START

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OFFICIAL GAZETTE

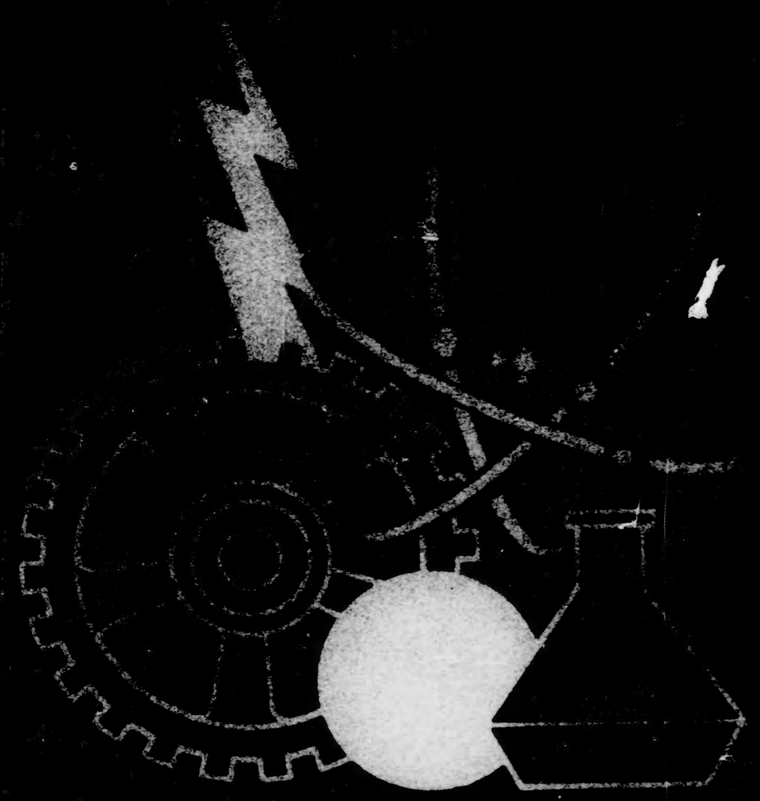
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENTS

February 7, 1989



U.S.
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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
February 7, 1989 Volume 1099 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Oct. 1, 1988, and was announced in the *Official Gazette* at 1094 O.G. 2 on Sept. 6, 1988.

Domestic PCT fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Danish declaration under PCT Article 64 (1)(a), that Denmark shall not be bound by PCT Chapter II, as from Nov. 1, 1988, was announced at 1095 O.G. 2 on Oct. 4, 1988.

The withdrawal of the Norwegian declaration under PCT Article 64(1)(a), that Norway shall not be bound by PCT Chapter II, as from Jan. 1, 1989, was announced at 1096 O.G. 34 on Nov. 22, 1988.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1160.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

DONALD J. QUIGG,
Oct. 26, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on February 4, 1986 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,567,611 through 4,569,085
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 26, 1982 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,313,229 through 4,314,378
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED NOVEMBER 20, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,483,020	06/442,304	11/20/84
4,483,027	06/387,972	11/20/84
4,483,031	06/488,366	11/20/84
4,483,038	06/530,781	11/20/84
4,483,039	06/537,427	11/20/84
4,483,050	06/412,212	11/20/84
4,483,057	06/335,826	11/20/84
4,483,059	06/486,565	11/20/84
4,483,068	06/324,896	11/20/84
4,483,071	06/363,762	11/20/84
4,483,073	06/402,925	11/20/84
4,483,078	06/418,445	11/20/84
4,483,080	06/361,835	11/20/84
4,483,085	06/559,103	11/20/84
4,483,086	06/397,107	11/20/84
4,483,087	06/337,445	11/20/84
4,483,088	06/462,231	11/20/84
4,483,095	06/597,649	11/20/84
4,483,099	06/597,691	11/20/84
4,483,102	06/422,459	11/20/84
4,483,104	06/363,520	11/20/84
4,483,112	06/329,710	11/20/84
4,483,114	06/373,391	11/20/84
4,483,115	06/367,446	11/20/84
4,483,118	06/224,677	11/20/84
4,483,119	06/507,700	11/20/84
4,483,127	06/388,178	11/20/84
4,483,129	06/426,151	11/20/84
4,483,132	06/465,982	11/20/84
4,483,140	06/290,015	11/20/84
4,483,143	06/423,528	11/20/84
4,483,152	06/515,216	11/20/84
4,483,153	06/484,394	11/20/84
4,483,155	06/392,617	11/20/84
4,483,162	06/376,258	11/20/84
4,483,163	06/395,490	11/20/84
4,483,175	06/450,698	11/20/84
4,483,189	06/518,336	11/20/84
4,483,197	06/430,535	11/20/84
4,483,198	06/455,673	11/20/84
4,483,199	06/421,115	11/20/84
4,483,214	06/477,121	11/20/84
4,483,222	06/297,495	11/20/84
4,483,223	06/482,721	11/20/84
4,483,225	06/450,360	11/20/84
4,483,233	06/431,395	11/20/84
4,483,238	06/432,202	11/20/84
4,483,245	06/439,856	11/20/84
4,483,248	06/481,749	11/20/84
4,483,250	06/485,083	11/20/84
4,483,257	06/491,366	11/20/84
4,483,261	06/464,410	11/20/84
4,483,263	06/614,580	11/20/84
4,483,264	06/364,545	11/20/84
4,483,269	06/268,357	11/20/84
4,483,278	06/493,210	11/20/84
4,483,287	06/376,688	11/20/84
4,483,290	06/363,270	11/20/84
4,483,298	06/592,738	11/20/84
4,483,301	06/413,900	11/20/84
4,483,302	06/460,437	11/20/84

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Patent Number	Serial Number	Issue Date
4,483,309	06/495,737	11/20/84
4,483,311	06/521,291	11/20/84
4,483,312	06/403,484	11/20/84
4,483,313	06/464,697	11/20/84
4,483,315	06/337,703	11/20/84
4,483,317	06/352,935	11/20/84
4,483,321	06/408,461	11/20/84
4,483,324	06/494,702	11/20/84
4,483,327	06/389,030	11/20/84
4,483,334	06/483,622	11/20/84
4,483,337	06/431,335	11/20/84
4,483,339	06/584,765	11/20/84
4,483,344	06/473,262	11/20/84
4,483,347	06/356,326	11/20/84
4,483,365	06/402,457	11/20/84
4,483,372	06/489,390	11/20/84
4,483,374	06/438,171	11/20/84
4,483,375	06/380,106	11/20/84
4,483,376	06/415,420	11/20/84
4,483,378	06/484,318	11/20/84
4,483,386	06/423,010	11/20/84
4,483,392	06/364,391	11/20/84
4,483,400	06/527,969	11/20/84
4,483,413	06/448,762	11/20/84
4,483,414	06/508,069	11/20/84
4,483,427	06/460,275	11/20/84
4,483,436	06/327,571	11/20/84
4,483,440	06/316,129	11/20/84
4,483,445	06/431,219	11/20/84
4,483,447	06/382,203	11/20/84
4,483,451	06/450,798	11/20/84
4,483,455	06/409,874	11/20/84
4,483,461	06/280,282	11/20/84
4,483,463	06/403,609	11/20/84
4,483,488	06/485,493	11/20/84
4,483,501	06/494,432	11/20/84
4,483,509	06/390,324	11/20/84
4,483,515	06/411,710	11/20/84
4,483,525	06/535,424	11/20/84
4,483,531	06/399,416	11/20/84
4,483,533	06/427,691	11/20/84
4,483,535	06/446,643	11/20/84
4,483,540	06/597,874	11/20/84
4,483,545	06/469,354	11/20/84
4,483,546	06/361,352	11/20/84
4,483,548	06/427,596	11/20/84
4,483,550	06/517,630	11/20/84
4,483,555	06/404,189	11/20/84
4,483,558	06/323,902	11/20/84
4,483,567	06/378,209	11/20/84
4,483,568	06/416,929	11/20/84
4,483,573	06/396,811	11/20/84
4,483,578	06/421,129	11/20/84
4,483,580	06/419,387	11/20/84
4,483,589	06/448,142	11/20/84
4,483,599	06/494,309	11/20/84
4,483,616	06/400,192	11/20/84
4,483,625	06/485,023	11/20/84
4,483,635	06/436,248	11/20/84
4,483,636	06/490,303	11/20/84
4,483,637	06/393,318	11/20/84
4,483,641	06/461,338	11/20/84
4,483,644	06/418,232	11/20/84
4,483,647	06/387,516	11/20/84
4,483,655	06/426,222	11/20/84
4,483,657	06/427,593	11/20/84
4,483,662	06/407,311	11/20/84
4,483,675	06/459,635	11/20/84
4,483,680	06/560,737	11/20/84
4,483,685	06/477,115	11/20/84
4,483,699	06/474,348	11/20/84
4,483,704	06/437,299	11/20/84
4,483,715	06/519,439	11/20/84
4,483,722	06/381,197	11/20/84
4,483,732	06/587,427	11/20/84
4,483,742	06/469,679	11/20/84
4,483,748	06/420,413	11/20/84
4,483,754	06/585,177	11/20/84
4,483,774	06/590,147	11/20/84
4,483,776	06/505,507	11/20/84
4,483,789	06/513,953	11/20/84
4,483,796	06/409,164	11/20/84
4,483,813	06/495,539	11/20/84
4,483,824	06/434,066	11/20/84
4,483,831	06/402,315	11/20/84
4,483,834	06/463,364	11/20/84
4,483,842	06/518,988	11/20/84
4,483,850	06/466,621	11/20/84
4,483,882	06/518,953	11/20/84
4,483,895	06/394,895	11/20/84
4,483,909	06/276,148	11/20/84
4,483,922	06/378,441	11/20/84
4,483,941	06/414,216	11/20/84
4,483,963	06/506,776	11/20/84
4,483,968	06/537,346	11/20/84
4,483,978	06/379,354	11/20/84
4,483,992	06/406,791	11/20/84
4,483,994	06/468,428	11/20/84
4,483,996	06/468,427	11/20/84
4,484,005	06/466,299	11/20/84
4,484,006	06/502,877	11/20/84
4,484,007	06/488,281	11/20/84
4,484,031	06/390,536	11/20/84
4,484,033	06/339,429	11/20/84
4,484,045	06/408,375	11/20/84
4,484,056	06/339,439	11/20/84
4,484,062	06/401,094	11/20/84
4,484,063	06/397,838	11/20/84
4,484,064	06/401,635	11/20/84
4,484,066	06/417,394	11/20/84
4,484,081	06/592,734	11/20/84
4,484,082	06/568,301	11/20/84
4,484,086	06/428,580	11/20/84
4,484,092	06/360,123	11/20/84
4,484,094	06/529,580	11/20/84
4,484,095	06/449,784	11/20/84
4,484,106	06/417,177	11/20/84
4,484,109	06/319,660	11/20/84
4,484,132	06/241,507	11/20/84
4,484,140	06/371,043	11/20/84
4,484,151	06/524,694	11/20/84
4,484,156	06/359,299	11/20/84
4,484,171	06/467,740	11/20/84
4,484,175	06/429,987	11/20/84
4,484,186	06/323,659	11/20/84
4,484,190	06/267,327	11/20/84
4,484,198	06/363,390	11/20/84
4,484,202	06/417,277	11/20/84
4,484,216	06/377,975	11/20/84
4,484,233	06/431,262	11/20/84
4,484,253	06/535,732	11/20/84
4,484,288	06/325,218	11/20/84
4,484,297	06/308,972	11/20/84
4,484,318	06/475,816	11/20/84
4,484,322	06/562,997	11/20/84
4,484,332	06/384,292	11/20/84
4,484,343	06/355,611	11/20/84
4,484,350	06/526,691	11/20/84

Recission of Notice of Patent Expiration

The Notice of Expiration due to failure to pay maintenance fees for the following patent was published in the Official Gazette of Aug. 16, 1988, in error and is hereby rescinded:

Patent Number	Serial Number	Issue Date
4,451,214	06/418,743	5/29/84

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,627,313, Re. S.N. 283,506, Filed Dec. 7, 1988, Cl. 74/867, CONTROL SYSTEM FOR AN INFINITELY VARIABLE TRANSMISSION, Yasuhito Sakai, Owner of Record: *Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Martin A. Farber, Ex. Gp.: 352

4,628,233, Re. S.N. 283,263, Filed Dec. 9, 1988, Cl. 318/306, MICROPROCESSOR BASE MOTOR CONTROL, Robert Bradus, Owner of Record: *Inventor,* Attorney or Agent: Christopher M. Brock, Ex. Gp.: 217

4,645,123, Re. S.N. 284,385, Filed Dec. 14, 1988, Cl. 229/69, CONTINUOUS, FILLED ENVELOPE ASSEMBLY WITH NON-MARGINAL SPACED FEED HOLES, Robert E. Ashby, Owner of Record: *Moore Business Forms Inc., Grand Island, N.Y.,* Attorney or Agent: Michael J. Keenan, Ex. Gp.: 241

4,685,212, Re. S.N. 278,239, Filed Nov. 30, 1988, Cl. 29/876, METHOD OF MANUFACTURING A JACK, Toru Masuda, et al., Owner of Record: *Hosiden Electronics Co., Ltd., Osaka, Japan,* Attorney or Agent: Felix J. D'Ambrosio, Ex. Gp.: 326

4,706,624, Re. S.N. 281,338, Filed Dec. 8, 1988, Cl. 123/321, COMPRESSION RELEASE RETARDER WITH VALVE MOTION MODIFIER, Zdenk S. Meistrick, et al., Owner of Record: *The Jacobs Manufacturing Co., Hartford, Conn.,* Attorney or Agent: Donald E. Degling, Ex. Gp.: 342

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,415,374, Reexam. No. 90/001,670, Requested: Dec. 15, 1988, Cl. 209/211, METHOD AND APPARATUS FOR VORTICAL SEPARATION OF SOLIDS, Nils Anders L. Wikdahl, Owner of Record: *Noss Co., Decatur, Ga.,* Attorney or Agent: Ledig, Voit, et al., Ex. Gp.: 130, Requester: Hydrocyclone Technology Inc., Stone Mountain, Ga.

4,479,821, Reexam. No. 90/001,671, Requested: Dec. 16, 1988, Cl. 71/93, N-PHENYLSULFONYL-N TRIAZINYLUREAS, Willy Meyer, et al., Owner of Record: *Ciba-Geigy Corp., New York, N.Y.,* Attorney or Agent: Unknown, Ex. Gp.: 120, Requester: E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.

Erratum

"All reference to Patent No 4,797,565 to Lawrence E. Lach, et al. of Ill. for 'CASCADE FET LOGIC CIRCUITS' appearing in the Official Gazette of Jan. 10, 1989 should be deleted since no patent was granted."

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceedings sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Lee D. Tousignant, Santa Ana, Calif., Reg. No. 1,405,573, for the mark "PC II" and design, Canc. No. 16,551.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For JEFFREY M. SAMUELS,
Assistant Commissioner
for Trademarks.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. These persons have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished the Director, Office of Enrollment and Discipline on or before Mar. 17, 1989:

Andrews, Richard L., 1400 S. Joyce St., #C-1205, Arlington, Va. 22202
Briscoe, Kurt G., 82 Christopher St., First Fl., Montclair, N.J. 07042
Butsky, Victor V., 148 River Oaks Blvd. East, Oakaville, Ont., Canada L6H 5N7
Caldwell, John W., Sr., 3344 - 5th St., SE., Washington, D.C. 20032
Corbin, John K., 307 Lorraine Dr., Rockville, Md. 20852
Dority, Carroll B., 813 Swan Creek Rd., Ft. Washington, Md. 20744
Krosnick, Freda L., 1118 Cresthaven Dr., Silver Spring, Md. 20903
Lastova, John R., 610 S. 21st St., Arlington, Va. 22202
Marantz, Sidney, 835 Gist Ave., Silver Springs, Md. 20910
McNagibm, Eukeeb N., m Bix 25m Cinnerce Ct., West, Toronto, Ont., Canada M5L 1A9
Pedersen, Nils E., 1400 S. Joyce St., Arlington, Va. 22202
Provost, Alain, Robic, Robic & Assoc., 1514 Docteur Penfield, Montreal, Que., Canada H3G 1X5
Rimrodt, Louis K., 2511 S. Grant St., Arlington, Va. 22202
Stallard, Wayland W., 4407 Garrison St., NW., Washington, D.C. 20016
Steinberg, Robert, 24434 W. Nicklaus Dr., #M4, Valencia, Calif., 91355
Watts, Charles R., 6517 Bruck Hearth Ct., Alexandria, Va. 22306
Williams, Howard S., 9519 Falls Rd., Rockville, Md. 20854

Jan. 9, 1989 CAMERON WEIFFENBACH,
Director, Office of Enrollment
and Discipline.

Survey of Registered Practitioners In Patent Cases

Pursuant to 37 CFR 10.11(b), a survey letter was mailed on Nov. 18, 1988 from the Office of Enrollment

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and Discipline (OED) to all practitioners in patent cases whose last names begin with K through O. Enclosed with the letter was a data sheet which had to be completed and returned to OED as soon as possible. All data sheets returned to OED will be acknowledged. Failure by a practitioner to submit a completed data sheet within the time period specified in the survey letter will result in the practitioner being removed from the register in accordance with CFR 10.11(b).

If your last name begins with K through O and you have not received a data sheet or if you returned the data sheet to OED and you did not receive an acknowledgement within three (3) months after returning the data sheet to OED, please contact Patricia M. Jordan at (703) 557-1728.

Dec. 12, 1988.

CAMERON WEIFFENBACH,
Director, Office of Enrollment and Discipline.

PATENT NOTICES

Certificates of Correction for the Week of Feb. 7, 1989

B1 3,958,676	4,719,599	4,748,181	4,765,871
D. 295,052	4,720,732	4,748,409	4,766,251
D. 297,675	4,723,772	4,748,502	4,766,574
4,338,260	4,724,196	4,748,677	4,766,790
4,457,881	4,724,482	4,749,153	4,766,951
4,464,103	4,724,490	4,749,360	4,767,097
4,542,345	4,724,834	4,749,578	4,767,266
4,552,386	4,725,390	4,749,649	4,768,057
4,576,369	4,727,535	4,750,591	4,768,092
4,613,371	4,727,936	4,751,181	4,768,251
4,623,040	4,728,509	4,751,230	4,768,487
4,636,810	4,729,153	4,751,613	4,769,357
4,644,250	4,729,310	4,751,969	4,770,193
4,647,841	4,730,269	4,752,734	4,770,391
4,652,077	4,730,343	4,753,374	4,770,415
4,652,334	4,733,275	4,753,578	4,770,754
4,658,437	4,734,123	4,753,587	4,772,048
4,674,618	4,734,338	4,754,014	4,772,111
4,676,033	4,734,632	4,754,429	4,772,203
4,679,108	4,737,520	4,754,793	4,772,264
4,682,328	4,737,827	4,754,886	4,772,274
4,683,044	4,738,370	4,755,123	4,772,464
4,693,493	4,738,527	4,755,241	4,772,465
4,696,882	4,738,876	4,755,267	4,772,466
4,706,464	4,739,658	4,756,064	4,772,506
4,708,854	4,740,059	4,756,448	4,772,585
4,709,921	4,741,136	4,756,514	4,772,606
4,710,102	4,741,286	4,757,343	4,772,609
4,711,558	4,741,744	4,758,210	4,772,722
4,712,121	4,742,108	4,758,349	4,773,326
4,712,691	4,742,780	4,758,437	4,773,588
4,713,820	4,743,292	4,759,013	4,773,756
4,714,082	4,743,377	4,761,000	4,774,175
4,715,164	4,743,502	4,761,045	4,774,272
4,715,390	4,743,705	4,761,482	4,774,514
4,715,578	4,744,985	4,761,871	4,774,664
4,716,038	4,745,112	4,762,923	4,777,883
4,716,061	4,745,187	4,763,325	4,777,930
4,717,245	4,745,545	4,763,373	4,778,377
4,717,283	4,745,603	4,764,372	4,784,071
4,719,196	4,747,324	4,764,967	
4,719,221	4,747,731	4,765,144	

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SPECIAL BOXES FOR MAIL

Special PTO mail box numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they are intended.

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Commissioner of Patents and Trademarks
Washington, D.C. 20231

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Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
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Box 6	Mail for the Office of Procurement.
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Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Mail related to Reexamination.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").
PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries (PDLs), receive current issues of U.S. Patents and maintain collections of earlier-issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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Since there are variations in the scope of patent collec patents from either microfilm or paper collections are generallcontemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours in order to avert possible inconvenience.

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Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 451-2965
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	Boston Public Library	(617) 536-5400 Ext. 265
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New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 846-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
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Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 744-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Nashville: Vanderbilt University Library	(615) 322-2775
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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	Milwaukee Public Library	(414) 278-3247

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF December 31, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-4-87
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	1-21-86
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	1-20-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	7-31-86
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-24-86
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	6-8-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-27-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-28-87
DESIGN, GROUP 290—K. L. CAGE, Director	1-23-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	1-12-88
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	7-7-87
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	1-20-87
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-22-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-4-88

Expiration of patents: The patents within the range of numbers indicated below expire during December 1988, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,624,839 to 3,631,538, inclusive
Plant Patents ..... None

STATUTORY INVENTION REGISTRATIONS

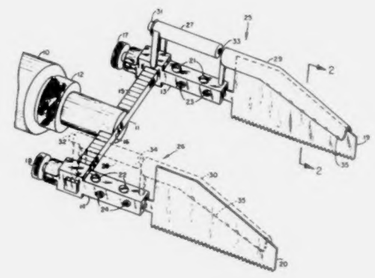
PUBLISHED FEBRUARY 7, 1989

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H571
DOUBLE-BLADED, WATER-COOLED ATTACHMENT FOR SURGICAL BONE CUTTING SAW AND METHOD FOR USING AND ASSEMBLING THE SAME

Jeffrey O. Hollinger, Glenwood; John P. Schmitz, Columbia, and Eric S. Koppelman, Bowie, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 20, 1986, Ser. No. 831,196
Int. Cl.[4] A61B *17/14*
U.S. Cl. 128—317 **9 Claims**

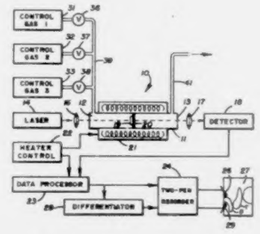


1. An attachment for a surgical saw motor comprising:
(a) means for connecting two surgical saw blades to said saw motor, so that two parallel cuts can be made simultaneously; and
(b) means for cooling said surgical saw blades and the bone areas adjacent thereto when said surgical saw blades are engaged in a cutting operation.

H572
OPTICAL ANALYZER

Anthony D. Hansen, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 28, 1987, Ser. No. 101,534
Int. Cl.[4] G01N *21/00*
U.S. Cl. 356—439 **18 Claims**

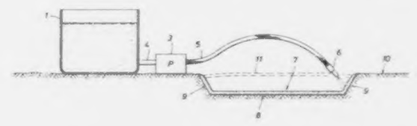


1. A method of analyzing particulate matter in which there is at least one sample of said particulate matter collected on a light transmitting filter comprising:
(a) passing a light beam through said sample,
(b) heating said sample and increasing the temperature thereof at a controlled rate,
(c) maintaining said sample in a controlled atmosphere as the temperature thereof is increased,
(d) detecting the intensity of light transmitted through said sample,
(e) determining the magnitude of transmission of light through said sample as the temperature of said sample is increased,
(f) determining the rate of change of the transmission of light through said sample as the temperature of said sample is increased,
(g) plotting said rate of change of transmission versus temperature on a chart.

H573
SEALING OF PITS

George M. Deeley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 30, 1987, Ser. No. 126,549
Int. Cl.[4] E02D *3/00*
U.S. Cl. 405—270 **7 Claims**

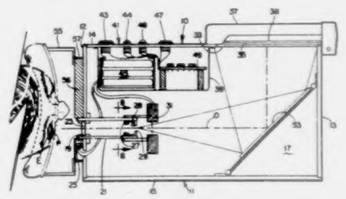


1. A method for sealing the bottom of a pit to minimize leakage from the pit, comprising:
mixing a sealing material in a fluid mixing tank;
connecting a pump and hose to the fluid mixing tank;
dispensing a layer of the sealing material from the fluid mixing tank through the pump and hose and onto the bottom and sides of the pit; and
allowing the dispensed layer of sealing material to seal the bottom and sides of the pit.

H574
SUBJECT OPERATED PUPILOMETER

Harold S. Merkel, and David P. Ramer, both of Beavercreek, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 28, 1987, Ser. No. 90,481
Int. Cl.[4] A61B *3/02, 3/14*
U.S. Cl. 351—223 **4 Claims**



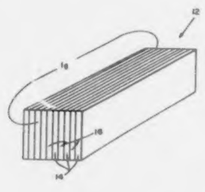
1. An instrument for the self-administered measurement of the pupil of the eye of a subject, comprising:
(a) a controllable light source for selectively illuminating said eye of said subject;

(b) optical means for projecting along an optical axis an image of said eye so illuminated;
(c) photographic film disposed along said optical axis for recording said image of said eye, said film disposed a preselected distance from said optical means providing a predetermined magnification of said image of said eye on said film;
(d) a substantially transparent plate having thereon a set of calibrated lines disposed along said optical axis adjacent said film for superimposing a set of calibrated lines onto said image of said eye;
(e) a controllable shutter disposed along said optical axis for slectively exposing said film to the superposition of said image of said eye and an image of said calibrated lines; and
(f) a light shield surrounding said light source for resiliently contracting the face of said subject and excluding extraneous light from said optical means.

H575
LIGHT-WEIGHT NON-SATURATING SPACED CORE INDUCTOR

Charles S. Kerfoot, Pasadena, and Walter E. Milberger, Severna Park, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 25, 1988, Ser. No. 189,459
Int. Cl.[4] B32B *15/10;* **B22F** *7/00;* **H01F** *27/24*
U.S. Cl. 428—464 **4 Claims**

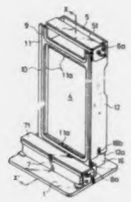


1. A light weight non-saturating spaced core inductor including a core structure made of alternate layers of magnetic material and non-magnetic material to form a light weight core.

H576
ELECTROPHERESIS APPARATUS HAVING SAFETY DEVICE

Sigeru Tezuka, c/o Fuji Photo Film Co., Ltd. No. 11-46, Senzui 3-chome, Asaka, Saitama, Japan

Filed Sep. 11, 1987, Ser. No. 97,619
Claims priority, application Japan, Sep. 11, 1986, 61-214882
Int. Cl.[4] B01D *13/02;* **C25D** *13/00*
U.S. Cl. 204—299 R **5 Claims**



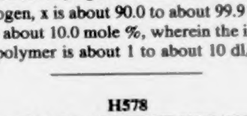
1. In an electrophoresis apparatus having a buffer solution vessel provided with an electrode and an electrically conductive terminal, said buffer solution vessel having a cover member capable of covering said vessel so that an operator's hands cannot touch a buffer solution within said vessel, wherein the improvement comprises said cover member being provided with an opening through which a power supply plug can be connected to said electrically conductive terminal, said cover member being pivotally connected to the vessel for rotational movement between an open position wherein the vessel is uncovered and a closed position wherein the vessel is covered, said power supply plug being arranged so as to be able to be connected to said electrically conductive terminal through said opening only when said cover member is in said closed position.

H577
AQUEOUS DRAG REDUCTION WITH NOVEL ACRYLAMIDE-N-ALKYL ACRYLAMIDE COPOLYMERS

Jan Bock; Ralph M. Kowalik, both of Bridgewater; Donald B. Siano, Fanwood, all of N.J., and S. Richard Turner, Pittsford, N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 28, 1987, Ser. No. 137,929
Int. Cl.[4] C08K *5/00;* **C08L** *39/00*
U.S. Cl. 524—555 **7 Claims**

1. A method for reducing frictional drag of water in flow through pipes comprising adding about 5 to about 100 ppm of a water soluble copolymer to said water, said copolymer having the formula:



wherein R_1 is an alkyl or cycloalkyl group having about to about 22 carbon atoms, R_2 is the same or different alkyl group as R_1 or hydrogen, x is about 90.0 to about 99.9 mole %, and y is about 0.1 to about 10.0 mole %, wherein the intrinsic viscosity of said copolymer is about 1 to about 10 dl/g.

H578
ELECTROLYTE ADDITIVE FOR LITHIUM RECHARGEABLE ORGANIC ELECTROLYTE BATTERY

Wishvender K. Behl, Ocean, N.J., and Der-Tau Chin, Winthrop, N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 8, 1988, Ser. No. 153,611
Int. Cl.[4] H01M *10/08*
U.S. Cl. 429—197 **14 Claims**

1. In a lithium rechargeable organic electrolyte battery including lithium as the anode, a compound selected from the group consisting of titanium disulfide, molybdenum oxide, molybdenum sulfide, vanadium oxide, vanadium sulfide, and chromium oxide as the cathode, and a solution of an organic lithium salt in an organic solvent as the electrolyte, the improvement of using a large excess of lithium iodide in the solution as an electrolyte additive to provide overcharge protection.

H579
HIGHLY FLAME RETARDED FLEXIBLE POLYVINYL CHLORIDE COMPOSITIONS AND METHODS FOR PRODUCING SAME

Thomas P. Fidelle, and Robert J. Nulph, both of Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

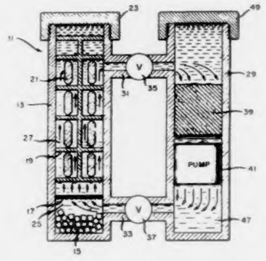
Filed Oct. 26, 1987, Ser. No. 113,570
Int. Cl.[4] C08K *5/09*
U.S. Cl. 524—288 **7 Claims**

1. A method for flame retarding plasticized flexible polyvinyl chloride resin without significant adverse affect on thermal stability measured in accordance with ASTM procedure D2115 or tensile strength measured in accordance with ASTM procedure D638 of the resin comprising the step of incorporating therein an effective amount of di-2-ethylhexyl tetrabromophthalate and, optionally, a flame retardant enhancing agent.

H580
METHOD AND APPARATUS FOR GROWING HIGH PERFECTION QUARTZ

John R. Vig, Colts Neck, N.J., assignor to The United States of America as represented by the Secretary of the army, Washington, D.C.

Filed Jul. 16, 1987, Ser. No. 75,799
Int. Cl.[4] C30B *35/00*
U.S. Cl. 422—245 **16 Claims**

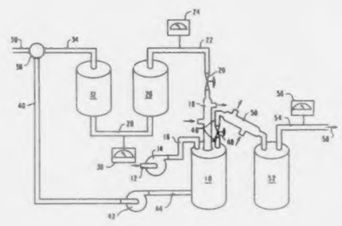


1. An apparatus for the hydrothermal growth of quartz comprising:
first and second autoclaves, said first autoclave containing seed crystals, nutrient and mineralizer;
said second autoclave being connected to said first autoclave and containing means for filtering said mineralizer.

H581
MINERAL SPIRITS PURIFICATION PROCESS

Steven L. Collignon, Waldorf, and Dennis R. Knudsen, Fredericksburg, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 9, 1987, Ser. No. 71,502
Int. Cl.[4] C10G *17/00*
U.S. Cl. 208—254 R **9 Claims**



1. A method of purifying mineral spirits contaminated with 1,2-propanediol dinitrate and hydrogen cyanide comprising:
(1) removing the 1,2-propanediol dinitrate and hydrogen cyanide by simultaneously
(a) heating the contaminated mineral spirits in a partially filled vessel at a temperature of from about 145° C. to the reflux temperature of the mineral spirits at atmospheric pressure to
(i) decompose the 1,2-propanediol dinitrate to gaseous decomposition products including hydrogen cyanide and nitrogen oxides and
(ii) drive the gaseous decomposition products from the mineral spirits into open portion of the vessel,
(b) purging the gaseous decomposition products from the vessel with a stream of a carrier gas, and
(c) removing the hydrogen cyanide and nitrogen oxides from the carrier gas;
and when the concentration of 1,2-propanediol dinitrate in the mineral spirits has been reduced to an acceptable level,
(2) recovering the mineral spirits from the vessel by distillation.

H582
BLENDS FOR MAKING SKIN PACKAGING FILMS

John H. Tucker, 1885 Howell, Beaumont, Tex. 77706

Filed Mar. 17, 1987, Ser. No. 26,852
Int. Cl.[4] C08 *3/26;* **C08J** *37/00*
U.S. Cl. 524—427 **20 Claims**

1. A blend useful for extruding into skin packaging films comprising:
(a) about 75 to about 95.5% by weight of one or more ethylene/carboxylic acid copolymers;
(b) about 5 to about 20% by weight of high density polyethylene; and
(c) about 0.5 to 5% by weight of one or more particulate inorganic fillers.

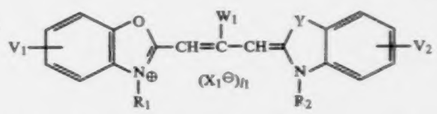
H583
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Masahiro Asami, c/o Fuji Photo Film Co., Ltd., No. 210, Nakanuma, Minami Ashigara-shi, Kanagawa, Japan

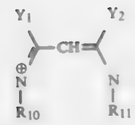
Filed Jan. 5, 1987, Ser. No. 503
Claims priority, application Japan, Jan. 8, 1986, 61-1865
Int. Cl.[4] G03C *1/30, 1/34, 1/20, 1/40*
U.S. Cl. 430—550 **28 Claims**

1. A color photographic light-sensitive material which comprises a support having provided thereon at least one light-sensitive emulsion layer containing a silver chlorobromide emulsion substantially free of iodide, wherein at least one of said light-sensitive emulsion layers containing a silver halide emulsion sensitized spectrally with a combination of at least one compound represented by the general formula

(I-A)



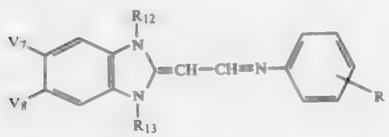
wherein W_1 represents a hydrogen atom, or an allkyl group; V_1 and V_2 may be the same or different, and each represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an amido group, an alkoxycarbonyl group or a cyano group, and further, V_1 and V_2 may be a condensed benzene ring; the number of each substituent represented by V_1 and V_2 which may be present in a molecule is one or more; R_1 and R_2 each represents an alkyl group, an alkenyl group or an aralkyl group, each of which may be substituted with a sulfo group, a sulfonate group, a carboxyl group, a carboxylate group or a hydroxyl group directly or through a divalent alkoxy group; Y represents an oxygen atom; X_1 represents a counter ion which can suffice for neutralization of charges in each molecule; l_1 represents 0 or 1, and l_1 is 0 when the molecules form an inner salt; and at least one compound represented by the general formula (II-A) or (II-B):



(II-A)

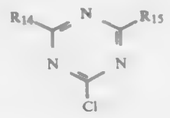
$(X_4^{\ominus})_{n2}$

wherein Y_1 and Y_2 each represents atomic groups necessary to constitute a benzoxazole nucleus, a naphthoxazole nucleus, a bezothiazo'e nucleus or a naphthothiazole nucleus, each of which may substituted with a halogen atom, a hydroxyl group, an alkyl group, an alkoxy group, an aryl group, a cyano group, a nitro group or an alkoxycarbonyl group; R_{10} and R_{11} each represents an alkyl group, an alkenyl group or an aralkyl group each of which may be directly substituted with a sulfo group, a sulfonate group, a carboxyl group, a carboxylate group or a hydroxyl group, or indirectly substituted therewith through a divalent alkoxy group X_4 represents a counter ion which can suffice for neutralization of charges in the molecule; and n_2 represents 0 or 1, and n_2 is 0 when the compound forms an inner salt;



(II-B)

wherein R_{12} and R_{13} each represents an alkyl group, an alkenyl group or an aralkyl group, each of which may be substituted with a sulfo group, a sulfonate group, a carboxyl group, a carboxylate group, or a hydroxyl group directly or through a divalent alkoxy group; V_7 and V_8 may be the same or different and each represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an amido group, an alkoxycarbonyl group or a cyano group; and R represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an amido group, an alkoxycarbonyl group or a cyano group; and being hardened with at least one compound represented by the general formula (III) and/or at least one compound represented by the general formula (IV):

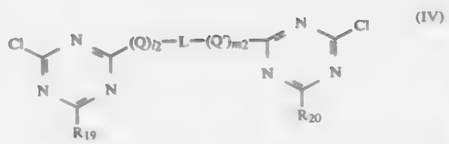


(III)

wherein R_{14} and R_{15} each represents a chlorine atom, —OM wherein M represents a hydrogen atom or a monovalent metal atom, an alkyl group, an alkoxy group,



wherein R_{16} and R_{17} each represents a hydrogen atom, an alkyl group or an aryl group, or —NHCOR$_{18}$ wherein R_{18} represents a hydrogen atom, an alkyl group, an aryl group or an alkylthio group, provided that the case of R_{14}=R_{15}=Cl is excluded herein;



(IV)

wherein R_{19} and R_{20} each represents a chlorine atom, —OM wherein M represents a hydrogen atom or a monovalent metal atom, an alkyl group or an alkoxy group; Q and Q' each represents —O—, —S—or —NH—; L represents an alkylene group or an arylene group; and l_2 and m_2 each represents 0 or 1.

H584

DIELECTRIC OMNI-DIRECTIONAL ANTENNAS

Felix Schwering, Eatontown, N.J., and Song-Tsuen Peng, Dix Hills, N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 18, 1986, Ser. No. 943,229
Int. Cl.[4] H01Q *13/00*
U.S. Cl. 343—785 **5 Claims**



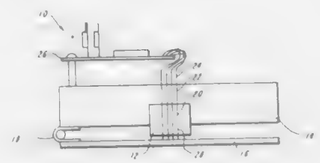
1. An antenna comprising:
a solid dielectric cylindrical feed section having a uniform diameter;
a solid radiating section extending from and integral withg said feed section and including a cylindrical tapered region whose diameter decreases outwardly from said feed section and extends for at least one wavelength, said radiating section including a plurality of periodically spaced corrugations having grooves therebetween, said corrugations being between 0.4 and 0.6 wavelengths apart and said grooves having gradually increasing depths in an intermediate length of said radiating section and having a constant depth in the end region of said radiating section.

H585

ANISOTROPIC MAGNETORESISTANCE MEASUREMENT APPARATUS AND METHOD THEREOF

John M. Cavallo, Beltsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 20, 1988, Ser. No. 146,012
Int. Cl.[4] G01R *33/02*
U.S. Cl. 324—249 **2 Claims**



1. Apparatus for measurement of magnetoresistance parameters of a film having a surface exposed to a magnetization comprising:
a support means, and

a plurality of contact points engagable with the surface of the film,
the plurality of contact points being supported by the support means for contact with the surface of the film and arranged in a pattern suitable for measuring the magnetoresistance parameters of the film according to the equation

$$\phi = \frac{IR}{4}\,\mathrm{Ln}\,\frac{(x+d)^2+y^2}{(x-d)^2+y^2} + \frac{IR}{4}\,\mathrm{Ln}\left(1+\frac{\Delta\rho}{\rho_0}\,\frac{((x+d)\cos\theta+y\sin\theta)^2}{(x+d)^2+y^2}\right) - \frac{IR}{4}\,\mathrm{Ln}\left(1+\frac{\Delta\rho}{\rho_0}\,\frac{((x-d)\cos\theta+y\sin\theta)^2}{(x-d)^2+y^2}\right)$$

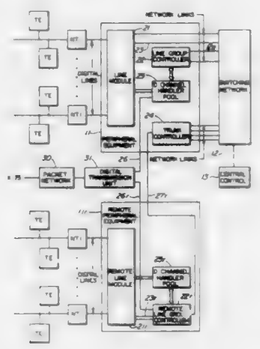
wherein:
ϕ is the potential between the respective contact points,
I is the isotropic current
R is the isotropic resistance,
$(x\pm d)$ are the abscissa coordinates of the contact points,
y is the ordinate coordinate of the contact points,
$\Delta\rho$ is the magnetoresistance
ρ_o is the resistivity perpendicular to the magnetization, and
θ is the angle of the magnetization to the abecissa.

H586

ISDN D CHANNEL HANDLER

Randall D. Kun, 10 Cyrus Court, Nepean, Ontario, Canada (K2H 9C9)

Filed Mar. 16, 1987, Ser. No. 26,502
Claims priority, application Canada, Jun. 20, 1986, 512045
Int. Cl.[4] H04J *3/24*
U.S. Cl. 370—94 **11 Claims**



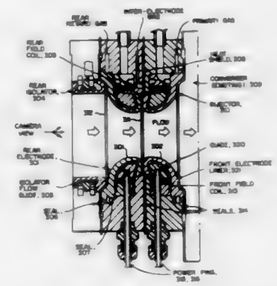
2. A method for D channelizing informations destined for [ISDN]integrated services digital network (ISDN) subscribers' digital lines, comprising the steps of:
obtaining start addresses from a predefined output address queue, each start address defining the first of a series of storage locations wherein bit states destined for transmission to the ISDN subscriber digital lines are stored;
reading the storage locations one after another and distributing the read bit states in sequence into prearranged bit position occurrences in a bit stream being received by the ISDN subscribers' digital lines.

H587

DUAL TOROIDAL ELECTRODES

James H. Painter, St. Louis County, Mo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 13, 1987, Ser. No. 111,238
Int. Cl.[4] B23K *9/16*
U.S. Cl. 219—75 **6 Claims**



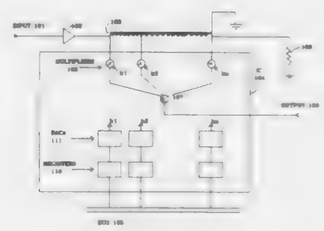
1. An electrical arc heater assembly for use with a supply of electrical power and a supply of pressured gas, said electrical arc heater assemply comprising:
a means for injecting a stream of gas into said heater assembly, said injecting means being connected to said supply of pressured gas and receiving p essured gas thereby;
a forward toroidal electrode mounted in said heater assembly and serving as a cathode;
first and second rear toroidal electrodes which are mounted in said heater assembly and respectively serving as a first and second anode to generate an electrical arc through said stream of gas to said cathode when said first and second anode and said cathode receive electrical power; and
a means for conducting said electrical power from said supply of electrical power to said forward toroidal electrode and said first and second rear toroidal electrodes.

H588

TRANSVERSAL FILTER USED AS AN EQUALIZER FOR DATA READOUT FROM A DISK DRIVE

Paul W. Latham, II, Newmarket, N.H., assignor to Data General Corporation, Westborough, Mass.

Filed Oct. 13, 1987, Ser. No. 108,512
Int. Cl.[4] G11B *5/02*
U.S. Cl. 360—65 **5 Claims**



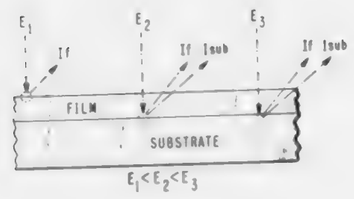
1. In a data storage device for storing data on a magnetic medium and having read heads for retrieving the data from the magnetic medium, an equalizer operatively connected to each read head comprising a transversal filter for equalizing the data from the read head.

VOL 1099 ISS 1 FEB 7 1989 UMI

H589
MEASUREMENT OF FILM THICKNESS OF INTEGRATED CIRCUITS

Richard G. Sartore, Bradley Beach, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 23, 1987, Ser. No. 43,271
Int. Cl.[4] G01N *23/00*
U.S. Cl. 250—307 1 Claim



1. A method of measuring the film thickness of integrated circuits comprising the steps of:
directing a narrow, high energy, electron beam to impinge upon an integrated circuit;
increasing in incremental steps of three or more the accelerating voltage of the electron beam so that the electrons penetrate into the film and with one or more further increases penetrate into the substrate of the integrated circuit to a predetermined extent;
the transmitted electrons serving to interact with the film and substrate materials to generate distinct X-rays;
detecting the generated X-rays;
the relative X-ray intensities of the film material to that of the substrate material being used to obtain a close estimate of the accelerating voltage required to penetrate the film;
determining the film penetration voltage in accordance with a least squares fitting of the relative X-ray intensity data points or readings; and
calculating the film thickness (T) in accordance with the formula:

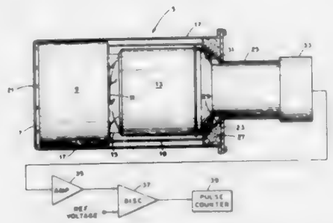
$$T=40\times E^{1.75}/P$$

where E=film penetration voltage, and p=film material density in mg/cm^3.

H590
HIGH-EFFICIENCY SCINTILLATION DETECTOR FOR COMBINED OF THERMAL AND FAST NEUTRONS AND GAMMA RADIATION

Marion M. Chiles, Knoxville; John T. Mihalczo, and Edward D. Blakeman, both of Oak Ridge, all of Tenn., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Feb. 27, 1987, Ser. No. 19,738
Int. Cl.[4] G01T *1/20*
U.S. Cl. 250—367 6 Claims



1. A radiation detector for the combined detection of thermal neutrons, high-energy neutrons and gamma ray radiations, comprising:
a first scintillator means disposed to receive said radiations entering said detector through an entrance area thereof for producing scintillations in response to thermal neutrons absorbed therein and allowing said high energy neutrons and gamma rays to pass therethrough;
a second scintillator means disposed adjacent said first scintillator means to receive said high-energy neutrons and gamma rays passing through said first scintillator means for producing scintillations therein in response to high-energy neutrons and gamma rays absorbed therein and optically coupled to said first scintillator means for guiding light pulses therethrough generated by said scintillations produced in said first scintillator means;
a photomultiplier tube having a light sensitive face optically coupled to said second scintillator means for receiving light pulses generated by said scintillations produced in said first and second scintillator means and producing current pulses at an output thereof in response to each of said generated light pulses indicative of the total combined radiation count rate; and
a light-tight housing disposed about said first and second scintillator means and said light sensitive face of said photomultiplier and having a radiation pervious window therein forming said entrance area of said detector.

REISSUES

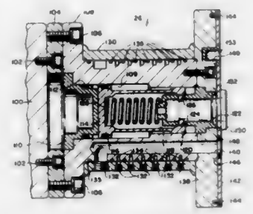
FEBRUARY 7, 1989

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,854
ADAPTER WITH MODULAR COMPONENTS FOR A ROBOT END-OF-ARM INTERCHANGEABLE TOOLING SYSTEM

Peter E. McCormick, Dallas, Tex.; Rick C. Edwards, Renton, Wash.; Walter D. Autry, Jr., Dallas, Tex.; Timothy D. Culbertson, Carrollton, Tex.; Jerome F. Goch, Dallas, Tex., and Marc S. Linder, Garland, Tex., assignors to EOA Systems, Inc., Dallas, Tex.

Original No. 4,676,142, dated Jun. 30, 1987, Ser. No. 728,763, Apr. 30, 1985. Continuation-in-part of Ser. No. 616,974, Jun. 6, 1984, Pat. No. 4,611,377. Application for reissue Oct. 20, 1987, Ser. No. 110,686
Int. Cl.[4] F01B *31/00*; B25J *17/02, 11/00*
U.S. Cl. 92—130 R 15 Claims

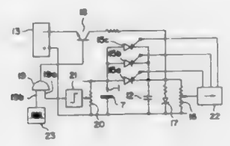


8. An adapter for use in connecting a tool to the end of a robot arm, the tool having a locking element, comprising:
a first module for connection to the end of the robot arm;
means disposed on the first module for disengageably locking the tool to the adapter by means of rigid engagement with the tool's locking element;
at least one second module attached to the first module; and
a plurality of interface connectors disposed on the second module for establishing connections between the tool and interface passageways within the second module.

Re. 32,855
CAPACITOR-TYPE PULSE GENERATOR FOR ELECTRICAL DISCHARGE MACHINING, ESPECIALLY FOR WIRE-CUTTING EDM

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Original No. 4,442,333, dated Apr. 10, 1984, Ser. No. 238,123, Feb. 25, 1981. Application for reissue Apr. 10, 1986, Ser. No. 851,792
Claims priority, application Japan, Feb. 26, 1980, 55-23574
Int. Cl.[4] B23P *1/08*
U.S. Cl. 219—69 W 10 Claims



4. A method of operating a wire-cutting EDM, capacitor-type pulse generator comprising the steps of:
(a) charging a capacitor from a DC source, said capacitor being connected in series with a first switch means and a wire EDM gap, and said DC source having an ouptut voltage in excess of a predetermined level to charge said capacitor at an accelerated rate;
(b) generating a signal which is a function of capacitor voltage;
(c) upon said signal reaching said predetermined level, turning said first switch means into conduction to permit the charge on said capacitor to be discharged through said EDM gap; and
(d) upon said signal exceeding a preselected value, turning a second switch means connected in series between said DC source and said capacitor from a conductive state in which said capacitor is charged to a nonconductive state.

Re. 32,856
ALARM SYSTEM

James W. Millsap, Highland, Ind., and Peter Miller, Chicago, Ill., assignors to Peter Miller, 5659 N. Drake, Chicago, Ill.

Original No. 4,577,182, dated Mar. 18, 1986, Ser. No. 598,851, Apr. 10, 1984. Application for reissue Nov. 19, 1987, Ser. No. 122,440
Int. Cl.[4] G08B *1/08*; H04M *11/04*
U.S. Cl. 340—539 11 Claims



10. An alarm system for a protected premises at a fixed location, which comprises:
a digital communicator;
means for connecting an alarm signal line to said digital communicator;
a cellular transceiver, said cellular transceiver having an audio input and an audio output;
said digital communicator having an audio output and an interrogation input;
means coupling said digital communicator audio output to said cellular transceiver audio input;
means coupling said cellular transceiver audio output to said digital communicator interrogation input;
an antenna connected to said cellular transceiver, whereby an alarm signal received by said digital communicator will operate said cellular transceiver to transmit an over-the-air signal to a cellular site, where it can be forwarded to an alarm monitoring station with the alarm monitoring station being placed in two-way communication with the cellular transceiver via the cellular site.

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Re. 32,857

BRUSHLESS TACHOMETER/SYNCHRO

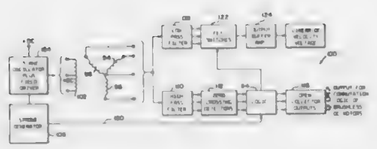
John R. Luneau, Center Harbor, N.H., assignor to Resolvex Corporation, Center Harbor, N.H.

Original No. 4,605,889, dated Aug. 12, 1986, Ser. No. 642,992, Aug. 21, 1984. Application for reissue May 12, 1987, Ser. No. 48,959

Int. Cl.[4] H02P *9/14;* G01P *3/46*

U.S. Cl. 322—61 **13 Claims**





12. A generator comprising

a stator;

means for providing a magnetic field associated with said stator including a constant field and an alternating field having a frequency of alternation;

a brushless rotor movable within said stator to selectively couple said constant field and said alternating field and generate a composite field signal;

pickup means associated with said stator to detect said composite field signal;

means to separate said composite field signal into a first and second field signal; and

output means including commutator means timed by said frequency of alternation and receiving said first field signal to generate a first output signal correlated to the position of said rotor within said stator.

Re. 32,858

STORED-PROGRAM CONTROL MACHINE

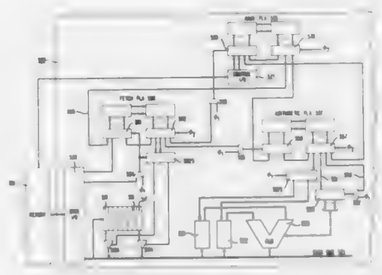
Donald E. Blahut, Holmdel; Marc L. Harrison, Morganville, and Mark E. Thierbach, Middletown, all of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Original No. 4,399,516, dated Aug. 16, 1983, Ser. No. 233,143, Feb. 10, 1981. Application for reissue Aug. 16, 1985, Ser. No. 766,912

Int. Cl.[4] G06F *9/22*

U.S. Cl. 364—716 **10 Claims**

1. An integrated circuit structure including a first logic array having an associated input register for supplying first signals to said first logic array, and a second logic array having an associated output register for receiving second signals from said second logic array, said input and output registers being operative respectively in [response to] first and second [phase clock pulses, clock means for applying clock pulses in said first and second phase] *clock phases* and means for applying inputs to said input register *during said first clock phases,* said structure being characterized by control means, connected between said output register and said input register *and* responsive to an output from said output register during [each] *a* second phase [clock pulse], for controlling modification of selected ones of said [second] *first* signals received in the [output] *input*



register during the next [preceding second] *first* phase [clock pulse].

Re. 32,859

ACOUSTIC SURFACE WAVE DEVICES

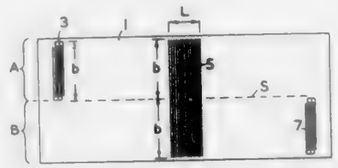
Frank G. Marshall, and Edward G. S. Paige, both of West Malvern, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Original No. 3,836,876, dated Sep. 17, 1974, Ser. No. 249,573, May 2, 1972. Application for reissue Jan. 12, 1987, Ser. No. 4,381

Claims priority, application United Kingdom, May 5, 1971, 13125/71

Int. Cl.[4] H03H *9/145, 9/25, 9/42, 9/64*

U.S. Cl. 333—151 **40 Claims**



1. An acoustic surface wave device which comprises *a single substrate having* at least a first track and a second track, said tracks being *located at spaced areas of said substrate each of which areas is* formed of a material able to support acoustic surface waves and having first and second piezoelectric regions respectively across both said first and second tracks, means for launching surface acoustic waves along the first track, and means for receiving and detecting acoustic surface wave energy travelling along the second track, said device further comprising acoustic surface wave coupling means *on said substrate* extending between said tracks and having a first part disposed across said first track and a second part disposed across said second track, said first and second parts of said coupling means comprising a plurality of spaced filamentary electrical conductors *all of which are electrically insulated from one another and* each of which extends in length over the first region and thence without interruption over the second region, those parts of said filamentary conductors which extend across said first region being substantially parallel to another and being oriented substantially orthogonal to the direction of energy travel along said first track, and those parts of said filamentary conductors which extend across said second region being substantially parallel to one another and being oriented substantially orthogonal to the direction of energy travel along said second track, said coupling means being

operative to transfer energy between said first and second tracks by transduction whereby energy in said first track comprising at least some of the acoustic surface wave energy traveling in the [travck] *track* is intercepted and converted into electrical energy induced between said conductors by said first part of the coupling means extending across the first track, is then transferred toward said second track along the filamentary electrical conductors of the coupling means as said electrical energy is then converted back to surface acoustic wave energy and relaunched as surface acoustic surface wave energy *traveling substantially in a single direction only* in the second track by said second part of the coupler means extending across the second track.

Re. 32,860

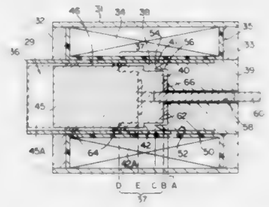
SOLENOID CONSTRUCTION AND METHOD FOR MAKING THE SAME

Bruce D. Clark, Clifton Springs, N.Y., assignor to G. W. Lisk Company, Inc., Clifton Springs, N.Y.

Original No. 4,604,600, dated Aug. 5, 1986, Ser. No. 740,640, Jun. 3, 1985. Continuation-in-part of Ser. No. 563,891, Dec. 23, 1983, Pat. No. 4,539,542. Application for reissue Jan. 4, 1988, Ser. No. 140,661

Int. Cl.[4] H01F *7/08*

U.S. Cl. 335—261 **33 Claims**



1. An assembly for use in a solenoid comprising:

a. a hollow solenoid armature tube adapted to be received in a solenoid coil, said tube having an armature chamber therein;

b. a stationary pole piece member fixed in and defining one end of said armature chamber;

c. an armature member positioned in said armature chamber of said tube for axial sliding movement relative to and defining an armature stroke relative to said pole piece member;

d. one of said members having an axially extending recess therein and the other member having a reduced in cross section end portion adapted to be received in and complementary to said recess;

e. said other member having a radially internally facing frusto-conical surface formed on said reduced in cross section end portion and disposed within said recess *to face radially internally into an air gap not entered by said other member;*

f. said armature tube having a non-magnetic section defining a reduced magnetic gap extending coaxially with *said air gap and with* at least a portion of said armature stroke sufficient to permit selected magnetic forces to be produced on said armature; and

g. said armature tube providing concentricity of said two members.

Re. 32,861

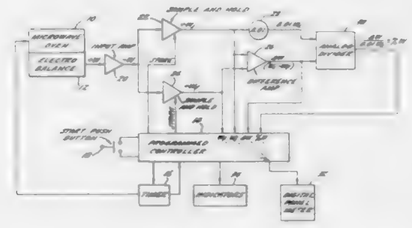
AUTOMATIC VOLATILITY COMPUTER

Michael J. Collins, Charlotte; Bernard W. Cruse, Jr., Indian Trail, and Ronald J. Coetchius, Charlotte, all of N.C., assignors to CEM Corporation, Indian Trail, N.C.

Original No. 3,909,598, dated Sep. 30, 1975, Ser. No. 381,087, Jul. 20, 1973. Application for reissue Jul. 21, 1980, Ser. No. 170,932

Int. Cl.[4] G06G *7/16*

U.S. Cl. 364—567 **13 Claims**



1. An automatic volatility computer comprising automatic weighting means, microwave heating means *including an enclosed heating chamber and a microwave energy source transmittably connected therewith,* a program controller means, memory circuit means, differential amplifier means, analog divider means and information readout means, said automatic weighing means being *at least partially* positioned within said microwave heating [means] *chamber,* said controlling means being electrically connected to and programmed to sequentially actuate said weighing means and [mircrowave] *microwave* heating means, said weighing means being [electrially] *electrically* connected to said memory circuit means and hence to said differential amplifier means, said analog divider means being electrically connected to said differential amplifier means and said memory circuit means, the output thereof being electrically connected to said information readout means.

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PLANT PATENTS

GRANTED FEBRUARY 7, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,581

CHRYSANTHEMUM PLANT NAMED YELLOW OVARO

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed May 15, 1987, Ser. No. 49,952
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct Chrysanthemum plant named Yellow Ovaro, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; anemone capitulum type; yellow ray floret color; diameter across face of capitulum of up to 12 cm at maturity when grown as a pinched disbudded pot mum, with diameter of anemone cushion of up to 4 cm; uniform eight week photoperiodic flowering response to short days; tall plant height when grown as a pinched pot mum; recommended both as disbudded and spray pot mum; and spreading and prolific branching pattern.

6,582

ROSE PLANT NAMED DE VORAN

Stanley G. Marciel, Pleasanton, Calif., assignor to DeVor Nurseries, Inc., Pleasanton, Calif.

Filed Jul. 7, 1987, Ser. No. 70,729
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—16 **1 Claim**

1. The new and distinct variety of rose plant and parts thereof, substantially as herein shown and described, characterized by the very large size of its orange-yellow blooms, which are produced continuously and profusely with sturdy, upright peduncles on a very tall plant of free branching character with vigorous, upright and strong canes, moderately abundant foliage, and very vigorous growth rate.

6,583

ROSE PLANT NAMED DEVAURORA

Stanley G. Marciel, Pleasanton, Calif., assignor to DeVor Nurseries, Inc., Pleasanton, Calif.

Filed Jul. 7, 1987, Ser. No. [illegible]30
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. The new and distinct variety of miniature rose plant and parts thereof, substantially as herein shown and described, characterized by its profuse and continuous production of bright orange flowers of generally small size, and by its vigorous, upright and free branching growth habit.

6,584

ROSE PLANT NAMED DE VROJO

Stanley G. Marciel, Pleasanton, Calif., assignor to DeVor Nurseries, Inc., Pleasanton, Calif.

Filed Jul. 7, 1987, Ser. No. 70,731
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. The new and distinctive variety of miniature rose plant and parts thereof, substantially as herein shown and described, characterized by its profuse and continuous production of Cardinal Red flowers of small size and having a vigorous, upright, free-branching and rapid growth rate habit.

6,585

KENTUCKY BLUEGRASS

Virgil D. Meier, Marysville, Ohio; James K. Turner, Salem, Oreg., and Eugene W. Mayer, Marysville, Ohio, assignors to The O.M. Scott & Sons Company, Marysville, Ohio

Filed May 29, 1987, Ser. No. 55,435
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. A variety of Kentucky bluegrass plant, substantially as shown and described, characterized by a high level of resistance to disease, especially leaf spot disease, a desirable green color throughout the growing season, a high quality persistent turf under a wide variety of environmental conditions and a very high level of seed yielding capacity.

6,586

CHRYSANTHEMUM PLANT NAMED LUCIDO

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed May 15, 1987, Ser. No. 49,951
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct Chrysanthemum plant named Lucido, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; red ray floret color; good color retention under high light conditions; diameter across face of capitulum of up to 7.5 cm at maturity when grown as a pinched spray pot mum; uniform eight week photoperiodic flowering response to short days; medium plant height when grown as a pinched pot mum; recommended as spray pot mum for all pot sizes; and spreading and prolific branching pattern.

6,587

AFRICAN VIOLET PLANT NAMED SONJA

Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 55,878
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Sonja, as described and illustrated, and particularly characterized by its violet-shaped, but round-looking purple flowers with wavy edges; upright flower stems, producing a nice bouquet above the foliage; profuse flowering; vigorous growth habit; round to oval medium green leaves; and long lasting and non-dropping flowering habit.

6,588

APPLE TREE NAMED RAFZUBIN

Walter Hauenstein, Rafz, Switzerland, assignor to Hauenstein A.G., Rafz, Switzerland

Filed Jun. 15, 1987, Ser. No. 61,671
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct apple tree named Rafzubin, as described and illustrated, and particularly characterized by its excellent flavor, high content of sugar and acidity, long and slender stalks, form and wood similar to Golden Delicious, and lamina generally similar to Golden Delicious but biserrate, small fruit during first two years of production but normal size third year of production and thereafter, and by its excellent keeping quality.

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6,589
CHRYSANTHEMUM PLANT NAMED GOLDEN GEOS
Christine Jordan, Tenerife, Canary Islands, Spain, and Marie Satory, Hamburg, Fed. Rep. of Germany, assignors to Ball Pan Am Plant Co., Parrish, Fla.
Filed Jul. 7, 1987, Ser. No. 70,728
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—78 1 Claim

1. A new and distinctive cultivar of Chrysanthemum named Golden Geos, as illustrated and described.

6,590
CHRYSANTHEMUM PLANT NAMED ANTONIO
Dieter Sueptitz, Hamburg, Fed. Rep. of Germany, assignor to Ball Pan Am Plant Co., Parrish, Fla.
Filed Jul. 16, 1987, Ser. No. 74,481
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of Chrysanthemum plant named Antonio, as illustrated and described, and particularly characterized by its clear white ray floret color, with immature lime green to mature yellow disc florets; flat capitulum form and single capitulum type; nine week response, and its compact growth habit.

6,591
CHRYSANTHEMUM PLANT NAMED GOLDEN ANTONIO
Dieter Sueptitz, Hamburg, Fed. Rep. of Germany, assignor to Ball Pan Am Plant Co., Parrish, Fla.
Filed Jul. 16, 1987, Ser. No. 74,482
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of Chrysanthemum plant named Golden Antonio, as illustrated and described, and particularly characterized by its yellow-gold flower color, daisy form, nine week response, free breaking habit, and its good performance in year round pot mum programs.

6,592
POINSETTIA NAMED SUPJIBI
Eduard Gross, 16250 Blanzac, Nanteuillet, France
Filed Apr. 1, 1987, Ser. No. 32,831
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—86 1 Claim

1. A new and distinct poinsettia cultivar, substantially as herein shown and described, particularly distinguished by large, bright red bracts, large thick stems and leaves and a self-branching growth habit.

6,593
VARIETY OF GERANIUM NAMED MANDARIN
Blair L. Winner, Lompoc, Calif., assignor to Denholm Seeds, Lompoc, Calif.
Filed Jul. 15, 1987, Ser. No. 73,807
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of geranium plant substantially as herein shown and described and parts thereof.

6,594
MAPLE TREE NAMED MARELTOI
Herman H. Haver, 10411 N. 84th St., Omaha, Nebr. 68122
Filed Jan. 12, 1987, Ser. No. 2,792
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—51 1 Claim

1. A new and distinct variewty of maple tree of the species botanically known as *Acer saccharinum*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of slow growth, harder wood, split lacy leaf, appearing seedless, very hardy, and resistant to blight and insects.

6,595
BEDDING VIOLA NAMED 'BLACK MAGIC'
Jackson P. Muldoon, 29370 Mill Creek Rd., Sheridan, Oreg. 97378
Filed Aug. 6, 1987, Ser. No. 82,296
Int. Cl.[4] H01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct form of Viola plant as described and illustrated known by the cultivar name Black Magic and particularly characterized by its black flowers; floriferous habit; low growing, compact and spreading form; ability to thrive heartily in full sun and its hardiness to severely cold Winter temperatures.

6,596
ROSE PLANT
J. Benjamin Williams, 2800 Elsora St., Silver Spring, Md. 20902
Filed Jul. 17, 1987, Ser. No. 75,000
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—4 1 Claim

1. A new and distinct variety of rose plant of the climber class, substantially as herein shown and described, characterized particularly as to novelty by its vigorous habit of growth, its good hardiness, its abundant and attractive foliage, its very good remontance, its habit of producing excellent formed blooms singly on long-stemmed canes and in clusters, the strong and appealing fragrance of its blooms, and the general color tonality of the flowers is bright orange-red, with dark velvet overtones on the inner petals of the open flower.

PATENTS

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ERRATA

For CLASS	See PATENT NO.
425-135	4,802,267
087-008	4,802,398
164-440	4,802,436
128-661	4,802,458
182-204	4,802,471
119-029	4,802,482
198-345	4,802,565
414-790	4,802,570
241-030	4,802,635
180-219	4,802,682
402-001	4,802,789
400-660	4,802,795
401-122	4,802,797
416-241	4,802,828
273-094	4,802,880
252-049	4,802,893
427-003	4,802,924
427-433	4,802,932
055-302	4,802,983
266-078	4,803,037
252-135	4,803,058
204-192	4,803,130
525-477	4,803,254
525-420	4,803,256
514-332	4,803,277
514-431	4,803,286
514-464	4,803,290
360-122	4,803,338
341-154	4,803,461
341-172	4,803,462
341-023	4,803,463
357-081	4,803,502
323-284	4,803,612

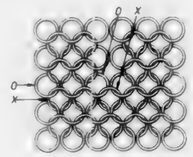
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PATENTS

GRANTED FEBRUARY 7, 1989

GENERAL AND MECHANICAL

4,802,242
GARMENT OF CHAIN ARMOUR STRUCTURE
Pehr Lars-Jos, Box 6, S-78 200 Malung, Sweden
Continuation of Ser. No. 21,592, Mar. 2, 1987, abandoned, Continuation-in-part of Ser. No. 780,653, Sep. 26, 1985, abandoned. This application Nov. 24, 1987, Ser. No. 124,907
Claims priority, application Norway, Sep. 28, 1984, 843936
Int. Cl.[4] A41D *13/00, 19/00*
U.S. Cl. 2—2 **4 Claims**



1. In a garment comprising at least two pieces of chain armour at least for two, bending parts of a body, one body part having skin which stretches when the one body part is bent and the other body part having skin which is subjected to compression when the other body part is bent, the improvement comprising:

at least two pieces of four-ring chain armour, the four-ring chain armour consisting essentially of rings which pass through and over two adjacent rings and through and under two, other adjacent rings for defining a longitudinal direction of each piece of the four-ring chain armour along ridges formed by successive ones of the rings passing over the two adjacent rings, whereby each piece of the four-ring chain armour stretches more in the longtitudinal direction than in the direction transverse thereto; and

garment-making means for making a garment at least for two, bending parts of a body, one body part having skin which stretches when the one body part is bent and the other body part having skin which is subjected to compression when the other body part is bent, the garment comprising the two pieces of four-ring chain armour with the longitudinal direction of one of the pieces 90° to the longitudinal direction of the other of the pieces, whereby the one piece may be made into a portion of the garment at the one, bendable body part with the longitudinal direction thereof in the direction the skin stretches and the other piece may be made into a portion of the garment at the other, bendable body part.

4,802,243
ACOUSTIC HEADGEAR-SUN VISOR ASSEMBLY
John W. Griffiths, 3940 NW. Echo Ct., Portland, Oreg. 97229
Filed Oct. 26, 1987, Ser. No. 112,556
Int. Cl.[4] A42B *1/24*
U.S. Cl. 2—6 **3 Claims**

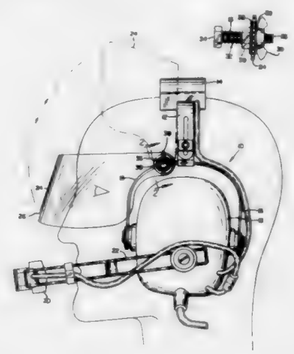
1. The acoustic headgear-sun visor assembly comprising in combination:

(a) an acoustic headpiece configured to extend laterally over a head and including a flat band support member at each side of the headpiece,

(b) a pair of split bolts each having a bifurcated, externally threaded shank receiving the flat band support member in the slot between the bifurcations,

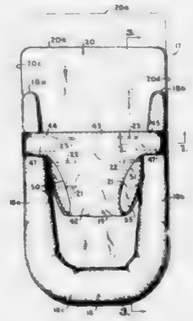
(c) a nut threaded on said bifurcated shank releasably securing said flat band support member between said nut and the base of said slot,

(d) sun visor means, and



(e) mounting means mounting the sun visor means on the split bolt.

4,802,244
PREMATURE INFANT BEDDING CONSTRUCTION
Melissa McGrath-Saleh, 1219 Amesbury, Liberty, Mo. 64068
Filed Aug. 28, 1987, Ser. No. 90,518
Int. Cl.[4] A41B *13/06*; A47G *9/00*
U.S. Cl. 2—69 **19 Claims**



1. A therapeutic positioning device for receiving and holding prematurely born infants thereon comprising, in combination:

(1) an elongate, flat base pad of substantially rectangular shape having a generally relatively upwardly positioned head end thereof and a generally relatively downwardly positioned foot end thereof, said pad ends connected by substantially straight and substantially parallel elongate side edges, said pad also having top and bottom, normally flat surfaces thereof,

(2) an upstanding, resilient yet shape retaining wall positioned at and fixed to a portion of the periphery of said pad, such pad periphery portion including the entire foot end thereof and substantial lengths of the elongate side edges of said base pad, said lengths each extending from the foot end of the base pad, such wall extending up-

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wardly above said pad top surface from said foot end thereof at least partially along the side edges thereof at the substantial periphery thereof whereby a substantial portion of the central area of said pad top surface from the foot end thereof upwardly towards the head end thereof is bounded by said wall at the peripheral edges thereof;

(3) a loin-cloth like harness adapted to receive the diapered fundament of a prematurely born infant therewithin, said harness having an upper side, such comprising a substantially V-shaped first panel and a lower side, such also comprising a substantially V shaped second panel, said panels connected together at their lesser width ends by a substantially rectangular child's perineal or crotch area underlying cloth;

(4) first means for removably fixing portions of the lower side panel of the harness to the base pad and separate, second means for removably fixing portions of the upper side panel of said harness to side portions of side lengths of said upstanding wall, and

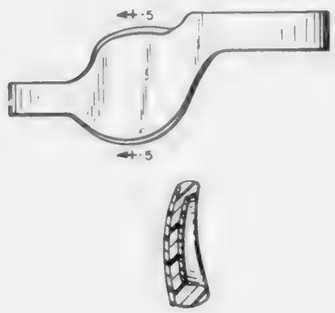
(5) said harness having both the upper and lower side panels thereof separately longitudinally adjustable and removably fixable with respect to portions of the upstanding wall and base pad, respectively.

4,802,245

EAR PROTECTOR

Richard J. Miano, 1860 Alamoana Blvd. Suite 1202, Honolulu, Hi.

Filed Sep. 19, 1986, Ser. No. 909,910
Int. Cl.[4] A42B *3/00*
U.S. Cl. 2—209 **3 Claims**



1. An ear protector for use by a swimmer, comprising:

a. a first band of dimensions which fit comfortably across a user's forehead;

b. for each ear, an ear-covering member depending downwardly from said band;

c. a second band linking the ear-covering members, such second band attaching to each ear-covering member proximate the portion thereof which covers the bottom of the user's ear and dimensioned to fit comfortably across the back of the user's head; and

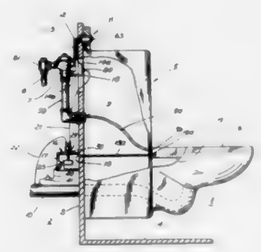
d. a resilient rim secured to the interior of each ear-covering member, said rim being large enough to encircle the user's ear and deep enough to form a seal between the ear-covering member and the user's head.

4,802,246

DISABLER AND ACTIVATION SYSTEM FOR PLUMBING FIXTURE

Martin J. Laverty, Jr., Earlyville, Va., assignor to Coyne & Delany Co., Charlottesville, Va.

Continuation of Ser. No. 781,944, Sep. 30, 1985, Pat. No. 4,709,427. This application Feb. 25, 1987, Ser. No. 18,495
Int. Cl.[4] E03D *11/00*
U.S. Cl. 4—427 **19 Claims**



1. In a liquid flush valve operating arrangement for a fixture to be flushed, including:

a flush valve operatively associated with said fixture;

a flush valve actuator assembly associated with said flush valve;

a remotely controlled operated electrically responsive unit remote from said flush valve actuator assembly and operatively associated therewith;

a pair of tubes extending between said flush valve actuator assembly and said remotely controlled operated unit;

a third tube under liquid supply line pressure connected between said flush valve and said remotely controlled operated unit, means in said remotely controlled operated unit for connecting the liquid supply line pressure from said third tube with said pair of tubes for actuating said actuator assembly;

an electrically opeaated infra-red sensor actuating device coupled with said remotely controlled operated unit for activation thereof in response to an object returning infra-red rays transmitted from said infra-red sensor actuating device to said sensor actuating device for connecting said remote operated unit with the inlet supply side of said flush valve;

said infra-red sensor actuating device comprising an infra-red radiation transmitter and an infra-red radiation receiver;

isolation means isolating said remotely controlled operating unit from said infra-red radiation transmitter and receiver;

said pair of tubes being normally at zero line pressure and being subjected to said liquid supply line pressure in response to said sensor actuating device being activated for rendering said flush valve actuator assembly operative to operate said flush valve;

means separate from said flush valve actuator assembly and associated therewith for bleeding off liquid supply line pressure to disable said remote operated unit; and

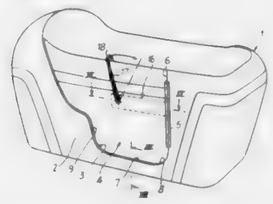
means separate from said flush valve actuator assembly and said last-mentioned means and associated with said remotely controlled operated unit for disabling thereof to render said flush valve inoprative responsive to a change in electrical energy supplied to said sensor device or said remotely controlled electrically responsive unit.

4,802,247

DOOR BATH TUBE FOR THE HANDICAPPED

Roland G. Leichle, 1, chemin du Baron, Cirey sur Vezouze, France (54480), and Jean-Paul Lecrivain, 9, Allée Belle Vue, Luneville Chanteheux, France (54300)

Continuation of Ser. No. 694,516, filed as PCT FR84/00090 on April 3, 1984, published as WO84/04236 on Nov. 8, 1984, abandoned. This application Aug. 8, 1986, Ser. No. 894,093
This application Aug. 8, 1986, Ser. No. 894,093
Claims priority, application France, Apr. 28, 1983, 83 07027
Int. Cl.[4] A47K *3/02*
U.S. Cl. 4—556 **15 Claims**



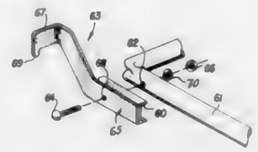
1. A bath-tub with a door for motive disabled persons, which includes a side door (4) adapted for being opened outwardly by tilting about an articulation (5) of vertical axis for clearing a cut-out part or access bay into the bath-tub, is characterized by the fact that the width of the cut-out part (3), measured horizontally, increases continously from the bottom to the top, that the contour of the cut-out part (3) on the wall of the bath-tub body (1) has a rabbet (10) turned inwardly to the bath-tub, that the cooperating contour of door (4) has a complementary rabbet (11) turned outwardly from the bath-tub, a seal (12) being provided between the two rabbets, and in that the door is provided with an operating handle (17) and with a mechanism (16) adapted, under the action of the operating handle, for lifting the door from its lower closed position for vertically disengaging the two rabbets from each other at least in their region which are remote from the articulation and allowing the free opening pivoting movement of the door outwardly.

4,802,248

CRIB SPRING HANGER ASSEMBLY

John W. Moroney, Glendora, and Jugal K. Ralli, Los Angeles, both of Calif., assignors to Spalding & Evenflo Companies, Inc., Tampa, Fla.

Filed Mar. 5, 1986, Ser. No. 836,370
Int. Cl.[4] A47C *31/00, 19/00*
U.S. Cl. 5—11 **2 Claims**



1. Apparatus for hanging a spring frame from a crib comprising

at least one closed loop bracket support mounted at each corner of a crib;

a removable hanger for mating with and being supported by each of said bracket supports, each of said hangers comprising

a rigid plate having two ends, one end of said plate being of a dimension to pass through and rest upon its associated closed loop bracket support whereby said bracket support supports said rigid plate;

a downwardly extending lip at the one end of said plate, said lip extending beyond and below said closed loop bracket support when said plate rests upon said bracket support;

a C-channel secured to the other end of said plate for mating with a spring frame;

mating boreholes through said plate, said C-channel and said spring frame; and

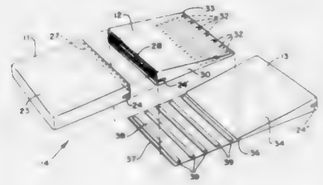
a bolt for passing through said boreholes.

4,802,249

PORTABLE MULTIPLE SECTION ADJUSTABLE POSTURE CONTOUR CARE BED

Earl C. Bills, P.O. Box 365, Savoy, Tex. 75479

Filed Feb. 19, 1988, Ser. No. 157,590
Int. Cl.[4] A47C *20/00, 27/00*
U.S. Cl. 5—420 **10 Claims**



1. A multiple section adjustable posture contour care bed comprising: a plurality of cushions including two wedge shaped cushions each rectangular in plan view and wedge shaped in side edge view extending from a wide end to a thin edge; extension flap means having a top face extending from the thin edge of a first cushion of said two wedge shaped cushions for a length approximately the length of one of said wedge shaped cushions; an area contact interlocking material positioned on the top face of said extension flap means; and a second contact interlocking material that position locks on contact with said contact interlocking material on the top face of said extension flap means with said second contact interlocking material mounted on the bottom of the second cushion of said two wedge shaped cushions extending from the thin edge of the cushion back for a distance under the cushion to facilitate placement of the second cushion at various spacings from the first cushion in adapting to the height of a user; and wherein a third cushion is included in said plurality of cushions that is generally of rectangular shape both plan view wise and side end view wise, and that has rectangular forward and rear faces; and fastening means on the forward face of said third cushion engageable in interlocking relation with fastening means positioned on the wide end of one of said wedge shaped cushions.

4,802,250

SELF-ALIGNMENT BEDDING

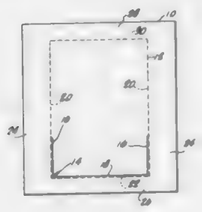
Richard S. Farr, 2257 Century Hill, Los Angeles, Calif. 90067

Continuation-in-part of Ser. No. 725,649, Apr. 22, 1985, abandoned. This application Jun. 5, 1987, Ser. No. 58,912
Int. Cl.[4] A47G *9/00*
U.S. Cl. 5—482 **5 Claims**

1. A bedding having a central longitudinal axis adapted for use on and alignment with foot and sides of a rectangular mattress having a central longitudinal axis to facilitate making of a bed, said bedding comprising a flat substantially rectangular sheet of material defining a foot end, a head end and a plurality of mattress alignment indicators disposed on said sheet adjacent said foot end thereof, said indicators including a first transverse mattress foot alignment indicator and a mattress centering indicator, said foot alignment indicator being spaced inwardly from and extending parallel to said foot end of said bedding such that upon said bedding being positioned on

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said mattress for securement thereto, said foot alignment indicator is disposed over and extends parallel to the foot of the mattress and said centering indicator is disposed over a portion



of said mattress so as to superimpose the central longitudinal axis of said bedding over the central longitudinal axis of the mattress.

4,802,251

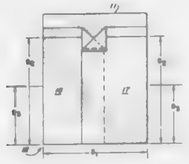
TOP AND BOTTOM BED-SHEETING COMBINATION

Mark A. O'Dell, 731 S. Whiting Clr., Mesa, Ariz. 85204

Filed Dec. 17, 1987, Ser. No. 134,258

Int. Cl.[4] A47C *23/00*

U.S. Cl. 5—502 6 Claims



1. Bed sheeting for use with a bed having a mattress on which a bottom sheet may be fittingly emplaced, said sheeting comprising:

a bottom sheet to removably encompass a mattress and having four perimeter sides including a head side and a foot side, a left and a right side; and,

a top sheet comprising two sheeting sections coupled to said bottom sheet along the bottom side thereof such that a first one of said two sheeting sections covers more than a first half of the top surface of said bottom sheet, a second one of said two sheeting sections covers more than a second half of the top surface of said bottom sheet, and each of said first and said second ones of said two sheeting sections overlap in a region central to the top surface of said bottom sheet.

4,802,252

BEDCLOTHING SUPPORT

Adrian Marmor, 300 Millbank Rd., Bryn Mawr, Pa. 19010

Filed Apr. 29, 1987, Ser. No. 43,951

Int. Cl.[4] A47C *21/02*

U.S. Cl. 5—505 3 Claims

1. For a bed having a mattress supported on a spring, a unitary device for elevating a portion of bed clothing above the level of the mattress comprising:

a base portion for insertion between the mattress and the spring;

a support portion to extend over the mattress and support the bed covering;

a connector portion between the base portion and the support portion; and

said portions being comprised of interconnected pivot means and post means which provide for the base portion, the connector portion, and the support portion to be oriented with respect to one another for the base portion to be inserted between the mattress and the spring and for the



support portion to extend over the mattress and also providing for the base portion, the connector portion, and the support portion to be oriented with respect to one another to assume a substantially planar condition for storage.

4,802,253

DRY CLEANING METHOD USING AT LEAST TWO KINDS OF SOLVENTS

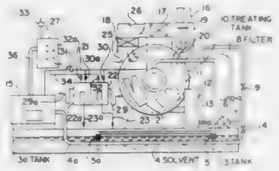
Haruo Hagiwara; Hideo Tsukamoto, and Yasuhiro Tsubaki, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 14,655, Feb. 13, 1987, which is a division of Ser. No. 813,698, Dec. 27, 1985, Pat. No. 4,712,392. This Claims priority, application Japan, Dec. 28, 1984, 59-277497; Dec. 28, 1984, 59-277498

application Aug. 25, 1987, Ser. No. 89,122

Int. Cl.[4] D06F *43/08*

U.S. Cl. 8—158 1 Claim



1. A dry cleaning method comprising the steps of providing tanks for exclusively receiving at least two kinds of solvents which are soluble in each other, connecting one treating tank to the tanks, providing a fractionating device, connected to the tanks and the treating tank, recovering the two or more kinds of solvents by fractional distillation through the use of the fractionating device, providing exclusive filters for the respective solvents through the use of a common filter or a multi-filter device composed of both the filters which is disposed between the tanks and the treating tank, and using the two or more kinds of solvents independently so that washing is carried out.

4,802,254

ANTI-CORD SWALLOWING SYSTEM AND METHOD FOR A FLOOR CLEANER

Kendell S. Lahndorff, Harrodsburg, and Wilbur C. Bewley, Jr., Lexington, both of Ky., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 2, 1988, Ser. No. 188,845

Int. Cl.[4] A47L *9/00*

U.S. Cl. 15—41 R 19 Claims

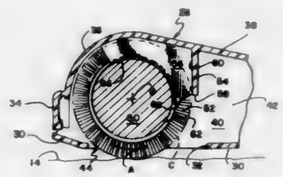
1. A floor cleaner comprising

a rotatable beater brush having a dowel,

a housing having an upper wall,

an elongate power cord and

means for preventing said cord from wrapping around said beater brush, said preventing means including a plurality of grooves formed about the periphery of said dowel and spaced apart along the length of said dowel and



a plurality of spaced apart ribs each extending from a surface of said housing and about a circumferential portion of said beater brush, each of said ribs extending partially into one of said grooves.

4,802,255

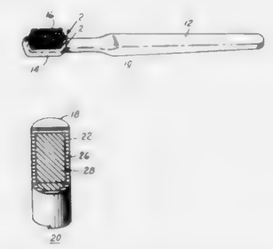
NOVEL BRUSH FILAMENTS

Miklos M. Breuer, Newton, and Joseph A. Hanak, Norwell, both of Mass., assignors to Gillette Canada Inc., Montreal, Canada

Filed Aug. 10, 1987, Ser. No. 83,336

Int. Cl.[4] A46B *9/04*

U.S. Cl. 15—159 A 18 Claims



1. A monofilament for a toothbrush, said filament having a longitudinal surface defining the maximum width (W) of the cross-sectional area of the filament which includes a first colored region provided by a dye colorant and which extends along at least a portion of the longitudinal surface, said first colored region being arranged in association with another portion of the cross-sectional area providing at least one different colored region, said first colored region providing a color intensity which can change in response to increased use of the filament to provide a signal indicative of wear.

4,802,256

SLIDE HAMMER CHIMNEY CLEANER

Marvin W. Usimaki, Rte. 1, Box 186, Pelke, Mich. 49958

Filed Sep. 8, 1987, Ser. No. 94,140

Int. Cl.[4] F23J *3/00*

U.S. Cl. 15—243 8 Claims

1. An apparatus (10) for cleaning debris from the inner surfaces of a chimney comprising; a scraping plate (12) having a periphery for completely conforming to the cross-sectional shape of the inside flue (16) of a chimney, and a support means (14) for supporting said scraping plate (12) in a transverse orientation relative to the longitudinal axis of the chimney flue (16) while moving said scraping plate (12) through the chimney flue (16), said apparatus (10) characterized by said scraping plate (12) being inflexible and said periphery thereof contacting the entire inside surface of the chimney flue (16) for unyielding scraping the entire inside surface of the chimney flue (16) during movement therethrough and being slidable along said support means (14) between a first striking surface (18) and a longitudinally spaced second striking surface (20), said support means (14) including an elongated shaft (22) disposed perpendicularly and centrally through said scraping plate (12), and said scraping plate (12) including a sleeve member (38) fixedly attached thereto for supporting said scraping plate (12) on said shaft (22) in a perpendicular orientation relative to the longitudinal axis of said shaft (22).



4,802,257

WIPER BLADE FOR CLEANING WINDOW PANES OF MOTOR VEHICLES

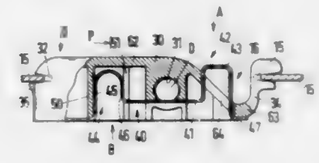
Reinhard Edele, Bietigheim-Bissingen, and Eckhardt Schmid, Brackenheim, both of Fed. Rep. of Germany, assignors to SWF Auto-Electric GmbH, Bietigheim-Bissingen, Fed. Rep. of Germany

Filed Jul. 16, 1987, Ser. No. 74,002

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1986, 3625063

Int. Cl.[4] B60S *1/40*

U.S. Cl. 15—250.32 15 Claims



1. A wiper blade, comprising a supporting yoke having a substantially U-shaped cross-section formed by two side walls and a connecting web, an aperture in said web, in the area of said aperture said side walls being provided with coaxially aligned bores for receiving an insertable pin for articulating a wiper arm, a component part fixed between the side walls for axially securing the position of the pivot pin, said component part having a bearing bore which is coaxially aligned with said first mentioned bores, the diameter of said first mentioned bores being substantially larger than the diameter of the pivot pin to be received therein whereby there is no contact between the pivot pin and the walls of said first mentioned bores a metallic locking spring being fixed in the component part which intersects the bearing bore for cooperation with a groove in the pivot pin, the portion of said locking spring which contacts the pivot pin being essentially flat and having

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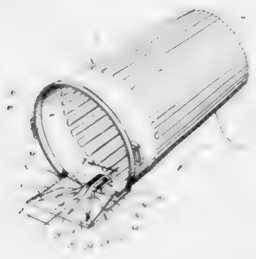
similar width as said groove in the pivot pin so that the pivot pin is axially secured.

4,802,258

COMBINATION DUSTPAN AND GUIDE MEANS FOR FILLING TRASH CONTAINERS AND THE LIKE

Otto S. Jensen, 5650 Panorama Dr., Whittier, Calif. 90601

Filed Mar. 18, 1987, Ser. No. 27,257
Int. Cl.[4] A47L *13/52*
U.S. Cl. 15—257.1 5 Claims



1. A combination dustpan and guide for filling trash containers, comprising:

a main body member having a scoop portion formed therein;

stabilizing means formed as part of said main body whereby said dustpan, when attached to a trash container, prevents said trash container from rolling when placed in a horizontal position;

said stabilizing means comprising a pair of depending flange members formed longitudinally along each side of said dustpan;

said flange members extending rearwardly of said scoop portion, forming a pair of oppositely disposed leg members so as to be positioned under said trash container when said trash container is laid in a horizontal position;

attaching means formed rearwardly of said scoop portion, whereby said dustpan is removably attached to said trash container;

said attaching means including a handle and said leg members, said handle is inserted into said trash container;

at least one depending tooth-like member extending downwardly from said handle for gripping engagement with the inner surface of said container wall;

each of said leg members being formed with an enlarged rear lobe portion, said lobe portions engage the outer surface of said container wall said trash container being gripped between said tooth-like member and said lobe portions; and

guide means formed in said scoop portion to guide and direct debris directly into said container when said debris is swept into and over said dustpan.

4,802,259

SPATTER SHIELD

Daniel G. Geslewitz, 8014 E. Del Tesoro, Scottsdale, Ariz. 85261

Filed Mar. 20, 1987, Ser. No. 28,216
Int. Cl.[4] E05D *11/00*
U.S. Cl. 16—251 6 Claims

1. A shield for use in combination with a hinge component, said hinge component including

a leaf having an exposed surface and an edge with a defined contour, and

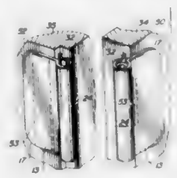
a generally cylindrical pintle portion projecting from said surface,

said leaf being affixed to an environmental structure having a surrounding surface,

and for protecting said hinge component during application of a treatment to said surrounding surface, said sheild comprising:

(a) a cover for overlaying the exposed surface of said leaf, said cover including a generally rigid panel having a surface for lying in juxtaposition with the exposed surface of said leaf and an edge of said leaf;

(b) attachment means for detachably securing said cover to said hinge component, said attachment means comprising a generally tubular member extending along a



portion of the edge of said panel and having a bore for receiving said pintle portion therein; and

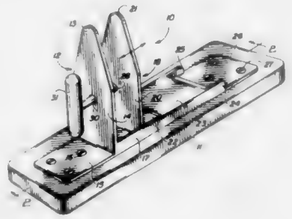
(c) a short tab extending generally radially from said tubular member in the same direction as the panel and at an acute angle to said panel for bearing against said environmental member and urging potential rotational movement of said tubular member about said pintle portion to urge the surface of said panel against the exposed surface of said leaf.

4,802,260

CRAB OPENER APPARATUS

Justin Fletcher, 1216 Carolina Ave., Lynn Haven, Fla. 32444

Filed Sep. 14, 1988, Ser. No. 244,094
Int. Cl.[4] A22C *29/04*
U.S. Cl. 17—76 9 Claims



1. A crab opener comprising:

a base;

a fixed blade fixedly attached to said base, said fixed blade having an aperture therein;

a slidable blade extending generally parallel to said fixed blade and slidably mounted to said base, said slidable between a first position adjacent said fixed blade and a second position separated from said fixed blade;

a rod connected to said slidable blade and extending through said aperture in said fixed blade; and

a handle attached to said rod for moving said rod and slidable blade between first and second positions when a crab is positioned on adjacent fixed and slidable blades.

4,802,261

CLAMP BAND

Yasumasa Mizukoshi, Fujisawa, and Minoru Ishijima, Machida-shi, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1986, Ser. No. 918,135
Claims priority, application Japan, Jan. 16, 1986, 61-5137
Int. Cl.[4] B65D *63/02*
U.S. Cl. 24—20 TT 16 Claims



1. A clamp band adapted to be formed into a loop-like shape around a cylindrical member with a first end porion of the band overlapping a second end portion of the band to the outside of the second end portion, characterized in that:

said first end portion has an inwardly directed first projection formed adjacent to a first aperture lengthwise of the band, and a rectangular second aperture which has a tool-engaging end edge and which is formed closer to a fore end of said first end portion than is said first projection,

said second end portion has an outwardly directed second projection formed adjacent to a third aperture lengthwise of the band, and a protuberance which has a tool-engaging end edge adjacent to a rectangular fourth aperture lengthwise of the band and which is further than said second projection from the fore end of said second end portion,

said tool-engaging end edges, said first and second projections, and said first and third apertures are disposed such that with the first and second end portions of the band partially overlapped, oppositely directed tangential clamping forces may be applied to said tool-engaging end edges by respective portions of a clamping tool to increase the amount of overlap of said end portions and thereby bring the band into a clamped state in which said first projection is received in said third aperture and said second projection is received in said first aperture, with a back part of said first projection engaging a back part of said second projection and the engaged projections supporting circumferential forces that would tend to separate the overlapped end portions of the band, and

retaining means is provided for retaining said first end portion adjacent said second end portion to prevent said first end portion from drifting outward from said second end portion when the band is in said clamped state.

4,802,262

BUCKLE ASSEMBLY

Kazumi Kasai, Namerikawa, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 10, 1987, Ser. No. 83,462
Claims priority, application Japan, Aug. 12, 1986, 61-123530[U]
Int. Cl.[4] A44B *11/25*
U.S. Cl. 24—606 14 Claims

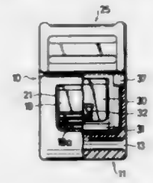
1. A buckle assembly comprising:

(a) a plug member molded of synthetic resin and including a resilient tongue having a locking lug disposed thereon; and

(b) one-piece socket member molded of synthetic resin and adapted to be releasably coupled with said plug member, said one-piece molded socket member including

(i) a pair of spaced upper and lower wings joined together by a pair of opposed side walls so as to define therebetween a guide channel for receiving therein said resilient tongue, said upper wing having a cut-away groove communicating with said guide channel to form a cantilevered resilient flap, said resilient flap having a releasing lug projecting into said guide channel, and

(ii) a stopper bar extending between said side walls transversely across said guide channel and being spaced a distance from said releasing lug in a direction toward an inlet of said guide channel, said stopper bar being lock-



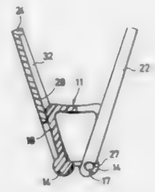
ingly engageable with said locking lug to couple said plug and socket members, said releasing lug being engageable with said locking lug to urge the latter out of locking engagement with said stopper bar when said resilient flap is flexed toward said lower wing, and said stopper bar being engageable with said resilient flap to limit inwardly flexing movement of said resilient flap to such an extent that said resilient tongue of said plug member is prevented from being jammed against an inner surface of said lower wing of said socket member.

4,802,263

DEVICE FOR CLIPPING PAPER

Kurt Lorber, Scharwaldstrasse 114, D-7307 Aichwald 2, Fed. Rep. of Germany

Filed Jul. 2, 1987, Ser. No. 69,424
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1986, 3623766
Int. Cl.[4] B42F *1/02*
U.S. Cl. 24—67.5 11 Claims



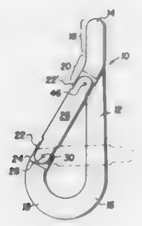
1. A device for detachably clipping sheets and the like, comprising:

a clip constructed as a cross-sectionally roughly U-shaped profile, the profile having sides terminating in leg ends defining two longitudinal edges of the clip, the clip being resiliently biased to bring said longitudinal edges toward one another, the longitudinal edges having integrally molded pins extending in opposite directs from front ends of the longitudinal edges; and,

two levers operable for spreading apart the longitudinal edges of the clip, the levers having lateral slits engagable on the pins by snapping the levers onto the pins in a push-button-like manner, and the levers being articulated to the clip at said pins at the front ends of the longitudinal edges, the levers being engaged against the sides of the clip to spread said longitudinal edges, the clip and the levers being molded plastic.

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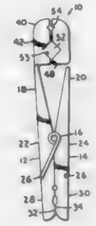
4,802,264
TWISTED CARABINER
Kyle Isenhart, Rte. 2, Box RS1, Little Hocking, Ohio 45742
Filed Dec. 8, 1987, Ser. No. 130,030
Int. Cl.[4] A44B *13/00*
U.S. Cl. 24—241 P 6 Claims



6. A carabiner comprising
a unitary body including
a substantially straight back portion having a longitudinal axis,
a pair of curved end portions extending from opposite ends of the back portion, each of said end portions comprising a proximal segment lying in a respective plane, the planes of the opposite proximal segments being substantially perpendicular to one another, and a distal segment bent out of the plane of its adjacent proximal segment and terminating at a tip substantially aligned with the tip of the opposite end portion along an axis that is skewed relative to the axis of the back portion,
a gate hinged to a first one of said tips, so as to be movable between open and closed positions, and having means for engaging the second of said tips, to form a closed loop, and
means for biasing said gate away from its half-open position, toward either its fully open or its fully closed position,
wherein said gate has an axial blind bore closed at its free end, and wherein said biasing means comprises a compression spring bottomed in said bore and a pawl in engagement with said spring and protruding from said bore, said pawl bearing against said first tip, and
wherein said first tip has a notch therein for receiving said pawl, said notch being positioned so as to bias said gate away from its half-open position.

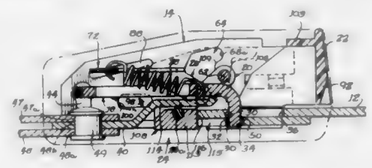
4,802,265
REMOVABLE SKIRT AND TROUSER CLIP FOR GARMENT HANGER
Robert L. Stevenson, 7320 W. 87th St., Overland Park, Kans. 66212
Filed Oct. 1, 1987, Ser. No. 103,803
Int. Cl.[4] A41D *27/22*; A47G *25/48*
U.S. Cl. 24—335 1 Claim

1. An attachment for a garment hanger having a horizontal cross bar and comprising:
(a) a single pair of rigid, elongate fingers with a single spring coil mounted medially and positioning said fingers in a pinching relationship;
(b) jaw portions at respective first ends of each of said fingers and urged into pinching contact by said spring coil for retaining an article of clothing therebetween;
(c) said fingers being spaced apart at respective second ends with one of said fingers including an extension portion projecting linearly outwardly;
(d) an opposing block member positioning against said extension portion and separate from the other of said fingers, said block member being detachably connected to said extension portion by a screw and nut assembly;
(e) said extension portion and said block member having opposing faces with a plurality of triangular shaped recesses of correspondingly graduated sizes located at intermediate positions and forming a diamond shaped aperture when said recesses are mated for receiving and clamping



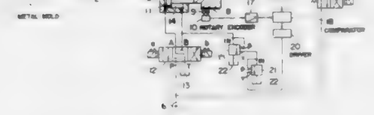
about said crossbar whereby said attachment is securely suspended from said cross bar and maintains a garment in hanging relation to said garment hanger.

4,802,266
SEAT BELT BUCKLE
Gerald A. Doty, Crown Point, Ind., and James L. Zygutis, Frankfort, Ill., assignors to Gateway Industries, Inc., Olympia Fields, Ill.
Filed May 1, 1987, Ser. No. 45,954
Int. Cl.[4] A44B *11/28*
U.S. Cl. 24—637 7 Claims



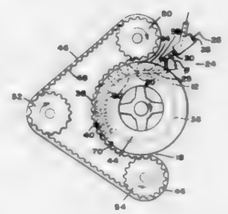
1. A seat belt buckle comprising:
a tongue plate;
a cover;
a buckle frame disposed within the cover and having a pair of upstanding parallel sidewalls and an opening at its forward end for receiving the tongue plate;
pivotal latching means movable between a latching position for retaining the tongue plate within the buckle frame and an open position for enabling the tongue plate to travel into and out of the buckle frame;
locking means for locking the latching means in latching position including a movable transverse member extending across the width of the buckle adjacent the latching means and detent means defining a locked position and an unlocked position for the transverse member;
a push button movable between a first position and a second position and operatively associated with the latching means for shifting the latching means from the latching position to the open position when the push button is moved from the first position to the second position;
ejection means including a generally cylindrical ejection pin extending transversely across the width of the buckle for urging the leading end of the tongue plate away from said buckle frame;
actuating means operatively associating the ejection pin with the transverse member to shift the latching means into latching position upon insertion of the tongue plate;
biasing means to bias the transverse member toward the unlocked position when the latching means is in the open position and to urge the transverse member into the locked position when the tongue plate is pushed into the buckle frame and the latching means is moved into the latching position, said biasing means including a single coil spring loaded in tension, said spring having forward and rearward ends, the spring being attached at its forward end to the latching means to urge the latching means toward the open position; and
said actuating means including a stirrup-shaped linkage member disposed within the buckle frame sidewalls so as to be protected thereby, said linkage member having a generally cylindrical central portion comprising said ejection pin, and two arms, one at each end of said ejection pin, said transverse member also extending between said two arms so as to be spaced from said ejection pin, and pivot connecting means on said two arms intermediate said transverse member and said ejection pin, said actuating means further comprising a generally U-shaped retainer member disposed within the buckle frame sidewalls so as to be protected thereby, including a bight portion extending between two legs, said legs of the U pivotally attached to said pivot connecting means, and said retainer members including a pair of opposed mounting ears attached to said bight portion, one adjacent each leg, for mounting to said frame sidewalls for pivotal and sliding movement of the retainer member relative thereto, and spring engaging means for engaging the rearward end of said spring.

4,802,267
METHOD AND APPARATUS FOR CONTROLLING RETRACTING SPEEDS OF INJECTION MOLDING MACHINES
Toshio Hosoya, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 29, 1987, Ser. No. 140,143
Claims priority, application Japan, Jan. 7, 1987, 62-1220
Int. Cl.[4] B29C *45/82*
U.S. Cl. 425—135 1 Claim



1. Apparatus for controlling a charging speed of injection molding machine wherein a molten resin contained in a heated barrel is injected into a metal mold, said apparatus comprising:
a screw contained in said heated barrel;
means for rotating said screw;
piston-cylinder means for reciprocating said screw in said heated barrel;
pressurized oil transfer valve means for admitting and discharging pressurized oil into and from said cylinder;
means operated by said piston for generating a signal representing a screw retraction speed;
means for setting a reference screw retraction speed; and
means responsive to a difference between said signal representing the screw retraction speed and said reference screw retraction speed for controlling a back pressure of said pressurized oil acting upon a rear surface of said piston, said means comprising a back pressure setting relief valve connected between a chamber in said cylinder on a back side of said piston and a drain, said back pressure setting relief valve having a pilot port also connected to said chamber and a vent port, and an electromagnetic control valve having a port connected between the vent port of said back pressure setting relief valve and said drain and a vent port controlled by an output of a driver actuated by a difference between said signal representing said screw retraction speed and said reference screw retraction speed.

4,802,268
APPARATUS FOR TEXTURIZING YARN
Hsin L. Li, Parsippany; Hendrikus J. Oswald, Morristown, and Alfred L. Liland, Wharton, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Continuation of Ser. No. 851,919, Nov. 16, 1977, abandoned, which is a division of Ser. No. 675,353, Apr. 9, 1976, Pat. No. 4,074,405, which is a continuation of Ser. No. 527,464, Nov. 26, 1974, abandoned. This application Nov. 19, 1982, Ser. No. 443,086
The portion of the term of this patent subsequent to Feb. 21, 2005, has been disclaimed.
Int. Cl.[4] D02G *1/12*, *1/16*
U.S. Cl. 28—254 13 Claims



1. Apparatus for crimping a tow of continuous filaments comprising:
(a) a chamber having an inlet opening for receiving the filaments, and an outlet opening for withdrawing the filaments;
(b) a movable perforate yarn-receiving means at least partially disposed in said chamber adjacent said inlet opening;
(c) a stationary, noncontinuous impacting surface disposed in said chamber adjacent said inlet opening;
(d) fluid directing means having an angular disposition relative to said impacting surface for directing a stream of compressible fluid containing said filaments into contact with said impacting surface to initiate crimping thereof, the angle of disposition ranging from about 15° to 75° and being such that impingement of said filaments on said impacting surface occurs within said chamber; said yarn receiving means being adapted to separate the major portion of said fluid from said filaments and to expel it from said chamber and to provide a continuously moving surface associated with said chamber, the velocity of said surface being adjusted to cause overfeeding of said filaments into said chamber, the ratio between the velocity of said filaments and the velocity of said surface and the angular disposition of said fluid directing means being such that said filaments are initially crimped by impact against said impacting surfce and deflected therefrom against a mass of said tow to produce final crimping of the filaments, and emerge from the chamber in crimped form.

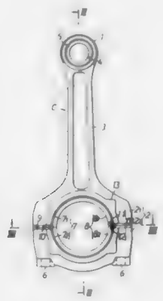
VOL 1099 ISS 1 FEB 7 1989 UMI

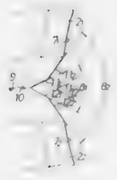
4,802,269

METHOD FOR PRODUCING CONNECTING ROD OF RECIPROCATING MOTION SYSTEM

Masato Mukai, Saitama, and Koichi Komatsu, Shizuoka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 775,967, Sep. 13, 1985, Pat. No. 4,693,139. This application Jun. 11, 1987, Ser. No. 61,875
Claims priority, application Japan, Sep. 14, 1984, 59-193229
Int. Cl.[4] B21D 53/10
U.S. Cl. 29—149.5 C 4 Claims





1. A method of producing a connecting rod of a reciprocating motion system wherein the connecting rod includes a larger diameter end portion having a bearing hole formed therein and a bearing metal incorporated into the bearing hole, said larger diameter end portion being divided into body side bearing half and a bearing cap that are connected together by bolts means, the method comprising:

subjecting a blank to a forging operation to produce an intermediate connecting rod product having an enlarged diameter end portion containing opposite end surfaces and a hole axially therethrough;

providing continuous grooves of a generally V-shaped section on the opposite end surfaces of said product and transversely through said hole, said transversely extending grooves being formed as continuations of said end surface grooves;

at least said transversely extending grooves having oppositely facing, inclined surfaces including a first, gently inclined portion and a second, steeply inclined portion; and

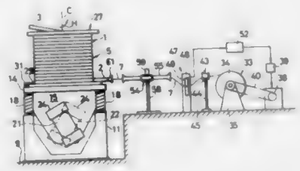
dividing said larger diameter end portion into said bearing half and said bearing cap along said generally V-shaped grooves.

4,802,270

APPARATUS FOR PASSING OPTICAL FIBERS THROUGH TUBULAR PRODUCTS

Kunio Kashiwaya, Tokyo; Hiroyo Haga, Sagamihara; Nobuo Saeki, Tokyo; Yoichi Yabuki, Tokyo; Kuniyuki Ozoe, Tokyo; Shinichi Fukushima, and Kazufumi Tabata, both of Narashino, all of Japan, assignors to Nippon Steel Corp. and Nippon Steel Welding Products & Engineering Co., Ltd., Tokyo, Japan

Division of Ser. No. 11,917, Feb. 5, 1987. This application Jan. 4, 1988, Ser. No. 140,666
Int. Cl.[4] B23P 19/04
U.S. Cl. 29—241 14 Claims



1. An apparatus for passing an optical fiber through a tube which comprises:

a cylindrical body around which the tube to admit the optical fiber is coiled;

means to vibrate the cylindrical body in such a manner that a given point of the tube reciprocates along a helical path; and

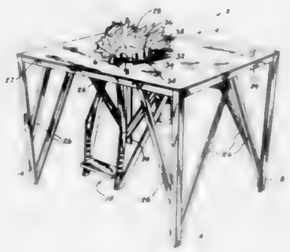
means to feed the optical fiber into the coil of tube being thus vibrated from one and thereof, whereupon the optical fiber fed into the tube moves forward under the influence of the intermittent conveying force exerted by the inner wall of the tube in the direction of the circumference of the coil of tube, said feeding means including means to positively feed the optical fiber at a speed substantially the same as the speed of forward movement of the optical fiber through the coil of tube.

4,802,271

WREATH MAKING MACHINE

Richard Bader, 2002 Parkfield Dr., West Bend, Wis. 53095

Filed Jul. 22, 1987, Ser. No. 76,531
Int. Cl.[4] B23P 11/00
U.S. Cl. 29—243.56 9 Claims



1. An apparatus for making wreaths or the like, said wreaths being formed on a frame having a plurality of clips for retaining greens or the like on said frame, each said clip having a base member connected to said frame and a pair of spaced arms extending therefrom, each said arm having a proximal end connected to said base member and a distal end spaced therefrom, said clip being adapted to receive said greens or the like between said spaced arms, said apparatus comprising:

a support structure including a platform-like upper work surface;

a pair of opposed movable jaws maintained in a fixed position relative to said support structure adjacent said work surface, said jaws being movable between an open position for receiving said clip therebetween and a closed position for crimping said clip about said greens or the like, each said jaw having a face portion for engaging said clip during movement of said jaws from said open position to said closed position, said face portion of each said jaw having an arcuate indentation formed therein, said indentations cooperating during movement of said jaws from said open position to said closed position to securely crimp said clip about said greens or the like by forming said clip to a substantially elliptical shape with portions of said clip overlapping; and

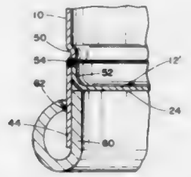
actuator means connected to said jaws and operable to cause said jaws to be moved from said open position to said closed position, said actuator means being interconnected with said support structure below said upper work surface.

4,802,272

PROCESS FOR REFURBISHING CONTAINERS

Robert J. Beaudrie, 1038 Park Clr., Girard, Ohio 44240

Filed Oct. 16, 1987, Ser. No. 109,452
Int. Cl.[4] B23P 7/00
U.S. Cl. 29—407.07 22 Claims



1. A process for reconditioning containers comprising the steps of:

cutting an end member from a sidewall of a used container to define a terminal end;

forming an indentation on said sidewall a preselected dimension from said terminal end;

inserting a new end member having an extending leg portion for receipt in the sidewall and engagement with the indentation, said inserting step including positioning said leg portion for initial receipt in said sidewall; and,

welding said sidewall along said indentation for sealing said new end member to said sidewall.

4,802,273

HYDRAULIC EXPANSION TOOL FOR TUBULAR ELEMENT

Jean E. Widart, Saint Severin, Belgium, assignor to Cockerill Mechanical Industries, Belgium

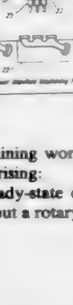
PCT No. PCT/BE86/00024, § 371 Date Feb. 26, 1987, § 102(e) Date Feb. 26, 1987, PCT Pub. No. WO87/00457, PCT Pub. Date Jan. 29, 1987
PCT Filed Apr. 17, 1986, Ser. No. 33,100
Claims priority, application Belgium, Jul. 18, 1985, 0/215371
Int. Cl.[4] B23P 11/00; B21D 26/02
U.S. Cl. 29—421.1 7 Claims

1. A hydraulic expansion tool for a tubular element, said tool comprising:

an elongated body having two opposed ends and an external surface;

a first seal having a first head portion and a first skirt portion, said first head portion disposed at one end of the elongated body and said first skirt portion surrounding the one end of the elongated body and oriented towards the opposite end of the elongated body, said first seal suitably dimensioned and flexible to seal an inner surface of a tubular element when said tool is introduced into said tubular element;

a second seal having a second head portion and a second skirt portion, said second head portion disposed at the opposite end of the elongated body and said second skirt portion surrounding the opposite end of the elongated body and oriented towards the one end of the elongated body, said second seal suitably dimensioned and flexible to seal said inner surface of said tubular element when said tool is introduced into said tubular element;



first compression means for securing and sealing said first head portion of said first seal against said one end of said elongated body;

second compression means for securing and sealing said second head portion of said second seal against said opposite end of said elongated body; and

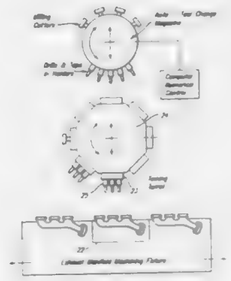
means, axially traversing one of said first or second compression means, for communicating pressurized fluid from outside to within a space defined by the first and second seals and the external surface of the tubular body.

4,802,274

METHOD OF DETERMINING WORN ROTARY TOOL

Robert C. Petrof, Farmington Hills, and Charles O. McHugh, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 4, 1987, Ser. No. 46,066
Int. Cl.[4] B23Q 3/156; B23B 49/00
U.S. Cl. 29—568 12 Claims



1. A method of determining worn rotary tools during machining operations, comprising:

(a) establishing the steady-state dominant tool force level required to (i) carry out a rotary machining operation at a

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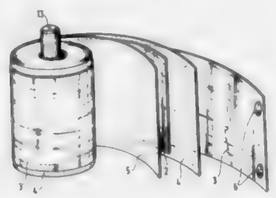
given set of cutting conditions in the abrasive wear regime, (ii) using a known worn rotary tool with a given geometry, and (iii) using a workpiece of given material;
(b) supporting another rotary tool of the same given geometry in a holder for being power driven for rotation, said holder having means to impart a signal in resonse to exceeding a predetermined force level calibrated to be just below the steady-state force level of the worn tool; and
(c) while employing said another tool to rotary machine a workpiece of the same given material, initiating an automatic tool change in response to a signal imparted by said means of said holder for said another tool.

4,802,275

METHOD OF MANUFACTURING AN ELECTROCHEMICAL CELL HAVING AN ALKALINE ELECTROLYTE AND SPIRAL-WOUND ELECTRODES

Jean-Pierre Frelache, Angouleme, France, assignor to Saft, S.A., Romainville, France

Filed Mar. 3, 1988, Ser. No. 163,831
Claims priority, application France, Mar. 12, 1987, 87 03391
Int. Cl.⁴ H01M *4/26, 10/28*
U.S. Cl. 29—623.4 **5 Claims**



1. A method of manufacturing an electrochemical cell having an alkaline electrolyte and spiral-wound electrodes, the method consisting:
in superposing four items: a positive electrode, a separator, a negative electrode, and another separator, with the two separators optionally between two lengths of a common separator;
in winding these four items around a core in order to obtain a roll; and
in inserting said roll in the can of the cell; the method including the improvement whereby, at the end of the winding operation, the end of one of the elements is fixed on the preceding turn of the same element by means of a hot melt glue which is not soluble in said alkaline electrolyte.

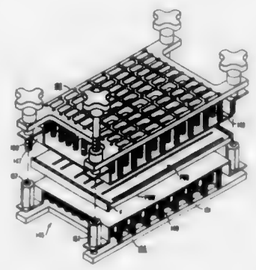
4,802,276

APPARATUS FOR PRINTED WIRING BOARD COMPONENT ASSEMBLY

Corey H. Bowcutt, Annapolis; John J. Buckley, Jr., Baltimore, and James A. Rew, Millersville, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1987, Ser. No. 32,429
Int. Cl.⁴ H05K *3/30, 3/34*
U.S. Cl. 29—739 **15 Claims**

1. An apparatus for supporting at least a first printed wiring board and for maintaining a predetermined constant force on components which have been mounted on the at least first printed wiring board said apparatus comprising: a frame means defining a generally U-shaped member having an upper and a lower surface, said U-shaped member having a slot means therein for slidingly and removably receiving the at least first printed wiring board therein; an upper cover member and a lower cover member which cooperate with the upper and lower surfaces of the U-shaped member to generally enclose the at least first printed wiring board; resilient biasing means comprising a plurality of compliant pads, each having an area at least equal to that of the at least first printed wiring board, the means disposed between the at least first printed wiring board and the cover members; and means for removably securing the cover members to the U-shaped member, whereby a predetermined constant force is maintained on components which have been mounted on the at least first printed wiring board.

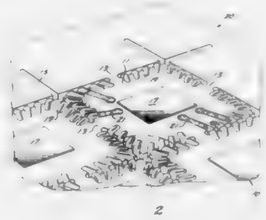


4,802,277

METHOD OF MAKING A CHIP CARRIER SLOTTED ARRAY

Randolph E. Root, Westminster, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 722,644, Apr. 12, 1985, abandoned. This application Nov. 23, 1987, Ser. No. 124,229
Int. Cl.⁴ H01L *23/48;* **H05K** *3/10*
U.S. Cl. 29—846 **21 Claims**



1. A method of making a chip carrier array comprising the steps of:
providing a substrate; and
forming elongated slots in the substrate which extend beyond the corners of individual chip carriers to define edges thereof and which form one severable interconnecting bridge at each edge of each chip carrier, each edge of each chip carrier including first and second edge portions separated by a respective interconnecting bridge, which bridges maintain the individual chip carriers in the chip carrier array.

4,802,278

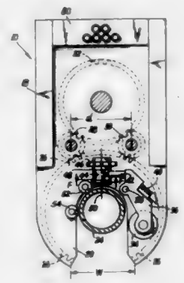
GEAR DRIVEN TUBE CUTTER

Jerald Vanderpol, Eldorado Hills; Neil Pfafman, Placerville, and Cory J. Silber, Sacramento, all of Calif., assignors to Tri Tool, Inc., Rancho Cordova, Calif.

Filed Aug. 6, 1987, Ser. No. 82,135
Int. Cl.⁴ B23D *21/06*
U.S. Cl. 30—97 **25 Claims**

1. A gear driven cutting tool for cutting through a wall of tube comprising:

(a) a cutting body defining a first slot opening outwardly through a first end to accommodate a tube therein;
(b) a cutting head rotatably mounted within the cutting body so as to rotate about a first axis, the cutting head defining a second slot;
(c) a generally "C" shaped driven gear attached to the cutting head such that an opening defined by the generally "C" shape coincides with the second slot, the opening having a width w measured at the mouth of the "C";
(d) at least first and second spur gears rotatably mounted in the cutting body so as to rotate about second and third



axes, the spur gears operatively engaging the generally "C" shaped gear, the second and third axes being spaced apart by a distance d such that d>w;
(e) cutting means mounted on the cutting head and adapted to extend into the second slot so as to bear against a tube therein;
(f) feed means operatively associated with the cutting means to urge the cutting means against the tube; and
(g) gear drive means operatively engaging the first and second spur gears so as to cause rotation of the cutting head about the first axis to draw the cutting means about the periphery of the tube to thereby sever the tubing wall.

4,802,279

GAME HUNTING KNIFE

Jerry D. Rowe, Lander, Wyo., assignor to Rocky Mountain Enterprises, Inc., Lander, Wyo.

Filed Apr. 17, 1987, Ser. No. 40,268
Int. Cl.⁴ B26B *3/04*
U.S. Cl. 30—155 **13 Claims**



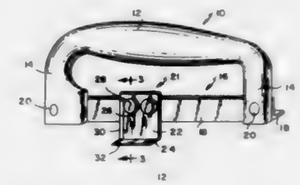
1. A knife, comprising an elongated handle, a cutting blade, a pivot unit connected to said handle and said blade and pivotally supporting said blade to one end of said handle, said handle having a slot extending from said pivot unit for a length exceeding the length of said blade, a shield means coupled to said pivot unit and pivoted to said handle for movement in the path of said blade, said shield having a length greater than said blade and pivotal between a first position abutting said handle with said blade in said slot and a second position pivotally outwardly and angulated relationship to said handle at a angle no greater than 45° and defining a back support for said blade whereby said blade is pivotal outwardly into engagement with said shield with said cutting edge facing said handle for eviscerate cutting of an animal.

4,802,280

DEVICE FOR REMOVING PUTTY FROM A WINDOW

John LaPlana, 89 Pennsylvania Ave., Somerville, Mass. 02145

Filed Feb. 11, 1988, Ser. No. 151,158
Int. Cl.⁴ B26B *27/00*
U.S. Cl. 30—293 **1 Claim**



1. A tool for removing putty from the recess around a window frame within which the edge of the glass is mounted, comprising an elongate, U-shaped handle embodying a handle grip portion and longitudinally-spaced attaching legs disposed at right angles to the handle, an elongate guide of L-shaped cross section defining an attaching flange for attachment to the legs and a guide flange for engagement with the window frame adjacent the glass-receiving opening, bolts attaching the attaching flange to the legs at one side of the legs in a position such that the guide flange extends at right angles to the legs in a direction away from the legs and a detachable, adjustably-mounted, L-shaped cutting blade mounted to the attaching flange at the side thereof opposite the guide flange, said L-shaped cutting blade embodying right-angularly disposed legs comprising a first leg and a second leg, transversely-spaced, parallel cutting edges at the opposite edges of the legs, means comprising second bolts detachably mounting the first leg of the cutting blade to the attaching flange in a position such that the second leg extends downwardly from the guide flange and in a direction away from the attaching flange at right angles thereto and wherein said first leg contains spaced, parallel, elongate slots perpendicular to the second leg for receiving the attaching bolts and wherein said second flange contains threaded openings for receiving the second bolts by means of which the L-shaped cutting blade is attached to the attaching flange for adjustment relative to the guide flange.

4,802,281

DRY SHAVING APPARATUS

Eduard W. Tietjens, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 943,471, Dec. 16, 1986, abandoned. This application Jun. 8, 1988, Ser. No. 205,599
Claims priority, application Netherlands, Dec. 20, 1985, 8503519; Taiwan, Apr. 24, 1986, 75-101838
Int. Cl.⁴ B26B *19/14*
U.S. Cl. 30—43.6 **1 Claim**

1. A dry-shaving apparatus comprising a housing supporting a holder for a longitudinally extending shear plate provided with hair-entry apertures; and an associated longitudinally extending cutter rotatable about an axis of rotation, said cutter including a carrier having cutting elements movable relative to the carrier in substantially radial directions, each cutting ele-

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ment having a cutting edge at its radial end; the shear plate having a central portion shaped as a part of a circularly cylindrical surface and formed with the hair-entry apertures, said central portion partly surrounding the cutter; the cutting edges of the cutting elements of the cutter, as it rotates, following a constrained path defined by the shear plate and a free path where the cutting edges are disengaged from the shear plate; the shear plate also having two peripheral portions respectively adjoining the central portion of the shear plate for securing the shear plate to the holder; the shear plate having a first shear-plate transition between one peripheral portion and its central portion, the cutting edge of each cutting element changing from the free path to the constrained path in the vicinity of the first shear-plate transition, and having a second shear-plate transition between the other peripheral portion and its central portion, the cutting edge of each cutting element



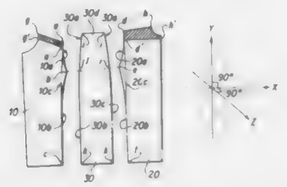
changing from the constrained path to the free path in the vicinity of the second shear-plate transition; the free path followed by the radial ends of the cutting elements being situated on a cylindrical surface having its axis coinciding with the axis of rotation of the cutter; a line from the axis of the circularly cylindrical shear plate through the centre of the central portion of the shear plate defining a positive y-axis, and a line perpendicular to such y-axis from the axis of the circularly cylindrical shear plate towards the second shear-plate transition defining a positive x-axis; and the axis of rotation of the cutter being situated closer to the second shear-plate transition than to the first shear-plate transition and also being situated in the quadrant defined by the positive x-axis and the positive y-axis whereby said cutting elements enter and leave the first and second shear-plate transitions reducing the effects of collisions between the cutting elements and the shear plate.

4,802,282

MASTER PATTERN FOR UPPER GARMENTS

Shoji Fujimura, Yamatokoriyama, and Toru Kawai, Osaka, both of Japan, assignors to Shikibo Ltd., Osaka, Japan

Filed Jul. 16, 1987, Ser. No. 74,179
Claims priority, application Japan, Jul. 18, 1986, 61-170490
Int. Cl.⁴ A41H *3/06*
U.S. Cl. 33—12 **2 Claims**



1. A master pattern for an upper garment, said master pattern comprising front, rear and lateral parts, each of said front and rear parts having a first sewing side line at one side thereof, each of said first sewing side lines having an upper end, a first substantially straight lower portion and an outwardly projected upper portion therebetween, each of said outwardly projected upper portions having a bulging portion intermediate said first substantially straight lower portion and said upper end meeting to define an apex for constituting a sleeve root, said lateral part having two second sewing side lines at each side thereof and including an upper portion for constituting a sleeve bottom and a lower portion for interconnecting said front and rear parts, each of said two second sewing side lines having a second substantially straight portion at said lower portion thereof,

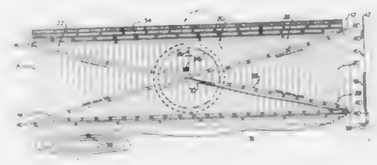
wherein each of said first substantially straight lower portions and a lower half of each of said bulging portions of first sewing side lines may be sewn with each of second substantially straight portions of said two second sewing side lines, and each of said upper ends, each said apex and an upper half of each of said bulging portions may be sewn with a sleeve root.

4,802,283

HEADING AND DISTANCE MEASURING DEVICE AND METHOD

Thomas R. Trump, P.O. Box 586, Moodus, Conn. 06469

Filed May 12, 1987, Ser. No. 48,835
Int. Cl.⁴ G01C *21/20*
U.S. Cl. 33—431 **15 Claims**



1. A navigation device adapted for use with a selected navigation chart comprising,

a generally elongated, rectangular, at least partially transparent substrate,

a compass rose on said substrate,

at least one linear distance scale on said substrate, said linear distance scale being adapted for use with said chart and havign its origin coincident with the center of said compass rose and wherein said linear distance scale radiates outwardly from the center of said compass rose in a direction generally toward an edge of said device and is discontinuous along its length and comprises an initial portion and a distal portion laterally offset from said intial portion, and

an elongated flexible member adapted for placement along said linear distance scale, said elongated flexible member being operatively affixed at one end to the center of said compass rose and the origin of said linear distance scale and having its distal end free so that said flexible member can be placed in coinciding relationship along said linear distance scale.

4,802,284

LOCATING DEVICE USED WITH ELECTRICAL OUTLET BOXES AND THE LIKE

Christopher A. Jackson, 9771 Acacia Ave., #8, Garden Grove, Calif. 92641

Filed Feb. 24, 1987, Ser. No. 17,931
Int. Cl.⁴ G01B *5/14*
U.S. Cl. 33—528 **2 Claims**

1. A device for locating the open sides of either a single outlet or double outlet electrical box during installation of a panel which covers said open sides, including,

a locator plate having an inside surface,

a pair of outlet alignment pins connected to and extending outwardly from said inside surface which hold the locator plate over the open side of either the single outlet or double outlet electrical box when said locator plate is placed in position prior to installation of the panel,

said outlet alignment pin

(a) holding the locator plate over open side of a double outlet electrical box with the center of the locator plate displaced with respect to the center of the open side of the double outlet electrical box and the inside surface abutting at least partially the edges of the said open side of the double outlet electrical box, and

(b) holding the locator plate over the open side of a single outlet electrical box with the center of the locator plate coinciding with the center of the open side of said single outlet electrical box and the inside surface of the locator plate abutting the edges of said open side of the single outlet electrical box,

a pair of template alignment pins connected to and extending outwardly from the locator plate opposite the side from the outlet alignment pins,

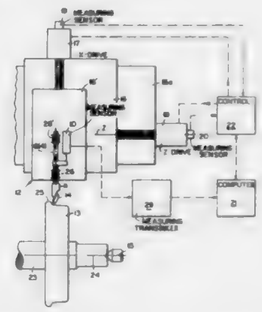
a template having a pair of openings therein which receive

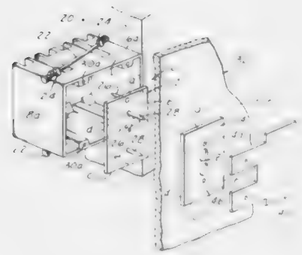
4,802,285

METHOD AND APPARATUS FOR ASCERTAINING THE RADIAL LOCATION OF A NEW WHEEL PROFILE TO BE PRODUCED BY A REPROFILING OPERATION

Herbert Ligacz, Erkelenz; Alfred Heimann, Aachen; Hartwig Klosterhalfen, Duren, and Helmut Wittkopp, Erkelenz, all of Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt GmbH, Erkelenz, Fed. Rep. of Germany

Filed Jun. 15, 1987, Ser. No. 63,245
Claims priority, application European Pat. Off., Jun. 28, 1986, 86108841.7
Int. Cl.⁴ G01B *5/20, 7/28*
U.S. Cl. 33—551 **11 Claims**





the template alignment pins when the template is assembled with the locator plate, said template serving as a guide for a cutting tool to cut away the section of the panel disposed between the locator plate and the template, and having dimensions of the single outlet electrical box such that, when positioned to overlie the open side of a single outlet and assembled with the locator plate, the center of the template is in registration with the center of the open side of said single outlet electrical box and the perimeter of the template extends slightly beyond the perimeter of said side,

an extension plate having a pair of openings therein which receive the template alignment pins when the template is assembled with the extension plate, said extension plate, when assembled with the template, providing a template assembly for a double outlet electrical box that, when positioned to overlie the open side of the double outlet electrical box, provides that the template assembly is in registration with the center of the open side of the double outlet electrical box and the perimeter of the template assembly extends slightly beyond the perimeter of said open side of the double outlet electrical box.

1. A method for ascertaining the radial position of a new profile to be produced by a reprofiling operation with reference to an actual, worn profile not corresponding to a rated profile of a railroad wheel having a fixed location relative to a reference point and of which the axial position of the actual profile is known, comprising the following steps:

(a) ascertaining in a sensing or measuring plane of each wheel (13) at least one surface point (P1) on the wheel tread,

(b) ascertaining the radial distance in the X-direction of said surface point (P1) to said reference point,

(c) ascertaining in different, but given radial locations at least two points (P3, P4) at each rim flank by an axial gaging in the Z-direction,

(d) ascertaining the radial and axial location of said at least two points (P3, P4) relative to a reference profile, and

(e) ascertaining the radial location of a rated profile (32, 32') which rated profile forms a tangent with at least one of the ascertained points, whereby simultaneously at least the other sensed points of the actual profile are located on the rated profile or radially outside the rated profile.

4,802,286

METHOD AND APPARATUS FOR FREEZE DRYING

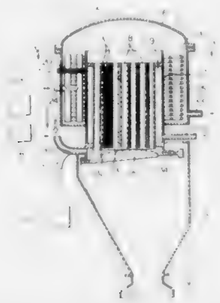
Masakazu Kobayashi, Tokyo; Konomi Harashima, Yokohama, and Hiroichi Ariyama, Iwatsuki, all of Japan, assignors to Kyowa Vacuum Engineering, Ltd., Tokyo, Japan

Filed Feb. 9, 1988, Ser. No. 154,151
Int. Cl.⁴ F28B *5/04*
U.S. Cl. 34—15 **6 Claims**

1. A method for freeze drying, comprising the steps of: supplying a predetermined amount of water onto a refrigerating/heating surface provided inside a drying chamber of a vacuum-type freeze drying apparatus, said refrigerating-/heating surface being cooled to a temperature below 0° C. to form an ice film having a predetermined thickness thereon; keeping said refrigerating/heating surface at a temperature below 0° C.; under such conditions, supplying a material to be dried onto a surface of said ice film to cause said material to

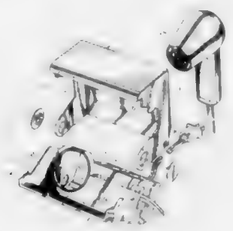
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freeze on said ice film; and producing a vacuum in said drying chamber of said vacuum-type freeze drying apparatus,



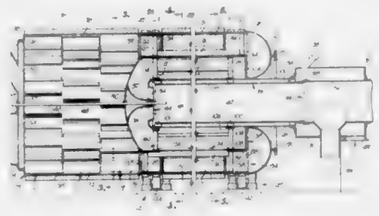
whereby sublimation of said ice film and said material frozen thereon occurs.

4,802,287
TWO-PURPOSE DEVICE OF HAND AND HAIR DRYERS
Shye L. Chen, Taipei, Taiwan, assignor to Tatung-Consair Corporation, Taipei, Taiwan
Filed Sep. 16, 1987, Ser. No. 97,120
Int. Cl.[4] F26B *19/00*
U.S. Cl. 34—91 3 Claims



1. A combination hair and hand dryer device comprising a portable hand-held electric hair dryer and a cabinet for mounting the hair dryer on a wall or the like so as to convert same to a hand dryer, the cabinet comprising a base part with a base wall, side arms extending from the base wall, and a top cover, the cabinet further comprising a front part having side walls, a front wall with a vent, and internal means for releasably securing the hair dryer therein in a position to blow heated air through the vent, the cabinet still further comprising pivot means connecting the side walls to the side arms for swinging the front part between open and closed positions relative to the base part, for insertion and removal or the hair dryer in the open position and operation of the device as a hand dryer in the closed position, and catch means on the front part and base part for releasably retaining the front part in the closed position.

4,802,288
ROTARY DRUM DRYER AND METHOD
Donald E. Shinn, and Andrew D. Livingston, both of Independence, Kans., assignors to Productization, Inc., Independence, Kans.
Division of Ser. No. 33,344, Apr. 1, 1987, Pat. No. 4,729,176.
This application Nov. 27, 1987, Ser. No. 125,864
Int. Cl.[4] F26B *11/02*
U.S. Cl. 34—136 5 Claims

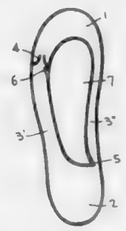


1. A multiple-pass product dryer, comprising:
an elongated, normally horizontally disposed, axially rotatable body having means defining a plurality of elongated, substantially concentric, internal passageways each having an entrance end and an exit end and being in communication with each other to present a continuous, serpentine flow path through said body;
means defining a wet product inlet and a dried product outlet at respective ends of said flow path;
means for inducing flow of heated air currents within said body and along said flow path for conveying said product therealong in a cocurrent fashion with said air currents, and for simultaneously drying the initially wet product; and
means for introducing additional quantities of ambient-derived air into the innermost internal passageway of said body at a point for cocurrent passage of said product, heated air currents and additional air along said innermost passageway, said additional air having a lower relative humidity than the induced air currents entering said innermost passageway,
said air introduction means comprising an elongated tubular element disposed about the defining walls of said innermost internal passageway to define therewith an elongated zone, means adjacent the entrance end of said innermost internal passageway and in communication with said zone for directing said additional quantities of air into and along the length of the innermost internal passageway, and means located exteriorly of said body and in communication with said zone for delivery of said additional quantities of air into and along the length of the zone.

4,802,289
INSOLE
Hans Guldager, Rypevang 4, Allerod, Denmark (3450)
Filed Mar. 25, 1987, Ser. No. 29,816
Int. Cl.[4] A43B *13/38*
U.S. Cl. 36—43 9 Claims

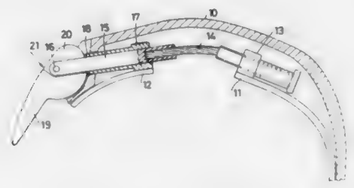
1. Insole for footwear and of the kind that consists at least partly of a case of a soft, flexible foil material, filled with fluid, and characterized by the fact that the interior of the case is divided into cells mutually connected by ducts, out of which one cell (1) is confined tb a toe area of the sole so that in use it is under a user's toes, and one other cell (2) is placed in the heel area of the sole, and where the above-mentioned cells (1) and (2) are mutually connected via at lease two ducts (3), one of the ducts including a non-return valve (4) which permits flow of fluid through said one duct between the cells (1) and (2) in one

direction and obstructs flow through said one duct in the opposite direction the other of said ducts including throttling



means (5), which permits slow flow through the other of said ducts between the cells (1) and (2) in the opposite direction.

4,802,290
CLAMPING DEVICE FOR SHOES AND BOOTS
Antonello Marega, Montebelluna, Italy, assignor to Calzaturificio Tecnica Spa, Treviso, Italy
Filed Jul. 9, 1987, Ser. No. 71,441
Claims priority, application Italy, Jul. 10, 1986, 22501/86[U]
Int. Cl.[4] A43B *5/04*; A43C *11/00*
U.S. Cl. 36—119 11 Claims



1. Clamping device for band-like members in shoes and boots in which a foot is releasably clamped to the shoe, said device comprising:
a control lever located at an outer surface of the shoe, said lever being pivotally actuatable between a lever clamping position and a lever unclamping position;
a cam part rigidly connected to said lever and actuatable with said lever between a first clamping position and a second unclamping position;
an anchoring member connected to an edge to be clamped, said anchoring member being adjustably connected to one end of a guy member, the other end of said guy member being engagable with said cam part when in said first clamping position;
a sleeve member freely axially slidable along said guy member and connected to a second edge to be clamped, whereby actuation of said control lever to said lever clamping position causes said cam part to be actuated towards said first clamping position, said cam part engaging said sleeve member to cause a relative sliding motion between said guy member and said sleeve to bring said second edge towards said first edge.

4,802,291
SKI BOOT INCORPORATING A FOOT SECURING DEVICE
Mariano Sartor, Montebelluna, Italy, assignor to Nordica S.P.A., Montebelluna, Italy
Filed Jul. 20, 1987, Ser. No. 75,717
Claims priority, application Italy, Jul. 25, 1986, 82560 A/86
Int. Cl.[4] A43B *5/04*
U.S. Cl. 36—119 10 Claims



1. In a ski boot incorporating a foot securing device, said ski boot comprising an upper, a substantially elongated shell having a toe portion, a heel portion, an instep portion and a metatarsal portion, a foot presser mounted internally of said shell so as to face said intep and metatarsal portions thereof, a single traction element mounted internally of said shell for acting on said presser at least partially, said traction element including a first overlapping said presser adjacent said metatarsal portion of said shell, a second tract extending internally of said shell between said metatarsal and said heel portion thereof, and a third tract overlapping said presser adjacent said instep portion of said shell, the improvement consisting of the fact that said first tract of said traction element extends obliquely with respect to the longitudinal direction of said shell from one side to the other thereof to thereby embrace said presser both transversely and longitudinally thereof.

4,802,292
CONTINUOUS MINING DEVICE FOR CRUST DEPOSITS, ETC. AND CONTINUOUS LINE BUCKET METHOD WITH TURNING MOVEMENT
Yoshio Masuda, Kanagawa, Japan, assignor to Hideaki Fukada, Tokyo, Japan, a part interest
Filed Feb. 9, 1987, Ser. No. 12,453
Claims priority, application Japan, Feb. 13, 1986, 61-27933
Int. Cl.[4] E02F *3/14*
U.S. Cl. 37—69 7 Claims



1. A method for mining crust deposits and the like located underwater with a maneuverable sea vessel of the type having a bow, a stern, port and starboard sides, an endless cable means of a selected length, means for engaging a portion of said cable

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means for moving said cable means to pay out and pull in said cable means, a plurality of bucket means attachable to said cable means at spaced intervals, at least two guide means for said cable means, said guide means being mountable on the vessel at spaced locations, one of said locations being disposed along one of the sides of the vessel, the other of the locations being at a location including one of the stern and the other side of the vessel, comprising the steps of:

a. moving the vessel while turning through an arc of between 180° and 360° to one side of the vessel;

b. paying out the cable means from one location including one of the stern and the other side of the vessel with the bucket means attached at said spaced intervals, the length of the cable means paid out being such that at least a portion of the bucket means of the cable means will engage the crust deposits;

c. simultaneously pulling in the cable means with the bucket means on said one side of the vessel which is located on the inside of said arc;

d. maintaining the cable means being paid out from the one location separate from the length of cable means being pulled in and being generally in a straight line while the cable means being paid out traces generally an arc.

3. Apparatus for the mining of crust deposits located underwater with a maneuverable sea vessel having a bow, a stern, port and starboard sides, the apparatus comprising an endless cable means of a selected length, means for engaging a portion of said cable means for moving said cable means to pay out and pull in said cable means, a plurality of bucket means attached to said cable means at spaced intervals, at least two guide means for said cable means, said guide means being mounted on the vessel at spaced locations, one of said locations being disposed along one of the sides of the vessel at approximately two thirds of the length of the vessel measured from the bow of the vessel, the other of the locations being on the other side of the vesel with said one location being used to pull in said cable means and the other location being used for paying out the cable means.

4,802,293

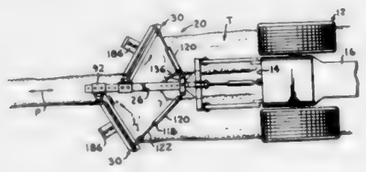
ADJUSTABLE EARTH-MOVING ATTACHMENT FOR A VEHICLE

Raymond H. Smith, Rte.2, 5AAA, Larned, Kans. 67550

Filed Nov. 20, 1987, Ser. No. 123,608

Int. Cl.⁴ E02F *5/00*

U.S. Cl. 37—108 R 27 Claims



1. An earth-moving attachment for a vehicle comprising:

a main frame assembly which includes a main frame-to-vehicle attaching means adapted to be mounted on the vehicle, a main beam connected at one end thereof to said main frame-to-vehicle attaching means and extending outwardly therefrom to have the longitudinal centerline thereof aligned with the direction of movement of the vehicle along a path;

a pair of earth-moving blade assemblies which can be movably mounted on said main beam, each earth-moving blade assembly including

a blade for moving earth in a predetermined direction with respect to the path,

an inner edge on said blade locatable adjacent to said main beam,

an outer edge on said blade,

a first blade-to-main beam attaching means attaching said blade to said main beam,

a second blade-to-main frame attaching means attaching said blade to said main beam,

said first blade-to-main beam attaching means including means for adjusting the height of said blade above the path and means for adjusting the position of the inner edge of said blade with respect to said main beam longitudinal centerline, and

said second blade-to-main beam attaching means including means for adjusting the position of the outer edge of said blade with respect to said main beam longitudinal centerline.

4,802,294

FRAME, MORE PARTICULARLY FOR A PICTURE

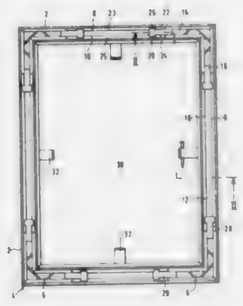
Heinz G. Baus, Wartbodenstrasse 35, CH-3626 Hünibach-Thun, Switzerland

Filed May 4, 1987, Ser. No. 45,565

Claims priority, application Fed. Rep. of Germany, May 3, 1986, 3615117

Int. Cl.⁴ A47G *1/06*

U.S. Cl. 40—155 21 Claims



1. A frame for a picture comprising:

profiled rails joined together at the corners of the frame by means of corner-connectors, each of said rails comprising a cavity and two webs extending in the longitudinal direction of the rail, and said two webs having an opening between them also extending in the longitudinal direction of the rail, said cavity being formed from a substantially U-formed portion of the profiled rail comprising of rearwardly directed legs each carrying one of said two webs, each web projecting laterally toward the web carried by the other leg ,

each of said corner-connectors comprising two plugs formed integrally with each other in a single piece, each plug being inserted from an end inside the cavity of a rail,

at least one of the webs comprising a retaining element projecting rearwardly behind the rear surface of said at lest one web,

each plug comprising in the vicinity of said retaining element a resilient tongue with a free end which extends outwardly from the cavity through the opening between said two webs, said tongue being formed integrally with the plug and having a width which is at the most equal to the width of said opening,

at least one laterally projecting hook element being provided at said free end of the tongue, said hook element extending outside said cavity and overlying said rear surface of said at least one web, said tongues and lateral hook elements having a maximum width no wider than the width of said plugs, and

means for locking said hook element to said retaining element.

4,802,295

BLOW MOLDED POLYETHYLENE TEREPHTHALATE CONTAINER HAVING IML TEXTURED LABEL WALL AND METHOD POR MAKING SAME

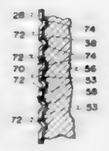
Richard C. Darr, Seville, Ohio, assignor to Plastipak Packaging, Inc., Plymouth, Mich.

Filed Apr. 28, 1987, Ser. No. 43,640

Int. Cl.⁴ G09F *3/08;* **B65D** *23/00*

U.S. Cl. 40—310 9 Claims





1. A container comprising: a blow molding made of polyethylene terephthalate and including a noncylindrical wall of a generally uniform thickness having an outer surface; at least one label secured to the outer surface of the wall by in-mold labeling and having upper, lower, and side edges defining junctions with the wall; said wall having abrupt curvatures at the edges of the label to provide a smooth transition at the junctions between the label edges and the outer surface of the wall; the outer surface of the wall outside the perimeter of the label having a relatively smooth surface finish; the outer surface of the label and the outer surface of the wall within the perimeter of the label having a textured surface including isolated depressions; and said label and wall within the perimeter of the label having a combined generally uniform thickness.

4,802,296

ARCHITECTURAL SIGN SYSTEM

Judson L. Kovalak, Jr., Rockford, Mich., assignor to SignComp, Inc., Comstock Park, Mich.

Filed Dec. 30, 1986, Ser. No. 947,688

Int. Cl.⁴ G09F *15/00*

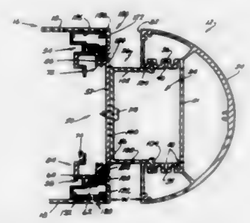
U.S. Cl. 40—607 18 Claims

1. An architectural sign structure comprising:

a pair of support columns, each column fabricated as a one-piece extrusion defining an outer surface, an inner surface and an elongated channel-shaped groove opening through said inner surface, said channel-shaped groove including spaced, parallel sidewalls, said sidewalls defining a plurality of opposed reveal grooves;

a sign body including a plurality of body members defining the sides thereof;

a pair of elongated reveals, each reveal being attached to opposed sides of said sign body and including outwardly extending slide flanges, said slide flanges being selectively



disposed within opposed ones of said reveal grooves to provide a variable reveal; and

a sign face retainer joined to said sign body.

4,802,297

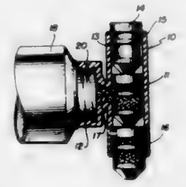
BULLET LUBRICATING APPARATUS

Kendrick L. French, Lebanon, Me., assignor to K. W. Thompson Tool Company, Inc., Rochester, N.H.

Filed Oct. 16, 1987, Ser. No. 109,497

Int. Cl.⁴ F41C *27/00*

U.S. Cl. 42—90 2 Claims



1. Apparatus for use in lubricating bullets, comprising:

(a) a main body having a bore with a diameter slightly larger than the diameter of one of the bullets, the bore extending completely through the main body and having an entrance into which the bullets may be introduced seriatim as well as an exit from which a bullet may be ejected, and

(b) a branch portion extending at a right angle to the centerline of the bore, the said portion being adapted to fit over a discharge opening of a container of lubricant, the branch portion having a passage adapted to lead from the discharge opening of the said container to the midpoint of the bore of the main body, the main body and the branch portion being integrally formed of clear plastic, so that flow of lubricant around a bullet can be observed, the length of the bore being equal to the length of three bullets, so that one bullet can reside adjacent the entrance to the bore, another bullet can reside in the midportion of the bore adjacent the said passage, and another bullet can reside adjacent the exit of the bore, wherein the bore adjacent the exit is provided with a counterbore to facilitate the movement of the bullet out of the bore, and wherein a plurality of pads occupy a portion of the counterbore adjacent the midportion of the bore to guide the bullet through the counterbore.

4,802,298

GUN CYLINDER LOCK DEVICE

Donald G. Baugus, 1139 Terrell St., Mebane, N.C. 27302

Filed Apr. 8, 1988, Ser. No. 179,635

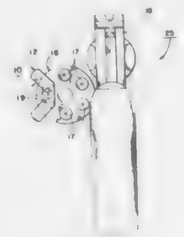
Int. Cl.⁴ F41C *27/00*

U.S. Cl. 42—70.11 9 Claims

1. A cylinder lock device for a gun cylinder comprising: a chamber stud, a pawl, said pawl connected to said chamber

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stud, said pawl having a radial section, said radial section extending outwardly beyond said cylinder when said chamber



stud is positioned in a cylinder chamber whereby said radial section will stop the cylinder rotation to prevent the gun from firing.

4,802,299

REEL MOUNTING DEVICE ON FISHING RODS

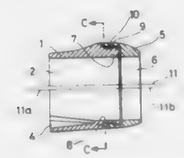
Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka, Japan

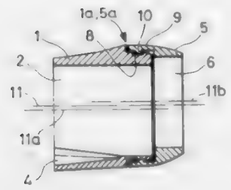
Filed Aug. 11, 1987, Ser. No. 84,024

Claims priority, application Japan, Aug. 20, 1986, 61-194783; Nov. 14, 1986, 61-272585; May 29, 1987, 62-137426

Int. Cl.[4] A01K *87/06*

U.S. Cl. 43—22 10 Claims





1. A reel mounting device for use with a fishing rod, comprising:

a first elongated sleeve member having a first bore for passing said fishing rod, a first and second end, and an inner surface;

a first longitudinal recess for receiving a foot portion of the reel, said longitudinal recess being formed in the inner surface of said first sleeve member at said first end of said first sleeve member with said first longitudinal recess being formed partially along the length of the first sleeve member;

a first annular connecting portion, said first connecting portion being formed at the second end of said first sleeve member;

a second elongated sleeve member having a second bore for passing said fishing rod, and a first and second end;

a second annular connecting portion, said second connecting portion being formed at the first end of said second sleeve member;

wherein the axis of said first bore is eccentrically disposed relative to the axis of said first annular connecting portion and the axis of said second bore is eccentrically disposed relative to the axis of said second annular connecting portion with said second annular connecting portion being adapted to rotatably connect and coaxially cooperate with said first connecting portion.

4,802,300

FISHING HOOK

Toshitaka Fujii, and Haruyuki Fujii, both of 481 Gonose-cho, Nishiwaki-shi, Hyogo, Japan

Continuation-in-part of Ser. No. 850,036, Apr. 14, 1986, abandoned. This application Jun. 19, 1987, Ser. No. 64,812

Int. Cl.[4] A01K *85/00*

U.S. Cl. 43—43.16 1 Claim



1. A fishing hook having a shank (4), a bend (5), and a barb (7), characterized in that a tip (6) of said barb is flattened to form wedge-like blade and that an interior angle α between an edge line of said blade and the longitudinal axis of said barb in a plane of said hook is substantially 90 degrees.

4,802,301

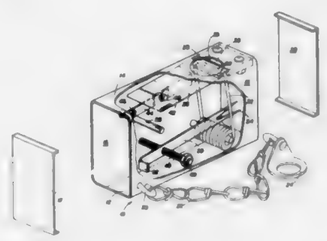
HUMANE RACCOON TRAP

Jack E. Isborn, deceased, late of Talmage, Calif., and Nora S. Isborn, heir, P.O. Box 327, Talmage, Calif. 95481

Filed May 27, 1988, Ser. No. 199,440

Int. Cl.[4] A01M *23/00*

U.S. Cl. 43—58 8 Claims



1. An animal trap comprising:

a housing including a top panel, bottom panel, opposing side panels and end closures;

means forming an opening in said top panel of a size to receive closely the paw of a small animal;

a gate in said housing closely spaced below said top panel;

said gate being mounted for movement between set position and a sprung position, respectively displaced from and underlying said opening;

strong spring means biasing said gate into said sprung position;

a trigger arm in said housing;

a pivot rod extending between said side panels;

said trigger arm being pivotally mounted between the ends thereof on said pivot rod;

bait attaching means at one end of said trigger arm beneath said opening;

a first latch member extending laterally from the other end of said trigger arm;

a complementary latch member depending from and pivotally carried on said gate;

a fulcrum rod extending between said side panels above said other end of said trigger arm so that with said gate in set position said complementary latch member may be pivoted down and forward against said fulcrum rod and engaged by said first latch member; and

means for positioning said trigger arm laterally on said pivot rod to align said first latch member with said second latch member.

4,802,302

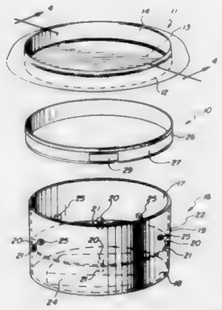
INSECT TRAPPING PET FOOD DISH

Fahad A. Alsaffaar, 2407 Wilshire Blvd., Suite 4, Santa Monica, Calif. 90403

Filed Nov. 3, 1987, Ser. No. 116,529

Int. Cl.[4] A01M *1/14*

U.S. Cl. 43—114 12 Claims



1. An insect-diverting pet food dish comprising

a. a cylindrical base section having an upper cylindrical wall section adapted to receive an encircling band having an insect trapping outer layer,

b. a dish section having a concave upper wall surface and a convex lower wall surface supportable on said base section, said concave dish section having a downwardly depending annular flange adapted to concentrically overlie said upper cylindrical wall section of said base section, and

c. means for limiting downward slippability of an insect-trapping band fastened circumferentially around the outer cylindrical wall of said cylindrical base section.

4,802,303

INSECT TRAP

John Floyd III, Acala, Fla., assignor to Fly Bye, Inc., Lexington, Ky.

Filed Feb. 29, 1988, Ser. No. 161,774

Int. Cl.[4] A01M *1/20*

U.S. Cl. 43—131 11 Claims

1. An insect trap utilizing an aromatic attractant essence comprising:

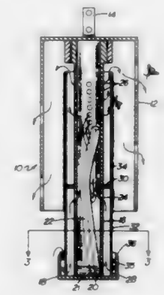
a cylindrical outer shell having an upper closed end and a lower open end;

a coaxial inner tube having first and second ends, means for attaching said first end to the inside of said closed end of said outer shell said second end of said inner tube extending through said open end of said outer shell;

said inner tube having a plurality of orifices passing through the tube walls, means for closing the second end of said inner tube;

said closing means cooperating with said inner tube so as to confine said essence;

an outer sleeve coaxial to said inner tube and spaced from said inner tube;



means on said trap to kill the flies attracted; and

means for inducing a positive draft of air through said orifices within said insect trap;

whereby said positive draft mixes said essence with inducted air creating aromatic air and releases said aromatic air into the atmosphere to attract insects.

4,802,304

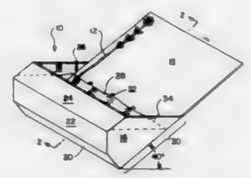
CUT FLOWER STORAGE AND DISPLAY UNIT AND SYSTEM

John Ferris, 46 Arbolado Dr., La Selva Beach, Calif. 95076

Filed Nov. 5, 1986, Ser. No. 927,648

Int. Cl.[4] A01G *5/00*

U.S. Cl. 47—41 R 5 Claims

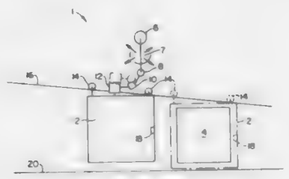


1. A container for cut flowers having stems, which comprises a generally flat bottom, a pair of sides extending from an end of said generally flat bottom at least partly along opposite sides of said generally flat bottom, a third side extending along the end of said generally flat bottom between said pair of sides, extending at a right angle to said generally flat bottom, a fourth side extending along an edge of said third side at an angle to said third side between said third side and said top, said fourth side extending vertically when said generally flat bottom is angled upward from the end at a predetermined angle, and a top extending between said pair of sides, said sides, bottom and top defining a reservoir for a liquid at the end of said flat bottom, said reservoir having an open side facing away from the end of said flat bottom, said flat bottom extending beyond said reservoir to provide support for the stems of the flowers, said reservoir serving to confine the liquid at the end of said flat bottom when said flat bottom is angled upward from the end.

4,802,305
COATED SEEDS
Susumu Kojimoto; Fumio Nii, and Toshio Mori, all of Osaka, Japan, assignors to Sumitiomo Chemical Company, Limited, Osaka, Japan
Continuation of Ser. No. 624,069, Jun. 25, 1984, abandoned. This application May 27, 1986, Ser. No. 867,595
Claims priority, application Japan, Jun. 30, 1983, 58-119814
Int. Cl.[4] A01C *1/06*
U.S. Cl. 47—57.6 **7 Claims**

1. Multi-coated seeds having two or more coating layers, wherein at least the innermost coating layer contains a water repellent selected from the group consisting of fatty acids and metal salts thereof, said water repellent being present in said innermost coating layer in high concentration than in the other coating layer or layers.

4,802,306
AUTOMATIC, GRAVITY-POWERED CLOSURE DEVICE
Darryl E. Laxo, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation of Ser. No. 923,946, Oct. 28, 1986, which is a continuation-in-part of Ser. No. 681,526, Dec. 14, 1984, abandoned. This application Mar. 23, 1988, Ser. No. 171,984
Int. Cl.[4] E05F *15/20*
U.S. Cl. 49—31 **7 Claims**

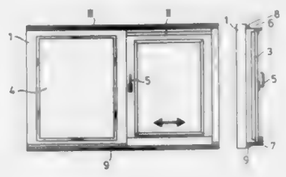


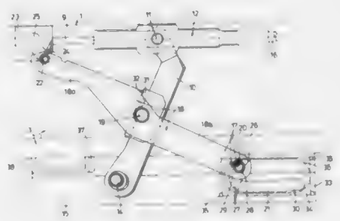
1. A gravity actuated automatic closure device comprising:
a closure;
a gravity-powered means for placing said closure in front of an opening; and
triggering means for said gravity-powered means, said triggering means activated by heeling beyond an activation angle said triggering means further comprising:
(i) a release block holding said closure in an open position;
(ii) a linkage attached to said release block;
(iii) an unstable weight operably attached to said linkage, said weight capable of pulling on the linkage to release the door when an angle of heel reaches a release angle.

4,802,307
TILT-SLIDING MECHANISM FOR A WINDOW OR DOOR
Karl H. Schmidt, Wilnsdorf-Niederdelfen, German Democratic Rep., assignor to Siegenia-Frank KG, Siegen, Fed. Rep. of Germany
Filed Mar. 31, 1988, Ser. No. 175,923
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1987, 3711170
Int. Cl.[4] E05D *15/10*
U.S. Cl. 49—219 **12 Claims**

1. Tilt-slide mechanism for a wing of a window or door which can be stopped in parallel positions and in this position can be shifted horizontally relative to a stationary frame, the mechanism having lower shift arms (**10**) and upper shift arms, at least one of the lower shift arms (**10**) being pivotally mounted to a lower transverse wing beam and to a traveling carriage (**12**), which shift arm can be brought in and out of a work connection by a control pivot pin (**22**) with a thrust bearing mounted on the stationary frame by means of the displacement motion of the wing, characterized by the fact that

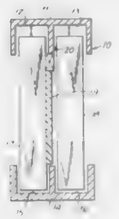
a supporting lever (**18**) has a lever arm (**18**) swingably hinged by a pivot pin (**19**) on the shift arm (**10**) in the area between a pivot pin (**11**) on the traveling carriage (**12**) and a pivot pin (**14**) on the wing, the lever arm (**18**) engaging a guide pin (**20**) so as to be swingably shiftable, the lever arm being connected to the wing in a guide slot (**21**)





located on the wing, the guide slot being provided at one end with a detent recess (**26**) for the guide pin (**20**), while a second end of the lever arm is provided with the control pivot pin (**22**) which can be brought by a shift-and-lock motion of the wing into a work connection with the thrust bearing (**23**) mounted on the stationary frame, and said lever arm is therewith fixed so as to be placed in blocking engagement by the guide slot (**21**).

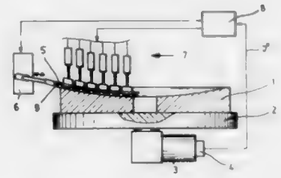
4,802,308
MEANS FOR PREVENTING AIR LEAKAGE THROUGH WINDOW SASH INTERLOCK
Geoffrey Hitzig, 175 Kennedy Dr., Hauppauge, N.Y. 11788
Filed Feb. 5, 1988, Ser. No. 152,861
Int. Cl.[4] E05D *15/16*
U.S. Cl. 49—406 **2 Claims**



1. In a window construction including a window frame, a pair of parallel horizontally sliding sash elements carried by said frame in upper and lower grooves therein for movement between open and closed positions, said sash elements being removable by raising said sash elements to enable the lower edge of said sash elements to clear a respective lower groove,

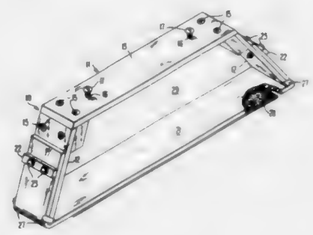
resilient means carried by at least one vertical edge of one of said sash elements to effect a seal over an elongated area in which said sash elements mutually overlap when said sash elements are in closed position; said sealing means being interrupted to form an interstice at an upper end thereof to permit removal of said sash elements, the improvement comprising: a resiliently mounted manually actuated push button having an axis of movement perpendicular to the plane of sliding movement of said sash elements, said push button being mounted in one of said sash elements and selectively retractable into said one of said sash elements; said push button in non-retracted condition filling said interstice to completely seal said elongated area.

4,802,309
METHOD AND APPARATUS FOR LAPPING AND POLISHING OPTICAL SURFACES
Erich Heynacher, Heidenheim, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany
Filed Aug. 6, 1987, Ser. No. 82,292
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1986, 3643914
The portion of the term of this patent subsequent to Aug. 19, 2003, has been disclaimed.
Int. Cl.[4] B24B *13/00*
U.S. Cl. 51—62 **10 Claims**



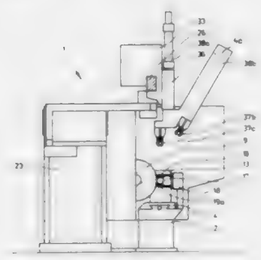
1. A method of lapping and polishing a surface of an optical workpiece, wherein the contour of the surface to be lapped or polished is first measured and the lapping or polishing process is controlled in correspondence to the deviations of the actual surface contour from a predetermined desired shape, the method comprising the steps of:
laying down upon said surface at least one lapping and polishing tool having the form of a strip-like flexible membrane covering only a portion of said surface;
applying a plurality of pressure forces to said membrane at a plurality of locations on the side of the membrane facing away from said surface to generate a pressure force distribution corresponding to said deviations, said pressure forces having respective magnitudes which vary as a function of time;
imparting an oscillatory movement to said membrane in a predetermined first direction transverse to said pressure forces so as to cause said membrane to move across said surface and to remove material from said surface;
moving said workpiece and said tool relative to each other in a predetermined second direction; and,
controlling the respective magnitudes of said pressure forces as a function of time in dependence upon the instantaneous relative position between said workpiece and said tool in said second direction of movement in order to correspond to the deviations of that portion of said surface covered by said membrane.

4,802,310
SANDER ATTACHMENT
Robert W. Holmes, P.O. Box 244, The Sea Ranch, Calif. 95497
Continuation-in-part of Ser. No. 8,477, Jan. 29, 1987, abandoned. This application Jan. 25, 1988, Ser. No. 147,539
Int. Cl.[4] B24B *23/00*
U.S. Cl. 51—170 MT **3 Claims**



1. The combination with a power sander having an oscillating base plate of an attachment for sanding curved surfaces, said attachment comprising a substantially rigid frame comprising an intermediate bar and legs depending from opposite ends of the bar, means for attaching said intermediate bar to the base plate of the sander, a stretchable elastic strap secured to said legs, said elastic strap being stretchable to move up into the space between said legs when the strap is pressed against a curved surface, and a substantially inelastic sheet of abrasive material carried by said strap, said inelastic sheet having a contact adhesive thereon which is capable of being detached from and reattached to said strap during oscillation of said frame by the sander.

4,802,311
METHOD OF GRINDING ROTARY WORKPIECES
Dietmar Schoder, Leinfelden-Echterdingen, and Georg Haag, Neckartailfingen, both of Fed. Rep. of Germany, assignors to Schaudt Maschinenbau GmbH, Stuttgart (Hedelfingen), Fed. Rep. of Germany
Division of Ser. No. 767,417, Aug. 20, 1985, Pat. No. 4,651,472. This application Oct. 29, 1986, Ser. No. 924,855
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1984, 3432306
Int. Cl.[4] B24B *1/00*
U.S. Cl. 51—289 R **13 Claims**



11. A method of grinding the round surfaces of rotary workpieces at a grinding station of a surface grinding machine, comprising the steps of transporting a succession of untreated and treated workpieces to and from the grinding station; monitoring the dimensions of at least some workpieces at said station including scanning such workpieces by at least one sensor of a measuring device; testing the measuring device at preselected intervals including delivering to the grinding station a

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pattern having at least one defined diameter, contacting the pattern with the sensor and generating signals denoting the position of the sensor during contact with the pattern; establishing for the pattern a depository at a selected distance from the grinding station, said delivering step comprising conveying the pattern from the depository to the grinding station; and returning the pattern from the grinding station to the depository upon completion of said signal generating step, said transporting step comprising advancing untreated workpieces to and treated workpieces from the grinding station along a predetermined path a portion of which is adjacent to the depository, said testing step further including advancing a selected untreated workpiece along said path and temporarily storing the selected workpiece in the depository not earlier than upon completion of the first stage of said conveying step, withdrawing the freshly treated workpiece from the grinding station, advancing the freshly treated workpiece to the depository while the pattern is located at the grinding station, withdrawing the selected untreated workpiece from the depository, introducing the freshly treated workpiece into the depository, advancing the withdrawn selected workpiece from the depository and delivering it to the grinding station, replacing the pattern with the selected workpiece, extracting the freshly treated workpiece from the depository, reinserting the pattern into the depository, and advancing the freshly treated workpiece along said path in a direction away from the grinding station.

4,802,312

WET SAND BLASTING WITH PRESSURIZED WATER FEED

Karl C. Glaeser, and Gerhard Buhr, both of Leverkusen, Fed. Rep. of Germany, assignors to Ernst Peiniger GmbH Unternehmen für Bautenschutz, Essen, Fed. Rep. of Germany

Filed Jul. 6, 1982, Ser. No. 395,619

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1981, 3127035

Int. Cl.⁴ *B24C 1/00*

U.S. Cl. 51—321 **7 Claims**



1. In a method of sand blasting wherein

a stream of a suspension of a carrier gas and solid particles at superatmospheric pressure is progressively restricted in a tapering region of a conduit so that it is accelerated; and

a liquid-carrying additive gas is introduced into said stream at a location generally at the upstream end of the region and mixed with said stream to moisten said particles, the improvement wherein

said additive gas is introduced into said stream at a pressure greater than the pressure of said stream at said location by between 1.5 and 2.5 times,

said additive gas is introduced into said stream in a unit of time at a rate sufficient to introduce into said stream a quantity of the liquid equal to between about one-twentieth to one-thirtieth the mass of the particles passing said location during said unit of time, and

in another unit of time the mass of the particles of the carrier-gas stream passing the mixing location is equal to between about 1.4 to 2.5 times the mass of the carrier gas passing said location during said other unit of time.

4,802,313

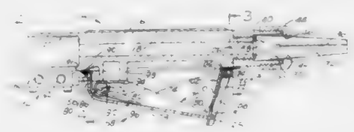
ABRASIVE BLASTING SYSTEM

Edward J. Smith, Hinckley, Ohio, assignor to ALC Co., Inc., Medina, Ohio

Division of Ser. No. 862,305, May 12, 1986, Pat. No. 4,735,021. This application Oct. 29, 1987, Ser. No. 113,992

Int. Cl.⁴ *B24C 5/02*

U.S. Cl. 51—438 **3 Claims**



1. A discharge nozzle and control assembly for an abrasive blasting system comprising:

an elongated body having a passage extending therethrough terminating in a discharge nozzle;

valve means carried by said body and having an operating member movable between a first position stopping the flow of abrasive fluid through said passage and a second position permitting the flow of abrasive fluid through said passage;

a first manually operable lever means mounted on the exterior of said body for pivotable movement about a first axis between a first position and a second position and biasing means for continually biasing said first lever means toward said first position, said first manually operable lever means including means for moving said valve operating member to its second position when said first manually operable lever means is moved to its second position;

a second manually operable lever means mounted on said body for pivotal movement about a second axis parallel to said first axis and spaced therefrom, and spring means for continually biasing said second lever means to a position for blocking movement of said first lever means to its said second position;

said second lever means having an opening formed through a terminal end portion spaced from said second axis;

said first lever means having a terminal end portion spaced from the first axis and adapted to extend through said opening when said first lever means is in its first position; and,

interengaging surfaces on said first and second lever means for preventing said first lever means from moving either toward or away from said second position when said first lever means is in its first position.

4,802,314

CABLE-STAY ROOF FOR STADIUM OR ARENA AND METHOD OF CONSTRUCTION OF SAME

Adam T. Schildge, Jr., 899 Green St., San Francisco, Calif. 94133

Filed Nov. 24, 1987, Ser. No. 124,969

Int. Cl.⁴ *E04H 3/12*

U.S. Cl. 52—6 **26 Claims**

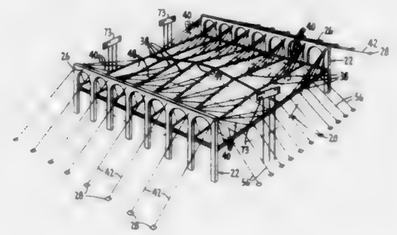
1. A methoid of contructing a roof over an existing stadium, said method comprising:

(a) erecting a first row of cable stay towers outside one side of the stadium;

(b) erecting a seocnd row of cable stay towers outside the side of the stadium opposite said one side;

(c) cantileering roof structure in compression imparting relaionship from each row of said towers by progressively extending sections of said structure from said towers and over the stadium while suspending each sucessive section

by a cable stay connection to the tower from which the section extends; and,



(d) joining the roof structures cantilivered from the rows of towers in tension to partially relieve compressive forces of the structures on the towers and limit such forces.

4,802,315

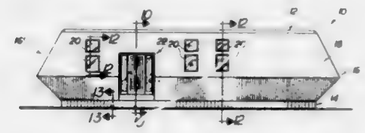
BUILDING CONSTRUCTION

William Reed, P.O. Box 1267, Marathon, Fla. 33050

Filed Jun. 5, 1987, Ser. No. 58,951

Int. Cl.⁴ *E04H 1/00*

U.S. Cl. 52—79.4 **7 Claims**



1. A building system for the construction of a building usable for domestic, commercial and/or recreational purposes, said system comprising:

(a) a primary framing means for support of and at least partially defining the roof portion, side wall portions and floor portion of the building, and a secondary framing means secured to said primary framing means and disposed for formation of oppositely disposed, load-bearing end wall portions of the building,

(b) a foundation assembly disposed in supporting relation to said primary and secondary framing means and mounted on a support surface on which the building is constructed,

(c) said primary framing means comprising a plurality of primary framers disposed in spaced, parallel relation to one another and collectively extending along a length of the building,

(d) at least a majority of said plurality of primary framers each comprising a substantially continuous configuration including a roof section, a floor section and two side wall sections,

(e) said side wall sections of said primary framers collectively defining load-bearing longitudinal side walls of the building and each side wall section thereof comprising a first and a second wall segment interconnected at correspondingly positioned ends at a first junction, said first wall segments of said primary framers extending angularly outward from said roof section to said first junction and collectively defining an outwardly extending angularly oriented first side wall portion of said building, said second wall segments of said primary framers extending angularly outward from said floor section to said first junction and collectively defining an outwardly extending, angularly oriented second side wall portion of the building,

(f) said plurality of secondary framers collectively extending along both ends of the building in spaced, parallel relation to one another and in transverse relation to one of two endmost primary framers; said plurality of secondary framers extending from said roof section to said floor section of correspondingly positioned endmost ones of said primary framers, each secondary framer comprising a first and a second side wall segment interconnected at a corresponding end at a second junction,

(g) said first end wall segment extending angularly outward from said roof section to said second junction and collectively defining an outwardly extending angularly oriented first end wall portion of said building, said second end wall segments extending angularly outward from said floor section to said second junction and collectively defining an outwardly extending angularly oriented second end wall portion of the building,

(h) internal facing means for forming internal, exposed surfaces of the building being mounted on interior portions of said plurality of primary and secondary framers,

(i) external facing means for forming external portions of the building being mounted on exterior portions of said plurality of primary and secondary framers, and

(j) each of said side wall portions and said end wall portions of the building extending outwardly from a substantially vertical orientation into a substantially V-shaped configuration along their respective lengths.

4,802,316

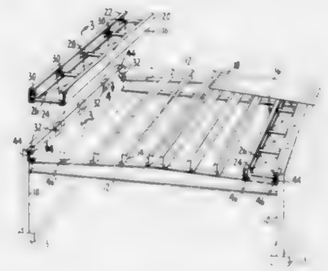
EAVE TRUSS AND METHOD FOR SUPPORTING AND REINFORCING A CONCRETE OR MASONRY WALL AND METAL ROOF STRUCTURE

David L. Kelly, Sacramento, and Jeffrey R. Needham, Modesto, both of Calif., assignors to The Burke Company, Sacramento, Calif. and AMCA International Corp.

Filed Jul. 28, 1987, Ser. No. 78,853

Int. Cl.⁴ *E04B 7/02*

U.S. Cl. 52—90 **35 Claims**



1. An eave truss, for anchoring, supporting and reinforcing walls and a roof in a building resistant to seismic, wind or thermal loading, said building being constructed on a foundation and having at least two walls and a roof, with each wall having an inner side, an outer side and an upper portion and in which said roof is mounted on roof beams and purlins, said eave truss comprising:

an outer channel having two ends, a center portion, a top, a bottom, an inner surface, and an outer surface;

an inner channel having two ends, a top, a bottom, an inner surface, and an outer surface;

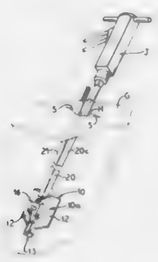
a first means for attaching said outer channel to said inner channel, for spacing said outer channel from said inner channel, for holding said outer channel and said inner channel substantially parallel to each other, and for supporting and reinforcing said outer channel and inner channel against each other to produce a rigid structure;

a second means for attaching the center portion of said outer channel of the eave truss against the inner side of the upper portion of the wall in shear; and,

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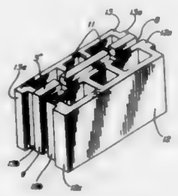
a third means for attaching the end portions of said outer channel of the eave truss against the inner side of the wall, said third means adapted to permit movement of the ends of the outer channel relative to the wall after the end portions of the outer channel have been attached to the wall.

4,802,317
GROUND ANCHOR
David R. Chandler, Northglenn, Colo., assignor to Foresight Industries, Inc., Northglenn, Colo.
Filed Oct. 29, 1987, Ser. No. 113,828
Int. Cl.[4] E02D 5/74
U.S. Cl. 52—163 12 Claims



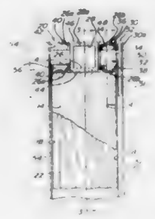
1. A ground anchor which comprises a generally rectangular rigid plate member having a tubular longitudinal central body portion, wings radiating laterally from the body portion along the length thereof, a central axial leg portion projecting from the body portion forwardly of the wings and having radiating sides with sharpened leading edges forwardly of the wings, said body portion having a raised longitudinal rib diverging rearwardly from the leg portion to an eye portion, said rib having a sharpened leading edge effective to plow earth to the sides of the body portion, said eye portion of the rib having radial shoulders in advance of the eye, a pull member pivotably mounted in the eye behind said shoulders, said tubular body portion having a socket along the length thereof with a round bottom adapted to receive a drive rod for driving the anchor into the ground, said socket having an open top with an inclined rim projecting rearwardly from the trailing ends of the wings, and said rim and said trailing and leading ends of the wings being sharp to facilitate rotation of the anchor in the ground.

4,802,318
INSULATING BLOCK UNIT, A METHOD FOR ITS MANUFACTURE, AND A METHOD OF ERECTING A WALL BY MEANS OF SUCH BLOCKS
Jacov Saltovski, 17 Bialik St., Ramat Hasharon, Israel
Filed Aug. 6, 1987, Ser. No. 83,034
Int. Cl.[4] L04B 5/04
U.S. Cl. 52—309.12 15 Claims



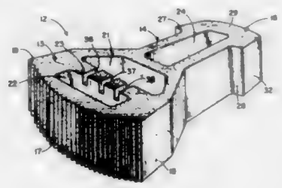
1. A hand portable and transportable insulating masonry block unit useful in conventional construction methods comprising a sandwich of an inner plate of insulating material between two conventional type building blocks, each of said building blocks defining two outer faces and at least one through-going cavity parallel to said faces, said sandwich being held together tightly and permanently by a continuous flexible strap looped through at least one through-going cavity of each of said two building blocks and encompassing said insulating material, said continuous strap remaining an integral part of said masonry block unit without protruding from the outer faces thereof.

4,802,319
PANEL STRUCTURE FOR GARAGE DOORS AND THE LIKE
Jean-Claude Lafleur, 3409 Maricourt Street-Apt. 6, Sainte-Foy, Canada G1W 2M4
Filed Aug. 18, 1987, Ser. No. 86,606
Int. Cl.[4] E06B 3/70
U.S. Cl. 52—455 9 Claims



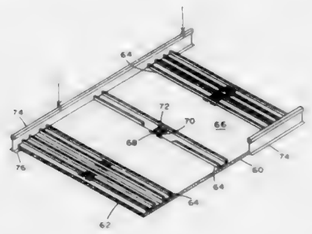
1. A panel comprising a main panel member edgewisely carried by a quadrangular frame member, said frame member made from extruded tubular sections each having bevelled ends, one central cavity and at least two opposite first and second side cavities, the interior walls of said cavities of each tubular section being coplanar and flatly edgewisely abutting against said main panel member; wherein in each tubular section, a reinforcing tube is engaged in said central cavity and has bevelled ends, means interlocking the bevelled ends of said reinforcing tubes in pairs, corner connectors mounted in said first side cavities interlocking said tubular sections in pairs; and retaining means retaining said main panel member within said frame member.

4,802,320
RETAINING WALL BLOCK
Paul J. Forsberg, Richfield, Minn., assignor to Keystone Retaining Wall Systems, Inc., Edina, Minn.
Continuation of Ser. No. 907,077, Sep. 15, 1986, abandoned. This application Nov. 3, 1987, Ser. No. 116,228
Int. Cl.[4] E04C 1/00
U.S. Cl. 52—585 43 Claims



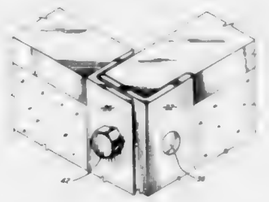
1. A retaining wall block comprising:
a body including a convex curved front face having opposite ends, a generally flat top surface, a generally flat bottom surface spaced from and extended generally parallel to the top surface and side walls extended between said top and bottom surfaces rearwardly and inwardly from the opposite ends of the front face, said body having a first generally elongate pocket and a second generally elongate pocket open to the bottom surface thereof, said first pocket being located adjacent one of said side walls, said second pocket being located adjacent the other of said side walls, and a pair of holes extended vertically through said body adapted to accommodate pins having ends projected from the body said holes having opposite ends open to said top and bottom surfaces of the body one of said holes being located inwardly of and adjacent said first pocket, the other of said holes being located inwardly of and adjacent said second pocket whereby the ends of the pins projected from the body are adapted to extend into pockets of similar adjacent retaining wall blocks having front faces and locate the front faces of the adjacent retaining wall blocks offset inwardly of the front face of the retaining wall block,
a recess open to the bottom surface of the body spaced inwardly from said convex curved front face thereof, a first opening vertically through said body spaced inwardly from said recess, a web separating said recess from said first opening, said holes being located through said web, said pockets being located adjacent opposite ends of said web, a neck joined to the side walls and extended rearwardly therefrom, said neck having a width smaller than the length of said front face, a head joined to the neck, said head having ears projected laterally from opposite sides of the neck, said neck and head having a second opening extended vertically therethrough, and a second web separating the first opening from the second opening.

4,802,321
SAG RESISTANT CEILING PANEL
Robert J. Meuchetti, Buffalo, N.Y., assignor to National Gypsum Company, Dallas, Tex.
Filed May 18, 1988, Ser. No. 196,180
Int. Cl.[4] E04B 5/52
U.S. Cl. 52—484 20 Claims



1. A ceiling panel comprising a four-sided extra-wide ceiling board, having a composition which is conductive to developing some sag when supported only along the board edges, said panel further comprising at least one narrow, elongate, rigid reinforcing element, said reinforcing element having a length substantially equal to one of the cross dimensions of said board and being affixed to extend across substantially a full cross dimension of said board, said reinforcing element having a flat rigid web portion disposed against the top face of said board, said flat web portion having an opening therein at approximately the mid point lengthwise of said reinforcing element, said opening having a shape such that a short rigid tongue is formed in said flat web portion, and means on the top face of said board, affixed to said board, in the center portion of said board, for receiving and being supported by said short tongue.

4,802,322
PORTABLE DIKE SYSTEM
Dwayne Bendfeld, Box 6, Site 6, R.R. 1, St. Albert, Alberta, Canada T8N 1M8
Filed May 21, 1987, Ser. No. 52,831
Claims priority, application Canada, Feb. 27, 1987, 530867
Int. Cl.[4] E04C 2/04
U.S. Cl. 52—601 15 Claims



1. An environmental control dike system, comprising:
a. a plurality of precast sections, each of said sections comprising:
i. a rectangular metal frame having a top horizontal member, a bottom horizontal member, a first vertical end member joining said top and bottom horizontal members, said first vertical end member at a first end of said frame having an extension which extends longitudinally beyond said top and bottom horizontal members, said extension having a plurality of spaced openings adapted to receive the shank of a bolt, and a second vertical end member joining said top and bottom horizontal members at a second end of said frame, said second vertical end member having a plurality of threaded openings such that one of said sections may be secured to an adjacent section by passing a bolt through said openings in said longitudinal extension at said first end of said section and threadedly engaging said bolt in said threaded opening at said second end of said adjacent section; said second vertical end member having threaded openings in both an end and a side such that each of said sections may be joined longitudinally in end to end relation with an adjacent section or joined with an adjacent section to form a corner;
ii. a plurality of vertical reinforcing bars, one end of said vertical reinforcing bars being attached to said top horizontal member and the other end of said vertical reinforcing bars being attached to said bottom horizontal member of said frame;
iii. a plurality of horizontal reinforcing bars, one end of said horizontal reinforcing bars being attached to said first vertical end member and the other end being attached to said second vertical end member of said frame;
iv. a concrete filler material covering said vertical and horizontal reinforcing bars.

4,802,323
AUTOMATED INSPECTION OF CAPSULE SEALS
Charles R. Garris, Sewell; Kenneth M. Ruttenberg, Hammonton, both of N.J., and James L. Neiswender, Sr., Philadelphia, Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.
Filed Oct. 20, 1987, Ser. No. 110,328
Int. Cl.[4] B65B 57/00
U.S. Cl. 53—53 11 Claims

1. In combination with a machine for sealing two-part oblong capsules, each capsule having a first smaller diameter open-ended part and a second larger diameter open-ended part overlapping the smaller diameter part, the machine comprising: a first endless conveyor having a series of slats, each slat

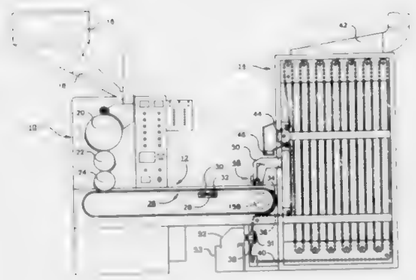
VOL 1099 ISS 1 FEB 7 1989 UMI

having a row of capsule-receiving slots, the row extending in a direction transverse to the conveyor path and the slots being elongated in said direction; liquid binder applying means disposed along the path of the first conveyor for transferring liquid binder to the circumference of the capsules carried by the conveyor to form a narrow band of liquid binder at the edge of the opening of each larger diameter part; means for drying the binder on the capsules comprising a second endless conveyor having a series of capsule-carrying buckets, a drying chamber, and means for guiding the buckets through the drying chamber; means for transfer of capsules from the conveyor to the drying means; and means for removing dried capsules from the second conveyor;

an inspection and rejection apparatus comprising:

photoelectric inspection means adjacent to the portion of the first conveyor in the path between the binder applying means and the transfer means, said photoelectric inspection means comprising means for producing a defect signal upon detection of a capsule having a defective band of liquid binder;

rejection means, located adjacent to the portion of the second conveyor in the path between the transfer means and the means for removing dried capsules, for removing selected capsules from the capsule-carrying buckets of the second conveyor; and



control means responsive to defect signals produced by the photoelectric inspection means for causing the removing means to remove capsules defective bands on which caused the inspection means to produce the defect signals;

in which each capsule-carrying bucket of the second conveyor has a row of capsule-receiving recesses, and in which the means for removing selected capsules comprises a plurality of air nozzles, there being one air nozzle adjacent to the path of each recess, the nozzle being arranged to project a short-duration stream of air toward a recess as it passes the nozzle to blow a capsule out of the recess; and

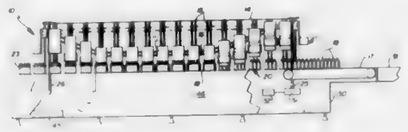
in which the second conveyor comprises a pair of conveyor chains and in which each capsule-carrying bucket is carried between the pair of conveyor chains and rotatable about a horizontal axis extending between the conveyor chains, and in which each bucket is weighted so that the openings of its recesses normally face upwardly and having guide means, located adjacent to the means for removing selected capsules, for restraining said buckets against rotation as they pass the air nozzles, whereby the air streams projected by said nozzles are prevented from causing rotation of the buckets.

4,802,324

VERTICAL CARTONING ASSEMBLY AND METHOD

William G. Everson, Deerwood, Minn., assignor to Minnesota Automation, Inc., Crosby, Minn.

Filed Apr. 14, 1988, Ser. No. 181,651
Int. Cl.[4] B65B *21/00, 5/06, 35/44*
U.S. Cl. 53—398 20 Claims



15. A process for vertically lowering partially erected and opened cartons onto moving preselected product groups comprising:

(a) providing a line conveyor for moving preselected product groups,

(b) providing a cartoner assembly having a frame, a carton transfer device, a cam rail structure having sloping sections, and a continuous supply of carton receiving baskets for engagement with said cam rail structure and for lowering cartons onto the product groups,

(c) providing a supply of flat and folded cartons for said cartoner assembly,

(d) placing individual cartons from said carton supply into the carton holders of said cartoner assembly,

(e) lowering and guiding said carton baskets onto the moving product groups,

(f) sealing the cartons beneath said product groups, and

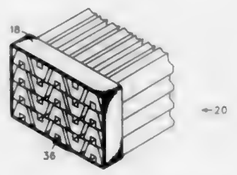
(g) removing the cartoned products from the line conveyor.

4,802,325

METHOD OF PACKAGING

William Duncan, Glasgow, United Kingdom, assignor to Motorola Inc., Schaumburg, Ill.

Filed Jul. 20, 1987, Ser. No. 75,787
Int. Cl.[4] B65B *35/50, 25/00*
U.S. Cl. 53—444 20 Claims



1. A method of packaging semiconductor integrated circuit components for shipping comprising:

loading the components in rails;

assembling a plurality of the rails into a composite self-supporting structure; and

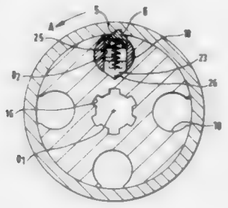
wrapping the composite structure in an anti-static envelope so as to form a quasi-rigid anti-static package.

4,802,326

OVERLOAD COUPLING FOR PROTECTING DRIVE TRAINS ESPECIALLY ON AGRICULTURAL MACHINES

Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH

Filed Oct. 14, 1987, Ser. No. 108,732
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1986, 3635163
Int. Cl.[4] A01O *75/18;* F16D *7/04*
U.S. Cl. 56—10.3 16 Claims



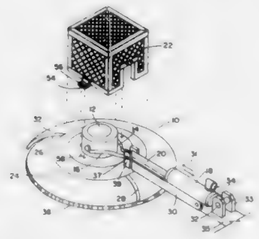
1. An overload coupling for protection against overloading of a drive train, in particular for agricultural machines, comprising a first coupling part, a second coupling part rotatably mounted to the first coupling part for relative rotation about a coupling axis, said first coupling part having a plurality of recesses therein, a rotor mounted for rotation about a rotor axis in each of said recesses, said rotor axes each being spaced from and parallel to said coupling axis, said first coupling part also having respective openings therein to said recesses for communication with said second coupling part, and a spring-loaded drive cam mounted for movement in each rotor and for engagement through said opening with said second coupling part for coupling said first and second coupling parts together.

4,802,327

MOWER ATTACHMENT

Charles A. Roberts, Star Route, Box 24, Vian, Okla. 74962

Filed Sep. 4, 1986, Ser. No. 903,697
Int. Cl.[4] A01D *34/86;* B26D *1/46*
U.S. Cl. 56—15.2 10 Claims



1. A cutting apparatus which comprises:

a disc with a groove in its circumference;

a chain having cutting teeth on its outer edge and V-notches in its inner edge and positioned in said groove;

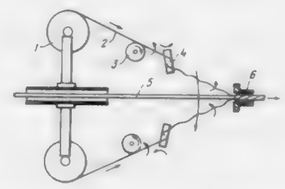
pins extending through said groove and said notches, but not through the material of said chain, to prevent excessvie slippage between said chain and said disc to provide for transfer of rotational force between said disc and the V-notch of said chain.

4,802,328

METHOD OF MANUFACTURING WIRE ROPES AND WIRE ROPE TWISTING MACHINE FOR EFFECTING THE SAME

Georgy V. Senyagin, and Anatoly V. Kazakov, both of Tashkent, U.S.S.R., assignors to Nauchno-Issledovatelsky Proektao-Konstruktorsky I Tekhnologichesky Kabelny Institut Niki Po "Sredazkabel", U.S.S.R.

Filed Feb. 25, 1987, Ser. No. 44,034
Int. Cl.[4] D07B *3/02, 3/06;* H01B *13/02*
U.S. Cl. 57—9 10 Claims



1. A method of manufacturing a wire rope consisting of a plurality of round steel wires helically twisted on a core wire, comprising the steps of deforming said plurality of round steel wires by applying two types of bending actions to said round steel wires which change the directions of bending including flat bending and helical bending, said round steel wires thereby being imparted with residual deformation along a helical line; and twisting said deformed round steel wires on the core wire.

9. A wire rope twisting machine for manufacturing wire ropes, comprising a successively arranged drum (10) with a core (11) wound thereon, a hollow shaft (14), a rotor (15) carrying reels (1) of wire (2) and mounted on said hollow shaft (14) through which the core (11) extends, a device (17) for imparting residual deformation to the wires (2) secured in the outlet portion of said hollow shaft (14) coaxially therewith, a reducing die (19) in which the deformed wires (2) are twisted around the core (1) and reduced, a pull mechanism (21) and a take-up drum (22) for the rope (20), wherein said device (17) for imparting residual deformation to the wires (2) comprises a body (23) having first and second successive supports (26, 27) for each wire (2) arranged therein, said first support (26) being capable of freely rotating about its geometric axis (28a), and said second support (27) being capable of freely rotating about its geometric axis (31a) and adjustingly turning about an axis (33) extending normally to the geometric axis (31a) of the second support (27).

4,802,329

COMBINED SPINDLE AND BOBBIN

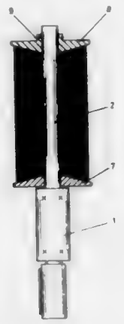
Günther Oppl, Hammelburg; Hermann Pickel, Schondra-Schildeck, and Horst Rauch, Elfershausen, all of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer KGaA, Fed. Rep. of Germany

Filed Sep. 28, 1987, Ser. No. 101,816
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1986, 3635338
Int. Cl.[4] B65H *75/02*
U.S. Cl. 57—129 12 Claims

1. A combination spindle and spindle core for the rewinding, respooling or twisting of a yarn, wherein the spindle comprises

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a rotatable spindle part and the spindle core is nonseparably supported to the rotatable part, the spindle core having an



exterior that is constructed and shaped as a bobbin for directly receiving yarn thereon and for supporting yarn thereon.

4,802,330

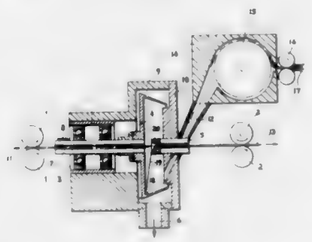
COMBINED CARPET YARNS BY OPEN END ROTOR SPINNING

Paul W. Yngve, Wilmington, Del.; Peter Artzt, Reutlingen, Fed. Rep. of Germany; Gerhard Egbers, Reutlingen, Fed. Rep. of Germany; Ullrich Stark, Stuttgart, Fed. Rep. of Germany, and Heinz Müller, Metzingen-Neuhausen, Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 4,608, Jan. 20, 1987, Pat. No. 4,729,214. This application Sep. 11, 1987, Ser. No. 95,224

Int. Cl.[4] D02G *3/38*

U.S. Cl. 57—238 **9 Claims**



1. A combined yarn suitable for use in carpets and upholstery having continuous filament yarn and staple yarn characterized by:

(a) the staple yarn being open end spun using suitable machine settings and having staple fibers 75–200 mm in length;

(b) a balanced ply;

(c) the combined yarn having a mechanical twist of 1.5–7 tpi; and

(d) the staple fibers having a denier per fiber of 6–34.

4,802,331

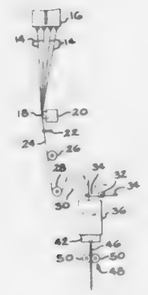
GLASS FIBER BULK STRAND ROVING

Jerome P. Klink, and Hellmut I. Glaser, both of Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 44,182, Apr. 30, 1987, Pat. No. 4,741,151. This application Sep. 21, 1987, Ser. No. 98,914

Int. Cl.[4] D02G *3/18, 3/22, 3/24;* **D02J** *1/02*

U.S. Cl. 57—246 **13 Claims**



1. A bulk strand roving product comprising: a plurality of strands, each of said strands comprising a plurality of fibers, each of said strands having a plurality of axially extending loops and a plurality of unbroken, cross-axially extending loops formed therein, said axially extending loops and said cross-axially extending loops being interengaged and interwined with one another to form an entangled structure.

4,802,332

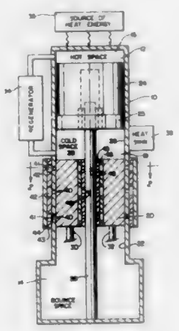
SLIDING SURFACE LUBRICATION PARTICULARLY ADVANTAGEOUS FOR A FREE PISTON STIRLING ENGINE

William T. Beale, Athens, Ohio, assignor to Sunpower, Inc., Athens, Ohio

Filed Nov. 20, 1987, Ser. No. 123,296

Int. Cl.[4] F02G *1/04*

U.S. Cl. 60—520 **11 Claims**



1. In an engine having opposed spaces that are each filled with fluid and have an imposed cyclic pressure difference variation, the engine further having a piston member that separates said spaces, has an outer bearing surface, and moves within and relative to a female bearing member having an interior bearing surface interfacing the bearing of the piston, a lubricating means comprising a plurality of fluid cavities opening to the interfacing bearing surfaces for the cyclic intake and exhaust of said fluid out of phase with said imposed cyclic pressure variation.

4,802,333

THRUSTERS

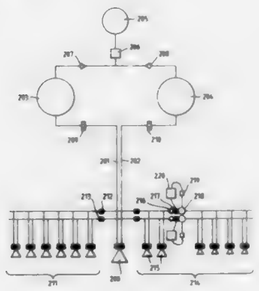
Peter Smith, Portsmouth, England, assignor to The Marconi Company Limited, England

Filed Apr. 13, 1987, Ser. No. 37,806

Claims priority, application United Kingdom, Apr. 16, 1986, 8609228

Int. Cl.[4] F02K *9/42*

U.S. Cl. 60—260 **2 Claims**



1. An attitude and orbit control thruster for use in a spacecraft having liquid bipropellant thrusters, comprising:

a combustion chamber having a thrust nozzle;

a fuel tank for containing a supply of liquid fuel;

an oxidizing agent tank for containing a supply of liquid oxidizing agent;

a pair of vaporizing chambers, each having an inlet and an outlet;

first conduit means connected between the fuel tank and the inlet of the one of the vaporizing chambers for conveying the fuel along a first path to said one vaporizing chamber for vaporization therein to form a vaporized fuel, said first conduit means being further operative for conveying the liquid fuel to said liquid bipropellant thrusters;

second conduit means connected between the oxidizing agent tank and the inlet of the other of the vaporizing chambers for separately conveying the oxidizing agent along a second path, separate from said first path, to said other vaporizing chamber for vaporization therein to form a vaporized oxidizing agent, said second conduit means being further operative for conveying the liquid oxidizing agent to said liquid bipropellant thrusters; and

means connected between the outlets of the vaporizing chambers and the combustion chamber, for delivering the vaporized fuel and the vaporized oxidizing agent to the combustion chamber for joint combustion therein to generate combustion gases for expansion through the thrust nozzle to produce thrust.

4,802,334

AUGMENTOR FUEL SYSTEM

Matthias Eder, Stuart, and Walter B. Kerr, West Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 5, 1987, Ser. No. 104,608

Int. Cl.[4] F02K *3/10*

U.S. Cl. 60—261 **5 Claims**

1. A fuel supply system for the augmentor of a gas turbine engine comprising:

fuel supply means for supplying fuel under pressure;

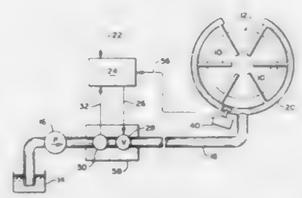
a plurality of augmentor spray bars located in the engine gas stream;

at least one manifold supplying said spray bars;

conduit means for conveying fuel from said fuel supply means to said manifold;

valve means for modulating the fuel flow quantity;

means for determining the desired fuel flow to the augmentor;



sensing means for sensing the presence of liquid, located in said supply manifold area; and

control means for providing a high fuel flow in response to the absense of liquid at said sensing means, and for providing the desired flow in response to the presence of liquid at said sensing means.

4,802,335

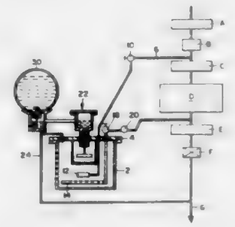
METHOD OF AND APPARATUS FOR IMPROVING THE EFFICIENCY OF INTERNAL COMBUSTION ENGINES

Howard Bidwell, Granby, Mass., assignor to Stephen Masiuk, Granby, Mass.

Continuation-in-part of Ser. No. 821,342, Jan. 22, 1986, which is a continuation-in-part of Ser. No. 623,499, Jun. 22, 1984, abandoned, which is a continuation-in-part of Ser. No. 402,970, Jul. 29, 1982, Pat. No. 4,484,444. This application Dec. 3, 1987, Ser. No. 128,387

Int. Cl.[4] F01N *3/04;* **F02M** *25/06*

U.S. Cl. 60—274 **12 Claims**



1. In a method of feeding magnesium powder into the air intake of an internal combustion engine including the step of variably regulating the rate of flow of the magnesium powder into the engine air intake and the step of variably regulating the rate of flow of the magnesium powder in accordance with the engine speed and load, the additional step of mixing the magnesium powder with water and agitating and heating the magnesium enriched water mixture with a flow of exhaust fumes diverted from the engine exhaust manifold and induced into the lower portion of the mixture.

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4,802,336

HYDROSTATIC TRANSMISSION HAVING A CONTROL AND REGULATING DEVICE FOR ADJUSTING THE DRIVING TORQUE WITH SUPERIMPOSED OUTPUT POWER LIMIT REGULATION

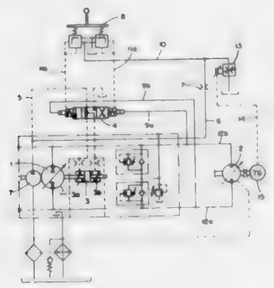
Albert Mayr, Senden, and Wolfgang Wiest, Tiefenbach, both of Fed. Rep. of Germany, assignors to Hydromatik GmbH, Ulm/Donau, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,467

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1980, 3042837

Int. Cl.⁴ F10H *39/46*

U.S. Cl. 60—448 **8 Claims**



1. A hydrostatic transmission having a control and regulating device for adjusting the driving torque with superimposed output power limit regulation, comprising:

a drive unit comprising a hydraulic pump having a variable output, and a hydraulic motor arranged to be operated by the hydraulic pump;

a servo-adjusting device arranged to control the output of the hydraulic pump in order to adjust the working pressure in the transmission, said device comprising a servo-piston arranged for two-way adjustment of the hydraulic pump in two directions, and a control valve arranged to subject the servo-piston to an adjusting pressure so that the piston can adjust the operation of the hydraulic pump;

a servo-valve spool provided in said control valve and arranged, in dependence upon the desired direction of adjustment of the hydraulic pump, to be subjected on the one hand to a control pressure and on the other hand to the working pressure prevailing in the transmission or regulating pressure proportional to the working pressure;

a variable operating device comprising a pressure regulator for adjusting said control pressure from a constant supply pressure provided by an auxiliary pump;

and a regulating valve arranged to limit the control pressure, or indirectly the supply pressure for the variable operating device, and adjustable in dependence upon the amount of working fluid running through the drive unit whereby the regulating valve operates in dependence upon the discharge amount through the drive unit only when a predetermined minimal discharge amount is reached.

4,802,337

FLAMEHOLDER FOR A TURBOJET ENGINE AFTERBURNER

Jacques E. J. Caruel, Maincy, France, assignor to Societe Nationale d-Etude et de Construction de Moteurs d-Aviation (SNECMA), Paris, France

Filed Feb. 27, 1987, Ser. No. 19,929

Claims priority, application France, Feb. 27, 1986, 86 02699

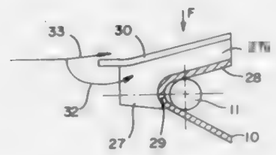
Int. Cl.⁴ F02K *3/10*

U.S. Cl. 60—749 **6 Claims**

1. A flameholder structure for a turbojet engine afterburner having an afterburner duct to direct turbojet engine gases from an upstream portion toward a downstream portion, the flameholder structure comprising:

(a) an annular flameholder ring having a substantially "V"-shaped cross-section defined by a radially outer leg portion and a radially inner leg portion interconnected at upstream ends by a base portion such that the "V" shape opens in a downstream direction; and

(b) a plurality of substantially radially extending fins regularly distributed about the periphery of the annular flame-



holder ring and extending radially outwardly therefrom into the turbojet engine gas flow from only the radially outer leg portion of the flameholder ring, each fin having at least a downstream portion attached to the radially outer leg portion and in contact therewith along substantially its entire length, each downstream portion disposed at an angle to the direction of the gas flow so as to impart a circumferential rotation to that portion of the gas flow passing across the fins.

4,802,338

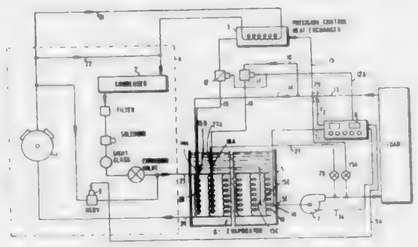
PRECISION-CONTROLLED WATER CHILLER

Philip D. Oswalt, Indianapolis; Harold R. Short, and Steven E. Wash, both of Greenwood, all of Ind., assignor to Advantage Engineering Incorporated, Greenwood, N.J.

Continuation of Ser. No. 856,033, Apr. 25, 1986, Pat. No. 4,769,998. This application Feb. 16, 1988, Ser. No. 155,764

Int. Cl.⁴ F25D *17/02*

U.S. Cl. 62—98 **13 Claims**



1. A method of precisely controlling the temperature of a water-based liquid coolant used for cooling processing equipment in an industrial process and comprising the steps of:

circulating the process coolant through a load circuit including the processing equipment to remove heat from the processing equipment by transferring the heat from the processing equipment to the coolant;

returning process-heated coolant through a tank having refrigerant conveying and evaporating heat exchanger means of a refrigeration system therein;

sensing temperature of returning coolant from the process at a coolant return line from the equipment to the tank; and

responding to sensed temperature below a desired point to transfer heat from hot gas in said refrigerating system to a portion of the coolant returned to the tank.

4,802,339

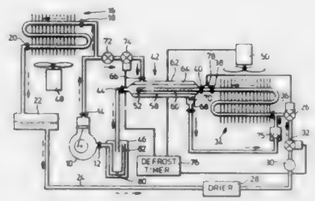
HOT GAS DEFROST SYSTEM FOR REFRIGERATION SYSTEMS AND APPARATUS THEREFOR

Charles Gregory, 1348 #5 Highway, Burlington, Ontario, Canada (L7R 3X4)

Filed Jul. 29, 1987, Ser. No. 78,950

Int. Cl.⁴ F25B *47/00*

U.S. Cl. 62—196.4 **40 Claims**



1. A liquid refrigerant vaporizer for use in a refrigeration system employing hot refrigerant fluid to defrost a coil or coils thereof, the vaporizer comprising:

first inner, second middle and third outer pipes mounted one within the other to provide a first inner flow passage in the first inner pipe, a second annular flow passage between the first inner and second middle pipes, and a third annular flow passage between the second middle and third outer pipes;

wherein the first inner pipe is adapted for connection at one end into the refrigeration system so as to receive refrigerant fluid exiting from the coil under defrost, is closed at the other end, and is provided in its wall with a plurality of bores distributed along its length so that the refrigerant fluid flowing therein exits therefrom through the bores to impinge against the inner wall of the second middle pipe for heat exchange therewith;

the total flow area provided by all of the said bores being at least 0.5 times the cross-sectional flow area of the first inner flow passage;

wherein the second middle pipe is of heat conductive material, the second annular flow passage is closed at one end and is adapted for connection at its other end into the refrigeration system for delivery of the refrigerant fluid therefrom;

wherein the cross-sectional flow area of the said second annular flow passage is at least 0.5 times the cross-sectional flow area of the first inner flow passage;

wherein the third annular flow passage has an inlet thereto and an outlet therefrom for the hot refrigerant fluid, the inlet and the outlet being spaced from one another for the hot refrigerant fluid to contact the outer wall of the second middle pipe for heat exchange therewith; and

a refrigerant fluid flow restriction at or connected to the third annular flow passage outlet for producing an increase in back pressure of the refrigerant fluid in the second annular flow passage.

4,802,340

REFRIGERATED SALAD BAR

Thomas M. Johnson, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Oct. 28, 1987, Ser. No. 113,704

Int. Cl.⁴ F25B *49/00*; A47F *3/04*

U.S. Cl. 62—229 **8 Claims**

1. A refrigerated appliance for cooling foodstuffs or the like comprising an enclosure having a refrigeration unit mounted therein and an insulated storage compartment for storing foodstuffs, the improvement comprising;

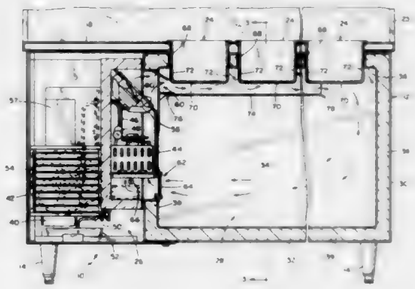
said enclosure having a top wall provided with one or more openings therein communicating with said compartment,

said openings adapted for receiving foodstuff containers having heat transferring bottom wall surfaces,

a cool air inlet from said refrigeration unit for providing cool air to said storage compartment,

said inlet being disposed in proximity to said top wall of said enclosure and adapted to direct cool air across the bottom wall surfaces of said containers,

a duct having one end configured to receive cool air issuing from said inlet and having a second end open to said compartment,



said compartment having a return air opening providing for the return to the refrigeration unit of air issuing from said second end of said duct,

said duct disposed in closely spaced relation to the bottom wall surfaces of said foodstuff containers, and

a baffle within said duct for diverting cool air away from one of said foodstuff containers disposed proximate to said cool air inlet,

wherein said cool air is concentrated in said duct for maintaining the air within the duct at a temperature below the temperature of the compartment.

4,802,341

ADSORPTION APPARATUS TEST AS AN ELECTRO-HEATING STORAGE

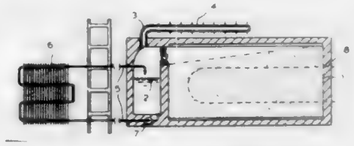
Peter Maier-Laxhuber, Sammweberstrasse 14, D-8000 Munchen 60, and Fritz Kaubek, Gasparistrasse 5 A, D-8000 Munchen 71, both of Fed. Rep. of Germany

Filed Jan. 28, 1985, Ser. No. 695,484

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1984, 3413349

Int. Cl.⁴ F25B *27/00*

U.S. Cl. 62—235.1 **10 Claims**



1. Adsorption apparatus for use as electro-heat storage by using the heat pumping effect, comprising:

an adsorption substance container containing an adsorption substance, said adsorption substance being capable of adsorbing water and being heatable by an electric heating system as to desorb steam from said adsorption substance;

a condenser for liquifying said steam to form a condensate;

a collecting container for collecting said condensate, said adsorption substance container being in vapor communication with said collecting container by a steam line, said condenser being in vapor communication with said collecting container so that desorbed steam from said adsorp-

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tion substance can be liquified by said condenser to form said condensate and said condensate collects in said collecting container;
a heat collector for collecting ambient heat;
a water cycle connected between said collecting container and said heat collector; and
a circulation pump installed in said water cycle for circulating said condensate.

4,802,342
PROTECTIVE GRILLE AND AIR FLOW STRAIGHTENER FOR TRANSPORT REFRIGERATION APPARATUS
Alan D. Gustafson, Eden Prairie, and Richard F. Unger, New Prague, both of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.
Filed Apr. 18, 1988, Ser. No. 182,655
Int. Cl.[4] B60H *1/32*
U.S. Cl. 62—239 **3 Claims**

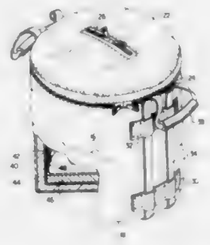
1. Transport refrigeration apparatus including a condenser section containing a U-shaped refrigerant condenser coil having a horizontally oriented bight and vertically oriented leg portions which define a central fan chamber having a vertically oriented air discharge side, and a fan in the fan chamber which draws condenser air into the fan chamber through the bight and leg portions of the condenser coil, the improvement comprising:
air flow straightening means disposed across the air discharge side of the fan chamber to reduce short cycling of discharge air back into the leg portions of the condenser coil,
said air flow straightening means including a metallic grille having a major flat sheet metal portion which includes a plurality of horizontally spaced, vertically oriented louvers for straightening discharge air flow in a vertical plane,
said louvers each having upper and lower ends, and flat major portions intermediate said upper and lower ends, with said upper and lower ends being integrally joined to the major flat sheet metal portion of the grille via 90 degree twists of the joining metal which direct the flat major portions of the louvers perpendicular to the flat major sheet metal portion of the grille,
said vertically oriented louvers being horizontally spaced by a dimension selected to additionally provide the function of a protective grille.

4,802,343
SELF-COOLING CONTAINER
Arthur G. Rudick, Marietta; Richard H. Heenan, Atlanta, and Ashis S. Gupta, Marietta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Jul. 1, 1987, Ser. No. 68,876
Int. Cl.[4] F25D *3/10*
U.S. Cl. 62—294 **29 Claims**



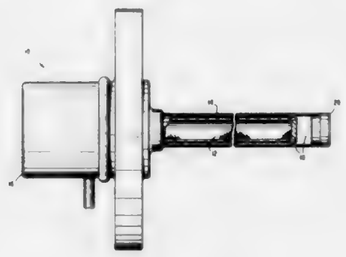
1. A self-cooling container comprising:
(a) a hollow body for the storage of a beverage,
(b) opening means on said hollow body for providing an opening therein for dispensing said beverage therethrough,
(c) a cooling chamber within said hollow body and affixed thereto and having cooling means therein, and
(d) a directing means within said hollow body for directing said beverage to flow into direct contact with said cooling chamber prior to being dispensed from said container.

4,802,344
PORTABLE COOLER FOR BEVERAGE KEGS
Mark L. Livingston, 58 W. 650 North, Clearfield, Utah 84015, and Michael Babcock, 1234 W. 1350 South, Syracuse, Utah 84041
Continuation of Ser. No. 69,771, Jul. 6, 1987, abandoned. This application Apr. 12, 1988, Ser. No. 183,364
Int. Cl.[4] F25D *3/08*
U.S. Cl. 62—372 **5 Claims**



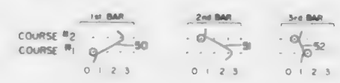
1. A thermally insulated portable cooler for carrying and storing a beverage keg having a dispensing tap projecting outwardly therefrom, said cooler comprising:
a hollow cylindrical flexible outer cover member having an open top end portion, a cylindrical side wall portion, and a circular bottom wall;
a hollow cylindrical flexible inner cover member adapted to coaxially receive the beverage keg, said inner cover member having an open top end portion, a cylindrical side wall portion, and a circular bottom wall, said inner cover member being coaxially received within said outer cover member with said top end portion of said inner cover member being circumferentially secured to said open top end portion of said outer cover member, said bottom wall and said sidewall portion of said inner cover member being respectively spaced inwardly from said bottom wall and side wall portion of said outer cover member and defining therewith an internal cavity having a hollow cylindrical side portion coaxial with said outer and inner cover member, and a lower end portion positioned between said bottom walls;
relatively flexible thermal insulating material operatively disposed within said side portion of said internal cavity;
a generally disc-shaped support member coaxially positioned in said lower end portion of said internal cavity, said support member being formed from a relatively rigid thermal insulating material and adapted to support the bottom end of a beverage keg or the like operatively received in said inner cover member;
carrying strap means, firmly secured to the outer surface of said outer cover member, for facilitating lifting and carrying of said cooler and the beverage keg disposed therein, said carrying strap means having outer end portions extending upwardly along radially opposite portions of said sidewall portion of said outer cover member, and a longitudinally central portion extending generally diametrically across said bottom wall of said outer cover member, the opposite outer ends of said carrying strap means having handle means operatively associated therewith and adapted to be grasped and lifted by a person carrying said cooler and the beverage keg disposed therein, the lifting force on said handle means being transmitted to the bottom end of the keg through said relatively rigid support member via said longitudinally central portion of said carrying strap means;
thermally insulated lid means movably secured to said top end portion for selectively opening and closing the same;
fastening means for releasably holding said lid means in a closed position; and
means for defining a closable opening in said cooler through which the dispensing top of the keg may outwardly project.

4,802,345
NON-TEMPERATURE CYCLING CRYOGENIC COOLER
Daniel L. Curtis, Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Dec. 3, 1987, Ser. No. 128,233
Int. Cl.[4] F25B *19/00*
U.S. Cl. 62—514 R **7 Claims**



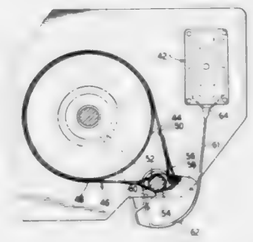
1. In a cryogenic cooler which includes a dewar spaced from a cold finger and which is arranged to operate at an operating temperature, the improvement in maintaining thermal conductivity between the cold finger and the dewar and thereby to prevent temperature cycling in the cooler, comprising a gas having the characteristic of remaining in its gaseous state at the operating temperature and, therefore, to remain in its thermally conductive state.

4,802,346
METHOD OF WARP KNITTING
Bahrat J. Gajjar, Wilmington, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.
Filed Dec. 21, 1987, Ser. No. 135,395
Int. Cl.[4] D04B *21/00*
U.S. Cl. 66—195 **5 Claims**



1. A method of warp knitting a plurality of threads from at least two guide bars on a warp knitting machine operating in a repeating stitch pattern which comprises the steps of: operating first guide threads in a repeating stitch pattern of alternating laid-in and knit-in stitches, while operating second guide threads in a repeating stitch pattern that is opposite to said first guide threads stitch pattern wherein when said first guide threads are laid-in, said second guide threads are knit-in, and subsequently repeating both stitch patterns.

4,802,347
PUMP MOTOR/BASKET BRAKE FOR AN AUTOMATIC WASHER
Arne M. Nystuen, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Dec. 24, 1987, Ser. No. 137,601
Int. Cl.[4] D06F *13/02, 37/40*
U.S. Cl. 68—23.7 **12 Claims**



1. For use in an automatic washer having a stationary tub, a selectively rotatable basket, a vertical oscillatable agitator, a first motor for selectively driving said agitator and said basket, a pump for discharging wash liquid from said tub, a second motor for selectively driving said pump, and a brake mechanism for selectively restraining said basket against rotational movement, said brake mechanism including a brake member selectively engageable with said basket to provide a desired braking action, means for activating said brake mechanism comprising:
means for biasing said brake member toward engagement with said basket to effect braking,
a displaceable stator portion in said second motor, and
linkage means extending between said brake member and said stator portion, whereby, energization of said second motor will result in movement of said stator portion thereby moving said brake member away from engagement with said basket to release braking.

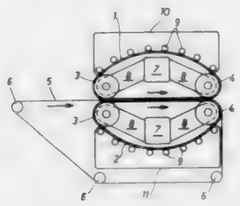
VOL 1099 ISS 1 FEB 7 1989 UMI

4,802,348

APPARATUS FOR TENTERING HIDES

Lecas Viljaamaa, Maineamstrasse 179, Konstanz, Fed. Rep. of Germany

Continuation of Ser. No. 770,959, filed as PCT F185/00009 on Jan. 24, 1985, published as WO85/03309 on Aug. 1, 1985 abandoned. This application Sep. 10, 1987, Ser. No. 97,365
Claims priority, application Finland, Jan. 25, 1984, 840289
Int. Cl.⁴ C14B *1/02*
U.S. Cl. 69—33 12 Claims



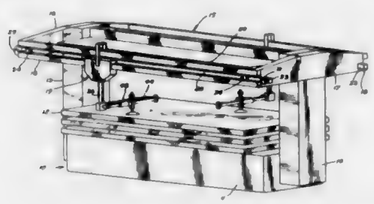
1. An apparatus for tentering a hide, said apparatus comprising first and second angular or hose-like hide tentering mats (1, 2), each open at opposite sides thereof, said mats being adapted to circulate along endless runs in predetermined directions so that a portion of the first mat is pressed in face-to-face opposing relation with and moves in the same direction as a portion of the second mat, said mats being made of an elastically extensible material, and mat stretching means for stretching both said portions of said first and second mats in a second direction crosswise to said direction, wherein the improvement comprises means for sealing (22, 23) said opposite sides of each of said first and second mats so as to respectively form closed pressure chambers or spaces, and wherein said mat stretching means comprises edge-gripping track shoes (12) attached to said mats, and guide tracks (15) for defining running paths for said track shoes, said guide tracks being adapted to simultaneously advance in said second direction and diverge from each other (1) in order to produce diverging running paths for said track shoes (12) and (2) so as to stretch said portions of said mats in said second direction crosswise relative to said direction.

4,802,349

HORIZONTAL BED POWER ASSIST HIDE APPLICATOR

Carleton E. Jesarick, Welch; Rudolph O. Marohl, Red Wing, and Robert J. Weber, Hastings, all of Minn., assignors to Sargent Sail (Delaware), Inc., Red Wing, Minn.

Filed Jul. 17, 1987, Ser. No. 74,686
Int. Cl.⁴ C14B *1/02, 1/58*
U.S. Cl. 69—39 25 Claims



1. A power assist hide applicator apparatus for flattening and stretching a wet hide against the smooth horizontal planar surface of the flat bed of a vacuum hide drier upon which a hide is applied for subsequent drying on the bed according to conventional tannery practice, said apparatus being adapted for positioning adjacent to the bed of a vacuum drier, said apparatus comprising:

(A) an elongated horizontal arm, said arm comprising a horizontal slicker support rotatable out of and into position above and closely adjacent to the upper surface of the drier bed;

(B) support means for said horizontal arm, said support means being adapted for positioning spaced from but adjacent to the bed of a vacuum drier;

(C) a rotary connection between said support means and one end of said horizontal arm whereby said arm is rotatable in a plane parallel to and closely adjacent to the upper surface of the drier bed;

(D) means for rotating said arm relative to said support means;

(E) means supporting a slicker element from said horizontal arm, said slicker element having a smooth straight edge rotatable in a plane parallel to the surface of the drier bed;

(F) separate motor power means associated with the slicker element for rotating the same;

(G) further separate independent power thrust drive means associated with the slicker element for moving the element into and out of contact with a wet hide carried on the bed, and exerting force on the slicker element; and

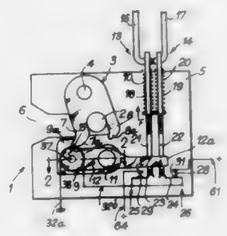
(H) electric control means for actuating the several power means for manipulating the slicker element over the surface of a hide in simulation of manual hide application.

4,802,350

ASSEMBLY OF A DOOR LATCH AND ANTI-THEFT AND ANTI-ATTACK DEACTIVATING DEVICE FOR SAID LATCH, AND LATCH WHICH IS PART OF SAID ASSEMBLY

Pierre Periou, Cergy Pontoise, France, assignor to Rockwell-CIM, France

Filed Apr. 25, 1988, Ser. No. 185,638
Claims priority, application France, Apr. 29, 1987, 87 06131
Int. Cl.⁴ E05B *53/00*
U.S. Cl. 70—264 11 Claims



1. An assembly of a door latch and a device for deactivating said latch, in particular for a vehicle door, in which assembly the latch comprises a keeper for fixing on a frame of the door, a latch case, a fork member pivotally mounted in the latch case in which fork member is provided an opening for receiving said keeper, said fork member being provided with two branches for retaining the keeper therebetween, a catch pivotally mounted on the latch case and capable of being placed in a position for locking the fork member onto the keeper for maintaining the door closed, means for shifting the catch and permitting the locking and unlocking of the fork member and capable of being rendered inoperative by the deactivating device, wherein:

(a) the catch shifting means comprise a control lever, at least one manual control system for said lever connected to said lever to permit the shifting of the catch for the locking of the latch, and an electromechanism capable of maintaining the control lever coupled in rotation with the catch so long as said electromechanism is not supplied with electric current and capable of releasing the lever relative to the catch when the electromechanism is supplied with current;

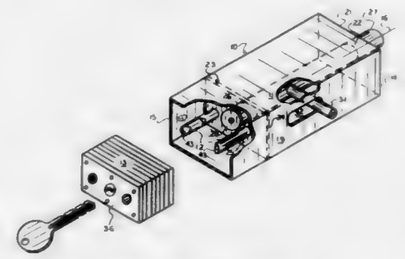
(b) the deactivating device comprises a centralized electric control circuit associated with the manual control system for the lever and in which control circuit are inserted at least one switch capable of being closed by an approach travel of said control system, and the electromechanism, which is provided with means for automatically releasing the lever relative to the catch, said means for releasing being actuated after activation of the electric deactivating circuit by a closure of said switch which supplies current to the electromechanism, and means for automatically producing said closure of said switch by a manual attempt to actuate the control system for the lever.

4,802,351

SLIDING BOLT LOCK FOR GATES

George Kojak, 2241 23rd St., Beaumont, Tex. 77706

Filed May 9, 1988, Ser. No. 191,976
Int. Cl.⁴ E05B *67/38*
U.S. Cl. 70—56 10 Claims



1. A lock for gate structures comprising:

(a) a sturdy metal housing elongated upon a centered axis between front and rear extremities, and comprised of opposed side panels and opposed end panels, said panels being joined in a box-like configuration having as interior of uniformly rectangular contour,

(b) a first transverse wall disposed within said housing adjacent said front extremity in perpendicular orientation to said axis and having an aperture therein centered upon said axis,

(c) a second transverse wall, bounded by opposed interior and exterior surfaces, disposed with said housing close to said rear extremity in perpendicular orientation to said axis and having an aperture therein centered upon said axis,

(d) two parallel shackle posts attached to the exterior surface of said second transverse wall at sites equidistantly spaced from said axis and extending perpendicularly therefrom to distal extremities located rearwardly of the rear extremity of the housing,

(e) bolt means having forward and rearward extremities defining a length greater than the distance of separation between said transverse walls,said bolt means being slidably held by the apertures in said walls,

(f) a manipulating arm perpendicularly attached to said bolt and extending through a close-fitting slotted opening in one of said end panels,

(g) means for limiting the extent of sliding motion of the bolt means in forward and rearward directions,

(h) a padlock configured to enter the rear extremity of said housing while engaging said shackle posts, said padlock having a rearwardly directed key-receiving extremity and an opposite, forwardly directed bottom extremity, whereby

(i) when said padlock is emplaced upon said shackle posts, the rearward extremity of said bolt means abuts against the bottom extremity of said padlock, thereby fixing the forward extremity of the bolt means in a disposition forwardly displaced from the front extremity of the housing, and

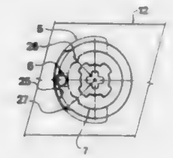
(j) when said padlock is removed, said bolt means can slide rearwardly so that its forward extremity no longer protrudes forwardly of said housing.

4,802,352

DOUBLE-THROW BAR LOCK HAVING INDEPENDENTLY OPERABLE CYLINDERS

Gian P. Andreoli, Artogne, Italy, assignor to ISEO Serrature SPA, Pisogne, Italy

Filed Jun. 8, 1987, Ser. No. 59,499
Claims priority, application Italy, Jul. 25, 1986, 21526 A/86
Int. Cl.⁴ E05B *17/04*
U.S. Cl. 70—118 9 Claims



1. A double-throw bar lock operable independently from opposite sides, the lock comprising an external cylinder having a tang and an internal cylinder or knob having a tang, two toothed plates and a rotatable cross element which, when rotated, transmits movement to said plates, said cross element being rotatable by an internal mechanism, provided for operation from a first side of the lock and an external mechanism, provided for operation from a second side of the lock, each of said mechanisms comprising:

a base plate or a counter-plate, respectively;

a recess provided in the base plate and in the counter-plate, said recess having a smaller diameter sector and a larger diameter sector, the sectors being smoothly joined, the larger diameter sector defining a dead region;

a rotary element rotatable within said recess, said rotary element having a raised conformation along part of an outer circumference, a seat being provided in said rotary element for entraining a cylindrical roller, the rotary element having engagement means for engaging the tangs of the external cylinder or the internal cylinder or knob;

a disc rigid with the cross element and having notches, the notches of the disc in the internal mechanism being angularly aligned with the notches of the disc in the external mechanism;

a slider; and

a pressure means for maintaining the slider in contact with the cross element;

whereby when said roller is positioned in one of said notches, the rotary element and the disc rotate together and when said roller is positioned in said dead region, the rotary element is free to rotate independently of the disc.

4,802,353

BATTERY-POWERED DOOR LOCK ASSEMBLY AND METHOD

Thomas E. Corder, Danville, and James B. Mullin, San Jose, both of Calif., assignors to Intelock Corporation, Pleasanton, Calif.

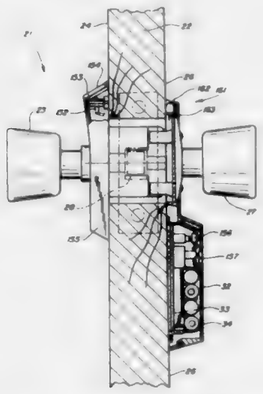
Filed Aug. 7, 1987, Ser. No. 83,668
Int. Cl.⁴ E05B *47/00*
U.S. Cl. 70—277 26 Claims

1. In a lock assembly including movable bolt means, movable handle means coupled to move said bolt means to an open

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position, and locking means mounted for movement between a locked position securing said bolt means against movement and unlocked position releasing said bolt means, wherein the improvement in said lock assembly comprises:

said locking means moving in response to movement of said handle means and normally being supported in said unlocked position;



said locking means moving to said locked position prior to movement of said bolt means to said open position upon movement of said handle means; and

electromagnetic means responsive to an input signal for energization and positioned to hold said locking means in said unlocked position upon energization thereof to prevent movement of the locking means to said locked position upon movement of said handle means.

4,802,354

HIGH SECURITY PIN TUMBLER LOCK

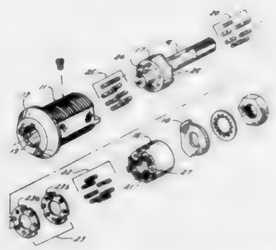
Gale Johnson, Northbrook, Ill., assignor to Fort Lock Corporation, River Grove, Ill.

Continuation-in-part of Ser. No. 3,813, Jan. 16, 1987, Pat. No. 4,716,749. This application Jul. 7, 1987, Ser. No. 70,924

The portion of the term of this patent subsequent to Jan. 5, 2005, has been disclaimed.

Int. Cl.[4] E05B *27/08*

U.S. Cl. 70—491 **14 Claims**



1. In a tubular lock construction comprising an outer barrel having forward and rear ends, a stationary tumbler sleeve telescoped into the rear end portion of said barrel, a locking spindle extending through and rotatably mounted in said stationary tumbler sleeve, a rotatable driver sleeve fixed to said spindle and disposed within said barrel in face-to-face relation with the forward end of said stationary tumbler sleeve and driver and tumbler pins slidably mounted in axially extending and angularly spaced bores defined in said stationary tumbler sleeve and said rotatable driver sleeve and normally operable to prevent rotation of said spindle with respect to said stationary tumbler sleeve, the improvement comprising

at least one of the rear face of said driver sleeve and a front face of said tumbler sleeve is provided with a plurality of notches, each notch surrounding an axial bore so as to provide a false shear plane at a trough of the notch and a support plane at the crests of said notches, said ones of said sleeves including the notched face having a relatively thin disc member fixedly mounted on the notch crests, said disc having annularly spaced bores corresponding to the tumbler and driver sleeve bores; and annular grooves defined on selected ones of said driver pins and said tumbler pins at their end proximate to the face-to-face junction of said sleeves, whereby said pin grooves interact with said sleeve notches and disc to create a false impression of the existence of said face-to-face junction, as the pins are axially slided along said annular bores.

4,802,355

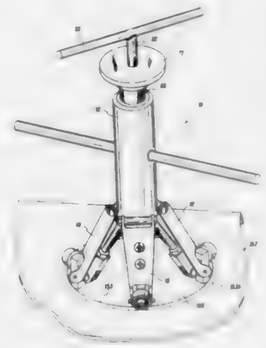
FLANGE-FORMING TOOL

Nelson Ezell, P.O. Box 1793, Breckenridge, Tex. 76024

Filed Oct. 29, 1987, Ser. No. 114,614

Int. Cl.[4] B21D *19/02*

U.S. Cl. 72—112 **20 Claims**



5. A method for forming a conical flange about a circular opening in malleable planar sheet material, comprising the steps of:

engaging an annular portion of the material which defines the opening with at least one pair of opposed surfaces on opposite sides of the annular portion;

applying rotational force to the opposed surfaces in order to initially bias the surfaces in the direction of the desired conical flange; and

translating the opposed surfaces across the annular portion thereby displacing and deforming the annular portion to form at least a partial conical flange.

4,802,356

APPARATUS OF PROCESSING CONTINUOUSLY CAST SLABS

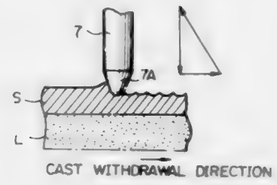
Tsuneo Yamada, Nishinomiya; Tsutomu Sakashita, Ibaraki; Hiroshi Tomono; Takashi Kimura, both of Osaka; Yasuhiro Mashara, and Kunio Yasumoto, both of Kobe, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

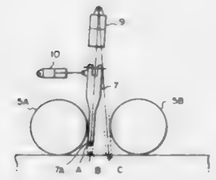
Division of Ser. No. 760,453, Jul. 30, 1985, Pat. No. 4,709,572. This application Aug. 6, 1987, Ser. No. 82,360

Claims priority, application Japan, Jul. 31, 1984, 59-161183; Aug. 20, 1984, 59-171439; Aug. 20, 1984, 59-171440

Int. Cl.[4] B21B *1/46, 11/00*; C21D *8/00*

U.S. Cl. 72—184 **7 Claims**





1. An apparatus for treating continuously cast slab having a surface, said slab being provided between guide rollers of a continuous casting machine, the surface of the slab passing through said guide rollers at a point after being continuously cast, comprising a working tool to form a dent in the slab surface, a first drive means to move said working tool towards and away from the slab surface, a second drive means to move said working tool alternately between a first position and a second position spaced from the first position in the direction of the passage of the slab, and a control unit connected to said first and second drive means for adjusting the movement of said working tool towards and away from the slab surface and alternately between the first and second positions.

4,802,357

APPARATUS AND METHOD OF COMPENSATING FOR SPRINGBACK IN A WORKPIECE

Everett E. Jones, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed May 28, 1987, Ser. No. 54,893

Int. Cl.[4] B21D *5/02*

U.S. Cl. 72—389 **7 Claims**

1. A method of bending a workpiece to a predetermined angle in a brakepress, wherein springback of the workpiece is automatically compensated for by overbending the workpiece by a calculated amount, comprising the steps of:

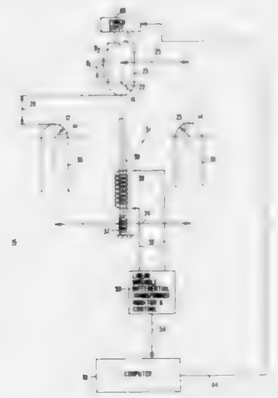
moving a punch member a selected distance in a first direction to bend the workpiece between a pair of spaced die members to a predetermined angle;

moving the punch member in a second direction, opposite the first direction to permit springback of the workpiece;

sensing when the workpiece achieves a neutral position corresponding to the cessation of springback motion in the workpiece;

determining, in response to sensing the cessation of springback motion, the distance the punch member moves in said second direction, said distance corresponding to the linear distance of springback of the workpiece;

calculating, based on said linear distance of springback and the physical geometry of the brakepress, an amount of



overbend necessary to achieve said predetermined angle of bend in the workpiece after springback; and

moving said punch member in the first direction a distance sufficient to overbend the workpiece by said calculated amount.

4,802,358

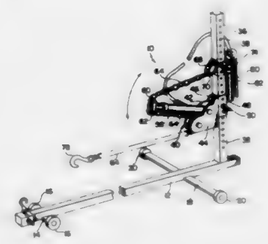
VEHICLE REPAIR APPARATUS

Roger Cavaca, Portsmouth, R.I., assignor to Andrew A. Bucci, Johnston, R.I., a part interest

Filed Jul. 10, 1987, Ser. No. 73,530

Int. Cl.[4] B21D *1/12*

U.S. Cl. 72—308 **10 Claims**



1. Apparatus for use in the repair of a vehicle, comprising an elongated horizontal beam on which rollers are mounted to provide for selected placement of said horizontal beam beneath the vehicle on which a repair is required, means located adjacent to an outermost end of said beam for anchoring said outermost end to the underside of said vehicle for securing said horizontal beam in the selected position of use, a vertical beam fixed to said horizontal beam adjacent to the end thereof that is opposite to the outermost end on which said anchoring means is located, a bracket mounted on said vertical beam in vertical adjustable relation, a pulling chain extending through said bracket and having a first end that is interconnected to said vertical beam in fixed relation, the other end of said chain being free and extending outwardly of said bracket for being located in place on a selected portion of said vehicle that has

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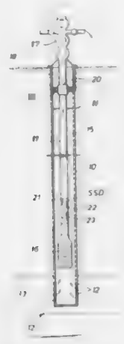
been damaged and that is to be repaired, a main hydraulic cylinder, one end of which is mounted for pivotal movement in said bracket, a piston extending outwardly of said cylinder for axial relative movement with respect thereto, the outermost end of said piston being fixed to said chain between the ends thereof, and said piston being pivotally movable with said cylinder relative to said bracket simultaneously with the axial movement of said piston with respect to said cylinder, and portable control means for actuating said piston in said hydraulic cylinder to incrementally force said piston carried thereby are pivotally movable upwardly relative to said bracket, the outward and pivotal movement of said piston exerting an incremental pulling action on the free end of said chain for restoring the damaged portion of said vehicle on which the free end of said chain has been located to a position for finishing the repair thereof.

4,802,359

TOOL FOR MEASURING PRESSURE IN AN OIL WELL

Corjon Patrice, Alkmaar, Netherlands, assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Oct. 23, 1987, Ser. No. 112,905
Claims priority, application France, Oct. 30, 1986, 86 15166
Int. Cl.[4] E21B *47/00*
U.S. Cl. 73—151 **21 Claims**



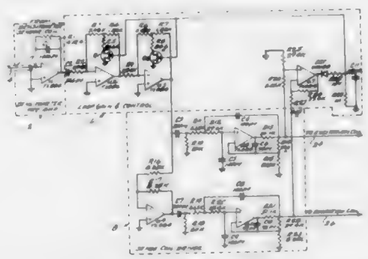
1. A tool for measuring the pressure set up in an oil well by an underground formation where the well is drilled, the well being delimited by casing having production string installed therein, said string including a section comprising a sliding sleeve circulating valve, said valve being capable, on command, of putting the space inside the production string into communication with an annular space lying between the production string and the casing by bringing orifices through said sliding sleeve into register with orifices through the wall of said production string, wherein said tool comprises: means designed to be lowered inside the production string and locked at the level of the circulating valve section and further including means for putting said orifices after they have been brought into register into sealed connection with a pressure sensor, the connection being sealed against the pressure reigning in the production string, such that the pressure sensor receives the pressure reigning in the annular space via said orifices and said sealed connection means, the means for putting comprising two coaxial elements capable of sliding telescopically, a first element which is tubular and has an outside diameter which is slightly less than the inside diameter of the production string, and a second element capable of sliding over a limited stroke on an internal bearing surface of the first element and including a duct for providing sealed connection between the pressure sensor and said orifices.

4,802,360

VIBRATING SPOOL DENSITOMETER IMMUNE TO CABLING EFFECTS

Lawrence C. Maier, New Haven, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Mar. 27, 1987, Ser. No. 31,850
Int. Cl.[4] G01N *9/00*
U.S. Cl. 73—32 A **19 Claims**



1. Apparatus for use with a densitometer having a probe the probe having a probe output connected to a probe output cable having a signal conductor and a shield conductor, and a probe driver coupled to said probe, comprising:

a loop circuit coupled between said probe output and said probe driver;

amplifying means, coupled in said loop circuit, for amplifying a signal provided on said signal conductor with a phase shift independent of a length or capacitance loading of said probe output cable, said amplifying means including means for holding the signal provided on said signal conductor at ground potential as a current-varying signal; and

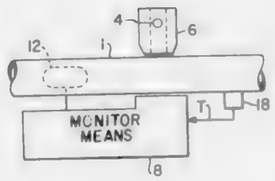
phase/gain control means, coupled in said loop circuit between said amplifying means and said probe driver, for controlling said loop circuit to provide a loop gain of at least one and a substantially zero degree shift between said probe driver and said probe output signal.

4,802,361

PRODUCTION STREAM ANALYZER

Alfred E. Bussina, Spring; Thomes M. Williams, Houston; Paul D. Carmichael, Houston, and Hans J. Psap, Houston, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,682
Int. Cl.[4] G01N *33/22*
U.S. Cl. 73—61.1 R **10 Claims**



1. A production stream analyzer for use with a flowing crude oil production stream which also includes water and gas in a conduit comprises:

a sensor sensing the temperature of the flowing production stream and providing a temperature signal representative thereof,

monitoring means for monitoring the capacitance of the production stream and providing a corresponding capacitance signal,

a densitometer measuring the density of the production stream and providing a density signal corresponding thereto, and

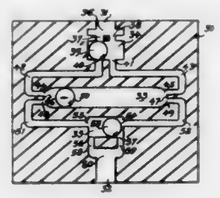
output means connected to the sensor, to the monitoring means and to the densitometer for providing output signals corresponding to the quantity of at least one constituent of the production stream in accordance with the temperature, the capacitance and the density signals.

4,802,362

FLUID FLOW SENSOR

Joel E. Haynes, 18316 Oxnard St., Tarzana, Calif. 91356

Division of Ser. No. 790,595, Oct. 23, 1985, Pat. No. 4,635,476, which is a continuation of Ser. No. 589,592, Mar. 14, 1984, abandoned. This application Nov. 17, 1986, Ser. No. 914,466
The portion of the term of this patent subsequent to Jan. 13, 2004, has been disclaimed.
Int. Cl.[4] G01F *11/04*
U.S. Cl. 73—249 **4 Claims**



1. A fluid flow sensor for measuring the volumetric flow of a fluid, comprising:

a housing having a fluid inlet and a fluid outlet;

a measuring chamber in the housing having opposite first and second ends, each end being connected to both said fluid inlet and said fluid outlet;

a body in said measuring chamber movable between said opposite ends of said chamber; and

a single outlet valve means for alternatively controlling the continuous flow of fluid from said first or second end toward said outlet, said valve means including a member being movable between a first position in which said valve means member is positioned to cut-off said first end of said chamber from said outlet such that fluid in said first end of said chamber urges said body in a first direction towards the end of said chamber, and a second position in which said valve means member is positioned to cut-off said second end of said chamber from said outlet such that fluid in the second end of said chamber urges said body in the opposite direction towards the first end of said chamber;

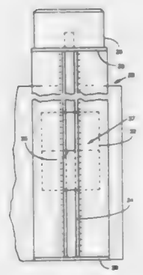
said outlet valve means member being shaped and positioned to be moved between said first and second positions solely by the difference in fluid pressure exerted on opposite sides of the member between first and second fluids from the first and second ends, respectively, of the measuring chamber as said first and second fluids alternately flow from the ends of said measuring chamber thrugh the outlet valve means and to the fluid outlet and to be maintained in a respective one of said first and second positions, during movement of said body in said measuring chamber, solely by the difference in the pressure exerted on opposite sides of said outlet valve means member developed by the alternate flow of said first and second fluids from said respective first and second ends of said measuring chamber through said valve means and to said outlet.

4,802,363

APPARATUS AND METHOD FOR MEASURING LIQUID DEPTH

John J. Fling, 57 Hollister Ranch, Gaviota, Calif. 91325, and William F. Fling, 8710 Pershing Dr., Apt. #2, Playa Del Rey, Calif. 90291

Filed Aug. 3, 1987, Ser. No. 80,808
Int. Cl.[4] G01F *23/66*
U.S. Cl. 73—315 **8 Claims**



1. A method for measuring the depth of a liquid contained in a tank or the like, comprising the steps of:

forming an elongate frame having a lower end and an upper end and a lengthwise passage extending between the upper and lower ends;

mounting a rod in the lengthwise passage in the frame;

forming a flotation device to have a passage therethrough;

mounting the flotation device on the rod so that the rod extends through the passage in the flotation device such that the flotation device may be slidably moved along the rod;

biasing the rod against rotation within the frame;

retaining the flotation device in a locked position where it is engaged with the frame to resist axial movement of the flotation device in the frame;

engaging the rod with the flotation device such that rotation of the rod within the frame causes the flotation device to rotate to an unlocked position out of engagement with the frame where the flotation device may move in the frame to the level of the liquid when the lower end of the frame is placed against the bottom of the tank; and

locking the flotation device inside the frame by allowing the flotation device to return to the locked position so that the flotation device remains at the position of the liquid level on the frame when the it is withdrawn from the liquid.

4,802,364

ANGULAR RATE SENSOR

Donald R. Cage, 6 Placer Ave., and Michael J. Zolock, 1425 Missouri Ave., both of Longmont, Colo. 80501

Filed May 29, 1987, Ser. No. 55,643
Int. Cl.[4] G01C *19/56*
U.S. Cl. 73—505 **9 Claims**

1. An apparatus for measuring rate of turn, comprising:

(A) mounting pedestal;

(B) common base mounted to said mounting pedestal;

(C) tyne one substantially fixed to said common base;

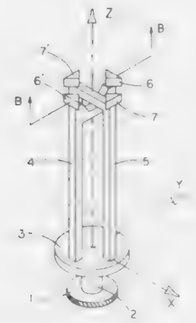
(D) tyne two substantially fixed to said common base such that vibration effects with said tyne one are virtually cancelled whereas said tyne one and said tyne two act as coaxial tynes of a tuning fork whereas there is virtually no movement in said mounting pedestal;

(E) drive means associated with said tyne one and said tyne two for oscillating said tyne one and said tyne two in opposition to one another as in a tuning fork, at a selected frequency in a prescribed direction;

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(F) first pickoff means for sensing relative motion of said tyne one to said tyne two whereas said first pickoff means senses a selected proportion of the motion in the driven oscillating direction as well as a selected proportion of the resultant force motion which is perpendicular to the driven oscillating direction;

(G) second pickoff means for sensing relative motion of said tyne one to said tyne two whereas said second pickoff means senses a selected proportion of the motion in the driven oscillating direction as well as a selected proportion of the motion in the resultant force direction which is perpendicular to the driven oscillating direction whereas the phase of either the said selected proportion of the motion in the resultant force direction or of said selected proportion of the motion in the driven oscillating direction is opposite to the corresponding selected proportion of said first pickoff means, for sensing any phase difference of said selected frequency related to said first pickoff means, whereas said phase difference corresponds to a measurement of rate of turn of the apparatus.

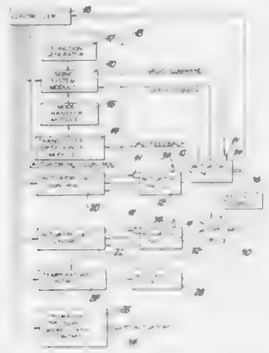


4,802,365

MULTI-AXIAL FATIGUE TESTING MACHINE

David W. Sallberg; Timothy J. Lawson, both of Farmington Hills, and Maurice H. Cardon, Rochester, all of Mich., assignors to Schenck Pegasus Corporation, Troy, Mich.

Filed Feb. 22, 1988, Ser. No. 158,605
Int. Cl.[4] G01N *3/32*
U.S. Cl. 73—808 **9 Claims**



1. A testing machine for multi-axis fatigue testing of a component having inner and outer elements subject to linear and rotational forces about different axes comprising

a base,

first, second and third hydraulic actuators secured to the base,

hydraulic pressure means and control means coupled to the actuators for controlled operation of the actuators,

gimbal means comprising first and second gimbals mounted on the base and interconnected for rotation about mutually perpendicular axes, the first gimbal having means for attachment to one of the elements,

means for substantially independently coupling the first and second actuators to the first and second gimbals respectively so that each actuator effects rocking movement of one gimbal without inputting torque about the axis of the other gimbal, and

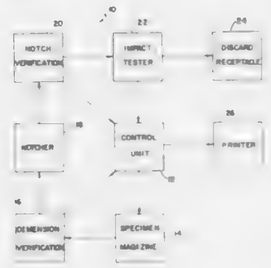
means for attaching the third actuator to the other of the elements, whereby the three actuators independently and controllably apply loads to the component about three axes of motion.

4,802,366

APPARATUS AND PROCESS FOR IMPACT TESTING OF PLASTICS

Walter F. Bachleder, Ft. Faloaga; Maurice Frankel, Farmingville, and Peter Fiore, Mt. Sinai, all of N.Y., assignors to Testing Machines Inc., Amityville, N.Y.

Filed May 26, 1988, Ser. No. 199,026
Int. Cl.[4] G01N *3/30*
U.S. Cl. 73—799 **17 Claims**



1. An impact tester for the impact testing of each of a plurality of specimens, said tester comprising:

vise means for selectively gripping one said specimen;

delivery means for sequentially delivering specimens to said vise means;

hammer means for selectively subjecting one said specimen gripped in said vise means to a selected impact and for measuring the impact of said hammer on the specimen;

photodetector means in proximity to said vise means for detecting and identifying a break in said specimen in response to the impact of said hammer means; and

control means operatively connected to said hammer means and said photodetector means for displaying information relating to the impact of said hammer means on said specimen and the type of break identified by said photodetector means.

4,802,367

TENSILE TEST CONTROLLER

Niel R. Petersen, Minnetonka, and David G. Chasco, Bloomington, both of Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Continuation of Ser. No. 939,749, Dec. 9, 1986, abandoned. This application Jan. 25, 1988, Ser. No. 147,070
Int. Cl.[4] G01N *3/00*
U.S. Cl. 73—805 **18 Claims**

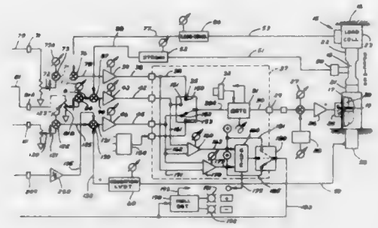
1. A control system for testing specimens in tension utilizing an actuator that moves to load the specimen in tension in response to servo-control signals, and including means to provide a first feedback signal proportional to the load on the specimen, and a second feedback signal proportional to the stroke position of the actuator comprising:

first circuit means including a load controller and a stroke controller, each having a separate program for providing command input signals on the basis of time, means to provide said first feedback signal to said load controller, and means to provide said second feedback signal to said stroke controller, the load and stroke controllers each providing an output signal;

second circuit means for providing a control signal to the actuator which is a function of the load controller output signal during elastic deformation of the specimen being tested, and including means for switching the control signal to the actuator to be a function of the stroke controller output signal after yield of the specimen has been reached; and

third circuit means coupled to the first circuit means for preventing increasing velocity of the actuator prior to operation of the means for switching.

10. The control system of claim 1, wherein said first circuit means includes means associated with the stroke controller that causes the output signal of the stroke controller to accelerate the actuator to cause fracture of the specimen, after the means for switching is operated to provide the control signal to the actuator to be a function of the stroke controller output signal.



15. A control system for testing specimens in tension utilizing an actuator that moves to load the specimen in response to servo-control signals comprising:

first circuit means including a load controller and a stroke controller, each being responsive to a separate program providing input signals on the basis of time, means to provide a first feedback signal to said load controller, and means to provide a second feedback to said stroke controller whereby said first circuit means provides a separate load error signal and a separate stroke error signal;

second circuit means for providing a first control signal to the actuator which is a function of the load error signal during elastic deformation of said specimen, and including means for switching to a second control signal to the actuator which is a function of the stroke error signal upon acceleration of the actuator after yield of the specimen being tested has been reached; and

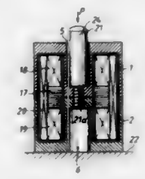
third circuit means coupled to the first circuit means and including a signal generator providing a signal representing a loading velocity for input to the stroke controller for preventing increasing velocity of the actuator beyond a desired velocity.

4,802,368

MAGNETOELASTIC FORCE TRANSDUCER

Jan O. Nordvall, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Dec. 9, 1987, Ser. No. 130,545
Claims priority, application Sweden, Dec. 15, 1986, 8605377
Int. Cl.[4] G01L *1/12*
U.S. Cl. 73—862.69 **7 Claims**



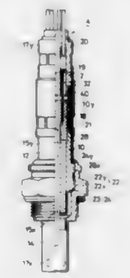
7. A magnetoelastic force transducer having a magnetic core formed from two identical, cylindrical bodies which are held together and define an axially extending and concentrically located inner space, a bobbin located in said inner space and supporting two measuring windings connected in opposition, and an excitation winding supplied with alternating current, the interior of the transducer core being shaped such that a thin cylindrical tubular wall is formed immediately opposite to the respective measuring winding in each one of said two cylindrical bodies, a stud bolt extending axially of said two cylindrical bodies and holding said two cylindrical bodies together in the vicinity of said tubular walls, whereby when the transducer is influenced, via the stud bolt, by an externally applied force, a compressive stress arises in one of said tubular walls and a tensile stress arises in the other of said tubular walls to influence the magnetic conditions in the core such that a signal is obtained from the measuring windings which is proportional to the applied force.

4,802,369

SENSOR STRUCTURE

Hiroaki Morii, Aichi, Japan, assignor to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Jul. 22, 1987, Ser. No. 76,578
Claims priority, application Japan, Jul. 22, 1986, 61-172466
Int. Cl.[4] G01N *27/26*
U.S. Cl. 73—116 **7 Claims**



1. A sensor structure comprising:

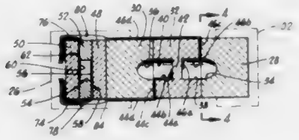
a quadrangular prism-shaped detecting element (14) made of a ceramic material;

a metal sleeve (10) having a through hole in which said ceramic detecting element is disposed;

a seal member (18–20) for closing said through hole of said metal sleeve;

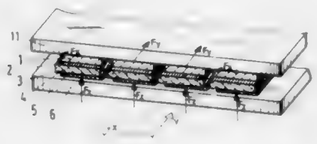
a main metal tubular member (24) integrally provided with said metal sleeve in the inside thereof; and
a metal outer tube (28) fixed to an outer circumferential wall of said metal sleeve, wherein an outer diameter of said metal sleeve is step-wise reduced for forming an air layer (40) between a reduced portion (10y) of an outer diameter of said metal sleeve and said metal outer tube.

4,802,370
TRANSDUCER AND SENSOR APPARATUS AND METHOD
Errol P. EerNisse, Salt Lake City, and Roger W. Ward, Park City, both of Utah, assignors to Halliburton Company, Duncan, Okla.
Filed Dec. 29, 1986, Ser. No. 947,022
Int. Cl.[4] G01F *11/00*; G01L *19/04*
U.S. Cl. 73—702 **10 Claims**



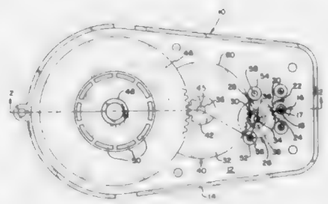
5. A transducer, comprising:
a support body having a chamber which is to be exposed to a pressure to be detected when said transducer is used;
pressure sensing means, disposed in said chamber, for sensing the pressure;
reference means, disposed in said chamber, for providing a reference relative to which an output of said pressure sensing means is measured;
temperature sensing means, disposed in said chamber, for sensing temperature in said chamber; and
an end cap having an end wall and having a peripheral wall extending from said end wall so that a cavity is defined, said reference means and said temperature sensing means disposed in said cavity and an end of said pressure sensing means received in said cavity so that said end cap holds said reference means and said temperature sensing means next to said pressure sensing means.

4,802,371
MULTI-COMPONENT DYNAMOMETERS
Reto Calderara; Hans-Conrad Sonderegger, both of Neftenbach, and Peter Wolfer, Kleinandelfingen, all of Switzerland, assignors to Kristal Instrumente AG, Switzerland
Filed Nov. 9, 1987, Ser. No. 118,048
Int. Cl.[4] G01L *1/16, 5/16*
U.S. Cl. 73—862.04 **21 Claims**



1. A multi-component dynamometer for measuring forces and torques, especially in metal-cutting operations, comprising at least one piezoelectric transducer element arranged between a pair of force introduction plates, the transducer element including at least two piezoelectric elements each having a predetermined crystallographical orientation and a flat alignment edge parallel to a crystal axis, and said two piezoelectric elements being joined to an insulating carrier plate therebetween with their flat alignment edge parallel with an alignment edge of said carrier plate whereby the piezoelectric elements are pre-oriented crystallographically in relation to a coordinate system provided by the carrier plate, and the carrier plate is oriented in relation to a coordinate system of said force introducing plates, a first piezoelectric element being sensitive to pressure in a direction essentially normal to a plane of the force introduction plates and a second piezoelectric element being sensitive to shear essentially in the plane of the force introduction plates.

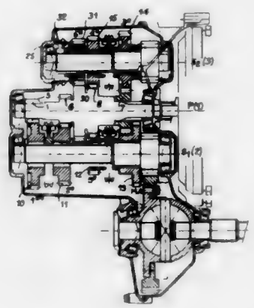
4,802,372
SELECTABLE RATIO TRANSMISSION AND VISUAL IDENTIFICATION OF THE RATIO
Lawrence R. Harrod, Fort Wayne, and Michael R. Siebern, Angola, both of Ind., assignors to Kranco, San Francisco, Calif.
Filed Jun. 20, 1985, Ser. No. 747,121
Int. Cl.[4] F16H *3/02, 57/02*
U.S. Cl. 74—325 **4 Claims**



1. A selectable-ratio transmission comprising:
a driving gear rotatable on a first axis and having a first tip radius;
a driven gear having a second tip radius and rotatable on a second axis parallel to the first axis and displaced from the driving gear;
first axle-locating means defining a first intermediate axis spaced from the axis of the driving gear by a distance greater than the first tip radius and spaced from the axis of the driven gear by a distance greater than the second tip radius;
second axle-locating means defining a second intermediate axis spaced from the axis of the driving gear by a distance greater than the first tip radius and spaced from the axis of the driven gear by a distance greater than the second tip radius, the distance of the first intermediate axis from one of the first and second axes being different from the distance of the second intermediate axis from the same one of the first and second axes;
a plurality of selectable intermediate gear-set means, a selected one of which provides a selected one of a plurality of gear ratios from the driving gear to the driven gear, each of the gear-set means comprising an axle engageable with a respective one of the axle-locating means, a first gear meshable with the driving gear, and a second gear rigidly connected to the first gear and coaxial therewith and meshable with the driven gear;
each of the gear-set means being color-coded according to the respective axle-locating means with which the axle of the gear-set means is engageable;
an output gear meshing with and driven by said driven gear;
a housing enclosing the driving gear, driven gear, and a selected gear-set means;
a plurality of selectable output gear axles, each color-coded to correspond to a respective one of the gear-set means;

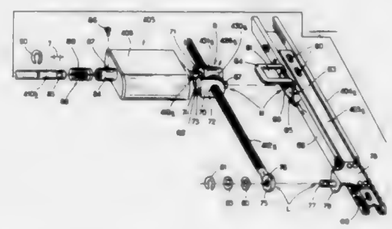
an opening in the housing; and
an axle support in the housing aligned with said opening and supporting a selected one of the output gear axles within the housing with the output gear axle being visible through said opening, the selected output gear axle being color-coded correspondingly to the selected gear-set means.

4,802,373
MANUAL TRANSMISSION WITH ONE PRIMARY SHAFT AND TWO SECONDARY SHAFTS
Alain Saint-Jean, Chateauy-Malabry, and Michel Bagard, La Garenne-Colombes, both of France, assignors to Regie Nationale des Usines Renault, Boulogne Billancourt, France
Filed Oct. 24, 1986, Ser. No. 922,743
Claims priority, application France, Oct. 25, 1985, 85-15852; Oct. 17, 1986, 86-14434
Int. Cl.[4] F16H *3/08*
U.S. Cl. 74—359 **2 Claims**



1. A manual transmission comprising:
a primary shaft;
first and second secondary shafts;
first speed, second speed, fifth speed and reverse idling gears rotatably mounted on said first secondary shaft;
a first double synchronizer mounted on said first secondary shaft between said first speed idling gear and said second speed idling gear;
a second double synchronizer mounted on said first secondary shaft between said fifth speed idling gear and said reverse idling gear;
third and fourth speed idling gears rotatably mounted on said second secondary shaft;
a third double synchronizer mounted on said second secondary shaft between said third speed idling gear and said fourth speed idling gear;
a third speed gear mounted on said primary shaft and meshing with said third speed idling gear, said third speed gear being axially positioned between teeth of said reverse idling gear and said second double synchronizer;
a first drive gear mounted on said first secondary shaft and a second drive gear mounted on said second secondary shaft, and a differential ring gear meshing with both of said first and second drive gears, wherein said first and second drive gears both have identical numbers of teeth;
a fourth speed gear mounted on said primary shaft and drivingly meshing with both said fourth speed idling gear and said fifth speed idling gear;
a sixth speed idling gear rotatably mounted on an end of said second secondary shaft;
a simple synchronizer mounted at said end of said second secondary shaft;
a second speed gear mounted on said primary shaft; and
a sixth speed gear mounted on said primary shaft between said second and fourth speed gears and meshing with said sixth speed idling gear.

4,802,374
DEVICE FOR CONTROLLING THE DISPLACEMENT OF AN ELEMENT, IN PARTICULAR OF A SEAT OR PARTS OF A SEAT OF A MOTOR VEHICLE, IN RELATION TO A BASE
Renee-Louis Hamelin, Gif sur Yvette, and Maurice F. Wattier, Simonnes, both of France, assignors to Equipments Automobiles Marchal, Issy les Moulineaux, France
PCT No. PCT/FR86/00122, § 371 Date Feb. 5, 1987, § 102(e) Date Feb. 5, 1987, PCT Pub. No. WO86/06036, PCT Pub. Date Oct. 23, 1986
PCT Filed Apr. 14, 1986, Ser. No. 6,689
Claims priority, application France, Apr. 18, 1985, 85 05879
Int. Cl.[4] F16H *1/16*; B60N *1/02, 1/08*
U.S. Cl. 74—89.14 **13 Claims**



1. A device for controlling the displacement of an element in relation to a base comprising a motor having a shaft provided at an end with a worm, the shaft having an axis extending in a given direction,
a stirrup including two orthogonal and intersecting cylindrical sleeves defining an opening at the intersection thereof, one of said sleeves of said stirrup having a nut-wheel disposed therein, said nut-wheel having an axis of rotation that is orthogonal to the shaft axis,
said worm being housed in a tube and said motor having a casing connected to said tube, said tube having a cylindrical wall which includes a first window located adjacent said opening whereby a portion of said worm projects through said first window of said tube and said opening to engage said nut-wheel in said one sleeve, said one sleeve having open opposite ends and
the device further including a surrounding component having parallel faces disposed to close said ends of said one sleeve, said parallel faces having holes for receiving a screw which cooperates with said nut-wheel;
means for flexibly securing said stirrup relative to said base including a frame which defines a second window, said frame connected to said base and said second window receiving a portion of said stirrup so that said frame completely surrounds said portion to allow limited displacement of said stirrup relative to said base in said given direction, said stirrup and said means for securing further including conjugate connection means for preventing displacement of said stirrup relative to said base in a second direction which is mutually perpendicular to said given direction and said axis of rotation of said nut-wheel;
said screw having means for detachable connection to said displaceable element including a head provided with an eye for receiving a pin connected to said displaceable element.

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4,802,375

CHANGE-SPEED GEARBOX

Enno Stodt, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

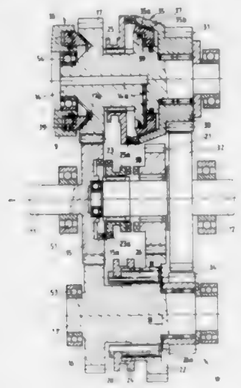
PCT No. PCT/EP86/00684, § 371 Date Aug. 3, 1987, § 102(e) Date Aug. 3, 1987, PCT Pub. No. WO87/03661, PCT Pub. Date Jun. 18, 1987

PCT Filed Nov. 26, 1986, Ser. No. 112,508

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1985, 3543269

Int. Cl.[4] F16H *3/08*

U.S. Cl. 74—358 18 Claims



1. A change-speed gearbox for providing at least three forward gear ratios and one reverse gear ratio, the gearbox comprising:

the gearbox having a central gearbox axis, an input drive shaft on the gearbox axis for delivering input drive; an output drive shaft on the gearbox axis for being driven; a first clutch between the input drive shaft and the output drive shaft and engagement of the first clutch producing a first one of the forward gear ratios;

a first and a second counter shaft spaced from the gearbox axis and each counter shaft being rotatable independently of the output drive shaft;

a first gear wheel group including a first gear on and rotatable with the input drive shaft, a second gear on and rotatable with the first counter shaft and the first and second gears being in mesh; a third gear on and rotatable with the second counter shaft, the first and third gears being in mesh, with the second and third gear being out of mesh; the gears of the first gear wheel group all being arranged in a first gear wheel plane across the input shaft;

a fourth output gear supported on and rotatable with respect to the output drive shaft; a second clutch which is engageable for joining the output drive shaft and the fourth output gear for rotation together; a fifth output gear supported on and rotatable with the first counter shaft and in mesh with the fourth output gear for rotating therewith and for defining a second one of the forward gear ratios; the fourth and fifth gears define a second gear wheel group which are in a second gear wheel plane across the gearbox axis and axially spaced from the first gear wheel plane;

a sixth output gear is supported on and rotatable with respect to the second counter shaft; a third clutch engageable between the second counter shaft and the sixth gear for coupling them to rotate together;

a seventh gear on the output drive shaft and rotatable together therewith, the sixth and seventh gears being in mesh for rotating together and for defining a third one of the forward gear ratios;

an eighth, reversing gear in mesh with the seventh gear for rotation therewith;

a ninth, reversing gear supported on and rotatable with respect to the first counter shaft and being in mesh with the eight gear; a fourth clutch engageable for coupling the fifth gear on the first counter shaft with the ninth gear for defining the reverse gear ratio;

the sixth, seventh, eighth and ninth gears being in a third gear wheel group located in a third gear wheel plane across the gear box axis and axially spaced from the first and the second gear wheel planes.

4,802,376

VARIABLE PHASE AND OSCILLATORY DRIVES

Frederick M. Stidworthy, 2 Butlers Close, Long Compton nr. Shipston-on-Sour, Warwickshire, England (CV36 5JY)

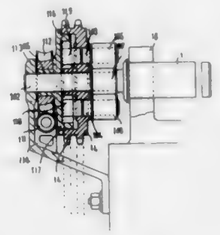
PCT No. PCT/GB86/00256, § 371 Date Feb. 27, 1987, § 102(e) Date Feb. 27, 1987, PCT Pub. No. WO86/06788, PCT Pub. Date Nov. 20, 1986

PCT Filed May 9, 1986, Ser. No. 2,693

Claims priority, application United Kingdom, May 9, 1985, 8511680

Int. Cl.[4] F01L *1/34;* F16H *35/02*

U.S. Cl. 74—394 8 Claims



1. A camshaft arrangement comprising:

a camshaft supported for rotation about a first axis;

a sprocket wheel for driving said camshaft, said sprocket wheel being supported for rotation about said first axis;

a first follower shaft mounted on said sprocket wheel for rotation therewith about said first axis, said first follower shaft being supported by said sprocket wheel for rotation about a second axis parallel to said first axis;

a second follower shaft mounted on said sprocket wheel for rotation therewith about said first axis, said second follower shaft being supported by said sprocket wheel for rotation about a third axis parallel to said first axis and located on the opposite side of said first axis from said second axis;

first and second follower members carried by said first and second follower shafts respectively for rotation with said respective first and second follower shafts;

first and second drive elements carried by said first and second follower shafts respectively for rotation with said respective first and second follower shafts, said first and second drive elements being spaced along said first axis from said first and second follower members;

coupling means carried by said camshaft for rotation therewith and engaged by said first and second drive elements to impart rotational movement to said camshaft in phase with the rotation of said sprocket wheel and in the absence of rotation of said first and second follower shafts; and

control means engaged by said first and second follower members for imparting oscillatory rotational movements to each of said first and second follower shafts in the course of rotation of said sprocket wheel to produce pulses in the rotational movement of said camshaft.

4,802,377

GANTRY ARRANGEMENT FOR AN INDUSTRIAL ROBOT

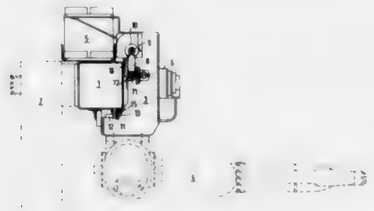
Rainer Koppler, Baierndorf, Fed. Rep. of Germany, assignor to Manutec Gesellschaft für Automatisierungs- und Habengsysteme GmbH, Fürth, Fed. Rep. of Germany

Filed Jul. 16, 1986, Ser. No. 886,536

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1985, 3532588

Int. Cl.[4] F16H *19/04, 57/12;* F16C *29/04*

U.S. Cl. 74—422 5 Claims



1. A gantry arrangement for an industrial robot, comprising:

a gantry beam defining a path of travel of the industrial robot;

support means for supporting said gantry beam;

a first elongate guide element having a circular transverse cross-section and extending parallel to said path, said elongate guide element being secured to said gantry beam and made of a rigid material, said first elongate element being disposed proximately to an upper side of said gantry beam;

a second elongate guide element having a substantially rectangular transverse cross-section and extending parallel to said path, said second elongate guide element being secured to said gantry beam and made of a rigid material, said second elongate guide element being spaced from said first elongate guide element and disposed proximately to a lower side of said gantry beam;

a carriage carrying the robot;

first means including a ball sleeve for shiftably mounting said carriage to said first elongate guide element so that said carriage is shiftably supported by said first elongate guide element for motion along said path; and

second means including at least two rollers rotatably mounted to said carriage and engaging said second elongate guide element for bracing said carriage and preventing rotation thereof about said first elongate guide element.

4,802,378

BOWDEN CABLE

Serafino Memmola, Varese, Italy, assignor to Delta Elettronica s.r.l., Varese, Italy

Continuation of Ser. No. 699,787, Feb. 8, 1985, Pat. No. 4,683,774. This application Jun. 17, 1987, Ser. No. 63,642

Claims priority, application Italy, Mar. 8, 1984, 83609 A/84; Oct. 25, 1984, 60968/84[U]; Oct. 31, 1984, 60978/84[U]

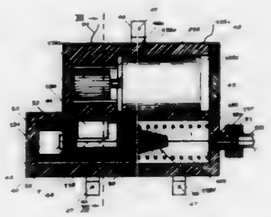
The portion of the term of this patent subsequent to Aug. 4, 2004, has been disclaimed.

Int. Cl.[4] F16C *1/10*

U.S. Cl. 74—502.6 18 Claims

1. A motion transmitting device, particularly for use in motor vehicles, comprising an elongated tubular casing having fixed first and second end portions; an axially movable wire extending into said casing and beyond at least one of said fixed end portions, the other end portion of said casing including a receptacle and said wire having an end portion in said receptacle; a mobile abutment disposed in said receptacle and movable with said end portion of the wire relative to said receptacle; locking means movable relative to said casing into and from motion-preventing engagement with said wire, said locking means including a blocking element movable to and from an operative position in which the blocking element prevents said mobile abutment and said wire from moving relative to said casing; and means for moving said locking means relative to said casing, said moving means including motor means and control means for said motor means.

18. A motor transmitting device, particularly for use in motor vehicles, comprising an elongated tubular casing having fixed first and second end portions; an axially movable wire extending into said casing and beyond at least one of said fixed end portions, said wire having a first end portion in the other



end portion of said casing and a second end portion; a mobile abutment reciprocable in the other end portion of said casing with the first end portion of said wire between first and second positions; means for yieldably biasing said mobile abutment to said first position; stop means provided on said first end portion of said wire, said biasing means being arranged to urge said mobile abutment against said stop means; locking means slidable in said casing into and from engagement with said wire to hold the wire against axial movement relative to the casing; actuator means for moving said wire axially, said actuator means being connected to the second end portion of said wire; and means for reciprocating said locking means relative to said casing, said reciprocating means comprising a reversible motor and control means for said motor.

4,802,379

TRANSFER MECHANISM FOR NUCLEAR REACTOR INSTRUMENTS

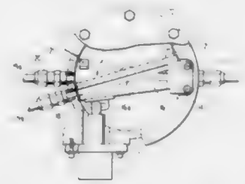
Toshikazu Edajima, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1987, Ser. No. 109,787

Claims priority, application Japan, Oct. 16, 1986, 61-157382[U]

Int. Cl.[4] F16C *1/00;* G21C *19/00*

U.S. Cl. 74—502.6 5 Claims



1. A transfer mechanism for establishing an insertion/withdrawal path for a flexible monitoring cable between an inlet cable guide tube (11) and at least two outlet cable guide tubes (19*a*, 19*b*) pursuant to the measurement of variable parameters within a nuclear reactor core, comprising:

(a) a hollow cylindrical housing (12) having an inlet aperture in a sidewall thereof and at least two spaced outlet apertures in a generally diametrically opposite sidewall,

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(b) coupling means (13, 20) for individually connecting the inlet and outlet tubes to the inlet and outlet apertures in axial alignment therewith,

(c) a selector member (16) rotatably mounted within the housing and having a branched guide passage (16a) defined therein and extending therethrough, said passage having a single outlet disposed proximate said outlet apertures and at least two inlets disposed proximate said inlet aperture, and

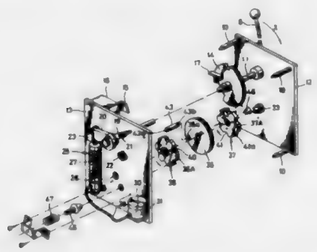
(d) actuator means (17) operatively coupled to the selector member for selectively rotating said member between at least two stop positions whereat a continuous cable insertion/withdrawal path is established between the inlet tube and either one of the outlet tubes.

4,802,380

HANDLE CONTROL FOR A SLOT MACHINE

Masaharu Shirasawa, Tochigi, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

Filed Aug. 31, 1987, Ser. No. 91,498
Claims priority, application Japan, Aug. 29, 1986, 61-203449
Int. Cl.[4] G05G 1/04; F16D 41/04
U.S. Cl. 74—523 3 Claims



1. An operating handle control device in combination with a slot machine having an operating handle which is swung from its initial position to a starting position for starting a game, the operating control device comprising:

a rotatable wheel supported by a fixed shaft for rotation by said operating handle;

a pair of clutch wheels mounted on said fixed shaft on opposite sides of said rotatable wheel, said clutch wheels being rotatable unidirectionally but oppositely to each other;

longitudinally displaceable interconnecting means for selectively interconnecting said rotatable wheel with one of said pair of clutch wheels; and

actuating means for moving said interconnecting means in opposite directions when said operating handle is swung to said initial position and to said starting position, thereby causing said interconnecting means to perform said selective interconnection.

2. An operating handle control device for a slot machine having an operating handle which is swung from its initial position to a starting position for starting a game, the operating handle control device comprising:

a rotatable wheel supported by a fixed shaft for rotation by said operating handle;

a pair of clutch wheels mounted on said fixed shaft on opposite sides of said rotatable wheel, said clutch wheels being rotatable unidirectionally but oppositely to each other;

interconnecting means for selectively interconnecting said rotatable wheel with one of said pair of clutch wheels, said interconnecting means comprising a pin slidable lengthwise in a bore in said rotatable wheel; and

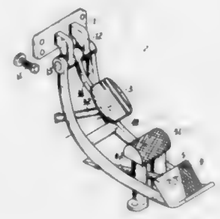
actuating means for moving said pin in opposite directions when said operating handle is swung to said initial position and to said starting position, thereby causing said pin to perform said selective interconnection.

4,802,381

COMPOUND ACCELERATION-BRAKE PEDAL ASSEMBLY

Nsin-Hsin Lo, 9, Alley 3, Lane 35, Weitao Rd. No. Dis., Taichung, Taiwan

Filed Mar. 18, 1987, Ser. No. 27,358
Int. Cl.[4] G05G 1/14, 1/18
U.S. Cl. 74—513 3 Claims



1. A compound acceleration-brake pedal for vehicles consisting essentially of the following engaging and interacting elements: a brake pedal means for initiating braking action, said brake pedal means having parallel upwardly arms, each arm having an upper end with an opening defining an axis of rotation, and a lower end connected to a brake pedal;

an axle means inserted through said opening;

an accelerator pedal assembly rotatably mounted on said axle means and including a pendant-type acceleration pedal;

an accelerator linkage means connected to said accelerator pedal assembly for connecting said pedal assembly to fuel regulating apparatus in the vehicle;

a brake bar means for operatively connecting said brake pedal to a braking mechanism in the vehicle;

a foot stock separately and fixedly disposed between said arms and in spaced relationship between said accelerator pedal, and said brake pedal, said foot stock having a sloping surface being aligned with respective surfaces of said accelerator pedal and said brake pedal.

2. A compound accelerator-brake pedal structure for a vehicle comprising a pendant-type accelerator assembly including a pivot arm and an accelerator pedal, a pendant-type brake assembly including a pivot frame and a brake pedal, the pivot arm and the pivot frame being suspended from a common axle with the accelerator pedal being located above and in line with the brake pedal, and a fixed foot stock between the pedals, the foot stock being positioned for supporting a user's foot in a location for selectively operating the accelerator and brake pedals, with toe pressure and heel pressure respectively by rocking the foot on the foot stock.

4,802,382

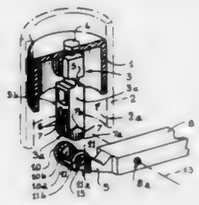
CONNECTING ROD ASSEMBLIES INTENDED FOR THE RECIPROCATING DRIVING OF A PISTON INSIDE A CYLINDER

Robert Nissels, Vallières, France, assignor to Société Berthoud S.A., Belleville sur Saone, France

Filed Jun. 19, 1987, Ser. No. 64,132
Claims priority, application France, Jun. 26, 1986, 86 09483
Int. Cl.[4] G05G 1/00; F16J 1/04
U.S. Cl. 74—579 R 8 Claims

1. A connecting rod assembly for reciprocating a piston within a cylinder comprising, a connecting rod having upper and lower ends which are integrally formed with respect to one another along an elongated axis, said connecting rod having an area of reduced dimension spaced from said upper end thereof, said area of reduced dimension being yieldable so as to permit said lower end of said connecting rod to be positioned in various orientations with respect to said upper end, said lower end of said connecting rod including a plurality of blade elements which are spaced relative to one another and which extend generally parallel to said elongated axis of the connecting rod, each of said blade elements having a curved lower bearing surface portion, said blade elements being yieldably resilient so as to be urged toward one another and thereafter being capable of assuming their original configuration, an actuating lever, said actuating lever having an end portion, and means for cooperatively seating said curved lower bearing surface portions of said blade elements of said connecting rod with said end portion of said lever, and connector means carried by said blade elements for cooperatively engaging said end portion of said actuating lever.

5. A combination piston and connecting rod assembly for reciprocating the piston within a cylinder comprising, a piston



means, a connecting rod having upper and lower ends which are integrally formed with respect to one another, means for securing said upper end of said connecting rod in fixed relationship with respect to said piston means, said connecting rod having an area of reduced dimension spaced from said upper end thereof, said area of reduced dimension being yieldable so as to permit said lower end of said connecting rod to be positioned in various orientations with respect to said upper end, an actuating lever, said actuating lever having an end portion, said lower end of said connecting rod including a plurality of blade means which are spaced and generally parallel relative to one another, said blade elements being yieldably resilient so as to be urged toward one another and thereafter being capable of assuming their original configuration, and connector means carried by at least two of said blade elements for cooperatively engaging said end portion of said actuating lever.

4,802,383

POWER TRANSFER DEVICE FOR FOUR-WHEEL DRIVE

Nobuaki Katayama; Kan Sasaki; Takeharu Koide, and Keisuke Takizawa, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 22, 1987, Ser. No. 53,061
Claims priority, application Japan, May 23, 1986, 61-119650; Mar. 2, 1987, 62-47260
Int. Cl.[4] F16H 1/44
U.S. Cl. 74—711 6 Claims

1. A power transfer device for four-wheel drive in combination with a power transmission, comprising:

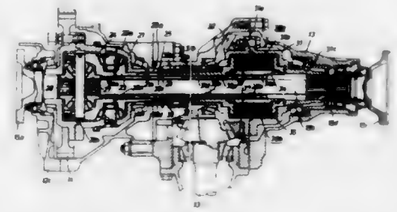
a first differential of the bevel gear type arranged to split the driving torque from said power transmission into two torque delivery paths respectively for front-wheel drive and rear-wheel drive;

a second differential of the bevel gear type arranged coaxially with said first differential at one side thereof to transfer the split driving torque from a first side gear of said first differential to one of front and rear-wheel axles;

an output gear arranged coaxially with said first differential at the other side thereof to transfer the split driving torque from a second side gear of said first differential to the other of said rear and front-wheel axles; and

a limited-slip differential assembled within a mounting case for said output gear to effect limited-slip torque proportional to the difference in rotational speed between said side gears;

wherein said limited-slip differential includes first and second rotary elements coupled with each other for relative rotation, said first rotary element being assembled within said mounting case for relative rotation and having a hollow shaft portion aligned with a first hollow shaft which is drivingly connected to the second side gear of said first differential, and said second rotary element being mounted on a second hollow shaft which is drivingly connected at an inner end thereof to the first side gear of said first differential and extends into the interior of said mounting case through said first hollow shaft, and



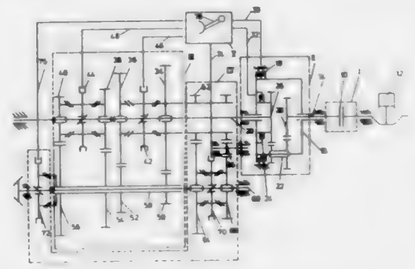
a clutch sleeve arranged between said first differential and said output gear and axially slidably mounted on said first hollow shaft for rotation therewith and being shiftable between a first position where it is engaged with said mounting case and said hollow shaft portion of said first rotary element and a second position where it is disengaged from said mounting case and said hollow shaft portion of said first rotary element and engaged with a casing of said first differential, whereby said power transfer device may be switched between limited slip four wheel drive when said clutch sleeve is in said first position, and two wheel drive when said clutch sleeve is in said second position.

4,802,384

PROCEDURE FOR SHIFTING A TRANSMISSION COMPOSED OF SEVERAL GEAR UNITS

Reinhard Schwarz, Gondelsheim; Heinz Stubenrauch, Schwetzingen, and Dieter Nobis, Lemse-Hahnhausen, all of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Filed Sep. 30, 1987, Ser. No. 103,481
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1986, 3633372
Int. Cl.[4] F16H 3/02; B60K 20/10
U.S. Cl. 74—745 3 Claims



1. A process for shifting a transmission having:

(i) a first gear unit drivably connectible to an engine;

(ii) a last gear unit having at least one synchronizer to driv-

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ingly connect the last gear unit to at least one driven component;

(iii) at least one intermediate gear unit releasably connecting said first and last gear units,

the process comprising:

(i) releasing said at least one synchronizer and said at least one intermediate gear unit;

(ii) connecting said at least one synchronizer;

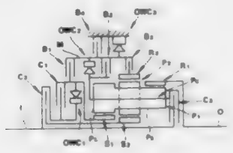
(iii) connecting said at least one intermediate gear unit.

4,802,385

AUTOMATIC TRANSMISSION'S RAVIGNEAUX TYPE PLANETARY GEAR TRAIN HAVING TWO RING GEARS

Kazuyoshi Hiraiwa, Hanamatsu, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 10, 1986, Ser. No. 917,856
Claims priority, application Japan, Oct. 11, 1985, 60-224780
Int. Cl.⁴ F16H *57/10*
U.S. Cl. 74—758 **10 Claims**



1. A planetary gear system comprising:

a stationary member,

input means for receiving a driving torque,

an output shaft,

a compound planetary gear train comprising a plurality of pinion sets each comprising a first pinion and a second pinion meshing with each other, a pinion carrier supporting said first and second pinions, a first sun gear meshing with said first pinions, a first ring gear meshing with said first pinions and always connected with said output shaft, a second sun gear meshing with said second pinions, and a second ring gear meshing with said second pinions,

a clutch group including a first clutch disposed between said input means and said first sun gear for connection and disconnection therebetween, a second clutch disposed between said input means and said second sun gear for connection and disconnection therebetween, and a third clutch disposed between said input means and said pinion carrier for connection and disconnection therebetween, and

a holding device group including a first holding device disposed between said first sun gear and said stationary member for holding said first sun gear, a second holding device disposed between said pinion carrier and said stationary member for holding said pinion carrier, and a third holding device disposed between said second ring gear and said stationary member for holding said second ring gear,

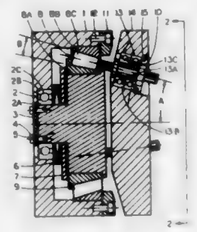
wherein each of said first pinions has a large gear section having a diameter and a small gear section which rotates with said large gear section as a unit and which has a diameter smaller than said diameter of said large gear section, said large gear section of each of said first pinions being in mesh with said first sun gear, and said small gear section of each of said first pinions being in mesh with said first ring gear, and wherein, in each pinion set, said second pinion is in mesh with said small gear section of said first pinion.

4,802,386

PRECISION ROTARY POSITIONING MECHANISM

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Filed Feb. 18, 1987, Ser. No. 16,174
Int. Cl.⁴ F16H *13/06, 15/56, 57/10, 13/02*
U.S. Cl. 74—798 **1 Claim**



PRECISION ROTARY POSITIONING MECHANISM

1. A rotary positioning apparatus comprising:

a. a carrier having a central axis;

b. a plurality of roller/shafts whose axes are oblique to the axis of the carrier;

c. bearing means rotatably mounting a first end of each roller/shaft in the carrier;

d. housing means;

e. a central shaft member rotatably mounted within the housing means;

f. wherein the second end of each roller/shaft is tapered and mounted between the central shaft and housing by an inner race and an outer race;

g. biasing means positioned within the housing means to bias the housing and central shaft so that the races are biased against the tapered ends of the roller/shafts;

h. whereby a rotational input to the device is provided at the first end of one of said roller/shafts;

i. whereby a rotational output member may be the central shaft, the housing, or the carrier, when one of the three is held stationary, and a device to be positioned is affixed to the output member by an attachment means.

4,802,387

REVERSIBLE UNIDIRECTIONAL TRANSMISSION

Thomas A. Williams, III, 4768 S. 6th St., Arlington, Va. 22204

Filed Nov. 24, 1986, Ser. No. 934,102
Int. Cl.⁴ E16H *5/52;* **B25B** *17/00*
U.S. Cl. 74—812 **27 Claims**



1. A transmission comprising:

an output member;

first means rotating in a first direction for driving said output member in a first direction in response to a first direction of rotation of said input member, said first means rotating in a second direction and not driving said output member in response to a second direction of rotation of said input member;

second means rotating in a first direction for driving said output member in said first direction in response to the second direction of rotation of said input member, said second means rotating in a second direction and not driving said output member in response to the first direction of rotation of said input member;

third means for changing the rotation of said output member to a second direction by changing said first means to rotate in said second direction for driving said output member in said second direction in response to said second direction of rotation of said input member and said first means to rotate in said first direction and not driving said output member in response to the first direction of rotation of said input member, and by changing said second means to rotate in said second direction for driving said output member in said second direction in response to said first direction of rotation of said input member and said second means to rotate in said first direction and not driving said output member in response to the second direction of rotation of said input member;

intermediate means for rotating said first means in said first direction and rotating said second means in said second direction in response to said first direction of rotation of said input member, and for rotating said first means in said second direction and said second means in said first direction in response to said second direction of rotation of said input member; and

holding means for enabling said intermediate means to cause said second means to be rotated by said input member in the opposite rotational direction of said input member and for disabling said intermediate means thereby not causing said second means to be rotated by said input member in the opposite rotational direction of said input member.

4,802,388

TIRE REPAIR PLUG AND TOOL

Simon Roberts, 30543 Shoreham, Southfield, Mich. 48076

Division of Ser. No. 592,506, Mar. 26, 1984, Pat. No. 4,579,161. This application Jul. 22, 1985, Ser. No. 757,257
Int. Cl.⁴ B60C *25/16, 21/06*
U.S. Cl. 81—15.7 **6 Claims**

1. In a tire repair apparatus for repairing and sealing a puncture of a tire of the type wherein a resilient plug is forcibly inserted into said puncture the improvement comprising:

(a) a labyrinth of closely spaced arcuate sealing rings with concentric circumferential grooves therebetween axially disposed along the periphery of the plug; and

(b) a folded metal wire insert having contiguous straight segment portions interiorally bonded to the plug and an adjoining loop portion projecting outwardly from one end of the plug for receiving a hook end portion of a tool adapted to forcibly insert the plug into a puncture of a tire.

4,802,389

ADJUSTABLE WORKPIECE GRIPPING AND ROTATING DEVICE

William E. Shultz, 239 N. Main St., Lombard, Ill. 60148

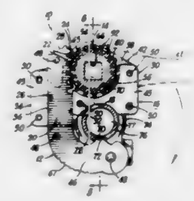
Continuation of Ser. No. 463,858, Feb. 4, 1983, abandoned. This application Dec. 31, 1984, Ser. No. 687,659
Int. Cl.⁴ B25B *13/12*
U.S. Cl. 81—127 **6 Claims**

1. Apparatus for gripping and rotating a workpiece comprising:

a gear mechanism housing having therein a rotatable annular gar member rotatably secured within the housing, said gear member including a plurality of radially extending teeth extending from an integral axle said axle including integral bearing surfaces on opposite ends, said gear member axle including a torque member-receiving slot extending completely through the axle and the housing to permit a torque member to engage the gear member axle from opposite sides of the housing;

a first adjustable jaw member including an integral elongated rack having a plurality of teeth cooperatively spaced to be received between the teeth of the annular gear member, said rack received and movable within a rack-receiving slot in the gear mechanism housing, said rack-receiving slot extending completely through the gear mechanism housing so that the adjustable jaw member can be manually forced to achieve more or less jaw separation, said slot defined by spaced inner housing wall members to maintain said gear member in alignment with said rack to maintain interengagement of the teeth of the rack with the teeth of the gear member;

a second jaw member integral with the gear mechanism housing, cooperatively disposed with respect to the adjustable jaw member for gripping a workpiece therebetween;



friction means disposed between said gear member and said gear member housing for frictionally engaging said gear member to provide a predetermined rotational resistance to said gear member at all rotational positions of said gear member, so that the adjustable jaw member and gear member are manually movable to manually initially set and maintain the adjustable jaw member with respect to the second jaw member onto a workpiece to any approximate, predetermined desired spacing without further movement or slippage of said adjustable jaw member from said predetermined initial spacing.

4,802,390

AUTO-GRIP PLIERS

William A. Warbelt, 121 Iroquois Dr., Butler, Pa. 16001

Continuation of Ser. No. 777,358, Sep. 18, 1985, Pat. No. 4,662,252. This application Mar. 19, 1987, Ser. No. 28,188
The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.
Int. Cl.⁴ B25B *7/04*
U.S. Cl. 81—341 **4 Claims**

1. Pliers having first and second rigid elongated handle members, each having a jaw end, a handle end, and an intermediate neck portion;

fastening means connecting the members between their neck portions and permitting the jaw ends to move toward each other in a sliding action in response to an initial manual closing force being applied to close the handle ends toward each other to grasp a workpiece between the jaw ends;

the fastening means acting to half further sliding action of the members in response to the jaw ends contacting the workpiece and to translate continued closing force on the handle members as a pivoting, gripping action of the jaw ends on the workpiece; and

a spring, mounted fully within the first handle member and

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interconnected to the second handle member, exerting force on the second handle member such that the jaw ends



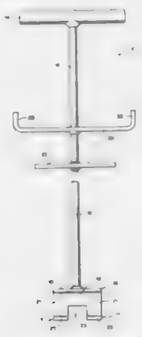
are normally caused to slide away from each other to a fully opened disposition.

4,802,391

TOOL FOR RECREATIONAL VEHICLE

Stanley K. Willhoite, and Thomas G. McMenamy, both of Rte. 1, Box 188A, Temple, Tex. 76501

Filed Sep. 24, 1987, Ser. No. 100,475
Int. Cl.[4] B25B *33/00*
U.S. Cl. 81—488 **11 Claims**



1. A hand tool for use to assist in connecting and operating the sewer hose and sewer gate valve of a recreational vehicle, comprising:

an elongated rod having a handle at one end and a two prong hook at the other end; an upright wall member mounted on said rod adjacent to and facing said hook; and a cross bar member secured to said rod at a position intermediate said ends, said cross bar member having a flange at each end which extends generally parallel to said rod.

4,802,392

METHOD OF EXTRACTING THE WOOD DUST COLLECTING IN VERTICAL PANEL SAWS

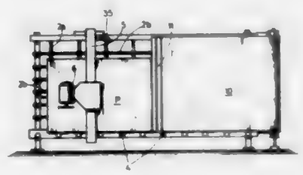
Ludwig Striebig, Lucerne, Switzerland, assignor to Striebig AG, Switzerland

Filed Apr. 24, 1987, Ser. No. 41,938
Claims priority, application Switzerland, Apr. 25, 1986, 1702/86
Int. Cl.[4] B26D *7/18, 1/18*
U.S. Cl. 83—100 **8 Claims**

1. A vertical panel saw comprising means for collecting sawdust accumulating behind a panel when the saw is making horizontal cuts therein, comprising a substantially vertical supporting grid on which a panel to be sawed is placed, said grid being formed from horizontally arranged, mutually parallel bars and on a front panel support side of which is arranged a vertical, laterally displaceable beam supporting a saw unit, said panel saw further comprising

a rear side of the supporting grid, which rear side is remote from the panel support side and is completely closed by a cover element anchored in a stationary manner on the supporting grid,

channels thereby formed between the grid bars adjacent to one another in pairs and connected to a vertical flow-off shaft,



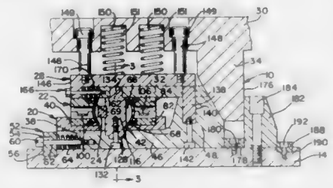
a movable sealing wall extending over the entire supporting grid height and arranged on the marginal section of the supporting grid which lies in the direction of the horizontal cut, said sealing wall being pretensioned in the direction of the panel to be sawed, and coupling means cooperative between said beam and a free edge of the sealing wall to cause joint lateral movement of said beam and sealing wall, said free edge of the sealing wall normally resting against an edge of said panel, said coupling means interengaging said free edge of the sealing wall and said beam in order to prohibit said saw from engaging said free edge of said sealing wall.

4,802,393

PIERCING DIE

Henry Grachalski, and Albert Grachalski, both of Bensenville, Ill., assignors to Ecological Systems, Inc., Chicago, Ill.

Filed Nov. 4, 1986, Ser. No. 926,953
Int. Cl.[4] B21D *28/28;* **B26F** *1/14*
U.S. Cl. 83—184 **20 Claims**



1. A piercing die for piercing a hole in a blank having an open interior and an outer wall defining a closed figure from the interior of the blank out through the outer wall to the outside of the blank comprising, in combination,

a base,

a slide movably mounted on the base,

a guide movably connected to the slide to control movement of the slide to a straight line movement,

a hollow female die mounted on said base having an inner working supporting surface defining a receptacle for snugly holding a blank having an inside wall and an outside wall having a surface complementary to the work supporting surface

a male die mounted on the slide,

said female die having a cutting aperture intersecting the blank receptacle,

said female die being split through said cutting aperture

said male die being positioned within the blank receptacle of the female die and mateable with the cutting aperture of the female die to cut a hole in the blank positioned in the blank receptacle of the female die from the interior of the blank through the outer wall to the outside of the blank, and

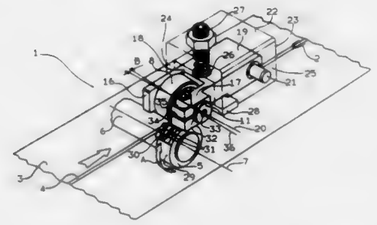
a cam connectable to the slide for moving the male die toward the female die to engage the blank and to cut the hole in the blank.

4,802,394

NOTCHING DEVICE FOR STRIP WRAPPING MATERIAL

Antonio Gamberini, and Silvano Boriani, both of Bologna, Italy, assignors to G.D. Società per Azioni, Bologna, Italy

Filed Feb. 10, 1988, Ser. No. 154,374
Claims priority, application Italy, Feb. 23, 1987, 3358 A/87
Int. Cl.[4] B26D *1/62;* **B26F** *1/42*
U.S. Cl. 83—346 **5 Claims**



1. A notching device for strip wrapping material, in particular, for effecting transverse cuts along the length of a continuous strip of transparent outer wrapping material incorporating a longitudinal tear-open ribbon that is severed with each such cut, comprising:

an incision roller, rotatable about a first axis and fitted with at least one peripheral blade of substantially 'U' shape;

a moving support;

a shaft, carried by the moving support and having at least one distinct end section cooperating with the support for adjustment relative to the support of the angular position of the shaft about a second axis lying substantially parallel to the first axis, and at least one further section aligned along a third axis that is angled in relation to the second axis;

a pressure roller mounted rotatably to the section of the shaft that is aligned along the third axis;

calibrated preload means, impinging on the support in such a way that contact between the incision and pressure rollers is invested with a given force.

4,802,395

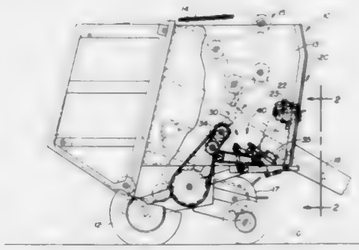
KNIFE ASSEMBLY FOR NET DISPENSING APPARATUS

John H. Merritt, III, New Holland, and Paul S. Shenberger, Wyomissing, both of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed May 1, 1987, Ser. No. 45,944
Int. Cl.[4] B26D *7/00;* **A01D** *39/00*
U.S. Cl. 83—649 **5 Claims**

1. In a net dispensing apparatus for use on a round baler to dispense netting material into the bale forming mechanism of the round baler where the cylindrical bale formed therein can be wrapped with a layer of said netting material, said net dispensing apparatus having means for retaining a source of supply of said netting material; a feeding mechanism to feed said netting material from said source of supply to said bale forming means; a knife assembly to sever said netting material after a sufficient amount of said netting material has been fed into said bale forming means; and drive means for operably powering said feeding mechanism, an improved knife assembly comprising:

said knife assembly having a pivot means and a cutting edge rotatably movable about a pivot axis between a retracted position and a cutting position, said netting material engaging the pivot means for said knive assembly while being fed from said feeding mechanism to said bale forming mechanism and while said cutting edge is in a retracted position, said netting material remaining in engagement with said knife assembly while said knife assembly is moved from said retracted position to said cutting position, said cutting edge being selectively movable into said netting material without substantially imparting energy into said netting material such that said netting material forms an angle around said cutting edge, whereby a tensile force exerted on said netting material substantially perpendicular to said cutting edge is solely operable to effect a severing of said netting material along said cutting edge.



4,802,396

SABER SAW BLADE

Anthony K. Kuklinski, 426 Penn Rd., Norristown, Pa. 19401

Continuation of Ser. No. 385,346, Jun. 7, 1982, abandoned. This application May 19, 1988, Ser. No. 196,811
Int. Cl.[4] B27B *33/02*
U.S. Cl. 83—849 **1 Claim**



1. For cutting a kerf in wood composed of fibers, a saber saw metal blade in the form of a longitudinally extending web having teeth extending generally in the plane of the web along one side thereof, with means on the web to secure the blade at one end to a reciprocating motor-driven saw so that the blade reciprocates longitudinally of the saw; the improvement comprising

a tooth combination of

(1) shear teeth for shearing fibers at the side of the kerf, and

(2) cleaving teeth for partially cleaving fibers cut on one side of the kerf,

wherein

(1) a single cleaving tooth alternates with a single shear tooth;

(2) the shear teeth have a set out of the plane of the web, with alternating shear teeth having opposite sets; and

(3) the cleaving teeth lie in the plane of the web:

whereby, when the saw blade reciprocates, a sawing action occurs wherein

(1) a first shear tooth set to one side of the web first shears wood fibers at the side of the kerf of the set;

(2) a cleaving tooth adjacent the first shear tooth partially cleaves the said first sheared fivers from the wood, the said cut fibers remaining intact at the side of the kerf opposite the cut made by the first shear tooth, and

(3) a second shear tooth set opposite the first shear tooth shears the said partially cleaved fibers at the side of the kerf opposite the first shear;

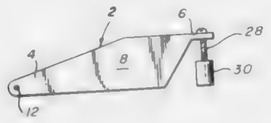
wherein the teeth are symmetrical, whereby the shearing and cleaving action set forth occurs in each direction of reciprocation.

4,802,397

VIBRATO PALM REST

David J. Petschulat, 200 W. Union, Apt. #2, Fullerton, Calif. 92632

Filed Jan. 14, 1987, Ser. No. 3,033
Int. Cl.[4] G10D *3/18*
U.S. Cl. 84—328 **12 Claims**



1. A palm rest for the vibrato device of a stringed musical instrument such as a guitar, comprising

a rigid support member arranged adjacent the vibrato device and including

(1) means for movably connecting said support member adjacent the vibrato device, whereby said support member moves with the vibrato device when the device is activated from a normal floating rest position to change the tension of the instrument strings; and

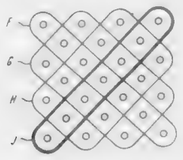
(2) support means for supporting said member in spaced relation adjacent the vibrato device when the device is in its normal floating rest position, whereby said support member prevents the instrument player's hand from inadvertently contacting and moving the vibrato device from its normal floating rest position during play of the instrument.

4,802,398

DIAGONALLY REINFORCED MECHANICAL PACKING

George B. Champlin, Stoneham, Mass., and Charles F. Swan, Brooklyn, Me., assignors to New England Braiding, Inc., Manchester, N.H.

Filed Dec. 18, 1986, Ser. No. 943,950
Int. Cl.[4] D04C *1/06, 1/12;* **F16J** *15/22, 15/26*
U.S. Cl. 87—8 **10 Claims**



1. A method for preventing packing extrusion by increasing the strength of a corner of a mechanical compression packing braided on a braider having X-tracks, including the steps of:

providing a high strength yarn braided from the carriers following only one given diagonal X track to provide only one reinforced corner adapted to lie adjacent a shaft to be sealed; and

providing a different and lower strength yarn braided from the carriers following all other tracks of the braider, whereby only a minimum of higher strength yarn is utilized in the braiding of the mechanical compression packing to eliminate packing extrusion.

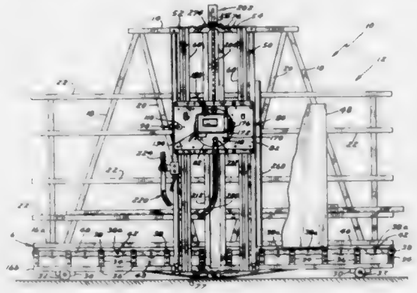
6. A braided mechanical compression packing system including a number of rings of braided mechanical compression packing material having at least two braided yarns and adapted to be placed in a stuffing box having a throat and a gland to compress the rings about a shaft, at least one of the rings including a first braided yarn along only one given diagonal X track to provide a reinforced corner of the packing, with said first braided yarn being a yarn having a higher strength as compared to the other braided yarns in the packing, such that when said at least one ring is properly positioned in said stuffing box about said shaft, extrusion of braided yarn from said last mentioned ring is eliminated with a minimum of said higher strength yarn.

4,802,399

PANEL SAW APPARATUS

Eugene T. Olson, 1250 135th Ave. N.E., Anoka, Minn. 55303

Filed Jul. 27, 1987, Ser. No. 78,412
Int. Cl.[4] B27B *5/06*
U.S. Cl. 83—425 **17 Claims**



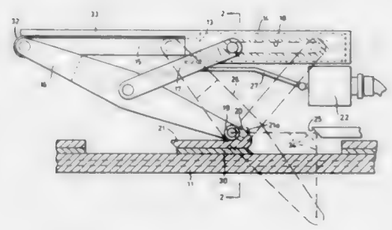
1. Panel saw apparatus comprising a generally upright frame, vertical track means including a pair of laterally spaced H-beams, each having a first pair of oppositely directed leg portions secured to said frame and a pair of second oppositely directed leg portions spaced forwardly of said frame, said vertical track means also including a rail member mounted on each of said second leg portions, a carriage including upper and lower pairs of wheels engaging the rail members on each of said beams so that said carriage is constrained for reciprocable movement in a generally vertical plane forwardly of said beams, said carriage including a plate having a circular opening therein, a turntable mounted for rotation relative to said circular opening and forming a segmental opening relative to an arcuate edge of said circular opening, an electric motor supported on one side of said turntable and said motor having a shaft projecting therefrom, a drive pulley on said motor shaft in alignment with said segmental opening, a saw mount supported on the other side of said turntable and said saw mounted having a shaft projecting therefrom, a driven pulley on one end of said saw mount shaft in alignment with said segmental opening and also in alignment with said drive pulley, the other end of said saw mount shaft being adapted for the attachment of a circular saw blade thereto, and a flexible belt entrained about said pulleys and extending through said segmental opening.

4,802,400

AIR-CARRIED MISSLE LAUNCHER

Dennis Griffin, Guildford, and Ronald F. Delves, Fordingbridge, both of England, assignors to Frazer-Nash Limited, England

Filed Apr. 9, 1987, Ser. No. 36,320
Claims priority, application United Kingdom, Apr. 9, 1986, 8608668
Int. Cl.[4] F41F *3/06*
U.S. Cl. 89—1.57 **14 Claims**



1. An airborne missile launcher, comprising:

a main missile launcher,

a sub-rail for detachable attachment of a missile,

detachable connection means for detachably connecting said sub-rail to said launcher,

jettison means for disconnecting and jettisoning said sub-rail from said launcher,

actuating means for actuating said jettison means where actuating said jettison means causes detachment of said connection means and disconnects and jettisons said sub-rail from said launcher.

4,802,401

PNEUMATICALLY MOVABLE DEVICE WITH A SAFETY LOCK MEANS

Kouichi Ozaki, Gunma, Japan, assignor to Ichikoh Engineering, Ltd., Maebashi, Japan

Filed Aug. 3, 1987, Ser. No. 81,210
Claims priority, application Japan, Jan. 20, 1987, 62-009047
Int. Cl.[4] F15B *15/26*
U.S. Cl. 91—44 **4 Claims**



1. A pneumatically movable device with a safety lock means comprising:

a movable member,

a pneumatic actuator connected to said movable member and adapted to move said movable member and having first and second air ports,

a direction control valve connected to said first and second air ports of said actuator,

a locking cylinder connected between said first air port and said direction control valve and having a piston disposed in said cylinder and a spring disposed in said cylinder, the spring pressing against one side of the piston, a first chamber being defined in the cylinder at the side of the piston where the spring is located and a second chamber being defined in the cylinder at the other side of the piston,

a first two openings provided in the first chamber and being respectively connected to said first air port of the actuator and to said direction control valve through respective check valves, the check valves being so arranged as to prevent air from flowing into said cylinder,

a second two openings provided in the second chamber, a first of said second two openings being connected to said first air port of the actuator through a check valve being so arranged as to prevent air from flowing into the locking cylinder and a second of said second two openings being connected to said directional control valve through an other check valve, said other check valve having a restrictor to prevent air from flowing into said direction control valve, and

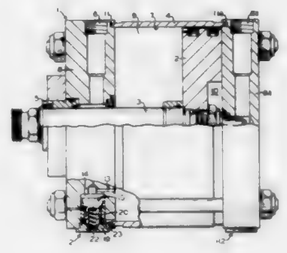
a locking member attached to the piston rod of said cylinder and an engaging member attached to said movable member and being adapted to engage with and lock said locking member.

4,802,402

CYLINDER HAVING AN INTERNALLY-DISPOSED DRAIN VALVE

Larry K. Rogers, Henderson, Ky., assignor to American Standard Inc., Lexington, Ky.

Filed Nov. 14, 1986, Ser. No. 930,479
Int. Cl.[4] F01B *3/00*
U.S. Cl. 91—268 **20 Claims**



1. A work cylinder having an internally-disposed drain valve for purging moisture therefrom comprising:

(a) a housing having a bore formed coaxially therein;

(b) a piston, movable within said bore, divides said bore into a first and a second chamber;

(c) a pilot chamber formed in said housing adjacent one of said first and second chambers, and in fluid communication with said one of said first and second chambers through a first passageway;

(d) a plunger member movable within said pilot chamber to a first position when fluid pressure introduced to said one of said first and second chambers is communicated over said first passageway to one side of said plunger, said plunger further being movable to a second position when such fluid pressure introduced to said one of said first and second chambers is exhausted; and

(e) said drain valve being disposed in said pilot chamber and being formed partially on said plunger member, said drain valve being operable to an open condition when said plunger member is in such second position such that moisture from said one of said first and second chambers can be drained to atmosphere, and said drain valve being further operable to a closed condition when said plunger member is in such first position whereby said drain valve is in a closed condition when said one of said first and second chambers is pressurized regardless of the pressure in the other of said first and second chambers.

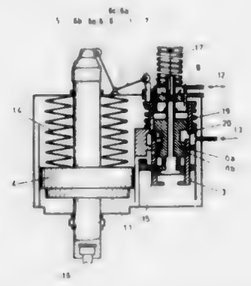
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4,802,403

RETURN MECHANISM OF AN ACTUATING DRIVE

Heinrich Logeder, Siggenthal-Station; Jaroslav Masek, Wettingen, and Kamil Prochazka, Windisch, all of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Sep. 23, 1986, Ser. No. 910,680
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1985, 3535174
Int. Cl.[4] F15B *9/10*
U.S. Cl. 91—374 1 Claim



1. A return apparatus of an actuating drive for valves wherein the actuating drive includes a control block having a slide valve and a return sleeve, and a servo-piston, the return apparatus comprising:

a shaped connecting surface provided on the servo-piston;

linearly translatable transmission means for acting on the return sleeve to displace the sleeve in response to a displacement of the servo-piston, said linearly translatable transmission means including a pin supported for linear movement in a direction parallel to and offset from the axis of the return sleeve;

a lever pivotally mounted for rotation about a pivot axis extending in a direction generally perpendicular to the central axis of the servo-piston, said lever including a first lever arm having first follower means for contacting said shaped connecting surface and a second lever arm having second follower means for contacting said linearly translatable transmission means, said first and second follower means including rotatable disks mounted to said first and second arms of said lever, said first disk being in rolling contact with said shaped connecting surface of the servo-piston and said second disk being in rolling contact with said return sleeve; and

a control spring positioned colinear with the axis of the return sleeve at a first end of the return sleeve, said transmission means also acting on said first end of the return sleeve.

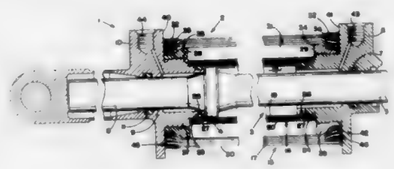
4,802,404

COMPOSITE CYLINDER ASSEMBLY WITH REMOVABLE LINER ASSEMBLY

William Dirkin, Portage; Fred Peters, Richland, and Terry L. Benton, Kalamazoo, all of Mich., assignors to Pneumo Abex Corporation, Boston, Mass.

Filed Apr. 6, 1987, Ser. No. 34,858
Int. Cl.[4] F16S *10/02*
U.S. Cl. 92—171 37 Claims

1. A composite cylinder assembly comprising axially spaced apart end glands having axially inwardly extending cylindrical end portions with external grooves containing seal means, a removable liner assembly comprising a liner member having circumferential hoop stress windings wrapped about said liner member, said liner member having opposite ends axially slidable onto said cylindrical end portions of said end glands and into direct sealing engagement with said seal means, and an outer wall portion surrounding said removable liner assembly, end rings affixed to opposite ends of said outer wall portion, said end rings having releasable connection means with the respective end glands, said outer wall portion being separate



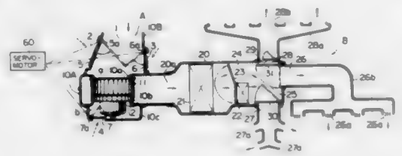
from said removable liner assembly, the inner diameter of said end rings being greater than the outer dimeter of said removable liner assembly to permit removal of said liner assembly from said end glands and outer wall portion upon disconnecting said end rings from said end glands.

4,802,405

AUTOMOTIVE AIR-CONDITIONER

Yutaka Ichitani, Kariya; Masayoshi Imaeda, Nagoya; Yoshimasa Ikeda, Toyota; Yoji Nishimura, Okazaki, and Kiyokazu Seikou, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 935,682, Nov. 26, 1986, abandoned.
This application Jan. 15, 1988, Ser. No. 145,690
Claims priority, application Japan, Nov. 28, 1985, 60-183274[U]
Int. Cl.[4] B60H *1/26*
U.S. Cl. 98—2.06 8 Claims



1. An automotive air-conditioner having a fan section and an air-conditioning section connected to a discharge side of said fan section to receive air therefrom and condition the thus received air, said air-conditioning section having at least one outlet through which the thus conditioned air flows into an occupant compartment, said fan section comprising:

a centrifugal fan having a plurality of circumferentially arranged vanes and axially opposite open ends through which flow of air enter the fan;

a fan casing accomodating said centrifugal fan;

said fan casing having a first wall portion including a first suction port closely adjacent to one of the open ends of said fan, a second wall portion including a second suction port closely adjacent to the other open end of said fan, a first air induction portion connected to said first wall portion and defining a fresh-air inlet and a first recirculated-air inlet both adapted to be communicated with said one open end of said fan, and a second air induction portion connected to said second wall portion and defining a second recirculated-air inlet adapted to be communicated with the other open end of said fans;

a first valve means for selectively opening and closing said fresh-air inlet and said first recirculated-air inlet;

a second valve means for opening and closing suid second recirculated-air inlet; and

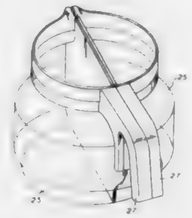
actuating means operatively associated with said first and second valve means to actuate them so that said fresh-air inlet and said first and second recirculated-air inlets are operated and closed by said valve means, said actuating means comprising a servomotor and a mechanical link mechanism drivingly connected said servomotor to said first and second valve means, said first and second valve means and said link mechanism being arranged such that, when said fresh-air inlet is opened by said first valve means, said first recirculated-air inlet is closed by said first valve means and said second recirculated-air inlet is closed by said second valve means and such that, when said fresh-air inlet is closed by said first valve means, said first recirculated-air inlet is opened by said first valve means and said second recirculated-air inlet is opened by said second valve means.

4,802,406

COFFEEMAKER

David W. Bouldin, 49 Briar Hollow, Apt. #2003, Houston, Tex. 77027

Filed Apr. 29, 1988, Ser. No. 187,956
Int. Cl.[4] A47J *31/00, 31/06*
U.S. Cl. 99—295 4 Claims



1. In an improved coffee brewing apparatus having a supply of heated water and means for dispensing a predetermined quality of said heated water at a predetermined time, the improvement comprising:

a grounds basket having divider means for separating said basket into at least two side by side grounds compartments, said basket having means for attaching to said coffee brewing apparatus so as to receive hot water dispensed by said coffee brewing apparatus, and each of said compartments having a brewed coffee outlet in the bottom thereof for passage of brewed coffee downwardly therethrough;

means associated with said basket for diverting hot water from said coffee making apparatus uniformly to both sides of said basket;

filter means arranged to be received in said grounds compartment for receiving coffee grounds thereinto;

and a pair of containers removably supported beneath said grounds basket for receiving and collecting brewed coffee exiting from said brewed coffee outlets;

whereby coffee grounds of different quality may be placed in each of said grounds compartments and two coffees of different quality may be brewed simultaneously.

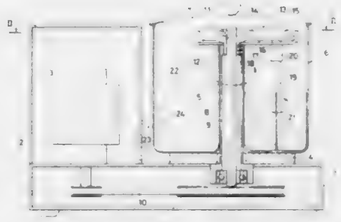
4,802,407

AUTOMATIC ELECTRIC HOUSEHOLD APPLIANCE FOR MAKING CHEESE AND BY-PRODUCTS THEREOF

Cesare Negri, Piacenza; Giorgio Bonini, Carpaneto, and Giorgio Libe', Pontenure, all of Italy, assignors to Philips S.p.A., Italy

Filed May 29, 1987, Ser. No. 55,782
Claims priority, application Italy, Jan. 5, 1986, 44807 A/86; Mar. 20, 1987, 44801 A/87
Int. Cl.[4] A23C *3/02, 9/00*
U.S. Cl. 99—453 11 Claims

1. An automatic electric household appliance for making cheese and by-products thereof, comprising a housing seat, a milk container which is removable from said seat, electric heating resistance means associated with said seat near said container, an agitator removably inserted in said container, an electric drive motor for said agitator and an electric control circuit including power supply means for said heating rsistance and said drive motor, two-temperature thermostat means responsive to a lower preselected temperature corresponding to the curdling temperature of milk in the container to stop electrical power supply to the heating resistance, first timing means activated by said thermostat means at said lower temperature to stop electrical power supply to the drive motor at the end of



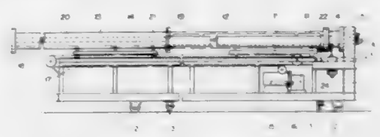
a shorter preselected time adequate for introduction of a coagulant in the milk, second timing means activated by said thermostat means at said lower temperature to restart electrical power supply to the heating resistance and the drive motor and to make the thermostat means responsive to a higher preselected temperature adequate for breaking the curd and converting the same into cheese and surrounding liquid at the end of a longer preselected time, said thermostat means being responsive to said higher temperature to stop electrical power supply to the heating resistances and the drive motor, means for allowing removal of the container from its seat and physical separation of the cheese from the liquid by draining.

4,802,408

COMPACTING APPARATUS OF ROLLED PLASTIC FILMS

Akio Hirabayashi, Saitama; Katsuaki Kaneko, Hasuda, and Yoshitake Okazaki, Ageo, all of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1988, Ser. No. 180,900
Int. Cl.[4] B30B *9/00*
U.S. Cl. 100—90 1 Claim



1. An apparatus for pneumatically compacting a roll of plastic films which comprises:

(a) a base stand having an elongated plan;

(b) a hollow cylindrical base shaft fixedly mounted in a horizontal disposition on or above the base stand along the longitudinal direction of the base stand and connected at one end to a means for air supply and evacuation, the other end being open;

(c) a trough for receiving rolls of plastic films pivotally connected to the base shaft at one end in a tiltable manner in the circumferential direction, the other end thereof extending toward the longitudinal direction of the base stand;

(d) an elongated cylindrical drum closed at one end remote

from the base shaft and mounted above the base stand in a movable manner along the longitudinal direction of the base stand to envelope the trough when moved toward the base shaft; and

(e) a means for fastening the open end of the elongated cylindrical drum to the open end of the base shaft and air-tightly connecting the same together.

4,802,409

PRINTING MECHANISM WITH TORQUE LIMITING DETENT ELEMENTS ON ACTUATING KNOB

Heinrich Volk, Beerfelden-Gammelsbach, and Ulf Koch, Eberbach, both of Fed. Rep. of Germany, assignors to Easelte Meto International GmbH, Fed. Rep. of Germany

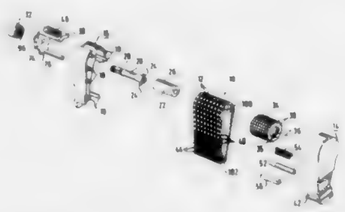
Filed Nov. 24, 1986, Ser. No. 934,036

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1986, 3635733

The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.

Int. Cl.[4] B41J *1/20*

U.S. Cl. 101—111 **13 Claims**



1. A printing mechanism comprising:

a plurality of type carriers carrying printing types in one peripheral region and indictor type in another peripheral region, the printing types are brought into a printing position by turning the type carriers;

a setting means including an actuating knob, a setting shaft operably connected to said actuating knob and a driver means for turning the type carriers in response to turning of said setting shaft, said setting means being axially displaceable to be brought into a drive connection with each of the type carriers for rotation therewith;

stop means provided at the type carriers for limiting the turning travel of the type carriers;

said actuating knob is connected to said setting shaft by way of a torque limiting means which permits said actuating knob to rotate relative to said setting shaft when the torque necessary to turn a type carrier is greater than a predetermined slip torque, but provides a direct connection below said predetermined slip torque, said torque limiting means comprising resilient detent elements operatively connected to one of said actuating knob and said setting shaft for engaging a shaped means on the other of said actuating knob and said setting shaft, said predetermined slip torque is governed by the spring hardness of said resilient detent elements and is greater than the force necessary to turn the type carriers and less than the force resulting from the effect of said stop means.

4,802,410

SHEET GRIPPER ARRANGEMENT FOR SILK SCREEN PRINTER

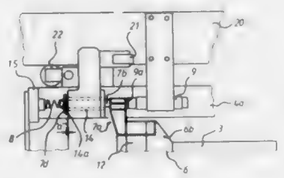
Sylve J. D. Ericsson, Tumba, Sweden, assignor to Svecia Silkscreen Maskiner AB, Norrsborg, Sweden

Filed Jan. 4, 1987, Ser. No. 58,272

Claims priority, application Sweden, Jan. 5, 1986, 86 02551; Apr. 1, 1987, 87 01365

Int. Cl.[4] B41F *15/08, 15/14*

U.S. Cl. 101—124 **20 Claims**



1. A silk screen printer comprising:

a substantially cylindrical printing table adapted to apply print to a sheet of material;

a stencil stretched in a movably mounted frame and arranged above the printing table;

a squeegee arrangement for urging the stencil against the printing table and to thereby transfer print onto said sheet of material located between the printing table and the stencil;

gripping means for gripping a forwardly located end part of said material, as seen in the direction of movement, during at least a part of the printing operation, said gripping means being mounted for movement with the frame in a direction along the longitudinal extent of the frame;

a spring device for urging said gripping means against a first stop means, said spring device being mounted for movement with said frame.

4,802,411

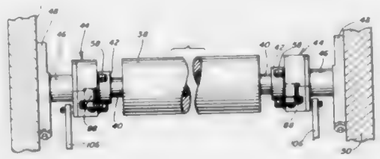
ADJUSTABLE MOUNTING BRACKET FOR PRINTING OR DUPLICATING MACHINE

Stanley Witczak, Chicago, Ill., assignor to AM International, Inc., Chicago, Ill.

Filed Feb. 6, 1987, Ser. No. 11,568

Int. Cl.[4] B41F *5/00*

U.S. Cl. 101—216 **18 Claims**



1. A bracket assembly for receiving and positionally adjusting the shaft end of a distribution roller in a printing, duplicating or like machine, comprising:

a pin head structure mounted on a framework of the machine;

a triangular array of pins projecting inwardly of the pin head axially of the roller for receiving the shaft end of the roller in a position of engagement between the sides of the pins and the sides of the shaft end;

means for adjusting at least one of said pins generally in a radial direction to take up any radial play between the roller shaft end and the pin array;

means for adjusting at least one of said pins in an axial direction to take up any axial play between the roller shaft end and the pin head structure, and

means for retracting at least one of said pins to allow for insertion of the roller into position between the pins.

4,802,412

IMPRINTER APPARATUS WITH CHANGEABLE CASSETTE IMPRINT ROLLER STRUCTURE

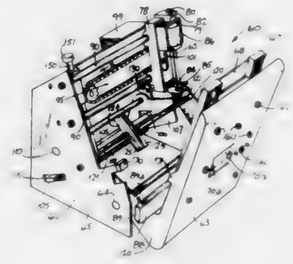
David G. Edwards, Dublin; Gerard Finlay, Naven; David J. Boyle, Leixlip, all of Ireland; Clyde C. Hensly, Jr., Arlington, Va.; Joseph M. Walsh, Raheny, Ireland, and Ralph J. Poling, Walkersville, Md., assignors to Security Imprinter Corporation, Walkersville, Md.

Continuation-in-part of Ser. No. 834,633, Feb. 28, 1986, abandoned. This application May 6, 1987, Ser. No. 46,557

Claims priority, application Ireland, Jun. 4, 1985, 1376/85; Nov. 21, 1985, 2918/85

Int. Cl.[4] B41F *3/04*

U.S. Cl. 101—269 **20 Claims**



1. Imprinter apparatus for imprinting characters from a character imprint source member onto imprint recording sheet material such as document sheets or the like, comprising an imprinter means housing section including a casing having movable roller means for transversely rectilinearly traversing a path laterally spanning an imprint station and drive means for moving said roller means back and forth along said path, the roller means including a horizontally slidable carrier block member and a changeable cassette carried thereby having a changeable vertically slidable roller block member and a vertically elongated generally cylindrical imprinter roller rotatably carried by said roller block member, the drive means comprising a pair of spaced-apart rotatable sprockets and an endless drive chain trained about said sprockets, the drive chain having a spud projecting therefrom, a pair of vertically spaced guide track members engaging and slidably supporting said carrier block member to guide the carrier block member and roller block member carried threby along said path, the carrier block member having a slot receiving said spud therein for driving the carrier block member and roller block member and roller carried thereby back and forth through advance and return strokes spanning said imprint station as the spud moves with said drive chain between said sprockets, said carrier block member having roller block support means movable from an operative position for imprinting document sheets to a release portion for removal and replacement of the roller block member and roller carried thereby, and a carrier member hinged for movement about a pivot axis to said housing section adjacent the path traversed by the roller means at said imprint station, said carrier member having a recess for receiving the imprint source member therein and a pocket formation for the recording sheet material, the carrier being movable about said pivot axis between an open position exposing said recess and pocket formation for introduction and withdrawal of the source member and sheet material and a closed position locating the sheet material and source member at said imprint station, said roller upon movement of said carrier block member and roller block member and its roller through said advance stroke by said spud and drive chain pressing the sheet material by said roller against said source member to produce a character imprint thereon.

4,802,413

PRINTING PLATE SECURING

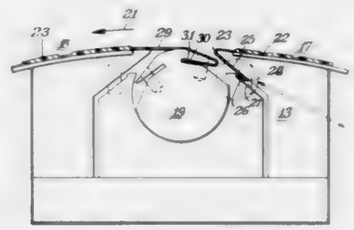
Richard B. Schroeder, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 24, 1987, Ser. No. 65,951

Claims priority, application United Kingdom, Jul. 11, 1986, 8616952

Int. Cl.[4] B41F *1/30, 13/08*

U.S. Cl. 101—415.1 **20 Claims**



1. In a printing plate assembly of a rotary printing press wherein a printing plate is mounted to a plate cylinder and wherein the printing plate includes at least one pair of semi-cylindrical substrates mounted around the periphery of the plate cylinder, the improvement being in said substrates being made of resilient, flexible non-metallic material, locking means for securing said substrates to said plate cylinder, said locking means including the leading end in the non-printing area of at least one of said substrates being formed in a multiple bend, said multiple bend forming a first bent portion being in the reverse direction to said one substrate and below the printing surface of said one substrate, said multiple bend further forming a second bent portion being at an angle to said first bent portion and below said printing surface of said one substrate, said assembly including a narrow elongated recess which is non-radial with respect to the axis of said plate cylinder, said recess being below said printing surface and being exposed at said leading end, a shoulder at the mouth of said recess defining a narrow passageway with said recess being wider beyond said shoulder, said multiple bend in its uncompressed condition being wider than the width of said recess, said multiple bend being inserted into said recess in a compressed condition and engaged against the walls of said recess, and the free end of said multiple bend being against the same wall as said shoulder at a steep angle thereto and disposed beyond and in contact with said shoulder whereby said multiple bend springs open beyond said shoulder and said shoulder prevents said multiple bend from being inadvertently removed from said recess.

4,802,414

MULTIPLE-CONTACT PLUG CONNECTION FOR ELECTRICALLY ACTUATABLE TRIGGERING MEDIA

Kurt Fiedler, Diepersdorf, and Berahard Kratz, Wendelstein, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

Filed Nov. 3, 1987, Ser. No. 116,023

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1986, 3638084

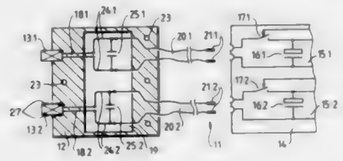
Int. Cl.[4] F42C *11/00*

U.S. Cl. 102—206 **7 Claims**

1. A multiple-contact plug connection for multiple electrically actuatable triggering devices, comprising an identifying

VOL 1099 ISS 1 FE 7 1989 UMI

capacitor connected in parallel with each said triggering device, with each identifying capacitor having a different value of capacitance from each other identifying capacitor, such that each particular triggering device can be positively identified



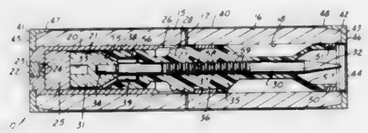
by measuring the capacitance of the identifying capacitor associated therewith, whereby the values of the capacitances of the identifying capacitors for different triggering devices clearly distinguish from each other.

4,802,415

TELESCOPED AMMUNITION ROUND HAVING SUBCALIBER PROJECTILE SABOT WITH INTEGRAL PISTON

Stephen E. Clarke, Orange; James D. Hendry, Huntington Beach, and Ernest R. Mijares, Sunset Beach, all of Calif., assignors to Ford Aerospace Corporation, Newport Beach, Calif.

Filed Dec. 28, 1987, Ser. No. 138,259
Int. Cl.[4] F42B *5/02*
U.S. Cl. 102—434 **12 Claims**



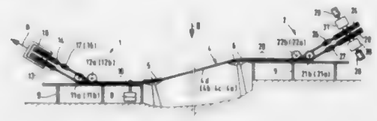
1. A telescoped ammunition round comprising:
- a propellant charge having an axial cavity for supplying firing power for said ammunition round;
- a control tube means housed within said axial cavity for selectively covering an aft surface portion of said axial cavity, said control tube means having a generally cylindrical axial bore substantially coaxial with said axial cavity;
- a discarding sabot concentric with and extending axially within said axial cavity, having an aft end within said axial bore, said sabot comprising at its aft end a piston integral therewith, said piston having a generally cylindrical outer surface forming a sliding fit with said axial bore;
- a subcaliber projectile mounted within said discarding sabot;
- a booster charge mounted within said axial bore aft of said piston, said discarding sabot being forwardly moveable in response to pressure against a rearward facing surface of said piston generated during firing of said booster charge and said projectile being forwardly moveable by forward movement of said discarding sabot; and
- a primer means in communication with said booster charge for actuating a firing of said ammunition round.

4,802,416

CABLEWAY HAVING A MULTIPASS LIFT CABLE

Bernd Meindl, Hard, Austria, assignor to Konrad Doppelmayr & Sohn Maschinenfabrik Gesellschaft mbH & CO. KG, Wolfurt, Austria

Filed May 29, 1987, Ser. No. 56,600
Claims priority, application Austria, Jun. 3, 1986, 1489/86
Int. Cl.[4] B61B *7/00, 11/00*
U.S. Cl. 104—192 **9 Claims**



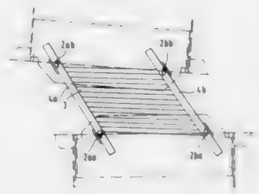
1. In a cableway having a multipass lift cable, especially a double pass lift cable, with a plurality of couplable and uncouplable conveying means, in which said lift cable is driven at one of at least two cable stations by drive-sheave means having at least two drive sheave grooves coupled with one another for joint rotation, the improvement wherein said lift cable is formed by a single endless cable loop which is crossed at least once to form a plurality of cable segments, said cable segments near the regions where said conveying means are couplable and uncouplable and in the conveying path between said regions are guided parallel and adjacent each other and at least one crossing point of said single closed cable loop is positioned between one of said regions and one of said cable stations containing a guide sheave means with at least two guide-sheave rollers having respective grooves or said drive-sheave means, said lift cable being fed to or guided from at least two of said guide-sheave grooves or said drive-sheave grooves positioned one over the other at different heights by a plurality of deflection rolls, said lift cable being guided at least approximately horizontally in said regions where said conveying means are couplable and uncouplable each of said conveying means being simultaneously suspended from at least two of said segments guided parallel and adjacent to each other.

4,802,417

GANGWAY FOR A RAILWAY CAR PASSAGEWAY

Wolfgang Küker, Salzgitter; Peter Braemert, Wolfenbüttel, and Werner Ortmann, Minden, all of Fed. Rep. of Germany, assignors to Linke-Hofmann-Busch GmbH, Fed. Rep. of Germany

Filed Jul. 14, 1987, Ser. No. 73,016
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1986, 3628627
Int. Cl.[4] B61D *17/00, 17/14;* **B60D** *5/00*
U.S. Cl. 105—8.1 **20 Claims**



1. A gangway for spanning a space between adjacent ends of two railway cars, comprising: a plurality of substantially rigid-parallel and spaced apart rails forming a bridge area in the space; bridge bearings connected to the end of each railway car, each said bridge bearing being pivotable with respect to the end of a railway car for pivotal movement about an axis;

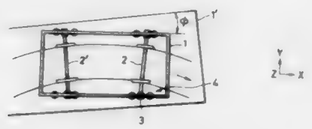
guide means for supporting said rails for sliding with respect to each other, said guide means being mounted on said bridge bearings for pivoting therewith and for lengthwise movement with respect to said bridge bearings.

4,802,418

WHEELSET STEERING APPARATUS AND METHOD FOR THE TRUCK OF RAILWAY VEHICLES

Isao Okamoto, Musashino; Katsuyuki Terada, Kudamatsu; Hiromi Go, Kudamatsu; Michio Sebata, Kudamatsu; Hiroshi Higaki, Kudamatsu, and Hideo Takai, Hikari, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 29, 1987, Ser. No. 8,340
Claims priority, application Japan, Jan. 29, 1986, 61-15670
Int. Cl.[4] B61F *5/30*
U.S. Cl. 105—167 **4 Claims**



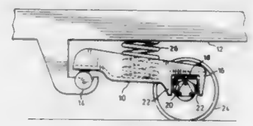
1. A wheelset steering apparatus for a truck of a railway vehicle, comprising a wheelset, a truck frame, an axle box to be rotatably installed on said wheelset, and an axle box retaining means, which includes a first elastic means for retaining elastically said axle box in the longitudinal direction as well as in the lateral direction of the truck with regard to said truck frame while carrying vertical loadings on said truck frame with regard to said axle box, and a second elastic means having a variable spring constant in the longitudinal direction of the truck in the running condition of the vehicle such that a bending stiffness of said wheelset is smaller on a curved track than on a straight track and a shearing stiffness is larger on a curved track than on a straight track.

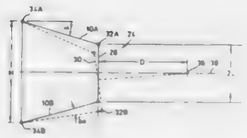
4,802,419

STEERED AXLE FOR A RAILWAY VEHICLE

Roy E. Smith, Kingston, Canada, assignor to Urban Transportation Development Corporation, Toronto, Canada

Filed Oct. 8, 1986, Ser. No. 917,115
Int. Cl.[4] B61F *5/38*
U.S. Cl. 105—171 **3 Claims**





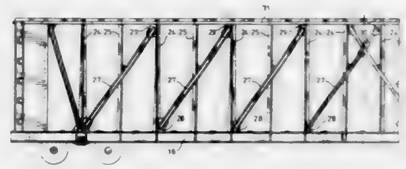
3. In combination with a rail vehicle, a first and second wheel set and swinging arm assembly, each wheel set and swinging arm assembly comprising:
- a wheel set;
- a first swinging arm having two ends, pivotally connected at one end to the rail vehicle to form a first pivot point and pivotally connected at the other end to the wheel set to form a second pivot point;
- a second swing arm of equal length to the first swinging arm and having two ends, pivotally connected at one end to the rail vehicle to form a third pivot point and pivotally connected at the other end to the wheel set to form a fourth pivot point;
- spring means for supporting the rail vehicle on the wheel set and swinging arm assembly; and
- a connecting linkage between the wheel set and swinging arm assemblies including a first rigid connecting arm pivotally connected to the first swinging arm of the first wheel set and swinging arm assembly, a second rigid connecting arm rigidly connected to the longitudinally adjacent swinging arm of the second wheel set and swinging arm assembly, and the first and second rigid connecting arms being pivotally connected to each other so that the two wheel set and swinging arm assemblies rotate conformably with each other.

4,802,420

CENTRE BEAM RAILROAD CAR

Ronald S. Butcher, and Mohamed A. Khattab, both of Burlington, Canada, assignors to National Steel Car Limited, Hamilton, Canada

Filed Jul. 21, 1987, Ser. No. 76,176
Int. Cl.[4] B61D *17/00*
U.S. Cl. 105—355 **8 Claims**



1. A freight car of the bulkhead flat car type having a centre beam structure extending between a pair of end bulkheads and supporting substantially the entire load carried by the freight car, the centre beam structure comprising a substantially vertical spine, extending the length of the centre beam structure, and crossbearers forming a load-carrying surface; the vertical spine connecting to a compression member in the form of an open truss extending in a substantially horizontal plane and aligned centrally about the vertical spine and extending the length thereof, the compression member absorbing compressive and lateral stresses transferred to the spine in use, wherein the compression member is mounted to extend along the top end of the vertical spine and comprises a rail member aligned on top of the vertical spine and extending the length of the compression member; a number of spaced apart, cross-members each secured at its mid-portion to the rail member and extending laterally therefrom; two edge rail members extending the length of the compression member, one on each side of the rail member, and joining the ends of the cross-members; and a diagonal cross-member extending between each pair of adjacent cross-members.

4,802,421

PALLET CONSISTING OF TWO OR SEVERAL BASE MEMBERS

Fred Atterby, Revvikon, S-181 90 Lidingö ; Bertil Voss-Schrader, Korshamnsvikon, S-139 00 Värdnö , and Lennart Tenggvist, Karlavägen 85, S-114 59 Stockholm, all of Sweden

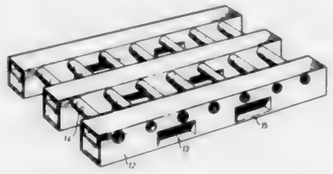
PCT No. PCT/SE86/00556, § 371 Date Aug. 12, 1987, § 102(e) Date Aug. 12, 1987, PCT Pub. No. WO87/03859, PCT Pub. Date Jul. 2, 1987

PCT Filed Dec. 8, 1986, Ser. No. 93,498

Claims priority, application Sweden, Dec. 19, 1985, 8506025

Int. Cl.⁴ B65D *19/20*

U.S. Cl. 108—51.1 **17 Claims**



1. Pallet consisting of at least two elongate base members having upper and lower, surfaces and side surfaces said base members having a number of holes provided laterally through the side surfaces perpendicularly to their elongate length directions, distributed along and closely adjacent the upper surfaces of the base members, through which holes, tubes can be inserted under friction so as to unite the base members to the formation of the pallet, characterized in that: each base member of the said pallet consists of three pressed carton pieces (1,2,3) folded to a rectangular U-section, each piece having a length corresponding to the length of the base member, of which the first (1) and the second (2) U-section carton pieces have a height corresponding substantially to the height of the pallet, whereas the third U-section carton piece (3) has a height dimension of the inner surface of its upright portions of its folded U-section which approximates the diameter of the tubes; of which folded carton pieces, one of the first (1) and the second (2) U-section carton pieces in the assembled base member is disposed in the upright U-form with the back of the U-section downwards, the other of the two U-section carton pieces (1,2) is disposed in the inverted U-form and situated within the said one carton piece (1 or 2) and wherein the said third U-section carton piece (3) is located in the assembled base member in an upright U-form disposed within and uppermost in said other U-section carton pice (1 or 2), the distance between the vertical walls of the carton pieces folded to the rectangular U-form being such that they fit closely to each other and by gluing are tightly fixed to each other at surfaces in contact with each other, the holes for the tubes being located so as to lead through the space enclosed by the third carton piece (3) uppermost in the base member, whereupon the tubes are supported by the horizontal inner surface of the third U-section carton piece (3) and by the horizontal inner surface of the other of said U-section carton pieces (1 or 2).

4,802,422

WORK SURFACE GANGING CLIP

Michael D. Beard, Hudsonville, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Continuation of Ser. No. 860,095, May 6, 1986. This application Sep. 15, 1987, Ser. No. 96,665

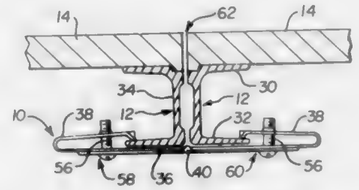
Int. Cl.⁴ A47B *57/00*

U.S. Cl. 108—64 **14 Claims**

1. A clip adapted to mount to first and second support brackets to secure first and second work surfaces mounted thereto in load transmitting relationship, said first and second support brackets being mounted to a wall in side-by-side relationship and having opposed first and second substantially horizontal legs, wherein said clip comprises:

a clamp means comprising a first lower portion, a first upper portion connected to said first lower portion, a first pin extending through said first upper and lower portions and a first drawing means on said first pin, engaging said first upper and lower portions and for drawing said first upper and lower portions toward each other to secure said first horizontal leg between said first upper and lower portions;

a securing means comprising a second lower portion connected to said first lower portion, a second upper portion connected to said second lower portion, a second pin extending through said second lower and upper portions and a second drawing means on said second pin, engaging said second upper and lower portions and for drawing said



second upper and lower portions toward each other to secure said second horizontal leg between said second upper and lower portions to secure said first and second work surfaces together in load transmitting relationship; and

an adjustment means comprising a first pivot means connected to said first lower portion, engaging said first horizontal leg and positioned on said first lower portion so as to provide a fulcrum for bending and pivoting of said first lower portion with respect to said first horizontal leg;

whereby tightening said first drawing means causes said first lower portion to deflect upwardly and to bend and pivot about said first pivot means thereby forcing said second lower portion to deflect downwardly, with respect to said first lower portion, to exert a force tending to lower said second work surface relative to said first work surface.

4,802,423

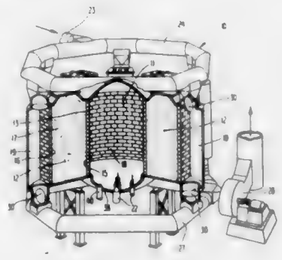
COMBUSTION APPARATUS WITH AUXILIARY BURNING UNIT FOR LIQUID FLUIDS

Rodney L. Pennington, Morris Township, Morris County, N.J., assignor to Regenerative Environmental Equipment Co. Inc., Morris Plains, N.J.

Filed Dec. 1, 1987, Ser. No. 127,158

Int. Cl.⁴ F23B *7/00*

U.S. Cl. 110—233 **16 Claims**



1. A combustion apparatus for incinerating gaseous fluids, comprising a combustion chamber, means for delivering gases to be burned into the combustion chamber and for withdrawing the gaseous products of combustion therefrom, and means for burning the gases thus delivered while in the chamber, the improvement comprising an auxiliary burning unit for burning combustible waste liquid as a fuel and for delivery of hot gases resultant therefrom into the combustion chamber, said unit including:

(a) a burning chamber;

(b) means for delivering liquid fuel and air to the burning chamber of the unit for ignition of liquid fuel and for providing a desired burning temperature in the burning chamber;

(c) with said burning chamber including means defining first and second elongate paths of travel for products of combustion; and

(d) said first and second elongated paths being at least in part on opposite sides of a common shared wall.

4,802,424

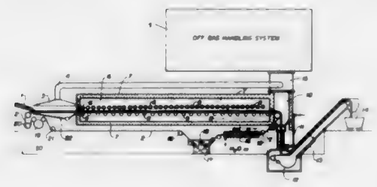
FURNACE FOR HAZARDOUS MATERIALS

Francis K. McGinnis, III, Dallas, Tex., and John F. Enright, III, Lancaster, Pa., assignors to Nass, Inc., York, Pa.

Filed May 26, 1988, Ser. No. 199,276

Int. Cl.⁴ F23G *5/00, 5/10, 5/12*

U.S. Cl. 110—250 **12 Claims**



1. In a continuous furnace for thoroughly treating hazardous materials to convert such materials to environmentally acceptable materials, the furnace including a continuous belt adapted to carry hazardous materials through at least one heated zone without release of noxious fumes or noxious solids to the environment, the improved combination comprising:

(a) a charging zone located in the open atmosphere adapted to spread the hazardous material charge on the moving belt before introduction into a heated zone, said charging zone being equipped with an exhaust hood ducted to convey to an off-gas handling system any volatile materials emitted while spreading;

(b) at least one substantially air-tight heated high temperature zone adapated to drive off volatiles and detoxify solids on the belt without release to the enviornment;

(c) an enclosed discharged zone having cooled walls and adapted to:

(i) discharge volatiles to an off-gas handling system for conversion of hazardous volatiles to environmentally acceptable materials;

(ii) convey solids to a solids collecting zone;

(d) means to move the continuous belt outside of the heating zone from the discharge zone to the charging zone; and

(e) means positioned between the discharge zone and the charging zone to cool the continuous belt prior to its return to the charging zone.

4,802,425

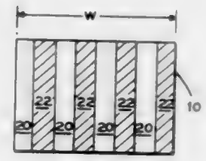
HIGH TEMPERATURE FIBER SYSTEM WITH CONTROLLED SHRINKAGE AND STRESS RESISTANCE

Edwin J. Dickson, Augusta, Ga., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 16, 1982, Ser. No. 450,401

Int. Cl.⁴ F23M *5/00*

U.S. Cl. 110—336 **4 Claims**



1. A fibrous lining for an interior of a furnace or the like, said lining having a hot and cold face, said lining comprising:

alternate strips of a first fibrous material, a second fibrous material material mechanically stronger than said first material but less shrink resistant then said first material and means for attaching the strips to a furnace wall such that the alternating strips of a first and second fibrous material, laid edgewise, form the hot face of the lining to provide a fibrous lining exhibiting the shrink resistance of a lining composed entirely of said first fibrous material.

4,802,426

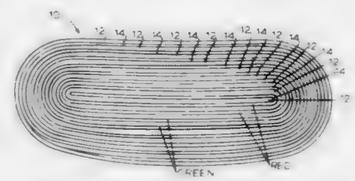
METHOD OF MAKING BRAIDED RUG CONSTRUCTION

Walter L. Hinshaw, 3200 Alamance Rd., Burlington, N.C. 27215

Division of Ser. No. 48,885, May 12, 1987, Pat. No. 4,764,407. This application Apr. 25, 1988, Ser. No. 185,841

Int. Cl.⁴ D04C *1/06;* **D04H** *13/00;* **D05B** *93/00*

U.S. Cl. 112—262.1 **7 Claims**



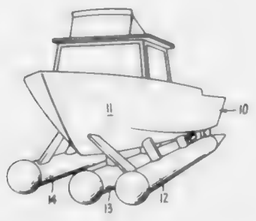
1. The method of making a braid type rug, comprising:

(a) starting with one end of a strand of braid at the center of the rug, coiling the braid to form a rug of selected size and shape;

(b) starting with one end of a first auxiliary strand substantially smaller in size than said braid and secured by stitches to said one end of the braid, coiling said auxiliary strand such that said auxiliary strand in relation to said braid lies outside but immediately adjacent the junction of and between and parallel to adjacent strands of said braid and exposed to view; and

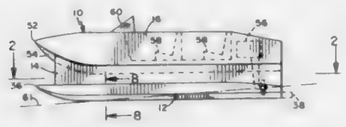
(c) stitching said braid and auxiliary strand together to retain said braid and auxiliary strand in said relation throughout the portion of the rug in which said auxiliary strand is employed.

4,802,427
SHIP HULL CONSTRUCTION
Donald R. Biegel, Napa, Calif., assignor to Tri-Albi Corporation, Napa, Calif.
Continuation of Ser. No. 892,310, Aug. 4, 1986, abandoned. This application Feb. 16, 1988, Ser. No. 155,876
Int. Cl.[4] B63B 1/12
U.S. Cl. 114—61 12 Claims



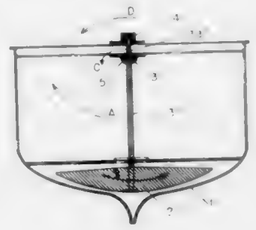
1. A ship hull construction comprising an upper main buoyant hull having a generally V-shaped bottom including a submerged keel and chines, and three submerged substantially cylindrical sub-hulls, one sub-hull being located directly beneath the keel of the main hull, the other two sub-hulls being located above and to opposite sides of said one sub-hull, each sub-hull being mounted to the underside of said main hull and imparting a constant buoyancy force thereto; whereby said V-shaped bottom and sub-hulls cooperatively define five throat areas through which water movement occurs to dampen roll and yaw movements of the ship hull without changing the total buoyancy force of said sub-hulls, said five throat areas being a first throat area defined by said keel and said one sub-hull, said second and third throat areas being defined by said other two sub-hulls and their respective chines, and said fourth and fifth sub-hulls being defined by said one sub-hull and each of said other two sub-hulls.

4,802,428
PLANING CATAMARAN VESSEL
Thomas G. Lang, 417 Loma Larga Dr., Solana Beach, Calif. 92075
Filed Mar. 17, 1987, Ser. No. 26,774
Int. Cl.[4] B63B 1/00
U.S. Cl. 114—61 36 Claims



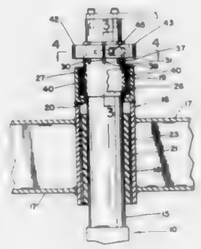
1. A catamaran vessel, comprising:
a pair of spaced, parallel elongated pontoons;
at least one strut extending upwardly from each of the pontoons;
each strut having a streamlined nose region and having a width less than that of the attached pontoon;
a superstructure supported on said struts for riding above the waterline; and
each pontoon having a lower planing surface for planing on the water surface at speed and sharp chines at its inner and outer side edges, the cross-sectional width of the pontoon varying along at least part of its height with the widest point of the cross-section being below the top of the pontoon, the pontoon lying at least substantially below the waterline when the vessel is at rest in the water snd planing on the water surface with the majority of the pontoon lying above the water line when the vessel travels at speed in the water.

4,802,429
VESSEL SUCH AS A SHIP, BOAT AND THE LIKE PROVIDED WITH STABILIZING MEANS
Kemal Batka, 372 Central Park West, Apt. 20 J, New York, N.Y. 10025
Filed Sep. 11, 1987, Ser. No. 96,966
Int. Cl.[4] B63B 39/02
U.S. Cl. 114—124 13 Claims



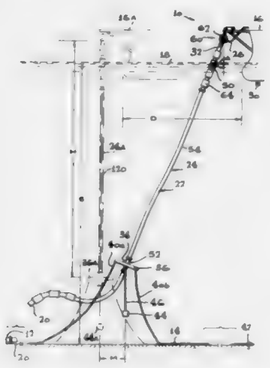
1. A vessel such as a ship, a boat and the like, comprising a hull having an inner hollow; a substantially vertical fixed support element fixedly connected with said hull; and a stabilizing element located in said inner hollow, one of said elements having a passage while the other of said elements at least partly freely extending through said passage and being limitedly turnable relative to said one element, so that in the absence of waves, wind and the like said elements are spaced from and do not abut against one another, while when said hull together with said fixed support element turns about a horizontal axis in a first direction under the action of waves, wind and the like, said elements come to abutment against one another and the abutment produces a moment which urges said fixed support element and therefore said hull to turn in a second direction which is opposite to said first direction so as to stabilize the vessel.

4,802,430
COMPOSITE RUDDER SEAL
James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Filed Oct. 26, 1987, Ser. No. 112,649
Int. Cl.[4] B63B 3/40
U.S. Cl. 114—169 9 Claims



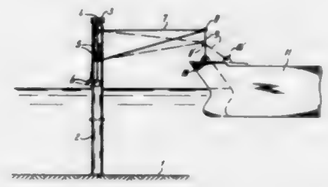
1. A bearing assembly for use with a steering rudder for a ship comprising a cylindrical housing with an upper portion and a lower portion, said cylindrical housing having a central bore therethrough, said lower portion having a sleeve of antifriction material bonded to the central bore thereof, a rudder shaft journaled in said central bore, said shaft having a thick annular rubber bearing member bonded thereto which slidingly engages said sleeve of antifriction material, said shaft having a thin rubber sleeve bonded to the upper portion thereto, a fiberglass sleeve bonded to said rubber sleeve, an annular rubber ring bonded to said fiberglass sleeve, the upper portion of said cylindrical housing having a fiberglass ring bonded to said central bore thereof, a ring of antifriction material bonded to said fiberglass ring for frictional sliding engagement with said rubber ring and for putting said rubber ring under compression.

4,802,431
LIGHTWEIGHT TRANSFER REFERENCING AND MOORING SYSTEM
Jack Pollack, Reseda, Calif., assignor to Amtel, Inc., Providence, R.I.
Continuation-in-part of Ser. No. 802,860, Nov. 27, 1985, Pat. No. 4,727,819, which is a continuation-in-part of Ser. No. 603,434, Apr. 24, 1984, Pat. No. 4,637,335, which is a continuation-in-part of Ser. No. 438,322, Nov. 1, 1982, abandoned. This application Apr. 27, 1987, Ser. No. 43,174
Int. Cl.[4] B63B 21/00
U.S. Cl. 114—230 6 Claims



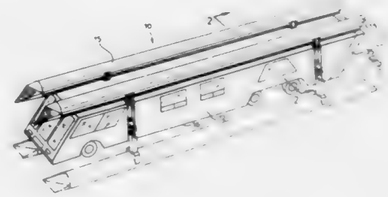
4. An offshore fluid transfer system for transferring fluid between a pipe lying near the sea floor and a dynamically positioned vessel, comprising:
a dynamically positioned vessel which includes a thruster;
a riser extending along most of the height of the sea, and having upper and lower ends, said riser including a fluid conduit for coupling said pipe near the sea floor and said vessel;
means for pivotably coupling said upper riser end to said vessel to allow relative pivoting of the riser upper end to the vessel about two horizontal axes;
means coupling the lower riser end to the sea floor, for allowing the lower riser end to pivot about horizontal axes and move by limited amounts both horizontally and vertically, and for weighting the bottom of said riser to keep it under tension;
means responsive to tilting of said riser upper end from the vertical, and a known relationship between such tilting and drift which takes into account movement of the lower end of the riser, for controlling said thruster.

4,802,432
MOORING DEVICE
Leendert Poldervaart, La Turbie, and Raymond Hervouet, Cap D'Ail, both of France, assignors to Single Buoy Moorings Inc., Marly, Switzerland
Filed Jan. 18, 1987, Ser. No. 63,462
Claims priority, application Netherlands, Jul. 1, 1986, 8601716
Int. Cl.[4] B63B 21/00
U.S. Cl. 114—230 2 Claims



1. In a mooring device comprising a mooring element anchored to the bottom of a body of water, said mooring element having a weighted structure swingably suspended from it at a location situated above the center of gravity of the weighted structure, said weighted structure being rotatable with respect to the said mooring element about a vertical axis, said device further comprising a rigid arm extending from said weighted structure toward a vessel, the connection of said arm with the vessel comprising a horizontal axis of rotation; the improvement in which the rigid arm forms a rigid entity with the weighted structure, and the end of the said rigid arm remote from the weighted structure and adjacent the vessel is connected with the vessel by means of a tension-resistant connecting element, and in which when said center of gravity of said weighted structure is in its lowest position, said tension-resistant connecting element is upright.

4,802,433
AMPHIBIOUS VEHICLE
Andrew J. Kovac, 4474 Shelby Crescent, Mississauga, Ontario, Canada L4W 3T3
Continuation-in-part of Ser. No. 885,844, Jul. 16, 1986, Pat. No. 4,691,657. This application Aug. 27, 1987, Ser. No. 90,951
Int. Cl.[4] B63B 35/00
U.S. Cl. 114—270 4 Claims



1. An amphibious vehicle having a front, a rear and two sides, comprising:
a frame provided with wheels for transporting the vehicle on land;
a body attached to the frame, the body having a watertight lower portion enabling the vehicle to float in a body of water;
pontoons for the vehicle to provide flotation of the vehicle in a body of water, the vehicle having at least one pontoon positionable laterally along each side thereof;

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at least two pivoting arms for moving each pontoon from a stowed position atop the vehicle to an operating position alongside the vehicle, each arm having one end attached to the pontoon and the other end attached to two continuous cables positioned on either side of the arm, each cable being arranged about a plurality of pulleys in a parallel manner to define a curved path for movement of the end of the arm attached to the cable approximately 180° about a pivot so that the pontoon may be moved into the desired position; and means for causing the cable to move along the path defined by the pulleys.

4,802,434

ANCHOR

Peter Bruce, Onchan, United Kingdom, assignor to BruPat Limited, Onchan, United Kingdom

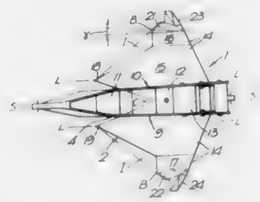
PCT No. PCT/GB86/00522, § 371 Date May 5, 1987, § 102(e) Date May 5, 1987, PCT Pub. No. WO87/01347, PCT Pub. Date Mar. 12, 1987

PCT Filed Mar. 9, 1986, Ser. No. 46,857

Claims priority, application United Kingdom, Sep. 5, 1985, 8522062; May 3, 1986, 8610914

Int. Cl.⁴ B63B *21/34*

U.S. Cl. 114—294 **23 Claims**



1. A marine anchor comprising a fluke arranged transversely to a longitudinal plane of symmetry of the anchor, a shank adapted at one end for attachment to an anchor line and at the other end for attachment to said fluke, said fluke including a main fluke member and fluke side structures on each side of said plane of symmetry, each fluke side structure including an upstanding lug and an auxiliary fluke attached to the lug so as to be remote from the plane of symmetry, each auxiliary fluke extending substantially transversely to said plane of symmetry and providing a leading surface inclined upwardly at an acute forwardly opening angle β_1 to a plane at right angles to said plane of symmetry and having a fluke central line; and support means about which the anchor tilts when inverted on a firm horizontal mooring be surface to bring one of said fluke side structures into contact with the mooring bed with the leading surface of the auxiliary fluke of said one fluke side structure inclined upwardly at an obtuse forwardly opening angle β_2 to the horizontal mooring bed surface whereby the auxiliary fluke digs into the mooring bed surface on forward movement of the inverted anchor.

4,802,435

SAFETY BOAT ASSEMBLY

Tai J. Choi, 1375 Hwanghak-Dong, Joong-Ku, Seoul, Rep. of Korea, assignor to Tai Jin Choi; Jung Bai Kim; Young Sung Park and Sai Hwan Kim, all of Seoul, Rep. of Korea

Filed Dec. 29, 1987, Ser. No. 138,951

Claims priority, application Rep. of Korea, Jan. 9, 1987, 139/1987

Int. Cl.⁴ B63B *43/12*

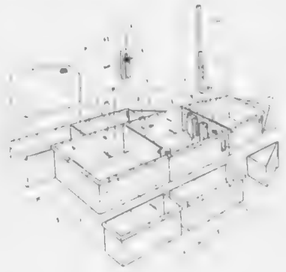
U.S. Cl. 114—360 **11 Claims**

1. A safety boat assembly having air bags which comprises:

a body member which includes a front cabin and a rear cabin disposed in the middle and rear portion of said body member, respectively, and a front chamber, disposed in the front portion of said body member,

a plurality of side chambers, attached to both sides of said body member, wherein said front chamber and said side chambers contain air bags disposed therein for improving the floating stability of the boat assembly,

a tubular pole, disposed in said front cabin and supported by a supporting member which is mounted to an interior wall between said front cabin and said front chamber, said tubular pole containing a dense material in the lower portion thereof for increasing the weight of the boat assembly so as to stabilize the boat assembly in heavy waves,



an air passing cylinder attached to said interior wall, wherein said air passing cylinder receives a tubular air inlet member for introducing fresh outside air from the atmosphere into the front cabin when the boat assembly is capsized, and

a light device attached to said interior wall for automatically lighting a light bulb by means of a gravity on/off switch which operates when the boat assembly is turned over, whereby the boat assembly reduces dangers associated with boating accidents and exhibits improved buoyancy and sailing stability.

4,802,436

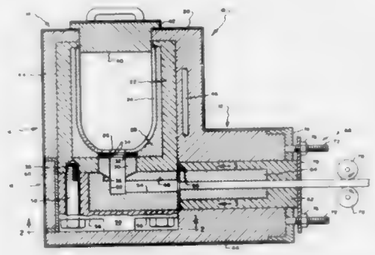
CONTINUOUS CASTING FURNACE AND DIE SYSTEM OF MODULAR DESIGN

Robert Wilson, Dundee, Scotland, and Jerry C. LaPlante, Buffalo, N.Y., assignors to Williams Gold Refining Company, Buffalo, N.Y. and Rautomead Limited, Dundee, Scotland

Filed Jul. 21, 1987, Ser. No. 76,022

Int. Cl.⁴ B22D *11/00*

U.S. Cl. 164—440 **27 Claims**



1. A continuous casting furnace for use with metals capable of dissolving carbon, the furnace being of a modular construction utilizing a graphite metal containment system lined with suitable non carbon containing refractory materials; said furnace comprising:

a crucible assembly provided with a graphite crucible, and a refractory liner supported within the graphite crucible;

a die section including a tubular graphite die carrier, and a non-wetting refractory die disposed within the tubular graphite die carrier;

flexible sealing means extending between the die section and the crucible assembly; and

holding means capable of holding the parts together in juxtapositioned relationship.

4,802,437

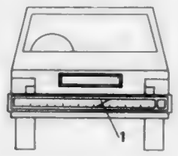
EXTERNAL SPEED DISPLAY DEVICE FOR MOTOR VEHICLES

Umberto Felicetti, Via Rossini, 8, 87040 Castrolibero (CS), Italy

Continuation of Ser. No. 752,429, Jul. 8, 1985, abandoned. This application Nov. 3, 1986, Ser. No. 925,957

Int. Cl.⁴ G01P *15/06;* **B60Q** *1/54, 9/00*

U.S. Cl. 116—62.4 **6 Claims**



1. A device for indicating the speed of a vehicle and for registering the speed of a vehicle which is involved in a collision, comprising,

a box member mounted on the outside of a vehicle, said box member being substantially the size of a vehicle bumper,

means for recording vehicle speed in response to involvement of the vehicle in a collision, said recording means including a cylindrical tube member and a shaft, said cylindrical tube member being mounted on said box member and being visible to other motorists,

a first set of graduations for indicating vehicle speed, said graduations being marked in units of vehicle speed, said graduations being visible and extending lengthwise with respect to said box member, said graduations being provided on one of said members, said shaft having indicator means cooperating with said graduations to indicate vehicle speed

said cylindrical tube member being transparent and having a deformable inner layer,

said shaft being located inside the cylindrical tube member and having a raised external thread formed thereon, said shaft being rotatable relative to said tube member in response to changes in vehicle speed, said thread facing the deformable inner layer, said cylindrical tube member being movable against the thread in response to collision forces sustained by said cylindrical tube member, said external thread being capable of forming an indentation in said inner layer to register the vehicle's speed when a collision moves the inner layer against the thread.

4,802,438

CONTAINER COLLAR DOSAGE TIME INDICATOR AND CONTAINER

Antonia R. DeJonge, R.D. #1 Lilac Dr., Annandale, N.J. 08801

Filed Mar. 24, 1988, Ser. No. 173,243

Int. Cl.⁴ B65D *55/22;* **G09F** *9/00*

U.S. Cl. 116—308 **16 Claims**

1. A medicine bottle, comprising:

(a) a container having a bottom, a side wall structure, with a shoulder section of said side wall structure tapering inwardly and upwardly towards a neck, a neck with a cross sectional area less than that of the side wall structure, said neck having a generally cylindrical configuration, a cap engagement means about said neck, an opening at the top of said neck, a circular flange about said neck below said cap engagement means, said circular flange having a specific outer diameter, and a fixed container marker located on said side wall structure;

(b) a cap capable of engagement with said cap engagement means of said container; and,

(c) a tapered collar having a top diameter and a bottom diameter wherein said top diameter is narrower that said bottom diameter, said top diameter being slightly less than



the outer diameter of said circular flange and said bottom diameter being less than the greatest width of said shoulder section, said tapered collar having been force and fitted over said flange and being held under said flange and rotatably resting on said shoulder section, and said tapered collar having serial indicia located on its outside for alignment with said fixed container marker for dosage time indication as said tapered collar is sequentially rotatable thereabout.

4,802,439

PRESSURE APPLYING MECHANISM FOR FIXING ROLLERS OF A COPYING APPARATUS

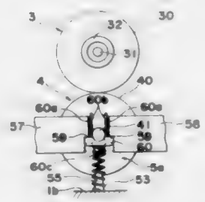
Yuji Sugimoto; Masaru Tsuji, both of Nara, and Shoichiro Yoshiura, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 4, 1987, Ser. No. 21,675

Claims priority, application Japan, Mar. 6, 1986, 61-32991; May 16, 1986, 61-112971

Int. Cl.⁴ B05C *11/02*

U.S. Cl. 118—116 **1 Claim**



1. A pressure device for applying pressure between an upper fixing roller and a lower fixing roller of an image forming apparatus, said pressure device comprising:

a holding arm member for supporting a rotary shaft of said lower fixing roller at each end thereof, said holding arm member including a bearing portion and two vertical arm elements projecting from said bearing portion of said holding arm member such that said holding arm member substantially resembles a "U", each of said vertical arm elements having an inwardly protruding portion formed on an inner wall thereof, said inner walls of said arm elements facing each other such that said protruding portions prevent said rotary shaft of said lower fixing roller from being inadvertently detached from said holding arm member;

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two horizontal stationary support plates located at each end of said lower fixing roller juxtapositioned to said rotary shaft adjacently disposed on respective sides of said vertical arm elements of said holding arm member, each support plate being provided with a shoulder portion substantially at the central portion thereof such that siad holding arm member is positioned between said support plates within said shoulder portions;

biasing means located immediately below said respective bearing portions of said holding arm members for biasing said holding arm members upward so that said respective holding arm members may be engaged with said respective shoulder portions of said support plates; and

means for preventing said biasing means from moving in a horizontal direction,

said pressure applying device being provided at each end of said lower fixing roller whereby said upper and lower fixing rollers are held in pressure contact with each other through depression of said upper fixing roller towards and with said lower fixing roller.

4,802,440

GLUE APPLICATOR FOR LABELING MACHINES

Hermann Kronseder, Regensburger Str. 42, D-8404 Worth-/Donau, Fed. Rep. of Germany

Filed Jul. 14, 1987, Ser. No. 72,903

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1986, 8618968

Int. Cl.[4] **B05C** *1/02*

U.S. Cl. 118—261 12 Claims



1. A scraper device for regulating the thickness of a film of glue on a roller, said device comprising:

carrier means extending generally alongside of said roller and spaced from the periphery of said roller,

a support member and mounting means for mounting said support member to said carrier means for said member to be adjustable toward or away from said roller, said support member having stop surfaces thereon,

a glue scraper blade insert shaped for abutting said stop surfaces, said blade insert having at least one beveled scraper edge extending beyond said support member to provide a small gap between said edge and the periphery of said roller, and

a clamping member having a stop surface and means for mounting said clamping member to said support member to press the support member against said blade insert so as to hold said blade insert against said stop surfaces on the support member to assure that said blade insert is held in the same position when inserts are exchanged.

4,802,441

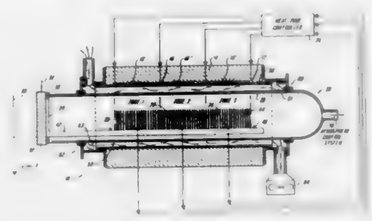
DOUBLE WALL FAST COOL-DOWN FURNACE

Arthur Waugh, Winchester, Mass., assignor to BTU Engineering Corporation, North Billerica, Mass.

Filed Jan. 8, 1987, Ser. No. 1,444

Int. Cl.[4] **C23C** *16/00*

U.S. Cl. 118—666 7 Claims



1. A fast cool-down furnace, comprising:

a reaction vessel having an outer wall and defining an elongated reaction chamber having a length;

means coupled to the reaction vessel for heating the reaction chamber;

means coupled to the reaction vessel for injecting reactants in gas phase into the reaction chamber;

means for providing an annular fluid flow passageway having an annular mouth and that is in concentric surrounding relation to and extends substantially along the length of the reaction chamber;

means coupled to the annular fluid flow passageway for providing an annular duct in air-tight sealing relation to said mouth of said annular fluid flow passageway; and

means coupled to said annular duct for moving an annular stream of fluid peripherally around the mouth and through the passageway for removing heat uniformly from around the reaction chamber.

4,802,442

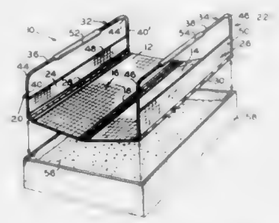
CAT LITTER SCREENING DEVICE

Michael E. Wilson, 818 Hayes, Apt. C, San Francisco, Calif. 94102

Filed Nov. 9, 1987, Ser. No. 118,171

Int. Cl.[4] **A01K** *29/00*

U.S. Cl. 119—1 12 Claims



1. A device for removing fecal matter from cat litter contained in a litter box, comprising the combination of at least two planar bottom panels, each panel having a pair of spaced-apart side edges and a pair of spaced-apart end edges which extend orthogonal to said side edges to form a generally rectangular configuration, means forming a plurality of screen-like foramen in each panel, said foramen being sized to permit passage therethrough of the litter while occluding passage of a substantial portion of the fecal matter, said bottom panels being positioned in side-by-side relationship with a side edge of one bottom panel being adjacent to a side edge of the other bottom panel, hinge means for connecting said adjacent side edges of the panels together for pivotal movement about a central axis, lift means attached to each panel at the side edges thereof remote from the central axis for moving the panels down through the litter toward the bottom of the box, for lifting the panels up through the litter and away from the box while carrying fecal matter trapped by the foramen and for disposing of fecal matter carried by the panels, said end edges being coextensive with the plane of their respective bottom panel whereby when the device is tipped to move either of the end edges downwardly the discharge of fecal matter from the bottom panels over the end edges is unrestricted.

4,802,443

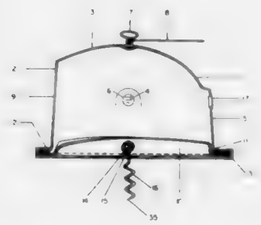
DOME SHAPED ANIMAL SHELTER

Henry M. Denmark, Raleigh, N.C., assignor to DAMCO Plastics Corporation, Raleigh, N.C.

Filed Oct. 1, 1987, Ser. No. 103,521

Int. Cl.[4] **A01K** *1/02*

U.S. Cl. 119—19 12 Claims



1. An animal shelter comprising:

a. a substantially dome-shaped housing having an opening for a door;

b. a separable base providing a floor for said housing;

c. means for attaching said housing to said base;

d. a swivel arm means attached at top of said housing;

e. a tether attached to said arm;

f. a spiral anchor means for anchoring said base to the ground, said means including a spiral anchor placed in the ground, said anchor having a loop at the top, an anchor bar held horizontally in place along center line of bottom of said base by holes located on opposite sides of said base, where said bar is placed through said loop of said anchor while being placed in said holes of said base, thereby holding the shelter in place.

4,802,444

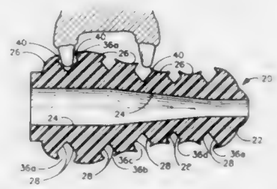
THERAPEUTIC PET TOY

Joseph P. Markham, and Peter Emily, both of Lakewood, Colo., assignors to Bounce, Inc., Lakewood, Colo.

Filed Jul. 15, 1987, Ser. No. 73,484

Int. Cl.[4] **A01K** *15/00*

U.S. Cl. 119—29 21 Claims



1. A dental hygienic play toy for performing dental prophylaxis on the teeth of a carnivore as said toy is chewed by the carnivore, said toy comprising:

an elastomeric elongated body having a longitudinal axis extending in the direction of said body's elongation, said body; defining an outer surface, a plurality of grooves extending circumferentially about said body and said longitudinal axis; formed in; said outer surface and having spaced sides, and a functional prophylaxis lip located between at least one of said sides of each groove and said toy's associated adjacent outer surface, said lip partially projecting over opening of the each groove and being sized and configured to scrape a tooth as it is inserted into and partially withdrawn from groove each as the carnivore chews said toy.

4,802,445

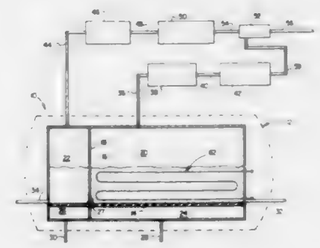
PARALLEL STAGED FLUIDIZED BED COMBUSTOR

Archibald S. Robertson, Jr., Whitehouse Station, N.J., assignor to Foster Wheeler Development Corporation, Livingston, N.J.

Filed May 12, 1988, Ser. No. 166,574

Int. Cl.[4] **B09B** *3/00*

U.S. Cl. 122—4 D 3 Claims



1. A combustor comprising a vessel, means for dividing said vessel into two cells, means for passing air through a bed of particulate material including fuel disposed in each of said cells at a velocity sufficient to fluidize said particulate material and promote the combustion of said fuel, means for controlling the quantity of air introduced to one of said cells so that it is sufficient for complete combustion of the fuel in said latter cell to form a flue gas, means for controlling the quantity of air introduced to the other cell so that it is insufficient for complete combustion of said fuel but sufficient to generate a combustible off-gas, the flue gases from said combustion passing through said vessel and entraining a portion of said particulate material, outlets associated with said vessel for discharging said flue gas and said off-gas respectively, separating means respectively connected to said outlets for separating the entrained particulate material from said flue gases and from said off-gas, and means connected to said separators for burning said separated off-gas in the presence of said separated flue gases to raise their temperature.

4,802,446

SAFETY DEVICE FOR SUBCRITICAL PRESSURE STEAM BOILERS

Leonard E. Triggs, 407 Kindt Corner Rd., Shoemakersville, Pa. 19555

Filed Apr. 27, 1987, Ser. No. 43,185

Int. Cl.[4] **F22B** *37/42*

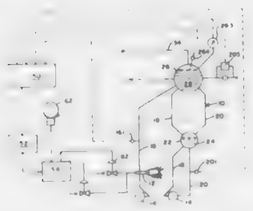
U.S. Cl. 122—504 4 Claims

1. An improved subcritical pressure boiler with a heat source, a steam drum, inventory water, a plurality of risers, downcomers, headers and furnace tubes in combination comprising:

a. means for sensing saturation drum water temperature and generating a first signal therefor;

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b. means for sensing temperature in the downcomer and to generate a second signal therefor;
c. means for finding the subtractive difference between the first signal and second signal;



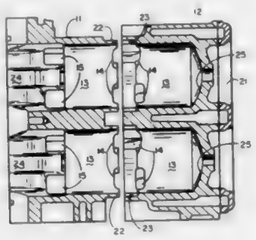
d. means for measuring a trend of the subtractive difference in a defined time interval;
e. means for diminishing the heat source if the subtractive difference approaches a defined limit in the defined time interval.

4,802,447

FOAM PATTERN FOR ENGINE CYLINDER BLOCK

William D. Corbett, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 17, 1985, Ser. No. 809,987
Int. Cl.[4] B22C *7/02*
U.S. Cl. 123—65 K **3 Claims**



1. A foam pattern for use in a lost foam casting process for making a cylinder block of a crankcase compression, two-cycle engine, said cylinder block having a transfer passage extending through the cylinder block to connect a crankcase end of a cylinder with a transfer port in a wall of the cylinder, said transfer port positioned intermediate the crankcase and head ends of the cylinder, and having an exhaust port through the wall of the cylinder intermediate the ends of the cylinder, said pattern comprising:

(A) a first die cast pattern component for a head end of the cylinder block, said first component including a first cylinder cavity defining the head end of said cylinder and head ends of said transfer port and transfer passage, said first cylinder cavity being free of projections which would prevent the withdrawal of a forming die in a direction parallel to the axis of said cylinder;

(B) a second die cast pattern component for the crankcase end of the cylinder block, said second component including a transfer cavity defining crankcase ends of said transfer port and transfer passage, said transfer cavity being free of projections which would prevent the withdrawal of a forming die in a direction parallel to the axis of said cylinder; and

(C) a means to join said first and second components together,

wherein said second component further includes a second cylinder cavity defining a crankcase end of said cylinder,

wherein said second pattern component includes a cylindrical projection coaxial with and encircling a portion of said cylinder and said first pattern component includes a cylindrical cavity mating with said cylindrical projection,

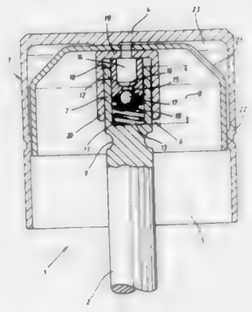
wherein the crankcase end of said transfer port is defined at the end of said cylindrical projection.

4,802,448

CUP TAPPET WITH HYDRAULIC PLAY COMPENSATION DEVICE

Erich Ableitner, Remseck, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 17, 1988, Ser. No. 156,607
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1987, 3704929
Int. Cl.[4] F01L *1/24*
U.S. Cl. 123—90.55 **9 Claims**



1. Cup tappet with hydraulic play compensation means for a breather valve of an internal-combustion engine having a cup open towards the breather valve, which cup exhibits a guide bushing arranged hub fashion to receive a hydraulic valve play compensating element having a hollow cylindrical part influencing the valve shank and a piston part guided slidably on the cylindrical part and braced, pretensioned by a spring against the cup base, said piston part and cylindrical part enclosing a working space which is connected through a non-return valve to a storage space which is connected through a duct in the cup to a lubricating oil circuit of the internal-combustion engine, wherein the valve shank is provided along a shank section, starting from the valve shank end, with a cylindrical recess which constitutes the cylindrical part, which is retained in the guide bushing secured internally to the cup base and which conjointly with the guide bushing encloses the storage space and working space.

4,802,449

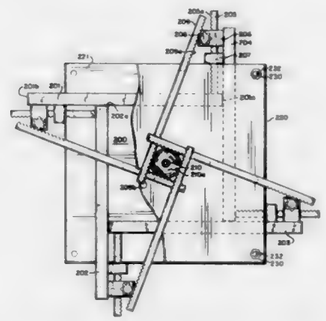
"O"-TYPE ENGINE CONSTRUCTION

Ping Yang, 8220 Dorothy St., Rosemead, Calif. 91770

Continuation-in-part of Ser. No. 753,670, Jul. 10, 1985, Pat. No. 4,651,690, which is a continuation-in-part of Ser. No. 646,773, Sep. 4, 1984, abandoned. This application Dec. 8, 1986, Ser. No. 939,079
The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.
Int. Cl.[4] F01B *7/02*
U.S. Cl. 123—197 R **13 Claims**

1. An internal combustion engine comprising:

a combustion chamber having two inner wall surfaces and at least three movable walls reciprocally mounted therein, each movable wall adapted to move simultaneously laterally and orthogonal with respect to each other, means associated with an exterior of each movable wall for moving orthogonally while simultaneously causing each said movable wall to move laterally while moving orthogonally so as to maintain said combustion chamber in a continuously sealed condition, and means for collecting all orthogonal movements into one reciprocating linear movement and for transmitting such movement to a crankshaft;



ignition means secured in said combustion chamber adapted to selectively ignite a gas contained in said combustion chamber; and

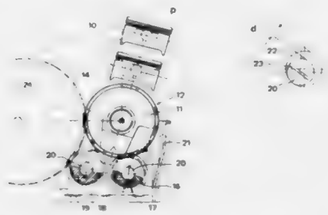
means for permitting said gas to selectively enter into and exit from said combustion chamber.

4,802,450

BALANCER FOR INTERNAL COMBUSTION ENGINE

John M. L. Roberts, Coventry, United Kingdom, assignor to Triumph Motorcycles (Coventry) Limited, Hinckley, United Kingdom

Filed Feb. 20, 1987, Ser. No. 17,264
Claims priority, application United Kingdom, Feb. 22, 1986, 8604457
Int. Cl.[4] F02B *75/06*; F16F *15/26*
U.S. Cl. 123—192 B **5 Claims**



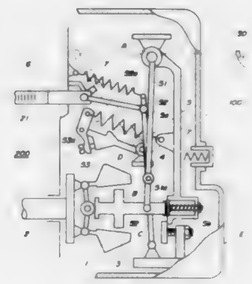
1. A motorcycle internal combustion engine which comprises four in line pistons and associated cylinders; a crankshaft driven by reciprocation of the pistons in the cylinders; drive transmission means for transmitting drive from the crankshaft; and balancing means for balancing secondary forces generated by the engine; the drive transmission means including a crankshaft gearwheel concentrically rotatable with the crankshaft about the crankshaft axis, and a primary gearwheel in direct driving engagement with the crankshaft gearwheel and arranged to carry drive clutch means; the balancing means including a first balancing wheel in direct engagement with the crankshaft gearwheel and a second balancing wheel in direct engagement with the primary gearwheel, whereby the balancing wheels are driven in opposite directions at twice the rotational speed of the crankshaft about axes parallel to the crankshaft axis; and further comprising adjustment means for each balancing wheel whereby the distance between the axis of rotation of the respective balancing wheel and the axis of rotation of its associated gearwheel is adjustable independently of the other balancing wheel.

4,802,451

MECHANICAL GOVERNOR FOR FUEL INJECTION PUMP, WITH REACTION FORCE ADJUSTING MECHANISM FOR GOVERNOR CONTROL LEVER

Masantsu Takahashi, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1987, Ser. No. 65,335
Claims priority, application Japan, Jan. 30, 1986, 61-153753
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—373 **5 Claims**



1. A mechanical governor for a fuel injection pump of an internal combustion engine having an accelerator pedal, said mechanical governor comprising:

a casing;

a governor control level mounted to said casing for pivotal movement about a pivotal axis between a first extreme angular position corresponding to a release position of said accelerator pedal and a second extreme angular position corresponding to a maximum depression position of said accelerator pedal;

first biasing means for biasing said governor control lever so as to gradually increase a reaction force acting thereupon as a function of the pivotal movement of said governor control lever from said first extreme angular position toward said second extreme angular position; and

second biasing means having one end connected to said governor control lever and another end supported by said casing for applying a biasing force to said governor control lever so as to adjust the reaction force acting upon said governor control lever due to said first biasing means, said one end of said second biasing means being shifted in response to the pivotal movement of said governor control lever;

a link mechanism arranged between said another end of said second biasing means and said casing and connecting them to each other, said link mechanism being operative in response to the pivotal movement of said governor control lever about said pivotal axis for shifting said another end of said second biasing means relative to said casing, to substantially parallelly translate a line connecting said one and said another ends of said second biasing means to each other, across said pivotal axis of said governor control lever.

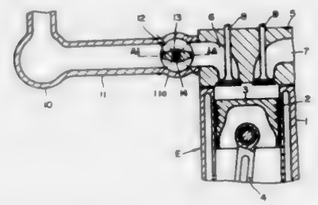
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4,802,452

ENGINE INTAKE SYSTEM

Hiroshi Kanesaka, Kawasaki, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Shizuoka and Kabushiki Kaisha Kanesaka Gijutsu Kenkyusho, Kawasaki, both of, Japan

Filed Aug. 28, 1986, Ser. No. 901,764
Claims priority, application Japan, Sep. 6, 1985, 60-195941
Int. Cl.[4] F02D *31/00*
U.S. Cl. 123—376 **8 Claims**



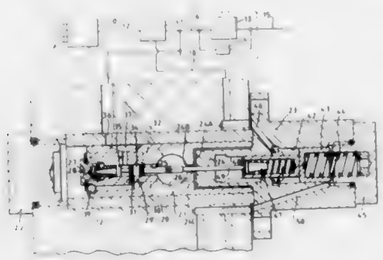
1. An intake system for an internal combustion engine, the system comprising: an intake passage having an intake port and an inertial supercharging intake pipe leading to the intake port; an intake valve mounted in said intake port and operatively connected to said engine for alternately opening and closing the intake port; a rotary valve operatively connected to the engine and disposed in the intake passage intermediate said inertial supercharging intake pipe and said intake port, said rotary valve being rotatable for opening and closing the intake passage, and timing adjusting means operatively connected to said engine and to said rotary valve for retarding the opening of the rotary valve relative to the opening of the intake valve at low engine speeds, and for advancing the opening of the rotary valve at high engine speeds, whereby the retarding and advancing of the opening of the rotary valve enables inertial supercharging in the intake pipe at both low and high engine speeds.

4,802,453

FUEL INJECTION PUMP

Ian R. Thornthwaite, Gillingham, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Jul. 27, 1987, Ser. No. 77,809
Claims priority, application United Kingdom, Aug. 16, 1986, 8619994
Int. Cl.[4] F02M *41/14, 37/06;* **F04B** *29/00*
U.S. Cl. 123—450 **12 Claims**



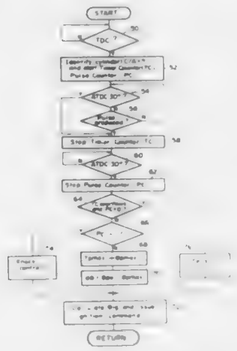
1. A fuel injection pump for supplying fuel to an internal combustion engine comprising a pumping plunger located in a plunger bore, cam means and a cam follower means, a drive shaft coupled to one of said means for driving the cam means and cam follower means relative to each other to impart inward movement to the plunger, a fluid pressure operable device for effecting limited movement of the other of said means about the axis of rotation of the drive shaft, said device comprising a piston slidable within a cylinder, means coupling the piston to the other of said means, a control valve member slidable within a bore defined in the piston, passage means through which the opposite ends of said control valve member are exposed to a low pressure, port means opening into said bore and controlled by the valve member whereby when the valve member is moved in one direction fluid can flow to one end of the cylinder to move the piston in the same direction to re-establish an equilibrium position and when the valve member is moved in the other direction fluid can flow out of said one end of the cylinder to allow the piston to move in the other direction until the equilibrium position is re-established, and means responsive to a control pressure for controlling the position of said valve member.

4,802,454

DEVICE FOR CONTROLLING IGNITION TIMING IN INTERNAL COMBUSTION ENGINE

Akira Tanaka, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1987, Ser. No. 10,875
Claims priority, application Japan, Feb. 19, 1986, 61-34330
Int. Cl.[4] G01L *23/22;* **F02P** *5/145*
U.S. Cl. 123—425 **12 Claims**



1. A device for controlling ignition timing in a multi-cylindered internal combustion engine, comprising:
(a) pressure sensors disposed in the vicinity of each combustion chamber of the engine for detecting pressure variation in the chamber;
(b) a crankshaft angle sensor disposed in the vicinity of a rotating member of the engine for detecting the angular position of the crankshaft;
(c) filtering means connected to the pressure sensors, said filtering means for passing pressure sensor output signals in a transmission band extending up to and including knocking frequencies;
(d) pulse generating means connected to the filtering means for generating a pulse at every peak output by the pressure sensors;
(e) knocking and maximum pressure angle detecting means, connected to the pulse generating means, said knocking and maximum pressure angle detecting means for counting each pulse generated by said pulse generating means and for determining that knocking has occurred when the number of counted pulses exceeds a predetermined value, and said knocking and maximum pressure angle detecting means, being further connected to the crankshaft angle sensor, for determining the maximum pressure angle at which the combustion chamber pressure becomes maximum based upon the detected angular position of the crankshaft and based upon the counted pulses;

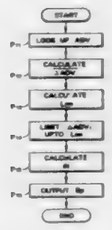
(f) ignition timing calculating means, connected to the knocking and maximum pressure angle detecting means and crankshaft angle sensor, for separately calculating ignition timing of the engine for each combustion chamber, said ignition timing calculating means retarding the ingition timing when knocking is detected and said ignition timing calculating means calculating the deviation of the maximum pressure angle from a predetermined target angle and compensating the ignition timing to decrease the deviation when knocking is not detected; and
(g) ignition means connected to the ignition timing calculating means for igniting a fuel and air mixture in each combustion chamber.

4,802,455

KNOCKING CONTROL SYSTEM AND METHOD FOR AN INTERNAL COMBUSTION ENGINE

Toshimi Abe, Kanagawa, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed Oct. 14, 1986, Ser. No. 918,123
Claims priority, application Japan, Oct. 29, 1985, 60-243606
Int. Cl.[4] F02P *5/145*
U.S. Cl. 123—425 **9 Claims**



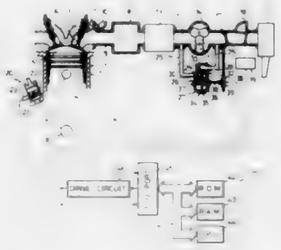
1. A knocking control system for a multi-cylinder engine comprising:
(a) first means for detecting engine operating conditions;
(b) second means for detecting the occurrence of knocking in each of the engine cylinders;
(c) third means for setting a basic advance angle value for ignition timing on the basis of the engine operating conditions detected by said first means;
(d) fourth means for calculating an angle correction amount for each engine cylinder by which the basic advance angle value set by said third means is to be adjusted toward the retarded-ignition side so as to suppress knocking when knocking is detected by said second means and toward the advanced-ignition side when said second means detects no knocking;
(e) fifth means for calculating a limit value for the angle correction amounts calculated by said fourth means on the basis of an average value of the angle correction amounts for all cylinders and limiting said angle correction amounts to no more than said limit value;
(f) sixth means for correcting the basic advance angle value set by said third means for each cylinder according to the angle correction amount for the corresponding cylinder calculated by said fourth means and limited by said fifth means and determining a final advance angle value for each cylinder from the correction thereof; and
(g) seventh means for ignition an air-fuel mixture supplied to each engine cylinder on the basis of the final advance angle value for that cylinder.

4,802,456

DEVICE FOR CONTROLLING CHARGING PRESSURE OF A SUPERCHARGED INTERNAL COMBUSTION ENGINE

Yukihiro Okane; Koji Endo, and Masayoshi Nakai, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 14, 1987, Ser. No. 73,284
Claims priority, application Japan, Aug. 15, 1986, 61-190559
Int. Cl.[4] F02B *33/38;* **F02D** *23/00*
U.S. Cl. 123—564 **8 Claims**



1. A device for controlling charging pressure of an internal combustion engine having an intake passage, said device comprising:
a throttle valve arranged in the intake passage;
a mechanically driven charger driven by the engine and arranged in the intake passage downstream of said throttle valve;
a bypass passage branched from the intake passage between said throttle valve and said mechanically driven charger and connected to the intake passage downstream of said mechanically driven charger;
a pressure source having a pressure which is not less than atmospheric pressure;
speed detecting means for producing an output signal indicating an engine speed;
relief valve means arranged in said bypass passage and having a pressure control chamber selectively communicating under the control of a control means with one of said pressure source and the intake passage between said throttle valve and said mechanically driven charger, said relief valve means opening and closing in response to charging pressure and controlling a maximum charging pressure in the intake passage downstream of said mechanically driven charger by controlling a flow area of said bypass passage in response to an absolute pressure in said pressure control chamber to reduce said maximum charging pressure as said absolute pressure is reduced, said relief valve means being opened when the charging pressure exceeds a pressure which is determined in response to the absolute pressure in the pressure control chamber thereby controlling the flow area of the relief valve means to equalize the charging pressure with the charging pressure determined by the absolute pressure in the pressure control chamber, said relief valve means having a construction such that, if the pressure control chamber is connected to the intake passage between the throttle valve and the mechanically driven charger, the relief valve is closed when the engine speed is lower than a first speed and opened when the engine speed exceeds the first speed to control the flow area of the relief valve means so that the charging pressure becomes equal to the charging pressure determined by the level of vacuum in said pressure control chamber; and
said control means selectively connecting said pressure control chamber to said pressure source or the intake passage between said throttle valve and said mechanically driven charger in response to the output signal of said

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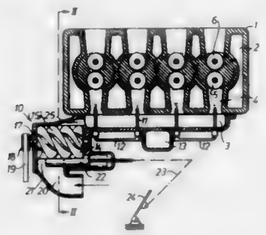
speed detecting means to connect said pressure control chamber to said pressure source when the engine speed is lower than a second predetermined speed that is higher than the first speed and to connect said pressure control chamber to the intake passage between said throttle valve and said mechanically driven charger when the engine speed is higher than said second predetermined speed.

4,802,457

INTERNAL COMBUSTION ENGINE PROVIDED WITH A SUPERCHARGER

Johnny Oscarsson, Gustavsberg, Sweden, assignor to Svenska Rotor Maskiner AB, Stockholm, Sweden

PCT No. PCT/SE86/00467, § 371 Date May 14, 1987, § 102(e) Date May 14, 1987, PCT Pub. No. WO87/02417, PCT Pub. Date Apr. 23, 1987
PCT Filed Oct. 10, 1986, Ser. No. 54,274
Claims priority, application Sweden, Oct. 14, 1985, 8504744
Int. Cl.⁴ F02B *33/36*; F02D *23/02*
U.S. Cl. 123—564 **8 Claims**



1. A throttle controlled internal combustion engine (1, 2) comprising:

a supercharger in the form of an air compressor (10), said air compressor comprising intermeshed helical screw rotors (14, 15) arranged in a compression chamber;

said air compressor (10) having a capacity regulating means (22) on an air inlet side (20) thereof;

control means coupled to said capacity regulating means (22) for regulating the power output of the engine, said control means including movable means for assuming positions corresponding to a partial engine load for adjusting said capacity regulating means (22) to corresponding positions in which the function of said air compressor (10) is switched to an expander mode with variable throttling effect on the sunction inlet side (3) of the engine and substitutes for a gas throttle, said air compressor (10) in said expander mode transferring power to the engine (1, 2); and

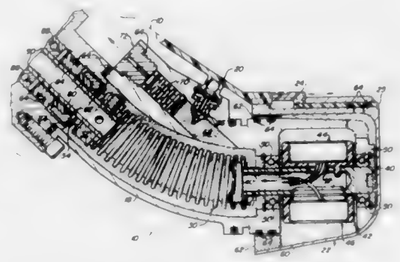
said capacity regulating means including a valve slide means (22) arranged for axial movement in relation to said rotors (14, 15) and forming a movable wall part of said compression chamber of said air compressor (10), and also forming a movable wall part of a radial inlet port means (21), said radial inlet port means including a nozzle means (30) of variable area, said nozzle means (30) communicating with a fuel delivery means (31).

4,802,458

DUAL FUNCTION ULTRASONIC TRANSDUCER PROBES

Phillip M. Finsterwald, West Haven, Conn.; Charles W. Howlett, Bailey, Colo., and James W. Ring, Southbury, Conn., assignors to Ethicon, Inc., Somerville, N.J.

Filed Mar. 9, 1984, Ser. No. 588,021
Int. Cl.⁴ A61B *10/00*
U.S. Cl. 128—661.08 **5 Claims**



3. An ultrasonic transducer probe comprising:

a motor having a first shaft;

an ultrasonic transducer mounted on a second shaft;

a flexible coupling connecting said first and second shafts;

wherein said ultrasonic transducer, said first shaft and said flexible coupling are surrounded by a fluid chamber; and

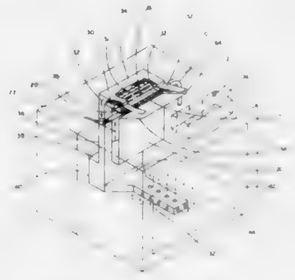
a dynamic fluid seal located around said first shaft.

4,802,459

IMPROVED GAS OVEN USING FLAME SWITCHING

David H. McFadden, Lexington, and W. David Lee, W. Newton, both of Mass., assignors to Gas Research Institute, Chicago, Ill.

Filed Dec. 21, 1987, Ser. No. 135,932
Int. Cl.⁴ F24C *3/00*
U.S. Cl. 126—41 R **16 Claims**



2. A flame switchable gas burning device for use as a radiant and a convection heat source in a gas stove having an oven cavity therein said device comprising:

a burner tube having a plurality of front-facing flame ports thereon,

means for substantially directing fresh air through an upper and a lower gap proximate to said burner tube over substantially the length of said burner tube;

means for creating a low pressure zone over the length of said burner tube above and rearward of said burner tube, said low pressure zone adequate in size to allow the passage therethrough of a flame which will emanate from said flame ports when said burner tube is appropriately connected to a source of gas and is appropriately ignited and said means for creating a low pressure zone also causing recirculation air to flow from said low pressure zone into said oven cavity.

means for activating and deactivating said means for creating a low pressure zone thereby causing said flame to switch from bake to broil when said means for creating a low pressure zone is deactivated;

a broil flame channel within which a broil flame from said flame ports is contained when said means for creating a low pressure zone is deactivated, comprising a spreader plate having a width substantially equal to the length of said burner tube and appropriately positioned above said burner tube and associated with said low pressure zone so as to permit a flame from said flame ports to enter said low pressure zone, when said low pressure zone is present, without substantially impinging onto said spreader, and a shield plate having a width substantially equal to the width of said spreader plate, one end positioned appropriately below said burner tube and in association with said lower gap and sloping upwardly and toward said spreader plate thereby creating said broil flame channel and having a front-facing broil flame channel opening with a height dimension less than the rearward spacing between said spreader and said shield, said broil flame distributed over and attached to said shield plate; and

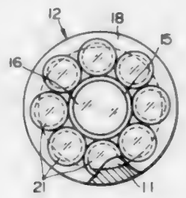
means for attaching said gas burning device to the roof surface of said oven cavity.

4,802,460

ENDOSCOPE ILLUMINATING OPTICAL SYSTEM DEVICE

Hideki Ohkawa, and Akira Hasegawa, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 2, 1987, Ser. No. 56,832
Claims priority, application Japan, Jan. 6, 1986, 61-131463
Int. Cl.⁴ A61B *1/06*
U.S. Cl. 128—6 **18 Claims**



1. An endoscope illuminating optical system device comprising:

a light guide inserted through an insertable part of an endoscope said light guide having an exit end surface and transmitting an illuminating light to an observing means; and

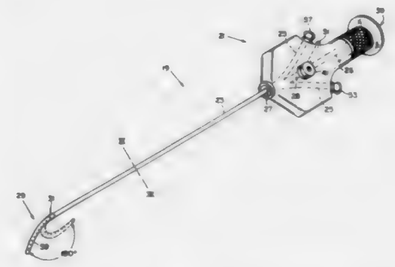
an illuminating optical member arranged in a position opposed to the exit end surface of said light guide, said illuminating optical member having a plurality of lens parts arranged so that the cross-section of said lens parts taken as a whole is substantially of the same shape and size as the cross-section of the exit end surface of said light guide and distributing the illuminating light projected out of the exit end surface of said light guide to an object to be observed.

4,802,461

RIGID ENDOSCOPE WITH FLEXIBLE TIP

George Cho, Sudbury, Mass., assignor to Candela Laser Corporation, Wayland, Mass.

Filed Aug. 26, 1987, Ser. No. 89,579
Int. Cl.⁴ A61B *1/30*
U.S. Cl. 128—7 **39 Claims**



1. An endoscope comprising:

a tube having (i) a length which is sufficiently rigid such that the tube is evenly displaced along its length through axial and rotational translation by maneuvering one end of the tube, and (ii) a tip portion at an opposite end of the tube having an outer diameter of less than about 3 mm and a length of up to about 12 cm and comprising a notched plastic tubing, the tip portion being selectively flexible up to about 180° relative to the length by user control while maintaining the length substantially stationary; and

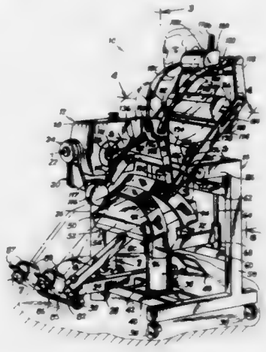
means for laterally moving the tip portion relative to the length of the tube.

4,802,462

MUSCLE EXERCISE AND REHABILITATION APPARATUS FOR THE UPPER LUMBAR REGION

James M. Reiss, Setauket; Walter Gesari, New York, and Robert Stidd, Center Moriches, all of N.Y., assignors to Biodex Corporation, Shirley, N.Y.

Filed Dec. 21, 1987, Ser. No. 136,017
Int. Cl.⁴ A61H *1/02*
U.S. Cl. 128—25 R **26 Claims**



1. A back attachment for a muscle exercise and/or rehabilitation apparatus of the type having a motor driven output shaft with a central axis, said back attachment comprising:

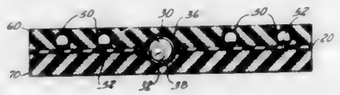
seat means for supporting a person thereon;

back exercising means connected to said output shaft for

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pivoting the back of the person about said central axis when said person is supported on said seat means;
support means for supporting said set means at a downward angle of approximately 15 degrees toward a front portion of said seat means, regardless of the angle of pivot of said back exercising means; and
said back exercising means being pivotally connected to said support means along a pivot axis in line with said central axis;
securing means for securing the person to said seat means and said back exercising means.

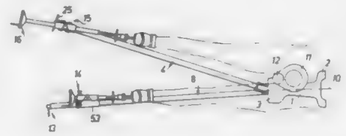
4,802,463
FOOT MASSAGER
Teresa M. Rojas, 9715 NW. 6th La., Miami, Fla. 33172
Filed Oct. 26, 1987, Ser. No. 112,952
Int. Cl.[4] A61H *1/00*
U.S. Cl. 128—36 **4 Claims**



1. A foot massaging device, comprising:
A. a platform member having substantially the shape of the sole of a foot and being made of a substantially resilient material, and said platform member further including an upperside and an underside;
B. motor means for producing vibrations rigidly mounted to said platform member;
C. first cushion means for cushioning positioned on said upperside and having substantially the same projected dimensions as said platform member;
D. second cushion means for cushioning positioned on said underside and having substantially the same projected dimensions as said platform member;
E. battery means for providing electricity and connected to said motor means;
F. an upper member covering said first and second cushion means for cushioning and urging them towards the sole of the user's foot; and
G. a plurality of vibration transmitting means rigidly mounted to the upperside of said platform and covered by said first means for cushioning;
said vibration transmitting means comprises a tubular section made out of a substantially flexible material so that the user's sole does not come in contact with an uncomfortably hard object if the user applies his weight on said transmitting means.

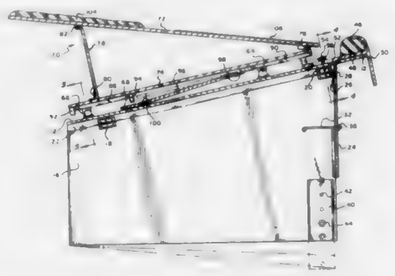
4,802,464
TRACTION DEVICE FOR OPERATING TABLES AND ORTHOPAEDIC SURGERY APPARATUS FOR SURGICAL OPERATIONS
Roland Déprez, Gentilly, France, assignor to Marzet-Anbry, Gentilly, France
Filed Apr. 2, 1987, Ser. No. 33,992
Claims priority, application France, Apr. 3, 1986, 0604786
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—71 **9 Claims**

1. A traction device for operating tables and orthopaedic surgery comprising:
a frame defining a median vertical plane,
a first arm being a central traction arm,
a second arm being a central counter-extension arm,
each of said arms being provided with traction means and means for locking said arms in position,
means mounting said first arm on said frame for both horizontal movement around a first axis in said median plane and for vertical movement around a second axis perpendicular to said median plane,
means mounting said second arm on said frame for only horizontal movement around a third axis in said median plane,



a pelvis support,
and means mounting said pelvis support on said frame for adjustment laterally with respect to said median plane.

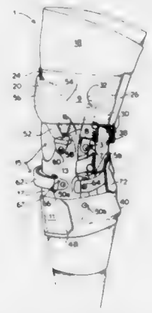
4,802,465
RECLINING TRACTION LOUNGE
Bernie L. Slagle, 29 Allenwood Estates, Vincentown, N.J. 08088
Filed Dec. 13, 1985, Ser. No. 808,759
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—71 **10 Claims**



1. A reclining traction lounge comprising:
a frame having a front and a back and adapted to rest on the floor, said frame including an upper frame surface inclined downwardly from the front to the back at an angle of between approximately 10° to about 40° below the horizontal;
means carried by said frame adjacent the front of the upper frame surface for supporting a person's knees;
a body support means including a body support surface, said support surface being substantially planar and extending from a point adjacent said knee supporting means rearwardly and upwardly at an angle of between approximately 0° to about 30° above the horizontal, the length of said body support surface being sufficient to underlie the upper thighs, buttocks, back and head of a person lying thereon;
means, located between said body support means and said upper frame surface for allowing relatively free limited movement of said body support means rearwardly and forwardly along said upper frame surface, said body support means being movable relative to said knee supporting means;
means for temporarily maintaining said body support means in a forward position;
means for releasing said maintaining means to allow said body support means to move rearwardly while a person is lying on the lounge, said releasing means being located adjacent one side of said body support means so as to be readily accessible to and manually operable by said person lying on said lounge;
said body support surface having a padded non-slip surface formed thereon adjacent the upper portion thereof

adapted to underlie the person's head and shoulders, said body support surface also having a slippery portion thereon in the area adapted to underlie the person's buttocks.

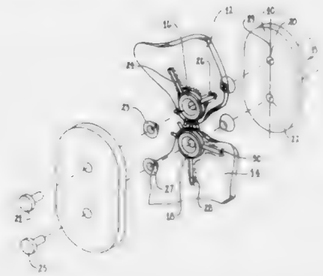
4,802,466
LIGHTWEIGHT, COMPACT ORTHOTIC DEVICE FOR CONTROLLING KNEE INSTABILITIES
Andrew H. Meyers, 31 The Birches, Roslyn Estates, N.Y. 11576, and Jeffrey Minkoff, New York, N.Y., assignors to Andrew H. Meyers, Roslyn Estates, N.Y.
Filed Apr. 14, 1987, Ser. No. 38,048
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—80 C **14 Claims**



1. An orthotic device for controlling knee instabilities, comprising:
a. a joint structure;
b. an upper support assembly including side portions and an anterior portion, and a lower support assembly for circumscribing the leg above and below the kneejoint and connected to the joint structure for supporting the joint structure over the kneejoint;
c. a condyle pad assembly having an upper portion for engaging one of the condyle regions of the kneejoint; and
d. mounting means including a resilient strap for applying a lifting force on the upper portion of the condyle pad assembly and a D-ring means connected to the upper portion of the condyle pad assembly, wherein one end of the resilient strap is connected to the side portion of the upper support assembly that lies above the condyle region of the kneejoint, the other end of the resilient strap is connected to the anterior portion of the upper support assembly, while a middle portion of the resilient strap pulls the upper portion of the condyle pad assembly both upwardly and laterally to resiliently maintain the upper portion of the condyle pad assembly in intimate supporting contact with the condyle region throughout the range of pivotal movement of the kneejoint.

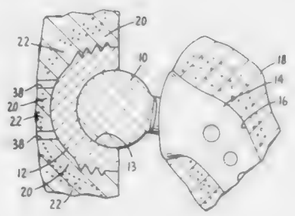
4,802,467
BI-CENTRIC KNEE JOINT SUPPORT
Timothy Passiera, 1050 NW. First Ave., Boca Raton, Fla. 33432
Filed May 9, 1988, Ser. No. 191,508
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—88 **5 Claims**

1. A bi-centric joint for an orthotic support device having proximal and distal members, the joint comprising:
(a) planar base means having a first aperture and a second aperture, said planar base means having a longitudinal centerline;
(b) a first hub, said hub being rotationally secured to said planar base means through said first aperture, said first aperture thereby defining an axis of rotation of said first hub, said first hub being integral to said proximal member along a peripheral edge of said first hub thereof;
(c) a second hub, said second hub being rotationally secured to said planar base means through said second aperture, said second aperture thereby defining an axis of rotation of said second hub relative to said planar base, said second hub being integral to said distal member along a peripheral edge of said second hub thereof, said centerline passing through said rotational axes;
(d) a plurality of spaced apart tubular radial spokes projecting radially outwardly from said first hub in the direction of said second hub; and



(e) a plurality of spaced apart tubular radial spokes projecting radially outwardly from said second hub in the direction of said first hub, said respective pluralities of tubular radial spokes being in interdigitating relationship to each other, said spokes upon rotation of said hub sequentially passing in alignment with said centerline, each of said tubular spokes having a length such that, when each spoke is in alignment with said centerline, such spoke will penetrate a peripheral edge of said proximal or distal member to which the hub of such spoke is not rigidly secured,
whereby a particular characteristic of relative movement between said first and second hubs, in the nature of a simulation of naturally occurring movement of a human joint, is obtained by the above combination of elements.

4,802,468
DEVICE FOR CUTTING THREADS IN THE WALLS OF THE ACETABULAR CAVITY IN HUMANS
Roy Y. Powlan, 1 Chapel Dr., Lafayette, Calif. 94549
Continuation-in-part of Ser. No. 653,096, Sep. 24, 1984, Pat. No. 4,611,587. This application Aug. 22, 1986, Ser. No. 899,162
The portion of the term of this patent subsequent to Sep. 16, 2003, has been disclaimed.
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—92 V **6 Claims**



1. A device for cutting threads in the wall of the acetabular cavity, said device comprising:
(a) a rotatable cutting head shaped to substantially conform

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to the shape and size of the acetabular cavity and having a longitudinal opening therein,

(b) a cutting tool located within the cutting head and having a rotatable cutting tool bit extending exteriorly of said cutting head through the opening,

(c) power means for rotating said cutting tool bit, and

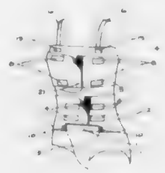
(d) means for driving the cutting tool bit in a spiral path so as to cut threads in the wall of the acetabular cavity.

4,802,469

THERAPEUTIC BODY SUIT

Maria Gollestani, P.O. Box 2388, Kailua-Kona, Hi. 96745

Filed Aug. 3, 1987, Ser. No. 80,985
Int. Cl.[4] A61F 5/24
U.S. Cl. 128—98.1 7 Claims



1. A body suit providing therapeutic pressure for post-surgical or other medical uses comprising:

(a) at least one section of flat breathing, elastic material joined together to surround the abdominal areas below the shoulders, and to further cover the body from the breasts and upper back to the lower crotch, with openings for the legs to depend through;

(b) shoulder straps for shoulder and breast support;

(c) two separable crotch bottom ends with each end having attached to it an attachment base where the base of the first end may be attached or separated from the base of the second end;

(d) the upper front and rear of the body suit having firmly attached to one of the interior and the exterior; attachment bases for removable attachment of a breast supporting brassiere;

(e) the central front and back of the body having firmly mounted at least one attachment base to provide removable attachment of an elastic waist binding;

(f) the front and rear lower waist areas of the body suit having firmly attached at least one attachment base to provide removable attachment of a crotch supporting binding; wherein said attachment bases permit tandem use of the crotch binding independently of an elastic waist binding;

(g) an elastic waist binding constructed of flat breathing elastic material with attachment bases fixed to the rear interior back area which contact and attach to the attachment bases located on the central back of the body suit; the elastic waist binding further having one attachment base fixed to each of its two ends which connect to each other in an adjustable manner to provide additional pressure above and beyond that provided by the body suit, but in tandem with the body suit to the abdominal area it surrounds; the elastic waist binding further having attachment bases fixed to it and located at the lower central front and rear areas for attachment of a crotch binding;

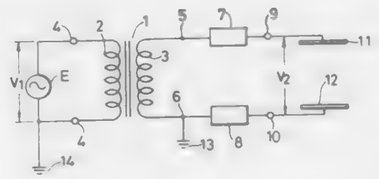
(h) a crotch binding constructed of flat breathing elastic materials which is wider at its ends and tapers towards its center; the crotch binding ends having attachment bases mounted thereon for removable attachment to the elastic waist binding.

4,802,470

ELECTRIC FIELD THERAPY APPARATUS

Akikuni Hara, and Yukio Ogawa, both of Tokyo, Japan, assignors to Hakuju Institute For Health Science Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 655,092, Sep. 27, 1984, abandoned. This application Mar. 2, 1987, Ser. No. 22,529
Int. Cl.[4] A61N 1/00
U.S. Cl. 128—24.1 4 Claims



1. An electric field therapy apparatus for treatment of the human body and the like, said apparatus comprising:

a pair of spaced apart electrodes having a spacing therebetween that is large enough to receive a body part to be treated;

terminal means for connecting said apparatus to a commercial power source of alternating current of a predetermined frequency;

a transformer, having a primary winding connected across said terminal means and a secondary winding connected at two spaced apart points on said secondary winding to respective electrodes of said pair of electrodes, for boosting the voltage of said power source to provide a very high voltage of said predetermined frequency across said electrodes; and

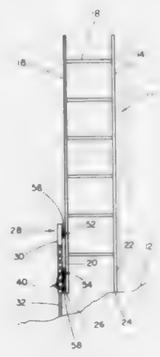
means for connecting a third point on said secondary winding, located between said two spaced part points, to ground.

4,802,471

LEVELER ATTACHMENT FOR LADDERS

James E. Cordell, 42 Florida Pl., Asheville, N.C. 28806

Filed Feb. 3, 1988, Ser. No. 162,158
Int. Cl.[4] E06C 7/44
U.S. Cl. 182—204 11 Claims



1. An improved ladder comprising:

first and second substantially parallel support beams;

a plurality of spaced apart rungs connected between said support beams forming steps of said ladder;

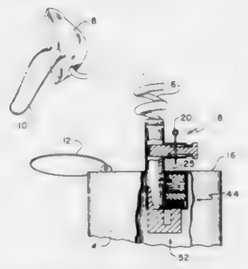
a leveler connected to one of said support beam; said leveler including an elongated bar adapted to slide relative to one of said beams; said bar acting as one of the legs of said ladder when said ladder is on an uneven surface; said leveler having at least one substantially smooth surface; said leveler including a gripping device having a sharp edge; said sharp edge of said gripping device selectively engaging said substantially smooth surface for holding said bar at a fixed position and for permitting said bar to freely slide past the end of said one of said beams when said sharp edge is not engaging said substantially smooth surface so as to level the ladder; said leveler including an outer rail and an inner rail; said outer rail connected to one of said beams; said inner rail being slidable and including said smooth surface; said gripping means connected to said outer rail; said gripping means is substantially T-shaped; an opening in said outer rail; a portion of said gripping means extending through said opening in said outer rail.

4,802,472

EMERGENCY AIR SUPPLY DEVICE

Sakun J. Jung, 325 Hammonton Pl., Silver Spring, Md. 20904

Filed Oct. 8, 1987, Ser. No. 105,617
Int. Cl.[4] A61M 16/00
U.S. Cl. 128—204.18 10 Claims



1. An air supply device comprising:

a tank for holding air, said tank having an outlet therein;

activation means for permitting release of said air from said tank through said outlet, said activation means comprising,

a movable blocking element for closing said outlet, said blocking element being movable from a closed position wherein said outlet is closed to an open position wherein said outlet is opened and wherein release of air from said tank is permitted,

means for urging said blocking element from said closed position to said opened position, and

means for holding said blocking element in the closed position, said means for holding being removable such that said means for urging is permitted to move said blocking element to said opened position to permit said release of air;

regulation means for regulating the flow of air from said tank during said release of air, said regulation means comprising,

a hollow element connected to said outlet, said element having a plurality of generally, longitudinally aligned ports therein such that said air in said tank is in communication with said outlet,

movable valve means for opening and closing a plurality of said ports, said movable valve means comprising a U-shaped valve stem having an end portion enclosed by said hollow element, said end portion of said valve stem being reciprocable to sequentially open and close said plurality of generally, longitudinally aligned ports,

means for urging said valve means to a position closing a majority of said ports, and

expansion means for overcoming said means for urging in order to move said valve means to various positions wherein successively more ports are opened, said expansion means being responsive to pressure of said air in said tank such that as air is removed form the tank, said valve means is moved to open more ports in order to maintain a substantially constant flow of air; and

means for furnishing air to a user from said tank when said activation means permits release of said air.

4,802,473

FACE MASK WITH EAR LOOPS

Vance M. Hubbard, Euless, and Welton K. Brunson, Bedford, both of Tex., assignors to Tecnol, Inc., Fort Worth, Tex.

Continuation of Ser. No. 549,392, Nov. 7, 1983, abandoned. This application Dec. 31, 1985, Ser. No. 815,753
Int. Cl.[4] A62B 7/10
U.S. Cl. 128—206.19 1 Claim



1. A face mask, comprising:

a generally rectangular layer of thermoplastic polymeric micro-fiber material adapted for disposal over the nostrils and mouth of a wearer;

first and second ear loops each fabricated from a thin strip of elastically deformable heat malleable material that has two free ends, the material of said ear loops consisting of 90.33 percent of 78 Denier texturized polyester and 9.67 percent of 40 Denier lycra spandex and allowing for high frequency heat bonding thereof; and

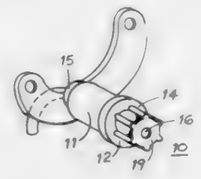
each of said loops having the free ends thereof attached proximate a corner of said fabric layer on one of the vertical sides thereof by a high frequency heat formed seal such that the integrity of said micro-fiber layer is maintained by not invasively attaching the free ends of said loops thereto.

4,802,474

PROTECTIVE COVER FOR TRACHEOTOMY TUBE

Katherine K. Beevers, 11075 Montana Ave., Boise, Id. 83704

Filed Sep. 4, 1987, Ser. No. 93,311
Int. Cl.[4] A01M 16/00
U.S. Cl. 128—200.26 2 Claims



1. A protective cover for a tracheotomy tube comprising:

a collar adapted in size and shape to fit over and frictionally engage the end of the tracheotomy tube;

an end plate in spaced relation with said collar;

a plurality of cage bars interconnecting said end plate and collar, said plurality of cage bars aligned in parallel cylindrical spaced relationship, and further, spaced at sufficient

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intervals to permit the insertion of a standardized aspirating tube between any two cage bars;

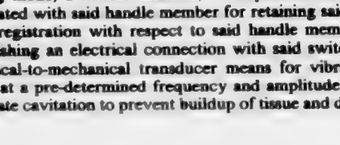
a surface flange integral with said frictional engagement means and said inhalation prevention means, adapted in size and shape to cover the annular space between said frictional engagement means and the surrounding tissue of the wearer's neck.

4,802,475

METHODS AND APPARATUS OF APPLYING INTRA-LESIONAL CRYOTHERAPY

Ahmed H. A. G. Weshahy, 11 Harrun St., Dokki, Cairo, Egypt

Filed Jun. 22, 1987, Ser. No. 64,619
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—303.1 **21 Claims**



1. A method of applying intra-lesional cryotherapy, comprising the steps of:

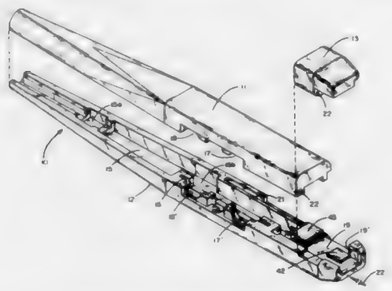
inserting a hollow thermally conductive needle having a front opening through the skin of a patient with said needle having a given surface portion adapted to position the same at a given depth according to the location of a lesion to cause said front opening of the needle to protrude from the patient's skin when said given portion is in position and applying a cryogen through the internal hollow of said needle to cause said given portion to freeze tissue in the area of said lesion while said cryogen is being discharged from said front opening of said needle.

4,802,476

ELECTRO-SURGICAL INSTRUMENT

Marc D. Noerenberg, Shakopee, and Peter Stasz, Minneapolis, both of Minn., assignors to Everest Medical Corporation, Brooklyn Center, Minn.

Filed Jan. 1, 1987, Ser. No. 56,434
Int. Cl.[4] A61B *17/39*
U.S. Cl. 128—303.14 **10 Claims**



1. An electro-surgical tool having a cutting mode of operation, coagulating mode of operating, switch means for altering the mode of operation between the cutting mode and the coagulating mode, a handle member, an improved blade, means associated with said handle member for retaining said blade in fixed registration with respect to said handle member while establishing an electrical connection with said switch means, electrical-to-mechanical transducer means for vibrating said blade at a pre-determined frequency and amplitude sufficient to create cavitation to prevent buildup of tissue and debris, and means for energizing the blade for cutting and coagulating, said improvements to the blade comprising of:

(a) a blank having two opposed side surfaces and a working edge along a pre-determined portion thereof, said blank having a notch cooperating with said means associated with said handle member for retaining said blade, said blank being made of a material having a conductive surface;

(b) a first insulative coating covering all of said blank except said working edge of said blank and a portion of the conductive surface of said blank which comes in contact with said electrical-to-mechanical transducer means;

(c) a first electrically conductive strip member disposed on said first insulative coating and having one end thereof leading to said portion of the conductive surface of said blank which comes in contact with said electrical-to-mechanical transducer means;

(d) a second electrically conductive strip member disposed on said first insulative coating on one side surface of said blank so as to be electrically insulated from the conductive surface of said blank, said second conductive strip member having a portion located near the working edge of said blank;

(e) a third electrically conductive strip member disposed on said first insulative coating on the side surface of said blank opposite said one side surface so as to be electrically insulated from the conductive surface of said blank, said third conductive strip member having a portion located near the working edge of said blank and generally parallel to said portion of said second conductive strip member; and

(f) a second insulative coating deposited upon a predetermined portion of said blank for preventing passage of body fluids into said handle member during use.

4,802,477

STERNUM CLOSURE DEVICE

Shlomo Gabbay, 1 Randall Dr., Short Hills, N.J. 07078

Filed May 7, 1987, Ser. No. 47,869
Int. Cl.[4] A61B *17/08, 17/14*
U.S. Cl. 128—317 **32 Claims**



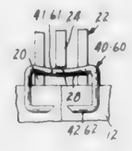
22. A method of treating a sternum after opening, said sternum having an upper side and a lower side, said method comprising closing said sternum, anchoring a plurality of fastening means to said sternum spaced apart along an incision, whereby lower sections of at least some of said fastening means extend beneath said sternum and said fastening means also have upper sections extending on said upper side of said sternum, placing a flexible saw beneath said sternum, between said lower sections and said lower side of said sternum, and substantially along said incision.

4,802,478

MEDICAL STAPLE AND REMOVAL METHOD

August L. Powell, Livonia Township, Sherburne County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 354,764, Mar. 4, 1982, abandoned. This application Aug. 31, 1984, Ser. No. 647,256
Int. Cl.[4] A61B *17/04*
U.S. Cl. 128—334 R **5 Claims**



1. In a method for inserting and removing staples with respect to living tissue or skin, comprising the steps of:

providing an open staple comprising a central portion, and end portions attached to said central portion and having pointed distal ends which project away from its central portion in a single plane;

positioning the pointed ends of the staple adjacent the tissue;

closing the staple by bending it in the plane so that its pointed ends pierce the tissue and its end portions move to a position with their pointed ends adjacent each other so that the tissue is gathered and held together by the closed staple; and

opening the staple by bending the central portion of the staple to generally a U-shape so that the end portions of the staple will retract from the tissue, which bending is caused by placing two spaced jaw members of a staple remover between the tissue and the central portion of the staple, placing a third jaw member of the staple remover between said two jaw members on the side of said central portion opposite said tissue, and manually manipulating the staple remover to move the jaw members into general alignment with each other so that the U-shaped bend is made in the central portion;

the improvement wherein said method further includes providing a crank-like structure along the central portion of the staple, which crank-like structure is adapted to receive the jaw members, and in response to pressure from the jaw member as the jaw members are initially pressed against the central portion of the staple, will first orient the staple at a predetermined position with respect to the jaw members, and will then maintain that orientation as the central portion is bent to generally a U-shape by subsequent movement of the jaw members.

4,802,479

HAND-HELD INSTRUMENT FOR IMPLANTING, DISPENSING, AND INFLATING AN INFLATABLE MEMBRANE

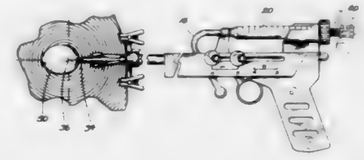
Terry M. Haber, Lake Forest, and William H. Smedley, Lake Elsinore, both of Calif., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Oct. 31, 1986, Ser. No. 925,163
The portion of the term of this patent subsequent to Aug. 18, 2004, has been disclaimed.
Int. Cl.[4] A61B *19/00*
U.S. Cl. 128—344 **20 Claims**

1. An instrument for implanting an inflatable genitourinary prosthesis within the urethral tissues of a patient to increase local tissue density and the application of occlusive pressure at the periurethral tissues of the corpus spongiousum for treating urinary incontinence, said instrument including an inflatable genitourinary prosthesis, means for inflating said prosthesis with material, and trocar assembly means comprising:

an infusion tube extending between said inflating means and said prosthesis to deliver material for inflating said prosthesis;

a pair of normally open tunneling members for dilating a tunnel through the urethral tissues, said tunneling members movable to either a closed position to surround and



protect an uninflated prosthesis and thereby form a tissue dilating nose or to an open position to permit said prosthesis to be inflated and positioned within the urethral tissues; and

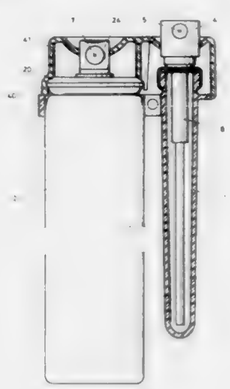
an outer trocar sleeve movable to a first position to surround and engage said tunneling members to retain said members in the closed position to form said dilating nose or to a second position retracted from said tunneling members to release said members for movement to the open position to permit inflation of said prosthesis.

4,802,480

METHOD FOR TREATING PORTIONS OF THE HUMAN BODY

Karl Mäder, Pfäffikon; Guido Schönenberger, Reinach, and Carlo A. Buzzi, Zürich, all of Switzerland, assignors to I D C - Chemie AG, Freienbach, Switzerland

Continuation of Ser. No. 856,990, Apr. 29, 1986, Pat. No. 4,711,375. This application Aug. 20, 1987, Ser. No. 87,321
Claims priority, application Switzerland, May 17, 1985, 2123/85
Int. Cl.[4] A61F *7/00*
U.S. Cl. 128—400 **3 Claims**



1. A method of treating burn and scald wounds and localized disorders on portions of the human body by rapid cooling thereof comprising the steps of:

(a) spraying a liquid from a first hand held container;

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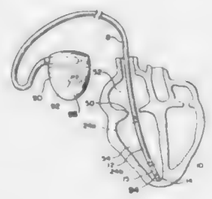
(b) directing the sprayed liquid at the human body portion to be treated to form thereon a film of said liquid; and
(c) spraying and directing onto said film of liquid from a second hand held container a refrigerant at a temperature low enough and at a flow rate high enough to freeze a substantial portion of said film of liquid, whereby said human body portion is rapidly cooled by heat absorbed by the frozen film, and wherein the steps of spraying a liquid from a first hand held container and of spraying a refrigerant from a second hand held container are performed with said first and second containers provided in a single hand held device.

4,802,481

APPARATUS FOR CONTROLLING PACING OF A HEART IN RESPONSE TO CHANGES IN STROKE VOLUME

Edward A. Schroeppel, Miramar, Fla., assignor to Cordis Leads, Inc., Miami, Fla.

Division of Ser. No. 885,063, Jul. 14, 1986, Pat. No. 4,708,143, which is a division of Ser. No. 632,625, Jul. 19, 1984, Pat. No. 4,600,017. This application Sep. 17, 1987, Ser. No. 97,817
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 PG **3 Claims**



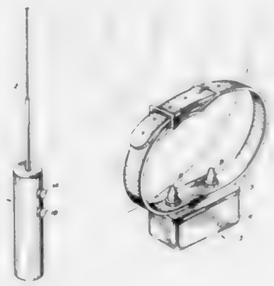
1. An apparatus for sensing pressure changes in a heart chamber to determine opening and closing of a tricuspid valve in a heart, for using those determinations of openings and closings of the tricuspid valve to determine stroke volume and changes in stroke volume, and for controlling pacing of a heart relative to changes in stroke volume, said apparatus comprising: a pacer having therein pulse generating circuitry for generating pacing pulses, control circuitry for controlling the pulse generating circuitry and a socket; a pacing lead having a proximal termination received in said pacer socket, being electrically coupled to said pacer in said socket and having a lead body; a pressure sensor mounted in said lead body; a pacing electrode on said lead body; means for establishing a pacing circuit including said pacing electrode, said pulse generating circuitry and said control circuitry; said control circuitry including circuit means in said pacer coupled to said sensor for sensing changes in pressure in a heart chamber to determine the opening of a tricuspid valve during each heart cycle and the closing of the tricuspid valve during each heart cycle; means for calculating ejection time from the openings and closings of the tricuspid valve; means for calculating the changes in ejection time, ΔET, from calculations of ejection time; means for calculating changes in stroke volume, ΔSV from calculations of ejection time; means for determining the required change in heart rate, ΔR, relative to the changes in stroke volume, ΔSV; and means in said control circuitry for adjusting the pacing rate of said pacer relative to the required change in heart rate, ΔR.

4,802,482

METHOD AND APPARATUS FOR REMOTE CONTROL OF ANIMAL TRAINING STIMULUS

Gerald J. Gonda, and Gregory J. Farkas, both of Tucson, Ariz., assignors to Tri-Tronics, Inc., Tucson, Ariz.

Filed Sep. 21, 1987, Ser. No. 99,410
Int. Cl.[4] A61N *1/00*
U.S. Cl. 119—29 **12 Claims**



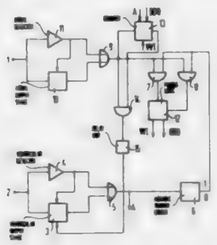
1. A training apparatus comprising in combination:
(a) a transmitter including means for selectively producing and terminating first and second rf control signals and means for transmitting the first and second rf control signals;
(b) a receiver-stimulator unit remote from the transmitter, the receiver-stimulator unit including a harness or collar and first and second electrodes that extend from the harness or collar through fur to skin of an animal to apply electrical stimulation thereto;
(c) first circuit means in the receiver-stimulator unit for beginning and terminating first and second stimulation control signals in immediate response to beginning and terminating of the first and second rf control signals, respectively;
(d) second circuit means for (1) beginning and terminating a first signal burst including a first number of current pulses per second in response to the first stimulation control signal, and (2) beginning and terminating a second signal burst including a second number of current pulses per second in response to the second stimulation control signal, the second number being substantially greater than the first number; and
(e) a transformer having a primary winding coupled to the second circuit means to conduct the current pulses, and a secondary winding, the secondary winding having first and second terminals coupled to first and second electrodes, respectively, the primary winding, secondary winding, and the second circuit means co-acting to cause a sufficiently high open circuit voltage difference between the first and second electrodes for current pulses of either of the first and second signal bursts to produce electrical arcs that jump across a gap between the skin of the animal and the first and second electrodes, respectively, to apply electrical stimulation to the animal despite the presence of the gap in response to either of the first and second stimulation control signals.

4,802,483

HEART PACEMAKER FOR AVOIDING PACEMAKER MEDIATED TACHYCARDIA AT MODE SWITCHING

Anders Lindgren, Taeby, Sweden, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 5, 1987, Ser. No. 22,006
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1986, 3609072
Int. Cl.[4] A61N *1/00*; H05G *00/00*
U.S. Cl. 128—419 PG **20 Claims**



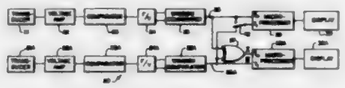
1. A heart pacemaker comprising:
means for stimulating the atrium and sensing atrial events;
means for stimulating the ventricle and sensing ventricular events;
switching means connected to said means for stimulating the atrium and to said means for stimulating the ventricle for switching between selected stimulation modes, including an atrial synchronous mode, upon the occurrence of a predetermined heart condition; and
delay means connected to said switching means for delaying switching to said atrial synchronous mode until after a selected delay following sensing of the predetermined heart condition which caused the switching to said atrial synchronous mode.

4,802,484

METHOD AND APPARATUS TO MONITOR ASYMMETRIC AND INTERHEMISPHERIC BRAIN FUNCTIONS

Ernest H. Friedman, 1831 Forest Hills Blvd., East Cleveland, Ohio 44112; Gary G. Sanders, Lakewood, Ohio, and Steven L. Hunter, Livermore, Calif., assignors to Ernest H. Friedman, Cleveland, Ohio

PCT No. PCT US85/01909, § 371 Date May 22, 1987, § 102(e) Date May 22, 1987, PCT Pub. No. WO87/01922 PCT Pub. Date Apr. 9, 1987
Continuation-in-part of Ser. No. 503,821, Jun. 13, 1983, Pat. No. 4,543,957. PCT filed May 22, 1987, Ser. No. 77,550
The portion of the term of this patent subsequent to Oct. 1, 2002, has been disclaimed.
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—630 **13 Claims**



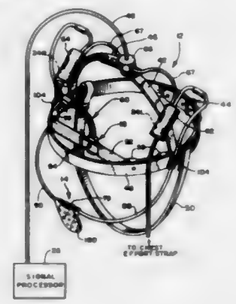
1. A human response system for determining the rate of hiatuses between neuromotor responses of a human subject, comprising in combination:
transducer means responsive to at least one type of monitored neuromotor response of the subject who is subjected to sensory inputs to the right and left hemispheres of the brain;
hiatus means connected to said transducer means to determine successive occurrences of a hiatus between predetermined neuromotor responses of said at least one type of the subject, with each hiatus defined as the absence of said at least one type of monitored neuromotor responses for a predetermined time interval bounded by the predetermined neuromotor responses;
rate means connected to said hiatus means to determine the average hiatus rate in a given segment of the predetermined neuromotor response of the subject;
sorting means to sort the average hiatus rate into one of at least two levels of response;
and means to indicate the average time duration of the individual hiatuses for each of the at least two rate levels.

4,802,485

SLEEP APNEA MONITOR

David L. Bowers, La Mesa, and Gunther W. Kienle, El Cajon, both of Calif., assignors to Sentel Technologies, Inc., Waukesha, Wis.

Filed Sep. 2, 1987, Ser. No. 92,055
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—633 **17 Claims**



1. A sensor positioning device for an oximeter of the type comprising an emitter having at least one light source, a receiver having at least one photosensor, and means for monitoring the receiver to measure selected body parameters, said device comprising:
a headband configured to rest on the head of a subject;
means for mounting the emitter and the receiver to the headband in side-by-side relationship such that both the emitter and the receiver are directed toward the forehead of the subject;
means, included in the mounting means, for resiliently biasing the emitter and receiver into contact with the forehead of the subject;
a breath sensor; and
means for mounting the breath sensor to the headband to position the breath sensor to respond to air exhaled by the subject.

4,802,486

METHOD AND APPARATUS FOR DETECTING OPTICAL PULSES

David E. Goodman, San Francisco, and James E. Corenman, Menlo Park, both of Calif., assignors to Nellcor Incorporated, Hayward, Calif.

Continuation of Ser. No. 718,525, Apr. 1, 1985. This application Jun. 7, 1985, Ser. No. 742,720
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—633 **28 Claims**

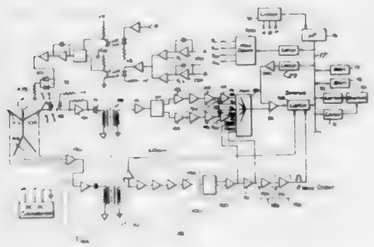
1. An improved method for photoelectrically detecting arterial pulses of a patient comprising:
detecting the blood flow, which may include arterial pulses and artifacts, at the patient's body tissue using a device

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that calculates blood constituents from the detected blood flow;

detecting the occurrence of a selected portion of the patient's EKG waveform as the occurrence of the heartbeat of the patient;

correlating the occurrence of the heartbeat with the detection of pulses by the blood constituent calculating device by determining a period of time in which an arterial pulse is likely to be detected after the occurrence of a selected portion of the EKG waveform; and



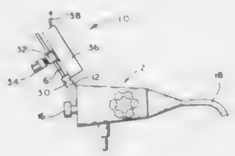
determining whether or not a detected pulse is likely to be a detected arterial pulse by determining that a detected pulse is one of either a first pulse acceptable for processing as an arterial pulse when the pulse is detected in the determined period of time after the selected portion of the EKG waveform occurs, or a second pulse not acceptable for processing as an arterial pulse when it is detected other than in the determined period of time after the selected portion of the EKG waveform occurs.

4,802,487

ENDOSCOPICALLY DELIVERABLE ULTRASOUND IMAGING SYSTEM

Roy W. Martin, Redmond, and Fred E. Silverstein, Seattle, both of Wash., assignors to Washington Research Foundation, Seattle, Wash.

Filed Mar. 26, 1987, Ser. No. 30,098
Int. Cl.⁴ A61B *10/00*
U.S. Cl. 128—662.06 44 Claims



1. A system for ultrasonically imaging internal tissues through the biopsy channel of an endoscope, comprising:

a catheter having a diameter that is sufficiently small to pass through said biopsy channel;

an ultrasound probe mounted at one end of said catheter, said ultrasound probe having a maximum transverse dimension that is sufficiently small to pass through said biopsy channel, said ultrasound probe having a transversely directed beam pattern;

position measuring means coupled to said catheter and adapted to be coupled to said endoscope for generating an ultrasound probe position signal indicative of the longitudinal position of said catheter with respect of said endoscope;

latch means actuatable to manually disengage said catheter from said position measuring means so that said catheter can move longitudinally without varying said ultrasound probe position signal; and

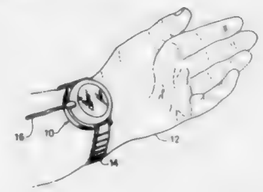
imaging means connected to said ultrasound probe by conductors extending through said catheter, said imaging means generating an ultrasound signal that is applied to said probe to generate an acoustic signal, said imaging means further receiving an ultrasound signal from said ultrasound probe corresponding to ultrasound acoustic signals reflected from said tissues to said ultrasound probe, said ultrasound imaging means generating said ultrasound image from said received ultrasound signal and from said ultrasound probe position signal.

4,802,488

BLOOD PRESSURE MONITORING METHOD AND APPARATUS

Joseph S. Eckerle, Redwood City, Calif., assignor to SRI International, Menlo Park, Calif.

Continuation-in-part of Ser. No. 927,843, Nov. 6, 1986. This application Jan. 27, 1987, Ser. No. 7,038
Int. Cl.⁴ A61B *5/02*
U.S. Cl. 128—672 15 Claims



1. A system for the continuous external measurement of blood pressure in an underlying artery of a subject including an array of individual pressure sensitive elements, the length of which array exceeds the diameter of the underlying artery,

means employing outputs from all elements of the array for identifying one element at a center of a region to be searched,

user information input means for entering information concerning the subject related to the diameter of the underlying artery into the system,

means employing said information concerning the subject related to the diameter of the underlying artery for estimating an extent of said region to be searched, and

means responsive to outputs from only those elements within said region for selecting one element having a local minimum of at least one of the diastolic and systolic pressures on a plot of diastolic or systolic pressure versus transducer element number.

4,802,489

METHOD FOR CARRYING OUT BLOOD FLOW MEASUREMENTS AND A PROBE THEREFOR

Meir Nitzan, Mizrach Binyamin, Israel, assignor to Jerusalem College of Technology, Jerusalem, Israel

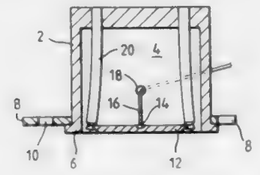
Filed Jul. 23, 1987, Ser. No. 76,785
Claims priority, application Israel, Jul. 29, 1986, 79541
Int. Cl.⁴ A61B *5/02*
U.S. Cl. 128—691 12 Claims

1. A probe for regional blood flow measurement, comprising:

a housing of low thermal conduction and heat capacity, at least one face of which is adapted to make contact with a tissue region investigated, said face being provided with a recessed portion;

a single relatively thin plate made of a material of high thermal conductivity, located in said recessed portion and being substantially flush with said tissue-contacting face of said housing;

a temperature-sensing means in thermal contact with said plate and adapted to transfer temperature-related information to the outside of said housing,



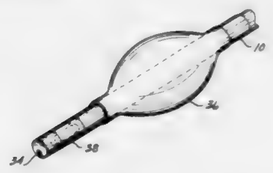
wherein the respective configurations of said plate and said housing are such as to minimize the area of contact between them relative to the area of contact between said plate and said tissue region, in order to minimize heat flow between said plate and said housing.

4,802,490

CATHETER FOR PERFORMING VOLUMETRIC FLOW RATE DETERMINATION IN INTRAVASCULAR CONDUITS

G. Gilbert Johnston, 28511 - 10th Ave. South, Federal Way, Wash. 98003

Continuation-in-part of Ser. No. 667,333, Nov. 11, 1984, Pat. No. 4,637,401. This application Jan. 20, 1987, Ser. No. 5,007
The portion of the term of this patent subsequent to Jan. 20, 2004, has been disclaimed.
Int. Cl.⁴ A61B *10/00*
U.S. Cl. 128—661.08 16 Claims



1. A catheter for use within an intravascular conduit, said catheter comprising:

an elongated tube having a proximal portion of substantially flexible material and having a distal portion;

flow restriction means carried by said distal portion of said tube, said flow restriction means being selectively controllable between a first state in which said flow restriction means does not substantially restrict flow through a reference plane transverse to the longitudinal axis of such distal portion when said catheter is in use in a location substantially fixed with respect to said reference plane and a second state in which said flow restriction means does substantially restrict flow through said reference plane when said catheter is in said location; and

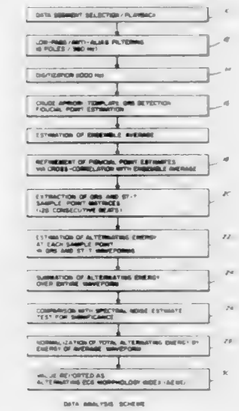
ultrasonic transducer means carried by said distal portion proximate said flow restriction means, said ultrasonic transducer means having a ring-shaped construction arranged so as to transmit and receive ultrasonic energy along a beam path that intersects said reference plane at points always external to said flow restriction means.

4,802,491

METHOD AND APPARATUS FOR ASSESSING MYOCARDIAL ELECTRICAL STABILITY

Richard J. Cohen, Newton Highlands, and Joseph M. Smith, Brookline, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 30, 1986, Ser. No. 891,653
Int. Cl.⁴ A61B *5/04*
U.S. Cl. 128—702 17 Claims



1. Method for analyzing cycle-to-cycle variability in a physiologic waveform for assessing relative physiologic stability, comprising:

digitizing the waveform at a plurality of sample points for each cycle;

constructing two-dimensional sample point matrices, having rows and columns, from the digitized waveform; and

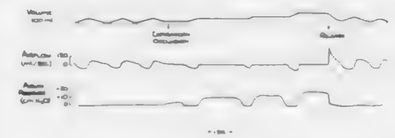
analyzing variability in each column of the sample point matrices to form an index correlating with the physiologic stability.

4,802,492

METHOD FOR DETERMINING RESPIRATORY FUNCTION

Michael M. Grunstein, Denver, Colo., assignor to National Jewish Center for Immunology and Respiratory Medicine, Denver, Colo.

Filed Mar. 11, 1987, Ser. No. 24,684
Int. Cl.⁴ A61B *5/08*
U.S. Cl. 128—720 10 Claims



1. A method for measuring respiratory function in a subject comprising:

(a) covering nose and mouth of said subject with a sealable face mask, said face mask equipped with means connected to a flowmeter, a two way valve with a first port delivering air for inhalation and a second port for removing exhaled air, and connecting means connecting said face mask to a pressure transducer;

(b) permitting spontaneous breathing by said subject through said first port for a predetermined number of

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breaths while occluding exhalation of air inhaled by said patient through said first port;
(c) measuring progressive cumulation of inspired volume in the lungs of said subject with said flowmeter and increases in mask pressure with said pressure transducer;
(d) relating said volume cumulation measured with said flowmeter and mask pressure increases measured with said pressure transducer to determine the subject's respiratory compliance;
(e) spontaneously releasing said exhalation occlusion;
(f) measuring flow of exhaled air through said second port following release of said occlusion with said flowmeter;
(g) measuring volume change in said subject's lungs following release of said occlusion;
(h) relating said measured flow and said volume change to determine the time constant of said subject's respiratory system; and,
(i) relating the time constant and said respiratory compliance to determine respiratory system reaistance in said subject.

4,802,493

DEVICE AND METHOD FOR ALLERGY TESTING

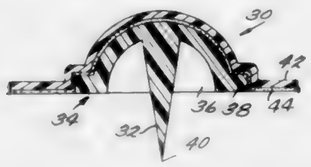
Nicholas H. Maganias, Reston Medical Bldg., 1712 Club House Rd., Reston, Va. 22090

Continuation of Ser. No. 779,612, Sep. 25, 1985, abandoned, which is a continuation of Ser. No. 445,746, Nov. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 330,587, Dec. 14, 1981, Pat. No. 4,473,083. This application Feb. 17, 1987, Ser. No. 16,487

The portion of the term of this patent subsequent to Sep. 25, 2001, has been disclaimed.

Int. Cl.[4] A61B *5/04*

U.S. Cl. 128—743 19 Claims



1. A method for allery testing comprising: applying to the skin of a patient a test strip in the form of a thin, flexible essentially transparent strip of adhesive tape a portion of which carries on its adhesive side at least one skin-penetrating projecting lance device carrying an allergen, so that the tape releasably adheres to the skin, the lance device including a plate-like substrate having in one surface thereof an imperforate concave surface forming an open-ended cavity retaining liquid allergen therein and at least one lance projecting from said concave surface and having an outer end located outside said cavity; supplying said outer end with said allergen; and pressing at least said portion against the skin to cause the lance to penetrated the skin to a depth less than subcutaneous tissue thereby carrying a portion of the allergen into the skin and maintaining contact between the allergen and the thus-traumatized skin cells; leaving the strip in place for a period of time sufficient for the patient's skin, if allergic to the allergen, to produce an allergic reaction which can be observed through the strip.

4,802,494

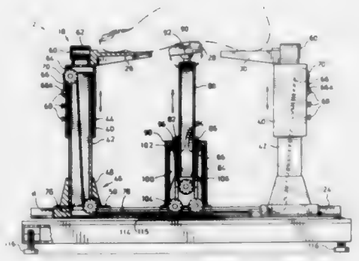
MEASUREMENT OF THE NEUTRAL ALIGNMENT POSITION OF THE FOOT

Roy J. W. Gardiner, Toronto, Canada, assignor to Sports Bio-Mechanics Research Inc., Toronto, Canada

Filed Oct. 2, 1986, Ser. No. 914,270

Int. Cl.[4] A61B *5/10*

U.S. Cl. 128—779 18 Claims



1. An apparatus for establishing the neutral alignment position of a foot, comprising:
a toe portion support means,
a heel portion support means and an arch portion support means disposed between said toe portion support means and said heel portion support means,
connecting means for connecting said toe, heel, and arch portion support means together,
each of said support means being alignable with the corresponding portions of said foot and mounted for relative movement parallel to a vertical axis and about a longitudinal axis in response to forces exerted thereon by said corresponding portions, and
indicating means for indicating the orientation of each of said toe portion support means, said arch portion support means and said heel portion support means.

4,802,495

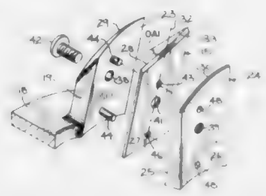
METHOD AND APPARATUS FOR RENEWING CUTTING EDGES IN CORN PROCESSING EQUIPMENT

Gerald F. Maruska, 329 Cheyenne Trail, Madison, Wis. 53705

Filed May 13, 1985, Ser. No. 733,989

Int. Cl.[4] A01F *11/06*

U.S. Cl. 130—9 B 15 Claims



1. A method of renewing a cutting edge of a knife of a type used in a machine for cutting corn kernels from a corn cob, the method comprising:
providing a knife blade having a substantially planar body which is formed along a blade axis to be disposed longitudinally with respect to an ear of corn moving longitudinally through the machine and which is flexible in a direction transverse to the axis, the knife blade also having at a forward end of the body an oblique cutting edge that is disposed at an oblique angle relative to the transverse direction of the body and the knife blade having a rear end;
positioning the knife blade in a knife blade holder with the blade axis of the body elevated at the rear end of the body to form an acute angle with a longitudinal axis of an ear of corn moving longitudinally through the machine; and
flexing the body transverse to its blade axis to cause the oblique cutting edge to conform to a curved profile for cutting a spiralling swath of sufficient width along the corn cob.

4,802,496

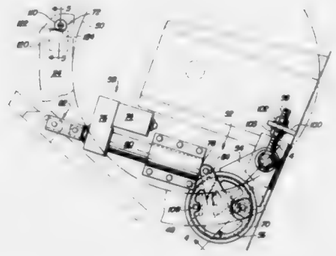
AGRICULTURAL CONCAVE ADJUSTMENT MEANS

Robert E. Beanett, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed May 19, 1987, Ser. No. 51,962

Int. Cl.[4] A01F *12/28*

U.S. Cl. 130—27 S 14 Claims



1. An agricultural combine for harvesting and threshing an agricultural crop, the combine comprising:
a supporting structure defining an internal area;
ground engaging means for supporting the supporting structure above a field;
harvesting means for harvesting a crop from a field, the harvesting means extends from the supporting structure;
threshing means for threshing the harvested crop, the threshing means having a transverse threshing cylinder and a transverse concave between which the crop is directed, the cylinder and concave are mounted in the internal space of the supporting structure and together define a relative spacing;
feeder house means mounted on the supporting structure for transporting the harvested crop from the harvesting means to the threshing means;
adjustment means for adjusting the relative spacing between the cylinder and concave, the adjustment means comprising two links pivotally coupled to the supporting structure outside and on opposite sides of the internal area, two camming discs each being rotatingly mounted inside one of the links outside the internal area, each of the camming discs provided with an inwardly projecting sleeves extending into the internal spaces and contacting the concave, and a transverse rod operatively coupled to both camming discs, whereby when the camming disc is rotated, the relative spacing between the concave and cylinder is adjusted by the inwardly projecting sleeves moving the concave.

4,802,497

TOBACCO FEED SYSTEM FOR CIGARETTE MAKING MACHINE

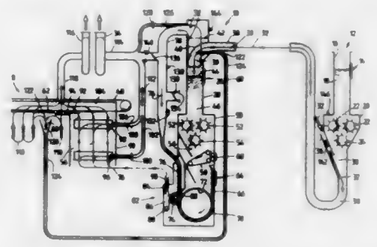
Karel Hrboticky, Etobicoke, Canada, assignor to Molins PLC, London, England

Filed Dec. 27, 1987, Ser. No. 136,938

Claims priority, application United Kingdom, Jan. 2, 1987, #700025

Int. Cl.[4] A24C *5/14*

U.S. Cl. 131—109.1 23 Claims



1. A method of feeding tobacco to a cigarette machine, comprising conveying tobacco particles in an air stream from a tobacco sender device to a hopper apparatus, metering tobacco in the hopper apparatus, and pneumatically conveying it in an air stream towards an air-permeable suction band for formation, by withdrawal of the air stream, of a layer of tobacco for conveyance to a tobacco rod-forming means of the cigarette making machine, wherein atmospheric air is induced into the sender device and utilized successively for entraining and conveying the tobacco particles from the sender to the hopper apparatus, and for entraining and conveying the tobacco particles from the hopper apparatus to the suction band, the particles being disentrained from the air flow at an entrance to the hopper apparatus, and metered tobacco from the hopper apparatus being reentrained in at least part of the same air flow, the hopper apparatus being operated at a subatmospheric pressure prevailing in the air stream separated from the tobacco particles received from the sender device.

4,802,498

RESIN-BASED CHEWING TOBACCO

Warren Ogren, Rte. 8, Ogren Rd., Hayward, Wis. 54843

Filed Jul. 2, 1987, Ser. No. 69,700

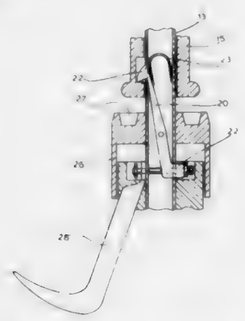
Int. Cl.[4] A24B *15/18*

U.S. Cl. 131—359 8 Claims

1. A tobacco containing gum comprising
(a) a gum base, in a concentration of 20 to 40 parts by weight,
(b) a sweetener, in a concentration of 5 to 25 parts by weight,
(c) a softener, in a concentration of 0.1 to 3 parts by weight,
(d) a filler, in a concentration of 0.1 to 5 parts by weight,
(e) sorbitol in a concentration of 40 to 70 parts by weight,
(f) tobacco, in a concentration of 0.1 to 20 parts by weight,
(g) propolis, in a concentration of 0.1 to 5 parts by weight, and
(h) a natural flavoring, in a concentration of 0.1 to 3 parts by weight.

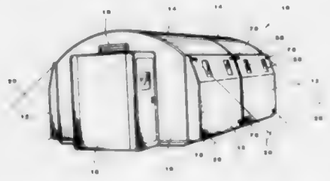
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4,802,499
UMBRELLA WITH PISTOL-SHAPED HANDLE AND TRIGGER-ACTIVATED OPENING DEVICE
Dennis Lissack, 3710 Trailbridge, Louisville, Ky. 40222
Filed Jul. 27, 1987, Ser. No. 78,297
Int. Cl.[4] A45B *25/14*
U.S. Cl. 135—24 **4 Claims**



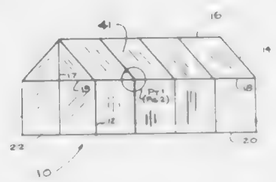
1. An umbrella with a pistol-shaped handle comprising:
a. a self-opening umbrella frame attached to a tubular shaft;
b. a pawl containing a first opening means secured to the tubular shaft adapted to open the umbrella when the first opening means is depressed;
c. a pistol-shaped handle secured to the tubular shaft; and
d. a trigger-activating second opening means comprised of a pivot lever pivotally secured to the pistol handle and a trigger linkage comprised of an upper plate located above the tubular shaft, a lower plate located below the tubular shaft and a pair of pins which connect the upper plate to the lower plate, wherein said second opening means is contained in the pistol-shaped handle.

4,802,500
PORTABLE COLLAPSIBLE BUILDING SYSTEM OF MODULAR CONSTRUCTION
James P. Davis, and David W. Henry, both of c/o Miles Yanick & Co., 261 Madison Ave. S., Bainbridge Island, Wash. 98110
Filed Aug. 14, 1987, Ser. No. 85,466
Int. Cl.[4] E04H *15/14, 15/48, 15/02*
U.S. Cl. 135—97 **8 Claims**



1. A collapsible, self-storing, portable building system, comprising:
(a) substantially identical, collapsible modular floor and sidewall units for use in pairs, each of said modular units being generally rectangular and including a generally flat, planar and rigid floor section and a rigid sidewall section, said floor section and said sidewall section being hingedly attached to each other along adjacent edges and allowing said sidewall section to be pivotally rotated from a closed position in which the perimeters of said floor and sidewall sections are generally coincident and engageable with each other, to an open and upright position relative to its related floor section, said sidewall section having inwardly extending edge walls around its periphery such that an inside surface is formed to define a storage cavity between said floor and sidewall sections when their respective peripheries are engaged, said pairs of modular floor and sidewall sections in their open and upright position being detachably connected to each other along their abutting edges for holding said pairs securely together,
(b) removably attachable and collapsing roof members adapted to be secured to and between the tops of said pairs of sidewall sections and to be stored in said storage cavity, and
(c) collapsible and attachable end wall sections adapted to be secured to the ends of said modular units and including door means.

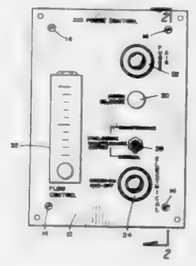
4,802,501
PORTABLE SHELTER
James W. Hall, II, 517 Carroldale SE., Canton, Ohio 44707
Filed Jul. 21, 1987, Ser. No. 76,056
Int. Cl.[4] E04H *15/48*
U.S. Cl. 135—109 **28 Claims**

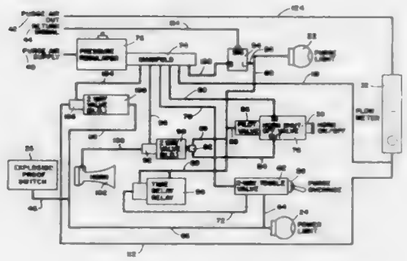


1. A prefabricated, collapsible, portable shelter frame comprising
(a.) a bottom side member for supporting the bottom of said frame
(b.) an upright vertical member for supporting the side of said frame, having a first end anchored directly or indirectly to the ground
(c.) a horizontal side member attached to a second end of said vertical member and tying two vertical members together
(d.) a roof support member having a first end attached to said second end of said vertical member and forming an obtuse angle with said vertical member for supporting a roof
(e.) an apex member attached to a second end of said roof support member and tying two roof support members together on one side of the roof wherein said vertical member, horizontal side member, roof support member and apex members are attached to each other by swivel means wherein said swivel means between said vertical member and said horizontal side member and between said roof support member and said apex member comprises a hinge and sleeve member which provides for 360 degree rotation of said horizontal side member and said apex member with respect to said vertical member and said roof support member respectively and wherein said swivel means comprises an axel and a wheel or angular rotation between said members, and wherein said axel is attached to a rotatable sleeve for positional rotation between said members.

4,802,502
PURGE AIR CONTROL SYSTEM
Henry L. Williams, Oklahoma City, Okla., assignor to Geograph Pioneer, Inc., Oklahoma City, Okla.
Filed Feb. 20, 1987, Ser. No. 16,854
Int. Cl.[4] B65D *25/00*
U.S. Cl. 137—382 **5 Claims**

1. A purge control system for providing and maintaining a non-hazardous environment within an electronics enclosure comprising a separate purge air box housing non-electrical components, an outlet port on the box for supplying inert gas under pressure from a purge air supply to the electronics enclosure and an inlet port on the box for receiving inert gas under pressure back from the electronics enclosure; a manifold mounted in the box; a pressure regulator mounted in the box and in fluid communication with a purge air supply for providing the purge air to the manifold; a flow meter mounted on the box for providing a flow of purge air from the manifold to the electronics enclosure through the outlet port and for determining the rate of flow to the outlet port; a signal valve having one inlet in communication with the manifold and another inlet in communication with the inlet port; the signal valve having an





outlet providing a pneumatic signal when pressure is received at the inlet port; a first pneumatic light mounted on the box connected to the outlet of the signal valve for indicating the status of purge air pressure coming from the enclosure; a time-delay pneumatic relay connected to the outlet of the signal valve for providing a delayed signal in response to the signal received by the signal valve; an explosion-proof, pneumatically operated switch connected to the output of the time-delay relay for providing electrical power to the electronics enclosure in response to the delayed signal; and a second pneumatic light mounted on the box and responsive to the delayed signal for indicating the status of electrical power going into the enclosure through the explosion-proof switch.

4,802,503
CONTROL VALVE FOR FLUSHING SYSTEM
Guang-Yue Sheen, No. 1-2, Lane 23, Yeong Chang Third St., Taichung, Taiwan
Filed Jul. 8, 1988, Ser. No. 216,290
Int. Cl.[4] F16K *31/26*
U.S. Cl. 137—413 **1 Claim**

1. A flushing system control valve comprising the combination of:
(a) a main body (1) having an inlet channel (12), an outlet port (13), a valve chamber (14), and a control study cavity (15); an upper portion of said inlet channel (12) communicating with said outlet port (13); an upper end of said outlet port (13) opening into said valve chamber (14); said inlet channel (12) also communicating with said control stud cavity (15) via a stop hole (151) situated therebetween;
(b) a control rod (2) having a notched stopper (21) on a lower end thereof and a seal on a lowermost end thereof; said control rod (2) being movable in said control stud cavity (15) through a two-way flow channel (64); a plug (22) being positioned roughly mid-way up said control rod (2); a spring (24) encompassing said control rod (2), said spring (24) being retained on a lower end thereof by said notched stopper (21);
(c) a stop valve (5) having a substantially stepped disk shape with a cylindrical sleeve (52) on an upper side thereof and a pliable valve cover (51) fitting on a lower side thereof for providing water-tight engagement with said valve chamber (14);
(d) a lid (6) comprising a fixing element (66), a protrusion (62), said two-way flow channel (64), and a gasket (61); said gasket (61) being located on an uppermost end of said main body (1); said lid (6) fitting tightly on an upper portion of said main body (1); a guide rod (65) being threadably fixed at a lower end thereof in said fixing element (66); said sleeve (52) being vertically slidable on said protrusion (62);



(e) a support rod (3); a lug (63) being disposed on said lid (6) one end of said support rod (3) being pivotally connected at said lug (63) and a second end of said support rod (3) being pivotally connected to a shaft (32); said shaft (32) having a hole (33) at an upper end thereof; a pin (331) being secured in said hole (33) and partially protruding therefrom;
(f) a float cylinder (4) having a cylindrical guide sleeve (42) therein for vertical slidability on said guide rod (65); said float cylinder (4) also having a shaft cavity (41) for housing said shaft (32); said float cylinder (4) having a plurality of adjustment notches (43) which are integrally formed in an outer part of said shaft cavity (41); said setting pin (331) of said shaft (32) being placeable on any of said plurality of adjustment notches (43) for adjusting a range of said float cylinder (4); and
said float cylinder (4) in a non-flush position being buoyed up by a full reservoir (7) of water so that said shaft (32) is elevated a corresponding distance with said float cylinder (4); said shaft (32) causing said support rod (3) to support said control rod (2) so that said plug (22) of said control rod (2) closes said passage (152) when float cylinder (4) is in a non-flush position; and
said float cylinder (4) in a flush position resting on said fixing element (66) so that said shaft (32) is in a lowermost posi-

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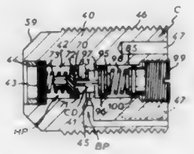
tion thereby causing said support rod (3) and said control rod (2) to be said in lowermost position; said passage (152) and said two-way flow cahnnel (64) being open when said float cylinder (4) is in a flush position so that water is urged out of an upper part of said valve chamber (14) under an upward pressure of water on a lower side of said stop valve (5), thereby allowing water to flow freely into said reservoir (7) until said float reaches said non-flush position.

4,802,504

TAP WITH FLOW LIMITER FOR GAS BOTTLES

Jean-Marie Politi, Pontault-Combault, France, assignor to L'Air Liquide, Paris, France

Filed Aug. 5, 1986, Ser. No. 893,356
Claims priority, application France, Aug. 14, 1985, 85 12381
Int. Cl.[4] F16K 47/08; F17C 13/04
U.S. Cl. 137—454.5 10 Claims



1. A tap for a bottle of pressurized gas comprising a tap body having a recess therein and having means for attachment to a gas supply line, a flow limiter device in the form of a cartridge hermetically attachable within said recess, said cartridge defining a first, upstream, chamber communicating with said gas bottle attachment means a second, downstream, chamber communicating with said supply line attachment means, and an open unobstructed calibrated passage whereby said first chamber is in communication with said second chamber, the calibrated passage having a length several times its maximum transverse dimension and a predetermined constant volume, said cartridge defining a third, expansion chamber between and communicating with said first chamber and said calibrated passage, a valve within one of said chambers for controlling gas flow from said first chamber to said third chamber, calibrated control means in engagement with said valve, and spring means for biasing said valve.

4,802,505

FLUID CONTROL VALVE

Andre Gemignani, Saint Mitre les Remparts; Serge J. Boulogne, Rognac, and Gerald Schaumburg, Martigues, all of France, assignors to Societe D'Exploitation de Brevets pour L'Industrie et la Marine, Chateauneuf les Martigues, France

Filed Mar. 13, 1987, Ser. No. 25,382
Claims priority, application France, Mar. 13, 1986, 86 04120
Int. Cl.[4] G05D 16/06
U.S. Cl. 137—492 3 Claims

1. A valve for controlling fluid flow between a user, a high-pressure source, and a low-pressure sump, the valve comprising:

a valve housing defining a chamber extending along an axis and formed with axially offset source, sump, and user ports respectively connected to the source, sump, and user, the user port opening into the chamber between the source and sump ports;

a valve body in the chamber having first and second coaxial but axially independently movable parts, the first part having a mainly axial throughgoing passage having one end exposed continuously to one of the source and sump ports and an opposite axially open end axially sealingly engageable with the second valve port;

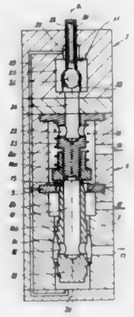
a central seat between the source and sump ports and axially sealingly engageable with one of the valve parts to isolate one of the source and sump ports from the other of the source and sump ports, the parts being displaceable between

one end position permitting flow in the chamber between the user and the other port while blocking flow between same and the one port with the valve parts in sealing engagement with each other and one of the valve parts out of engagement with the central seat while the other of the valve parts passes with clearance through the central seat,

an intermediate position blocking flow in the chamber between the ports with the valve parts in sealing engagement with each other and with the one valve part in sealing engagement with the central seat and the other valve part passing therethrough, and

a drain end position permitting flow in the chamber between the user and one port while blocking flow between same and the other port with the valve parts out of axial contact with each other and with the one valve part in sealing engagement with the central seat, the seat defining an orifice and the other valve part being engageable through the orifice with the one valve part;

a spring urging the one valve part into sealing engagement



with the seat, the housing forming with the other valve part a source compartment connectable to the source for urging the other part into axial engagement through the orifice with the one part, the valve housing further forming a pilot chamber permanently pressurized from the source and formed with a small-diameter extension;

a conduit connecting the source compartment with the small-diameter extension;

a ball in the pilot chamber sealingly engageable over the extension to separate same from the pilot chamber;

a pilot spring urging the ball into the extension;

an actuating pin engageable opposite to the pilot spring with the ball for lifting same off the extension;

the pin being tubular and having one end sealingly engageable with the ball and an opposite end connected to the sump;

a piston engageable with the pin to displace same against the ball, the housing forming an actuator chamber on one side of the piston and connected to a pressure source to be monitored; and

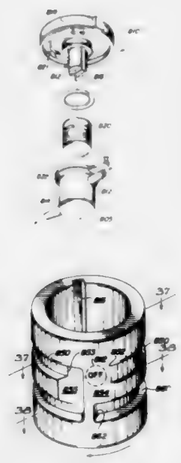
an actuator spring bearing opposite to the actuator chamber on the piston to urge same against the pin, whereby when the pressure in the actuator chamber exceeds the force of the actuator spring the pin pulls away from the ball to vent the extension and source compartment.

4,802,506

FLOW CONTROL DEVICE FOR ADMINISTRATION OF INTRAVENOUS FLUIDS

Jerry L. Aslanian, 4247 E. Hazelwood, Phoenix, Ariz. 85018

Continuation-in-part of Ser. No. 630,632, Jul. 13, 1984. This application Apr. 20, 1987, Ser. No. 39,946
Int. Cl.[4] F16K 5/16, 5/10
U.S. Cl. 137—556 11 Claims



1. A valve for establishing and maintaining predetermined administration flow rates in an IV system having a source of fluid connectable to an administration needle via a tubing line, said valve comprising:

(a) a housing of a first material defining a cylindrical valving chamber, said housing having an inlet and an outlet communicating with said chamber and connectable in said tubing line;

(b) a metering member having a projection rotatable within said chamber, said metering member being of a second material and extending axially within said valving chamber;

(c) a valving drum having a generally cylindrical outer surface and a predetermined axial length defining a recess engageable about said projection and defining a flow path on its outer surface, said drum being rotatable with said projection to vary the flow rate between the inlet and outlet, said drum being of a third material which is relatively softer than said first and second materials and being at least partially compressed in an assembled position in said flow chamber and being interiorly supported by said projection substantially along its entire length to provide a wiping and sealing action as the drum is rotated.

4,802,507

GAS FLOW CONTROL DEVICE

James R. Willson, Ashland, Mass., assignor to Kidde, Inc., Saddle Brook, N.J.

Filed Jan. 2, 1987, Ser. No. 46
Int. Cl.[4] F16K 31/126
U.S. Cl. 137—613 25 Claims

19. A gas flow control device comprising:

a body means defining an inlet, an outlet, and a gas flow passage therebetween;

a main valve means disposed in said passage and comprising a primary valve movable between a closed position that prevents flow through said passage and an open position that permits flow therethrough;

a primary diaphragm operably connected to said primary valve and supported by said body means, said primary diaphragm defining with said body means and separating a primary reference chamber from a primary regulator chamber located in said passage, pressure in said primary reference chamber exerting a force tending to open said primary valve;

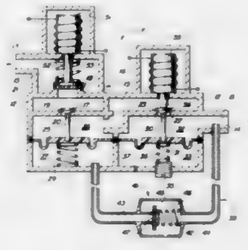
a primary bias means biasing said primary valve toward said open position;

a secondary valve disposed in said passage between said primary valve and said outlet, said secondary valve movable between a closed position that prevents flow through said passage and an open position that permits flow therethrough;

a secondary diaphragm operably connected to said secondary valve and supported by said body means, said secondary diaphragm defining with said body means and separating a secondary reference chamber from a secondary regulator chamber located in said passage, pressure in said secondary regulator chamber exerting a force tending to close said secondary valve;

a mechanical secondary bias means coupled to said secondary valve and applying thereto a mechanical force biasing said secondary valve toward said open position said secondary bias means being manually adjustable so as to permit selective variation in the mechanical force applied to said secondary valve; and

control passage means providing communication between said primary reference chamber and said outlet, said control passage means including a gas flow restriction providing restricted gas flow between said primary reference chamber and said outlet and adapted to transmit to said primary reference chamber changes in the gas pressure at said outlet after a substantial delay provided by said gas flow restriction.



4,802,508

CYCLICALLY VARYING PULSATING FLUID SUPPLY SYSTEM

George R. Styles, Glendale; K. Tom Jones, Chandler, and Devin A. Bloom, Phoenix, all of Ariz., assignors to Pacific BioSystems, Inc., Phoenix, Ariz.

Filed Mar. 31, 1988, Ser. No. 176,361
Int. Cl.[4] B08B 3/02
U.S. Cl. 137—624.13 21 Claims

1. A system for delivering a pulsating supply of fluid to a utilization device, including in combination:

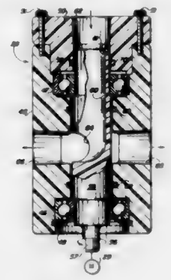
a source of fluid at a predetermined pressure;

at least first and second utilization devices for receiving fluid on first and second inlets, respectively; and

pulsator means having an inlet coupled with said source of fluid and having at least first and second outlets coupled, respectively, to said first and second inlets of said first and second utilization devices, said pulsator means apportioning fluid in a cyclically varying pattern of pressure from

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the inlet thereof to each of the first and second outlets thereof such that the total fluid flow through both of said first and second outlets thereof remains substantially constant, and the pressure of fluid at the input to said pulsator



means remains substantially constant at said predetermined pressure, while the cyclical flow of fluid through said first outlet increases with a corresponding decrease of the flow of fluid through the second outlet thereof and vice-versa.

4,802,509

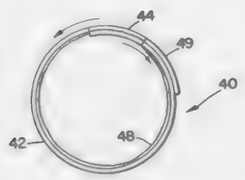
WRAPAROUND CLOSURE FOR CONDUIT PROTECTION

Henry E. Brandolf, 1 Quiet Ct., Miller Place, N.Y. 11764

Filed Dec. 15, 1987, Ser. No. 133,074

Int. Cl.⁴ F16L *57/00*

U.S. Cl. 138—110 **5 Claims**



1. A wraparound closure for conduit protection, comprising:
(a) a substantially planar sheet of plastic material having shape memory, being heat recoverable at transition temperature T°, and having upper and lower surfaces;
(b) a mastic layer disposed on the upper surface of said sheet, said layer being composed of an adherent material selected from the group of mastic and heat-activated adhesives being activated at a temperature below T°, said adherent material being coated on the upper surface of said sheet;
(c) a first strip of self-amalgamating material partially crosslinked by exposure to a radiation dose of less than approximately 4 Mrad disposed on and integrated with said upper sheet surface where said self-amalgamating material and said adherent material are of substantially equal thickness to provide a continuous layer on said upper surface of substantially uniform thickness, said self-amalgamating material being capable of fusing together without application of heat thereto,
(d) a second strip of self amalgamating material partially crosslinked by exposure to a radiation dose of less than approximately 4M rad complementary to said first strip positioned on and integrated with said lower sheet surface to mate and fuse with said first strip when said sheet is wrapped around a tubular conduit and said first and second strips are juxtaposed and pressed together where application of heat to a temperature of T° causes said sheet to shrink about the conduit and the adherent material bond thereto, and the lap peel strength of the fused first and second strips is sufficient to exceed the hoop stress and lap shear imparted from the heat recovery of said plastic sheet.

4,802,510

HIGH-PRESSURE HOSE AND A PROCESS FOR ITS PRODUCTION

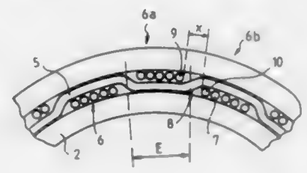
Yves Berlincourt, Blois, and Alain Mouchot, Cheverny, both of France, assignors to Tecalemit Flexibles S.A., Blois Cedex, France

Filed Apr. 14, 1987, Ser. No. 38,884

Claims priority, application France, Apr. 18, 1986, 8605629

Int. Cl.⁴ F16L *11/10*

U.S. Cl. 138—125 **15 Claims**



1. A flexible hose comprising an inner plastic tube covered by at least one braiding constituted of a plurality of helically crossed layers braided in two different directions around the inner plastics tube, each layer being constituted of a single flat row of filaments arranged in adjoining parallel relation, all the layers having a same number of filaments, the plurality of layers providing plural adjacent layers of filaments extending in the same direction, wherein the filaments of every layer are made of plastics, and wherein, when the hose is straight, the number of filaments per layer is such and each filaments is so deformed in its right cross-section that a gap separating two adjacent layers extending in the same direction as one another is at least 100% filled, each filament having a non-circular flattened cross-section.

4,802,511

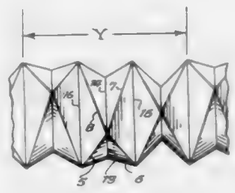
SHIRRED TUBULAR MATERIAL

Norman G. Hensley, Lafayette, Ind., assignor to Teepak, Inc., Oak Brook, Ill.

Continuation-in-part of Ser. No. 547,817, Nov. 1, 1983, abandoned. This application Aug. 15, 1984, Ser. No. 641,136

Int. Cl.⁴ F16L *11/10*

U.S. Cl. 138—118.1 **12 Claims**



1. A shirred tubular flexible material sausage casing having a central axis bore, said shirred tubular material comprising a plurality of outer folds arranged along at least two parallel and at least two counter-directional, parallel, longitudinal extending, crisscrossing helixes defining substantially diamond shaped patterns, and a plurality of inner folds arranged in a plane substantially perpendicular to the longitudinal axis of the tube, connecting opposing points of said diamond shaped patterns defined by the crisscrossing of said outer folds wherein said opposing points are rotationally displaced from the corresponding point of each preceding neighboring shaped pattern.

4,802,512

AUTOMATIC WIRE DECORTICATING AND CUTTING METHOD AND APPARATUS

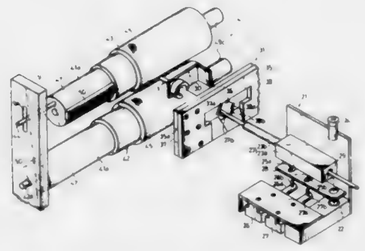
Hiroji Kodera, Gifu, Japan, assignor to Kabushiki, Kaisha, Kodera, Denshi, Seisakusho, Gifu, Japan

Filed Feb. 24, 1987, Ser. No. 18,393

Claims priority, application Japan, Feb. 25, 1986, 61-39434; Feb. 25, 1986, 61-39435

Int. Cl.⁴ B21F *07/00*

U.S. Cl. 140—149 **15 Claims**



1. An automatic, covered wire cutting and decorticating method comprising the steps of:
(a) making a covered wire move by specified lengths toward one side of sending means of a cutting means disposed at a position opposed to said sending means, said wire moved by rotating a pair of rollers of said sending means,
(b) cutting a cover of said covered wire by said cutting means,
(c) pulling said covered wire to the sending means and decorticating the cover of said covered wire by rotating said rollers of said sending means, and
(d) twisting an exposed core wire by relatively moving said rollers of said sending means in the axial center direction in synchronization with said step of pulling said covered wire.

4,802,513

CLOSED SYSTEM CHEMICAL CONTAINER

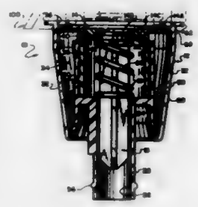
Richard P. Reynolds, Greensboro, N.C., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 261,431, May 7, 1981, abandoned. This application Apr. 6, 1982, Ser. No. 364,322

Int. Cl.⁴ B65D *83/00*

U.S. Cl. 141—311 R **10 Claims**

1. A container-mating closure unit for attachment to an extraction device to provide selective access to the interior of a container, comprising:
a housing adapted to be attached to a container in a fluid-tight manner, said housing defining an inner chamber and an outer chamber that is separate from and surrounds said inner chamber, said outer chamber being in fluid communication with the interior of the container;
a downtube providing fluid communication between said inner chamber and the container;
an outlet valve that is automatically opened when an extraction device is attached to the container to provide the extraction device with access to said inner chamber; and
a lid that closes the top of said housing, said lid comprising a flange that forms a flap valve which normally closes off said outer chamber from the exterior of the container and that is deformed inwardly into said outer chamber when



the extraction device is attached to the container to provide the extraction device with access to said outer chamber.

4,802,514

OVERFLOW SPILLAGE PREVENTER FOR FUEL TANKS IN BOATS

Chris L. Morse, 6 Coach Rd., Savannah, Ga. 31419

Filed Mar. 31, 1987, Ser. No. 32,477

Int. Cl.⁴ B65B *3/04*

U.S. Cl. 141—86 **2 Claims**



1. A fuel spillage prevention device for mounting to the hull of a boat beneath a fuel tank air vent outlet, comprising:
receptacle means for collecting and storing fuel that is expelled from said outlet, said receptacle means having a flat rear wall that is adapted to contact said hull, and one or more outwardly extending projections; and
suction cup means attached to each of said projections for securing said receptacle means to said hull, said suction cup means protruding beyond said flat rear wall of said receptacle means when the apparatus is not attached to the hull of a boat whereby said receptacle may be firmly attached to the hull of a boat without damaging the hull, said device further including baffle means for intercepting fuel that is expelled from said outlet at high speeds, and means for pivotally mounting said baffle means relative to said receptacle means, whereby said baffle means may be positioned to intercept the fuel expelled from outlets on either side of a boat.

4,802,515

SAFETY GAS CYLINDER CONTAINMENT SYSTEM

Frank G. Pytryga, 972 Arundel Dr., Arnold, Md. 21012, and Martin Prince, 58 Darlington Dr., Wayne, N.J. 07470

Filed Nov. 21, 1986, Ser. No. 933,160

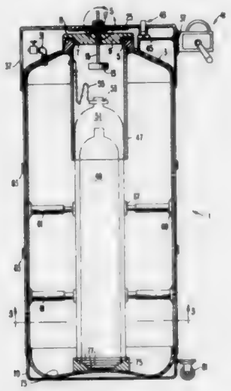
Int. Cl.⁴ B65B *21/00*

U.S. Cl. 141—97 **14 Claims**

1. A gas containment unit comprising:
(a) a sealed storage means for receiving a container having hazardous gases or the like therein;
(b) said storage means having a bottom and a side wall;
(c) means for supporting the container in said storage means, said supporting means comprising:
(1) at least one seat flange positioned in said bottom; and

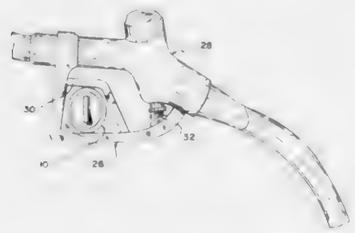
VOL 1099 ISS 1 FE 7 1989 UMI

(2) a plurality of means extending from said side wall and directed inwardly to support the gas container;
(d) means for gaining access at an end of said storage means;



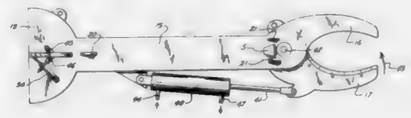
(e) a vacuum valve for removing gas from said storage means; and
(f) a gas valve for treating the gas in said storage means.

4,802,516
NOZZLE LOCK GAS CAP
David F. Dahlem, 901 Gatewood Dr., Enfield, Conn. 06082
Filed Aug. 12, 1987, Ser. No. 84,488
Int. Cl.[4] B65D *51/24*
U.S. Cl. 141—392 **5 Claims**



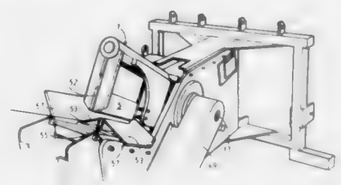
1. A gas cap, comprising:
an elliptical flange element having a first planar surface and a second planar surface and a circumferentially disposed concave-shaped recess around the periphery of said elliptical flange element between said first and second planar surfaces;
said elliptical flange element including a gas cap handle element disposed on said first planar surface, thereby providing means for applying torque to said elliptical flange element; and
a threaded curvilinear extension rigidly affixed to said second planar surface, and disposed opposingly to said gas cap handle element; whereby,
said flange element may be employed within a nozzle housing of a gasoline dispensing means having a trigger/handle, such that the elliptical flange element displaces said trigger/handle of said dispensing means in varying amounts due to the elliptical shape of the flange element, allowing thereby an adjusted flow of fuel from the dispensing means, said trigger/handle being seated in said circumferentially disposed concave-shaped recess of said flange element such that the gas cap is stabilized between the trigger/handle and said nozzle housing.

4,802,517
TREE CUTTING APPARATUS
Pat Laster, P.O. Box 31821, Lafayette, La. 70503
Filed May 9, 1988, Ser. No. 191,913
Int. Cl.[4] A01G *23/02*
U.S. Cl. 144—34 E **11 Claims**



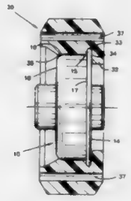
1. A cable-supported tree cutting apparatus device for use with draglines and the like comprising:
(a) an elongated tool body;
(b) a pair of opposed jaws positioned at one end of the tool body and movable with respect to one another so that the jaws can open and close;
(c) an open-ended mouth portion defined by the jaws in an open position and adapted to receive a tree to grip or cut same;
(d) a counterweight portion of the elongated body generally opposite and spaced from the open mouth;
(e) lifting eye means positioned between the jaws and the counterweight for forming a connection with a cable; and
(f) means spaced from the lifting eye means for moving the body laterally when supported by a vertically extended lift cable.

4,802,518
LOG CUTTING MACHINE
May Knight, Leek, England, assignor to David John Knight, Cheddleton, England
Filed Sep. 14, 1987, Ser. No. 96,625
Claims priority, application United Kingdom, Sep. 12, 1986, 8621986
Int. Cl.[4] B27L *7/00*
U.S. Cl. 144—193 R **16 Claims**



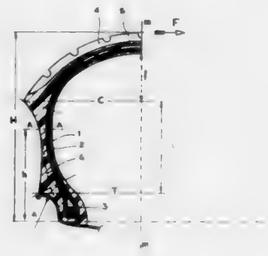
1.A log cutting machine comprising a pivotal support carrying a cutting blade, a reaction surface defined by two spaced apart oppositely inclined back-to-back ramps defining a gap therebetween, said cutting blade being movable into the gap between said ramps of said reaction surface upon pivoting of said support, a cranked drive apparatus, and connecting means movably connected to both said pivotal support and said cranked drive apparatus for effecting cyclic pivotal movement of said cutting blade toward and away from said reaction surface.

4,802,519
RUBBER TIRED ROLLER BEARING
Richard F. Moranz, Cleveland, Ohio, assignor to Kendale Industries, Valley View, Ohio
Filed Jun. 8, 1987, Ser. No. 59,573
Int. Cl.[4] B65G *13/00;* **B60B** *5/00*
U.S. Cl. 152—325 **3 Claims**



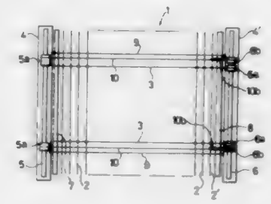
1. A wheel assembly comprising
a hub adapted to be affixed to a shaft;
an outer bearing member rotably affixed to said hub, said outer bearing member having a generally cylindrical outer perimeter wall, having a bearing flange, having a first end wall at a first end of said outer perimeter wall, and having a shoulder at a second end of said outer perimeter wall; and
a generally toroidal resilient tire, said tire having an inner perimeter wall fitting elastically around said outer perimeter wall of said outer bearing member, having a tire groove, and having a tire flange at a first end of said inner perimeter wall, said tire groove fitting elastically around said bearing flange of said outer bearing member and said tire flange overlapping said first end wall of said outer bearing member.

4,802,520
MOTORCYCLE TIRES
Giancarlo Armellin, Nova Milanese, Italy, assignor to Pirelli Coordinamento Pneumatici S.p.A., Italy
Filed Jun. 3, 1987, Ser. No. 56,947
Claims priority, application Italy, Jun. 9, 1986, 20716 A/86
Int. Cl.[4] B60C *3/04*
U.S. Cl. 152—454 **6 Claims**



1. A tire for two-wheeled vehicle wheels having a deflection value between 0.20 and 0.40 comprising
a toridal body having a carcass of textile plies, with the sidewalls thereof having a cross-section with an arcuate curvilinear profile that is concave inwardly;
a tread band disposed in the crown zone of said carcass, sidewalls of varying thickness and beads for positioning said tire on a corresponding mounting rim;
said sidewalls, radially extending between the extremities of said tread band and the radially outermost surface of said mounting rim having in the uninflated state of the tire an axially external surface of a concave profile, wherein the radial height of said sidewalls is between 30% and 45% of the value of the total height H of said tire, the point of minimum thickness of said sidewalls being at a radial height comprised between 40% and 60% of said total height H, and the ratio between said minimum thickness and the maximum thickness of each sidewall, measured in the direction perpendicular to the profile of said carcass plies, in correspondence of the radially outermost surface of said mounting rim, being between 0.15 and 0.40, whereby in the inflated state of the tire the axially external surface of said sidewall has a substantially rectilinear profile.

4,802,521
OVERHEAD BLIND
Eiharu Tsuchida, Tochio, and Hiroyoshi Nagasawa, Higashikubiki, both of Japan, assignors to Karon Corporation, Niigata, Japan
Division of Ser. No. 831,996, Feb. 20, 1986. This application Nov. 18, 1986, Ser. No. 932,469
Claims priority, application Japan, Nov. 25, 1985, 60-179881; Nov. 30, 1985, 60-183653
The portion of the term of this patent subsequent to Apr. 5, 2005, has been disclaimed.
Int. Cl.[4] E06B *9/30*
U.S. Cl. 160—172 **2 Claims**



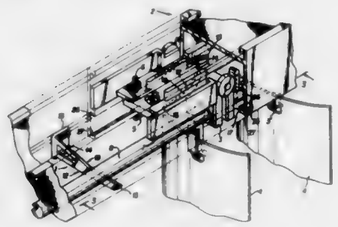
1. An overhead blind of the type including a plurality of slats characterized in that said plurality of slats are provided and movable in a substantially horizontal direction, said blind comprises a means for tilting said plurality of slats and a means for shifting a group of slats to open and close the blind, at least one support cable for passing through said slats and preventing said slats from drooping, said means for tilting comprising a plurality of tilt cords which supports said slats at both edges thereof in parallel to and at a substantially equal distance from each other and each of said slats for the overhead blind is formed with cutaways engageable with said tilt strings.

4,802,522
SUPPORT FOR AN OPERATING ELEMENT OF A VENETIAN BLIND ASSEMBLY
Richard N. Anderson, Owensboro, Ky., assignor to Hunter Douglas Inc., Saddle River, N.J.
Continuation-in-part of Ser. No. 725,456, Apr. 22, 1985, Pat. No. 4,662,422. This application Feb. 17, 1987, Ser. No. 15,268
The portion of the term of this patent subsequent to May 5, 2004, has been disclaimed.
Int. Cl.[4] E06B *9/30*
U.S. Cl. 160—168.1 **6 Claims**

1. A support for the operating means of a laterally movable blind assembly adapted to be moved to open and closed positions, where said blind assembly includes a plurality of vertically disposed portions each depending from a traveler supported by and movable along a longitudinal headrail extending at an angle with respect to the vertical direction, said operating

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means extending parallel to said headrail and in a closed position of the blind assembly being supported at intervals along the length of said headrail by said travelers, and means for moving said travelers towards open and closed positions of said blind assembly; said support being mounted in a stationary manner in at least one location along the length of said headrail, said support having a support element normally positioned



in the path of movement of said travelers and in a supporting position with respect to said operating means, said support element being movable out of said supporting position and out of the path of movement of said travelers in response to engagement with said travelers, and means for moving said support element into said supporting position when not engaged by a traveler.

4,802,523

BLANKET SHADE FOR WINDOW FRAME

Richard A. Scholten, and Larry A. Mosteller, both of Cincinnati, Ohio, assignors to Richard A. Scholten, Cincinnati, Ohio

Filed Jul. 13, 1983, Ser. No. 513,372

Int. Cl.⁴ A47H *23/00*

U.S. Cl. 160—354 **3 Claims**



1. A window and blanket shade combination comprising,

a window frame,

a stationary vertical magnetic strip on each side of said window frame,

a blanket shade attached to the top of said window frame, and covering said frame,

and a movable vertical magnetic strip disposed within said blanket shade along each edge thereof, said movable strips overlying said stationary strips when said shade it lowered,

said strips each having only three longitudinally-extending poles spaced transversely across the strip, the nominal pole spacing being three to five times the thickness of the strip,

one of said strips on each side of said frame having an N S N pole configuration, the corresponding movable strip having a S N S pole configuration, wherein each of the three poles in each of said strips is independent of the other, like poles in each strip being completely separated from each other by an unlike pole in the same strip.

4,802,524

METHOD FOR MAKING COMPOSITE MATERIAL USING OXYGEN

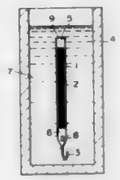
Tadashi Donomoto, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Continuation of Ser. No. 282,185, Jul. 15, 1981, abandoned. This application Feb. 23, 1984, Ser. No. 581,226

Claims priority, application Japan, Jul. 30, 1980, 55-105654

Int. Cl.⁴ B22D *19/14*

U.S. Cl. 164—97 **6 Claims**



1. A method for making a composite material, comprising the steps, performed in the specified sequence, of:

(a) charging porous reinforcing material into a tubular member having two open opposite ends;

(b) replacing substantially all of the atmospheric air occupying the space in said tubular member including the interstices of said reinforcing material by substantially pure oxygen gas by blowing oxygen gas into said tubular member from one of said open ends thereof while exhausting the air in said space from the other of said open ends thereof;

(c) closing only one of said open ends of said tubular member while substantially maintaining the conditions obtained by step (b);

(d) submerging said tubular member charged with said reinforcing material and oxygen gas into a bath of molten metal, the molten metal thereby flowing into said tubular member through said one open end thereof and filling the space in said tubular member including the interstices of said reinforcing material as the oxygen gas which has been occupying said space in said tubular member including said interstices loses its volume by reacting with the molten metal; and

(e) taking out said tubular member from said bath of molten metal and cooling it down to solidify the molten metal in said tubular member.

4,802,525

REMOVING A CASTING FROM A MOLD

Gerold Heine, Uhldingen-Muehlhofen, and Joachim Stark, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Dornier Medizintechnik GmbH, Germering, Fed. Rep. of Germany

Filed Dec. 5, 1986, Ser. No. 938,571

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1985, 3543062

Int. Cl.⁴ B22D *29/00*

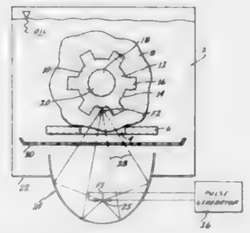
U.S. Cl. 164—48 **4 Claims**

1. Method for removing the mold or parts of the mold from a casting following solidification and cooling comprising the steps of

immersing the casting with mold or mold particles still attached in a liquid; and

generating and focusing shock waves by means of a curved

transducer onto interface portions between the mold and mold parts on one hand and the casting on the other hand,



to obtain ablation and spalling of the mold material to be removed from the casting.

4,802,526

CENTRIFUGAL CASTER

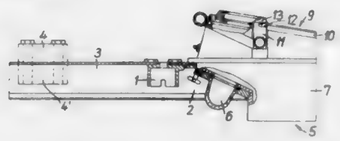
Ronald Friedrich, Kamp-Lintfort; Werner Hammecke, deceased, both of Bohmte, both of Fed. Rep. of Germany (by Marie Elise Gisela Hammecke, heiress), and Ronald Friedrich, Kamp-Lintfort, all of Fed. Rep. of Germany, assignors to Fried. Krupp GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 247,292, Mar. 26, 1981, Pat. No. 4,418,760. This application Jul. 22, 1983, Ser. No. 516,347

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932681

Int. Cl.⁴ B22D *13/00*

U.S. Cl. 164—287 **9 Claims**



1. A centrifugal caster arrangement comprising: a motor driven centrifuge arm; a casting chamber connected to said centrifuge arm; a weight arm connected to said centrifuge arm, both said arms being rotatable about a vertical axis; a counterweight having a permanently fixed position relative to said weight arm and being immovable relative to said casting chamber and said vertical axis; a melting crucible disposed in said casting chamber; and a plurality of muffle sets, each said muffle set comprising an exchangeable muffle cage and an associated casting muffle inserted in said exchangeable muffle cage, wherein said casting chamber is provided with a region for mounting one of said muffle sets, and each said exchangeable muffle cage is matched to its associated casting muffle according to size and weight so that the total weight of each respective muffle set is of such magnitude that when each respective muffle set is mounted in said casting chamber and rotated about said vertical axis said centrifuge arm is in balance with said weight arm and said permanently fixed counterweight.

4,802,527

APPARATUS FOR CASTING MOLTEN METAL

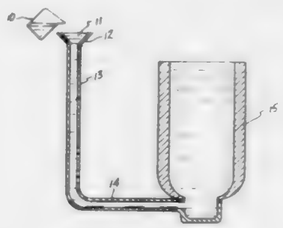
Jerry W. Brockmeyer, Hendersonville, N.C., and Michael A. Cummings, Taylor, S.C., assignors to Swiss Aluminum Ltd., Chippis, Switzerland

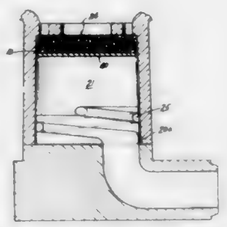
Filed Nov. 16, 1987, Ser. No. 121,634

Int. Cl.⁴ B22C *9/08*

U.S. Cl. 164—358 **9 Claims**

1. An apparatus for casting molten metal which comprises: a mold for casting molten metal having a base portion; a molten metal inlet located at the base portion; a horizontally disposed filter positioned across the molten metal inlet so that all molten metal must pass therethrough; an annular holding means disposed above said filter to hold said filter in place and to prevent mechanical damage to the filter; and a well beneath said inlet and beneath said filter.





4,802,528

HOOPS FOR CONTINUOUS CASTING ROLLS

Joseph J. Terrasse; Andre Boucher, both of St. Ferreol, and Michel Seux, Chambon Feugerolles, all of France, assignors to Chavanne - Ketin, Puteaux, France

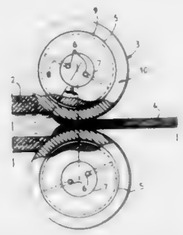
PCT No. PCT/FR86/00086, § 371 Date Nov. 14, 1986, § 102(e) Date Nov. 14, 1986, PCT Pub. No. WO86/05423, PCT Pub. Date Sep. 25, 1986

Continuation of Ser. No. 939,479, Nov. 14, 1986, abandoned. This PCT application Mar. 14, 1986, Ser. No. 191,820

Claims priority, application France, Mar. 15, 1985, 8503867

Int. Cl.⁴ B22D *11/06, 11/128*

U.S. Cl. 164—428 **2 Claims**



1. In a machine for the continuous casting of aluminium alloy comprising a feed duct for molten aluminium alloy an outlet nozzle communicating with said duct and having an outlet end, and two rotatable rolls, immediately adjacent to said outlet end for receiving the molten aluminium alloy from said outlet end and rolling the aluminium alloy to a desired thickness, each of said rolls comprising in combination a core,

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journals at each end of said core, an outer peripheral surface on said core defining peripheral grooves, cooling liquid inlet and outlet passageways in said core and in said journals for putting said grooves in communication with a cooling liquid supply, and a cylindrical outer sleeve having an inner surface mounted on said core and in close contact with said peripheral surface, said cooling liquid communicating with said inner surface through said grooves and said passageways for cooling said sleeve ; the improvement wherein said sleeve is in a forged, heat treated and machined state and consists in an alloy steel, having the following composition in percentages by weight : C: 0.30 to 0.36; Mn: 0.30 to 0.60; Si: 0.15 to 0.45; Ni: less than 0.40; Cr: 2.80 to 3.40; Mo: 0.85 to 1.25; V: 0.10 to 0.30: S: ≦0.020; P: ≦0.020; Cu: ≦0.30, the balance being substantially iron and residual impurities.

4,802,529

REFRIGERANT-HEATING TYPE HEATING APPARATUS

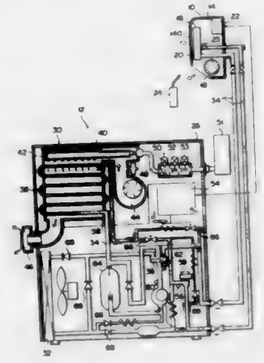
Shigeto Sumitani; Haruo Noguchi, both of Fuji, and Hiroyuki Araya, Fujinomiya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 14, 1988, Ser. No. 143,709

Claims priority, application Japan, May 25, 1987, 62-127702

Int. Cl.⁴ F25B *29/00*

U.S. Cl. 165—29 **5 Claims**



1. A refrigerant-heating type heating apparatus, comprising:
a refrigeration cycle including a compressor, an indoor heat exchanger arranged in a room, a refrigerant-heating unit for heating the refrigerant, and refrigerant tubes connecting the above components to each other, the refrigerant heating unit having a heat exchanger section through which a refrigerant flows, heating means whose combustion rate is adjustable, and guide means for guiding a combustion gas produced by the combustion of the heating means so as to heat the refrigerant flowing through the heat exchanger section;
room temperature detecting means for detecting the temperature of the room;
temperature presetting means for presetting a desired room temperature;
refrigerant temperature detecting means for detecting the temperature of a refrigerant flowing into the heat exchanger section of the refrigerant-heating means; and
control means for driving the heating means at a combustion rate according to the difference between the room temperature detected by the room temperature detecting means and the preset temperature preset by the temperature presetting means, and for shifting the combustion rate of the heating means, in accordance with the refrigerant temperature detected by the refrigerant temperature detecting means, so as to prevent the condensation of water vapor in the combustion gas flowing through the guide means when the combustion rate of the heating means is in a specified range.

4,802,530

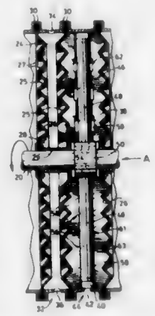
CORRUGATED PLATE HEAT EXCHANGER

Vladimir L. Goldstein, Woodbridge, Canada, assignor to Sunwell Engineering Company Ltd., Woodbridge, Canada

Filed Aug. 13, 1987, Ser. No. 85,024

Int. Cl.⁴ F25C *1/14*

U.S. Cl. 165—94 **16 Claims**



1. A blade assembly suitable for scraping a corrugated heat transfer surface of a heat exchanger, said blade assembly including at least one blade of a complementary shape to the corrugated heat exchange surface to contact said surface; and biasing means to bias said blade towards said surface to maintain the contact therebetween, said blade assembly being rotatable about an axis generally perpendicular to a plane containing said heat transfer surface.

4,802,531

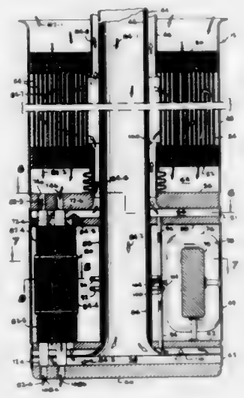
PUMP/INTERMEDIATE HEAT EXCHANGER ASSEMBLY FOR A LIQUID METAL REACTOR

Richard D. Nathenson, Pittsburgh; Christopher C. Alexion, and Wayne C. Sumpman, both of N. Huntingdon, all of Pa., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Jun. 17, 1986, Ser. No. 875,151

Int. Cl.⁴ H02K *44/02*

U.S. Cl. 165—104.28 **15 Claims**



1. A heat exchanger and pump assembly for transferring

thermal energy from a heated, first electrically conductive fluid to a pump second electrically conductive fluid and for transferring internal energy from said pumped second electrically conductive fluid to said first electrically conductive fluid, said assembly comprising:

(a) a heat exchanger comprising means for defining an annularly shaped cavity for receiving a flow of said second electrically conductive fluid and a plurality of tubes disposed within said cavity, each of said tubes for receiving a flow of said first electrically conductive fluid therethrough, whereby said second electrically conductive fluid in said cavity is heated;

(b) a pump assembly disposed beneath said heat exchanger and comprised of a plurality of flow couplers disposed in a circular array, each flow coupler comprised of a plurality of pump ducts for receiving said first electrically conductive fluid and a plurality of generator ducts for receiving said second electrically conductive fluid, said pluralities of generator and pump ducts disposed in a stack disposed radially with respect to said circular array;

(c) a first conduit disposed centrally of said annularly shaped cavity and within said circular array of said flow couplers for receiving said second electrically conductive fluid, said conduit extending continuously through said annular cavity and said circular array of said flow couplers;

(d) a first plenum chamber disposed beneath said pump assembly, in communication with said centrally disposed first conduit for receiving said second electrically conductive fluid and in communication with each of said generator ducts of said flow couplers for directing said pumped second electrically conductive fluid upwardly through said generator ducts in a first direction;

(e) a second plenum chamber disposed intermediate said heat exchanger and said pump assembly, in communication with each of said generator ducts for collecting said second electrically conductive fluid as discharged from each of said generator ducts and in communication with said annular cavity for directing said collected second electrically conductive fluid thereto;

(f) a third plenum chamber disposed intermediate said heat exchanger and said pump assembly and above said second plenum, in communication with said tubes for receiving said first electrically conductive fluid as discharged therefrom and in communication with said pump ducts for introducing said first electrically conductive fluid therein, whereby said first electrically conductive fluid is directed downwardly through said pump ducts in a second direction opposite to said first direction and the internal energy of said pumped second electrically conductive fluid is transferred to and pumps said first electrically conductive fluid, and

(g) a second conduit disposed concentrically about said first conduit and in communication with said second plenum chamber for directing said second electrically conductive fluid about said third plenum chamber and into said annular cavity.

4,802,532

HEAT SINK

Ronald G. Dawes, Tamworth; Geoffrey T. Hilton, Solihull; Anthony W. Marshall, and Derek Bullivant, both of Birmingham, all of England, assignors to British Telecommunications Public Limited Company, United Kingdom

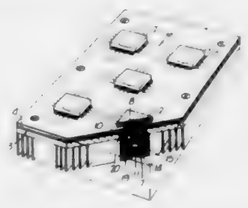
Filed Jan. 23, 1987, Ser. No. 27,321

Claims priority, application United Kingdom, Jan. 24, 1986, 8601746

Int. Cl.⁴ H01L *73/02*

U.S. Cl. 165—80.3 **20 Claims**

1. A heat sinking apparatus for use in conducting heat away from a circuit device, said apparatus comprising:
a first heat conductive structure having an aperture therein;
a second heat conductive structure sized to fit and move axially within said aperture and including expansion means for selectively locking the second structure into a tight friction fit at a range of axial positions within the aperture; and
a third heat conductive structure having one side adapted for thermal contact with said circuit device and an opposite side adapted for thermal contact with an exposed end



of said second structure and including fastening means for selectively achieving mechanical and thermal attachment between said second and third structures while yet also permitting selective detachment of the second and third structures.

4,802,533

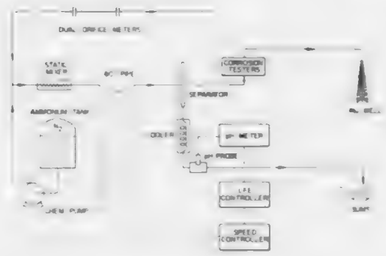
METHOD OF CONTROLLING PERMEABILITY DAMAGE OF HYDROCARBON FORMATIONS DURING STEAM INJECTION WHILE PREVENTING PIPE CORROSION

Liming Hsueh, Buena Park, and Marion G. Reed, Hacienda Heights, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 064,265, Jun. 18, 1987, abandoned, which is a continuation-in-part of Ser. No. 654,331, Sep. 24, 1984, abandoned, which is a continuation-in-part of Ser. No. 848,662, Apr. 4, 1986, abandoned, and a continuation-in-part of Ser. No. 909,971, Sep. 22, 1986, abandoned. This application May 24, 1988, Ser. No. 197,950

Int. Cl.⁴ E21B *43/22, 47/00, 47/06*

U.S. Cl. 166—252 **25 Claims**



13. A method for inhibiting permeability damage of a hydrocarbon formation containing clay minerals in the vicinity of a well penetrating said formation, comprising:
(a) injecting a wet steam including
an amoutt of ammonium ions to produce an ammonium ion concentration in the vapor phase condensate of said wet steam effective to inhibit the permeability damage of said formation in the vicinity of the vapor phase, and
an amount of a bicarbonate salt of the alkali metals, or mixtures thereof, effective to raise the pH of the liquid phase of said wet steam to with in the range of from about 8.5 to about 9.5, and
an amount of a potassium salt in the liquid phase of said wet steam effective to inhibit permeability damage of said

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formation in the vicinity of the liquid phase of said wet steam; and

(b) monitoring the pH of the residual liquid phase and continually adjusting the addition of said bicarbonate salt to maintain the pH within the range of from about 9.5 to about 9.5.

4,802,534

METHOD AND DEVICE FOR MANIPULATING FERROFLUIDS FOR USE IN CEMENTING WELLS

David B. Larson, and Erik B. Nelson, both of Broken Arrow, Okla., assignors to Dowell Schlumberger Incorporated, Tulsa, Okla.

Continuation-in-part of Ser. No. 798,527, Nov. 15, 1985, Pat. No. 4,691,774. This application Sep. 4, 1987, Ser. No. 92,938

Int. Cl.⁴ E21B *33/14, 43/00*

U.S. Cl. 166—381 **20 Claims**



1. A device for manipulating ferrofluids in a wellbore annulus between a pipe or casing and walls of a well, comprising:

(a) means for generating a plurality of alternating magnetic fields distributed in a radial manner, said fields extending into a ferrofluid in the wellbore annulus separating the casing and walls of a subterranean formation; and

(b) means for moving said plurality of magnetic fields relative to the ferrofluid, to facilitate movement of the ferrofluid.

11. A method for manipulating ferrofluids in a wellbore annulus between a pipe or casing and walls of a well, comprising the steps of:

(a) generating at least one magnetic field by a permanently magnetized casing, said magnetic field extending into a ferrofluid in the wellbore annulus separating the casing and walls of a subterranean formation; and

(b) moving said casing relative to the ferrofluid, to facilitate movement of the ferrofluid.

4,802,535

FIRE-FIGHTING TOOL

Arlan N. Bakke, Rte. 1, Cushing, Minn. 56443

Filed Jan. 27, 1987, Ser. No. 7,182

Int. Cl.⁴ A62C *31/22*

U.S. Cl. 169—70 **20 Claims**

1. A portable fire-fighting tool, comprising:

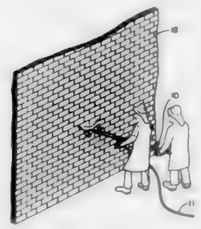
(a) an elongated section of steel pipe having forward and rearward end portions and having a hollow interior and a hollow generally conically-shaped forward end portion in fluid communication with said interior;

(b) a pointed, steel, piercing element carried by said forward end portion and extending forwardly therefrom, said piercing element being constructed and arranged to pierce the wall or roof of a burning building when rammed forcefully thereagainst to thereby extend, with said forward end portion, into the interior of such a building;

(c) said hollow forward end portion having wall structure with a plurality of openings extending therethrough and bringing the interior thereof into fluid communication with the interior of such a building when the wall or roof of the latter is so pierced by said piercing element and said forward end portion of said pipe;

(d) a tubular connector coupling mounted on intermediate portions of said pipe and connected in fluid communication with the hollow interior of said pipe, said connector coupling being constructed and arranged to be connected in fluid communication with a fire hose to receive water under pressure therefrom; and

said openings of said hollow end portion being constructed and arranged to maintain said forward end portion within the interior of such a building in wall-piercing position



after it has pierced such a wall and extended into the interior of such a building, whereby a fire within the interior of the building will be quickly extinguished by a spray of water emanated from said openings of said hollow end portion when pressurized water is admitted into the fire hose, and toward that end;

(f) some of said openings being directed rearwardly and arranged to produce streams of water emanating therethrough in non-intersecting relation to streams of water emanating from all other of said openings in said wall structure.

4,802,536

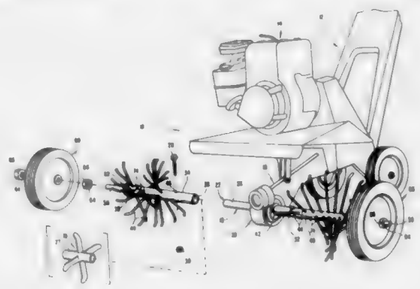
LAWN DETHATCHER FOR A ROTARY CULTIVATOR

Ronald L. O'Neal, R.R. 2, Box 416, Sayre, Pa. 18840

Continuation-in-part of Ser. No. 924,919, Oct. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 789,740, Oct. 21, 1985, abandoned. This application Jan. 22, 1988, Ser. No. 146,963

Int. Cl.⁴ A01B *33/14, 45/02*

U.S. Cl. 172—42 **8 Claims**



1. A lawn dethatcher for use with a rotary cultivator having a rotatably driven shaft with a first end and a second end and removably affixed cultivating tines disposed at said first end and at said second end, comprising:

lawn dethatcher means selectively interchangeable with the cultivating tines, including a first rigid sleeve member with a third end and a forth end, a second rigid sleeve member with a fifth end and a sixth end, and a plurality of rigid dethatchment tines and received through and removeably affixed in helical array to said first rigid member between said third end and said fourth end, and received through and removeably affixed in helical array to said second rigid member between said fifth end and said sixth end in mirror image relationship to said dethatchment tines affixed between said third end and said fourth end;

attachment means to removably affix said lawn dethatcher means at said first end and said second end to the rotatably driven shaft of a rotary cultivator;

and support means associated with each of said rigid sleeve members to position said lawn dethatcher means at the proper to dethatch grass lawns, said support means being operable free from the rotational influence of the rotatably driven shaft.

4,802,537

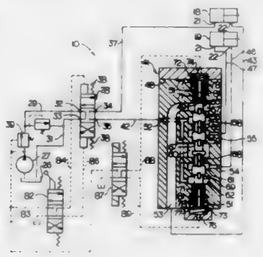
CONTROL CIRCUIT FOR POSITIONING AND TILTING AN EARTHMOVING BLADE

Lee T. Ryerson, Graymont, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Sep. 20, 1985, Ser. No. 778,462

Int. Cl.⁴ E02F *3/85;* **F15B** *13/06*

U.S. Cl. 172—812 **8 Claims**



1. A fluid control circuit for an earthmoving blade suitably supported on a vehicle so that the tilt and tip positioning of the blade relative to the ground is controlled by first and second double-acting fluid pressure cylinders, each of which has a head end port and a rod end port, comprising:

a tank;

a pump;

a single control valve having an inlet port connected to the pump, an exhaust port connected to the tank, and first and second control ports, said control valve being movable to a first position at which fluid from the pump is directed through said first control port and to a second position at which fluid from said pump is directed through the second control port, said first control port being connected to one of the ports of the first cylinder; and

a selector valve connected to the second control port of the control valve, to the other port of the first cylinder, and to the ports of the second cylinder, said selector valve being movable to a first position to provide fluid powered dual cylinder tilting of the blade wherein the first cylinder extends and the second cylinder retracts when the control valve is moved to one of said positions and the first cylinder retracts and the second cylinder extends when the control valve is moved to the other of said positions, a second position to provide fluid powered dual cylinder tipping of the blade wherein the first and second cylinders both extend when the control valve is moved to said one position and retract when the control valve is moved to said other position, and to a third position to provide fluid powered single cylinder tilting of the blade wherein the second cylinder is hydraulically locked at a fixed position and the first cylinder extends and retracts when the control valve is moved to said one and said other position respectively.

4,802,538

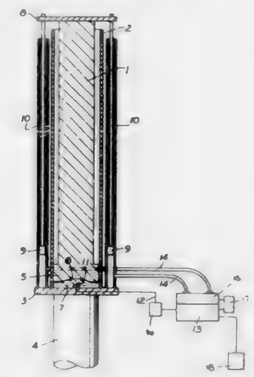
PILING HAMMER

Brian Hays, 17 Falstone Crescent, Ashington, Northumberland, and Clive Taylor, 16 All Saints Road, Shildon, County Durham, both of England

Filed Feb. 20, 1986, Ser. No. 832,102

Int. Cl.⁴ B21J *7/06*

U.S. Cl. 173—1 **8 Claims**



1. A method of driving a pile into the ground, comprising disposing said pile uprightly upon or at least partly within the ground with an upper end of the pile projecting out of the ground, confining a quantity of a hydraulic fluid in a chamber which is in direct or indirect impact-transmitting contact with the upper end of said pile, striking the upper surface of said hydraulic fluid by allowing a substantial weight to drop thereon, detecting a resulting increase in the pressure of said hydraulic fluid and automatically lifting said weight to a desired height in response to the detection of said resulting pressure increase, and automatically allowing the weight to drop.

4,802,539

POLYCRYSTALLINE DIAMOND BEARING SYSTEM FOR A ROLLER CONE ROCK BIT

David R. Hall, Provo, Utah, and Donald G. Cross, Laguna Beach, Calif., assignors to Smith International, Inc., Irvine, Calif.

Division of Ser. No. 864,681, May 19, 1986, Pat. No. 4,738,322, which is a continuation-in-part of Ser. No. 684,849, Dec. 20, 1984, abandoned. This application Jan. 11, 1988, Ser. No. 141,829

Int. Cl.⁴ F21B *10/46*

U.S. Cl. 175—329 **20 Claims**

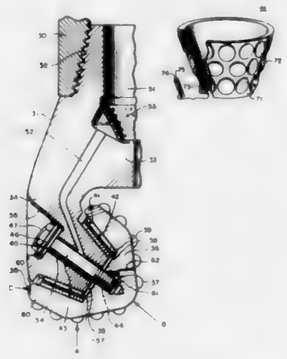
1. A roller cone rock bit comprising:

a main bit body with at least one downwardly extending leg, said leg having a journal thereon, said journal having a frusto-conically shaped main journal bearing surface which comprises polycrystalline diamond;

a roller cone rotatively mounted on each journal, said roller cone having a main roller cone bearing surface which

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mates with the main journal bearing surface and which comprises polycrystalline diamond; and



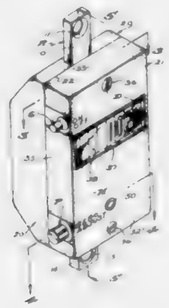
means for maintaining the two bearing surfaces in a state of compression against each other.

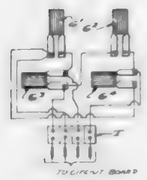
4,802,540

ELECTRONIC WEIGHING SCALES

Bosko Grubovac, Arcadia, and Zlatko Kurtovic, Walnut, both of Calif., assignors to Consolidated Devices Inc., City of Industry, Calif.

Filed Jan. 29, 1988, Ser. No. 150,034
Int. Cl.[4] G01G *3/14, 21/28*; G01L *1/22*
U.S. Cl. 177—211 16 Claims





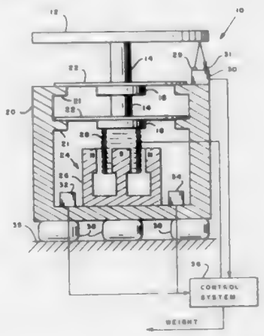
1. A weighing scales comprising a normally laterally and torsionally stable elongate vertical load-supporting and force-conducting rod with an elongate upper reaction portion, an elongate lower working portion and an elongate central tension portion, said tension portion is less in cross-sectional extent than and extends between the reaction and working portions; a plurality of resistance-type strain gauges fixed to the tension portion in predetermined spaced relationship thereon and relative to each other; an elongate vertical housing with upper, central and lower portions is engaged about the rod between the upper and lower terminal end portions thereof; anchoring means secures the reaction portion of the rod in and with the upper end portion of the housing with the tension and working portions of the rod extending through and depending from the central and lower portions of the housing with free working clearances, a window opening in the housing; a circuit board mounted within the housing and carrying an electric digital display device visible through the window and a bridge circuit with a signal output connected with the digital display device and in which the strain gauges on the rod are connected, a variable resistance device with a manually engageable operating part accessible at the exterior of and carried by the housing and connected in the circuit and operating to selectively null an output signal from the circuit to the display device, a power supply battery mounted in the housing and connected with a power input of the circuit.

4,802,541

WEIGHING SCALE WITH VOICE COIL

Feliks Bator; Kevin D. Hunter, both of Stratford, and Robert T. Durst, Jr., Monroe, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 11, 1988, Ser. No. 166,859
Int. Cl.[4] G01G *7/00, 23/06*
U.S. Cl. 177—212 9 Claims



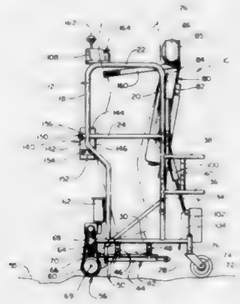
1. A weighing scale of the force balance transducer type for weighing articles, the combination comprising:
- a housing,
- a tray,
- support means secured to said tray and received within said housing,
- at least one spring attached at one location to said support means and at another location to said housing, wherein said tray is operative to move vertically,
- said tray having a rest position when supported solely by said at least one spring without any article on said tray,
- sensing means for sensing the position and velocity of movement of said tray in response to an article being placed upon said tray,
- a voice coil attached to said support means and to said housing,
- means for providing a current to said voice coil in response to said location sensor sensing when said tray is moved downwardly from said rest position and to return said tray to its rest position after an article to be weighed has been placed on said tray,
- means for measuring the current in said voice coil,
- means for controlling the current to said voice coil in response to the position and velocity of said tray so as to expedite the return of said tray to its rest position, and
- means for determining the weight of an article on said tray in response to the measured current required to hold said tray at its rest position after an article has been placed thereon.

4,802,542

POWERED WALKER

Thomas T. Houston, Erie, and Raymond H. Metzger, Wheat Ridge, both of Colo., assignors to Falcon Rehabilitation Products, Inc., Commerce City, Colo.

Filed Aug. 25, 1986, Ser. No. 899,890
Int. Cl.[4] B60K *1/02, 7/00*; A61G *5/00*
U.S. Cl. 180—65.5 19 Claims



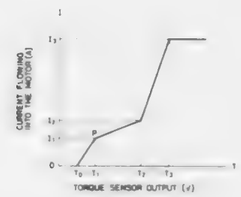
19. In a powered walker apparatus having a frame assembly defining a central space for containing an operator in a standing position, means for selectively moving said apparatus over a ground surface and gate means for closing an entryway into said central space and adapted to define the front surface of said apparatus when in a closed position, the improvement comprising seat assembly means having a seat member movable between a substantially horizontal position within said central space wherein said operator is maintained in a sitting position and a substantially vertical position wherein said operator is maintained in said standing position within such central space, said seat member being further movable between a first and a second horizontal position, said first horizontal position being defined within said central space, and said second horizontal position projecting forwardly outwardly of said frame assembly to permit said operator ready access to said seat member from the exterior of said powered walker apparatus.

4,802,543

ELECTRIC POWER STEERING DEVICE

Hisatsugu Ishikura, and Shigeki Saito, both of Katsuta, Japan, assignors to Hitachi, Ltd. and Hitachi Automotive Eng. Co., both of Tokyo, Japan

Filed Apr. 22, 1987, Ser. No. 41,225
Claims priority, application Japan, Apr. 22, 1986, 61-91249
Int. Cl.[4] B62D *5/04*
U.S. Cl. 180—79.1 2 Claims



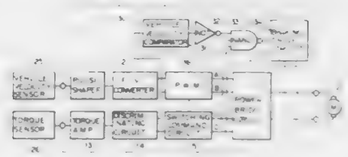
1. In an electric power steering device operatively positioned between a steering wheel and a steering mechanism of a vehicle:
- torque sensing means for detecting torque applied to the steering wheel for producing an electrical signal related to the amount of said torque;
- an electrically powered actuator means for generating rotational assist torque to provide an auxiliary steering force to the vehicle steering mechanism;
- control means responsive to the electrical signal supplied by the torque sensing means for producing an electric current to drive said actuator means in a direction corresponding to the direction of movement of the steering wheel to thereby generate a rotational assist torque;
- said control means being effective to maintain said drive electric current zero when the applied torque is smaller than a predetermined value that is less than when static friction is overcome and rotational assist torque occurs;
- said control means further being effective to provide a constant proportional relationship between said electric current and said applied torque when said applied torque exceeds said predetermined value until the applied torque causes initiation of rotational assist torque from said actuator means; and
- wherein a second proportional relationship between said electric current and said applied torque is provided after rotational assist torque is initiated, said second proportional relationship being less than said constant proportional relationship.

4,802,544

ELECTRIC POWER STEERING APPARATUS HAVING MOTOR BRAKING FUNCTION

Naoyuki Maeda, Aichi, Japan, assignor to Toksi TRW & Co., Ltd., Aichi, Japan

Filed Dec. 7, 1987, Ser. No. 130,101
Claims priority, application Japan, Dec. 9, 1986, 61-292759
Int. Cl.[4] B62D *5/04*
U.S. Cl. 180—79.1 2 Claims



1. An electric power steering apparatus comprising:
- an electronic control circuit adapted to output a drive signal which has a vehicle velocity response characteristic and a steering response characteristic in response to a vehicle velocity, a steering torque, and a steering direction;
- a motor for assisting a steering force which is made operative by said drive signal;
- said electronic control circuit having a braking control circuit to short-circuit between both terminals of said motor when a steering operation is stopped and the supply of said drive signal to said motor is stopped in its running state when said vehicle velocity exceeds a predetermined value;
- said braking control consisting of:
  - a vehicle velocity comparator having a reference value corresponding to said predetermined value of vehicle velocity;
  - a gate circuit adapted to output a braking command signal in response to an output signal of said vehicle velocity comparator and the stop of said steering operation; and
  - a braking drive circuit adapted to short-circuit between both terminals of said motor in response to said braking command signal.

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4,802,545

STEERING CONTROL SYSTEM FOR ARTICULATED VEHICLE

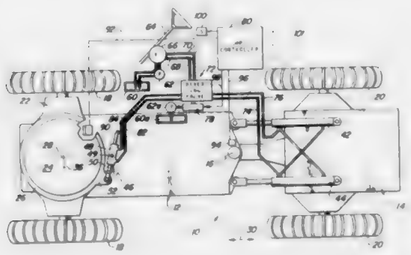
Paul A. Nystuen; Barry D. Batcheller, both of West Fargo; Kevin L. Brekkestran, Fargo, and Calvin J. Kraning, Valley City, all of N. Dak., assignors to J. I. Case Company, Racine, Wis.

Continuation-in-part of Ser. No. 919,172, Oct. 15, 1986, Pat. No. 4,771,851. This application Oct. 15, 1987, Ser. No. 109,661

The portion of the term of this patent subsequent to Sep. 20, 2005, has been disclaimed.

Int. Cl.⁴ B62D *5/06, 12/00*

U.S. Cl. 180—135 **12 Claims**



1. An improved steering system for an articulated vehicle of the type having first and second frame portions each provided with at least one pair of ground-engaging wheels, with the wheels associated with the first frame portion being mounted for pivotable wheel steering through pivoting movement of such wheels with respect to the first frame portion, first hydraulic actuator means for pivoting the wheels of the first frame portion with respect to the first frame portion, and second hydraulic actuator means for articulated steering by articulating the first and second frame portions relative to one another, the improvement comprising:

first means for determining the degree of pivot of at least one wheel of the first frame portion relative to the first frame portion;

second means for determining the degree of articulation of the first and second frame portions;

steering control means for selecting the direction of vehicle travel, including a manual steering member, at least first and second hydraulic fluid conduits, and hydraulic valve means for directing pressurized hydraulic fluid to the first conduit when movement of the manual steering member by a vehicle operator indicate the vehicle is to turn toward a first direction and to the second conduit when movement of the manual steering member by the vehicle operator indicates the vehicle is to turn in a second opposite direction; and

system control means for controlling the first and second hydraulic actuators in response to said degree of pivot, said degree of articulation and the pressurized hydraulic fluid in the first and second conduits, including electrically operated hydraulic control valve means, in hydraulic fluid communication with the first and second conduits and the first and second hydraulic actuator means, for diverting the flow of pressurized hydraulic fluid in the first and second conduits sequentially between the first and second hydraulic actuators to effect steering of the vehicle by pivotable wheel steering and articulation steering.

4,802,546

STEERING APPARATUS FOR A VEHICLE

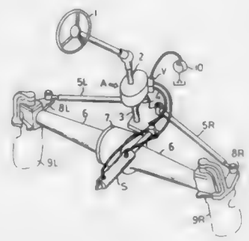
Shigenori Sakikawa, Itami, and Toshiaki Okanishi, Kobe, both of Japan, assignors to Kanzaki Kokyukoki Mfg. Co. Ltd., Japan

Filed Jan. 19, 1988, Ser. No. 144,972

Claims priority, application Japan, Jan. 19, 1987, 62-6878[U]; Jun. 2, 1987, 62-85954[U]

Int. Cl.⁴ B62D *5/06*

U.S. Cl. 180—132 **2 Claims**



1. A steering apparatus for a vehicle characterized in that

a first sun gear (**2***a*) fixed to a handle shaft (**2**) at a handle (**1**) of a vehicle, planetary gears (**14***a*) and (**14***b*), and a ring gear (**15**) constitute a first planetary gear train,

a first carrier (**17**) supporting said planetary gears (**14***a*) and (**14***b*) at said first periphery gear train is fixed to a second sun gear (**19**) at a second planetary gear train,

said second sun gear (**19**), planetary gears (**20***a*) and (**20***b*), and a ring gear (**25**) constitute a second planetary gear train,

a second carrier (**30**) supporting said planetary gears (**20***a*) and (**20***b*) is fixed to a steering wheel side shaft (**3**),

said ring gear (**25**) at the second planetary gear train is fixed to a steering case (**12**), said ring gear (**15**) at the first planetary gear train being made rotatable and desirably stationary within said steering case (**12**), and

a steering valve switching member (**11**) provided at the outer periphery of said ring gear (**15**) and rotatable in a predetermined range with respect to said steering case (**12**) enables a steering hydraulic valve (V) to be desirably switched in order to steer said vehicle.

4,802,547

GOLF CART

Eiji Nakasaki, Kakogawa, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Dec. 22, 1987, Ser. No. 136,565

Claims priority, application Japan, Dec. 26, 1986, 61-311327

Int. Cl.⁴ B62D *61/08;* **B60C** *9/02*

U.S. Cl. 180—216 **3 Claims**

1. A golf cart having: a front wheel including a tire which is inflated to a low air pressure of 0.1 to 1.0 kg/cm^2, having a carcass of a bias ply construction and the tread of which is provided with a plurality of circumferentially extending grooves; and a rear wheel including a beltless tire which is inflated to a low air pressure of 0.1 to 1.0 kg/cm^2, having a carcass of a radial ply construction and the tread of which is



subtantially smooth and provided with a plurality of spikes for traction.

4,802,548

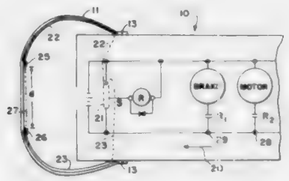
AUTOMATIC GUIDED VEHICLE SAFETY SYSTEM

James R. Kausch, Newport News, Va., assignor to Muack Automation Technology, Inc., Newport News, Va.

Filed Dec. 21, 1987, Ser. No. 135,984

Int. Cl.⁴ B60K *28/10*

U.S. Cl. 180—274 **8 Claims**



1. In combination with an automatic guided vehicle,

deflectable bumper means mounted on the vehicle and adapted to signal contact with an obstruction;

a light source mounted on the vehicle and forming part of an electric circuit;

fiber optic emitter means in operative connection with said light source for transmitting a light signal therefrom;

fiber optic receiver means in spaced optical alignment with said emitter means for receiving a light signal optic emitter means and said

both said fiber optic emitter means and said fiber optic receiver means being secured to said deflectable bumper means and moveable therewith;

said fiber optic emitter means and said fiber optic receiver means when in optical alignment serving to complete an electric circuit that permits said automatic guided vehicle to operate; and,

whereby when said deflectable bumper means contacts an obstruction said bumper will deflect and move said at least one of said fiber optic emitter means and said fiber optic receiver means out of optical alignment to thereby open the electric circuit and cause said automatic guided vehicle to stop.

4,802,549

CENTRAL ROTATING TERMINAL FOR VEHICLES

Mario J. Martinez, Elgin, Ill., assignor to Elgin Sweeper Company, Elgin, Ill.

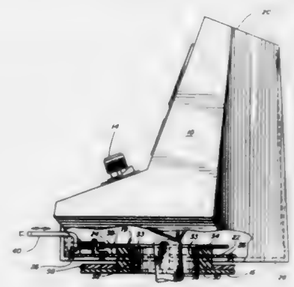
Filed Jul. 30, 1987, Ser. No. 79,809

Int. Cl.⁴ B60K *26/00;* **B62D** *1/22*

U.S. Cl. 180—322 **17 Claims**

1. In a vehicle having first and second driver's seats and a control console, said driver's seats being in side-by-side relation, the improvement comprising, in combination:

pivot means carrying said control console to permit said console to pivot between at least a first positon facing said first driver's seat and a second position facing said second driver's seat, said pivot means comprising a rotatable plate member attached to said control console and a ring member carried in stationary manner in said vehicle, said plate member resting on and being slidably rotatable with respect to said ring member.



4,802,550

CHRONO-STETHOSCOPE

Henry B. Poore, 1003 McFarland St., Norman, Okla. 73069

Filed Sep. 11, 1987, Ser. No. 95,828

Int. Cl.⁴ A61B *7/02*

U.S. Cl. 181—131 **17 Claims**



1. A chrono-stethoscopic device comprising:

a stethoscope including:

a pickup head;

an elongated, flexible, tubular sound conveyance channel element having a first end connected to said pickup head, and having a second end; and

a pair of ear pieces connected to said second end;

a timepiece; and

means for detachably and adjustably movably securing said timepiece to said elongated flexible tubular sound conveyance channel element at a position which is located between said pickup head and said ear pieces and not more than ten inches from said pickup head.

4,802,551

LOUDSPEAKER UNIT

Preben Jacobsen, Glyngøre, Denmark, assignor to Jamo Hi-Fi A/S, Glyngøre, Denmark

Filed Jul. 2, 1986, Ser. No. 881,247

Claims priority, application Denmark, Jul. 5, 1985, 3093/85

Int. Cl.⁴ H05K *5/00*

U.S. Cl. 181—146 **2 Claims**

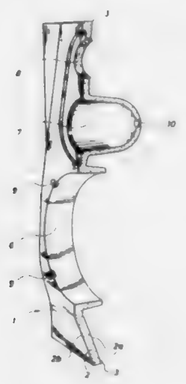
1. A front plate of a loudspeaker unit, including:

a hollow body having a plurality of joined inner, outer and edge walls;

said walls defining, on said front plate, at least one opening through which a loudspeaker, when mounted in the opening, may project sound;

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said walls of said hollow body enclosing an interior cavity; said interior cavity being filled with a filling of a mixture of a foamed plastic material and sand having a grain size in a



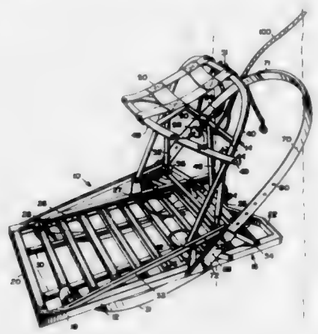
range of about 1.5–2.0 mm and a specific gravity which is greater than that of said foamed plastic material, whereby said hollow body is substantially without acoustical resonance.

4,802,552

COMBINED CLIMBING AND HANG-ON TREE STAND WITH OPTIONAL CLIMBING AID

Ralph D. Williams, Haughton, La., assignor to Loggy Bayou Industries, Shreveport, La.

Filed Jul. 28, 1987, Ser. No. 78,677
Int. Cl.[4] A45F 3/26; A47C 9/10
U.S. Cl. 182—187 **39 Claims**



1. A tree stand comprising:

a platform having opposite edges with one edge engageable with a tree; said

elongated means secured at its opposite ends to platform and extendable about the tree for engagement with the other side of the tree from the platform and at an elevation above the elevation at which the one platform edge is engageable with the tree; and

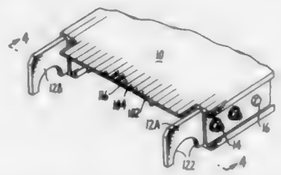
a seat carried by and upstanding from said platform, and said seat having a frame element for engagement with the tree at an elevation therealong different from the elevation of the engagement of the tree stand platform and said elongated means, whereby the tree stand is engageable with the tree at three discrete elevationally different locations affording support and stability to the stand.

4,802,553

ALUMINUM SCAFFOLD PLANK

Herman H. Waters, and John White, both of Magnolia, Ark., assignors to Alumax, Inc., San Mateo, Calif.

Filed Jan. 16, 1987, Ser. No. 63,572
Int. Cl.[4] E04G 5/08
U.S. Cl. 182—222 **7 Claims**



1. A scaffolding plank without interjacent gaps for use with a scaffolding frame comprising:

a. a support platform having a first end, a second end, a top surface and a bottom surface;

b. a plurality of grasper hooks, each of said hooks having a scaffolding frame receiving aperture, certain of said hooks affixed to said first end and a remainder of said hooks affixed to said second end, a portion of each of said hooks extending beyond said first end and said second end;

c. a first tongue member extending from said first end and a second tongue member extending from said second end, each of said tongue members being positioned so as not to interfere with said hooks, said tongue members extending nearly to a center of said aperture;

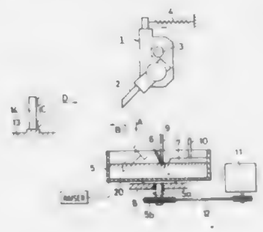
d. vertical support members positioned on said bottom surface and further wherein each of said vertical support members extends along the length of the bottom surface and further comprises an I-beam having a vertical web and horizontal upper and lower flanges attached to the web, and wherein the flanges are bent over to form slots for receiving an end of one of the grapser hooks, said slots being dimensioned so as to be substantially filled by the end of the grasper hook.

4,802,554

GREASE APPLYING METHOD

Naoto Takayama; Yuzo Tsunekawa, and Kazumi Kitamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 11, 1988, Ser. No. 142,593
Claims priority, application Japan, Jan. 9, 1987, 62-2659
Int. Cl.[4] F16N 7/00
U.S. Cl. 184—14 **8 Claims**



1. A grease applying method in which a precisely measured quantity of grease is applied to a desired part, comprising the steps of:

placing a supply of grease in an open storing means;

continuously stirring and leveling the grease in said storing means;

dipping grease applying means into said grease through the surface thereof;

pulling said applying means with grease adhered to at least an end portion thereof; and

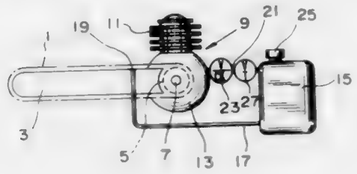
moving said applying means to a part to be lubricated to apply grease adhered to said applying means to said part.

4,802,555

OIL SUPPLY SYSTEM

Takao Matsunaga, Tachikawa; Kazuo Nakajima, Sayama, and Masaki Kobayashi, Kodaira, all of Japan, assignors to Komatsu Zenoah Co., Japan

Continuation of Ser. No. 276,037, Jun. 22, 1981, abandoned. This application Dec. 6, 1983, Ser. No. 558,694
Claims priority, application Japan, Feb. 13, 1981, 56-018245[U]
Int. Cl.[4] F16N 7/14
U.S. Cl. 184—15.1 **4 Claims**



1. An oil supply system for a chain saw including a saw chain powered by an internal combustion engine having a crankcase, said system lubricating the saw chain and comprising:

a lubricating oil reservoir;

air passage means communicating between said oil reservoir and the crankcase of said engine to pressurize said oil reservoir in response to operation of the engine;

means defining an oil communicating passage without a flow adjusting means between said oil reservoir and the saw chain to be lubricated, so that oil can flow to the chain from said pressurized oil reservoir; and

adjustable valve means associated with said air passage means and selectably operative to adjust the amount of air supplied through said air passage means to said oil reservoir from the engine;

so as to selectably adjust the amount of oil flowing through said oil communicating passage and applied to lubricate the saw chain without requiring a means in the oil communicating passage to adjust the flow of oil therethrough.

4,802,556

AUTOLUBER

Michael L. Lauber, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 1, 1983, Ser. No. 518,886
Int. Cl.[4] F16N 7/12; B29H 17/10
U.S. Cl. 184—102 **1 Claim**

1. An apparatus for applying a liquid to a tire shaping drum comprising:

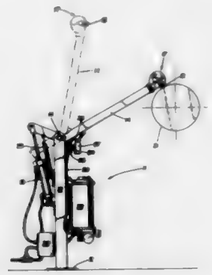
(a) base means;

(b) pivot means pivotable about said base means;

(c) fluid actuator means affixed to said pivot means and associated with said base means to cause said pivot means to pivot about said base means in response to actuation of said fluid actuator means;

(d) liquid absorbing means associated with said pivot means;

(e) liquid pumping means adapted to provide liquid to said liquid absorbing means through a conduit in constant fluid communication with said pumping means and said absorbing means wherein the liquid pumping means provides liquid to the liquid absorbing means in response to the pivoting of the pivot means about said base mean.

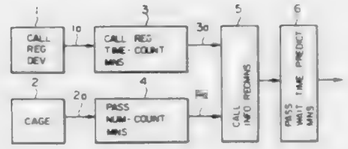


4,802,557

WAIT TIME PREDICTION APPARATUS FOR ELEVATOR

Yasukazu Umeda, and Shintaro Tsuji, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 24, 1987, Ser. No. 17,695
Claims priority, application Japan, Feb. 25, 1986, 61-39615
Int. Cl.[4] B66B 1/18
U.S. Cl. 187—127 **6 Claims**



1. A wait time prediction apparatus for an elevator comprising call registration time-counting means for counting registration times of calls which have been registered in order to assign cages, passenger number-counting means for counting numbers of passengers who get on the cages serving the calls, call information-recording means for recording the call registration times and the numbers of passengers for the respective calls for a predetermined number of calls, and passenger wait time-predicting means providing a predictive summation of the actual waiting times of individual passengers getting on an elevator which serves a call after a predetermined time from the registration of the call on the basis of outputs of said call information-recording means.

4,802,558

APPARATUS PROVIDING ENVIRONMENTAL AND MECHANICAL PROTECTION FOR BALL SCREW DRIVES

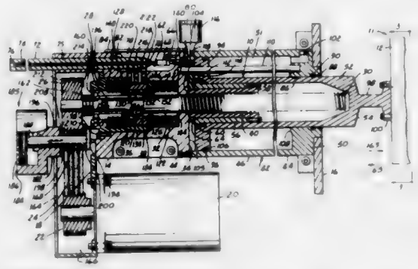
Donald W. Garnett, Grand Ledge, Mich., assignor to The Olofsson Corporation, Lansing, Mich.

Filed Oct. 1, 1987, Ser. No. 103,208
Int. Cl.[4] B60T 7/12
U.S. Cl. 188—134 **14 Claims**

1. In apparatus having a movable member, a drive for said member including a screw, a nut mounted on said screw to move axially in response to rotation of said screw, a tubular member connected to said nut, said tubular member extending

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lengthwise of and surrounding said screw and having a closed end across one end of said screw, means connecting said closed end of said tubular member to said movable member, means including a casing defining a substantially closed chamber housing said nut, screw and tubular member, means in a wall of



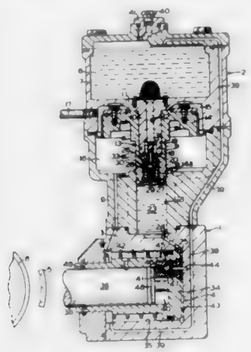
said casing defining an opening through which the closed end of said tubular member extends, means for sealing said opening to exclude foreign matter from said chamber, said casing having an annular wall, said tubular member having a piston slidable along said wall, and sealing means carried by said piston and contacting said wall to exclude foreign matter.

4,802,559

HYDROPNEUMATIC BRAKE ACTUATOR ARRANGED TO MAINTAIN A CONSTANT BRAKE SHOE CLEARANCE

Eugene Fourie, Brooklyn, South Africa, and Steven C. Rumsey, Greer, S.C., assignors to American Standard Inc., Spartanburg, S.C.

Filed Feb. 3, 1988, Ser. No. 151,738
Int. Cl.[4] F16D *65/72*
U.S. Cl. 188—196 A **6 Claims**



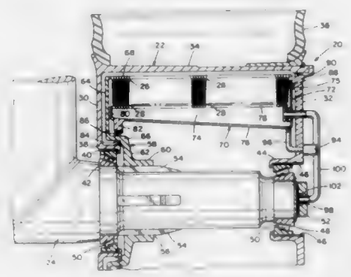
1. A hydraulic brake actuator for operating brake means relative to a member to be braked comprising:
(a) a cylinder body having a bore therein terminating in an end wall;
(b) a force piston operatively-disposed in said cylinder bore and forming, in cooperation therewith, a first chamber;
(c) means for yieldably exerting a force on said force piston to urge movement thereof to a brake release position in which said force piston is engageable with said end wall of said cylinder bore;
(d) a bore in said force piston;
(e) a take-up piston operatively-disposed in said force piston bore and cooperating therewith to provide a second chamber, said take-up piston being connected to said brake means;
(f) a fluid flow path in said force piston interconnecting said first and second chambers, said take-up piston being movable in a brake application direction relative to said force piston in response to the supply of fluid under pressure to said first and second chambers, said movement of said take-up piston effecting such volumetric expansion of said first and second chambers as to prevent the fluid pressure force acting on said force piston from exceeding said yieldable force, thereby preventing actuation of said force piston from said release position until said movement of said take-up piston is arrested;
(g) check valve means for controlling fluid pressure communication between said first and second chambers comprising:
(i) a valve seat formed in said force piston in surrounding relationship with said flow path;
(ii) a valve member cooperatively arranged relative to said valve seat;
(iii) a pin fixed to said end wall so as to project into said flow path and displace said valve member from said valve seat a predetermined distance in said release position of said force piston, whereby fluid pressure communication is established between said first and second chambers during said movement of said take-up piston in said brake application direction relative to said force piston;
(iv) a bias spring acting on said valve member in a direction urging engagement of said valve member with said valve seat, whereby said fluid pressure communication between said first and second chambers is interrupted in response to said actuation of said force piston and distance corresponding to said predetermined distance; and
(h) friction means for exerting a friction force between said force piston and said take-up piston to prevent relative movement therebetween during said movement of said force piston to said release position, whereby said brake means is retracted from said member to be braked at least said predetermined distance to provide positive clearance therebetween.

4,802,560

COMBINED WHEEL/BRAKE APPARATUS USING ELECTRO-RHEOLOGICAL FLUID

Dilip K. Bhadra; Richard L. Creedon, both of San Diego; C. Ross Harder, Rancho Santa Fe, and Bourque, Robert F., San Diego, all of Calif., assignors to General Atomics, San Diego, Calif.

Filed Jan. 27, 1988, Ser. No. 148,970
Int. Cl.[4] F16D *65/78, 27/00*
U.S. Cl. 188—264 F **13 Claims**



1. Combined wheel/brake apparatus, employing electro-rheological fluid, for mounting on an axle, said apparatus comprising:

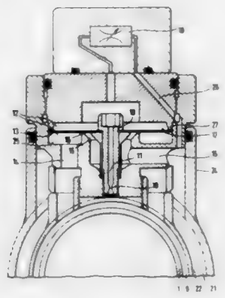
a wheel rotatably mounted on said axle;
a first plurality of spaced, electrically and thermally conductive vanes extending in a first direction, and held fixed by said axle;
a second plurality of spaced, electrically and thermally conductive vanes extending in a direction opposite said first direction, interdigitated with but not contacting said first plurality of vanes carried by said wheel and electrically insulated from said first plurality of vanes;
an electro-rheological fluid disposed between said first and second pluralities of vanes, at least some of said vanes having a coolant passageway; and
means for supplying a coolant to the coolant passageways, said coolant passageways being isolated from said electro-rheological fluid whereby application of an electrical potential across said two pluralities of vanes causes an increase in the viscosity of said electro-rheological fluid among said vanes to develop a braking force, heat occasioned by the braking being transmitted to said coolant.

4,802,561

ADJUSTABLE SHOCK ABSORBER

Heinz Knecht, and Norbert Ackermann, both of Eltorf, Fed. Rep. of Germany, assignors to Boge AG, Eltorf, Fed. Rep. of Germany

Filed Mar. 12, 1987, Ser. No. 24,831
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1986, 3609862
Int. Cl.[4] B60G *17/08;* **F16F** *9/50*
U.S. Cl. 188—318 **29 Claims**



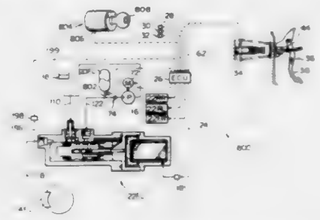
1. An adjustable shock absorber, comprising:
a sealed cylinder containing a damping fluid;
a piston rod sealingly projecting into said cylinder and axially displaceable with respect thereto;
a piston attached to said piston rod and disposed within said cylinder to thereby sealingly divide said cylinder into first and second chambers;
a wholly mechanical throttle valve connecting said first and second chamber for varying the damping of said adjustable shock absorber;
said wholly mechanical throttle valve comprising:
a flexible membrane having a first side, a second side, an inner portion and an outer peripheral portion;
means for prestressing said membrane;
a valve seat disposed adjacent said first side of said flexible membrane;
a first passageway for admitting fluid on one side of said valve seat; and a second passageway for expelling fluid on another side of said valve seat,
said valve seat comprising an edge between said first passageway and said second passageway;
a control chamber disposed at said second side of said membrane; a controlled chamber disposed at said first side of said membrane; a principal bypass interconnecting said first and second chambers through said first and second passageways and said controlled chamber; and
continuously open, internal bypass means for connecting said control chamber with said first passageway, for admitting fluid, to pressurize said control chamber;
said shock absorber further comprising:
control bypass means, external to said wholly mechanical throttle valve, connecting aid second passageway, for expelling fluid, with said control chamber.

4,802,562

ELECTRONICALLY CONTROLLED BRAKING SYSTEM WITHOUT A MASTER CYLINDER

Masatoshi Kuroyanagi, Kariya; Kazuma Matsui, Toyohashi; Yonzou Majima, and Fumiaki Murakami, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 13, 1987, Ser. No. 25,841
Claims priority, application Japan, Mar. 17, 1986, 61-58990; May 2, 1986, 61-102742
Int. Cl.[4] B60K *41/20;* **B60T** *8/62, 11/00*
U.S. Cl. 192—1.23 **16 Claims**



1. An electronically controlled braking system for a wheeled vehicle, which comprises:
a brake operatively associated with the wheel and having a wheel cylinder for applying the brake to retard the rotation of the wheel;
input means actuated by a vehicle operator during brake application;
sensing means associated with said input means for sensing an amount of actuation of said input means and delivering a first electrical signal indicative of said amount;
a source of brake fluid under pressure;
electronic control means responsive to said first signal for delivering a second electrical signal proportional to said first signal; and
pressure modulator means in fluid communication with said source and said wheel cylinder and responsive to said second signal for communicating to said wheel cylinder a fluid pressure proportional to said second signal to apply the brake with a braking force proportional to the amount of actuation of said input means;
wherein said pressure modulator means comprises:
a housing having a cylinder bore, an inlet port in fluid communication with said source, and an outlet port in fluid communication with said wheel cylinder;
a piston received slidably and fluid-tightly in said bore to define therein an output chamber and an input chamber at opposite sides of the piston, said output chamber being in fluid communication with said outlet port, and said piston defining a passage therein for communicating said inlet port with said input chamber;
valve means, including a valve member axially movably received in said piston, for controlling fluid communication through said passage between said inlet port and said input chamber in such a manner that fluid communication between said inlet port and said input chamber is established to allow the brake fluid under pressure to flow into said input chamber to cause the fluid pressure in said input chamber to be raised as the valve member is moved

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toward said output chamber, and that fluid communication between said inlet port and said input chamber is interrupted causing the fluid pressure in said input chamber to be lowered as the valve member is moved toward said input chamber; and,

electrically operated positioning means responsive to said second signal and operatively associated with said valve member for positioning said valve member axially with respect to said housing, whereby the piston is moved under the action of the fluid pressure in said input chamber to a position in which fluid pressure in said output chamber is balanced with fluid pressure in said input chamber thereby communicating to said wheel cylinder a fluid pressure which is proportional to the amount of actuation of said input means.

13. An electronically controlled braking system for a wheeled vehicle having an engine ignition switch, which comprises:

(a) a brake operatively associated with the wheel and having a wheel cylinder for applying the brake to retard the rotation of the wheel;

(b) input means actuated by a vehicle operator during brake application;

(c) sensing means associated with said input means for sensing an amount of actuation of said input means and delivering a first electrical signal indicative of said amount.

(d) a source of brake fluid under pressure;

(e) a switch sensor for sensing the position of said ignition switch and delivering a second electrical signal when said ignition switch is closed;

(f) wheel sensor means for sensing the rotation of the wheel and delivering a third electrical signal in response to rotation thereof;

(g) electronic control means responsive to said first signal for delivering a fourth electrical signal proportional to said first signal, said control means being also responsive to said second and third signal and delivering a fifth signal upon receipt of third signal in the absence of said second signal; and,

(h) electrically operated pressure modulator means in fluid communication with said source and said wheel cylinder and responsive to said fourth signal for communicating to said wheel cylinder a fluid pressure proportional to said fourth signal to apply the brake with a braking force proportional to the amount of actuation of said input means, said pressure modulator means being also responsive to said fifth signal to communicate to the wheel cylinder a brake fluid under pressure whereby the brake is applied when rotation of the wheel occurs while said ignition switch is opened,

wherein said pressure modulator means comprises:

a housing having a cylinder bore, an inlet port in fluid communication with said source, and an outlet port in fluid communication with said wheel cylinder;

a piston received slidably and fluid-tightly in said bore to define therein an output chamber and an input chamber at opposite sides of the piston, said output chamber being in fluid communication with said outlet port, and said piston defining a passage therein for communicating said inlet port with said input chamber;

valve means, including a valve member axially movably received in said piston, for controlling fluid communication through said passage between said inlet port and said input chamber in such a manner that fluid communication between said inlet port and said input chamber is established to allow the brake fluid under pressure into said input chamber to cause the fluid pressure in said input chamber to be raised as the valve member is moved toward said output chamber, and that fluid communication between said inlet port and said input chamber is interrupted causing the fluid pressure in said input chamber to be lowered as the valve member is moved toward said input chamber, and,

electrically operated positioning means responsive to said fourth signal and operatively associated with said valve member for positioning said valve member axially with respect to said housing, whereby the piston is moved under the action of the fluid pressure in said input chamber to a position in which fluid pressure in said output chamber is balanced with fluid pressure in said input chamber thereby communicating to said wheel cylinder a fluid pressure which is proportional to the amount of actuation of said input means.

4,802,563

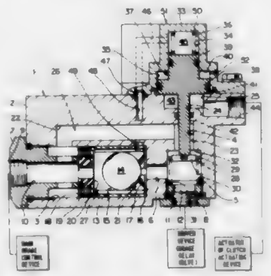
BRAKING FORCE HOLDING DEVICE FOR AN AIR BRAKE SYSTEM

Katsumi Kojima, and Ryota Miki, both of Yokosuka, Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Oct. 24, 1986, Ser. No. 924,344

Int. Cl.[4] B60K *41/24*

U.S. Cl. 192—13 A 5 Claims



1. A braking force maintaining device for an air brake system of a vehicle including a main brake control device that discharges compressed air when operated by a driver of the vehicle, driven device that is actuated by compressed air to brake the vehicle, and an actuator of a clutch operating device that is actuated by compressed air, said braking force maintaining device comprising:

a main body having an inlet port connected to the main brake control device for receiving the compressed air discharged therefrom, an outlet port connected to the driven device, a control port connected to the actuator of the clutch operating device for receiving compressed air therefrom when the actuator is actuated, and an air passage extending between and communicatable with said inlet port and said outlet port;

a valve device comprising a valve seat defined on the main body between said air passage and said outlet port, and a valve body movably seated on said valve seat over said air passage; and

a control unit having a movable member operatively connected to the valve body for moving said valve body between a first position at which the valve body is off of said valve seat and said inlet port communicates with said outlet port through said air passage and a second position at which the valve body is seated on said valve seat to block said inlet port from said outlet port via said air passage, said movable member having a first respective pressure receiving portion upon which when pressure acts the movable member is movable in a direction to move said valve body from said second position to said first position and a second respective pressure receiving portion upon which when pressure acts the movable member is movable in a direction to move said valve body from said first position to said second position, a first chamber constantly open to said outlet port for receiving compressed air from the driven device to which the outlet port is connected, said first chamber facing said first respective receiving portion of the movable member so that the compressed air received therein acts on the first respective pressure receiving portion to move said valve body toward said first position, and a second chamber constantly open to said control port for receiving the compressed air received by the control port from the actuator of the clutch control device, said second chamber facing said second respective pressure receiving portion so that the compressed air received therein acts on the second respective pressure receiving portion.

4,802,564

FRICTION-DISC CLUTCH

Enno Stodt, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

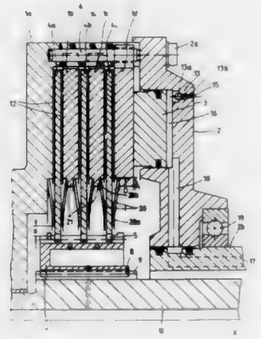
PCT No. PCT/EP86/00685, § 371 Date Jul. 22, 1987, § 102(e) Date Jul. 22, 1987, PCT Pub. No. WO87/03348, PCT Pub. Date Jun. 4, 1987

PCT Filed Nov. 26, 1986, Ser. No. 90,254

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1985, 3541755

Int. Cl.[4] F16D *13/69, 13/72*

U.S. Cl. 192—70.28 15 Claims



1. A friction-disc clutch comprising a first clutch half and a second clutch half which cooperate for engaging to transmit torque and for disengaging;

(a) the first clutch half comprising a clutch housing; a rotatable shaft within the clutch housing for being drivingly connected to and disconnected from the clutch housing;

an outer friction plate extending around the shaft; the outer friction plate having an outer circumference that is connected with the clutch housing in a rotatably fast manner and in a manner permitting relative axial sliding of the outer friction plate with respect to the clutch housing; the outer friction plate having a first axial side;

(b) the second clutch half comprising an inner friction plate extending around the shaft; the inner friction plate having a second axial side; the inner friction plate having an inner circumference; connection means between the inner circumference of the inner friction plate and the shaft for connecting them rotatably fast while permitting axial sliding of the inner friction plate with respect to the shaft;

(c) the inner friction plate extending radially outwardly and being located axially alongside the outer friction plate; a friction surface being disposed on the second axial side of the inner friction plate which is opposite the first axial side of the adjacent outer friction plate, such that the friction surface on the inner friction plate may contact the first axial side of the outer friction plate when the first and second clutch halves are engaged;

(d) a first actuating element operating upon the outer and inner friction plates to move them into engagement for engaging the clutch; a second actuating element operable for moving the outer and inner friction plates axially apart for disengaging the clutch;

(e) a respective resilient disengaging member extending around the shaft and being disposed between the adjacent inner and outer friction plates; the disengaging member having a third axial side for acting upon the inner friction plate and a fourth opposite axial side for acting upon the adjacent outer friction plate for normally urging the friction surface of the inner friction plate off the first axial side of the outer friction plate;

(f) the disengaging member comprising a Belleville spring around the shaft, the spring being annular and having a radially outer border, and the Belleville spring being shaped and of a diameter such that the radially outer border abuts against a radially inner area, near the inner circumference, of the outer friction plate of the first clutch half;

(g) the outer border of the Belleville spring engaging and rotating at least mostly together with the outer friction plate of the first clutch half;

(h) the Belleville spring having a radially inner border which is spaced radially outwardly from the shaft and abutting against the respective inner friction plate, the radially inner border of the Belleville spring having a sliding surface for sliding over a surface of the inner friction plate, whereby the Belleville spring rotates at least mostly together with the first clutch half.

4,802,565

DEVICE FOR ADJUSTING A SET OF WORKPIECE MOUNTS IN DEFINED WORKING POSITIONS

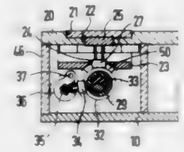
Bernd Berberich, Schwieberdingen, and Holger Reinbold, Freudenstadt, both of Fed. Rep. of Germany, assignors to Tampoflex GmbH, Ditzingen, Fed. Rep. of Germany

Filed Mar. 29, 1988, Ser. No. 174,607

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1987, 3710534

Int. Cl.[4] B65G *21/20, 43/00, 35/08, 23/00*

U.S. Cl. 198—345 16 Claims



1. In a device for moving a set of workpiece mounts to work positions of the type with mounts arranged in a given spacing on an endless conveyor moving incrementally around a loop, the spacing corresponding to the length of one incremental movement, the improvement comprising:

a frame;

the mounts being sheds (25) on the frame pivotably connected to each other by elongated strips (28) at spacings corresponding to one incremental movement and which are guided in a guide path (21, 22, 24);

the strip-shed connections having a given play in them in the direction of conveyor movement;

a guide roll (27) connected to each shed in position adjacent to said pivot connections;

a drive shaft (29);

a rotating drive roll (30) on the drive shaft (29) having a groove (43) therein, the guide rolls (27) insertable into the groove (43), said groove (43) extending at least the length of one incremental conveyor movement plus twice the diameter of the guide rolls (27), whereby the shed (25) having its guide roll (27) inserted into the groove (43) can be brought to a defined reference position;

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positioning rolls (32) non-rotatably mounted on the drive shaft (29) and having peripheral grooves (33) receiving the guide rolls (27) of the sheds (25) which complete the set of workpiece mounts;

slide members (36) adjustably mounted with respect to the frame and having shift rolls (34) engaged in one of the peripheral grooves (33);

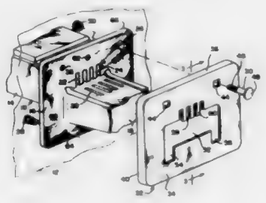
threaded rods (37) rotatably secured to the frame and each extending to one of the slide members (36) for adjustment thereof, the positioning rolls (32) adjustable on the drive shaft (29), by adjustment of the slide members (36), to spacings deviating from the length of incremental conveyor movement.

4,802,566

COIN SLIDE GUARD

Evan C. Wilfong, Philadelphia, and Harvey S. Gitlin, Ambler, both of Pa., assignors to Equipment Systems & Devices, Inc., Ambler, Pa.

Filed Aug. 6, 1987, Ser. No. 82,377
Int. Cl.[4] G07F 1/00
U.S. Cl. 194—350 **6 Claims**



1. A coin slide guard for protecting a coin slide mounting flange having an outer periphery and a predetermined thickness and of the type having a plurality of transversely spaced slots with dividers respectively therebetween and a plurality of mounting openings through the mounting flange comprising:

a unitary hardened steel face forwardly overlying the mounting flange, said face including a face outer periphery which terminates in a hollow, peripheral flange having top and bottom walls and joining left and right walls following said outer periphery of said mounting flange, said guard flange walls extending in depth sufficiently to cover the entire peripheral thickness of the coin slide mounting flange,

the face being provided with an opening to receive a portion of a coin slide therethrough,

the opening being upwardly shaped to provide a plurality of transversely spaced slots, the slots being defined by respective protective fingers therebetween,

the face being provided with a plurality of securing openings, at least some of the securing openings in the guard face registering over and aligning with a mounting opening in the mounting flange,

the protective fingers of the guard overlying and protecting the dividers of the mounting flange when the guard securing openings are in registry over the flange mounting openings; and

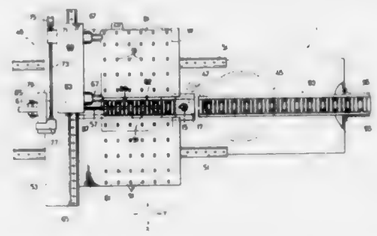
at lesat one fastener positioned through an aligned pair of mounting opening and securing opening to secure the guard to the coin slide mounting flange.

4,802,567

PLATE PROCESSING MACHINE

Hidekatsu Ikeda; Hidetoshi Miyama, and Yoshihiko Kashiwabara, all of Kanagawa, Japan, assignors to Amada Company, Limited, Japan

Filed Feb. 4, 1987, Ser. No. 10,855
Claims priority, application Japan, Feb. 6, 1986, 61-15068[U]; Feb. 6, 1986, 61-15071[U]
Int. Cl.[4] B65G 47/22
U.S. Cl. 198—345 **10 Claims**



1. A plate processing machine having a base and two guide members extending in a longitudinal Y-axis direction of the machine and disposed parallel to each other on both ends of a lateral Y-axis direction of the machine, which comprises:

(a) a Y-axis motor;

(b) a carriage base extending for a predetermined distance in the X-axis direction and supported by said two guide members on both ends thereof so as to be movable by said Y-axis motor to and from a process position of the machine in the Y-axis direction;

(c) a carriage (69) having two clamping devices (67) for clamping a workpiece to be processed and mounted on said carriage base so as to be reciprocably movable along said carriage base in the X-axis direction said carriage extending longitudinally in the X-axis direction and having two longitudinal ends, said carriage further being movably connected to a screw rod for driving said carriage, said connection being made at one longitudinal end of said carriage;

(d) a carriage drive unit (77, 79) being drivingly connected to said screw rod near a middle portion of said carriage base to move said carriage under a balanced condition in weight with respect to said carriage base; and

(e) said screw rod having a length which is substantially less than the predetermined distance along which said carriage base extends.

4,802,568

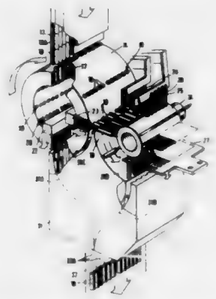
SORTING AND ORIENTING APPARATUS

Rolf Haarer, Winterbach; Theo Moser, Steinenberg, and Klaus Reum, Korb, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 17, 1987, Ser. No. 63,039
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1986, 3626733
Int. Cl.[4] B65G 47/24
U.S. Cl. 198—388 **19 Claims**

1. Apparatus for sorting and orienting randomly-disposed elongate containers which are at least partially closed at one end and open at the other end, the apparatus comprising a first rotor rotatable about a first axis, a second rotor rotatable about a second axis parallel to the axis of the first rotor, said first rotor containing radially-disposed bores of uniform cylindrical shape for receiving the containers and said second rotor having radially-disposed spokes, means for rotating said first and second rotors to periodically bring said radially-disposed bores into alignment with said radially-disposed spokes, dispensing means adjacent said first rotor for depositing said randomly-

disposed elongate containers in said radially-disposed bores in said first rotor as said radially-disposed bores are moved into alignment with said dispensing means, means operable when said first and second rotors move to positions wherein said radially disposed bores are aligned with said radially-disposed spokes to eject said containers that are disposed with their open ends facing away from the center of rotation of said first rotor onto said spokes, and friction engaging means for retaining said containers by frictional engagement that are disposed



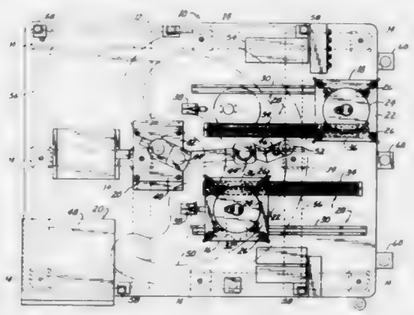
with their open ends facing toward the center of rotation in said radially-disposed bores, receiving means adjacent said first and second rotors for receiving containers from said first and second rotors, whereby rotation of said first and second rotors align said containers with said receiving means, open end facing the respective axis of said first and second rotors, and means for ejecting said containers from said first and second rotors into said receiving means as said containers are moved into alignment therewith, said containers thereby being aligned in the same orientation.

4,802,569

TWO STATION ROBOTIC WELDER

Stephen H. Aldin, and Russell Bailey, both of Sarasota, Fla., assignors to Aldin Automation Corp., Sarasota, Fla.

Filed Jan. 12, 1987, Ser. No. 62,170
Int. Cl.[4] B65G 47/00
U.S. Cl. 198—346.1 **8 Claims**



1. A machine for sequentially performing an operation on a plurality of parts, comprising in combination:

a left and right nest, each comprising a base member;

fixture means affixed to each said base member for securely receiving one of the parts therein;

table means;

a pair of slide means in side by side relationship for slidably connecting said nests to said table means allowing each said nest to individually shuttle back and forth in parallel paths between an extended position at a loading and unloading operator station adjacent to one edge of the machine and a retracted position at a work area within the machine in an alternating sequence;

robotic means including a predefined work footprint including said fully retracted positions of said nests; and

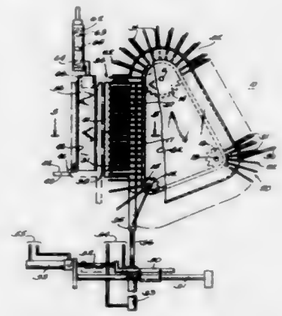
operation means affixed to said robotic means for performing the desired robotic operation on the part mounted within said fixture of a retracted said nest, whereby a part may be loaded into the fixture of one nest while the part previously loaded into the fixture of the other nest may be operated on and then, upon actuation of said rail means, the newly loaded part is shuttled to the retracted position for being operated on while the completed part is shuttled to the extended position for unloading and reloading with a new part.

4,802,570

STACKER WITH A YOKE-TYPE STRIPPING DEVICE

John L. Hirsch, Sheboygan Falls, and Mark L. Wingender, Sheboygan, both of Wis., assignors to Curt G. Joa, Inc., Sheboygan Falls, Wis.

Filed Sep. 14, 1987, Ser. No. 95,839
Int. Cl.[4] B65G 61/00
U.S. Cl. 414—790 **6 Claims**



1. A stripper for stripping articles from a conveyor, the conveyor comprising: driven closed loop flexible means driven lengthwise, a series of paddle members disposed along the length of said flexible means, said paddle members having corresponding ends connected to said flexible means and extending outwardly therefrom for articles to be deposited on said paddle members at one location and for a series of articles to be accumulated on said paddle members, respectively, where a series of generally vertically moving paddle members are above and below each other at another location to facilitate stripping said articles from said paddle members to form a stack of articles, said stripper comprising:

front and rear rows of laterally spaced apart upright stripper bars and carrier bars extending horizontally from one row toward the other to form a yoke, said carrier and stripper bars being spaced from each other to define slots of sufficient width between them for said vertically moving paddle members to pass through so a series of articles can be accumulated on paddle members above said carrier bars,

a fixed horizontal table top adjacent the line of movement of said paddle members, said top having slots directed toward the line of vertical movement of said paddle members, said slots in the table top being aligned with said carrier and stripper bars,

yoke positioning means coupled to said yoke and operative to establish said yoke in a first position in alignment with said generally vertically moving paddle members to accumulate said series of articles between said upright stripper

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bars while simultaneously holding said yoke at a level wherein said carrier bars are higher than said horizontal table top,

said positioning means operating further to shift said yoke laterally toward a second position for said upright bars to strip said articles from said paddle members and locate the stack of articles, while being supported on said carrier bars, over said slots in the table and

said positioning means operating further to lower said yoke to a third position horizontally wherein said carrier bars are registered in said plate slots flush with said table.

4,802,571

APPARATUS FOR CONVEYING SUSPENDED BOTTLES

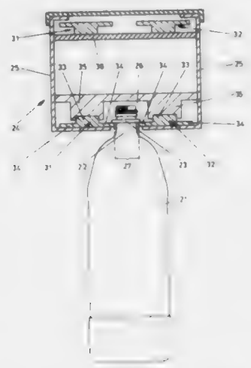
Gerhard Born, Bingen; Paul Elsner, Bad Kreuznach, and Heinz-Jürgen Scherer, Windesheim, all of Fed. Rep. of Germany, assignors to Seitz Enzinger Noll Maschinenbau Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Apr. 25, 1986, Ser. No. 856,695

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1985, 3515353

Int. Cl.⁴ B65G *15/14*

U.S. Cl. 198—627 **12 Claims**



1. A bottle-conveying apparatus for conveying bottles along a conveying path between as well as within treatment and related bottle-handling stations along the conveying path, with said bottles each having a pronounced distinctly defined annular bead on the neck of the bottle; said apparatus comprising:

a conveyor line, which extends over the conveying path;

means forming a guide slot with the conveyor line;

a bottle carrier means that is provided with the conveyor line and that extends along said conveying path, that extends below the annular bead on the neck of the bottle, and that guides said bottles in a suspended state loosely supported only with friction engagement contact, via said annular beads on the neck of said bottles respectively, with play, through said means forming the guide slot that extends along said conveying path;

said bottle carrier means including a side edge region arranged with said conveyer line for providing said bottles with a feed movement for conveying said bottles and to provide said feed movement parallel to said means forming the guide slot for said bottle necks, with said forming said guide slot being provided on said bottle carrier means;

said bottle carrier means further including a first endless conveyor movable along said guide slot for said bottle necks, at a feed speed that corresponds to the desired conveying speed; said conveyor includes said side edge region, said side edge region deli one side of said guide slot; said apparatus also includes further bottle carrier parts that keep said bottle beads on said side edge region of said conveyor;

said further bottle carrier parts being formed by a second endless conveyor that also includes a side edge region, which is disposed opposite said side edge region of said a first conveyor, with said conveyers being guided parallel to, and at such a distance from, one another that said guide slot for said bottle necks is formed between said opposed side edge regions, with a secure seating for said bottle neck beads being formed on each side of said side edge regions; and

said conveyors being operated at the same feed speed, namely the desired conveying speed for said bottles; each of said conveyers being embodied as a hinged chain that is able to follow a laterally converging curved path, with each of said chains having at least one side edge region, and adjacent thereto a guide region that projects beyond said side edge region.

4,802,572

AIRCRAFT CARGO ROLLER SYSTEM

Thomas H. Shorey, Mill Creek, and Mark W. Shorey, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 2, 1987, Ser. No. 115,383

Int. Cl.⁴ B65G *13/06*

U.S. Cl. 198—791 **13 Claims**



1. An aircraft cargo roller system, comprising:

one or more rotatable rollers for supporting and moving cargo;

motor means for rotating the rollers; and

at least one rotatable coupler for coupling the motor means to the rollers, the coupler comprising:

a first member coupled to the motor means;

a second member having a longitudinal axis and engageable with the rollers; and

a position control means connecting the first and second members together, the position control means being configured so that upon rotation of the first member by the motor means, the second member, when initially out of engagement with the rollers, will be first moved translationally along its longitudinal axis into engagement with the rollers, and then rotated to thereby rotate the rollers, and upon rotation of the motor means in an opposite direction, the second member will sequentially be first disengaged from the rollers, then engaged with the rollers, and then rotated to thereby rotate the rollers in the opposite direction.

4,802,573

PROCESS FOR WET QUENCHING OF COKE

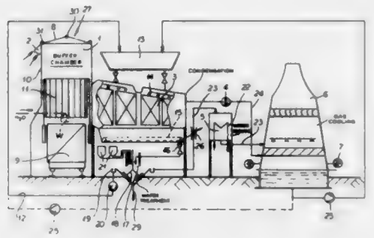
Heinz Hölter; Heinrich Igelbüscher, both of Gladbeck; Heinrich Gresch, Dortmund, and Herbert Dewert, Gladbeck, all of Fed. Rep. of Germany, assignors to Heinz Holter, Gladbeck, Fed. Rep. of Germany

Filed Feb. 9, 1987, Ser. No. 12,580

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1986, 3603985

Int. Cl.⁴ C10B *39/08*

U.S. Cl. 201—39 **3 Claims**



1. In a process for quenching coke with low smoke/vapor emissions in which glowing coke is sprayed with water and thereby quenched while a quenching smoke/vapor is produced wherein the improvement comprises bunkering said quenching smoke/vapor in a storage chamber before delivery to said atmosphere, intermittently mixing said bunkered smoke/vapor with fresh air to prevent an explosive carbon monoxide concentration from developing in the storage chamber in which said quenching smoke/vapor is bunkered, withdrawing said bunkered smoke/vapor from the storage chamber and spraying the withdrawn smoke/vapor with water to form a condensate and a gas phase, separating the gas phase from the condensate and further cooling the separated gas phase, and wherein the condensate is further cooled and recycled for spraying the withdrawn smoke/vapor.

4,802,574

ABSORBENT FOR A GAS PRESERVATIVE ATOMOSPHERE

Yosuke Akiba, 21-11, Sendagaya 1-chome, Shibuya-ku, Tokyo, Japan

Filed Dec. 1, 1987, Ser. No. 127,165

Int. Cl.⁴ B65D *81/26, 81/22*

U.S. Cl. 206—204 **14 Claims**



1. An apparatus for dispersing a gaseous food preservative into a vessel containing food substance comprising:

an absorbent strip comprising at least one absorbent layer having a top and a bottom;

a layer of non-woven fabric in a lattice network placed onto said top and bottom of said absorbent strip forming a non-woven fabric combination having a top and a bottom;

a plastic film placed onto said top and bottom of said non-woven fabric combination forming a plastic film combination having a top and a bottom; and

a plastic cover placed onto said top and bottom of said laminated film combination, said plastic cover being sealed along its edges.

4,802,575

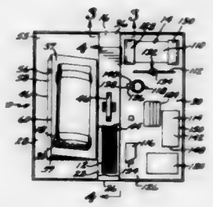
FOOD STORE COUPON ORGANIZER

Dorothy B. Martin, 1205 E. Ocean Blvd., Long Beach, Calif. 90802

Filed May 26, 1987, Ser. No. 54,200

Int. Cl.⁴ B65D *85/00*; A45G *11/00*

U.S. Cl. 206—232 **3 Claims**



1. A coupon organizing system comprising:

a plurality of category pages, each said category page having a first wall, first indicia means extending outwardly from said first wall, and a plurality of substantially vertical overlapping divider walls mounted to said first wall to define a plurality of staggered pockets, said staggered pockets including means for facilitating insertion and withdrawal of coupons therefrom, wherein said means for facilitating insertion and withdrawal of coupons therefrom includes a lip formed in one of said walls;

a carrying case sized to receive said category pages, at least one of said category pages pivotally mounted to said carrying case; and

attaching means for releasably attaching said plurality of category pages to said carrying case.

4,802,576

STORAGE CONTAINER FOR A PAINT ROLLER

Ingo Kern, Witzlebenstrasse 13, D-1000 Berlin 19, Fed. Rep. of Germany

Filed Nov. 26, 1986, Ser. No. 935,327

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1985, 3542164

Int. Cl.⁴ B65D *43/16, 85/08*

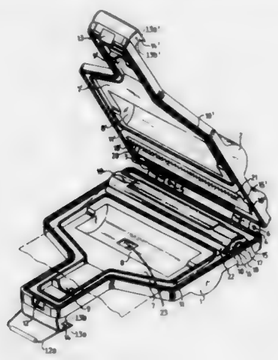
U.S. Cl. 206—225 **19 Claims**

1. A storage container for a paint roller having a handle and a paint-applying roll, said storage container comprising a housing for receiving and enclosing the paint roller therein and having a recess generally configured to the outline of the roller to receive said paint roller therein, said housing having an inside and an outside, means to provide open and closed positions for said housing, said open position permitting the insertion and removal of the paint roller,

sealing means provided in said container for forming a hermetic seal around the roller when the container is in the closed position; and

foil receiving means in said container generally configured

to the outline of a roll of foil for receiving said roll of foil, said foil receiving means being adjacent said paint-applying roller when said roller is disposed in said container, said foil receiving means defining a further recess.



4,802,577

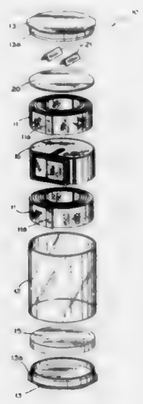
DISPLAY CONTAINER FOR A PLURALITY OF BELTS

Dennis E. O'Leary, 2635 Broadway, Suite 3, Toledo, Ohio 43609

Filed Jul. 1, 1988, Ser. No. 214,303

Int. Cl.[4] B65D *85/18*

U.S. Cl. 206—278 **12 Claims**



1. A display container for a plurality of belts comprising:

a hollow body having upper and lower open ends, said body being formed from a transparent material;

upper and lower end caps for closing said upper and lower open ends of said body; and

central spacer means disposed within said body, said central spacer means being spaced apart from said upper end cap to provide an upper space within said body for at least one belt disposed between said central spacer means and said upper end cap and being spaced apart from said lower end cap to provide a lower space within said body for at least one belt disposed between said central spacer means and said lower end cap.

4,802,578

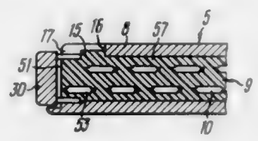
SURGICAL INSTRUMENT

Ernest M. Akopov; Valery E. Schitinin, and Anna V. Artpova, all of Moscow, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Ispytatelny Institut Meditsinskoi Tekhniki, Moscow, U.S.S.R.

Division of Ser. No. 772,733, Sep. 5, 1985, Pat. No. 4,684,051. This application Jan. 24, 1987, Ser. No. 49,210

Int. Cl.[4] B65D *85/24*

U.S. Cl. 206—339 **4 Claims**



1. A detachable staple magazine for a surgical instrument adapted for placing linear staple sturctures, said detachable staple magazine comprising:

a body shaped as a rectangular monolith parallelepiped having a front surface and a rear surface, two side faces and two end faces;

two portions provided integrally with said body so that these portions are adjacent to said two end faces thereof, said two portions each having a front surface and a rear surface which are extensions of said front surface and said rear surface, respectively, of said body, two side faces arranged so that a distance in between said two side faces of said two portions is smaller than a distance in between said two side faces of said body, and an end face arranged to be located on an opposite side with respect to said body; and

a plurality of through slots for staples provided in said body throughout the entire length thereof and in said two portions adjacent to the end faces of said body, said through slots being located in between said front surface and said rear surface of said body and said two portions.

4,802,579

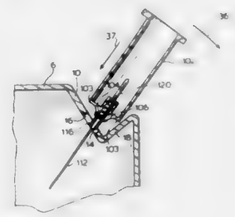
MEDICAL CONTAINER

S. Warren Hall, and Jacquelyn L. O. Hall, both of 3 Cranleigh Court, Islington, Ontario, Canada

Filed Mar. 17, 1987, Ser. No. 26,875

Int. Cl.[4] B65D *83/10*

U.S. Cl. 206—366 **7 Claims**



1. In a container, a disposable medical needle engaging region comprising a notched area having a camming surface and an associated recess in an adjacent angled surface,

said recess having a widened region for allowing entry of a disposable medical needle and a gripping region associated with said widened region sized to engage a plastic connecting piece of such needle when forced into engagement therewith,

said gripping region being appropriately spaced from said camming surface to cooperate with a support of such needle to effect gripping of such plastic region in said gripping region by using such support as a lever against said camming surface urging such plastic region into said gripping region.

4,802,580

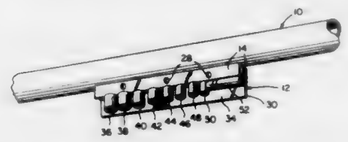
MAGNETIC SOCKET AND TOOL HOLDER

Timm Andersen, 505 W. Pickett Creek Rd., Grants Pass, Oreg. 97527

Filed Dec. 17, 1987, Ser. No. 134,041

Int. Cl.[4] B65D *85/70;* **A47F** *5/08;* **H01F** *7/20*

U.S. Cl. 206—378 **8 Claims**



1. A magnetic socket and tool holder including a pair of elongated ferrous material, laterally spaced apart and generally parallel armature plates, a plurality of permanent magnets supported between said plates and spaced longitudinally therealong, said plates including first and second pairs of generally coplanar corresponding opposite side longitudinal edges, said first pair of corresponding edges being abutable against a ferrous object for magnetic support of said holder therefrom and said second pair of corresponding edges defining abutment edges to be abutted and spanned by a plurality of ferrous objects spaced along said plates for removable magnetic support of said objects therefrom, a positioning plate generally paralleling and supported and laterally spaced from one of said armature plates on the side thereof remote from the other armature plate, said positioning plate including one longitudinal marginal portion corresponding to said second pair of corresponding edges and projecting appreciably edgewise outwardly therebeyond, said one longitudinal marginal portion defining a handle as well as an abutment plate portion to be abutted by the opposing surfaces of said ferrous objects for proper alignment of said objects along said second pair of corresponding plate edges.

4,802,581

NEEDLE CASE

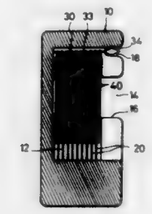
Masamitsu Takahashi, Hiroshima, Japan, assignor to Bankoku Needle Manufacturing Co., Ltd., Hiroshima, Japan

Filed Mar. 14, 1988, Ser. No. 167,842

Claims priority, application Japan, Apr. 24, 1987, 62-62154[U]; Jan. 16, 1988, 63-4000[U]

Int. Cl.[4] B65D *85/24*

U.S. Cl. 206—380 **2 Claims**



1. A needle case comprising:

a case member having an accommodation portion capable of accommodating a plurality of needles therein, a notch portion where any of the shanks of the needles can be pinched, a takeout opening from which a needle is extracted, and a cutaway portion through which thread is passed; and

a needle supporting member formed of elastic metal or resin into a forked elongate member having a forked portion fixed to a portion of said case member at a position opposite to the position of said takeout opening of said case member, an extension portion extending in a direction in which a needle is extracted and passing through the eyes of the needles to support the needles in a suspended state within said accommodation of said case member, and an expansion portion disposed at a position corresponding to the position of said cutaway portion of said case member, having a hole of a diameter substantially the same as the width of said cutaway portion of said case member and large enough to easily pass thread therethrough, and capable of preventing the needles from passing therethrough due to an elastic force of the material thereof in an expanding direction thereof under normal conditions but permitting a needle to pass therethrough against the elastic force when a force for extracting the needle from said takeout opening of said case member is exerted on the needle.

4,802,582

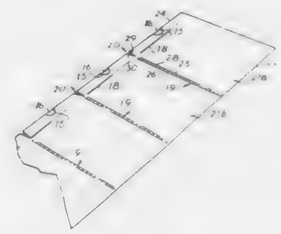
CONTINUOUS DRAW TAPE BAGS

James R. Johnson, Doraville, Ga., assignor to AMI, Inc., Doraville, Ga.

Continuation-in-part of Ser. No. 47,677, May 8, 1987, which is a continuation-in-part of Ser. No. 829,808, May 12, 1987, Pat. No. 4,664,649. This application Oct. 27, 1987, Ser. No. 114,093

Int. Cl.[4] B65D *33/28*

U.S. Cl. 206—390 **8 Claims**



1. A plurality of draw tape bags defined along a web of bag material, each bag of said plurality of bags having opposed parallel side walls, a lower edge of said side walls joining said opposed side walls, and upper hemmed edges parallel to said lower edge and including a hem in each of said side walls and a draw tape within each of said hems, said web of bag material including a plurality of side seals generally perpendicular to said lower edge, said plurality of side seals being so arranged that two side seals are adjacent to each other between adjacent bags along said web of bag material, said web defining a line of perforations between said two side seals adjacent to each other, and a plurality of side welds extending generally through said hems.

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4,802,583

ARTICLE CONTAINER WITH OVERWRAP

Rodney K. Calvert, Dunwoody, and Prentice J. Wood, Hapeville, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 11, 1988, Ser. No. 167,094
Int. Cl.[4] B65D *75/28, 17/28*
U.S. Cl. 206—427 **8 Claims**



1. An article container comprising a reusable case having a rectangular bottom wall, a pair of side walls joined respectively to opposite side edges of said bottom wall and projecting upwardly therefrom, and a pair of end walls joined respectively to opposite end edges of said bottom wall and respectively joined at their end edges to adjacent end edges of said side walls to form an open top structure, and a disposable overwrap having a rectangular main panel overlying said case, a pair of rectangular side panels foldably joined respectively to opposite side edges of said main panel and projecting downwardly in overlying relation respectively to said side walls, a pair of upper end panels foldably joined respectively to opposite end edges of said main panel and projecting downwardly in overlying relation respectively with said end walls, collapsible web structure interconnecting each end edge of each of said upper end panels with the adjacent end edge of each of said side panels, a rectangular bottom panel foldably joined to the bottom edge of one of said side panels and underlying said bottom wall, a pair of lower end panels foldably joined respectively to opposite ends of said bottom panel and projecting upwardly, in overlying, relation with said end walls and in face contacting relation with the lower portions of said upper end panels respectively and secured thereto, collapsible web structure interconnecting one end edge of each of said lower end panels with the adjacent end edge of one of said side panels, an end flap foldably joined to each end edge of the other of said side panels and secured to the inner surface of the adjacent one of said lower end panels, and means adjoining said bottom panel to the lower part of said other side panel.

4,802,584

KIT FOR PREPARING BLISTER PACKAGES

John A. Harrison, Hudson, Wis.; Gary A. Isakson, Woodbury, Minn., and James R. Nelson, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 18, 1988, Ser. No. 156,985
Int. Cl.[4] B65D *85/00*
U.S. Cl. 206—447 **3 Claims**

1. A pad comprising a plurality of sheets of similar size and shape, each of said sheets having a backing having on one major surface thereof a layer of a first adhesive, said sheet being laminated to a release layer, said first adhesive layer being in face-to-face contact with said release layer, each of said sheets being attached to a like sheet by means of a first bonding strip having a backing having on one major surface thereof a layer of a second adhesive and on the other major surface thereof a layer of a low adhesion backsize, said first bonding strip being coextensive with at least one edge of said sheets, a portion of said second adhesive layer being bonded to a portion of said release layer, the remainder of said second



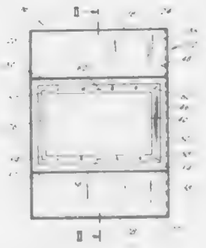
adhesive layer being bonded to a portion of said layer of said low adhesion backsize of a second bonding strip.

4,802,585

PICTURE HOLDER

Rudolph Durrer; Hilmar Priessner, both of Zürich, and Eric Bach, Taufkirchen, all of Fed. Rep. of Germany, assignors to Peter Fuchs GmbH Druckservice, Fed. Rep. of Germany

Filed Jul. 22, 1986, Ser. No. 888,749
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1985, 8521119
Int. Cl.[4] B65D *85/48*
U.S. Cl. 206—449 **5 Claims**



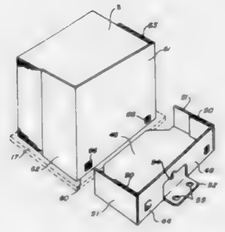
1. A holder for pictures, or the like, comprising:
two generally rectangular layers of a transparent plastic material welded together at three of four outer edges to form an envelope open at one of the edges; at least on further weld seam between the layers and extending parallel to one of the edges intersecting the open edge for dividing the envelope internally, into a plurality of pockets; guide means in one of the pockets, comprising guide means weld seams between the two layers, said guide means weld seams being shorter in length than the distance between the open edge and the opposite closed edge of the one pocket, said guide means weld seams being placed at positions within said pocket for guiding installation of a picture, or the like, through the one open edge and into a predetermined region of the one pocket defined by the guide means weld seams.

4,802,586

HIGH SPEED DUPLICATOR WITH COPY SHEET PREPACKAGED SHIPPING AND LOADING CARTON

Clifford L. George, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 27, 1984, Ser. No. 654,705
Int. Cl.[4] B65D *83/00*
U.S. Cl. 206—556 **6 Claims**



1. A disposable carton in combination with a stack of sheets adapted for shipping and storage, and for permitting an operator to present a large stack of sheets for use in a printing machine having a sheet feeding apparatus and a sheet supply platform for supporting copy sheets, comprising,
a receptacle having a bottom panel and at least three side panels hingedly connected to said bottom panel along fold lines for supporting the stack of copy sheets therein, said receptacle being open at its top side,
a cover section adapted to cover said receptacle and having a top panel bridging substantially across the open top side thereof immediately above the stack of sheets, said cover section having a main section including said top panel and an edge section adapted to be removed during preparation of the carton for loading in the printing machine,
said receptacle being adapted to be lifted away and removed from said main section to expose the stack of sheets when the receptacle, the stack, and the main section are inverted, said main section being adapted to be manually positioned upon the platform when the same with the stack have been inverted to place said top panel with the stack supported thereon on top of the platform and with the top of the stack in operating association with the sheet feeding apparatus, and
means for permitting the operator to slideably remove said top panel of said main section relative to the platform and the stack and thereby effect the placement of the stack of sheets upon the sheet supply platform.

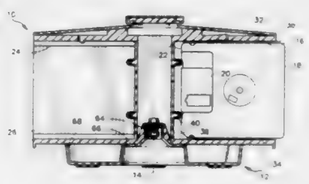
6. A disposable carton in combination with a stack of sheets adapted for shipping and storage, and for permitting an operator to present a large stack of sheets for use in a printing machine having a sheet feeding apparatus and a sheet supply platform for supporting copy sheets, comprising,
a receptacle having a bottom panel and at least three side panels hingedly connected to said bottom panel along fold lines for supporting the stack of copy sheets therein, said receptacle being open at its top side,
a cover section adapted to cover said receptacle and having a top panel bridging substantially across the open top side thereof immediately above the stack of sheets, said cover section having a main section including said top panel and an edge section adapted to be removed during preparation of the carton for loading in the printing machine,
said receptacle being adapted to be lifted away and removed from said main section to expose the stack of sheets when the receptacle, the stack, and the main section are inverted, said main section being adapted to be manually positioned upon the platform when the same with the stack have been inverted to place said top panel with the stack supported thereon on top of the platform and with the top of the stack in operating association with the sheet feeding apparatus, and
means for permitting the operator to slideably remove said top panel of said main section relative to the platform and the stack and thereby effect the placement of the stack of sheets upon the sheet supply platform, said manually operable means is planar and is adapted to be folded within the same plane as said top panel.

4,802,587

DATA DISKETTE CARTRIDGE STORAGE TRAY WITH RESILIENT BUMPERS

Richard L. Armijo, 5511 Taft Ave., La Jolla, Calif. 92037, and Paul R. Coughlin, 18975 Shadow Wood Dr., Monument, Colo. 80132, assignors to Richard L. Armijo, La Jolla, Calif. and Paul R. Coughlin, Madisonville, Ky.

Filed Jun. 12, 1987, Ser. No. 62,434
Int. Cl.[4] B65D *85/57*
U.S. Cl. 206—444 **2 Claims**



1. A tray for storing data diskette cartridges, each of which cartridges is flat, made of rigid material, and includes a shutter which covers a portion of one edge of the diskette cartridge, with the shutter being spring-biased to cover an aperture in the cartridge that exposes a data diskette in the cartridge to a transducer when the cartridge is inserted into a data retrieval device to thereby move the shutter, said tray comprising
a chassis defining an open chamber having first and second opposed walls and slots in the first and second opposed walls for receiving opposite edges of individual diskette cartridges inserted into the chamber, and further defining a back wall at the opposite end of the chamber from the opening;
wherein the back wall includes a bumper positioned for contacting a portion of the partially shuttered edge of the data diskette cartridge not covered by the shutter when the shutter is in its spring-biased position and when the cartridge is inserted into the chamber with the shutter facing the back wall, to thereby prevent the shutter from contacting the back wall when it is inserted into the chamber;
wherein the bumper comprises
resilient material for forcing a said cartridge positioned at rest in contact with the bumper away from the bumper in response to the cartridge momentarily being forced into the bumper from its at-rest position; and
a rigid ridge extending from the back wall of the chamber;
wherein said resilient material is secured to the ridge, and extended from the ridge to define a void between the ridge and the portion of the resilient material contacted by the cartridge.

4,802,588

PLANT GROW AND TRANSPORT PALLET

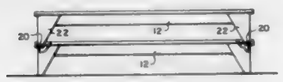
Aarre Silvola, 2910 Rainbow Glen Rd., Fallbrook, Calif. 92028

Filed Apr. 18, 1984, Ser. No. 601,503
Int. Cl.[4] B65D *21/02*
U.S. Cl. 206—511 **5 Claims**

1. A stackable open top pallet for supporting and transporting plants, comprising:

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an open rectangular frame defined by opposed parallel side rails and a pair of opposite end rails;
a plurality of pairs of tray support cross members secured between opposite sides of said frame for supporting a plurality of growing trays;
a pair of fork engaging cross members secured to and beneath a pair of said tray support cross members;
a support flange extending inwardly from said end rails and across each end of said frame; and



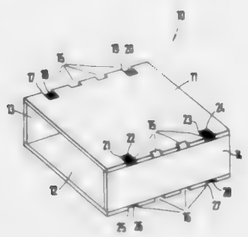
vertically extending support means defined by said end rails extending downwardly from the ends of said frame for engaging the support flange of a lower pallet for support thereof, said support means having sufficient height to enable stacking a plurality of pallets for accommodating predetermined growth of seedlings and for transporting stacks of pallets loaded with seedlings without damaging the seedlings.

4,802,589

HOUSING FOR ELECTROTECHNICAL EQUIPMENT

Franco Berg, Isernhagen, and Claus-Dieter Bovermann, Breidenbach-Niederdieten, both of Fed. Rep. of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany

Filed Sep. 29, 1987, Ser. No. 102,035
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1986, 3633248
Int. Cl.⁴ B65D *85/62*
U.S. Cl. 206—511 19 Claims



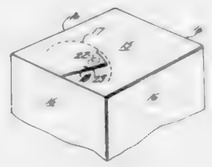
1. Housing for electrotechnical equipment comprising two side walls, a top wall and a bottom wall, said walls forming a framework having two generally rectangular openings which are sealable by means of a back wall, a door, or an inspection window, and wherein stacking legs are pivotally mounted near the edges of the housing at the corners of said top and bottom walls and said stacking legs are adjustable between a retracted position in which they are substantially flush with said top and bottom walls and an extended position in which they are substantially perpendicular to said top wall and said bottom wall, characterized in that at least said stacking legs mounted at said bottom wall comprise terminal stacking ends, and at least said stacking legs mounted at said top wall form stacking seats in which said terminal stacking ends of said stacking legs in the extended position, are insertable when said stacking legs are in said retracted position.

4,802,590

MILK CARTON WITH FOLDED SPOUT

Barry W. Smith, 535 Plum Ave., Sutherlin, Oreg. 97479

Filed Oct. 26, 1987, Ser. No. 112,405
Int. Cl.⁴ B65D *5/70*
U.S. Cl. 206—620 2 Claims



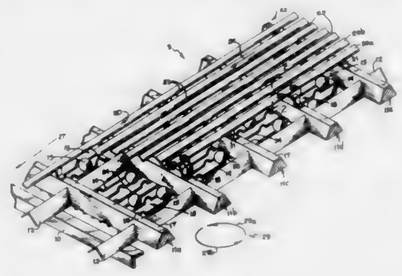
1. In a liquid storage carton of fibrous material and having contiguous side walls and a perpendicular top wall, the improvement comprising a spout integral with the top wall of the carton and having a pair of primary members jointed along a fold line, said fold line intersecting a carton edge intermediate extremities of said edge, a pair of secondary members integral with said primary members and with said top wall, said spout when collapsed lying in parallel relationship with the carton top wall, a line of severance extending horizontally in said top wall and terminating in said top wall at points offset from said carton edge, said line of serverance denoting the extremities of said secondary members, said primary members folded against one another and overlying one of said secondary members, said primary members of the spout additionally serving as a finger grip during deployment of the spout from the carton top wall with separation of said secondary members from the top wall occurring along said line of severance.

4,802,591

LOUVERED CHIP SCREENER

William E. Lower; W. Nash McCauley, both of Cincinnati; Stephen C. Mitchell, Westchester; Roger C. Robins, Reading, and Steven A. Schmidt, Cincinnati, all of Ohio, assignors to Rotex, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 901,885, Aug. 29, 1986, abandoned. This application Mar. 14, 1988, Ser. No. 167,690
Int. Cl.⁴ B07B *13/04, 1/28*
U.S. Cl. 209—680 29 Claims



1. A machine for separating chips according to thickness, comprising,
a frame mounting a sloping deck on which chips flow generally downwardly from an upper end toward a discharge end, the deck comprising a series of spaced parallel slats mounted on slat support means which are spaced apart along the length of the slats, the slats extending parallel to the downward direction of chip flow, the support means

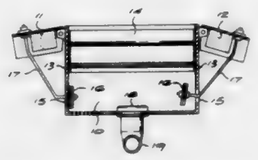
canting each slat transversely to the general plane of the deck,
the slats presenting elongated openings between them, said openings being parallel to the slats and extending the length of the deck and through the discharge end thereof;
a drive for imparting a screening motion to said frame;
said drive moving the deck in a horizontal rotary path wherein during the upstream half of the cycle said openings are moving transversely toward chips on adjacent slats facing the respective openings, and away from such chips during the downstream half;
the slat support means of adjacent slats being staggered with respect to one another, each slat being deflectable along its length between the slat support means which support it, adjacent slats thus being deflectable relative to one another along their entire length; and
ball cleaning means having narrow, elongated ball support members which extend parallel to said slats.

4,802,592

FLOATING LIQUID SKIMMERS HAVING A FLOATING WEIR

Allistair P. Wessels, Bryanston, South Africa, assignor to Fabet NV, Curacao, Netherlands Antilles

Filed Feb. 16, 1988, Ser. No. 156,365
Claims priority, application South Africa, Feb. 17, 1987, 87/1137
Int. Cl.⁴ E04H *3/20*
U.S. Cl. 210—169 6 Claims



1. A floating skimmer which comprises a body, a floating weir at an edge of the body over which liquid can pass into the body, a suction outlet in the base of the body for connection to a suction hose, at least one float for keeping the body buoyant and which is hinged to the body, a scuttle valve in a wall of the body, and motion transmitting means between the float and the scuttle valve so that as the float pivots downwardly when the body rises in liquid, the scuttle valve is opened to allow liquid to enter the body and cause it to float at its original level.

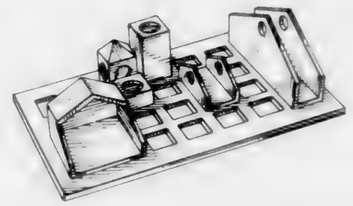
4,802,593

FLEXIBLE DESKTOP ORGANIZER

Nayla J. Romanos, 4201 Cathedral Ave., N.W. Apt. 819 E, Washington, D.C. 20016

Filed Jul. 14, 1987, Ser. No. 73,232
Int. Cl.⁴ B42F *17/00*
U.S. Cl. 211—10 6 Claims

1. As an article of manufacture, a desktop organizer comprising, in combination:
a gridded planar base having a plurality of openings therein;
said openings being of substantially the same configuration and comprising substantially the same shape;
a plurality of functional modules capable of being located in various positions on said base;
said modules containing one or more protrusions on the bottom portions thereof;
said protrusions being of substantially the same configuration as said openings, but being adapted so as to fit within one or more of said openings in said gridded base;
said protrusions being of sufficient length in a vertical plane to effectively hold said modules in desired locations on said base; and
said modules being adapted to function as containers for a variety of desk implements or serving other office functions, said plurality of functional modules comprising one or more of
(a) a series of cross-sectionally square-shape modules formed of four sidewalls having the same surface area, a bottom portion containing said protrusion, and a top portion having an opening therein, each of said modules being adapted to have a hollow inside portion and to function as a container for various desk accessories based on the height of said modules;
(b) a module adapted to function as a paperweight by forming a solid square-shaped block having a pyramid-shaped top portion and a bottom portion containing said protrusion;



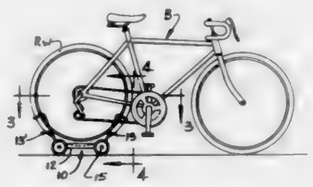
(c) a series of modules adapted to hold business cards, envelopes, documents or similar desk accessories comprising a bottom portion containing at least two of said protrusions, and two similarly-shaped sidewalls rising vertically from opposite peripheral edges of said bottom portion to form a holding space therebetween; and
(d) a series of modules adapted to form a partially enclosed holding section comprising a bottom portion containing four of said protrusions, three sidewalls and a top portion comprising two similarly-shaped roof pieces adapted to form an upwardly inclined roof-like structure, each of the sidewalls and roof pieces being shaped to integrally form said partially enclosed holding section for holding memo pads, cigarettes or other desk accessories, and said modules may further comprise a piece adapted to form a shelf parallel with said bottom portion and extended between two opposing sidewalls below said upwardly inclined roof like structure.

4,802,594

BICYCLE SUPPORT STAND

John W. Graber, Stoughton, Wis., assignor to Graber Products, Inc., Madison, Wis.

Filed Jan. 22, 1988, Ser. No. 146,852
Int. Cl.⁴ A47F *7/04*
U.S. Cl. 211—20 6 Claims



1. A bicycle support stand comprising, a generally horizontal base frame including first and second cross frame members and first and second longitudinal frame members, the longitudinal frame members each having a first end portion attached

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to the first cross frame member and a second end portion attached to the second cross frame member and extending in generally parallel spaced relation between the cross frame members to straddle a bicycle tire, a first crotch frame including first and second leg portions having lower ends attached to the first end portions of the first and second longitudinal frame members respectively, the first and second leg portions of the first crotch frame extending upwardly from the first end portions of the respective first and second longitudinal frame members and having upper ends connected by a first U-shaped crotch portion extending transverse to the associated leg portions, a second crotch frame including first and second leg portions having lower ends attached to the second end portions of the first and second longitudinal frame members respectively, the first and second leg portions of the second crotch frame extending upwardly from the second end portions of a respective first and second longitudinal frame members and having upper ends connected by a second U-shaped crotch portion extending transverse to the associated leg portions, the first and second crotch portions having open sides in opposed relation to straddle a bicycle tire at first and second locations spaced from each other and from the longitudinal frame members, the first and second longitudinal frame members being attached to the cross frame members for adjustment relative to each other to accommodate bicycle tires of different size.

4,802,595

DEBRIS RECEIVING TROUGH

Bengie Northington, 14643 Almanac Dr., Burtonsville, Md. 20866

Filed Sep. 4, 1987, Ser. No. 93,224
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—88 **8 Claims**



1. A trough, means for attaching the trough to and supporting it from edge of a drafting table and means for extending the length of the trough comprising interfitting channel members, a rib formed integrally with the bottom of one said channel member and a grove on another of said members slidably receiving said rib whereby the channel members may be moved relative to each other to vary the overall length of the trough and the rib and groove guide their relative motion, reinforce the members and lend lateral stability to the trough.

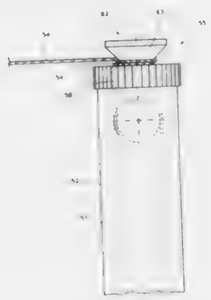
4,802,596

CLOTHES DRYING APPARATUS

Walter Steiner, Säntisstrasse 52, CH-8311 Brüttten, Switzerland

Filed Nov. 12, 1986, Ser. No. 929,992
Claims priority, application European Pat. Off., Nov. 16, 1985, 85114578.9; Switzerland, Jan. 16, 1986, 163/86
Int. Cl.[4] A47B *47/00*
U.S. Cl. 211—197 **5 Claims**

1. A clothes drying apparatus comprising:
a central, elongate supporting post member;
a plurality of support arms for supporting a plurality of first clothes line portions extending between said support arms;
a collar member mounted on said supporting post member for supporting said support arms, said support arms having one end pivotally attached to said collar member, said collar member being axially displaceable along said supporting post member between upper and lower positions in which said support arms are, respectively, in an extended position in which said support arms are spread out so that the first clothes line portions extend between said support arms in an essentially stretched condition, and a rest position in which said support arms are essentially parallel to said supporting post member;
a head member mounted on the top portion of said supporting post member;
a plurality of strut members having one end thereof pivotally connected to said head member and the other end thereof pivotally connected to respective support arms;
a second clothes line portion extendable between said head member and an anchoring member distantly located from said supporting post member;



storage means for storing said second clothes line portion adjacent said supporting post member;
means for retracting said second clothes line portion onto said storage means;
means for locking a section of said second clothes line portion in the vicinity of said head member when in an extended position between said head member and the anchoring member;
said head member comprising an eccentric opening through which said second clothes line portion is withdrawn, and said locking means including an extension member centrically mounted on the upper surface of said head member, said extension member having a concial portion which is tapered with a decreasing diameter as it extends toward said upper surface of said head member;
said head member being rotatably mounted on the top of said supporting post member to tension the second clothes line portion when the second clothes line portion is in said extended position.

4,802,597

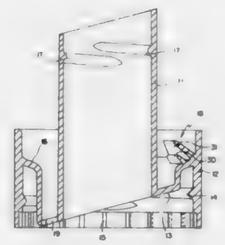
PLASTIC STOPPER FOR A CONTAINER, WITH A MEASURING CUP THAT SERVES AS A CAP

Werner F. Dubach, Maur, Switzerland, assignor to Alfatechnic AG, Dielikon, Switzerland

Filed Jan. 11, 1988, Ser. No. 142,864
Claims priority, application Switzerland, Jan. 22, 1987, 223/87
Int. Cl.[4] B65D *51/24*
U.S. Cl. 215—307 **11 Claims**

1. A plastic stopper for a container used for free-flowing media, having a lower portion (1) that can be secured to a container and having a tubular protruding pouring spout (11), a wall (12) surrounding said spout and an intermediate wall (13) therebetween, said wall (12) and intermediate wall (13) forming an annular trough (18) about the pouring spout (11),

said trough having a drain (19) for returning the medium to the container, as well as a measuring cup (2) that serves as a cap, said measuring cup having an annular inner wall (23) that fits said pouring spout, said inner wall and said spout being provided with coacting attachment means (17,24) the intermediate wall (13) of said annular trough being raised around its periph-



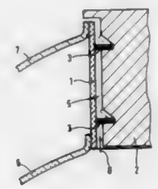
ery to form an annular shoulder (16) that is inclined towards said spout (11), the lower end of the outer wall (22) of said measuring cup being formed as a sharp edged tapered lip (28), said tapered lip capable of lying on said raised inclined shoulder, when said measuring cup is held on said spout by said attachment means, for forming a sealed closure between said measuring cup and said lower portion.

4,802,598

CLOSING FOR A DISCHARGE-PROOF CRYOCONTAINER

Werner K. Diehl, Cologne; Heinrich Fleseler, Dormagen, and Gerhard Saßmann, Siegen, all of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Fed. Rep. of Germany

Filed Apr. 29, 1988, Ser. No. 188,320
Claims priority, application Fed. Rep. of Germany, May 21, 1987, 3717053
Int. Cl.[4] B65D *53/06*
U.S. Cl. 215—348 **3 Claims**



1. In a closing for a discharge-proof cryocontainer with a locking stopper which can be inserted in the container neck while forming a gas escape gap, the improvement being in that said gas escape gap is filled at least in part over the entire circumference with polyamide foam.

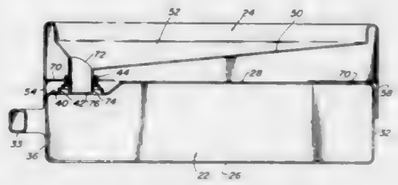
4,802,599

ENGINE OIL COLLECTOR SYSTEM

Fred C. Hill, 585 Moyer Rd., Souderton, Pa. 18964

Filed Jul. 15, 1987, Ser. No. 73,559
Int. Cl.[4] B65B *39/00*; **F16N** *31/00*; **B65D** *81/36*
U.S. Cl. 220—1 C **7 Claims**

1. A reusable system for collecting used oil from an engine comprising collector means, oil directing means, and sealing means, said collector means comprising an enclosed hollow collector vessel of a predetermined shape and having a bottom wall upon which said vessel is arranged to be disposed beneath said engine, a top wall disposed opposite said bottom wall and having a sealable entrance mouth therein, and at least one side wall interconnecting the top wall and the bottom wall, said oil directing means comprising a drain pan with a lowest point and including a top wall forming a downward sloping recess having an outlet adjacent its lowest point, said drain pan being arranged to be releasably mounted upon said collector vessel during oil drainage, whereupon its outlet is in communication with the entrance mouth to said collector vessel so that oil emptied into said drain pan flows down the recess thereof, through said outlet and said communicating entrance mouth into said vessel, said sealing means comprising a sealing cap to seal said entrance mouth after the oil is located within said collector vessel and said drain pan has been removed therefrom, and said collector vessel may be transported to a disposal



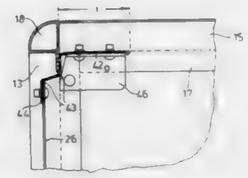
location, said top and bottom walls of said collector vessel each being generally planar, with said collector vessel top wall having a recess therein from which an annular neck projects upward to an elevation just slightly higher than said collector vessel top wall, said annular neck forming said entrance mouth and having helical threads disposed thereabout, said cap including threads for mating with said threads on said entrance mouth, said recess allowing said annular neck to be of sufficient length for said outlet to nest securely within said annular neck to provide stability when said drain pan is mounted on said collector vessel and said recess providing that only a small portion of said annular neck protected by said cap projects beyond said top wall of said collector vessel when said collector vessel is transported to a disposal location.

4,802,600

FREIGHT CONTAINER FOR AIR TRANSPORT

Gerd Bretschneider, Hilzingen, and Dieter Kienewetter, Radolfzell, both of Fed. Rep. of Germany, assignors to Swiss Aluminium, Chippis, Switzerland

Filed Nov. 25, 1987, Ser. No. 125,479
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1986, 8632203[U]; Apr. 14, 1987, 3712695
Int. Cl.[4] B65D *88/52*
U.S. Cl. 220—1.5 **8 Claims**



1. Freight container for air transport which comprises a baseplate, support frame arranged on the baseplate, said support frame having sections rising from the baseplate and transverse sections connecting the rising sections for a container roof sheeting which at least partially fills in the support frame, one side of the freight container being provided with a lateral loading opening, a gap immediately adjoining the lateral loading opening in the container roof, and a pivotable or displaceable portion of the container roof operative to close said gap

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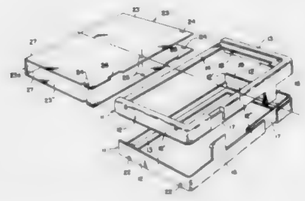
formed by a fold-back cover which is articulated approximately at the center axis (M) of the container roof, including a hollow section adjacent said pivotable portion, wherein the fold-back cover together with the hollow section forms one edge of the container roof and a connecting section on each side of the gap in the container roof for providing transverse reinforcement, each said connecting section being at a right angle to the loading opening underneath the pivotal portion and being fixed at both ends to the support frame, and each said connecting section having a molded extension overlapping adjacent sheeting and being fixed to an outer surface thereof.

4,802,601

HOUSING

Stefan Pijanowski, Peterborough; Peter Thompson, Bourne End, and Adrian Dartnall, Loughborough, all of United Kingdom, assignors to Amarex International Ltd., Buckinghamshire, England

Filed Jan. 27, 1987, Ser. No. 7,698
Int. Cl.[4] B65D *6/00*
U.S. Cl. 220—4 R **6 Claims**



1. A housing comprising spaced-apart front and rear walls and side walls defining a receiving space for the container contents, characterized by the feature that one or more molded, peripheral frame means form a side walls or walls or part side walls of the container and define spaces in which a front wall and a rear wall of the container are locatable when received by receiving means of the frame means; and that one or more initially flat sheets of flexible material are adapted to form the front and rear walls of the container; each said frame means having two spaced or at least one receiving means to receive portions or a portion of said sheet forming the front and rear walls, wherein two frame members are provided as the frame means, with each frame member having receiving means in the form of grooves or channel means with sheet engaging means for retainably receiving one of said flexible sheets or a portion of a flexible sheet which has another portion received by the other frame member.

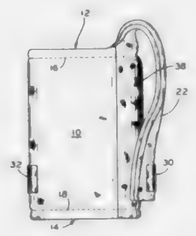
4,802,602

INSULATING DEVICE FOR A BEVERAGE CONTAINER

John C. Evans, North Webster; Charles E. Campbell, Warsaw, and John E. Blair, North Webster, all of Ind., assignors to Kover-up, Inc., North Webster, Ind.

Filed Dec. 8, 1987, Ser. No. 130,071
Int. Cl.[4] B65D *23/08*
U.S. Cl. 220—85 H **8 Claims**

1. A device for insulating a beverage container comprising:
a flexible insulating sleeve adapted to receive a beverage container therein;
a flexible cover for covering one end aperture of said sleeve, said cover having one end thereof secured to said sleeve;
first fastening means operatively associated with said sleeve and the other end of said cover whereby said cover may be secured over said first aperture; and



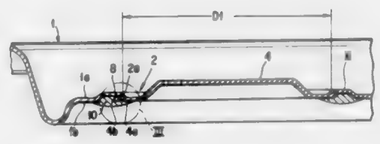
second fastening means operatively associated with said sleeve and the other end of said cover whereby said cover may be secured to said sleeve to form a handle.

4,802,603

EASY OPEN CAN END

Gunter H. R. Schmidt; Hans-Dieter Joge; Wilhelm R. Sauer, all of Neuwied, Fed. Rep. of Germany, and Abraham C. Spruit, Beverwijk, Netherlands, assignors to The Broken Hill Proprietary Company Limited, Victoria, Australia

Filed Nov. 16, 1987, Ser. No. 121,640
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1986, 3639426
Int. Cl.[4] B65D *41/32*
U.S. Cl. 220—268 **26 Claims**



1. A can end made from metal for cans whose contents is under inside pressure, specifically for cans to be filled with carbonated beverages, with at least one opening tab partly punched from the end leaving a hinge area, and an aperture belonging to it formed by the partial punching, with the opening tab and/or the area of the end surrounding the aperture being cold formed so that the edge area of the aperture overlaps the edge area of the opening tab on the outside of the end, and with plastisol as a sealant being applied in ring-form to the edge areas of the opening tab and of the aperture on the end inside and having jellied under heat; characterized by the plastisol (10) having a viscosity of $\eta_{D4\,1\,2}-1$ (40° C.) of about 2000–2800 mPa.s and an edge angle α of about 30°–40° before application and gelation respectively and, after gelation, having a tensile strength of 0.4–1.0 N/mm^2 and a maximum elongation of 120–250%.

4,802,604

MODULE BUILDER BACK DOOR LATCH

Russell E. Lindsey, Lubbock, Tex., assignor to Scott Manufacturing, Inc., Lubbock, Tex.

Filed Feb. 24, 1988, Ser. No. 159,788
Int. Cl.[4] B65D *43/16;* **E05C** *3/30*
U.S. Cl. 220—324 **3 Claims**

1. In a cotton module builder having:
a. a rectangular top frame,
b. side panels sloping outward from the top frame, and

c. a back door having an outer surface hinged at its top to the top frame, and sloping outward;
Wherein the Improvement Comprises
d. a horizontal latch shaft having two ends journaled to the lower outer surface of door,
e. a lug on the shaft,
f. a crank on each end of the shaft,
g. a latch bolt on each of the cranks,
h. a catch on the rear of each of the side panels,
i. so arranged and constructed that when the door is closed rotation of the shaft will cause each of the latch bolts to engage the catches and securely latch the door closed, and
j. a hydraulic cylinder interconnecting the top frame and the lug on the latch shaft
k. so arranged and constructed that contraction of the cylinder will first rotate the shaft to unlatch the door and continued contraction will raise the door, and
l. expansion of the cylinder will permit gravity to close the



door and continued expansion will rotate the shaft to latch the door as set out above.

3. The process involving a module builder having
a. a rectangular top frame,
b. sides sloping outward from the top frame, and
c. a back door having an outer surface hinged at its top to the top frame and sloping outward;
Wherein the Improved Method Comprises:
d. extending a hydraulic cylinder from the top frame to a latch operator on the outer surface of the lower half of the door,
e. operating the latch to unlatch the door responsive to
f. contracting the cylinder,
g. raising the door by further
h. contracting the cylinder after the door is unlatched, then
i. permitting gravity to close the door by expanding the cylinder, and
j. latching the door by
k. further expanding the cylinder after the door is closed.

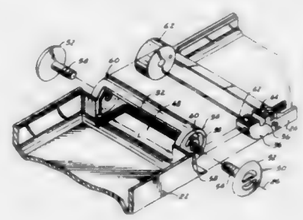
4,802,605

HINGE FOR CABLE ROUTING

Michael E. Salmon, Flint, and John E. Nemazi, Troy, both of Mich., assignors to GMI Engineering & Management Institute, Flint, Mich.

Filed Apr. 2, 1987, Ser. No. 34,068
Int. Cl.[4] B65D *43/14*
U.S. Cl. 220—338 **20 Claims**

1. A hinge for pivotably connecting a first and second housing, to allow limited relative rotation therebetween along a hinge axis while providing an internal routing for a cable or the like therebetween, said hinge comprising:
a first pivot member affixed to the first housing said pivot member having a seal surface, generally concentric with the hinge axis and circumaxial slot formed in the pivot member sealing suface and extending partially about said hinge axis projecting through the pivot member into the first housing;
a second pivot member affixed to the second housing having a sealing surface for engaging the first pivot member sealing surface, said second pivot member having a port formed therein aligned with the circumaxial slot and extending into the second housing providing an internal routing for a cable between the first and second housings; and



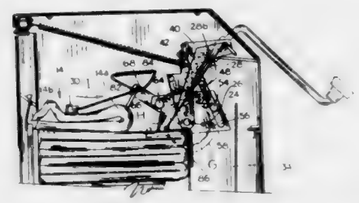
attachment means to attach the first and second pivot members in axial alignment and allowing limited pivotable motion therebetween.

4,802,606

NEWSPAPER DISPENSER

Duane D. Daniels, P.O. Box 67, Ainsworth, Nebr. 69210

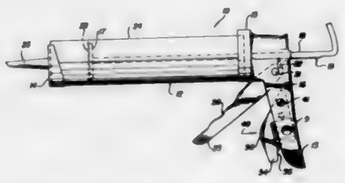
Filed Nov. 12, 1987, Ser. No. 119,820
Int. Cl.[4] B65G *59/02;* **G07F** *11/22*
U.S. Cl. 221—39 **12 Claims**



1. A newspaper dispenser for dispensing a single newspaper at at time, comprising:
an enclosed frame having a platform therein adapted to support a vertical stack of newspapers laid flat thereon, said newspaper having a folded edge and said platform having forward and rearward edges,
said newspaper being stacked with their folded edge aligned above the forward edge of said platform,
a stop means connected to said frame above said platform and located over the forward edge of said platform to hold the folded edge of said papers,
biasing means for biasing said stack of newspapers upwardly against said stop means;
pusher means for pushing the top paper toward the rearwardly edge of said platform;
an operable means for lifting the top newspaper upwardly off of said stack after release from said stop means;
a rotatable handle for operating said operable lifting means, and causing said lift means to slide under the top newspaper in the stack,
a newspaper dispensing chute mounted between said lift means and an opening in the front wall of said frame, for dispensing a paper from said lift means to the front wall opening; and
said operable lifting means being pivotal to cause said lifted newspaper to slide off said lifting means and drop down said chute.

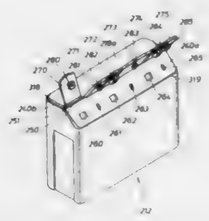
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4,802,607
TIP TRIMMER ASSEMBLY FOR A CAULKING GUN
Raymond A. Johnson, P.O. Box, Carpinteria, Calif. 93013
Filed Jan. 20, 1988, Ser. No. 146,079
Int. Cl.[4] B67B 7/54
U.S. Cl. 222—82 11 Claims



1. A caulking tube tip trimmer assembly adapted for use between a manually actuated caulking gun handle and trigger assembly comprising a body having a curved contour along one edge, pivot means adjacent one end of said curved contour, a cutting edge disposed along a second edge of said body and detent means carried by said body for selective engagement with one of a plurality of receiving means on a caulking gun handle.

4,802,608
SPICE DISPENSER ARRANGEMENT
Raimund Hofmann, Kreuzwertheim, Fed. Rep. of Germany, assignor to Jan Folkmar, Oetlfingen, Switzerland
Filed Sep. 2, 1987, Ser. No. 92,012
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1986, 3629967; Sep. 23, 1986, 3632188; Jul. 28, 1987, 3724998
Int. Cl.[4] A47G 19/12
U.S. Cl. 222—142.1 10 Claims

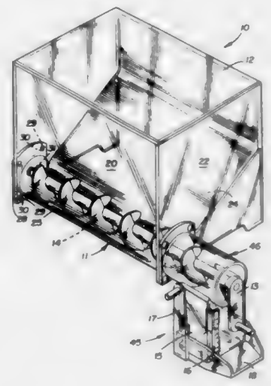


1. A spice dispenser of the type having a housing defining a closable upper opening with oppositely situated first and second edges and having a plurality of closable spice chambers subdivided from each other by walls, the spice dispenser comprising:

a first closure lid, articulately and integrally connected to said first edge of said housing, defining an arrestor stud opening and a sprinkling opening, said first closure lid being displaceable in a closing position over said upper opening;

a second closure lid including a housing-facing surface, a weakening line in said surface dividing said second closure lid into a housing-connected portion and a flap portion, said housing-connected portion articulately and integrally connected to said second edge of said housing and displaceable over said first closure lid when in a closing position, said housing-connected portion including an arresting stud projecting from said surface for engaging and arresting said arrestor stud opening when said first closure lid is in a closing position, said flap portion including an incision extending away from said housing-connected portion thereby dividing said flap portion into at least two flaps, each said flap articulatable about said weakening line and adapted to expose said sprinkling opening in an opening position and adapted to close said sprinkling opening in a closing position.

4,802,609
SANITARY FOODSTUFF DISPENSER
Hugh B. Morse, 680 Wildwood Dr., Watsonville, Calif. 95076, and John V. Ciolino, 13558 Paseo Terreno St., Salinas, Calif. 93908
Filed Dec. 15, 1986, Ser. No. 941,732
Int. Cl.[4] B67D 5/38
U.S. Cl. 222—158 27 Claims



1. A sanitary foodstuff dispenser for dispensing a measured quantity of solid foodstuff comprising

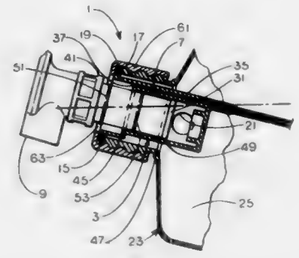
a closed container defining a chamber adapted to be at least partially filled with a preselected quantity of solid foodstuff, said container comprising vertically disposed and flat front, back and side walls, and a single bottom wall including a flat wall portion secured in said container to slope downwardly from an upper end of said back wall towards a lower end of said front wall and terminating at an arcuate wall portion merging with said front wall,

a measuring cup means, having an upper end and an open bottom end, mounted on one of the side walls of said container adjacent to said front wall, for receiving said measured quantity of said foodstuff,

screw means exposed to the foodstuff in said chamber and extending over and openly communicating with the open upper end of said cup means for selectively filling said cup means with said measured quantity of foodstuff in response to rotation of said screw means, said screw means comprising a shaft having a plurality of flat blades secured in longitudinally spaced and split involute relationship thereon to extend radially therefrom to provide longitudinally spaced surface means on said blades for conveying a wide variety of said solid foodstuff therealong in a clog-free manner, said screw means substantially positioned within and conforming to the arcuate wall portion of said bottom wall and extending vertically above a juncture of the flat and arcuate wall portions of said bottom wall to freely receive foodstuff deposited on said screw means under the influence of gravity from the flat wall portion of said bottom wall,and

dispensing means, movably mounted on said cup means, for dispensing said measured quantity of foodstuff from said cup means.

4,802,610
POUR SPOUT
Gary C. Cheek, Fountain Inn, and Andy Rice, Greenville, both of S.C., assignors to The Dow Chemical Company, Midland, Mich.
Continuation of Ser. No. 338, Jan. 5, 1987, abandoned. This application May 16, 1988, Ser. No. 196,831
Int. Cl.[4] B67D 3/00
U.S. Cl. 222—481.5 5 Claims



1. A manually operable pour spout for engagement with an opening of a container with liquid therein for use in dispensing said liquid from said container, and in closing said container when not dispensing, comprising:

a valve body portion having side walls defining a first cylindrical cavity and a bottom wall closing said first cylindrical cavity at the bottom thereof, said valve body expanding above said first cylindrical cavity to form a first annular ledge generally concentrically encircling said cavity, said body portion extending above said annular ledge to define a second cylindrical cavity and said valve body forming a second annular ledge above said second cylindrical cavity, said second annular ledge having a top surface and a bottom surface for contacting said container opening, said valve body defining through said side walls at said first cylindrical cavity a passageway for fluid communication with the interior of said container;

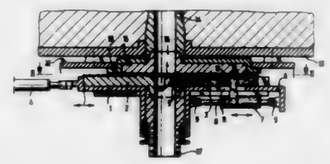
a hollow cylindrical conduit slidably and sealingly received within said sidewalls to move along the axis of said body portion including a pouring orifice in the upper portion thereof and an opening in the bottom thereof which is positioned above said passageway for fluid communication with the container interior when said conduit is in an up position for dispensing and which descends below said passageway to preclude fluid communication when said conduit is in a down position for closing;

a vent tube in fluid communication with said first annular ledge;

means on the exterior of said conduit means for closing said vent tube at said first annular ledge when said conduit means is in said down position and for opening said vent when in said up position.

4,802,611
MOVABLE REFRACTORY PLATE ASSEMBLY WITH MOVABLE REFRACTORY CONTROL MEMBER
Otto Schuhmacher, Plankstadt, Fed. Rep. of Germany, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany
Filed Dec. 9, 1986, Ser. No. 943,938
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1985, 3545764
Int. Cl.[4] B22D 41/08
U.S. Cl. 222—600 32 Claims

1. In a sliding closure unit for controlling the discharge of molten metal from a metallurgical vessel, said unit including a casing to be fixed to the metallurgical vessel adjacent an outlet thereof, a stationary refractory plate mounted in said casing and having a discharge opening aligned with the vessel outlet, a movable refractory plate having therethrough a discharge opening, a movable frame supporting said movable refractory plate in planar abutting contact with said stationary refractory plate, and means for moving said movable frame and said movable refractory plate between an open position with said discharge openings of said movable and stationary refractory plates in alignment and a closed position with said discharge openings out of alignment, the improvement comprising means for, when said movable frame and said movable refractory plate are stationary and in said open position, selectively adjusting the size of said discharge opening in said movable refractory plate and thereby regulating the amount of molten



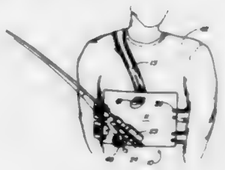
metal discharged therethrough, said adjusting means comprising:

a refractory control member mounted for sliding movement relative to said movable refractory plate between selected positions restricting the cross section of said movable refractory plate discharge opening;

means, operable independently of the operation of said moving means, for sliding said control member relative to said movable refractory plate between said selected positions; and

said control member and said sliding means being accessible from the exterior of said casing, at least when said movable refractory plate is in said closed position.

4,802,612
SPORTING APPARATUS SUPPORT DEVICE FOR THE HANDICAPPED
Emmett L. Anderson, 2992 Herrin Rd., #10, Helena, Mont. 59601
Filed Jan. 2, 1987, Ser. No. 191
Int. Cl.[4] A01K 97/10
U.S. Cl. 224—208 13 Claims



1. A sporting apparatus support device for the handicapped comprising:

a substantially rectangular front body support plate having an upper portion, a lower portion, and either sides, and an elongate attachment bar extending upwardly and outwardly from the lower portion of said front support plate;

a transverse belt means for attachment around the torso of the wearer, said belt means attached to and extending from either side of said front support plate;

a back support plate having an upper portion, a lower portion, and either side; said back support plate attached to said belt means;

a fishing rod holder means removably attached to said attachment bar; and

a line-holding mans attached to the upper portion of said

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front support plate wherein said line-holding means comprises an outwardly extending projection having at least one kerf.

4,802,613
INSTRUMENT SUPPORT APPARATUS
Mark D. Tierney, 709 Cramer Ave., Schenectady, N.Y. 12306
Continuation of Ser. No. 771,904, Sep. 3, 1985, abandoned. This application Dec. 8, 1986, Ser. No. 939,618
Int. Cl.[4] A45F *3/02*
U.S. Cl. 224—204 **3 Claims**



1. An apparatus for supporting a musical instrument in front of a person and evenly distributing the weight of the instrument over the shoulders and across the back of said person comprising:

a pair of substantially L-shaped belts, each said belt including a shoulder strap portion and a chest strap portion; each of said belts including a back belt, such that when worn the shoulder strap portions rest on each shoulder and extend down the back of the wearer, the back belts are interconnected by an adjustable buckle, and the chest strap portions extend around the front of the wearer and are attached together by an adjustable buckle to form the apparatus; the shoulder strap portions include a permanently fastened, adjustable instrument attachment means, such that the instrument is attached in front of the wearer at only one point, and the device provides freedom of movement of the instrument.

4,802,614
SURGICAL STAPLING INSTRUMENT AND CARTRIDGE
David T. Green, Norwalk, and Henry R. Sieaklewicz, Stamford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed May 23, 1986, Ser. No. 866,800
Int. Cl.[4] A61B *17/00*
U.S. Cl. 227—19 **8 Claims**

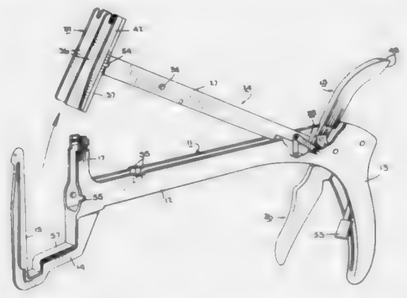
1. A surgical stapling instrument comprising

a frame having an anvil disposed at a distal end;

a first actuator means connected at a proximal end to said frame for movement between a closed position coaxial with said frame and an open position away from said frame to permit cleaning of said frame and said actuator means, said actuator means being reciprocally mounted within said frame when in said closed position;

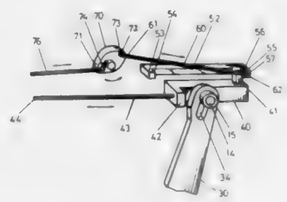
a stapling cartridge holder integrally mounted on a distal end of said actuator means; and

a second actuator means connected to said frame and said first actuator means for movement between an open position away from said frame and a closed position within



said frame for reciprocating said first actuator means within said frame when in said closed position thereof.

4,802,615
TAG ATTACHING APPARATUS
Duck H. Lee, 804-14, Bangbae-Dong, Kangnam-Ku, Seoul, Rep. of Korea
Filed Nov. 13, 1987, Ser. No. 120,143
Int. Cl.[4] A41H *37/00;* **B25C** *1/00;* **B65C** *5/06;* **A43D** *69/00*
U.S. Cl. 227—67 **2 Claims**



1. An apparatus for attaching a tag to a surface of a garment using fasteners, said fasteners being arranged in an assembly and being coupled to a common carrier member by respective coupling members, said apparatus comprising:

a body member having a hand portion,

a needle supported on one side of said body member,

a operating lever pivotally attached to said body member and provided with a spring member which is biased against the hand portion of said body member, said spring member having a substantially L-shaped configuration,

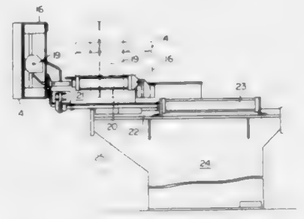
a drive lever pivotally connected at one end thereof to said operating lever,

a sliding member having a substantially L-shaped configuration, disposed in said body member, the other end of said drive lever being pivotably connected to said sliding member, said L-shaped sliding member having a fixed pin at the one end and a fastener pushing rod at the other end thereof,

a pawl member having a substantially U-shape for receiving said fixed pin, said pawl member being provided with a pivotal rod which is pivotally connected to a convertible member including a pivotal gear pushing rod, wherein when said fixed pin is moved in a forward and backward direction within said pawl member, said gear pushing rod moves in a backward direction and a forward direction, and

a stopper having a substantially V-shaped configuration about a pivot pin, said V-shaped stopper being fixed to said gear pushing rod with a bias spring at one end and being able to operatively engage with teeth of a fastener feed gear wheel at the other end thereof for locking said gear wheel between the operation of a pushing plate which is operatively contacted to an upper end edge of said operating lever and said gear pushing rod, whereby, upon the squeezing of said operating lever against said hand portion of the body member, said tag is readily and easily attached to said surface of the garments by said fasteners with little effort being required by the user.

4,802,616
SYSTEM FOR POSITIONING AUTOMOTIVE VEHICLE SIDE BODY
Kazuo Naruse, Okazaki; Mikio Kitano, and Hideaki Tobita, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan
Filed Nov. 24, 1986, Ser. No. 933,870
Claims priority, application Japan, Nov. 29, 1985, 60-184169[U]
Int. Cl.[4] B23K *9/12, 37/04*
U.S. Cl. 228—4.1 **4 Claims**



1. In an automotive vehicle body assembly line wherein two side bodies are moved forwardly along a body positioning path extending substantially perpendicular to an underbody conveyance path along which an underbody is supported at an elevated location above an assembly line floor for spot welding the sidebodies, a side-body positioning system, comprising:

a frame disposed on the assembly line floor and having an upper surface with an extreme forward edge and an opposite rear edge, said extreme forward edge opposing and spaced a predetermined lateral distance from the underbody conveyance path;

slide rail means mounted on said upper surface and extending axially in a direction defining the side body positioning path, said slide rails being mounted at an elevation substantially corresponding to the elevated location of the supported underbody;

a side body conveyor mounted on said slide rail means and movable in opposite directions along the side body coveyor path;

a stool having a pallet surface for removably supporting a pallet, said stool being mounted on said side body conveyor to pivot about a horizontal axis substantially perpendicular to the side body positioning path for positioning the plane of the pallet mounting surface in a first position substantially parallel to the upper surface of the frame and in a second position substantially perpendicular to the upper surface of the frame;

first means mounted on said upper surface of the frame for moving the conveyor along the rail means in the forward direction to a welding location for positioning the pallet mounting surface forward of the extreme forward edge of the upper frame surface; and

second means including a cylinder and piston and piston rod assembly mounted on said side body conveyor and connecting said stool and side body conveyor operative to pivot said stool from the first to the second position for placing the pallet mounting surface at the welding location for welding the supported underbody to the sidebody, said pallet mounting surface being disposed horizontally at times when said piston rod is fully extended from said cylinder of the assembly.

3. In an automotive vehicle body assembly line wherein two side bodies are moved forwardly along a body positioning path extending substantially perpendicular to an underbody conveyance path along which an underbody is supported at an elevated location above an assembly line floor for spot welding the sidebodies, a side-body positioning system, comprising:

a frame disposed on the assembly line floor and having an upper surface with an extreme forward edge and an opposite rear edge, said extreme forward edge opposing and spaced a predetermined lateral distance from the underbody conveyance path;

slide rail means mounted on said upper surface and extending axially in a direction defining the side body positioning path, said slide rails being mounted at an elevation substantially corresponding to the elevated location of the supported underbody;

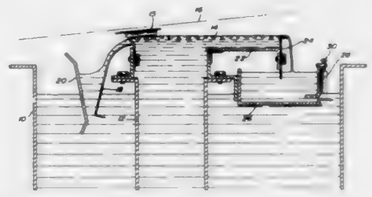
a side body conveyor mounted on said slide rail means and movable in opposite directions along the side body conveyor path;

a stool having a pallet mounting surface for removably supporting a pallet, said stool being mounted on said side body conveyor to pivot about a horizontal axis substantially perpendicular to the side body positioning path for positioning the plane of the pallet mounting surface in a first position substantially parallel to the upper surface of the frame and in a second position substantially perpendicular to the upper surface of the frame, said stool being disposed between the extreme front edge and the rear edge of the frame at times when said pallet mounting surface is in the first position;

first means mounted on said upper surface of the frame for moving the coveyor along the rail means in the forward direction to a welding location for positioning the pallet mounting surface forward of the extreme forward edge of the upper frame surface; and

second means mounted on said side body conveyor operative to pivot said stool from the first to the second position for placing the pallet mounting surface at the welding location for welding the supported underbody to the sidebody.

4,802,617
RESTRICTION OF DROSS FORMATION IN A SOLDERING APPARATUS
Carlos A. Desambrosio, LaPrairie, Canada, assignor to Electrovert Limited, Toronto, Canada
Filed Feb. 19, 1988, Ser. No. 158,308
Int. Cl.[4] B23K *3/06*
U.S. Cl. 228—180.1 **19 Claims**



1. In a soldering apparatus wherein liquid solder is pumped upwards from a solder reservoir and falls from an overflow back into the reservoir, the improvement comprising a solder receiving tray positioned beneath at least a portion of the overflow to receive liquid solder falling from the overflow, and a level control means to limit the maximum solder level in the tray above a dynamic solder level in the reservoir, the

solder level in the tray being a predetermined distance below the overflow to limit dross formation thus restricting dross recirculation.

17. In a method of soldering wherein liquid solder is pumped upwards from a solder reservoir and falls from an overflow back into the reservoir, the improvement comprising the steps of:

catching at least a portion of the liquid solder falling from the overflow in a tray,

maintaining a level of solder in the tray at a predetermined distance below the overflow and above a dynamic solder level in the reservoir to limit dross formation thus restricting dross recirculation, and

draining the liquid solder from the tray into the reservoir with minimum turbulence.

4,802,618

LIGHTTIGHT ENVELOPE FOR HIGH-SPEED CONVEYANCE OF STIMULABLE PHOSPHOR SHEET

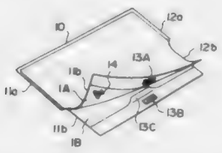
Kinzo Seto, and Makoto Otsuda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 31, 1984, Ser. No. 666,807

Claims priority, application Japan, Nov. 2, 1983, 58-206556

Int. Cl.[4] B65D 27/00

U.S. Cl. 229—68 R 9 Claims



1. A lighttight envelope for high-speed conveyance of a stimulable phosphor sheet, which is fabricated of a flexible light shielding material and has a size sufficient to house the stimulable phosphor sheet therein,

the lighttight envelope comprising:

(i) an upper sheet and a lower sheet having approximately identical rectangular shapes, said upper sheet and said lower sheet being closely contacted with each other at least at one side thereof and at a significant portion of an adjacent side to said one side, and open at one side opposite to said closely contacted side and at less than entire portions of two sides adjacent the ends of said opposite side up to such positions that access to a part of the stimulable phosphor sheet housed in the lighttight envelope is allowed, and

(ii) a means for preventing said upper sheet and said lower sheet from separating from each other, said means being positioned at a part of said opposite side.

4,802,619

STORAGE AND TRANSPORT CONTAINERS FOR HEAVY AND/OR FRAGILE OBJECTS

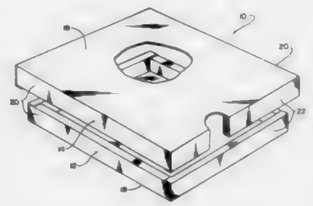
Michael Laido, 575 N. Midland Ave., Saddle Brook, N.J. 07662

Continuation of Ser. No. 935,776, Nov. 28, 1986, abandoned. This application Apr. 25, 1988, Ser. No. 185,428

Int. Cl.[4] B65D 5/20, 5/68

U.S. Cl. 229—125.19 3 Claims

1. A container comprising a box tray component including a rectangular bottom wall having integral extentions at each side and end edge, each of said extentions being provided with fold lines defining in sequence an outer panel, a top panel, an inner panel, a bottom panel and an interior panel, and a flap integrally extending from each lateral end of each interior panel of the pair of side extentions, said extentions being foldable into opposing pairs of rectangular cross-sectioned upstanding tubular walls with each of said extending flaps of said interior panels lying contiguous to an inner surface of an outer wall panel of a side extention, said cross-sectioned tubular walls



formed by said side and end extentions being at right angles to each other.

4,802,620

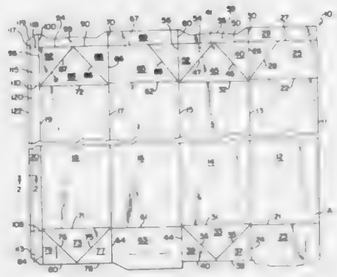
GABLE TOP CARTON FOR PREVENTING WICKING

Robert D. Phillips, Avon Lake, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 1, 1988, Ser. No. 176,623

Int. Cl.[4] B65D 5/06

U.S. Cl. 229—125.42 6 Claims



1. A blank for forming a gable top carton, said blank being formed from a single sheet of foldable stock material comprising a layer of paperboard material having opposed first and second surfaces and a layer of substantially fluid impervious material secured in face-to-face relationship with said paperboard material such that said fluid impervious material defines said first surface of said blank and the surface of said blank opposite said first surface defining a second surface thereof, said blank comprising first through fourth generally rectangular side wall panels and a side glue panel consecutively articulated to one another along parallel fold lines, first through fourth base panels and first through fourth top panels articulated respectively to said first through fourth side panels along fold lines extending substantially orthogonal to the consecutive articulations between said first through fourth side panels, a bottom glue panel, a top glue panel articulated to opposite ends of said side glue panel, a skived flap extending continuously along an edge of said blank and adjacent said side glue panel and said bottom glue panel and top glue panel, said skived flap being defined by a skived portion extending into the second surface of said blank and top seal panels articulated to the top panels of said blank, the articulation of the top glue panel to the associated top seal panel being defined by a pair of spaced apart perforations extending into the exterior surface of the blank.

4,802,621

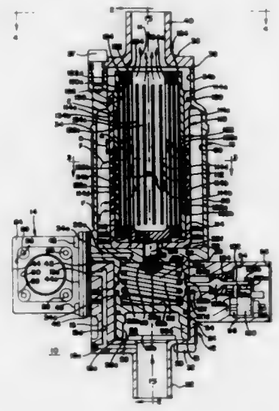
THERMAL MODULATING CONTROL VALVE

Helmut Standke, Woodland Hills, Calif., assignor to Consolidated Controls Corporation, Bethel, Conn.

Filed Sep. 25, 1986, Ser. No. 911,335

Int. Cl.[4] G05D 23/02

U.S. Cl. 236—93 R 9 Claims



1. A thermo-modulating aircraft bleed air control valve comprising:

a valve chamber having inlet means for supplying high temperature bleed air into said chamber at an inlet end and an outlet for releasing temperature modulated bleed air from said chamber at an output end; and

valve means in said chamber between said inlet means and said outlet for regulating the flow of bleed air to said outlet in response to the temperature of said bleed air supplied to said chamber by said inlet means, said valve means comprising:

first elongated hollow cylindrical wall means separating said inlet means from said outlet, said first wall means having a plurality of axially spaced annular grooves on an interior face and a plurality of circumferentially spaced orifices in each of said grooves communicating between said grooves and an exterior face of said first wall means;

second elongated hollow cylindrical wall means disposed coaxially within said first wall means, said second wall means being axially movable with respect to said first wall means and having an exterior face slidably engaging said interior face of said first wall means, said second wall means having a plurality of axially spaced annular grooves on said exterior face thereof and a plurality of ciruemferentially spaced orifices in each of said grooves communicating between said grooves and an interior face of said second wall means, said second wall interior face defining an interior portion communicating with said outlet, and

thermally responsive means disposed within said interior portion and connected to said second wall means for positioning said second wall means relative to said first wall means such that said annular grooves of said first and second wall means are in at least partial registry permitting bleed air to flow through said respective orifices and annular grooves from said inlet means to said outlet, said thermally responsive means being responsive to temperature of said bleed air for effecting movement of said seocnd wall means relative to said first wall means to move said annular grooves of said second wall means toward a flow reducing position out of registry with said annular grooves of said first wall means as said bleed air temperature increases.

4,802,622

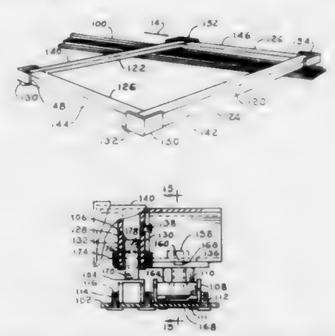
SINGLE TRACK MOBILE STORAGE STRUCTURE AND METHOD

John F. Homan, Brighton, Mich., assignor to Homan Company, Inc., Brighton, Mich.

Filed May 22, 1986, Ser. No. 866,465

Int. Cl.[4] A47B 53/00, 96/00

U.S. Cl. 238—10 R 8 Claims



3. A mobile storage system comprising a plurality of separate storage units, wheel assemblies for supporting the storage units connected to the storage units, at least one track with which the wheel assemblies are associated for guiding the separate storage units on movement of the separate storage units, and means operably associated with the tracks and storage units compensating the mobile storage systems for drift of the separate storage units along the track including means installing the one track with a predetermined slope other than 0°.

7. The method of installing a compact mobile storage system on a floor having a slope comprising installing guide means for a plurality of separate storage units and compensating for drift of the separate storage units of the mobile storage system including the step of installing the single track with a predetermined slope other than 0°.

4,802,623

CONCRETE CROSS SLEEPER SYSTEM

Günter Fasterding, Ilsede, and Jürgen Freuzel, Freden, both of Fed. Rep. of Germany, assignors to Stahlwerke Peine-Salzgitter AG, Peine, Fed. Rep. of Germany

Filed Jan. 9, 1987, Ser. No. 60,039

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1986, 3619417

Int. Cl.[4] E01B 9/04

U.S. Cl. 238—44 17 Claims

1. A cross sleeper for supporting a rail, said sleeper comprising:

an elongated member having a center portion interconnecting two ends thereof;

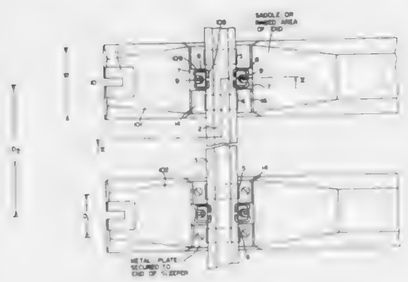
each of said ends being provided with two rail seats for supporting said rail, said two rail seats being spaced from one another transversely across each of said ends and along the direction of extension of said rail;

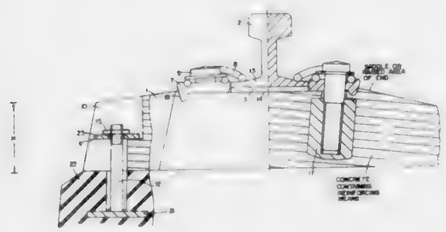
each of said two rail seats extending beneath said rail to include a portion at each side of said rail; and

tension means at said each side of said rail for resiliently clamping said rail to said two rail seats, said tension means effecting said clamping action on said each side of said rail, said tension means at said each side of said rail being

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disposed between said portions of said two rail seats at said each sides of each said rail, whereby said tension means





and said two said seats provide triple point fixing at said each side of said rail.

4,802,624

RAIL CLIP ASSEMBLY HAVING A PIVOTED WEDGE MEMBER

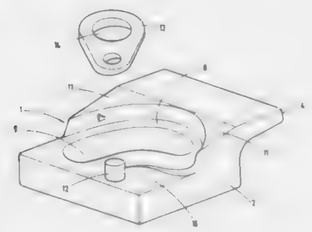
Ian M. Marchant, Ashstead, England, assignor to GH International Ltd., George Town,

Filed Aug. 17, 1987, Ser. No. 85,794

Claims priority, application United Kingdom, Aug. 28, 1986, 8620632

Int. Cl.⁴ E01B *9/66*

U.S. Cl. 238—317 **10 Claims**



1. A rail clip assembly comprising a body member which has a base portion for connection to a rail support surface and a lip portion which can, in use, overlie an edge of a rail, the body member having a first surface which, in use, extends parallel to the rail and abuts a lateral face of the rail, a second surface facing away from the first surface and an elongate slot for receiving a connector for connecting the body member to the rail support surface, the slot extending in a direction which is generally inclined with respect to the direction of extent of the rail, the assembly further comprising a pivoting member which pivots about a point which is located on the body member, the pivoting member including an aperture for registration with the slot and for receiving the connector, the pivoting member having a surface which contacts the said second surface of the body member, said second surface being at an angle to the plane of the rail support surface, whereby lateral forces applied by the rail are transmitted to the body, to the pivoting member, to the said connector and to the rail support.

4,802,625

ELECTROSTATIC SPRAY COATING DEVICE FOR COATING WITH POWDER

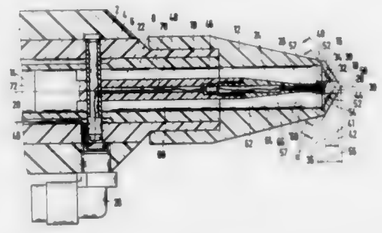
Karl Buschor, St. Gallen, Switzerland, assignor to Ransburg-Gema AG, Switzerland

Filed Mar. 6, 1987, Ser. No. 22,739

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1986, 3608415

Int. Cl.⁴ B05B *5/00, 5/02, 1/28, 7/04*

U.S. Cl. 239—3 **28 Claims**



15. A method of forming a powder spray jet for coating articles with powder, comprising the steps of:

passing coating powder through an elongated powder channel and discharging it at a spray opening at a downstream end thereof;

transmitting gas through at least one gas channel which has at least one gas outlet, the gas channel and its gas outlet being arranged substantially in the radial center of said powder channel upstream of its spray opening and discharging axially downstream toward said spray opening; and

supplying high voltage to at least one electrode disposed for having gas from the gas channel flow around it, said electrode being located in the gas outlet and having a downstream electrode end terminating substantially at the downstream end of the gas outlet;

damming and compacting the powder before it is discharged, in a damming region formed in the powder channel at a generally conical section thereof which becomes narrower substantially from the gas outlet to the spray opening in the downstream direction, and into which the gas outlet debouches;

the radial center of the spray opening being located substantially at the point of the smallest diameter of the channel section and opposite the gas outlet.

4,802,626

MOLDED SCENT IMPREGNATED DEVICES

David R. Forbes, and Carman S. Forbes, both of Hiawatha, Iowa, assignors to Hunter's Specialties, Inc., Cedar Rapids, Iowa

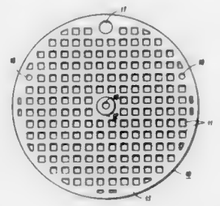
Filed Dec. 22, 1986, Ser. No. 943,958

Int. Cl.⁴ A61L *9/00*

U.S. Cl. 239—36 **5 Claims**

1. A scent impregnated device having at least one two-faced wafer of molded material impregnated with a scent, wherein each wafer comprises a circular disc having a plurality of

honeycombed perforations therethrough from face-to-face effective to allow air currents to flow therethrough from face-to-face, each of the wafer faces including attaching means disposed at the center thereof and molded integrally therewith



for manually removably attaching a plurality of the wafers together in stacked, axially aligning and spaced relation to each other by first axially aligning the wafers, then moving the same along the axis and finally engaging the attaching means.

4,802,627

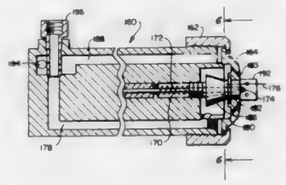
MODIFIED SPRAY GUNS FOR VAPOROUS AMINE-ASSISTED SPRAY COATINGS AND METHOD THEREFOR

Timothy Y. Moy, and Jeffery W. Radcliff, both of Dublin, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 930,721, Nov. 13, 1986, Pat. No. 4,771,946. This application May 27, 1988, Ser. No. 199,698

Int. Cl.⁴ B05B *1/24, 15/02*

U.S. Cl. 239—112 **5 Claims**



1. In a spray gun for spraying atomized liquid with the assistance of a vaporous amine flow supplied from an amine line connected to an amine flow path in said gun, the improvement which comprises:

pressure regulation means followed by unidirectional flow valve means interposed in said amine line;

adjustable reference pressure sensing control means connected with said amine line after said amine line pressure regulation means to sense the pressure in said amine line;

pressure regulation means disposed in a control gas flow line which line is connected with said sensing control means as the reference pressure and which control gas flow is withdrawn from said sensing control means so long as the reference pressure in said amine line is greater than the pressure in the control gas flow line into said sensing control means;

two-way pilot actuated valve means interposed in a heated gas flow line which is at a pressure greater than the pressure in said amine line when said gun is idle, said control gas flow withdrawn from said sensing control means being the pilot therefor, whereby said pilot valve means is open only when said pilot control gas flow has gas flow therethrough;

unidirectional gas flow means interposed in a heated gas flow line which runs from said pilot valve means to the amine line at a point after said amine line unidirectional flow valve means, the control gas pressure regulation means being adjusted so that the control gas pressure is greater than the pressure in said amine line when said gun is spraying and there is gas flow therein, but the control gas pressure is less than the pressure in said amine line when the spray gun is idle and the pressure in the amine line increases because there is no gas flow therein;

wherein said gun has been modified so that said heated gas flow still passes through said gun when said gun is idle.

4,802,628

ROTOR NOZZLE FOR A HIGH-PRESSURE CLEANING DEVICE

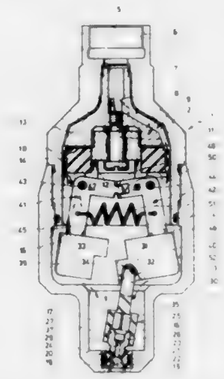
Heinz Dantel, Backnang, and Johann G. Wesch, Bergien, both of Fed. Rep. of Germany, assignors to Alfred Karcher GmbH & Co., Winnenden, Fed. Rep. of Germany

Filed Jul. 9, 1987, Ser. No. 71,193

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1986, 3623368

Int. Cl.⁴ B05B *3/04*

U.S. Cl. 239—227 **11 Claims**



1. Rotor nozzle for a high-pressure cleaning device comprising:

a housing,

a rotor mounted for rotation in said housing, said rotor being made to rotate by the cleaning liquid,

a driver connected to said rotor and spaced radially from the axis of rotation of said rotor,

a nozzle arranged downstream from said rotor, the exit axis of said nozzle forming an acute angle with the axis of rotation of said rotor,

a cup-like member open at its center and held on said housing

an elongate member that mounts said nozzle to form a nozzle assembly that is supported at one ball-shaped end in said cup-like member

said driver engaging the other end of said nozzle assembly in a matter that enables free rotation of said nozzle assembly about the longitudinal axis of said elongate member relative to said rotor

and said rotor connected to said driver rotating said nozzle assembly about the fixed axis of said rotor such that the exiting jet of cleaning fluid moves around the lateral area of a cone.

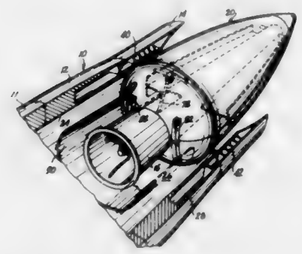
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4,802,629

PLUG-TYPE EXHAUST NOZZLE HAVING A VARIABLE CENTERBODY AND TRANSLATING SHROUD

Garry W. Klees, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 22, 1982, Ser. No. 436,006
Int. Cl.[4] F02K *1/08, 1/09*
U.S. Cl. 239—265.19 18 Claims



1. An exhaust nozzle for containing and directing the flow of exhaust gases generated by a gas turbine engine, comprising:

an annular nozzle housing mountable to the aft end of said gas turbine engine so as to extend rearwardly therefrom;

an annular shroud coaxially mounted to the aft end of said nozzle housing for axial sliding movement relative to said housing, said shroud being movable along a translational path between a forwardmost position and a rearmost position, said shroud having an inwardly facing surface for defining a flow passage for receiving said exhaust gases generated by said gas turbine, a first portion of said inwardly facing surface adjacent a forward end of said shroud being configured to form a flow passage of constant cross-sectional area, and a second portion of said inwardly facing surface adjacent said first portion configured to form a flow passage of increasing cross-sectional area in the aft, axial direction;

a support tube mountable to the aft end of said gas turbine to extend rearwardly therefrom, said support tube being mounted coaxially within said nozzle housing and said shroud; and

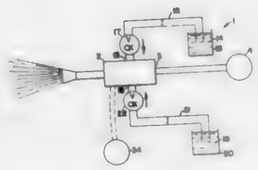
a variable circumference centerbody axially mounted on said support tube within said flow passage of said shroud forming a throat passage between said inner surface of said shroud and said centerbody, said centerbody including a first shell and a second shell, said first and second shells each having a forward end and an aft end, the edges of said first and said second shells abutting one another along a plane that is parallel to the central axis of the exhaust nozzle when said shells are in a retracted position, the aft ends of said first and said second shells being pivotally attached to said support tube for pivotal movement of the forward ends of said shells away from one another into an extended position, said first and said second shells being configured to vary the cross-sectional flow are of said throat passage by cooperation between the pivotal movement of said shells and the translational movement of said shroud, said variable centerbody being positioned axially within said shroud to be adjacent said first and said second portions of said inwardly facing surface of said shroud when said shroud is moved axially, said throat passage being at a minimum area when said shroud is translated to its rearmost position and said centerbody is in retracted position, and said throat passage being at a maximum area when said shroud is translated to its forwardmost position and said centerbody is in an extended position.

4,802,630

ASPIRATING FOAMER

Edward P. Kromrey, Osceola, Wis., and Richard J. Mehus, Berkshire, England, assignors to Ecolab Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 799,423, Nov. 19, 1985, abandoned. This application Oct. 6, 1986, Ser. No. 914,054
Int. Cl.[4] B05B *7/04*
U.S. Cl. 239—428 14 Claims



6. A nozzle for generating foam by turbulently mixing a liquid medium with a plurality of liquid products, comprising:

(a) a longitudinal inlet path, the longitudinal inlet path permitting the introduction of the liquid medium into the nozzle, the longitudinal inlet path having a longitudinal axis;

(b) a longitudinal exit path, the longitudinal exit path having a lengthwise axis, the lengthwise axis being coaxial with the longitudinal axis of the longitudinal inlet path;

(c) a first liquid product inlet path directed into the nozzle at an orientation normal to the longitudinal axis of the first inlet path, the first liquid product inlet path having a major axis aligned such that a first liquid product flows in a direction substantially aligned with the major axis;

(d) a second liquid product inlet path directed into the nozzle at an orientation normal to the longitudinal axis of the first inlet path, the second liquid product path having a flow axis that is coaxial with the major axis of the first liquid product inlet path; and

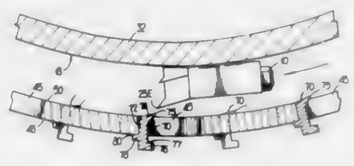
(e) an aspiration inlet path, the aspiration inlet path being located in a first plane normal to a second plane containing the longitudinal exit path, longitudinal inlet path, and first and second liquid product inlet paths.

4,802,631

WINGED CUTTING KNIFE FOR PRODUCING WOOD CHIPS OR FLAKES

Stanley Arasmith, P.O. Box 2458, Rome, Ga. 31064

Division of Ser. No. 917,855, Oct. 14, 1987, Pat. No. 4,776,375.
This application Nov. 23, 1987, Ser. No. 124,043
Int. Cl.[4] B02C *17/02*
U.S. Cl. 241—88.1 12 Claims



1. A wood processing machine for reducing the size of a wood member into reduced wood portions, comprising:

a separating grate having a first and a second side, and defining at least one filtering slot, said filtering slot including a leading and a trailing edge;

means for transporting said wood member along a path defined by said first side of said grate, such that said wood member is first directed over said leading edge of said slot and thereafter toward said trailing edge of said slot;

means defining at least one cutting edge, said means extending from said trailing edge of said slot; and

means extending from said cutting edge for directing wood portions into said slot,

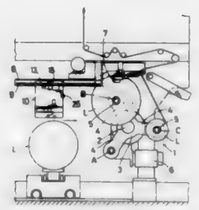
such that said cutting edge engages said wood members, and removes a portion of said wood member having a size sufficient to pass through said slot, and said directing means directs said wood portion through said slot.

4,802,632

METHOD AND APPARATUS FOR TREATING END PORTION OF ROLL PAPER

Akira Fukuda, Osaka, and Itsuro Mazuda, Higashiosaka, both of Japan, assignors to Hamada Printing Press Mfg. Co., Ltd., Osaka, Japan

Filed Mar. 2, 1988, Ser. No. 163,335
Claims priority, application Japan, Nov. 12, 1987, 62-287789
Int. Cl.[4] B65H *19/18*
U.S. Cl. 242—58.5 5 Claims



1. A device for treating the end portion of a paper roll mounted on a paper feed unit of a paper processor and located at a splicing position, said device comprising a driving means adapted to be brought into contact with said paper roll to rotate it, a support frame movable toward and away from said paper roll, a presser roller rotatably mounted on said support frame and adapted to be rotated by contact with said paper roll, a cutter means disposed below said presser roller for transversely cutting a plurality of turns of paper on said paper roll as broke with a cutter movable radially and axially of said paper roll, a suction conveyor means provided below said cutter means and including a suction box elongated transversely of said paper roll, a belt roller and a plurality of perforated belts passed around said suction box and said belt roller so as to extend parallel to one another, said suction box being formed with suction openings at the side behind said paper roll so that they will be aligned with said perforations formed in said belts, nip rollers for holding said broke fed downwardly from said suction conveyor means, a cavity forming means for forming a cavity in the end portion of said paper roll fed together with said broke into between said suction conveyor means and said nip rollers, and a tab sticking means for sticking the upper part of a tab on said paper end at a portion right over said cavity formed by said cavity forming means.

4,802,633

MOVABLE CARTRIDGE LOCK

Jack Beery, Centerville, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 22, 1988, Ser. No. 209,714
Int. Cl.[4] G03B *17/26;* B65D *85/66*
U.S. Cl. 242—71.1 14 Claims

1. In a spool type cartridge containing at least one spool of web material, which material may be readily extracted when the cartridge is placed in utilization apparatus, and which spool is locked against rotation during shipping and handling prior to insertion in such utilization apparatus, the improvement in spool locking structure, comprising:

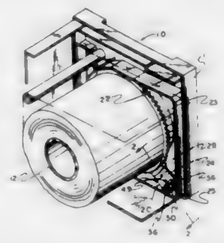
means associated with said spool and connected for rotation therewith defining a locking portion,

a locking member having a relatively fixed portion and a locking portion movable into and out of engagement with said spool locking portion,

means on said locking member defining a bendable connection joining said movable locking portion with said fixed portion and normally maintaining said movable portion in locking engagement with said spool,

said locking member being movable on said fixed portion by bending movement of said connection beyond the elastic limit of the material of said connection, and

means operable upon the placement of said cartridge in said utilization apparatus to disengage said locking member from said spool accompanied by said bending at said connection providing for a permanent disengagement of said member.

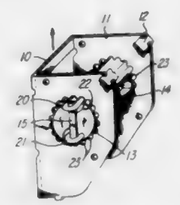


4,802,634

BELT REEL-IN MECHANISM

Kaus P. Singer, Hamburg, Fed. Rep. of Germany, assignor to Autoflug GmbH & Co. Fahrzeugtechnik, Rellingen, Fed. Rep. of Germany

Filed Apr. 24, 1987, Ser. No. 42,414
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1986, 3614283
Int. Cl.[4] B60R *22/38, 22/40*
U.S. Cl. 242—107.4 A 14 Claims



1. In a self-locking belt reel-in mechanism having a belt-winding spindle that is mounted in a housing and is loaded by a rewinding spring, where said belt-winding spindle comprises a spindle core and a spindle body, at each end of which are disposed two locking members that operate radially between an inner position and an outer position, are surrounded by stops on said housing, and bring about a symmetrical quadruple locking, with said locking members being coupled by connecting rods that are parallel to the central axis of said belt-winding spindle, are disposed within the cross-sectional area of said spindle, and rotate with the latter, and with said locking members meshing with said housing stops when self-locking is

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initiated via a system that is sensitive to the movement of the belt and/or of the vehicle, the improvement therewith which comprises that:

said connecting rods have ends on which are integrally connected said locking members, which axially embrace and surround said spindle core symmetrically relative to the respective connecting rod; and

said housing stops are toothings, with said locking members being pivotable about the longitudinal axis of their connecting rod in a radially outward direction until they mesh in said toothings.

4,802,635

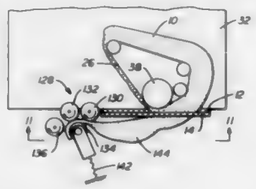
APPARATUS AND METHOD FOR COMPACTING A SCRAP TIRE

Randel L. Barclay, 5616 Carpenter Rd., Stockton, Calif. 95205

Continuation-in-part of Ser. No. 001,686, Jan. 9, 1987, Pat. No. 4,738,172. This application Sep. 9, 1987, Ser. No. 94,714

Int. Cl.⁴ B02C *18/06, 23/02;* **B26D** *7/14*

U.S. Cl. 241—30 16 Claims



1. A method of compacting a tire of a type having a circular crown portion, a tire axis, laterally opposed first and second side walls and having a bead wire within each side wall, said crown portion having an exterior surface and an interior surface, comprising,

providing a linear debeaded tire casing having a length about as great as the circumference of the tire crown portion, and

coiling said debeaded tire casing about a coil axis.

4,802,636

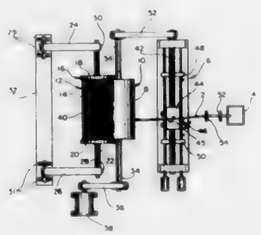
METHOD AND APPARATUS FOR LEVEL WINDING ELASTOMERIC RIBBON

Richard H. Frick, Neenah; Hugo L. Koss, and Marion C. Morris, both of Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 26, 1982, Ser. No. 342,965

Int. Cl.⁴ B65H *18/08*

U.S. Cl. 242—67.1 R 8 Claims



1. In apparatus for winding elastomeric ribbon into a ribbon roll, the appratus being of the type including (i) a reel on which the ribbon roll is formed that has a rotatable shaft and spaced apart end caps, (ii) drive means for rotating the reel, and (iii) traversing means for reversibly guiding the ribbon in directions parallel to the axial length of the reel to distribute the turns of the ribbon roll along the axial length of the reel with a gap between each end cap of the reel, and the ribbon

the improvement wherein:

(1) the drive means includes a drive roll engaging the ribbon roll formed on the reel,

the drive roll being positioned between the traversing means and the reel so that the elastomeric ribbon travels first across the traversing means, around the drive roll and thereafter onto the reel;

(2) pivotable means for supporting the shaft of the reel to pivot the ribbon roll into engagement with the drive roll for rotation thereof by the drive roll; and

(3) guide means for guiding the elastomeric ribbon to the traversing means in an elongated condition;

the ribbon roll having a ribbon node at each of its axial ends, each ribbon node comprising at least one ribbon turn due to layering of ribbon turns while the traversing means is reversing the traverse direction of the ribbon; and

each ribbon node being spaced a distance from the end cap to define the gap therebetween, said distance being sufficient to permit the turns of the ribbon node to slide into the gap such that said node collapses.

4,802,637

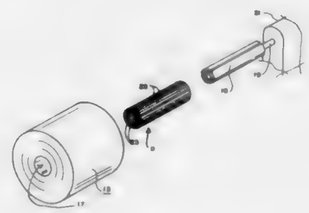
APPARATUS FOR BEING POSITIONED ON AN EXPANDABLE MANDREL

Logan D. Williams, 7395 Cotton Plant Cove, Memphis, Tenn. 38119

Filed Apr. 22, 1988, Ser. No. 184,679

Int. Cl.⁴ B65H *75/24;* **B23B** *31/40*

U.S. Cl. 242—72 R 5 Claims



1. An apparatus for being positioned between the outer circumference of an expandable mandrel and the inner circumference of a roll of sheet material; said apparatus comprising:

(a) a plurality of elongated, rigid beam members, each of said beam members having at least one transverse aperture therethrough; and

(b) elastic means extending through said transverse apertures of said beam members for joining said beam members to one another to form an expandable sleeve for being inserted over said outer circumference of said expandable mandrel and for being inserted into said inner circumference of said roll of sheet material.

4,802,638

CORD STOWAGE APPARATUS

Marilyn S. Barger, Pompano, and John M. McKee, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 29, 1987, Ser. No. 79,052

Int. Cl.⁴ B65H *75/40*

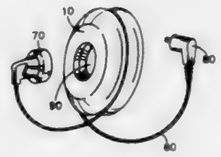
U.S. Cl. 242—85.1 12 Claims

1. A cord stowage apparatus for stowing cord comprising:

a spool including first and second opposed ends, the spool including a channel through which the cord slides when the apparatus is being positioned on the cord;

a first flexibly resilient cup-shaped member including a rim and a center connected to the first end of the spool, the first member being positionable in first and second positions, the first position being defined such that the first member includes a substantially concave surface which faces away from the spool, the second position being defined such that the first member includes a substantially concave surface which faces toward the spool,

a second flexibly resilient cup-shaped member including a rim and a center connected to the second end of the spool,



the second member being positionable in third and fourth positions, the third position being defined such that the second member includes a substantially concave surface which faces away from the spool, the fourth position being defined such that the second member includes a substantially concave surface which faces toward the spool,

the rims of the first and second members engaging the cord therebetween when the first and second member are in the second and fourth positions, respectively.

4,802,639

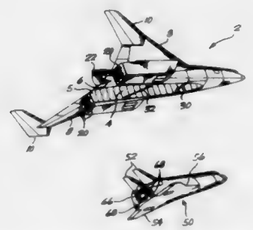
HORIZONTAL-TAKEOFF TRANSATMOSPHERIC LAUNCH SYSTEM

Richard Hardy; Jonathan Hardy, both of Seattle; Thomas J. Kornell, Federal Way, and Kenneth M. Talliquist, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 656,159, Sep. 28, 1984, abandoned. This application Oct. 14, 1986, Ser. No. 919,207

Int. Cl.⁴ B64G *1/14*

U.S. Cl. 244—2 37 Claims



24. A method of launching a transatmospheric vehicle, comprising:

providing an aircraft of the type having an air breathing engine;

providing the aircraft with a rocket engine, and providing the transatmospheric vehicle with a scramjet engine;

releasably connecting the aircraft and the transatmospheric vehicle together;

operating said air breathing engine to accomplish a horizontal takeoff of the connected aircraft and vehicle;

flying the connected aircraft and vehicle, including igniting said rocket engine and then accelerating to a Mach number of about 3.3 and climbing to an altitude sufficient to allow said vehicle to attain orbit and accomplish a predetermined mission;

while so accelerating and climbing, igniting said scramjet engine; and

upon reaching said Mach number and altitude, releasing the aircraft and said vehicle from each other and flying the aircraft and said vehicle independently of each other; including operating said scramjet engine to cause the separated transatmospheric vehicle to continue to accelerate to a velocity exceeding orbital velocity and climb to about the maximum altitude at which the scramjet engine can function, and then allowing said vehicle to coast to orbital altitude.

4,802,640

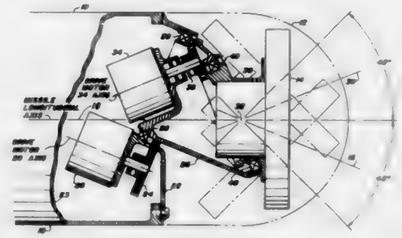
OBLIQUE AXIS SEEKER

James B. Reid, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 18, 1978, Ser. No. 943,598

Int. Cl.⁴ F41G *7/00;* **F42B** *15/02;* **G06F** *15/50*

U.S. Cl. 244—3.19 8 Claims



1. A platform translator mechanism for moving a platform with respect to a mounting body in a vehicle, said vehicle having a direction of motion along a longitudinal axis, comprising:

(a) a first connecting member having a first portion and a second portion, said first portion being rotatable with respect to said second portion about a first axis, said first portion being attached to the mounting body;

(b) a second connecting member having a first segment and a second segment, said first segment being rotatable with respect to said second segment about a second axis, said first segment being attached to said second portion, said second segment being attached to the platform; and

(c) said first axis and said second axis intersecting at an oblique angle and at a point approximately coincident with the center of gravity of the platform and each of said first axis and said second axis being at an oblique angle with respect to the longitudinal motion axis.

4,802,641

METHOD OF PROVIDING RAPID CONVERSION OF AN AIRCRAFT WEAPON CARRIAGE

Richard Hardy, Seattle, and Frank D. Neumann, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1985, Ser. No. 781,657

Int. Cl.⁴ B64D *1/06*

U.S. Cl. 244—137.4 7 Claims

1. A method of providing rapid conversion of an internal weapon carriage for folded fin or relatively small fin weapons to an external weapon carriage for relatively large fixed fin weapons carried in a semi-submerged configuration, said weapon carriage having a mounting mechanism adapted to mate with mounting mechanisms of said weapons, the steps comprising:

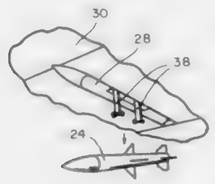
removing a folded or relatively small fin weapon from a

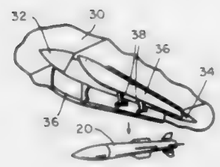
VOL 1099 ISS 1 FEB 7 1989 UMI

removable quick-connect weapon housing if one is therein;

removing the quick-connect housing consisting of front and rear fairings with built-in doors therebetween from the aircraft;

installing a relatively large fixed fin weapon on said weapon carriage, said large fixed fin weapon having a mounting





mechanism mating with the mounting mechanism on said weapons carriage, said relatively large fin weapon occupying the space that is occupied by said removable housing when folding or relatively small fin weapons are carried on said weapon carriage; and

raising the weapon from a launch position to a cruise position on the aircraft, with at least one fin of said large fixed fin weapon projecting from said aircraft.

4,802,642

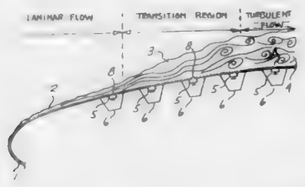
CONTROL OF LAMINAR FLOW IN FLUIDS BY MEANS OF ACOUSTIC ENERGY

Rudolph A. Mangiarotty, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 14, 1986, Ser. No. 918,229

Int. Cl.[4] B64C *23/00*

U.S. Cl. 244—200 **11 Claims**



1. A method for retarding the onset of turbulent boundary layer flow around an airfoil moving with respect to an air mass through the infusion of acoustic energy into the boundary layer comprising the steps of:

(a) electronically generating acoustic energy at or near the surface of an airfoil moving through an air mass and having a laminar flow boundary layer over at least a portion of said surface of said airfoil,

(b) providing a plurality of predetermined acoustic energy emitting locations upon said airflow surface over which said boundary layer flow is laminar, and

(c) directing said electronically generated acoustic energy into said boundary layer from said plurality of predetermined acoustic energy emitting locations,

wherein the step of electronically generating includes generating said acoustic energy as a band of random noise having wavelengths not greater than one half of a predetermined critical wavelength of Tollmien-Schlichting oscillatory disturbance waves present within said boundary layer in the absence of said generated acoustic energy, such that said band of random noise forms wave patterns that destructively interfere with the formation of said Tollmien-Schlichting oscillatory disturbance waves.

4,802,643

CABLE LADDERS

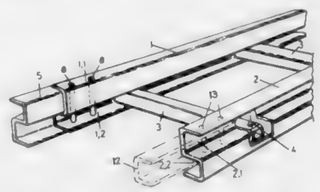
Pieter Uys, 99 Park Road, Newton, Johannesburg, Transvaal, South Africa

Filed Sep. 15, 1987, Ser. No. 96,949

Claims priority, application South Africa, Sep. 29, 1986, 86/7391

Int. Cl.[4] F16L *3/22*; E06C *7/08*

U.S. Cl. 248—49 **1 Claim**



1. A cable ladder which comprises two rails joined together by rungs, of which the rails are of glass fibre reinforced resin the result of a pultrusion process, the cross section of the rails is S-shaped oriented with the left rail a mirror image of the right rail, the upper part of each S-shape presenting an outwardly directed channel portion and the lower part an inwardly directed channel portion, and the channel presenting extended flanges about as long as the webs, the section thickness being between 10 and 15% of the width of each channel, the ends of the rungs entering the inwardly directed channel portions of each rail clamped in a tight fit between the extended flanges, the rungs being of box section, a vertical glass fibre dowel pasing through each end of the rungs and the inwardly directed channel portion with glue bonding between rung end and channel portion, the following has said cable ladder spliced to another similar cable ladder by a splint comprising a short length of rail having the same S-cross section as the ladder rails, the width of one channel being smaller than the width of the other larger channel by the sum of the section thickness of the flanges of the larger channel and the splint being turned around to snugly fit in the ladder rails, with fastening dowels passing vertically through the ladder rails from a top flange surface through the splint and to a bottom flange surface thus stiffening the section and glue bonding the splint, the dowels, and ladder rails, the dowels thus shielded from the space between the rails above the cross rungs on which cables can be carried.

4,802,644

BLIND HEADRAIL BRACKET

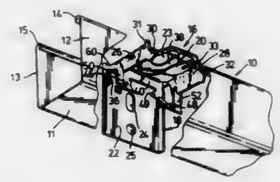
Herman Oskam, Vlist, Netherlands, assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles

Filed Feb. 1, 1988, Ser. No. 150,574

Claims priority, application United Kingdom, Feb. 5, 1987, 8702604

Int. Cl.[4] A47H *1/14*

U.S. Cl. 248—251 **11 Claims**



1. A bracket for releasably securing a channel section blind headrail to a horizontal or vertical surface, said channel section blind headrail including a web and upwardly extending front and rear flanges, each having an inturned rim at its upper free edge, said bracket comprising:

(a) a main body formed as a thin metal component securable to a vertical or horizontal surface;

(b) at least one supporting portion on the body, supportingly engageable with one of said rims;

(c) a member also formed as a thin metal component and movably associated with the body;

(d) at least one supporting part of said member supportingly engageable with the other rim, the member normally holding a first position with respect to the body, and being capable of being forcedly removed to a second position with respect to the body against a resilient force acting to hold it in the first position, in which second position the member cannot engage the other rim;

(e) a horizontal part of said member slidably interengaged in a horizontal plane with said body;

(f) a thin operating tongue on said member projecting forwardly beyond the front end of the body to the extent that it will extend above and past the front flange of a headrail when mounted on the bracket;

(g) at least one supporting part at the rear of said member;

(h) a U-shaped portion of said member with first and second legs and a web portion, said legs being angled with respect to the horizontal plane, the first leg being connected near or at one end to said horizontal part of the member and at the other end, through said web portion, to the second leg; and

(i) an abutment of said second leg substantially spaced from and positioned to abut a portion of said body to restrain said second leg, whereby, when a pulling force is exerted on said tongue, said legs flex and provide said resilient force.

4,802,645

SYRINGE HOLDER

Gary T. Chiodo, 7015 SE. 34th Ave., Portland, Oreg. 97202

Filed Feb. 1, 1988, Ser. No. 151,227

Int. Cl.[4] A47F *5/00*

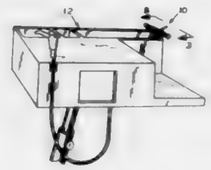
U.S. Cl. 248—309.1 **3 Claims**

1. For use together with a syringe assembly comprising a syringe body, a syringe needle attached to one end of the body, a finger grip attached to the other end of the body, an operating piston working within the body and extending outwardly through the finger grip, and a protective cap for the needle, open at one end; a syringe holder comprising:

(a) a syringe body support comprising a cradle-shaped support member, open at the top

(b) a cap support at one end of the body support arranged therewith the open end of the cap facing inwardly, the cap support comprising a cradle-shaped member, open at the top and merging with the body support; and

(c) releasable cap securing means positioned for releasably securing the cap in a position to receive the syringe needle



when the syring body is placed on the syringe body support, to secure the cap when the syringe is removed from the syringe body support after each use, and to release the cap when the syringe and cap are removed together from the support for disposal after use.

4,802,646

CLAMP FITTING, IN PARTICULAR FOR PIPES AND TUBE

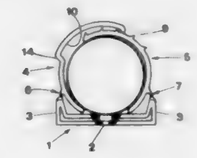
Augusto Cattani, Parma, Italy, assignor to Officine Augusto Cattani & C. S.p.A., Italy

Filed Dec. 22, 1987, Ser. No. 136,289

Claims priority, application Italy, Jan. 30, 1987, 2890/87[U]

Int. Cl.[4] F16L *3/08*

U.S. Cl. 248—316.5 **6 Claims**



1. A clamp arrangement comprising

a clamp having a base with a substantially flat inside surface,

two support elements extending upwardly from said base, first and second engaging elements each having a body with an arc-shaped configuration, each said engaging element having fastening means at a first end thereof for fastening said engaging elements together,

a second end of each said engaging element is free,

each said engaging element is pivotally attached to one said support element at a point between said first and second ends,

when an element to be clamped is inserted into the clamping arrangement said first and second engaging elements are pivotally moved about said support elements so that said free second ends of the first and second engaging elements support the element to be clamped from underneath to ensure smooth movement of the element within the clamp, whereby in the locked condition said free second ends of the first and second engaging elements engage the substantially flat inside surface of the base in such a manner that substantial gaps are defined between said free second ends and the element to be clamped, and said element to be clamped is received by the arc-shaped engaging elements and the substantially flat surface of the base.

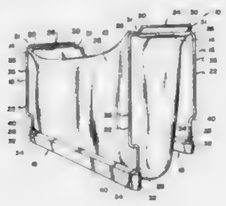
VOL 1099 ISS 1 FEB 7 1989 UMI

4,802,647

TRASH BAG HOLDER

James M. Celmayster, 1238 Nopal St., Santa Barbara, Calif. 93103, and Alain J-M Clenet, 1211 Harbor Hill Dr., Santa Barbara, Calif. 93109

Filed Jun. 4, 1987, Ser. No. 58,033
Int. Cl.[4] A63B 55/04
U.S. Cl. 248—544 10 Claims



1. A trash bag holder comprising: a pair of inverted U-shaped supports each of which has a pair of generally vertically extending legs and an upper connecting portion that extends between the legs; each support having each leg thereof provided with an upper bight portion adjacent the connecting portion and each leg also having a lower distal end remote from the connecting porton; the connecting portion of each support having a laterally elongated U-shaped configuration that is inclined with respect to the legs and has laterally spaced ends that cooperate with the upper bight portions of the legs connected thereto to define support notches for receiving a trash bag handle looped over the connecting portion; the legs of each support having lower bight portions that cooperate with the upper bight portions to provide bight formations of the legs; a pair of elongated bases that each extend between the pair of supports in a spaced and parallel relationship to each other; each base having opposite ends including connection holes that respectively receive distal leg ends of both inverted U-shaped supports such that the supports position the bases in a spaced relationship to each other and are supported thereby with the connecting portions inclined away from each other such that the support notches receive and support the trash bag whose handles are looped over the inclined connecting portions; and each base having a pair of slots that receive the bight formations to locate the supports and bases with respect to each other prior to use and for storage when use is not necessary.

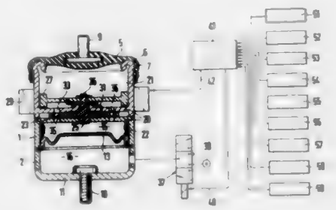
4,802,648

ADJUSTABLE ENGINE MOUNT

Heinz Decker, Vaihingen; Ortwin Engler, Stuttgart, and Walter Kuhle, Neckarwestheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 8, 1988, Ser. No. 153,380
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1987, 3705579
Int. Cl.[4] F16M 13/00
U.S. Cl. 248—550 12 Claims

1. An adjustable engine mount for supporting a drive unit relative to a vehicle body, said adjustable engine mount including a damping chamber (15) which is divided into two chambers by a perforated partition and further including an elastic spring element, an air cushion (16) disposed in said adjustable engine mount in series with or parallel to said damping chamber (15), a valve device (37) in communication with said air cushion for pressurizing or depressurizing said air cushion, means adapted to connect said engine mount to an electronic control unit whereby magnitude of the damping of said engine mount can be varied as a function of control signals of said control unit, wherein the electronic control unit (41) has an input which communicates with the output of a measurement pickup via which the magnitude of the engine motion is detected, and further that the electronic control unit (41) has an output for control signals that are arranged to communicate with the input of an actuating device (29), said actuating device



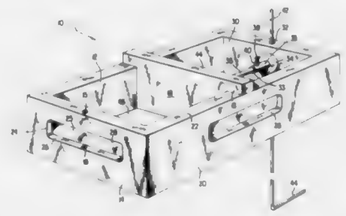
adapted to define communication between said two chambers (21, 22), and said valve device (37) includes an electronic control input that communicates with an output of said electronic control unit (41).

4,802,649

APPARATUS FOR MAKING AN ADOBE BRICK STRUCTURE

Thomas D. Salazar, Rte. 9, Box 86DS, Sante Fe, N. Mex. 87505

Filed Aug. 18, 1987, Ser. No. 86,480
Int. Cl.[4] B28B 7/02; E04G 11/20
U.S. Cl. 249—21 14 Claims



1. An apparatus for making an adobe brick structure comprising:

a rectangular shaped device having an open top and bottom defining a hollow volume for receiving adobe mud including two pairs of parallel planar sides, each said side having an inside face and an outside face;

a first planar edge, extending around the perimeter of said rectangular shaped device, for defining a top edge of said rectangular shaped device;

a second planar edge, extending around the perimeter of said rectangular shaped device, for defining a bottom edge of said rectangular shaped device;

a handhold means, forming a cavity on the outside face of each of said planar sides, for maneuvering said rectangular shaped device;

means for adjusting said rectangular shaped device so that said volume is capable of selectively receiving different amounts of adobe mud to form different size adobe bricks; and

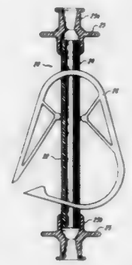
means for stabilizing said rectangular shaped device being perpendicularly mounted to said device relative to a plane defined by said second planar edge.

4,802,650

INTRAVENOUS DRUG MIXING AND FLOW DEVICE

Saul Stricker, Marblehead, Mass., assignor to Abiomed, Inc., Danvers, Mass.

Filed Jun. 29, 1987, Ser. No. 67,940
Int. Cl.[4] F16K 7/06, 47/08; A61M 5/00
U.S. Cl. 251—117 7 Claims



1. A flow restrictor for inclusion in an infusion flow path to define a determined flow rate of infusate, such flow restrictor comprising

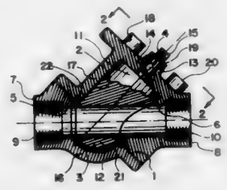
a first flow tube having a peripheral wall and first and second ends with first and second end connectors adapted for fluid connection into an infusion set, said peripheral wall defining a continuous normally open passage with an interior cross section of a size to not substantially restrict flow through said set, said peripheral wall further being flexible such that opposed regions thereof may be pinched together to occlude the normally open passage, and a second flow tube integral with said peripheral wall and defining at least in part a parallel flow path between said first and second ends, said second flow tube being adapted to restrict flow to said determmined flow rate, and being substantially rigid so that the parallel flow path remains open when said peripheral wall is clamped thereby assuring that fluid flows at at least said determined rate.

4,802,651

BALL PLUG VALVE

Hyok S. Lew, and Yon S. Lew, both of 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 372,462, Apr. 4, 1982, Pat. No. 4,702,457. This application Sep. 14, 1987, Ser. No. 96,150
The portion of the term of this patent subsequent to Oct. 27, 2004, has been disclaimed.
Int. Cl.[4] G16K 25/00
U.S. Cl. 251—161 20 Claims



1. An apparatus for shutting off and/or controlling fluid flows comprising in combination:

(a) a valve body including a cylindrical cavity with a generally hemispherical end, and two flow passages respectively extending from said cylindrical cavity to two extremities of the valve body wherein at least one of the two flow passages has an opening emerging through the hemispherical surface of the hemispherical end of said cylindrical cavity;

(b) a cylindrical plug with a generally hemispherical end engaging said cylindrical cavity in a close tolerance at least on cylindrical and hemispherical surfaces thereof, said cylindrical plug including at least one flow passage hole disposed therethrough in an oblique angle with respect to the central axis of the cylindrical plug, wherein one opening of the flow passage hole emerges through the hemispherical surface of the hemispherical end of said cylindrical plug;

(c) means for rotating said cylindrical plug; and

(d) means for adjusting seating pressure between the two hemispherical surfaces respectively included in said cylindrical cavity and said cylindrical plug;

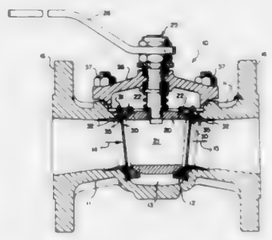
wherein the flow passage hole disposed through the cylindrical plug connects the two flow passages included in the valve body when the cylindrical plug is rotated to a first position, and the cylindrical plug blocks off connection between the two flow passages included in the valve body when the cylindrical plug is rotated to a second position.

4,802,652

TAPERED BALL VALVE

Christopher P. Kaniut, Sulphur Springs, Tex., and Howard R. Dittmer, Buffalo Grove, Ill., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 28, 1988, Ser. No. 149,284
Int. Cl.[4] F16K 5/20
U.S. Cl. 251—181 3 Claims



1. A tapered ball valve comprising:

(a) a valve body having an inner wall defining a valve chamber said chamber having annular inlet and outlet flow openings;

(b) valve seat insert means disposed with said valve chamber, said insert means having a first leg with an inner wall that is coplanar with the inner wall of the body and a second leg that extends outwardly from said valve chamber into its respective flow opening:

(c) sealing means located at the angle enclosed by said first and second legs and between said insert means and said valve body to insure complete sealing of the valve;

(d) valve seat means mounted within said valve seat insert means;

(e) a ball valve member operably disposed within said valve seat means for rotation between flow enabling and flow disabling positions; and

(f) closure means attachable to said valve body to seal said valve chamber and hold said valve seat insert, valve seat and plug valve member in assembled positions.

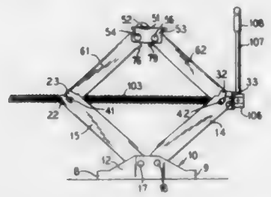
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4,802,653

SCISSORS JACK

Darryl L. Engel, Laotto, Ind., assignor to Universal Tool & Stamping Co., Inc., Butler, Ind.

Filed Nov. 16, 1987, Ser. No. 121,165
Int. Cl.[4] B66F 3/08
U.S. Cl. 254—126 1 Claim



1. A scissor jack comprising, a base member formed with a channel, first and second pivot pins mounted in said base member and extending across said channel, first and second lower links each formed with gear teeth on their inner ends, a first slot formed in the lower surface of said first link, a second slot formed in the lower surface of said second link, said first and second pivot pins receivable into said first and second slots when said gear teeth are in mesh and the lower surfaces of said first and second links make an angle of less than 180 degrees, a cap formed with a channel, third and fourth pivot pins mounted in said cap and extending across said channel, third and fourth upper links each formed with intermeshing gear teeth on their inner ends and pivotally mounted on said third and fourth pivot pins, a fifth pivot pin pivotally connecting the outer ends of said first and third link, a sixth pivot pin pivotally connecting the outer ends of said second and fourth link and means for moving said fifth and sixth pivot pins toward and away from each other so as to raise and lower said jack, wherein a third slot is formed in the upper surface of said third link and a fourth slot is formed in the upper surface of said fourth link and said third and fourth pivot pins are receivable in said third and fourth links when said gear teeth are in mesh and the upper surface of said third and fourth links make an angle of less than 180 degrees, wherein the outer ends of said first, second, third and fourth links are formed with slots into which said fifth and sixth pivot pins are received and said slots at the outer ends of said first, second, third and fourth links are compressed around said fifth and sixth pivot pins, and wherein said means for moving said pivot pins includes a threaded collar mounted on said fifth pivot pin and a thrust bearing is mounted on said sixth pivot pin, and a threaded shaft with one and extending through said thrust bearing and the other end through said threaded collar and a handle for turning said threaded shaft.

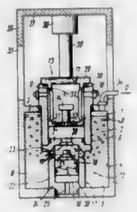
4,802,654

THERMOPULSE APPARATUS FOR DEBURRING PARTS

Valery P. Boshko; Alexei V. Losev; Mateos P. Takoriants; Viktor I. Pleshkov; Vitaly E. Strizhenko, all of Kharkov; Ivan A. Levitynsky, Gatchina; Boris L. Filippov, and Tamara I. Kononenko, both of Kharkov, all of U.S.S.R., assignors to Kharkovsky Aviatsionny Institut, Kharkov, U.S.S.R.

PCT No. PCT/SU86/00040, § 371 Date Jan. 25, 1988, § 102(e) Date Jan. 25, 1988, PCT Pub. No. WO87/06513, PCT Pub. Date Nov. 5, 1987
PCT Filed Apr. 30, 1986, Ser. No. 156,914
Int. Cl.[4] C21D 9/00; B23K 7/06
U.S. Cl. 266—51 1 Claim

1. A thermopulse apparatus for deburring parts comprising a frame having a working chamber (2) provided with spark plugs (9), an inlet valve (10) for filling an interior (11) of the chamber (2) with fuel mixture, an exhaust valve (12) for discharging combustion products from the interior (11) of the chamber (2) and a cover (13) for accommodation of parts (14) being treated being mounted for reciprocations within the chamber (2), characterized in that the frame comprises a hollow body (1), the working chamber (2) is disposed within the body (1) so as to define a space (7) between inner walls (4) of the body (1) and outer walls (6) of the chamber (2) partly filled with a liquid (8), the exhaust valve (12) is mounted in the bottom part of the working chamber (2) to extend along the longituddinal axis (16) under the layer of the liquid (8), the



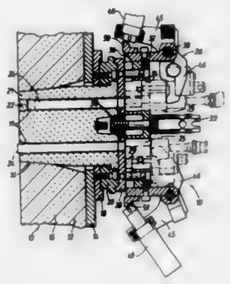
valve (12) having ports (23) in the side walls (22) for establishing communication between the space (7) for the liquid (8) and the interior (11) of the working chamber (2), and the cover member (13) for accommodation of the parts (14) being treated having ports (32) on the side of the exhaust valve (12) for the passage of combustion products from the interior (11) of the working chamber (2) through the inlet port (20) of the outlet valve (12) and its ports (23) in the side walls (22) into the space (7) for the liquid (8).

4,802,655

APPARATUS FOR INJECTING SUBSTANCES INTO LIQUIDS

Kenneth W. Bates, Derbyshire, England, assignor to Injectall Limited, Sheffield, England

PCT No. PCT/GB87/00431, § 371 Date Feb. 15, 1988, § 102(e) Date Feb. 15, 1988, PCT Pub. No. WO88/00246, PCT Pub. Date Jan. 14, 1988
PCT Filed Jun. 22, 1987, Ser. No. 158,274
Claims priority, application United Kingdom, Jun. 25, 1986, 8615481; Oct. 10, 1986, 8624322
Int. Cl.[4] C21C 5/48
U.S. Cl. 266—218 20 Claims



1. Apparatus for installation in the wall of a liquid containment vessel for injecting substances into a liquid therein, including a refractory block which is pierced by an injection passage, has in injectant delivery pipe therein and has a passage blocking element temporarily located at or in a delivery end of the passage to prevent liquid entering the passage before injection is commenced, the pipe being movable forcibly in the passage at the said element to break or dialodge said element to open the passage for injection, wherein the delivery pipe is part of a lance assembly and wherein positioning means acting between the said assembly and a fixed part of the apparatus define a stop for locating the lance assembly at a ready position prior to injection.

4,802,656

ROTARY BLADE-TYPE APPARATUS FOR DISSOLVING ALLOY ELEMENTS AND DISPERSING GAS IN AN ALUMINUM BATH

Gérard Hudault, Pau, and Pierre Netter, Voiron, both of France, assignors to Aluminium Pechiney, Paris, France

Filed Sep. 17, 1987, Ser. No. 97,880
Claims priority, application France, Sep. 22, 1986, 86 13362
Int. Cl.[4] C22B 21/06
U.S. Cl. 266—225 9 Claims



1. A rotary blade-type apparatus for dissolving alloy elements and dispersing gas in an aluminium bath comprising a vertical shaft (1) which is pierced along its axis by a duct (2) intended for the passage of the gas, connected in its upper part to a source of gas and to a drive motor and comprising in its lower part which is immersed in the bath a disc (3) with the same axis as the shaft characterised in that the disc is provided on its side wall with blades (4) which extend along the generatrices of a right prism of parallelogrammatic section with its axis passing through the centre of the disc, the ends of which result from the intersection of said prism with a cylinder of the same axis as that bearing against the side wall of the disc, the large faces (5) of the prism forming an angle α of at most 45 degrees to the horizontal and the small faces (6) being disposed respectively in the planes of the upper and lower faces of the disc, said blades being provided with at least one orifice (7) connected to the duct (2) by a tubular passage (8).

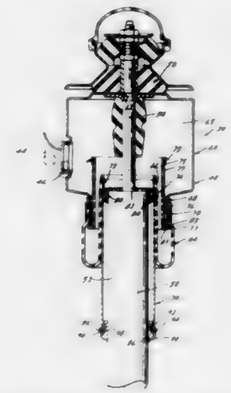
4,802,657

VEHICLE LEVELING SHOCK ABSORBER ASSEMBLY

Jan M. A. Wijnhoven; Henri C. J. Vanhove, both of Sint Truiden, and Marc J. I. I. J. Pauls, Kessel-lo, all of Belgium, assignors to Monroe Auto Equipment Company, Monroe, Mich.

Filed Jun. 23, 1986, Ser. No. 877,121
Int. Cl.[4] F16F 9/08, 9/50
U.S. Cl. 267—64.24 44 Claims

1. A fluid adjustable shock absorber assembly comprising:
a shock absorber having an elongated housing, a piston slidably movable within said housing, a diaphragm support member connected to the outer periphery of said housing and a piston rod attached to said piston and extending longitudinally outwardly from one end of said housing for longitudinal movement relative to said housing;
a generally hollow chamber member generally surrounding at least a portion of said shock absorber and sealingly interconnected with a longitudinally outer end of said piston rod, said chamber member being spaced laterally outwardly relative to said shock absorber, a flexible diaphragm member having a first and second end portion, respectively, sealingly interconnected with said chamber member and said support chamber, said members collectively defining a pressurizable fluid chamber with said piston rod and said housing;
fluid pressure supply means operable for supplying a pressurized fluid to and from said pressurizable fluid chamber;
a generally longitudinally extending hollow coil support tube encircling a portion of said shock absorber in a laterally spaced-apart relationship therewith and having a portion of its outer periphery encircled by a portion of said chamber member, said coil support tube having a



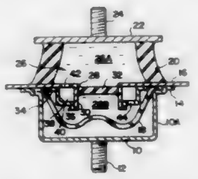
generally laterally extending flange thereon fixedly interconnected with said chamber member,
an electrical coil fixedly attached to said support tube outer periphery and contained in the interior of said chamber member for sensing the longitudinal position of said housing relative to said piston rod, the inductance of said electrical coil varying in response to varying longitudinal positions of said housing relative to said piston rod; and
control means for operating said fluid pressure supply means in response to the sensing of the longitudinal position of said housing relative to said piston rod by said electrical coil.

4,802,658

VIBRATION ISOLATING APPARATUS

Takao Uchijima, Chigasaki, and Takeshi Noguchi, Yokohama, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 770,236, Aug. 28, 1985, abandoned. This application Dec. 16, 1987, Ser. No. 134,598
Claims priority, application Japan, Sep. 7, 1984, 59-187360
Int. Cl.[4] F16F 15/04; B60G 15/04; F16M 13/00
U.S. Cl. 267—140.1 28 Claims



1. A vibration isolating apparatus disposed between a vibration generating portion and a vibration receiving portion and having a liquid chamber capable of being expanded and con-

tracted, which apparatus comprises a partition member, made of a stretchable resilient material and having a substantially uniform thickness, which divides said liquid chamber into two small liquid chambers and which is disposed so as to be deformable to the maximum deformation limit of the resilient material in response to vibration amplitudes, and an orifice disposed between said small liquid chambers to communicate through small openings therebetween, whereby low-frequency vibrations are absorbed by virtue of fluid resistance occurring in said orifice, while high-frequency, vibrations are absorbed by virtue of deformation of said resilient partition member which suppresses rises in pressure inside said liquid chamber.

4,802,659

LEAF SPRING

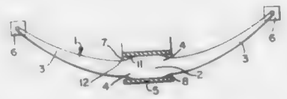
Stephen A. Hope, Sunbury-on-Thames, England, assignor to British Petroleum Company p.l.c., London, England

Filed Jul. 13, 1987, Ser. No. 72,638

Claims priority, application United Kingdom, Jul. 17, 1986, 8617540

Int. Cl.⁴ B60G *11/02*; F16F *1/36*

U.S. Cl. 267—149 **12 Claims**



1. A leaf spring of fibre reinforced composite material for attachment to the wheel axle of a vehicle for reducing local stresses when the leaf spring is under load, said spring comprising a longitudinal, vertical cross-section having a central zone and two end zones, the central zone being clamped to said axle with the spring ends attached to the vehicle chassis, the central zone being thicker than the end zones, said longitudinal, vertical cross-section further having a tapered zone between the central zone and each of the end zones, the tapered zone having upper and lower curved surfaces, each curved surface comprising a first convex portion and a second concave portion, the convex portion being adjacent to the central zone and the concave portion being adjacent to the end zone, and each convex and concave portion being a segment of a curve which is defined by x and y axes of the longitudinal, vertical cross-section of the spring, wherein the x axis is the longitudinal axis of the spring and the y axis is perpendicular to the x axis and is in the plane of the vertical cross-section and where P is defined as the length in the x axis of the segment of the curve and h is defined as the length in the y axis of the segment of the curve, and the curve is defined by the mathematical equation

$$(X/A)^C+(Y/B)^D=1$$

wherein X and Y are displacements in the x and y axes respectively and A is defined as the solution to the mathematical equation

$$(P/A)^C+((B-h)/B)^D=1$$

where B, C and D are arbitrary numbers selected to define the path of an ellipse in space.

4,802,660

ELECTRICALLY CONTROLLED SPRING ELEMENT

Göran Engdahl, Tiby, Sweden, assignor to Asea Brown Boveri AB, Västerås, Sweden

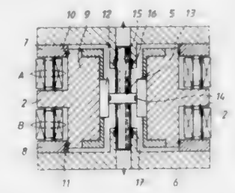
Filed Mar. 15, 1988, Ser. No. 168,417

Claims priority, application Sweden, Mar. 19, 1987, 8701138

Int. Cl.⁴ F16F *6/00*

U.S. Cl. 267—182 **3 Claims**

1. An electrically controlled spring element comprising an even number of elements in which each element consists of a rod of highly magnetostrictive material, permanent magnets to pre-magnetize the rod and a surrounding excitation coil and that the elements form a basic spring element comprising two elements mounted in a frame, the rods being in line, having the same centre line and with an intermediate transmission element having a power output, and that the magnetic orientation of



the pre-magnetization and the excitation coils are so arranged that, regardless of the direction of the control current, they are directed in the same direction in one element and in opposite directions in the other element and that the electrically controlled spring element consists of one or more basic spring elements.

4,802,661

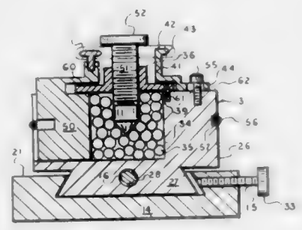
METHOD AND APPARATUS FOR PRODUCING EYEGLASS FRAMES

Bryce D. Jewett, Sr., 2901 Maury St., Richmond, Va. 23224

Filed Jan. 20, 1988, Ser. No. 145,892

Int. Cl.⁴ B23Q *3/14*

U.S. Cl. 269—48.1 **7 Claims**



1. An apparatus for holding a plastic workpiece panel of elongated outer periphery for the production of an eyeglass frame, said panel having two lens-holding apertures of mirror image identity substantially centered upon the axis of elongation of the panel, each aperture having a groove circumscribing its entire perimeter centered within the thickness of the panel and adapted to receive the edges of the lenses which will be inserted into the finished frame, said apparatus comprising:

(a) a rigid base having means for attachment to an underlying substrate,

(b) paired chuck assemblies of mirror image identity slideably positionable upon said base along a common horizontal axis,

(c) means for causing sliding motion of said chuck assemblies upon said base,

(d) means for locking each chuck assembly in a desired location upon said base,

(e) each chuck assembly comprising:

(1) a housing having a lower portion which engages said motion causing means, an upper portion having a chamber which confines a multitude of ball bearings, said chamber having an upwardly directed opening, a cylindrical threaded hub disposed above said opening and having a hollow interior that communicates with said chamber, and slots oriented in vertical planes radially emergent from said chamber,

(2) first holding means laterally positionable in a direction perpendicular to said common horizontal axis and adapted to engage the groove within an aperture of said workpiece panel,

(3) second holding means adapted to engage the groove within an aperture of said workpiece panel at a site closest to the other aperture, said site ultimately becoming the nosepiece of the eyeglass frame, the concerted action of the second holding means of the two chuck assemblies being to limit the separation between the two assemblies against the urging of said means for causing sliding motion along said horizontal axis,

(4) a number of impingement means moveable radially with respect to said hub, and adapted to contact the workpiece panel at different sites within the apertures thereof, each impingement means being supported by an underlying traveling plate communicating with said chamber and constrained to slide within said slots, and

(5) closure means which treadably engages said hub and, by rotation moves downward to apply force to the multitude of ball bearings, whereby

(f) said traveling plates are independently driven radially outwardly from said hub, carrying said impingement means which abut with equal force against the perimeter of the aperture, whereby

(g) the workpiece panel is securely and precisely held without distortion in a manner to permit milling of its outer periphery to produce the sought eyeglass frame.

4,802,662

PROCESS AND DEVICE FOR REMOVING THE TOP FLY FROM A STACK OF PLIES SUCH AS LAYERS OF FABRIC

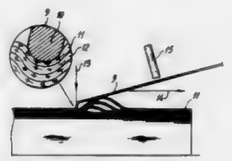
Hendrik J. H. Hobbelt, Almelo; Eduard A. Burgemeister, Sprang/Capelle, and Theodorus J. P. M. Kroon, Aalten, all of Netherlands, assignors to Research-Vereniging Nederlandse Kleding-En Tricotage-Industrie(RNKT), Netherlands

Filed Sep. 2, 1986, Ser. No. 902,608

Claims priority, application Netherlands, Sep. 2, 1985, 8502400

Int. Cl.⁴ B65H *3/60*

U.S. Cl. 271—20 **4 Claims**



1. A process for removing the top layer from an elastically compressible stack of layers of fiber material by having an element engage the top layer of the stack and move said element in the plane of said top layer, the improvement being that the element engages the top layer with a smooth surface which has a friction upon said top layer which is less than the friction between the top layer of the stack and the next layer below the top layer, which element is pressed upon the stack in such a way that the stack is locally dented, in which position the element is moved over in pressing contact with the stack from an initial position on top of the stack towards an edge of the stack, after which the element is returned free from said top layer, while a vacuum is produced above the top layer by means of a jet of air directed onto a plate arranged with an upward inclination with respect to the element in the direction of said edge in such a way that the top layer is lifted by the vacuum.

4,802,663

SHEET SMOOTHER FOR THE GRIPPED EDGE OF THE SHEET IN A SHEET-FED ROTARY PRINTING MACHINE

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to MAN-Roland Druckmaschinen Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Jun. 12, 1986, Ser. No. 873,414

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1985, 3521590

Int. Cl.⁴ B65H *9/18*

U.S. Cl. 271—227 **8 Claims**



1. A sheet smoother for a sheet-fed rotary printing machine having a sheet feeder with

a feed table (1) having a feeding edge and adapted to support a plurality of sheets (2); and

grippers (16) and front gauges (17) disposed along the feeding edge of said table (1);

comprising

a vertically reciprocable beam-shaped rule (3) disposed above said feed table (1), extending perpendicularly to sheet-feeding direction and located adjacent the feeding edge of the sheet when the sheet is positioned against the front gauges (17), said rule being formed along one edge with a plurality of transversely extending recesses (5, 6), located immediately adjacent to, and adapted for receiving, said grippers (16) and front gauges (17);

a lifter (7) supporting said rule (3); and

means for raising said lifter (7) and said rule (3) during removal of a sheet (2) by said grippers (16) from said table (1) and for subsequently lowering an axially continuous portion of an undersurface of said rule (3) onto a following sheet, for smoothing the entire width of the leading edge of said following sheet (2) on said table (1).

4,802,664

ARRANGEMENT FOR THE FEEDING OF SHEETS TO A MAGAZINE

Arild Larsen, Rabbalshede, Norway, assignor to AB Tetra Pak, Lund, Sweden

Filed Jan. 6, 1987, Ser. No. 843

Claims priority, application Sweden, Jan. 20, 1986, 8602233

Int. Cl.⁴ B65H *29/18*

U.S. Cl. 271—201 **7 Claims**

1. An apparatus for feeding sheets or blanks to a stacking magazine comprising:

a guide located next to the magazine,

a carriage movable along the guide,

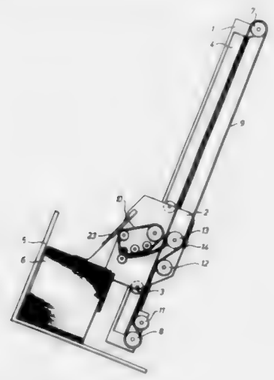
an endless driving belt extending along the guide,

feed-out means for feeding-out sheets entering the carriage to the magazine, said feed-out means including an endless feed-out belt which is supported by the carriage and which includes an active section extending in a direction toward the magazine, said active section of the feed-out belt extending along a guide rail directed toward the magazine, said feed-out means further including a feedout pulley around which said feed-out belt is guided at a downstream end of said active section and a feed-out roll spaced from said feed-out belt by a distance, in a non-loaded condition, adapted to be less than the thickness of a sheet to be fed to the magazine, and

drive means connected between the driving belt and the carriage for driving the carriage along the guide and for

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driving the feed-out means, the drive means including a first pulley which delivers drive to the feed-out means by



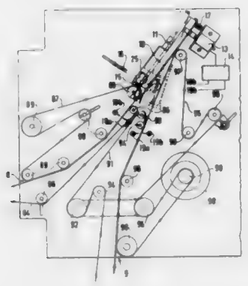
rotating and which delivers drive to the carriage by frictionally engaging the driving belt.

4,802,665

CONVEYOR DEVICE FOR FLAT OBJECTS

Roland Allio, La Roche de Glun; Raymond Chiffiet, Grandes les Valence, and Phillipe Jeantin, Valence, all of France, assignors to Compagnie Generale D'Automatisme CGA-HBS, Paris, France

Filed Jul. 29, 1987, Ser. No. 78,955
Claims priority, application France, Jul. 29, 1986, 86 10970
Int. Cl.[4] B65H *5/00*
U.S. Cl. 271—225 **9 Claims**



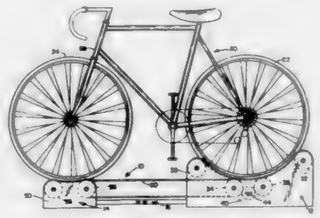
1. A conveyor device for flat objects, comprising a substantially linear input conveyor having an object input and an object output, a substantially linear output conveyor orthogonal to said input conveyor and having an input and an output, the input of said output conveyor being substantially contiguous with the output of said input conveyor, a U-shaped chute, pivotably mounted on said conveyor device, for linking said input and output conveyors, said chute having an object input-/output end and being pivotable between an idle position in which it extends the output of said input conveyor and a transfer position in which it extends the input of said output conveyor, said chute further including a roller partially projecting thereinto from one side thereof, said roller being substantially aligned with the output of said input conveyor when said chute is in said idle position and substantially aligned with the input of said output conveyor when said chute is in said transfer position, said chute also having a high side from which said roller projects and a low side below a level of said output conveyor, said output conveyor including an ejector belt extending beyond the input of said output conveyor and partly into said chute when in said transfer position, in which said roller is pressed against said ejector belt, said conveyor device further comprising control means for moving said chute between said idle and transfer positions.

4,802,666

BICYCLE SUPPORT APPARATUS

Michael Rodriguez, 2499 Kapiolani Blvd., Apt. 3100, Honolulu, HI. 96826

Filed Aug. 6, 1987, Ser. No. 82,312
Int. Cl.[4] A63B *69/16*
U.S. Cl. 272—73 **4 Claims**



1. A bicycle support for supporting through its wheels an assembled bicycle for non-traveling, exercise use of the bicycle comprising:

a front wheel support assembly including a frame and at least a pair of laterally spaced rollers journaled on said frame for rotation about parallel axes, the rollers having wheel-engaging surfaces and the surfaces of the rollers lying in a first circular arc, the rollers being constructed and arranged to provide for cradled support therebetween of the front wheel of the bicycle,

a rear wheel support assembly including a frame and multiple laterally spaced rollers journaled on said frame for rotation about parallel axes, the rollers of the rear wheel support assembly having wheel-engaging surfaces and these surfaces lying in a second circular arc having the same radius as said first circular arc, said rollers of the rear wheel support assembly including a front roller and rear roller and at least an intermediate roller between the front and rear rollers, the front and rear rollers being constructed and arranged to provide for cradled support therebetween of the rear wheel of a bicycle and the intermediate roller providing a bottoming support between the cradled support for the rear wheel, the surfaces of said front and rear rollers being angularly spaced in said second circular arc a greater angular distance than the angular spacing of the surfaces of the rollers in the front wheel assembly in said first circular arc, belt means interconnecting the intermediate roller in the rear wheel support assembly with a roller in the front wheel support assembly whereby rotation is imparted from the intermediate roller to the roller in the front wheel support assembly, and

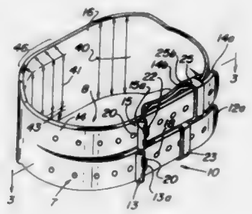
means fixing the front and rear wheel assemblies at a predetermined distance apart and with the assemblies aligned in a direction extending transversely of their respective rollers.

4,802,667

WEIGHTLIFTER'S BELT

David J. Altner, 2415 Ridge Rd., Perkasie, Pa. 18944

Filed Feb. 8, 1988, Ser. No. 153,314
Int. Cl.[4] A63B *13/00*
U.S. Cl. 272—123 **5 Claims**



1. A belt arrangement for use in the practice of weightlifting comprising:

(a) a flexible member which is integrally formed to provide first and second contiguous belts which respectively include tongue and buckle members, said first belt being utilized with respect to the narrowest dimension of the waist;

(b) a plurality of holes formed in said respective first and second belts wherein the holes in the first belt are staggered with respect to the holes in the second belt for allowing each to develop equal tension in the waist area with respect to one another and full tension across the lumbar region when said respective buckles and tongues are tightened around the weightlifter's waist;

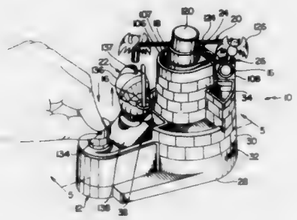
(c) first and second loop members wherein a respective first loop is attached to said first belt and said second loop is attached to said second belt, and wherein said first loop is positioned closer to the buckle associated with the first belt than is the buckle associated with the second belt to prevent interference with one another and to prevent a gap from being formed between the belts.

4,802,668

TOY GAME APPARATUS

Toshio Kobayashi, Chiba, Japan, assignor to Asahi Corporation, Tokyo, Japan

Filed Dec. 7, 1987, Ser. No. 129,822
Claims priority, application Japan, Dec. 6, 1986, 61-188014
Int. Cl.[4] A63F *9/00*
U.S. Cl. 273—1 GE **9 Claims**



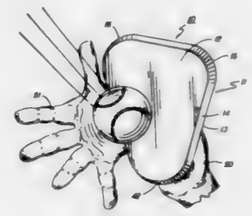
1. An action toy game apparatus comprising a base, a timer in said base actuatable for a set period of time, a plurality of magnetically responsive game elements, feeder means for sequentially feeding said game elements to a feeder station, magnetic support means on said base communicating with said timer and rotating when said timer is in an actuated condition, said magnetic support means being operative for individually receiving sequential game elements from said feeder means at said feeder station and for magnetically supporting them so that they are individually moved in a substantially circular path which is spaced upwardly from said base, and retrieving means on said base for individually retrieving said game elements from said support means as they are moved in said substantially circular path.

4,802,669

BASEBALL TRAINING DEVICE

Peter C. Birmingham, 117 Pumpkin Ln., Syracuse, N.Y. 13219

Filed Oct. 13, 1987, Ser. No. 107,559
Int. Cl.[4] A63B *71/02*
U.S. Cl. 273—26 C **4 Claims**



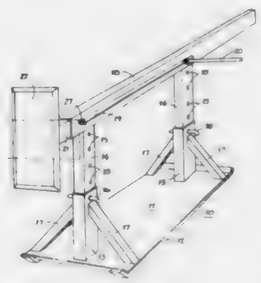
1. A baseball training device that is worn over the glove hand of a player to aid the wearer in developing good fielding skills that includes a triangular shaped uniformly resilient pad having planar front and back surfaces, said pad having hand attachment means on the back surface thereof for encircling the thumb and first three fingers of the glove hand which will align the middle finger along an axis of the triangle with the apex of the pad being positioned over the wrist, the edge of the pad extending outwardly beyond the tips of the fingers and side edges of the user's hand, said pad having a resilience such that when worn on the hand of a player a ball striking said front surface backed by a wearer's hand heel portion will deform to a greater extent than the remaining portion of the pad and will have a longer surface contact time on said pad than balls striking the remaining portion of said pad whereby a wearer is afforded greater time in which to place his other hand over a ball when making a catch.

4,802,670

FOOTBALL BLOCKING APPARATUS

Dan R. Smith, 6733 Fernwood Dr., Boise, Id. 83709

Filed Feb. 18, 1987, Ser. No. 16,017
Int. Cl.[4] A63B *67/00*
U.S. Cl. 273—55 R **3 Claims**



1. A football blocking apparatus which comprises:

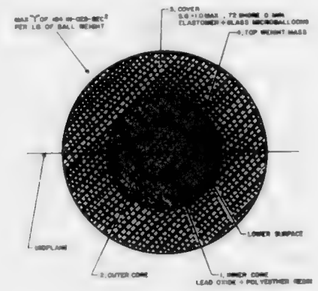
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an outer tubular frame member and an elongated ram member;
a support means for holding the outer tubular frame member in parallel spaced relationship to the ground;
said outer tubular frame member telescopically receiving and supporting said ram member;
a blocking pad simulating a torso of an on-rushing defensive lineman attached to the extending end of said telescoping ram member;
means for receiving a force from a trainer for selectively and repeatedly extending the blocking pad to simulate the forward rush of a defensive lineman;
means for adjusting the height at which the outer tubular frame member is held in parallel spaced relationship to the ground;
said outer tubular frame member having an elongated slot therein, said slot being parallel to and horizontally extending with respect to the longitudinal axis of said tubular frame member; a thrust bar attached to and extending horizontally from said telescoping ram member through said slot for selectively and repeatedly receiving thrust forces from a trainer to selectively extend and retract said telescoping ram member relative to said outer frame member to simulate the repeated rush of a defensive lineman.

4,802,671
BOWLING BALL

Joseph A. Gentiluomo, 1456 Belmont Ave., Schenectady, N.Y. 12308

Continuation-in-part of Ser. No. 628,158, Jul. 5, 1984, which is a continuation-in-part of Ser. No. 171,897, Jul. 24, 1980, abandoned. This application Aug. 11, 1987, Ser. No. 83,811
Int. Cl.[4] A63B *37/14*
U.S. Cl. 273—63 E **14 Claims**



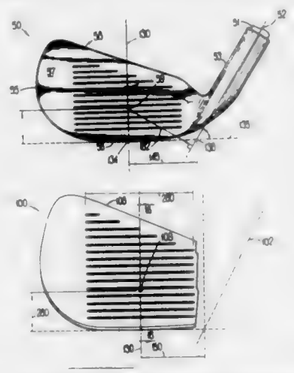
1. A bowling ball comprising:
(a) an inner core having its center substantially coincident with the geometrical center of said bowling ball;
(b) a solid outer core surrounding said inner core;
(c) and a rigid elastomer foam cover surrounding said outer core, and having a minimum Shore D Durometer hardness of 72 and a maximum specific gravity of 1.

4,802,672
SET OF GOLF IRONS

D. Clayton Long, Albany, Ga., assignor to MacGregor Golf Company, Albany, Ga.

Filed Jun. 24, 1987, Ser. No. 66,077
Int. Cl.[4] A63B *53/00*
U.S. Cl. 273—77 A **4 Claims**

1. In a set of golf irons consisting of long irons and short irons wherein each iron has a heel, a toe, a sole, a planar face, a backside, a top, a center of mass, and a hosel and wherein each iron has an offset and the set has progressively decreasing offset from the long irons to the short irons, the

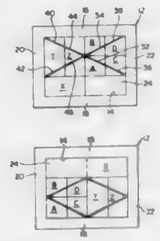


improvement comprising a progressively decreasing displacement from the long irons to the short irons.

4,802,673
PUZZLE GAME

Narendrakumar M. Patel, 59 Deerfield Rd., Parsippany, N.J. 07054

Continuation-in-part of Ser. No. 926,964, Nov. 4, 1986, Pat. No. 4,732,388. This application Jan. 29, 1988, Ser. No. 149,855
The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.
Int. Cl.[4] A63F *9/08*
U.S. Cl. 273—153 S **20 Claims**

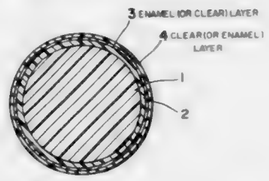


1. A puzzle comprising:
a frame comprising opposed first and second major sides and opposed first and second minor sides extending between and connected to the major sides so as to define a generally rectangular opening in said frame, said rectangular opening having a major dimension measured parallel to said major sides and substantially equal to four times a selected unit of measurement, and a minor dimension measured parallel to said minor sides and being substantially equal to three times the selected unit of measurement such that a line connecting the midpoints of said major sides defines first and second halves of said opening adjacent the first and second minor sides respectively;
four substantially identical square puzzle pieces having side edges equal in length to the selected unit of measurement, said square puzzle pieces being movable within the rectangular opening of said frame and being initially disposed in the first half of the rectangular opening; and
three substantially identical rectangular puzzle pieces, each said rectangular puzzle piece having a minor side dimension substantially equal to the selected unit of measurement and a major side dimension substantially equal to twice the selected unit of measurement, said rectangular puzzle pieces being movably disposed within said rectangular frame, two of said rectangular puzzle pieces having their major sides parallel to the minor sides of the frame and being initially disposed entirely within the second half of the opening therein, the remaining rectangular puzzle piece having its major side parallel to and adjacent one of said major sides of said frame, at least selected ones of said square and rectangular puzzle pieces having indicia thereon, whereby said square and rectangular puzzle pieces can be moved relative to said frame to achieve a selected distribution of said square and rectangular puzzle pieces such that said square puzzle pieces are entirely within the second half of said opening and the parallel rectangular puzzle pieces are entirely within the first half of the opening.

4,802,674
GOLF BALL

Katsutoshi Kitaoh, Takarazuka, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Mar. 17, 1987, Ser. No. 26,888
Claims priority, application Japan, Mar. 17, 1986, 61-39155
Int. Cl.[4] A63B *37/12*
U.S. Cl. 273—235 A **13 Claims**

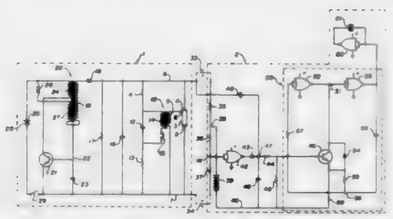


1. A golf ball prepared by coating a golf ball core with an ionomer resin composition comprising 0.5 to 10% by weight of a pigment and 0.2 to 0.6% by weight of a fluorescent whitening agent, wherein the % of the pigment and the agent are based on the total weight of the resin composition and then coating the ionomer resin composition coated golf ball core with an enamel paint comprising 1 to 10% by weight of a pigment, wherein the % is based on the solid content of said enamel paint.

4,802,675
TOY GUN

David L. W. Wong, 1040 West 55 Avenue, Vancouver, British Columbia, Canada (V6P 1R1); Paul C. P. Leung, 3590 Osler Street, Vancouver, British Columbia, Canada (V6H 2W6), and Friederich H. Spiesinger, 3343 West Broadway, Vancouver, British Columbia, Canada (V6R 2B1)

Filed Sep. 24, 1986, Ser. No. 911,148
Claims priority, application United Kingdom, Jan. 20, 1986, 8601299
Int. Cl.[4] A63H *33/26*
U.S. Cl. 273—310 **28 Claims**



1. A game comprising a toy gun, including an electronic flash tube; means to provide a relatively low-voltage direct current supply; means to produce from the low-voltage supply a relatively high-voltage unidirectional supply; means coupled to the high-voltage supply to fire the flash tube in response to pressure on a trigger of the gun; and a reflector positioned adjacent the flash tube to produce a beam of light; and a hollow concentrator having a relatively large diameter inlet into which the beam passes, and a relatively small diameter outlet which serves to concentrate the beam into a relatively narrow beam for projection at a target.

4,802,676
CLAY PIGEON HAVING AT LEAST ONE SEALED RECESS CONTAINING A PRODUCT PRODUCING A CLOUD PERMITTING VISUALIZATION IN SPACE OF THE IMPACT AND/OR DURING FLIGHT

Rene Descos, Uchaud, and Jean-Claude Laporte, Biot, both of France, assignors to Cibles Descos S.A.R.L., Vauvert, France

Filed Jul. 30, 1986, Ser. No. 890,727
Claims priority, application France, Aug. 1, 1985, 85 11930; Jun. 18, 1986, 86 08889
Int. Cl.[4] F41J *9/16, 1/16;* F42B *11/16*
U.S. Cl. 273—363 **2 Claims**

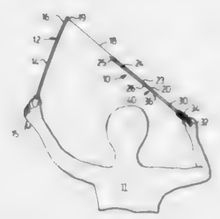


1. In a flying target comprising a target body having a recess therein, means closing said recess to define with said target body a sealed chamber, and an indicating material in said sealed chamber, the improvement comprising a hole extending between said chamber and the outside of the target and means temporarily sealing said hole, said temporary sealing means being adapted to be dislodged from said hole during launching or flight of said target, thereby to discharge a stream of said indicating material through said hole during flight of said target, said temporary sealing means comprising a weight suspended therefrom, such that rotation of said target during flight imparts centrifugal force to said weight and removes said temporary sealing means.

4,802,677
GAME ARROW

Jerald M. Homan, 343 Oakwood Ave., East Peoria, Ill. 61611

Filed Sep. 24, 1987, Ser. No. 100,408
Int. Cl.[4] F41B *15/00*
U.S. Cl. 273—416 **4 Claims**



1. A game arrow, for use with a launching device providing an elongated substantially rigid somewhat flexible stick having a handle end and an opposite distal end with an elongated string attached thereto with the string having an opposite knotted end, comprising;
a two-piece shaft having a forward portion providing a forward end and an opposite connector end, and a rear-

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ward portion providing a finger gripping end and an opposite connector end;
and an elongated ferrule having opposite ends rigidly interconnecting said connector ends of the shaft and a mid-portion provided with opposite flats with opposite peripherally curved segments therebetween;
and a slot extended inwardly of the ferrule through one of said segments between said flats of a width slideably to receive said string therethrough with said knotted end of the string engageable with one of said flats.

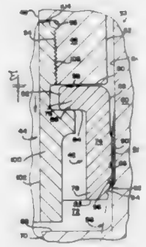
4,802,678
SPORTS RACKET
Rodney A. Svoma, 1210 E. Northern, Phoenix, Ariz. 85020
Filed Feb. 3, 1986, Ser. No. 825,541
Int. Cl.[4] A63B 51/06
U.S. Cl. 273—73 D 3 Claims



1. In a sports racket comprising a frame having sides connecting a tip and a heel, a handle with a grip thereon secured to the heel of the frame, a plurality of longitudinal strings in said frame and extending generally parallel to said handle and a plurality of transverse strings in said frame and extending generally at right angles to said handle, the improvement wherein a plurality of said longitudinal strings in a middle region of said frame have their ends secured to said frame in such a manner that the strings lie generally from the heel to the tip of the frame in a common flat plane coextensive with the plane of said frame, a plurality of said longitudinal strings to either side of said middle region of said frame being provided in pairs with each pair positioned in a plane generally at right angles to said common flat plane, said pairs of longitudinal strings having their ends secured to said frame in such a manner that the distance between the strings in each pair becomes progressively greater and the strings of each pair are farther from said common flat plane from the string pairs adjacent said middle region to the string pairs adjacent the sides of the frame, said transverse strings being positioned individually in spaced relationship generally from the heel to the tip of the frame, every other transverse string being interwoven only with but one of the strings of the pairs of longitudinal strings to either side of said middle region of said frame, the other transverse strings being interwoven only with the other strings of the pairs of longitudinal strings to either side of said middle region of the frame, and each transverse string being separately interwoven with all of the longitudinal strings in said middle region of the frame.

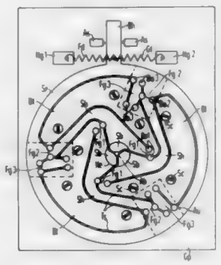
4,802,679
BELL SEAL OF IMPROVED STABILITY FOR HIGH PRESSURE TURBINES
Shun Chen, and Chin-Sheng Lee, both of Winter Springs, Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 31, 1987, Ser. No. 140,066
Int. Cl.[4] F16J 15/00
U.S. Cl. 277—12 6 Claims

1. A bell seal assembly comprising, in combination, a bell seal unit and a retaining nut unit, said bell seal unit including a radially inwardly extending flange with an upper end face sealing surface, a lower seal flange support surface, and a generally cylindrical skirt portion depending from said flange and terminating in a skirt end surface, said skirt portion being adapted to be positioned in telescoping relation within a portion of an associated nozzle chamber, said nozzle chamber portion including a cylindrical sidewall sealing surface, said skirt portion having its outer surface subdivided into an upper skirt surface, an intermediate portion and a lower skirt margin, said intermediate portion comprising a primary skirt seal region having at least one circumferentially extending, continuous cylindrical sealing land portion of enlarged diameter relative to said upper skirt surface, said lower skirt margin being tapered inwardly toward and joining said skirt end surface, said lower skirt margin also including a plurality of spaced apart, circumferentially extending grooves, one of which terminates adjacent the lower eged of said sealing land, said sealing land being adapted in use to be spaced closely apart by no more than a working clearance from said sidewall sealing surface of said nozzle chamber when said seal is at a given,



lower temperature and to be urged into snug radial sealing engagement with said sidewall sealing surface of said nozzle chamber when said nozzle chamber and said seal unit are at an elevated temperature, said bell unit being positioned by said retaining nut for free but limited axial movement such that said upper end face sealing surface is spaced just apart from a cooperating bottom end face sealing surface on an associated inlet sleeve, but is movable to a position of end face engagement with said inlet sleeve lower end face surface in response to an increase in fluid pressure in the interior of said seal assembly.

4,802,680
COAXIAL COLLET CHUCK
Volker Fuchs, Ottobrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Mar. 4, 1987, Ser. No. 21,793
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1986, 3609723
Int. Cl.[4] B23B 31/02
U.S. Cl. 279—33 12 Claims



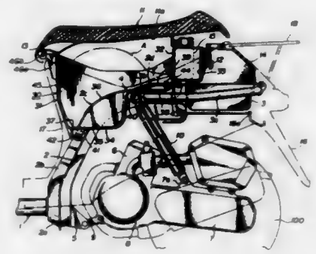
1. In a coaxial collet chuck having at least two clamping jaws adjustable and moveable in common in a radial direction, and means for moving the jaws radially, the improvement comprising:
said means including a separate chuck lever (Sh) connected to each of said clamping jaws (Sb) at a point intermediate the ends of each of said chuck levers (Sh);
said chuck levers (Sh) each being connected to a respective stationary base part (Bt) by a first spring joint (Fg1) on a first end of each of said chuck levers;
said chuck levers (Sh) each being hinged to a set collar (Sr) by a second spring joint (Fg2) for common clamping and releasing of said clamping jaws (Sb) on a second end of each of said chuck levers opposite said first end;
said set collar (Sr) being respectively rotatably seated at each of said stationary base parts (Bt) by a third spring joint (Fg3);
whereby all of said chuck levers (Sh), stationary base parts (Bt), first, second and third spring joints (Fg1, Fg2, Fg3) as well as said set collar (Sr) are fashioned of one piece from a common plate.

4,802,681
WHEELBARROW
Tung-Ping Hung, No. 14 Lane 590 Hsin-Fu Road, Feng-Shan Kaohsuing, Taiwan
Filed Dec. 17, 1987, Ser. No. 134,483
Int. Cl.[4] B62B 3/02
U.S. Cl. 280—47.18 2 Claims



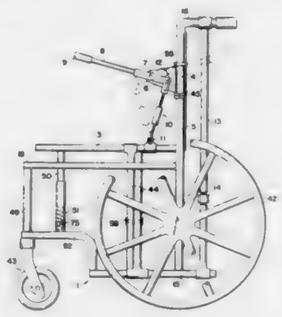
1. An improved wheelbarrow capable of being used as a two-wheeled and a four-wheeled device which comprises:
a body having a front section, an axis bar and a rear section, the rear sections having a handle including pipes; the front section including pipes, two front wheels and two rear wheels each rotatably mounted on the front section pipes, and braking devices for the two front wheels; the pipes of the front and rear sections each having one end pivotally attached to the axis bar,
a folding device for permitting the push handle of the front section to pivot about the axis bar, the folding device including controlling blocks arranged in the one end of the pipes of the front section, movable blocks and springs arranged within the one end of the pipes of tie handle so that the springs force the movable blocks against the controlling blocks in an engaging relationship, and a pulling stick arranged to release the force of the springs, so that the movable blocks and controlling blocks can be disengaged and the push handle can be pivoted to at least one of three positions including a first position of the push handle being an extension to the front section when the wheelbarrow is used as the two-wheeled device, a second position of the push handle being vertical to the front section when the wheelbarrow is used as the four-wheeled device, and a third position of the push handle being folded on the front section for storage of the wheelbarrow, and
a rack for one of loading and unloading arranged on the front section at an end opposite the folding device.

4,802,682
STORAGE DEVICE ON MOTORCYCLE
Kitaoi Yasuji, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 25, 1987, Ser. No. 89,159
Claims priority, application Japan, Sep. 29, 1986, 61-149298
Int. Cl.[4] B62J 7/02
U.S. Cl. 180—219 19 Claims



10. A storage device on a motorcycle having a body frame including a rear frame member extending substantially longitudinally centrally of said body frame and being upwardly inclined rearwardly from a lower position to an upper position below a driver's seat, said storage device comprising:
a container disposed below said driver's seat and having a bottom wall,
a bulging portion in said bottom wall defining a substantially longitudinally extending recess to receive said rear frame member, and
substantially upstanding wall means extending upwardly from said bottom wall about the periphery thereof, said wall means having an opening at the upper end thereof beneath said driver's seat.

4,802,683
WHEELCHAIR WIDTH REDUCING ATTACHMENT
J. T. Gillum, Sr., 4418 NW. 32nd Ave., Gainesville, Fla. 32606
Continuation-in-part of Ser. No. 931,332, Nov. 13, 1986, abandoned. This application Aug. 10, 1987, Ser. No. 82,905
Int. Cl.[4] A47C 4/00
U.S. Cl. 280—304.1 17 Claims



1. A width reducing attachment for a wheelchair which comprises a pair of side frame members pivotally connected to each other for movement toward and away from each other and seat support members connected to said side frame members in a manner to cause movement of said side frame members toward and away from each other when said seat support members are respectively raised and lowered vertically with respect to said side frame members; said width reducing attach-

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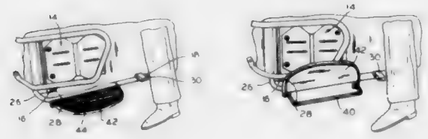
ment comprising means operable by the occupant of the wheelchair or by an attendant to raise said seat support members with respect to respective adjacent side frames, said means including an operating lever pivotally connected near one end to said adjacent side frame, said operating lever having a hand grip portion at its other end and being readily moveable without detachment from said adjacent side frame from a position in which its said other end lies forward of the pivotable connection and is accessible for operation by the occupant of the wheelchair to a position in which its said other end lies to the rear of the pivotable connection and is readily accessible for operation by an attendant standing behind the wheelchair.

4,802,684

MOTORCYCLE FLOORBOARD DEVICE

William R. Bennett, 14317-139th Ave. Ct. West, Edgington, Ill. 61284; Tom Mix, 8216 50th St., Coal Valley, Ill. 61240, and James F. Smith, 4102 8th Ave., Moline, Ill. 61265

Filed Dec. 17, 1982, Ser. No. 450,977
Int. Cl.[4] B62J *25/00*
U.S. Cl. 280—291 5 Claims



1. An accessory device for attachment to a motorcycle of a type having a roll bar associated with at least its motor, said accessory device comprising means including an elongated support frame to be attached at one end to said motorcycle at a motor mount location and at the other end to a foot peg location near the back of the motorcycle, said support frame providing means for resting and supporting the foot of a motorcycle rider on a pivoted pad, said elongated support frame having mounting means disposed on opposite ends of the elongated frame, said mounting means being shaped and dimensioned to be attached to said motorcycle by fitting under existing bolts at said motor mount location and at said foot peg location on said motorcycle, and said pivoted foot pad means hingedly affixed to said support frame to pivot between a horizontal position for use and a vertical position for out-of-the-way storage.

4,802,685

WINCH ASSEMBLY FOR USE WITH A BOAT TRAILER OR THE LIKE

Byron L. Godbersen, Lake LaJune Estates, Ida Grove, Iowa 51445

Division of Ser. No. 112,476, Oct. 26, 1987. This application Mar. 31, 1988, Ser. No. 176,211
Int. Cl.[4] B60P *3/10*
U.S. Cl. 280—414.1 2 Claims

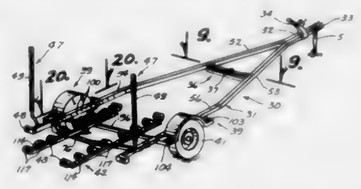
1. A winch assembly for use with a boat trailer having a tongue at the front end thereof, said which assembly comprising:

winch means adapted to rotatably mount a cable for removable attachement to a boat to be movably mounted onto the boat trailer; and

stand means adjustably mounted on the tongue and movable between an upright position and a position tilted toward the rear end of the boat trailer, said stand means supporting said winch means;

and wherein said stand means comprises a channel shaped member having a bottom portion adapted to straddle the tongue;

and further wherein said member has a pair of transversely aligned first openings formed forwardly in the bottom portion for receiving a connecting element therethrough,



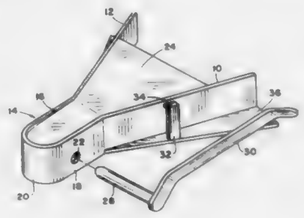
and said member having further a pair of transversely aligned, plurality of second openings formed rearwardly in the bottom portion and also formed in an upwardly, rearwardly curving arc, said second openings spaced apart, each transversely aligned pair of second openings adapted to receive a second connecting element.

4,802,686

TRAILER HITCH

Noah D. Isreal, 201 Kansas St., Pawnee, Okla. 74058

Filed Oct. 30, 1987, Ser. No. 115,535
Int. Cl.[4] B60D *1/06*
U.S. Cl. 280—477 6 Claims



1. A trailer hitch for use with a hitch ball which comprises:

an elongated hitch ball receiving compartment having first and second substantially parallel sections having upper and lower edges which sections are connected by a curved section having an upper and a lower edge, the parallel sections forming a mouth between the end of said first and second section at a position opposite the curved section;

a third and fourth section each having an upper and a lower edge and which connect to the first and second section respectively at said mouth and flare outwardly, said mouth being unobstructed so that said hitch ball may pass therethrough;

a top plate extending along the top edges of said curved section, said first and second sections and said third and fourth sections;

a U-shaped plate secured to the lower edge of said first section, said second section and said curved sections and a first hole through said first section and a second hole through said second section said U-shaped plate extending on the inner side of said first section, said second section and said curved section forming a V-shaped ledge inside thereof with a throat width which is less than the diameter of said hitch ball;

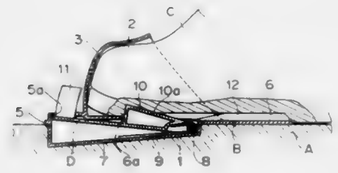
a pin lock lever having a handle and a pin in which the pin is insertable through said first and second holes.

4,802,687

SKI SHOE BINDING DEVICE

Satoshi Shimizu, Tokyo, Japan, assignor to Northern Commercial Limited, Tokyo, Japan

Continuation of Ser. No. 943,075, Dec. 18, 1986, abandoned. This application Mar. 23, 1988, Ser. No. 172,960
Claims priority, application Japan, Jan. 8, 1986, 61-000795
Int. Cl.[4] A63C *9/20*
U.S. Cl. 280—615 6 Claims



1. A ski shoe binding structure, comprising:

a ski board having a front and a rear and having a recess formed in an upper surface thereof, said recess having a bottom;

a toe covering member an upper toe covering portion for receiving a toe of a shoe thereunder, said toe covering member being attached to said upper surface of the ski board such that a forward end of said toe covering member is positioned at a longitudinally intermediate area of said recess, said toe covering member having a lower surface with an aperture disposed therein and below said toe covering portion;

an engaging piece having a front and a rear provided in said recess and extending longitudinally therein, said engaging piece having a longitudinal axis, said engaging piece being pivotally connected towards said rear to said ski board for rotation about an axis transverse to said longitudinal axis, said engaging piece having a detent projecting upwardly therefrom, said detent being positioned beneath said toe covering member and aligned with said aperture, said detent projecting through said aperture upon upward pivotal movement of said engaging piece, said engaging piece having a manipulating portion projecting upwardly ahead of said toe covering member;

biasing means for yieldably urging said engaging piece to rotate about said transverse axis upwardly and away from said bottom of said recess;

an elongate projection extending upwardly from the upper surface of said ski board rearwardly of said recess in said ski board;

a ski shoe having a sole thereof formed with a recess complementary to said detent;

engaging means for engaging said elongate projection longitudinally with said ski shoe;

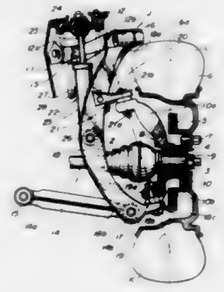
said ski shoe and said engaging piece cooperating so that when said ski shoe is stepped onto said ski board to bring said shoe into engagement with said elongate projection by way of said engaging means and slid forwardly into said toe covering member to press down said engaging piece until said recess of said ski shoe passes said detent, said detent is locked into said recess in a snap action.

4,802,688

DOUBLE LINK TYPE SUSPENSION SYSTEM

Takuya Murakami, Atsugi, and Toshihiko Kanimoto, Isehara, both of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Aug. 26, 1987, Ser. No. 89,447
Claims priority, application Japan, Aug. 28, 1986, 61-202256
Int. Cl.[4] B62D *7/06*
U.S. Cl. 280—666 20 Claims



1. A double link type suspension system for a vehicle, comprising:

a knuckle for rotatably supporting a wheel of the vehicle, said knuckle having an upper and a lower end;

a first joint which is connected to the lower end of said knuckle;

a second joint which is connected to the upper end of said knuckle;

an upper control arm having an inboard end which is rotatably connected to a vehicle body and an outboard end;

a lower control arm having an inboard end which is rotatably connected to the vehicle body, and an outboard end which is rotatably connected through said first joint to the lower end of said knuckle;

an extension member having an upper end which is rotatably connected to the outboard end of said upper control arm, and a lower end which is rotatably connected to the outboard end of said lower control arm, said extension member being rotatably connected through said second joint to the upper end of said knuckle between the upper and lower ends of said extension member, an axis connecting said first and second joints serving as a steering axis around which the wheel is turnable to steer the vehicle.

4,802,689

SUSPENSION SYSTEM FOR RIGID VEHICLE AXLE

Friedrich Hoffmann, Schoenaich, and Franz X. Scheller, Weilstadt, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 757,939, Jul. 23, 1985, abandoned, and a continuation-in-part of Ser. No. 757,940, Jul. 23, 1985, abandoned. This application Oct. 22, 1986, Ser. No. 895,332
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1984, 3428160; Jul. 31, 1984, 3428161
Int. Cl.[4] B60G *9/00*
U.S. Cl. 280—688 12 Claims

1. Axle suspension arrangement for supporting a rigid axle on a vehicle, comprising:

guide control means supportingly engageable with the rigid axle for guiding the movement of the rigid axle axis about a guide control pivot axis during springing movement of the rigid axle with respect to a relatively fixed vehicle body,

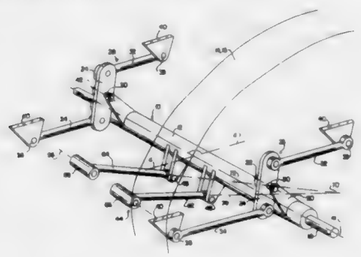
and additional guide arm means interposed between the rigid

VOL 1099 ISS 1 FE 7 1989 UMI

axle and the vehicle body for controlling movement of the rigid axle,

said guide control means and additional guide arm means guiding movement of the rigid axle to effect positive oblique upward and rearward movements of the rigid axle axis in response to upward springing movements of the rigid axle,

wherein the guide control means includes first and second



guide control arm arrangements disposed at opposite lateral sides of the additional guide arm means,

wherein each of said first and second guide control arm arrangements includes a rocker arm pivotally attached to the rigid axle and a pair of guide arms pivotally connected to the rocker arm at opposite sides of its pivotal attachment to the rigid axle, said guide arms having their ends opposite the rocker arms pivotally attached to respective fixed vehicle body.

4,802,690

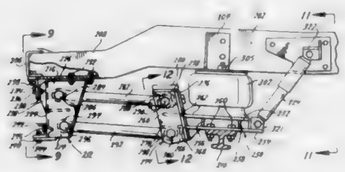
SUSPENSION ASSEMBLY FOR STEER AXLE WITH SINGLE AIR SPRING MOUNTED DIRECTLY OVER THE AXLE

John E. Raidel, Rte. 1, Box 400-M, Springfield, Mo. 65804

Continuation-in-part of Ser. No. 929,634, Nov. 12, 1986, abandoned. This application Mar. 2, 1987, Ser. No. 20,490

Int. Cl.[4] B60G *11/28*

U.S. Cl. 280—713 **14 Claims**



1. In a vehicle having a chassis with left and right longitudinally extending rail members and an axle, a compact, readily removable suspension assembly comprising:

an axle seat, a torque rod bracket, and a sway bar bracket joined together as an integral unit having an upper plate and spaced generally vertical inboard and outboard side plates with means for connecting the generally vertical side plates to the upper plate, the sway bar bracket being on the inboard side of said integral unit,

the upper plate having a forwardly extending tongue with side edges welded to the generally vertical side plates, means to connect the axle seat to the axle,

an air spring having upper and lower sides, and releasable means to connect the upper plate to the lower side of the air spring,

a spring mounting bracket connected to the chassis, and releasable means to connect the upper side of the air spring to the spring mounting bracket,

a hanger depending from the chassis,

upper and lower torque rods of equal length having first ends pivotally supported by the hanger at vertically spaced axes and second ends pivotally supported by and between the generally vertical side plates at vertically spaced axes, the space between the hanger support axes being substantially equal to the space between the torque rod bracket support axes,

a sway bar having a first end and a second end, releasable means for pivotally connecting the first end of the sway bar to the sway bar bracket, and releasable means for pivotally supporting the second end of the sway bar from the chassis at an axis spaced transversely from the sway bar bracket.

4,802,691

HEADREST

James C. Watkins, 103 Brown Pl., Newnan, Ga. 30263

Filed Apr. 10, 1987, Ser. No. 37,039

Int. Cl.[4] A47C *7/36*

U.S. Cl. 280—751 **4 Claims**



1. For use in a cab type vehicle having a rear, windowed cab wall, a demountable headrest assembly comprising

a substantially planar mounting board, said board being shaped to overlay a portion of the frame of the window in the cab wall,

a cushion member mounted on one surface of said mounting board, and first mounting means affixed to the other surface of said mounting board for affixing said headrest assembly to said window frame and second mounting means adapted to be affixed to the frame of the window in the cab wall,

said first and second mounting means being adapted to mate with each other to provide a firm mounting for said headrest assembly.

4,802,692

CONTINUOUS PERFORATED PAPER SHEET FOR PRINTER

Thomas N. Stryd, 7907 W. "R" Ave., Kalamazoo, Mich. 49009

Filed Aug. 20, 1987, Ser. No. 87,654

Int. Cl.[4] B42D *19/00*

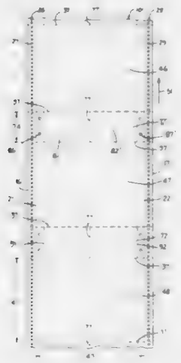
U.S. Cl. 281—5 **16 Claims**

1. An elongate paper sheet, comprising:

spaced, parallel edges located on opposite sides thereof and extending lengthwise thereof;

a plurality of pairs of transverse perforation lines each extending from one of said edges to the other thereof approximately perpendicular thereto, wherein a plurality of first sections of said paper sheet each extend between adjacent said transverse lines of respective said pairs and each have a dimension in a direction lengthwise of said sheet which is substantially greater than the dimension in said direction of each of a plurality of second sections of said sheet which each extend between the transverse lines of a respective said pair; and

a plurality of divider perforation lines which each extend between and terminate at the transverse perforation lines



of a respective said pair, each said first section of said sheet being free of said divider perforation lines.

4,802,693

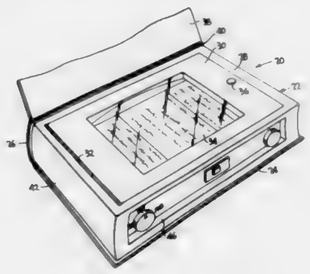
DIRECT READER BOOK

Robert A. Brown, 3205 Mt. Zion Rd., Upperco, Md. 21155

Continuation of Ser. No. 608,093, May 8, 1984, abandoned. This application Jun. 20, 1986, Ser. No. 876,478

Int. Cl.[4] B42D *19/00*; **G09B** *25/00*

U.S. Cl. 281—7 **15 Claims**



1. A direct reading book comprising a housing having a face wall, a magnifying lens carried by said face wall, means within said housing for mounting in roll form a printed web, a printed web in roll form mounted in said mounting means, said web comprising a book in miniaturized form and said mounting means providing that an intermediate portion of such printed web underlies said magnifying lens, said magnifying lens being designed to re-magnify said book, and positioning means within said housing for maintaining that portion of such printed web in constant preselected spaced relation to said magnifying lens for providing constant magnification of such printed web, said positioning means being a pair of spaced parallel shoes extending downward from the bottom surface of said face wall, and said wall, and said web mounting means includes means for advancing a web.

4,802,694

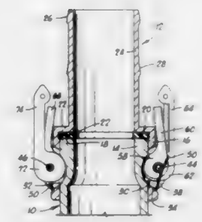
QUICK-DISCONNECT COUPLING

Edward E. Vargo, Enid, Okla., assignor to Central Machine and Tool Co., Enid, Okla.

Filed Oct. 26, 1987, Ser. No. 112,253

Int. Cl.[4] F16L *37/18*

U.S. Cl. 285—87 **2 Claims**



1. A quick-disconnect coupling for interconnecting a pair of tubular elements comprising:

a tubular male adapter having an end face and further having an annular groove of arcuate, concave cross-sectional configuration extending around said male adapter at a location spaced axially along said male adapter from said end face, said groove defining an arcuate concave outwardly facing surface;

a tubular female coupler including:

a tubular neck portion;

a tubular sleeve of larger diameter than said neck portion and having a pair of openings formed through the opposite sides thereof; and

a radially extending annular shoulder extending between, and interconnecting, said sleeve and said neck portion, and forming an internal seal seat within said female coupler, said sleeve receiving said tubular male adapter therewithin, with said end face facing, and extending parallel to, said internal seal seat, and with said annular groove aligned with the openings through said sleeve;

a first pivot pin secured to said tubular sleeve across one of the openings in said sleeve in a direction parallel to a diameter of said sleeve;

a first, elongated locking handle pivotally mounted on said first pivot pin and including a first locking handle cam head having a cam surface thereon and having said first pivot pin extending through said first locking handle can head, said first locking handle cam head and cam surface being so configured and positionally arranged relative to said annular groove on said male adapter that pivotation of said first locking handle to a locking position in which said first locking handle extends substantially parallel to the axis of said tubular sleeve will cause said cam head to bias said male adapter axially inwardly into said sleeve until said end face is in a sealing position relative to said internal seal seat, whereas pivotation of said first locking handle to a de-coupling release position in which said locking handle is pivoted outwardly away from said sleeve and away from said locking position will cause said cam surface to move to a position away from the concave surface of said annular groove, and will allow said male adapter to move axially outwardly with respect to said sleeve, and will allow said end face to move away from said sealing position;

a first elongated safety handle pivotally mounted on said first pivot pin and including a safety handle cam head having a radially inner surface thereon, and having said first pivot pin extending through said first safety handle cam head, said first safety handle cam head and the radially inner surface carried thereon being so configured and positionally arranged relative to said annular groove and its con-

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cave, outwardly facing surface that pivotation of said first elongated safety handle to a safe position in which said first elongated safety handle extends parallel to the axis of said tubular sleeve will place a part of said radially inner surface within said annular groove of said male adapter, and prevent said male adapter from moving totally out of said sleeve, whereas pivotation of said first elongated safety handle to a release position will move said radially inner surface radially outwardly out of said annular groove and allow said male adapter to be extricated from said sleeve when said locking handle is in said de-coupling release position;

a first spring having convolutions around said first pivot pin and having a first part bearing against said first elongated safety handle and resiliently biasing said first safety handle to said safe position, and a second part bearing against said sleeve and resiliently resisting movement of said first safety handle away from said safe position, said first spring being positioned to continue to exert said resilient bias on said first safety handle to oppose movement of said first safety handle toward said release position from said safe position, with said resilient biasing of said first safety handle continuing throughout, and opposing, the entire movement of said safety handle from said safe position to said release position;

a second pivot pin secured to said tubular sleeve across the other of said openings in said sleeve and located on the opposite side of said sleeve from said one opening, said second pivot pin extending in a direction parallel to a diameter of said sleeve and parallel to said first pivot pin;

a second, elongated locking handle pivotally mounted on said second pivot pin and including a second locking handle cam head having a cam surface thereon, and having said second pivot pin extending through said second locking handle cam head, said second locking handle cam head and the cam surface carried thereon being so configured and positionally arranged relative to said annular groove, and its radially outwardly facing concave surface, that pivotation of said second locking handle to a locking position in which said second locking handle extends parallel to the axis of said tubular sleeve will cause the cam head carried on said second locking handle to bias said male adapter axially inwardly into said sleeve unit said end face is in a sealing position relative to said internal seal seat, whereas pivotation of said second locking handle to a release position in which said second locking handle is pivoted outwardly away from said sleeve and away from said locking position causes said cam surface on the cam head of said locking handle to move to a position away form the concave surface of said annular groove, and allows said male adapter to move axially outwardly with respect to said sleeve, and said e nd face to move away from said sealing position;

a second elongated safety handle pivotally mounted on said second pivot pin and including a second safety handle cam head having a radially inner surface thereon, and having said second pivot pin extending through said second safety handle cam head, said second safety handle cam head and said radially inner surface carried thereon being so configured and positionally arranged relative to the outwardly facing concave surface of said annular groove that pivotation of said second elongated safety handle to a safe position in which said second safety handle extends parallel to the axis of said tubular sleeve will place a part of said radially inner surface carried on said second safety handle within said groove, sand prevent said male adapter from moving totally out of said sleeve in an axial direction, whereas pivotation of said first safety handle to a release position will move said radially inner surface carried on the cam head of said second safety handle radially outwardly out of said annular groove and allow said male adapter to be extricated from said sleeve by movement in an axial direction at a time when said first and second locking handles are pivoted to said release positions; and

a second spring having convolutions around said second pivot pin and having a first part bearing against said second elongated safety handle and resiliently biasing said second safety handle to said safe position, and having a second part bearing against said sleeve and resiliently resisting movement of said second safety handle away from said safe position, said second spring being positioned to continue to exert said resilient bias against said second elongated safety handle to oppose movement of said second safety handle toward said release position from said safe position with said resilient biasing of said second safety handle continuing throughout, and opposing, the entire movement of said safety handle from said safe position to said release position.

4,802,695

PIPE SCREWED CONNECTION

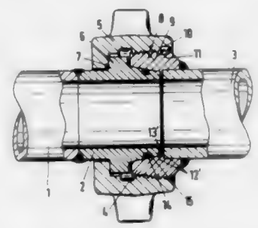
Karl Weinhold, Im Jagdfeld 43, 4040 Neuss 1, Fed. Rep. of Germany

Filed May 18, 1987, Ser. No. 50,327

Claims priority, application Fed. Rep. of Germany, May 21, 1986, 3617014; Mar. 25, 1987, 3709819

Int. Cl.⁴ F16L *19/00*

U.S. Cl. 285—91 9 Claims



1. A liquid-tight, hydraulic, pipe screwed connection having a socket member attachable to one pipe end, a plug-in member at the opposite pipe end which can be partly inserted into the socket member, and a union nut for which the plug-in member has a bearing surface in the form of an annular shoulder and which engages over the plug-in member and is screwed on to the socket member, wherein meshing screwthreaded surfaces disposed on the union nut and on the socket member each have matchingly conical threads and cylindrical threads, said cylindrical threads intersecting said conical threads at the largest diameter of said conical threads, and said cylindrical threads being substantially fewer in number than said conical threads, whereby the angle of conicity of said conical threads is such that rotating the union nut disengages the threads of each threaded member readily by virtue of a gap which is produced between the conical threads when the threaded members are shifted longitudinally in relation to each other, and wherein opposite coaxial sealing surfaces of each of the plug-in member and the socket member are cylindrical, and a sealing ring is inserted in an annular groove in at least one of said plug-in member and said socket member sealing surfaces and wherein a split locking pin is inserted transversely through the union nut and engages a locking pin shoulder surface in said socket member.

4,802,696

QUICK CONNECT COUPLING

Satish M. Chohan, and Jerry J. Antosch, both of Rockford, Ill., assignors to The Gates Rubber Company, Denver, Colo.

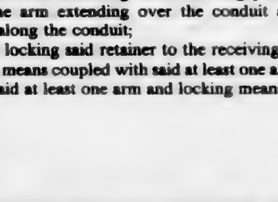
Filed Oct. 23, 1986, Ser. No. 922,482

Int. Cl.⁴ F16L *37/08*

U.S. Cl. 285—317 14 Claims

1. In a female coupling of the type with a housing having at least two substantially coaxial bores for receiving a male end pipe portion where one of the bores is stepped to a larger diameter than the other bore; at least one O-ring disposed in the housing and with an axis oriented substantially coaxially with the bores, the O-ring defining a sealing means for the housing and a male end pipe portion; and a means for retaining part of a collared pipe end portion in the housing, the collar having a desired radial height and axial thickness; wherein the improvement comprises:

the housing having the larger diameter bore sized to receive the O-ring without radial clearance and having a generally radially extending annular shoulder between the two bores;



spring bias means disposed in the housing for biasing the O-ring against a portion of the annular shoulder, deforming the O-ring, and effecting a seal with part of the annular shoulder, the spring bias means having an end portion, juxtaposed the O-ring and an opposite end portion that is axially displaceable an amount at least equal to the desired collar thickness; and

wherein the retaining means has deflectable fingers juxtaposed the displaceable end portion of the spring bias means, the fingers deflectable an amount at least equal to the desired collar height and the fingers as a means for engaging the collar of a pipe end portion to effect retention.

4,802,697

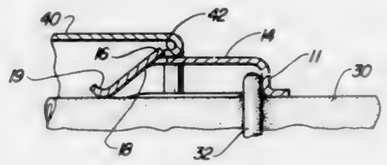
MEANS OF LOCKING TUBES INTO ENGAGEMENT WITH A PRESSURE FITTING

Donald D. Bartholomew, Marine City, Mich., assignor to Proprietary Technology, Inc., Southfield, Mich.

Filed Sep. 9, 1987, Ser. No. 94,688

Int. Cl.⁴ F16L *39/00*

U.S. Cl. 285—319 5 Claims



1. A retainer for retaining a conduit with an annular bead within a receiving fitting, said retainer comprising:

a ring portion positioned peripherally about the conduit and abutting the annular bead to prohibit withdrawal of the conduit from said retainer;

at least one arm extending from said ring portion, said at least one arm extending over the conduit annual bead axially along the conduit;

means for locking said retainer to the receiving fitting, said locking means coupled with said at least one arm such that in use said at least one arm and locking means tensionally maintain the conduit in a locking relationship with the fitting; and

at least one more additional arm extending from said ring portion over the bead and axially along the conduit for maintaining concentricity of the retainer with respect to the conduit within the fitting.

4,802,698

JOINT MEANS HAVING FLANGES

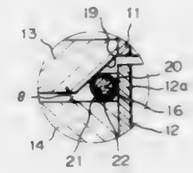
Katsuhide Fujisawa; Toshimasa Takanaka; Hireo Buseki, and Masakatsu Takahashi, all of Kanagawa, Japan, assignors to Nippon Reinz Co., Ltd., Kanagawa, Japan

Filed Apr. 8, 1987, Ser. No. 35,937

Claims priority, application Japan, Apr. 22, 1986, 61-59617[U]; Apr. 22, 1986, 61-59618[U]; Apr. 23, 1986, 61-60182[U]

Int. Cl.⁴ F16L *23/00*

U.S. Cl. 285—363 4 Claims



1. A joint means for fixedly connecting first and second pipes end to end and for sealing the connection of the first and second pipes, said joint means comprising:

a first flange integrally extending from the outer peripheral surface of the first pipe at an end portion thereof that includes the free end of the first pipe, a part of said first flange projecting from said free end of the first pipe, said part of said first flange having an inner peripheral surface comprising a frusto-conical surface;

a second flange integrally extending from the outer peripheral surface of the second pipe adjacent an end portion thereof that includes the free end of the second pipe,

said first flange including said frusto-conical surface and said second flange opposing each other;

nut and bolt means extending between said first and said second flanges for fixedly securing said first and said second flanges to one another to connect the first pipe to the second pipe; and

a sealing member clamped between said first and said second flanges for sealing the connection of the first pipe to the second pipe,

said sealing member having a closed loop shape and comprising heat resistant material surrounded by a thin metal sheet, the thin metal sheet having overlapped end portions one of which includes an edge of the thin metal sheet that is exposed at the periphery of the sealing member thereby defining a seam of the sealing member,

said sealing member extending around said end portion of the second pipe, and said sealing member in contact with and clamped between said frusto-conical surface of the first flange and said second flange.

4,802,699

SNAP LOCK ASSEMBLY

Gary I. Smith, Auburn, Ind., assignor to Brunsmall, Inc., Angola, Ind.

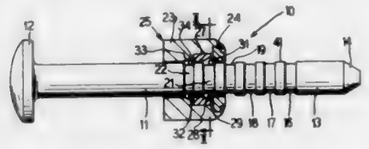
Filed Jun. 6, 1988, Ser. No. 202,312

Int. Cl.⁴ B05D *33/34*

U.S. Cl. 292—327 3 Claims

1. A snap lock seal comprising, a bolt with a shank in which a plurality of equidistant spaced grooves are formed, a locking

member formed with a central opening through which said bolt shank can be inserted, a plurality of snap rings with substantially circular cross-sections mounted in said locking member so as to be spaced apart the same distance as the spacings of said grooves in said shanks and adapted to be received in said grooves to lock said locking member to said shank, each of said plurality of grooves formed with forward end walls which are substantially normal to the longitudinal axis of said bolt shank and each of said plurality of grooves formed with back end walls which have angles less than 90° to the longitudinal

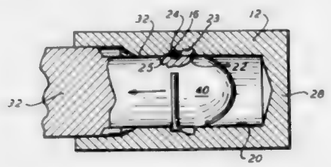


axis of said bolt shank, and said locking member formed with a plurality of snap ring sockets in which said plurality of snap rings are received and each of sockets formed with walls which are substantially normal to the longitudinal axis of said bolt shank, and each of said sockets formed with rear walls which are tapered relative to the longitudinal axis of said bolt shank such that if force is applied to remove said bolt from said locking member, the rear tapered wall of each of said sockets will press one of said plurality of snap rings downwardly into said plurality of grooves to prevent said bolt from being removed from said locking member.

4,802,700
LOCKING SEAL

David L. Stevenson; Terry R. Moore, and Terrence N. Brummall, all of Angola, Ind., assignors to Trans-Guard Industries, Inc., Angola, Ind.

Filed Nov. 9, 1987, Ser. No. 118,548
Int. Cl.[4] B65D *33/34*
U.S. Cl. 292—327 2 Claims

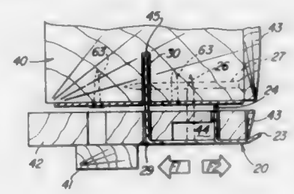


1. A locking seal comprising:
a lock body, said lock body including a bore extending partially therethrough, a first radially outwardly extending channel formed in said bore at least a portion of the surface of said channel being frusto-conical and a second radially outwardly extending channel formed in said base and in communication with said first channel, said second channel including a cylindrical surface;
a bolt for insertion within said base in said lock body, said bolt including a generally annular channel which may be selectively aligned with said first and second channels in said lock body in response to axial displacement of said rod within said lock body; and
spring means received within said annular channel in said rod and one of said channels in said lock body, said spring means being split such as to be enlargeable and compressible in diameter from its no-load condition, said spring means being compressible into said annular channel in said rod in response to initial displacement of said rod in the direction out of said lock body and said spring means being compressible in response to further displacement of said rod in the direction out of said lock body such as to be received within said annular channel and said second channel in said lock body.

4,802,701
ANCHOR LATCH

George S. Mazie, 12521 Fordline, Southgate, Mich. 48195

Filed Dec. 31, 1986, Ser. No. 948,108
Int. Cl.[4] E05C *21/00*
U.S. Cl. 292—340 8 Claims



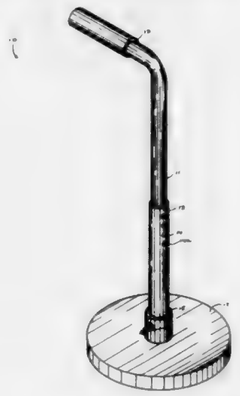
1. A security latch comprising:
a wooden door frame structure having a vertical first wooden member and a vertical second wooden member, the first wooden member having spaced parallel first and second surfaces, the first wooden member being disposed in a side-by-side relationship with the second wooden member;
a latch plate having a planar outer section with a bolt-receiving opening for receiving a locking door bolt, and means for fastening said latch plate to the first wooden member in abutment with the first surface thereof, the latch plate having a planar anchor section disposed at a right angle to said outer section, the anchor section having a width greater than the thickness of the first wooden member so as to extend beyond the second surface thereof, whereby the outer section of the latch plate is disposed adjacent the first surface thereof, the anchor section having a fastener-receiving opening therein;
a planar base plate having an opening for receiving the anchor section of the latch plate, the base plate being disposed between member and the second wooden member in a spaced, parallel relationship to the outer section of the latch plate such that a portion of the fist wooden member is sandwiched between the outer section of the latch plate and the base plate, and the fastener-receiving opening in the anchor section is disposed on the opposite side of the base plate as the outer section of the latch plate; and
an elongated screw received in the second wooden member through the fastener-receiving opening in the anchor section, the screw being disposed on the opposite side of the base plate as the outer section of the latch plate.

4,802,702
MAGNETIC LIFTING TOOL

Royce D. Bownds, 411 N. Ave. E., Deaver City, Tex. 79323

Filed Mar. 10, 1988, Ser. No. 166,398
Int. Cl.[4] B25J *15/06*; B66C *1/04*
U.S. Cl. 294—65.5 5 Claims

1. A magnetic lifting tool for use in removing ferrous debris, said tool comprising:
an "L" shaped handle including an elongate hollow vertical leg and a hollow vertical leg and a horizontal leg of lesser extent than said vertical leg, and
a hollow securement sleeve slidably secured to said handle along a first extent portion of said sleeve and fixedly secured to housing means along a second extent portion of said sleeve, said first and second extent portions of said sleeve spaced at opposite ends of said sleeve, and
said housing means including a cylindrical housing of a first diameter and socket of a second diameter directed upwardly of said housing means accepting said securement sleeve, and
a magnetic means for magnetically attracting ferrous debris secured within said housing means, and
wherein said horizontal leg includes a frictional grip encompassing a majority of a surface defined by said horizontal leg, and
wherein said securement sleeve is formed with a series of axially spaced openings cooperative with a resilient detent secured within said vertical leg and projecting through an



opening in said vertical leg to cooperative with one of said spaced openings, and
wherein said socket is of a diameter to accept said securement sleeve therein including a plurality of fasteners to secure said securement sleeve with said socket, and
wherein said first diameter is six inches and said housing means of a height of one inch to define a six to one ratio of said first diameter to said height, and
wherein said housing means includes a working surface formed of a magnetically attractive metal,
and said surface formed along and defining a lowermost face of said housing, and
an upper surface and sides of said housing means formed of plastic-like material.

4,802,703
TWEEZERS WITH AUTOMATIC OPENING AND CLOSING

Jean P. Gabel, La Wantzenau, France, assignor to Manufacture des Outils Dumont S.A., Montignez, Switzerland

Continuation of Ser. No. 829,380, Feb. 13, 1986, abandoned.
This application Oct. 19, 1987, Ser. No. 110,631
Claims priority, application Switzerland, Feb. 20, 1985, 777/85
Int. Cl.[4] B65G *7/12*
U.S. Cl. 294—99.2 14 Claims

1. Tweezers, with automatic locking, comprising:
(a) two legs each having forward and back ends with tips at the forward ends and a middle portion spaced from the back end, the legs being joined together at the back ends and having a normal position biased away from each other in the middle portions and at the forward ends and tips with no intervening structure therebetween, the legs in the middle portion being adapted to be subjected to a closing pressure to move the legs in the middle portion toward each other so as to move the forward ends and tips to a closed position, said legs further having opposite outside faces extending therealong from the back ends to the forward ends;
(b) a rigid closing ring having opposite internal faces spaced from each other by a predetermined distance and freely and slidably mounted on said legs for sliding movement without friction and under the influence of gravity between said back ends and the middle portion thereof, with said opposite internal faces opposing and moving along the opposite outside faces of the legs; and
(c) the spacing of the outside faces in said middle portion of the legs when in said normal position being greater than the predetermined spacing of the internal faces of said ring to frictionally retard movement of said ring therealong and said spacing of the outside faces being less than said predetermined spacing with the outside surfaces of the



legs spaced from the opposed inside surfaces of the ring when said closing pressure is applied to permit the ring to slide under the influence of gravity toward the tips and over at least part of the middle portion of said legs and thereby hold said tips closed upon release of said closing pressure by frictional retainment of said ring on the middle portion of said legs and to further permit free sliding movement away from the forward ends under the influence of gravity upon exerting a sufficient closing pressure to space the outside faces of the legs directly underlying the ring at a distance from each other which is less than said predetermined spacing with the outside surfaces of the legs spaced from the opposed inside surfaces of the ring; and
(d) stop means at the back ends of the legs to stop movement of the ring in a direction toward the back ends.

4,802,704
SPARE RIB HOLDER

Thomas P. Burns, 70 Oakridge La., Albertson, N.Y. 11507

Filed Mar. 11, 1988, Ser. No. 167,049
Int. Cl.[4] A47G *21/10*; A47J *43/28*
U.S. Cl. 294—99.2 1 Claim



1. A spare rib holder comprising two oppositely disposed members pivotally joined at one end to simulate retractable jaws, the lower member extending forwardly of the upper member, said members being spring biased with respect to each other so as to normally be in open position, the upper

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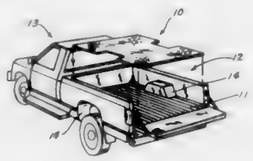
member being provided with a row of teeth at its free end, said teeth extending transversely of the holder; the lower member having a forwardly projecting uninterrupted scoop for accessing a spare rib, the scoop being provided with a retaining wall at its sides, a spare rib being clampable between the teeth and the scoop after being accessed by the scoop, the outer surfaces of both members being provided with finger grips so the device may be conveniently held between the thumb and index finger and squeezed closed thereby.

4,802,705

TRUCK BED LINER AND METHOD OF FORMING SAME

Dennis L. Elwell, Johnston, Iowa, assignor to Dee Zee, Inc., Des Moines, Iowa

Filed Jan. 4, 1988, Ser. No. 140,610
Int. Cl.[4] B62D *33/02*
U.S. Cl. 296—39.2 **10 Claims**



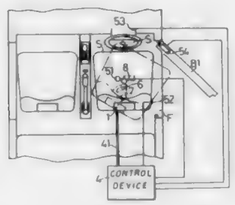
1. A liner for protecting the corrugated or flat exposed floor of a truck bed comprising a flat mat of an aluminum alloy conforming generally to the outline of the truck bed, said mat originally formed in a coil, said coil comprising a strip having a length considerably longer than said mat, said coil having been flattened and formed into a plurality of mats of identical shape, each of said mats again formed into a roll for shipping purposes.

4,802,706

ROTARY SEAT FOR VEHICLE

Sadahisa Onimaru, Nishio; Toshiaki Shimogawa, Okazaki; Masahiro Taguchi, Hazu, and Satosi Kuwakado, Nukata, all of Japan, assignors to Nippon Sokeu, Inc., Nishio, Japan

Filed Jun. 4, 1986, Ser. No. 870,354
Claims priority, application Japan, Jun. 4, 1985, 60-121199; Jul. 11, 1985, 60-153004
Int. Cl.[4] B60N *1/02*
U.S. Cl. 296—68 **5 Claims**



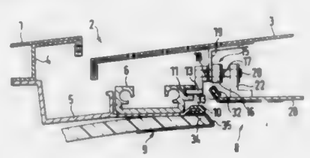
1. A rotary seat for a vehicle, comprising:
a support shaft mounted upright on a floor of the vehicle;
a seat cushion member rotatably supported on said support shaft;
driving means connected to said seat cushion member for automatically rotating said seat cushion member between a direction toward a front of said vehicle and a direction toward a side door of said vehicle;
means for disconnecting said driving means from said seat cushion member to allow said seat cushion member to be manually rotatable, said disconnecting means comprising a rodlike member provided on one of said vehicle floor and said seat cushion member eccentrically with a center of rotation of said seat cushion member, and a pair of engaging surfaces provided on the other one of said seat cushion member and said vehicle floor, said rod-like member having a locus of movement with respect to one of said vehicle floor and said seat cushion member, said engaging surfaces being movable along the locus of movement of said rod-like member, independently of movement of said seat cushion member, said engaging surfaces being separated by a distance substantially equal to a total range of movement of said rod-like member; and
control means for controlling said riving means and said disconnecting means to place said seat cushion member in an automatic rotating mode or a manual rotating mode, and said control means including means for controlling said disconnecting means to place said seat cushion member in said automatic rotating mode by pushing said rod-like member with one of said engaging surfaces, and for placing said seat cushion member in said manual rotating mode by positioning said engaging surfaces at extreme ends of said locus of movement of said rod-like member.

4,802,707

SLIDING ROOF FOR AUTOMOBILES

Albert Schlapp, Dreieich, Fed. Rep. of Germany, assignor to Rockwell-Golde GmbH, Fed. Rep. of Germany

Filed Mar. 11, 1988, Ser. No. 167,274
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1987, 3707697
Int. Cl.[4] B60J *7/053, 7/195*
U.S. Cl. 296—214 **2 Claims**



1. In a sliding roof for an automobile having a roof, a roof opening, lateral guide rails adjacent said roof opening, a rigid sliding lid which is slidably guided by said guide rails, and a reinforcing frame connected to said roof for framing the roof opening at the front and sides of said roof opening, that improvement comprising:
a sliding roof frame below said reinforcing frame;
said guide rails being supported on said sliding roof frame;
said guide rails having guide channels open towards said roof opening and located at an inner periphery of said sliding roof frame;
a fixed liner below said sliding roof frame terminating in a vertical cross section having an acute angle formed between a bottom side and an inner linear edge of said fixed liner;
a connecting strip over an edge of said sliding roof frame and overlying said fixed liner adjacent a flat upper edge of said liner which strip surrounds the edges of said sliding roof frame, said connecting strip extending above said flat upper edge of said fixed liner;
a substantially rectangular movable lid liner having a peripheral edge which extends around the four sides of said movable lid liner, which edge is upwardly bent at an angle which is complementary to the acute angle of each edge of said fixed liner whereby the peripheral edge of said movable lid liner provides a counter surface for said inner edge of said fixed liner thereby providing substantially parallel surfaces which are adapted to mate in an inclined

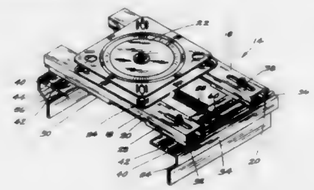
direction, said respective mating surfaces sealing against each other in a closed position to prevent any separation of the respective mating edges which would allow traveling noises to enter the interior of said vehicle.

4,802,708

REMOVABLE BOAT SEAT

Wilbur Vos, and Donavon E. Musgrove, both of P.O. Box 84, Sully, Iowa 50251

Filed Apr. 15, 1987, Ser. No. 40,212
Int. Cl.[4] B63B *29/04*
U.S. Cl. 297—252 **1 Claim**



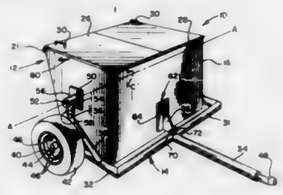
1. A seat for removable attachment to a boat thwart or any like structure having opposing edges, comprising:
a. a main frame continuously longitudinally extensible between an extended position and a retracted position;
b. a pair of grasping members, mounted to either end of said main frame and including a plurality of spaced parallel lengthwise slots, for engaging the thwart edges;
c. said main frame including a pair of substantially parallel channel members having upper and lower surfaces with slide portions formed on their lower surfaces; a pair of substantially parallel first slide members mounted in an adjustably spaced apart relation to one of said grasping members, and a pair of substantially parallel matching second slide members mounted in an adjustably spaced apart relation to the other of said grasping members, each of said first and second slide members being slidably mounted to the slide portions of the channel members.
d. said first and second and slide members include releasable attachment means slidably received within said slots for adjustably mounting said first and second and slide members to said grasping members;
e. means extending between the grasping members for biasing said grasping members toward a retracted position to secure said main frame to the thwart;
f. a turntable mounted on the upper surface of said channel members of said main frame; and
g. a seat member mounted on said turntable for rotation about a generally vertical axis.

4,802,709

DUMPING UTILITY TRAILER

Mark G. Jones, Paris, Tex., assignor to J-10, Inc., Paris, Tex.

Continuation of Ser. No. 524,651, Aug. 19, 1983, abandoned. This application Nov. 25, 1985, Ser. No. 801,508
Int. Cl.[4] B60P *1/24*
U.S. Cl. 298—10 **1 Claim**



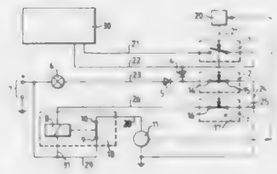
1. A dumpable utility trailer comprising a frame assembly, a container assembly rotatably connected to said frame assembly, and a releasable latch assembly;
said frame assembly comprising a transverse member having spaced apart longitudinal members extending rearwardly therefrom, a singular towing member extending forwardly of said transverse member and connected thereto and having disposed at the forwardly extending end thereof a trailer hitch adapted to releasably couple said dumpable utility trailer to a tow vehicle, at least one wheel connected to each of said longitudinal members, and upwardly extending support arms adapted to connect said container assembly to said longitudinal members, said frame assembly being devoid of structure extending transversely across its width beneath or rearwardly of said container assembly;
said container assembly comprising container means, and means for rotatably connecting said container means to said upwardly extending support arms so as to permit rotational motion of said container means between the spaced apart longitudinal members of said frame assembly from an upright position to a fully inverted dumping position, and thereafter, by reversing the direction of rotation, back to an upright position;
said means for rotatably connecting said container means to said upwardly extending support arms defining a rotational axis of said container means that extends generally parallel to said transverse member at substantially the same level as and forward of the center of gravity of the container means when said container means is in an upright position relative to said frame assembly;
said transverse member of said frame assembly being disposed forward of said container means when said container means is in an upright position relative to said frame assembly; and
said latch assembly being adapted to maintain said container means in an upright position relative to said frame assembly until said latch assembly is released to effect dumping.

4,802,710

ELECTRIC SWITCHING DEVICE

Jochen Burgdorf, Offenbach-Rumpenheim, and Franz Latka, Niddatal, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 20, 1987, Ser. No. 112,190
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1986, 3636263
Int. Cl.[4] B60T *11/18, 17/22*
U.S. Cl. 303—11 **2 Claims**



1. An electric switching device for monitoring the operation of a hydraulic brake system for an automotive vehicle equipped with a brake slip control device, said electric switching device comprising first switch means adapted to switch the brake slip control device on and off, second switch means for operating a warning lamp, third switch means for controlling a hydraulic pressure pump, a brake system pressure responsive actuating element connected to said first, second, and third switch means, said first switch means including means to make contact through said switch, said second switch means including means to break contact through said switch, and circuit means providing for functional redundancy of said first switch

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means including means electrically connecting said first switch means to said second switch means to maintain said brake slip control device in a switched off position in the event said first switch remains in a switched on position and pressure in said hydraulic brake system remains below a threshold value.

4,802,711

ANTI-LOCK CONTROL METHOD FOR VEHICLE

Tetsuji Muto; Shohei Matsuda; Yoshihiro Iwagawa, and Toshio Yahagi, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1988, Ser. No. 148,674

Claims priority, application Japan, Jan. 26, 1987, 62-15474

Int. Cl.⁴ B60T *8/66, 8/70*

U.S. Cl. 303—96 **5 Claims**



1. An anti-lock control method for a vehicle comprising the steps of integrating wheel speeds to estimate a vehicle speed, comparing said wheel speeds with a reference value derived from said estimated vehicle speed to judge whether wheels are entering a locked state, and reducing a brake pressure to wheel brakes when said wheels are entering a locked state, wherein when a difference between a signal value derived from a lower one of the wheel speeds and a signal value derived from a higher one of the wheel speeds is larger than a predetermined value, a range of condition for judging that said wheels are about to be locked is enlarged.

4,802,712

ANTILOCK SYSTEM FOR A VEHICLE HAVING POWER-ASSISTED HYDRAULIC MULTIPLE-CIRCUIT BRAKE SYSTEM

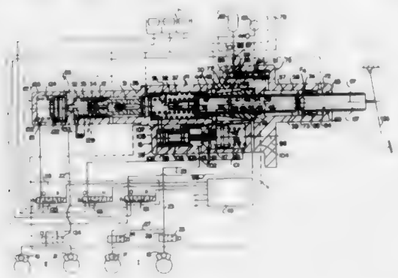
Reinhard Resch, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 686,477, Dec. 26, 1984, Pat. No. 4,629,258. This application Apr. 2, 1986, Ser. No. 847,225

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1985, 3511974

Int. Cl.⁴ B60T *8/44*

U.S. Cl. 303—114 **18 Claims**



1. An antilock system for a vehicle having a power assisted hydraulic brake system comprising:

a control cylinder means having a primary piston separating a primary output pressure space from a boosting space, and means for applying pedal force to said piston;

a pressure modulator means having a floating piston separating a modulator input space, which is connected to said primary output pressure space, from a modulator output space which is connected to a first brake circuit, and a counter piston delimiting a counter pressure space on one side and engaging said floating piston;

an auxiliary pressure source;

a proportional control means for providing an auxiliary proportional pressure which is proportion to said pedal force; and

a control valve means connected to said boosting space, said counter pressure space, said auxiliary pressure source, and said proportional control means for connecting said auxiliary proportional pressure to said boosting space in a normal braking position and connecting said auxiliary pressure source to said counterspace in an antilocking position.

4,802,713

SYSTEM FOR CONTROLLING MOTOR VEHICLE BRAKES

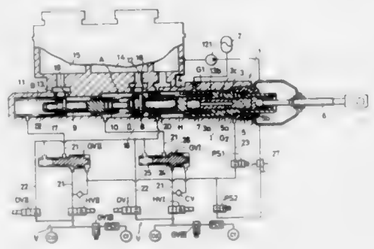
Kinji Ogino, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo and Akebono Research and Development Centre Ltd., Saitama, both of, Japan

Filed Sep. 9, 1987, Ser. No. 94,554

Claims priority, application Japan, Sep. 10, 1986, 61-211440

Int. Cl.⁴ B60T *8/42, 13/68*

U.S. Cl. 303—119 **5 Claims**



1. A system for controlling motor vehicle brakes comprising:

means for detecting status of each of driving and driven wheels of a motor vehicle;

means for supplying hydraulic pressure to and exhausting hydraulic pressure from brakes of each of said driving and driven wheels; and

means for controlling the supply-and-exhaust means according to an output of the detection means,

said supply-and-exhaust means comprising:

an accumulator;

means for decompressing hydraulic pressure supplied from said accumulator; and

means for switching a passage way from said accumulator to said decompression means.

4,802,714

DESK WITH AN ADDITIONAL LECTERN

Helmut Steinhilber, Vorrutiweg 12, CH-6052 Hergiswil, Switzerland

Filed Dec. 7, 1987, Ser. No. 129,735

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1986, 3642672; European Pat. Off., Aug. 29, 1987, 87112619.9

Int. Cl.⁴ A47B *17/00*

U.S. Cl. 312—196 **30 Claims**

1. A desk

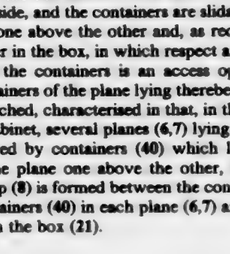
a lectern and,

means for slidably guiding said lectern into a resting position under the top of said desk, and for enabling said lectern to be pulled from said resting position into a working position in which said lectern projects over said desktop, comprising:

(a) at least one extension;

(b) means secured to said desk beneath said desktop for slidably receiving said extension;

(c) at least one supporting arm;



(d) means for pivotally connecting said supporting arms to said extension; and

(e) means for pivotally connecting said lectern to said supporting arm;

(f) said first mentioned means and said lectern being free of means for supporting said lectern by engaging said desktop; whereby said lectern is supported in said working position by said supporting arm, said extension and said receiving means.

4,802,715

DEVICE FOR THE STORAGE OF OBJECTS IN A PLURALITY OF CONTAINERS

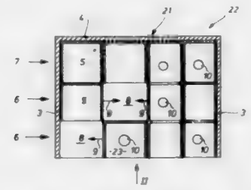
Walter Gröbly, Höchweg, CH-8914, Aeugst a.A., and Bruno Stocker, Neugasse 3, CH-9442 Berneck, both of Switzerland

Continuation of Ser. No. 852,847, filed as PCT EP85/00365 on Jul. 23, 1985, published as WO86/00791 on Feb. 13, 1986. This application Dec. 23, 1987, Ser. No. 136,479

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1984, 3428198

Int. Cl.⁴ A47B *88/00*

U.S. Cl. 312—299 **12 Claims**



1. A device for the storage of objects in a box which is designed as a cabinet, drawer or the like, in which respect the objects are stored in a plurality of containers which fill up the basal surface of the box and in which said containers are open on at least one side, and the containers are slidably mounted in several planes one above the other and, as required, also one behind the other in the box, in which respect arranged in each plane between the containers is an access opening through which the containers of the plane lying therebelow or therebehind can be reached, characterised in that, in the design of the box (21) as a cabinet, several planes (6,7) lying one behind the other are formed by containers (40) which lie vertically in respectively one plane one above the other, in that in each plane (6,7) a gap (8) is formed between the containers (40) and in that the containers (40) in each plane (6,7) are guided vertically slidably in the box (21).

4,802,716

FITTING ASSEMBLY FOR CONNECTING THE SIDEWALL OF A DRAWER TO THE REAR WALL THEREOF

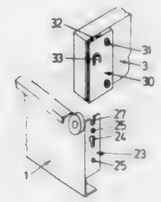
Erich Röck, Höchst; Helmut Hollenstein, Lustenau, and Josef Brunner, Höchst, all of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed May 5, 1987, Ser. No. 46,175

Claims priority, application Austria, May 14, 1986, 1280/86

Int. Cl.⁴ A47B *88/00*

U.S. Cl. 312—330 R **13 Claims**



1. A fitting assembly for connecting the rear end of a side wall of a drawer to the respective end of a rear wall of the drawer, said assembly comprising:

a fastening plate to extend inwardly from the rear end of the drawer side wall at a right angle thereto, said fastening plate having in an upper edge thereof an open-ended slot, said fastening plate having therethrough a keyhole-shaped opening, and said fastening plate including fastening means for use in connecting said fastening plate to a rear side of the drawer rear wall; and

holding means, to be connected to the rear side of the drawer rear wall, for cooperation with at least said open-ended slot of said fastening plate for clamping said fastening plate to the rear side of the drawer rear wall, said holding means comprising a plate to be connected to the rear side of the drawer rear wall at a position spaced rearwardly therefrom to define a gap therebetween, such that said fastening plate may be inserted relatively upwardly into the gap, said plate having extending forwardly therefrom a tap to fit within said open-ended slot in said fastening plate.

4,802,717

INFRARED AFOCAL ZOOM TELESCOPE

Reynold S. Kebo, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 21, 1986, Ser. No. 854,373

Int. Cl.⁴ G02B *13/14, 15/16*

U.S. Cl. 350—1.3 **19 Claims**

1. An infrared afocal zoom telescope comprising:

a first fixed positive lens group;

a second fixed positive lens group spaced from the first lens group, said second fixed lens group comprising a doublet having a germanium positive meniscus lens and a zinc selenide meniscus lens;

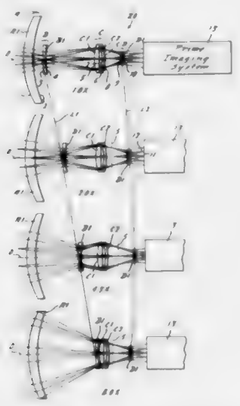
a front negative zoom lens disposed between the first and second fixed lens groups;

a rear negative zoom lens disposed on an opposite side of the second fixed lens group; and

means for mechanically compensating the telescope by moving the zoom lenses relative to each other between a first position defining a magnification power of at least 6X wherein the front zoom lens is disposed adjacent the positive meniscus lens of the second fixed lens group to form a weak negative lens group, with said means moving the zoom lenses to a second position defining a magnification power at least of unity or less wherein the front zoom

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lens is spaced from the positive meniscus lens of the second fixed lens group; and



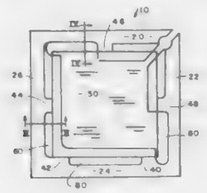
whereby the lenses are selected and arranged to prevent the formation of an image between the first lens group and said rear negative zoom lens.

4,802,718

ONE PIECE FRAME FOR HOLDING A HOLOGRAPHIC ELEMENT IN A HOLOGRAPHIC SYSTEM

Kenneth G. Leib, Wantagh, and Suey L. Jue, deceased, late of Hicksville, both of N.Y. (by Catherine Jue, executrix), assignors to Grumman Aerospace Corporation, N.Y.

Filed Sep. 3, 1986, Ser. No. 903,275
Int. Cl.⁴ G03H *1/04;* **A47G** *1/06;* **G03B** *17/26*
U.S. Cl. 350—3.6 **18 Claims**



1. A one piece frame for holding a holographic element in a holographic system, comprising:

a border portion forming an outside border of the frame, and being flexible between an open position for receiving the holographic element, and a closed position for holding the holographic element in the frame;

a seating portion connected to and extending inward from the border portion to seat against a back surface of the holographic element; and

a plurality of lateral positioning tabs connected to and extending inward from the border portion, above the seating portion, the lateral positioning tabs being spaced apart from each other and along the border portion to apply upward, downward, leftward and rightward forces to the holographic element to force said element into, and to hold the holographic element in, a centered position in the frame and spaced from said border portion thereof;

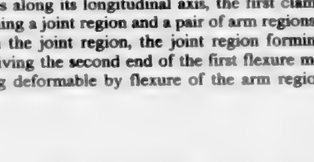
the border portion being biased toward the closed position to hold the holographic element against the lateral positioning tabs in a fixed position in, and with a great angular orientation relative to, the frame, and to cooperate with the holographic element to maintain the frame in a fixed preset shape to facilitate placing and holding the holographic element in a precise location and orientation in the holographic system.

4,802,719

INFRA-RED LASER SHIELD

Jose Magarinos, and Daniel Coleman, both of Thornwood, N.Y., assignors to Farrand Optical Co., Valhalla, N.Y.

Continuation-in-part of Ser. No. 525,116, Aug. 22, 1983, abandoned, and a continuation-in-part of Ser. No. 639,661, Aug. 13, 1984. This application Jul. 24, 1985, Ser. No. 758,515
Int. Cl.⁴ G03H *1/04;* **G02B** *5/32;* **G02C** *7/10*
U.S. Cl. 350—3.65 **44 Claims**



3. A method of making a holographic optical element, comprising the steps of:

(a) recording an interference pattern in a sensitive film disposed on a substrate having a first shape;

(b) developing said interference pattern;

(c) removing the sensitive film from the substrate with the interference pattern recorded in it; and

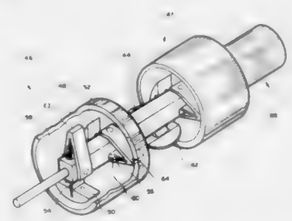
(d) adhering the removed sensitive layer to a substrate having a second shape.

4,802,720

FLEXURAL PIVOT

Dean R. Paulsen, 918 Belmont St., Watertown, Mass. 02172

Filed Jun. 30, 1987, Ser. No. 68,637
Int. Cl.⁴ G02B *26/10*
U.S. Cl. 350—6.6 **4 Claims**



1. A scanner comprising:

A. a base;

B. a first elongated flexure member having first and second ends and a longitudinal axis, being secured to the base at its first end, and being adapted for flexure along its longitudinal axis to translate its second end;

C. an armature having a pivotal axis and adapted to pivot about its pivot axis;

D. a first clamp member for securing the second end of the first flexure member to the armature so that the armature pivots about its pivot axis when the first flexure member flexes along its longitudinal axis, the first clamp member forming a joint region and a pair of arm regions extending from the joint region, the joint region forming a recess receiving the second end of the first flexure member and being deformable by flexure of the arm regions toward each other to clamp the second end of the first flexure member; and

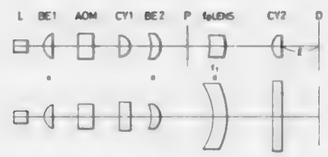
E. first fastening means, spaced from the second end of the first flexure member, for securing the arm regions of the first clamp member to the armature to support the armature at a position spaced from the second end of the first flexure member and to deflect the arm regions of the first clamp member toward each other to clamp the second end of the first flexure member in the recess, whereby the first fastening means acts to secure the second end of the first flexure member to the first clamp member without being positioned at the second end of the first flexure member.

4,802,721

SCANNING OPTICAL SYSTEM

Hisao Fujita, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 784,366, Oct. 4, 1985, abandoned. This application Sep. 14, 1987, Ser. No. 97,297
Claims priority, application Japan, Oct. 5, 1984, 59-208345
Int. Cl.⁴ G02B *26/10, 13/18*
U.S. Cl. 350—6.8 **5 Claims**



1. A scanning optical system comprising a laser as a light source, a deflector for deflecting and scanning the emitted light of said laser, and a focusing element for converging the emitted light of said deflector on the scanning surface, characterized in that at least one optical element having an aspherical, non-planar, contour in section in a scanning direction is arranged at the rear of said focusing element.

4,802,722

LIGHTPEN

Sven A. R. Persson, Hägersten, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

PCT No. PCT/SE86/00078, § 371 Date Oct. 22, 1986, § 102(e) Date Oct. 22, 1986, PCT Pub. No. WO86/05280, PCT Pub. Date Sep. 12, 1986
PCT Filed Feb. 24, 1986, Ser. No. 934,393
Int. Cl.⁴ G02B *1/04, 6/00*
U.S. Cl. 350—96.10 **15 Claims**



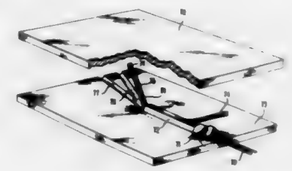
1. An optical cable adapted for use in reading an optical information carrier, said cable comprising a light conductor adapted for transmitting light from the information carrier to a light-sensitive receiver, the light conductor including a major portion consisting of an optical fibre made of an easily bendable material and having an end face, and an end portion secured to and projecting from said end face of said major portion in a direction facing away from the light-sensitive receiver and consisting of a separate optical fibre, the light reception angle (α) of which, for obtaining good resolution, is less than the corresponding angle of the said major portion.

4,802,723

OPTICAL FIBER TAP

Calvin M. Miller, Lilburn, Ga., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murry Hill, N.J.

Filed Sep. 9, 1982, Ser. No. 416,363
Int. Cl.⁴ G02B *6/36*
U.S. Cl. 350—96.15 **14 Claims**



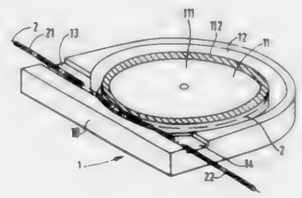
1. A device for tapping energy from an optical fiber CHARACTERIZED in that said device compriaes a tube of transparent material adapted to substantially surround a continuous portion of an optical fiber and having a bend therein adapted to form a bend in said fiber, and with a first detector being optically coupled to a first end of said tube so as to detect optical energy propagating axially along a first direction of said tube.

4,802,724

RESERVE DEVICE POR OPTICAL FIBERS

Claude R. Fraise, Boudeville; Christian Ferja, Wissous, and Robert Calevo, L'Hay les Roses, all of France, assignors to Societe Anonyme de Telecommunications and Societe Industrielle de Liaisons Electriques, Paris, France

Filed Jul. 15, 1987, Ser. No. 74,304
Claims priority, application France, Jul. 15, 1986, 86 10270
Int. Cl.⁴ G02B *6/36*
U.S. Cl. 350—96.20 **6 Claims**



1. Apparatus for protectively containing a reserve length of at least one optical fiber disposed within two protective tubular ducts, comprising:

a base element having a flat bottom and an internal substantially annular recess formed around a circular central core having a predetermined diameter, the annular recess having transverse extensions aligned past the central core so that an overall recessed form like an omega "Ω" is defined thereby, the transverse extensions respectively providing inlet and outlet channels for said at least one optical fiber passing into the recess to go around the core and out from said base element; and

a lid firmly attachable to said base to cover the overall omega-shaped recessed form while squeezing said ducts one each within said transverse extensions thereof to immobilize the same with respect to the base and the lid, whereby said at least one optical fiber entering one of said transverse extensions through said immobilized corresponding tubular duct can be disposed bare in a predetermined length around said core and leaves the other of said

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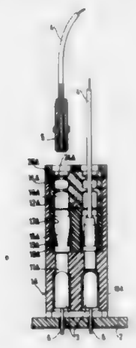
transverse extensions through the other of said corresponding protective ducts immobilized thereat.

4,802,725

OPTO-ELECTRONIC CONNECTION DEVICE

André Borne, and Marcel Jusseau, both of Villeurbanne, France, assignors to Cgee Alsthom, Levallois-Perret, France

Filed Aug. 25, 1982, Ser. No. 411,723
Claims priority, application France, Aug. 28, 1981, 81 16427
Int. Cl.[4] G02B *6/36, 7/26*
U.S. Cl. 350—96.20 5 Claims



1. A transmission head for connecting at least one opto-electronic component mounted on a printed circuit board to an optical fiber fitted with a connecting terminal having a radially enlarged flange intermediate of its ends, said transmission head comprising:

at least one junction block of generally parallelepipedal shape and forming top and bottom surfaces,

at least one channel extending the full height of said junction block from said top surface to said bottom surface and opening onto said bottom surface and being sized at its bottom end to receive and house an opto-electronic component mounted on said printed circuit board,

a single groove within said junction block from said top surface downwardly to peripherally enlarge a portion of the channel above said opti-electronic component,

a hollow support member and a hollow sealing member in end abutment positioned in inverse order within said groove so as to form internally a channel axially aligned with the channel of said junction block, and

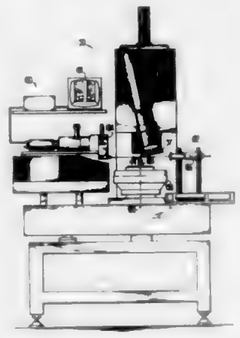
a metal sleeve fixedly mounted internally of said hollow support member and having internally directed resilient longitudinal tongues such that an optical fiber projecting downwardly through said hollow sealing member and said hollow support member, in that order, has said radially enlarged flange positioned below said internally directed resilient longitudinal tongue to lock said optical fiber connecting terminal to said junction block under the ends of said resilient longitudinal tongue and to thereby effect an optical connection between the end of said connecting terminal and said opto-electronic component within said channel in end abutting fashion.

4,802,726

METHODS OF AND APPARATUS FOR RECONFIGURING OPTICAL FIBER CONNECTOR COMPONENTS AND PRODUCTS PRODUCED THEREBY

John M. Palmquist, Lilburn, and Morton J. Saunders, Atlanta, both of Ga., assignors to American Telephone and Telegraph Company, AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Oct. 8, 1987, Ser. No. 106,095
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 24 Claims





1. A method of configuring an end portion of a plug which is adapted to terminate an end portion of an optical fiber, said method including the steps of:

inserting an elongated gauging member having a longitudinal axis into a passageway which extends through an end portion of the plug such that a portion of the gauging member extends beyond an end face of the end portion of the plug;

holding the plug so that it may be turned about an axis of rotation;

turning rotatably the plug about the axis of rotation;

determining the location of the axis of rotation about which the plug is turned;

directing a beam of light into engagement with the portion of the gauging member that extends beyond the end face of the plug in a direction transverse to the longitudinal axis of the gauging member;

determining the location of the centroid of the gauging member adjacent to the end face of the plug at a first position of the plug and then at a second position after the plug has been turned rotatably through a predetermined angle;

determining the eccentricity of the gauging member from the axis of rotation;

moving the plug to cause the centroid of the gauging member adjacent to the end face of the plug to coincide with the axis of rotation; and

configuring the plug to cause the centroid of the gauging member adjacent to the end face of the plug to coincide

with the axis of rotation and the axis of revolution of the configured outer surface of the end portion of the plug.

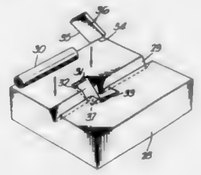
23. A plug which is adapted to terminate an end portion of an optical fiber, said plug being configured in accordance with the method of claim 1.

4,802,727

POSITIONING OPTICAL COMPONENTS AND WAVEGUIDES

Ian W. Stanley, Ipswich, England, assignor to British Telecommunications public limited company, United Kingdom

PCT No. PCT/GB86/00626, § 371 Date Jun. 11, 1987, § 102(e) Date Jun. 11, 1987, PCT Pub. No. WO87/02474, PCT Pub. Date Apr. 23, 1987
PCT Filed Oct. 16, 1986, Ser. No. 80,467
Claims priority, application United Kingdom, Oct. 16, 1985, 8525458; Oct. 16, 1985, 8525459; Oct. 16, 1985, 8525460; Oct. 16, 1985, 8525461; Oct. 16, 1985, 8525462; Oct. 23, 1985, 8526189
Int. Cl.[4] G02B *6/42*
U.S. Cl. 350—96.20 12 Claims



6. An optical assembly comprising an optical component having at least two supporting surfaces and at least one optical waveguide which have been positioned in alignment with one another by the method of:

(a) forming at least one elongate waveguide and a locating groove in a common single crystal substrate, the step of forming the locating groove including anisotropically etching the substrate to form a self-limited V-shaped groove, the included angle of the locating groove being substantially equal to the angle between the supporting surfaces of the optical component; and

(b) mounting the optical component in the locating groove;

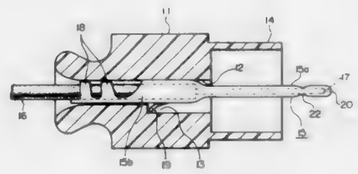
the relative positions of the locating groove and the or each waveguide being such that in use an optical beam may be coupled between the optical component and the or each waveguide.

4,802,728

PIN PLUG WITH AN OPTICAL FIBER

Yasuhiro Komatsu, Osaka, Japan, assignor to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Feb. 8, 1988, Ser. No. 153,381
Claims priority, application Japan, Feb. 12, 1987, 62-19482
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 3 Claims



1. A pin plug with an optical fiber, comprising:

a columnar plug body of a molded insulating material;

a first through hole extending through said plug body along an axis thereof;

a recess in an inner surface of said first through hole;

a cylindrical portion integral with said plug body on the front side thereof in axial alignment with said first through hole;

a ferrule having a large-diametered portion fixedly held in said first through hole, said ferrule having a projecting portion whose inner and outer diameters are smaller than those of said large-diametered portion, said projecting portion extending integrally from said large-diametered portion, axially and forwardly thereof, and projecting out of a front end of said cylindrical portion;

a ring-shaped groove in the outer peripheral surface of said projecting portion adjacent the front end thereof;

a second hole in the front end of said projecting portion;

an optical fiber cable inserted through said plug body and fitted into said ferrule, an end portion of said optical fiber cable having its outer sheath removed and inserted into said projecting portion of said ferrule, a tip end portion of said optical fiber cable having its optical fiber exposed and fitted into said second through hole so that the extreme end of said exposed optical fiber is flush with the front end face of said projecting portion of said ferrule;

a pawl extending rearwardly and outwardly integrally from said large-diametered portion of said ferrule in engagement with said recess in the inner surface of said first through hole; and

a cable clamping portion at the rear end of said large-diametered portion of said ferrule for clamping said optical fiber cable;

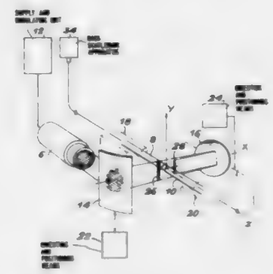
said ferrule, said pawl and said cable clamping portion being integral portions of a cut and bent sheet metal.

4,802,729

DEVICE FOR FOCUSING A LIGHT BEAM AND MACHINE FOR WELDING OPTICAL FIBRES USING THIS DEVICE

Loïc Rivoallan, Tossen hat Kermonoch, 22140 Begard, and Jean-Yves Guilloux, 12 Chemin de Couvesant Ar Gross, 22560 Trebeurden, both of France

Filed Jan. 7, 1987, Ser. No. 1,193
Claims priority, application France, Jan. 9, 1986, 86 00219
Int. Cl.[4] G02B *6/38*
U.S. Cl. 350—96.21 4 Claims



1. A machine for welding an end of an optical fiber to an end of another optical fiber, said machine comprising: means for positioning and holding said ends against one another along a first axis, a light source capable of generating a light beam of circular cross section and capable of heating the ends of the fibers, and a device for focusing the light beam in the vicinity of said ends, the focusing device comprising: a first optical means for focusing the light beam of circular cross section into an elongated focal spot to one side of said optical fibers, paral-

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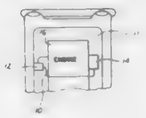
lel to a second axis perpendicular to said first axis, and a second optical means facing the first optical means and forming an elongated image spot substantially parallel to the elongated focal spot on a side opposite said one side of said fibers, whereby said ends of said fibers are exposed to and heated by the beam between the spots.

4,802,730

OPTICAL FIBER CABLES FOR MOTOR VEHICLE ENGINE COMPARTMENT APPLICATIONS

Philip A. Chatfield, West Haven, and Eugene Shapiro, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 10, 1986, Ser. No. 929,094
Int. Cl.[4] G02B *5/14*
U.S. Cl. 350—96.23 **13 Claims**





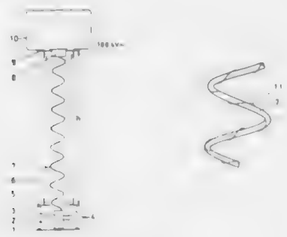
1. A compartment containing:
a source of heat comprising an engine;
first and second electrical or electronic devices; and
an optical fiber cable for connecting said devices, said cable having at least one optical fiber and means for conducting heat away from said optical fiber.

4,802,731

OPTICAL WAVEGUIDE ARRANGEMENT FOR A HIGH-VOLTAGE INSULATOR

Martin Maschek, Würenlos; Georg Mastner, Niederrohrdorf, and Branko Tomic, Oberehrendingen, all of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Oct. 22, 1987, Ser. No. 111,350
Claims priority, application Switzerland, Oct. 24, 1986, 4243/86
Int. Cl.[4] G02B *6/44*
U.S. Cl. 350—96.23 **12 Claims**



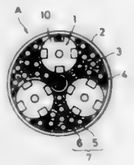
1. Optical waveguide arrangement for a high-voltage insulator, particularly for a current transducer of a high-voltage outdoor installation, comprising:
(a) at least one optical waveguide which leads from a high-voltage side of the high-voltage insulator to its low-voltage side;
(b) an optical waveguide support around which the at least one optical waveguide is spirally conducted;
(c) the optical waveguide support having a surface leakage path (k) the length of which is greater than 1.5-times the height (h) of the high-voltage insulator; and
said support comprising an insulating coil and the at least one optical waveguide being conducted positionally stably through said insulating coil, which is located in the hollow space of the high-voltage insulator, the optical waveguide wound around said coil with a steep pitch.

4,802,732

OPTICAL FIBER CABLE PREVENTING WATER FROM SPREADING TOWARD CABLE INTERIOR

Masumi Fukuma, and Nobuhiro Akasaka, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 21, 1987, Ser. No. 98,839
Claims priority, application Japan, Sept. 19, 1986 61-221384, May 13, 1986 62-116659
Int. Cl.[4] G02B *6/44*
U.S. Cl. 350—96.23 **9 Claims**



1. An optical fiber cable comprising:
an optical fiber unit comprising:
a rod-like spacer formed with a plurality of grooves at its outer peripheral surface, and
at least one optical fiber tape disposed in each of said grooves; and,
at least one water blockage tape disposed in each of said grooves of said spacer in said unit together with said optical fiber tape, said water blockage tape comprising,
a film like flexible base member, and a water absorbing and swelling member bonded to at least one surface of said base member, said water absorbing and swelling member is formed of a cross-linked polyethylene oxide comprising,
polyethylene oxide having average molecular weight of not less than 20,000; and
one of two functional cross linking agent and three functional cross linking agent, having 0.1 to 1% by weight relative to said polyethylene oxide.

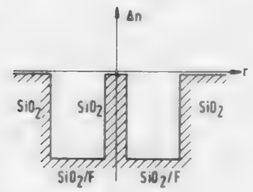
4,802,733

FLUORINE-DOPED OPTICAL FIBRE AND METHOD OF MANUFACTURING SUCH FIBRE

Peter K. Bachmann; Peter E. E. Geittner; Dieter Leers, and Howard J. C. Wilson, all of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Filed Dec. 30, 1985, Ser. No. 814,842
Claims priority, application Fed. Rep. of Germany, Nov. 1, 1985, 3500672
Int. Cl.[4] G02B *6/00, 6/10*; C03C *25/02*
U.S. Cl. 350—96.34 **15 Claims**

1. An optical fiber comprising:
a light-transmitting core having a thermal expansion coefficient, said core consisting essentially of silicon dioxide doped with a uniform concentration of fluorine and doped with a uniform concentration of a material which increases the thermal expansion coefficient of the core; and
a cladding surrounding the core, said cladding having a thermal expansion coefficient less than the thermal expansion coefficient of the core, said cladding consisting essentially of silicon dioxide doped with a uniform concentration of fluorine, the concentration of fluorine in the cladding exceeding the concentration of fluorine in the core.

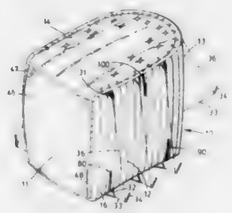


4,802,734

COLD STATIC BALLOONS

Forey Walter, S. 3722 Ridgeview Dr., Spokane, Wash. 99206

Filed Oct. 9, 1987, Ser. No. 106,266
Int. Cl.[4] G03B *21/56*; E04B *1/34*; E04G *11/04*
U.S. Cl. 350—117 **8 Claims**



1. In inflatable screen comprising, a flexible cold air balloon envelope, a screen panel of white material forming one end of said balloon envelope, a blower means connected to said balloon envelope to inflate it, and a projector mounted so as to project display material onto said screen panel which can be observed external of said balloon envelope, and including strips with opposite ends connected to said top and bottom.

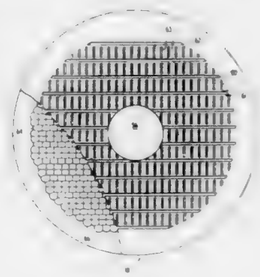
4,802,735

LIGHT VALVE PROJECTOR HAVING AN IMPROVED BAR PLATE CONFIGURATION

Thomas T. True, Camillus, and William E. Good, Liverpool, both of N.Y., assignors to General Electric Company, Philadelphia, Pa.

Filed Apr. 10, 1986, Ser. No. 849,990
Int. Cl.[4] G02B *27/42, 27/00*; H04N *9/31*
U.S. Cl. 350—162.12 **4 Claims**

1.
A light valve projector of the Schlieren dark field type having improved input and corresponding output bar plate systems wherein the optical input pupil comprises:
a lenticular lens system including a first array of lenslets arranged in rows and a second array of lenslets arranged in columns, the columns disposed orthogonal the rows, wherein the columns of lenslets are periodically interrupted by a respective row of lenslets for segmenting the columns of lenslets and further wherein proximate rows of lenslets are separated by segments of the columns of lenslets, the lenslets of the first array having a first predetermined dimension along the direction of the row and the lenslets of the second array having a second predetermined dimension along the direction of the row wherein the first and second predetermined dimensions are equal, said first array of lenslets in said rows being displaced along the direction of the row a predetermined distance from a predetermined end point of the second predetermined dimension with respect to a predetermined end point of the first predetermined dimension, wherein the predetermined distance is equal to one half the first predetermined dimension;
an input bar plate having row slots and associated row bars and column slots and associated column bars, the row slots and associated row bars disposed orthogonal the column slots and associated column bars, and the row



slots and associated row bars aligned with said first array of lenslets, and further the column slots and associated column bars aligned with said second array of lenslets, in which said row slots and associated row bars are continuous and spaced apart transverse the column slots and associated column bars which are discontinuous for accommodating the row slots and associated row bars; and
light filtering means for passing one color through the row slots and another color through the column slots.

4,802,736

INTERFEROMETERS

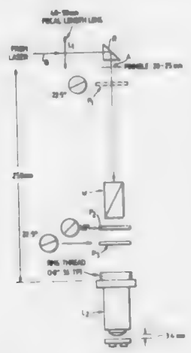
Keith Gardner, Foxton; Robert J. Longman, Coton; Robert M. Pettigrew, Foxton, and Walter T. Welford, London, all of United Kingdom, assignors to Plessey Data Systems, N.V., Curaco, Netherlands Antilles

PCT No. PCT/GB86/00101, § 371 Date Dec. 11, 1986, § 102(e) Date Dec. 11, 1986, PCT Pub. No. WO86/04997, PCT Pub. Date Aug. 28, 1986
PCT Filed Feb. 25, 1986, Ser. No. 925,806
Claims priority, application United Kingdom, Feb. 25, 1985, 8504772; Jul. 10, 1985, 8517428
Int. Cl.[4] G02B *27/00*
U.S. Cl. 350—163 **12 Claims**

12. An interferometer which comprises:
a single, coherent light source;
a first converging lens positioned on the optical axis of said coherent light sources;
means including a beam-splitting arrangement positioned on said optical axis and spaced from said first converging lens by a distance greater than the focal length of said lens for splitting the light beam into two laterally spaced beams;
a second converging lens positioned on said optical axis to receive and to focus the two beams emanating in use from the beam-splitting arrangement;
means including a mirror arrangement positioned so that the beams focused by said second converging lens impinge on the mirror arrangement for reflecting said beams to intersect at a focal point with a large angle between the principal rays of the two beams;
said beam-splitting arrangement comprising a Wollaston double image prism and a polarizing arrangement;
said coherent light source constituting a laser generating light of wavelength of about 450 nm or less;
said first converging lens having a focal length of about

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40–50 mm and said second converging lens being a microscope objective lens; and



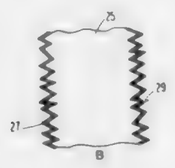
said interferometer including means for arranging the optical elements so that said reflected beams are brought to intersect at an angle of at least 45 degrees.

4,802,737

ANTI-RELFECTION OVERLAY DEVICE

Peter R. Deaton, 33 Harrow Gate Dr., Cherry Hill, N.J. 08003

Filed Apr. 28, 1986, Ser. No. 856,709
Int. Cl.[4] G02B 5/28
U.S. Cl. 350—166 6 Claims



1. A transparent overlay means to permit light to be transmitted to an object to be viewed, which overlay means provides protection for said object to be viewed and provides for reducing light reflection as seen by a viewer, comprising in combination:

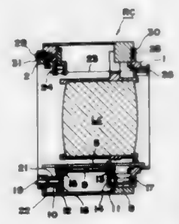
a transparent glass base member having a refractive index and having a depth dimension and having first and second surfaces lying on opposite sides of said depth dimension, said first and second surfaces being roughened surfaces with a plurality of hill-like protrusions and a plurality of valleys lying therebetween, whereby light which is incident thereto is partially transmitted therethrough and partially dispersed to reduce image light reflection as seen by a viewer; and transparent anti-reflection coating secured to both said first and second surfaces in such a manner as to follow said hill-like protrusions, said anti-reflection coating having a refractive index and thickness which provides a light interference phenomenon to light which is incident to said overlay means whereby image light reflection from light incident to said overlay means is reduced by both said light interference phenomenon and by light being partially dispersed.

4,802,738

INTERMEDIATE OPTICAL DEVICE

Makoto Ando, and Hiroshi Kojima, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Feb. 26, 1987, Ser. No. 19,857
Claims priority, application Japan, Feb. 26, 1986, 61-42475
Int. Cl.[4] G02B 7/02; G03B 3/00
U.S. Cl. 350—257 12 Claims



9. An extension device insertable between a camera body having a rotary front coupling on a front wall thereof and an interchangeable lens having a rotary rear coupling complementing and releaseably engageable with said camera body coupling, said extension device including

a rotary front coupling complementing and releaseably engageable with said interchangeable lens coupling and having a front forwardly facing annular positioning surface;

and a rotary rear coupling complementing and releaseably engageable with said camera body coupling and having a rear rearwardly facing annular positioning surface;

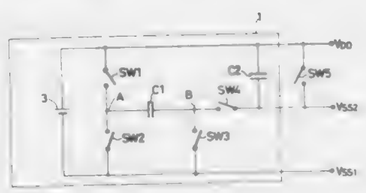
and characterized by having a coupling prevention means including a recess formed in one of said positioning surfaces and an outwardly biased retractable detent disposed in the other of said positioning surfaces, the detent on the extension device engaging the recess in another similar extension device in end-to-end engagement therewith to prevent the relative rotation thereof to full coupling positions.

4,802,739

LIQUID CRYSTAL DISPLAY CONTROL DEVICE

Yoshihiro Iwamoto, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 27, 1986, Ser. No. 833,233
Claims priority, application Japan, Jun. 7, 1985, 60-122805
Int. Cl.[4] G02F 1/13; G06F 3/14; H02M 7/25
U.S. Cl. 350—332 16 Claims



1. A control device for a liquid crystal display unit, comprising:

(a) a boosting circuit having;

a dc power supply,

charging and discharging means,

feeding means for supplying to the liquid crystal display unit a voltage which is necessary to drive and display liquid crystal by controlling the charge and discharge of said charging and discharging means by selectively coupling said charging and discharging means to said dc power supply, and

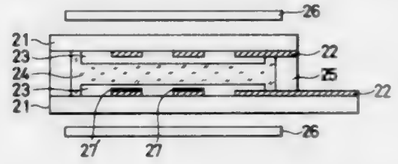
(b) switching means connected to said charging and discharging means for discharging the charges that are accumulated in said charging and discharging means to prevent erroneous display on the liquid crystal display unit when a power interruption occurs.

4,802,740

LIQUID CRYSTAL ALIGNMENT LAYER CONTAINING POLYVINYL-ALCOHOL AND TITANIUM-ALKOXIDE

Yoshio Hotta; Kenji Ohzuma, and Akihiko Komura, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1986, Ser. No. 828,253
Claims priority, application Japan, Feb. 13, 1985, 60-24540; Feb. 15, 1985, 60-26506; Feb. 15, 1985, 60-26507
Int. Cl.[4] G02F 1/133; C08F 8/00
U.S. Cl. 350—341 7 Claims



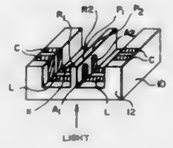
1. A liquid crystal device, which comprises an alignment-controlling film formed by applying on a substrate a water solution comprising polyvinyl alcohol and titanium alkoxide, followed by heating, said titanium alkoxide being contained in a proportion of more than 2 parts by weight and not more than 4 parts by weight per part by weight of polyvinyl alcohol.

4,802,741

IN-DEPTH ELECTRODE LIGHT VALVE ARRAY DEVICES AND IMPROVED FABRICATION METHOD THEREFOR

Joseph Y. Kaukeinen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 9, 1987, Ser. No. 107,230
Int. Cl.[4] G02F 1/03
U.S. Cl. 350—392 10 Claims



1. A light valve array member having discretely addressable electro-optic gates for selectively changing the polarization of light passing therethrough, said member comprising:

(a) a wafer of electro-optic material having opposing major surfaces which are substantially flat and parallel at a modulation zone, said wafer having a pair of spaced parallel grooves of uniform depth which extend into said wafer's thickness from portions of one major surface of said wafer so as to form therebetween, along said modulation zone, a light modulation land portion having opposing, parallel side walls respectively within the depths of said grooves;

(b) a plurality of discrete addressing electrodes deposited on said wafer, said addressing electrodes extending in spaced relation over the walls and bottom surface of a first of said grooves, with intervening wafer portions therebetween, to electrical address connection locations on said wafer; and

(c) reference electrode means deposited on said wafer and extending over the walls and bottom surface of the second of said grooves to an electrical reference connection location(s) on said wafer.

3. A method of making a linear light valve array having a plurality of transversely driven, discretely addressable, electro-optic gates, comprising the steps of:

(a) cutting parallel grooves of uniform depth to form a land region on a wafer of electro-optical material;

(b) holding a stencil having reference and address electrode patterns over said land region and groove portions of said wafer; and

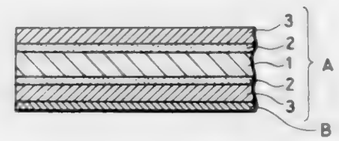
(c) vacuum depositing conductive material through said stencil to form address and reference electrodes on opposing side walls of said land region.

4,802,742

ELECTRODE PLATES FOR LIQUID CRYSTAL DISPLAY PANELS

Rinjiro Ichikawa, Otsu, and Toshio Ishida, Tokyo, both of Japan, assignors to Toyobouseki Kabushiki Kaisha, Osaka and Fujimori Kogyo Co., Ltd., Tokyo, both of, Japan

Filed Sep. 8, 1987, Ser. No. 94,353
Claims priority, application Japan, Sep. 14, 1986, 61-216199
Int. Cl.[4] G02F 1/133
U.S. Cl. 350—339 R 10 Claims



1. In a liquid crystal display panel electrode plate having a transparent electrode on at least one side thereof, which plate comprises a substrate layer comprising an optically non-rotatory transparent film or sheet having a retardation value of not more than 30 nm formed from a polycarbonate resin, polyether sulfone resin, polysulfone resin or polyarylene ester resin, an anchor layer disposed on at least one side of said substrate layer, and one or more protective layers of gas-impermeable resin or/and cured crosslinkable resin disposed on said anchor layer, the improvement wherein said anchor layer is formed from a solution or dispersion of an anchor agent in an aqueous medium, said anchor agent being at least one member selected from the group consisting of polyesters, polyamides, polyurethanes and high molecular weight ion complexes, all of which contain sufficient hydrophilic groups in the polymer segment to achieve solution or dispersion of the polymer in an aqueous medium.

4,802,743
LIQUID CRYSTAL DEVICE HAVING COLOR FILTERS WHEREIN THE COLOR FILTERS FORMED FROM A POLYAMINO RESIN CONTAINING COLORING MATERIALS

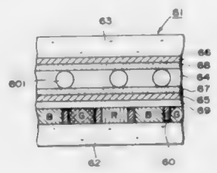
Hideaki Takao; Taiko Motoi, both of Sagamihara; Nobuyuki Sekimura, Kawasaki; Masaru Kamio, and Tatsuo Murata, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1987, Ser. No. 27,308

Claims priority, application Japan, Mar. 20, 1986, 61-060614; Aug. 30, 1986, 61-202745

Int. Cl.[4] G02F 1/13

U.S. Cl. 350—339 F **38 Claims**



1. A liquid crystal device comprising a liquid crystal provided between a pair of substrates each having a transparent electrode formed thereon, and a color filter provided on at least one of said substrates, said color filter comprising a film formed from a polyamino resin containing a coloring material dispersed therein.

4,802,744
OPTICAL MODULATION APPARATUS

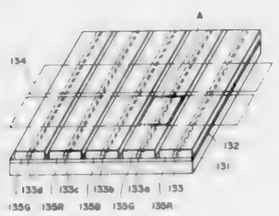
Hitoshi Shiado, Atsugi; Masahiko Ezari, Yokohama, and Mitsutoshi Kuno, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1987, Ser. No. 36,873

Claims priority, application Japan, Apr. 11, 1986, 61-83926; May 26, 1986, 61-119194; Jun. 20, 1986, 61-145614

Int. Cl.[4] G02F 1/13

U.S. Cl. 350—339 F **38 Claims**



1. An optical modulation device, comprising:
a first substrate having thereon a first conductor film;
a second substrate having thereon a second conductor film; and
an optical modulation material disposed between said first and second substrates,
wherein at least one of said first and second conductor films has thereon a plurality of low-resistivity transmission electrode lines in electrical contact with said at least one of said first and second conductor films so as to provide a potential gradient along said at least one of said first and second conductor films and intersecting the low-resistivity transmission electrode lines,
wherein at least one of said first and second substrates has thereon a color filter disposed on both sides of at least one of said low-resistivity transmission electrode lines.

4,802,745
LIGHT-POLARIZING FILMS

Toyokazu Okada; Koji Higashi, and Satoshi Taguchi, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

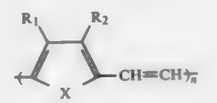
Filed May 26, 1987, Ser. No. 53,656

Claims priority, application Japan, May 23, 1986, 61-119852; Mar. 18, 1987, 62-65161

Int. Cl.[4] G02B 5/30, 27/28; F21V 9/14; G02C 7/12

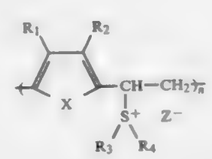
U.S. Cl. 350—397 **10 Claims**

1. A light-polarizing film as comprising a uniaxially oriented conductive polymer having about 81% or more of a polarizing co-efficient in the wavelength having a minimum transmittance in the range of from 400 to 700 μm, said uniaxially oriented conductive polymer represented by formula (VI)



(VI)

wherein X represents a sulfur atom or an oxygen atom; R_1 and R_2, which may be the same or different, each represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, a nitrile group, a halogen atom, or a trihalomethyl group; and n represents an integer of at least 5, and, wherein the conductive polymer represented by formula (VI) is obtained from a conductive polymer precursor represented by formula (I):



(I)

wherein X represents a sulfur atom or an oxygen atom; R_1 and R_2, which may be the same or different, each represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, a nitrile group, a halogen atom, or a trihalomethyl group; R_3 and R_4, which may be the same or different, each represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms; Z^- represents an anion; and n represents an integer of at least 5.

4,802,746
VARIABLE-FOCUS OPTICAL ELEMENT AND FOCUS DETECTING DEVICE UTILIZING THE SAME

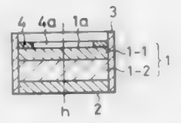
Takeshi Baba, Atsugi; Shigeyuki Suda, Tokyo; Noriyuki Nose, Sagamihara; Eigo Kawakami; Toshiyuki Nakajima, both of Atsugi, and Nobuo Kushibiki, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1986, Ser. No. 832,649

Claims priority, application Japan, Feb. 26, 1985, 60-36770; Apr. 16, 1985, 60-80863

Int. Cl.[4] G02B 3/14

U.S. Cl. 350—418 **21 Claims**



1. A variable-focus optical element comprising:
plural elastic members laminated in the direction of an optical axis; and

deforming means for deforming said elastic members thereby causing a surface thereof to protrude or retract from a determined aperture; the elastic modulus of a first elastic member positioned at the protruding or retracting side of said plural elastic members being larger than that of a second elastic member neighboring said first elastic member.

4,802,747
COMPACT ZOOM LENS

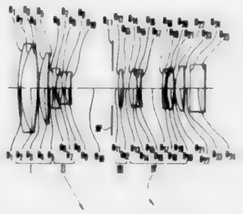
Akihisa Horiuchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1987, Ser. No. 100,307

Claims priority, application Japan, Sep. 25, 1986, 61-26539; Sep. 25, 1986, 61-226540

Int. Cl.[4] G02B 15/14, 9/64

U.S. Cl. 350—427 **2 Claims**



1. A compact zoom lens comprising:
from front to rear,
a first lens unit having a positive refractive power and axially movable for focusing;
a second lens unit having a negative refractive power and monotonously, axially movable for zooming;
a stop fixed relative to an optical axis;
a third lens unit stationary relative to the optical axis and having a positive refractive power; and
a fourth lens unit to move, while depicting a locus convex toward the front, to compensate for the shift of an image plane resulting from the movement of said second lens unit,
wherein letting the focal length of the i-th lens unit counting from the front be denoted by fi and the shortest focal length of the entire lens system by fw, the following conditions are satisfied:

$2.99 < f_1/fw < 4.08$

$0.88 < |f_2/fw| < 1.21$

$1.75 < f_3/f_4 < 2.42.$

4,802,748
CONFOCAL TANDEM SCANNING REFLECTED LIGHT MICROSCOPE

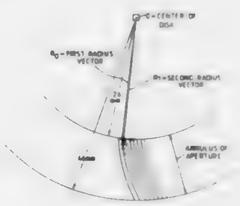
Jon J. McCarthy, Middleton, Wis.; John D. Fairing, Baldwin, Mo., and Jeffrey C. Buchholz, Cross Plains, Wis., assignors to Tracor Northern, Inc., Middleton, Wis.

Filed Dec. 14, 1987, Ser. No. 132,779

Int. Cl.[4] G02B 21/00, 21/06, 26/02

U.S. Cl. 350—507 **5 Claims**

1. A scanning device for use in an optical imaging system, comprising:
an opaque disk having apertures formed therein in an annular pattern around the circumference of the disk;
the apertures being distributed within the annular pattern in a series of adjacent arcuate, radially-extending arms defined by radius vectors having their length R_n determined in accordance with the relationship:



$$R_n = \frac{[R_{n-1} + (R_{n-1}^2 + 4K)^{\frac{1}{2}}]}{2}$$

where R_{n-1} is the length of the preceding radius vector and K is a constant,
and their angle T of orientation determined in accordance with the relationship:

$$T = \cos^{-1}(R_n^2 + R_{n+1}^2 - L^2)/(2R_nR_{n+1})$$

where L is the distance between the ends of the radius vectors.

4,802,749
SURGICAL MICROSCOPE

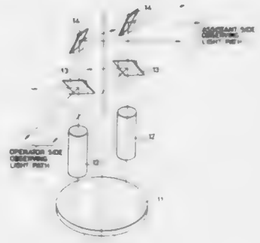
Takayoshi Togino, Tokyo; Hiroshi Fujiwara, Hachioji; Yutaka Takabayashi, Hachioji; Takashi Nagano, Hachioji; Takashi Fukaya, Ina; Kazuyuki Minami, Musashino, and Toshiyuki Tsunoda, Sagamihara, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 4, 1987, Ser. No. 81,333

Claims priority, application Japan, Aug. 6, 1986, 61-183386

Int. Cl.[4] G02B 21/22, 21/36

U.S. Cl. 350—516 **11 Claims**



1. A surgical microscope, comprising:
a common objective lens;
a pair of variable magnification optical systems disposed to face each other on the image side of said common objective lens; and
a pair of light beam splitting members disposed on the image side of said pair of variable magnification optical systems, respectively, wherein:
one of two pairs of optical paths split by said pair of light beam splitting members is adapted to be directed to extend in a direction having a predetermined angle other than a right angle relative to a plane containing respective opti-

VOL 1099 ISS 1 FEB 7 1989 UMI

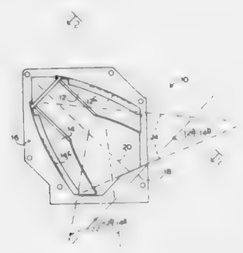
cal axes of said pair of variable magnification optical systems, within a plane crossing at right angles the respective optical axes of said pair of variable magnification optical systems.

4,802,750

REAL IMAGE PROJECTION SYSTEM WITH TWO CURVED REFLECTORS OF PARABOLOID OF REVOLUTION SHAPE HAVING EACH VERTEX COINCIDENT WITH THE FOCAL POINT OF THE OTHER

Steve A. Welck, Santa Monica, Calif., assignor to Grand Mirage, Van Nuys, Calif.

Filed Aug. 3, 1987, Ser. No. 80,761
Int. Cl.[4] G02B 17/06, 5/10, 7/18
U.S. Cl. 350—619 4 Claims



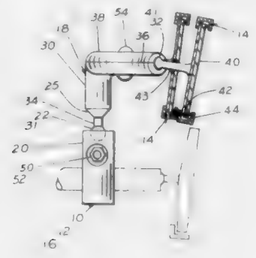
1. A real image projection system comprising
an optical axis extending through a real object zone and a real image zone, and
a pair of paraboloid-of-revolution-segment, compound curvilinear reflective expanses spaced from, and located on one side only of, said axis adjacent said zones, operable, with a real object occupying said real object zone, to create a real image thereof in said real image zone,
said expanses each having a vertex and a focal point defined by the paraboloid-of-revolution associated with each of said expanses, with the vertex of each being substantially coincident with the focal point of the other.

4,802,751

MIRROR ASSEMBLIES WITH UNIVERSAL JOINTS

Ming-Shean Ueng, 1856 Sherman St., Apt. 4, Hollywood, Fla. 33020

Filed Sep. 3, 1987, Ser. No. 93,175
Int. Cl.[4] B60R 1/04, 1/08; G02B 7/18, 5/08
U.S. Cl. 350—626 1 Claim



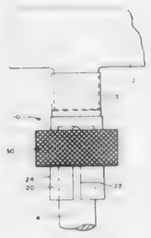
1. A vehicle side viewer to be installed inside a vehicle comprising, two mirror assemblies, a support assembly and adjusting means to rotate each of said mirror assemblies to enable a vehicle driver to see the views in the directions of the rear left and the rear right portions, or in the directions of the left hand and the right hand portions of said driver;
said support assembly comprising a lower support assembly and an upper support assembly;
said lower support assembly having two clamp-halves assembled together by a fastener and a self-locking nut;
said upper support assembly having a lower stem-half and an upper stem-half assembled together by fasteners; said lower stem-half having an universal joint at the lower end, a chamfer to meet a column of larger diameter, and an arc at the top;
said two clamp-halves on said lower support assembly forming a spherical cavity to hold said universal joint on said upper support assembly; and
said lower stem-half and said upper stem-half on said upper support assembly forming a spherical cavity to hold said universal joint on each of said mirror assemblies.

4,802,752

METHOD OF AND APPARATUS FOR MOUNTING A MIRROR TO A ROTATABLE SHAFT

Noah L. Anglin, San Jose, Calif., assignor to Greyhawk Systems, Inc., Milpitas, Calif.

Continuation of Ser. No. 914,347, Oct. 2, 1986, abandoned. This application May 4, 1988, Ser. No. 188,705
Int. Cl.[4] G02B 7/18
U.S. Cl. 350—631 10 Claims



1. An apparatus for mounting a mirror formed with a protruding part securely to a rotatable shaft, comprising
an adaptor having a mirror-accepting end part formed with a slot for envelopingly accepting said protruding part and a shaft-accepting part at the opposite end from said mirror-accepting end part, said shaft-accepting part being tubular and slitted with a hollow interior into which an end of said shaft is slidingly insertable and having a tapered exterior surface outside said hollow interior, and
a clamp ring having a tapered inner surface matching said tapered exterior surface of said adaptor, said clamp ring being disposed around said tubular shaft-accepting part and slidable along said tapered exterior surface parallel to said shaft so as to secure said adaptor to said shaft with said shaft inserted into said hollow interior.

4,802,753

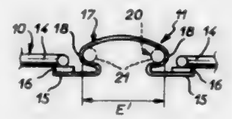
EYEGLASS FRAME WITH RESILIENT BRIDGE

Bernard Lhospice, Blois, France, assignor to Essilor International Cie Generale d'Optique, Creteil Cedex, France

Filed Sep. 9, 1987, Ser. No. 95,005
Claims priority, application France, Sep. 15, 1986, 86 12842
Int. Cl.[4] G02C 5/06, 5/02, 5/12
U.S. Cl. 351—88 11 Claims

1. An eyeglass frame comprising two surrounds, each of said surrounds being adapted to receive a respective lens, a resilient bridge linking said surrounds to permit relative movement of the surrounds and the frame to adapt to a wearer's face, said resilient bridge comprising a strip spring of omega-shaped

cross-section, said spring having opposed lateral lugs attached to the respective surrounds, a middle part and a generally converging connecting zone connecting the middle part to



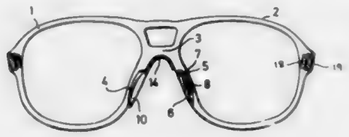
each of said lateral lugs, a nose-side support means being clipped to said bridge and comprising a U-shaped support member having two branches, each of said branches being held in engagement with a respective one of said connecting zones.

4,802,754

SOFT-PAD SYSTEM FOR A SPECTACLE FRAME

Heinz Neef, Stuttgart, Fed. Rep. of Germany, assignor to Marwitz & Hauser GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 2, 1987, Ser. No. 34,283
Claims priority, application European Pat. Off., Apr. 2, 1986, 86104464.2
Int. Cl.[4] G02C 5/12
U.S. Cl. 351—138 9 Claims



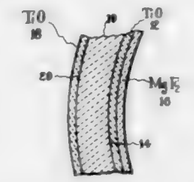
1. A soft-pad system for a spectacle frame to be worn on the nose of a wearer, the nose having nose flanks and the spectacle frame having two pad legs in the region of the nose flanks of the nose of the wearer, the soft-pad system comprising:
said pad legs having respective recesses formed therein;
two pads each of which has a bearing front surface for supporting the spectacle frame on the nose flank of the wearer and a rearward surface opposite said front surface;
each of said pads further having different thicknesses at respectively different locations between said surfaces so as to permit said bearing front surface to be adapted to the form of the nose flank of the wearer;
said pads being inserted into corresponding ones of said recesses so as to cause substantially the entire rearward surface thereof to be in full contact engagement with respective ones of said pad legs so as to be fully supported thereagainst thereby preventing an unwanted deformation of said pads when the spectacle frame is worn by the wearer; and,
each of said recesses having a predetermined depth; each of said pads having a cross-sectional thickness at one location thereon which is less than at other locations of said pad; and, said cross-sectional thickness at said one location being greater than said depth of the recess accommodating said pad to permit the adaption of one and the same spectacle frame to different anatomical characteristics of the face of the person wearing the spectacles.

4,802,755

DUAL PURPOSE SUNGLASS LENS HAVING GOLD APPEARANCE AND METHOD OF MANUFACTURE

J. Raymond Hensler, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Apr. 6, 1987, Ser. No. 34,511
Int. Cl.[4] G02C 7/10; G02B 5/23
U.S. Cl. 351—163 6 Claims



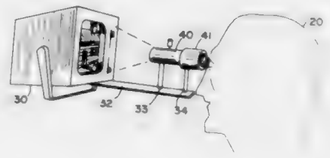
1. A dual purpose sunglass lens having a gold appearing surface, comprising:
a photochromic sunglass lens having titanium monoxide coatings deposited on the concave and convex surfaces thereof and a magnesium fluoride coating deposited onto the titanium monoxide coating applied to the concave surface, said sunglass lens having a gold appearing surface color and a transmittance of approximately 10% at 20° C. and a transmittance of approximately 5% at 0° C. in bright sunlight.

4,802,756

LOW VISION APPARATUS AND DEVICE AND METHOD FOR ENABLING THE VISUALLY HANDICAPPED TO VIEW TELEVISION

Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., Roskonkoma, N.Y.

Filed Feb. 9, 1987, Ser. No. 12,627
Int. Cl.[4] A61B 3/00; H04N 7/00
U.S. Cl. 351—200 10 Claims



1. A method for enabling a visually handicapped person to view a television screen with resolution and to view the entire screen, said person having a visual handicap requiring the wearing of an optical aid which undesirably limits said person's field of view where the magnification of the optical aid as worn by said person requires said person to position the eye of said person when accommodating the optical aid very close to said screen which therefore severely restricts said person's field of view, the method herein permitting said person to view said screen at a convenient distance when said person is accommodating said optical aid, comprising the steps of:
placing an assembly in front of said screen at a distance to provide a complete image of said screen at a reduced size, with said reduced size image substantially occupying the field of view of said person as determined by said optical aid as accommodated,
inverting said reduced image to enable said person to view said reduced image via said optical aid at a convenient distance with said reduced image substantially occupying said person's entire field of view as limited by said aid to

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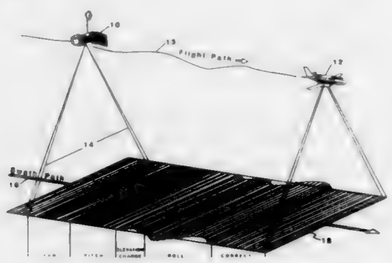
enable said person to view said screen with optimum resolution.

4,802,757

SYSTEM FOR DETERMINING THE ATTITUDE OF A MOVING IMAGING SENSOR PLATFORM OR THE LIKE

Peter K. Pleitner, and Robert K. Vincent, both of Ann Arbor, Mich., assignors to GeoSpectra Corporation, Ann Arbor, Mich.

Filed Mar. 17, 1986, Ser. No. 840,332
Int. Cl.[4] H01V *39/12*
U.S. Cl. 356—2 **23 Claims**



1. A method of determining changes in the yaw, pitch, roll or elevation of an airborne sensor which moves along a flight path above the earth and records successive two-dimensional images of the earth's surface along said flight path, comprising the steps of:

(A) generating a first set of data representing picture elements of a first two-dimensional image of said surface at a first point along said flight path such that the data representing all of the picture elements of said first image are generated simultaneously;

(B) generated a second set of data representing picture elements of a second two-dimensional image of said surface at a second point along said flight path closely spaced from said first point such that at least a portion of said images overlap each other, and wherein the data representing all of the picture elements of said second image are generated simultaneously,

said picture elements varying in intensity in accordance with their respective locations on the corresponding images, the corresponding picture elements of the first and second images in the overlapping portions thereof being offset from each other by an amount related to changes in the yaw, pitch, roll or elevation of said sensor;

(C) correlating a plurality of corresponding picture elements of the first and second images in the overlapping portions thereof, the relative positions of the correlated picture elements representing the changes in the yaw, pitch, roll or elevation of said sensor, and wherein

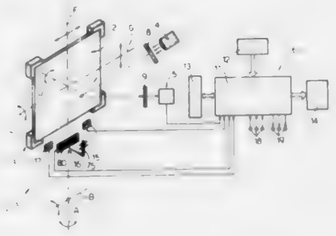
the step of correlating is performed at least in part by selecting at least three spaced apart N×M arrays of picture elements in one of said images, selecting at least three spaced apart reference picture elements in the other of said images which are respectively associated with said at least three N×M arrays, and comparing the at least three reference picture elements with the picture elements in the associated N×M arrays.

4,802,758

DEVICE FOR QUALITY CONTROL OF HOLOGRAMS

Bruno Fabbiani, Via Feletto, 17, 10155 Torino, Italy

Filed Apr. 28, 1987, Ser. No. 43,639
Claims priority, application Italy, Apr. 30, 1986, 67358 A/86
Int. Cl.[4] G03H *1/02*
U.S. Cl. 356—71 **22 Claims**



1. Device for verifying the authenticity and quality control of a hologram with respect to a sample hologram comprising:

means of support for said hologram, said support means comprising a framework;

means for emitting electromagnetic radiation incident upon said hologram;

said support means and said emitting means having at least three degrees of freedom with respect to each other;

analog means for detecting the electromagnetic radiation corresponding to images reconstructed from said hologram during use;

means for processing signals emitted by said detecting means in at least two predetermined relative positions assumed during use by said support means, radiation emitting means, and detecting means; said processing means comprising memory means in which reference signals, taken from said sample hologram in the same positions in which said reference signals are received from said hologram, are stored;

a processing unit which compares said stored signals with said received signals to make a determination if said stored signals and said received signals are identical; and

an output unit which is connected to said processing unit to display results of said determination made by said processing unit.

4,802,759

THREE-DIMENSIONAL SHAPE MEASURING APPARATUS

Goro Matsumoto, 5-10-6-1, Sumikawa, Minami-ku, Sapporo-shi, and Koichi Shimizu, Sapporo, both of Japan, assignors to Goro Matsumoto, Sapporo and Hitachi Medical Corporation, Tokyo, both of, Japan

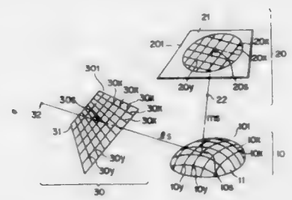
Filed Aug. 6, 1987, Ser. No. 82,815
Claims priority, application Japan, Aug. 11, 1986, 61-188321
Int. Cl.[4] G01B *11/24*
U.S. Cl. 356—376 **16 Claims**

1. A three-dimensional shape measuring apparatus for determining three-dimensional coordinates on an outer surface of a three-dimensional object when placed in a space measured by a three dimensional coordinate system comprising:

a projection device comprising a single projection plane of known three-dimensional coordinates and having a plurality of grating lines wherein at least some of said grating lines cross each other thereby constituting a grating pattern, and a light source of known three-dimensional coordinates for illuminating, through said projection plane, said object -dimensional located at an arbitrary position in the same three

an observation device having a single viewing point and comprising a lens system having an optical center, an observation plane of known three-dimensional coordinates and a specific point of known three-dimensional coordinates corresponding to the optical center of the lens system, said specific point being located between said observation plane and said object; and

means for determining the three-dimensional coordinates of an arbitrary sample point on one of the projected grating



lines of the grating pattern on said object, said sample point on said object being the intersection of a line defined by a light ray emitted from said light source of said projection device and illuminating said sample point on said object and a line including said specific point of said observation device and the image of said sample point in said observation plane, thereby measuring the three-dimensional shape of the object.

4,802,760

RAMAN MICROPROBE APPARATUS FOR DETERMINING CRYSTAL ORIENTATION

Yasuo Inoue, Itami, and Takeshi Ikeda, Hachioji, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1988, Ser. No. 143,401
Claims priority, application Japan, Mar. 25, 1987, 62-72247
Int. Cl.[4] G01J *3/44*; G01N *21/65*
U.S. Cl. 356—31 **2 Claims**



1. A Raman microprobe apparatus for determining crystal orientation, comprising:

a half mirror for deflecting circularly polarized incident light toward a specimen,

a polarizer for selecting linearly polarized incident light from the defected incident light, and

an object lens system for focusing the linearly polarized incident light onto the specimen,

wherein Raman light scattered from the specimen is collected as a Raman light beam by the object lens system and linearly polarized by the polarizer before it is transmitted through the half mirror.

4,802,761

OPTICAL-FIBER RAMAN SPECTROSCOPY USED FOR REMOTE IN-SITU ENVIRONMENTAL ANALYSIS

John M. Bowes; Patrick J. Sullivan; M. Sterling Blanche; Michael Essington, and Lewis J. Noe, all of Laramie, Wyo., assignors to Western Research Institute, Laramie, Wyo.

Filed Aug. 31, 1987, Ser. No. 93,093
Int. Cl.[4] G01J *3/44*; G01N *1/10*
U.S. Cl. 356—301 **17 Claims**



1. A method for remote in-situ detection of at least one compound of interest in liquids or gases comprising:

introducing a collecting cell into the liquid or gas;

said collecting cell comprising a tube having a top and a bottom;

an optical fiber bundle at the top of said tube, a filter at the bottom of said tube, and a protective cap covering said tube;

obtaining at least one Raman spectrum for the compound of interest in the liquid or gas;

carrying the Raman signal obtained through optical fibers to a sensing device remote from the site of the liquid or gas; and

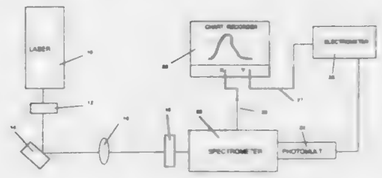
reading the sensing device to detect the presence or amount of the compound of interest.

4,802,762

OPTICAL INSPECTION OF POLYMER-BASED MATERIALS

Ralph H. Hill, Jr., San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Oct. 14, 1986, Ser. No. 917,959
Int. Cl.[4] G01J *3/30*; G01N *21/64*
U.S. Cl. 356—318 **11 Claims**



1. A method for detecting the deterioration of a specimen of polymer-based material, comprising the steps of:

obtaining a reference data signal corresponding the the intensity of fluorescent radiation emitted by a reference sample of said polymer-based material when exposed to light having a particular first wavelength, said reference sample of said polymer material having a known physical condition;

illuminating said specimen of said polymer material with light having a wavelength corresponding to said particular first wavelength;

detecting fluorescent radiation produced by said specimen

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after illumination by said light and producing an second data signal in response thereto; and

comparing said second data signal to said reference data signal to obtain an indication of the physical condition of said specimen.

4,802,763

MEASURING APPARATUS FOR CHARACTERIZING A SURFACE HAVING COLOR DIRECTIONAL REFLECTANCE PROPERTIES

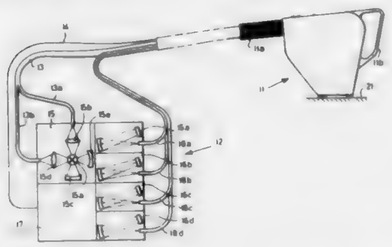
Hermann Gerlinger, Aalen-Ebnat; Gerhard Hohberg, Aalen-Dewangen, and Horst Schneider, Königsbronn, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Mar. 25, 1988, Ser. No. 173,151

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1987, 8704679[U]

Int. Cl.[4] G01J *3/36, 3/42;* **G01N** *21/47*

U.S. Cl. 356—319 **13 Claims**



1. A measuring apparatus for characterizing a surface having color directional reflectance properties, the measuring apparatus comprising:

a freely movable measuring head having a head housing;

a stationary base unit;

said stationary base unit including a base housing; and, a light source mounted in said base housing;

first light conductor means for conducting light from said light source to said measuring head;

light directing means mounted in said measuring head for directing said light onto the surface having said properties;

a plurality of receiving optics arranged in said head housing for receiving the light reflected from said surface;

second light conducting means for conducting the reflected light to said base unit; and,

said base unit further including a plurality of diode-array spectrometers for receiving the reflected light from corresponding ones of said receiving optics.

4,802,764

DIFFERENTIAL PLANE MIRROR INTERFEROMETER HAVING BEAMSPLITTER/BEAM FOLDER ASSEMBLY

Peter S. Young, 307 Cherry Hill Rd., Middlefield, Conn. 06455, and Gary E. Sommargren, 119 Neck Rd., Madison, Conn. 06443

Continuation of Ser. No. 845,925, Mar. 28, 1986, abandoned. This application Aug. 28, 1987, Ser. No. 91,354

The portion of the term of this patent subsequent to Sep. 15, 2004, has been disclaimed.

Int. Cl.[4] G01B *9/02*

U.S. Cl. 356—349 **36 Claims**

1. A differential plane mirror interferometric system comprising: a pair of plane mirrors separable by a variable optical path length; source means for emitting an input beam comprising two stabilized orthogonally polarized optical frequencies having a frequency difference, said source means further comprising means for providing an electrical reference signal corresponding to said frequency difference between said two stabilized optical frequencies; means optically coupled to said input beam for converting said input beam into two separated parallel orthogonally polarized beams; means optically disposed in the path of one of said two separated parallel orthogonally polarized beams for converting said two separated parallel orthogonally polarized beams into two separated parallel beams having the same polarization; means optically coupled to said two separated parallel same polarized beams for causing one of said two separated parallel same polarized beams to be reflected twice by one of said pair of plane mirrors and the other of said two separated parallel same polarized beams to be reflected by the other of said pair of plane mirrors to produce two parallel output beams having the same polarization; means optically disposed in the path of one of said two separated same polarized parallel output beams for converting said two separated same polarized parallel output beams into separated orthogonally polarized parallel output beams; means optically coupled to said two separated parallel orthogonally polarized output beams for converting said two separated parallel orthogonally polarized output beams into a single output beam having a pair of orthogonally polarized frequency compo-



nents, with a phase difference therebetween being directly proportional to said variable optical path length between said pair of plane mirrors; means optically coupled to said single output beam for mixing said orthogonally polarized components thereof and producing an electrical measurement signal therefrom; and means operatively connected to said electrical measurement signal and said electrical reference signal for indicating a difference in phase between said electrical reference signal and said electrical measurement signal, said indicated phase difference being proportional to said variable optical path length between said pair of plane mirrors; whereby an optical configuration extremely insensitive to measurement error and misalignment is provided for said interferometric sytem, said means for converting said input beam into two separated parallel orthogonally polarized beams comprising a beamsplitter/beam folder assembly means, said beamsplitter/beam folder assembly means comprising a first set of regions of antireflection and polarizing coatings, said means for converting said input beam into said parallel orthogonally polarized output beams comprising said beamsplitter/beam folder assembly means first set of regions and coatings.

4,802,765

DIFFERENTIAL PLANE MIRROR HAVING BEAMSPLITTER/BEAM FOLDER ASSEMBLY

Peter S. Young, and Gary E. Sommargren, both of Madison, Conn., assignors to Zygo Corporation, Middlefield, Conn.

Continuation of Ser. No. 873,406, Jun. 12, 1986, abandoned, which is a continuation-in-part of Ser. No. 845,925, Mar. 28, 1986. This application Aug. 28, 1987, Ser. No. 91,284

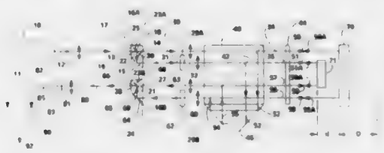
The portion of the term of this patent subsequent to Sep. 15, 2004, has been disclaimed.

Int. Cl.[4] G01B *9/02*

U.S. Cl. 356—349 **52 Claims**

1. A differential plane mirror interferometric system comprising: a pair of plane mirrors separable by a variable optical path length; source means for emitting an input beam comprising two stabilized orthogonally polarized optical frequencies; means optically coupled to said input beam for converting said input beam into two separated parallel orthogonally polarized beams; means optically disposed in the path of one of said two separated parallel orthogonally polarized beams for converting

said two separated parallel orthogonally polarized beams into two separated parallel beams same polarized beams for causing one of said two separated parallel same polarized beams to be reflected twice by one of said pair of plane mirrors and the other of said two separated parallel same polarized beams to be reflected by the other of said pair of plane mirrors to produce two parallel output beams having the same polarization means optically disposed in the path of one of said two separated same polarized parallel output beams for converting said two separated same polarized parallel output beams into two separated orthogonally polarized parallel output beams; means optically coupled to said two separated parallel orthogonally polarized output beams for converting said two separated parallel orthogonally polarized output beams into a single output beam having a pair of orthogonally polarized frequency components, with a phase difference therebetween being directly proportional to said variable optical path length between said



pair of plane mirrors; means optically coupled to said single output beam for mixing said orthogonally polarized components thereof and producing an electrical measurement signal therefrom; and means operatively connected to said electrical measurement signal for extracting a difference in phase from said electrical measurement signal, said extracted phase difference being proportional to said variable optical path length between said pair of plane mirrors; whereby an optical configuration extremely insensitive to measurement error and misalignment is provided for said interferometric system, said means for converting said input beam into two separated parallel orthogonally polarized beams comprising a beamsplitter/beam folder assembly means, said beamsplitter/beam folder assembly means comprising first set of regions of antireflection and polarizing coatings, said means for converting said input beam into said separated parallel orthogonally polarized output beams comprising said beamsplitter/beam folder assembly means first set of regions and coatings.

4,802,766

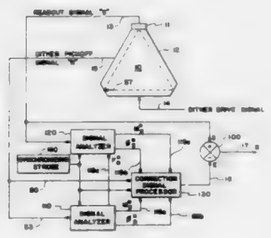
DITHER SIGNAL REMOVER FOR A DITHERED RING LASER ANGULAR RATE SENSOR

Merle E. Lasdeen, Largo, and Wesley C. Sewell, Dunedin, both of Fla., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 23, 1986, Ser. No. 945,604

Int. Cl.[4] G01C *19/64*

U.S. Cl. 356—350 **9 Claims**



1. A dithered angular rate sensor comprising:

means for generating counter-propagating waves along a closed-loop path, each of said waves having a frequency related to the rotation of said sensor;

means for dithering the frequency of at least one of said waves;

means for producing a dither reference signal related to said dithering;

readout means responsive to said waves for producing a readout signal indicative of rotation of said sensor, said readout signal including a dither signal component due to said dithering;

first signal analyzing means for performing a frequency analysis of said dither reference signal and providing frequency component information descriptive of said dither reference signal;

second signal analyzing means for performing a frequency analysis of said readout signal and providing frequency component information descriptive of said readout signal; and

signal processing means for deriving a correction signal representative of said dither signal component in said readout signal from (i) said frequency component information descriptive of said dither reference signal and said readout signal, and (ii) said dither reference signal.

4,802,767

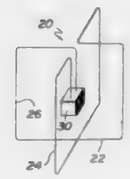
METHOD AND APPARATUS FOR OPTICAL NUTATION SENSING

Warren J. Jasper, Raleigh, N.C., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 2, 1986, Ser. No. 881,433

Int. Cl.[4] G01B *9/02;* **G01C** *19/64*

U.S. Cl. 356—350 **9 Claims**



1. A nutation sensor for sensing nutation in a spin stabilized satellite having a transverse angular momentum vector comprising:

coil means for restraining the path of a beam of energy, said coil means including a coil of optic fiber having two substantially orthogonal loops each loop lying in a plane substantially normal to said transverse angular momentum vector;

means for providing a first beam of coherent energy in a first direction along said path and a second beam of coherent energy in a second direction along said path;

means for combining said first and second beams at an output end of said path to form a composite beam; and

means for analyzing the composite beam to provide an output signal representing the nutation of said satellite with respect to a frame of reference.

4,802,768

TWO LIGHT SOURCE REFERENCE SYSTEM FOR A FLUOROMETER

Charles R. Gifford, Foster City, and Achille M. Bigliardi, Woodside, both of Calif., assignors to Sclavo, Inc., Wayne, N.J.

Filed Apr. 11, 1986, Ser. No. 850,944

Int. Cl.[4] G01N *21/64, 21/05*

U.S. Cl. 356—417 **18 Claims**

1. An apparatus comprising:

an arc light means having electrodes, for exciting a variable unknown and very small quantity of fluoroescent dye chemically attached to a material being assayed with

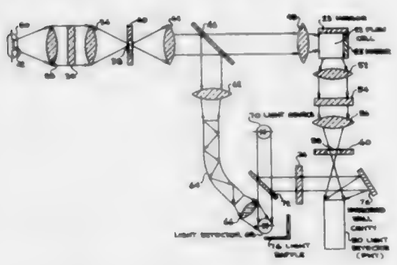
VOL 1099 ISS 1 FEB 7 1989 UMI

intense excitation pulses of light generated from an arc occurring between said electrodes, said excitation light pulses having at least some wavelengths in the excitation band of said fluorescent dye;

flow cell means for containing said material to which said fluorescent dye molecules are attached, said flow cell having a flat, transparent input window of quartz glass having a shape which is longer in one dimension than the other, said longer dimension having an axis which is parallel to the axis between said electrodes in said arc light means between which said arc appears, said flow cell also having a flat, transparent exit window of quartz glass having a normal which is at right angles to the normal of said input window, said exit window being the path through which fluorescent light emitted by excited dye molecules travels, said flow cell having at least the intersection of said input window and said exit window formed by opaque material so as to block the path of scattered light traveling inside the input window toward said exit window by refraction between the quartz surfaces thereby preventing such scattered light from entering the paths used by light exiting from said exit window;

first mask means in the optical path between said arc light means and said input window for limiting the image of the arc from wandering on the surface of said flow cell outside the bounds of said input window;

photomultiplier tube means for detecting fluorescent light emitted from said dye in response to said excitation light pulses and for generating signals indicting the intensity of said light emitted from said dye;



means for focusing emitted fluorescent light on said photomultiplier tube means and for allowing only light rays emanating from the interior of said flow cell means and having a frequency in the band of fluorescent light frequencies emanating from excited dye molecules to reach said photomultiplier means and for preventing stray excitation light scattered from the walls of said flow cell means from following the path traveled by said fluoroescent light rays emanating from the inside of said flow cell means;

reference light detector means for detecting the intensity of light pulses shining on a light sensitive surface and for generating an output signal indicating said intensity;

light waveguide means for coupling light from said arc to said reference light detector means and for spatially integrating the image of said arc so that there is no arc image that wanders randomly over said light sensitive surface of said reference light detector means;

reference light source means for supplying pulses of reference light to each of said photomultiplier tube means and to said reference light detector means during the dark intervals between excitation light pulses; and

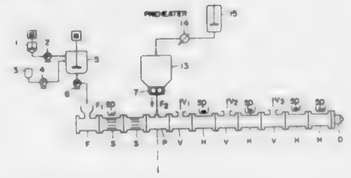
means for calculating a relative fluorescence index from the output signals from said reference light detector means in response to both said excitation light pulses and said reference light pulses and from the output signals from said photomultiplier tube means in response to both emitted fluorescent light pulses and reference light pulses, said relative fluorescence index indicating the amount of fluorescent light being emitted from said flow cell and being compensated for changes in intensity of either the reference light pulses or the excitation light pulses and being compensated for changes in the sensitivity of either said photomultiplier tube means or said reference light detector means.

4,802,769

APPARATUS FOR TREATING THERMOPLASTIC RESIN

Shoichi Tanaka, Numazu, Japan, assignor to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, Fed. Rep. of Germany

Filed Dec. 29, 1986, Ser. No. 947,042
Claims priority, application Japan, Jan. 7, 1986, 61-1149
Int. Cl.⁴ B29B *1/10*
U.S. Cl. 366—75 **4 Claims**



1. Apparatus for treating a thermoplastic resin comprising:

means for preparing a diene type graft polymer slurry;

means for evaporating off vaporizing component from an acrylonitrile-styrene copolymer;

a cylinder constituted by a feed barrel, a standard barrel having longitudinal slits for removing vaporized component, a press-in barrel and a plurality of vent barrels, each provided with a vent opening, and a plurality of heating cylinders respectively interposed between said vent barrels;

said barrels being connected together in the order mentioned to form said cylinder;

means for feeding said graft polymer slurry into said feed barrel;

means for feeding under pressure said AS polymer into said press-in barrel;

a double screw contained in said cylinder for kneading and transferring a mixture of said graft polymers slurry and said AS polymer; and

an extruder connected to an end of said cylinder opposite to said feed barrel for extruding a kneaded mixture;

said screw being provided with forward screw in said feed barrel in reverse screws respectively installed in said press-in barrel and said heating barrels for applying back pressures to flows of said graft polymer slurry and said mixture, and a kneading screw installed in said feed-in barrel downstream of said reverse screw in said feed-in barrel.

4,802,770

HIGH PRESSURE MIXING DEVICE

Carlo Florentini, Varese, Italy, assignor to Afros S.p.A., Varese, Italy

Filed Aug. 27, 1987, Ser. No. 89,990
Claims priority, application Italy, Sep. 25, 1986, 21815 A/86
Int. Cl.⁴ B01F *5/04, 15/02*
U.S. Cl. 366—177 **5 Claims**

1. A high pressure mixing device for mixing a plurality of components comprising:

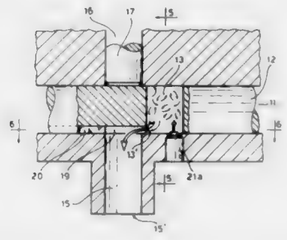
a device body having means therein defining first and second bores extending therethrough so that they intersect one another at a right angle; said first bore comprising a discharge duct having an outlet end;

a first plunger having a constant exterior dimension along its length so as to be in a sliding fit relationship within said first bore;

a second plunger having a sliding fit relationship with said second bore, said second plunger including means defining a through bore dimensioned to slidingly receive said first plunger therethrough;

means for injecting components to be mixed including inlet apertures, said injecting means being positioned so as to have said inlet apertures within said second bore and spaced a predetermined distance from said first bore;

means for moving said first and second plungers in a coordinated manner between advanced and retracted positions, said second plunger being movable between a retracted



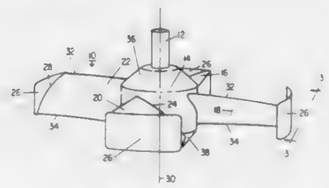
position, wherein said through bore is coaxially aligned with said first bore, and an advanced position whereby said through bore has been moved so that said inlet apertures are exposed within said through bore with the components mixing in said area defined by said through bore thereby creating a mixing chamber therein, said second plunger further including means defining a lateral passageway when in its advanced position so that a communication passageway is provided between the interior of said mixing chamber and said discharge duct, said injection means being positioned so that the components are injected in a manner that they flow into the mixing chamber in a direction which is opposite to the direction of flow of the resulting mixture within the discharge duct.

4,802,771

MIXING APPARATUS

Ronald J. Weetman, Rochester, N.Y., assignor to General Signal Corp., Stamford, Conn.

Filed Mar. 31, 1986, Ser. No. 846,372
Int. Cl.⁴ B01F *5/12, 7/22;* **F04D** *29/18*
U.S. Cl. 366—270 **15 Claims**



1. Apparatus for mixing or circulating a liquid or liquid suspension medium which comprises an impeller having a plurality of blades, each of said blades having a tip at the outer end thereof, said blades being rotatable about an axis, said impeller having a diameter which is the diameter of a circle described by the rotation of the tips of said blades about said axis, each of said blades having means for providing a head coefficient k_ψ from about 3 to 10, at a hydraulic efficiency of at least 40%, where

$$k_\psi = \frac{H_d}{V^2/2g}$$

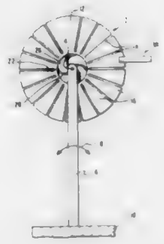
where H_d is the pressure head across the impeller, V is the average flow velocity of the medium across the diameter of the impeller, and g is the acceleration of gravity, means for rotating the impeller, said head coefficient being provided by said blades with each of said blades a leading edge, a trailing edge, opposite surfaces, and a base at the inner end thereof, each of said blades having a ratio of the width, measured between the leading and trailing edges thereof, to the diameter of said impeller from 0.30, +0.10 to −0.05 at said tip and 0.25±0.05 at said base, and with a fin disposed at the tip of each of said blades and extending above and below said opposite surfaces about the tip of each of said blades, the tip of each of said blades being arcuate along a sector of a circle centered at said axis, said fins being rectangular plates with upper, lower, forward, and rear edges and which are also arcuate and conforming to the tips on which said fins are disposed, said tips extending diagonally across said fins, and said fins being symmetrically disposed about said tips with the distances between the leading and trailing edges of said blade at said tips and the upper and lower edges of said fins being approximately equal and the distances between the leading and trailing edges of said blades at said tips and said forward and rear edges of said fins also being approximately equal.

4,802,772

NONELECTRIC TEMPERATURE MONITOR

Richard B. G. Chiancese, Altamonte Springs, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 4, 1988, Ser. No. 152,284
Int. Cl.⁴ G10K *5/64*
U.S. Cl. 374—205 **10 Claims**



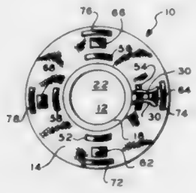
1. Apparatus for monitoring temperature, comprising: a body which experiences a change in shape in response to a change in the temperature of said body; a rotatable device having an axis of rotation and an optical transmissivity which varies circumferentially and radially relative to the axis of rotation; a light conductor device disposed for passing a light beam along a beam axis which intersects said rotatable device at a location spaced from the axis of rotation; means for rotating said rotatable device about the axis of rotation while the light beam impinges on said rotatable device such that said rotatable device permits light to be transmitted therethrough with an intensity which varies in time as a function of the distance between the beam axis and the axis of rotation; and means mounting one of said devices on said body such that a change in the shape of said body in response to a change in body temperature produces a corresponding change in the distance between the axis of rotation and the beam axis.

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4,802,773
BAG FOR MAIL AND THE LIKE

Clifford M. Gross, New York, N.Y., assignor to Hospital For Joint Diseases Orthopedic Inst., New York, N.Y.

Continuation of Ser. No. 638,626, Aug. 7, 1984. This application Dec. 30, 1986, Ser. No. 948,446
Int. Cl.[4] B65D 33/06
U.S. Cl. 383—16 2 Claims



1. A bag for mail and the like, said bag constructed with handles located for minimizing strain on the spine and muscles of a person lifting, carrying or dragging said bag and contents therein, said bag comprising:

(a) a bag body having a body portion in generally cylindrical configuration having an openable end and a closed end, a bottom portion secured to said cylindrical body portion for forming said closed end, said openable end for receiving items stored in said bag;

(b) a plurality of handles individually secured to said body portion in sets of pairs of handles, each handle of each pair of handles arcuately disposed about said body portion diametrically opposite a handle of the same set of pairs of handles, each handle of the same set of pairs spaced arcuately 90 degrees from the adjacent handles of the same set of pairs, said plurality of handles including,

(c) a first set of pairs of handles secured to said body portion proximate said openable end;

(d) a second set of pairs of handles secured to said body portion proximate said closed end;

(e) a third set of pairs of handles secured to said body protion essentially equidistant between said first set of pairs and said second set of pairs, longitudinally;

(f) each handle of said first set of pairs of handles and each handle of said second set of pairs of handles secured to said body so that a circumferential line passing through the length of each handle of the same set of pairs of handles is at normal with the longitudinal axis passing through said generally cylindrical body and a longitudinal line passing through the length of a handle of said third set of pairs of handles is parallel with said longitudinal axis;

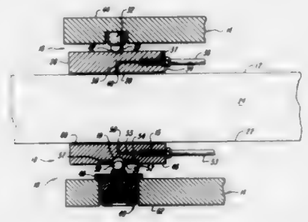
(g) one handle of said first set of pairs and one handle of said second set of pairs and one handle of said third set of pairs are essentially in alignment whereby a longitudinal line passing through the length of said one handle of said third set of pairs of handles is perpendicular to a circumferential line passing through the length of said one handle of said first set of pairs of handles and is perpendicular to a circumferential line passing through the length of said one handle of said second set of pairs of handles and the extension of said longitudinal line intersects each said circumferential line at approximately the midpoint of the handle through which the respective circumferential line passes; and,

(h) said first set of pairs of handles being spaced from said third set of pairs of handles, longitudinally, a distance which substantially approximates the width of the shoulders of a normal, average size man so that the arms of the person lifting said bag by two adjacent longitudinally separated handles, are essentially parallel.

4,802,774
GAS BEARING FOR GUIDING RELATIVE MOVEMENT OF PRECISION MACHINE PARTS

Vitaly I. Pesikov, Providence, R.I., assignor to Brown & Sharpe Manufacturing Co., No. Kingstown, R.I.

Filed Oct. 14, 1987, Ser. No. 108,143
Int. Cl.[4] F16C 32/06
U.S. Cl. 384—12 19 Claims



1. A system for guiding movement of one member relative to another member comprising:

a first rigid member having first and second opposed generally parallel surfaces which are relatively planar;

a second member, said second member and said first member being relatively movable with respect to one another in a direction generally parallel to said opposed surfaces of said first member;

a first gas bearing disposed in said second member, said first gas bearing having a first bearing shoe with a bearing surface disposed in closely spaced, confronting relation with said first surface of said first member;

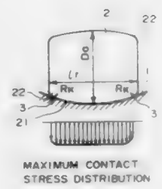
a second gas bearing disposed in said second member, said second gas bearing having a second bearing shoe with a bearing surface disposed in closely spaced, confronting relation with said second surface of said first member; and

means associated with said second gas bearing for applying a substantially constant force to said second bearing shoe over a range of movement of said second bearing shoe with respect to said second member in a direction generally normal to said second surface of said first member.

4,802,775
ROLLER BEARING

Hirotoshi Takata, Yokohama, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1988, Ser. No. 203,879
Int. Cl.[4] F16C 19/26
U.S. Cl. 384—450 1 Claim



1. A roller bearing comprising an inner race, an outer race and rollers arranged between said outer and inner races, characterized in that radius of curvature (Rk) of a contacting portion between a rolling surface of each of said rollers and a chamfer portion of said roller satisfies the following relationship:

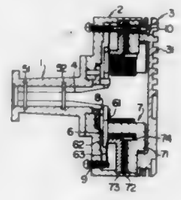
$$0.04\sqrt{Da \cdot lr} \leq Rk \leq 0.20\sqrt{Da \cdot lr}$$

wherein Da represents maximum diameter of said roller, and lr represents a length of said roller.

4,802,776
PRINT HEAD HAVING A WEAR RESISTANT ROTATIONAL FULCRUM

Akiyasu Miyazawa, Toyota; Mineo Harada, Owariasahi; Eiji Tajima, Owariasahi, and Takao Abe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 803,674, Dec. 2, 1985, abandoned, which is a continuation of Ser. No. 540,158, Oct. 7, 1983, abandoned. This application Sep. 1, 1987, Ser. No. 91,756
Claims priority, application Japan, Oct. 15, 1982, 57-179845
Int. Cl.[4] B41J 3/12
U.S. Cl. 400—124 10 Claims



1. A print head comprising:

a plurality of printing elements;

a plurality of armatures corresponding to said printing elements for activating said printing elements fixed to one respective end of each of said armatures;

a plurality of resilient members, each being fixed to another respective end of each of said armatures;

a first magnet having magnetic poles, one of said magnetic poles being situated between said one end of armatures and another of said magnetic poles for attracting said armatures such that a closed path for magnetic flux can be established through each of said armatures and said first magnet in contact with each other at said magnetic poles of said first magnet, while resiliently deflecting said resilient members; and

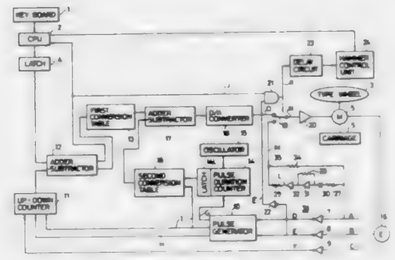
a plurality of second magnets for cancelling the attracting force from said one magnetic pole of said first magnet to actuate said aramatures by the resilient force of said resiliently deflected resilient members;

wherein hardness of a surface of said another magnetic pole is higher than the hardness of an edge at said another end of each of said armatures, each of said another magnetic pole surfaces being in contact with said edge at said another end of each of said armatures so as to form a fulcrum for rotation of said each armature therearound.

4,802,777
PRINT WHEEL AND CARRIAGE DRIVE SYSTEM FOR A PRINTER

Yasuaki Yamada, Matsudo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 837,667, Mar. 4, 1986, abandoned, which is a continuation of Ser. No. 629,751, Jul. 12, 1984, abandoned, which is a continuation of Ser. No. 575,720, Feb. 1, 1984, abandoned, which is a continuation of Ser. No. 380,396, May 20, 1982, abandoned. This application Mar. 16, 1987, Ser. No. 27,123
Claims priority, application Japan, Oct. 19, 1981, 56-166611; Oct. 19, 1981, 56-166612
Int. Cl.[4] B41J 1/30
U.S. Cl. 400—144.2 28 Claims



1. A serial printer comprising:

a motor;

a first counter for storing a rotational position of said motor;

a latch for storing a destination position of said motor;

a first operation unit for receiving outputs from said latch and said first counter and for calculating an amount of position error therefrom;

a first conversion table containing target values corresponding to amounts of position error for receiving an output from said first operation unit;

a pulse generator responsive to a rotation of said motor for generating pulse signals;

a second counter for counting reference pulses generated in an oscillator during one cycle of the pulse signals generated from said pulse generator;

a second conversion table containing a plurality of numeric values associated with average velocities delayed by one cycle of the pulse signals for receiving an output from said second counter;

a second operation unit for receiving target values corresponding to amounts of position error from said first conversion table and numeric values associated with average velocities delayed by one cycle of the pulse signal from said second conversion table and for calculating an error signal from said target values and said numeric values;

a D/A converter for converting an output of said second operation unit into an analog signal;

an analog circuit for generating a signal by combining an analog signal generated during a predetermined period in response to the rotation of said motor and a phase-advanced compensation signal; and

a selection switch for temporarily connecting said motor to said analog circuit when said motor reaches a stopping region, said motor otherwise being connected to said D/A converter.

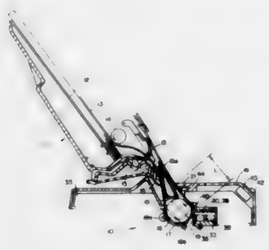
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4,802,778

CARRIAGE DRIVE CONTROL DEVICE IN A PRINTING DEVICE

Kiyoshi Takahashi, and Hisaki Okada, both of Aichi, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 8, 1986, Ser. No. 849,396
Claims priority, application Japan, Apr. 9, 1985, 60-74678
Int. Cl.⁴ B41O *13/10*
U.S. Cl. 400—624 **5 Claims**



1. A carriage drive control device comprising:
means for supplying a printing sheet having a leading edge;
a rotatable platen means for receiving and supporting said printing sheet supplied by said supplying means and for advancing said printing sheet upon rotation of said rotatable platen means;
a print head;
a carriage means for supporting said print head for bidirectional movement along a printing line parallel to said rotatable platen means;
a paper guide member mounted on said carriage means proximate said print head to confront said rotatable platen means;
a driving means for selectively reciprocating said carriage means along said printing line;
means for determining, upon the end of the printing operation for each line, whether said leading edge of said printing sheet has been advanced beyond said printing line by a predetermined distance; and
drive control means for controlling said driving means and said carriage means to position said print head at a predetermined location in said printing line prior to rotation of said rotatable platen means to advance said printing sheet if said leading edge of said printing sheet has been advanced by a distance less than said predetermined distance.

4,802,779

KEYBOARD

Jean-Luc Allaire, Gaichainville, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 6, 1987, Ser. No. 118,383
Claims priority, application France, Nov. 14, 1986, 86 15853
Int. Cl.⁴ B41J *5/16*
U.S. Cl. 400—496 **5 Claims**



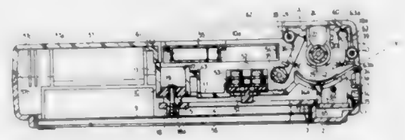
1. A keyboard comprising a chassis with a main section and provided with an elongate key and guide means, said key being slidable along said guide means of said chassis, said keyboard having a handle intended to prevent the key from being depressed obliquely, said handle being pivotable about an axis perpendicular to the sliding direction of said key, said handle being formed of a wire shaft each end of which is folded twice at right angles to form two U-shaped sections each with a pin parallel to the rest of the shaft, said key having two slots perpendicular to said sliding direction, each pin being slidably fitted in an associated slot of said key, said chassis being provided with elastic connection means for mounting said handle, each slot of said key being open at one end in order to permit the entrance of its respective pin, said key being provided with an inclined surface for each slot leading to the opening of its associated slot, each said inclined surface being on the side of said key away from the main section of said chassis, said elastic connection means permitting said pins to follow said inclined surface and to enter each of said slots thereby connecting said key to said chassis, said elastic connection means and said inclined surface forming a releasing means for readily releasing said handle pins from said slots.

4,802,780

PRINTER FRAME STRUCTURE FOR SIMPLIFYING RECORD MEDIUM FEEDING ATTACHMENT

Takeshi Yokoi, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 799,753, Nov. 19, 1985, abandoned. This application Nov. 18, 1987, Ser. No. 122,524
Claims priority, application Japan, Nov. 20, 1984, 59-175818[U]; Feb. 5, 1985, 60-014887[U]; May 2, 1985, 60-066064[U]
Int. Cl.⁴ B41J *29/02*
U.S. Cl. 400—643 **4 Claims**



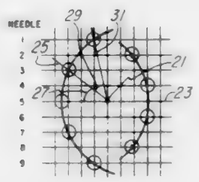
1. In a printer comprising:
a frame having an upper cover, and a rear cover member extending generally vertically at the rear end of said upper cover;
said frame further including a main frame having a rear side wall, said rear side wall and rear cover member constituting at least part of a rear cover;
a platen in said frame in close proximity with said upper cover and said rear cover and supported rotatably on an axis parallel to said upper and rear covers;
a carriage movable along said platen in the longitudinal direciton thereof and positioned in said frame on a first side of said platen which is opposite to a second side thereof where said rear cover is located;
a printing head supported on said carriage and facing said platen;
an open area for exposing part of upper and rear surfaces of said platen, formed in a position between said upper cover add said rear cover; the improvement comprising
a paper guide member positioned in said frame,
said paper guide member having a concave arc surface facing the lower surface of said platen and spaced therefrom,
a rear edge of said concave arc surface directly extending above said rear side wall of said main frame so as to be directly connected to said rear cover at the lower edge of said open area,
whereby a first path for printing paper is defined extending in the direction toward said platen from a first portion of said open area formed in said upper cover and a second path is defined extending from a second portion of said open area formed in said rear cover.

4,802,781

DOT MATRIX PRINTER HAVING INCREASED IMPACT FORCE AND HIGHER OPERATING FREQUENCY

Thomas J. Sheerer, Troy, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 27, 1987, Ser. No. 89,879
Int. Cl.⁴ B41J *3/12*
U.S. Cl. 400—124 **12 Claims**



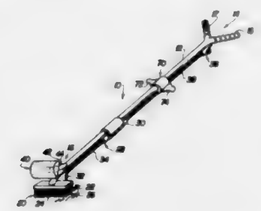
1. A method of positioning print wire actuators for a dot matrix printer, comprising the steps of:
(a) locating in a plane N parallel spaced lines, where N is an odd positive integer;
(b) locating a point on the (N+1)/2 line from an extreme one of said lines;
(c) defining points on a first arc of a circle having a center of curvature in the direction of said point and passing through the odd ones of said N lines at angles of (360 degrees/N)×A with said (N+1)/2 line, where A is an integer from 0 to N;
(d) defining points on a second arc of a circle having a center of curvature in the direction of said point and on the opposite side of said point as said first arc and passing through the even ones of said N lines at angles of (360 degrees/N)×A with said (N+1)/2 line, where A is an integer from 0 to N; and
(e) placing print wire actuators at said points.

4,802,782

CLEANING INSTRUMENT FOR CARPETS AND LIKE SURFACES

James Scalf, R.I. Box 525 #85A, Marathon, Fla. 33050

Filed Dec. 16, 1987, Ser. No. 133,840
Int. Cl.⁴ A47L *13/12, 13/26*
U.S. Cl. 401—138 **10 Claims**



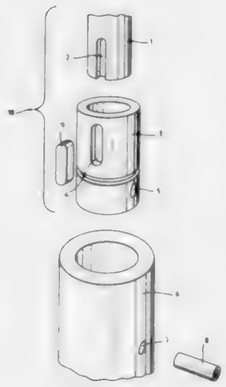
1. A cleaning tool assembly designed to clean and remove stains and the like from a carpet or like surface, said assembly comprising:
(a) a base having an elongated configuration and including a handle means mounted, at least partially, at one end thereof for manipulating said tool assembly,
(b) an agitating means for working the surface being cleaned and secured to an opposite end of said base relative to said handle means and extending outwardly from said base,
(c) a cleaning means for removing fluid from the surface being cleaned and secured to said base at said opposite end and extending outwardly from said base in a different direction than said agitating means,
(d) said cleaning means comprising a support head and a fluid absorbing member secured to said support head and positionable in movable engagement with a surface being cleaned,
(e) said support head pivotally secured to said base and including an elongated support surface reciprocally positionable and engageable with the surface being cleaned upon manipulation of said base and handle means, said support surface comprising a substantially arcuate cross-sectional configuration extending along its length,
(f) said fluid absorbing member comprising a flexible absorbent material cover removably mounted in overlying, exposed and supporting engagement on said support surface,
(g) said fluid absorbing member extending in covering and substantially conforming relation to said support surface and assuming the arcuate cross-sectional configuration thereof and including opposite ends thereof removably connected to said support head outboard in spaced relation to said support surface and being structured for removably connecting opposite ends of said absorbing member, and
(h) said base and said handle means being cooperatively disposed and configured for reverse orientation relative to the surface being cleaned and positioning of said base being a first and a second operative position respectively defined by said agitating means and said cleaning means being disposed in operative engagement with the surface being cleaned.

4,802,783

SLEEVE JOINT

Magnus Eriksson, Johannesfors, Sweden, assignor to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 904,838, Sep. 8, 1986, abandoned, which is a continuation of Ser. No. 672,908, Nov. 19, 1984, abandoned. This application Aug. 27, 1987, Ser. No. 91,291
Claims priority, application Sweden, Nov. 22, 1983, 8306443
Int. Cl.⁴ F16B *3/00*
U.S. Cl. 403—2 **1 Claim**



1. Sleeve joint apparatus for rotary coupling comprising in combination:
a driven impeller body having a cylindrical portion with a bore and a first aperture therein;

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a unitary formed cylindrical sleeve having first and second end portions and a second aperture positioned adjacent said second end portion for alignment and corresponding with said first aperture, said second end portion of said sleeve being inserted and partially accommodated in said bore of said driven impeller body, and said cylindrical sleeve having a slot adjacent said second end portion and angularly displaced from said second aperture;

a driving shaft member having a third end portion being inserted and partially accommodated in said first end portion of said sleeve, said driving shaft member having an axially disposed channel for alignment and corresponding with said slot;

a wedge member for insertion into said slot and channel to form a rotary entraining connection between said driving shaft member and said cylindrical sleeve; and

a shearable driving pin for inserting into said first and second apertures and securing said driven impeller body and said cylindrical sleeve for rotational movement by said driving shaft member,

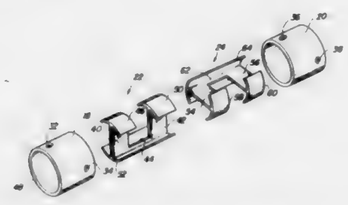
whereby, when said driven impeller body is prevented from rotational movement, said shearable driving pin will shear and said driving shaft member and unitary formed cylindrical sleeve will continue to rotate.

4,802,784

BI-FLEX PIVOT

John J. Brooks, Santa Ynez, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Mar. 11, 1988, Ser. No. 167,202
Int. Cl.[4] F16D *1/00*
U.S. Cl. 403—24 **14 Claims**



1. A structural pivot that substantially eliminates the geometric center shift of its rotating members, said pivot comprising:

a first sleeve having a major axis and an inner surface;

a second sleeve having a major axis and an inner surface, said second sleeve being spaced from the first sleeve;

a first flexure having first and second spaced apart blades joined by a common cross member, each blade having a free end, the free end of the first blade being connected to the inner surface of the first sleeve, while the free end of the second blade is connected to the inner surface of the second sleeve, the blades being connected so that they define a first plane passing through the axes of the sleeves; and

a second flexure member having third and fourth spaced apart blades joined by a second common cross member, the third and fourth blades having free ends, the free end of the third blade being connected to the inner surface of the first sleeve, while the free end of the fourth blade is connected to the inner surface of the second sleeve, the third and fourth blades being connected so that they define a second plane passing through the axes of the sleeves, said second plane being substantially transverse to the first plane.

4,802,785

JOINT CONSTRUCTION AND OVERHEAD HANGER

Peter S. Richards, 100 Mt. SI Pl. NW., Issaquah, Wash. 98027

Continuation-in-part of Ser. No. 811,939, Dec. 20, 1985, Pat. No. 4,667,916. This application May 6, 1987, Ser. No. 47,439
Int. Cl.[4] B25G *3/00*
U.S. Cl. 403—27 **30 Claims**



1. A joint construction comprising:

a first member including a cylindrical sidewall defining a socket having an inner surface;

a second member including a connector assembly, said connector assembly comprising an axially-extending stud having a base, a free end and a threaded portion adjacent the free end;

a cam ring at the base of the stud having a base end and an opposite end, said cam ring being smaller in diameter than the inside diameter of said socket, said cam ring including a beveled edge at its opposite end spaced radially outwardly from said stud;

a main locking disk having a central portion with a center opening through which the stud extends, and a plurality of wings spaced around the disk and bent along fold lines to extend towards the edge of the cam ring, said wings having outer grip edges, and said main locking disk having a plan form sized to slip fit into said socket;

a nut threaded onto the threaded portion of the stud outwardly of the main locking disk, said nut including lower stop means at its end nearest the cam ring and a wrench portion extending from said lower stop means in the direction opposite the cam ring, said wrench portion having side wrench surface means;

a nut wing washer having a central opening through which said wrench portion of the nut extends, said opening corresponding in shape to the wrench surface means so that the nut wing washer is secured against rotation relative to the nut, said nut wing washer having a plurality of generally radial wings with outer edges, said nut wing washer having a plan form which is larger than the inside diameter of the socket;

upper stop means for holding the nut wing washer against axial movement off from the nut in a direction away from the lower stop means; and

wherein the first and second members are connected together by an insertion movement of the connector assembly on the second member into the socket of the first member, with such movement causing a bending of the wings of the nut wing washer, attended by the outer edges of such wings gripping the inner surface of the socket and holding the nut wing washer against rotation, followed by a rotation of the second member relative to the first member, with the nut wing washer holding the nut in position relative to the first member during such rotation, causing relative axial travel of the nut on the stud towards the cam ring, and with such axial travel causing the beveled edge of the cam ring to push the wings of the main locking disk outwardly, so as to press their outer edges into tight gripping engagement with the inner surface of the socket.

4,802,786

JOIST HANGER

James G. Yeager, Lincoln, and John M. Rushton, Milford, both of Mich., assignors to MiTek Industries, Inc., Creve Coeur, Mo.

Filed Nov. 3, 1987, Ser. No. 116,445
Int. Cl.[4] B65G *3/28*
U.S. Cl. 403—232.1 **20 Claims**



1. An improved joist hanger of the type comprising an upright back, parallel opposing sides forming a channel and a horizontal bottom extending forwardly from the back forming a seat for a joist, the improvement comprising:

at least one pair of opposing tabs extending inwardly from the sides of the hanger into the channel, the tabs presenting downwardly, rearwardly sloping surfaces to a joist forced against the tabs to urge the joist against the back of the hanger.

4,802,787

ELECTRICAL CONTROL SYSTEM

Marvin G. Bays, Ponca City, Okla., assignor to Mertz, Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 940,981, Dec. 12, 1986. This application Oct. 23, 1987, Ser. No. 111,767
Int. Cl.[4] E01C *23/12*
U.S. Cl. 404—90 **10 Claims**

1. Apparatus for controlling the total force being applied to a tool means in contact with a surface comprising:

(a) force generation means;

(b) elastic means having a first and second surface means;

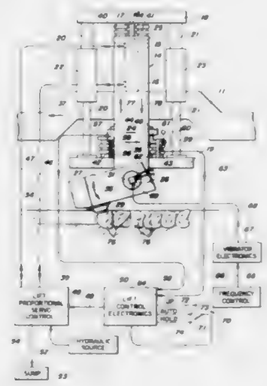
(c) means for coupling said force generation means to said first surface means;

(d) means for coupling said tool means to said second surface means;

(e) means for measuring the distance between said first surface means and said second surface means;

(f) means coupled to said means for measuring the distance for generating an output corresponding to the said measured distance; and,

(g) means responsive to said output, coupled to said force generation means in a manner to regulate the total force generated when said distance measures a preselected amount;



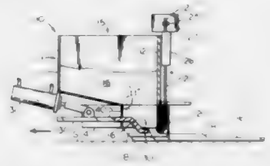
whereby when said elastic means is crushed by a predetermined distance a desired total force is realized.

4,802,788

ROAD MARKING APPARATUS

Martin A. Smith, Atlanta, Ga., assignor to Pave-Mark Corporation, Atlanta, Ga.

Filed Jan. 13, 1988, Ser. No. 143,369
Int. Cl.[4] E01C *23/16*
U.S. Cl. 404—94 **4 Claims**



1. Road marking apparatus comprising a pair of side runners; a hopper mounted upon said pair of side runers in which a fluid marking material may be held, said hopper having front and rear walls joined by side walls with the bottom of said rear wall defining a boundary of an outlet through which fluid marking material may flow out of the hopper and onto the surface of a road between said side runners; a doctor blade means mounted for generally vertical reciprocal movement in sliding contact with the outside of said hopper rear wall adjacent said hopper outlet for varying the thickness of marking material applied to a road surface; and a floor gate mounted for generally horizontal reciprocal movement into and out of sealing engagement with a bottom edge of said hopper rear wall and a surface of the doctor blade facing the floor gate leading edge in closing and opening said hopper outlet.

4,802,789

COMBINED PUNCH AND CLIP

Walter W. Hsu, No. 156, Chen Pei Village, Chen Pei Road, Tou Liu City, Yun Lin Hsien, Taiwan

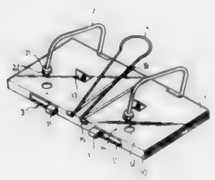
Filed May 12, 1988, Ser. No. 192,911
Int. Cl.[4] B42F *3/04*
U.S. Cl. 402—1 **3 Claims**

1. A combined punch and clip for punching a stack of paper therewith and clipping said stack of paper together thereon,

comprising a base (1), two punching elements (2), two locking apparatuses (3), and a clipping shank (4), wherein:

said base (1) comprises respective horizontal slots (11) provided on left and right sides of a lateral surface (10) of said base for permitting respective said locking apparatuses (3) to protrude therefrom; respective openings (12) are provided proximate to each of said horizontal slots (11); a pair of cylindrical components (15) are mounted on an upper central horizontal portion of said lateral surface (10) of said base (1) for receiving distal ends of said clipping shank (4);

said respective punching elements (2) are mounted at distal ends thereof on left and right sides of said base (1); a punching head (21) is provided on another distal end of each of said punching elements (2) proximate to and insertable in said opening (12); an aperture (22) is disposed at a lateral surface of said punching head (21) and facing said horizontal slot (11) to permit said locking element (3) to be wedged therebetween; and



said respective locking apparatuses (3) are housed in left and right sides of said base (1) and pivotally fixed therein by respective pins (30); respective retarding means (18) mounted on left and right sides of said base (1) are adjacent to each said locking apparatus (3); a spring-loaded controlling element (31) is provided on each of said locking apparatuses (3) and protrudes from said horizontal slot (11) with a spring (32) disposed between said controlling element (31) and said retarding means (18); and a retaining element (37) formed on said locking apparatus (3) is retractable in said aperture (22) of said punching head (21) to lock said punching element (2).

4,802,790

VIBRATING MACHINE FOR EFFECTING TILING

Claudio Tondini, Cotignola, Italy, assignor to Tomecanic, Aubergenville, France

Filed Sep. 30, 1987, Ser. No. 103,774

Claims priority, application European Pat. Off., Oct. 1, 1986, 86402146.4

Int. Cl.⁴ E04F *21/22;* **E01C** *19/28*

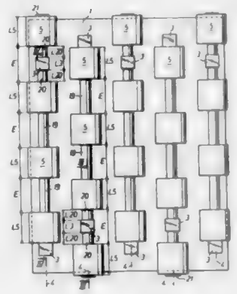
U.S. Cl. 404—132 **4 Claims**

1. In a vibrating machine for applying sandstone or like tiles (16) on a bonding agglomerate (17) disposed between a surface (18) to be covered and said tiles (16), said machine including a frame (1), an assembly of rollers (5) disposed beneath said frame (1) and mounted on parallel shafts (2) with their lower surfaces positioned along a common tangential plane (P), and a vibrating generating device (9) coupled to said frame (1), and wherein each of said shafts (2) is fixed beneath said frame (1) and being stopped in the direction of rotation with respect to said frame (1), said assembly of rollers (5) on each of said shafts (2) being separated, one from the adjacent one, by a distance (E), and each of said rollers (5) being mounted to rotate on said shafts (2), the combination therewith in which

(a) said distances (E) separating adjacent rollers (5) mounted on the same shaft (2) are substantially equal,

(b) substantially all of said rollers (5) are identical and are of a common length (L5), said distances (E) separating two adjacent identical rollers (5) being greater than said length (L5), and

(c) said identical rollers (5) supported on said shafts (2) are disposed substantially in a quincunx pattern so that the



rectilinear traces (T5) capable of being made by said rollers (5) supported by one of said shafts (2) are not convered by the rectilinear traces (T5) capable of being made by said rollers (5) supported by the following of said shafts (2).

4,802,791

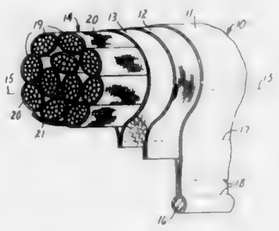
REDEPLOYABLE HIGH TEMPERATURE OIL BOOM

Edward M. Fisher, and Stephen M. Sanocki, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 1, 1987, Ser. No. 103,268

Int. Cl.⁴ E02B *15/04*

U.S. Cl. 405—63 **14 Claims**



1. A high temperature oil containment boom comprising an outer layer, a first underlayer of a first knitted wire mesh and a second underlayer of high or intermediate temperature resistant refractory fabric surrounding a cellular, high temperature resistant flotation core, said layers being secured together at least about their peripheral edges.

4,802,792

BUSHINGS FOR JOINING RIGID OBJECTS TO FLEXIBLE MEMBRANES

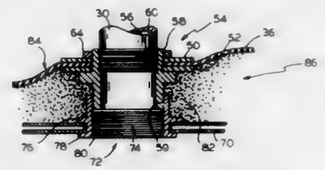
James D. Fleesse, Hinsdale, Ill., assignor to MPC Industries, Inc., Chicago, Ill.

Filed Oct. 17, 1986, Ser. No. 920,717

Int. Cl.⁴ F16L *19/00*

U.S. Cl. 405—53 **7 Claims**

1. A bushing for enabling a rigid object to make a sealed penetration of a hole having a first diameter and formed in a membrane of industrial fabric which may be buried in the earth and which is subject to bending forces, said bushing comprising a tubular member having an enlarged collar which has a diameter that is greater than said first diameter, external threads extending from at least one side of said collar to an end of said member, a pair of smooth surfaced semi-flexible washers having center holes with substantially said first diameter, said washers being positioned on opposite sides of said membrane with said holes aligned and fitting over said external threads, said washers resting on said enlarged collar without



being attached to said membrane in order to distribute said bending forces appearing in the membrane while enabling the membrane to slip relative to said washer in the general areas where said bending forces appear whereby said membrane does not always tend to bend at the same location, and nut means cooperating with said collar for tightly securing said washers on opposite sides of said membrane.

4,802,793

PIPELINE OR CABLE PLOUGH

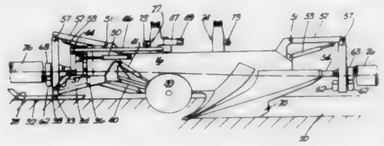
Timothy W. Grinsted, Ovingham, and Alan R. Reece, Wylam, both of England, assignors to Soil Machine Dynamics Limited, Stocksfield, England

Continuation of Ser. No. 911,338, Sep. 25, 1986, abandoned. This application Apr. 19, 1988, Ser. No. 186,708

Claims priority, application United Kingdom, Oct. 3, 1985, 8524410

Int. Cl.⁴ F16L *1/04;* **E02F** *5/02*

U.S. Cl. 405—161 **6 Claims**



1. A plough for entrenching a pipeline comprising first and second portions, each said portion including a plough body part and an elongated chassis component extending ahead of said plough body part, said portions together defining a trough between said chassis components in which trough a pipeline can be received in an elevated position where a seabed, said trough having a base surface beneath the pipeline, said elongate chassis components having respective leading ends, said portions being connected by bridging structure extending actross said trough and the pipeline therein, said plough further comprising means engagable with the underside of the pipeline to prevent damaging engagement between the underside of the pipeline and said base surface of said trough, and further comprising hinge means permitting each of said plough body parts to separate from the other by movement about a hinge axis extending lengthwise of said plough to allow the pipeline to pass between said parts during installation of said plough on the pipeline and removal therefrom, and said bridging structure being spaced rearwardly from said leading ends of said chassis components to allow said plough to execute pitching movements without imposing damaging loads upon the pipeline by engagement with the upper side thereof.

4,802,794

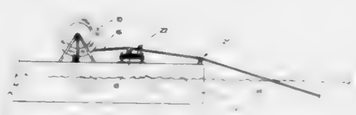
REEL TYPE MARINE PIPE LAYING APPARATUS WITH TENSION INDUCED PIPE STRAIGHTENING

Robert P. Lynch, Tulsa, Okla., assignor to Lyntech Corporation, Tulsa, Okla.

Filed Apr. 30, 1987, Ser. No. 44,355

Int. Cl.⁴ F16L *1/04;* **B21D** *3/04*

U.S. Cl. 405—168 **10 Claims**



1. An apparatus for straightening pipe unwound from and at a point on a reel aboard a floating barge which has a stern which comprises:

a barge stern roller supported by the barge;

tensioning means for applying tension to said pipe as it is unwound from said reel;

said stern roller and said point on said reel defining a straight, targent line;

one and only one straightening roller member between said sern roller and said point on said reel;

support means supporting said straightening rollermember above said tangent line.

4,802,795

PLATEN FIXING APPARATUS

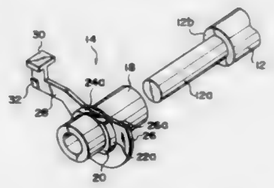
Masaaki Takada, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 20, 1987, Ser. No. 110,666

Claims priority, application Japan, Oct. 24, 1986, 61-163252

Int. Cl.⁴ B41J *11/04*

U.S. Cl. 400—660 **6 Claims**



1. An apparatus for fixing a platen, comprising:

a. a frame including a pair of parallel supporting plates separated by a specified distance, each of the supporting plates having an upper end edge, a supporting section, and an engaging hole formed near the supporting section, said supporting section having a round supporting hole and a guide hole extending from the supporting hole up to the upper end edge of the supporting plate, said guide hole having a width less than the diameter of the supporting hole;

b. a platen shaft extending coaxially with the platen and having a pair of ends projecting from both ends of the platen;

c. a pair of fixing members for holding both ends of the platen shaft in the supporting sections to support the platen between the supporting plates, each fixing member including:

a cylindrical body into which one end of the platen shaft is rotatably inserted;

an intermediate portion formed at said body and fitted into the supporting hole, the intermediate portion having a

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pair of arcuate supporting faces with substantially the same diameter as that of the supporting hole and a pair of guide faces positioned diametrically opposite each other and separated by a distance less than the width of said guide hole;

first stopper means, extending from the body and contacting that side of the supporting plate which faces the platen, for restraining the fixing member from moving toward the supporting plate;

operating means for turning the fixing member between a fixed position in which the supporting faces of the intermediate portion contact the inner surfaces of the supporting hole and a mounting position in which the guide faces of the intermediate portion are aligned with the guide hole so that the fixing member can be pulled out from the supporting hole through the guide hole, said operating means including an operating arm extending radially from the body and elastically deformable in the axial direction of the platen;

restraining means for holding said fixing member in the fixed position, said restraining means including (1) a grip portion formed at the extended end of the operating arm, said grip portion contacting the upper end edge of the supporting plate to restrain the fixing member from rotating in one direction when the fixing member is turned to the fixed position, and (2) a projection formed on the operating arm, said projection engaging the engaging hole of the respective supporting plate to restrain the fixing member from rotating in a direction opposite the one direction when the fixing member is located at the fixed position; and

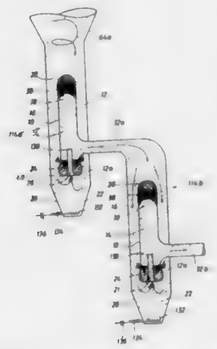
d. second stopper means at each end of the platen shaft for preventing the fixing member from moving toward the platen.

4,802,796

PRESSURE-REDUCING DEVICE FOR PARTICULATE MATERIAL

Roine Brännström, Finspong, Sweden, assignor to ASEA-Stal AB, Finspong, Sweden

Continuation of Ser. No. 819,331, Jan. 16, 1986, abandoned. This application Sep. 29, 1987, Ser. No. 104,590
Claims priority, application Sweden, Jan. 28, 1985, 8500378
Int. Cl.[4] B65G 53/04
U.S. Cl. 406—141 12 Claims



1. Fluid transport apparatus for discharging particulate material with a fluid from a first chamber subjected to a high internal pressure to a second chamber having a significantly lower pressure comprising:

a first conduit for transporting said material from said first chamber, said first conduit having a closed downstream end;

a second conduit positioned within and spaced from the inner surface of said first conduit with an open end at its upstream end which faces the downstream end of the first conduit, said second conduit defining at its inlet end a smoothly decreasing cross-sectional area in its downstream direction and a minimum cross-sectional area which is substantially less than the cross-sectional area of the space between said first and second conduits;

said second chamber receiving the output of said particulate material and said fluid as it emerges from said second conduit and having a cross-sectional area which is at least ten times greater than said minimum cross-sectional area of said second conduit;

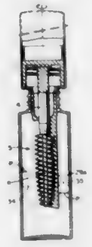
whereby the reversal in direction of flow of the particulate material before it enters said second conduit and its subsequent emergence into said second chamber causes a substantial portion of the particulate material, and especially the particles thereof which are of greater mass, to pass through the central part of said second conduit particularly adjacent its upstream end to thereby reduce significantly the wear at the entrance to said second conduit.

4,802,797

MATERIAL APPLICATOR ASSEMBLY AND WIPER THEREFOR

Rodney D. Cole, 24 Pine Walk, Cobham, Surrey, England

Filed May 19, 1986, Ser. No. 865,081
Claims priority, application United Kingdom, May 22, 1985, 8512902; Mar. 5, 1986, 8605342
Int. Cl.[4] A45D 40/26
U.S. Cl. 401—122 19 Claims



1. A material applicator assembly comprising an elongate applicator, a container for the material to be applied by the applicator, a wiper unit having a wiping orifice for squeezing and wiping a material-retaining portion of the applicator upon its withdrawal from the container to limit the amount of material retained thereon, and a cleaning member adapted to project inwardly relative to the orifice and penetrate an inner part of said material-retaining portion to aid the removal of material from said inner part, said cleaning member being flexible radially outwardly to allow the passage of a shank portion of the applicator to be withdrawn through and wiped by the wiping orifice, the shank portion being formed with at least one recess spaced axially from said material-retaining portion for accommodating said cleaning member when the applicator is fully inserted into the container.

4,802,798

DRILL HEAD

Thomas Adamson, 1619 N. Home, Mishawaka, Ind. 46545

Filed Dec. 14, 1987, Ser. No. 132,259
Int. Cl.[4] B23B 45/14
U.S. Cl. 408—112 5 Claims

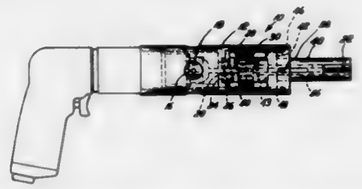
1. A drill head for use with a drill including means for securing said drill head to said drill, said drill head comprising

an elongated cylindrical outer barrel of a diameter sufficient to surround the front portion of said drill,

said outer barrel having a first abutment means intermediate its length,

an inner barrel supported for longitudinal movement within said outer barrel,

said abutment means at the foremost end of said outer barrel,



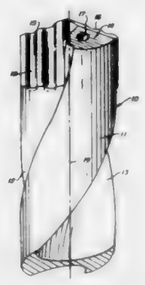
spring means extending between said first abutment means and said inner barrel to urge said inner barrel into engagement with said second abutment means, and a pair of lock rings threadably mounted to the inner wall of said outer barrel and adjustable to form a stop which determines the extent of longitudinal movement of said inner barrel into said outer barrel.

4,802,799

DRILL BIT

Marko I. Rachev, Vernon Hills, Ill., assignor to Markes Tool Company, Mundelein, Ill.

Filed Jun. 10, 1987, Ser. No. 60,153
Int. Cl.[4] B23B 51/02
U.S. Cl. 408—144 10 Claims



1. In a cylindrical drill defining an axis and having a tip at one end thereof and a pair of diametrically opposite, helical flutes opening into said tip, the improvement comprising:

a diametric slot in said drill bisecting said tip; and

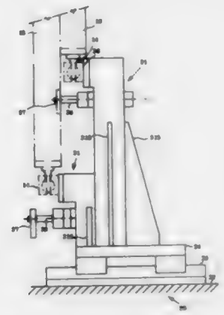
an insert in said slot defining a cutting edge constructed to cause metal chips being cut by said cutting edge to be fragmented, a portion of said insert at said tip having cylindrical grooves each defining a length and a radius, the length of said grooves being substantially greater than the radius thereof, said grooves extending at a preselected acute angle to said drill axis, said cutting edge comprising a wavy edge defined by a pair of oppositely oriented serpentine series of said grooves, said series being symmetrically disposed relative to said drill axis.

4,802,800

PASSIVE POSITIONING APPARATUS

Dino Costin, New Hyde Park, and Howard Citron, Northport, both of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Filed Oct. 5, 1987, Ser. No. 105,560
Int. Cl.[4] B23C 9/00; B66C 23/00
U.S. Cl. 409—131 9 Claims



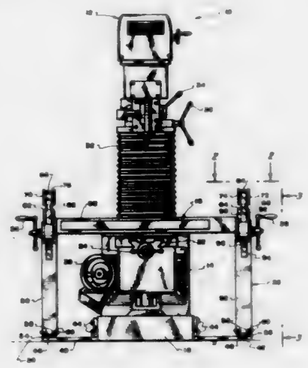
1. A method for enhancing the ability of robots to hold the position of a part in the presence of external forces comprising the steps of: providing at least three non-colinear adaptive clamping surfaces on a robot end effector, said adaptive clamping surfaces being flat, each of said surfaces being substantially parallel to a plane and free to rotate about two axes mutually perpendicular to a normal to said plane; providing a mating flat clmaping surface for each said adaptive clamping surface, said mating surface being free to mvoe in a direction substantially perpendicular to said plane of said adaptive clamping surface; applying a compliant force to maintain said adaptive clmaping and mating surfaces in intimate contact during robot positioning; immobilizing said mating clamping surfaces; and clamping said adaptive clamping surfaces to said mating surfaces, said clamping totally immobilizing said end effector.

4,802,801

WORKTABLE SUPPORT FOR MACHINE TOOL

Wolfram F. O. Feagler, 16721 Chaparral, Cerritos, Calif. 90701

Filed Nov. 6, 1987, Ser. No. 117,575
Int. Cl.[4] B23C 1/14
U.S. Cl. 409—168 4 Claims



1. In combination with a machine tool having a tool supporting column and a horizontal worktable, said tool supporting

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column being movable toward and away from said worktable, a floor mounted base, said tool supporting column being mounted on said base, a knee, said worktable being movably mounted on said knee, said worktable having longitudinal spaced apart ends, said ends being cantilevered relative to said knee, said knee being mounted on said base, the improvement comprising:

a support apparatus for said worktable, said support apparatus including a pair of arms, each said arm having an outer end, a said outer end connecting by connection means with a said end of said worktable; and

arm support means composed of a pair of actuating cylinder arrangements, therebeing a said actuating arrangement for each said arm, a said actuating cylinder arrangement connecting with a said arm and being for the purpose of raising and lowering its respective said arm, whereby each said actuating cylinder arrangement is to slightly raise its respective said end of said worktable and orient such precisely in horizontal alignment with the portion of said worktable located directly above said knee.

4,802,802

ATTACHMENT UNIT INCLUDING NAIL AND SLEEVE

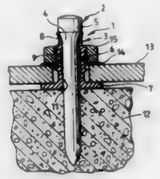
Elmar Thurner, Feldkirch, Austria, assignor to Hilti Aktiengesellschaft, Fürstentum Liechtenstein, Fed. Rep. of Germany

Filed Mar. 7, 1988, Ser. No. 164,823

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1987, 3707424

Int. Cl.⁴ F16B *39/00, 5/02*

U.S. Cl. 411—107 **6 Claims**



1. Attachment unit comprising an axially elongated nail having an axially elongated shank with a head at one end of and extending transversely outwardly from said shank, and an axially extending sleeve guided on said shank so that the nail can be driven by an explosive powder charge through the sleeve into a receiving material, said sleeve comprises a first end more remote from the head of said nail and a second end, an abutment flange located at and extending transversely outwardly from the first end of said sleeve, a first axially extending sleeve section extending from said flange toward the second end of said sleeve, said first sleeve section having an axially extending exterior thread with a root diameter, wherein the improvement comprises a axially extending second sleeve section extending from the first sleeve section to the second end of said sleeve, said second sleeve section has an outside diameter smaller than the root diameter of said exterior thread, said attachment unit having a first condition before being driven into the receiving material and a second condition after it is driven into the receiving material, whereby in the first condition said second sleeve section is spaced from the head of said nail and in the second condition the head of said nail is driven into said second sleeve section and deforms said second sleeve section.

4,802,803

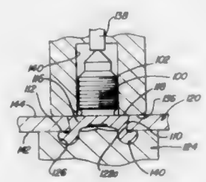
FASTENING ELEMENT AND PANEL ASSEMBLY

Rudolph R. M. Muller, Frankfurt, Fed. Rep. of Germany, assignor to Multifastener Corporation, Detroit, Mich.

Division of Ser. No. 852,689, Apr. 16, 1986, Pat. No. 4,713,872, which is a continuation-in-part of Ser. No. 773,387, Sep. 6, 1985, Pat. No. 4,633,560, which is a division of Ser. No. 563,833, Dec. 21, 1983, Pat. No. 4,555,838, which is a continuation-in-part of Ser. No. 458,099, Mar. 28, 1983, Pat. No. 4,459,073, and Ser. No. 504,074, Jun. 14, 1983, Pat. No. 4,543,701, which is a continuation of Ser. No. 229,274, Jan. 28, 1981, abandoned, said Ser. No. 458,099, is a division of Ser. No. 229,274,. This application Aug. 24, 1987, Ser. No. 91,554

Int. Cl.⁴ F16B *37/04*

U.S. Cl. 411—183 **6 Claims**



1. A panel assembly, comprising a metal panel and a metal fastening element, said panel including an aperture having a cone-shaped internal surface extending therethrough and said fastening element permanently attached to said panel within said panel aperture, said fastening element including a disk-shaped portion having a conical exterior surface press fitted into said panel aperture and forming said aperture conical internal surface, said fastening element exterior conical surface conforming to and mating with said panel aperture conical internal surface throughout its length having major and minor diameters, said mating cone-shaped surfaces interlocking and limiting movement of said element in one direction, said fastening element having an intergral annular rim extending from adjacent said minor diameter of said disk-shaped portion, said rim being hook-shaped in cross-section and having an annular free end portion resiliently biased against said panel spaced radially outwardly from said panel aperture preventing pull-out of said element from said panel aperture in the opposite direction from said first direction, and said fastening element including a body portion extending from said disk-shaped portion opposite said rim.

4,802,804

PLASTIC CLIP WITH RESILIENT THREAD SEGMENTS AND HINGED CLASP

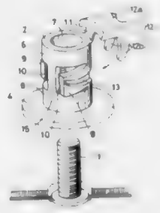
Toshio Hirohata, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed May 3, 1988, Ser. No. 189,783

Claims priority, application Japan, May 11, 1987, 62-112583

Int. Cl.⁴ F16B *37/08*

U.S. Cl. 411—433 **2 Claims**



1. A plastic clip to be tightened against a bolt, comprising a

base having a through hole to be penetrated vertically by said bolt, an upright post extending upright from the top of said base adjacent to said through hole, a cylindrical portion united to the outer end of said upright post and having a hole formed above and coaxial with said through hole in said base for receiving said bolt, a pair of flexible arms one extending in a curved fashion from each side of said upright post between said base and said cylindrical portion to slightly project with respect to the outer shape of said cylindrical portion and having a curved concave inner surface provided with a thread to be meshed with the male thread of said bolt, and a bifurcated pivotable member vertically rockably united via a reduced thickness hinge portion to the outer periphery of said cylindrical member, said bifurcated pivotable member serving to urge said pair of flexible arms sidewise against said bolt when rocked downwards.

4,802,805

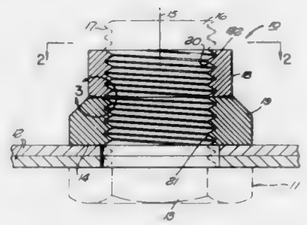
FATIGUE RESISTANT FASTENERS AND RELATED METHODS

Mark Hajian, Orange, Calif., assignor to William P. Green, Pasadena, Calif., a part interest

Continuation of Ser. No. 742,290, Jun. 7, 1985, abandoned, which is a division of Ser. No. 380,439, May 20, 1982, Pat. No. 4,545,104, which is a continuation-in-part of Ser. No. 111,774, Jan. 14, 1980. This application Apr. 23, 1987, Ser. No. 41,638

Int. Cl.⁴ F16B *39/28, 39/30*

U.S. Cl. 411—263 **5 Claims**



1. A fatigue resistant threaded connection including a screw, a nut and a work piece or work pieces, and which is formed by the method that comprises:

connecting together a screw having an external thread and a nut having first and second portions near outer and inner ends respectively of the nut attached rigidly together at a location intermediate said ends and carrying two aligned internal threads respectively of a common pitch engaging said external thread at different locations; with said two internal threads, before engagement with the screw, being retained in fixed relative positions in which one internal thread is not a true helical continuation of the other, and in which portions of the two internal threads lying in a common axial plane are spread slightly farther apart axially than if the internal threads were true helical continuations of one another;

initially applying force to said external thread of the screw by each of said two internal threads of the nut in a direction axially away from the other internal thread of the nut by virtue of said slightly spread condition of the internal threads;

then tightening said screw and nut threadedly relative to one another against the resistance of a work piece or work pieces to a preloaded condition stretching said screw axially relative to said nut; and

in said preloaded condition applying force to said external thread of the screw by said two internal threads of the nut in a common axially outer direction rather than opposite directions axially away from one another;

the radial thickness of said nut, between the major diameter of said internal threads and a radially outer surface of the nut, being substantially as great at said intermediate location as at said first portion of the nut to transmit high preload forces from said first portion through said intermediate location to said second portion of the nut, for transmission by said second portion to said work piece or work pieces, without excessive deformation of the nut at said intermediate location.

4,802,806

TENSION DEVICE FOR TIGHTENING AND LOOSENING BOLTS OR PINS

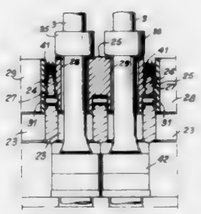
Gerard Sevelinge, Montceau-les-Mines, France, assignor to Framatome, Courbevoie, France

Filed Nov. 4, 1986, Ser. No. 926,499

Claims priority, application France, Nov. 4, 1985, 85 16293

Int. Cl.⁴ F16B *35/02, 37/08*

U.S. Cl. 411—383 **8 Claims**



1. Tension device for simultaneous tightening and loosening of a plurality of fastening member (3), said device comprising a body having at least one jack (40, 51) equipped with a piston (25, 53), each said at least one jack (40-51) being associated with at least two fastening members (3) positioned adjacent to one another for simultaneous extension thereof.

4,802,807

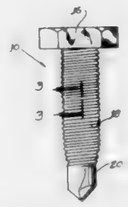
THREADED FASTENER

Mark Offenburger, Elgin; Eric Parker, Algonquin, and Frank Ptak, Highland Park, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 14, 1988, Ser. No. 181,749

Int. Cl.⁴ F16B *25/00*

U.S. Cl. 411—387 **9 Claims**



1. A threaded fastener having improved driving performance for corrosion-resistant securement of one or more metallic work pieces, said fastener comprising: a drive head; and a composite threaded shank comprising a threaded inner core; a zinc plating applied to said core; and an aluminum plating applied on said zinc plating, to promote lubricity in driving said shank into said work pieces.

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4,802,808

STACKING APPARATUS FOR DEEP-DRAWN ARTICLES OF PLASTICS OF PLASTICS MATERIAL

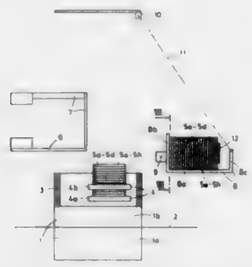
Frank-Michael Wölk, and Horst Zabel, both of Lübeck, Fed. Rep. of Germany, assignors to Maschinenbau Gabler GmbH, Lübeck, Fed. Rep. of Germany

Filed Jul. 28, 1987, Ser. No. 78,919

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1986, 3625841

Int. Cl.[4] B65G *57/28, 57/30*

U.S. Cl. 414—789.2 **7 Claims**



1. A stacking apparatus for deep-drawn articles made from plastics material in a thermoforming machine, comprising a lower stacking plate and an upper stacking plate adapted for receiving formed articles from a forming die of the thermoforming machine, the lower and upper stacking plates capable of forming vertically extending stacks of articles, the upper stacking plate vertically raisable from a position above the forming die to a raised position, a first pushing dvice for pushing stacks of articles carried by the upper stacking plate into the raised position thereof, a support plate exclusively horizontally movable from a first position into a second position in which the support plate is moved underneath the first pushing device and underneath the stacks of articles carried by the upper stacking plate into the raised position thereof, the support plate capable of carrying the stacks of articles after the upper stacking plate has been lowered, a tilting frame tiltable about a horizontal axis from a vertical position next adjacent the support plate to an esentially horizontal position, the first pushing device being movable horizontally parallel to the support plate, the first pushing device serving for pushing the stacks of articles from the support plate onto the tilting frame when the tilting frame is in the vetical position and a second pushing device capable of sliding into the tilting frame when the tilting frame is in the horizontal position.

4,802,809

MANIPULATOR FOR STANDARD MECHANICAL INTERFACE APPARATUS

Anthony C. Bonora, Menlo Park, and Andrew W. O'Sullivan, Gilroy, both of Calif., assignors to Asyst Technologies, Milpitas, Calif.

PCT No. PCT/US86/01758, § 371 Date Apr. 20, 1987, § 102(e) Date Apr. 20, 1987, PCT Pub. No. WO87/01361, PCT Pub. Date Mar. 12, 1987

Continuation-in-part of Ser. No. 769,709, Aug. 26, 1985, Pat. No. 4,676,709, which is a continuation-in-part of Ser. No. 769,850, Aug. 26, 1985, Pat. No. 4,674,936. This PCT application Aug. 25, 1986, Ser. No. 49,393

Int. Cl.[4] B65G *65/00*

U.S. Cl. 414—217 **37 Claims**

1. Apparatus for transferring a cassette holding articles to be processed to and from a container supported at a processing station where the processing station has a cassette port for receiving the cassette when the cassette moves along a central axis extending from outside the processing station through the cassette port, and into the processing station, said apparatus comprising:

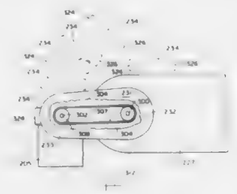
platform means including a cassette platform transportable substantially along said central axis for transferring the cassette to and from the container substantially along said central axis;

manipulator means including a first member extending substantially orthogonal to said central axis, the first member including a first portion and a second portion;

a pivoting arm including a pivoting portion and a coupling portion, the pivoting portion mounted pivotally adjacent to the second portion of the first member, the pivoting arm operable to pivot about a pivot axis extending substantially through the pivoting portion and substantially perpendicular to the central axis;

coupling means mounted adjacent to the coupling portion of the pivoting arm for coupling to the cassette; and

tilt means for tilting the coupling means and the cassette coupled thereto during pivoting by said pivoting arm, such that during the pivoting the cassette tilts relative to the central axis.



4,802,810

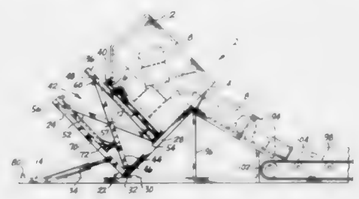
APPARATUS FOR UNLOADING CONTAINERS

Erwin T. Gunn, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 24, 1987, Ser. No. 100,735

Int. Cl.[4] B65G *65/23*

U.S. Cl. 414—414 **19 Claims**



1. Apparatus for unloading articles from a container having a side opening, comprising;

a frame including a base and a restraining wall substantially perpendicular to the base; said wall being dimensioned to cover said opening;

a table mounted on and essentially parallel to the base and dimensioned to receive said container thereon with said opening adjacent to said wall;

pivot means for pivoting the frame and the table, with said container positioned thereon, from an initial position in which the base is substantially horizontal to an inclined position in which said opening faces generally downwardly;

raising means disposed between the base and the table for raising the table and said container relative to the frame, following pivoting of the frame and the table to said inclined position, to progressively uncover said opening and allow gravity to cause articles in the container to move out through said opening; and

conveyor means positioned to receive said articles.

4,802,811

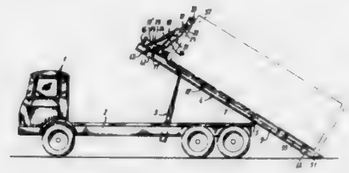
APPARATUS FOR LOADING AND UNLOADING AN INTERCHANGEABLE CONTAINER ONTO AND FROM A VEHICLE

Derk Nijenhuis, Hoogeveen, Netherlands, assignor to N.C.H. Hydraulische Systemen BV, Hoogeveen, Netherlands

Continuation of Ser. No. 723,964, filed as PCT NL84/00026 on Aug. 13, 1984, published as WO85/00787 on Feb. 28, 1985, abandoned. This application Jan. 16, 1987, Ser. No. 4,058

Int. Cl.[4] B60P *1/64;* **B65G** *63/02, 67/02*

U.S. Cl. 414—478 **5 Claims**



1. A self-loading and unloading apparatus for a vehicle having a tiltable frame mounted on said vehicle, gripping means movably positioned on said frame for engaging an interchangeable container and lifting said container from a lower level onto said vehicle by vertical and horizontal movements such that a first lower terminal edge of the container is moved onto said vehicle and that thereupon the container is moved longitudinally onto said vehicle until said container is fully supported by said vehicle and for unloading said container from said vehicle by reversing the aforesaid movements, the improvement comprising:

a slidable track means disposed and guided in a longitudinal direction in said tiltable frame,

said tiltable frame being mounted for pivotal movement on said vehicle about a horizontal axis near a pick-up location for said containers,

a movable carriage mounted for longitudinal movement on said slidable track means,

a drive mounted on said frame,

flexible pulling means coupled to said drive and said carriage for moving said carriage,

hooking means connected to said flexible pulling means for engaging containers to be loaded and unloaded from said vehicle,

a plurality of different container gripping means including said hooking means and at least one gripping means mounted on said carriage,

each of said plurality of gripping means engaging a different type of container thereby allowing the use of said self-loading apparatus on a variety of different types of containers.

4,802,812

APPARATUS FOR HARVESTING ROW CROPS

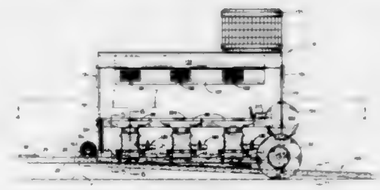
Leland S. Simpson, III, 4275 N. Chateau Fresno, Fresno, Calif. 93711

Filed Jul. 12, 1985, Ser. No. 754,179

Int. Cl.[4] B60P *1/00*

U.S. Cl. 414—508 **11 Claims**

1. An apparatus for harvesting row crops comprising a frame adapted for earth traversing movement along a first path substantially parallel to and laterally disposed with respect to a row crop, a harvesting unit borne by the frame for movement along a second path substantially transversely related with respect to the first path toward and from the row crop and adapted to receive a field worker thereon in a seated position facing the row crop for movement with the harvesting unit toward the row crop along the second path by the field worker manually moving the harvesting unit along said second path, means mounted on the harvesting unit for receiving the crop harvested from the row crop by the field worker and transporting said crop for collection, and resilient means connected to the harvesting unit for urging the harvesting unit along the second path from the row crop whereby said manual moving of the harvesting unit along said second path by the field worker is required only for movement along the second path toward the row crop and said resilient means returns said harvesting unit to a retracted position in movement from said row crop along the second path upon said field worker terminating manual resistance thereto.



4,802,813

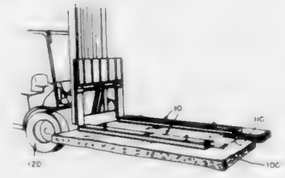
APPARATUS TO BE USED IN CONJUNCTION WITH A FORKLIFT FOR LIFTING AND MOVING A CONCRETE SLAB

Charles C. Perry, 8513 Newcastle Ave., Northridge, Calif. 91325

Filed Mar. 14, 1988, Ser. No. 167,709

Int. Cl.[4] B66F *9/12*

U.S. Cl. 414—607 **10 Claims**



6. An apparatus to be used in conjunction with a forklift for lifting and moving a concrete slab, comprising:

a. an elongated housing member defined by a top section, a pair of sidewalls attached at either end of said top section, and a pair of outwardly protruding floor members with one floor member attached to the end of a respective sidewall remote from said top section and which extend generally parallel to said top section and away from the top section and away from the sidewall to which it is attached;

b. an interior channel defined by said top section and said pair of sidewalls;

c. a multiplicity of spaced apart openings in each of said pair of floor members;

d. a multiplicity of anchor bolts inserted through said spaced apart opening such that one anchor bolt is inserted through a selected one of the spaced apart openings;

e. a first rotatable cover member enclosing a sidewall and its adjacent floor member;

f. said first rotatable cover member being rotatable to permit access to the openings in its adjacent floor member, and define an opened position;

g. a second rotatable cover member enclosing the other sidewall and its adjacent floor member;

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h. said second rotatable cover member being rotatable to permit access to the openings in its adjacent floor member, and define an opened position;

i. a first securing means to maintain said first cover in a closed position enclosing a sidewall, its adjacent floor member and a multiplicity of anchor bolts; and

j. a second securing means to maintain said second cover in a closed position enclosing a sidewall, its adjacent floor member and a multiplicity of anchor bolts;

k. whereby said apparatus is attached to said concrete slab through said multiplicity of anchor bolts extending through the openings in the floor members and affixed into the concrete slab while said first and second covers are in the opened position and thereafter the first and second covers are rotated into the closed position and fastened closed and said concrete slab is raised and moved by inserting a fork of a forklift through said interior channel and causing the fork to move upwardly on the forklift.

4,802,814

DEVICE FOR ATTACHING FRONT LOADER TO TRACTOR

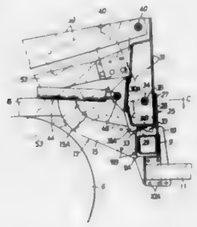
Isao Kourogi; Keiichi Masuda; Masami Hirooka; Yoshio Tomiyama; Kazunori Yoshiuchi, and Takashi Gokenya, all of Osaka, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Mar. 31, 1987, Ser. No. 32,384

Claims priority, application Japan, Apr. 23, 1986, 61-93923; Apr. 23, 1986, 61-93924; Nov. 28, 1986, 61-285028

Int. Cl.[4] B66C *23/36*

U.S. Cl. 414—686 **7 Claims**



7. A device for attaching to a tractor body a front loader having a pair of opposite booms carrying working means at their front ends, a pair of opposite masts pivotably supporting the pair of booms respectively, and a pair of opposite braces projecting forward from the pair of masts respectively, by removably mounting each of the masts on a mast support fixed to the tractor body and removably fixing the front end of each of the braces to a brace fixing member secured to a front portion of the tractor body;

the device being characterized in that each of the opposite mast supports comprises a fitting portion, said fitting portion having a back wall and opposite side walls to form an open concave shape in plan view to receive the mast which will enter from a forward and higher position for removable insertion;

that a projection is provided to connect said opposite side walls at a point intermediate in height of each of the mast supports to serve as a pivot in an attaching or in a removing action;

that each of the masts is secured removably in a respective mast-fitting portion, each of the masts having a hollow box shape and its transverse dimension being sized to allow the mast to engage into the mast support, opposed skirts are formed on a lower end of each said mast, a recess is formed in each said skirt to receive said projection, an inclined slant guide face is formed on both sides of each recess to guide said projection into the recess, thus pivotal support means is formed by engagement of the projection with the recess;

that means is provided for removably attaching the mast to the mast support while the mast is supported by said projection comprising lockpin holes, oppositely opened on the opposite side walls of said mast support located above said projection and pins which are removably insertable transversely from the outside of the mast support and wherein each hole is formed to allow a longitudinal movement of the pin relative to the hole therein to buffer impacts which remain after the buffering action of the braces, and each hole extends longitudinally and is closed to control displacements of the engaged pin;

whereby breaking of the pins is avoided when elastic deformation of the braces take place due to external impacts.

4,802,815

INDUSTRIAL ROBOT

Takanori Funabashi, Hirakata; Akiyoshi Nakada, Suita, and Haruo Tada, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

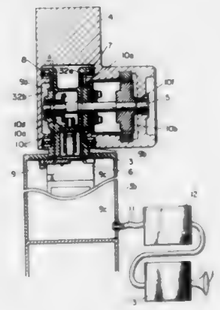
PCT No. PCT/JP84/00586, § 371 Date Aug. 6, 1985, § 102(e) Date Aug. 6, 1985, PCT Pub. No. WO85/02577, PCT Pub. Date Jun. 20, 1985

PCT Filed Dec. 12, 1984, Ser. No. 767,268

Claims priority, application Japan, Dec. 15, 1983, 58-236618

Int. Cl.[4] B25J *17/00*

U.S. Cl. 414—680 **11 Claims**



1. In an industrial robot including a stationary arm and a driven arm for constituting articulations, bearing means for rotatably supporting said driven arm relative to said stationary arm, and a driven source provided in said stationary arm for swiveling said driven arm relative to said stationary arm, the tip end of said driven arm being adapted to be positioned at any position in a space, the improvement comprising an internal air chamber formed by substantially closing a space surrounded by said stationary arm, said driven arm and said bearing means in a manner to separate the same from the outside air; and air passage provided in a wall of said stationary arm, said air passage being in communication with an area of said internal air chamber near an inner peripheral side of said bearing means and connecting said internal air chamber to a cavity provided within aid stationary arm; negative pressure generating means for sucking air contained in said cavity, said air passage and said internal air chamber to make the air pressure therein lower than the pressure of the outside air; and piping means for connecting said negative pressure generating means to said cavity.

4,802,816

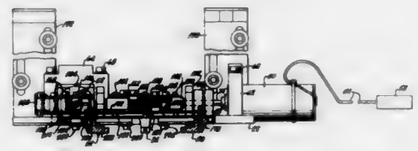
PICK AND PLACE MACHINE HAVING IMPROVED CENTERING JAWS

Victor B. Meshinsky, Anaheim, Calif., assignor to Excellon Industries, Torrance, Calif.

Filed Oct. 8, 1985, Ser. No. 785,601

Int. Cl.[4] B65G *47/91*; H05K *13/02*

U.S. Cl. 414—736 **16 Claims**



13. A pick and place machine for positioning a part having a plurality of side faces, comprising:

a vacuum head that lifts and suspends said part; and

first and second pairs of opposing centering jaws positioned substantially perpendicular to said vacuum head to contact only the side faces of said part, and movable linearly in a plane perpendicular to said vacuum head to adjust the position of said part on said vacuum head.

4,802,817

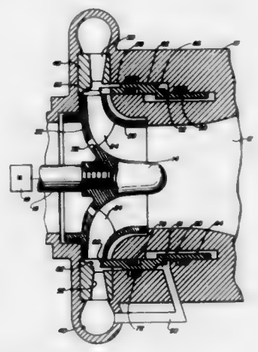
CENTRIFUGAL PUMP WITH SELF-REGULATING IMPELLER DISCHARGE SHUTTER

Thomas R. Tyler, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 23, 1987, Ser. No. 137,163

Int. Cl.[4] F01D *17/08*

U.S. Cl. 415—157 **7 Claims**



1. A centrifugal pump comprising:

a housing,

an impeller rotatable in said housing;

an outlet volute extending about said impeller;

an impeller discharge shutter movably mounted in said housing in surrounding radially-spaced relation with said impeller with a forward section variably positionable in a flow path between the impeller and the volute and having an end exposed to tip static pressure at the tip of the impeller; and

means communicating a remote opposite end portion of the impeller discharge shutter with volute pressure whereby the impeller discharge shutter forward section, at certain flow rates, is variably positionable in said flow path dependent upon the values of said tip static pressure and said volute pressure, said end of the impeller discharge shutter and said remote end portion thereof being of constant area constantly exposed to said tip static pressure and volute pressure respectively, in all the variable positions of the impeller discharge shutter whereby said variable positions are determined solely by the relative values of tip static pressure and volute pressure applied to the constant areas of the impeller discharge shutter.

4,802,818

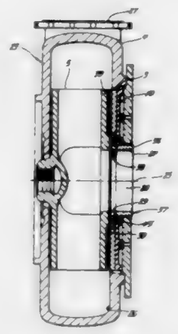
SLURRY PUMP SUCTION SIDE LINER WITH REPLACEABLE COMPONENTS

Daniel Wiggins, 700 Homestead, and Robert B. Flood, Jr., 13 Oakhill Dr., both of Marquette, Mich. 49855

Filed Sep. 28, 1987, Ser. No. 101,390

Int. Cl.[4] F04D *29/42*

U.S. Cl. 415—170 A **10 Claims**



1. A slurry pump action side liner for use in a pump having a casing and an impeller defined by an axis in said casing, comprising, in combination, a suction port through which a slurry enters said impeller substantially parallel to said axis; an annular wear ring assembly proximate said impeller positioned between said impeller and said suction port so as to be a certain predetermined distance from said impeller, said predetermined distance being so small as to substantially prevent said slurry passing between said wear ring assembly and said impeller; an annular wear plate assembly positioned so as to substantially surround said wear ring assembly and positioned substantially at said predetermined distance from said impeller; and connection means for rigidly and removably connecting said wear plate assembly, said wear ring assembly and said suction port to said casing whereby a slurry which enters said suction port passes through said wear ring assembly and said wear plate assembly into said impeller and said suction port, and said wear ring assembly and said wear plate assembly may be selectively removed and replaced.

4,802,819

CENTRIFUGAL PUMP

Jack T. Bevington, and Alan B. Channell, both of Ashland, Ohio, assignors to McNeil (Ohio) Corporation, St. Paul, Minn.

Filed Sep. 14, 1987, Ser. No. 95,665

Int. Cl.[4] F04D *17/12*

U.S. Cl. 415—199.3 **7 Claims**

6. A stage for a centrifugal pump having a plurality of axially aligned stages comprising:

housing means having a cylindrical wall defining a portion of the outer surface of the pump and a annular end wall having a centrally located aperture;

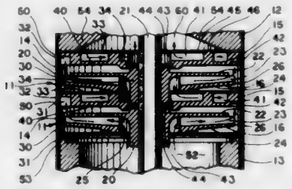
diffuser means fully received within said housing means and affixed to said end wall of said housing means and having a discharge opening adjacent said aperture;

impeller means rotatably received within said housing means

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in operative association with said diffuser means, said impeller means having an inlet opening; and

means to axially align said housing means with a housing



means of an axially adjacent stage including a rim circumferentially about one axial end of said housing means and a pilot region circumferentially about the axially distal end of said housing means.

4,802,820

COMPACT TURBINE HOUSING

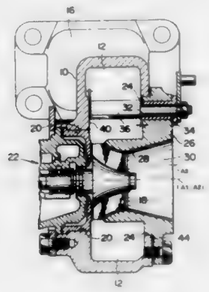
Hiroshi Komatsu, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Aug. 9, 1985, Ser. No. 764,067

Claims priority, application Japan, Aug. 15, 1984, 59-169234

Int. Cl.⁴ F04D *29/60*

U.S. Cl. 415—201 7 Claims



1. A turbine arrangement for use in an automotive turbocharger or the like, comprising:

a housing;

a turbine impeller disposed in said housing, said impeller having a first axis about which it is rotatable;

means defining a first aperture in said housing, said first aperture having a second axis, said second axis being offset from said first axis, said first aperture casting a shadow into said housing;

a cover detachably secured to said housing in a manner which closes said first aperture;

means defining an exhaust port in said cover, said exhaust port having an axis coincident with said first axis;

means defining a scroll passage in the housing, said scroll passage being arranged to direct gases from an inlet port toward said impeller;

a variable nozzle located at the downstream end of said scroll passage for variably throttling the flow of gases flowing though said scroll passage from an inlet port toward said impeller, said variable nozzle including a pivotally mounted vane, said vane being pivotal between first and second extreme positions;

means defining a precision machined surface in said housing, said precision machined surface being arranged immediately adjacent an edge of said vane and in an area over which said vane sweeps as it pivots from said first extreme position to said second extreme position, said precision machined surface being located so that at least the portion thereof which is closest to said impeller lies in the shadow of said first aperture.

4,802,821

AXIAL FLOW TURBINE

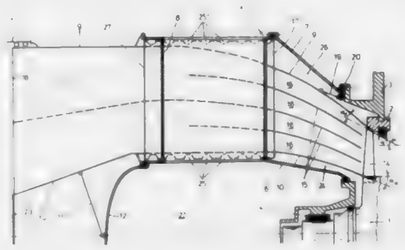
Franz Krietmeier, Baden, Switzerland, assignor to BBC Brown Boveri AG, Baden, Switzerland

Filed Sep. 21, 1987, Ser. No. 99,020

Claims priority, application Switzerland, Sep. 26, 1986, 3876/86

Int. Cl.⁴ G01D *25/30*

U.S. Cl. 415—210 13 Claims



1. Axial flow turbine comprising reaction blading having outlet rotor blades (14) with a high Mach number flow and a large opening angle and which are followed by a diffuser with axial outlet into an exhaust gas pipe (13), wherein kink angles (α_N, α_Z) of an inlet of the diffuser both at an inner boundary wall of the diffuser and at an outer boundary wall of the diffusor are fixed so as to even out the energy profile over the height at an outlet portion from a last rotor blade row and wherein means for removing swirl from the swirling flow are provided within a diffuser zone.

4,802,822

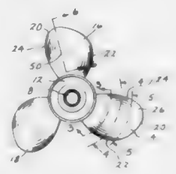
MARINE PROPELLER WITH OPTIMIZED PERFORMANCE BLADE CONTOUR

Hubert S. Gilgenbach, Butte des Morts, and Ronald M. Steiner, Oshkosh, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Oct. 8, 1987, Ser. No. 106,140

Int. Cl.⁴ B63H *1/26*

U.S. Cl. 416—235 5 Claims



1. A marine propeller comprising a hub having a plurality of blades extending generally radially outwardly therefrom to respective outer tips, each blade having a leading edge and a trailing edge, each blade having a pressure surface defined between said hub and said outer tip and between said leading edge and said trailing edge, said pressure surface having a progressive pitch from said leading edge to said trailing edge along a given radius from said hub, and means providing uniform loading of said pressure surface from said hub to said tip and preventing overloading of said tip, comprising a contoured

said pressure surface having increasing progressiveness of said pitch with increasing radii from said hub to said tip.

4,802,823

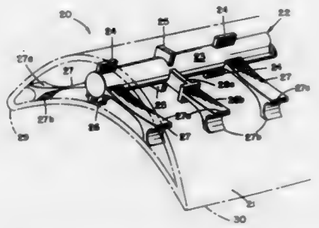
STRESS RELIEF SUPPORT STRUCTURES AND ASSEMBLIES

Gary W. Decko, Wethersfield; Yao Peng, Woodbridge, and Herman Vogel, Newtown, all of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed May 9, 1988, Ser. No. 191,324

Int. Cl.⁴ F01D *5/18*

U.S. Cl. 416—97 A 12 Claims



1. A flexible interior support structure, for absorbing the internal stresses normally developed during the gradient heating of an outer surface layer comprising a thin, elongate, contoured, heat-expandable and/or distortable metal sheathing, said support structure being unitary, and comprising an elongate metallic support core designed to extend along at least a major portion of the length of the elongate contoured element which it is designed to support, and a plurality of spaced flexible metallic eextension arms attached to said core and extending therefrom in different directions for supporting engagement between the ends thereof and a thin contoured outer surface layer to be supported by said support structure in spaced relation to the said elongate metallic support core, said extension arms being flexible and/or twistable relative to said support core to permit heat expansion and/or distortion of the outer surface layer relative to the support core while absorbing the internal stresses normally generated by such expansion and/or distortion.

4,802,824

TURBINE ROTOR

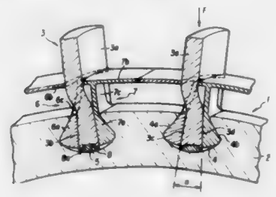
Philippe M. D. Gastebois, Vert Saint Denis, and Jean-Francois R. Imbault, Posthierry, both of France, assignors to Societe Nationale d'Etude et Moteurs d'Aviation "S.N.E.C.M.A.", Paris, France

Filed Dec. 11, 1987, Ser. No. 131,725

Claims priority, application France, Dec. 17, 1986, 86 17634

Int. Cl.⁴ F01D *5/32*

U.S. Cl. 416—193 A 5 Claims



1. A turbine rotor comprising

a disc,

a plurality of rectilinear, axially oriented sockets in the periphery of said disc, said sockets being evenly distributed around said periphery and each having side walls and a bottom wall providing said socket with a dovetail shaped cross-section,

a plurality of blades disposed in respective ones of said sockets and projecting radially outwards from said periphery of said disc, said blades being formed of a composite ceramic fibre material and each of said blades having

an aerofoil shaped body radially outwards of said disc defining concavely and convexly curved sides of said blade, and

a root received in one of said sockets, said root being in the form of a bulb and having a bottom face and two flat side faces defining an angle of convergence towards said body not exceeding 10 o whereby said ceramic fibres of said blade proceed continuously from said body to said root of said blade without geometric distortion, and

locking means associated with each of said blades for locking said blade in said corresponding socket, said locking means including a pair of elements disposed on opposite sides of said blade, each of said elements comprising

a wedge-shaped member disposed in said socket between one of said side faces of said root and the adjacent one of said side walls of said socket to ensure radial locking of said blade,

a platform disposed adjacent said blade radially outwards of said disc and extending in a circumferential direction, and

a strut connecting said platform to said wedge-shaped member,

said platforms of said elements of said locking means of all of said blades co-operating to form a continuous ring intersected by said blades and defining part of the inner boundary of the main streamline flow path of the turbine gases.

4,802,825

METHOD AND APPARATUS FOR MAINTAINING A MIXTURE OF PRODUCTS AT A CERTAIN TEMPERATURE

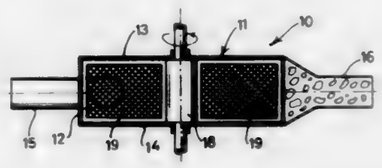
Willem F. Hermanus, Amstelveen, Netherlands, assignor to Stork Amsterdam B.V., Amsterdam, Netherlands

Filed May 13, 1987, Ser. No. 49,617

Claims priority, application Netherlands, May 14, 1986, 8601221

Int. Cl.⁴ F04D *29/38*

U.S. Cl. 416—231 B 2 Claims



1. A method of maintaining at a certain temperature, and for a certain period of time, a flow of a mixture of products consisting of a liquid of low to medium viscosity incorporating solid particles, wherein the residence time in the vessel of the solid particles mixed with the liquid is separately controlled, such that a desired temperature of the solids can be reached independent of the flow of the liquid.

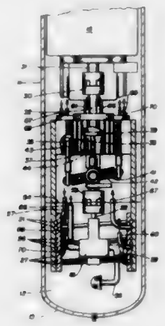
VOL 1099 ISS 1 FEB 7 1989 UMI

4,802,826

SEALED, SELF-CONTAINED, LIQUID-COOLED, GAS COMPRESSOR

John M. Hall, Burlingame, Calif., assignor to Rix Industries, Emeryville, Calif.

Filed Jun. 25, 1982, Ser. No. 392,029
Int. Cl.[4] F04B *39/06, 35/04*
U.S. Cl. 417—243 **2 Claims**



1. A sealed, self-contained, liquid-cooled compressor for natural gas comprising:

an enclosed housing providing an elongated, sealed, explosion-proof chamber adapted for vertical positioning of its longitudinal axis in use and providing an oil sump at its normally lower end;

verically superimposed and motive power connected electric motor, multi-stage gas compressor comprising a plurality of stages for successively increasing pressure of gas compressed therein and an oil pump positioned within said housing with said pump lowermost and having an intake connected to withdraw oil from said sump;

a plurality of sets of compressed gas heat exchanger tubes, one set for each stage of said compressor, mounted in said housing within said sump to cool the gas in said tubes; said sets individually connecting the output of each lower stage to the input of the next succeeding stage and the output of the last stage for delivery of compressed gas to a storage tank;

oil heat exchanger tubes connected to the discharge of said pump and mounted externally of said housing for cooling oil therein and being connected to discharge cooled oil onto said motor and compressor for gravitation thereover and into said sump;

a gas inlet conduit connected to the input of the first stage of said compressor; and

means mounted interiorly of said chamber and connected to said inlet conduit allowing any inadvertent escaped high pressure gas in said chamber to be drawn back into said compressor, thus avoiding excessive build-up of gas pressure in said chamber.

4,802,827

COMPRESSOR

Takayoshi Fujiwara, Kawasaki; Toshikatsu Iida, and Tetuo Fukuda, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 24, 1987, Ser. No. 137,680
Claims priority, application Japan, Dec. 24, 1986, 61-309408; Dec. 25, 1986, 61-307965; Dec. 26, 1986, 61-315366
Int. Cl.[4] F04B *39/10;* **F04C** *15/02*
U.S. Cl. 417—356 **11 Claims**

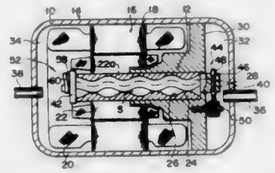
1. A compressor comprising:

a closed casing having a suction chamber and a discharge chamber;

a rotating member rotatably arranged in the casing and having a spiral bore formed along the axis of rotation thereof, said bore having first and second end openings communicating with the suction chamber and the discharge chamber, respectively;

an electric motor section arranged in the casing, for rotating the rotating member;

a spiral internal member inserted in the bore of the rotating member so as to rotate relative to the rotating member while the rotating member rotates, said internal member,



in conjunction with an inner surface of the bore, defining a plurality of closed spaces moving from the first end opening to the second end opening, whereby a fluid in the suction chamber is transported from the first end opening to the second end opening while being confined within the spaces, and is then discharged into the discharge chamber; and

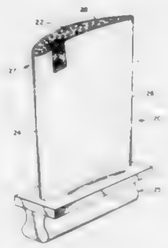
valve means for controlling the discharge of the fluid from the second end opening into the discharge chamber.

4,802,828

TURBINE BLADE HAVING A FUSED METAL-CERAMIC TIP

David A. Rutz, Glastonbury; Edward Lee, Higganum; Robert P. Schaefer, East Hartford, and Edward L. Johnson, Middletown, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 29, 1986, Ser. No. 947,066
Int. Cl.[4] B63H *1/26;* **B64C** *11/16, 27/46;* **F03B** *3/12*
U.S. Cl. 416—241 B **9 Claims**



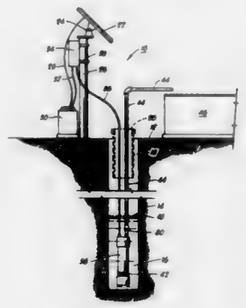
1. A gas turbine engine blade made of a superalloy, comprised of a substrate having an abrasive tip made of ceramic particulate in a predominately fused metal matrix characterized by the blade having a superalloy sheath containing no ceramic particulates along a portion of the periphery of the abrasive tip part, the sheath being attached to the substrate of the blade.

4,802,829

SOLAR CONTROLLED WATER WELL

Michael A. Miller, Rte. 2, Box 55, Selman, Okla. 73834

Filed Feb. 17, 1987, Ser. No. 15,363
Int. Cl.[4] F04B *49/02, 17/00;* **F04F** *1/20*
U.S. Cl. 417—12 **8 Claims**



1. Apparatus for automatic control of water flowing from a water well to storage, comprising:

a solar panel having a plurality of soluar cells directed to intercept sun rays to generate a d-c voltage output;

a d-c storage cell receiving input of said d-c voltage output;

pump compressor means periodically energized by said d-c storage cell to provide output of air at increased pressure;

an elongated airjet chamber having upper and lower ends and being disposed below the water level of said well and having a nipple in the upper end for receiving the output of air at increased pressure sealingly connected at an upper extremity, said chamber having inlet holes at a bottom extremity to allow entry of water;

an exit tube extending along the majority of the length of said airjet chamber, said exit tube having at least one air mix hole formed through the upper extremities proximate said airjet chamber upper end;

a surface storage tank; and

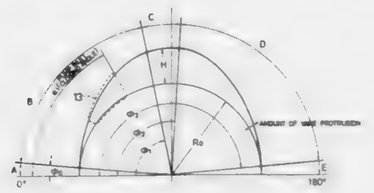
a delivery pipe connected between the exit tube at the upper end of the airjet chamber and the surface storage tank to conduct water in response to said air at increased pressure.

4,802,836

VANE COMPRESSOR WITHOUT OCCURRENCE OF VANE CHATTERING

Nobuyuki Nakajima, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1987, Ser. No. 139,646
Claims priority, application Japan, Jan. 9, 1987, 62-002883
Int. Cl.[4] F04C *18/344*
U.S. Cl. 418—150 **4 Claims**



1. A vane compressor comprising:

a pump housing including a cam ring having an inner peripheral camming surface and opposite axial open ends, and a pair of side blocks secured to said cam ring to close respectively the opposite axial open ends thereof;

a rotor rotatably arranged within said pump housing, said rotor having an outer peripheral surface having a plurality of axial slits formed therein;

a plurality of vanes slidably fitted respectively in said axial slits;

wherein a plurality of pumping chambers are defined by said side blocks, said cam ring, said rotor and said vanes and vary in volume to compress fluid with rotation of said rotor; and

said inner peripheral camming surface of said cam ring having a cam profile comprising:

a first regularly circular portion at which the outer peripheral surface of said rotor is in close contact with said inner peripheral camming surface of said cam ring;

an increasing radius portion continuous to said first regularly circular portion, each of said vanes having an amount of protrusion progressively increasing along said increasing radius portion;

a constant radius portion continuous to said increasing radius portion, said amount of vane protrusion being maintained constant along said constant radius portion;

a decreasing radius portion continuous to said constant radius portion, said amount of vane protrusion decreasing progressively along said decreasing radius portion;

a second regularly circular portion continuous to said decreasing radius portion, the outer peripheral surface of said rotor being in close contact with said inner peripheral camming surface of said cam ring at said second regularly circular portion;

said portions being arranged in the order mentioned above;

said portions of said inner peripheral camming surfaces having respective cam profiles determined respectively by the following equalities and inequalities:

(1) said first regularly circular portion:

$R(\theta)=R_o$, and

$0° \leqq \theta \leqq \phi_o$

(2) said increasing radius portion;

$$R(\theta) = R_0 + H \cdot \sin^{5/2}\left[\frac{90}{\phi 1 - \phi 2}(\theta - \phi_0)\right], \text{ and}$$

$\phi_0 < \theta \leqq \phi_1$

(3) said constant radius portion:

$R(\theta)=R_o+H$, and

$\phi_1 < \theta \leqq \phi_2$

(4) said decreasing radius portion:

$$R(\theta) = R_0 + H - H \cdot \sin^{5/2}\left[\frac{90}{\phi 3 - \phi 2}(\theta - \phi_2)\right], \text{ and}$$

$\phi_2 < \theta \leqq \phi_3$

(5) said second regularly circular portion:

$R(\theta)=R_o$, and

$\phi_3 < \theta \leqq 180°$,

where

R_o is a radius of said rotor;

H is a maximum amount of vane protrusion;

$R(\theta)$ is the amount of vane protrusion + the radius of said rotor;

θ is a rotational angle of said rotor;

ϕ_o is an angle from a reference point (0°) of rotation of

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said rotor to a termination edge of said first regularly circular portion in a rotational direction of said rotor;

ϕ_1 is an angle from said reference position (0°) to a terminating edge of said increasing radius portion in the rotational direction of said rotor;

ϕ_2 is an angle from said reference position (0°) to a terminating edge of said constant radius portion in the rotational direction of said rotor; and

ϕ_3 is an angle from said reference position (0°) to a terminating edge of said decreasing radius portion in the rotational direction of said rotor; and

wherein acceleration of protrusion of each vane is substantially low at an initiating edge of said increasing radius portion.

4,802,831

FLUID MACHINE WITH RESIN-COATED SCROLL MEMBERS

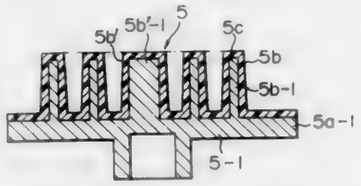
Kazutaka Suefuji, Shimizu; Aizo Kaneda, Yokohama; Yasuyuki Kasai, Shimizu; Shozo Nakamura, Yokohama; Tetsuya Arata, Shimizu; Katsuaki Kikuchi, Tsuchiura; Takao Sensiu, Shizuoka; Kimiaki Nakakado, Shimizu; Eiji Maeda, Shimizu, and Sadatsugu Minakawa, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1987, Ser. No. 37,849

Claims priority, application Japan, Apr. 11, 1986, 61-82045; May 28, 1986, 61-121131; Jun. 2, 1986, 61-125787

Int. Cl.⁴ F04C *18/04, 29/00*

U.S. Cl. 418—55 19 Claims



1. A scroll type fluid compressor including a stationary composite scroll member and an orbiting composite scroll member, each of said composite scroll members having a substantially circular end wall and a generally spiral wrap formed on and extending axially from one side of said end wall, said scroll members being disposed such that their wraps are engaged with each other to cooperate together and with the end walls to define working chambers, and driving means for causing said orbiting scroll member to make an orbiting motion relative to said stationary scroll member so that said working chambers are moved radially to change volumes thereof, each of said scroll members including a metallic base scroll member having an end wall portion and a substantially spiral wrap portion extending axially from one side of said end wall portion and a coating layer of a resin composition formed on at least the entire surface of said side of said end wall portion, including surfaces of said wrap portion, wherein said spiral wrap of each of said composite scroll members terminates in an inner end portion which is generally bulbous as viewed axially of the scroll member, and wherein said resin composition includes a thermosetting resin and an inorganic filler and has a linear thermal expansion coefficient of not greater than 2.8×10^{-5} cm/cm/°C. and a glass transition temperature of not lower than 160° C.

4,802,832

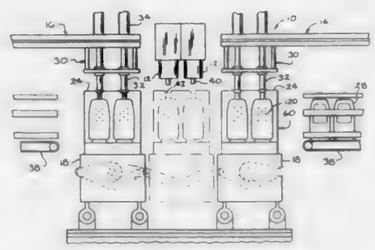
IN-MOLD LABELING ACCESSORY FOR A BLOW MOLDING MACHINE

Thomas A. Shapler, Bowling Green, Ohio, assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Oct. 22, 1987, Ser. No. 112,263

Int. Cl.⁴ B29C *49/24*

U.S. Cl. 425—126.1 12 Claims



1. An accessory for a continuous blow molding machine of the type having an elongated blow pin insertable within a parison for forming articles wherein said accessory places labels into a mold cavity such that the labels become bonded to the article during molding, said accessory comprising:

a label magazine positioned above said mold cavity for storing a plurality of said labels,

a carriage assembly having a vertically movable portion slidably mounted above said mold cavity,

a pick-up head coupled to said vertically movable portion, said pick-up head having at least one pick-up arm pivotable between an extended and a retracted position, said pick-up head further having a vacuum head carried by an end of said arm and pivotable with respect to said arm, said vacuum head carrying at least one vacuum cup,

first actuation means for translating said movable portion along the side of said blow pin between a first position in which said vacuum cup is in registry with said label magazine, to a second position wherein said vacuum cup is in registry with the mold cavity, and

second actuation means for pivoting said pick-up arm from said retracted position to said extended position wherein, when said carriage movable portion is at said first position, said pick-up arm is pivotable to said extended position causing said vacuum cup to engage the label from said magazine and said pick-up arm being further pivotable to said retracted position and thereafter said carriage movable portion is retracted position and thereafter said carriage movable portion is movable to said second position whereat said pick-up arm is again pivoted to said first position to deposit the label into said mold cavity, and said movable portion is therefore movable to said first position to again position said vacuum cup in registry with said magazine shield means for protecting said label and for aligning said pick-up head to a predetermined orientation when said actuation means is in said retracted position.

4,802,833

ACCUMULATOR HEAD FOR PRODUCING A STORAGE DRUM WITH VIEW STRIPE

Thomas A. Shapler, Bowling Green, Ohio, assignor to Hoover Universal, Inc., Ann Arbor, Mich.

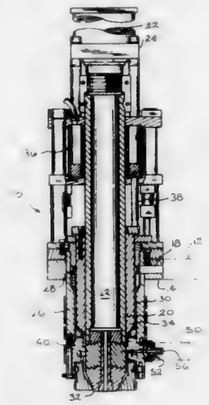
Filed Mar. 21, 1988, Ser. No. 170,784

Int. Cl.⁴ B29C *47/06*

U.S. Cl. 425—131.1 3 Claims

1. In an accumulator head for a blow molding machine for extruding a tube of plastic material wherein said head includes a mandrel, a die body enclosing said mandrel to define therewith an annular outlet orifice, a first inlet orifice, an annular

accumulation chamber in communication with and located between said inlet and outlet orifices, and an annular piston movable in said accumulation chamber so as to discharge accumulated first plastic material therein through said outlet orifice, means operatively associated with said mandrel and said die body between said accumulation chamber and said outlet orifice to form a radially extending split in said first



plastic material as said first plastic material is discharged through said outlet, a second inlet orifice for injection of a second plastic material into said split in the flow stream of said first plastic material as said first plastic material exits through said outlet orifice whereby the total extruded plastic flowing out of the annular outlet orifice forms a tube having a strip of said second plastic material in said tube extending longitudinally thereof.

4,802,834

ERROR DETECTOR FOR VARIOUS SET VALUES OF AN INJECTION-MOLDING MACHINE

Noriaki Neko, Hachioji, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

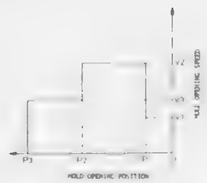
PCT No. PCT/JP87/00045, § 371 Date Sep. 21, 1987, § 102(e) Date Sep. 21, 1987, PCT Pub. No. WO87/04388, PCT Pub. Date Jul. 30, 1987

PCT Filed Jan. 23, 1987, Ser. No. 104,107

Claims priority, application Japan, Jan. 24, 1986, 61-12141

Int. Cl.⁴ B29C *45/77, 45/80*

U.S. Cl. 425—138 5 Claims



1. An error detector for various set values of an injection-molding machine controlled by means of a numerical control unit, comprising:

input means receiving input data respectively associated with set values of various items of molding conditions, said molding conditions including at least one of damping conditions, selection conditions, injection conditions and metering conditions;

memory means for storing the set values of the various items of said molding conditions;

discrimination means for determining whether input data of said various items, manually input through said input means, fulfill requirements related to said items, said discrimination means being operable to compare sizes of input data related to individual requirements and determining whether said input data fulfill their corresponding requirements when the input data have predetermined size relations;

memory control means for controlling said memory means to store said input data as set values of said items when said discrimination means concludes that said requirements are fulfilled, said injection molding machine being operated in accordance with the stored set values; and

alarm means, adapted to deliver an alarm when said discrimination means concludes that said requirements are not fulfilled, for preventing errors by setting errors of said set values and a resultant wrong operation of said injection-molding machine.

4,802,835

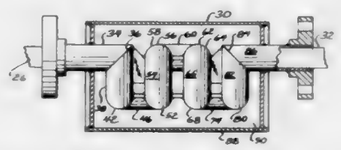
APPARATUS FOR MAKING SOAP

Salvatore J. Silvis, Lambertville, N.J., and Jameel H. Jabbour, Marietta, Ga., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 855,593, Apr. 25, 1986, abandoned. This application Nov. 4, 1987, Ser. No. 117,217

Int. Cl.⁴ B29C *47/36*

U.S. Cl. 425—205 9 Claims



1. An apparatus for making soap, comprising:

an extruder having a helical screw for passing the soap directly from the screw to an orifice plate having an opening and forming an extrudate by the orifice plate adjacent a downstream portion of the extruder; and

static means for working the extrudate to remove residual screw lines and prevent cracking of soap formed from the extrudate, comprising a plurality of generally straight pipe sections connected by bends, with some of said pipe sections being disposed in first and second spaced planes, and other of said pipe sections connecting the first and second planes.

4,802,836

COMPACTION DEVICE FOR CONCRETE BLOCK MOLDING MACHINE

Gilles Whissell, 635 Watson Dr., Lachute Quebec, Canada J8H 4H1

Filed Jul. 13, 1987, Ser. No. 73,228

Int. Cl.⁴ B28B *3/06*

U.S. Cl. 425—253 8 Claims

1. In a concrete block molding machine of the type comprising:

a stationary mold formed with a plurality of vertical cells, each of said cells having an open top and an open bottom;

closure means located beneath the mold to close the bottoms of the cells of said mold;

means for moving said closure means vertically towards and away from the mold;

means for filling the cells of the mold with a non-slump concrete mix when the closure means has been moved

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toward the mold and is closing the bottoms of the cells of said mold;

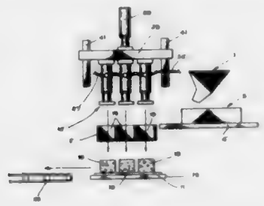
compaction means for applying a compaction pressure onto the mix poured in the cells, said compaction means comprising:

head plate located above the mold;

a plurality of compaction shoes connected to said head plate, said compaction shoes being equal in number to the number of cells in the mold and each sized, configured and positioned above the mold for snug insertion into one of the cells of said mold, and

means for moving said head plate and compaction shoes bodily towards the mold to apply a predetermined compaction pressure over the mix in the cells; and

vibrating means for vibrating the mold while a compaction pressure is applied onto the mix in the cells; the improvement wherein said molding machine further comprises:



a plurality of fluid power jacks equal in number to the number of compaction shoes, each of said power jack supporting one of said shoes and comprising a cylinder and a piston rod telescopically mounted within the cylinder for linear, non-rotatable displacement therein, said displacement being such that each power jack has a working stroke essentially equal to a predetermined allowable difference in height of the concrete block to be molded in the corresponding cell; and

means for interconnecting the power jacks so that the cylinders of all of said power jacks are in fluid communication with each other;

whereby an equal compaction pressure is applied by each compaction shoe in each cell when the compaction means are operated, thereby allowing production of concrete blocks having the same maximum density in all of said cells.

4,802,837

APPARATUS FOR PRODUCING PROCESSED WOOD MATERIAL PANELS

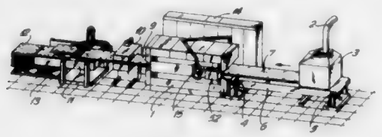
Kurt Held, Alte Str. 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Nov. 13, 1987, Ser. No. 120,355

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1986, 3639061

Int. Cl.[4] B29C *43/22*

U.S. Cl. 425—230 **101 Claims**



1. Apparatus for producing processed wood material as board or panels, such as chipboard, fiberboard, and the like, comprising means for supplying processed wood material to a support surface for forming a mat and for conveying the mat to a continuously operating double band press, said double band press comprising a first and a second endless press band located opposite one another and forming a passageway therebetween with an inlet at one end of said passageway and an outlet at the other end and a reaction zone extending between the inlet and the outlet ends, said press bands having spaced sides extending between the inlet and the outlet ends, at least two drums in spaced relation for supporting each said press band with said press band travelling over said drums, said press bands arranged to travel the mat through the reaction zone in said passageway, pressure plates arranged in the region of the reaction zone for transmitting pressure to said press bands, said reaction zone comprising a wedge-shaped inlet zone at the inlet end of said passageway, an average pressure reaction zone between said inlet zone and the outlet end, and a lower pressure zone between said average pressure zone and the outlet end, wherein the improvement comprises means located within the inlet zone for supplying one of an acid and basic hardener in one of a gaseous phase and a binary phase with a gaseous carrier agent into the mat in said inlet zone of said passageway.

4,802,838

APPARATUS FOR EXTRUSION OF FOODSTUFFS

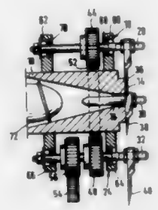
Heinz Schaaf, Quellenweb 14 + 19a, 6277 Bad Camberg-Oberselters, Fed. Rep. of Germany

Filed Nov. 4, 1986, Ser. No. 926,894

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1985, 3515616

Int. Cl.[4] A21C *11/12*

U.S. Cl. 425—311 **8 Claims**



1. Apparatus for extrusion of foodstuffs comprising an extruder screw for feeding the material to be extruded, a nozzle head having a nozzle opening and a cutting means for treating the extruded material, characterized in that on the nozzle head (10, 80) a plurality of cutting blades (36, 38, 40, 42; 92, 94) are rotatably mounted and that the cutting blades are led past the nozzle opening (12, 82) with one said cutting blade being movable over the entire nozzle opening and with each remaining cutting blade being movable over the nozzle opening only at the periphery.

4,802,839

APPARATUS FOR PRODUCING CAST PRODUCTS

Yoshiyuki Hidawa, Tokorozawa, Japan, assignor to Yoshiyuki Corporation, Tokyo, Japan

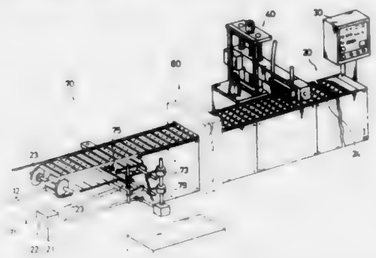
Filed Mar. 13, 1987, Ser. No. 25,534

Claims priority, application Japan, Mar. 20, 1986, 61-63671; Jul. 28, 1986, 61-177361; Jul. 28, 1986, 61-177362

Int. Cl.[4] B28B *13/00*

U.S. Cl. 425—439 **5 Claims**

1. Apparatus for producing cast products which comprises a filling unit wherein a non-solid material is filled into elastic moulds having open bag shaped interior filling sections, said filling unit including filling nozzles insertable internally of said filling sections of said elastic moulds, a source of high fluid pressure, and means for applying said high fluid pressure to an exterior surface of said elastic mould filling sections to collapse said filling sections into surrounding contact with said filling nozzles before said elastic moulds are filled in said filling unit, a solidifying unit wherein the filled material is solidified inside the elastic moulds, a withdrawal unit wherein a solidified product is withdrawn from the inside of said elastic moulds, said withdrawal unit including a movable vacuum chamber, and conveying means moving said elastic moulds sequentially from said filling unit to said solidifying unit to an inverted



position at said withdrawal unit, and means for intermittently moving said vacuum chamber toward and away from the exterior of said inverted elastic moulds at said withdrawal unit, whereby said vacuum chamber covers the inverted filling section of said elastic moulds and expands said elastic moulds thereby permitting cast product removal in a downward direction and then moves away from said elastic moulds permitting movement of said elastic moulds by said conveying means.

4,802,840

DIE FOR MOLDING HONEYCOMB STRUCTURES

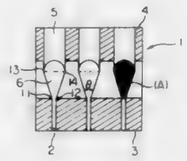
Morio Fukuda; Masayuki Hanada, both of Kitakyushu; Hideo Inutsuka, and Katsuya Ogata, both of Kishima, all of Japan, assignors to Catalysts & Chemicals Industries Co., Ltd., Tokyo and Iwao Jiki Kogyo Co., Ltd., Saga, both of, Japan

PCT No. PCT/JP86/00139, § 371 Date Nov. 25, 1987, § 102(e) Date Nov. 25, 1987, PCT Pub. No. WO87/05855, PCT Pub. Date Oct. 8, 1987

PCT Filed Mar. 26, 1986, Ser. No. 138,843

Int. Cl.[4] B29C *47/30*

U.S. Cl. 425—464 **3 Claims**



1. A die possessing a mutually communicating molding passage having a sectional shape corresponding to that of a honeycomb core and having a predetermined depth from the outlet surface of the die to the inlet surface of the die, and plural mutually independent supply passages that are opposite to intersecting portions and/or acute side portions of said molding passage and have a predetermined depth from the inlet surface of the die to the outlet surface of the die, wherein a through hole for communicating mutually adjacent supply passages is provided at a place forming part of each partition wall between supply passages and connecting with said molding passage; the sectional shape of said through hole takes the combined shape of a trapezoid with the molding passage width as a top side and with the supply passage diameter as a maximum base side and a semicircle having a diameter corresponding to the base side of said trapezoid; an angle formed by extension lines of oblique sides formed by joining both mutually corresponding ends of the top side and the base of said trapezoid is not more than 60 degrees; the ratio of the sectional area (A) of the through hole to the sectional area (B) of the molding passage is in the range of 1.5–3.0; and the length extending from the outlet to the inlet of the molding passage is in the range of 5–10 times as long as the molding passage width.

4,802,841

OPERATION APPARATUS

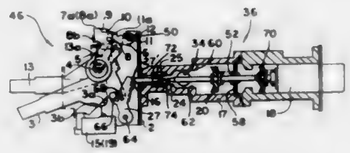
Masahiko Komura, and Masafumi Ohno, both of Aichi, Japan, assignors to Rinnai Corporation, LaGrance, Ga.

Continuation-in-part of Ser. No. 785,783, Oct. 9, 1985, abandoned. This application Jul. 16, 1987, Ser. No. 74,372

Claims priority, application Japan, Dec. 11, 1984, 59-260083

Int. Cl.[4] F23Q *9/08*

U.S. Cl. 431—47 **18 Claims**



1. A device comprising:

a gas burner;

a source of gas connected by a gas pathway to said burner;

an ignitor means positioned adjacent said burner operable for igniting said gas at said burner;

a valve means situated in said gas pathway for selectively opening or closing the gas flow through said pathway;

a first operation lever connected to said valve means and said ignitor means and movable from a starting end position in a first direction, while being normally urged in a second opposite direction, through an intermediate position, to a final end position;

a first switching means for actuating the valve means to open gas flow through said pathway when the first operation lever is in the intermediate position;

a second switch means for actuating the ignition means to cause ignition of said gas at said burner when the first operation lever is in final end position;

locking means which is partially acted upon by and moved along with said first operation lever for allowing said first operation lever to pass through said intermediate position to said final end position to ensure the operation of said ignitor means and for gripping and holding said first operation lever at said intermediate position only after said first operation lever has passed to said final end position to ensure that said valve means is maintained open to allow gas to pass through said pathway;

first spring means for resiliently urging said first operation lever in said second direction; and

release means which can be brought into engagement with said locking means for releasing and allowing said first operation lever to return to said starting end position.

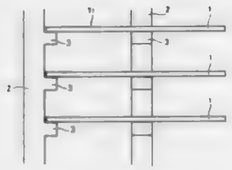
VOL 1099 ISS 1 FEB 7 1989 UMI

4,802,842

APPARATUS FOR MANUFACTURING SEMICONDUCTOR DEVICE

Makoto Hirayama, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 884,294, Jul. 10, 1986, abandoned. This application Aug. 4, 1987, Ser. No. 83,020
Claims priority, application Japan, Jul. 15, 1985, 60-156582
Int. Cl.[4] F23D 5/00
U.S. Cl. 432—5 2 Claims



1. A method of forming a uniform film on a semiconductor substrate in a heating furnace, comprising the steps of positioning a plurality of semiconductor substrates within a supporting structure having a plurality of supports for holding said plurality of semiconductor substrates in generally parallel, spaced relation to each other, said supports being circumferentially spaced from each other and each support having projections spaced from each other along the support, said projections each having an upward exposed surface contacting to support at least part of a bottom face of each semiconductor substrate and wherein adjacent projections on each support are sufficiently vertically spaced from each other so that the spacing between an upper peripheral surface of one substrate and the bottom surface of an adjacent above projection overlying said upper peripheral surface is considerably greater than the thickness of said substrate; placing the supporting structure containing the stacked substrates within a vertical heating furnace; and introducing a raw material gas within the heating furnace for forming films on the upper surface of the substrates, the said spacing enabling a free flow of said gas along substantially the entire surface of each substrate including substantially the entire peripheral surface thereof to induce a uniform film along the entire surface of each ubstrate, wherein each projection has an upward exposed surface formed with a step portion, and wherein the wherein the upward exposed surface of each projection includes a notched portion defining a step portion having a depth approximately equal to the thickness of the semiconductor substrate so that the upper surface of the substrate exposed to the raw material gas is substantially coplanar with the remainder of the upward exposed surface of the projections located radially outward from the substrate upper surface.

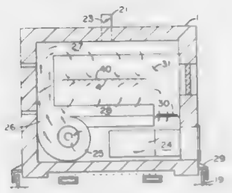
4,802,843

METHOD OF PREPARING SHEETS OF FIBER REINFORCED THERMOPLASTIC RESIN OR SUBSEQUENT MOLDING IN A PRESS

Timothy E. Chilva, Utica, Mich., assignor to Andel, Inc., Shelby, N.C.

Division of Ser. No. 58,720, Jun. 5, 1987, Pat. No. 4,767,321, which is a division of Ser. No. 937,798, Dec. 4, 1986, abandoned.
This application Jan. 4, 1988, Ser. No. 141,012
Int. Cl.[4] F27B 9/28
U.S. Cl. 432—8 3 Claims

1. A method of preparing sheets of fiber reinforced thermoplastic resin for molding in a press comprising:
continuouualy pasing sheets of fiber reinforced resin through an oven,
continuously contacting all surfaces of said sheets with circulating hot gases, controlling the temperature of said circulating gases to provide temperatures in excess of the melting temperature of the resin in said sheets,
regulating the circulation rate of the hot gases circulating to provide a gas flow of below 1000 cubic feet per minute in the oven,
controlling the rate of travel of the sheets through the oven to thereby provide a residence time for the said sheets in the oven sufficient to cause the resin in said sheets to become molten throughout the sheets;



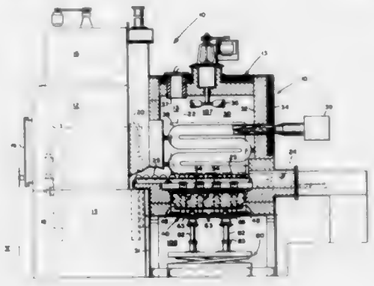
passing the gases after contact with said resin sheets through a filtering zone to remove particulates generated by heating the said sheets, reheating the filtered gases and recirculating them to the oven for contact with further of said sheets; and
removing the sheets from the oven continuously while the resin therein is molten for placement in the molding press while the resin in the sheet is in a molten or flowable state.

4,802,844

HIGH CAPACITY, RETRACTABLE FURNACE HEARTH

Timothy J. Kuhn; James W. Bender, both of Toledo, and Arvind C. Thekdi, Sylvania, all of Ohio, assignors to Gas Research Institute, Chicago, Ill.

Filed Jan. 20, 1988, Ser. No. 146,195
Int. Cl.[4] F27B 9/14, 5/12
U.S. Cl. 432—126 29 Claims



1. A retractable roller hearth arrangement for use in an industrial heat treat furnace having a furnace chamber surroudnign said hearth into which metallic workpieces placed in a work tray are to be heat treated, said hearth comprising:
(a) a refractory base having a bottom surface, a top surface, and a closed peripheral edge surface extending between said bottom and top surfaces;
(b) tile support means extending from said top surface of said refractory base for supporting, when actuated, said work tray when said furnace chamber is heat treating said work;
(c) roller rail means positioned on said top surface of said refractory base and including a plurality of rollers for supporting, when actuated, said work tray and permitting movement of said tray into and out of said furnace chamber in a rolling, anti-friction bearing manner;

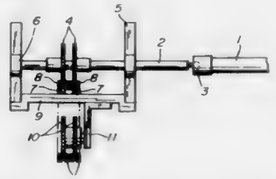
(d) hearth lift means for moving said roller rail means relative to said tile means while maintaining said refractory base within said furnace chamber for selectively actuating said roller rail means to support said work tray when said tile support means is not actuated and selectively actuating said tile support means when said roller rail means is not actuated whereby the load-sustaining capacity of said rollers is maintained.

4,802,845

APPARATUS FOR DRIVING ROLLERS OF ROLLER HEARTH KILN

Yasuhiro Kajiura, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Aug. 31, 1987, Ser. No. 91,410
Claims priority, application Japan, Sep. 17, 1986, 61-142395[U]
Int. Cl.[4] F27B 9/24
U.S. Cl. 432—236 2 Claims



1. An apparatus for driving rollers of a roller hearth kiln, comprising:
a plurality of driving shafts coupled to corresponding rollers of a roller hearth kiln respectively,
a case extending along the kiln so as to house those ends of the driving shaft therein which ends are away from the kiln,
sprocket wheels secured to said ends of the driving shafts in said case respectively,
a rail disposed on the bottom of the case so as to extend below said sprocket wheels,
a driving chain in a form of a loop including a return path located outside said case and moving on the rail while engaging said sprocket wheels from below,
a tensile sprocket wheel rotatably supporting by a holder and secured to said end of each driving shaft in the bottom of said case, and
an additional rail disposed on the bottom of the case so as to extend below said tensile sprocket wheel,
said driving chain moving on the additional rail while engaging said tensile sprocket wheel from below for applying a tension to the driving chain.

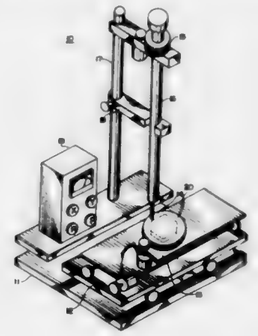
4,802,846

AUTOMATIC SURVEYOR FOR DENTAL MODELS

Jorge E. Ponca, Star Road #1, Box 440, Rosemond, Calif. 93560

Filed Apr. 27, 1987, Ser. No. 42,720
Int. Cl.[4] A61C 3/00
U.S. Cl. 433—75 5 Claims

1. Apparatus for dispensing hot wax in a pattern, which comprises:
pressure vessel means for maintaining temperature and pressure of melted wax therein, having an outlet valve for dispensing the melted wax and an input for inserting raw wax material,
means for positioning an article in relation to the outlet valve of said pressure vessel means, in fluid communication with the melted wax effluent from said pressure vessel valve, for forming a melted wax pattern on the article;
controller means for maintaining the temperature of said pressure vessel constant, for maintaining the pressure in said pressure vessel constant, for operating said outlet valve and for controlling said means for positioning an article,



whereby to dispense hot wax at constant viscosity and pressure in a pattern determined by the positioning of the article relative to the dispensing pressure vessel.

4,802,847

DENTAL IMPLANT

Shigeru Komatsu, 7-14-7, Roppongi, Minato-ku, Tokyo, Japan

Filed Sep. 16, 1987, Ser. No. 97,618
Claims priority, application Japan, Nov. 28, 1986, 61-183392[U]
Int. Cl.[4] A61C 8/00
U.S. Cl. 433—176 3 Claims



1. A dental implant comprising:
a body having a tortuous cross section with ridges extending from an upper end to a lower end, and a plurality of pointed leg portions at the lower end; and
a head supported on the upper end of the body and adapted to receive an artificial tooth, said head having a generally elliptical transverse cross section with its major axis extending substantially normal to a central plane of said body and a positioning step formed at the lower peripheral portion thereof for engaging the bottom portion of an artificial tooth.

4,802,848

PARAPULPER RESTORATIVE PIN AND DRIVER ASSEMBLY

Jean-Claude Randin, Ballaigues, Switzerland, assignor to Les Fils D'Auguste Maillefer Societe Anonyme A Ballaigues, Switzerland

Filed Jul. 6, 1987, Ser. No. 70,061
Claims priority, application Switzerland, Jul. 7, 1986, 2.735/86
Int. Cl.[4] A61C 5/04
U.S. Cl. 433—225 1 Claim

1. An assembly on the one hand having a parapulper restorative pin for use in dentistry having a stem one end of which is threaded, which includes a weakened breaking zone and which

carries, at its opposed end, a handle permitting to operate it manually, and on the other hand a driving member ensuring the connection between said restorative pin and a motor driving device, in which said handle of said pin is arranged in such a way as to constitute a hold for one of the ends of said driving member arranged in such a way as to engage said handle and which includes a conformation which is reciprocal of said driving member so that once the interengagement is effected,



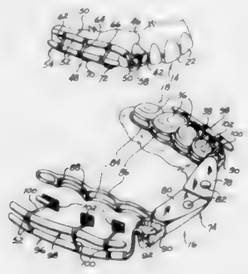
said driving member is angularly rigid with said handle of said pin and said handle of said pin is provided with several longitudinal grooves distributed angularly regularly around the axis of said pin, said end of said driving member cooperating with said handle being provided with a corresponding number of longitudinal fingers, also distributed angularly regularly around the axis of said driving member, engaging each one of said longitudinal grooves of said handle of said pin.

4,802,849

RAPID MANDIBULAR ADVANCEMENT AND VERTICAL AND LATERAL DEVELOPMENT DEVICE

John A. Collins, Jr., 1116 Mishawaka Ave., South Bend, Ind. 46615

Filed Nov. 27, 1987, Ser. No. 126,026
Int. Cl.[4] A01C 7/00
U.S. Cl. 433—19 10 Claims



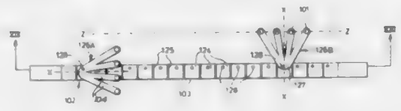
1. A functional appliance adapted to be worn in the mouth of a patient adjacent upper and lower rows of teeth, said appliance comprising an upper part for wearing in an upper part of the mouth adjacent the upper teeth and arch, and a lower part for wearing in a lower part of the mouth adjacent the lower teeth and arch, each upper part and lower part including a rigid tooth positioning part located in abutment behind upper and lower incisor teeth in said patient's mouth, flexible metal positioning wires extending rearwardly of each positioning part located adjacent upper and lower molars in said patient's mouth, each positioning part including magnet means for, mating the positioning parts to position said incisor teeth in a substantially vertical bite plane which promotes movement of said mandible into an ideal bite position.

4,802,850

DENTAL-PORCELAIN COLOR MATCHING SYSTEM

David G. Boon, Pinhays, Herring Road, South Pool, Kingsbridge, S. Devon, United Kingdom

Filed Apr. 21, 1987, Ser. No. 41,834
Claims priority, application United Kingdom, Apr. 22, 1986, 8609778
Int. Cl.[4] A61C 19/10
U.S. Cl. 433—26 3 Claims



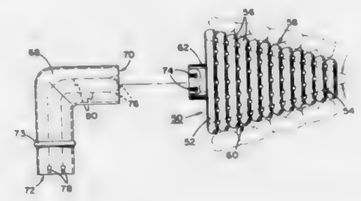
2. A dental-porcelain color matching system comprising a plurality of dental-porcelain beads of different colors carried on a support adapted to allow at least some of said beads to be moved apart so that each said bead can be placed individually against a patient's natural tooth for color comparison with that tooth without color interference from any other bead on said support, wherein said support comprises an elongate body part with a stepped surface and a plurality of respective pivot points, the arms projecting from a respective said pivot point in a common plane and each arm carrying a said bead at its free end, wherein each said group is pivotally attached at its pivot point to a respective step of said stepped surface such that said groups lie in planes parallel to said steps and overlap each other in a stored condition of the system so that the beads are closely spaced but all are visible, and wherein each group is pivotable in its plane into a position for said color comparison.

4,802,851

DENTAL APPLIANCE

Clark J. Rhoades, 181 Tweed Blvd., Nyack, N.Y. 10960

Filed Feb. 3, 1988, Ser. No. 152,033
Int. Cl.[4] A61C 17/04
U.S. Cl. 433—93 20 Claims



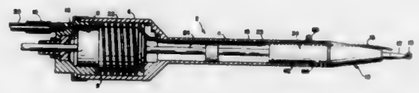
1. A combination jaw rest and ejector device, comprising:
(a) a generally hollow, closed, wedge-shaped body having longitudinal upper and lower channels formed on the sloped upper and lower edges thereof, said body and said channels being dimensioned such that said body may be inserted into one side of a patient's mouth, with several upper teeth of said patient removably fitting into said upper channel and with several lower teeth of said patient removably fitting into said lower channel, such that said body holds open said patient's mouth;
(b) a plurality of holes defined through at least one side of said body; and
(c) communicating means to permit communication of said holes and the interior of said body with a source of vacuum;
whereby, airborne liquid and solid materials may be drawn from said patient's mouth, through said communicating means, and to said source of vacuum.

4,802,852

IRRIGATED DRILL AND QUICK-RELEASE CHUCK ASSEMBLY

John J. Shea, Memphis, Tenn., assignor to Richards Medical Company, Memphis, Tenn.

Filed Oct. 10, 1986, Ser. No. 917,669
Int. Cl.[4] A61C 1/14
U.S. Cl. 433—127 3 Claims



1. A drill comprising an elongate hollow casing defining a nose portion at a front end thereof and an electric motor in the other end,
a bur having an elongate shank with opposite flats on a free end thereof and an annular groove spaced from said flats,
bearing means in said nose portion for rotatably supporting the bur shank,
said motor having a drive shaft with a slotted end for accommodating the flatted end of the bur shank for rotatably driving the bur,
and a chuck for releasably holding the bur shank in the slotted end of the motor shaft,
said chuck comprising annular bearing means and a sleeve engaged around the bearing,
the bearing means closely surrounding the bur shank and being engageable into the annular groove,
said sleeve having limited freedom to move transversely of the length of the bur shank, the bearing means being moveable inwardly into the groove to thereby block outward movement of the bur shank from the slotted end of the motor drive shaft and being moveable outwardly of the groove to thereby unblock the bur shank,
spring means engaged between the casing and the sleeve whereby to bias the same so as to cause said bearing means to move inwardly into the groove,
and a manually operable plunger having one end attached to the sleeve and the other end extending outwardly of the casing whereby, upon pressing said plunger inwardly the bearing race is caused to move outwardly of the groove.

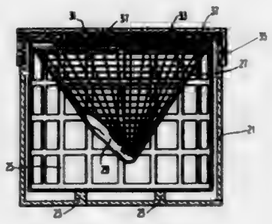
4,802,853

METHOD AND APPARATUS FOR PRESERVING AND REIMPLANTING A TOOTH

Paul R. Krasner, Pottstown, Pa., assignor to Biological Rescue Products, Inc., Pottstown, Pa.

Continuation-in-part of Ser. No. 880,088, Jun. 30, 1986, Pat. No. 4,689,014. This application Aug. 20, 1987, Ser. No. 87,206
The portion of the term of this patent subsequent to Aug. 25, 4004, has been disclaimed.
Int. Cl.[4] A61C 5/00
U.S. Cl. 433—215 16 Claims

1. A method of preserving an exarticulated tooth, comprising the steps of:
(a) placing the tooth in a container, the container having a cushioning means on its interior, at least part of the cushioning means comprising a non-liquid material attached to the container, the container being substantially filled with a solution,
(b) storing the tooth in the container, in the solution, until dental said is available,



(c) removing the tooth from the container, and
(d) reimplanting the tooth.

4,802,854

EDUCATIONAL BLOCKS

Pauline D. Davis, 42 Redwood Rd., Severna Park, Md. 21146

Filed Apr. 25, 1988, Ser. No. 185,898
Int. Cl.[4] G09B 1/06; A63H 33/10
U.S. Cl. 434—159 6 Claims



1. A set of educational letters and/or numerals comprising a plurality of relatively thin blocks of uniform thickness, each in the shape of a letter of the alphabet or numeral and having extended lower portions, and
a main support track having a longitudinal groove in its upper face of substantially the same width as the thickness of each block, for snug reception of said extended lower portions or other edge portions of the blocks, and
one or more auxiliary support tracks of shorter length but having similar grooves, whereby blocks can be supported individually and one block can be stacked on top of another in any desired orientation.

4,802,855

WORD ASSOCIATION LABEL TEACHING METHOD

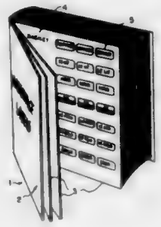
Harry E. Wood, 6465 Oakland Dr., New Orleans, La. 70118

Filed May 17, 1988, Ser. No. 195,038
Int. Cl.[4] G09B 19/08
U.S. Cl. 434—157 1 Claim

1. A "Word Association Label Teaching Method" for teaching a foreign language consisting of:
(a) peel off and restickable labels upon which are printed foreign language words such as nouns, verbs, adjectives, etc., to be adhered to the object to which the word refers;
(b) sheets (pages) upon which English words are listed alphabetically followed by several peel off labels with the foreign language equivalent of that word printed on them as described in part (a);

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(c) a cover or binding means designed to hold many sheets or pages as described in part (b);



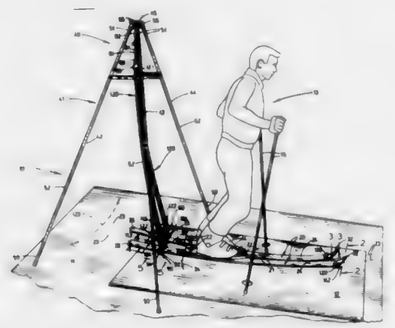
(d) the peel off labels described in part (a) are of different colors to indicate nouns, verbs adjectives, etc.

4,802,856

APPARATUS FOR TRAINING SKIERS

Bruce R. Olson, 458 S. Clovis Ave., #105, Fresno, Calif. 93727

Filed Oct. 26, 1987, Ser. No. 112,620
Int. Cl.[4] A63B *69/18*
U.S. Cl. 434—253 **6 Claims**



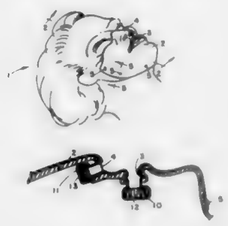
1. Apparatus for training a skier wearing a pair of skis, the apparatus comprising:
- a tripod adapted to be rested on a supporting surface in upright relation, the tripod further having an apex;
- a chain releasably mounted on the tripod adjacent to the apex, the chain adjustable as to length relative to the apex;
- a support frame mounted on the rearward portion of each ski and having a channel substantially cylindrically shaped in cross section disposed substantially transversely of the longitudinal axis of each ski, and a plate having a portion slidably received in the channel;
- a pair of resilient cords having opposite ends individually interconnecting the rearward portion of each ski with the chain, each resilient cord mounted at one end on one of the plates and mounted at the opposite end on the chain, the resilient cords individually operable to position the rearward portion of each ski in an elevated position with respect to the supporting surface; and
- a forward support assembly mounted on the forward portion of each ski and disposed in rested relation on the supporting surface in supporting relation to said forward portion of each ski, the forward support assembly permitting substantially independent pivotal movement of the respective skis substantially about their respective longitudinal axes to permit the skier wearing said skis to simulate skiing maneuvers, and the plate operable to release the rearward portions of the skis from said elevated positions upon rotation of the skis sufficiently about their respective longitudinal axes to cause said portions of the plates to slide from said channels.

4,802,857

CPR MASK

Patrick E. Laughlin, 1191 Beechwood Dr., Green Bay, Wis. 54303

Filed Nov. 23, 1987, Ser. No. 124,289
Int. Cl.[4] G09B *23/28*
U.S. Cl. 434—265 **17 Claims**



1. A hygienic mask that is fitable to an existing CPR dummy and comprising;
- (a) a mask fabricated of a thin conformable material and having an inside surface and an outside surface,
- (b) air passages formed in the mask and the passages are indexable in air passages of a face of a CPR dummy, and the air passages have as a part thereof, filter chambers configured to receive and hold replaceable filters,
- (c) a cling producing means which causes the inside, face contacting surface of the mask to cling to the face of the CPR dummy, and
- (d) an attachment means distributed around the periphery of the mask whereby the periphery of the mask is releasably secured to the face portion of the CPR dummy and the attachment means is retrofitable to the face of an existing CPR dummy without permanent modification of the dummy.

4,802,858

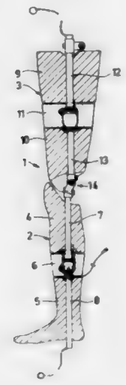
DEVICE FOR TEACHING TREATMENT OF SKELETON INJURIES

Kjell Lindskog, Skellefteå, and Jan Sandegard, Östersund, both of Sweden, assignors to Procare AB, Skellefteå, Sweden

PCT No. PCT/SE86/00052, § 371 Date Oct. 14, 1986, § 102(e) Date Oct. 14, 1986, PCT Pub. No. WO86/04711, PCT Pub. Date Aug. 14, 1986
PCT Filed Feb. 7, 1986, Ser. No. 928,282
Claims priority, application Sweden, Feb. 11, 1985, 8500604
Int. Cl.[4] G09B *23/32*
U.S. Cl. 434—274 **8 Claims**

1. A device for teaching treatment of a skeletal injury comprising: an artifical body part having two spaced-apart portions made of shape-permanent material; an elongated bone-simulating member in the form of a pipe in each portion of the body part, said members projecting from their respective portions of shape permanent material and having end portions located outside their respective body portions of shape permanent material and in the space between said body portions and facing each other so as to form a place of simulated skeletal injury; means for applying a counter force to said bone-simulating members when they are separated from each other in the longitudinal direction of said members; and means operable from outside the body part for releasably locking said members against being moved angularly relative to each other, said locking means including a locking pin movable between a

position wholly within one pipe and a position partially within both pipes, said device further including means for applying a



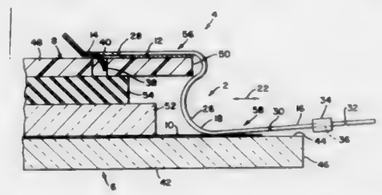
resilient force to said pin in the longitudinal direction of the pipes.

4,802,859

ELECTRICAL CONNECTOR

Thomas E. Gouldy, South Williamsport; William C. Knoll, Turbotville; Ernest R. Ritter, deceased, late of Lewisburg (by Faye E. Ritter, executrix); Thomas M. Lynch, Williamsport; Ronald E. Steffey, Cochranton, all of Pa.; Donald R. White, Warwick, R.I., and Robert E. Brown, Stratham, N.H., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 1, 1988, Ser. No. 176,502
Int. Cl.[4] H01R *9/09*
U.S. Cl. 439—74 **15 Claims**



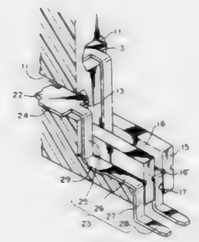
1. An electrical connecting device for use with a multiple layered circuit-containing device wherein at least two layers of said multiple layered circuit-containing device each contain a circuit including circuit contacts to be electrically connected from layer to layer by said electrical connecting device, said electrical connecting device comprising:
- an upper longitudinal peripheral surface joined to a lower longitudinal peripheral surface by an intermediate longitudinal surface to form an elongated member having a longitudinal direction, a transverse direction and a Z-like configuration when viewing a transverse cross-section of said elongated member,
- a row of elongated apertures being provided in said intermediate longitudinal surface, said row extending in said longitudinal direction, and each elongated aperture in said row of elongated apertures extending in said transverse direction and being spaced in the longitudinal direction from an adjacent elongated aperture by a Z-shaped connector of electrically conductive material formed by said intermediate longitudinal surface, each elongated aperture being spaced in said longitudinal direction from an adjacent elongated aperture in a predetermined amount to effect a moiré pattern when superimposed relative to said circuit contacts of at least one layer of said at least two layers.

4,802,860

SURFACE MOUNT TYPE ELECTRICAL CONNECTOR

Shigeru Kikuta, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Mar. 1, 1988, Ser. No. 162,577
Claims priority, application Japan, Mar. 4, 1987, 62-31588[U]; Mar. 4, 1987, 62-31589[U]
Int. Cl.[4] H01R *9/09*
U.S. Cl. 439—79 **9 Claims**



1. A surface mount type electrical connector comprising:
- an insulating housing having a plurality of contact receiving apertures;
- a plurality of contacts each mounted in each of said contact receiving apertures;
- said contact having a contacting section for contact with a mating connector contact, a terminal portion to be connected to a conductor of a printed circuit board, and an intermediate section between them having a pair of broadened engaging members;
- said contact receiving aperture having a pair of grooves for receiving said broadened engaging members to retain said contact therein; and
- a plurality of receiving channels each communicating with said receiving aperture for receiving a rear section of said contact behind said broadened engaging members in such a manner that said rear section may be slidably movable in said grooves.

4,802,861

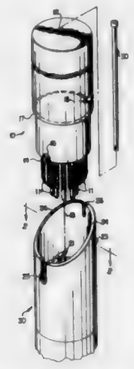
SELF-ALIGNING ELECTRICAL CONNECTOR

Lynn S. Gaston, Fort Worth, Tex., assignor to Boeing Vertol Company, Ridley Park, Pa. and Bell Helicopter Textron Inc., Fort Worth, Tex., a part interest

PCT No. PCT/US87/01361, § 371 Date Jun. 15, 1987, § 102(e) Date Jun. 15, 1987, PCT Pub. No. WO88/10525, PCT Pub. Date Dec. 29, 1988
PCT Filed Jun. 15, 1987, Ser. No. 132,943
Int. Cl.[4] H01R *13/625, 13/64*
U.S. Cl. 439—247 **8 Claims**

1. An electrical connector assembly, comprising:
- a female coupler having a longitudinal axis, a threaded socket on said axis, and a pin socket extending parallel to said axis;
- an open-ended cylindrical standpipe attached to said female coupler and extending axially therefrom;
- said open end of said standpipe having a rim forming a cam, said cam sloping to a slot in said standpipe that extends axially toward said female coupler;
- a male coupler having a longitudinal bore along a coupler axis and a pin extending from said male coupler parallel to said male coupler axis;
- a cam follower extending radially outward from said male

coupler, said cam follower following said cam during connection of said couplers, thereby rotating said male coupler about said coupler axis so that said cam follower engages said slot to align and engage said pin with said pin



socket, said cam follower compriaing a lug and a cylindrical roller mounted on and rotatable about said lug; and

a jackscrew extending through said bore for engaging said threaded socket to connect said couplers.

4,802,862

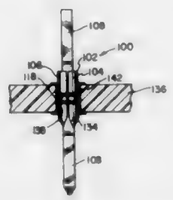
SOLDERABLE ELECTRICAL CONTACT

Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, Flushing, N.Y.

Continuation of Ser. No. 248,900, Mar. 30, 1981, abandoned. This application Oct. 6, 1983, Ser. No. 538,851

Int. Cl.⁴ H01R *9/09*

U.S. Cl. 439—83 **2 Claims**



1. A contact element adapted to form one member of an electrical connection arrangement having mating male and female members, comprising:

a body having an engaging surface conforming substantially to a corresponding surface on the mating member;

said body having a peripheral groove communicating with said engaging surface;

a deposit of solder in said groove, said solder including a peripheral ridge portion projecting away from the groove and extending beyond said engaging surface, said ridge portion being adapted to be at least partially displaced from the remaining solder in said groove upon mating of said members;

whereby, upon mating of said members, at least a portion of said ridge of solder is externally visible at the juncture of said mated members;

said contact member further including at least one longitudinal channel communicating with and substantially perpendicular to said groove.

4,802,863

DEVICE FOR ELECTRICAL CONNECTION OF TWO COMPONENTS

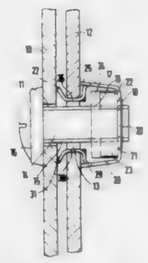
Jurgen Debus, Dietzhoelztal, Fed. Rep. of Germany, assignor to Rittal-Werk Rudolf Loh GmbH & Co. KG, Herborn, Fed. Rep. of Germany

Filed Apr. 25, 1988, Ser. No. 185,448

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1987, 3714500

Int. Cl.⁴ H01R *9/24*

U.S. Cl. 439—387 **10 Claims**



1. In an electrical connection device of the type having first and second principal components with opposed flat areas, first and second aligned boreholes in the first and second components, respectively, a bolt with a shank extending through the boreholes from a front surface of the first principal component, and a nut engaging the shank against a back surface of the second principal member and having a free side away from the second principal component, the principal components of metal with a non-conductive coating, the improvement comprising:

the second borehole, adjacent the nut, being larger than the bolt shank such that there is substantial clearance between the shank and the edge of the second borehole;

a claw retainer non-rotatably secured on the free side of the nut;

a side leg connected to the claw retainer and having a first claw engaging the back surface of the second principal component; and

an extension extending from the claw member, passing through said clearance, and having a second claw engaging the first principal component on its surface opposite the front surface.

4,802,864

RIGHT ANGLE STRAIN RELIEF ADAPTER FOR ELECTRICAL CONNECTORS

Leonard H. Michaels, Warrenville, and Robert A. Miller, Woodridge, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

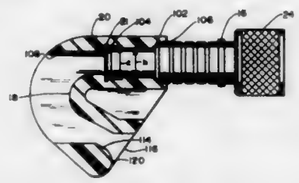
Division of Ser. No. 5,095, Jan. 20, 1987, Pat. No. 4,758,174. This application Apr. 22, 1988, Ser. No. 184,725

Int. Cl.⁴ H01R *13/58*

U.S. Cl. 439—457 **5 Claims**

1. An adapter to provide strain relief for an electrical connector having a cable extending therefrom, said adapter including a connector mounting channel whose ends are exposed to the exterior of said adapter, at least said connector mounting channel being dimensioned to be removably mounted to said electrical connector, said adapter further defining a cable channel angularly aligned at an angle substantially greater than zero degrees to said connector mounting channel and having ends which are exposed to the exterior of said adapter, at least a portion of said cable channel being dimensioned to frictionally retain the cable therein, whereby the connector mounting channel of the adapter may be mounted over the cable of the

electrical connector and securely but removably mounted on the electrical connector, and whereby the cable may be



threaded through and frictionally retained in the cable channel.

4,802,865

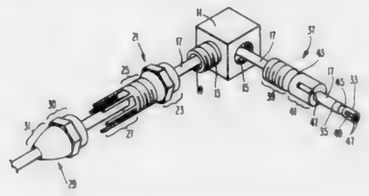
CABLE CONNECTOR ARRANGEMENT TO ACCOMMODATE AN ANGULAR CABLE LAYOUT

Vernon F. Albert, Misty Hollow R.D.#3, Glen Mills, Pa. 19342

Filed Apr. 2, 1987, Ser. No. 34,007

Int. Cl.⁴ H01R *13/59*

U.S. Cl. 439—461 **5 Claims**



1. A cable connector arrangement to accommodate an angular cable layout comprising in combination: housing means having a wall defining the outside thereof and being formed to have a substantially hollow chamber inside said housing means; said housing means having first and second wall sections formed to respectively define first and second apertures through said wall into said hollow chamber with the axis of said first aperture disposed to lie at an angle less than 180° from the axis of said second aperture; said first wall section and said second wall section further formed to be threaded in order to be respectively connectable to first and second cable connector means; first cable connector means formed to be threaded in order to be connected to said first wall section; said first cable connector means further formed to include a plurality of finger like structure means, each having a secured end formed integral with support means and disposed so that when viewed together said secured ends define an endless configuration, each of said finger like structure means having a free end with said free ends disposed so that a space is formed between each of said finger like structure means and any adjacent ones of said finger like structure means and wherein said first cable connector means further include a compression nut means having an aperture therethrough and formed to fit over said finger like structure means whereby when said compression nut means is moved over said finger like structure means they pass through said aperture in said compression nut to effect a clamping action on a cable passing through said finger like structure means and said compression nut; and second cable connector means formed to be threaded in order to be connectable to said second wall section and further formed to be secured to said cable whereby a cable can be passed through said first cable connector means and connected thereto, through said hollow chamber, and through said second cable means and connected thereto to form a cable layout which defines an angle of less than 180°.

4,802,866

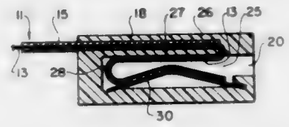
CONNECTOR

Alfiero Balzano, 4333 Sunny La., Yorba Linda, Calif. 92680, and Dan Dove, 2102 Chateau, Anaheim, Calif.

Filed Aug. 10, 1987, Ser. No. 83,070

Int. Cl.⁴ H01R *13/04*

U.S. Cl. 439—496 **2 Claims**



1. A solderless electrical connector for releasably joining opposite ends of multiple contact flexible circuitry comprising:

a first and second length of flexible circuitry having a plurality of electrical conductors carried along their lengths in insulative fixed parallel spaced-apart relationship;

a form defining an open cavity for supporting said first length of flexible circuitry so that said first length of flexible circuitry is folded over upon itself to define a contact closure between opposing surfaces of exposed electrical conductors;

resilient leaf spring means carried on said form within said form cavity yieldably urging said contact closure together, said resilient means comprising a pair of elongated V-shaped members having their opposite terminating ends anchored in said form with a single free end slidably carried on a sloping ramp with the apex of said V-shaped member movably projecting into said form cavity to support said first length of flexible circuitry; and

a projection for supporting said second length of flexible circuitry so that said second length of flexible circuitry is folded over said projection to define exposed electrical conductors for mating with electrical conductors of said contact closure when said projection is inserted into said form cavity.

4,802,867

ELECTRICAL CONNECTOR HOUSING ASSEMBLY

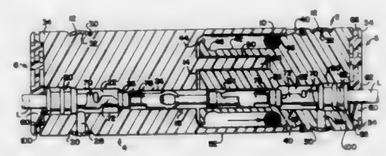
James W. Palmer, Watford, England, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 16, 1987, Ser. No. 121,309

Claims priority, application United Kingdom, Dec. 5, 1986, 8629112

Int. Cl.⁴ H01R *13/40*

U.S. Cl. 439—587 **9 Claims**



1. An electrical connector housing assembly comprising an electrical connector housing having a mating face and a terminal receiving face and defining a plurality of through, terminal receiving cavities each opening into both of said faces, and means projecting from said terminal receiving face and having a latching opening therein, the assembly further comprising a terminal locking cap having latching means thereon for reception in a latching opening provided in means projecting from said terminal receiving face, the cap being resiliently compressible to allow said latching means to be inserted into said open-

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ing to secure said cap against said terminal receiving face so as to obturate said cavities, the cap having a plurality of hollow lobes spaced from each other to receive electrical leads extending from electrical terminals between them.

4,802,868

CONTACT SPRING CONNECTOR STRIP

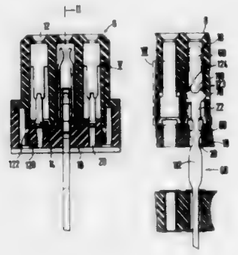
Helmut Rolf, Feucht, and Werner Bock, Kirchensittenbach, both of Fed. Rep. of Germany, assignors to Leonhardy GmbH, Reichenschwand, Fed. Rep. of Germany

Filed Oct. 28, 1987, Ser. No. 114,455

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1986, 3636774

Int. Cl.⁴ H01R *13/42, 13/506*

U.S. Cl. 439—689 **17 Claims**



1. A contact spring connector strip comprising:
a housing forming substantially straight elongated contact chambers which are open at opposite ends, including an inlet end, each chamber having an inside wall forming a pair of opposed inwardly-extending longitudinal flanges within the chamber, each flange having an end within the chamber;
contacts each including a contact spring which has two spring clips facing one another and adapted to rest on opposite sides of the flanges and a substantially flat push-in pin with a connector end insertable into one of the contact chambers, said pin oriented substantially parallel to and between the spring clips and having first and second ends inside and outside the housing, respectively;
the push-in pin having at least two tabs near the first end and positioned to engage the flange ends with the push-in pin inserted, the contact spring being affixed to the push-in pin at a position therealong between the tabs and the second end;
a cover attachable to the housing to close the contact chambers, the cover having a passageway for each push-in pin; and
the ends of the pair of flanges within each contact chamber each having a recess facing the direction of insertion of the push-in pin, the recesses positioned and dimensioned to receive said tabs.

4,802,869

PROBEABLE ELECTRICAL CONNECTOR

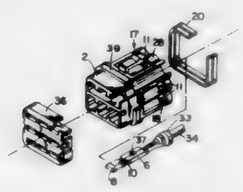
H. Winston Maue, Farmington Hills, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Aug. 17, 1987, Ser. No. 86,322

Int. Cl.⁴ H01R *13/40*

U.S. Cl. 439—587 **5 Claims**

1. A probeable electrical connector assembly comprising:
(a) a plurality of mating electrical connector housings;
(b) each of said mating housings containing means for accommodating at least one terminal which when mated with a corresponding terminal in a mating housing forms a terminal union;
(c) each of said mating housings containing a passage leading to at least one terminal located within the housing whereby the passage provides means for allowing a probe to be inserted to make electrical contact with the terminal when the mating housings are connected to form the assembly;



(d) each of said mating housings having a plurality of passages, said mating housing also having a circumferential groove and wherein at least one of the passages terminates at the groove; and
(e) a removable seal sized to fit snugly in the groove whereby the seal in combination with the groove provides reusable means for covering the passages.

4,802,870

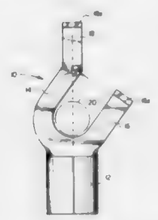
UNIVERSAL ELECTRICAL CONNECTOR

Noel Lee, 47 W. Park Dr., Daly City, Calif. 94015

Filed Oct. 19, 1987, Ser. No. 110,127

Int. Cl.⁴ H01R *11/00*

U.S. Cl. 439—860 **5 Claims**



1. An electrical connector comprising a member for receiving an electrical conductor, two parallel legs formed integrally with, and extending from, said member and spaced apart a distance sufficient to accommodate a post of an electrical terminal, each of said parallel legs extending at an angle to the axis of said member, and an extension formed on one of said legs for extending within an opening in another electrical terminal, said extension extending at an angle to said one leg, and the longitudinal axis of said extension coinciding with an extension of an axis of said member.

4,802,871

OUTBOARD ENGINE ARRANGEMENT

Yoshimi Watanabe; Hiroshi Kawamura, and Chiharu Sohda, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

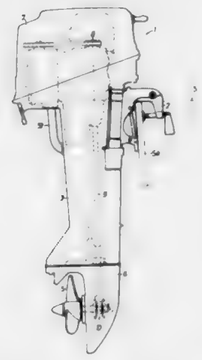
Filed Feb. 17, 1987, Ser. No. 15,167

Claims priority, application Japan, Feb. 17, 1986, 61-32638; Feb. 17, 1986, 61-21387[U]

Int. Cl.⁴ B63H *5/13*

U.S. Cl. 440—75 **14 Claims**

1. An outboard engine arrangement, comprising an engine; an extension case below said engine; a drive shaft disposed within said extension case to extend longitudinally therein and connected to a crank shaft of said engine for driving a propeller; a transmission interposed between said crank shaft and said drive shaft for shifting a speed change ratio between said both



shafts at least at two stages of higher and lower speeds, an oil pan storing lubricating oil for the engine, said oil pan being connected to said engine at a lower surface thereof, said transmission being contained within said oil pan in sealed relation from the interior of the extension case outside the oil pan.

4,802,872

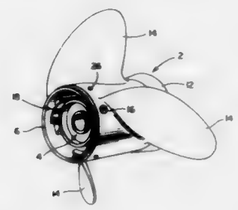
REGULATED AERATION OF GASES EXHAUSTING THROUGH A PROPELLER

Robert Stanton, Box 175, Road #1, Sweet Valley, Pa. 18656

Filed Sep. 5, 1986, Ser. No. 904,151

Int. Cl.⁴ B63H *1/28*

U.S. Cl. 440—89 **9 Claims**



1. A propeller comprising:
an inner hub having an outermost wall,
an outer hub having an innermost wall, said outer hub being supported in spaced relation to and surrounding said inner hub,
an annular passageway defined between said outermost wall of said inner hub and said innermost wall of said outer hub,
a plurality of blades mounted on said outer hub,
a plurality of openings defined by said outer hub, each of said plurality of openings being located adjacent to a root of a leading edge of one of said plurality of blades,
reed valve means mounted in said annular passageway, said reed valve means including an elongated reed having a thickness substantially less than its length and width, said elongated reed being positioned in said annular passageway so that the restriction of gas flow through said annular passageway by the thickness of said elongated reed minimizes the blockages of gas flow through said annular passageway, said reed valve means being located adjacent each of said plurality of openings and biased away from each of said plurality of openings for moving towards each of said plurality of openings and at least partially sealing each of said plurality of openings due to centrifugal force acting against a bias of said reed valve means during rotation of the propeller in a predetermined speed range, said plurality of openings being substantially free of blockage by said reed valve means of gas flow through said openings outside of said predetermined spped range due to the bias of said reed valve means away from said plurality of openings, and
anticavitation means for allowing a small amount of gas to escape to an area adjacent to said plurality of blades when said reed valve means covers said plurality of openings.

4,802,873

METHOD OF ENCAPSULATING TFEL PANELS WITH A CURABLE RESIN

William A. Barrow, Aloha, and Richard Schmachtenberg, III, Beaverton, both of Oreg., assignors to Planar Systems, Inc., Beaverton, Oreg.

Filed Oct. 5, 1987, Ser. No. 104,166

Int. Cl.⁴ H05B *33/04*

U.S. Cl. 445—6 **4 Claims**



1. A method of manufacturing a matrix addressed AC TFEL device, said device comprising a first transparent electrode layer deposited on a glass substrate and active electroluminescent components deposited on said transparent electrode layer, comprising the steps of:
(a) affixing a rear cover to said substrate, said cover thereby forming a sealed cavity enclosing said active electroluminescent components;
(b) filling said cavity with a material initially having a liquid state which cures to a solid state;
(c) energizing said active electroluminescent components so as to completely illuminate said device for a predetermined time; and
(d) wherein said liquid material cures to said solid material within said predetermined time.

4,802,874

METHOD OF INSTALLING MOUNT ASSEMBLY IN CATHODE RAY TUBE

Koichi Yasuda, Yotsukaido, and Yoshihiko Kimura, Chiba, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 4, 1987, Ser. No. 21,396

Claims priority, application Japan, Mar. 19, 1986, 61-59157

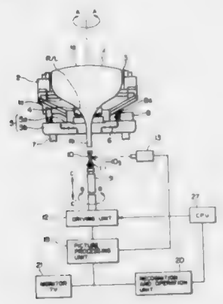
Int. Cl.⁴ H01J *9/40, 9/42*

U.S. Cl. 445—4 **4 Claims**

1. In a method of sealing a stem structure mounted with an electron gun to the inside of an opening end of a neck portion of a tube of a color cathode ray tube which includes at least a phosphor screen and a shadow mask,
the steps of installing a mount assembly in the cathode ray tube, comprising:
detecting a distance between a standard level of said tube and a standard level of said electron gun in a case where a tube-axis of said tube body and an axis of ordinates of said electron gun are in the same direction;
seeking a correction value by making a comparison between the detected distance and a preset standard distance between the standard level of said tube and the standard level of said electron gun;
decreasing the correction value by moving at least one of

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said tube and said electron gun in the direction of the axis of ordinates; and



sealing said opening end of said neck portion of said tube enclosing said electron gun after the correction value has fallen within a predetermined allowable value.

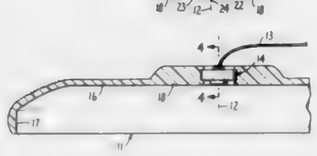
4,802,875

TETHERED FLYING DISC WITH TWO-PIECE BEARING MEANS

Paul E. Cunningham, 4237 Henning Dr., Concord, Calif. 94521

Filed Mar. 6, 1987, Ser. No. 22,656
Int. Cl.[4] A63H *27/00*
U.S. Cl. 446—46 **7 Claims**





1. A flying disc toy, comprising a body of inverted concavo-convex disc shape

having an axis of rotation,

an elongated flexible tether having two ends for controlling said body, and

two-piece bearing means operatively connecting said tether to said body on said axis of rotation for free spinning rotation of said body independent of said tether, wherein a removable plug is inserted in said two piece bearing means, and said elongated flexible tether is engaged with said plug.

4,802,876

AXLE STRUCTURE AND AXLE JOINT FOR CONSTRUCTION TOY ASSEMBLY

Vic Bertrand, Dollard des Ormeaux, Canada, assignor to The Ritvik Group Inc., Derval, Canada

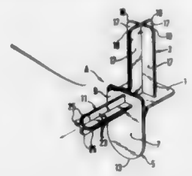
Filed Sep. 23, 1987, Ser. No. 100,300
Int. Cl.[4] A63H *17/00, 17/26*
U.S. Cl. 446—95 **12 Claims**

1. A one-piece plastic axle structure comprising:

a base plate having an upper face, a lower face, a straight edge and having a free perimeter;

an abutment plate solid with the straight edge of the base plate, said abutment plate extending perpendicularly to the base plate and having a minor portion projecting up from the base plate, away from the upper face of said base plate, and a major portion projecting down from the base plate, away from the lower face of said base plate, said major portion having a rounded lower end, said rounded lower end having an accessible edge.

a columnar connector of essentially constant cross-section extending upwardly perpendicularly from the upper face



of the base plate, said columnar connector being spaced from the minor portion of said abutment plate;

a reinforcing plate extending perpendicularly to both the abutment plate and base plate, between the major portion of said abutment plate and the lower face of said base plate, and

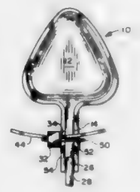
a shaft projecting perpendicularly from said abutment plate in a direction opposite to said base plate, said shaft having, opposite said abutment plate, a free end formed with outward bulges whereby when said shaft engages a wheel said accessible edge may support said wheel when said axle structure is stressed downwardly.

4,802,877

METHOD AND APPARATUS OF TYING THE NECK OF A BALLOON

John C. Davis, Palatine, and James A. Milne, Crystal Lake, both of Ill., assignors to CTI Industries, Barrington, Ill.

Filed Feb. 10, 1988, Ser. No. 154,317
Int. Cl.[4] A63H *3/06*; **B65H** *69/04*
U.S. Cl. 446—222 **17 Claims**



1. A hand tool adapted to secure a flexible neck of an inflatable balloon against fluid leakage, said hand tool comprising:

a housing having a forward end portion and a rearward end portion each positioned on the longitudinal axis of the housing, said housing having an exterior lateral surface between the end portions for manual grasping to rotate the housing about its longitudinal axis;

first and second elongate legs mounted in adjacent position in the forward end of the housing and extending outwardly of the housing to a position along the extension of said longitudinal axis of the housing, said legs being adapted to receive the neck of the balloon therebetween in a starting position preparatory to a tying operation; and

a supply of continuous tying line having a free end positioned adjacent and in alignment with one of said legs when the legs are in starting position, whereby rotation of

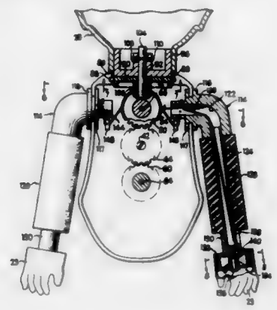
said housing and legs rolls the balloon neck into tight convolutions about said free end and legs to a tying position, and subsequent withdrawal of the legs from the convolutions permits the free end of the line captured within the convolutions to be securely tied about the convolutions to prevent fluid leakage through the balloon neck.

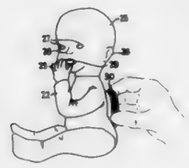
4,802,878

DOLL WITH ROTATING AND BENDABLE ARMS

Rouben T. Terzian, Chicago, and Walter J. Wozniak, Addison, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 6, 1987, Ser. No. 11,903
Int. Cl.[4] A63H *3/28*
U.S. Cl. 446—300 **13 Claims**





1. A doll comprising in combination:

a torso;

an arm carried by the torso;

the arm having a shoulder at one end adjacent to the torso and a hand at the other end;

the arm being mounted for rotational movement relative to the torso at the shoulder, shoulder rotation means adjacent to the shoulder to cause rotation of the arm at the shoulder, said arm is bendable intermediate the shoulder and the hand,

a hollow resilient flexible tube intermediate the shoulder and the hand;

a cable passing through the tube;

one end of the cable being connected to the hand; and

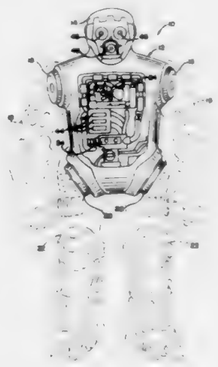
the other end of the cable passing through the shoulder in the torso and being connected to control means carried by the torso that movement of the control means in a predetermined direction tightens the cable and bends the arm upwardly from an at rest position down alongside of the torso and also causes the shoulder rotation means to rotate the arm relative to the torso at the shoulder.

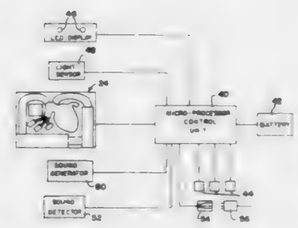
4,802,879

ACTION FIGURE TOY WITH GRAPHICS DISPLAY

Owen R. Rissman, Northbrook, Ill., and Henry T. H. Tai, Chiawan, Hong Kong, assignors to Tiger Electronics, Inc., Vernon Hills, Ill.

Filed May 5, 1986, Ser. No. 859,699
Int. Cl.[4] A63H *3/16, 3/28*
U.S. Cl. 446—175 **10 Claims**





9. An action figure toy construction having animated characteristics, comprising:

a humanoid torso portion for said action figure construction configured to resemble a human torso;

graphics display means mounted on said torso portion and comprising a liquid crystal graphics display, said graphics display means being configured to display a plurality of simulated life functions and being operable to correspond to a plurality of varying levels of activity for said action figure construction to lend animated characteristics to said construction, said levels of activity including modes wherein said graphics display means reflects differing activities for said action figure toy construction, with the rate at which the features of said graphics display means are operated varying commensurate with the mode of the graphics display means;

micro-processor means operatively connected to said graphics display means for effecting operation and control thereof, including variations in said plurality of levels of activity of said simulated life functions displayed by said graphics display means; and

at least one switch means on said torso portion, said switch means being operatively connected to said micro-processor means whereby operation of said switch means effects alteration of the simulated life functions shown by said graphics display means, said micro-processor means including timer means for generating an electrical timer signal reflecting the passage of time,

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said graphics display means including a numerical display operatively connected with said timer means for displaying changing numerals reflecting passage of time to provide a display of the age of said action figure toy construction.

4,802,880

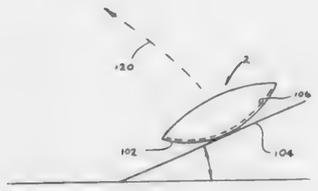
LEAPFROG AND FOOTBALL GAME

Christopher Shaw, 163 Oakes Drive, Mississauga, Ontario, Canada L5G 3M2

Filed Apr. 15, 1987, Ser. No. 38,603

Int. Cl.[4] A63F 7/06; A63H 11/06

U.S. Cl. 273—94 **11 Claims**



1. A game comprising:

(a) a board having football field representations thereon;

(b) a device moveable relative to said board and having an angularly selectively adjustable surface relative to said board; and

(c) a jumping toy having an original stable shape in the form of a thin flexible convex surface with two curved perimetral edge formations, said convex surface adapted to bear against said angularly adjustable surface, wherein said jumping (top) toy is manipulatively elastically deformable against said angularly adjustable surface so as to leap from said angularly adjustable surface when said convex surface returns to its original stable shape to land on said board.

4,802,881

COUPLING MEMBER FOR TAKING UP TORQUE IN A VEHICLE STEERING COLUMN AND A VEHICLE STEERING COLUMN ASSEMBLY

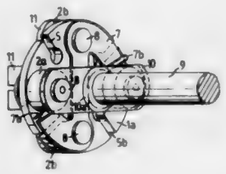
Michael T. Hancock, Coventry, England, assignor to The Torrington Company Ltd., Coventry, England

Filed Aug. 10, 1987, Ser. No. 83,618

Claims priority, application United Kingdom, Aug. 11, 1986, 8619527

Int. Cl.[4] F16D 3/70, 3/78

U.S. Cl. 464—93 **15 Claims**



1. A coupling member for taking up torque in a vehicle steering column comprising: a disc with bosses extending from each face of the disc, said disc having a cut-out portion between adjacent bosses, each cut-out portion extending generally radially of said disc and serving to accommodate deflection of the coupling member in use thereof; each face of the disc having a fail-safe deflection plate located to take up thrust by reacting against opposed bosses upon torque being applied through said bosses.

4,802,882

DIAPHRAGM DISK ASSEMBLY FOR TORQUE TRANSMITTING JOINT AND PROCESS FOR ITS FABRICATION

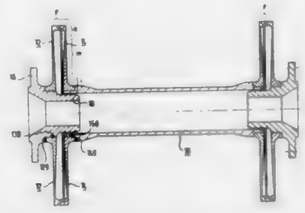
Günther Heidrich, Burgberg, Fed. Rep. of Germany, assignor to BHS - Bayerische Berg-, Hütten- und Salzwerke AG

Continuation of Ser. No. 808,459, Dec. 12, 1985. This application Mar. 17, 1988, Ser. No. 169,088

Claims priority, application European Pat. Off., Jul. 26, 1985, 85109402.9

Int. Cl.[4] F16D 3/79

U.S. Cl. 464—99 **10 Claims**



1. A torque transmission unit comprising a first joint part (16) and a second joint part (10) defining an axis and interconnected by a diaphragm disk assembly (12, 14),

said diaphgram disk assembly (12, 14) comprising a pair of adjoining concentric diaphragm disks (12, 14), each of said diaphragm disks (12, 14) having an annular radially outer edge area (a) , an annular radially inner edge area (i) and an annular radially middle area (m) extending between said outer and inner edges areas (a, i), said middle areas having a radial dimension greater than the radial dimensions of said outer and inner edge areas, said diaphragm disks having radially extending oppositely directed front faces in said middle areas and outer edges areas with said front faces being planar and extending perpendicularly to the axis of said second joint part, said front faces being imperforate and free of support external of said diaphragram disks, said diaphragm disk (12, 14) being connected adjacent respective radially inner peripheries each to a different one of said first (16) and said second (10) joint parts in said radially inner areas and being connected to each other adjacent respective radially outer peripheries in said outer edge areas, said diaphragm disks (12, 14) being provided adjacent their radially outer peripheries in said outer edge areas with axially directed annular projections facing oppositely to said front faces and directed towards each other, the annular projection of a first said diaphragm disk (12) being provided with a radially inner axially directed base face (124) and a radially outer axially directed annular extension, the axial projection of a second said diaphgram disk (14) being provided with a radially outer axially directed base face (141) spaced radially outwardly from said base face (124) of said first diaphgram disk and a radially inner axially directed annular extension, said radially inner annular extension being located radially inwards of and located opposite said radially outer annular extension, a Z-shaped butt joint being defined between said annular extensions and base faces, a radially outer zone of said Z-shaped butt joint being defined by an axially directed end face (121) of said radially outer annular extension and said radially outer base face (141), a radial intermediate zone of said Z-shaped butt joint being defined between a radially inwardly directed circumferential centering face (122) of said radially outer annular extension and a radially outwardly directed circumferential centering face (142) of said radially inner annular extension and a radially inner butt joint zone of said Z-shaped butt joint being defined by said radially inner base face (124) and an axially directed end face (144) of said radially inner extension, an annular disk-shaped electron beam welding zone (20) being provided in said radially outer butt joint zone extending radially inwardly from radially outermost circumferentially faces (128, 148) of said first and second diaphgragm disks to said radially outwardly directed circumferential centering face (142) for connecting said end face (121) of said radially outer annular extension and said radially outer base face (141), and the radial dimension of said welding zone (20) corresponding at least to the radial dimension of said outer based face (141) and being greater than the radial dimension of said radially inner annulur extension.

4,802,883

METHOD OF AND APPARATUS FOR ADJUSTING TENSION OF TIMING BELT

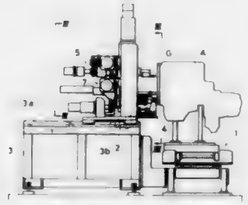
Kanji Tsuzuaga; Toshihiro Hijikata; Katsuhiro Yamaguchi; Yoshimichi Matsumoto, and Yasuo Watanabe, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1987, Ser. No. 107,311

Claims priority, application Japan, Oct. 13, 1986, 61-241288; Aug. 7, 1987, 62-196465

Int. Cl.[4] F16H 7/10

U.S. Cl. 474—101 **26 Claims**



1. A method of adjusting the tension of a timing belt in an engine, the engine having an engine body, a crankshaft in the body, on one side of the engine body a driving pulley on the crankshaft, a driven pulley on a camshaft of a valve operating mechanism, an auxiliary pulley, a timing belt bridged over the driving pulley, the driven pulley, and the auxiliary pulley, and a tension pulley for pressing a loose side portion of the timing belt from outside, characterized by carrying out the following steps in order, reversely rotating the driving pulley in a reverse rotational direction opposite to a normal rotation direction when the engine is running so that loose side portion of the timing belt is tensioned at its region extending between the auxiliary pulley and the driven pulley, under the condition that the driven pulley is fixedly held in position; normally rotating the driving pulley in the normal rotational direction so that a tension side portion of the timing belt is brought into an over-tensioned condition, while the tension pulley is being pushed and advanced toward the timing belt; and retracting the tension pulley while the driving pulley is rotated in the reverse direction so that defection of the tension side portion of the timing belt may reach a predetermined target adjustment value, and thereafter fixing the tension pulley at a retracted position.

4,802,884

METHOD OF FOLDING INTO PACKAGES DISPOSABLE ABSORBENT ARTICLES, E.G. DIAPERS, IN CONNECTION WITH THE PRODUCTION THEREOF

Arne Fröldh, Stenungsund, and Lennart Persson, Billdal, both of Sweden, assignors to Molnlycke AB, Gotaborg, Sweden

PCT No. PCT/SE87/00333, § 371 Date Feb. 19, 1988, § 102(e) Date Feb. 19, 1988, PCT Pub. No. WO88/00441, PCT Pub. Date Jan. 28, 1988

PCT Filed Jul. 10, 1987, Ser. No. 175,387

Claims priority, application Sweden, Jul. 17, 1986, 8603153

Int. Cl.[4] B65B 63/04

U.S. Cl. 493—339 **2 Claims**



1. A method of folding into packages, in connection with the manufacture thereof, disposable absorbent articles such as diapers, or incontinence protectors comprising an absorbent body (1) enclosed in a casing extending laterally beyond the absorbent body and having casing portions intended to seal around the abdomen of the wearer, as well as elastic leg means in the form of elastic bands or threads (6,7) affixed to the casing with portions (6',7') extending at least partially along either side edge of the article at a distance beyond the absorbent body, characterized in that the ends of the article are folded in with approximately equal lengths towards the mid-section of the article which is thereafter folded together in the same direction into a four-folded state, the elastic portions (6',7') at the center of the article simultaneously being held laterally stretched so as to encompass the laterally positioned article ends, the folded article upon release of said elastic portions being held together thereby in the state of a compact, four-folded package.

4,802,885

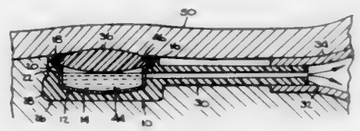
SELF SEALING SUBCUTANEOUS INFUSION AND WITHDRAWAL DEVICE

Vaughan B. Weeks, and Jeffrey E. Bark, both of Racine, Wis., assignors to Medical Engineering Corporation, Racine, Wis.

Filed Jun. 17, 1986, Ser. No. 875,421

Int. Cl.[4] A61M 11/00

U.S. Cl. 604—93 **18 Claims**



1. A self-sealing subcutaneous infusion and withdrawal device comprising, a cup-shaped needle stop member having a wall portion defining a mouth, and a base opposite said mouth, a fluid transfer opening formed in said wall portion, a jacket member enveloping said needle stop member, said jacket member including a fluid transfer tube aligned with the fluid transfer opening of said needle stop member, a needle penetrable seal member for sealing the mouth of said needle stop member, said seal member having opposite convex surfaces, one of said convex surfaces extending into said needle stop member and the other of said convex surfaces extending away from said needle stop member, said other surface having a peripheral ledge, and clamping means for clamping said peripheral ledge of said seal member to the mouth of said needle stop member.

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4,802,886

CONTINUOUS PROCESS FOR THE DYEING OF POLYMERS

John R. B. Beecock, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Sep. 25, 1987, Ser. No. 100,901
Int. Cl.[4] D06P 7/00, 3/79
U.S. Cl. 8—489 **11 Claims**

1. A continuous process for the dyeing of melt-extrudable polymers capable of being dyed, said process comprising extruding molten polymer through an orifice, contacting the extruded polymer while still in the molten state with an aqueous solution of a dye for said polymer, and withdrawing the resultant dyed polymer from the aqueous solution, said polymer being selected from the goup consisting of:

A. a polyamide;

B. a polyester;

C. a direct copolymer that is a copolymer of an alpha-olefin having the formula $R—CH=CH_2$, where R is a radical selected from the class consisting of hydrogen and alkyl radicals having from 1 to 8 carbon atoms, with at least one alpha, beta-ethylenically unsaturated carboxylic acid having from 3 to 8 carbon atoms, the acid moieties being randomly or non-randomly distributed in the polymer chain, the carboxylic acid content being 0.5–50% by weight of the direct copolymer, any other copolymerized monomer being monoethylenically unsaturated;

D. an ionomer of a direct copolymer;

E. a graft copolymer obtained by grafting 0.1 to 20 percent by weight of at least one alpha-, beta-unsaturated carboxylic acid having 3 to 8 carbon atoms or unsaturated carboxylic acid anhydride onto a preformed polyolefin backbone derived from ethylene or ethylene and C_3 to C_8 alpha-olefin, in which polyolefin backbone any other optionally copolymerized monomer component is monoethylenically unsaturated; and

F. blends of at least one C, D or E with a hydrocarbon polymer derived from at least one monomer of the formula $R—CH=CH_2$, where R is as defined above.

4,802,887

COMPOSITIONS COMPRISING A WATER-SOLUBLE METAL COMPLEX DYE, AN OXYALKLATED AMINE SULPHATE ESTER AND A DISPERSING AGENT

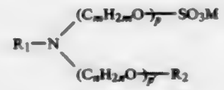
Kamal Akrya, Binningen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 879,242, Jun. 26, 1986, abandoned. This application Mar. 10, 1987, Ser. No. 24,287
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1985, 3522981
Int. Cl.[4] C09B 67/24; D06P 1/39, 3/32
U.S. Cl. 8—524 **24 Claims**

1. A composition comprising:

(a) 30 to 90 % by weight of one or more water soluble anionic dyestuffs in metal complex form,

(b) 0.5 to 20 % by weight of one or more compounds of formula I



(I)

in which R_1 is C_{12-22}alkyl or C_{12-22}alkenyl;

R_2 is hydrogen or $—SO_3M$;

m is 2, 3 or 4;

n is 2, 3 or 4;

p+p' is 10 to 30 inclusive, each of p and p' being at least 1; and M is a cation; and

(c) 5 to 40 % by weight of a dispersing agent which is a condensation product of ditolylether sulphonate and formaldehyde or of naphthalene sulphonic acid and formaldehyde or is a lignin sulphonate or a oxylignin sulphonate,

said percentages being based on the dry weight of the total composition.

4,802,888

DRY DYESTUFF POWDERS WITH ENHANCED WATER SOLUBILITY

Charles W. Sandefur, and Thomas J. Thomas, both of Summerville, S.C., assignors to Mobay Corporation, Pittsburgh, Pa.

Filed Nov. 6, 1987, Ser. No. 117,856
Int. Cl.[4] C09B 67/42
U.S. Cl. 8—524 **9 Claims**

1. A composition comprising a dry dyestuff powder containing less than 12% by weight water wherein said composition comprises:

(i) an anionic water soluble dye

(ii) about 2 to about 12% of a chelating agent which is characterized in that it contains at least two free acid groups, said percents being relative to the weight of said powder and

(iii) a sufficient amount of a Lewis base to bring the pH of a solution of said powder in water to about 7 to 10, selected from the group consisting of lithium hydroxide, amine and amine carbonate.

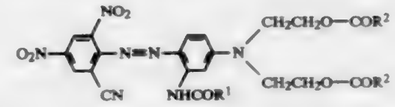
4,802,889

2-CYANO-4,6-DINITROPHENYL MONO-AZO DYES FOR POLYESTER AND CELLULOSE ACETATE

Ulrich Bie,uml/u/ hler, Alzenau; Horst Tappe, Dietzenbach; Reinhard Kilbs, Frankfurt; Albert Beda, Schwalbach, and Margareta Beus, Hattersheim, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 896,811, Aug. 15, 1986, abandoned. This application Aug. 24, 1987, Ser. No. 88,831
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1985, 3533980
Int. Cl.[4] C09B 29/08, 43/42; D06P 1/18, 3/36
U.S. Cl. 8—639 **13 Claims**

1. Monoazodyestuff of the formula



wherein

R^1 is alkyl having 1 to 3 carbon atoms and

R^2 is alkoxy having 1 to 4 carbon atoms which is unsubstituted or substituted by methoxy or ethoxy.

4,802,890

AGGLOMERATION OF COAL FINES

Robert F. Viles, Tamworth, England, assignor to Fosroc International Limited, Birmingham, England

Filed Mar. 9, 1987, Ser. No. 23,389
Claims priority, application United Kingdom, Apr. 8, 1986, 8608488
Int. Cl.[4] C10L 5/14, 5/06
U.S. Cl. 44—21 **14 Claims**

1. A process for the agglomeration of coal fines comprising (a) producing a mixture which consists essentially of (i) coal fines, (ii) a phenol-formaldehyde resole resin in alkaline aqueous solution, and (iii) a curing agent for the resin, the curing agent being at least one ester selected from the group consisting of esters of polyhydric alcohols, carbonate esters and lactones, (b) forming the mixture into agglomerates and (c) drying and curing the agglomerates.

5. A process according to claim 1 wherein the amount of

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alkali present is 20–60% by weight based on the weight of phenol-formaldehyde resin.

4,802,891

COAL-METHANOL SLURRY AND ITS PRODUCTION PROCESS

Izumi Yamada, Tokyo; Tetsuya Oishi, Kamakura, and Kazuhiko Hasashita, Kitakyushu, all of Japan, assignors to Mitsui Mining Company, Limited and Mitsui Toatsu Chemicals, Incorporated, both of Tokyo, Japan

Continuation of Ser. No. 861,439, May 9, 1986, abandoned. This application Mar. 21, 1988, Ser. No. 171,152

Claims priority, application Japan, Apr. 15, 1986, 61-85073

Int. Cl.[4] C10L *1/32*

U.S. Cl. 44—51 **6 Claims**

1. In a coal-methanol slurry of coal particles and methanol as principal components, the improvement comprising:

a slurry comprising from 42.7–73.6 wt. % coal particles in a liquid medium comprising methanol and water and from 0.005–5 wt. % of at least one compound selected from the group consisting of partially-desulfonated lignosulfonic acids and salts thereof, based on the weight of the coal-methanol slurry, wherein the total water content of the slurry ranges up to 30 wt. %, which water content includes 2–25 wt. % of water added to the slurry in addition to the inherent moisture of the coal particles; said coal particles having a maximum particle size not greater than 1500 μm and a cumulative particle size distribution of 30–65 wt. % of 74 μm and smaller particles, 10–25 wt. % of 10 μm and smaller particles and 5–15 wt. % of 3 μm and smaller particles, the concentration of the coal particles being within a range which satisfies the relationship:

$$X-34.0 \leq Y \leq X-15.1$$

wherein X designates the degree of coalification expressed in terms of wt. % carbon in the coal particles and Y denotes the concentration (wt. %) of the coal particles in the slurry.

4,802,892

FUEL OIL ADDITIVE AND FUEL OIL HAVING IMPROVED FLOWABILITY

Takeo Shimada; Tsutomu Iseka; Noriyuki Okada; Iwao Ishino, and Nobuhiro Usami, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Sep. 18, 1986, Ser. No. 908,797

Claims priority, application Japan, Sep. 24, 1985, 60-210805

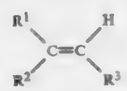
Int. Cl.[4] C10L *1/18*

U.S. Cl. 44—62 **9 Claims**

1. A middle distillate fuel oil having a difference between a 20% and 90% distillation temperature of less than 100° C. and having improved flowability, consisting essentially of a fuel oil and 10 to 2,000 ppm by weight, based on the weight of the fuel oil, of a flowability improver consisting essentially of an ethylenic copolymer being derived from:

(a) ethylene, and

(b) at least one monomer selected from the group consisting of vinyl esters of saturated carboxylic acids, ethylenically unsaturated mono- or di-carboxylic acids and esters thereof having the formula:



wherein R^1 represents hydrogen or a methyl group, R^2 represents the group —$OCOR^4$ or —$COOR^4$ in which R^4 represents hydrogen or an alkyl group having 1 to 18 carbon atoms, and R^3 represents hydrogen or the group —$COOR^4$ in which R^4 is as defined above, and having a number average molecular weight of less than 1,000 and a (b) component content of 1 to 25 mol %, and containing 2 to 10 alkyl branches per 100 methylene groups.

4,802,893

MODIFIED SUCCINIMIDES

Robert H. Wollenberg, San Rafael, and Frank Plavac, Novato, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 096,426, Sep. 11, 1987, Pat. No. 4,747,850, which is a division of Ser. No. 897,190, Aug. 15, 1986, which is a continuation-in-part of Ser. No. 722,939, Apr. 12, 1985, Pat. No. 4,612,132, which is a continuation-in-part of Ser. No. 632,777, Jul. 20, 1984, abandoned. This application Apr. 20, 1988, Ser. No. 183,803

Int. Cl.[4] C10M *133/16*

U.S. Cl. 252—49.6 **66 Claims**

1. A product prepared by the process which comprises reacting at a temperature sufficient to cause reaction

(a) a multiply adducted alkenyl or alkyl succinimide wherein one or more of the nitrogens of the multiply adducted alkenyl or alkyl succinimide is substituted with hydroxyhydrocarbyl oxycarbonyl wherein the hydroxyhydrocarbyl group of said hydroxyhydrocarbyl oxycarbonyl contains from 2 to 20 carbon atoms and 1 to 6 hydroxy groups with the proviso that there is no hydroxy substitution on the hydrocarbyl carbon atom attaching the hydroxyhydrocarbyl group to the oxy atom of the oxycarbonyl group and with the further proviso that when more than one hydroxy group are contained in the hydroxyhydrocarbyl group, no more than one hydroxy group is attached to the same carbon atom and the number of carbon atoms in the hydroxyhydrocarbyl group is minimally one greater than the number of hydroxy groups and wherein said multiply adducted alkenyl or alkyl succinimide is derived from a multiply adducted alkenyl or alkyl succinic anhydride charcterized by the presence within its structure of an average of greater than 1 succinic group for each equivalent of alkenyl or alkyl group; with

(b) a boron compound selected from the group consisting of boric acid, boron oxides, boron halides and esters of boric acid employing from about 0.1 equivalents to 10 equivalents of boron compound per equivalent of the multiply adducted alkenyl or alkyl succinimide of (a) above.

4,802,894

METHOD OF USING A STRUCTURAL MEMBER OF ANTI-SULFUR-ATTACK CR-NI-AL-SI ALLOY STEEL FOR COAL GASIFICATION SYSTEM

Kenichi Usami; Seishin Kirihara, both of Hitachi; Tadaoki Morimoto, Ibaraki; Hiroyuki Doi, and Michiya Okada, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

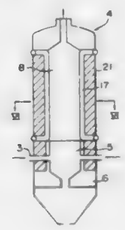
Continuation of Ser. No. 795,777, Nov. 7, 1985, abandoned. This application Jan. 12, 1987, Ser. No. 2,285

Claims priority, application Japan, Nov. 9, 1984, 59-234981

Int. Cl.[4] C10J *3/76*

U.S. Cl. 48—77 **2 Claims**

1. A method of using an alloy steel in a coal gasification furnace comprising subjecting a water-cooled tube wall to a hot gas atmosphere comprising H_2, CO, CH_4 and H_2S produced through reaction between coal and a gasifier, wherein said water-cooled tube wall is made of an anti-sulfur attack Cr-Ni-Al-Si alloy steel having a composition consisting essentially of, by weight, 0.03–0.3% of C, 1–10% of Si, not greater than 2.0% of Mn, 10–14% of Ni, 16–18% of Cr, 0.5–10% of Al, 2–3% of Mo, and the balance not less than 50% of Fe.



4,802,895

COMPOSITE DIAMOND ABRASIVE COMPACT

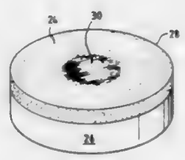
Richard P. Burnand, 39 Constantia Ave., Alan Manor, Johannesburg, Transvaal, and Kenneth A. Mackenzie, 215 Oak Ave., Ferndale, Randburg, Transvaal, both of South Africa

Filed Jul. 7, 1987, Ser. No. 70,369

Claims priority, application South Africa, Jul. 14, 1986, 86/5237

Int. Cl.[4] B24D *3/00*

U.S. Cl. 51—293 **5 Claims**



1. A metohd includes the steps of:

(a) providing a reaction capsule for a high temperature/high pressure apparatus;

(b) loading the reaction capsule by placing therein a cemented carbide body, a thin layer of "fine" carbide powder of average particle size less than 2 microns on a surface of the carbide body, and a mass of "fine" diamond particles of average particle size less than 20 microns on the layer of carbide powder;

(c) placing the loaded reaction capsule in the reaction zone of the high temperature/high pressure apparatus;

(d) subjecting the contents of the reaction capsule to elevated conditions of temperature and pressure suitable to form a composite diamond abrasive compact; and

(e) recovering the composite diamond abrasive compact from the reaction capsule.

4,802,896

MODIFIED RESINS AND ABRASIVE ARTICLES MADE WITH THE SAME AS A BOND SYSTEM

Kam W. Law, Oakdale, and Walter W. Goethel, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 8, 1987, Ser. No. 129,826

Int. Cl.[4] C09K *3/14*

U.S. Cl. 51—298 **11 Claims**

1. An abrasive product having abrasive grain and a resin bond system, said resin bond system comprising cured hard resin and sufficient thermally stable aromatic ligand to provide said abrasive product with improved abrasive performance over that of an abrasive product having the same resin bond system without said ligand, the amount of ligand in said resin bond system being at least 3% by weight based upon the combined weight of the ligand and resin.

4,802,897

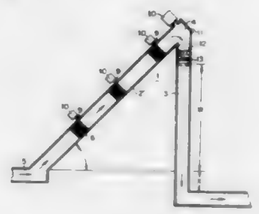
RECOVERY OF GASES FROM NON-VISCOUS SOLVENTS

Arthur F. Johnson, 240 Fox Dr., Boulder, Colo. 80303

Filed Aug. 5, 1986, Ser. No. 893,425

Int. Cl.[4] B01D *19/00*

U.S. Cl. 55—55 **19 Claims**



1. The process of continuously separating a more volatile substance from a non-viscous liquid in which it is dissolved comprising:

(a) flowing the liquid through a vertical conduit having portions extending radially outwardly and radially inwardly, the portions extending radially outwardly each having a pattern of shaped, spaced obstructions disposed therein, said flow being controlled to take place at a sufficient velocity to cause bubbles of said volatile substance to form due to centripetal separating force caused by flow-stream curvature around the shaped obstructions; and

(b) continuously removing the bubbles of the volatile substance from the nonviscous liquid before they redissolve in the liquid.

4,802,898

METHOD AND APPARATUS FOR REMOVING CYANOGEN CHLORIDE FROM AIR

Edward D. Tolles, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Jun. 17, 1985, Ser. No. 745,082

Int. Cl.[4] B01D *53/04*

U.S. Cl. 55—71 **16 Claims**

1. In a method for removing cyanogen chloride from an air stream containing cyanogen chloride using a carbon containing filter, the improvement comprising said carbon having an effective amount of triethylenediamine added thereto in the absence of chromium.

16. Type AS whetlerite charcoal impregnated with triethylenediamine in an amount effective for removing cyanogen chloride from an airstream containing cyanogen chloride.

4,802,899

PRESSURE SWING ADSORPTION APPARATUS

Edward E. Vrana, West Seneca, and Ravinder K. Bansal, Amherst, both of N.Y., assignors to AirSep Corporation, Buffalo, N.Y.

Filed Sep. 21, 1987, Ser. No. 98,879

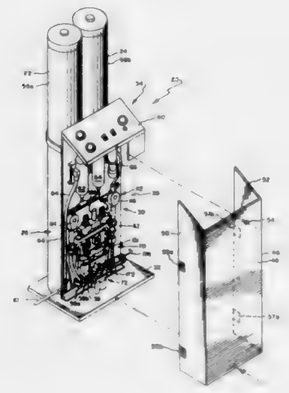
Int. Cl.[4] B01D *53/04*

U.S. Cl. 55—161 **16 Claims**

1. In a pressure swing adsorption apparatus including a pair of adsorbers each having an inlet and an outlet and adapted to fractionate at least one constituent from a gaseous mixture delivered from a feed stream by sequentially directing the gaseous mixture from the feed stream into the inlet of one

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adsorber so that said one adsorber performs adsorption while simultaneously purging the other adsorber of adsorbed constituent with product gas withdrawn from the outlet of the one adsorber and then directing the gaseous mixture from the feed stream into the inlet of the other adsorber so that said other adsorber performs adsorption while simultaneously purging the one adsorber of adsorbed constituent of product gas withdrawn from the outlet of the other adsorber wherein the apparatus includes feed and waste valving means associated with the inlets of the adsorbers to which the gaseous mixture is selectively routed to the inlet of one or the other adsorber for the production of product gas and through which product-depleted waste gas is discharged from the adsorber being purged and a purge loop and equalization valving means associated with the outlets of the adsorbers permitting the adsorbers to communicate with one another through the outlets thereof for the purposes of purging one and then the other of the adsorbers and for equalizing the internal pressure of the adsorbers between preselected stages of adsorber operation, the improvement comprising:



a base;

an elongated control box for housing the feed and waste valving means of the apparatus, said control box being directly mounted upon said base so that its longitudinal axis is oriented generally vertically and including a substantially planar back oriented generally vertically, the valving means of the apparatus are supportedly attached to said planar back in a substantially coplanar and vertical arrangement facilitating service and maintenance of said valving means, and

said pair of adsorbers include a pair of towers directly mounted upon said base and oriented in a generally vertical, side-by-side arrangement and positioned in such a relationship with the control box so that the back panel of the control box is positioned adjacent and so as to span the width of the adsorber towers, the towers and the control box being attached to one another so that the vertical stability of each of the towers and control box contributes to the vertical stability of each of the other of the towers and control box.

4,802,900

LABORATORY ANIMAL CARRIER FILTER BAG

Keith R. Ball, 16 Winans Pl., Piscataway, N.J. 08854, and David M. Thompson, 423 Cross Rd., Matawan, N.J. 07747

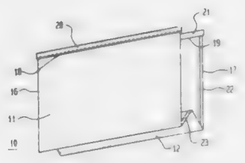
Filed Mar. 12, 1987, Ser. No. 25,255

Int. Cl.⁴ B01D *39/16*

U.S. Cl. 55—381 **6 Claims**

1. A container comprising:

a continuous length of spun polyester sheet which is folded so as to form first and second side portions and a bottom portion continuously with, and intermediate of, said first and second side portions, said bottom portion being folded onto itself so as to be expandable, said first and second side portions each having lateral edges and a top edge, and being joined at respective ones of said lateral edges to one another;



polyethylene seal means installed intermediate of said folds in said folded bottom portion, said folded bottom portion being sealed continuously on respective sides thereof with said first and second side portions; and

a polyethylene seal for closing an opening defined by said top edges of said first and second sides, said opening being distal from said bottom portion.

4,802,901

LIQUID SEPARATOR

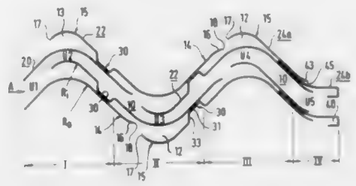
Dieter Wurz, Riefstahstr. 6, D-7500 Karlsruhe 1, and Max Zimmermann, Karlsruhe, both of Fed. Rep. of Germany, assignors to Dieter Wurz, Fed. Rep. of Germany

Filed Aug. 13, 1987, Ser. No. 84,918

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1986, 3627555

Int. Cl.⁴ B01D *45/08*

U.S. Cl. 55—440 **16 Claims**



1. A liquid separator for separating liquid components entrained in a two-phase flow (gas/liquid), in which the flow is passed through a channel provided with one or more trap pockets for the liquid components, said pockets each having a leading edge associated therewith and an associated guide plate upstream thereof which at its end has separating edges for the liquid, in which the separating edge (**18**) of each guide plate (**14**) is disposed at a distance (b) upstream of the leading edge (**17**) of the associated trap pocket (**12**), characterized in that the end of each guide plate (**14**) is curved in the direction leading into the trap pocket (**12**) in such a way that the tangent (t) to the separating edge (**18**) of the guide plate (**14**) extends into the trap pocket (**12**), that the velocity is substantially constant at least in the vicinity of the opening between guide plate and trap pocket, and that the end of the guide plate (**14**) which has the separating edge (**18**) is provided with a bent portion (**16**) having a length (l) the maximum value of which is determined from the equation

$$l_{max} = m \cdot \frac{h}{\eta} \cdot \ln \frac{u(0)}{u(1)}$$

wherein u(0) is the mean film velocity at the beginning of the bent portion, and u(1) is the mean film velocity at the separating edge and $2.5 < u(0)/u(1) \leqq 3.5$, m is the same mass flow per unit of width, h is the mean film thickness, and η is the dynamic viscosity of the liquid, and wherein the practical length (l) of the bent portion (**16**) is in the range of $0.2l_{max} < l \leqq l_{max}$.

4,802,902

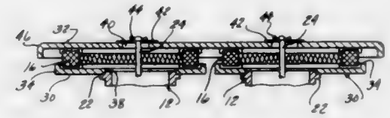
AIR CLEANER COVER AND BASE FOR DUAL CARBURETOR ASSEMBLIES

David D. Bauerle, St. Clair Shores, and Barry I. Rabotnick, Southfield, both of Mich., assignors to Colt Industries Inc., New York, N.Y.

Filed Jun. 10, 1987, Ser. No. 66,354

Int. Cl.⁴ B01D *46/00*

U.S. Cl. 55—484 **13 Claims**



4. In combination with a dual throttle body assembly including a pair of throttle bodies each having a circular air cleaner flange and a pair of annular air filter elements of an inner diameter greater than the diameter of said flange, an air cleaner cover and base plate assembly for mounting said filters in operative relationship upon said throttle bodies, said cover and base plate assembly comprising a pair of circular base plates each operable to support one of said air filter elements thereon, each of said plates having an eccentrically located circular opening therethrough adapted to receive said air cleaner flange of one of said throttle bodies to support said base plate thereon and to accommodate rotative adjustment of said plate relative to said one of said bodies, and a single cover means for clamping said pair of said filter elements respectively upon said pair of base plates located respectively on said flanges of said pair of throttle bodies.

4,802,903

METHOD AND APPARATUS FOR CURVING A GLASS SHEET

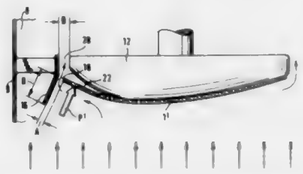
Hans-Werner Kuster, Aachen; Norbert Schwarzenberg, Herzogenrath, both of Fed. Rep. of Germany, and Luc Vanaschen, Eupen, Belgium, assignors to Saint-Gobain Vitrage, Paris, France

Filed Sep. 14, 1987, Ser. No. 95,850

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1986, 3632556; Sep. 25, 1986, 8625618[U]

Int. Cl.⁴ C03B *23/035*

U.S. Cl. 65—106 **12 Claims**



1. A method of curving a glass sheet which has been heated to its bending temperature, comprising blowing a hot gas stream with a large cross-sectional area against said sheet, to press said sheet against a curved forming surface of a curving form,

increasing the static pressure component of the hot gas stream at at least one region adjacent a portion of the periphery of said form where said surface is sharply curved, by means of a barrier positioned adjacent to, but spaced from, said periphery portion and extending below said glass sheet when applied against said frame.

4,802,904

METHOD AND APPARATUS FOR POSITIONING OF GLASS PLATES TO BEND THEM INTO A CONVEX SHAPE

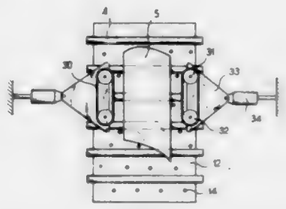
Philippe Boutier, Thourotte, France, and Luc Vanaschen, Eupen, Belgium, assignors to Saint-Gobain Vitrage, Paris, France

Filed Jul. 16, 1987, Ser. No. 74,024

Claims priority, application France, Jul. 16, 1986, 86 10329

Int. Cl.⁴ C03B *23/02*

U.S. Cl. 65—106 **8 Claims**



1. A process for bending plates of thermoplastic material into a convex shape, comprising:

advancing said plates into a bending chamber, on a support means comprising a roller conveyor,

supporting 10–80% of the weight of said plates while on said support means by way of a gas stream blown from below said support means,

centering said glass plates with respect to their placement in the direction perpendicular to the advance of said glass plate, while said plates are so supported, and

applying said plates against an upper mold.

6. Apparatus for bending glass plates, comprising a convexing installation having an upper convexing mold against which glass plates are intended to be applied, a support means comprising a roller conveyor for advancing said glass plates into a position below said upper convexing mold, a pressurized gas tank having an upper baffle equipped with a multiple number of outlets said outlets loated under the support means, said gas tank intended to blow a stream of gas in an ascending vertical direction in order to take up a part of the weight of the glass, and also comprising means for centering the glass plates with respect to their placement in the direction perpendicular to the advance of said glass plates, said centering taking place while the ascending stream of gas is working.

4,802,905

METHOD FOR PROTECTING PLANTS AND PLANT MATTER FROM STRESS

Marshall Spector, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 10, 1987, Ser. No. 24,273

Int. Cl.⁴ A01N *3/02, 33/04*

U.S. Cl. 71—68 **9 Claims**

1. In a process for protecting a plant from damage due to stress, wherein a polyamine or polyamine salt is applied to such plant in an amount effective for protecting such plant from stress, the improvement which comprises utilizing a polyamine represented by the formula $H_2NCHRCHR(—NHCHR-CHR—)_nNH_2$ where n represents an integer of from 1 to 3 and R represents either hydrogen or a methyl group or a salt of such polyamine.

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4,802,906

HERBICIDAL ORTHO-SULFONAMIDE BENZENESULFONYLUREAS

Donald J. Dumas, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 703,669, Feb. 21, 1985, abandoned. This application Dec. 23, 1985, Ser. No. 810,336

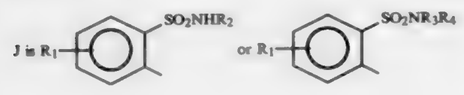
Int. Cl.[4] A01N *43/54*; C07D *239/69, 239/84, 401/12*

U.S. Cl. 71—92 **33 Claims**

1. A compound of the formula



and agriculturally suitable salts thereof, wherein:



J-1 J-2

W is O or S;

R is H or CH_3;

R_1 is H, C_1 to C_3 alkyl, C_1 to C_3 haloalkyl, halogen, nitro, C_1 to C_3 alkoxy, $SO_2NR_aR_b$, C_1 to C_3 alkylthio, C_1 to C_3 alkylsulfinyl, C_1 to C_3 alkylsulfonyl, CN, CO_2R_c, C_1 to C_3 haloalkoxy, C_1 to C_3 haloalkylthio, C_2 to C_3 alkoxyalkyl, C_2 to C_3 haloalkoxyalkyl, C_2 to C_3 alkylthioalkyl, C_2 to C_3 haloalkylthioalkyl, C_2 to C_3 cyanoalkyl or NR_dR_e;

R_a is H, C_1 to C_4 alkyl, C_2 to C_3 cyanoalkyl, methoxy or ethoxy;

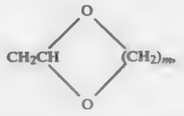
R_b is H, C_1 to C_4 alkyl or C_3 to C_4 alkenyl; or

R_a and R_b can be taken together as $—(CH_2)_3—$, $—(CH_2)_4—$, $—(CH_2)_5—$ or $—CH_2CH_2OCH_2CH_2—$;

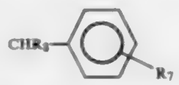
R_c is C_1 to C_4 alkyl, C_3 to C_4 alkenyl, C_3 to C_4 alkynyl, C_2 to C_4 haloalkyl, C_2 to C_3 cyanoalkyl, C_5 to C_6 cycloalkyl, C_4 to C_7 cycloalkylalkyl or C_2 to C_4 alkoxyalkyl;

R_d and R_e are independently H or C_1 to C_2 alkyl;

R_2 is C_2 to C_6 haloalkenyl, C_3 to C_6 cycloalkyl, C_3 to C_6 cycloalkyl optionally substituted with 1 or 2 CH_3 groups, C_4 to C_7 cycloalkylalkyl, C_5 to C_6 cycloalkenyl, C_3 to C_6 epoxyalkyl, C_2 to C_6 haloalkyl, $CH_2CH_2(OR_5)_2$,



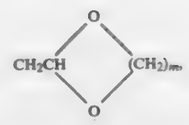
phenyl which may be optionally substituted with R_7,



$CH_2C(O)CH_3$, CN, C_1 to C_6 alkyl substituted with OR_9, $S(O)_nR_{10}$ or $NR_{11}R_{12}$, Q, CHR_8Q or CH_2CH_2Q;

R_3 is C_1 to C_6 alkyl, C_3 to C_6 alkenyl, C_3 to C_6 alkynyl, C_3 to C_6 cycloalkyl which can be optionally substituted with 1 or 2 CH_3 groups, C_4 to C_7 cycloalkylalkyl, C_5 to C_6 cycloalkenyl, C_1 to C_5 alkoxy, C_3 to C_6 epoxyalkyl or C_1 to C_6 alkyl substituted with OR_9, $S(O)_nR_{10}$, $NR_{11}R_{12}$ or $P(O)(OR_5)_2$;

R_4 is $CH_2CH_2(OR_5)_2$,



C_2 to C_6 haloalkenyl, C_3 to C_6 epoxyalkyl, $CH_2C(O)CH_3$, CN, C_1 to C_6 alkyl substituted with OR_9, $S(O)_nR_{10}$ or $NR_{11}R_{12}$, Q, CHR_8Q or CH_2CH_2Q;

R_5 is C_1 to C_3 alkyl;

R_7 is H, C_1 to C_3 alkyl, halogen, NO_2, CF_3, CN or C_1 to C_3 alkoxy;

R_8 is H or CH_3;

R_9 is H, SO_2R_5, $C(O)R_5$, CO_2R_5, $C(O)NR_{11}R_{12}$ or $P(O)(OR_5)_2$;

R_{10} is C_1 to C_3 alkyl;

R_{11} is H or C_1 to C_3 alkyl;

R_{12} is H or C_1 to C_3 alkyl;

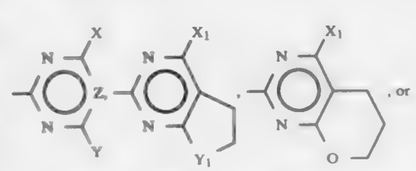
m is 2 or 3;

n is 0, 1 or 2;

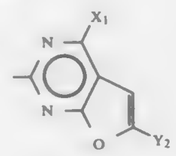
Q is a heterocycle selected from the group: pyrrolidine, pyrrole, dithiolane, tetrahydrofuran, dioxane, thiazole, thiadiazole, pyrimidine, and pyridine optionally substituted by one or more groups selected from L;

L is C_1 to C_3 haloalkyl, halogen, C_1 to C_3 alkoxy, C_1 to C_3 alkylthio, C_3 to C_4 alkenyloxy, C_3 to C_4 alkenylthio, C_1 to C_2 haloalkoxy or C_1 to C_2 haloalkylthio;

A is



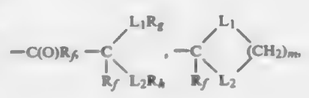
A-1 A-2 A-3



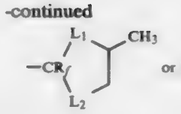
A-4

X is H, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, C_1 to C_4 haloalkoxy, C_1 to C_4 haloalkyl, C_1 to C_4 haloalkylthio, C_1 to C_4 alkylthio, halogen, C_2 to C_5 alkoxyalkyl, C_2 to C_5 alkoxyalkoxy, amino, C_1 to C_3 alkylamino or di(C_1 to C_3 alkyl)amino;

Y is H, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, C_1 to C_4 haloalkoxy, C_1 to C_4 haloalkylthio, C_1 to C_4 alkylthio, C_2 to C_5 alkoxyalkyl, C_2 to C_5 alkoxyalkoxy, amino, C_1 to C_3 alkylamino, di(C_1 to C_3 alkyl)amino, C_3 to C_4 alkenyloxy, C_3 to C_4 alkynyloxy, C_2 to C_5 alkylthioalkyl, C_1 to C_4 haloalkyl, C_3 to C_5 cycloalkyl, C_2 to C_4 alkynyl,



-continued



L_1 and L_2 are independently O or S;

R_f is H or CH_3;

R_g and R_h are independently C_1 to C_2 alkyl;

Z is CH;

Y_1 is O;

X_1 is CH_3, OCH_3, OC_2H_5 or OCF_2H;

Y_2 is H or CH_3;

provided that:

(a) when X is Cl, F, Br or I, then Y is OCH_3, OC_2H_5, $N(OCH_3)CH_3$, $NHCH_3$, or $N(CH_3)_2$; and

(b) when R_2 is CH_2CF_3 and A is A-1 then one or both of X and Y is OCF_2H.

23. A method for the control of undesirable vegetation comprising applying to the locus of such vegetation an herbicidally effective amount of a compound of claim 1.

4,802,907

N-SUBSTITUTED CHLOROACETANILIDES PROCESSES FOR PRODUCTION THEREOF, AND HERBICIDAL COMPOSITION COMPRISING THE SAME

Tetsuo Takematsu, Utsunomiya; Shozo Kato, Fujisawa; Masahiko Ishizaki, Sagamihara, and Toshihisa Sayama, Chigasaki, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

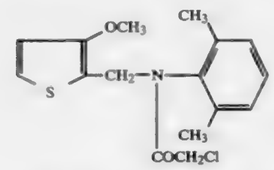
Continuation of Ser. No. 622,649, Jun. 20, 1984, abandoned. This application Sep. 4, 1987, Ser. No. 94,092

Claims priority, application Japan, Jun. 22, 1983, 58-111011

Int. Cl.[4] A01N *43/02*; C07D *333/32*

U.S. Cl. 71—90 **4 Claims**

1. A herbicidal composition comprising a herbicidally effective amount of an N-substituted chloroacetanilide represented by the following formula



and a herbicidally acceptable diluent or carrier.

4,802,908

HERBICIDAL 2-(1H)-PYRAZINONES

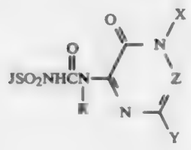
Craig L. Hillemann, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 22, 1987, Ser. No. 6,822

Int. Cl.[4] A01N *9/16*; C07D *401/12, 403/12*

U.S. Cl. 71—70 **35 Claims**

1. A compound of the formula:



wherein

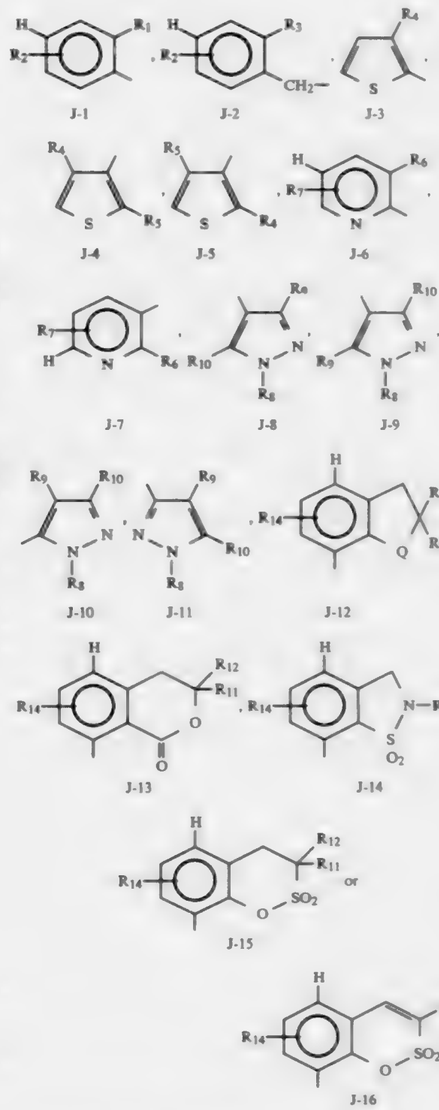
R is H or CH_3;

X is H, C_1–C_3 alkyl, C_1–C_3 alkoxy, NH_2, $NHCH_3$ or $N(CH_3)_2$;

Y is H, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_2 alkylthio, Cl or Br;

Z is CH, CF, CCl or CBr;

J is



J-1 J-2 J-3

J-4 J-5 J-6

J-7 J-8 J-9

J-10 J-11 J-12

J-13 J-14

J-15

J-16

I

R_1 is F, Cl, Br, NO_2, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_3–C_4 cycloalkyl, C_2–C_4 haloalkenyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_2–C_4 alkoxyalkoxy, CO_2R_e, $C(O)NR_aR_c$, $SO_2NR_dR_e$, $S(O)_nR_f$, $C(O)R_g$, CH_2CN or L;

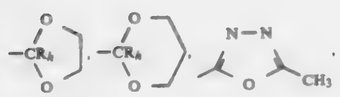
R_2 is H, F, Cl, Br, CN, CH_3, OCH_3, SCH_3 or OCF_2H;

R_3 is Cl, NO_2, CO_2CH_3, $CO_2CH_2CH_3$, $SO_2N(CH_3)_2$, SO_2CH_3, $SO_2CH_2CH_3$, OCH_3 or OCH_2CH_3;

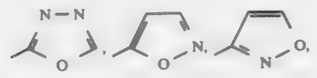
R_a is C_1–C_3 alkyl optionally substituted by halogen, C_1–C_2 alkoxy or CN, allyl or propargyl;

R_b is H, C_1–C_3 alkyl or C_1–C_2 alkoxy;

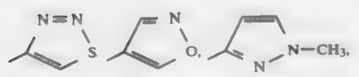
R_c is C_1–C_2 alkyl;
R_d is H, C_1–C_3 alkyl, C_1–C_2 alkoxy, allyl or cyclopropyl;
R_e is H or C_1–C_3 alkyl;
R_f is C_1–C_3 alkyl, C_1–C_3 haloalkyl, allyl or propargyl;
R_g is C_1–C_4 alkyl, C_1–C_4 haloalkyl or C_3–C_5 cycloalkyl optionally substituted by halogen;
n is 0, 1 or 2;
L is



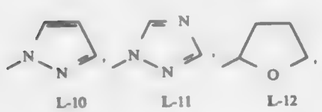
L-1 L-2 L-3



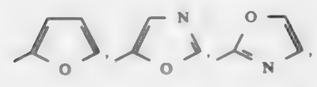
L-4 L-5 L-6



L-7 L-8 L-9



L-10 L-11 L-12



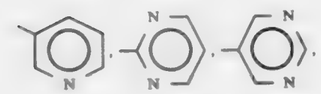
L-13 L-14 L-15



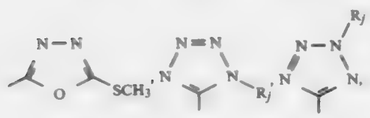
L-16 L-17 L-18



L-19 L-20 L-21

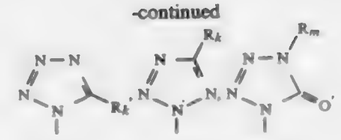


L-22 L-23 L-24

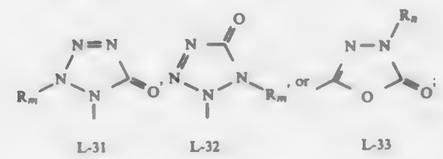


L-25 L-26 L-27

-continued



L-28 L-29 L-30



L-31 L-32 L-33

R_h is H or CH_3;
R_i is H or CH_3;
R_j is H, CH_3 or CH_2CH_3;
R_k is H, CH_3, CH_2CH_3, OCH_3, OCH_2CH_3, SCH_3 or SCH_2CH_3;
R_m is H, CH_3 or CH_2CH_3;
R_n is H or CH_3;
R_4 is C_1–C_3 alkyl, C_1–C_2 haloalkyl, C_1–C_2 alkoxy, C_2–C_4 haloalkenyl, F, Cl, Br, NO_2, CO_2R_a, $C(O)NR_bR_c$, $SO_2NR_dR_e$, $S(O)_nR_f$, $C(O)R_g$ or L;
R_5 is H, F, Cl, Br or CH_3;
R_6 is C_1–C_3 alkyl, C_1–C_2 alkoxy, C_2–C_4 haloalkenyl, F, Cl, Br, CO_2R_a, $C(O)NR_bR_c$, $SO_2NR_dR_e$, $S(O)_nR_f$, $C(O)R_g$ or L;
R_7 is H, F, Cl or CH_3;
R_8 is H or C_1–C_3 alkyl;
R_9 is C_1–C_3 alkyl, C_1–C_2 alkoxy, F, Cl, Br, NO_2, CO_2R_a, $SO_2NR_dR_e$, $S(O)_nR_f$, OCF_2H, $C(O)R_g$, C_2–C_4 haloalkenyl or L;
R_{10} is H, Cl, F, Br, C_1–C_3 alkyl or C_1–C_2 alkoxy;
R_{11} is H or C_1–C_2 alkyl;
R_{12} is H or C_1–C_2 alkyl;
R_{13} is H, C_1–C_6 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkoxyalkyl, C_3–C_5 cycloalkyl or C_4–C_6 cycloalkylalkyl;
R_{14} is H, F, Cl, Br, CN, CH_3, OCH_3, SCH_3 or OCF_2H; and
Q is O, S, SO, SO_2 or C(O);
and their agriculturally suitable salts; provided that X and Y are not simultaneously H.

29. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,802,909

UREAS AND THEIR USE AS HERBICIDES

Hermann Rempfler, Ettingen; Erich Stamm, Hattwil, and Rudolph C. Thammel, Courgenay, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

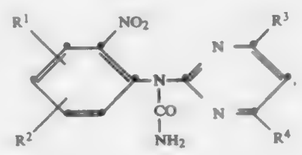
Filed Oct. 9, 1987, Ser. No. 107,437

Claims priority, application Switzerland, Oct. 13, 1986, 4074/86; Jul. 28, 1987, 2869/87

Int. Cl.[4] A01N *43/54*; C07D *239/42*

U.S. Cl. 71—92 14 Claims

1. Compounds of the formula



(I)

in which
R^1 and R^2 each represents, independently of the other, hydrogen, halogen, C_1–C_6-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkoxy-(C_1–C_4)-alkyl, nitro or cyano, and
R^3 and R^4 each represents, independently of the other, hydrogen, halogen, cyano, OH, SH, C_1–C_6-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, amino, mono-C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, C_1–C_4-alkoxycarbonyl or C_1–C_4-alkoxy-(C_1–C_4)-alkyl,
and the salts and addition compounds thereof with acids, bases and complex formers.

12. A method of controlling undesired plant growth, characterised in that a herbicidally effective amount of an active ingredient of the formula I according to claim 1 is applied to the environment of the plant to be controlled.

4,802,910

HERBICIDAL ACYLATED SULPHONYLGUANIDINES

Rolf Kirsten, Monheim; Joachim Kluth, Langenfeld; Klaus-Helmut Müller, Düsseldorf; Theodor Pfister, Monheim; Hans-Jochem Riebel, Wuppertal; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 20, 1987, Ser. No. 5,539

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1986, 3602679

Int. Cl.[4] A01N *43/66*; C07D *251/46, 251/52, 251/18*

U.S. Cl. 71—93 10 Claims

1. An acylated sulphonylguanidine of the formula

in which
R^1 represents an optionally substituted radical from the group consisting of alkyl, aralkyl and aryl with in each case up to 10 carbon atoms,
R^2 represents hydrogen, halogen, hydroxyl, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_1–C_4-alkoxy, C_1–C_4-halogenoalkoxy, C_1–C_4-alkylthio, C_1–C_4-halogenoalkylthio, amino, C_1–C_4-alkylamino or di-(C_1–C_4-alkyl)-amino,
R^5 represents hydrogen, halogen, cyano, C_1–C_4-alkyl, formyl, C_1–C_4-alkyl-carbonyl or C_1–C_4-alkoxy-carbonyl,
R^6 represents hydrogen, halogen, hydroxyl, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylamino or di-(C_1–C_4-alkyl)-amino,
R^3 represents a radical R^7, or represents a radical —NHR^8,
R^7 represents an optionally substituted radical from the group consisting of alkyl, alkenyl, alkinyl, alkoxy, alkenyloxy, alkinyloxy, cycloalkyl, dialkylamino, aralkyl, aryl, aralkoxy, aryloxy, alkylthio, aralkylthio and arylthio with in each case up to 10 carbon atoms,
R^8 represents an optionally substituted radical from the group consisting of alkyl, cycloalkyl, aralkyl, aryl and arylsulphonyl with in each case up to 10 carbon atoms,
R^4 represents hydrogen, or represents an optionally substituted radical from the group consisting of alkyl, alkenyl, alkinyl, cycloalkyl, aralkyl and aryl with in each case up to 10 carbon atoms, or
R^4 represents the radical —OR^9 or —$NR^{10}R^{11}$,
R^9 represents hydrogen or an optionally substituted radical from the group consisting of alkyl, alkenyl, alkinyl, cycloalkyl, cycloalkylalkyl, aralkyl and aryl with in each case up to 10 carbon atoms,
R^{10} represents hydrogen or C_1–C_4-alkyl,
R^{11} represents hydrogen or an optionally substituted radical from the group consisting of alkyl, alkenyl, alkinyl, cycloalkyl, aralkyl, aryl, alkylcarbonyl, alkoxycarbonyl, alkylsulphonyl and arylsulphonyl with in each case up to 10 carbon atoms, and
M represents hydrogen or one equivalent of a metal or represents the radical —COR^7, the optional substituents when present being selected from the group consisting of fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkoxycarbonyl, di-(C_1–C_4-alkyl)-amino-carbonyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl and C_1–C_4-alkylsulphonyl,
or a strong acid adduct thereof.

9. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound or adduct according to claim 1.

4,802,911

PHENYL-SUBSTITUTED SULFONAMIDES

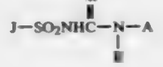
Robert J. Pasteris, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 785,833, Mar. 1, 1985, which is a continuation-in-part of Ser. No. 607,990, May 7, 1984, abandoned. This application Jan. 17, 1987, Ser. No. 63,218

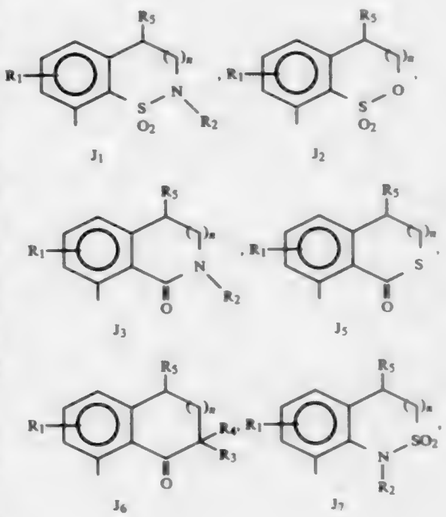
Int. Cl.[4] A01N *43/54, 43/72*; C07D *239/42, 417/12*

U.S. Cl. 71—92 27 Claims

1. A compound of the formula:



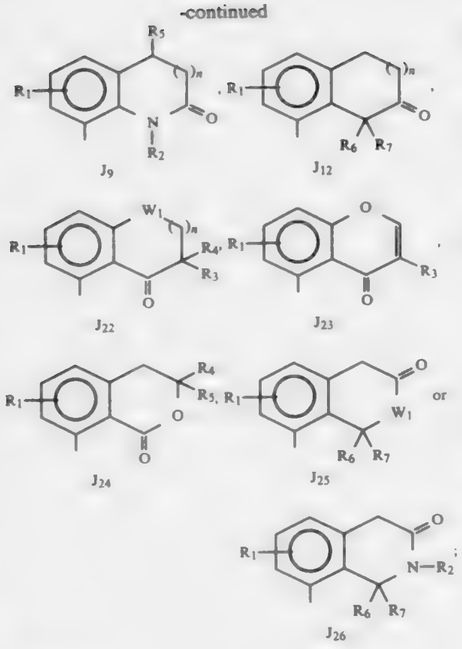
wherein
J is



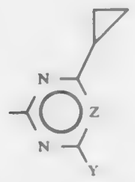
J_1 J_2 J_3 J_5 J_6 J_7

VOL 1099 ISS 1 FEB 7 1989 UMI

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n is 0, 1 or 2;
W is O or S;
W_1 is O or S;
R is H or CH_3;
R_1 is H, F, Cl, Br, CH_3, OCH_3, CF_3, SCH_3 or OCF_2H;
R_2 is H or C_1–C_4 alkyl;
R_3 and R_4 are independently H, C_1–C_4 alkyl, Cl or Br;
R_5 is H or CH_3;
R_6 is H or CH_3;
R_7 is H or CH_3;
A is



Y is
CH_3, CH_2CH_3, OCH_3, OCH_2CH_3, CH_2OCH_3, OCF_2H, SCF_2H, OCH_2CF_3, CF_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, $NHCH_3$, $N(CH_3)_2$ or $CH(OCH_3)_2$; and
Z is CH provided that
(a) when W is S, then R is H;
(b) the total number of carbon atoms in R_3 and R_4 is less than or equal to 4;
(c) when R_5 is CH_3, then n is 0; and
(d) when J is J_{24}, then R_4 and R_5 are not both H and R_4 is not Cl or Br;
and their agriculturally suitable salts.

23. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,802,912

HERBICIDE ANTIDOTES

Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Co., Westport, Conn.

Continuation-in-part of Ser. No. 291,207, Aug. 10, 1981, abandoned. This application Dec. 27, 1983, Ser. No. 566,009
Int. Cl.[4] A01N *2/32*
U.S. Cl. 71—100 10 Claims

1. A compound having the formula

$$CH_2Br—CHBr—CH_2—O—S—R_1$$

wherein R_1 is trihaloalkyl having 1 to 4 carbon atoms, inclusive.

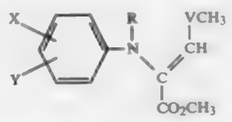
4,802,913

FUNGICIDAL ALPHA-SUBSTITUTED ACRYLATES

John Clough, Marlow, and Christopher R. A. Godfrey, Bracknell, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Aug. 5, 1986, Ser. No. 893,272
Claims priority, application United Kingdom, Aug. 22, 1985, 8521082
Int. Cl.[4] A01N *37/10*; C07C *69/618*
U.S. Cl. 71—111 5 Claims

1. A compound having the general formula:



and stereoisomers thereof, wherein V is oxygen or sulphur; R is hydrogen or lower alkyl; X is hydrogen, C_{1-4} alkyl, C_{3-4} alkenyl, halogen, phenyl, naphthyl, pyridyl, pyrimidinyl, benzyl, phenoxy, benzyloxy, pyridyloxy, furyl, thienyl, benzothienyl or pyrrolyl, each aryl or heteroaryl moiety being optionally substituted with one or more of halogen, C_{1-4} alkyl, C_{1-4} alkoxy or halo C_{1-4} alkyl; and Y is hydrogen or halogen.

5. A fungicidal, or plant growth regulating composition comprising, as an active ingredient, a compound as claimed in claim 1 together with a carrier therefor.

4,802,914

PROCESS FOR AGGLOMERATING MINERAL ORE CONCENTRATE UTILIZING DISPERSIONS OF POLYMER BINDERS OR DRY POLYMER BINDERS

Meyer R. Rosen, Parsippany; Lawrence Marlin, Bridgewater, and Anthony C. Bracco, Howell, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 736,237, May 21, 1985. This application Sep. 5, 1986, Ser. No. 903,968
Int. Cl.[4] C22B *1/08*
U.S. Cl. 75—3 63 Claims

1. A process of agglomerating a particulate material consisting essentially commingling said particulate material with a binding amount of water soluble polymer, wherein said polymer is applied to said particulate material as a dispersion in a non-aqueous dispersion medium.

4,802,915

PROCESS FOR PRODUCING FINELY DIVIDED SPHERICAL METAL POWDERS CONTAINING AN IRON GROUP METAL AND A READILY OXIDIZABLE METAL

Nelson E. Kopatz, Sayre; Joseph E. Ritska, and Walter A. Johnson, both of Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 25, 1988, Ser. No. 185,713
Int. Cl.[4] B22F *9/24*
U.S. Cl. 75—0.5 AA 16 Claims

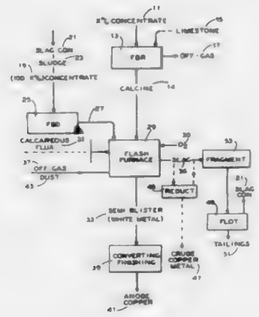
1. A process comprising:
(a) forming an aqueous solution containing at least one metal from the iron group metal,
(b) forming from said solution a reducible solid material selected from salts of said iron group metal, oxides of said iron group metal, hydroxides of said iron group metal and mixtures thereof,
(c) reducing said material to form metallic powder particles,
(d) entraining at least a portion of said powder particle in a carrier gas,
(e) feeding said entrained particles and said carrier gas into a high temperature zone and maintaining said particles in said zone for a sufficient time to melt at least about 50% by weight of said particles, and to form droplets therefrom and
(f) cooling said droplets to form metal particles having essentially a spherical shape,
(g) combining said spherical shaped particles with finely divided particles of at least one easily oxidizable metal in a non-oxidizing atmosphere to form an agglomerate and,
(h) subjecting said agglomerates to a sufficient temperature in a non-oxidizing atmosphere to form an alloy.

4,802,916

COPPER SMELTING COMBINED WITH SLAG CLEANING

Grigori S. Victorovich, Toronto; Carlos M. Diaz; Charles E. O'Neill, both of Mississauga; James A. E. Bell, Oakville, and Lloyd M. Timberg, Burlington, all of Canada, assignors to Inco Limited, Toronto, Canada

Filed Feb. 7, 1986, Ser. No. 827,086
Claims priority, application Canada, Mar. 20, 1985, 476986
Int. Cl.[4] C22B *15/00*
U.S. Cl. 75—24 9 Claims



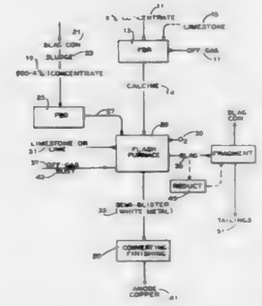
1. A process of oxidizing sulfidic copper ore concentrate containing iron and having a high iron to silica weight ratio to a copper metal product containing substantially no iron comprising charging to and autogenously combusting said sulfidic copper material containing iron in a bounded space with an oxygen-containing gas in the presence of a coolant at least part of which is a roasted copper concentrate and a calcareous flux to thereby provide a copper oxide-containing slag based upon the components CaO, FeO and Fe_2O_3 containing essentially all the iron and silica charged to said bounded space, a molten copper metal containing a small amount of white metal and an off-gas containing sulfur dioxide and thereafter cleaning said slag to recover metallic copper directly by said cleaning.

4,802,917

COPPER SMELTING WITH CALCAREOUS FLUX

Grigori S. Victorovich, Toronto; Carlos M. Diaz, and Charles E. O'Neill, both of Mississauga, all of Canada, assignors to Inco Limited, Toronto, Canada

Filed Feb. 7, 1986, Ser. No. 827,085
Claims priority, application Canada, Mar. 20, 1985, 476987
Int. Cl.[4] C22B *15/00*
U.S. Cl. 75—26 5 Claims



1. A process for the production of an iron-free, copper metallic copper product at least as rich in copper as semi-blister copper comprising charging a calcareous flux and an iron containing sulfidic ore concentrate from the group consisting of chalcopyrite concentrate and bornite concentrate having a high iron to silica ratio into a bounded space and autogenously combusting said sulfidic ore concentrate therein with an oxygen-containing gas in the presence of a coolant to thereby privide a slag based upon the components CaO, FeO and Fe_2O_3 containing essentially all the iron and silica of the charged materials, a molten copper metal and an off-gas containing sulfur dioxide.

4,802,918

CASE HARDENED STEEL AND METHOD OF MANUFACTURING THE SAME

Takao Ooki, Chita, and Jun Eguchi, Nagoya, both of Japan, assignors to Aichi Steel Works, Limited, Tokai, Japan

PCT No. PCT/JP86/00434, § 371 Date Apr. 3, 1987, § 102(e) Date Apr. 3, 1987, PCT Pub. No. WO87/01396, PCT Pub. Date Mar. 12, 1987
PCT Filed Aug. 22, 1986, Ser. No. 50,290
Claims priority, application Japan, Sep. 2, 1985, 60-193661
Int. Cl.[4] C22B *4/00*
U.S. Cl. 75—10.61 4 Claims

1. A case hardened steel consisting essentially of, by weight, 0.10–0.30% of carbon, not more than 0.50% of silicon, not more than 1.50% of manganese, not more than 0.012% of phosphorus, not more than 0.009% of sulfur, 0.020–0.040% of aluminum, not more than 0.0010% of oxygen, 0.0100–0.0200% of nitrogen and a member of members selected from the group consisting of 0.20–1.50% of chromium, 0.10–0.35% of molybdenum and 0.20–3.0% of nickel, the remainder being iron and inevitable impurities, said steel having a high reduction of area or more than 84% in warm forging and rated rolling fatigue strength B_{10} of $4.1–10.5\times10^7$ and an average rolling fatigue strength B_{50} of $9.7–24.6\times10^7$ after carburizing followed by quenching and tempering.

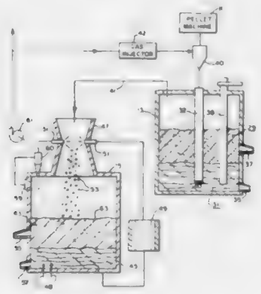
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4,802,919

METHOD FOR PROCESSING OXIDIC MATERIALS IN METALLURGICAL WASTE

Maurice G. Fey, Plum Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 6, 1987, Ser. No. 69,570
Int. Cl.[4] C21B *3/04*; C22B *7/02*
U.S. Cl. 75—25 **13 Claims**



1. A method for processing metallurgical waste from a ferrous metallurgical furnace comprising the steps of:
(a) collecting metallurgical dust containing oxides of metals which when reduced, form volatile and non-volatile metals;
(b) providing a reducing furnace containing a first metal bath and a reacting slag on the metal bath;
(c) heating in the reducing slag a mixture of the metallurgical dust and a carbonaceous material which react to form a vapor of volatile metal and non-volatile elemental metal;
(d) venting the volatile metal from the furnace; and
(e) directing the volatile metal through an inlet into a condenser for condensing the volatile metal into a second liquid metal bath.

9. A method of recovering lead and zinc from metallurgical waste from ferrous metallurgical furnace, comprising the steps of:
(a) collecting metallurgical dust containing oxides of metals which when reduced, form volatile elemental metal;
(b) compacting without heating a mixture of the dust, carbonaceous material, and silica into pellets;
(c) providing a reducing furnace containing a metal bath and a reacting slag;
(d) introducing the pellets into the reacting slag to reduce the dust into vapors of volatile metals and nonvolatile elemental metals with the nonvolatile elemental metal sinking from the slag into the metal bath;
(e) venting the vapors of the volatile metals from the furnace;
(f) directing the vapors through an inlet into a condenser for condensing the volatile metals into a liquid metal melt; and
(g) circulating the liquid metal melt to a location near said inlet and above the melt and spraying droplets of said melt into the vapor of volatile metal to cause the volatile metal vapor to condense on the surfaces of the droplets.

4,802,920

EXTRACTION OF METALS FROM AQUEOUS SOLUTIONS WITH ASPHALTENES

Simon G. Kukes, and Clifford E. Smith, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 18, 1985, Ser. No. 810,464
Int. Cl.[4] C22B *11/04*
U.S. Cl. 75—118 R **47 Claims**

1. A process for extracting at least one metal selected from the group consisting of gold, silver and combinations thereof from an aqueous solution containing said at least one metal, comprising:
(a) contacting said aqueous solution with an asphaltene to extract said at least one metal from said aqueous solution to said asphaltene; and
(b) recovering said thus extracted at least one metal from said asphaltene.

4,802,921

REFRACTORY COATING COMPOSITION

Hideo Motoki, Ibaraki, Japan, assignor to Minoru Fujii, Osaka, Japan

Continuation-in-part of Ser. No. 454,651, Dec. 30, 1982, abandoned. This application Sep. 14, 1984, Ser. No. 650,579
Claims priority, application Japan, Dec. 31, 1981, 56-213081
Int. Cl.[4] C09D *5/18*, *1/02*
U.S. Cl. 106—18.12 **6 Claims**

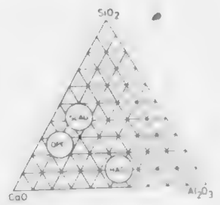
1. Refractory coating compositions comprising as the active components:
(A) 100 parts by weight of a water-soluble alkali metal silicate,
(B) 3 to 250 parts by weight of a hardening agent for the alkali metal silicate, and
(C) 100 to 600 parts by weight of a material, having an ability to release more than 15% by weight of the water contained therein when heated to 600° C., based on 100% by weight of the material at 100° C.

4,802,922

CAPSULES OF HIGH ALUMINA CEMENT COMPOSITIONS

Roderick M. Smart, Birmingham, United Kingdom, assignor to Fosroc International Limited, Birmingham, England

Filed Apr. 3, 1987, Ser. No. 34,526
Claims priority, application United Kingdom, Nov. 4, 1986, 8608715; Nov. 4, 1986, 8608716
Int. Cl.[4] C04B *7/19*
U.S. Cl. 106—89 **14 Claims**



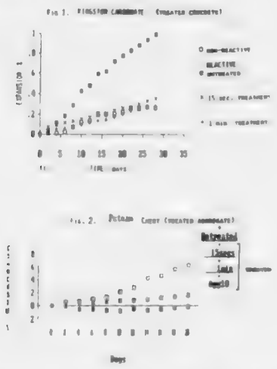
1. A frangible capsule containing in separate compartments the interactive components of a self-setting cementitious composition, one component being a base component and comprising high alumina cement, retarders, a reactive filler and water, and the other component being a catalyst component and comprising lime and water, wherein the fillers of the base component includes both CaO and SiO_2 in sufficient quantity such that when the interactive components are interacted the hydrate phases of a hydrated Portland cement are formed.

4,802,923

BENEFACTION OF CONCRETE AND AGGREGATE USING CALCIUM PHOSPHATE

Peter Hudec, 5755, Dalton Avenue, Windsor, Ontario, Canada (N1H 1M9)

Filed Jul. 14, 1987, Ser. No. 73,198
Claims priority, application Canada, Jul. 17, 1986, 514050
Int. Cl.[4] C04B *14/00*
U.S. Cl. 106—97 **12 Claims**



11. A wet concrete mixture adapted to prevent physical deterioration due to de-icing salt in pores and alkali reactivity of concrete produced with said wet mixture, and to increase its strength, said wet concrete comprising cement, aggregates, and water containing a solubilized calcium phosphate additive.

4,802,924

COATINGS BASED ON POLYDEXTROSE FOR AQUEOUS FILM COATING OF PHARMACEUTICAL FOOD AND CONFECTIONARY PRODUCTS

Edward J. Wozniicki, Douglassville, and Susan M. Grillo, Telford, both of Pa., assignors to Colorcon, Inc., West Point, Pa.

Filed Jun. 19, 1986, Ser. No. 876,186
Int. Cl.[4] A61K *9/00*
U.S. Cl. 427—3 **32 Claims**

1. A method of film coating pharmaceutical tablets, food, confectionery forms and the like with a protective film coating comprising the steps of
mixing polydextrose, plasticizer, detackifier, and secondary film former into water to form an aqueous coating suspension,
spraying an effective amount of said coating suspension onto said tablets to form a film coating on said tablets,
and drying the film coating on said tablets,
wherein the amount of polydextrose used is sufficient to yield improved results as compared to a similar coating absent polydextrose.

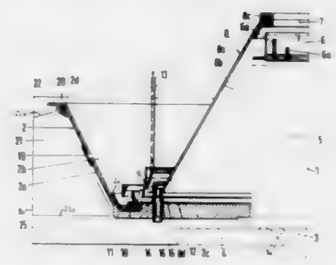
4,802,925

CONTINUOUSLY OPERABLE CENTRIFUGE FOR MASHING AND CENTRIFUGING OF SUGAR MASSECUITE

Helmut Schaper, Brunswick, and Heinrich Kurland, Erkerode-Lucklum, both of Fed. Rep. of Germany, assignors to Braunschweigische Maschinenbauanstalt AG, Brunswick, Fed. Rep. of Germany

Continuation of Ser. No. 2,955, Jan. 13, 1987, abandoned. This application Apr. 11, 1988, Ser. No. 183,290
Claims priority, application European Pat. Off., Jan. 18, 1986, 86710003.4
Int. Cl.[4] C13F *1/00*; B01D *33/00*
U.S. Cl. 127—19 **6 Claims**

1. A continuously operable centrifuge for mashing and centrifuging of sugar massecuite, comprising a vertical axis (1), a hub (5) rotatable about said vertical axis, a screen drum (2) and means mounting said screen drum to said hub for rotation about said vertical axis, said screen drum opening conically in an upward direction, said hub (5) reaching upwardly into the interior of said screen drum, massecuite filling and distributing means (6) mounted on top of said hub, downwardly opening conical precentrifuging acceleration bell means (8) mounted for rotation with said hub and reaching downwardly toward a bottom zone of said screen drum, said precentrifuging acceleration bell means (8) comprising a solid wall (8*a*) having an upper inlet end and a lower open discharge end, and a screen (8*b*) supported on said solid wall with a spacing between said solid wall and said screen (8*b*), a ring space (15) surrounding said lower discharge end of said solid wall (8*a*) for receiving liquid green run-off in said ring space (15), liquid discharge passages leading into said ring space for removing said green run-off, said precentrifuging acceleration bell means further comprising at its lower open discharge end a discharge rim (17) for discharging a precentrifuged crystalline mass, mashing means comprising a mashing ring (9) surrounding said discharge rim (17) with a radial spacing, said mashing ring (9) having a lower rim (9*a*) reaching close to a bottom of said screen drum (2), stationary mashing liquid supply means (14) having mashing liquid discharge openings extending to a level above said discharge rim (17) for supplying mashing liquid onto said mashing ring (9), said acceleration bell means having an opening angle larger than that of said screen drum (2), means mounting said mashing ring (9) for rotation with said hub, said mashing ring opening downwardly with a conical slope which is steeper than that of said screen drum and steeper than that of said precentrifuging acceleration bell means, and wherein said mashing liquid discharge openings of said stationary mashing liquid supply means (14) face in a direction toward a radially inner surface of said mashing ring (9) at a level above a zone on which said precentrifuged crystalline mass from said discharge rim (17) impinges on said mashing ring (9).



4,802,926

SPRAY DRIED LACTOSE AND PROCESS FOR PREPARING THE SAME

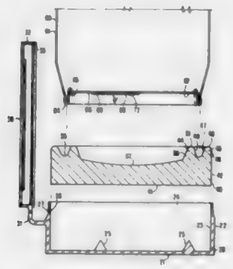
Klaas D. Kussendrager; Henricus A. M. van den Biggelaar, both of Veghel, and Herman Vromans, Een, all of Netherlands, assignors to DMV-Campina B.V., GE Veghel, Netherlands

Filed Mar. 18, 1987, Ser. No. 27,424
Claims priority, application Netherlands, Mar. 21, 1986, 8600731
Int. Cl.[4] C13K *5/00*
U.S. Cl. 127—31 **2 Claims**

1. Spray dried lactose products obtained by feeding a slurry of crystalline alpha-lactose hydrate in a saturated lactose solution to a spray dryer and drying the same, characterized in that from about 15 to about 50% by weight of the spray dried lactose is in amorphous form and at least 50% by weight of the lactose is in crystalline form, the crystalline particle size being less than about 45 micrometers.

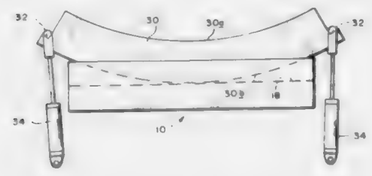
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4,802,927
BEVERAGE CAN CLEANER
Gary W. Barbour, 2108 E. St., Box 64, Chalmers, Ind. 47929
Filed May 20, 1987, Ser. No. 51,616
Int. Cl.[4] B08B *1/00*
U.S. Cl. 134—6 27 Claims



21. A method for cleaning the top of a beverage can, the top having a central surface and an axially extending annular rim surrounding the surface, the method comprising the steps of:
providing a cleaning sponge having an exterior upwardly extending annular cleaning rib, an interior upwardly extending annular cleaning rib and a rim-receiving groove disposed therebetween said groove having a bottom.
grasping the cleaning sponge;
positioning the sponge adjacent the top of the beverage can with the rim of the can disposed completely within the groove of the sponge;
pressing the sponge against the container;
rotating the sponge relative to the can while keeping the rim of the can within the groove of the sponge.

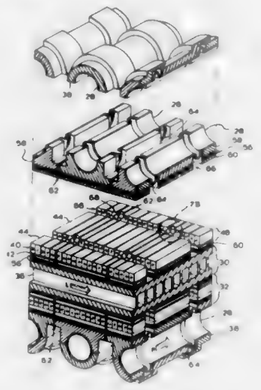
4,802,928
DOCTORING APPARATUS AND METHOD EMPLOYING PRESTRESSED DOCTOR BLADE
Harold E. Dunlap, St. Petersburg, Fla., assignor to Thermo Electron-Web Systems, Inc., Waltham, Mass.
Filed Aug. 13, 1984, Ser. No. 640,462
Int. Cl.[4] B08B *1/02*
U.S. Cl. 134—15 10 Claims



1. In the method of doctoring a moving surface by applying the elongate front edge of a doctor blade thereto while retaining the elongate rear edge of the blade in a blade holder, the improvement comprising: preloading the doctor blade to induce tensile and compressive stresses respectively in the front and rear edges thereof, said tensile and compressive stresses being oriented in the direction of blade length and the level of said tensile stresses being sufficient to prevent compressive stresses from developing at said front edge during doctoring as a result of linear expansion caused by frictional heat.

8. For use in doctoring a moving surface, a doctor blade assembly comprising:
a blade holder having a receiving slot defined at least in part by a substantially straight seating surface;
an elongate doctor blade dimensioned for insertion into said receiving slot, said doctor blade having a projecting front edge adapted to be placed in contact with said moving surface, and a rear edge adapted to be seated against said seating surface, said front and rear edges extending along the blade length and being respectively concave and convex when said blade is loosely received in said slot; and
force exerting means associated with said blade holder for urging said rear edge against said seating surface in order to straighten said front and rear edges and thereby induce tensile and compressive stresses in the direction of blade length respectively in the front and rear edges of said blade.

4,802,929
COMPLIANT THERMOELECTRIC CONVERTER
Alfred Schock, Bethesda, Md., assignor to Fairchild Industries, Inc., Chantilly, Va.
Filed Dec. 19, 1986, Ser. No. 943,795
Int. Cl.[4] H01L *35/04*
U.S. Cl. 136—205 10 Claims

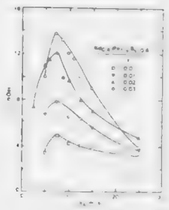


1. A thermoelectric converter comprising a hot surface, a plurality of thermoelectric cells bonded to said hot surface, said plurality of thermoelectric cells each having a waste heat conductor portion, a plurality of cooling pipes bonded to the waste heat conductor portions of said plurality of thermoelectric cells, and means for preventing the buildup of cumulative thermal stresses due to temperature differences and resultant thermal expansion differences between said hot surface and said cooling pipes, said means for preventing buildup of cumulative thermal stresses comprising means for accommodating differential thermal expansion in a first direction including a plurality of corrugations in said cooling pipes and means for accommodating differential thermal expansion in a second direction substantially perpendicular to said first direction including gaps located between adjacent thermoelectric cells.

4,802,930
AIR-ANNEALING METHOD FOR THE PRODUCTION OF SEAMLESS TITANIUM ALLOY TUBING
Harold D. Kessler, Sun City West, Ariz., assignor to Haynes International, Inc., Kokomo, Ind.
Filed Oct. 23, 1987, Ser. No. 111,600
Int. Cl.[4] C22F *1/18*; C22C *14/00*
U.S. Cl. 148—12.7 B 4 Claims

1. In an improved process for forming metastable beta phase titanium alloy products of the type comprising a series of at least one intermediate cold forming step followed by an annealing step and wherein the alloy is rapidly cooled after annealing to achieve optimum physical properties wherein the improvement comprises air annealing the alloy during at least one of the series of intermediate cold forming and annealing steps.

4,802,931
HIGH ENERGY PRODUCT RARE EARTH-IRON MAGNET ALLOYS
John J. Croat, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 508,266, Jun. 24, 1983, abandoned, which is a continuation-in-part of Ser. No. 414,936, Sep. 3, 1982. This application Oct. 26, 1983, Ser. No. 544,728
Int. Cl.[4] H01F *1/04*
U.S. Cl. 148—302 20 Claims



1. A permanent magnet in which the predominant phase is $(RE_{1-a}RE'_a)_2(Fe_{1-b}TM_b)_{14}B_1$ where RE is neodymium and/or praseodymium and comprises at least about 6 atomic percent of the magnet; RE' is one or more rare earth elements taken from the group consisting of yttrium, lanthanum, cerium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium and lutetium and where a is from 0 to about 0.4 and RE and RE' together comprise up to about 40 atomic percent of the magnet; TM is one or more transition metal elements taken from the group consisting of cobalt, nickel, manganese, chromium and copper where b is from 0 to about 0.4 and Fe comprises at least about 40 atomic percent, and Fe and T, together comprise up to about 90 atomic percent of the magnet; and B comprises at least from about 0.5 to about 10 atomic percent of the magnet, the magnet having intrisic magnetic coercivity of at least 1,000 Oersteds.

4,802,932
FLUORIDE-FREE FLUX COMPOSITIONS FOR HOT GALVANIZATION IN ALUMINUM-MODIFIED ZINC BATHS
Jeannine Billiet, Oudstrijderslaan, 3 (bus 26) B-9600 Ronse, Belgium
PCT No. PCT/BE87/00003, § 371 Date Nov. 4, 1987, § 102(e) Date Nov. 4, 1987, PCT Pub. No. WO87/05337, PCT Pub. Date Sep. 11, 1987
PCT Filed Mar. 3, 1987, Ser. No. 127,293
Claims priority, application Luxembourg, Mar. 4, 1986, 86339
Int. Cl.[4] B23K *35/34*
U.S. Cl. 148—23 18 Claims

1. Fluoride free flux composition for hot galvanization using aluminium modified molten zinc baths comprising by weight:
(1) 80 to 90% of $ZnCl_2$;
(2) 10 to 20% of NH_4C; and
based on the combined weight of the $ZnCl_2$ and the NH_4Cl, further including;
(a) 0.01 to 5% of a wetting agent.

4,802,933
NICKEL-PALLADIUM BASED BRAZING ALLOYS
Anatol Rabinkin, Morris Plains, N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Apr. 21, 1988, Ser. No. 184,324
Int. Cl.[4] C22C *5/04*
U.S. Cl. 148—403 9 Claims

1. An alloy having a composition represented by the formula:

$$Pd_aFe_bSi_cNi_{bal}$$

plus incidental impurities, where the subscripts "a", "b" and "c" are in atomic percent and "a" is in the range of about 38 and about 55, "b" is between about 19 and about 34.5, and "c" is in the range of about 11 to about 20.

4,802,934
SINGLE-CRYSTAL NI-BASED SUPER-HEAT-RESISTANT ALLOY
Takehiro Ohno, and Rikizo Watanabe, both of Yasugi, Japan, assignors to Hitachi Metals, Ltd., Japan
Filed Nov. 5, 1986, Ser. No. 927,109
Claims priority, application Japan, Nov. 18, 1985, 60-258078; Jun. 11, 1986, 61-135390
Int. Cl.[4] C22C *19/05*
U.S. Cl. 148—404 6 Claims

1. A single-crystal Ni-based super-heat-resistant alloy consisting essentially of, by weight percentage, 4 to 10% of Cr, 4 to 6.5% of Al, 4 to 10% of W, 4 to 9% of Ta, 2.9 to 6% of Mo, greater than impurity levels of 0.5% and not greater than 12% of Co, and the balance substantially Ni and impurities, wherein the contents of W, Ta and Mo are selected to meet the following conditions: $\frac{1}{2}W+\frac{1}{2}Ta+Mo=9.5$ to 13.5%; and at least one of Ta and W being less than 8%.

4,802,935
SUBSTRATE FOR A LITHOGRAPHIC PRINTING PLATE
Theodore J. Crona, New Martinsville, W. Va.; Heinz Bichsel, Henkhausen, Switzerland, and Jürgen Timm, Steisslingen, Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland
Continuation of Ser. No. 920,205, Oct. 17, 1986, abandoned. This application Dec. 29, 1987, Ser. No. 138,932
Claims priority, application Switzerland, Oct. 30, 1985, 4668/85
Int. Cl.[4] C22C *21/00*; B41N *1/08*
U.S. Cl. 148—437 1 Claim

1. An aluminum substrate for a lithographic printing plate consisting essentially of 1.1 to 1.8 wt. % iron, 0.1 to 0.4 wt. % silicon, 0.25 to 0.6 wt. % manganese, up to 0.3 wt. % copper, up to 0.8 wt. % magnesium, up to 2.0 wt. % zinc, 1.0 wt. % total of other elements which each individually do not exceed 0.3 wt. % in concentration, balance essentially aluminum wherein the sum of silicon and manganese is between 0.3 and 1.0 wt. % and said iron and manganese are present in a ratio of iron to manganese between 2.5 and 4.5, said substrate being characterized by improved mechanical properties including improved ductility and relatively high tensile and fatigue strengths, a fine substantially uniform surface structure suitable for roughening, a stable $Al_6(FeMn)$ phase that precipitates out on casting and is not transferred into an undesirable $AlFe_3$ phase during heat treatment, and a ternary AlFeSi phase which appears as a fine structure.

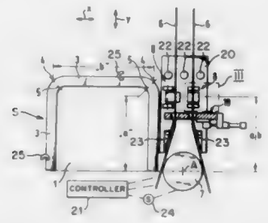
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METHOD AND APPARATUS FOR TAPING NONSTRAIGHT WORKPIECE EDGE

Wilhelm Riesmeier, Lübbecke, and Martin Rose, Espelkamp, both of Fed. Rep. of Germany, assignors to IMA-Norte Maschinenfabriken Klessmann GmbH & Co., Gütersloh, Fed. Rep. of Germany

Filed Nov. 30, 1987, Ser. No. 126,721
Int. Cl.[4] B65H *31/00*
U.S. Cl. 156—64 **9 Claims**



1. A method of adhering a tape to a corner-defining nonstraight edge of a generally planar workpiece with an apparatus comprising:

a stationary workpiece station;

means for retaining the workpiece in the station;

a roller engageable with the workpiece and rotatable on the carriage about an axis generally perpendicular to the workpiece plane; and

a supply of the tape and an adhesive on the carriage; the method comprising the steps of:

relatively displacing the roller and workpiece and thereby rolling the roller around the workpiece edge and over the corner thereof while pressing the tape with the roller against the workpiece edge and corner;

automatically monitoring the tape feed and determining which portion of the tape will be pressed over the edge corner;

cutting a notch in the tape at the portion to be pressed to the corner; and

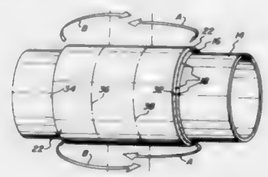
pressing the notched portion of the tape over the corner without overlapping the tape.

4,802,937

BELT AND TREAD TRANSFER RING AND DRUM EXPAND BLADDERS

Walter Szyms, Branford, Conn., assignor to The Armstrong Rubber Co., New Haven, Conn.

Filed Oct. 1, 1986, Ser. No. 913,991
Int. Cl.[4] B29D *23/00*
U.S. Cl. 156—118 **9 Claims**



1. In a process for fabricating reinforced structures adapted to be employed as belt and tread transfer ring bladders and belt and tread drum expand bladders in tire building operations the steps comprising, in the following sequence:

assembling a first continuous belt of partially cured rubber on a forming drum of cylindrical cross-section;

calendering at least one ply of rubber impregnated reinforcing material over substantially the whole of the surface of said first belt wherein said reinforcing material is selected from the group consisting of fabric and filaments;

assembling a second continuous belt of partially cured rubber over said rubber impregnated reinforcing material, said first and second belts having substantially the same width and having their edges substantially in registry with each other;

folding one edge of the resulting assembly inwardly towards the opposite edge of said assembly;

thereafter folding the opposite edge of said assembly inwardly so as to overlap the previously folded edge, the location of the overlap being in the area of the finished structure which will contact the workpiece in said tire building operations; and

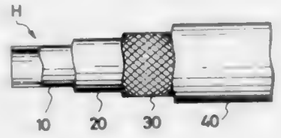
thereafter curing said assembly.

4,802,938

PROCESS FOR PRODUCING HOSES

Tetsu Kitami; Shigeru Igarashi, both of Kanagawa, and Katuya Ono, Gifu, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 878,689, Jun. 26, 1986, abandoned.
This application Aug. 11, 1987, Ser. No. 84,229
Claims priority, application Japan, Jun. 27, 1985 60-139091
Int. Cl.[4] B29C *35/02, 47/04*
U.S. Cl. 156—149 **8 Claims**



1. A process for the production of hoses having a plastic inner tube of reduced thickness, which comprises:

(a) extruding a thin layer of polyamide or polyester resin onto a mandrel to form an inner tube having a thickness in the range between 50 and 800 microns, said mandrel being releasable from said inner tube and preformed of polyamide or polyester, or vulcanized ethylene-propylene terpolymer rubber, butyl rubber or chlorobutyl rubber;

(b) laminating an outer tube of unvulcanized rubber by extrusion over said inner tube to form an integral hose body;

(c) vulcanizing said hose body; and

(d) removing said mandrel from said vulcanized hose body.

4,802,939

METHOD FOR ATTACHING A FASTENING TAPE TO A MOLDED ARTICLE

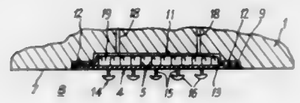
Patrick J. Billarant, and Bruno Queval, both of Charlotte, N.C., assignors to Aplix, S.A., Paris, France

Division of Ser. No. 676,951, Nov. 30, 1984, Pat. No. 4,693,921.
This application Sep. 4, 1987, Ser. No. 93,801
Claims priority, application France, Dec. 13, 1983, 83 19926; Jun. 26, 1984, 84 19933
Int. Cl.[4] A44B *21/00*; A41H *37/00*
U.S. Cl. 156—155 **9 Claims**

1. A method for securing a fastening member to an article to be molded, said fastening member being of the type characterized by having a base carrying numerous rows of hook-like projections for mating, releasable engagement with a loose, fibrous patch to form a fastener assembly, said method comprising the steps of:

(a) applying a thin, protective film to the fastening member to protect and sealingly enclose the hook-like projections around the entire periphery of the fastening member against leakage of molding liquid past the film onto the hook-like projections;

(b) placing the fastening member in a mold in a position wherein the hook-like projections will be exposed on the



surface of the completed molded article and introducing molding liquid to the mold;

(c) curing the molding liquid to form a solid; and

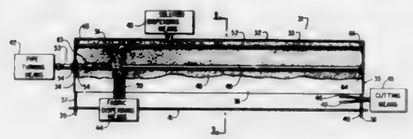
(d) removing the protective film from the fastening member after the molding liquid is cured to expose said hook-like projections for mating, releasable engagement with said patch.

4,802,940

METHOD FOR COATING PIPE WITH REFRACTORY MATERIAL

Harry P. Sullins, Columbia, S.C., assignor to Richland Industrial, Inc., Columbia, S.C.

Continuation of Ser. No. 521,451, Aug. 8, 1983, abandoned, which is a continuation-in-part of Ser. No. 386,638, Jun. 7, 1982, abandoned. This application Jul. 25, 1986, Ser. No. 887,969
Int. Cl.[4] B31B *1/00*
U.S. Cl. 156—187 **18 Claims**



1. A method for coating an elongated pipe with a coating composition, said method comprising:

mounting said pipe for axial rotation relative to a trough containing a solution of said coating composition;

passing a web of porous material from a web dispensing means through said trough in a position below the surface of said solution for coating said web, said web being passed around a bar mounted within said trough and having a web engaging surface below the surface of said solution;

securing said web to said pipe by placing a leading end portion of said web against said pipe to extend longitudinally along a portion of the outer surface of said pipe, wrapping an adjacent portion of said web around said pipe so that said leading end portion crosses under a first complete turn of said adjacent portion and extends beyond said first turn and between said first turn and a second complete turn of said adjacent portion, and tensioning said web such that said adjacent portion of the web is drawn tightly around said pipe, the tensioning of said web causing said leading end porton to be tucked tightly under said first turn and between said first turn and said second turn so as to lock the beginning of a wrapping of said web to said pipe;

turning said pipe to pull said secured web from said web dispensing means and to wrap additional portions of said secured web around said pipe, said secured web being pulled around said bar to coat said web with said solution before said additional portions thereof are wrapped around said pipe, and said secured web being pulled around a drag member having a stationary web contacting surface before being pulled around said bar, said drag member tensioning said web before said web is pulled around said bar; and,

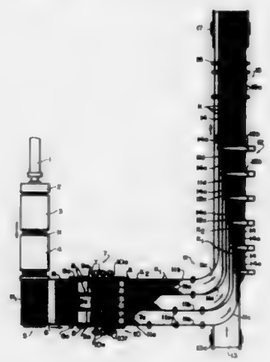
causing relative movement between said web dispensing means and said turning pipe in a direction parallel to the axis of said pipe to provide on the outer surface of said pipe a coating in the form of tightly wound spiral windings of said coated web extending along a coated length of said pipe.

4,802,941

METHOD OF MAKING WEBS, MATS AND THE LIKE OF REED-LIKE PLASTIC STRAWS FOR THATCHED ROOF

Max Koschorrek, Morzgerstrasse 38a, A-5020 Salzburg, Austria

Filed Apr. 6, 1987, Ser. No. 34,706
Claims priority, application Austria, Sep. 11, 1986, 2445/86
Int. Cl.[4] E04D *9/00*
U.S. Cl. 156—244.18 **15 Claims**



1. A method of making webs, mats and the like of reed-like plastic straws in a continuous automated fashion, whereby straw chains formed of straws of unequal length, arranged side by side and substantially in parallel, are affixed in an overlapping, scale-like manner to an elongated support sheet, said method comprising the steps of:

(a) arranging side by side and in parallel a plurality of plastic straws of equal lengths thereby forming a row of straws;

(b) severing said straws along at least one longitudinal axis of said row, with a varying ratio of division with a stamping tool automatically controlled to move transversely to said at least one longitudinal axis of said row thereby to form at least two straw chains having a straight edge on one side with the straw ends aligned together and a jagged edge on the opposite side with the severed straw ends unaligned;

(c) ordering said straw chains in adjacent, parallel relationship such that their straight edges are substantially parallel and are spaced apart a distance which is less than the width of said chains; and

(d) affixing said straw chains to a support sheet such that said straw chains overlap with their free jagged edges exposed.

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4,802,942

METHOD OF MAKING MULTILAYER COMPOSITE HOLLOW FIBERS

Toru Takemura, Ohtake; Hajime Itoh, Hiroshima; Jun Kamo, Ohtake, and Haruhiko Yoshida, Yamaguchi, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Division of Ser. No. 878,678, Jun. 26, 1986, Pat. No. 4,713,292. This application Sep. 1, 1987, Ser. No. 91,894

Claims priority, application Japan, Jun. 27, 1985, 60-141385

Int. Cl.⁴ B32B *31/16*

U.S. Cl. 156—244.13 **5 Claims**

1. A method of making a multilayer composite hollow fiber comprising (A) at least one nonporous separating membrane layer which performs a separating function and (B) at least two porous layers which perform a reinforcing function, said layer (A) and said layers (B) being alternately laminated together so as to give a structure having inner and outer surfaces formed by said layers (B), comprising the steps of:

(i) co-spinning a polymer (A') selected from the group consisting of (a) a non-crystalline polymer, (b) a crystalline polymer having a lower melting point than polymer (B'), (C) a crystalline polymer having a melt index greater than the melt index of polymer (B') and (d) a crystalline polymer containing a solvent or plasticizer which forms said separating membrane layer and a crystalline polymer (B') which forms said porous layers through a spinning nozzle of multiple tubular construction which sandwiches the spun polymer (A') between two layers of the spun polymer (B'), thereby forming a composite hollow fiber; and

(ii) stretching the resulting hollow fiber thereby imparting porosity to said layers (B) while leaving layer (A) nonporous.

4,802,943

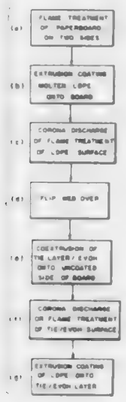
NON-FOIL COMPOSITE STRUCTURES FOR PACKAGING JUICE

Charles E. Gibbons; Cynthia L. Tanner, and Allan A. Whillock, all of Mobile, Ala., assignors to International Paper Company, Purchase, N.Y.

Division of Ser. No. 55,629, May 29, 1987. This application Jul. 29, 1988, Ser. No. 226,099

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—244.23 **6 Claims**



1. A process for improving the resistance of paperboard to the migration of essential oils and/or flavorings, said process comprising the steps of:

(a) flame treating a paperboard substrate on two sides;

(b) extrusion coating a 12 lb outer layer of a low density polyethylene polymer onto said outer surface of said paperboard;

(c) corona discharge treating said outer layer of low density polyethylene polymer;

(d) flipping the coated paperboard web over;

(e) coextruding an inner sandwich comprising a 4.5 lb tie layer, a 4.0 lb ethylene vinyl alcohol copolymer layer and a 4.5 lb tie layer onto said uncoated surface of said paperboard; and

(f) extruding a 10 lb heat-sealable low density polyethylene polymer layer onto said surface of said inner sandwich of tie layer-ethylene vinyl alcohol copolymer layer-tie layer.

4,802,944

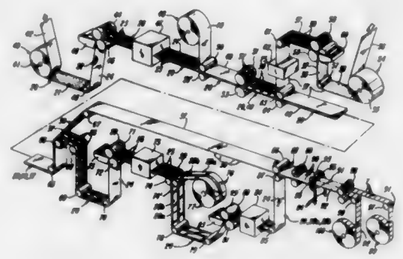
METHOD OF MAKING DEACTIVATABLE TAGS

S. Eugene Benge, Middletown, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 81,096, Aug. 3, 1987, abandoned, which is a continuation-in-part of Ser. No. 41,556, Apr. 22, 1987, which is a continuation-in-part of Ser. No. 912,466, Sep. 29, 1986, Pat. No. 4,717,438. This application Mar. 28, 1988, Ser. No. 177,815

Int. Cl.⁴ B32B *31/16*

U.S. Cl. 156—247 **4 Claims**



3. Method of making a deactivatable tag for use in an electronic article surveillance system, comprising the steps of: providing a first web with a first series of longitudinally spaced first spiral conductors and a second web with a series of longitudinally spaced second spiral conductors, providing spaced strips of conductive material having a layer of normally non-conductive material, positioning the strips with the normally non-conductive layer adjacent either the first or the second series of conductors, adhering the first and second webs to each other, connecting the conductors of the first and second webs to each other to provide a series of spaced resonant circuits in a composite web and there being one of said strips for each resonant circuit, separating the composite web into tags each having a first conductor and a second conductor coupled to each other, and wherein the normally non-conductive layer can be rendered conductive in response to an energy level higher than that level necessary to activate the tag.

4,802,945

VIA FILLING OF GREEN CERAMIC TAPE

Patricia B. Opina, Riverside, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 917,323, Oct. 9, 1986, abandoned. This application Mar. 23, 1988, Ser. No. 173,001

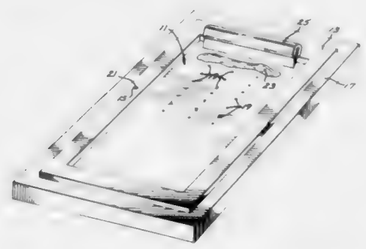
Int. Cl.⁴ B32B *31/18*

U.S. Cl. 156—247 **13 Claims**

1. A method of filling via holes disposed in a sheet of unfired pyrolyzable dielectric material with conductive material, said method comprising the steps of:

providing a sheet of unfired pyrolyzable dielectric material having a backing material secured to one surface thereof, the sheet of dielectric material and the backing material having a predetermined pattern of via holes disposed therein;

securing the sheet of dielectric material and its backing material to a support structure with the backing material exposed;



depositing conductive material into the via holes of the sheet of dielectric material using the backing material as a mask layer; and

separating the backing material from the sheet of dielectric material to provide a sheet of unfired dielectric material having conductive material disposed in the via holes thereof.

4,802,946

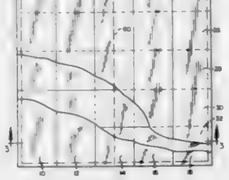
METHOD OF CONSTRUCTING LAMINATED PANELS

Howard C. Mason, 4421 SW. Coast, Lincoln City, Oreg. 97367

Filed May 21, 1987, Ser. No. 52,480

Int. Cl.⁴ B32B *31/12, 31/20*

U.S. Cl. 156—264 **6 Claims**



1. A method of making a laminated product, such as plywood and the like, from veneer pieces which comprises:

preparing veneer pieces having a common length "l" in their grain direction and a common width in a cross-grain direction, and wherein the width in the veneer pieces equals the length "l" divided by a whole number, the number being greater than one,

preparing a stack of first and second layers from the veneer pieces,

one of said layers being prepared with plural veneer pieces disposed side-by-side and parallel and abutting and extending in one direction and said preparation being performed with aligning the end edges of the veneer pieces, so that in said one direction, the layer has a dimension equaling "l",

the other of said layers being prepared with plural veneer pieces disposed side-by-side and parallel and abutting and extending in a direction normal to said one direction, and the preparation of said other layer being performed with a number of veneer pieces equaling said whole number to produce a layer where side edges of the veneer pieces on opposite sides of the layer are aligned with the aligned end edges of the veneer pieces in said one layer,

during preparing of the stack applying an adhesive between the layers, and

after preparing of the stack applying pressure and requisite temperature to bond the layers together.

4,802,947

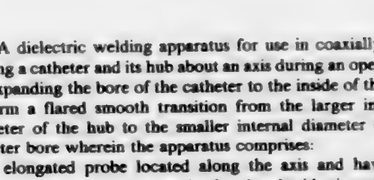
APPARATUS FOR ATTACHING A CATHETER TO A HUB

Victor L. Bartholomew, Sandy, Utah, assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Jul. 16, 1986, Ser. No. 887,004

Int. Cl.⁴ B29C *57/06, 65/04;* **B32B** *31/20*

U.S. Cl. 156—380.5 **3 Claims**



1. A dielectric welding apparatus for use in coaxially supporting a catheter and its hub about an axis during an operation for expanding the bore of the catheter to the inside of the hub to form a flared smooth transition from the larger internal diameter of the hub to the smaller internal diameter of the catheter bore wherein the apparatus comprises:

an elongated probe located along the axis and having a minor diameter at its proximal end and said minor diameter extending axially for carrying and supporting the catheter along the axis and a major diameter at its distal end for carrying the hub in axial alignment with the catheter;

a portion on said elongated probe disposed between said minor diameter and said major diameter with at least a part thereof having a flared transition extending outwardly and distally of said minor diameter toward said major diameter for producing a funnel shaped distal end on the catheter when it is place axially over said minor diameter and biased axially up onto said flared transition, and said major diameter extending axially for cooperating with the inside of the hub when the hub is coaxially positioned about the catheter distal end to axially align the hub with respect to the catheter forming an interface between at least the funnel shaped distal end on the catheter and the inside wall of the hub; and

a grounding support about the hub when positioned on said probe to receive dielectric energy across the interface between the catheter and hub and to carry the hub as said probe urges the catheter funnel shaped distal end into the inside wall of the hub.

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4,802,948

APPARATUS FOR PRODUCING INTERIOR TRIM COMPONENT FOR A MOTOR VEHICLE

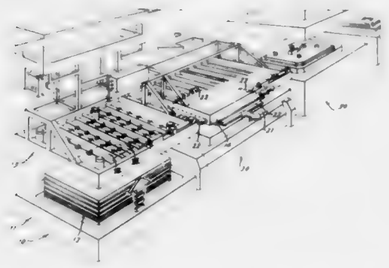
Willibald Zimmermann, Cologne; Klaus Hartmann, and Heinz Wessel, both of Gladbach, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 813,304, Dec. 24, 1985, Pat. No. 4,781,956. This application Dec. 5, 1986, Ser. No. 938,184

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1985, 3001354

Int. Cl.⁴ B32B *31/20*

U.S. Cl. 156—500 **6 Claims**



1. An apparatus for producing an interior trim component for a motor vehicle, said component comprising a compressed fiber base and a plastic sheet adhered to at least selected areas of a surface thereof, wherein selected portions of said base are less compressed and thicker than remaining portions of said base, said apparatus comprising a loading station followed by an alignment station followed by a shaping station followed by a sealing station, said shaping station comprising a male mold member and an opposed female mold member, said mold members being moveable relative one another into a closed position defining a gap between them of uneven thickness, whereby in said closed position said mold members are adapted to subject selected areas of a fibrous mat of substantially uniform thickness to different degrees of compression than remaining areas of said mat, and wherein said loading station comprises a first loading frame, a second loading frame and a support surface adapted to support a stack of fibrous mats, each of said loading frames comprising means for releasably gripping a fibrous mat to transport same and being vertically moveable independently of the other, said first loading frame being reciprocally moveably horizontally from a first position over said support surface to a second position over said alignment station, said second loading frame being reciprocally moveable horizontally from a first position over said alignment station to a second position over said shaping station.

4,802,949

APPARATUS FOR APPLYING AN EMBOSSING FOIL TO A FLEXIBLE MATERIAL

Reinwald Mitsam, Zirndorf, Fed. Rep. of Germany, assignor to Leonard Kurz, Furth, Fed. Rep. of Germany

Division of Ser. No. 742,216, Jun. 6, 1985, Pat. No. 4,701,235, which is a continuation of Ser. No. 476,192, Mar. 17, 1983, abandoned. This application Jul. 10, 1987, Ser. No. 71,893

Claims priority, application Fed. Rep. of Germany, May 6, 1983, 3210551

Int. Cl.⁴ B44C *1/16;* **B32B** *31/00;* **B30B** *5/02*

U.S. Cl. 156—540 **15 Claims**

1. Apparatus for applying an embossing foil to a portion of flexible material, comprising:

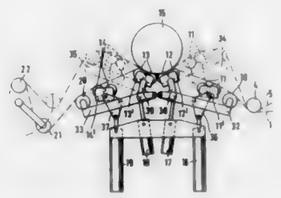
an embossing roller for embossing:

said flexible material:

means for heating said embossing roller;

an array of spaced apart pressure rollers having axes parallel to said embossing roller for movement into cooperation with said embossing roller to press said flexible material and embossing foil against said embossing roller, said array of pressure rollers including a sub-array of inner pressure rollers;

and means for controlling movement of said array of pressure rollers relative to said embossing roller in pressing said flexible material and embossing foil against said embossing roller to cause said sub-array of inner pressure rollers to be first displaced to engage said embossing roller and thence to cause said pressure rollers at respective sides of said inner pressure rollers sub-array to be progressively brought into engagement with said embossing roller.



4,802,950

ENAMEL-BONDING ETCHANT AND PROCEDURE

Theodore P. Croll, 4242 Mechanicsville Rd., Mechanicsville, Pa. 18934

Filed Apr. 12, 1988, Ser. No. 180,564

Int. Cl.⁴ B44C *1/22*

U.S. Cl. 156—629 **6 Claims**

6. A one-step tooth enamel-etching procedure for resin bonding in dentistry, comprising;

a. application of an etchant compound comprising phosphoric acid, fumed silica and silicon carbide particles to the surface of a tooth,

b. agitating said compound against the tooth with an applicator,

c. rinsing said compound from the tooth for less than 15 seconds, and

d. air-drying the surface of the tooth.

4,802,951

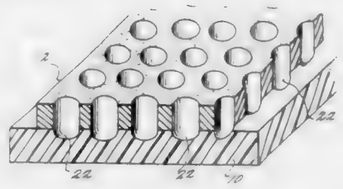
METHOD FOR PARALLEL FABRICATION OF NANOMETER SCALE MULTI-DEVICE STRUCTURES

Noel A. Clark; Kenneth Douglas, both of Boulder, Colo., and Kenneth J. Rothschild, Newton, Mass., assignors to Trustees of Boston University, Boston, Mass. and University of Colorado Foundation, Inc., Boulder, Colo.

Division of Ser. No. 837,376, Mar. 7, 1986, Pat. No. 4,728,591. This application Dec. 23, 1987, Ser. No. 136,992

Int. Cl.⁴ B44C *1/22;* **B05D** *3/06;* **G03C** *15/00, 5/00*

U.S. Cl. 156—630 **17 Claims**



1. A method of forming a pattern on a nanometer scale comprising the steps of:

binding to a substrate surface a self-assembled two-dimensionally ordered material array forming a two-dimensional spatial pattern of at least one of thickness, density and chemical reactivity variations, said pattern having a characteristic dimension of 1–50 nanometers,

forming at least one overlayer on said array; and

forming a two-dimension, nanometer scale pattern of holes in said overlayer which is determined by said pattern in said array.

4,802,952

METHOD FOR MANUFACTURING SEMICONDUCTOR ABSOLUTE PRESSURE SENSOR UNITS

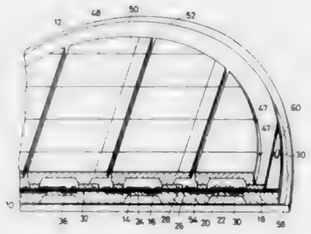
Shigeyuki Kobori; Kazuji Yamada, both of Hitachi; Ryoichi Kobayashi, Toukai; Atsushi Miyazaki, Katsuta, and Seikou Suzuki, Hitachiloota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 22, 1988, Ser. No. 158,750

Claims priority, application Japan, Mar. 6, 1987, 62-49981

Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*

U.S. Cl. 156—634 **4 Claims**



1. A method for manufacturing semiconductor absolute pressure sensor units comprising:

a step of preparing a semiconductor sensor wafer (**10**) of one conductivity type having a plurality of first recesses (**34**) formed on one surface thereof in matrix so as to constitute diaphragms (**36**), thick boundary area supporting and surrounding the first recesses (**34**), a plurality of piezoresistive elements (**14, 16**) of the other conductivity type formed on the other surface of the semiconductor sensor wafer (**10**) at the respective diaphragms (**36**), first conductive layer (**24**) forming a bridge circuit with the piezoresistive elements (**14,16**) at the respective diaphragms (**36**) and input and output terminals (**26**) therefor disposed on the thick boundary area of the respective diaphragms (**36**), glass layer (**32**) containing movable ions therein formed in matrix on the other surface of the semiconductor sensor wafer (**10**) over the thick boundary area, and second conductive strip layer (**28**) formed in contact with and in alignment with the glass layer (**32**);

a step of preparing a semiconductor cap wafer (**12**) of substantially the same thermal expansion coefficient as that of the semiconductor sensor wafer (**10**) having a plurality of second recesses (**44**) formed on one surface thereof in matrix, a plurality of first and second channels (**46, 47**) formed on the one surface in matrix adjacent to the second recesses (**44**) arranged in matrix, and cutting marks (**48, 50, 52**) formed on the other surface of the semiconductor cap wafer (**12**);

a step of aligning the semiconductor cap wafer (**12**) on the semiconductor sensor wafer (**10**) in such a manner that the second recesses (**44**) of the semiconductor cap wafer (**12**) overlie the respective diaphragms (**36**) of the semiconductor sensor wafer (**10**) from the other surface thereof so as to constitute reference pressure chambers (**38**) for the respective absolute pressure sensor units, the columns of the first channels (**46**) of the semiconductor cap wafer (**12**) overlie the input and output terminals (**26**) of the respective first conductive layers (**24**) and the columns of the second conductive strip layer (**28**) and the rows of the second channels (**47**) overlie the rows of the second conductive strip layer (**28**);

a step of applying a DC voltage between the semiconductor cap wafer (**12**) and the second conductive strip layer (**28**) on the semiconductor sensor wafer (**10**) in such a manner that the semiconductor cap wafer (**12**) is applied a positive potential and the second conductive strip layer (**28**) is applied a negative potential so as to bond the semiconductor cap wafer (**12**) to the semiconductor sensor wafer (**10**) with the glass layer (**32**) containing movable ions through anodic bonding process; and

a step of cutting the bonded semiconductor cap wafer (**12**) and semiconductor sensor wafer (**10**) along the cutting marks (**48, 50, 52**) on the other surface of the semiconductor cap wafer (**12**) so as to produce a plurality of semiconductor absolute pressure sensor units.

4,802,953

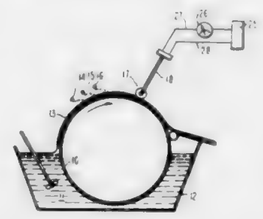
CONTINUOUS ON-LINE CONDUCTIVITY PROBE

Scot D. Hoeksema, Elkridge, and William H. Williams, Ellicott City, both of Md., assignors to Westvaco Corporation, New York, N.Y.

Filed Oct. 9, 1987, Ser. No. 106,506

Int. Cl.⁴ D21C *7/06;* **G01R** *27/02*

U.S. Cl. 162—263 **7 Claims**



1. Apparatus for measuring the soda loss of a mat of fibrous pulp during washing as determined by the conductivity of the liquor in the pulp mat comprising:

(a) a rotating filter screen having an outer surface;

(b) a fibrous pulp mat containing liquor on the outer surface of said filter screen;

(c) a support arm located adjacent to said filter screen;

(d) a rotating conductivity probe mounted on said support arm for rotation about a central axis through said probe, said probe comprising a pair of electrodes in side-by-side relation, spaced from one another by a layer of non-conductive material, and bound to the non-conductive material, said electrode being spaced apart a distance sufficient to prevent inadvertent leakage of current across said non-conductive material;

(e) means associated with said support arm for urging said conductivity probe into intimate contact with said fibrous mat with sufficient force to express a portion of the liquor from the fibrous mat; and,

(f) means for passing a current between said electrodes and through the liquor expressed from the fibrous mat to generate a signal corresponding to the instantaneous conductivity of said liquor.

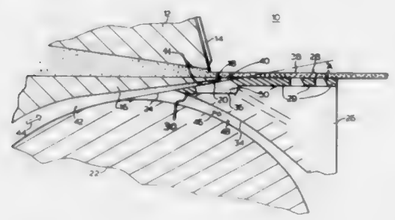
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4,802,954

FORMING BOARD FOR PAPERMAKING MACHINE

Alexander Maloshenko, Dollard des Ormeaux, Canada, assignor to Valmet-Dominion Inc., Lachine, Canada

Continuation of Ser. No. 932,588, Nov. 20, 1986, abandoned. This application Jun. 6, 1988, Ser. No. 203,631
Int. Cl.⁴ D21F *1/10*
U.S. Cl. 162—348 **10 Claims**



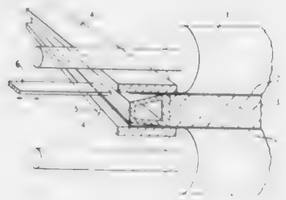
1. A papermaking machine comprising:
a forming wire;
a headbox for producing a jet of paper stock, the headbox including a lower slice lip having an apron; and,
a forming board having a rear section spaced rearwardly of the apron in the direction of paper stock travel to provide a gap between the apron and rear section, the rear section being positioned substantially in alignment with the apron, the forming board including a lead-in blade angled with respect to the rear section and projecting downwardly below the substantial alignment of the rear section and the apron, the forming wire passing over the lead-in blade and changing direction of travel as the wire passes through the gap to a direction of travel in alignment with the apron as the forming wire travels over the rear section such that the jet of paper stock leaving the headbox passes across the gap and is laid onto the forming wire travelling over the rear section of the forming board at substantially zero degrees angle of impingement to thereby minimize disturbance of the paper stock and minimize drainage as the stock leaves the headbox and impinges the wire.

4,802,955

DEWATERING BAND PRESS SIDE SEALS

Ilpo Koski, Pori, Finland, assignor to Rauma-Repola Oy, Pori, Finland

Filed Nov. 5, 1987, Ser. No. 117,636
Claims priority, application Finland, Nov. 5, 1986, 864502
Int. Cl.⁴ B01D *33/04*
U.S. Cl. 162—301 **2 Claims**



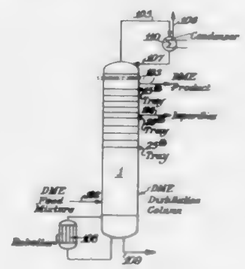
1. A dewatering band press, comprising:
a pair of rolls having ends and a spacing between the rolls;
two wires extending between the pair of rolls and pressed together by said rolls so as to retain a material to be dewatered that is fed between the two wires so as to form a pulp web, said wires adapted to move between the pair of rolls in a run direction;
two rails placed outside the ends of the rolls, each of the rails being at a level of a respective one of the pair of rolls and extending in the run direction such that a spacing between the rails is substantially equal to the spacing between the pair of rolls;
the wires being wider than and extending beyond the ends of the rolls so as to extend between said rails;
a sealing beam located between the rails and the wires, the thickness of the sealing beam being substantially equal to the spacing between the rolls less a thickness of the wires.

4,802,956

PROCESS FOR THE PURIFICATION OF DIMETHYLETHER BY DISTILLATION

Horst Dornhagen; Hartmut Hammer, and Ewald Meisenburg, all of Union Kraftstoff AG, Postfach 1663, D-5047 Wesseling, Fed. Rep. of Germany

Filed Nov. 20, 1986, Ser. No. 933,035
Int. Cl.⁴ B01D *3/14*; C07C *41/42*
U.S. Cl. 203—42 **7 Claims**



1. A process for the purification of dimethylether by distillation of a dimethylether feed mixture which contains methanol and impurities which comprises feeding the feed mixture which contains dimethylether, methanol and impurities into a distillation column containing a plurality of trays below the twentyfifth tray from the top of the column, withdrawing pure dimethylether from the column above the fifteenth tray from the top of the column, withdrawing an impurity fraction stream which contains impurities with lower boiling points than that of methanol from the column at least five trays above the tray at which said mixture is fed into the column, and withdrawing head gases from the top of the column and methanol from the bottom.

4,802,957

METHOD FOR MEASURING THE WATER CONTENT OF A SOLID SAMPLE USING KARL FISCHER'S COULOMETRIC TITRATION

Sinichi Kuwata, Machida; Hironosa Katoh, Tama, and Mitsumasa Ono, Ebina, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Japan

Filed Apr. 10, 1986, Ser. No. 850,527
Claims priority, application Japan, Apr. 26, 1985, 60-90520
Int. Cl.⁴ G01N *31/16, 33/18*
U.S. Cl. 204—1 T **4 Claims**

1. A method for measuring the water content of a solid substance comprising the following steps:
heating a solid substance to vaporize any water therein;
contacting any water vapor formed in the heating step with an electrolytic solution for Karl Fischer's coulometric titration, wherein the electrolytic solution consists essentially of:

(1) 0.1 to 3 percent by weight, calculated as free iodine, of an iodide or iodine;
(2) sulfur dioxide;
(3) an amine selected from the group consisting of pyridine derivatives, imidazole, and imidazole derivatives; and



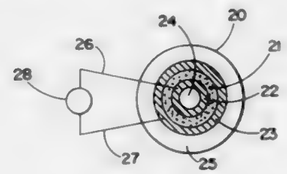
(4) a solvent which is a mixture of (a) from 3 to 30 percent by volume, based on the electrolytic solution, of a polyhydric alcohol or an ether compound thereof, (b) methanol, and (c) a halogenated hydrocarbon or an aromatic hydrocarbon; and
measuring the water content of the electrolytic solution by Karl Fischer's coulometric titration.

4,802,958

PROCESS FOR THE ELECTROCATALYTIC OXIDATION OF LOW MOLECULAR WEIGHT HYDROCARBONS TO HIGHER MOLECULAR WEIGHT HYDROCARBONS

Terry I. Mazanec, Solon, and Thomas L. Cable, Newbury, both of Ohio, assignors to The Standard Oil Company, Ohio

Filed Mar. 17, 1987, Ser. No. 26,663
Int. Cl.⁴ C25B *3/02*
U.S. Cl. 204—80 **21 Claims**



13. An electrocatalytic process for producing higher molecular weight hydrocarbons from methane in an electrogenerative cell which comprises
(A) providing a fuel cell comprising a solid electrolyte having a first surface coated with a conductive coating comprising metal, metal oxide or mixtures thereof capable of catalyzing the reduction of oxygen to oxygen ions, and a second surface coated with a conductive coating comprising a mixture of
(i) silver-containing compositions, and
(ii) at least one alkali metal or metal oxide and at least one alkaline earth metal or metal oxide the two conductive coatings being connected by an external circuit, wherein the first conductive surface is a cathode and the second conductive surface is the anode,
(B) passing an oxygen-containing gas in contact with the first conductive coating at a temperature of about 700° C. to about 950° C. while
(C) passing methane in contact with the second conductive coating at a temperature of about 700° C. to about 950° C., and
(D) recovering higher molecular weight hydrocarbons.

4,802,959

ELECTROSYNTHESIS OF PERSULFATE

Marek Lipsztajn, Rexdale, Canada, assignor to Tenneco Canada Inc., Islington, Canada

Filed Jan. 16, 1987, Ser. No. 62,637
Int. Cl.⁴ C25B *1/28*
U.S. Cl. 204—82 **12 Claims**

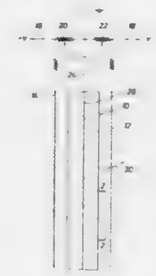
11. A method for the production of peroxydisulfuric acid, a salt thereof or a mixture of said acid and salt, which comprises electrolyzing at a temperature below about 25° C. an aqueous acid reaction medium having a pH below about 5 and containing sulfate ions provided by a sulfate ion source selected from a water-soluble sulfate, sulphuric acid and a mixture thereof using an anode having a glassy carbon surface in the presence of about 0.0002 to about 0.025 moles/L of fluoride ions to form peroxydisulfate ions at said anode.

4,802,960

ELECTROCHEMICAL CELL AND PROCESS EMPLOYING A BIASING ELECTRODE

Glenn A. Eisman, Nassau Bay, and Lloyd E. Alexander, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

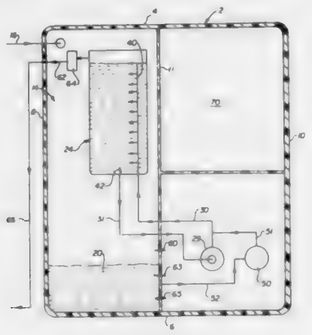
Filed Feb. 4, 1986, Ser. No. 826,162
Int. Cl.⁴ C25B *1/16, 1/26*
U.S. Cl. 204—98 **12 Claims**



1. A method of operating a galvanic or electrolytic cell involving ionic movement where the cell has a central separator spanning the cell and permitting controlled ionic movement, the cell further having spaced anode and cathode electrodes on opposite sides of the separator, the method of operation comprising the steps of:
(a) applying DC voltage to anode and cathode electrodes of the cell having an aqueous solution of salt dissolved therein to form OH ions in the vicinity of the cathode while also forming metal ions in the vicinity of the anode;
(b) selectively transferring a species of ions across the separator in response to electrical attraction acting on the transferred ions wherein the attraction assists in ionic transfer and wherein transfer is accompanied by an unwanted transfer of a second species of ions across said separator;
(c) positioning a screen electrode with the separator wherein said screen is formed by embedding particulate conductive material in said separator and forming a conductive pathway through said particulate material; and
(d) applying a selected bias voltage to the screen, the bias voltage being independent of the DC voltage between the electrodes, to form a voltage bias repelling the second species of ions from transfer through the separator while permitting the first species of ions to pass through.

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4,802,961
SILVER REMOVAL APPARATUS AND METHOD
Manfred J. Woog, 1960 "B" St., and Charles W. Schmidt, 340 School St., both of Craig, Colo. 81625
Filed Dec. 23, 1987, Ser. No. 137,272
Int. Cl.[4] C25C *1/20*; C25B *15/08*
U.S. Cl. 204—109 **27 Claims**



20. A method of recovering silver from photographic process solutions including

providing a housing having an unprocessed solution reservoir and an electrolytic cell containing an anode and a cathode disposed in relative spaced relationship,

providing pump means for delivering unprocessed solution to said cell,

maintaining said solution in said cell in a state of turbulence,

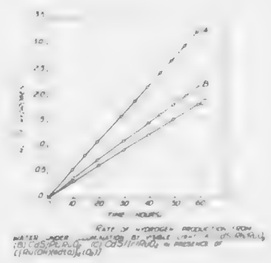
providing said pump means with a circulating pump for receiving solution from said cell and returning said solution to said cell and metering pump means for providing additional solution to said cell, and

periodically adding unprocessed solution to said cell directly or by means of said metering pump.

4,802,962
TREATMENT OF CATHODES FOR USE IN ELECTROLYTIC CELL
John F. Cairns, Cheshire, England, assignor to Imperial Chemical Industries PLC, London, England
Continuation of Ser. No. 640,936, Aug. 15, 1984, abandoned. This application Jan. 29, 1988, Ser. No. 149,927
Claims priority, application United Kingdom, Aug. 22, 1983, 8322563; Jan. 30, 1984, 8402347; Feb. 7, 1984, 8403177
Int. Cl.[4] C25F *1/00*
U.S. Cl. 204—145 R **13 Claims**

1. A method of treating the surface of a cathode in order to remove therefrom deposited iron, the cathode comprising a metallic substrate at least part of the surface of which has been activated in order to reduce the hydrogen overvoltage at the cathode when the cathode is used in the electrolysis of water or aqueous solutions, and the method comprising removing the iron deposited upon the activated surface of the cathode by contacting the activated surface with a liquid medium which reacts with and solubilizes the deposited iron, wherein, the cathode is in position in a electrolytic cell and the method is effected by contacting the cathode with the liquid medium in situ in the electrolytic cell, and wherein, the electrolytic cell contains a cation permselective membrane and wherein, the liquid medium is an aqueous solution which contains one or more soluble organic compounds selected from the group consisting of sucrose and an organic polymeric material.

4,802,963
PROCESS FOR THE PHOTOCATALYTIC DECOMPOSITION OF WATER INTO HYDROGEN AND OXYGEN
Mirza M. T. Khan; Ramesh C. Bhardwaj, and Chhaya Bhardwaj, all of Gujarat, India, assignors to Council of Scientific & Industrial Research, New Delhi, India
Filed Aug. 6, 1987, Ser. No. 82,816
Int. Cl.[4] C25G *1/02*
U.S. Cl. 204—157.5 **11 Claims**



1. A process for the photocatalytic decomposition of water into hydrogen and oxygen which comprises loading a semiconductor having a hexagonal crystal structure with a metal selected from Pt, Rh, Ir and In and a transition metal oxide, suspending the loaded semiconductor in an aqueous solution of dioxygen complex of ruthenium, passing light through the suspended loaded semiconductor maintained under an inert atmosphere and separating the hydrogen and oxygen so formed.

4,802,964
LIQUID SEPARATION PROCESS FOR SUSPENSIONS BY A PULSATING ELECTRICAL CURRENT
Harapanahalli S. Muralidhara, Dublin, and Cecil L. Criner, Columbus, both of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio
Filed Dec. 8, 1986, Ser. No. 938,707
Int. Cl.[4] B01D *57/02*
U.S. Cl. 204—180.1 **1 Claim**

1. A method of dewatering an aqueous suspension of melcone corn fiber slurry or corn gluten in a dewatering chamber with an inlet and discharge outlet, and having two electrodes, one of which is water permeable, forming opposing walls of the dewatering chamber, which method comprises:

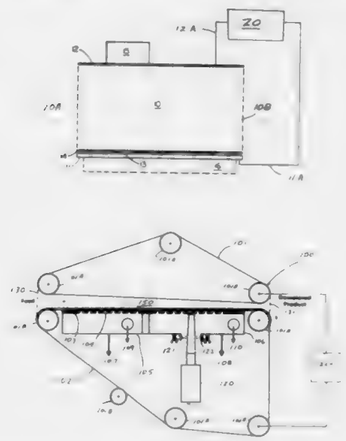
a. flowing the suspension into the dewatering chamber and between the two electrodes;

b. applying a pulsating D.C. electrical field concurrently with step a between the two electrodes for at least about 15 minutes at a pressure of not more than about 20 inches of mercury, a voltage of at least about 58, a current of at least about 450 milliamperes, and a pulse cycle of about 27 seconds on and about 33 seconds off for a melcone suspension, and for at least about 20 minutes at a pressure of not more than about 4 inches of mercury, a voltage of at least about 11, a current of at least about 2.8 amperes, and a pulse cycle of about 0.01 second on and about 0.01 second off for a gluten suspension, to cause suspended particles to migrate away from the water permeable electrode and water toward the permeable electrode;

c. concurrently with step b removing water from the suspension through the water permeable electrode; and

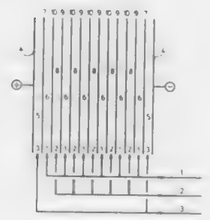
d. removing the dewatered suspension from the dewatering

chamber, whereby the total amount of energy employed for separating a unit of water from the suspension is less



than would be required by use of a D.C. electrical field to separate the unit of water.

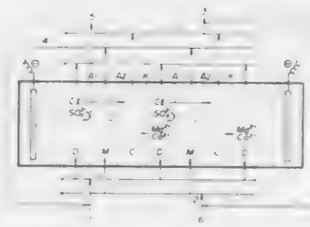
4,802,965
CONCENTRATING AQUEOUS SOLUTIONS OF ORGANIC COMPOUNDS WHICH CONTAIN SALTS, WITH SIMULTANEOUS REDUCTION OF THE SALT CONTENT
Hermann Puetter, Neustadt, and Eckhard Roske, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Dec. 16, 1985, Ser. No. 809,582
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1984, 3446695
Int. Cl.[4] B01D *13/02*
U.S. Cl. 204—182.4 **16 Claims**



1. In a process for concentrating an aqueous solution of an organic compound which contains a salt, with simultaneous reduction of the salt content of this solution, the improvement which comprises:

subjecting the salt-containing aqueous solution of the organic compound as the diluate to electrodialysis, using a concentrate of an aqueous salt solution which is greater than 1 molar.

4,802,966
METHOD FOR TREATING LIQUID USED FOR ABSORBING GASEOUS SULFUR DIOXIDE IN THE PROCESS FOR DESULFURIZATION OF COMBUSTION EXHAUST GAS
Haruo Aoki, and Yoshihiko Kudo, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 16, 1987, Ser. No. 39,478
Claims priority, application Japan, Apr. 17, 1986, 61-89007
Int. Cl.[4] C25B *7/00, 13/00*
U.S. Cl. 204—182.4 **9 Claims**



1. A method for treating a liquid used for absorbing gaseous sulfur dioxide in the wet process for desulfurization of a combustion exhaust gas of the gypsum-by-producing type so as to remove chloride ions from said liquid wherein said liquid has been saturated with gypsum, has dissolved at least magnesium sulfate and magnesium chloride and has been used for absorbing gaseous sulfur dioxide, the method comprising the steps of conducting a clarification treatment and afterward passing said liquid through an electrodialyzer having three dialyzing chambers which comprise one sheet of cation-exchange membrane and two sheets of membrane selectively permeable to monovalent anions as one unit, and thereby selectively separating and removing chloride ions fom said liquid as an aqueous solution of magnesium chloride of a high concentration.

4,802,967
SURFACE TREATMENT OF POLYMERS
Wilfred C. Kittler, Thousand Oaks, Calif., assignor to Andus Corporation, Canoga Park, Calif.
Filed Apr. 8, 1987, Ser. No. 35,846
Int. Cl.[4] C23C *14/34, 14/06*
U.S. Cl. 204—192.14 **10 Claims**

1. A method of improving bondability of a polymeric material, which comprises:

(a) providing a polymeric material having a surface of low critical surface tension; and

(b) sputtering onto said surface a layer consisting essentially of carbon and having a thickness less than 300 angstroms, said layer being transparent to the naked eye.

4,802,968
RF PLASMA PROCESSING APPARATUS
Howard A. Hendrix, Morgan Hill; Howard W. Schmidt, Jr., Gilroy, and Ernest S. Ward, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 29, 1988, Ser. No. 150,361
Int. Cl.[4] C23C *14/40*
U.S. Cl. 204—298 **8 Claims**

1. Sputtering apparatus for coating a substrate comprising:

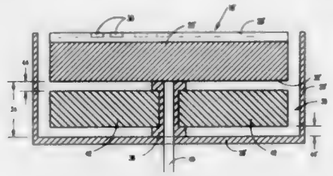
a first electrode and means for supporting a target member of a suitable material on said first electrode;

a second electrode having a front portion, peripheral portions and a back portion and means for supporting on said front portion a substrate positioned adjacent to and in alignment with said first electrode;

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a source of RF power arranged to impose an RF voltage across said first and said second electrodes to produce a glow discharge in the space between said first and said second electrodes;

shield means surrounding said peripheral and said back portions of said second electrode, said shield means being spaced from said back region of said second electrode to



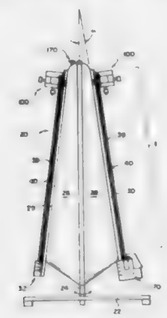
form a back space, said back space being substantially filled with means for electrically insulating said shield means from said second electrode, said means for electrically insulating being spaced a small substantially uniform distance from said shield means whereby maximum RF impedance to ground is provided and spurious sputtering is eliminated from said peripheral and said back regions of said second electrode.

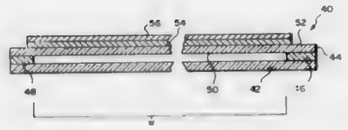
4,802,969

GEL PLATE ASSEMBLY FOR ELECTROPHORESIS

Robert R. Hellman, Jr., Southbury, Conn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 28, 1988, Ser. No. 187,668
Int. Cl.⁴ G01N *27/26, 27/28*
U.S. Cl. 204—299 R 3 Claims





1. For use in an electrophoresis device for electrophoretically separating charged compounds, the device comprising at least one support for mounting at least one gel plate assembly;

a gel plate assembly comprising a glass plate having a front surface and a rear surface, and means for confining a gel in contact with said front surface over a flow surface area, said rear surface being bonded substantially over the entire area in back of the flow surface area to means for evenly distributing temperature over said flow surface area,

whereby temperature is more effectively distributed than a similar construction wherein said rear surface merely rests in contact with a temperature-distributing means,

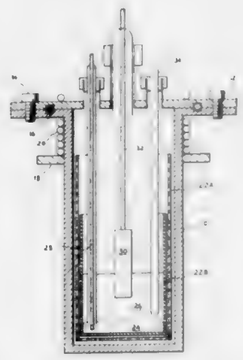
and further including a mirror coating on said rear surface, between said temperature-distributing means and said gel plate assembly.

4,802,970

PROCESS FOR PREPARING FLUORINE BY ELECTROLYSIS OF CALCIUM FLUORIDE

Gleb Mamantov, Knoxville, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 31, 1988, Ser. No. 200,093
Int. Cl.⁴ C25B *1/00*
U.S. Cl. 204—60 6 Claims



1. A process for producing fluorine from calcium fluoride comprising:

(a) dissolving calcium fluoride in a molten salt electrolyte containing an alkali tetrafluoroborate; and

(b) electrolyzing the electrolyte at a temperature below 400° C. between an anode selected from a carbon material and nickel and a cathode selected from lead, tin, zinc, and tin/zinc alloy.

4,802,971

SINGLE RISER FLUIDIZED CATALYTIC CRACKING PROCESS UTILIZING HYDROGEN AND CARBON-HYDROGEN CONTRIBUTING FRAGMENTS

Joseph A. Herbst, Turnersville; Hartley Owen, Belle Mead, both of N.J., and Paul H. Schipper, Wilmington, Del., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 903,183, Sep. 3, 1986, abandoned. This application Jan. 14, 1988, Ser. No. 144,706
Int. Cl.⁴ C10G *51/04, 51/06*
U.S. Cl. 208—13 16 Claims

1. A riser catalytic cracking process which comprises

(a) generating at least one of hydrogen species and carbon-hydrogen fragments by cracking in the base of the riser a hydrogen-rich hydrocarbon feed containing 12 to 25 weight percent hydrogen, in the presence of a mixture of cracking catalysts of comprising (1) at least one member of the group selected from amorphous cracking catalysts, large pore crystalline cracking catalysts and admixtures thereof and (2) a shape selective zeolite catalyst wherein said generated hydrogen species and carbon-hydrogen fragments from an intermediate product; and,

(b) contacting the mixture of catalyst and intermediate product with a thermally treated heavy hydrocarbon feed

downstream of the base of the riser and catalytically cracking the heavy feed to lighter products.

4,802,972

HYDROFINING OF OILS

Simon G. Kukes, Naperville, Ill., and Jerald A. Howell, Lake Jackson, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 10, 1988, Ser. No. 154,734
Int. Cl.⁴ C10G *47/34*
U.S. Cl. 208—107 20 Claims

1. A hydrofining process comprising the step of contacting a substantially liquid hydrocarbon-containing feed stream, which contains Ramsbottom carbon residue and also materials boiling in excess of about 1000° F. under atmospheric pressure conditions, with a free hydrogen-containing gas and a catalyst composition comprising at least one catechol compound of molybdenum,

in the substantial absence of solid material, and under such hydrofining conditions as to obtain at least one liquid hydrocarbon-containing product stream containing lower amounts of Ramsbottom carbon residue and lower amounts of said materials boiling in excess of about 1000° F. than said hydrocarbon-containing feed stream;

wherein said at least one catechol compound of molybdenum has been prepared by reacting, under non-reducing conditions, (a) at least one compound comprising molybdenum and oxygen with (b) an aromatic compound containing an aromatic ring of carbon and hydrogen and at least two OH groups in positions adjacent to one another.

4,802,973

REMOVAL OF HYDROGEN SULPHIDE

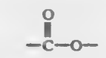
Philip K. G. Hodgson, Walton-on-Thames; Julie A. McShea, Shepperton, and Edward J. Tinely, Farnham, all of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Jan. 28, 1987, Ser. No. 7,476
Claims priority, application United Kingdom, Jan. 30, 1986, 8602250
Int. Cl.⁴ C10G *27/00*
U.S. Cl. 208—207 10 Claims

1. A method for scavenging hydrogen sulphide from a feedstock comprising crude oil and hydrogen sulphide which method comprises treating the feedstock with a reactant consisting essentially of a compound of general formula



where any two or more of R^1–R^4 are separate organic groups containing electronegative functional groups selected from the group consisting of ketonic, amino, nitrilic and



groups, and the remaining two or less of R^1–R^4 are hydrocarbyl groups, or hydrogen atoms and wherein the hydrocarbyl groups, when present, are selected from the group consisting of alkyl groups containing 1 to 18 carbon atoms, aryl groups and alkyl aryl groups wherein the alkyl moiety contains 1 to 18 carbon atoms, and reacting the compound in the liquid phase with the hydrogen sulphide contained therein, the compound being used in amount 1 to 50 times the amount of hydrogen sulphide present, on a molar basis.

4,802,974

HYDROFINING EMPLOYING TREATED ALUMINA MATERIAL IN FIXED BEDS

Simon G. Kukes, and Jesse R. Harris, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 12, 1987, Ser. No. 25,299
Int. Cl.⁴ C10G *45/08, 45/60*
U.S. Cl. 208—217 29 Claims

1. A hydrotresting process comprising the step of contacting a substantially liquid hydrocarbon-containing feed stream, which also contains compounds of sulfur and metals, with a free hydrogen containing gas in the presence of a fixed catalyst bed comprising

(a) at least one layer of impregnated, substantially spherical alumina-containing particles and

(b) at least one layer of hydrotreating catalyst particles comprising a refractory inorganic carrier material and at least one hydrogenation promoter selected from the group consisting of transition metals belonging to Groups IIIB, IVB, VB, VIB, VIIB, IB and IIB of the Periodic Table and compounds of said transition metals;

under such hydrotreating conditions as to obtain at least one liquid hydrocarbon-containing product stream having lower concentrations of sulfur and metals than said hydrocarbon-containing feed stream;

wherein said impregnated, substantially spherical alumina-containing particles in catalyst layer (a) have been prepared by a process comprising the steps of

(A) impregnating (i) a starting material of substantially spherical alumina-containing particles, which have an initial average particle size of at least about 0.05 inch, an initial surface area, determined in accordance with ASTM method D3037, of at least about 20 cm^2/g, an initial pore volume, determined by mercury intrusion porosimetry, of at least about 0.1 cc/g, and an initial content of Al_2O_3 of at least about 80 weight-%, with (ii) a solution comprising at least one dissolved magnesium compound; and

(B) heating the material obtained in step (A) at a temperature in the range of from about 500° to about 900° C. for a period of time of at least 10 minutes, under such heating conditions as to convert at least a portion of said at least one magnesium compound absorbed in step (A) to magnesium oxide and to obtain a material having a higher retention of crush strength, measured after exposure for about 100 hours to a liquid hydrocarbon-containing stream which contains at least about 0.5 weight-% sulfur, under hydrotreating conditions at about 2250 psig total pressure, about 350 psig partial pressure of steam and about 700° F., than said starting material;

wherein a layer (a) of said impregnated, substantially spherical alumina-containing particles is placed as support layer below at least one layer (b) of said hydrotreating catalyst particles;

wherein said impregnated, substantially spherical alumina-containing particles in said support layer are promoted with at least one compound of at least one element selected from the group consisting of Y, La, Ce, Ti, Zr, Hf, Cr, Mo, W, Mn, Re, Ni, Co, Cu, Zn and P, at a level of from about 0.1 to about 2.0 weight percent of said at least one element;

and wherein said hydrotreating catalyst particles contain said at least one hydrogenation promoter at a level which is effective for lowering the concentration of sulfur and metals present in said hydrocarbon-containing feed stream under said hydrotreating conditions.

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4,802,975

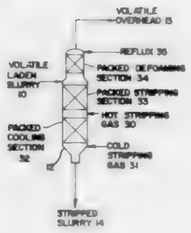
METHOD FOR STRIPPING OF RESIDUAL SOLVENT

Robert L. Mehlberg, Wheaton, Ill., assignor to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 758,339, Jul. 24, 1985, abandoned, and Ser. No. 594,755, Mar. 29, 1984, abandoned. This application Aug. 5, 1987, Ser. No. 82,085

Int. Cl.[4] C10G *1/04*

U.S. Cl. 208—390 **22 Claims**



1. A method for stripping organic solvent from an aqueous feed slurry comprising a mixture of water and a solid containing adsorbed organic solvent using a vertical packed column containing: (1) an organized packing having an opening size at least about twice that of the largest solid particles in the feed slurry; (2) a hot stripping section located within said column; and (3) a cold stripping section located within said column and below the hot stripping sectiona dn being at a temperature less than the temperature of said hot stripping section; wherein;

(a) said feed slurry is introduced into an upper portion of the hot stripping section and a hot stripping gas is introduced into a lower portion of the hot stripping section;

(b) at least a portion of said adsorbed organic solvent is recovered from an upper portion of the vertical column as an overhead product;

(c) feed slurry having a reduced content of adsorbed organic solvent is passed from the hot stripping section into the cold stripping section;

(d) a cold stripping gas is passed into a lower portion of the cold stripping section, said cold stripping gas being at a temperature less than the temperature of said hot stripping gas; and

(e) a stripped feed slurry substantially completed of organic solvent is recovered from a lower portion of the vertical column as a bottom product.

4,802,976

METHOD FOR RECOVERING FINE CLEAN COAL

Francis G. Miller, P.O. Box 501, Ligonier, Pa. 15658

Filed Jan. 4, 1988, Ser. No. 140,564

Int. Cl.[4] B03B *7/00, 9/00*; B03D *1/02*

U.S. Cl. 209—12 **2 Claims**

1. In a heavy medium low specific gravity method for recovering coarse coal and fine coal and coal-bearing particles from a raw coal feed containing particles of coarse coal, fine coal, coal bearing particles, coarse shale and fine shale within a size range of 3.81 cm×0 to which an amount of

at least one heavy medium taken from the group consisting of magnetite ore and ferrosilicon is added to form a slurry having a specific gravity between about 1.27 and 1.70,

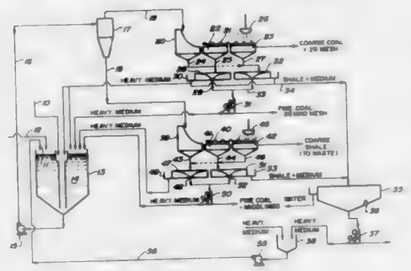
which slurry is treated in at least one cyclone to separate substantially all the coarse coal, a substantial portion of the fine coal and a major amount of the heavy medium as a cyclone overflow from substantially all the coarse shale, the remaining portion of the fine coal, coal-bearing particles, fine shale and the remaining portion of the heavy medium as a cyclone underflow,

treating the cyclone overflow on at least one sieve bend and vibrating screen to separate and recover all the coarse coal as a first screen overflow from the fine coal and heavy medium as a first screen underflow

and treating the cyclone underflow on at least one sieve bend and one vibrating screen to separate substantially all the coarse shale as a second screen overflow from substantially all the fine coal, coal bearing particles, fine shale and heavy medium as a second screen underflow, the improvement comprising:

(a) treating the first screen underflow in at least one froth-flotation cell containing at least one flotation reagent taken from the group consisting of M[BC and oil to separate substantially all the fine coal as a first flotation froth product from substantially all the heavy medium as a first sink product.

(b) separating and recovering the fine coal from any fugitive heavy medium in the first flotation-froth product of step (a) in at least one magnetic separator,



(c) recycling substantially clean heavy medium resulting from step (b) to the raw coal feed,

(d) treating the second screen underflow in at least one froth-flotation cell containing at least one flotation reagent taken from the group consisting of MIBC and oil to separate substantially all the fine coal and coal-bearing particles as a second flotation-froth product from substantially all the heavy medium as a second sink product,

(e) separating and recovering all the fine coal and coal-bearing particles from any fugitive heavy medium in the second flotation-froth product of step (d) in at least one magnetic separator, and

(f) recycling the substantially clean heavy medium resulting from step (e) to the raw coal feed.

4,802,977

PROCESS FOR SIZE SEPARATING TONER PARTICLES

Hitoshi Kanda, Yokohama, and Masayoshi Kato, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1987, Ser. No. 46,447

Claims priority, application Japan, May 12, 1986, 61-106597

Int. Cl.[4] B07B *7/00*; G03G *9/08*

U.S. Cl. 209—143 **10 Claims**

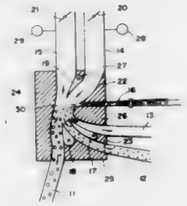
1. A process for size separation of a toner for developing electrostatic latent image, comprising:

generating a reduced pressure in a classifying chamber which is divided into at least three sections including a coarse powder section having a first outlet for withdrawing a coarse powder, a medium powder section having a second outlet for withdrawing a medium powder, and a fine powder section having a third outlet for withdrawing a fine powder, by sucking the classifying chamber through at least one of the first to third outlets;

supplying to the classifying chamber a feed toner material comprising toner particles of 20 μm or less in particle size in a proportion of 50% or more by number through a supply pipe having a supply nozzle opening into the classifying chamber at a velocity of 50 m/sec to 300 m/sec along with a gas stream flowing through the pipe;

controlling the abeolute value of a static pressure P_1 to 150 mm.aq. or above in a first gas introduction pipe having a first gas inlet opening into the classifying chamber at a position upstream of the first gas inlet by a first gas introduction control means;

controlling the absolute value of a static pressure P_2 to 40 mm.aq. or above in a second gas introduction pipe having a second gas inlet opening into the classifying chamber at a position just upstream of the second gas inlet by a second



gas introduction control means, the second gas inlet being disposed farther than the first gas inlet with respect to the supply nozzle; and

distributing the feed toner material supplied to the classifying chamber into at least the coarse powder section, the medium powder section and the fine powder section utilizing inertia force of the feed toner particles in the gas stream and centrifugal force of the curved gas stream imparted by a Coanda effect, wherein the absolute value $|P_1|$ of the static pressure P_1 and the absolute value $|P_2|$ of the static pressure P_2 satisfying the relation of $|P_1| - |P_2| \geq 100$ (mm.aq.).

4,802,978

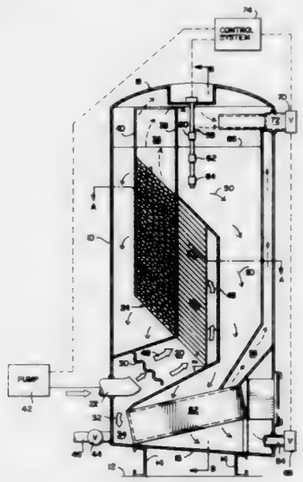
OIL-WATER SEPARATOR

Michael B. Schmit, and Robert T. McTighe, both of Mitchell, S. Dak., assignors to McTighe Industries, Inc., Mitchell, S. Ds'

Filed Feb. 27, 1987, Ser. No. 19,945

Int. Cl.[4] B01D *17/028*

U.S. Cl. 210—104 **22 Cla..**



1. An oil-water separator comprising:

(a) a tank;

(b) inlet means located in a lower portion of the tank and defining a flow path to direct an oil-water mixture into the tank;

(c) diffusion baffle means in the inlet means, the diffusion baffle having a corrugated surface;

(d) a coalescing pack comprising a plurality of substantially parallel generally planar oleophilic plates, each plate having a generally polygonal shape with a corner and being oriented such that first and second sides of each plate extending from the corner form acute angles with a generally horizontal plane passing through the corner, the plate pack located within the tank above the inlet means such that the oil-water mixture flows across the plates from the first side toward an opposite, third side through the plate pack between the plates causing the oil particles to separate from the water and to coalesce on the underside of the plates;

(e) a plurality of substantially parallel corrugations formed on major surfaces of each plate extending generally transverse to the flow of oil-water mixture across the plates such that oil particles coalescing on the underside of each plate are directed to a fourth side of each plate;

(f) means defining an oil relief channel in fluid communication with the fourth sides of the plates in the pack to direct the separated oil into an upper portion of the tank separate from the oil-water mixture flowing across the plates;

(g) a clean water outlet;

(h) water channel means to direct water from the plate pack to the clean water outlet; and

(i) oil outlet means located in the upper portion of the tank to facilitate withdrawal of the separated oil therefrom.

4,802,979

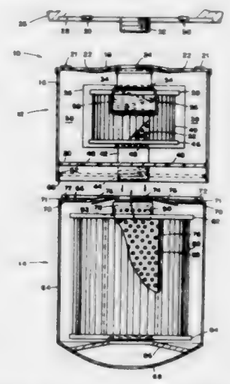
FLUID FILTER HAVING SEPARABLE ELEMENTS AND REMOVABLE END CLOSURES

Frank W. Medley, III, 45 East 18th St., Cookeville, Tenn. 38501

Continuation-in-part of Ser. No. 899,924, Aug. 25, 1986, Pat. No. 4,695,377. This application Jul. 17, 1987, Ser. No. 74,722

Int. Cl.[4] B01D *27/08*

U.S. Cl. 210—132 **9 Claims**



1. A fluid filter for attachment to a filter base having a base outlet for transmitting fluid under pressure to the filter and having a base inlet for receiving fluid from the filter;

a can defining a cavity and having first and second ends;

first inlet means for receiving fluid into the first end of said can;

first outlet means for transmitting fluid from the first end of said can;

second inlet means for receiving fluid into the second end of said can;

second outlet means for transmitting fluid from the second end of said can;

first attachment means for detachably attaching the first end of said can to the filter base and for sealably interconnecting the base outlet with said first inlet means of said can and the base inlet with the first outlet means;

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second attachment means configured for detachably attaching the second end of said can to the first end of said can and for sealably interconnecting said second outlet to said first inlet and said second inlet to said first outlet, whereby two of said cans may be attached together with the oil being delivered between said two cans from the first outlet of one can to the second inlet of the other can and to the first inlet of one can from the second outlet of the other can;

flow directing means for directing fluid flow in said can from said first inlet means to said second outlet means and from said second inlet means to said first outlet means;

said flow directing means being configured and operable to direct at least some fluid flow through said cavity;

end cap means for sealably engaging the second end of said can and being configured to direct fluid flow from said second outlet to said second inlet of said can; and

means for detachably fastening said end cap means to the second end of said can.

4,802,980

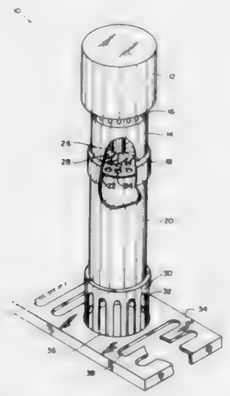
AQUARIUM FILTER

Charlotte E. Gilkey, and Hazel E. Gilkey, both of P.O. Box 272, Dixon, Ill. 61021

Filed Nov. 16, 1987, Ser. No. 120,963

Int. Cl.[4] A01K *63/04*

U.S. Cl. 210—169 **5 Claims**



1. An aquarium filter, comprising:

a hollow base (**34**) adapted to be covered with gravel in the bottom of an aquarium and having;

a plurality of water intake slots (**38**) in said base;

a cylindrical upstanding connector (**30**) communicating with the hollow interior of said base and having;

a plurality of vertical slots (**32**) disposed circumferentially around said connector;

an upstanding water conduit removably received in said connector and having a lower portion (**20**),

fiber and charcoal filter means (**21**) in said lower portion of said water conduit;

a top portion (**14**) of said water conduit removably connected by an annular over fitting joint (**18**) to said lower portion;

a motor (**12**) mounted on an upper end of said top portion of said water conduit;

a drive shaft (**26**) of said motor extending axially within said top portion;

a pump impeller (**28**) mounted on said drive shaft;

an apertured (**24**) shield plate (**22**) in said water conduit, beneath said pump impeller;

means defining a plurality of outlet holes (**16**) extending circumferentially around said top portion of said water conduit; and

said outlet holes being above said pump impeller and beneath said motor.

4,802,981

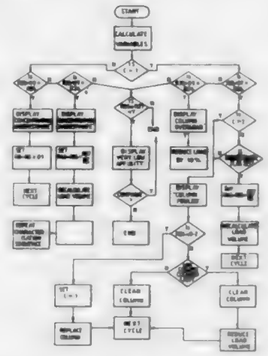
AUTOMATIC CHROMATOGRAPHY APPARATUS

Andrew C. Kenney, Windsor; Philip W. Thompson, Burnam, and John L. Harris, Slough, all of England, assignors to Oros Systems Limited, England

Filed Nov. 4, 1987, Ser. No. 117,014

Int. Cl.[4] B01D *15/08*

U.S. Cl. 210—198.2 **9 Claims**



1. Automatic chromatography apparatus comprising a column packed with adsorbent or attractant material;

means for supplying an elutant solution to the column;

loading means for loading controlled quantities of a material into the column, the material containing a substance to be eluted;

automatic control means which control the loading means so as to load the column with a first charge of the material and subsequently to load the column with a second charge of the material, the first charge being sufficiently small to ensure that the capacity of the column is not exceeded and the second charge being sufficiently large to ensure that the capacity of the column is exceeded;

first monitoring means for monitoring and controlling flow rate to provide accurate flow information to enable peak area integration;

second monitoring means which monitor the peaks of elution of the substance from the column resulting from the first and second charges of material; and

processing means connected to the monitoring means and arranged to integrate the elution peak with respect to the first charge of material so as to derive the concentration of the substance in the material, and to determine from the peak of elution of the substance from the column resulting from the second charge of material the maximum practical capacity of the column for the said substance

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4,802,982

SPIRAL-WOUND MEMBRANE WITH IMPROVED PERMEATE CARRIER

Larry A. Lien, Solana Beach, Calif., assignor to Desalination Systems, Inc., Escondido, Calif.

Filed Oct. 1, 1987, Ser. No. 103,633

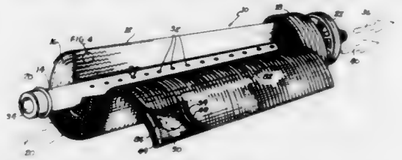
Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—247 **9 Claims**

7. A filtration module for separating a fluid permeate from a mixture of the fluid and a second component, comprising:

a self-supporting membrane made from an amorphous-locked poly(tetrafluoroethylene) polymer having a microstructure characterized by nodes interconnected by fibrils in intimate contact with said membrane, said membrane having pores sized to allow passage of the permeating fluid in a generally transverse direction while rejecting passage of the second fluid component therethrough;

a permeate carrier layer of non-woven ribbed channel material, having a membrane-contacting surface with a plurality of generally parallel ribs interconnected by a web-like matrix of much smaller fibrils, said ribs permeate-carrying channels formed between said ribs extending in a preselected direction, said channel material surface adhering to



said membrane so as to maintain said membrane taut as a working pressure is applied across the membrane to draw said permeate therethrough; and

conduit means for conducting the fluid permeate away from said channels, including a product collection tube about which said membrane and said layer are spirally wound such that said permeate carrier layer of channel material provides the sole path for the permeate to said product collection tube.

4,802,983

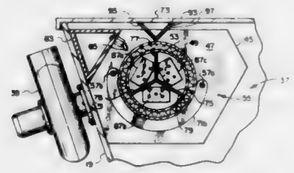
HOPPER LOADING DIRECTLY INSERTABLE HORIZONTALLY MOUNTED CYLINDRICAL SEGMENTED BORE PLEATED FILTER SYSTEM FOR ROTARY BROOM SWEEPERS

D. Franklin Howeth, 233 Chuck Wagon Trail, Fort Worth, Tex. 76108

Continuation of Ser. No. 5,232, Jan. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 757,011, Jul. 19, 1985, Pat. No. 4,650,504. This application Feb. 4, 1988, Ser. No. 148,149

Int. Cl.[4] B01D *45/18*

U.S. Cl. 55—302 **6 Claims**



1. An expendable, permanently segmented bore filter element comprising:

a hollow cylindrical filter body circumscribing an axis and adapted to filter particulate matter from fluid flowed laterally inwardly through said body into the interior thereof, said body having:

a continuous, uninterrupted cross-section extending along its length,

a generally cylindrical interior surface, and

an open end defining a bi-directional fluid flow opening through which fluid may be flowed in opposite axial directions into and out of the interior of said body; and

partition means for permanently dividing the interior of said hollow body into a plurality of separate, axially extending segments, in a manner preventing fluid cross flow between said segments during operation of said filter element, said partition means having a plurality of outer side edge surfaces permanently secured to said cylindrical interior surface of said body,

whereby a backflushing fluid flow from an external source of pressurized backflushing fluid may be directed axially inwardly through said bi-directional opening into one of said plurality of segments simultaneously with the axially opposite flow through the remainder of said plurality of segments of filtered fluid exiting said bi-directional opening, and the filter body, and the partition means permanently secured therein, may simply be discarded at the end of the useful life of the filter body and replaced with another filter body having partition means permanently secured therein.

4,802,984

COMPOSITE SEMIPERMEABLE MEMBRANE

Warren A. Walte, Burlington, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Filed May 4, 1988, Ser. No. 190,204

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—490 **9 Claims**

1. A thin film composite semipermeable membrane comprising a porous substrate having a surface layer of an ultrathin film formed by polymerization of an aqueous mixture of a water emulsion of water insoluble polymers or copolymers and an amino compound having at least two secondary amino groups using a polyfunctional cross-linking agent capable of reacting with secondary amino groups.

4,802,985

POROUS WATER-TREATING MATERIAL

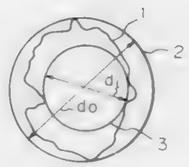
Shuichi Segimori, and Tomihiko Kawamura, both of Otake, Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Continuation of Ser. No. 702,637, Feb. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 563,531, Dec. 20, 1983, abandoned, which is a continuation of Ser. No. 368,249, Apr. 15, 1982, abandoned. This application May 1, 1987, Ser. No. 51,235

Claims priority, application Japan, Jan. 19, 1981, 5995743; Feb. 22, 1984, 59-30191; Feb. 23, 1984, 59-31480; Feb. 23, 1984, 59-31481; Feb. 23, 1984, 59-31482; Feb. 23, 1984, 59-31483

Int. Cl.[4] B01D *39/04*

U.S. Cl. 210—502.1 **10 Claims**



1. A porous water-treating material, in the form of pellets comprising cut porous strands each comprising a resinous matrix material consisting essentially of at least one member selected from the group consisting of organic thermoplastic polymer materials and mixtures of at least one organic thermoplastic polymer material with at least one inorganic particulate material in an amount of from 20% to 75% based on the weight of the resinous matrix material, and at least one organic cationic cross-linked polymer material, and each having a number of pores formed therein and connected to each other and an irregularly rugged peripheral surface; the irregular ruggedness being to an extent such that, in any cross-sectional profile of each cut porous strand, the ratio of the diameter of a circumscribed circle to that of an inscribed circle in the cross-sectional profile is in the range of from 1.10:1 to 5.00:1, that, in any side projection profile of each cut porous strand observed in a radius direciton thereof, the ratio of the distance between a

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pair of circumscribed lines to that between a pair of inscribed lines in the side projection profile, the circumscribed and inscribed lines being parallel to the longitudinal axis of the cut porous strand, is in the range of from 1.10:1 to 3.00:1, and that in the side projection profile of each cut porous strand, an average D of the distance Do between the circumscribed lines and the distance Di between the inscribed lines is in a range of from 0.5 to 5.0 mm, and the length of the profile is in a range of from 0.3 times to 3.0 times the average D.

4,802,986

HYDROCARBON GROUP-TYPE ANALYZER SYSTEM

Paul C. Hayes, Jr., Kettering, and Steven D. Anderson, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 905,413, Sep. 9, 1986, abandoned. This application Feb. 12, 1988, Ser. No. 160,746

Int. Cl.⁴ B01D *15/08*

U.S. Cl. 210—635 **3 Claims**



1. A method of analysis by high performance liquid chromatography of a sample of hydrocarbon compounds contained in solution into the following three components: saturates, alkyl benzenes, and polynuclear aromatics, which comprises the steps of:

(a) introducing said sample into a first column packed with a porous silica type packing material having a polar aminocyano bonded phase;

(b) thereafter introducing into said first column an organic chlorine-containing eluent;

(c) introducing the eluate from said first column into a second column packed with a tetranitrofluoroenimino packing material;

(d) passing the eluate from said second column into a dielectric constant detector to detect the eluate quantitatively for saturates, alkyl benzenes, and polynuclear aromatics, the three components having been chromatographically separated by steps (a), (b) and (c).

4,802,987

SELECTIVE PERMEATION OF AROMATIC HYDROCARBONS THROUGH POLYETHYLENE GLYCOL IMPREGNATED REGENERATED CELLULOSE OR CELLULOSE ACETATE MEMBRANES

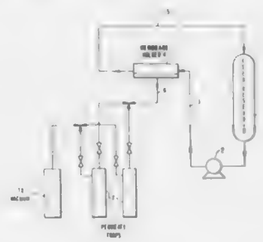
Laura E. Black, Sarnia, Canada, assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Feb. 24, 1984, Ser. No. 583,104

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—640 **2 Claims**

1. A method for separating a feed stream containing a mixture of aromatic and aliphatic hydrocarbons into aromatic rich and aromatic lean streams by selectively permeating, under pervaporation conditions, the aromatic content through a regenerated cellulose or cellulose acetate membrane which has a dry thickness of from about 10 to 25μ and a molecular weight cut-off in the range of from about 10,000 to 50,000, which



membrane is impregnated with from 10 to 25 2r% polyethylene glycol having a molecular weight in the range of about 600–14,000.

4,802,988

DEHYDRATION OF GLYCOLS

Craig R. Bartels, Wappinger Falls, and John Reale, Jr., both of Wappinger Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 17, 1987, Ser. No. 97,766

Int. Cl.⁴ B01D *15/00, 13/00*

U.S. Cl. 210—640 **13 Claims**

1. The method of concentrating a charge aqueous solution of a glycol which comprises

maintaining a non-porous separating layer of thickness of 1–10 microns of cast polyvinyl alcohol of molecular weight $\overline{M}_n$ of 20,000–200,000 which has been crosslinked in the presence of acid catalyst, with an aliphatic polyaldehyde containing at least three carbon atoms including those in said aldehyde groups and thereafter cured at 100° C.–200° C.;

maintaining a pressure drop across said non-porous separating layer of polyvinyl alcohol;

passing a charge aqueous solution of a glycol into contact with the high pressure side of said non-porous separating layer of polyvinyl alcohol whereby at least a portion of said water in said charge aqueous solution and a lesser portion of glycol pass by pervaporation through said non-porous separating layer of polyvinyl alcohol as a lean mixture containing more water and less glycol then are present in said charge aqueous solution and said charge aqueous solution is converted to a rich liquid containing less water and more glycol than are present in said charge aqueous solution;

recovering from the low pressure side of said non-porous separating layer of polyvinyl alcohol said lean mixture containing more water and less glycol than are present in said charge aqueous solution, said lean mixture being recovered in vapor phase at a pressure below the vapor pressure thereof; and

recovering from the high pressure side of said non-porous separating layer said rich liquid containing a lower water content and a higher glycol content than are present in said charge aqueous solution.

4,802,989

SYSTEM FOR PURIFYING DYE

Masahiro Haruta, Funabashi; Kunitaka Ozawa, Tokyo, and Takashi Hamamoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

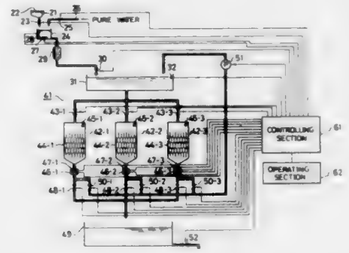
Continuation of Ser. No. 635,285, Jul. 27, 1984, abandoned. This application Oct. 29, 1986, Ser. No. 925,483

Claims priority, application Japan, Jul. 28, 1983, 58-136803; Jul. 28, 1983, 58-136804; Jul. 28, 1983, 58-136805; Jul. 28, 1983, 58-136806; Jul. 28, 1983, 58-136807; Jul. 28, 1983, 58-136808; Jul. 28, 1983, 58-136809; Jul. 28, 1983, 58-136810; Jul. 28, 1983, 58-136811

The portion of the term of this patent subsequent to May 12, 2004, has been disclaimed.

Int. Cl.⁴ B01D *15/04;* **B01J** *47/02*

U.S. Cl. 210—688 **10 Claims**



1. A dyestuff solution refining system to purify an aqueous dyestuff solution containing metal ion contaminants comprising:

preparation means for producing a dyestuff solution;

refining means including (a) ion-exchange means for removing metal ions from said dyestuff solution; (b) transfer means for transferring said dyestuff solution to said ion-exchange means; (c) discharge means for discharging said dyestuff solution from said ion-exchange means; and (d) metal ion sensor means for detecting the metal ion concentration in said discharge dyestuff solution and for generating an output responsive to said detected metal ion concentration;

control means including (i) comparison means for receiving said output from said metal ion sensor means, for comparing said output with a predetermined value, and for generating an output responsive to differences between said detected metal ion concentration and said predetermined value, (ii) fractionation means for fractionating said discharged dyestuff solution in response to said output from said comparison means into a poriton having a metal ion concentration at or below said predetermined value and a portion having a metal ion concentration above said predetermined value; and (iii) circulation means for recycling said discharged dyestuff solution portion having a metal ion concentration above said predetermined value to said ion-exchange means; and

a reservoir for collecting said discharged dyestuff solution portion having a metal ion concentration at or below said predetermined value.

4,802,990

SOLUTION AND METHOD FOR DISSOLVING MINERALS

Eugene L. Inskeep, Jr., 20320-14th Ave. W., Lynnwood, Wash. 98036

Filed Jul. 30, 1987, Ser. No. 79,810

Int. Cl.⁴ C02F *5/14*

U.S. Cl. 210—699 **8 Claims**

8. A method of dissolving mineral salts in water systems comprising contacting the mineral salts with an effective amount of a solution consisting essentially of water and six moles per liter of 1-hydroxyethane, 1, 1-diphosphonic acid mixed with one mole per liter of hydroxymethylene phosphonic acid, phosphonoformic acid, sulfamic acid, oxalic acid, hydroxyacetic acid, 2-amino ethane sulfonic acid, or fluoroboric acid and neutralized to a pH of 7.0 with potassium hydroxide or ammonia, and a polymeric dispersant.

4,802,991

METHOD AND APPARATUS FOR WATER PURIFICATION

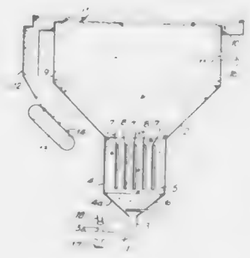
George Miller, Bogota, Colombia, assignor to Hidrotronic Watercleaning Systems, Ltd., Switzerland

Filed Oct. 2, 1984, Ser. No. 656,866

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1983, 3336460

Int. Cl.⁴ C02F *1/46, 1/52*

U.S. Cl. 210—705 **21 Claims**



1. A water purification process comprising:

directing water to be purified into an electrolysis chamber having at least two electrodes having voltages of different polarity and made of multi-valent metals, the electrodes being surrounded with a moving bed of solid, non-conductive particles whose specific density is greater than that of the contaminated water;

passing the contaminated water through the moving bed and past the at least two electrodes in a generally vertically upward direction to form hydrophobic floc;

directing the floc, water and a portion of the solid particles from the electrolysis chamber to a flocculation chamber directly connected to an upper end of the electrolysis chamber;

returning the solid particles from the flocculation chamber to the electrolysis chamber past the at least two electrodes in a generally vertically downward direction to clean the electrodes.

4,802,992

REMOVAL OF DISPERSED OIL FROM WATER

Dodd W. Fong, Naperville, and Ann M. Halverson, Wheaton, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Division of Ser. No. 740,436, Jun. 3, 1985, abandoned. This application Jun. 5, 1987, Ser. No. 58,826

The portion of the term of this patent subsequent to Aug. 5, 2003, has been disclaimed.

Int. Cl.⁴ B01D *17/05*

U.S. Cl. 210—709 **3 Claims**

1. A process for clarifying dispersed oil containing water comprising:

the addition of a polymer of a quaternary ammonium salt of 1-acryloyl-4-methyl piperazine to water containing dispersed oil in an amount effective to clarify said water by elimination of said dispersed oil.

4,802,993

METHOD OF TREATING LIQUID WASTES CONTAINING HEAVY METAL CHELATE COMPOUNDS

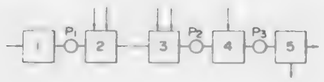
Seiji Katoh, Yokosuka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 754,448, Jul. 12, 1985, abandoned. This application Jun. 22, 1987, Ser. No. 64,562

Claims priority, application Japan, Jul. 13, 1984, 59-144249; Jul. 13, 1984, 59-144250; Jul. 13, 1984, 59-144251

Int. Cl.[4] C02F *1/56*

U.S. Cl. 210—725 **6 Claims**



1. A method of treating aqueous plant waste containing copper chelate compounds and chelating agents which comprises the steps of:

reducing the pH of the waste to 4 or less;

adding heavy metal ions of at least one member selected from the group consisting of Fe^{++}, Fe^{+++}, Cu^{++}, Ni^{++} and Zn^{++} simultaneously or successively to said waste having the reduced pH, the amount of heavy metal ions added as compounds being such that the equivalent ratio of heavy metal ions to chelating agents contained in said aqueous plant waste is at least 1.5:1,

wherein the Fe^{++}, Fe^{++} and Cu^{++} ions are obtained by the addition of ferrous sulfate, ferric sulfate and copper sulfate, respectively; the Ni^{++} and Zn^{++} ions are obtained by the addition of nickel sulfate or nickel chloride and zinc chloride, respectively; or the heavy metal ions are added as sludges containing heavy metal ions and Ca^{++}

adjusting the pH of the treated waste by adding a solution containing Ca^{++} ions to provide a pH of 9 or more and to produce copper hydroxide;

adding an anionic polyacrylamide flocculant to precipitate the copper hydroxide; and

separating the thus-produced hydroxide from the thus-treated aqueous plant waste.

4,802,994

BIOCIDE TREATMENT TO CONTROL SULFATE-REDUCING BACTERIA IN INDUSTRIAL PROCESS WASTE WATERS

Richard J. Mouché , Batavia, and Mei-Jan L. Lin, Naperville, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation of Ser. No. 886,480, Jul. 17, 1986, abandoned. This application Aug. 18, 1987, Ser. No. 88,011

Int. Cl.[4] C02F *1/72*

U.S. Cl. 210—759 **4 Claims**

1. A method of controlling sulfate-reducing bacteria in flue gas scrubber sludges or slurries produced from scrubbing gases in utilities, said sludges or slurries having a sulfate-reducing bacteria population greater than 10 colonies per ml which comprises treating said sludges or slurries with a biocidal composition comprising:

A. Hydrogen peroxide, and

B. A non-oxidizing organic biocide effective against sulfate-reducing bacteria selected from the group consisting of sodium dimethyldithiocarbamate/disodium ethylene bisdithiocarbamate in a 1:1 weight ratio, metronidazole and gluteraldehyde with the dosage of A being at least 1,000 ppm by weight of the sludges or slurries and the dosage of B being within the range of between about 5–500 ppm by weight of the sludges or slurries.

4,802,995

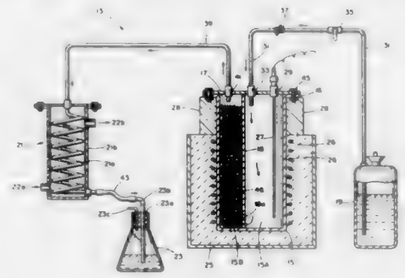
METHOD FOR DECOMPOSING THE CYANIDE RADICAL IN CYANIDE-BEARING WASTES OR MATERIALS

John Dvorscek, Oak Lawn; William Rostoker, and Arne R. Jarnboim, both of Chicago, all of Ill., assignors to Rostoker, Inc., Burnham, Ill.

Filed Jun. 5, 1987, Ser. No. 59,123

Int. Cl.[4] B01D *17/00*

U.S. Cl. 210—761 **30 Claims**



1. A method for chemically decomposing the cyanide radical in a cyanide-bearing waste or material comprising the steps of:

introducing said cyanide-bearing waste or material into a closed retort;

introducing water into said closed retort;

heating said closed retort to a temperature in excess of the critical temperature of reaction between water and the cyanide radical so that said water hydrolyzes with and decomposes a substantial quantity of said cyanide radical in said cyanide-bearing waste or material sufficient to form at least two new chemical products one of which includes the carbon constituent and the other of which includes the nitrogen constituent of said cyanide radical; and

venting, from said closed retort, a substantial portion of any gaseous products which result from the preceding steps.

4,802,996

BIOCIDES FOR TREATING INDUSTRIAL WATERS, PARTICULARLY FLUE GAS DESULFURIZATION SCRUBBER SLUDGE

Richard J. Mouche', Batavia, and Mei-Jan L. Lin, Naperville, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 911,853, Sep. 26, 1986, abandoned, which is a continuation-in-part of Ser. No. 886,480, Jul. 17, 1986, abandoned. This application Sep. 3, 1987, Ser. No. 92,826

Int. Cl.[4] C02F *1/68*

U.S. Cl. 210—764 **3 Claims**

1. A method of controlling sulfate-reducing bacteria in flue gas scrubber sludges produced from scrubbing gases in utilities which sludges have a sulfate-reducing bacteria population greater than ten colonies of sulfate-reducing bacteria per ml of said sludges, which comprises treating said sludges with an effective amount of a sulfate-reducing bacterial biocidal composition chosen from the group consisting of a 1:1 weight ratio of sodium dimethyldithiocarbamate and disodium ethylene bisdithiocarbamate, and glutaraldehyde.

4,802,997

METHOD FOR THE TREATMENT OF TEXTILE SURFACES AND COMPOSITIONS FOR USE THEREIN

Rodney T. Fox, Cottingham; Raymond A. Cowen, Woodfield Lane; Hazel Pool, Derby, and Robert V. Cook, Aston on Trent, all of Great Britain, assignors to Reckitt & Colman Products Limited, London, United Kingdom

Filed Aug. 21, 1987, Ser. No. 87,784

Claims priority, application United Kingdom, Aug. 28, 1986, 8620845

Int. Cl.[4] D06M *13/40*

U.S. Cl. 252—8.6 **27 Claims**

1. A method for the treatment of a textile surface which comprises the steps of:

applying to the textile surface a solids treatment composition, which comprises from 0.3 to 70% of a hydrogel swollen with a treatment fluid containing from 5 to 99.5% water, and an effective amount of treatment agent to release fluid from the hydrogel to effect treatment of the surface;

allowing the composition to reabsorb fluid;

allowing the textile surface to become substantially dry; and

removing any visible residue of the treatment composition from the textile surface.

4,802,998

POWDER-FORM LUBRICANT ADDITIVES FOR WATER-BASED DRILLING FLUIDS

Heinz Mueller, Wuppertal, and Claus-Peter Herold, Mettmann, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 8, 1987, Ser. No. 70,858

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1986, 3622826

Int. Cl.[4] C09K *7/02*

U.S. Cl. 252—8.514 **13 Claims**

1. A powder-form lubricant additive for water-based drilling fluids, consisting essentially of

a. from about 95 to 30% by weight, based on the total weight of the powder, of a highly disperse silica having an average particle diameter of from about 5 to about 50 nm and a surface area of from about 50 to about 300 m^2/g, and;

b. from about 5 to about 70% by weight, based on the total weight of the powder, of one or more of

i. fatty acid alkyl ester of the formula

$$R^1COOR^2 \quad (I)$$

in which R^1 is a straight-chain or branched, saturated or mono- or polyunsaturated C_9–C_{21} alkyl or alkenyl radical, and R^2 is a straight-chain or branched C_1–C_{12} alkyl radical,

ii. a polyol ester obtained by reaction of a di- or polyhydroxy compound with a carboxylic acid of the formula

$$RCOOH \quad (II)$$

in which R is a straight-chain or branched, saturated or mono- or polyunsaturated C_5–C_{21} alkyl or alkenyl radical, and

iii. a distillation residue from the transesterification of natural fatty acid esters.

4,802,999

LUBRICATING GREASE

Takehiro Koizumi, and Hideo Matsuzawa, both of Tokyo, Japan, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 934,103, Nov. 24, 1986, abandoned. This application Mar. 2, 1988, Ser. No. 163,245

Claims priority, application Japan, Apr. 30, 1986, 61-98100

Int. Cl.[4] C10M *123/02*

U.S. Cl. 252—18 **9 Claims**

1. A lubricating grease comprising a base oil containing about 2–30 wt. % of a thickener consisting essentially of the combination of:

a. lithium soap of C_{12-24} hydroxyfatty acid,

b. lithium phosphate salt produced from phosphoric or phosphorous acid ester or a mixture thereof, and

c. dilithium borate,

the amount of phosphoric or phosphorous acid ester being 0.05–15 parts by weight and the hydroxyfatty acid being 3–100 parts by weight per part by weight of boric acid, respectively.

4,803,000

LUBRICANT FOR COLD PLASTIC WORKING OF ALUMINUM ALLOYS

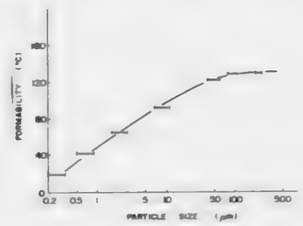
Takao Uematsu; Hiroshi Suzuki, both of Hitachi; Shigeki Komatsuzaki, Mito, and Fumio Nakano, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 17, 1986, Ser. No. 875,444

Claims priority, application Japan, Jun. 19, 1985, 60-131826

Int. Cl.[4] C10M *105/32, 129/68*

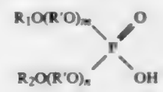
U.S. Cl. 252—32.5 **17 Claims**



1. In a process for cold plastic working an aluminum alloy comprising age-hardening a workpiece of age-hardening type aluminum alloy, coating the workpiece with a lubricant for plastic working and conducting plastic working, the improvement wherein as the lubricant, there is used a lubricating composition consisting essentially of

(A) at least one member selected from the group consisting of (a), (b) and (c) in an amount of 3% by weight or more,

(a) a polyoxyalkylene alkyl ether phosphate diester represented by the formula:



(I)

wherein R_1 and R_2 are independently an alkyl group having 12 to 18 carbon atoms; R' is a lower alkylene group; m and n are independently an integer of 1 or more and m+n=2 to 15,

(b) polyoxyalkylene alkylphenyl ether phosphate diester represented by the formula:



(2)

wherein R_3 and R_4 are independently a phenylalkyl group, the alkyl group of which has 8 to 9 carbon atoms; R' is a lower alkylene group; q and r are independently an integer of 1 or more and q+r=2 to 15,

(c) a phosphonic acid ester represent by the formula:

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(3)

wherein R and R'' are independently a lower alkyl group; and n is zero or an integer of 1, provided that when n is 1, R'' is OH,

(B) an N,N'-ethylenebis acid amide represented by the formula:

$$R_5CONHCH_2CH_2NHCOR_5 \quad (4)$$

wherein R_5 is a saturated or unsaturated fatty acid residue having 12 to 22 carbon atoms, and having an average particle size of 1 μm or more in an amount of 2 to 15% by weight, and

(C) a lubricating oil having a viscosity of 5 CS or more at 40° C. in an amount to make the composition 100% by weight.

4,803,001

AMINOMETHYL DERIVATIVES OF BENZOTHIAZOLINETHIONE AS LUBRICANT ADDITIVES

Hugo Camenzind, Fribourg, Switzerland, and Emyr Phillips, Sale, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 866,189, May 22, 1986, Pat. No. 4,737,302. This application Jan. 6, 1988, Ser. No. 141,165

Claims priority, application Switzerland, May 23, 1985, 2199/85

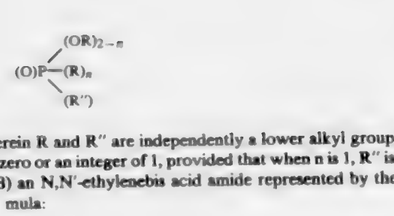
Int. Cl.⁴ C10M *133/38*

U.S. Cl. 252—47 **11 Claims**

1. A lubricant composition stabilized to reduce friction, wear, corrosion and oxidation, which comprises

(a) one or more mineral oils or synthetic oils, and

(b) 0.05 to 5% by weight, based on the oil, of at least one compound of formula II



II

wherein

R^1 is hydrogen, C_1–C_{12}alkyl, C_2–C_4alkoxy, C_2–C_{24}alkoxycarbonyl or nitro,

R^2 is hydrogen, C_1–C_{12}alkyl, 2-furyl, phenyl or phenyl which is substituted by C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkoxycarbonyl or nitro, and

R^3 is hydrogen, C_1–C_{20}alkyl, said alkyl interrupted by one or more members selected from O, S and N atoms or said alkyl containing oxo or thiono groups; or is C_3–C_{24}alkenyl, C_3–C_{12}alkoxyalkyl, C_5–C_8cycloalkyl, phenyl or phenyl which is substituted by C_1–C_{12}alkyl, C_1–C_4alkoxy, C_2–C_{24}alkoxycarbonyl or nitro; or is naphthyl, C_7–C_9phenylalkyl, 2-furylmethyl or 2-(tetrahydrofuryl)methyl.

4,803,002

CARBONATE TREATED DISPERSANTS

Robert H. Wollenberg, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 910,107, Sep. 19, 1986, Pat. No. 4,755,312, which is a division of Ser. No. 834,972, Feb. 28, 1986, Pat. No. 4,729,842, which is a division of Ser. No. 673,963, Nov. 21, 1984, Pat. No. 4,585,566. This application Apr. 21, 1988, Ser. No. 184,472

Int. Cl.⁴ C10M *133/16*

U.S. Cl. 252—49.6 **20 Claims**

1. A product prepared by the process which comprises reacting at a temperature sufficient to cause reaction a dispersant borated Mannich base having at least one primary or secondary amine group with a cyclic carbonate and wherein the molar change of cyclic carbonate to the basic nitrogen of the borated Mannich base is from about 0.2:1 to about 10:1.

4,803,003

ETHYLENE COPOLYMER VISCOSITY INDEX IMPROVER DISPERSANT ADDITIVE USEFUL IN OIL COMPOSITIONS

David Y. Chung, Edison, N.J., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Jun. 16, 1987, Ser. No. 63,144

Int. Cl.⁴ C10M *105/22*

U.S. Cl. 252—51.5 A **18 Claims**

1. A composition useful as an oil additive comprising reaction product of:

(i) reaction product of

(a) oil soluble ethylene copolymer comprising from about 15 to 90 wt. % ethylene and about 10 to 85 wt. % of at least one C_3 to C_{28} alpha-olefin, said copolymer having a number average molecular weight within a range of about 10,000 to 500,000, grafted with ethylenically unsaturated carboxylic acid material having 1 to 2 carboxylic acid groups or anhydride group,

(b) at least one polyamine selected from the group consisting of poly(alkylene amines) and poly(oxyalkylene amines) having at least two primary amine groups, and

(c) at least one carboxylic acid material selected from long chain hydrocarbyl substituted succinic anhydride or acid having about 50 to 400 carbons in said hydrocarbyl; and

(ii) a viscosity stabilizing effective amount of at least one C_{12} to about C_{16} aliphatic hydrocarbyl substituted succinic anhydride

15. An oil soluble viscosity stabilized grafted ethylene copolymer useful as an oil additive prepared by a process comprising:

(i) forming a grafted ethylene-alpha-olefin copolymer by grafting (a) oil soluble ethylene copolymer comprising from about 15 to 90 wt. % ethylene and about 10 to 85 wt. % of at least one C_3 to C_{28} alpha-olefin, said copolymer having a number average molecular weight of from about 10,000 to 500,000, with (b) ethylenically unsaturated carboxylic acid material having 1 to 2 carboxylic acid groups or anhydride group,

(ii) admixing said grafted ethylene-alpha-olefin copolymer (i) with at least one carboxylic acid material selected from long chain hydrocarbyl substituted succinic anhydride or acid having about 50 to 400 carbons in said hydrocarbyl to form a reaction mixture,

(iii) reacting the reaction mixture of (i) and (ii) with at least one polyamine selected from the group consisting of poly(alkylene amines) and poly(oxyalkylene amines) having at least two primary amine groups, and

(iv) subsequently reacting said reaction product of (i) through (iii) with an amount of at least one C_{12} to about C_{16} aliphatic hydrocarbyl substituted succinic anhydride effective to improve the viscosity stability thereof.

4,803,004

REACTION PRODUCTS OF ALKENYLSUCCINIC COMPOUNDS WITH AROMATIC AMINES AND HINDERED ALCOHOLS AND LUBRICANT COMPOSITIONS THEREOF

Harry J. Andress, Wenonah, and Henry Ashjian, E. Brunswick, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 19, 1985, Ser. No. 702,909

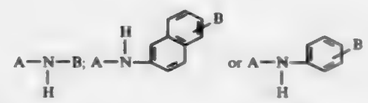
The portion of the term of this patent subsequent to Oct. 6, 2004, has been disclaimed.

Int. Cl.⁴ C10M *141/06, 141/06*

U.S. Cl. 252—51.5 A **30 Claims**

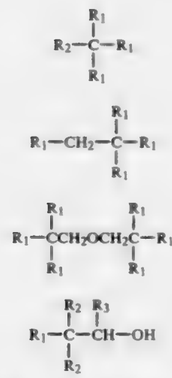
1. A product of reaction made by

(a) reacting an alkenylsuccinic compound selected from the group consisting of an alkenyl succinic acid and the ester and the anhydride thereof with an aromatic amine selected from the group having the following general formulae:



wherein A and B may be the same or a different aromatic group and wherein one or both of said aromatic groups may contain an alkyl substituent having from about 4 to about 18 carbon atoms and wherein said aromatic groups have from 6 to about 50 carbon atoms with

(b) a hindered alcohol selected from the group having the following general formulae:



(1)

(2)

(3)

(4)

wherein each R_1 and R_2 is each separately selected from CH_2OH and CH_3 with the proviso that at least one R_1 or R_2 is CH_2OH and R_3 is selected from H or alkyl of from about 4 to 22 carbon atoms and wherein reaction (a) is carried out at temperatures of from about 100°–200° C. and reaction (b) is carried out at temperatures of from about 100° to about 300° C. with the reactants being present in a molar ratio of succinic compound to aromatic amine to hindered alcohol of about 1:0.1–1:0.5–0.75.

4,803,005

PERFLUOROPOLYETHER SOLID FILLERS FOR LUBRICANTS

Timothy J. Juhlke; Thomas R. Bierschenk, both of Roundrock, and Richard J. Lagow, Austin, all of Tex., assignors to Exfluor Research Corporation, Austin, Tex.

Filed Aug. 6, 1986, Ser. No. 893,640

Int. Cl.⁴ C10M *105/52*

U.S. Cl. 252—58 **11 Claims**

1. A lubricant comprising a perfluoropolyether oil and about 20–70 percent by weight perfluoropolyether solid as filler.

4,803,006

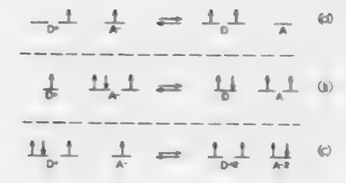
STRONGLY MAGNETIC ORGANIC SOLID STATE COMPOSITION OF MATTER

Leng Y. Chiang, Somerset, and Aaron N. Bloch, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 853,661, Apr. 18, 1986, abandoned. This application Jun. 26, 1987, Ser. No. 66,704

Int. Cl.⁴ H01F *1/00*

U.S. Cl. 252—62.51 **10 Claims**



1. A composition of matter having paramagnetic or ferromagnetic properties wherein said composition includes an aromatic organic donor molecule and an aromatic organic acceptor molecule one of which has a three-fold summetry, said donor molecule and acceptor molecule being stacked together, in a mix-stacked form and a dopant with an electron affinity so as to generate a ground state molecule with a triplet character.

7. A composition of matter comprising a donor molecule and an acceptor molecule, said donor molecule being selected from the group consisting of 2,3,6,7,10,11-hexaalkoxytriphenylene; 2,3,6,7,10,11-hexaaryloxytriphenylene; 2,3,6,7,10,11-hexa-p-alkylaryloxytriphenylene; 2,3,6,7,10,11-tris(N,N'-alkylenediamino) triphenylene; and hexaazaoctadecahydrocoronene, wherein said alkyl, alkoxy and alkanoate groups have from 1 to 13 carbon atoms therein, and said acceptor molecule is tetrafluorotetracyanoquinodimethane, said donor and acceptor molecule being present in a 1:1 ratio and in a mix-stacked form; and a dopant selected from the group consisting of halogen, AsF_5, SbF_5 or NO^+X^- is a univalent anion.

4,803,007

CORROSION INHIBITOR FOR SALT-BASED DEICING COMPOSITIONS

Frank R. Garber, 137 Canterbury Rd., Circle Pines, Minn. 55014

Filed Oct. 16, 1987, Ser. No. 109,486

Int. Cl.⁴ C09K *3/18*

U.S. Cl. 252—70 **11 Claims**

1. A deicing composition consisting essentially of a mixture of a major amount of sodium chloride and a corrosion inhibitor comprising a source of water-soluble Zn^{+2} selected from the group consisting of zinc halide, zinc acetate, zinc nitrate, zinc oxide and zinc sulfate and a hexametaphosphate salt wherein said inhibitor is present in an amount effective to reduce the rate of corrosion of ferrous metals by aqueous sodium chloride solutions.

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4,803,008

CLEANING COMPOSITION CONTAINING A COLORANT STABILIZED AGAINST FADING

Laura A. Ciolino, and Shaun F. Clancy, both of Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

Filed Sep. 23, 1987, Ser. No. 99,922

Int. Cl.[4] C09D 9/00; C11D 7/22, 7/50

U.S. Cl. 252—162 **32 Claims**

1. A cleaning composition comprising on a weight basis from about 2 to about 50% of a C_1-C_4 alkyl ether of alkylene and polyalkylene glycols, said glycol ethers having a total of from about 3 to about 12 carbons and introducing impurities into the composition in an amount and of a nature normally chemically incompatible with oxidizable dye chromophores; from about 0.0001 to about 0.1% by weight of a dye including oxidizable dye chromophores; from about 0.001 to about 0.1% by weight of an iodide salt stabilizer in an amount effective to retard fading of the dye; from about 0.001 to about 5% by weight of a surfactant; and water, said composition having a basic of neutral pH when the stabilizer is the thiosulfate salt.

4,803,009

STABILIZED AZEOTROPE OR AZEOTROPE-LIKE COMPOSITION OF 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, METHANOL AND 1,2-DICHLOROETHYLENE

Robert A. Gorski, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 2, 1988, Ser. No. 151,539

Int. Cl.[4] C11D 7/30, 7/50

U.S. Cl. 252—171 **16 Claims**

1. A stabilized azeotrope or azeotrope-like composition comprising a mixture of about 64 to 72 weight percent 1,1,2-trichloro-1,2,2-trifluoroethane, about 5 to 7 weight percent methanol and about 23 to 29 weight percent trans-1,2-dichloroethylene and effective stabilizing amounts of a lower alkoxyphenol, 1,2-butylene oxide, diisopropylamine and at least one of nitromethane and 1,2-propylene oxide.

4,803,010

WATER-SOLUBLE VISCOSITY INCREASING AGENT AND DETERGENT COMPOSITION CONTAINING THE SAME

Hidekazu Ogino, Koutoubashi; Hiroshi Kamitani, Wakayama; Jun Kamegai, Ichikawa; Hiroki Sawada, Wakayama; Hajime Hirota, Tokyo, and Tomihiro Kurosaki, Seanan, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Sep. 8, 1987, Ser. No. 93,606

Claims priority, application Japan, Sep. 18, 1986, 61-220043; Sep. 18, 1986, 61-220044

Int. Cl.[4] C11D 1/72

U.S. Cl. 252—174.21 **9 Claims**

1. A water soluble viscosity increasing agent, consisting essentially of at least one α-branched fatty acid ester selected from the group consisting of:

(i) an ester of an adduct of 40 to 400 moles of ethylene oxide with one mole of a polyhydric alcohol and an α-branched fatty acid of 8 to 36 carbon atoms,

(ii) an ester of polyethylene glycol having an average molecular weight of 2000 to 20,000 and an α-branched fatty acid of 8 to 36 carbon atoms, and

(iii) an adduct of 40 to 400 mole of ethylene oxide with an ester of a polyhydric alcohol and an α-branched fatty acid of 8 to 36 carbon atoms.

4,803,011

ELECTRICALLY CONDUCTING FILMS COMPRISING AT LEAST ONE MONOMOLECULAR LAYER OF AN ORGANIC CHARGE TRANSFER COMPLEX

André Barraud, Bures sur Yvette; Annie Ruaudel, Verrieres le Buisson, and Michel Vandevyver, Chatenay Malabry, all of France, assignors to Commissariat a l'Energie' Atomique, Paris, France

Filed May 9, 1985, Ser. No. 732,413

Claims priority, application France, May 10, 1984, 84 07214

Int. Cl.[4] H01B 1/00

U.S. Cl. 252—500 **18 Claims**

1. An electrically-conducting film, which comprises at least one monomolecular layer of amphiphilic molecules of an organic charge transfer complex of the formula:

$$DA_xX_y$$

wherein:

D is at least one member selected from the group consisting of quaternary ammonium groups, quaternary ammonium groups derived from aniline, quaternary ammonium groups derived from substituted aniline derivatives, quaternary groups derived from pyridines, quaternary ammonium groups derived from pyridines, quaternary ammonium groups derived from bipyridines, quaternary ammonium groups derived from benzopyridines, N-alkylbenzothiazoles, substituted N-alkylbenzothiazole derivatives, N-alkyl-indoleninium trimethine cyanines, and substituted N-alkyl-indoleninium trimethine cyanine derivatives;

A represents an organic electron acceptor group selected from the group consisting of tetracyanoethylene (TCNE), hexacyanobutadiene (HCBD), 1,2,4,5-tetracyanobenzene (TCNB), 7,7,8,8-tetracyanoquinodimethane (TCNQ) and its substituted derivatives, tetracyanodiquinodimethane (TCNDQ), benzotetracyanoquinodimethane (benzo-TCNQ), 2,3,5,6-tetrachloro-p-benzoquinone (CA), trinitro-benzene (TNB), tetranaphthoquinodimethane (TNAP), thiophenetetracyanoquinodimethane (thiophen-TCNQ), selenophen-tetracyanoquinodimethane (selenophen-TCNQ), and tetracyanoquinoquinazoline (TCQQ);

X represents I^-, PF_6^-, ClO_4^-, ReO_4^-, IO_4^-, AsF_4^-, FSO_3^-, FSO_3^-, AsF_6^-, Br^-, Cl^- or $MnCl_6^-$;

x is a number greater than 0 and up to 20;

y is equal to 0, or a number greater than 0 and up to 20; and

wherein at least one of the groups D and A is amphiphilic and has a saturated or unsaturated hydrocarbon substituent with at least 16 carbon atoms and up to 30 carbon atoms.

2. The conducting film of claim 1, wherein the monomolecular layers are formed from at least two different conductive charge transfer complexes.

4,803,012

ETHOXYLATED AMINES AS SOLUTION PROMOTERS

Thomas Wershofen, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 6, 1987, Ser. No. 12,102

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1986, 3603579

Int. Cl.[4] C11D 3/30, 1/00

U.S. Cl. 252—544 **7 Claims**

1. A method for promoting the water solubility of detergent components in an aqueous concentrate wherein said detergent concentrate is formulated for the machine washing of bottles, comprising incorporating in said concentrate a solubility-promoting-effective amount of one or more ethoxylated fatty amines corresponding to the following general formula

$$R^1-N(R^2)-(CH_2-CH_2-O)_n-H \quad (I)$$

in which

n is an integer of from 2 to 30,

R^1 is a C_{8-24} straight-chain or branched-chain, saturated or unsaturated alkyl, and

R^2 has the formula

$$-R^3-N(-(CH_2-CH_2-O)_x-H)(-(CH_2-CH_2-O)_y-H) \quad (III)$$

where

R^3 is a C_{2-6} alkylene, and

x, and y are each an integer of from 0 to 30.

4,803,013

HALOGENATED NAPHTHALENE DERIVATIVES

Nobuo Yokoyama, Musashino, Japan, assignor to Nippon Oil Co., Ltd., Tokyo, Japan

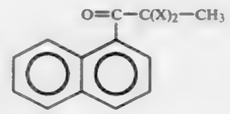
Filed Mar. 16, 1988, Ser. No. 169,221

Claims priority, application Japan, Mar. 17, 1987, 62-61788; Mar. 17, 1987, 62-61789

Int. Cl.[4] H01B 3/24

U.S. Cl. 252—580 **14 Claims**

1. A naphthalene derivative of the formula



where X is a fluorine or bromine atom.

2. 2,2-Difluoro-1-(1-naphthyl)-1-propanone.

4,803,014

LIGHT-POLARIZING FILM

Takuzo Okumura, Tokyo; Toyokazu Okada, and Hitoshi Kikui, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

PCT No. PCT/JP86/00091, § 371 Date Sep. 8, 1986, § 102(e) Date Sep. 8, 1986, PCT Pub. No. WO86/04998, PCT Pub. Date Aug. 28, 1986

PCT Filed Feb. 25, 1986, Ser. No. 910,220

Claims priority, application Japan, Feb. 26, 1985, 60-36855

Int. Cl.[4] G02B 5/30

U.S. Cl. 252—585 **11 Claims**

1. A light-polarizing film exhibiting a neutral gray produced by adsorbing and orienting the following (A) and (B) and/or (C) as dichroic coloring matter in a polymer film:

(A) iodine,

(B) a dichroic dye having absorption characteristics and polarization characteristics in the wavelength region of 400–500 nm in the wavelength range of visible light,

(C) a dichroic dye having absorption characteristics and polarization characteristics in the wavelength region of 600–700 nm in the wavelength range of visible light.

4,803,015

CONTINUOUS PROCESS FOR THE PRODUCTION OF ACYLOXYBENZENESULFONIC ACIDS

Werner Weilbrock, Bad Soden am Taunus, and Adolf Stadeneer, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 23, 1986, Ser. No. 922,275

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1985, 3538141

Int. Cl.[4] C07C 143/90

U.S. Cl. 260—402 **2 Claims**

1. A process for the continuous production of C_7–C_{12}-acyloxybenzenesulfonic acids, which comprises charging phenol and a sulfonating agent, diluted with an aliphatic C_7–C_{12}-carboxylic acid, to the top of a continuous-flow reactor heated to 80°–100° C. and charging the mixture of phenolsulfonic acid and the aliphatic carboxylic acid leaving the bottom end of this con- tinuous-flow reactor, and a chlorinating agent to the top of a second continuous-flow reactor heated to 45°–65° C., nitrogen being passed in counter-currnnt through both continuous-flow reactors.

4,803,016

METHOD OF DEOILING CRUDE LECITHIN

Melvin D. Binderman, Gaithersburg, Md., and Joseph N. Casey, Ft. Wayne, Ind., assignors to Central Soya Company, Inc., Fort Wayne, Ind.

Continuation-in-part of Ser. No. 897,288, Aug. 8, 1986, abandoned, which is a continuation-in-part of Ser. No. 724,321, Apr. 17, 1985, abandoned. This application Feb. 11, 1988, Ser. No. 154,987

Int. Cl.[4] C07F 9/10

U.S. Cl. 260—403 **8 Claims**

1. A method for the acetone deoiling of crude lecithin comprising providing a vertically-extending column having in progression from the top: an upper settling and removal section, a lecithin feed section, a contacting section, an acetone feed section and a bottom settling and removal section, said lecithin feed section and contacting section being equipped with vertically spaced apart agitators, the agitators only in said contacting section being separated by vertically-spaced apart, aperture-equipped annular baffles wherein the open area of each annular baffle is from about 20% to about 40% of the outside diameter of the baffle, treating said lecithin with from about 5% to about 20% acetone to facilitate break-up of solids during extraction and to increase flowability, introducing said treated lecithin into said feed section while introducing acetone into said acetone feed section, said lecithin introduction being under conditions of agitation but without flow constriction and at essentially atmospheric pressure, thereafter flowing said lecithin in continuous, countercurrent relation to acetone at a rate of 3 to 10 parts acetone to one part lecithin by weight under conditions of agitation and flow constriction to provide a refined lecithin having an Acetone Insolubles content in the range of about 94% to about 99.9%.

4,803,017

QUATERNARY AMMONIUM SALTS

Douglas E. Bugner, and Peter S. Alexandrovich, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

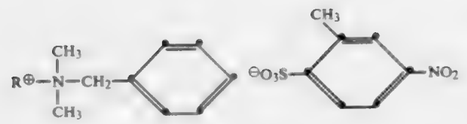
Filed Dec. 17, 1987, Ser. No. 134,488

Int. Cl.[4] C07C 87/30; G03G 9/00

U.S. Cl. 260—501.15 **2 Claims**

1. A quaternary ammonium salt having the structure

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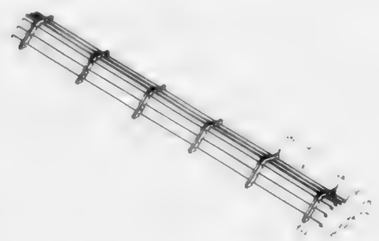
wherein R is alkyl having 12 to 18 carbon atoms.

4,803,018

SPLASH FILL FOR HEAT AND MASS TRANSFER APPARATUS AND METHOD OF MAKING A SPLASH FILL ASSEMBLY

Marcel R. Lefevre, 15990 Triple Crown Ct., Fort Myers, Fla. 33912, and Marven M. Smith, II, N. Ft. Myers, Fla., assignors to Marcel R. Lefevre, Fort Myers, Fla.

Filed Jul. 16, 1987, Ser. No. 74,337
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—111 **11 Claims**



1. A splash bar fill assembly for a splash-type cooling tower comprising at least two spaced-apart, vertically oriented, support assemblies laterlaly supporting a plurality of splash fill bars within the fill area of the tower, the splash fill bars comprising an elongated member having a generally convex upper surface of restricted width including first and second edges, the first and second edges having a pair of converging side surfaces which depend downwardly therefrom at an acute angle with respect to the upper surface, the side surfaces being of restricted depth; a crown formed at the uppermost point of the elongated member; and a vertical supporting rib member extending downwardly from the crown of the elongated member and having a lower free end which includes a bulbous formation formed thereon.

4,803,019

PROCESS FOR FORMING A LINER AND CAST PROPELLANT CHARGE IN A ROCKET MOTOR CASING

William H. Graham, Huntsville; Kenneth E. Bevel, Grant; James D. Byrd, Huntsville; Kenneth E. Junior, Madison, and Inella G. Shepard, Huntsville, all of Ala., assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Feb. 10, 1984, Ser. No. 579,222
Int. Cl.[4] C06B *21/00*
U.S. Cl. 264—3.1 **6 Claims**

1. A process for lining a rocket motor and casting a propellant charge within and an interfacial contact with said lining, comprising the steps of:

a. providing a rocket casing having an internal surface;
b. providing a blocked curable liner composition which is the reaction product of a prepolymer, an isocyanate curing agent, and a blocking agent;
c. applying said liner composition to said internal surface, thereby forming a casing and uncured liner assembly;
d. providing an uncured, castable propellant composition;
e. preheating said assembly, thereby preparing it for receiving said propellant while simultaneously unblocking said liner and precuring said liner to a tacky state;
f. casting said propellant within said precured liner; and
g. cocuring said liner and propellant compositions.

4,803,020

PROCESS FOR RADIATION CURING OF EPDM ROOF SHEETING UTILIZING CROSSLINKING PROMOTERS

Joseph K. Valaitis, Brecksville, and James A. Davis, Uniontown, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 2, 1987, Ser. No. 115,312
Int. Cl.[4] B29C *35/10*
U.S. Cl. 264—22 **10 Claims**

1. A process for preparing EPDM sheeting suitable for roofing purposes, said process comprising the steps of

(a) preparing a sheet having a thickness ranging from 10 to 150 mils composed of composition comprising (i) 100 parts uncured ethylene-propylene-diene (EPDM) elastomer containing an ethylene to propylene ratio ranging from about 3:1 to about 1:3, from about 2 to about 15 double bonds per 1000 carbon atoms and a number average molecular weight ranging from about 20,000 to about 200,000, (ii) from about 40 parts to about 150 parts carbon black, (iii) from about 30 parts to about 100 parts process oil and (iv) an amount of compatible radiation crosslinking promoter effective to promote curing in step (b), said radiation crosslinking promoter being selected from the group consisting of organic peroxides and liquid high vinyl 1,2-polybutadiene resin,
(b) treating said sheet with ionizing radiation to provide cured EPDM sheeting, said ionizing radiation being directed at both sides of the sheet.

4,803,021

ULTRAVIOLET LASER TREATING OF MOLDED SURFACES

Dennis L. Werth, Willow Springs, and Virupaksha K. Reddy, Naperville, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 829,794, Feb. 14, 1986, abandoned. This application Apr. 3, 1987, Ser. No. 34,794
Int. Cl.[4] B29C *71/04*
U.S. Cl. 264—25 **48 Claims**

1. A treating process for the removal of a mold-release agent from the surface of a molded composition, comprising the steps of:

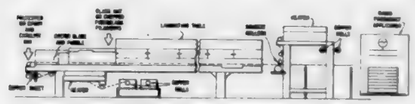
(a) introducing the molded composition having its surface coated with a thin film of the mold-release agent, into a treating zone, having a controlled atmosphere;
(b) irradiating the coated surface of the molded composition with ultraviolet radiation, said radiation having sufficient intensity to decompose said mold-release agent to yield diverse decomposition fragments within said treating zone;
(c) removing the diverse fragments of said mold-release agent from said treating zone; and
(d) recovering from said treating zone a molded composition having a clean surface, substantially free of mold-release agent.

4,803,022

METHOD OF CONTINUOUSLY BONDING AND CURING A ZINC-COATED METAL-CLAD POLYESTER-EPOXY-GLASS FIBER LAMINATE

David Barrell, Temple City, Calif.; Gerald P. Griffith, Collierville, Tenn.; Donald E. Kennedy, Baldwin Park, and Donald C. Rolles, Railto, both of Calif., assignors to Glasteel Industrial Laminates, Inc., Collierville, Tenn.

Filed May 6, 1987, Ser. No. 46,354
Int. Cl.[4] B29C *35/14, 71/04*
U.S. Cl. 264—25 **20 Claims**



1. A continuous process for preparing a metal foil laminate having at least one sheet of zinc-coated metal foil directly bonded to a face of a sheet of a glass fiber reinforced polyester and epoxy resin, comprising:

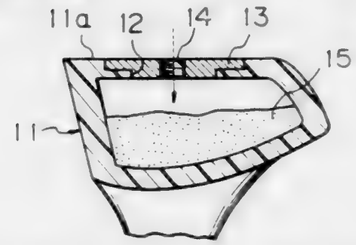
applying a coating of a polyester and epoxy resin, said resin consisting essentially of from about 80% to about 90% by weight polyester and from about 10% to about 20% by weight epoxy, to a first zinc-coated metal foil;
uniformly distributing glass fiber on said polyester and epoxy resin coating;
heating said glass fiber containing polyester and epoxy resin coated metal foil to partially gel said resin;
applying pressure to said partially gelled glass fiber containing polyester and epoxy resin coated metal foil; and
curing said glass fiber containing polyester and epoxy resin using radio-frequency electromagnetic energy to directly bond said glass fiber containing polyester and epoxy resin to said first zinc-coated metal foil.

4,803,023

METHOD FOR PRODUCING A WOOD-TYPE GOLF CLUB HEAD

Koichi Enomoto, and Tatsuo Nakanishi, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 739,029, May 29, 1968, abandoned. This application Feb. 19, 1987, Ser. No. 16,242
Claims priority, application Japan, Sep. 17, 1985, 60-205093
Int. Cl.[4] B29D *27/00*; **A63B** *53/04*
U.S. Cl. 264—45.4 **5 Claims**



1. Method for producing a wood-type golf club head comprising the steps of

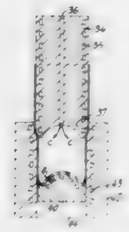
preparing a FRP shell having a cavity and defining a bottom section,
forming a seat hole in said bottom section of said FRP shell,
securedly closing said seat hole with a support plate having a threaded through hole at the position of the center of gravity thereof,
infusing foamable resin into said cavity of said FRP shell via said threaded through hole,
screwing a plug of a selected weight into said threaded through hole, and
developing foaming and hardening of said foamable resin for conversion into foam resin.

4,803,024

METHOD OF PRODUCING A CONTAINER

Torsten C. Nilsson, Löddeköpinge, Sweden, assignor to Petsiner S.A., Neuchatel, Switzerland

PCT No. PCT/SE85/00253, § 371 Date Mar. 5, 1986, § 102(e) Date Mar. 5, 1986, PCT Pub. No. WO86/00565, PCT Pub. Date Jan. 30, 1986
PCT Filed Jun. 17, 1985, Ser. No. 847,902
Claims priority, application Sweden, Jul. 5, 1984, 8403569
Int. Cl.[4] B29C *35/02, 49/22, 55/26*
U.S. Cl. 264—80 **15 Claims**



1. A method of producing a container from a tubular blank having a closed bottom at one end and an open mouth at the other end, the blank consisting of plastic material capable of being deformed, said method comprising:

axially stretching a limited region of the wall of the tublular blank near said closed bottom end,
then circumferentially stretching a portion of the wall of the tubular blank which extends from the open mouth thereof while keeping the closed bottom and an adjacent portion of the wall unstretched,
then axially stretching said blank to produce axial orientation in the wall of said blank,
then supporting the tubular blank in an outer support member with the closed bottom of the tubular blank resting on a mold bottom member,
positioning a mandrel at the open mouth of the tubular blank, the mandrel having an outer diameter which is greater than the inner diameter of the tubular blank, and
producing relative movement between the mold bottom member, on the one hand, and the outer support member and mandrel, on the other hand, to force the tubular blank to expand on the mandrel and pass through a gap formed between the mandrel and the outer support member whereby to circumferentially expand the tubular blank to form the container.

4,803,025

CERAMIC FOAM

Jerry W. Brockmeyer, Hendersonville, N.C., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 23, 1984, Ser. No. 602,683
Int. Cl.[4] G04B *35/00, 35/10*
U.S. Cl. 264—63 **6 Claims**

1. A process for preparing a ceramic foam filter for filtering molten metal which comprises:

providing a reticulated, organic polymer foam; impregnating said foam with an aqueous slurry of a thixotropic ceramic composition including a phosphate binder in an amount of at least 8%; drying and heating said impregnated polymer foam to remove the organic component therefrom; and firing at an elevated temperature of at least

VOL 1099 ISS 1 FEB 7 1989 UMI

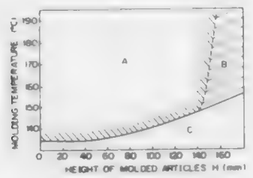
about 3020° F. to volatilize the phosphate producing a substantially phosphate-free material and sintering the refractory to produce a material having individual grains of ceramic tightly coalesced to minimize porosity between the grains, wherein the porosity between the grains is microporosity and the microporosity is less than about 5%.

4,803,026

PROCESS FOR PREPARATION OF ACRYLIC RESIN SHEETS HAVING EXCELLENT MOLDABILITY AND SOLVENT RESISTANCE

Hiroyuki Ikeda; Yukihiro Motsumoto, both of Toyama, and Koyu Nishimura, Yokohama, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Oct. 3, 1986, Ser. No. 915,095
Int. Cl.⁴ B29C *39/16*
U.S. Cl. 264—216 **6 Claims**



1. An improvement in a process for the preparation of acrylic resin sheets having excellent heat moldability and solvent resistance, wherein a syrup is prepared, which is composed of a partial polymerization product of methyl methacrylate or a monomer mixture comprising at least 60% by weight of methyl methacrylate and not more than 40% by weight of an acrylic acid ester, by partially polymerizing methyl methacrylate or said monomer mixture in the presence of a polymerization initiator; the thus-prepared syrup is incorporated with 0.02 to 1.0% by weight, based on the weight of the syrup, of a crosslinking agent; and the resulting mixture is subjected to cast polymerization in a casting mold; the improvement comprising carrying out the partial polymerization of the methyl methacrylate or said monomer mixture for the preparation of the syrup in the co-presence of 0.01 to 2.0% by weight, based on the weight of the methyl methacrylate or said monomer mixture, of a chain transfer agent, and carrying out the cast polymerization under such conditions that if the crosslinking agent is not present, the intrinsic viscosity of the completely polymerized sheet is in the range of 0.05 to 0.12 l/g.

4,803,027

PROCESS FOR THE PRODUCTION OF BIAXIALLY STRETCHED FILMS AND APPARATUS FOR IMPLEMENTATION OF THE PROCESS

Herbert Peiffer, Mainz; Guenther Crass, Taunusstein; Wolfgang Dietz, Saarbruecken, and Gunter Schloegl, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 9, 1987, Ser. No. 60,075
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1986, 3620219
Int. Cl.⁴ B29C *47/88*
U.S. Cl. 264—210.5 **14 Claims**

1. A method for the production of biaxially stretched films having opposed roughened surfaces wherein the degree of roughness on the two film surfaces is reproducibly controlled with respect to each other, said method comprising the steps of:

extruding a plastic melt through a slot die to form a film;

depositing a roll side of the film onto a surface of a take-off roll, thereby defining an air side of the film opposite to the roll side;

maintaining the surface of the take-off roll at a first temperature selected to provide a desired degree of surface roughness to the roll side of the film;

controlling the temperature of the air side of the film during at least a portion of said depositing step at a second temperature chosen in relation to said first temperature to provide a degree of roughness on the air side of the film having the desired relation to the degree of roughness on the roll side of film, said controlling step comprising exposing the film depositing over portions of the take-off roll surface on the air side of the film, which is opposite to the roll side of the film, to a rapid heat treatment of ambient air at an air temperature T_L greater than or equal to about 30° C. and less than or equal to about 200° C. for a period of time of at least 1.5 seconds sufficient to maintain said second temperature; and

biaxially stretching and heat-setting the film, whereby there is produced a film having the desired relation between the degree of roughness on both sides of the film.

10. An apparatus for producing biaxially stretched films having opposed roughened surfaces comprising:

means for extruding a plastic melt through a slot die to form a film having a roll side and an air side;



a take-off roll;

means for maintaining the surface of the take-off roll at a first temperature selected to provide a desired degree of surface roughness to the roll side of the film;

means for depositing the roll side of the film onto said take-off roll;

means for controlling the temperature of the air side of the film while it is at least on a portion of said take-off roll at a second temperature to provide a degree of roughness on the air side of the film having the desired relation to the degree of roughness on the roll side of the film, said controlling means including means for exposing the film deposited over at least a portion of the take-off roll surface on the air side of the film, which is opposite to the roll side of the film, to a rapid heat treatment of ambient air at an air temperature T_L greater than or equal to about 30° C. and less than or equal to about 200° C. for a period of time of at least about 1.5 seconds sufficient to maintain said second temperature, the means for exposing the film surface comprising a zone which surrounds a circumferential arc of the take-off roll of between about 150° and 200°; and

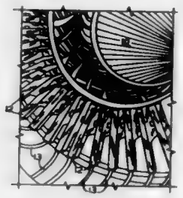
means for biaxially stretching the film.

4,803,028

CONDUCTOR INSULATING METHOD

Kevork A. Toroosian, Schenectady; Ralph T. Heisler, Scotia, and Frederick E. Cox, Gloversville, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 595,596, Apr. 2, 1984, Pat. No. 4,621,212. This application Apr. 4, 1986, Ser. No. 848,429
Int. Cl.⁴ B29C *45/14*
U.S. Cl. 264—263 **4 Claims**



1. A method of electrically insulating a series loop of an electrical machine, in situ, comprising the steps of:

assembling a thermoplastic mold about the series loop which step includes partially overlapping the joined portions of two mold halves;

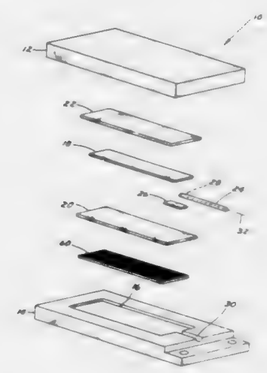
providing at least one non-hermetic seal at least at one end of the assembled mold between the mold and the series loop;

injecting a thermosetting resin into the mold; the thermosetting resin having a viscosity greater than 100,000 cps and the injection pressure being greater than 20 psig whereby air is expelled from the mold cavity through the non-hermetic seal without leaking the thermosetting resin;

curing the thermosetting resin at atmospheric pressure, in contact with both the series loop and the mold and thereby bonding the thermosetting resin to the mold whereby a composite electrical insulation is formed about the series loop without removing the mold.

f. positioning a flap of non-stick material over a port end of said tube;

g. closing said mold; and,



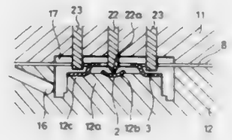
h. curing said unvulcanized material under pressure at an elevated temperature over time.

4,803,030

METHOD OF MOLDING CASE FOR PUSH-BUTTON SWITCH

Masato Kobayashi, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Sep. 24, 1987, Ser. No. 101,129
Claims priority, application Japan, Dec. 9, 1986, 61-293868; Dec. 9, 1986, 61-293867
Int. Cl.⁴ B29C *45/14, 45/33*
U.S. Cl. 264—278 **2 Claims**



4,803,029

PROCESS FOR MANUFACTURING AN EXPANDABLE MEMBER

Alfred A. Iversen, Wayzata, and William Eastman, Hopkins, both of Minn., assignors to PMT Corporation, Chanhassen, Minn.

Filed Jan. 28, 1986, Ser. No. 823,369
Int. Cl.⁴ B29C *43/18*
U.S. Cl. 264—264 **3 Claims**

1. Process for manufacturing an expandable member comprising the steps:

a. opening a mold with opposing like cavities and a port indentation;

b. positioning a first sheet of unvulcanized material in a first of said cavities;

c. positioning at least one sheet of non-stick material of a smaller area size than said first sheet of unvulcanized material;

d. positioning a like sheet of unvulcanized material in the other of said cavities;

e. positioning a port tube in said port indentation in between said unvulcanized materials and adjacent said sheet of nonstick material;

1. A method of molding a case for use in a push-button switch, comprising the steps of:

preparing a contact plate having a central fixed contact and opposite fixed contacts;

preparing an upper die and a lower die one of which has a central support portion and opposite support portions;

mounting the contact plate between the upper and lower dies in such a way that respective contact surfaces on one side of the central fixed contact and the opposite fixed contacts bear against the central support portion and the opposite support portions, respectively;

moving a locating pin that has a tapered front end portion having a point through the other die and pressing the point of the pin against a holding surface on an opposite side from the contact surface of the central fixed contact;

moving other locating pins through said other die so that these pins protrude toward respective holding surfaces on the opposite sides from the contact surfaces of the opposite fixed contacts with slight gaps formed between ends of these pins and the respective holding surfaces;

injecting molten resin into a cavity formed between the dies so as to mold the central fixed contact and opposite fixed contacts in a molded switch body; and

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withdrawing the tapered locating pin and the other locating pins from the molded switch body and leaving a central tapered hole coming to a point at the holding surface of the central fixed contact, and opposite holes spaced by molded resin from the holding surfaces of the opposite fixed contacts by said slight gaps therebetween, which thereby do not allow solder flux to enter around said contacts.

4,803,031

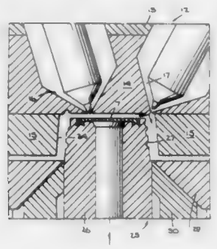
METHOD AND APPARATUS FOR MOLDING A CLOSURE CAP

Charles S. Ochs, Lancaster, and Carl E. Koontz, Thornville, both of Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Division of Ser. No. 384,185, Jun. 3, 1982, abandoned. This application Mar. 16, 1984, Ser. No. 590,153

Int. Cl.⁴ B29C *45/16;* **B29D** *1/00*

U.S. Cl. 264—255 **4 Claims**



1. A method for molding generally cup-shaped plastic closures of one plastic material with interior molded container plastic sealing members of a differing plastic comprising the steps of holding two cooperating molding heads with communicating cavities in one position for injecting a first plastic into a first cavity defining the sealing members only, injecting the first plastic into said first cavity, providing relative movement between the molding heads forming a second cavity communicating with the plastic injected into said first cavity and defining a cup-shaped closure shell and injecting second plastic into the second cavity.

2. Apparatus for molding cup-shaped plastic closures of two or more plastic materials with an interior molded plastic elastomeric sealing member of one plastic material and a closure shell of a harder outer plastic material comprising a pair of molding heads each including molding dies, means for holding the heads in one relative position with a first cavity defining the elastomeric sealing member only, a plastic injector nozzle for elastomeric material positioned to communicate with said first cavity, means for moving said molding heads apart to a second position with the molding dies forming a second cavity communicating with said first cavity and defining the cup-shaped closure shells only, and a second plastic injection nozzle positioned to communicate with said second cavity to form the closure shell with an attached sealing member.

4,803,032

METHOD OF SPOT EMBOSSING A FIBROUS SHEET

Galyn A. Schulz, Appleton, Wis., assignor to James River-Norwalk, Inc., Norwalk, Conn.

Division of Ser. No. 494,685, May 17, 1983, Pat. No. 4,659,608, which is a continuation-in-part of Ser. No. 116,230, Jan. 28, 1980, abandoned, which is a continuation of Ser. No. 1,741, Jan. 8, 1979, abandoned. This application Jan. 21, 1987, Ser. No. 5,839

Int. Cl.⁴ b29C *59/04;* **B31F** *1/07*

U.S. Cl. 264—284 **3 Claims**



1. A method of embossing an absorbant multi-ply fibrous tissue product having a machine direction and a cross machine direction prior to winding into a roll in its machine direction which comprises passing the multi-ply web between an embossing roll provided with raised embossing elements made up of a plurality of closed curvilinear lands and a rubber back-up roll impressing the multi-ply web from one side only with a plurality of identical oriented uniformly spaced asymmetrical spot pattern embossments all of which are of identical size and shape and are arranged in a first and second series of parallel rows, said first series crossing said second series at an acute angle in the machine direction, with said first series of rows disposed at an angle of from about 40° to about 57° relative to the machine direction and said second series of rows disposed at an angle of from about 15° to about 23° relative to the machine direction and wherein the ratio of the transverse dimension across each boss and the spacing between parallel rows is between about 1.2 and about 6.5.

4,803,033

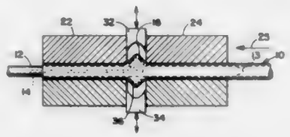
METHOD OF FORMING A FLANGE OR BELLOWS IN A PLASTIC TUB

William W. Rowley, 11524 Wilbert Rd., Chardon, Ohio 44024

Filed Apr. 15, 1987, Ser. No. 38,723

Int. Cl.⁴ B29C *53/08*

U.S. Cl. 264—339 **17 Claims**



1. A method for forming a flange or bellows in a plastic tube comprising:

inserting a mandrel inside a plastic tube;

gripping said tube with at least two gripping dies, said gripping dies initially spaced apart;

heating the tube between the two gripping dies until the wall portion of said tube between said gripping dies is foldable,

moving said gripping dies relatively toward each other to form such flange or bellows;

controlling the extent of movement of such gripping dies so as to avoid the interior walls of the flange or bellows from sticking to each other, and

providing the gripping dies with opposed annular ridges which are adapted to abut when the dies are moved toward each other.

4,803,034

CONCRETE FABRICATION AND CONCRETE SUCTIONING METHOD

Willem Moret, Sliedrecht, Netherlands, assignor to Machinefabriek de Renise B.V., Netherlands

Continuation of Ser. No. 611,600, May 18, 1984, abandoned. This application Aug. 20, 1986, Ser. No. 879,209

Claims priority, application Fed. Rep. of Germany, May 19, 1983, 8301789

Int. Cl.⁴ B28B *1/48, 11/12, 11/22;* **B65G** *53/00*

U.S. Cl. 264—504 **4 Claims**



1. A method of producing a concrete object comprising:

(a) first pouring an uncured concrete mixture into a mold; and

(b) then removing undesired uncured concrete by,

(1) providing a suctioning apparatus having a liquid supply means, a suction nozzle attached to a suction channel, and a tank connected to said channel,

(2) loosening and diluting concrete by means of liquid supplied through said liquid supply means, and

(3) suctioning said liquid and said loosened and diluted concrete together, through said suction nozzle, through said suction channel and into said tank, thereby removing said liquid and said loosened and diluted concrete.

4,803,035

METHOD FOR MAKING COMPOSITE FILMS

Edward N. Kresge, Watchung, and Donald R. Hazelton, Chatham Township, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Dec. 16, 1985, Ser. No. 809,511

Int. Cl.⁴ B29C *47/78*

U.S. Cl. 264—519 **13 Claims**

1. A process for preparing a composite film comprising at least one layer of a first plastic polymer and a substrate of a second polymer/first plastic polymer composition wherein the plastic polymer has a semicrystalline or crystalline melting point which is at least 10° C. higher than the second polymer softening or melting point, said first plastic polymer comprising about 15 to about 90 weight percent of the second polymer/first plastic polymer composition said second polymer and plastic polymer being insoluble in one another, which comprises:

(a) intimately mixing the second polymer and first plastic polymer;

(b) extruding the mixture through a film die having a die outlet comprising a first die surface and a second die surface;

(c) cooling at least one surface of the die outlet to a temperature at least about 10° C. below the melting point of the plastic polymer; and

(d) cooling the film so formed.

4,803,036

PROCESS FOR BLOW-MOLDING AND HEAT SETTING OF POLYESTER HOLLOW FORMED BODY

Yoshitsugu Marahashi; Setsuko Iida; Takashi Sugisaki, all of Yokohama; Yohji Mizutani, and Nobuhiro Kishida, both of Tokyo, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Aug. 31, 1987, Ser. No. 91,137

Claims priority, application Japan, Aug. 30, 1986, 61-202640

Int. Cl.⁴ B29C *49/16*

U.S. Cl. 264—526 **6 Claims**



2. A process for the preparation of a heat resistant polyester hollow formed body, which comprises mounting a preform of a thermoplastic polyester material composed mainly of ethylene terephthalate units, which is maintained at a temperature where high-speed drawing is possible but whitening can be prevented, in a hollow forming mold maintained at a temperature as high as possible within the range where a final hollow formed body can be withdrawn without deformation substantially under non-cooling; blowing air maintained at a temperature of at least 10° C. higher than the preform temperature (T) into the preform to effect stretch drawing and expansion draiwng so that the drawing speed in the circumferential direction is at least 450%/sec and the drawing speed in the axial direction is at least 250%/sec, said high speed drawing of the preform causing the temperature of the preform to rise due to heat generated by internal friction or crystallization of the polyester material during said blowing step thereby effecting heat setting as the preform is being draw formed.

4,803,037

PIPE QUENCHING APPARATUS

Robert M. McBain; Garry J. Becze, both of Sault Ste. Marie; Friedrich W. Kruppert, Goulais River, all of Canada, and Jack W. Leistner, Greenville, S.C., assignors to The Algoma Steel Corporation, Limited, Sault Ste. Marie, Canada

Filed Jul. 24, 1987, Ser. No. 77,595

Int. Cl.⁴ C21D *9/08*

U.S. Cl. 266—78 **10 Claims**

1. Apparatus for hardening an elongated steel pipe section by quenching with a liquid cooling medium, comprising in combination:

(a) a source of liquid cooling medium;

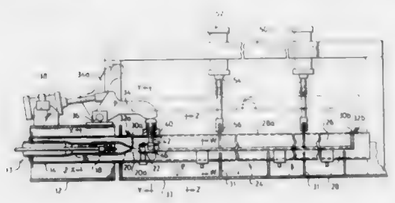
(b) a hollow elongated enclosure of length greater than the length of a pipe section to be quenched and of inside transverse dimensions greater than the outside diameter of such pipe section, and openable to receive such length of pipe, said enclosure comprising an upper shell and a lower shell operable to be assembled in mating engagement to form an enclosure and operable to be separated into an

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open configuation in which one shell is displaced from the other a sufficient distance to facilitate the introduction of a pipe into the apparatus;

(c) injection means for introducing cooling medium from said source to flow through the interior of a pipe section supported within said enclosure in linear alignment with said injection means, and to flow over the outside surface of such aligned pipe section over the outside surface thereof through the space between the exterior of such aligned pipe section and the interior surface of said enclosure;

(d) supporting means operable to support such pipe section within said enclosure in axial alignment with said injection means, said supporting means comprising a plurality of longitudinally spaced transversely extending adjustable flexible members dimensioned and arranged as to permit a substantially unimpeded flow of cooling medium through said elongated enclosure and being adjustable in length so as to support pipe sections of various diameters in alignment with said injection means;



(e) means for regulating the rate of flow of cooling medium through the inside of a pipe section received in said enclosure in axial alignment with said injection means, relative to the rate of flow of cooling medium over the outside surface of such pipe section;

(f) pipe handling means for receiving a hot pipe section to be quenched and for depositing such pipe onto said supporting means with said enclosure in the open configuration, wherein said pipe handling means is adapted to retract from said supporting means to a position in close proximity to the inner surface of said lower shell when said upper and lower shells are assembled to form said enclosure, thereby leaving such pipe section supported on said supporting means, and for lifting said pipe section free of said enclosure when said upper and lower shells are separated into said open configuration; and

(g) securing means for securing a pipe section supported on said supporting means within said enclosure against longitudinal displacement by cooling medium introduced into said enclosure by said injection means.

4,803,038

INTERNAL ANTI-POPPING ASSEMBLY FOR SOLID PROPELLANT ROCKET MOTOR AND ITS MANUFACTURING PROCESS

Jean Beboux, Bordeaux, France, assignor to Societe Europeenne de Propulsion, France

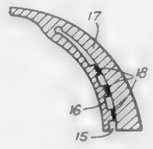
Division of Ser. No. 938,066, Dec. 4, 1986. This application Jan. 21, 1988, Ser. No. 146,385

Claims priority, application France, Dec. 5, 1985, 85 18021

Int. Cl.[4] C06B *21/00*

U.S. Cl. 264—3.3 **5 Claims**

1. A process for producing an internal anti-popping assembly for a solid propellant rocket comprising a propellant grain block housed in a casing with a heat-protection layer interposed between the propellant grain and the casing, and defining a combustion chamber, a separation zone formed between the propellant grain and the heat-protection layer of a bottom structure of the rocket, by a skin detached from said heat-protection layer and adhering to the solid grain, and means providing a passage for gases from the combustion chamber into the separation zone, wherein said process comprises the step of molding projections or teeth in one piece with one at least of



the two parts constituted by the detached skin and the heat-protection layer of the rocket motor bottom structure to ensure a minimum spacing of the detached skin with respect to said layer.

4,803,039

ON LINE INTERACTIVE MONITORING OF THE EXECUTION OF PROCESS OPERATING PROCEDURES

Albert J. Impink, Jr., Murrysville Boro; Melvin H. Lipner, Monroeville, and Roger A. Mundy, North Huntingdon, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 3, 1986, Ser. No. 825,427

Int. Cl.[4] G21C *7/36*

U.S. Cl. 376—216 **43 Claims**

1. A method of on-line monitoring of the execution by a human operator of procedures for a complex process facility comprising the steps of:

storing electric signals representative of step by step procedures for the complex process facility, at least some steps of which require verification of a selected process condition;

generating parameter signals representaitve of the real time value of predetermined process parameters;

sequentially electrically selecting a step of one of said stored step by step procedures as a current step;

electrically processing selected parameter signals to determine the state of the process condition to be varied by a current step which requires verification;

generating a visual representation of said current step including a visible textual statemenet of the condition to be verified, a visual indication of the state of the selected process condition to be verified by the current step, and, where the state of the selected condition indicates that it is not verified, a visible textual statement of recommended operator action;

providing means for the operator to electrically generate an operator response signal in response to a textural statement of recommended operator action by said visal display of said current step, including providing means for the operator to select between electrically generating an action complete response signal and an override response signal, and

electrically sequentially selecting the next step in said stored procedure as the current step in response to said operator response siganl.

4,803,040

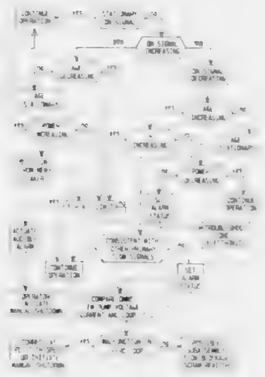
EXPERT SYSTEM FOR SURVEILLANCE AND DIAGNOSIS OF BREACH FUEL ELEMENTS

Kenny C. Gross, Lemont, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 21, 1988, Ser. No. 146,559

Int. Cl.[4] G21C *7/36*

U.S. Cl. 376—216 **15 Claims**



1. In a nuclear reactor having a core comprised of a plurality of cladded fuel elements, a coolant having a primary flow through the core over said cladded fuel elements, said fuel elements including fissionable fuel which emits delayed-neutrons (DN) as part of a nuclear chain reaction, a breached fuel element diagnostic apparatus comprising:

monitoring means for measuring the coolant primary flow rate and reactor power and generating output signals in response thereto;

delayed-neutron monitoring system (DNMS) means for measuring the equivalent recoil area (ERA) of a breach in the cladding of said fuel elements and for continuously monitoring the DN age and DN activity and generating output signals in response thereto, said DN age comprising the sum of a transit time, T_U, and hold-up time, T_h;

operability validation means for testing the operability of the components of said DNMS means and generating output signals indicating the operability of said components; and

a knowledge system comprising a factual knowledge base, a judgment knowledge base and means for said judgmental knowledge base to access said factual knowledge base, said judgmental knowledge base receiving, as input signals, the output signals from said monitoring means, DNMS means and operability validation means, said judgmental knowledge base comprising means for determining the operability of said reactor from a predetermined combination of judgmental knowledge base input signals, said predetermined combination accounting for a nonconstant DN age, and generating output signals in response thereto.

4,803,041

PROCESS FOR THE RECYCLING OF NUCLEAR FUEL PELLETS PREVIOUSLY IRRADIATED IN A FAST NEUTRON NUCLEAR REACTOR

Jean-Pierre Marcon, Lyon, France, assignor to Novatome, Courbevoie, France

Filed Nov. 6, 1986, Ser. No. 927,757

Claims priority, application France, Nov. 8, 1985, 8516577

Int. Cl.[4] G21C *19/34, 21/08*

U.S. Cl. 376—261 **7 Claims**



1. A process for the recycling of nuclear fuel pellets contained in a first metal can in which these pellets and said first metal can have previously been irradiated in a fast neutron nuclear reactor, wherein the process comprises extracting the pellets from the first irradiated can and introducing these pellets into a second unirradiated metal can before irradiating again said pellets contained in said unirradiated second metal can in a fast neutron reactor, said unirradiated metal can having a larger internal diameter than the internal diameter of the first can when said first can was in an unirradiated state, wherein the pellets are extracted from the first can by progressively melting the first can from one of its ends, the thus exposed pellets being maintained in their orientation and position in the stack and then being immediately introduced into the new can.

4,803,042

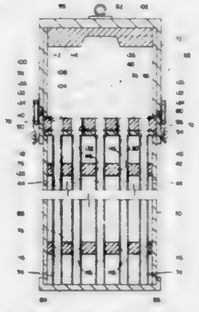
NUCLEAR REACTOR CORE COMPONENT SHIPPING CONTAINER

Charles B. Gilmore, Columbia, S.C.; James L. Kisak, Plum Boro, Pa.; Jeffrey P. Oberst, Penn Hills Twp., Pa.; John D. Wood, Hempfield Twp., Pa., and Frank J. Balok, Dawson, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 23, 1987, Ser. No. 124,318

Int. Cl.[4] G21C *19/00*

U.S. Cl. 376—272 **30 Claims**



23. In combination with a nuclear core component assembly having a common mounting structure and a plurality of spaced

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elongated members supported by said common structure and extending therefrom in a common direction, a nuclear core component shipping container comprising:

(a) a rigid cylinder body of plastic material having a closed bottom and an open top and receiving therein said elongated members of said nuclear core component assembly;

(b) a plurality of elongated tubes of plastic material inserted in said body and receiving said elongated members of said nuclear core component assembly, said tubes stabilizing said members during transport of said container with said core component assembly therein;

(c) a plurality of rigid flat cylindrical spacer plates of foam plastic material disposed stationarily within and transversely across said body and spaced apart from one another axially along said body, each of said plates having a plurality of openings therethrough receiving and disposing said tubes in transverse side-by-side spaced relationship with respect to one another in, and extending between said closed bottom and open top of, said body, said plates laterally spacing and supporting said core component members received in said tubes;

(d) a rigid cylindrical end lid composed of plastic material having a closed top and an open bottom and being installable at its open bottom on said open top of said body, said lid being hollow for receiving therein said common mounting structure of said core component assemby when said lid is installed on said body;

(e) locking means on said lid and said body and being actuatable for latching and unlatching said lid to and from said body; and

(f) a sealing element disposable between said open bottom of said lid and said open top of said body for providing an air-tight seal between said body and lid upon latching said lid to said body by actuation of said locking means.

4,803,043

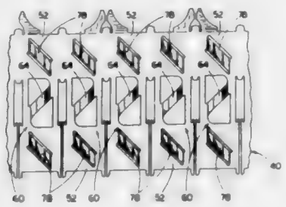
NUCLEAR FUEL ROD GRID SPRING AND DIMPLE STRUCTURES

Edmund E. DeMario, Columbia, and Bobby D. Street, West Columbia, both of S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 53,990, May 22, 1987, abandoned. This application Nov. 25, 1987, Ser. No. 125,514

Int. Cl.[4] G21C *3/34*

U.S. Cl. 376—442 **30 Claims**



1. In a nuclear fuel rod grid including a plurality of inner and outer straps being interleaved with one another to form a matrix of hollow cells, each cell for receiving one fuel rod and being defined by pairs of opposing wall sections of said straps which wall sections are shared with adjacent cells, each cell having a central longitudinal axis, a fuel rod engaging spring structure of resiliently yieldable material being integrally formed on each wall section of said inner straps comprising:

(a) a pair of laterally spaced elongated leg members each having a pair of opposite ends only at which is anchored to said wall section; and

(b) an elongated cross member having a pair of opposite ends, said cross member extending diagonally between and integrally attached at its opposite ends to said leg members such that said spring structure formed by said leg and cross members has an effective length greater than the actual length it occupies on said wall section.

4,803,044

BWR ASSEMBLY

John F. Patterson, Richland, Wash., assignor to Advanced Nuclear Fuels Corporation, Richland, Wash.

Continuation-in-part of Ser. No. 850,104, Apr. 10, 1986, Pat. No. 4,708,846. This application Nov. 3, 1987, Ser. No. 116,606

Int. Cl.[4] G21C *3/32*

U.S. Cl. 376—444 **7 Claims**



1. A fuel assembly for a boiling water reactor comprising a group of vertical, parallel, elongated fuel rods containing a fissionable material, and an outer flow channel surrounding said fuel rods, said assembly having a critical heat transfer zone in its upper portion; at least one inner flow channel having substantially rectilinear sides spanning at least several fuel tubes, said inner channel being constructed and arranged to receive cooling water near the lower end of said assembly, said inner channel extending upwardly through said assembly parallel to said fuel rods and closed at its upper end; a closure in the upper portion of said inner channel; an inner tube having an opening through said closure, and an opening adjacent to the top of said inner channel; at least one opening in said central tube, adjacent said closure, and upper openings in said inner channel above said closure, and located within said critical heat flux zone, whereby cooling water will flow upwardly through said inner channel, upwardly through said inner tube, then downwardly through said inner channel and outwardly through said upper openings into the critical heat flux zone.

4,803,045

COBALT-FREE, IRON-BASE HARDFACING ALLOYS

Evan K. Ohriner, Hamden, Conn.; Edward P. Whelan; Tsuguyasu Wada, both of Ann Arbor, Mich., and Howard Ockea, Palo Alto, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 24, 1986, Ser. No. 922,528

Int. Cl.[4] C22C *38/44, 38/34, 38/38*

U.S. Cl. 420—57 **16 Claims**

1. A cobalt-free, wear-resistant and anti-galling hardfacing weld-consumble or cast alloy consisting essentially by weight of 0.85–1.4% carbon; 5.0–13.0% mangancse; 1.5–5.5% silicon; 18.0–27.0% chromium; 4.0–12.0% nickel; an effective amount up to 6.0molybdenum to provide solid solution strengthening

with carbon molybdenum; 0.1–0.3% nitrogen; 0–1.0% niobium; 0–1.0% titanium; 0–1.0% tantalum; and the balance iron;



said alloy having a microstructure consisting essentially an austenitic matrix and eutectic alloy carbides.

4,803,046

METHOD FOR MAKING TARGETS

Juergen Hauselt; Stephan-U. Schittny, both of Alzenau, and Dieter Kaufmann, Birstein, all of Fed. Rep. of Germany, assignors to Demetron Gesellschaft Fuer Elektronik-Werkstoffe m.b.H., Hanau, Fed. Rep. of Germany

Filed Aug. 14, 1987, Ser. No. 85,502

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1986, 3627775

Int. Cl.[4] B22F *3/26*

U.S. Cl. 420—83 **14 Claims**

1. A method for making a high-purity, high density and mechanically-strong target, adapted for use to coat an object by cathode sputtering or by evaporation, comprising:

selecting a desired composition for said final target from a plurality of components, some of said components having a relatively higher melting temperature and some of said components having a relatively lower melting temperature;

forming a porous body of relatively high melting point from at least a portion of said components having a relatively higher melting temperature;

forming an impregnation material of relatively low melting point from the remaining portion of said components;

impregnating said porous body with said impregnation material such that the reaction of said impregnation material with said porous body produces no substantial amounts of a phase having a melting point lower than said components and produces only negligible proportions of a phase having brittleness in the equilibrium state.

4,803,047

METHOD FOR NEUTRALIZING OFFENSIVE CHEMICALS

Arthur W. Plaim, Jr., 324 E. Hazel, Stillwater, Minn. 55082

Continuation-in-part of Ser. No. 870,639, Jun. 4, 1986, which is a continuation-in-part of Ser. No. 589,595, Mar. 14, 1984, Pat. No. 4,594,239. This application May 28, 1987, Ser. No. 54,960

The portion of the term of this patent subsequent to Jan. 10, 2003, has been disclaimed.

Int. Cl.[4] A61L *9/01;* **A61K** *7/135*

U.S. Cl. 422—5 **10 Claims**

1. A method for decontaminating a surface which has been exposed to a urushiol, said method being for the purpose of neutralizing said urushiol, wherein said method comprises contacting said urushiol with an effective amount of an aqueous solution of a chlorine-containing compound which is capable of reacting with said urushiol to produce non-allergic reaction products, wherein said chlorine-containing compound is a water-soluble compound which is a stable solid at room temperature.

4,803,048

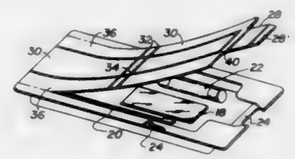
LABORATORY KIT

Frederic L. Nason, 6830 Orion Ave., Van Nuys, Calif. 91406

Filed Apr. 2, 1987, Ser. No. 33,220

Int. Cl.[4] G01N *1/10, 33/48*

U.S. Cl. 422—58 **18 Claims**



1. A laboratory kit, comprising:

at least one laboratory implement;

a tray defining an upwardly open receptacle for receiving and storing said implement for use in performing a laboratory procedure; and

a cover affixed to said tray for closing said tray and preventing access to the implement therein, said cover including a tear-off portion separable from said tray to open the tray and expose the implement therein for use in performing the laboratory procedure, said tear-off portion having a plurality of score lines preformed therein and being foldable along said score lines to form a relatively compact package for receiving and protecting the implement subsequent to performance of the laboratory procedure.

4,803,049

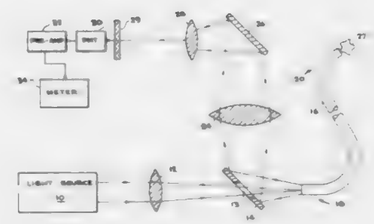
PH-SENSITIVE OPTRODE

Tomas B. Hirschfeld, Livermore, and Francis T. Wang, Danville, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 12, 1984, Ser. No. 681,487

Int. Cl.[4] G01N *21/80, 33/49*

U.S. Cl. 422—58 **44 Claims**



1. An apparatus for monitoring the pH of an associated fluid, the apparatus comprising:

a light source for generating an illumination beam;

a support material having a surface, the surface being capable of contacting the associated fluid;

a first plurality of rhodamine or fluorescein dye molecules covalently attached to the surface of the support material, the attached rhodamine or fluorescein dye molecules of the first plurality being spaced on the surface of the support material so that dimers are not formed between the attached rhodamine or fluorescein dye molecules of the first plurality and adjacent attached rhodamine or fluorescein dye molecules, and the first plurality comprising a sufficient number of attached rhodamine or fluorescein dye molecules so that a fluorescent signal is generated whenever the attached rhodamine or fluorescein dye

molecules of the first plurality are illuminated by the illumination beam; and

detection means for detecting the fluorescent signal and for relating the intensity thereof to the pH of the associated fluid.

4,803,050

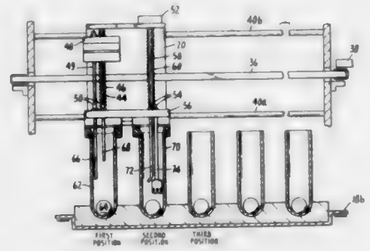
METHOD AND APPARATUS FOR LIQUID ADDITION AND ASPIRATION IN AUTOMATED IMMUNOASSAY TECHNIQUES

Daniel R. Mack, Half Moon Bay, Calif., assignor to Sequoia-Turner Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 757,525, Jul. 22, 1985, abandoned. This application Jul. 22, 1986, Ser. No. 888,848

Int. Cl.[4] G01N *35/06*

U.S. Cl. 422—65 6 Claims



1. A method for adding liquid to, and aspirating liquids from, reaction tubes disposed in rack comprising the steps of: providing reaction tubes disposed in a rack, said rack having n rows in a first horizontal x-direction and m columns in a second horizontal y-direction, perpendicular to the x-direction; a liquid probe depended from a carriage above said rack of tubes, said probe selectively moveable along its longitudinal axis relative to said carriage and perpendicular to the rack horizontal plane; means for moving said carriage in the x-direction or y-direction; means for selectively registering the liquid probe with a row of tubes in said rack; and, control means for selecting and effecting absolute and relative movement of the carriage, probe and rack;

introducing a controlled, timed, tube-dependent pause in a sequence for adding liquid to, and aspirating liquid from, a rack of reaction tubes by controlling the carriage and liquid probe movement so that

for each of y=1 to m columns,

a. liquid is added to tube in x row, y column;

b. previously-added liquid from tube in (x−1) row, y column is aspirated;

c. carriage, rack and probe are returned to register said probe with the tube in x row, (y+1) column; wherein x is between 1 and n.

4,803,051

ATOMIC SPECTROMETER APPARATUS

Gunter Knapp, Graz, Austria, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Continuation of Ser. No. 472,394, Mar. 4, 1983, abandoned, which is a continuation of Ser. No. 320,626, Nov. 12, 1981, abandoned. This application May 23, 1986, Ser. No. 868,204

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1980, 3042907

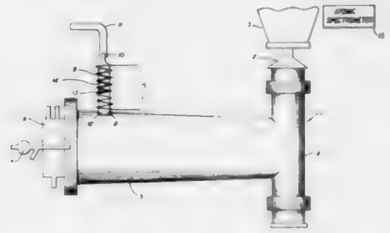
Int. Cl.[4] G01N *21/72*

U.S. Cl. 422—80 12 Claims

1. In combination, an atomic spectrometer and an atomizer apparatus for atomizing a test sample into an atomic state for analysis in said atomic spectrometer, wherein said atomic spectrometer is operatively connected to said atomizer apparatus such that said atomic spectrometer is capable of analyzing an atomized test sample produced by said atomizer apparatus, and wherein said atomizer apparatus comprises:

means for heating a sample to free individual atoms thereof for atomic spectroscopy, said heating means having an inlet opening for connection to a tube member for inletting a sample into said heating means;

a tube member containing a packing of an adsorbent for adsorbing predetermined metal complexes which adsorb to the adsorbent at a first temperature and are volatile at a second higher temperature for desorption from said adsorbent, said tube member having an inlet port for introducing a sample to said adsorbent, an outlet port connected to the inlet opening of the heating means and means for connecting the tube member to a source of carrier gas for carrying metal complexes desorbed from the adsorbent to the heating means;



a reagent for reacting with a selective metal constituent of a sample to form a predetermined metal complex which adsorbs to the adsorbent at a first temperature and is volatile at a second higher temperature for desorption from said adsorbent, wherein said reagent is adsorbed on said adsorbent in said tube member so that a sample may be introduced to said adsorbent to form metal complexes with said reagent; and

tube heating means disposed about said tube member for selectively heating said packing and any adsorbed metal complexes thereat to a temperature to desorb any such metal complexes therefrom for entraining into a flow of carrier gas through said tube member to said heating means for atomization thereof.

4,803,052

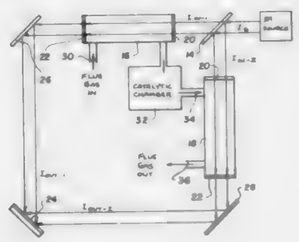
CARBON MONOXIDE DETECTOR

Andre T. Abromaitis, Northbrook, Ill., and Marion A. Keyes, IV, Chagrin Falls, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 431,430, Sep. 30, 1982. This application May 2, 1985, Ser. No. 729,889

Int. Cl.[4] G01N *21/05*

U.S. Cl. 422—91 6 Claims



1. A CO detector for determining the CO concentration in a continuous test gas stream containing interfering or background gases comprising;

a single source of substantially monochromatic IR radiation;

a measuring chamber adapted to continuously receive a gas to be tested for CO;

a reaction chamber connected to said measuring chamber for continuously receiving gas from said measuring chamber and for converting substantially all CO in the sample stream to CO_2;

a reference chamber connected to said reaction chamber for continuously receiving a gas from said reaction chamber to be tested for CO;

said measuring and reference chambers having IR transparent means defining first and second IR radiation paths therethrough;

beam splitting means associated with said IR source for directing IR radiation along said first and second paths;

an IR detector for detecting IR radiation of said first and second paths after the IR radiation has passed through said measuring and reference chambers respectively; and

circuit means connected to said detector for continuously determing a difference between the IR radiation of said first and second paths absorbed in said measuring and reference chambers which difference is a function of the CO concentration of gas supplied to said measuring chamber.

4,803,053

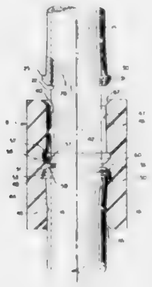
LABORATORY GLASSWARE EQUIPMENT

Kenneth L. Williamson, 43 Woodbridge St., South Hadley, Mass. 01075

Filed Jan. 22, 1987, Ser. No. 6,018

Int. Cl.[4] B01L *3/00, 9/06*

U.S. Cl. 422—101 22 Claims



1. Laboratory equipment comprising:

two functional members each having an identical tubular conduit portion;

the tubular conduit portion having a central axis and a smooth uninterrupted interior surface defined by a substantially constant inner diameter so as to form a nonrestricted internal passageway about the central axis, the tubular conduit portion further having an end terminating to form a planar opening with male sealing means adjacent the planar opening, said male sealing means comprising an annular flange having a forward conical surface increasing in diameter from the planar opening and the flange forming a rearward shoulder that defines a surface symmetrical about said axis and with a cone angle plus or minus 10° relative to a plane perpendicular to said central axis, the radially outward portion of said shoulder terminating in a sharp circumferential edge defined by said symmetrical surface and a cylindrical surface of said male joint means and

a coupling member having bore means comprising means defining a first and a second bore each having a first and a second end, the first and second bores being aligned about a central axis, the second end of the first bore opposing the second end of the second bore, the first and second bores each terminating in a coupling member opening at the first end and in stop means comprising seating members having means defining a central hole and an annular planar surface which cooperates and is coextensive with the planar opening of the tubular conduit portion, and the seating members comprise a gasket having means defining a central hole, the diameter of the hole substantially corresponding to the inner diameter of the tubular conduit portions and the gasket having a cross-sectional depth of 0.5 to 3 millimeters, the stop means adjoining female sealing means, each female sealing means comprising an annular groove having a forward conical surface increasing in diameter toward the opening and a rearward shoulder engaging said rearward shoulder on said male sealing means so that the female sealing means substantially corresponds to the male sealing means and cooperates with the male sealing means to support the functional members in axial alignment and to form a seal and the rearward shoulders of the male and female sealing means cooperating to resist an axial force tending to urge the tubular conduit portion out of the coupling member.

4,803,054

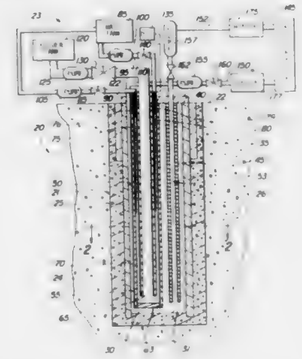
ASYMMETRIC HEAT-EXCHANGE REACTION APPARATUS FOR EFFECTING CHEMICAL REACTIONS

Dean R. Sillerud, Englewood, and Hermann W. Peterscheck, Longmont, both of Colo., assignors to VerTech Treatment Systems, Inc., Denver, Colo.

Filed Mar. 13, 1987, Ser. No. 25,470

Int. Cl.[4] B01J *10/00*

U.S. Cl. 422—109 15 Claims



1. A reaction apparatus for effecting chemical reactions, comprising:

means for holding a heat exchange medium, said holding means including a well casing lining a vertical subterranean shaft, said well casing defining an elongated chamber, said chamber having an upper portion and a lower portion;

a thermally insulated elongated conduit disposed in said elongated chamber and extending into and open to said lower portion of said elongated chamber for conveying a heat exchange medium into said elongated chamber;

an elongated reaction vessel disposed in said elongated chamber and spaced from said thermally insulated elongated conduit, said reaction vessel having first and second pipe portions defining first and second communicating flow passages, said first and second flow passages being in heat exchange relation to one another;

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means for introducing a fluid containing at least two reactants into said elongated reaction vessel to form a fluid column having a reaction zone at a selected pressure; and

means for cycling said heat exchange medium through said thermally insulated elongated conduit and said elongated chamber such that said heat exchange medium is in heat exchange relation with said elongated reaction vessel so that heat can be transferred between said heat exchange medium and said reactants in said elongated reaction vessel to bring about and to control a chemical reaction between said reactants.

4,803,055

APPARATUS FOR STERILIZING CONTAINERS

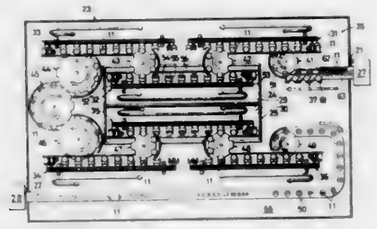
Michio Ueda, Tokushima, Japan, assignor to Shikoku Kakoki Co., Ltd., Tokushima, Japan

Filed Aug. 31, 1987, Ser. No. 90,989

Claims priority, application Japan, Sep. 24, 1986, 61-226426

Int. Cl.⁴ A61L *2/00*; **B08B** *3/08, 9/08*

U.S. Cl. 422—297 **4 Claims**



1. An apparatus for sterilizing containers having an open top and closed bottom comprising:

a closed sterilized chamber having a container inlet and a container outlet;

an antiseptic vessel and a rinse vessel arranged within the sterilized chamber, and

a group of container transport means for transporting a plurality of containers, one container after another from said container inlet, through said sterilized chamber, to said container outlet by way of said antiseptic vessel and said rinse vessel, one of said group of container transport means in each of said antiseptic vessel and saif rinse vessel, each including means for rotating each container, one after another, as each container enters each of said vessels, 180 degrees so that the open top of each container is in the up position, for transporting each container with its open top in the up position through each of said vessels and for again rotating each container 180 degrees as each container is being withdrawn form each of said vessels so that the open top of each container is in the down position.

4,803,056

SYSTEM FOR INCREASING THE CAPACITY OF A TITANIUM DIOXIDE PRODUCING PROCESS

Alan J. Morris, and Merlin D. Coe, both of Oklahoma City, Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Continuation of Ser. No. 515,888, Jul. 22, 1983, abandoned. This application Jul. 31, 1985, Ser. No. 761,329

Int. Cl.⁴ C01G *23/047*; **B01J** *12/02*

U.S. Cl. 422—156 **13 Claims**

1. A reactor for use in producing titanium dioxide by reacting titanium tetrachloride vapors with oxygen comprising:

means for forming a first reaction zone;

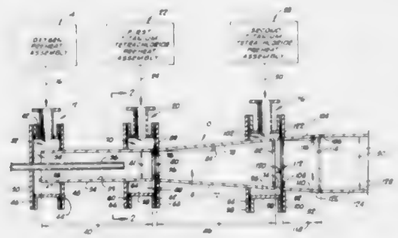
an oxidizing gas introduction assembly for receiving oxygen at a predetermined temperature level and passing the oxygen into the first reaction zone, the oxidizing gas introduction assembly comprising:

a conduit having an upstream and a downstream end and an opening extending therethrough intersecting the upstream and the downstream ends and the oxygen being passable through the opening in the conduit for passing the oxygen into the first reaction zone;

a first titanium tetrachloride introduction assembly for receiving titanium tetrachloride vapors at a first predetermined temperature level and passing the titanium tetrachloride vapors at the first temperature level into the first reaction zone for reacting with the oxygen to produce a mixture including titanium dioxide, the first titanium tetrachloride introduction assembly comprising:

a cylindrically shaped outer case having an upstream end, a downstream end and an opening extending axially therethrough intersecting the upstream and downstream ends;

a cylindrically shaped inner case having an upstream end, a downstream end and an opening extending axially therethrough intersecting the upstream and the downstream ends, the inner case being disposed in the opening in the outer case and the diameter of the outer case provided by the surface formed by the opening extending through the outer case being greater than the diameter formed by the outer peripheral surface of the inner case thereby providing a space between the outer case and the inner case forming a first titanium tetrachloride chamber, one of the upstream and the downstream ends



of the inner case being spaced a distance axially from the respective one of the upstream and the downstream ends of the outer case for forming a slot to pass titanium tetrachloride vapors from the first titanium tetrachloride chamber;

a downstream end wall secured to the downstream end of one of the inner and the outer cases;

an upstream end wall secured to the upstream end of one of the inner and the outer cases, the downstream end of the conduit being removably secured to the upstream end wall for passing the oxidizing gas from the oxidizing gas introduction assembly to the first titanium tetrachloride introduction through the upstream end wall, the upstream and the downstream end walls cooperating to secure the inner and the outer cases in the spaced apart relationship for forming the slot to pass titanium tetrachloride vapors from the first titanium tetrachloride chamber; and

means for passing the titanium tetrachloride vapor at the first temperature level into the first titanium tetrachloride chamber; and

wherein the means for forming the first reaction zone is defined further to include:

a section having an upstream end, a downstream end and an opening extending axially therethrough intersecting the upstream and downstream ends, the upstream end of the section being removably secured to the downstream end wall of the first titanium tetrachloride introduction assembly, the opening extending through the section cooperating to form the first reaction zone, the upstream and downstream end walls of the first titanium tetrachloride introduction assembly respectively being removably secured to the conduit of the oxidizing gas introduction assembly and the section of the first reaction zone to facilitate the removal or insertion of the first titanium tetrachloride introduction assembly from the conduit of the oxidizing gas introduction assembly and the section of the first reaction zone without disassembly of said conduit, said section and the first titanium tetrachloride introduction assembly.

4,803,057

CONTINUOUS CHROMATOGRAPHIC SEPARATION OF URANIUM ISOTOPES

Kunihiko Takeda, Yokohama, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

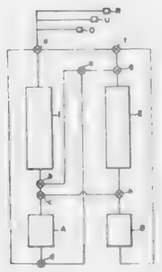
Continuation of Ser. No. 669,390, Nov. 8, 1984, abandoned. This application Sep. 24, 1986, Ser. No. 910,864

Claims priority, application Japan, Nov. 30, 1983, 58-224271

The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.

Int. Cl.⁴ C22B *60/02*; **B01D** *59/30*; **C01G** *43/00*

U.S. Cl. 423—6 **10 Claims**



1. In a process for continuously separating uranium isotpes by passing an acidic solution of a mixture of uranium isotopes in a solvent through an anion exchanger thereby forming on the anion exchanger a boundary (A) between a uranium adsorption zone and an adjacent reducing agent zone and a boundary (B) between a uranium adsorption zone and an adjacent oxidizing agent zone, advancing the uranium adsorption zone through the anion exchanger, effecting reduction at the boudary (A) and effecting oxidation at the boundary (B), thereby effecting enrichment adjacent said boundary, and separating a fraction enriched in one of said isotopes, the improvement which comprises passing an eluent containing a deactivated oxidizing agent and a deactivated reducing agent as a mixture through the anion exchanger to be used for isotope separation to convert said deactivated oxidzing agent and said deactivated reducing agent to activated oxidizing agent and activated reducing agent, respectively, and to form an oxidzing agent zone in the column, and reusing said activated reducing agent for the reduction of uranium.

4,803,058

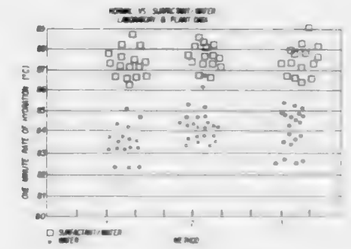
MOISTURIZED COMPOSITIONS OF HYDRATE-PORMING PHOSPHATES AND METHODS FOR PREPARATION THEREOF

Louis A. Highfill, Union, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 30,091, Mar. 31, 1987, Pat. No. 4,770,865, which is a continuation-in-part of Ser. No. 901,920, Aug. 29, 1986, abandoned. This application May 12, 1988, Ser. No. 193,024

Int. Cl.⁴ B01F *1/00*; **C09K** *3/00*; **C11D** *7/16, 17/06*

U.S. Cl. 252—135 **14 Claims**



1. A composition of matter in particulate, crystalline form, free-flowing during storage and prolonged exposure to ordinary ambient temperature and humidity conditions, having an increased rate of hydration and resistance to caking comprising sodium tripolyphosphate, and from about 0.1% by weight and about 23% by weight added water in the form of water of hydration, said water containing in solution sufficient surfactant to provide the composition with from about 0.2 ppm to about 125 ppm surfactant.

4,803,059

PROCESS FOR THE REDUCTION OF NITROGEN OXIDES IN AN EFFLUENT USING A HYDROXY AMINO HYDROCARBON

James C. Sullivan, Southport, and William R. Epperly, New Canaan, both of Conn., assignors to Fuel Tech, Inc., Stamford, Conn.

Filed Apr. 15, 1987, Ser. No. 39,013

Int. Cl.⁴ C01B *21/00*

U.S. Cl. 423—235 **23 Claims**

1. A process for the reduction of the concentration of nitrogen oxides in an effluent from the combustion of a carbonaceous fuel, the process comprising injecting a treatment agent comprising a hydroxy amino hydrocarbon into an effluent at an effluent temperature of greater than about 1300° F. under conditions effective to reduce the concentration of nitrogen oxides in the effluent.

4,803,060

PROCESS FOR PRODUCING A CRYSTALLINE GALLIOSILICATE WITH THE FAUJASITE STRUCTURE

Mario L. Occelli, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 1, 1986, Ser. No. 936,731

Int. Cl.⁴ C01B *33/20*; **B01J** *29/04*

U.S. Cl. 423—326 **23 Claims**

1. A process for preparing a crystalline, galliosilicate molecular sieve having the faujasite structure which comprises:

(a) mixing a source of gallia, a source of silica, a source of sodium and water to form a hydrogel having the following oxide mole ratios of components

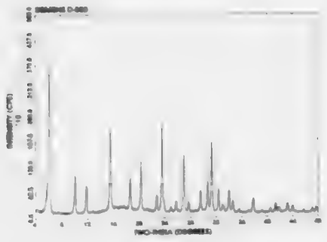
SiO_2/Ga_2O_3=6 to 15

Na_2O/Ga_2O_3=1 to 5

H_2O/Ga_2O_3=80 to 500

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(b) adding to said hydrogel a galliosilicate solution substantially free of alumina and dispersed particles, said solution having the following oxide mole ratios of components
SiO_2/Ga_2O_3=5 to 30
Na_2O/Ga_2O_3=6 to 20
H_2O/Ga_2O_3=200 to 800
to form a mixture of said solution and said hydrogel, said mixture having oxide mole ratios of components falling



within the same ranges as the oxide mole ratios of components in said hydrogel and wherein said solution is prepared by mixing a source of gallia, a source of silica, a source of sodium and water; and
(c) crystallizing said mixture in the absence of stirring at a temperature below about 150° C. to form a galliosilicate molecular sieve having the faujasite structure and containing less than about 0.2 weight percent alumina.

4,803,061

PARTIAL OXIDATION PROCESS WITH MAGNETIC SEPARATION OF THE GROUND SLAG

Mitri S. Najjar, Hopewell Junction, N.Y., and Michael W. Becker, Westminster, Calif., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 29, 1986, Ser. No. 947,122
The portion of the term of this patent subsequent to May 22, 2004, has been disclaimed.
Int. Cl.⁴ C01B *31/18*
U.S. Cl. 423—415 A 27 Claims

1. A process for the production of gaseous mixtures comprising H_2+CO by the partial oxidation of a feedstock comprising a heavy liquid hydrocarbonaceous fuel having a nickel- and vanadium-containing ash or petroleum coke having a nickel- and vanadium-containing ash, or mixtures thereof; and said feedstock includes a minimum of 0.5 wt. % of sulfur and said ash includes a minimum of 5.0 wt. % vanadium, a minimum of 2.0 wt. % of nickel, and silicon; comprising the steps of:
(1) mixing together with said feedstock, additive A comprising an iron-containing additive when the silicon content of said feedstock is less than about 350 ppm, or additive B comprising an iron- and calcium-containing additive when the silicon content of said feedstock is about 400 ppm or more, wherein the weight ratio of additive A or B to said ash is in the range of about 1.0–10.0 to 1.0, and for each part by weight of vanadium there is at least 10 parts by weight of iron when additive A is used, or at least 10 parts by weight of iron plus calcium when additive B is used;
(2) reacting the mixture from (1) at a temperature in the range of about 2200° F. to 3000° F. and a pressure in the range of about 5 to 250 atmospheres in a free-flow refractory-lined partial oxidation reaction zone with a free-oxygen containing gas in the presence of a temperature moderator and in a reducing atmosphere to produce a hot raw effluent gas stream comprising H_2+CO and entrained molten slag including vanadium-containing oxide laths and spinels; and where in said partial oxidation reaction zone when additive A is used said iron-containing additive combines with at least a portion of said nickel constituents and sulfur found in the feedstock to produce a liquid phase washing agent that collects and transports at least a portion of the vanadium-containing oxide laths and spinels and other ash components and refractory out of reaction zone; and when additive B is used separate portions of said iron- and calcium-containing additive (I) combine with a portion of said nickel, calcium and sulfur to generate a liquid phase washing agent that collects and transports a portion of the vanadium-containing oxide laths and spinels and other ash components and refractory; and (II) combine with a portion of said nickel, calcium and silicon to generate a liquid oxide-silicate phase that fluxes substantially all of the remaining portion of said vanadium-containing oxide laths and spinels and other ash components;
(3) cooling and cleaning said hot raw effluent gas stream from (2) by direct contact with water in a quench zone to produce an aqueous suspension of slag and other small solid particles;
(4) grinding and drying the slag and other particulate solids from (3) to produce a ground heterogeneous mixture of particles having varying magnetic susceptibilities, and non-magnetic solid particles; wherein said ground heterogeneous mixture of particles has a particle size of less than 180 microns, and a moisture content of less than 3.0 wt. %;
(5) separating said ground heterogeneous mixture of particles from (4) by electromagnetic means including spaced apart poles by introducing a portion of said ground heterogeneous mixture of solid particles from (4) about 38 to 600 microns thick between the poles of said electromagnetic means having a low magnetic field strength in the range of about 10 to 1000 gauses, and separating a first portion of magnetic particles from a first residue mixture of magnetic and non-magnetic particles; wherein said first portion of magnetic particles comprises a heterogeneous mixture of particles of an Fe-Ni alloy and about 0 to 10 wt. % of magnetite particles; and said Fe-Ni alloy comprises about 70–95 wt. % Fe and the remainder Ni, and said Ni comprises about 40 to 85 wt. % of the total amount of nickel present in the ground mixture of solid particles from (4); and said first portion of magnetic particles comprises about 0.2 to 5.0 wt. % of the ground mixture of solid particles from (4);
(6) separating said heterogeneous mixture of particles from (5) by electromagnetic means including spaced part poles by introducing a portion of said first residue mixture of magnetic and non-magnetic particles from (5) about 38 to 600 microns thick between the poles of said electromagnetic means having a medium magnetic field strength in the range of about 1,000 to 10,000 gausses, and separating a second portion of magnetic particles from a second residue mixture of magnetic and non-magnetic particles; wherein said second portion of magnetic particles comprises a heterogeneous mixture of particles which have a lesser magnetic susceptibility than that of the particles in said first portion of magnetic particles, and which comprises particles of a solid portion of Fe and Ni oxy-sulfide; about 0.1 to 2.0 wt. % of particles of vanadium compounds; and particles of iron silicate and calcium silicate; and said second portion of magnetic particles comprises about 85 to 98 wt. % of the ground mixture of solid particles from (4) and contains about 70 to 95 wt. % of the iron; and
(7) separating said heterogeneous mixture of particles from (6) by electromagnetic means including spaced apart poles by introducing a portion of said second residue mixture of magnetic and non-magnetic particles from (6) about 38 to 600 microns thick between the poles of said electromagnetic means having a high magnetic field strength in the range of about 8,000 to 40,000 gausses, and separating a third portion of magnetic particles from a third residue mixture of particles; wherein said third portion of magnetic particles comprises a heterogeneous mixture of particles which have a lesser magnetic susceptibility than that of the particles in said second portion of magnetic particles, and which comprises particles of a vanadium-containing spinel; and a mixture of particles comprising at least one metal silicate wherein the metal in said metal silicate is selected from the group consisting of iron, magnesium, aluminum, calcium, and mixtures thereof; and said third portion of magnetic particles comprises about 1 to 14 wt. % of the ground mixture of solid particles from (4) and contains about 60 to 98 wt. % of the vanadium in said mixture from (4).

4,803,062

METHOD FOR PRODUCING TUNGSTEN HEXACHLORIDE

Robin W. Munn, Sayre; Robert P. McClintic, Monroeton, and Kenneth T. Reilly, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 14, 1988, Ser. No. 181,885
Int. Cl.⁴ C01G *37/00*
U.S. Cl. 423—492 1 Claim

1. In a method for producing tungsten hexachloride comprising reacting tungsten with chlorine gas at a temperature sufficient to result in the conversion of said tungsten to tungsten hexachloride, the improvement comprising reacting tungsten in the form of pressed pieces to convert said pieces to tungsten hexachloride having an oxygen content of less than about 0.5% by weight with the rate of conversion to said tungsten hexachloride being at least about 2.3 times greater than the rate of conversion when said tungsten is in an unpressed form.

4,803,063

PROCESS FOR THE CYCLIC PRODUCTION OF HYDROGEN PEROXIDE

Christian Pralus, Saint-Cyr-Au-Mont-D'Or, France, assignor to Atochem, Puteaux and Oxysynthese, Paris, both of, France

Filed Apr. 1, 1988, Ser. No. 176,194
Claims priority, application France, Apr. 16, 1987, 87 05429
Int. Cl.⁴ C01B *15/02*
U.S. Cl. 423—588 8 Claims

1. A cyclic process for production of hydrogen peroxide comprising:
alternately reducing and oxidizing a quinone in a solvent medium; and
extracting the hydrogen peroxide formed;
wherein the solvent medium contains a carboxylic acid amide selected from the group consisting of carboxylic acid amides having at least one aryl group wherein an aryl group is attached to the nitrogen or the carbon of the carbonyl group; or an aryl group is attached to the nitrogen and another aryl group, which is the same or different, is attached to the nitrogen or to the carbon of the carbonyl group.

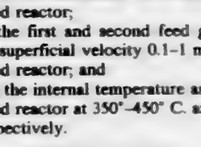
4,803,064

PROCESS FOR PREPARING TITANIUM DIOXIDE IN THE FORM OF SPHERICAL PARTICLES BY HYDROLYSIS OF TI(IV)

Franco Mostino, Novara, and Giuseppe Spoto, Turin, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Sep. 11, 1987, Ser. No. 95,611
Claims priority, application Italy, Sep. 16, 1986, 21710 A/86
Int. Cl.⁴ C01G *23/053*
U.S. Cl. 423—612 14 Claims

1. A process for preparing titanium dioxide in the form of spherical particles having diameters ranging from 0.2 to 1.5 μm and a polydispersion index $dw/dn \leqq 2$, wherein dw is the average weighed diameter and dn is the average linear diameter of the particles, by hydrolysis of aqueous solutions, strongly acid due to HCl or H_2SO_4, of Ti(IV) and $SO_4^{=}$ ions, in which the $SO_4^{=}/Ti(IV)$ ratio is at least higher than 1.5, in the presence of cationic polyelectrolytes, having an average molecular weight



higher than 1 million and a ionicity of at least 3 milliequivalents per gram (meq/g).

4,803,065

PRODUCTION PROCESS OF CHLORINE

Hiroyuki Itoh; Yoshitsugu Kono; Masanobu Ajioka; Shinji Takesaka, and Masafumi Katsura, all of Ohmuta, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jan. 22, 1987, Ser. No. 64,699
Claims priority, application Japan, Jan. 30, 1986, 61-151749; Jan. 30, 1986, 61-151750
Int. Cl.⁴ C01B *7/04*
U.S. Cl. 423—502 11 Claims

1. A process for producing chlorine by reacting hydrogen chloride and oxygen in the presence of a catalyst, which contains a chromium oxide as a principal component thereof, in a fluidized-bed reactor, which comprises:
(i) providing, as said reactor, a fluidized-bed reactor whose gas-contacting portions are each made of a material consisting essentially of nickel and having an iron content of 1 wt. % or less, said latter reactor having an equivalent diameter of at least 0.05 m;
(ii) filling, as the catalyst, a chromium oxide catalyst, which has a mean particle size of 40–100 μm and a maximum particle size of 200 μm or smaller and contains at least 10 wt. % of particles having particle sizes of 40 μm and smaller, in the thus-provided fluidized-bed reactor, said chromium oxide catalyst being filled in an amount of at least 0.1 m in terms of catalyst layer height in the thus-provided reactor when the chromium oxide catalyst is at rest;
(iii) feeding a first feed gas as an oxygen source and a second feed gas as a hydrogen chloride source into the thus-provided reactor in such amounts that the molar ratio of oxygen in the first feed gas to hydrogen chloride in the second feed gas is at least 0.25 and the hydrogen chloride in the second feed gas is fed at a rate of 100–1800 Nl per hour and per kg of the chromium oxide catalyst filled in the thus-provided reactor;
(iv) allowing the first and second feed gases to flow upwardly at a superficial velocity 0.1–1 m/sec through the thus-provided reactor; and
(v) controlling the internal temperature and pressure of the thus-provided reactor at 350°–450° C. and at least normal pressure respectively.

4,803,066

ANTIBACTERIAL AND/OR ANTIFUNGAL COMPOSITIONS FOR TOPICAL APPLICATION

Linda M. Edwards, Saffron Walden, United Kingdom, assignor to Smith & Nephew Associated Companies p.l.c., England

Filed Mar. 19, 1987, Ser. No. 27,861
Claims priority, application United Kingdom, Mar. 22, 1986, 8607159
Int. Cl.⁴ A61K *33/04*
U.S. Cl. 424—132 26 Claims

1. A pharmaceutical composition in topical administration

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form which comprises a synergistic mixture of an antimicrobial silver compound and an antimicrobial azole compound or a pharmaceutically acceptable acid addition salt thereof in the weight ratio of 10:1 to 1:10; in combination with a topically acceptable carrier therefor.

4,803,067

COMPOSITIONS FOR COSMETICS AND DERMATOLOGY COMPRISING PERFLUOROPOLYETHERS

Fabio Brunetta, Corsuda; Stefano Bader, Melzo, and Giovanni Pantini, Milan, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Mar. 26, 1986, Ser. No. 844,318

Claims priority, application Italy, Mar. 29, 1985, 20161 A/85

Int. Cl.[4] A61K *7/48, 31/77;* **C08L** *71/02*

U.S. Cl. 424—63 **15 Claims**

1. A composition comprising a perfluoropolyether liquid dispersed in an oil in water emulsion or in a water in oil emulsion, or in a solid phase suited to form a gel, said solid phase being suspended in a liquid organic phase, said composition containing from 0.05 to 30 parts of perfluoropolyether per 100 parts of the total sum of the other components.

4,803,068

HAIR-TREATMENT PREPARATION FOR IMPROVED WET COMBABILITY

Uwe Ploog, Haan; Peter Busch, Erkrath-Unterbach; Klaus Thiele, Langenfeld; Horst Höffkes, Dusseldorf Hellerhof, and Karl Glede, Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 525,971, Aug. 24, 1983, abandoned. This application Oct. 28, 1987, Ser. No. 115,553

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1983, 3302210

Int. Cl.[4] A61K *7/075, 7/08*

U.S. Cl. 424—70 **22 Claims**

1. A process for improving the wet combability of hair which comprises applying to said hair an aqueous hair-treatment composition comprising at least one hair-treatment agent and an additive to improve the wet combability of hair wherein said aqueous hair-treatment composition contains an amount sufficient to improve the wet combability of hair of at least one surface-active phosphonic compound selected from the group consisting of:

(1) phosphonic acid compounds having the formula

$$R^1—CH_2—PO_3H_2$$

wherein R^1 is a linear C_7–C_{13} alkyl, and

(2) a water-soluble salt of said phosphonic acid compounds as said additive to improve the wet combability of hair.

13. An aqueous hair-treatment composition comprising at least one hair-treatment agent and an additive to improve the wet combability of hair wherein said aqueous hair-treatment composition contains an amount sufficient to improve the wet combability of hair of at least one surface-active phosphonic compound selected from the group consisting of:

(1) phosphonic acid compounds having the formula:

$$R^1—CH_2—PO_3H_2$$

wherein R^1 is a linear C_7–C_{13} alkyl, and

(2) a water-soluble salt of said phosphonic acid compounds as said additive to improve the wet combability of hair, such composition further characterized as being free of detergent builder salts.

4,803,069

COMPOSITION FOR THE TREATMENT OF ACNE

Sándor Kékesi; Piroska Tamási; Veronika Pál; Sándor Jancsó; Ilona Kristóf née Szvitil; György Bacsa, and Katalin Kovács née Hadady, all of Debrecen, Hungary, assignors to Biogál Gyógyszergyár, Debrecen, Hungary

Filed Feb. 7, 1989, Ser. No. 874,247

Claims priority, application Hungary, Jun. 18, 1985, 2389/85

Int. Cl.[4] A61K *7/45, 7/075, 35/78*

U.S. Cl. 424—74 **6 Claims**

1. Composition for the treatment of various forms of acne, comprising in an amount of 2%–95% by weight the rhizoma (*Graminia rhizoma*) of wheat grass (Agropyron repens) in admixture with 5%–98% by weight of cosmetically acceptable additives and/or diluents and with or without an antibacterial agent and/or further a plant extract.

4,803,070

IMMUNOLOGICAL EMULSION ADJUVANTS FOR POLYSACCHARIDE VACCINES

John L. Cantrell, Corvallis, and Jon A. Rudbach, Hamilton, both of Mont., assignors to Ribi ImmunoChem Research Inc., Hamilton, Mont.

Filed Apr. 15, 1986, Ser. No. 852,118

Int. Cl.[4] A61K *39/00*

U.S. Cl. 424—92 **16 Claims**

1. An immunological adjuvant useful for enhancing the immune response against polysaccharide antigens, comprised of:

(1) an emulsion system selected from the group consisting of:

(A) a lipid emulsion system (LES) containing:

(a) a metabolizable oil,

(b) a low molecular weight polyol, and

(c) lecithin, or

(B) an oil-in-water emulsion system O/W containing:

(a) a light hydrocarbon non-biodegradable oil or a biodegradable oil, and

(b) a detergent,

(2) a refined detoxified endotoxin (RDE), and optionally,

(3) trehalose dimycolate, (TDM).

4,803,071

HAIR CARE COMPOSITIONS

Carmine P. Iovine, Bridgewater, and Frank A. Nowak, Jr., Somerville, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation of Ser. No. 120,185, Feb. 11, 1980, abandoned. This application Jan. 5, 1984, Ser. No. 617,416

Int. Cl.[4] A61K *7/06, 7/08, 7/11, 9/12*

U.S. Cl. 424—70 **6 Claims**

1. An improved hair conditioning composition selected from the group consisting of rinses, lotions, shampoos, and fixatives, comprising an aqueous or aqueous alcoholic carrier and a polymer of N,N-dialkyldiallyl ammonium bromide or chloride, wherein the improvement comprises improved manageability provided by the presence in the composition of from 0.30 to 2% by weight of a water-soluble cationic graft copolymer prepared by polymerizing about 21–25% by weight of a N,N-dialkyldiallyl ammonium halide monomer with about 75–79% by weight of a substrate selected from the group consisting of hydroxyethyl cellulose and hydroxypropyl cellulose the polymerization being carried out in a two-phase system in the presence of a free radical polymerization catalyst other than ceric ions which comprises the steps of:

(a) suspending the substrate in an organic solvent, which solvent has a boiling point at or above the temperature of the polymerization reaction, is immiscible with water and does not dissolve the substrate, monomer or graft copolymer;

(b) adding thereto an aqueous solution of the monomer thereby forming a suspension of discrete aqueous spheres in the organic solvent phase;

(c) deoxygenating and heating the reaction mixture in the presence of the free radical polymerization catalyst to a temperature of 40°–100° C. to initiate polymerization;

(d) continuing the polymerization for from 0.5–6 hours; and

(e) isolating the resultant graft copolymer from the reaction mixture in the form of solid beads; wherein it is required that either the aqueous solution or the substrate suspension or both contain a cationic, anionic or nonionic surfactant and that the solids content of the aqueous polymerization mixture is greater than 50% by weight.

4,803,072

IMMUNOMODULATION

Barbara J. Dalton, Philadelphia, Pa., and Robert C. Rees, Sheffield, England, assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Sep. 10, 1986, Ser. No. 905,825

Int. Cl.[4] A61K *45/02, 37/02*

U.S. Cl. 424—85.5 C **11 Claims**

1. A method of modulating the immune response in a human, or other animal, in need thereof by inducing the production of leukocyte IFN which comprises administering an effective, leukocyte interferon production inducing amount of NS1 to such human or animal.

4,803,073

PROCESS FOR THE PASTEURIZATION OF PLASMA PROTEINS AND PLASMA PROTEIN FRACTIONS

Walter Doleschel; Walter N. Doleschel, both of Vienna, and Helmut Kaltschmid, Bad Vöslau, all of Austria, assignors to Schwab & Co Ges.m.b.H., Vienna, Austria

Filed Mar. 9, 1967, Ser. No. 23,185

Claims priority, application Austria, Mar. 18, 1986, 719/86

Int. Cl.[4] A61K *35/16, 37/02;* **C12N** *7/06*

U.S. Cl. 424—101 **8 Claims**

1. A process for the pasteurization of dried plasma proteins and plasma protein fractions by heat treatment of their suspensions in a liquid organic heat-transfer agent without essentially impairing their biological activity, which comprises carrying out the heat treatment in symmetrical or in mixed glycerol esters, which are liquid at the pasteurization temperature, of saturated or singly or multiply unsaturated fatty acids having 4–22 carbon atoms, or mixtures of these esters, as the inert heat-transfer agent, with the maximum water content of the suspension being 1% by weight and the temperature being 50°–120° C.

6. The process as claimed in claim 1, wherein the heat treatment is carried out in the presence of Ca salts in the suspension in an amount of 10 to 50 mmol per liter.

4,803,074

FR-900848 SUBSTANCE AND PREPARATION THEREOF

Masaru Yoshida, Tsukuba, and Koki Horikoshi, Tokyo, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 30, 1988, Ser. No. 175,297

Claims priority, application United Kingdom, Apr. 10, 1987, 8708635

Int. Cl.[4] A61K *35/74;* **C12P** *1/06, 1/04*

U.S. Cl. 424—122 **3 Claims**

1. FR-900848 substance, wherein FR-900848 substance has following physico-chemical properties:

Appearance: colorless needles

Nature: acidic

Melting point: 198°–201° C. (dec)

Specific rotation: $[\alpha]_D^{20}$: −36.22° (c=0.5, DMSO)

Molecular formula: $C_{32}H_{43}N_3O_6$

Elemental Analysis: Calcd: for $C_{32}H_{43}N_3O_6$: C, 67.94, H, 7.60, N, 7.43; O, 16.97 (%); Found: C, 68.57; H, 7.51; N, 7.53; (O, 16.39) (%)

Molecular weight: FAB-MS m/z 56

Solubility:

soluble: dimethylsulfoxide;

slightly soluble: methanol, ethyl acetate, chloroform;

insoluble: water

Color reaction:

positive: Dragendorff reaction, Ehrlich reaction, cerium sulfate reaction, iodine vapor reaction

negative: Ninhydrin reaction, ferric chloride reaction, Molish reaction

Thin layer chromatography:

Rf value (silica plate, Kieselgel 60 F_{254}, made by Merck & Co., Inc.):

0.55 (chloroform:methanol=5:1);

0.70 (chloroform:methanol included 10% acetic acid=5:1)

High pressure thin layer chromatography:

Rf value (RP-18 F_{254}, made by Merck & Co., Inc.):

0.21 (methanol:10% acetic acid=9:1)

High pressure liquid column chromatography (HPLC):

(Column YMC-Pack A-302 (5 μm, 4.5×150 mm) (made by Yamamura Chemical Institute)

HITACHI M655 HPLC Processor (detect UV 280 nm);

solvent system methanol:10% acetic acid=9:1);

retention time: 4.42 minutes

Ultraviolet absorption spectrum:

$\lambda_{max}^{methanol}$=280 nm (ε=31,000);

$\lambda_{max}^{0.1N\ HCl\text{-}methanol}$=280 nm (ε=31,000);

$\lambda_{max}^{0.1N\ NaCl\text{-}methanol}$=280 nm (ε=31,000)

Infrared absorption spectrum: ν_{max}^{Nujol}=3320, 3250, 3055, 3000(sh), 2950(sh), 2920, 2850, 1760, 1708, 1675, 1650, 1615, 1540, 1520(sh), 1480, 1455, 1410, 1395, 1370, 1350, 1330, 1308, 1270, 1245, 1230, 1202, 1180, 1160, 1133, 1120(sh), 1093, 1068, 1030, 1020, 986, 955(sh), 945, 928, 917, 900, 880, 860, 850(sh), 825, 800, 760, 740, 720 cm^{-1}

^1H Nuclear magnetic resonance spectrum: (DMSO-d_6, 400.13 MHz); δ: 0.01–0.15 (4H, m), 0.29–0.37 (3H, m), 0.39–0.45 (1H, m), 0.46–0.76 (8H, m), 0.92–1.06 (3H, m), 0.99 (3H, d, J=6 Hz), 1.25 (1H, m), 2.43–2.60 (2H, m), 3.21 (1H, m), 3.26–3.44 (3H, m), 3.69 (1H, m), 3.75 (1H, m), 3.94 (1H, m), 4.91–5.00 (2H, m), 5.02 (1H, d, J=4.9 Hz), 5.12 (1H, d, J=5.6 Hz), 5.64 (1H, dd, J=14.9 and 9.4 Hz), 5.66 (1H, d, J=6.0 Hz), 5.89 (1H, d, J=15.0 Hz), 6.20 (1H, dd, J=14.9 and 11.1 Hz), 6.94 (1H, dd, J=15.0 and 11.1 Hz), 8.02 (1H, t, J=5.7 Hz), 10.27 (1H, broad s) ppm

^{13}C Nuclear magnetic resonance spectrum: (DMSO-d_6, 100.62 Hz); δ: 7.60(t), 7.65(t), 11.16(t), 12.95(t), 14.08(d), 14.37(t), 17.65(d), 17.81(d), 18.02(d), 18.29(d), 18.31(q), 19.67(d), 21.00(d), 21.24(d), 22.01(d), 23.28(d), 30.82(t), 35.97(t), 41.031(t), 70.06(d), 71.18(d), 81.21(d), 87.64(d), 121.45(d), 125.48(d), 130.27(d), 130.622(d), 139.44(d), 145.70(d), 153.10(s), 165.60(s), 170.29(s) ppm.

4,803,075

INJECTABLE IMPLANT COMPOSITION HAVING IMPROVED INTRUDABILITY

Donald G. Wallace, Menlo Park; Hertsel Reihanian, San Francisco; Bruce B. Pharriss, Palo Alto, and William G. Braun, Los Altos, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Filed Jun. 25, 1986, Ser. No. 878,418

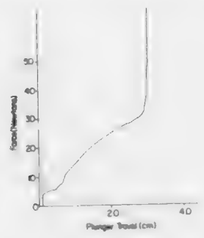
Int. Cl.[4] A61F *2/00*

U.S. Cl. 424—423 **34 Claims**

1. An injectable implant composition for soft tissue augmentation comprising an aqueous suspension of a particulate biomaterial containing a sufficient amount of a biocompatible fluid lubricant to significantly improve the intrudability of the composition, wherein said particles of biomaterial are fibrils or

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beads comprising natural or synthetic polymers, and wherein said fluid lubricant comprises a non-fibrillar high molecular



weight charged polymer, a high molecular weight neutral polymer, or a low molecular weight neutral molecule.

4,803,076

CONTROLLED RELEASE DEVICE FOR AN ACTIVE SUBSTANCE

Gautam R. Ranade, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Sep. 4, 1986, Ser. No. 904,070
Int. Cl.[4] A23K *1/18*; A01N *29/04*; A61K *31/025, 31/03*
U.S. Cl. 424—438 **39 Claims**



11. A bolus for oral administration into the reticulum or rumen of a ruminant mammal, said bolus being retained in said rumen or reticulum and releasing one or more active agents into the environment of said rumen or reticulum at a substantially constant rate over a prolonged period of time, which comprises said active agent or agents homogeneously disposed in a matrix and contained substantially in the shape of one or a plurality of truncated cones by means of an impermeable wall on the base and side of said truncated cone or cones.

4,803,077

PROCESS TO PREPARE SOLID PRODUCTS CONTAINING OIL-SOLUBLE SUBSTANCE

Masakazu Mitsuhashi; Shuzo Sakai, and Toshio Miyake, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Jun. 29, 1987, Ser. No. 70,140
Claims priority, application Japan, Jul. 10, 1986, 61-162657
Int. Cl.[4] A61K *47/00*
U.S. Cl. 424—439 **6 Claims**

1. A process to prepare a solid product containing an edible oil-soluble substance, comprising:

adding an aqueous maltose solution along with a maltose seed to an oil-soluble liquid substance; and

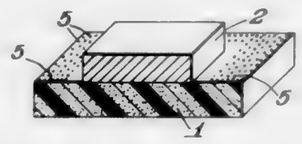
crystallizing beta-maltose hydrate in the mixture to effect solidification.

4,803,078

WOUND DRESSING

Mari Sakai, Okayama, Japan, assignor to Japan Gore-Tex, Inc., Tokyo, Japan

Filed Mar. 28, 1988, Ser. No. 172,792
Claims priority, application Japan, Jun. 16, 1987, 62-0913[U]
Int. Cl.[4] A61K *9/70*
U.S. Cl. 424—445 **8 Claims**



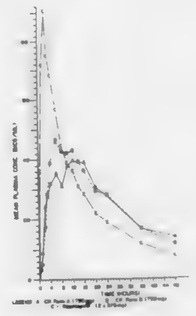
1. A wound dressing comprising a layer of chitin affixed to a layer of porous, expanded polytetrafluoroethylene.

4,803,079

CONTROLLED RELEASE NAPROXEN AND NAPROXEN SODIUM TABLETS

Charles H. Hsiao, Cooper City, Fla., and John S. Kent, Palo Alto, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 504,112, Jun. 14, 1983, Pat. No. 4,571,333. This application Dec. 20, 1985, Ser. No. 811,575
The portion of the term of this patent subsequent to Feb. 18, 2003, has been disclaimed.
Int. Cl.[4] A61K *9/22, 9/26*
U.S. Cl. 424—468 **17 Claims**



1. A controlled release tablet for once-daily oral administration of about 500–1200 mg of naproxen or naproxen sodium, which tablet comprises a homogeneous matrix comprising:

about 4–7 weight percent of hydroxypropyl mehylcellulose having a number average molecular weight in the range of from about 80,000 to about 130,000,

about 81–96 weight percent of naproxen or naproxen sodium in an amount effective for once daily oral administration, and

about 0.1 to about 2 weight percent of a pharmaceutically acceptable lubricating agent.

4,803,080

SUSTAINED-RELEASE THEOPHYLLINE FORMULATION

Gerald Benedikt, and Volker Steinijans, both of Constance, Fed. Rep. of Germany, assignors to BYK Gulden Lomberg Chemische Fabrik, Fed. Rep. of Germany

Filed Dec. 20, 1985, Ser. No. 811,742
Claims priority, application Switzerland, Dec. 21, 1984, 6111/84; Jun. 24, 1985, 2683/85
Int. Cl.[4] A61K *9/14*
U.S. Cl. 424—488 **28 Claims**

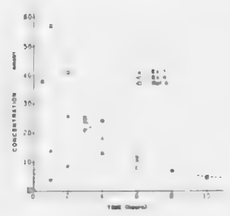
1. A pharmacologically-acceptable sustained-release theophylline formulation, which comprises matrix pellets in which theophylline particles are embedded in a matrix of water-insoluble plastic and which are enclosed by a membrane of water-insoluble plastic containing embedded particles of lactose.

4,803,081

NEW PHARMACEUTICAL PREPARATIONS WITH EXTENDED RELEASE

Kari-Erik L. Falk, Lindome; Sven M. Hugosson, Kungsbacka; Adam Rosinski, Mölndal, and John A. Sjogren, Mölnlycke, all of Sweden, assignors to Aktiebolaget Hassle, Molndal, Sweden

Filed Apr. 3, 1987, Ser. No. 34,500
Claims priority, application Sweden, Apr. 11, 1986, 8601624
Int. Cl.[4] A61K *9/14*
U.S. Cl. 424—488 **17 Claims**



1. A solid preparation providing extended release of an active compound with very low solubility in water copmrising a solution or dispersion of an effective amount of the active compound in a semi-solid or liquid nonionic solubilizer, wherein the amount by weight of the solubilizer is at least equal to the amount by weight of the active compound, and a release controlling system to provide extended release.

4,803,082

FLAVOR AND SWEETNESS ENHANCEMENT DELIVERY SYSTEMS AND METHOD OF PREPARATION

Subraman R. Cherukuri, Towaco; Steven M. Faust, Stanhope, both of N.J., and Daniel A. Orlandi, Flushing, N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

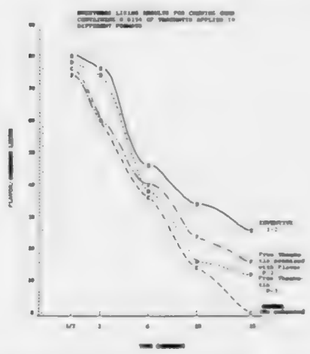
Filed Oct. 28, 1987, Ser. No. 114,483
Int. Cl.[4] A61K *9/68*; A23G *3/30*
U.S. Cl. 424—493 **23 Claims**

1. A free flowing particulate delivery system for providing enhanced flavor and sweetness to comestible compositions, said delivery system comprising:

(A) a powdered flavor composition; and

(B) an encapsulating matrix for said powdered flavor composition;

wherein said matrix comprises flavor/sweetness enhancers present in amounts of about 1 to about 30 % by weight of said delivery system selected from the group consisting of thaumetin, monellin, dihydrochalcones and mixtures thereof and a hydrophobic material present in amounts of about 10% to about 70% by weight of said delivery system selected from the group consisting of waxes, fats and mixtures thereof.



4,803,083

METHOD OF OPTIMIZING TEXTURE AND PROCESSABILITY OF CHEWING GUMS AND COMPOSITIONS MADE THEREFROM

Albert H. Chapdelaine, Naperville; Vasek J. Kures, Willow Springs, and Ronald T. Grey, Chicago, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Mar. 16, 1987, Ser. No. 25,939
Int. Cl.[4] A23G *3/30*
U.S. Cl. 426—3 **35 Claims**

1. In a process of developing a new or reformulated chewing gum composition containing gum base, bulking and/or sweetening agents including powdered sorbitol, plasticizers and optional fillers, flavors, colors and processing aids, comprising the steps of (1) making a sample batch of a gum composition, (2) evaluating the texture and processabilitiy of the sample and (3) producing and evaluating subsequent sample batches with different amounts of ingredients until acceptable texture and processability characteristics are obtained, the improvement comprising:

(a) using at least two different sorbitol powders in one or more of the sample batches, wherein the sorbitol powders differ significantly with respect to one or more characteristics chosen from the group consisting of

(i) particle size distribution and

(ii) particle morphology; and

(b) varying the ratio between the at least two sorbitol powders in subsequent sample batches to improve the texture and processability characteristics of the gum formulation.

4,803,084

SHELF-STABLE, SOFT DOUGH PRODUCT

Ward Shine, Irving, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Oct. 23, 1985, Ser. No. 790,602
Int. Cl.[4] A21D *2/16, 8/04*
U.S. Cl. 426—20 **11 Claims**

1. A method of preparing a shelf-stable, soft dough product having an A_w of 0.75 or less which comprises:

(a) preparing a leavened dough from a mixture comprising flour, water, and a leavening agent;

(b) adding to the leavened dough

(i) at least one antifirming agent including an oligomaltosaccharide;

(ii) a monoglyceride ester; and

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(iii) at least one starch hydrolyzate selected from maltodextrin and corn syrup solids;
(c) forming the dough into a desired configuration; and
(d) cooking the formed dough;
wherein the oligomaltosaccharide containing antifirming agent is obtained by subjecting maltodextrin or corn syrup solids to the enzymatic activity of diastatic malt and the dough comprises from 15% to 40% flour, from 15% to 30% water, from 2% to 8% monoglyceride ester, and from 20% to 50% maltodextrin or corn syrup solids, inclusive of the maltodextrin or corn syrup solids that are enzymatically modified to produce the oligomaltosaccharide-containing antifirming agent.

4,803,085

PRESERVATIVE COATING FOR HARD SOLID ANIMAL FEED SUPPLEMENT

John E. Findley, Claremont, Calif., assignor to Pacific Kenyon Corp., Long Beach, Calif.

Continuation of Ser. No. 771,603, Sep. 3, 1985, abandoned. This application May 1, 1987, Ser. No. 47,504
Int. Cl.[4] A23K *1/22*
U.S. Cl. 426—69 **8 Claims**

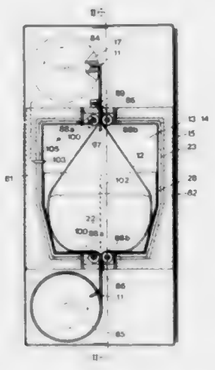
1. In a method for manufacturing a poured solid animal feed supplement wherein a solidifying aqueous solution of sugar, protein, and mixtures thereof is poured into containers and permitted to solidify into solids having top exposed surfaces therein, the improvement comprising; applying, to the exposed surfaces of said supplement in said containers, an aqueous solution consisting essentially of water soluble polyvinyl alcohol in an amount sufficient to form a film having a thickness from 0.1 to about 10 mils.

4,803,086

AUTOMATICALLY MAKING FOOD PRODUCTS SUCH AS BREAD, CAKES AND THE LIKE

Gunnar Hedenberg, Uddevalla, Sweden, assignor to Heden-Team Aktiengesellschaft, Triesenberg, Liechtenstein

PCT No. PCT/EP86/00786, § 371 Date Jul. 22, 1987, § 102(e) Date Jul. 22, 1987, PCT Pub. No. WO87/03784, PCT Pub. Date Jul. 2, 1987
PCT Filed Dec. 18, 1986, Ser. No. 93,741
Int. Cl.[4] A47J *27/62, 37/01*
U.S. Cl. 426—87 **14 Claims**



1. Apparatus for automatically making food products in piece form from dough-like substances, comprising a housing containing holding means adapted to be affixed to opposed edges of a flexible bag containing ingredients for the dough-like substance, kneading means for mechanically working the ingredients in the bag and including moving means for creating relative movement between the bag and the kneading means so that the ingredients are kneaded into a dough-like substance, heat treatment means for baking the kneaded dough-like substance, and programmable control means for controlling the sequential operation of the kneading means and heat treatment means, wherein the apparatus further comprises scanning means located adjacent the path of the bag as moved by the moving means for reading machine-readable indicia on a bag and for providing an output coupled to the control means to command operation of the control means.

4,803,087

COMPOSITION AND METHOD FOR PRODUCING VITAMIN-ENRICHED MILK

Timothy J. Karinen, Round Lake Beach, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 21, 1987, Ser. No. 76,109
Int. Cl.[4] A23L *1/303, 9/20, 5/00*
U.S. Cl. 426—73 **24 Claims**

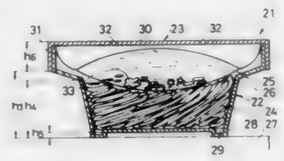
1. A method for enriching,milk with vitamins, comprising adding to raw milk an aqueous emulsion of (i) edible oil, (ii) a source of at least one vitamin selected from the group consisting of vitaa:i' A, vitamin D and mixtures of vitamins A and D, apd (iii) an emulsifying amount of an emulsifying agent that is a combination of (a) a member selected from the group consisting of food grade polyoxyethylene sorbitan oleates, polyoxyethylene sorbitan stearates and mixtures thereof, and (b) a member selected from the group consisting of food grade oleic acid monoesters of glycerol, sorbitol and sucrose, polyglycerol esters of edible fatty acids, polyoxyethylene glycerates and mixtures thereof, the weight ratio of (a):(b) being from about 2:5 to about 5:2.

4,803,088

CONTAINER PACKED WITH INSTANT FOOD FOR USE IN MICROWAVE OVEN

Masanori Yamamoto, Kaizuka; Tamotsu Kamoda, Kishiwada; Makoto Nakahara, Higashiosaka; Yoshimasa Fujii, Yamato-Koriyama, and Shozo Sugano, Nara, all of Japan, assignors to House Food Industrial Company Limited, Higashiosaka, Japan

Filed Apr. 25, 1986, Ser. No. 855,673
Claims priority, application Japan, May 1, 1985, 60-94385; Aug. 7, 1985, 60-121415[U]; Sep. 18, 1985, 60-143177[U]
Int. Cl.[4] B65D *81/34*
U.S. Cl. 426—107 **1 Claim**



1. A container packed with instant food which is for use in a microwave oven, said container comprising:
(a) a container body having an opening at its upper portion and a lid which is capable of tightly or substantially tightly sealing said container body by covering the opening, said lid having a plurality of holes therethrough such that the total surface area represented by said plurality of holes relative to the total area of the opening is between 0.005% and 1%, said container body and said lid being made of materials through which microwaves are transmitted;
(b) dehydrated instant food comprising instant noodles containing an edible foaming substance and seasoning ingredients accommodated in said container body;
(c) a second container in the form of a retort pouch accommodated in said container body, said second container hermetically containing a seasoning soup containing an edible foaming substance and having a viscosity of 1750 poise or less at a temperature of 60° C., said seasoning soup having a water content of an amount equivalent to between 100 to 155 wt. % of the water absorption capacity of said dehydrated instant food; and
(d) a member on the bottom of said container body for raising said container body above a surface on which it is placed, said member containing a large number of depressions,
wherein:
(e) said dehydrated instant food is held in place or substantially held in place in said container body by said second container;
(f) said dehydrated instant food is formed in a shape in which the upper central portion thereof is concave;
(g) the void proportion of said instant noodles is between 32% and 85%;
(h) the mass of said instant noodles has a height of 50 mm or less;
(i) said instant noodles are formed into a mass in which the noodles of the upper portion are loosely arranged and those of the lower portion are densely packed together; and
(j) the lower half of said mass of instant noodles has a void proportion which is between 52% and 97% of that of the upper half.

4,803,089

PROCESS FOR TREATING DAIRY BY-PRODUCTS

Michel Chaveron, La Tour-de-Peilz, and Fred Neumann, Steffisburg, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 700,765, Feb. 12, 1985, abandoned. This application Apr. 28, 1987, Ser. No. 45,757
Claims priority, application European Pat. Off., Mar. 2, 1984, 84102225.4
Int. Cl.[4] A23C *9/144, 9/146*
U.S. Cl. 426—239 **15 Claims**

1. A process for decationizing and obtaining decationized products from whey products comprising passing whey products through a weak cationic resin charged with H^+ ions and then through a strong cationic resin charged with H^{30} ions for obtaining decationized whey products and subsequently passing a concentrated aqueous solution of an acid through the strong cationic resin and then through the weak cationic resin for regenerating and recharging the resins with H^{30} ions for the decationization the whey products with the resins.

4,803,090

PROCESS FOR PRODUCING A MICROWAVE PUFFED CHEESE SNACK

Lance E. Schlipalius, Victoria, Australia; Jeffrey J. Myers, DesPlaines, and Jonathan P. Frey, Arlington Heights, both of Ill., assignors to Kraft, Inc., Glenview, Ill.

Filed Nov. 13, 1986, Ser. No. 930,647
Claims priority, application Australia, Nov. 13, 1985, PH3387
Int. Cl.[4] A23C *19/086, 19/09*
U.S. Cl. 426—242 **6 Claims**



1. A process for producing a dry, crisp, puffed, natural butterfat containing cheese snack food product without oiling off comprising the steps of
(a) forming hot viscous drops of cheese base material or processed cheese or slicing or dicing natural cheese, cheese base material or process cheese into pieces to provide cheese precursor pieces having a fat content in the range of 17–34 weight percent, and a moisture content of 20–50%,
(b) depositing the precursor pieces on to a surface,
(c) baking the precursor pieces in a convection oven,
(d) simultaneously or subsequent to said baking, subjecting the precuror pieces to a microwave cokking and drying step to puff the pieces without oiling off, in which the moisture content of the puffed product is less than 5% of that of the starting precursor pieces, and
(e) cooling the cooked, dried, puffed product.

4,803,091

CORN SPIRALS AND METHOD OF MANUFACTURE

George P. Mottar, Danville; Norman E. Peters, Berwick, and Ron L. Nietz, Bloomsberg, all of Pa., assignors to Borden, Inc., Columbus, Ohio

Continuation of Ser. No. 824,720, Jan. 31, 1986, abandoned. This application Mar. 17, 1988, Ser. No. 170,114
Int. Cl.[4] A23L *1/10*
U.S. Cl. 426—439 **11 Claims**

1. A process for producing a cooked snack food product comprising subjecting a ground masa made from dehulled corn kernels to comminution by simultaneously grating and cutting that reduces the size of particles in the masa, passing the comminuted masa through a die to a ribbon-like form, severing said ribbon-like material to form snack-sized pieces, and cooking said pieces.

4,803,092

METHOD OF ACIDULATING A COMMINUTED MEAT PRODUCT

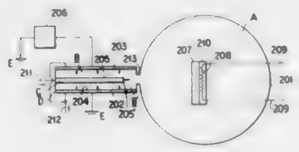
Herbert D. Weiss, Saffern, N.Y., and Robert G. Reynolds, Harrington Park, N.J., assignors to Balchem Corporation, Slate Hill, N.Y.

Division of Ser. No. 920,185, Oct. 17, 1986, Pat. No. 4,772,477. This application Apr. 28, 1988, Ser. No. 187,651
Int. Cl.[4] A23L *1/317*
U.S. Cl. 426—646 **11 Claims**

1. A method of lowering the pH of a moist comminuted meat product, the meat product having an initial pH of about 6 and which is to be processed at a processing temperature below about 135° F., to a pH level below about 5.2 in not less than one hour after adding the acidulant to the meat product, comprising:
(a) mixing an acidulant into said meat product, the acidulant having a delayed release coating encapsulating the acidulant, about 50 to 70 wt. % of the coating consisting of a water-soluble glyceride, said water-soluble glyceride having a melting point above said processing temperature and about 30 to 50 wt. % of the coating consisting of a hydrogenated vegetable oil, said hydrogenated vegetable oil having a melting point above said processing temperature; and
(b) allowing water in said meat product to dissolve the water-soluble glyceride, thereby destroying the coating and releasing the acidulant into the food.

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4,803,093
PROCESS FOR PREPARING A FUNCTIONAL DEPOSITED FILM
Shunichi Ishihara, Ebina; Keishi Saito, Naberi; Shunri Oda, Tokyo, and Isamu Shimizu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 24, 1986, Ser. No. 843,236
Claims priority, application Japan, Mar. 27, 1985, 60-62707
The portion of the term of this patent subsequent to Aug. 25, 2004, has been disclaimed.
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—35 **3 Claims**

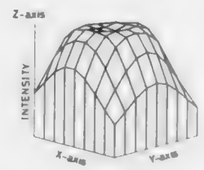


1. A process for preparing a functional deposited film on a substrate, said process employing (i) a precursor as a constituent for the film which precursor is substantially nonreactive as long as it remains in its original energy state and (ii) an active species which can react with and impart energy to the precursor to activate the precursor to a state capable of contributing to formation of said film, said process comprising the steps of:
(a) generating said active species by subjecting a gaseous substance capable of being activated to generate said active species to the action of activating energy sufficient to generate said active species in an active species generating and transporting space leading to a film forming space containing the substrate;
(b) simultaneously generating said precursor by subjecting a gaseous substance capable of generating said precursor to the action of activating energy sufficient to generate said precursor in a precursor generating and transporting space located separately from and within the active species generating and transporting space and open in a downstream region of that space; and
(c) introducing the resulting active species and precursor into the film forming space to chemically react to form the functional deposited film on the substrate in the absence of a plasma.

4,803,094
METALLIZED COATING
Richard A. Myers, 1127 Maple Ave., Downers Grove, Ill. 60515
Filed May 9, 1988, Ser. No. 191,920
Int. Cl.[4] B05D *3/06;* **C23C** *14/02, 14/26*
U.S. Cl. 427—40 **5 Claims**

5. A method for the vapor deposition of a thin stainless steel film onto a polymeric surface, comprising:
(a) placing said polymeric surface within a vacuum chamber;
(b) evacuating said vacuum chamber to a near-perfect vacuum;
(c) filling said chamber with argon gas;
(d) applying sufficient voltage and amperage to the argon gas in said chamber to electrically excite said argon gas, thereby creating a cloud of free argon electrons which prepares and imparts a charge to said polymeric surface;
(e) evacuating said argon from said chamber, and placing said chamber at a suitable plating vacuum;
(f) energizing an electrode disposed within said chamber and wrapped with a 316L-grade stainless steel yarn comprised of a plurality of thin strands of said stainless steel, each of said strands having a diameter not exceeding 20 microns, said electrode being energized sufficiently to vaporize said stainless steel, whereby said vaporized stainless steel is transported towards and coated onto said prepared, charged polymeric surface.

4,803,095
CHEMICAL VAPOR REACTION PROCESS BY VIRTUE OF UNIFORM IRRADIATION
Shigenori Hayashi; Naoki Hirose; Takashi Inujima, all of Atsugi, and Kenji Ito, Machida, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
Division of Ser. No. 97,188, Sep. 16, 1987, Pat. No. 4,768,464.
This application Feb. 10, 1988, Ser. No. 154,290
Claims priority, application Japan, Sep. 26, 1986, 61-148082; Sep. 26, 1986, 61-229255; Sep. 26, 1986, 61-229256; Sep. 26, 1986, 61-229257; Sep. 26, 1986, 61-229258
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—54.1 **2 Claims**



1. A chemical vapor reaction process comprising:
disposing a substrate in a reaction chamber;
inputting a reactive gas to said reaction chamber; and
irradiating said substrate with light from a light source,
said process characterized in that the intensity of the light incident on said substrate at the center position thereof is lower than that at the peripheral position.

4,803,096
ELECTRICALLY CONDUCTIVE TEXTILE MATERIALS AND METHOD FOR MAKING SAME
Hans H. Kuhn, Spartanburg, and William C. Kimbrell, Jr., Inman, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.
Filed Aug. 3, 1987, Ser. No. 81,069
Int. Cl.[4] B05D *5/12;* **H01B** *1/00*
U.S. Cl. 427—121 **24 Claims**



1. A method for imparting electrical conductivity to a textile material, which comprises contacting the textile material with an aqueous solution of an oxidatively polymerizable compound, selected from a pyrrole compound and an aniline compound, and an oxidizing agent capable of oxidizing said compound to a polymer, said contacting being carried out in the presence of a counter ion which imparts electrical conductivity to said polymer when fully formed, said contacting being under conditions at which the compound and the oxidizing agent react with each other to form a prepolymer in said aqueous solution before either the compound or the oxidizing agent are adsorbed by, or deposited on or in, the textile material, but without forming a conductive polymer, per se, in said aqueous solution; adsorbing onto the surface of said textile material the prepolymer and allowing the adsorbed prepolymer to polymerize while adsorbed on said textile material so as to uniformly and coherently cover the textile material with a conductive film of said polymer.

4,803,097
METAL PLATING OF PLASTIC MATERIALS
Howard A. Fraenkel, Lebanon, N.J.; Karen A. Davenport, Liverpool, and Frank A. Spicciati, Baldwinsville, both of N.Y., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Apr. 20, 1987, Ser. No. 40,445
Int. Cl.[4] B65D *3/10*
U.S. Cl. 427—307 **38 Claims**

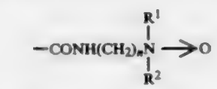
1. A process for metal plating a natural or synthetic plastic material to form a metal plated substrate having improved peel strength which process comprises:
(a) exposing said material to an atmosphere comprising ozone;
(b) contacting said exposed material with a conditioning solvent selected from the group consisting of aqueous conditioning solvents comprising an effective amount of one or more alcohols and one or more strong bases, and solvents comprising one or more strong bases;
(c) contacting said material with an effective amount of one or more oxidizing agents;
(d) depositing a metal coating upon said conditioned surface from an electroless plating bath to form said metal plated substrate; and
(e) annealing the metal coated substrate.

4,803,098
PROCESS FOR THE PREPARATION OF THE SURFACE OF A URANIUM AND TITANIUM ALLOY MEMBER, PARTICULARLY WITH A VIEW TO CHEMICAL NICKEL PLATING
Antoine Henri, Paris; Daniel Lefevre, Longvilliers, and Patrick Massicot, Vanves, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed Nov. 5, 1986, Ser. No. 927,336
Claims priority, application France, Nov. 19, 1985, 85 17068
Int. Cl.[4] B05D *3/04, 3/10*
U.S. Cl. 427—309 **11 Claims**

1. A process for preparing the surface of a uranium and titanium alloy which comprises chemically etching said surface with an etching solution containing effective amounts of lithium chloride and hydrochloric acid, subsequently recovering uranium from the etching solution and recycling said solution to the etching process.

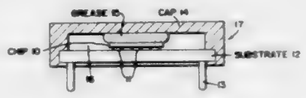
4,803,099
MODIFIED POLYETHYLENE, METHODS FOR ITS PREPARATION AND METHODS FOR FINISHING THE EXTERNAL SURFACES OF GLASS CONTAINERS
Erich Ruf, Essen, Fed. Rep. of Germany, assignor to Th. Goldschmidt AG
Filed Aug. 4, 1987, Ser. No. 81,482
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1986, 3629146
Int. Cl.[4] B05D *3/02*
U.S. Cl. 427—314 **4 Claims**

1. A method of finishing the surface of a glass object, which comprises applying to the surface an effective amount of an aqueous dispersion of polyethylene with an average molecular weight of 500 to 10,000 and having at least one laterally bound group of the formula



wherein R^1 and R^2 are the same or different and represent a low molecular weight alkyl group with 1 to 4 carbon atoms and n is 2 or 3 and drying the surface.

4,803,100
SUSPENSION AND USE THEREOF
Joseph G. Ameen, Apalachin; Timothy F. Carden, Vestal; Lawrence R. Cutting, Owego; Stephen R. Engle, and Ronald J. Moore, both of Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 21, 1987, Ser. No. 110,992
Int. Cl.[4] B05D *3/02;* **C09K** *5/00;* **H01B** *3/20*
U.S. Cl. 427—387 **12 Claims**



1. A method of coating a substantially uniform conformal layer of material onto a workpiece which comprises:
(a) providing a suspension of a coating material wherein said coating material has hydrogen bonds and predetermined physical and chemical characteristics in a predominantly solid state in a polar organic solvent which polar solvent is capable of breaking said hydrogen bonds and providing said material in liquid form;
(b) applying said suspension to a workpiece to coat said workpiece conformally; and
(c) evaporating said polar organic solvent so that said material is provided in its predominantly solid state having at least substantially said predetermined physical and chemical characteristics.

4,803,101
MICROCRACK RESISTANT COMPOSITES
Beverly K. Roberts, Hockessin, Del., and George E. Zahr, Glen Mills, Pa., assignors to E. I Du Pont De Nemours and Company, Wilmington, Del.
Filed Jan. 29, 1987, Ser. No. 67,116
Int. Cl.[4] B32B *3/12*
U.S. Cl. 428—116 **4 Claims**

1. A process for preparing epoxy resin impregnated woven fabrics of poly(paraphenylene terephthalamide) filaments which are resistant to microcracking when employed as facesheets over a honeycomb core of poly(metaphenylene isophthalamide) and subjected to cycling between 160° F. and −65° F. which comprises the steps of:
(a) precoating a woven fabric of poly(phenylene terephthalamide) filaments with from 0.1 to 10% by wt. based on the weight of the fabric of a mixture of an epoxy resin and a urethane rubber soluble in the epoxy resin, said rubber being present in an amount of from 5 to 40% by wt. of the mixture, and said mixture having a strain to failure of at least 2.5% at −65° F.;
(b) heating the precoated fabric to an elevated temperature in the range of 250° to 400° F. for a time sufficient to "B" stage the resin;
(c) impregnating the resulting precoated fabric with from 35 to 70% by wt., based on the weight of the fabric of an epoxy resin having a modulus in excess of 400,000 psi; and
(d) heating the impregnated product to an elevated temperature in the range of 250° to 400° F. for a time sufficient to "B" stage the resin,
each of steps (a) to (d) above being carried out at a warp tension of less than 0.4 lb/in. of warp width.

4,803,102

MULTIPLE LAYER PACKAGING FILMS AND PACKAGES FORMED THEREFROM

Jean E. Raniere, Huntington Beach; Steven L. Smith, Mission Viejo, both of Calif.; Russell P. Gehrke, Neenah, and Richard E. Johnson, Jr., Appleton, both of Wis., assignors to American National Can Company, Chicago, Ill. and Kendall McGraw Laboratories, Inc., Irvine, Calif.

Continuation of Ser. No. 802,876, Nov. 29, 1985, abandoned.
This application Oct. 27, 1987, Ser. No. 113,415
Int. Cl.[4] B65D *65/02*
U.S. Cl. 428—35.2 20 Claims



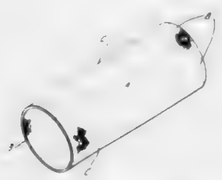
1. A multiple layer film, comprising:
(a) a first layer, the composition of said first layer being selected form the group consisting of polyesters, copolyesters, polycarbonates, and polyether block amide copolymers;
(b) a second sealant layer, the composition of said second layer comprising a composition of polypropylene polymer and a styrene ethylene butylene styrene copolymer; and
(c) a third adhesive layer adhering said first layer to said second layer with good adhesion, said third layer being positioned between said first and second layers, the composition of said third adhesive layer being styrene ethylene butylene styrene copolymer.

4,803,103

RECOVERABLE ARTICLE

Kenneth B. Pithouse, Lesulis, France; Thomas A. Kridl, Union City, and James T. Triplett, Livermore, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 567,127, Dec. 30, 1983, abandoned.
This application Dec. 22, 1986, Ser. No. 945,186
Claims priority, application United Kingdom, Jan. 6, 1983, 8300222; Aug. 16, 1983, 8322004
The portion of the term of this patent subsequent to Dec. 2, 2003, has been disclaimed.
Int. Cl.[4] F16L *11/02*; H01R *4/00*
U.S. Cl. 428—34.5 24 Claims



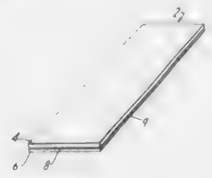
1. A hollow recoverable sleeve suitable for environmental protection of a substrate, which comprises:
a recoverable fabric having a plurality of zones respective zones having different recovery ratios or forces, the fabric having been woven from a plurality of fibres of different recovery ratios or forces, respective fibres corresponding to respective zones;
a polymeric matrix material by means of which the fabric is rendered substantially impervious;
the sleeve having a length greater than its diameter.

4,803,104

ARTICLE FOR JOINING DIMENSIONALLY RECOVERABLE PARTS

Paul G. L. Peigneur, Saint-Truiden; Yvo F. H. Leest, Binkom, and Jozef F. L. Van Beersel, Tense, all of Belgium, assignors to N.V. Raychem SA, Belgium

Continuation of Ser. No. 738,928, May 29, 1985, abandoned.
This application Jun. 19, 1987, Ser. No. 61,605
Claims priority, application United Kingdom, May 29, 1984, 8413687; Apr. 4, 1985, 8508955
Int. Cl.[4] B32B *3/00*, *31/00*
U.S. Cl. 428—35.1 18 Claims



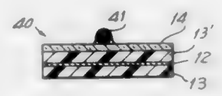
1. A heat stable closure patch for joining overlapping edges of a dimensionally recoverable polymeric cover, comprising first and second polymeric layers of substantially the same composition bonded to each other through an apertured reinforcing layer sandwiched therebetween, wherein the second layer is either non cross-linked or has a hot modulus sufficiently low that it can fuse when the patch is heated to form a bond to the recoverable cover, and wherein the first layer is cross-linked, and has a hot modulus sufficiently low that it is compatible with and can bond to the second layer, and sufficiently high that it does not melt when the patch is heated to bond it to the cover.

4,803,105

REINFORCING SHEET FOR THE REINFORCEMENT OF PANEL AND METHOD OF REINFORCING PANEL

Robert P. Kretow, Howell, and John W. Powers, Old Bridge, both of N.J., assignors to Essex Specialty Products, Inc., Clifton, N.J.

Filed Feb. 13, 1987, Ser. No. 14,636
Int. Cl.[4] A61F *13/02*
U.S. Cl. 428—40 19 Claims



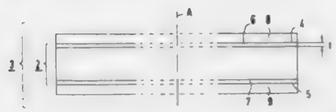
1. A reinforcing sheet adaptable to the reinforcement of a panel formed of metal, plastic or sheet molding compound, which reinforcing sheet comprises:
a thermosetting adhesive layer having a first and a second surface, the first surface being in contact with the panel when applied to the panel to be reinforced;
a moisture impermeable barrier embedded in the thermosetting adhesive layer to prevent moisture from adversely affecting the cohesion of the thermosetting adhesive layer between the panel and the moisture impermeable barrier upon curing the thermosetting adhesive layer when applied to the panel to be reinforced, said moisture impermeable barrier being adhered to the thermosetting adhesive and being stable up to the curing temperature of the thermosetting adhesive; and
a reinforcement adhered to the second surface of the thermosetting adhesive layer opposite the first surface to be applied to the panel to be reinforced.

4,803,106

DISC-SHAPED CARRIER BODY FOR A RECORDING MEDIUM AND METHOD FOR MANUFACTURING SAME

Armin Lenhart, Erlangen, and Karl-Rupprecht Hub, Donauwörth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 10, 1987, Ser. No. 72,119
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1986, 3624061; Aug. 7, 1986, 3626658
Int. Cl.[4] G11B *5/704*
U.S. Cl. 428—64 21 Claims



1. A recording medium comprising a disc-shaped carrier body of nonmagnetic material, said carrier body having at least one flat side having a smooth surface, to which flat side at least one storage layer which can be magnetized particularly perpendicularly (vertically) is applied, wherein a chemically hardened glass substrate is provided as the carrier body comprising Na^+ ions and K^+ ions incorporated in zones adjacent to its surfaces, and further comprising Ag^+ ions and Ag atoms, the depth of the surface zones measured perpendicularly relative to the flat sides being greater than 100 μm, the surface roughness of the at least one flat side of the glass substrate provided with the storage layer being less than 2 μm and the maximum roughness depth of the flat side provided with the storage layer of the glass substrate, referred to a measurement distance 2 mm long, being less than 40 nm, said substrate having a content of Al_2O_3 which is less than 5%.

6. A method for manufacturing a recording medium comprising a disc-shaped carrier body of a nonmagnetic material, said carrier body having at least one flat side having a smooth surface, to which flat side at least one storage layer which can be magnetized particularly perpendicularly (vertically) is applied, wherein a glass substrate is provided as the carrier body comprising Na^+ ions and K^+ions incorporated in zones adjacent to its surfaces, and further comprising Ag^+ ions and Ag atoms, the method comprising the steps of chemically hardening the glass substrate by means of an ion exchange process below the transformation temperature characteristic of the glass material, placing the glass substrate in a KNO_3 melt for a predetermined period of time, and cooling the substrate outside the melt to room temperature, the depth of the surface zones measured perpendicularly relative to the flat sides being greater than 100 μm, the surface roughness of the at least one flat side of the glass substrate provided with the storage layer being less than 2 μm, and the maximum roughness depth of the flat side provided with the storage layer of the glass substrate, referred to a measurement distance 2 mm long, being less than 40 nm, said substrate having a content of Al_2O_3 which is less than 5% and applying to said at least one flat side said storage layer.

4,803,107

LIGHT WEIGHT THERMAL INSULATION MATERIAL PRODUCT AND PROCESS

Jack V. Knowles, 420 S. Francis, Lansing, Mich. 48912

Filed May 2, 1988, Ser. No. 189,400
Int. Cl.[4] C04B *7/02*; B32B *13/00*, *5/16*
U.S. Cl. 428—68 20 Claims

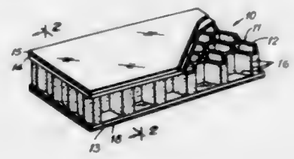
1. A thermal insulation material comprising: a product produced from a dry mix of pumice in small particleized form by volumn in the approximate range of 7% to 20% of the dry mix; scoria in particleized form in the approximate range of 30% to 50% of the dry mix; vermiculite in flaked particle form in the approximate range of 7% to 20% of the dry mix; and cement in the approximate range of 15% to 40% of the dry mix; and water is then added to the dry mix in the approximate range of 0.50 to 1.050 the volume of the dry cement to produce the product, a light weight thermal insulation construction material product.

4,803,108

HONEYCOMB REINFORCING SHEET FOR THE REINFORCEMENT OF PANELS AND METHOD OF REINPORCING PANELS

William E. Leuchten, Mountain Lake, and Robert P. Kretow, Howell, both of N.J., assignors to Essex Specialty Products, Inc., Clifton, N.J.

Filed May 1, 1987, Ser. No. 44,885
Int. Cl.[4] B32B *3/12*
U.S. Cl. 428—118 17 Claims



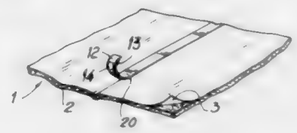
1. A reinforcing sheet adaptable to the reinforcement of a panel formed of metal, plastic or sheet molding compound, which reinforcing sheet comprises:
a first reinforcing member which includes a honeycomb member having columns that define cell apertures with open ends and a first thermosetting adhesive layer present on one end of said columns for applying the honeycomb member to the panel; and
a second reinforcing member which includes a second thermosetting adhesive layer present on the other end of said columns and a reinforcement backing adhered to the second thermosetting adhesive layer,
said open ends of the honeycomb member being covered by the adhesive layers and
said honeycomb member having perforations for allowing gas to escape from the cell apertures during curing of the first and second thermosetting adhesive layers.

4,803,109

METHOD FOR PROTECTION AND WATERPROOFING OF STITCH LINES IN PADDING AND PADDED GARMENTS

Lucio Santecalchi, Via Milano, 53, 22059 Robbiate (Como), Italy

Filed Jun. 23, 1987, Ser. No. 65,728
Claims priority, application Italy, Jun. 27, 1986, 20953 A/86
Int. Cl.[4] B32B *3/06*, *3/08*
U.S. Cl. 428—104 2 Claims



1. A method for the protection and waterproofing of lines of stitching between connected pieces of padding having a high degree of thermal insulation, comprising the steps of
providing a self-adhesive tape having an adhesive side and an opposite non adhesive side;
cold applying, by contact, over said lines of stitching said

adhesive side of said self-adhesive tape, said self adhesive-tape having

a support layer, a cladding of waterproofing synthetic resin coated on said non adhesive side of said self-adhesive tape and an elastomer based self-adhesive layer coated on said adhesive side, wherein said support layer is made from a polyamide fibre fabric of between 50 and 60 grammes/meter, said cladding of waterproofing synthetic resin is made of a polyurethane resin applied at a rate of 5–15 grammes/square meter and said elastomer based self-adhesive has the following formulation in parts by weight:

natural rubber	20.000
antioxidant (sterically inhibited polyphenol)	0.100
active zinc oxide	2.000
zinc resinate	1.500
stearic acid	0.100
hydrogenated polycyclodiene hydrocarbon resin	9.000
aliphatic hydrocarbon resin with cyclic structure	2.000
polyaliphatic hydrocarbon resin	5.000
reactive alkylphenolic resin	3.500
terpene phenolic resin	2.000
polyvynil isobutyl ether (60% in benzene)	2.000
hexane	50.000
toluene	50.000
methyl alcobol	2.000.

2. An item of clothing having a layer of padding comprising a plurality of padding pieces stitched together, wherein the stitching lines joining said padding pieces are rendered waterproof by the method according to claim 1.

4,803,110

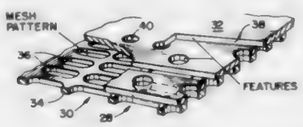
COATED MASK FOR PHOTOLITHOGRAPHIC CONSTRUCTION OF ELECTRIC CIRCUITS

Kie Y. Ahn, Chappaqua; Saryndevara Basavaiah, Mahopac; Stephen B. Brodsky, Monsey; Charles A. Cortellino, Wappinger Falls, and Joseph E. Levine, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 15, 1986, Ser. No. 907,268

Int. Cl.⁴ B32B *3/10*; **B05D** *3/06*; **G03F** *9/00*

U.S. Cl. 428—137 **11 Claims**



1. A mask for deposition of paste material in a predetermined format comprising:

a metallic substrate in the form of a thin foil having a thickness in the range of 0.001–0.006 inch;

a mesh formed in said metallic substrate and extending inwardly from a first exterior surface of the substrate;

a stencil formed in said metallic substrate and extending inwardly from a second exterior surface of said substrate opposite said first exterior surface, there being perforations in said mesh and in said stencil, perforations in said stencil communicating with predetermined ones of the perforations in said mesh for passage of paste material therethrough; and

a coating of a compound of nitrogen and an element of the fourth group of elements of the periodic table, said coating having a thickness of 2000–6000 angstroms; said coating being uniformly deposited on said substrate to provide lubricity and resistance to abrasion of said paste material within said mesh and within said stencil.

10. A method of coating a mask used in the construction of modular electric circuits by imprinting conductive paths on a base material, the method comprising the steps of:

constructing a mask substrate of a dimensionally stable material, the mask substrate being in the form of a thin foil having a thickness in the range of 0.001–0.006 inch and having apertures extending inwardly from a first surface to define a screen pattern and extending inwardly from a second surface to define a stencil pattern;

placing said mask substrate in front of and away from a source of a group IV element of the periodic table;

sputtering the group IV element of the periodic table onto the mask substrate;

simultaneously discharging nitrogen into a region of space permeated by the said sputtered element to provide a coating of nitrogen and said sputtered element upon the dimensionally stable material of said substrate;

directing the nitrogen away from said source, thereby to prevent contamination of the source and to preserve a uniform distribution of sputtering of the group IV element upon said mask substrate; and

terminating said sputtering upon attainment of a depth of said coating in the range of 2000–6000 angstroms, thereby providing a mask surface which is resistant to abrasion.

4,803,111

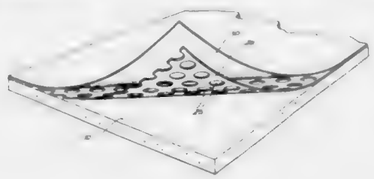
MEMBRANE ROOFING SYSTEM

William T. Mansell, Forestville, Australia, assignor to Chadwick Industries Pty. Limited, Lane Cove, Australia

Continuation of Ser. No. 769,693, Aug. 27, 1985, abandoned. This application Feb. 24, 1988, Ser. No. 163,133

Int. Cl.⁴ B32B *3/10*

U.S. Cl. 428—139 **2 Claims**



1. An improved single layer membrane roofing or cladding arrangement for waterproofing a surface of a substrate, said substrate being a concrete roof, said arrangement comprising:

a synthetic single layer roofing membrane;

an underlay disposed intermediate said membrane and said surface of said concrete roof, said underlay being a thin flat non-bituminous perforated sheet of paper material; and

a contact adhesive fixing said membrane to said surface of said roof by adhesive contact, through said perforations, between said membrane and said surface of said roof,

non-perforated portions of said underlay presenting a surface of said underlay that is opposed to corresponding portions of said surface of said roof, said opposed surface of said underlay and said corresponding portions of said surface of said roof defining vapor dispersion paths through said arrangement during the effective life of said underlay.

4,803,112

IMPACT-CUSHIONING SHEETS AND DIRECT-APPLYING RESTRAINT TYPE FLOOR DAMPING STRUCTURES USING THE SAME

Hirofumi Kakimoto; Osamu Kiso, and Shinya Shimada, all of Fukuyama, Japan, assignors to Hayakawa Rubber Co., Ltd., Japan

Filed Apr. 17, 1987, Ser. No. 39,425

Claims priority, application Japan, Apr. 24, 1986, 61-93466; May 21, 1986, 61-114945; Jun. 16, 1986, 61-138114

Int. Cl.⁴ B32B *3/00, 3/30*

U.S. Cl. 428—161 **9 Claims**



1. An impact-cushioning sheet, comprising:

a film base constituted by alternately arranging convex portions having air enclosed therein and concave portions made only of a film; and

a crosslinked viscoelastic body filled in the concave portions of the film base and/or over the whole surface of the film base abd obtained by curing a viscoelastomeric substance at room temperature;

said crosslinked viscoelastic body retaining its shape even when being warmed at 80° C. and having a hardness at 20° C. of not more than 50 as measured by a C-type hardness tester according to a standard SRIS-0101 in The Society of Rubber Industry, Japan, wherein a ratio of total air volume in the convex portions of the film base to total viscoelastic body volume filled in the concave portions of the film base is within a range of convex portion: concave portion of 2:8 to about 8:2, and a height of the convex portion is not more than 6 mm.

4,803,113

CORRUGATED MICA PRODUCT

Dennis J. Sklarski, Deerfield, and Arthur F. Doyle, Portsmouth, both of N.H., assignors to Essex Group, Inc., Fort Wayne, Ind.

Continuation-in-part of Ser. No. 782,259, Sep. 30, 1985, abandoned. This application Sep. 16, 1987, Ser. No. 97,575

Int. Cl.⁴ B32B *15/02, 31/26*

U.S. Cl. 428—182 **3 Claims**

1. A flexible corrugated mica insulation comprising one or more layers of mica paper impregnated with about 5 percent to about 25 percent by weight of a flexible polyxiloxane, said binder containing about 1 percent to about 4 percent by weight of an organic titanate and about 0.5 percent to about 2 percent by weight of a naphthenate wherein the mica insulation has improved moisture resistance, excellent flexibility and conformability.

4,803,114

PVC FILM FOR THE PRODUCTION OF IDENTITY CARDS

Martin Schledorn, Kirchehrenbach, Fed. Rep. of Germany, assignor to Internationale Octrooimaatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed Dec. 15, 1986, Ser. No. 942,083

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1985, 3544385

Int. Cl.⁴ B32B *5/16, 9/00*; **C08K** *3/04*

U.S. Cl. 428—208 **3 Claims**

1. An identity card capable of being inscribed or marked with a laser beam which comprises a transparent top layer of polyvinyl chloride film containing 0.1 to 20 g of carbon black per 100 kg of polyvinyl chloride supported by an essentially nontransparent backing layer.

4,803,115

GLASS FIBER-REINFORCED ELECTRICAL LAMINATES AND A CONTINUOUS PRODUCTION METHOD THEREFOR

Yasuo Fushiki, Takatsuki; Minoru Inshiki, Otsu; Hiroshi Nakano, Ashiya; Masayuki Oizumi, Otsu; Masayoshi Shimomura, Shiga, and Keiji Imajo, Otsu, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 25, 1986, Ser. No. 911,531

Claims priority, application Japan, Sep. 27, 1985, 60-215998; Oct. 15, 1985, 60-230869; Oct. 15, 1985, 60-230870; May 16, 1986, 61-113211; May 16, 1986, 61-113212

Int. Cl.⁴ B05D *5/00*

U.S. Cl. 428—285 **6 Claims**

1. An electrical laminate comprising a cured assemblage of a plurality of glass fiber substrates impregnated with a curable resin composition consisting essentially of (a) 30 to 90 percent by weight of the entire resin composition of a mixture of an unsaturated polyester and a monomer for crosslinking said unsaturated polyester, the acid component and the glycol component of said unsaturated polyester consisting of an unsaturated polybasic carboxylic acid and a halogenated bisphenol A-ethylene or propylene oxide adduct, respectively; and (b) 10 to 70 percent by weight of an epoxy acrylate resin produced by reacting a polyepoxy compound with an equivalent quantity, relative to said epoxy compound, of acrylic or methacrylic acid.

4,803,116

WATERPROOF FABRIC HAVING HIGH MOISTURE PERMEABILITY AND METHOD OF MAKING SAME

Jiro Amano, Takatsuki; Masato Shimada, Ohtsu; Kozuo Takano, and Shuroku Tohyama, both of Shiga, all of Japan, assignors to Toray Industries Incorporated, Tokyo, Japan

Filed Oct. 30, 1986, Ser. No. 925,709

Claims priority, application Japan, Oct. 31, 1985, 60-242960; Mar. 4, 1986, 61-45328; May 19, 1986, 61-112773

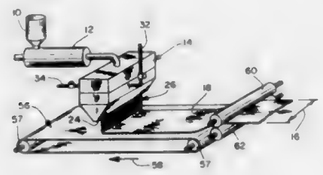
Int. Cl.⁴ B32B *27/00*

U.S. Cl. 428—286 **22 Claims**



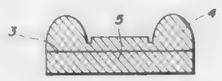
1. A waterproof fabric having a high moisture permeability and having an ultra-microporous continuous polymer coating having an average pore diameter in the range of between 50 Å and 0.2μ, said polymer having a monomer unit containing at least one acid radical selected from carboxyl group, sulfonic acid group, and alkali metal salts thereof.

4,803,117
COFORMED ETHYLENE-VINYL COPOLYMER ELASTOMERIC FIBROUS WEBS
Diego H. Daponte, Woodstock, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Continuation-in-part of Ser. No. 843,427, Mar. 24, 1986, abandoned. This application Mar. 13, 1987, Ser. No. 25,557
Int. Cl.[4] D04H *1/58*
U.S. Cl. 428—228 22 Claims



1. A composite elastomeric web comprising:
meltblown elastomeric fibers formed from a copolymer of ethylene and at least one vinyl monomer selected from the group including vinyl ester monomers wherein said vinyl monomer comprises from about 10% to about 50%, by weight, of said copolymer; and
at least one type of secondary fiber uniformly distributed throughout said web.

4,803,118
COMPOSITE CUSHION
Hidehito Sogi, Aichi, and Toshiyuki Hori, Chiba, both of Japan, assignors to E. I Du Pont de Nemours and Company, Wilmington, Del. and Toyo Tire & Rubber Company, Osaka, Japan
Filed Apr. 8, 1988, Ser. No. 179,553
Int. Cl.[4] B32B *3/26, 7/00*
U.S. Cl. 428—246 4 Claims



1. A composite cushion comprising at least two layers of foam having embedded therebetween at least one layer of fabric parallel to the planes of the foam layers, the fabric woven having a warp and a weft which are joined at the intersections, the fabric comprising a weft of elastomeric monofilament with a filament size of 0.125 mm–1.5 mm and a warp of yarn or elastomeric monofilament, the cushion having a spring function which is a composite of the individual components of the foam cushion.

4,803,119
INK COMPOSITIONS FOR IMPACT TYPEWRITER RIBBONS
James M. Duff, Mississauga; Stephan Drappel; James D. Mayo, both of Toronto, all of Canada, and Richard G. Crystal, Los Altos, Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Jun. 1, 1987, Ser. No. 56,172
Int. Cl.[4] B32B *3/26*
U.S. Cl. 428—321.3 20 Claims

1. An impact printing ribbon comprised of a supporting substrate and a sponge with an ink composition dispersed therein, which ink is comprised of pigment particles and a dimer acid.

4,803,120
MAGNETIC TAPE HAVING A LEADER TAPE
Hiroshi Ogawa; Chiaki Mizuno, and Yasuo Tamai, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 750,129, Jul. 1, 1985, abandoned. This application Jul. 29, 1987, Ser. No. 80,153
Claims priority, application Japan, Jun. 29, 1984, 59-133009; Jun. 29, 1984, 59-133011
Int. Cl.[4] G11B *5/627*
U.S. Cl. 428—323 11 Claims

1. A magnetic tape having a leader tape comprising a coating layer provided on one or both sides of a support, at at least one end of the magnetic tape, characterized in that the coating layer contains (a) an inorganic pigment powder with a grain size of 0.01 to 10 um and (b) a binder, in an amount of 25 to 600 parts per 100 parts of the powders, and the support is semi-transparent and is formed from a material selected from polyethylene terephthalate, polypropylene, polycarbonate and polyethylene naphthalate, and contains a white inorganic powder added as external grains, and has a haze of 40 to 80% and the leader tape has a percent photo-transmission of at least 20%.

4,803,121
MAGNETIC RECORDING MEDIUM
Katsumi Ryoke; Masatoshi Takahashi; Toshimitu Okutu, and Hideaki Kosha, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 16, 1987, Ser. No. 109,013
Claims priority, application Japan, Oct. 16, 1986, 61-244034
Int. Cl.[4] G11B *5/70*
U.S. Cl. 428—329 10 Claims

1. A magnetic recording medium comprising a non-magnetic support having thereon a magnetic layer comprising ferromagnetic fine particles, a binder, and α-alumina particles having an average size of from about 0.1 to 0.3 μm, provided that the number of α-alumina particles having a particle size of from 0.05 μm to 1.0 μm is at least equal to the number of α-alumina particles having a particle size of up to 0.05 μm, wherein the α-alumina particles have a specific surface area of from 5 to 50 m^2/g and the amount of the α-alumina particles is from about 2 to 12 wt % based on the ferromagnetic fine particles.

4,803,122
MULTILAYER LAMINATE OF SELF SUPPORTING FILMS
Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Division of Ser. No. 786,896, Oct. 11, 1985, Pat. No. 4,778,557. This application Feb. 27, 1987, Ser. No. 20,291
Int. Cl.[4] B32B *27/00, 27/32*
U.S. Cl. 428—349 7 Claims



1. A laminate comprising:
(a) a first self-supporting outer film comprising a thermoplastic heat sealable material;
(b) a second self-supporting film comprising an oxygen barrier thermoplastic material, said second film adhered to the first film;

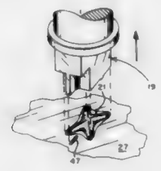
(c) a third self-supporting outer film comprising a thermoplastic heat sealable material; and
(d) wherein the lamiante has a thickness of at least about 10 mils, and at least one of the films is oriented.

4,803,123
PROCESS FOR PRODUCTION OF FIBROUS CARBON MATERIAL
Junzo Harada, Chiba, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan
Continuation of Ser. No. 939,573, Dec. 9, 1986, abandoned. This application Dec. 14, 1987, Ser. No. 133,181
Claims priority, application Japan, Dec. 16, 1985, 60-281141
Int. Cl.[4] B05D *3/04*
U.S. Cl. 428—367 1 Claim



1. A process for producing a fibrous carbon material from fibrous silicon carbide, said fibrous carbon material being of double structure in that the inside thereof near its core is silicon carbide and the outside thereof near its surface is carbon, said fibrous carbon material further being of essentially the same diameter and length as said fibrous silicon carbide but lighter in weight and having an average tensile modulus of 20.9 to 27.4 ton/mm^2, an average elongation of 1.28 to 1.67% and an average surface area of from 0.98×10^2 to 7.9×10^2 m^2/g, which comprises: charging said fibrous silicon carbide having an outer diameter of from 1.0 to 30μ and a length of from 10 to 40 mm to a reaction chamber; introducing an inert gas into said reaction chamber and adjusting the temperature therein to no greater than aobut 800° C.; while maintaining said temperature, contacting said fibrous silicon carbide with a halogen or halogen-containing compund for a period of time sufficient to remove the silicon therefrom at a silicon removal rate of 10 to 81%; replacing the halogen or halogen-containing compound with inert gas; lowering the temperature in said reaction chamber to about room temperature and removing the thus formed fibrous carbon material therefrom.

4,803,124
BONDING SEMICONDUCTOR CHIPS TO A MOUNTING SURFACE UTILIZING ADHESIVE APPLIED IN STARFISH PATTERNS
Rene Kunz, Mountain View, Calif., assignor to Alphasem Corporation, Sunnyvale, Calif.
Continuation of Ser. No. 2,267, Jan. 12, 1987, abandoned. This application Aug. 14, 1987, Ser. No. 85,355
Int. Cl.[4] B05D *1/14;* B32B *31/00;* B05C *3/02*
U.S. Cl. 428—200 11 Claims



1. The combination comprising a mounting surface for bonding a semiconductor chip hereto, and a deposit of die attach adhesive material carried on said mounting surface for bonding the semiconductor chip thereto, said deposit being formed to spread across the bonding surface and provide full coverage of said bonding surface with a uniformly thick layer of adhesive free of voids in response to being compressed by a planar bonding surface of a chip moving normal to said mounting surface and disposed in parallel relation to the plane of the mounting surface, said deposit being of a substantially viscous material disposed and arranged in the general shape of a starfish having a plurality of radially extending arms, said shape being characterized by a raised central position disposed at the intersection of the radially inner ends of said plurality of arms, said arms being increasingly thickened progressively radially inwardly thereof to cause the deposit to spread symmetrically when compressed by a planar bonding surface of a die moving normally thereto while disposed in parallel relation to the plane of the mounting surface.

4,803,125
MAGNETIC RECORDING MEDIUM
Yoji Takeuchi, Kyoto, and Kenji Sumiya, Saita, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan
Filed Feb. 18, 1987, Ser. No. 16,081
Claims priority, application Japan, Feb. 18, 1986, 61-34890
Int. Cl.[4] G11B *5/72*
U.S. Cl. 428—411.1 7 Claims

1. A magnetic recording medium comprising a substrate, a magnetic layer formed on one surface of said substrate and a back coating layer having a thickness of from 0.1 to 3.0 μm formed on the other surface of said substrate, wherein said back coating layer contains at least one polyfluoropolyether selected from the group consisting of a fluorinated polyether which comprises repeating units of the formula:

$$-(C_mF_{2m}O)- \quad (I)$$

wherein m is an integer of 1 to 18 and has, at least one molecular end, a polar group selected form the group consisting of polar groups of the formulae:

$$-COOR \quad (II)$$

$$-CONR_1R_2 \quad (III)$$

$$-C_nH_{2n}OH \quad (IV)$$

$$-C_nH_{2n}NR_1R_2 \quad (V)$$

$$-COC_nF_{2n+1} \quad (VI)$$

$$-C(OH)_2C_nF_{2n+1} \quad (VII)$$ ps

and

$$-CH_2OPO(OH)_2 \quad (VIII)$$

wherein R is a C_1–C_6 alkyl group or a benzyl or phenethyl group, R_1 and R_2 are the same and different, and each a hydrogen atom, a C_1–C_6 alkyl group, a benzyl or phenethyl group or a group of the formula: $-R_3OH$ wherein R_3 is a C_2–C_6 alkyl group, and n is an integer of 1 to 10 and a fluorinated polyether which comprises the repeating units of the formula (I) and has, at both molecular ends, polar groups of the formula:

$$-COO-(CH_2CH_2O)_l-PO(OH)_2 \quad (IX)$$

wherein l is an integer of 1 to 90, said polyfluoropolyether being contained in the back coating layer in an amount of from 0.01 to 10.0% by weight based on the total weight of solid components in the back coating layer.

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4,803,126

PROCESS TO PERMIT IMPROVEMENT OF FUNCTIONAL PROPERTIES OF POLYOLEFIN ARTICLES BY ELECTRON-BEAM INITIATED POLYMERIZATION

John E. Wyman, Westford, Mass., assignor to Energy Sciences Inc., Woburn, Mass.

Filed Oct. 19, 1987, Ser. No. 110,472
Int. Cl.[4] B32B *9/04*
U.S. Cl. 428—447 10 Claims

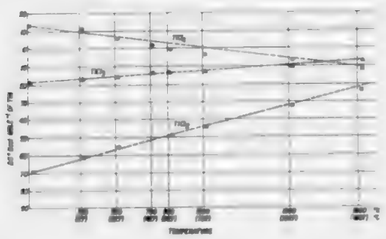
1. A process for modifying the surface of a polyolefin film and the like to increase the effective surface tension so as to permit adhesion thereto of a barrier coating, that comprises, hydrolyzing an organofunctional silane; coating the surface of a polyolefin film with the hydrolyzed silane and drying the same; and electron-beam irradiating the coated surface to initiate the further polymerization of the silane-to-silane structure in the hydrolyzed silane layer and also to graft the same to the polyolefin surface; and coating the silane-surface grafted polyolefin film with a polymer having the desired barrier properties.

4,803,127

VAPOR DEPOSITION OF METAL COMPOUND COATING UTILIZING METAL SUB-HALIDES AND COATED METAL ARTICLE

M. Javid Hakim, Burlington, Canada, assignor to Liburdi Engineering Limited, Ontario, Canada

Continuation of Ser. No. 943,871, Dec. 19, 1986, abandoned, which is a continuation of Ser. No. 788,701, Oct. 21, 1985, abandoned, which is a continuation of Ser. No. 577,225, Feb. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 469,857, Feb. 25, 1983, abandoned. This application Oct. 22, 1987, Ser. No. 111,144
Int. Cl.[4] B32B *15/04, 19/00*
U.S. Cl. 428—457 37 Claims



1. A method of producing metal compound coatings of one of the group of metals including titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum and tungsten on a substrate comprising:

(a) reacting in a reaction chamber in the presence of a substrate a gaseous mixture of the metal subchlorides with one member of the groups of gaseous mixtures comprising hydrogen and nitrogen; hydrogen, nitrogen and ammonia; hydrogen and a hydrocarbon; hydrogen, nitrogen and a hydrocarbon; and hydrogen, nitrogen, ammonia and a hydrocarbon;

(b) manipulating the free energy value for the reaction and the kinetic parameters of the reaction to facilitate a reaction temperature in the range of 250° to 850° C.;

(c) maintaining the reaction temperature of the substrate and the reaction chamber in the said reaction temperature range;

whereby the coating being one of the group of a metal nitride, and a metal carbide and a metal carbonitride is deposited on the substrate.

29. A coated article consisting essentially of:

(a) a metal compound coating of metal nitride, metal carbide or metal carbonitride; the metal being at least one of the metals from Group IVB, VB and VIB of the Periodic Table of the Elements; and the metal compound coating being formed using a metal subhalide and using hydrogen and not least one of nitrogen, ammonia or methane; and

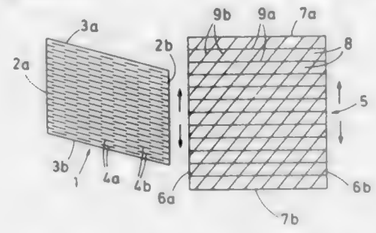
(b) the metal compound coating being deposited on and adhered to a metal substrate at a temperature below its softening point to avoid affecting its temper or hardness.

4,803,128

LATTICE

Ulrich Bender, Siegen, Fed. Rep. of Germany, assignor to Firma Emil Bender, Siegen, Fed. Rep. of Germany

Filed Aug. 18, 1987, Ser. No. 86,704
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1986, 3629527
Int. Cl.[4] B21D *31/04*
U.S. Cl. 428—577 7 Claims



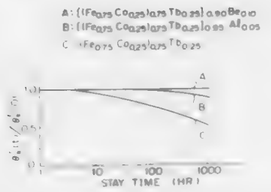
1. A lattice obtained by stretching a blank having a plurality of rows of slits, the lattice defining an edge and having webs which define rhomboid or rhomboidal openings, the webs extending obliquely relatively to the plane of the lattice, the major diagonal of the openings including an acute angle with the edge of the lattice, the major diagonals of the openings having such an angular position that always two webs which extend parallel to one another also extend parallel to the edge of the lattice, the webs located in the same row defining openings arranged one behind the other in the direction of the lattice edge being arranged so as to follow each other immediately and at least approximately in a straight line; wherein the blank has parallelogram or rhomboid shape, and wherein the rows of slits extend parallel to the edges of the lattice which extend at least approximately transversely or at an acute angle to the stretching direction of the blank.

4,803,129

MAGNETIC RECORDING MATERIAL

Naoshi Noriai, and Tadao Tokushima, both of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Continuation of Ser. No. 928,310, Nov. 6, 1986, abandoned. This application Dec. 14, 1987, Ser. No. 133,183
Claims priority, application Japan, Nov. 9, 1985, 60-251797
Int. Cl.[4] G11B *7/24*
U.S. Cl. 428—694 1 Claim



1. An improved magnetooptic recording material comprising a composition defined by

$$\{(Fe_aCo_b)_cTb_d\}_eBe_fTi_gAl_h$$

in which a to h indicate atomic ratios, and a is in a range from 0.3 to 0.95, b is in a range from 0.05 to 0.7, C is in a range from 0.6 to 0.8, d is in a range from 0.2 to 0.4, e is in a range from 0.80 to 0.99, f is in a range from 0.01 to 0.20, g is in a range from 0.01 to 0.20 and h is in a range from 0.01 to 0.20.

4,803,130

REACTIVE SPUTTERING PROCESS FOR RECORDING MEDIA

Joseph Skorjanec, White Bear Lake, and Carmen D. Moe, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 684,735, Dec. 21, 1984, Pat. No. 4,729,924. This application Aug. 20, 1987, Ser. No. 87,260
Int. Cl.[4] G11B *5/64*
U.S. Cl. 204—192.2 3 Claims

1. A method of making a ferromagnetic recording medium comprising the steps of:

(i) coating a non-magnetic substrate material with a magnetic layer comprising a cobalt/chromium alloy having an atomic ratio of cobalt to chromium between about 75/25 and 90/10 by sputtering said alloy onto said substrate;

(ii) after sufficient thickness of the cobalt chromium alloy has been coated onto the substrate, introducing a gas selected from the group consisting of a hydrocarbon, nitrogen, ammonia, and oxygen into the sputtering process in order to deposit a layer of cobalt and chromium reaction products with such gas and operating the sputtering process under the following conditions:

(a) film growth rate of at least 50 angstroms per minute;

(b) conditions of sputtering set to fully react the cobalt and chromium being sputtered with the gas; and

(c) final thickness of said layer of cobalt and chromium reaction products being between about 40 and 300 Angstroms;

(iii) coating the layer of reaction products of cobalt and chromium with a lubricant useful for lubricating recording media.

4,803,131

MAGNETIC RECORDING MEDIUM

Shinji Saito; Hiroaki Araki; Kiyomi Ejiri; Hiroshi Ogawa, and Chiaki Mizuno, all of c/o Fuji Photo Film Co., Ltd., 12-1, Ogi-cho 2, Odawara-shi, Kanagawa, Japan

Filed Oct. 20, 1987, Ser. No. 110,317
Claims priority, application Japan, Oct. 20, 1986, 61-248862
Int. Cl.[4] G11B *5/70*
U.S. Cl. 428—694 5 Claims

1. A magnetic recording medium comprising a non-magnetic support and a magnetic recording layer provided on the support which comprises a binder and a ferromagnetic powder dispersed therein, wherein said binder contains a resin component having an epoxy group in the range of 1×10^{-4} to 1×10^{-2} mols/g of said resin component, said resin component being selected from the group consisting of a vinyl chloride copolymer, a vinylidene chloride copolymer, a polyester resin, an acrylic resin, a polyvinyl acetal resin, a polyvinyl butyral resin, a phenoxy resin, a butadieneacrylonitile copolymer, and a polyurethane resin, and said ferromagnetic powder contains water in an amount corresponding to moles of 1–5 times as much as the number of moles of the epoxy group contained in the binder.

4,803,132

MAGNETIC RECORDING MEDIUM

Mikio Kishimoto, Osaka; Tetsuya Nakazumi, Ikeda; Tomoji Kawai, Mineo, and Shichio Kawai, Suita, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed May 8, 1987, Ser. No. 47,326
Claims priority, application Japan, May 9, 1986, 61-106372
Int. Cl.[4] G11B *5/706*
U.S. Cl. 428—141 6 Claims

1. A magnetic recording medium which comprises a non-magnetic substrate and a magnetic layer formed thereon, said magnetic layer containing a magnetic powder and a binder, said magnetic powder comprising a nuclear crystal consisting of magnetic oxide powder and a magnetic metallic layer formed thereon containing cobalt, said magnetic layer having a coercive force of not more than 1,000 Oe, a saturation magnetic flux density of not less than 1,800 gauss and a saturation magnetization of not less than 80 emu/g.

4,803,133

MAGNETIC RECORDING MEDIUM

Hozumi Hirota, Yamatokoriyama; Yukihiro Shimasaki, Katano; Hideaki Komoda, Hirakata, and Ikuo Ota, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 8, 1987, Ser. No. 130,299
Claims priority, application Japan, Dec. 26, 1986, 61-312228; Jan. 12, 1987, 62-4377; Jan. 12, 1987, 62-4378
Int. Cl.[4] G11B *5/71*
U.S. Cl. 428—695 1 Claim

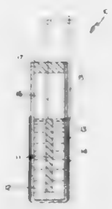
1. A magnetic recording medium comprising a support body and a magnetic layer formed on the support body, said magnetic layer including magnetic powder, oleic acid and a first ester selected from a group consisting of ethyl stearate and ethyl oleate, and a second ester selected from a group consisting of isocetyl stearate, 2-ethyl hexyl stearate and 2-ethyl hexyl laurate, wherein the compounding ratio of the oleic acid and the total amount of the first and second esters is 1:2 to 1:8 by weight, and the total amount of the oleic acid, the first ester and the second ester is 5 to 15% by weight with respect to the magnetic powder.

4,803,134

HIGH ENERGY DENSITY LITHIUM-OXYGEN SECONDARY BATTERY

Anthony F. Sammells, Naperville, Ill., assignor to Eltron Research, Inc., Aurora, Ill.

Filed Jan. 24, 1987, Ser. No. 65,967
Int. Cl.[4] H01M *8/14, 4/00, 4/36*
U.S. Cl. 429—16 20 Claims



1. A high energy density lithium-oxygen secondary cell comprising a lithium-containing negative electrode; a lithium ion conducting molten salt electrolyte contacting said negative electrode; an oxygen ion conducting solid electrolyte contacting and containing said molten salt electrolyte; and an oxygen redox positive electrode contacting said oxygen ion conducting solid electrolyte.

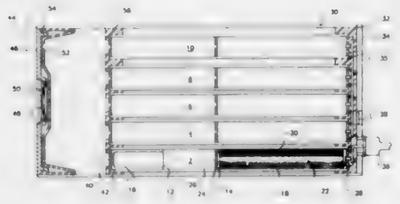
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4,803,135

PRESSURE ACTIVATED RESERVE BATTERY

Kurt F. Garoutte, Furlong, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 29, 1988, Ser. No. 161,556
Int. Cl.[4] H01M 6/34
U.S. Cl. 429—116 **7 Claims**



1. A reserve pressure compensating battery comprising at least one reserve cell which contains a means for storing a pair of cell electrodes and an electrolyte reservoir, separated by a fluid-tight barrier,

a first rupturable seal means for providing a rupturable fluid-tight barrier between the cell electrodes and the cell electrolyte reservoir, said barrier being arranged to connect the cell electrodes and the cell electrolyte reservoir through an appropriate opening,

a second rupturable seal means across an external end of the cell electrolyte reservoir means,

a deformable cup means within the electrolyte reservoir means, having the closed cup end facing said second rupturable seal means and an open end facing first seal means with a wall of said cup being integrally attached to the outer reservoir and cell wall means to provide a fluid-tight seal therewith,

a housing means surrounding said reserve cell and having an opening therein,

a third rupturable seal means across said opening in said housing means,

a flexible bladder means in said housing means for isolating said third seal means from said second seal means and

an electrically nonconductive fill fluid within said housing means between said bladder means and said second seal means whereby a movement of said bladder means allows an internal pressure of said fill fluid to match an external environmental pressure to minimize pressure resistance of said housing means.

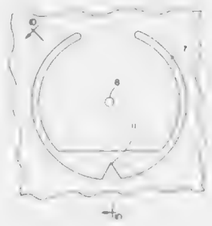
4,803,136

METHOD OF MANUFACTURING A SAFETY VENTED CONTAINER AND PRODUCT

Benjamin Bowsky, Maineville; Glenn A. Honkomp, Loveland; Larry G. Barrows, Cincinnati, and Edward E. Wilson, Milford, all of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 782,048, Sep. 30, 1985, abandoned, and a continuation-in-part of Ser. No. 909,302, Sep. 19, 1986, abandoned. This application Apr. 23, 1987, Ser. No. 41,478
Int. Cl.[4] H01M 2/12; C23F 1/00; B44C 1/22
U.S. Cl. 429—56 **30 Claims**

1. A method of making a safety vent in a portion of an hermetically sealed container for an electrochemical device, the safety vent being capable of withstanding a preselected pressure before profoundly rupturing with the metal adjacent the rupture remaining attached to an initial portion of said container portion for effective pressure relief, comprising: feeding said container portion having initial stress and grain characteristics into a printing zone; printing said container portion while in said printing zone with a masking resist pattern having an uncovered preselected planar strip-like area having preselected length and breadth to correspond to a safety vent area; feeding said masked printed container portion to an etching zone; subjecting said container portion while in said etching zone to a controlled etching process using preselected etching materials to etch said uncovered preselected planar area to a uniform preselected depth to leave a uniform preselected remaining material thickness throughout the etched planar area having said preselected length and breadth to be in the form of a flat membrane having stress and grain characteristics substantially like said initial stress and grain characteristics, said remaining materials of said etched planar area formed as said flat membrane being of uniform thickness and preselected surface area to have a controlled and uniform pressure sensitivity of substantially unchanged residual stress to serve as a safety vent and, feeding said uniformly etched



container portion through a rinsing zone to remove said etching materials.

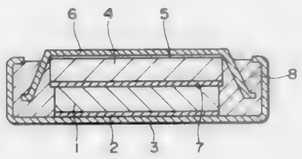
18. A container portion for a hermetically sealed container for an electro-chemical device, having at least one planar area chemically etched therein to provide a safety vent of preselected uniform thickness with stress and grain characteristics substantially like the stress and grain characteristics of the remaining material of said container portion in the form of a flat membrane to have a controlled and uniform pressure sensitivity of substantially unchanged residual stress capable of uniformly responding to and withstanding a preselected pressure before profoundly rupturing under preselected pressure with the metal adjacent the ruptured flat membrane safety vent remaining attached to said container portion.

4,803,137

NON-AQUEOUS ELECTROLYTE SECONDARY CELL

Tadaaki Miyazaki, Higashiyamato; Takao Ogino, Tokorozawa; Yoshitomo Masuda, Tachikawa, and Takahiro Kawagoe, Tokorozawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Apr. 25, 1988, Ser. No. 185,995
Claims priority, application Japan, May 19, 1987, 62-120216; Jun. 5, 1987, 62-141258
Int. Cl.[4] H01M 6/14
U.S. Cl. 429—194 **4 Claims**



1. A non-aqueous electrolyte secondary cell comprising a positive electrode active material selected from materials represented by formulae (1) through (6):

$$Li_xMo_zV_{2-z}O_5 \quad (1)$$

$$Li_xW_xV_{2-x}O_5 \quad (2)$$

$$Li_yMo_zV_{2-z}O_5 \quad (3)$$

$$Li_yW_zV_{2-z}O_5 \quad (4)$$

$$Li_{m+n}Mo_mW_nV_{2-m-n}O_5 \quad (5)$$

$$\beta\text{-}Li_qV_2O_5 \quad (6)$$

wherein $x \leqq 1$, $z < y \leqq 1$, $m+n \leqq 1$, and $0.1 \leqq q \leqq 0.6$,

a negative electrode active material of lithium or a lithium alloy capable of occluding and releasing lithium, and

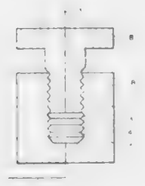
an electrolyte consisting essentially of a non-aqueous material which allows lithium ions to migrate for electrochemical reaction with said positive electrode active material.

4,803,138

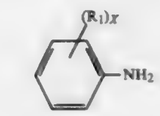
NONAQUEOUS SECONDARY BATTERY

Yukio Kobayashi, Sagamihara; Masataka Takeuchi, Yamato; Mutsumi Kameyama, Hatogaya; Masabu Ohira; Yoshikazu Kikuta, both of Kawasaki, and Toyohiko Takahashi, Yokohama, all of Japan, assignors to Showa Denko K.K. & Hitachi, Ltd., Tokyo, Japan

Filed Mar. 14, 1988, Ser. No. 168,046
Int. Cl.[4] H01M 4/60, 6/14
U.S. Cl. 429—194 **15 Claims**

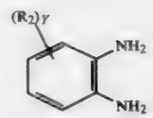


1. A nonaqueous secondary battery which comprises a positive electrode composed of a polymer obtained by oxidative polymerization of at least one aniline compound selected from the group consisting of compounds represented by the following formulae (1) and (2):



(1)

and



(2)

wherein R_1 and R_2 stand for an alkyl group having 1 to 5 carbon atoms or an alkoxy group having 1 to 5 carbon atoms, and X and Y are 0, 1 or 2,

or a reduction product of said polymer, a negative electrode composed of (i) an alkali metal, (ii) an alkali metal alloy, (iii) an electroconductive polymer or (iv) a composite of an electroconductive polymer with an alkali metal or an alkali metal alloy, and an electrolytic solution comprising a supporting electrolyte selected from the group consisting of $LiAsF_6$, $LiBF_4$ and $LiPF_6$ and a solvent, wherein when the supporting electrolyte is $LiAsF_6$ or $LiPF_6$, the solvent is a mixed solvent

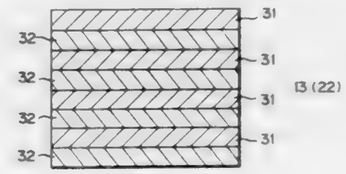
(2) comprising at least one member selected from the group consisting of propylene carbonate and ethylene carbonate and at least one member selected from the group consisting of tetrahydrofuran and 1,2-dimethoxyethane, and when the supporting electrolyte is $LiBF_4$, the solvent is a mixed solvent comprising propylene carbonate, ethylene carbonate and at least one member selected from the group consisting of tetrahydrofuran and 1,2-dimethoxyethane.

4,803,139

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Shuji Yoshizawa, and Tatsuya Ikezue, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Jul. 30, 1987, Ser. No. 79,763
Claims priority, application Japan, Aug. 11, 1986, 61-188316
Int. Cl.[4] G03G 5/082, 5/14
U.S. Cl. 430—57 **17 Claims**



1. An electrophotographic photoreceptor comprising:

a conductive substrate; and

a photoconductive layer, disposed on said substrate, for generating photocarriers upon irradiation with light, said photoconductive layer having a superlattice portion of two types of alternating semicondcutor layers comprised of amorphous silicon, said tyes differing is carbon content for each other, wherein each of said semiconductor layers (i) contains hydrogen and carbon, and (ii) has a thickness of between about 30 and 500 Å.

4,803,140

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Masaaki Hiro, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 775,766, Sep. 18, 1985, abandoned. This application Oct. 15, 1987, Ser. No. 110,088
Claims priority, application Japan, Sep. 20, 1984, 59-195840
Int. Cl.[4] G03G 5/14
U.S. Cl. 430—58 **4 Claims**

1. An electrophotographic photosensitive member having a photosensitive layer on an electroconductive substrate, said photosensitive layer having a laminated structure comprising a charge generation layer containing an organic photoconductive charge generation material and a charge transport layer containing an organic charge transport material having aromatic rings in the molecule, said charge transport layer being coated on the charge generation layer said charge transport layer containing a polymer formed from a polymerizable monomer having, in the side chain, an aromatic ring substituted with fluorine atom as the constituent.

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4,803,141

ELECTROPHOTOGRAPHIC SUPERLATTICE PHOTORECEPTOR

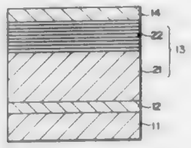
Shuji Yoshizawa, and Tatsuya Ikezue, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Jul. 30, 1987, Ser. No. 79,463

Claims priority, application Japan, Aug. 11, 1986, 61-188317; Aug. 11, 1986, 61-188318

Int. Cl.⁴ G03G *5/082, 5/14*

U.S. Cl. 430—58 **17 Claims**



1. An electrophotographic photoreceptor comprising:

a conductive substrate; and

a photoconductive layer disposed on said substrate, said photoconductive layer including a charge-generating layer for generating photocarriers upon irradiation with light and a charge-transporting layer for transporting the photocarriers generated from said charge-generating layer, said charge-transporting layer comprising amorphous silicon containing hydrogen, said charge-generating layer having a superlattice portion of alternately stacked first semiconductor layers comprised of amorphous silicon containing hydrogen and second semiconductor layers comprised of microcrystalline silicon containing hydrogen and carbon, each of said first and second semiconductor layers having a thickness of between about 30 and 500 Å.

4,803,142

CONTAINING MAGNETIC PARTICLES HAVING A BULK RESISTIVITY OF AT MOST 10^4 OHM.CM AND A POWDER RESISTIVITY OF 10^5-10^{12} OHM.CM

Seiichi Takagi, Yokohama, and Hiroshi Fukumoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1986, Ser. No. 922,310

Claims priority, application Japan, Oct. 28, 1985, 60-240755

Int. Cl.⁴ G03G *9/14*

U.S. Cl. 430—106.6 **17 Claims**

1. A magnetic toner composition, comprising: a binder resin and a particulate magnetic material comprising metallic iron and iron fluoride, said magnetic particles being less than about 1.0 μm and having a bulk resistivity of 10^4 Ω-cm or less and a powder resistivity of 10^5-10^{12} Ω-cm, wherein said magnetic toner composition has a magnetic material content W of from 20–60 wt. %, a saturation magnetization σ_s of W emu/g or higher as measured at a magnetic filed of 10 k Oe and a bulk resistivity of 10^{13} Ω-cm or higher.

4,803,143

COLORED SINGLE-COMPONENT TONERS AND THEIR PREPARATION

Werner Ostertag, Grueustadt; Erwin Czech, Darmstadt; Franz-Ulrich Schmitt, Gerlingen, and Detlef Schulze-Hagenest, Stuttgart, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Dec. 1, 1986, Ser. No. 936,312

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1985, 3542834

Int. Cl.⁴ G03G *9/08, 9/14*

U.S. Cl. 430—106.6 **5 Claims**



1. A colored single-coponent toner consisting essentially of a magnetic pigment, a binder based on an organic polymer and/or wax, a dye or colored pigment homogeneously dispersed in the binder, wherein the magnetic pigment consists of iron powder whose particles range in shape from spherical to elliptical and are from 2 to 12 μm in size.

4,803,144

ELECTROPHOTOGRAPHIC ENCAPSULATED PRESSURE FIXABLE TONER PARTICLES WITH ELECTROCONDUCTIVE POWDER COATING

Noriyuki Hosoi, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 758,570, Jul. 24, 1985, abandoned, which is a continuation of Ser. No. 433,712, Oct. 12, 1982, abandoned. This application Feb. 19, 1987, Ser. No. 16,962

Claims priority, application Japan, Oct. 16, 1981, 56-165265

Int. Cl.⁴ G03G *9/14*

U.S. Cl. 430—106.6 **9 Claims**

1. An electrostatographic toner material comprising encapsulated toner particles having an average particle size in the range from about 0.5 to about 1,000 microns, in which the toner particle comprises a pressure fixable adhesive core material containing colorant and magnetizable substance and a pressure rupturable shell enclosing the core material, the outer surface of the shell being provided with a white powder of electroconductive stannic oxide selected from the group consisting of SnO_2 doped with 0.01–30 molar % of a donner atom selected from the group consisting of antimony, niobium, and halogen, and a combination of SnO_2 and one or more electroconductive metal oxides selected from the group consisting of oxides of zinc, titanium, aluminum, indium, silicon, magnesium, barium and molybdenum.

4,803,145

LIGHT SENSITIVE ALKALI DEVELOPABLE PHOTORESIST MATERIAL WITH FLUORINE SURFACTANT CONTAINING COLOR LAYER

Tamotsu Suzuki; Fumiaki Shinozaki; Akira Nishioka, and Mikio Totsuka, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 30, 1987, Ser. No. 31,737

Claims priority, application Japan, Mar. 28, 1986, 61-70019

Int. Cl.⁴ G03C *1/74, 1/54, 1/68*

U.S. Cl. 430—166 **8 Claims**

1. A light-sensitive image-forming material comprising a support having provided thereon a coloring layer having a

thickness of about 0.1 to 10 μm comprising a coloring agent and an alkali soluble organic maromolecular binder, said coloring agent being present in an amount of from 1–100 wt % based on the weight of said binder, and an alkali developable photoresist layer, in the order listed, wherein said coloring layer further contains from 0.01 to 12 wt % based on coloring layer constituents (as solids) of a fluorine-containing surface active agent which isa copolymer comprising as repeating units (1) an acrylate or a methacrylate which has a fluorinated aliphatic group containing from 3 to 20 carbon atoms and not less than 40 wt % of fluorine atoms, said aliphatic group having a terminal moiety containing at least 3 fluorinated carbon atoms, adn (2) a poly(oxyalkylene) acrylate or a poly(oxyalkylene)methacrylate, wherein said fluorinated aliphatic group-containing acrylate or methacrylate repeating unit consititutes from 10 to 70 wt % based on said copolymer, and said copolymer has a molecular weight ranging from 2,500 to 100,000.

4,803,146

METHOD TO FORM IMAGE FOR SILVER SALT DIFFUSION TRANSFER USING FOGGING AGENT

Noriyuki Inoue; Yoshio Idota, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 20, 1987, Ser. No. 110,300

Claims priority, application Japan, Oct. 20, 1986, 61-248967

Int. Cl.⁴ G03C *5/54*

U.S. Cl. 430—248 **9 Claims**

1. A method for forming an image for diffusion transfer of silver salts comprising image-wise exposing a diffusion transfer photographic film material comprising at least one support, at least one surface latent image type silver halide photographic emulsion layer and at least one image-receiving layer, and developing the image-wise exposed at least one surface latent image type silver halide emulsion layer with an aqueous alkaline processing solution comprising a silver halide developing agent and a silver halide solvent in the presence of a fogging agent.

4,803,147

PHOTOSENSITIVE POLYIMIDE POLYMER COMPOSITIONS

Werner H. Mueller, E. Greenwich; Dinesh N. Khanna, and Rohitkumar H. Vora, both of W. Warwick, all of R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Nov. 24, 1987, Ser. No. 124,742

Int. Cl.⁴ G03C *1/68*

U.S. Cl. 430—288 **16 Claims**

1. A photosensitive polyimide composition consisting essentially of solvent soluble polyimide which is the condensation product of an aromatic diamine and an aromatic dianhydride; a photoinitiator; a photopolymerizable compound containing at least two terminal ethylenically unsaturated groups; wherein at least one of said dianhydride or said diamine is selected from 2,2-hexafluoro-bis(3,4-dicarboxyphenyl)propane dianhydride; 2,2-hexafluorobis(3-aminophenyl)propane; 2,2-hexafluoro-bis(4-aminophenyl)propane; 2,2-hexafluoro-bis[4-(3-aminophenoxy)phenyl]propane; 2,2-hexafluoro-bis[4-(4-aminophenoxy)phenyl]propane; 1,1-bis(4-aminophenyl)-1-phenyl-2,2-2-trifluoroethane; 1,1-bis-[4-(1,2-dicarboxyphenyl)]-1-phenyl-2,2,2-trifluoroethane dianhydride and mixtures thereof.

4,803,148

LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT AND POLYMERIZABLE COMPOUND

Toru Harada, and Kozo Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 9, 1987, Ser. No. 59,991

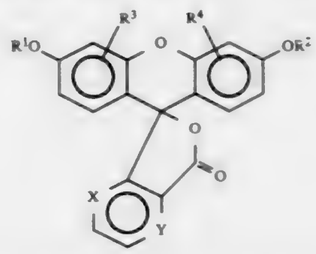
Claims priority, application Japan, Jun. 9, 1986, 61-133092

Int. Cl.⁴ G03C *5/54, 1/68*

U.S. Cl. 430—138 **7 Claims**

1. A light-sensitive material comprising a light-sensitive layer containing silver halide, a reducing agent, an ethylenic unsaturated polymerizable compound and a leuco dye provided on a support, wherein the leuco dye is a compound having the following formula (IV):

(IV)



in which one of X and Y is nitrogen and the other is carbon; R^1 and R^2 are the same groups selected from the group consisting of an alkyl group and a cycloalkyl group; R^3 and R^4 are the same groups selected from the group consisting of an alkyl group, a cycloalkyl group and an alkoxy group; and the sum of carbon atoms contained in the groups of R^1 and R^3 is not less than 5.

4,803,149

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Toshiro Takahashi; Ken-ichi Kuwabara, and Manabiro Okada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 6, 1986, Ser. No. 915,593

Claims priority, application Japan, Oct. 4, 1985, 60-221498

Int. Cl.⁴ G03C *1/36, 5/26*

U.S. Cl. 430—264 **12 Claims**

1. A silver halide photographic material for a bright room comprising a support having thereon at least one silver halide emulsion layer containing silver chloride grains or silver chlorobromide grains containing at least 80 mol% silver chloride, at least one of said silver halide emulsion layer or another hydrophilic colloid layer(s) present containing a yellow dye making the silver halide photographic material substantially insensitive to visible light of 420 n.m. or more and an ultraviolet absorbent in an amount sufficient to reduce the specific sensitivity of the silver halide emulsion at 360 n.m. to ½ or lower than ½ thereof in the absence of the ultraviolet absorbent, and the γ value of the silver halide photographic material being at least 10.

4,803,150

RADIOGRAPHIC ELEMENT EXHIBITING REDUCED CROSSOVER

Robert E. Dickerson, Rochester; James E. Kelly, Pittsford; Donald R. Diehl, and Ronda E. Factor, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 137,490, Dec. 23, 1987, abandoned, which is a continuation-in-part of Ser. No. 104,468, Oct. 5, 1987, abandoned. This application Jul. 13, 1987, Ser. No. 73,256

Int. Cl.⁴ G03C *5/16, 1/46, 7/26, 7/32*

U.S. Cl. 430—502 **10 Claims**

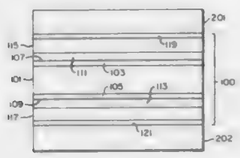
1. A radiographic element comprised of

a film support capable of transmitting radiation to which said radiographic element is responsive having opposed major faces,

processing solution permeable hydrophilic colloid layers including, coated on each opposed major face, at least one silver halide emulsion layer capable of responding to electromagnetic radiation in the visible portion of spec-

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trum and at least one other hydrophilic colloid layer interposed between said emulsion layer and said support, a dye dispersed in at least one of said interposed hydrophilic colloid layers capable of (i) absorbing visible radiation to which said radiographic element is responsive to reduce crossover and (ii) being decolorized in a processing solution,



characterized in that

said dye is prior to processing in the form of microcrystalline particles present in a concentration sufficient to reduce crossover to less than 10 percent and is capable of being substantially decolorized in less than 90 seconds during processing.

4,803,151

PHOTOGRAPHIC MATERIAL FOR THE SILVER DYE BLEACH PROCESS COMPRISING AN AZO DYE, CAPABLE OF LAKING, IN GELATINE

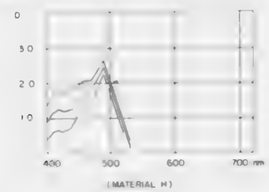
Rolf Steiger, Praroman, and Matthias Schelleberg, Marly, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 11, 1987, Ser. No. 13,419

Claims priority, application Switzerland, Feb. 11, 1986, 536/86

Int. Cl.⁴ G03C *7/32*

U.S. Cl. 430—562 **16 Claims**



1. A photographic material for the silver dye bleach process, which comprises, in at least one layer, a colloidal dispersion of water-insoluble salts of water-soluble azo dyes, capable of laking, in gelatin, the colloidal particles having a size of 0.01 to 1 m and the ratio of azo dye to gelatin being 1:1 to 1:10 the colloidal dispersion being obtained by reacting the azo dyes with at least the stoichiometric quantity of divalent or trivalent inorganic metal salts in the presence of gelatin.

4,803,152

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING NOVEL CHLORIDE CONTENT

Yasuhito Momoki, and Kazunori Hasebe, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

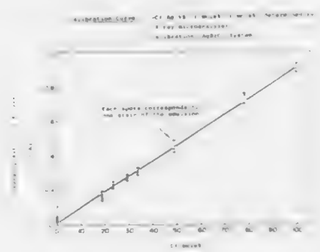
Filed Jun. 5, 1987, Ser. No. 58,712

Claims priority, application Japan, Jun. 5, 1986, 61-130739

Int. Cl.⁴ G03C *1/02, 7/23*

U.S. Cl. 430—567 **18 Claims**

1. A negative-working photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer, wherein said silver halide emulsion layer comprises a silver chlorobromide emulsion which is substantially free of iodide and has a chloride content which statisfies the following relationship (I) between the mean mole% of silver chloride in grain group (A), in which the grains have sizes not less than the median size in the grain size distribution of said silver halide emulsion, and the mean mole% of silver chloride



in grain group (B) in which the grains have sizes less than the median size:

Relationship (I): $3 \leqq$[Mean mole% of silver chloride in grain group (A)]$-$[Mean mole% of silver chloride in grain group (B)]$\leqq 50$.

4,803,153

PROCESS FOR SEPARATING BLOOD SERUM FROM BLOOD

Toshiko Shibata, Ichikawa; Hiroji Ina, Tama, and Kazuo Ina, Shizuoka, all of Japan, assignors to Nippon Paint Co., Ltd., Japan

Filed Mar. 18, 1986, Ser. No. 841,096

Claims priority, application Japan, Mar. 19, 1985, 60-53328

Int. Cl.⁴ B01D *21/01;* **A01N** *1/02*

U.S. Cl. 435—2 **2 Claims**

1. A process for the separation of blood serum from blood, which comprises (a) placing at least one compound selected from the group consisting of d-sesamin, l-sesamin, paulownin, d-asarinin, l-asarinin, 2α-paulownin, 6α-paulownin, pinoresinol, d-eudesmin, l-pinoresinol β-D-glucoside, l-pinoresinol, l-pinoresinol monomethyl ether β-D-glucoside, epimagnolin, lirioresinol-B, syringaresinol (dl), lirioresinonB-dimethyl ether, phillyrin, magnolin, lirioresinol-A, 2α, 6α-d-sesamin, d-diaeudesmin, lirioresinol-C dimethyl ether (ddiayangambin) and sesamolin in a test tube which is used for separation of blood serum, and (b) placing blood into said test gube.

4,803,154

MULTI-SPOT ENZYME IMMUNOASSAY METHOD

Junko Uo; Masaji Nishimura; Kazuo Horiguchi; Setsuko Nakanishi, and Shigeru Kaku, all of Kyoto, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Apr. 25, 1986, Ser. No. 856,018

Claims priority, application Japan, Apr. 25, 1985, 60-90216

Int. Cl.⁴ G01N *33/53*

U.S. Cl. 435—7 **12 Claims**

1. In a method for the assay of an immunologically active substance (B) in a biologically derived test sample comprising contacting a prefixed amount of an immunologically active substance (A) specifically reactive with the substance (B), which is immobilized on a solid carrier, with the test sample containing the substance (B) in the presence of an enzyme-labelled immunologically active substance (A′), and colorimetrically measuring the amount of the enzyme contained in the enzyme-labelled substance (A′) bound to the substance (B) bound to the immobilized substance (A), the improvement which comprises:

(a) preparing an immuno-active membrane of a hydrophobic polymer sheet having a number of hydrophilic spots, on which a prefixed amount of an immuno-active substance (A) has been immobilized,

(b) preparing a coloring-membrane having a number of spots which contain a color-producing reagent being capable of developing color by the catalytic effect of an enzyme at the corresponding positions to those of the immuno-active membrane,

(c) contacting the immuno-active membrane from (a) with said test sample together with an enzyme-labelled immuno-active substance (A′), simultaneously or successively, thereby reacting the substance (A), substance (B) and enzyme-labelled substance (A′) non-competitively,

(d) adding dropwise a mixture containing a substrate to each spot of the immuno-active membrane of (c), and

(e) superposing the coloring-membrane of (b) on the immuno-active membrane of (d), so that the spots in both membranes correspond to each other, and

(f) colorimetrically measuring the resulting color and thereby determining the amount of the substance (B) in the test sample.

4,803,155

MONOCLONAL ANTIBODIES TO *SCLEROTINIA HOMOEOCARPA*

Frank P. Petersen, Beverly; Adrianna M. Maybroda, Haddonfield, and Sally A. Miller, Pennsauken, all of N.J., assignors to Agri-Diagnostics Associates, Cinnaminson, N.J.

Filed Feb. 27, 1986, Ser. No. 834,198

Int. Cl.⁴ G01N *33/53, 33/577;* **C07K** *15/14*

U.S. Cl. 435—7 **22 Claims**

1. A monoclonal antibody capable of specifically binding with an antigen from *Sclerotinia homoeocarpa.*

4,803,156

PEPTIDE-BETA-LACTAMASE CONJUGATES FOR ENZYME-LINKED IMMUNOASSAYS

Alexander R. Neurath, New York, N.Y.; Stephen B. H. Kent, Pasadena, Calif., and Nathan Strick, Far Rockaway, N.Y., assignors to New York Blood Center, New York, N.Y. and California Institute of Technology, Pasadena, Calif.

Filed Sep. 11, 1985, Ser. No. 774,829

Int. Cl.⁴ G01N *33/53*

U.S. Cl. 435—7 **10 Claims**

1. A reagent for an ELISA determination of antibodies specific for the pre-S region of the hepatitis B virus envelope protein, the reagent comprising a peptide covalently linked to beta-lactamase, wherein said peptide is a synthetic peptide having an amino acid sequence corresponding to a sequence of amino acids in the pre-S region of the hepatitis B virus envelope protein and wherein said peptide mimics an antigenic determinant of said protein.

7. A reagent for an ELISA determination of antibodies specific for HTLV III/LAV, the reagent comprising a peptide covalently linked to beta-lactamase, wherein said peptide being a synthetic peptide having an amino acid sequence corresponding to a sequence of amino acids in HTLV III/LAV and wherein said peptide mimics an antigenic determinant of HTLV III/LAV.

4,803,157

HYDROLYZABLE FLUORESCENT SUBSTRATES FOR PHOSPHATASES AND ANALYTICAL USE THEREOF

Michael W. Sundberg, Penfield; Bruce Babb, and Gregory McClune, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 31, 1986, Ser. No. 824,752

Int. Cl.⁴ F12Q *1/42;* **C07F** *9/02*

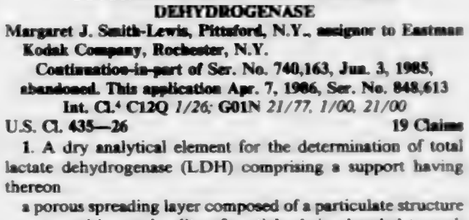
U.S. Cl. 435—21 **16 Claims**

1. A hydrolyzable compound represented by the formula:

BLOCK—X—R′—L

wherein BLOCK is phosphono, thioxophosphono or a salt thereof, X is —O—, —S— or —NR— wherein R is hydrogen or alkyl, provided that when BLOCK is thioxophosphono, X is —O—,

R′ is a phenalenone or benzphenalenone moiety selected from the group consisting of



provided that when released as —X—R′—L, —X—R′—L exhibits maximum fluorescent emission at least about 580 nm and maximum absorption above about 530 nm, and L is hydrogen or a specific binding ligand.

4,803,158

COMPOSITION USED FOR THE DETERMINATION OF BETA-HYDROXYBUTYRIC ACID AND A METHOD FOR PREPARING THE SAID COMPOSITION

Yukio Shigeta, Hyogo; Yutaka Haruno, Shiga; Shigeki Yamada, Kyoto, and Yoshinori Takahashi, Fukui, all of Japan, assignors to Kabushiki Kaisha Kyoto Daiichi Kagaku and Kabushiki Kaisha Sanwa Kagaku Kenkyusho, both of, Japan

Continuation-in-part of Ser. No. 582,059, Feb. 21, 1984, abandoned. This application Oct. 23, 1986, Ser. No. 922,178

Claims priority, application Japan, Mar. 8, 1983, 58-39813

Int. Cl.⁴ C12Q *1/32, 1/26*

U.S. Cl. 435—25 **3 Claims**

1. A test indicator consisting essentially of:

(a) a composition for determining beta-hydroxybutyric acid in a liquid, said composition consisting essentially of a single pH buffer for maintaining pH within the range of 7 to 9, beta-hydroxybutyric acid dehydrogenase, NAD (Nicotinamide adenine dinucleotide), diaphorase, and nitro-TB and a binder comprising a natural or synthesized film-forming polymer; and

(b) a water-impermeable substrate on which said composition is applied;

said indicator being a one-layered indicator on said substrate.

4,803,159

ANALYTICAL ELEMENT AND METHOD FOR DETERMINATION OF TOTAL LACATE DEHYDROGENASE

Margaret J. Smith-Lewis, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 740,163, Jun. 3, 1985, abandoned. This application Apr. 7, 1986, Ser. No. 848,613

Int. Cl.⁴ C12Q *1/26;* **G01N** *21/77, 1/00, 21/00*

U.S. Cl. 435—26 **19 Claims**

1. A dry analytical element for the determination of total lactate dehydrogenase (LDH) comprising a support having thereon

a porous spreading layer composed of a particulate structure comprising a plurality of particles being bonded to each other on surface areas of said particles which are adjacent, where said adjacent particles form a coherent, three dimensional lattice which is essentially non-swellable to an aqueous liquid,

said element further comprising a saturated or unsaturated fluorinated surfactant containing one or more fluorocar-

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bon moieties each having from 4 to 16 carbon atoms and from 8 to 33 fluorine atoms, and each of said moieties having a ratio of fluorine atoms to carbon atoms of about 2:1, provided that when said surfactant contains more than one such moiety, said moieties have up to two fluorinated or unfluorinated methyl branches.

4,803,160

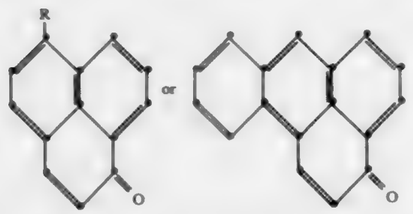
USE OF POLYMERIC MORDANTS TO INCREASE THE INTENSITY OF RIGID FLUORESCENT DYES

Annie L. Wu, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 31, 1986, Ser. No. 824,755
Int. Cl.[4] C12Q *1/02*
U.S. Cl. 435—29 **24 Claims**

1. An analytical dye composition comprising a rigid phenalenone, benzphenalenone or 4-oxo-4H-benz-[d,e]anthracene fluorescent dye or a hydrolyzable or reducible precursor thereof which releases a rigid fluorescent dye upon hydrolysis or reduction, respectively, of said precursor and a cationic or nonionic polymeric mordant.

3. The composition of claim 1 comprising a reducible fluorescent dye precursor of the structure $CAR—R^1)_n$ wherein CAR— is an aromatic or quinone nucleus having one or more hydrogen atoms removed to provide one or more valences through which R^1 is attached to CAR—, R^1 comprises a phenalenone or benzphenalenone moiety derived from



wherein R is hydroxy or mercapto, said moiety being attached to CAR— through an oxy or thio linkage obtained by removal of hydrogen from R, and n is 1 or 2,

provided that when R^1 is replaced with H, $CAR—(H)_n$ has an $E_{\frac{1}{2}}$ of either at least about +100 mV when measured in water.

18. A method for the determination of an analyte, said method comprising the steps of:

A. contacting a sample of a liquid suspected of containing an analyte with

a phenalenone, benzphenalenone or 4-oxo-4H-benz-[d,e]anthracene hydrolyzable or reducible fluorescent dye precursor which releases a rigid fluorescent dye upon hydrolysis or reduction, respectively, of said precursor in the presence of said analyte, and

a cationic or nonionic polymeric mordant, and

B. determining said dye released upon hydrolysis or reduction, respectively, or said precursor as a result of the presence of said analyte.

21. The method of claim 18 for the determination of a living organism.

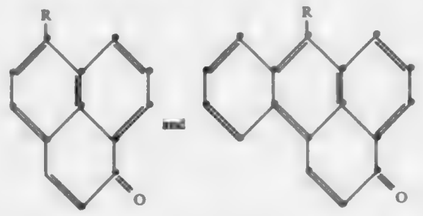
4,803,161

BIOLOGICAL AND ANALYTICAL USES OF PHENALENONE AND BENZPHENALENONE COMPOUNDS

Bruce E. Babb, Rochester; Robert T. Belly, Webster, and Albert J. Mura, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

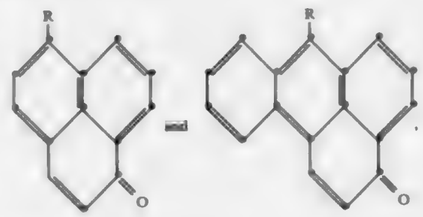
Filed Jan. 31, 1986, Ser. No. 824,757
Int. Cl.[4] C12Q *1/02*
U.S. Cl. 435—29 **22 Claims**

1. An analytical test composition buffered to a pH of 9 or less, said composition comprising a fluorescent dye selected from the group consisting of



wherein R is hydroxy, mercapto or amino or salts thereof.

4. An analytical composition comprising a reducible compound of the structure $CAR—R^1)_n$ wherein CAR— is an aromatic or quinone nucleus having a hydrogen atom removed to provide a valence through which R^1 is attached to CAR—, R^1 comprises a fluorescent moiety derived from a compound selected from the group consisting of



wherein

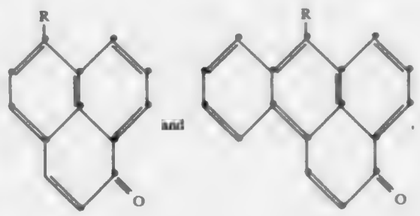
R is hydroxy or mercapto or salts thereof, and n is 1 or 2, said fluorescent moiety having an oxy or thio linkage, derived from said R group by removal of a hydrogen atom, through which said moiety is attached to said CAR— nucleus,

provided $CAR—R^1)_n$ is constructed so that it is capable of being reduced at a pH of 9 or less to release said derived fluorescent moiety, and

further provided that when R^1 is replaced with H, $CAR—(H)_n$ has an $E_{\frac{1}{2}}$ of at least about +100 mV when measured in water.

16. A method for the determination of an analyte comprising the steps of:

A. at a pH of 9 or less, contacting a sample of a liquid suspected of containing analyte with a reducible compound of the structure $CAR—R^1)_n$ wherein CAR— is an aromatic or quinone nucleus having a hydrogen atom removed to provide a valence through which R^1 is attached to CAR—, R^1 comprises a fluorescent moiety derived from a compound selected from the group consisting of



wherein

R is hydroxyl or mercapto or salts thereof, and n is 1 or 2,

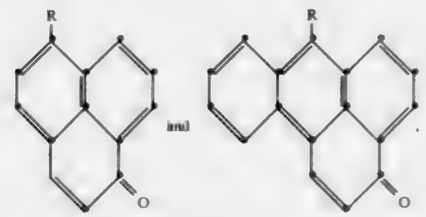
said fluorescent moiety having an oxy or thio linkage, derived from said R group by removal of a hydrogen atom, through which said moiety is attached to said CAR— nucleus,

provided $CAR—R^1)_n$ is constructed so that it is capable of being reduced at said pH to release said derived fluorescent moiety, and

further provided that when R^1 is replaced with H, $CAR—H)_n$ has an $E_{\frac{1}{2}}$ of at least about +100 mV when measured in water, and

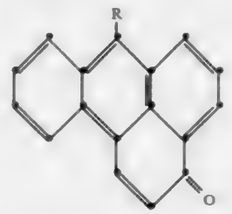
B. detecting said derived fluorescent moiety released from said compound upon its reduction as a result of the presence of said analyte.

21. A method for staining a biological specimen comprising contacting a biological specimen with a composition buffered to a pH of 9 or less, which composition comprises a fluorescent compound selected from the group consisting of



wherein R is hydroxy, mercapto or amino or salts thereof.

22. A compound of the structure



wherein R is hydroxy, mercapto or amino or salts thereof.

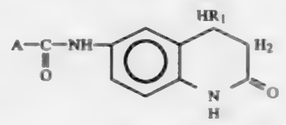
4,803,162

COMPOSITION, ARTICLE AND PROCESS FOR DETECTING A MICROORGANISM

Robert E. Smith, Livermore, and Eugene N. Fox, Kensington, both of Calif., assignors to Fluorodiagnostic Limited Partners, Walnut Creek, Calif.

Filed May 15, 1984, Ser. No. 610,324
Int. Cl.[4] C12Q *1/14, 1/04, 1/36*; C07D *215/16*
U.S. Cl. 435—36 **16 Claims**

1. A compound having the structure



wherein A is an enzyme-specific substituent and R1 is a haloalkyl having fewer than five carbon atoms.

4,803,163

PREPARATION OF A PROTEIN FRACTION EXHIBITING CELL GROWTH-INHIBITING ACTIVITY

Diana Fahey, and Ernest Knight, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 617,073, Jun. 4, 1984, abandoned. This application Jul. 9, 1986, Ser. No. 883,742
Int. Cl.[4] C12P *21/00*
U.S. Cl. 435—68 **12 Claims**

1. A process for preparing a protein fraction comprising proteins which are capable of inhibiting the growth of human lymphoblastoid cells, said process comprising:

(a) growing either (1) human diploid fibroblast cells in a culture medium containing a mixture of polyinosinic and polycytidylic acids or (2) human lymphoblastoid cells selected from the group consisting of Raji, Daudi and Namalva cells in a culture medium containing either mezerein or phorbol 12-myristate 13-acetate (PMA) under conditions which induce the cells to secrete proteins into culture medium;

(b) contacting the culture medium with an immobilized triazinyl dye capable of binding human fibroblast or lymphoblastoid interferons, whereby bound and unbound protein fractions are formed; and

(c) isolating the unbound fraction which contains the growth-inhibiting proteins.

4,803,164

PREPARATION OF HEPATITIS B SURFACE ANTIGEN IN YEAST

Ronald A. Hitzeman, Pacifica; Arthur D. Levinson, Burlingame, and Daniel G. Yansura, San Francisco, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 599,387, Apr. 12, 1984, abandoned, which is a continuation of Ser. No. 298,236, Aug. 31, 1981, abandoned. This application Apr. 22, 1987, Ser. No. 42,604
Int. Cl.[4] C12P *21/00, 21/02, 21/04*; C12N *15/00*
U.S. Cl. 435—68 **11 Claims**

1. A DNA expression vector capable of replication and phenotypic selection in yeast host strain comprising a promoter compatible with a yeast host strain and a DNA sequence encoding hepatitis B surface antigen, said sequence being positioned together with translational start and stop signals in said vector under control of said promoter such that in a transformant yeast strain it is expressed to produce hepatitis B surface antigen in particle form having a sedimentation rate which is virtually identical to that of authentic 22 nm hepatitis surface antigen particles.

4,803,165

NIF PROMOTER OF FAST-GROWING RHIZOBIUM JAPONICUM

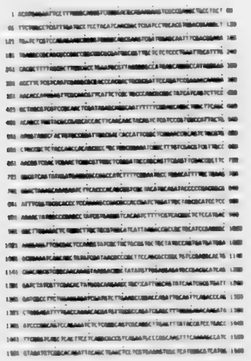
Edward R. Appelbaum, Madison, Wis., assignor to Lubrizol Genetics, Inc., Wickliffe, Ohio

Filed Aug. 7, 1985, Ser. No. 763,800
Int. Cl.[4] C12N *15/00, 1/20*; C12P *21/00*; C07H *15/12*
U.S. Cl. 435—172.3 **21 Claims**

1. A bacterial strain containing and replicating therein a

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recombinant DNA plasmid capable of functioning as a vector comprising



a composite gene comprising a promoter of a nifH gene from a fast-growing *Rhizobium japonicum* bacterium, and an extraneous structural gene under control of said promoter.

4,803,166

MICROORGANISM FOR DEGRADING TOXIC WASTE MATERIALS

Charles F. Kulpa, South Bend, Ind., and Michael G. Johnston, Durham, N.C., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Jul. 3, 1986, Ser. No. 881,767

Int. Cl.⁴ C12N *1/20*; C12R *1/40*; B07C *5/00*

U.S. Cl. 435—253.3 **1 Claim**

1. A biologically pure culture of *Pseudomonas putida* strain UNK-1 having all the identifying characteristics of the strain deposited under the accession number IVI-10112 wherein said culture is capable of degrading haloaromatic compounds in a liquid medium.

4,803,167

MONOCLONAL ANTIDIGOXTIN ANTIBODIES

Edgar Haber, Weston; Meredith Mudgett-Hunter, Hyde Park, and Michael Margolies, Weston, all of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed Mar. 30, 1982, Ser. No. 363,545

Int. Cl.⁴ C12N *5/00*; G01N *33/53*; C07K *15/02*

U.S. Cl. 435—240.27 **2 Claims**

1. A hybridoma capable of secreting antidigoxin antibodies which is ATCC HB-8113.

4,803,168

MICROENCAPSULATION WITH POLYMERS

Allan P. Jarvis, Jr., Newburyport, Mass., assignor to Damon Biotech, Inc., Needham Heights, Mass.

Continuation of Ser. No. 528,395, Sep. 1, 1983, abandoned. This application Jan. 4, 1986, Ser. No. 873,283

Int. Cl.⁴ C12N *5/00*

U.S. Cl. 435—240.22 **6 Claims**

1. A viable cell-containing capsule comprising a semipermeable membrane defining an enclosed intracapsular volume in which viable mammalian cells are disposed within a culture medium, said membrane consisting essentially of an inner layer comprising chitosan and an outer layer comprising a polyanionic polymer, said chitosan layer and polyanionic polymer being cross-linked by ionic interaction between cationic amine groups on said chitosan and anionic groups on said polyanionic polymer to form a water-insoluble permanent capsule, said encapsulated viable cells being capable of growth and reproduction within said capsule.

4,803,169

ASSAY FOR HUMAN BREAST CANCER

Peter S. Linsley; Vincent W. Ochs; Diane Horn; Joseph P. Brown, all of Seattle, Wash.; David B. Ring, Redwood City, Calif., and Arthur E. Frankel, Chapel Hill, N.C., assignors to Cetus Corporation, Emeryville, Calif.

Filed Feb. 5, 1986, Ser. No. 826,477

Int. Cl.⁴ G01N *33/577*

U.S. Cl. 435—7 **11 Claims**

1. A method of detecting breast cancer or determining the clinical stage of breast cancer in a human patient comprising:

(a) providing a sample of body fluid from said human patient; and

(b) determining the amount of a circulating antigen of about 260–340 kd MW by SDS-PAGE in said body fluid sample by a quantitative immunoassay using a monoclonal antibody to said circulating antigen, wherein said body fluid sample is incubated with said monoclonal antibody to determine the amount of antigen bound by said monoclonal antibody, and said selected antigen being characterized as having an epitope for an antibody produced by hybridoma cell line HB-8491 (W1) or HB-8489 (W9).

4,803,170

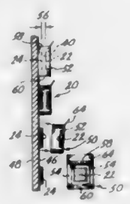
COMPETITIVE IMMUNOASSAY METHOD, DEVICE AND TEST KIT

Thomas H. Stanton, Seattle; James A. Clagett, Everett; Deborah C. Schindele; George E. Rezzoui, both of Bothell; Niels H. Andersen, and Kent E. Opheim, both of Seattle, all of Wash., assignors to Ultra Diagnostics Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 732,445, May 9, 1985, Pat. No. 4,746,631. This application Dec. 24, 1986, Ser. No. 946,475

Int. Cl.⁴ G01N *33/53*, *33/543*

U.S. Cl. 436—518 **30 Claims**



1. A device for detecting an analyte in a test fluid, comprising a reaction chamber having reagent, reaction, and detection surfaces wherein at least the detection surface does not overlap either the reagent surface or the reaction surface, the reaction chamber being adapted to receive and retain a predetermined volume of the test fluid in fluid communication with said reagent, reaction, and detection surfaces, the reagent surface having an analyte conjugate reversibly bound thereto, the analyte conjugate comprising a ligand/marker conjugated to an analyte component, the reaction surface having an analyte binding partner immobilized thereon, and the detection surface having a ligand/marker binding partner immobilized thereon.

21. A method of detecting an analyte in a test fluid, comprising the steps of:

providing a reaction chamber having reagent, reaction, and detection surfaces wherein at least the detection surface does not overlap either the reagent surface or the reaction surface, the reaction chamber being adapted to receive and retain a predetermined volume of the test fluid in fluid communication with said reagent, reaction, and detection surfaces, the reagent surface having an analyte conjugate reversibly bound thereto, the analyte conjugate comprising a ligand/marker conjugated to an analyte component, the reaction surface having an analyte binding partner immobilized thereon, and the detection surface having a ligand/marker binding partner immobilized thereon;

introducing a volume of test fluid suspected of containing analyte into the reaction chamber in fluid communication with the reagent, reaction, and detection surfaces;

retaining the volume of test fluid in the reaction chamber to permit solubilization of analyte conjugate from the reagent surface, binding of analyte and solubilized analyte conjugate to analyte binding partner on the reaction surface, and binding of solubilized analyte conjugate to ligand/marker binding partner on the detection surface; and,

thereafter measuring the activity of sequestered ligand-/marker on the detection surface, the measured activity being a function of the analyte concentration that is referable to standards and controls.

4,803,171

REAGENT PAPER FOR IMMUNOLOGICALLY ANALYSIS, A PROCESS FOR THE PREPARATION THEREOF AND THE USE THEREOF

Manfred Beier, Seeshaupt; Klaus P. Kaspar, Asuncion; Rainer Schäfer, Seeshaupt; Ulrich Trüger, Limburgerhof, and Siegfried Nötzel, Wilhelmsfeld, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Dec. 11, 1986, Ser. No. 940,500

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1985, 3543749

Int. Cl.⁴ G01N *33/52*, *33/53*, *33/543*, *33/545*

U.S. Cl. 436—530 **36 Claims**

1. Process for the preparation of a reagent paper for immunological analysis, comprising preparing a fibre fleece of a cellulose/synthetic fibre mixture, in which the weight ratio of cellulose/synthetic fibre is from 1:99 to 90:10, wherein said fleece is activated by treating at least a portion thereof with periodate, loading said activated fibre fleece with an acid treated protein under conditions favoring binding thereto and removing non-bound protein.

4,803,172

METHOD OF MANUFACTURING THYRISTOR WITH INTEGRATED POWER SUPPLY FOR AN ASSOCIATED CIRCUIT

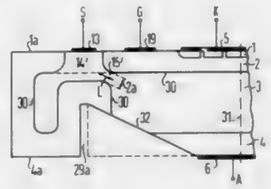
Roland Sittig, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Division of Ser. No. 5,784, Jan. 22, 1987, Pat. No. 4,736,232. This application Feb. 26, 1988, Ser. No. 163,199

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1986, 3602149

Int. Cl.⁴ H01L *21/223*, *21/302*

U.S. Cl. 437—6 **2 Claims**



1. A method for the manufacture of a thyristor having a p-emitter, an n-base, p-base, and an n-emitter being interconnected between anode and cathode electrodes respectively, and having a shoulder of said n-base extending through said p-base to an external electrical contact, comprising the steps of performing a deep diffusion of said p-base and said p-emitter in a wafer of n-doped semiconductor material using a doping mask covering the region above said shoulder at the cathode side of said thyristor making a deep notch in the surface of said thyristor at the anode side at a location opposite said shoulder, inserting said n-emitter into said p-base, and beveling the p-n junction at the anode side of said body such that the p-doped semiconductor region adjacent the lateral faces of said notch does not constitute a conductive connection to said p-emitter.

4,803,173

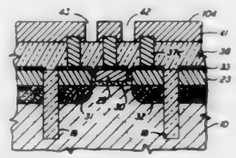
METHOD OF FABRICATION OF SEMICONDUCTOR DEVICE HAVING A PLANAR CONFIGURATION

Edward L. Sill, San Jose, and Paul G. Hilton, Boulder Creek, both of Calif., assignors to North American Philips Corporation, Signetics Division, Sunnyvale, Calif.

Filed Jan. 29, 1987, Ser. No. 67,032

Int. Cl.⁴ H01L *21/22*

U.S. Cl. 437—29 **16 Claims**



1. A method for producing an MOS device comprising source, drain and gate electrodes in a body of semiconductor, material, the top surfaces of the source, drain and gate electrodes being coplanar, the method comprising the following steps:

(a) selectively removing portions of a thick insulating layer on a single crystal semiconductor substrate to leave a mesa of insulating material on the substrate in a position corresponding to the desired gate region of the device;

(b) depositing a layer of source and drain material on the substrate and over the mesa to build up the surface of the semiconductor body and to define a gate trough therein;

(c) removing a portion of the source and drain layer in a manner to planarize the layer and to expose the insulating material filling the fate trough;

(d) removing the mesa-forming insulating material from the gate trough;

(e) forming a thin insulating layer at least on the walls and floor of the gate trough;

(f) forming the gate electrode in the gate trough;

(g) forming the source and drain electrodes; and

(h) providing electrical connection to the source, drain and gate electrodes by first forming contacts to each of these electrodes and then forming a metallization pattern thereon for external electrical connection to the source, drain and gate electrodes.

4,803,174

BIPOLAR TRANSISTOR INTEGRATED CIRCUIT AND METHOD OF MANUFACTURING THE SAME

Tadashi Hirao, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 801,789, Nov. 26, 1985, abandoned. This application Nov. 17, 1987, Ser. No. 121,912

Claims priority, application Japan, Dec. 20, 1984, 59-271239

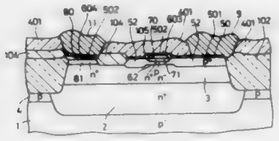
Int. Cl.⁴ H01L *21/225*

U.S. Cl. 437—31 **1 Claim**

1. A method of manufacturing a bipolar transistor, which comprises the steps of:

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forming a first conductivity type collector layer (3) surrounded by a isolation oxide film (102);
forming a polysilicon film (600) on said collector layer;
selectively forming a nitride film (202) on said polysilicon film;
selectively oxidizing said polysilicon firm with said nitride film thereon serving as a mask to form a first oxide film (104) while leaving a polysilicon films (601, 602) for defining emitter and collector electrodes, said polysilicon film (601) for said emitter electrode extending to an area on said isolation oxide film for defining a wiring hole;
introducing first conductivity type impurity into said remaining polysilicon films (601, 602) with said first oxide film (104) serving as a mask;
removing said first oxide film (104) from a region for defining a base layer;
injecting second conductivity type impurity into the region (5, 6) for defining said base layer by ion implantation, said conductivity type impurity being injected into the region



(6) for forming an active base layer (62) through the polysilicon film (603) for defining said emitter electrode;
diffusing said injected second conductivity type impurity to form said base layer while simultaneously diffusing said first conductivity type impurity introduced into the polysilicon films (603, 604) from the same to form an emitter layer (71) and low reaistance collector contact layer (81);
oxidizing said polysilicon film (603) on said emitter layer and the surface of said base layer at a low temperature to form a second oxide film (107);
removing said second oxide film (107) while leaving a portion (105) thereof on the edge wall of said polysilicon film (603) on said emitter layer;
forming metal silicide films (502, 501) on at least said polysilicon film on said emitter layer and said base layer; and
forming a protection film on the surface of the entire region and an emitter wire, a base wire and a collector wire through contact holes provided in said protection film.

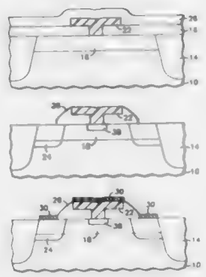
4,803,175

METHOD OF FABRICATING A BIPOLAR SEMICONDUCTOR DEVICE WITH SILICIDE CONTACTS

Antonio R. Alvarez, Sunnyvale, Calif., and James A. Kirchgessner, Mesa, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 14, 1987, Ser. No. 95,782
Int. Cl.[4] H01L *21/265*
U.S. Cl. 437—31 **14 Claims**

1. A method of processing a bipolar semiconductor device comprising the steps of:
providing a substrate;
isolating a device region on said substrate;
forming a first dielectric layer on said substrate;
forming an active base in said device region of said substrate;
defining an emitter opening in said first dielectric layer;
depositing a polysilicon layer on said first dielectric layer and in said emitter opening;
doping said polysilicon layer;
masking and etching said polysilicon layer so that said polysilicon extends beyond said emitter opening;
etching said first dielectric layer so that only the portion covered by said etched polysilicon layer remains;
forming silicide contacts on said polysilicon layer and said base;



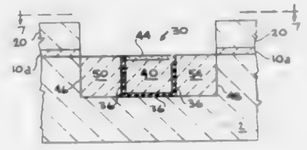
forming a second dielectric layer on said device region;
etching contact openings in said second dielectric layer, said contact openings extending to said silicide contacts; and
metallizing said contact openings to create external contacts.

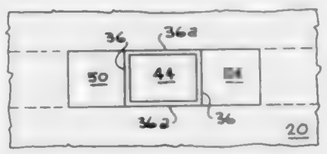
4,803,176

INTEGRATED CIRCUIT STRUCTURE WITH ACTIVE DEVICE IN MERGED SLOT AND METHOD OF MAKING SAME

Robert W. Bower, Maui, Hi., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 576,659, Feb. 3, 1984, abandoned. This application Aug. 18, 1986, Ser. No. 897,678
Int. Cl.[4] H01L *29/70, 29/78*
U.S. Cl. 437—33 **21 Claims**





1. A method for forming an improved integrated circuit structure with an active integrated circuit device formed in a single slot in the structure or substrate which comprises:
(a) forming a first portion of said slot in said substrate;
(b) constructing at least a part of one element of said active device in said slot;
(c) forming at least one additional slot portions in said substrate contiguous with said first slot portion; and
(d) constructing at least a part of at least one additional element of the same active device in said additional slot portion.

4,803,177

METHOD OF FORMING INTERCONNECTIONS AND CROSSINGS BETWEEN METALLIZATION LEVELS OF AN INTEGRATED CIRCUIT

Patrick Rabinzohn, Saint Maurice, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1987, Ser. No. 135,879
Claims priority, application France, Dec. 23, 1986, 86 18048
Int. Cl.[4] H01L *21/28*
U.S. Cl. 437—51 **8 Claims**



1. A method of forming interconnections and crossings between metallization levels of an integrated circuit, in which a first metallization level having a thickness e_{m1} has been formed on a substrate during an initial sequence a by means of etching or "lift-off" techniques generally used, characterized in that after the said initial sequence a resulting in that the said first metallization level is obtained, the inversion of a relief at the level of an interconnection is obtained by isotropic deposition, planarization by means of a sacrificial layer and anisotropic selective etching with respect to the said sacrificial layer according to the following further steps:
b. deposition of a first isolating layer having a thickness e_{i1} constituting the isolation between the said metallization level and the metallization level immediately above it,
c. deposition of a second isolating layer having a thickness e_{i2} constituting a phantom mask which will permit of ensuring the isolation by the said first layer at the levels of the crossings of the metallizations,
d. etching of the isolation pattern of the said second isolating layer selectively with respect to the first layer,
e. planarization of the structure thus obtained by the use of a sacrificial layer,
f. etching of the said sacrificial layer down to the level of the second isolating layer,
g. etching of the structure thus obtained so that the respective etching rates R_1, R_2 and R_S of the said first, second and sacrificial layers, respectively, permit of merging at the first level of metallization, while at the same time the said second isolating layer having a thickness e_{i2} is partly or entirely etched on the surface of the said structure, the relief of the said first metallization level and the inversion of a relief at the areas of the interconnections resulting from a selective etching of the first isolating layer with respect to the sacrificial layer, which ensures the self-alignment of the etching of the said first isolating layer at the first metallization level without any specific photolithographic step,
h. formation of the said metallization level lying immediately above it.

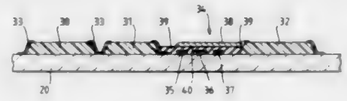
4,803,178

METHOD OF MAKING SILICON-ON-SAPPHIRE GATE ARRAY

Daniel V. McCaughan, Lincoln, England, assignor to Marconi Electronic Devices Limited, England

Filed Nov. 30, 1987, Ser. No. 126,562
Claims priority, application United Kingdom, Dec. 4, 1986, 8629040
Int. Cl.[4] H01L *21/225, 21/308*
U.S. Cl. 437—51 **6 Claims**

1. A method of making a semiconductor arrangement including the steps of forming a closely packed regular array of semiconductor island cells, each cell of which includes a semiconductor device and is formed on an insulating substrate; removing selected cells to leave a partially filled array; and forming electrically conductive interconnections for remaining cells, the interconnections at least partly overlying the sites of the removed cells.



4,803,179

METHODS FOR MAKING NEIGHBORING WELLS FOR VLSI CMOS COMPONENTS

Franz Neppl, Munich, and Carlos-Alberto Mazure-Espejo, Kirchseeon, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 2, 1987, Ser. No. 33,261
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1986, 3622504
Int. Cl.[4] H01L *21/308*
U.S. Cl. 437—70 **4 Claims**



1. In an improved method for the manufacture of neighboring wells implanted with dopant ions differing in conductivity type in the manufacture of VLSI complementary MOS field effect transistors (CMOS) circuits, wherein n^+-doped, or, alternatively, p^+-doped, silicon having an n^--doped, or, alternatively, p^--doped, epitaxial layer situated thereon is employed as a semiconductor substrate into which first p-wells are introduced upon employment of a composite layer consisting of a silicon oxide layer and a silicon nitride layer which composite layer is covered with a first photoresist as masking layer for n-wells, and then said n-wells are introduced upon employment of a silicon oxide layer covered with a second photoresist as masking layer for said p-wells, and whereby the edge of said composite layer is shifted in the direction of said n-wells by means of directed, lateral under-etching of said

composite layer and by means of subsequent oxidation preceding the production of said n-wells, the improvement comprising:

conducting said under-etching of said composite layer by isotropically etching into said silicon nitride mask layer under said first photoresist layer with all layers lying therebelow being not appreciably etched; and

generating an auxiliary polysilicon layer immediately above said silicon nitride mask layer and structured together with said first photoresist layer to protect said silicon nitride mask layer during said under-etching.

4,803,180

METHOD FOR MANUFACTURING PRESSURE CONTACT SEMICONDUCTOR DEVICES

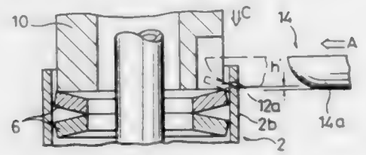
Mitsuo Obdate, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 751,670, Jul. 3, 1985, abandoned. This application Jun. 3, 1987, Ser. No. 56,990

Claims priority, application Japan, Jul. 5, 1984, 59-102590

Int. Cl.⁴ B01J *17/00*; **H01L** *23/04, 23/10, 23/48*

U.S. Cl. 437—222 **4 Claims**



1. A method for manufacturing a pressure contact semiconductor device comprising the steps of:

disposing a semiconductor element on a support member;

disposing a pan spring above said semiconductor element, said pan spring and said semiconductor element being contained in a container area of a cylindrical body;

compressing said pan spring with the lower surface of a compressing device; and

producing a plurality of folded curved projections at a top end of said cylindrical body with a pressure folding apparatus that is smoothly curved from an upper surface of said apparatus to a lower surface of said apparatus, wherein said folded curved projections are folded into said container area and into contact with the upper surface of said pan spring while said pan spring is in a compressed state.

4,803,181

PROCESS FOR FORMING SUB-MICROMETER PATTERNS USING SILYLATION OF RESIST SIDE WALLS

Peter L. Buchmann; Peter Vettiger, both of Langnau, and Bart J. Van Zeghbroeck, Richterswil, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1987, Ser. No. 26,799

Claims priority, application European Pat. Off., Mar. 27, 1986, 86104217.4

Int. Cl.⁴ H01L *21/265*

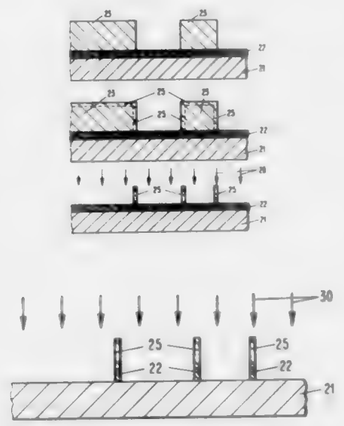
U.S. Cl. 437—228 **15 Claims**

1. A low temperature process for forming sidewalls on a substrate for use in the fabrication of structures with submicron lateral dimensions comprising the steps of:

depositing on said substrate a layer of polymeric resist comprising active hydrogen;

patterning said resist thereby forming a profile having horizontal surfaces and substantially vertical edges;

treating the maskless resist with a reactive organometallic silylation solution comprising Xylene, HMCTS and n-Methylpyrrolidone, respectively amounting to 89, 10 and 1 volume %, at a temperature of between 15° and 25° C., thereby silylating the exposed horizontal and vertical edges in said resist to a predetermined depth; and



anisotropic oxygen plasma etching said resist thereby removing the silylated resist at said horizontal surfaces and removing the unsilylated resist, leaving the silylated vertical edges.

4,803,182

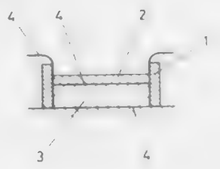
HEAT RESISTANT MATERIALS CONTAINING CERAMIC COMPONENTS

Sadanobu Ishikawa, 5-5, Omori Kita 6-chome, Ota-ku, Tokyo, Japan

Filed Dec. 14, 1987, Ser. No. 132,556

Int. Cl.⁴ C04B *12/04, 35/18*

U.S. Cl. 501—94 **18 Claims**



1. A ceramic-based article having heat resistance, which is produced by a process comprising:

a. admixing a hardening material comprising alunite, powdery sodium silicate and sodium fluosilicate, a material for providing heat resistance comprising at least one of ceramics and metals and water,

b. shaping the resulting admixture,

c. allowing said admixture to settle,

d. drying said admixture and then

e. baking.

4,803,183

DENSE MOLDED BODIES OF POLYCRYSTALLINE ALUMINUM NITRIDE AND PROCESS FOR PREPARATION WITHOUT USE OF SINTERING AIDS

Karl-Alexander Schwetz, Salzberg; Wolfgang Grellner, Kempten; Klaus Hunold, Lauben; Max Mohr, Kempten, and Alfred Lipp, Bad Worishofen, all of Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 20, 1987, Ser. No. 17,776

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1986, 3608326

Int. Cl.⁴ C04B *35/58*

U.S. Cl. 501—96 **2 Claims**

1. A molded body of polycrystalline aluminum nitride having a density of at least 99.8% TD calculated on the theoretical density of pure aluminum nitride comprising:

at least 99% by weight aluminum nitride,

up to 0.35% by weight residual oxygen,

up to 0.35% by weight residual carbon and

up to 0.30% by weight total of metallic impurities (Fe, Si, Ca, Mg),

wherein the aluminum nitride is present in the form of an essentially single-phase, homogeneous, isotropic microstructure with a grain size of 5 μm maximum, the residual oxygen and the residual carbon being present in the form of a solid solution in the AlN lattice and not detectable as separate phase(s) up to a 2400-times enlargement, having the following properties: bending strength (measured according to the 4-point method) at room temperature and up to about 1400° C. of at least 500 N/mm², predominantly transcrystalline rupture module and a heat conductivity at 300 K of at least 150 W/mK.

4,803,184

CONVERSION OF CRUDE OIL FEEDS

Gary N. Long, Putnam Valley; Regis J. Pellet, Croton-On-Hudson, and Jule A. Rabo, Armonk, all of N.Y., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 490,952, May 2, 1983, Pat. No. 4,512,875. This application Nov. 27, 1984, Ser. No. 675,285

The portion of the term of this patent subsequent to Dec. 13, 2005, has been disclaimed.

Int. Cl.⁴ B01J *27/18*

U.S. Cl. 502—63 **14 Claims**

1. A catalyst effective in cracking of crude oil feeds, comprising a zeolitic aluminosilicate cracking catalyst effective in cracking of crude oil feeds selected from the group consisting of zeolite Y, LZ-210, LZ-10, Faujasite and mixtures thereof and at least one molecular sieve selected from the group consisting of the silicoaluminophosphates SAPO-5 and SAPO-11 of U.S. Pat. No. 4,440,871.

4,803,185

OCTANE BOOSTING CATALYST

James G. Miller, Pearl River; Regis J. Pellet, Croton; Edwar S. Shamshoum, Lake Peekskill, and Jule A. Rabo, Armonk, all of N.Y., assignors to UOP, Des Plaines, Ill.

Filed Jan. 4, 1987, Ser. No. 58,241

Int. Cl.⁴ B01J *29/02, 29/06*

U.S. Cl. 502—65 **22 Claims**

20. A catalytic cracking composition comprising a combination of rare earth Y zeolite and a composite of SAPO-11 and $AlPO_4$-11.

4,803,186

SHAPE SELECTIVE CRYSTALLINE SILICATE ZEOLITE CONTAINING INTERMETALLIC COMPONENT AND USE AS CATALYST IN HYDROCARBON CONVERSIONS

Nai Y. Chen, Titusville, N.J.; Thomas F. Degnan, and Paul B. Weisz, both of Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 4, 1986, Ser. No. 938,095

Int. Cl.⁴ B01J *29/10, 29/28*

U.S. Cl. 502—66 **27 Claims**

1. A hydrocarbon conversion catalyst for performing a variety of hydrocarbon conversion, comprising:

(a) an acidic zeolite catalyst for hydrocarbon cracking and conversion; and

(b) a hydrogenation-dehydrogenation intermetallic catalytic component contained within said zeolite,

whereby said hydrocarbon conversion catalyst is resistant to agglomeration of the intermetallic catalytic component.

16. A process for preparing a hydrocarbon conversion catalyst for performing a variety of hydrocarbon conversions, comprising:

(a) contacting a hydrogenation-dehydrogenation metal-containing acidic zeolite catalyst with a volatile inorganic metal compound or a volatile organometallic compound under anhydrous conditions in a reducing atmosphere and in an amount which is calculated to avoid significant reduction in pore volume of the zeolite; and

(b) forming a hydrogenation-dehydrogenation intermetallic catalytic compound within the zeolite from a reaction between the hydrogenation-dehydrogenation metallic catalyst contained within the zeolite and the volatile inorganic metal compound or the volatile organometallic metal compound,

whereby the resulting hydrocarbon conversion catalyst is resistant to agglomeration of the intermetallic component.

4,803,187

ALKANE OXIDATION CATALYSTS

James E. Lyons, Wallingford; Paul E. Ellis, Jr., Downingtown; Harry K. Myers, Jr., Cochranville; George Suld, Springfield, and Wayne A. Langdale, Millmont Park, all of Pa., assignors to Sun Refining and Marketing Company, Philadelphia, Pa.

Filed Jul. 20, 1987, Ser. No. 76,570

Int. Cl.⁴ B01J *27/24, 27/14*

U.S. Cl. 502—200 **5 Claims**

1. Catalyst having the formula $H_{(c+x)}(X_kM_nO_y)^{-c}(N_3)_x$ where X is a group IIIA-VIA element, M is a transition metal, k is 1–5, n is 5–30, y is 18–62, and x is 1–4, and polyoxoanions thereof.

4,803,188

HETEROGENEOUS CATALYST CONTAINING SILICON DIOXIDE

Hubert Aulich; Hans-Peter Urbach, both of Munich, and Karl-Heinz Eisenrith, Schlieree, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 11, 1988, Ser. No. 142,203

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1987, 3702363

Int. Cl.⁴ B01J *37/00, 21/06*

U.S. Cl. 502—232 **20 Claims**

1. A heterogeneous catalyst based on silicon dioxide wherein the catalyst is a meso-porous material produced from large-surface glass bodies containing catalytically active additive by leaching with mineral acid, the catalytically active additives including metal oxides insoluble in hot mineral acid incorporated into an amorphous network of the glass body.

2. The catalyst of claim 1 wherein the additives are oxides of transition metals.

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4,803,189

CATALYST CARRIER OF METALLIC HONEYCOMB HAVING A SUPPORTING WALL AND A METHOD FOR PRODUCING THE SAME

Helmut Swars, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Interatom GmbH, Bergisch-Gladbach, Fed. Rep. of Germany

Filed May 11, 1987, Ser. No. 48,574

Claims priority, application Fed. Rep. of Germany, May 12, 1986, 3615902; Aug. 11, 1986, 3627224

Int. Cl.[4] B01J *32/00, 35/04*

U.S. Cl. 502—439 **54 Claims**

1. Catalyst carrier body, comprising layers of textured curved metal sheets through which a fluid can flow, a jacket in which said curved metal sheets are disposed, and at least one supporting wall disposed inside and firmly joined to said jacket forming a supporting structure inside the body, at least some of said curved metal sheets being individually secured to said at least one supporting wall.

4,803,190

PROCESS FOR PRODUCTION OF COMPOSITE OXIDE CATALYSTS

Kohei Saruwatu, and Etsuji Yamamoto, both of Ami, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Mar. 24, 1987, Ser. No. 29,645

Claims priority, application Japan, Mar. 24, 1986, 61-65279

Int. Cl.[4] B01J *21/00, 23/16, 27/18*

U.S. Cl. 502—205 **10 Claims**

1. A process for producing a composite oxide catalyst, wherein a Mo-Bi composite oxide catalyst represented by the following formula is produced by a process in an aqueous system comprising incorporating the compounds as respective element sources into a composite and subjecting the composite to heat treatment, characterized in that bismuth oxide and/or bismuth subcarbonate substantially insoluble in said aqueous system is used as a Bi source and that heat treatment is conducted at 450° to 600° C.;

$$Mo_aBi_bCo_cNi_dFe_eNa_fX_gY_hSi_iO_j$$

wherein: X represents K, Rb, Cs and/or Tl; Y represents B, P, As and/or W; a through j represent atomic ratios, respectively, and, when a equals 12, b=2 to 7, c=0 to 10, d=0 to 10, c+d=1 to 10, e=0.05 to 3, f=0 to 0.6, g=0.04 to 0.4, h=0 to 3, i=0 to 48 and j is a numeral which satisfies the oxidation states of the other elements.

4,803,191

HEAT-SENSITIVE RECORDING PAPER

Shigehisa Tamagawa, and Tetsuro Fuchizawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 19, 1988, Ser. No. 157,668

Claims priority, application Japan, Feb. 19, 1987, 62-36249

Int. Cl.[4] B41M *5/18*

U.S. Cl. 503—200 **16 Claims**

1. A heat-sensitive recording paper comprising a paper support having thereon a heat sensitive color forming layer, wherein said paper support is made of a base paper which is 7% or less in the sum of fluctuations in uneven formation in a wavelength range of 12.5 to 80 mm as determined by means of a laser formation measuring apparatus.

4,803,192

RECORDING MATERIAL

Keiso Saeki; Masanobu Takashima, and Ken Iwakura, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 9, 1987, Ser. No. 71,679

Claims priority, application Japan, Jul. 9, 1986, 61-161494; Jul. 28, 1986, 61-177380

Int. Cl.[4] B41M *5/16, 5/18, 5/22*

U.S. Cl. 503—212 **18 Claims**

1. A recording material comprising a support having thereon the combination of at least one electron-donating colorless dye comprising a p-substituted aminophenylindolyl-phthalide moiety and at least one electron-accepting compound comprising an organic acid having at least one phenolic hydroxyl group selected from the group consisting of zinc 3,5-bis(α-methylbenzyl)salicylate and zinc 5-α-(α-methylbenzyl)-phenethylsalicylate.

4,803,193

HEAT-SENSITIVE RECORDING MATERIAL USING CHROMENO COMPOUND

Nobuo Kanda, Hirakata; Yukihiro Abe, Nishinomiya, and Mitsuru Kondo, Hyogo, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

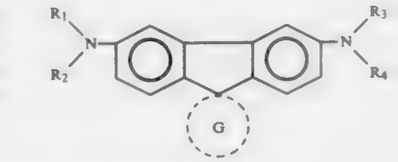
Filed Dec. 23, 1987, Ser. No. 137,368

Claims priority, application Japan, Dec. 27, 1986, 61-314744

Int. Cl.[4] B41M *5/18*

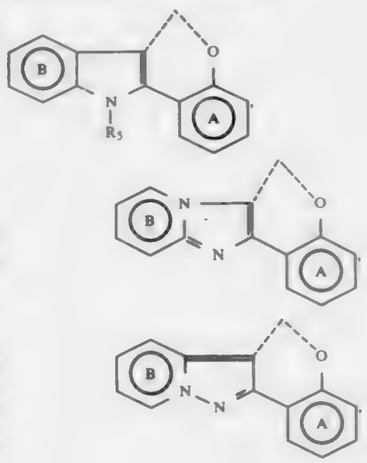
U.S. Cl. 503—209 **10 Claims**

1. In a heat-sensitive recording material comprising on a substrate a recording layer containing a colorless or pale-colored basic dye and an electron accepting reactant material, the heat-sensitive recording material which is characterized in that the basic dye comprises at least one chromeno compound represented by the formula [I] below

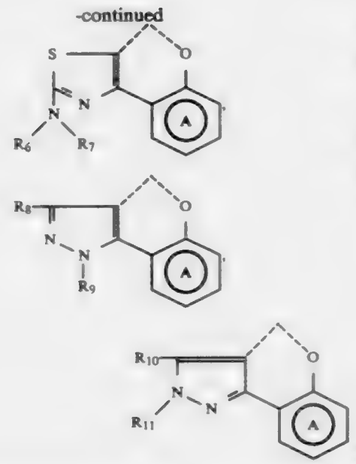


(I)

wherein G represents the following:



-continued



R_1, R_2, R_3 and R_4 are each hydrogen atom; $C_{1\sim12}$ alkyl unsubstituted or substituted with halogen atom or $C_{1\sim4}$ alkoxyl; $C_{3\sim12}$ alkenyl unsubstituted or substituted with phenyl; $C_{3\sim12}$ alkynyl unsubstituted or substituted with phenyl; $C_{5\sim12}$ cycloalkyl unsubstituted or substituted with $C_{1\sim4}$ alkyl; phenyl-$C_{1\sim2}$ alkyl unsubstituted or substituted with halogen atom, nitro, $C_{1\sim4}$ alkyl or $C_{1\sim4}$ alkoxyl; phenyl unsubstituted or substituted with halogen atom, nitro, $C_{1\sim4}$ alkyl, $C_{1\sim4}$ alkoxyl or $C_{1\sim4}$ halogenated alkyl; naphthyl unsubstituted or substituted with halogen atom; nitro, $C_{1\sim4}$ alkyl, $C_{1\sim4}$ alkoxyl or $C_{1\sim4}$ halogenated alkyl; R_1 and R_2, and R_3 and R_4 may form together therewith or with an adjacent benzene ring a heterorring selected from the group consisting of pyrrolidine ring, piperidine ring, morpholine ring, hexamethyleneimine ring, tetrahydroquinoline ring and julolidine ring; R_5, R_6, R_7, R_8, R_9, R_{10} and R_{11} are each hydrogen atom; $C_{1\sim12}$ alkyl unsubstituted or substituted with halogen atom or $C_{1\sim4}$ alkoxyl; $C_{3\sim12}$ alkenyl unsubstituted or substituted with phenyl; $C_{3\sim12}$ alkynyl unsubstituted or substituted with phenyl; benzyl unsubstituted or substituted with halogen atom, nitro, $C_{1\sim4}$ alkyl or $C_{1\sim4}$ alkoxyl; phenyl unsubstituted or substituted with halogen atom, nitro, $C_{1\sim4}$ alkyl, $C_{1\sim4}$ alkoxyl or $C_{1\sim4}$ halogenated alkyl; naphthyl unsubstituted or substituted with halogen atom, nitro, $C_{1\sim4}$ alkyl, $C_{1\sim4}$ alkoxyl or $C_{1\sim4}$ halogenated alkyl; R_6 and R_7 may form a pyrrolidine ring together therewith, each of the benzene ring A and benzene ring B may be substituted by halogen atom; $C_{1\sim4}$ alkyl; $C_{1\sim4}$ alkoxyl; benzyl unsubstituted or substituted with halogen atom, nitro, $C_{1\sim4}$ alkyl or $C_{1\sim4}$ alkoxyl; phenyl unsubstituted or substituted with halogen atom, nitro, $C_{1\sim4}$ alkyl or $C_{1\sim4}$ alkoxyl; amino unsubstituted or substituted with $C_{1\sim4}$ alkyl.

4,803,194

THERMAL TRANSFER PRINTING PAPER

Robert G. Bracewell, Canterbury, United Kingdom, assignor to The Wiggins Teape Group Limited, Basingstoke, England

Filed Sep. 19, 1986, Ser. No. 909,267

Claims priority, application United Kingdom, Sep. 19, 1985, 8523179

Int. Cl.[4] B41M *5/035, 5/26*

U.S. Cl. 503—227 **7 Claims**

1. A thermal system including a dye donor ribbon and a thermal transfer printing paper comprising a substrate having a receiving layer for receiving imaging material thermally transferred from the donor ribbon, said receiving layer consisting essentially of a dried polyethylene emulsion, said polyethylene being the only synthetic resin in said receiving layer.

4,803,195

PERFUME COMPOSITION WITH DEODORISING OR ANTIPERSPIRANT ACTION

Günter Holzner, Grand-Lancy, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Filed Feb. 17, 1988, Ser. No. 157,422

Claims priority, application Switzerland, Feb. 20, 1987, 647/87

Int. Cl.[4] A61K *7/46*

U.S. Cl. 512—4 **6 Claims**



1. A perfuming composition with deodorant or antiperspirant action for use in personal care, characterised in that it contains, in addition to an active deodorant or antiperspirant base, a perfuming base, either in the form of an aqueous emulsion, or in microencapsulated form, the said perfuming base being combined with

a. a solid film-forming substrate chosen from polyvinyl acetate, polyvinyl alcohol, dextrins, natural or modified starch, vegetable gums, pectins, xanthans, carboxymethylcellulose, methylcellulose, hydroxymethylcellulose and lipoheteropholysaccharides, and

b. an emulsifying agent chosen from mono- or diglycerides of fatty acids, esters derived from the combination of fatty acids with sorbitol or a saccharide, or their alkoxylated derivatives, or an ester of tartaric, citric, ascorbic or lactic acid.

4,803,196

PHARMACEUTICAL COMPOSITIONS CONTAINING β-LACTAM ANTIBIOTICS

Betty L. Richardson, Harrow, England, assignor to Glaxo Group Limited, London, England

Continuation of Ser. No. 816,826, Jan. 7, 1986, abandoned, which is a continuation of Ser. No. 530,655, Nov. 9, 1983, Pat. No. 4,582,830. This application Jan. 4, 1987, Ser. No. 58,119

Claims priority, application United Kingdom, Sep. 10, 1982, 8225853

The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.

Int. Cl.[4] A61K *31/43, 31/545*

U.S. Cl. 514—198 **11 Claims**

1. A solid pharmaceutical compositon comprising one or more β-lactam antibiotics in acidic or amphoteric form in association with at least one physiologically acceptable base in the presence of a gaseous atmosphere containing a stabilising amount of carbon dioxide at a concentration greater than that of atmospheric air.

4,803,197

2,1-BENZOTHIAZEPINE-2,2-DIOXIDE-5-CARBOXYLIC ACID DERIVATIVES

Jan W. F. Wasley, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

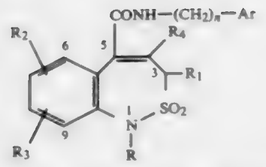
Filed Jan. 12, 1987, Ser. No. 2,074

Int. Cl.[4] C07D *281/02;* **A61K** *31/55*

U.S. Cl. 514—211 **13 Claims**

1. A compound of the formula

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or a tautomer thereof wherein n prepresents zero; Ar represents phenyl or phenyl monosubstituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylmercapto, C_1–C_4-alkylsulfinyl, C_1–C_4-alkylsulfonyl, halogen or trifluoromethyl, or phenyl disubstituted by radicals selected from C_1–C_4-alkyl, C_1–C_4-alkoxy and halogen; R represents hydrogen, C_1–C_4-alkyl, phenyl-C_1–C_4-alkyl or phenyl-C_1–C_4-alkyl monosubstituted on phenyl by C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylmercapto, C_1–C_4-alkylsulfinyl, C_1–C_4-alkylsulfonyl, halogen or trifluoromethyl, or phenyl-C_1–C_4-alkyl disubstituted on phenyl by radicals selected from C_1–C_4-alkyl, C_1–C_4-alkoxy and halogen; R_1 represents hydrogen, C_1–C_4-alkyl, phenyl-C_1–C_4-alkyl or phenyl-C_1–C_4-alkyl monosubstituted on phenyl by C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylmercapto, C_1–C_4-alkylsulfinyl, C_1–C_4-alkylsulfonyl, halogen or trifluoromethyl, or phenyl-C_1–C_4-alkyl disubstituted on phenyl by radicals selected from C_1–C_4-alkyl, C_1–C_4-alkoxy and halogen; R_2 represents hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen or trifluoromethyl; R_3 represents hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen; R_4 represents hydroxy; or a pharmaceutically acceptable salt thereof,

6. A pharmaceutical composition suitable for inhibiting the chemotactic activation of neutrophils in mammals which comprises an effective neutrophil chemotactic activation inhibiting amount of a compound of claim 1 or of a said compound in combination with one or more pharmaceutically acceptable carriers.

4,803,198

1-PHENYL-2-AMINOCARBONYLINDOLE COMPOUNDS, PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Heinrich-Wilhelm Ohlendorf; Wilhelm Kaupmann, both of Hanover; Ulrich Kuehl, Gehrden; Gerd Buschmann, and Stephen J. Magda, both of Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

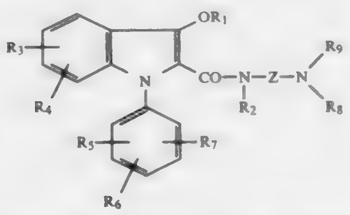
Continuation of Ser. No. 648,932, Sep. 15, 1984, abandoned, which is a continuation of Ser. No. 402,766, Jul. 28, 1982, abandoned. This application Jul. 15, 1986, Ser. No. 885,684

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1981, 3131527

Int. Cl.[4] A61K *31/55;* **C07D** *403/12, 403/14*

U.S. Cl. 514—212 **10 Claims**

1. A 1-phenyl-2-aminocarbonylindole compound of the general formula I



I

wherein R_1 is a hydrogen atom or an alkyl, alkenyl, cycloalkyl or cycloalkylalkyl radical with up to 7 carbon atoms, R_2 is a hydrogen atom or lower alkyl radical, R_3 is a hydrogen or halogen atom, or a lower alkyl, hydroxyl or lower alkoxy radical, R_4 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy, hydroxyl radical or, if R_3 is a hydrogen atom, R_4 may be a nitro or trifluoromethyl radical, or R_3 and R_4 are bonded to adjacent carbon atoms and together denote a methylenedioxy or ethylenedioxy radical, R_5 is a hydrogen or halogen atom, or a lower alkyl, hydroxyl or lower alkoxy radical, R_6 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy or hydroxyl radical or, if R_5 is a hydrogen atom, R_6 may be a nitro or trifluoromethyl radical, or R_5 and R_6 are bonded to adjacent carbon atoms and together denote a methylenedioxy or ethylenedioxy radical, R_7 is a hydrogen atom or, if R_5 and R_6 are lower alkoxy radicals, R_7 may also be a lower alkoxy radical, R_8 is a hydrogen atom or lower alkyl radical and R_9 is a hydrogen atom or lower alkyl radical, or R_8 and R_9, together with the nitrogen atom to which they are bonded, from a heterocyclic group corresponding to the formula:

where X represents a bond, an oxygen or sulphur atom, or a $—CH_2—$ or $—C_2H_4—$, radical and Z is an alkylene chain which has 2 to 5 carbon atoms and which is unsubstituted or substituted by hydroxyl on a carbon atom which is not bonded to nitrogen; or a pharmacologically acceptable acid addition salt of said compound.

10. A pharmaceutical composition containing an effective heart rhythm regulating amount of a 1-phenyl-2-aminocarbonylindole compound as claimed in claim 1 and a solid or liquid pharmaceutical carrier or excipient.

4,803,199

PHARMACEUTICALLY USEFUL HETEROCYCLIC AND CARBOCYCLIC ACID ESTERS AND AMIDES OF ALKYLENE BRIDGED PIPERIDINES

Peter Donatsch, 34 Herrenweg, CH-4123 Allschwil, Switzerland; Günter Engel, 11 Im Hasengarten, D-7858 Weil, Fed. Rep. of Germany; Bruno Hügi, 86A Hauptstrasse, CH-4148 Pfeffingen, Switzerland; Brian P. Richardson, 8 Im Hofacker, CH-4312 Magden, Switzerland; Paul A. Stadler, deceased, late of Biel-Benken, Switzerland; by Hildegard R. Stadler, heir, Jakobsweg 9, CH-4105 Biel-Benken; by Brigitte M. Stadler, heir, Jakobsweg 9, CH-4105 Biel-Benken, Switzerland; by Sigrid A. Stadler, heir, Jakobsweg 9, CH-4105 Biel-Benken, Switzerland, and by Gerald Breuleux, legal representative, Im Glockenacker 53, CH-8053 Witikov, Zürich, all of Switzerland

Continuation of Ser. No. 896,552, Aug. 14, 1986, abandoned, which is a continuation of Ser. No. 637,952, Aug. 6, 1984, abandoned, which is a continuation of Ser. No. 508,902, Jun. 28, 1983, abandoned. This application Nov. 25, 1987, Ser. No. 125,048

Int. Cl.[4] A61K *31/46;* **C07D** *451/12*

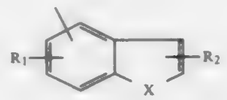
U.S. Cl. 514—214 **24 Claims**

1. A compound in free base form of formula I:

A—CO—B—D I

wherein

A is a group of formula II



II

wherein the free valence is attached to the fused benzene ring;

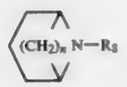
X is $—CH_2—$, $—NR_3—$, —O— or —S—;

R_1 and R_2, independently, are hydrogen, halogen, (C_{1-4})alkyl, (C_{1-4})alkoxy, hydroxy, amino, (C_{1-4})alkylamino, di-(C_{1-4})alkylamino, mercapto or (C_{1-4})alkylthio; and

R_3 is hydrogen, (C_{1-4})alkyl, (C_{3-5})alkenyl, unsubstituted phenyl, phenyl monosubstituted by (C_{1-4})alkyl, halogen, hydroxy or (C_{1-4})alkoxy, or unsubstituted phenyl (C_{1-4})alkyl;

B is —O— or —NH—; and

D is a group of formula IV

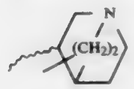


IV

wherein

n is 2, 3, or 4, and

R_8 is hydrogen, (C_{1-7})alkyl, (C_{3-5})alkenyl or unsubstituted phenyl (C_{1-4})alkyl; or D is a group of formula V



V

or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

4,803,200

SUBSTITUTED DIALKANOLAMINES, SULFUR ANALOGS AND CONDENSED 1,4-OXAZINE DERIVATIVES THEREOF IN VIRAL DISEASE TREATMENT

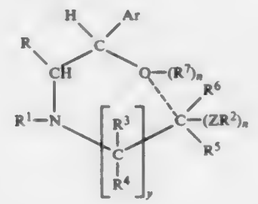
Harry R. Munson, Jr., and Robert W. Tankersley, Jr., both of Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Filed Oct. 2, 1987, Ser. No. 103,938

Int. Cl.[4] C07C *121/78*

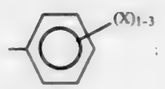
U.S. Cl. 514—231.2 **36 Claims**

1. A method of combating viral infections due to bovine parainfluenza-3 virus (shipping fever virus) in animals which comprises administering to said animals a compound selected from the group having the formula in an amount effective to control shipping fever virus:



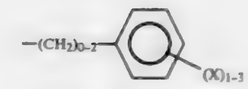
wherein;

Ar is



Z is oxygen or sulfur;

R is selected from hydrogen, loweralkyl, or



R^1, R^2, R^3, R^4, R^5, R^6 and R^7 are selected from hydrogen or loweralkyl;



together may form a lowercycloalkyl group (3–9 carbons); or R^5 with ZR^2 when taken together may form a 5-membered saturated oxygen or sulfur containing heterocyclic ring;

X is selected from hydrogen, halo, loweralkoxy, loweralkyl, trifluoromethyl or dimethylamino, and when X is more than 1, it may be the same radical or different;

y is 0, 1 or 2;

n is 1 or zero and when n is 1, the stereoisomers thereof, and when n is zero the dotted line becomes an oxygen-carbon bond forming a ring, and the pharmaceutically acceptable acid addition salts of all thereof.

4,803,201

HOMOCYCLIC DERIVATIVES

Arnold H. Ratcliffe, Poynton, United Kingdom, assignor to Imperial Chemical Industries PLC, London, England

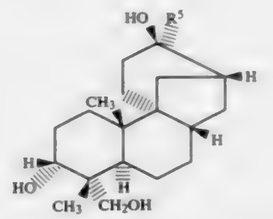
Continuation of Ser. No. 895,582, Aug. 13, 1986, abandoned, which is a continuation of Ser. No. 515,529, Jul. 20, 1983, abandoned. This application May 28, 1987, Ser. No. 54,897

Claims priority, application United Kingdom, Nov. 10, 1982, 8232084

Int. Cl.[4] C07C *101/02*

U.S. Cl. 514—239.2 **9 Claims**

1. A compound of the formula:



II

wherein R^5 stands for a glycyloxymethyl, γ-(N-morpholino)-n-butyryloxymethyl, m-carboxybenzenesulphonyloxymethyl or 5-dimethyl-aminonaphthalenesulphonyloxymethyl radical or a pharmaceutically acceptable salt thereof.

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4,803,202

SUBSTITUTED N-METHYL DERIVATIVES OF MITINDOMIDE

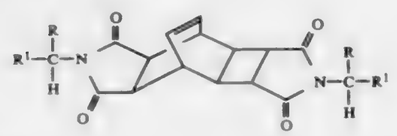
Rudiger D. Haugwitz, Bethesda; Venkatachala Narayanan, Gaithersburg, both of Md.; Leon H. Zalkow, Atlanta, Ga.; Howard M. Deutsch, Atlanta, Ga., and Leslie Gelbaum, Atlanta, Ga., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 684,136, Apr. 26, 1984, Pat. No. 4,670,461. This application Mar. 12, 1987, Ser. No. 25,062

Int. Cl.[4] A61K *31/38, 31/40;* **C07D** *209/56*

U.S. Cl. 514—228.2 **5 Claims**

1. A compound of the formula:

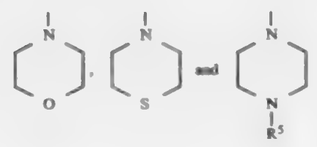


wherein

R = hydrogen, lower alkyl, phenyl, benzyl, or carboxylic acid group;

wherein

each R^1 is the same and are selected from the group consisting of:



wherein

R^5 = alkyl or benzyl; and physiologically acceptable acid-addition salts thereof.

5. A method of treating mammals implanted with L1210 leukemia comprising administering to said mammals an antineoplastically effective amount of the compound of claim 1.

4,803,203

PHENYL AND HETEROCYCLIC PIPERAZINYL ALKOXY-BENZHETEROCYCLIC COMPOUNDS AS ANTIPSYCHOTIC AGENTS

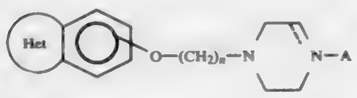
Bradley W. Caprathe, Redford; Horace A. DeWald, Ann Arbor; Joan C. Jaen, Plymouth, and Lawrence D. Wise, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 924,627, Nov. 5, 1986, Pat. No. 4,704,390, which is a continuation-in-part of Ser. No. 829,036, Feb. 13, 1986, abandoned. This application Jun. 16, 1987, Ser. No. 62,752

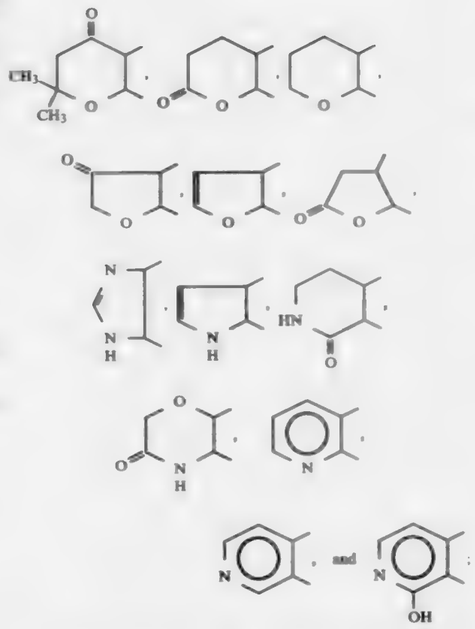
Int. Cl.[4] A61K *31/495, 31/535;* **C07D** *405/12, 413/14*

U.S. Cl. 514—230.5 **22 Claims**

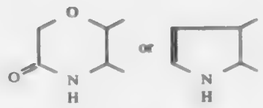
1. A compound of the formula



in which Het is selected from the group consisting of



n is an integer from two to five; A is phenyl or phenyl substituted by loer alkyl, lowei alkoxy, lower thioalkoxy, halogen or trifluoromethyl; 2-, 3- or 4-pyridinyl or 2-, 3- or 4-pyridinyl substituted by lower alkyl, lower alkoxy or halogen; 2-, 4- or 5-pyrimidinyl, or 2-, 4- or 5-pyrimidinyl substituted by lower alkyl, lower alkoxy or halogen; 2-pyrazinyl or 2-pyrazinyl substituted by lower alkyl, lower alkoxy or halogen; 2- or 3-thienyl or 2- or 3-thienyl substituted by lower alkyl or halogen; 2- or 3-furanyl or 2- or 3-furanyl substituted by lower alkyl or halogen, or 2- or 5-thiazolyl or 2- or 5-thiazolyl substituted by lower alkyl or halogen, or a pharmaceutical acceptable acid addition salt thereof, with the exclusion of the compound wherein Het is



and A is phenyl or substituted phenyl.

4,803,204

1-SUBSTITUTED 3-ARYL 7-CHLORO-3,4-DIHYDRO(2H)-ACRIDONE N-OXIDES, A PROCESS FOR THEIR PREPARATION, AND THEIR USE AS MEDICAMENTS AND FEEDSTUFF ADDITIVES

Rajkumar Dhar; Bhalamurthavan Venugopalan; Dipak K. Chatterjee; Richard H. Rupp, and Noel J. de Souza, all of Bombay, India, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

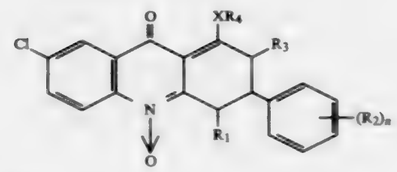
Filed Jul. 20, 1987, Ser. No. 75,643

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1986, 3624702

Int. Cl.[4] A61K *31/47;* **C07D** *219/06, 219/08*

U.S. Cl. 514—232.8 **7 Claims**

1. A compound of the formula I



I

in which

R_1 and R_3, which are identical or different, are hydrogen, C_1–C_4-alkyl, C_2–C_5-carbalkoxy, phenyl, or phenyl which is monosubstituted or polysubstituted by C_1–C_4-alkyl, halogen or amino,

R_2 is halogen or trifluoromethyl, wherein the substituents are identical or different if n is the integer 2 or 3,

n is an integer from 0 to 3,

X is oxygen or nitrogen,

R_4, if X is oxygen, is C_1–C_4-alkyl or, if X is nitrogen,

XR_4 is di-C_1–C_4-alkylamino, a 5- or 6-membered nitrogen heterocyclic ring or a 5- or 6-membered nitrogen heterocyclic ring which contains a further nitrogen or oxygen atom and is unsubstituted or monosubstituted or polysubstituted by C_1–C_4-alkyl, by substituted C_1–C_4-alkyl, by phenyl or by phenyl which is itself monosubstituted or polysubstituted by C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen.

5. A method for treating protozoa infections in a mammal which comprises administering an effective amount of a compound as claimed in claim 1.

4,803,205

QUINOLONES AS ANTIBACTERIAL AGENTS

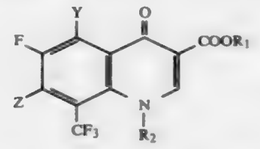
Alexander J. Bridges, Ann Arbor, and John M. Domagala, Canton, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 83,532, Aug. 7, 1987, Pat. No. 4,780,468. This application Jun. 7, 1988, Ser. No. 203,399

Int. Cl.[4] A61K *31/495;* **C07D** *401/04*

U.S. Cl. 514—254 **11 Claims**

1. A compound of the formula



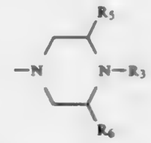
I

wherein R_1 is hydrogen, an alkyl of from one to six carbon atoms or a cation;

R_2 is alkyl of from one to four carbon atoms, vinyl, haloalkyl or hydroxyalkyl of from one to four carbon atoms or cycloalkyl of from three to six carbon atoms,

Y is hydrogen, fluoro, or amino;

Z is



R_3 is hydrogen, alkyl of from one to four carbon atoms or a cycloalkyl of from three to six carbon atoms;

R_5 and R_6 are each independently hydrogen or alkyl of from one to three carbon atoms;

or a pharmaceutically acceptable acid addition or base salt thereof.

11. A method of treating bacterial infections in mammals which comprises administering to said mammal a pharmaceutical composition as claimed in claim 10 in unit dosage form.

4,803,206

ANTIHYPERTENSIVE ACYLPYRAZINES

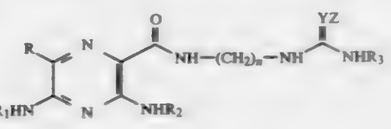
Charles V. Magatti, Verona, and Ronald J. Doll, Maplewood, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Mar. 7, 1988, Ser. No. 164,594

Int. Cl.[4] A61K *31/495;* **C07D** *241/20*

U.S. Cl. 514—255 **14 Claims**

1. A compound represented by the formula



wherein

n is 2–6;

R is F, Cl, Br or I;

R_1 and R_2 are independently hydrogen or lower alkyl;

R_3 is hydrogen, lower alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, lower alkylaryl, substituted lower alkylaryl, lower alkylheteroaryl, or substituted lower alkylheteroaryl wherein aryl is a C_6–C_{10} carbocyclic aromatic single or fused ring, heteroaryl is a 5–6 membered aromatic ring wherein 1–3 ring members are selected from the group consisting of oxygen, nitrogen and sulfur, and wherein substituted aryl, substituted heteroaryl, substituted lower alkylaryl and substituted lower alkylheteroaryl have on the aryl or heteroaryl portions thereof 1–3 substitutents selected from the group consisting of lower alkyl, lower alkoxy, halogeno, amino, carboxy and lower alkoxy carbonyl;

Y is =CH— or =N—;

Z is hydrogen, cyano or carbamoyl when Y is =N—, and when Y is =CH—, Z is nitro;

and the pharmaceutically acceptable acid addition salts thereof.

13. A method of treating hypertension comprising administering an antihypertensive effective amount of a compound of claim 1 to a mammal in need of such treatment.

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4,803,207

HYPOGLYCEMIC 2',3',10'-TETRAHYDRO-10'-HYDROXY-10'-SUBSTITUTED-SPIRO[CYCLOALKANE-1,3'-PYRIMIDO(1,2-A)INDOLE]DERATIVES

Alan C. White, Englefield Green; Ian A. Cliffe, Cippenham, and Richard S. Todd, Burnham, all of England, assignors to John Wyeth & Brother Ltd., Maidenhead, England

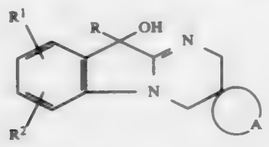
Filed Mar. 9, 1987, Ser. No. 23,333

Claims priority, application United Kingdom, Mar. 13, 1986, 8606254

Int. Cl.[4] C07D *487/04;* A61K *31/505*

U.S. Cl. 514—267 **10 Claims**

10. A method for treating diabetics which comprises administering to a mammal in need thereof, a hypoglycemically effective amount of a compound of formula:



in which

R is alkyl of 1 to 6 carbon atoms, or substituted or unsubsti naphthyl, furyl, thienyl, pyridyl, indolyl or benzothienyl, in which the substituents are hydroxyl, alkyl of 1 to 6 carbon atoms, alkoxy of I to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, halo, amino, alkylamino of 1 to 6 carbon atoms or dialkylamino of 2 to 12 carbon atoms;

R^1 and R^2 are, independently, hydrogen, hydroxyl, alkyl of 1 to 6 carbon alkoxy of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, halo, amino, alkylamino of 1 to 6 carbon atoms or dialkylamino of 2 to 12 carbon atoms;

and

A, together with the carbon atom to which it is attached, completes a cyclopentane, cyclohexane or cycloheptane ring;

or a pharmaceutically acceptable salt thereof.

4,803,208

OPIATE AGONISTS AND ANTAGONISTS

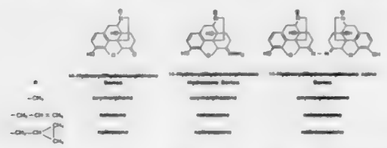
Gavril W. Pasternak, New York, N.Y., assignor to Sloan-Kettering Institute For Cancer Research, New York, N.Y.

Continuation of Ser. No. 430,630, Sep. 30, 1982, Pat. No. 4,608,376, which is a continuation-in-part of Ser. No. 312,018, Oct. 16, 1981, abandoned. This application Oct. 11, 1985, Ser. No. 786,879

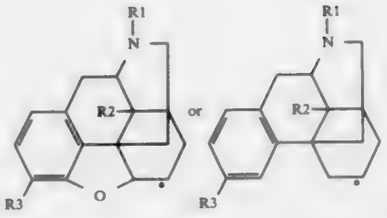
The portion of the term of this patent subsequent to Aug. 26, 2003, has been disclaimed.

Int. Cl.[4] C07D *489/08, 471/08;* A61K *31/485*

U.S. Cl. 514—282 **25 Claims**



1. Dihydromorphinone compound of the general formula HDM═N—R wherein HDM is



wherein • indicates binding carbon, R1 is C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_3–C_6 cycloalkyl, or cyclopropylmethyl,

R2 is OH or H,

R3 is OH,

R is N═R4, NH—R5,

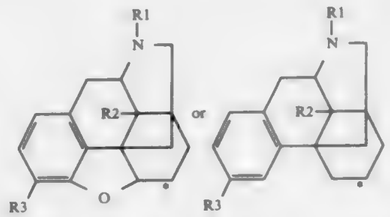


R4 is C_2–C_{10} alkenylidine, or HDM,

R5 is phenyl, C_1–C_6 alkyl, C_2–C_{10} alkenyl, C_3–C_{10} cycloalkyl, and

n is 1–10.

9. Method of controlling appetite comprising selectively and/or irreversibly blocking the mul opiate receptors by administering to a mammal an effective amount of a dihydromorphinone compound of the formula HDM═N—R wherein HDM is



wherein • indicates binding carbon, R1 is C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_3–C_6 cycloalkyl, or cyclopropylmethyl,

R2 is OH or H,

R3 is OH or OCH_3,

R is N═N═R4, NH—R5



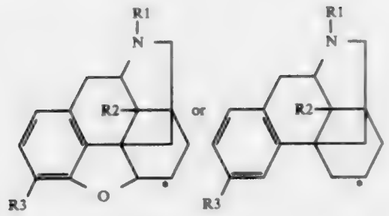
R4 is C_2–C_{10} alkenylidine, or HDM,

R5 is phenyl, C_1–C_6 alkyl, C_2–C_{10} alkenyl, C_3–C_{10} cycloalkyl, and

n is 1–10.

10. Method of modulating prolactin hormone release comprising administering an effective amount of the compound of claim 1 to a mammal.

19. Method of reducing pain comprising administering to a mammal an analgesically effective amount of a dihydromorphinone compound of the general formula HDM═N—R wherein HDM is

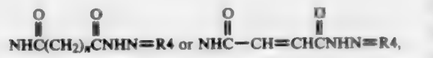


wherein • indicates binding carbon, R1 is C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_3–C_6 cycloalkyl, or cyclopropylmethyl,

R2 is OH or H,

R3 is OH or OCH_3,

R is N═R4, NH—R5



R4 is C_2–C_{10} alkenylidine, or HDM,

R5 is phenyl, C_1–C_6 alkyl, C_2–C_{10} alkenyl, C_3–C_{10} cycloalkyl, and

n is 1–10.

20. Method of reducing opiate dependency in an addict comprising administering an effective amount of the compound of claim 1.

4,803,209

SUBSTITUTED 2,3-DIPHENYL-1,2-DIHYDROQUINOXALINES

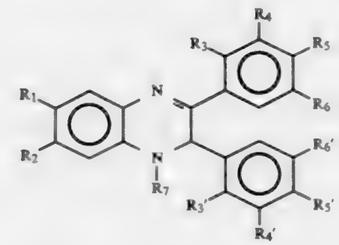
Kurt G. R. Sundelin, Wilmington, Del.; Joseph P. Salanitro, Houston, Tex., and Susan Stackhouse, Hughson, Calif., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Aug. 27, 1987, Ser. No. 90,342

Int. Cl.[4] C07D *241/40;* A61K *31/495, 31/65, 31/71*

U.S. Cl. 514—249 **24 Claims**

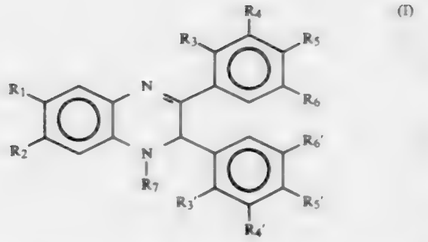
1. A compound of the formula



(I)

wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy; R_3 and R_3' are independently selected from the group consisting of halogen, hydroxy, lower alkoxy, lower acyloxy and lower alkylcarbonyloxy, R_4, R_4', R_5, R_5', R_6 and R_6'0 are independently selected from the group consisting of hydrogen, halogen, hydroxy, lower alkyl, lower alkoxy and lower acyloxy; and R_7 is hydrogen or lower acyl; or a pharmaceutically acceptable salt thereof.

17. A process for controlling coccidiosis in poultry which comprises administering to such poultry a coccidiosis-controlling amount of a compound of the formula



(I)

wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy; R_3 and R_3' are independently selected from the group consisting of halogen, hydroxy, lower alkoxy, lower acyloxy and lower alkylcarbonyloxy, R_4, R_4', R_5, R_5', R_6 and R_6' are independently selected from the group consisting of hydrogen, halogen, hydroxy, lower alkyl, lower alkoxy and lower acyloxy; and R_7 is hydrogen or lower acyl; or a pharmaceutically acceptable salt thereof.

4,803,210

CARDIOTONIC TRICYCLIC OXAZOLONES

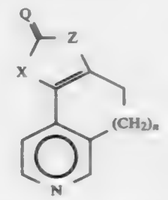
Winton D. Jones; Richard A. Schnettler; George P. Claxton, and Richard C. Dage, all of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 55,485, May 29, 1987, abandoned. This application Apr. 14, 1988, Ser. No. 183,537

Int. Cl.[4] A61K *31/42;* C07D *498/04*

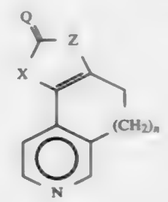
U.S. Cl. 514—293 **16 Claims**

1. A compound of the structure:



wherein Q is a divalent sulfur or oxygen atom; one of X and Z is an oxygen atom and the other is an imino (NH) group; and n is 0 or the integer 1 or 2 or a pharmaceutically acceptably salt thereof.

6. A method of treating heart failure in a patient in need thereof which comprises administering to the patient a cardiotonically effective amount of a compound of the structure:



wherein

Q is a divalent sulfur or oxygen atom; one of X and Z is an oxygen atom and the other is an imino (NH) group; and n is 0 or the integer 1 or 2 or a pharmaceutically acceptably salt thereof.

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4,803,211

THIADIZAZOLE COMPOUNDS AS ANTAGONISTS OF SRS-A

Toshiyasu Mase, Chiba; Ryuji Tsuzuki, Tokyo; Hiromu Hara, Saitama; Kiyoshi Murase, Saitama, and Kenichi Tomioka, Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

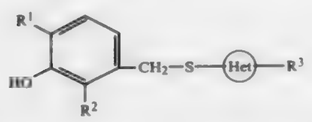
Filed Jul. 14, 1986, Ser. No. 885,085

Claims priority, application Japan, Jul. 22, 1985, 60-164267; Oct. 7, 1985, 60-224197; Dec. 26, 1985, 60-297097

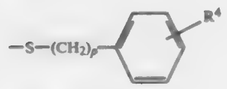
Int. Cl.[4] C07D *285/12*; A61K *31/41*

U.S. Cl. 514—361 **7 Claims**

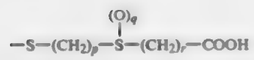
1. A thiadiazole compound represented by formula:



wherein R^1 represents a C_1-C_6 alkanoyl group; R^2 represents a lower alkyl group; Het represents a thiadiazole ring wherein one carbon atom in the ring binds to R^3 and the other binds to the ajacent thio group; R^3 represents a carboxy group, an amino group, a lower alkylamino group, a carboxy lower alkylamino group, a lower alkanoylamino group, a carboxy lower alkanoylamino group, a di-lower alkylamino group, a hydroxy group, a lower alkoxy group, a carboxy lower alkoxy group, a mercapto group, a lower alkylthio group, or a carboxy lower alkylthio group, a group represented by the formula:



or formula:



(wherein p represents an integer of 1 to 5; q represents 0, 1 or 2, r represents an integer of 1 to 5; R^4 represents a carboxy group, a lower alkoxy group, a carboxy lower alkoxy group, a lower alkyl group, a carboxy lower alkyl group and each except the carboxy group may have a sulfur atom or an oxygen atom between two carbon atoms in the carbon chain thereof); provided that when the compound is substituted by a carboxy group, said carboxy group may be in the form of a lower alkyl ester, a phenyl lower alkyl ester, or a lower alkoxy phenyl lower alkyl ester; or a pharmacologically acceptable non-toxic acid addition salt thereof.

4,803,212

AMINO DISULFIDES

Dolatrai M. Vyas, Fayetteville, N.Y.; Yulin Chiang, Morristown, N.J., and Terrence W. Doyle, Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

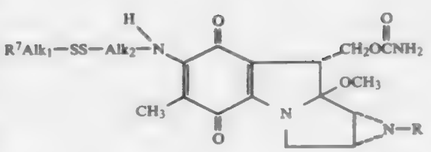
Continuation-in-part of Ser. No. 484,016, Apr. 11, 1983, abandoned. This application Feb. 24, 1984, Ser. No. 581,291

The portion of the term of this patent subsequent to Sep. 1, 2004, has been disclaimed.

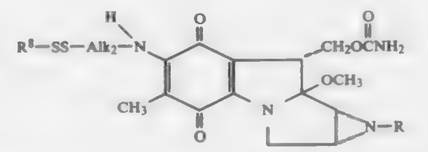
Int. Cl.[4] A61K *31/44*, *31/40*; C07D *487/14*

U.S. Cl. 514—338 **20 Claims**

1. A compound selected from the group having Formula I or Formula II:



I



II

wherein:

Alk_1 is a straight or branched chain alkylene group having 1 to 6 carbon atoms when R^7 is joined thereto through a carbon atom thereof, and 2 to 6 carbon atoms when R^7 is joined thereto through a sulfur, oxygen, or nitrogen atom thereof, and R^7 and —SS— are in that instance joined to different carbon atoms,

Alk_2 is a straight or branched chain alkylene group having 2 to 6 carbon atoms optionally bearing an R^7 substituent wherein the sulfur and nitrogen atoms connected thereto and any optional R^7 substituent connected thereto through oxygen sulfur or nitrogen are attached to different carbon atoms of Alk_2,

Alk_1 and Alk_2 may contain a double bond,

R is hydrogen, lower alkyl, lower alkanoyl, benzoyl, or substituted benzoyl wherein said substituent is lower alkyl, lower alkoxy, halo, amino, or nitro,

R^7 is selected from the group consisting of hydroxy, halo, amino, alkylamino or dialkylamino having 1 to 12 atoms, alkanoylamino, benzoylamino or A-substituted benzoylamino, naphthoylamino or A-substituted naphthoylamino, cycloalkyl or A-substituted cycloalkyl each having 3 to 8 ring members, cycloalkenyl or A-substituted cycloalkenyl each having 5 to 8 ring members, phenyl or A-substituted phenyl, naphthyl or A-substituted naphthyl, an unsubstituted, or methyl-, or nitro-substituted heterocyclic group selected from 2-pyridyl, 3-pyridyl, 4-pyridyl, or 2-imidazolylmethyl, alkoxy or alkythio each having 1 to 6 carbon atoms, carboxy, alkoxycarbonyl having 1 to 7 carbon atoms, phenoxycarbonyl or A-substituted phenoxycarbonyl, phenoxy, or A-substituted phenoxy, naphthoxy or A-substituted naphthoxy, alkoxycarbonylamino having 2 to 6 carbon atoms, guanidino, ureido (—NHCONH), N-alkylureylene (—NHCONHalkyl) having 2 to 7 carbon atoms, N^3-haloalkylureylene having 3 to 7 carbon atoms, N^3-haloalkyl-N^3-nitrosoureylene having 3 to 7 carbon atoms, and dialkylaminocarbonyl having 3 to 13 carbon atoms, wherein said A substituent is selected from the group consisting of one or two lower alkyl, lower alkanoyl, lower alkoxy, halo, amino, hydroxy, or nitro groups, and

R^8 is selected from the group consisting of alkyl having 1 to 12 carbon atoms, alkenyl or alkynyl each having 3 to 12 carbon atoms, cycloalkyl having 3 to 8 ring members, A-substituted cycloalkyl having 3 to 8 ring members, cycloalkenyl having 5 to 8 ring members, phenyl, A-substituted phenyl, naphthyl, A-substituted naphthyl, an unsubstituted, or methyl-, or nitro-substituted heterocyclic group selected from 2-pyridyl, 3-pyridyl, 4-pyridyl, or 2-imidazolylmethyl, wherein said A substituent is selected from the group consisting of one or two lower alkyl, lower alkanoyl, lower alkoxy, halo, amino, hydroxy, or nitro groups, and R^8 and the adjacent sulfur atom together constitute S-cysteinyl wherein said S-cysteinyl group may be esterified, or salified.

4,803,213

METHOD FOR PRODUCTION OF STABLE NICORANDIL PREPARATION

Yoshimitsu Iida; Takashi Terazono, both of Saitama, and Shuji Sumida, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 805,290, Dec. 5, 1985, abandoned. This application Jan. 21, 1988, Ser. No. 147,129

Claims priority, application Japan, Dec. 17, 1984, 59-265888; Jan. 26, 1985, 60-213277; Jul. 8, 1985, 60-149688

Int. Cl.[4] A61K *31/44*

U.S. Cl. 514—355 **5 Claims**

1. A stable pharmaceutical composition comprising a therapeutic amount of nicorandil in admixture with a pharmaceutically acceptable and excipiently effective amount of a jet-milled sugar having an average particle size of about 3–10 microns selected from the group consisting of mannitol, lactose, sucrose, glucose, galactose, maltose and fructose.

2. A stable pharmaceutical composition comprising a therapeutic amount of nicorandil in admixture with an amount of powder organic acid effective to stabilize said pharmaceutical preparation to humidity, said organic acid being selected from the group consisting of fumaric acid, oxalic acid, salicylic acid, tartaric acid and glutaric acid.

4,803,214

FUNGICIDAL ACTIVE COMPOUND COMBINATIONS

Wilhelm Brandes, Leichlingen; Paul Reinecke, Leverkusen; Helmut Kaspers, Leverkusen; Hans Scheinpflug, Leverkusen, and Jörg Stetter, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

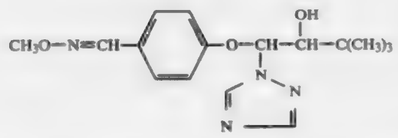
Filed Jan. 15, 1988, Ser. No. 144,822

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1987, 3701715

Int. Cl.[4] A01N *41/02*, *43/64*

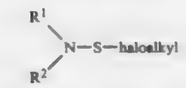
U.S. Cl. 514—383 **2 Claims**

1. A fungicidal composition comprising a fungicidally effective amount of 3,3-dimethyl-1-(4-methoximinomethylphenoxy)-1-(1,2,4-triazol-1-yl)-butan-2-ol of the formula



(I)

and at least one member selected from the group consisting of a polyhalogenoalkylthio derivative of the formula



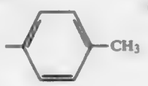
(II)

wherein $R^1 = (CH_3)_2N—SO_2—$, (IIa)



, and haloalkyl = $—CCl_2F$

(DICHLOFLUANID) and



(IIb)

wherein $R^1 = (CH_3)_2—N—SO_2—$, R^2 =

and haloalkyl = CCl_2F

-continued

(TOLYFLUANID).

wherein the ratio of I:II is 1:0.05 to 10 parts by weight.

4,803,215

5-HETEROCYCLYL-1-ARYL-PYRAZOLES, COMPOSITION CONTAINING THEM, AND METHOD OF USING THEM TO COMBAT INSECTS, ACARIDS AND NEMATODES

Uta Jensen-Korte, Duesseldorf; Reinhold Gehring, Wuppertal; Otto Schallner, Monheim; Jörg Stetter, Wuppertal; Heinz-Jürgen Wroblowsky, Langenfeld; Benedikt Becker, Mettmann; Bernhard Homeyer, Leverkusen; Wolfgang Behrenz, Overath, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

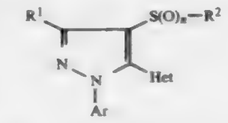
Filed Dec. 16, 1986, Ser. No. 942,476

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1985, 3545036

Int. Cl.[4] A02N *43/56*, *43/653*; C07D *403/04*

U.S. Cl. 514—407 **18 Claims**

1. A 5-heterocyclyl-1-aryl-pyrazole of the formula



in which

R^1 represents in each case straight-chain or branched alkyl or haloalkyl having 1 to 4 carbon atoms and, if appropriate, 1 to 9 identical or different halolatoms or represents hydrogen,

R^2 represents in each case straight-chain or branched alkyl, alkenyl or alkinyl having in each case up to 8 carbon atoms, represents in each case straight-chain or branched haloalkyl or haloalkenyl having in each case up to 8 carbon atoms and up to 17 identical or different haloatoms, represents cycloalkyl having 3 to 7 carbon atoms or represents in each case optionally singly or multiply, identically or differently substituted phenylalkyl or phenyl having, if appropriate, 1 to 4 carbon atoms in the straight-chain or branched alkyl part, phenyl substituents in each case being halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy, alkylthio, alkylsulphinyl, alkylsulphonyl, haloalkyl, haloalkoxy, haloalkylsulphinyl or haloalkylsulphonyl having in each case 1 to 4 carbon atoms in the individual alkyl parts and, if appropriate, 1 to 9 identical or different haloatoms,

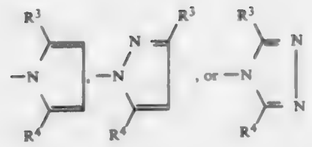
Ar represents in each case optionally singly or multiply, identically or differently substituted phenyl, 2-pyridyl, 3-pyridyl or 4-pyridyl, substituents being cyano, nitro, halogen, in each case straight-chain or branched alkyl, alkoxy or alkoxycarbonyl having in each case up to 4 carbon atoms, in addition in each case straight-chain or branched haloalkyl or haloalkoxy having in each case up to 4 carbon atoms and up to 9 identical or different haloatoms or an $S(O)_m—R^7$ radical,

R^7 represents amino, or in each case straight-chain or branched alkyl, alkylamino, dialkylamino or haloalkyl having in each case up to 4 carbon atoms in the individual alkyl parts and, in the case of the haloalkyl, having up to 9 identical or different haloatoms,

m and n each independently represents a number 0, 1 or 2, and

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where

R^3 and R^4, independently of one another, represent in each case hydrogen, straight-chain or branched alkyl having 1 to 4 carbon atoms, or phenyl.

13. A method of combating insects, arachnids or nematodes which comprises applying thereto or to a habitat thereof an insecticidally, arachnicidally or nematocidally effective amount of a compound according to claim 1 in admixture with a diluent.

4,803,216

PYRAZOLE-3-AMINES AS ANTI-INFLAMMATORY AGENTS

Richard A. Appleton, Wycomb Nr Melton Mowbray; John Dixon, Great Dalby, and Sidney C. Burford, Loughborough, all of England, assignors to Fisons plc, Ipswich, England

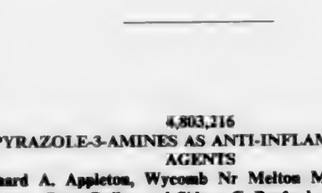
Filed May 5, 1987, Ser. No. 46,656

Claims priority, application United Kingdom, May 7, 1986, 8611102; Dec. 24, 1986, 8630906

Int. Cl.[4] A61K *31/415;* **C07D** *231/38*

U.S. Cl. 514—407 10 Claims

1. A compound having the formula



(I)

in which

R_1 represents hydrogen, alkyl, alkanoyl or alkyl substituted by Ar_1,

R_3, R_4 and R_5, which may be the same or different, each independently represent hydrogen, alkyl or Ar_3,

Ar_1, Ar_2 and Ar_3, which may be the same or different, independently represent phenyl or phenyl substituted by one or more of alkyl, hydroxy, alkoxy, NR_6R_7 or halogen,

R_6 and R_7, which may be the same or different, independently represent hydrogen or alkyl,

provided that

(i) when R_1, R_3 and R_4 each represent hydrogen, and R_5 represents methyl, then Ar_2 does not represent phenyl or phenyl substituted by alkyl, alkoxy or halogen and

(ii) when R_1, R_3 and R_4 each represent hydrogen and AR_2 represents phenyl or phenyl substituted by alkyl, then R_5 does not represent phenyl or phenyl substituted by alkyl, alkoxy or halogen, and

(iii) when R_1 and R_3 represent hydrogen, and Ar_2 represents pheyl, then,

(a) R_4 and R_5 do not both represent phenyl and

(b) R_5 does not represent hydrogen when R_4 represents alkyl,

and pharmaceutically acceptable acid addition salts thereof.

4,803,217

HAPALINDOLINONE COMPOUNDS AS VASSOPRESSIN ANTAGONISTS

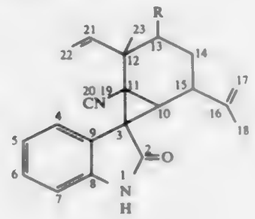
Robert E. Schwartz, Westfield; Charles F. Hirsch, Sommerville; Janet M. Signmund, Linden, all of N.J., and Douglas J. Pettibone, Chalfont, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 24, 1986, Ser. No. 946,545

Int. Cl.[4] C07D *209/96;* **A61K** *31/40;* **C12P** *17/10*

U.S. Cl. 514—409 5 Claims

1. The compounds having the Formula IA and IB:



IA R = Cl
IB R = H

4,803,218

3-AMINOALKYL-1H-INDOLE-5-UREA AND AMIDE DERIVATIVES

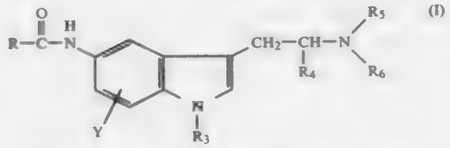
Kerry G. Stanley, Lansdale, and Winston Ho, Hatfield, both of Pa., assignors to McNeilab, Inc., Spring House, Pa.

Filed Sep. 29, 1982, Ser. No. 427,024

Int. Cl.[4] C07D *209/16, 401/14, 401/12;* **A61K** *31/40*

U.S. Cl. 514—414 11 Claims

1. A method of treating hypertension in an animal comprising administering to the animal, a hypertension reducing amount of a pharmaceutical composition of a pharmaceutically-acceptable carrier and a 3-aminoalkyl-1H-indole-5-urea compound of the following formula (1):



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein:

R is represented by R_1R_2N—;

R_1 is H, or C_{1-4} loweralkyl, phenyl or cycloalkyl;

R_2 is H or a C_{1-4} loweralkyl;

Y is H or halo;

R_3 is H or a C_{1-4} loweralkyl;

R_4 is H or a C_{1-4} loweralkyl;

R_5 is H, a C_{1-4} loweralkyl, a C_{1-4} loweralkylcarbonyl or $COCH_2CF_3$, and

R_6 is H or a C_{1-4} loweralkyl; or

R_5 and R_6 are taken together as a N-loweralkylpyrrolidinylidene group.

2. N-[3-(2-aminoethyl)-1H-indol-5-yl]urea or a pharmaceutically acceptable acid addition salt thereof.

11. N-[3-(2-Aminoethyl)-1H-indol-5-yl]urea

4,803,219

1,3-PROPANEDIAMINE DERIVATIVES AND ANTIAUHYTHNIC PHARMACEUTICAL COMPOSITION CONTAINING THEM

Michel Combourieu; Nadine Sinibille; Marie-Paule Landes, all of Aurillac, and Yvon Bernet, Jussac, all of France, assignors to RIOM Laboratories C.E.R.M., Riom, France

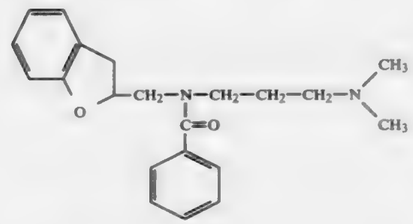
Filed Jul. 21, 1987, Ser. No. 76,082

Claims priority, application France, Jul. 22, 1986, 86 10638

Int. Cl.[4] A61K *31/34;* **C07D** *307/81*

U.S. Cl. 514—469 5 Claims

1. N,N-dimethyl-N'-benzoyl-N-(2,3-dihydrobenzofuran-2-ylmethyl)1,3-propanediamine of the formula:



in its enantiomerically pure and mixed forms, and their pharmaceutically acceptable salts.

4,803,220

PHARMACEUTICAL AGENTS

Andrew G. Brewster, Bollington; George R. Brown, Wilmslow, and Michael J. Smithers, Macclesfield, all of United Kingdom, assignors to Imperial Chemical Industries PLC, London, United Kingdom

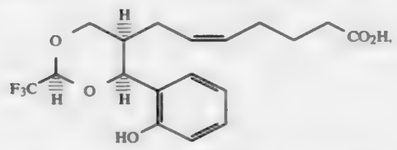
Filed Jan. 28, 1985, Ser. No. 750,101

Claims priority, application United Kingdom, Jul. 6, 1984, 8417314

Int. Cl.[4] A61K *31/335;* **C07D** *319/06*

U.S. Cl. 514—452 7 Claims

1. The compound 5(Z)-7-([2,4,5-cis]-4-o-hydroxyphenyl-2-trifluoromethyl-1,3-dioxan-5-yl)heptenoic acid of the formula



1

in racemic or laevorotatory optically active form; or a salt thereof.

4,803,221

ANTHRACENE DERIVATIVES

Kenneth W. Bair, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 661,802, Oct. 17, 1984, Pat. No. 4,719,099, which is a continuation-in-part of Ser. No. 499,332, May 31, 1983, abandoned. This application Aug. 28, 1987, Ser. No. 90,569

Int. Cl.[4] C07C *93/00, 87/78, 87/64*

U.S. Cl. 514—510 11 Claims

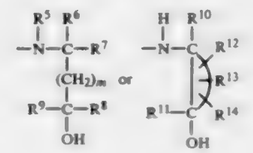
1. A pharmaceutical formulation containing a compound of formula (I)

$$ArCH_2R^1 \quad (I)$$

or a monomethyl or monoethyl ether thereof, the compound of formula (I) including its ethers containing no more than 30 carbon atoms in total); ethers, esters thereof; acid addition salts thereof; wherein

Ar is an anthracene ring optionally substituted by one or two substituents. The substituents will contain not more than four carbon atoms in total when taken together being the same or different and are selected from halogen; cyano; C_{1-4} alkyl or C_{1-4} alkoxy, each optionally substituted by hydroxy or C_{1-2} alkoxy; halogen substituted C_{1-2} alkyl or C_{1-2} alkoxy; a group $S(O)_nR^2$ wherein n is an integer 0, 1 or 2 and R^2 is C_{1-2} alkyl optionally substituted by hydroxy or C_{1-2} alkoxy; or the anthracene ring is optionally substituted by a group NR^3R^4 containing not more than 5 carbon atoms wherein R^3 and R^4 are the same or different and each is a C_{1-3} alkyl group;

R^1 contains not more than eight carbon atoms and is a group



wherein

m is 0 or 1;

R^5 is hydrogen;

R^6 and R^7 are the same or different and each is hydrogen or C_{1-3} alkyl optionally substituted by hydroxy (proving that at least one hydroxy group is present);

R^8 and R^9 are the same or different and each is hydrogen or C_{1-3} alkyl;

—C———C—

is a five- or six-membered saturated carbocyclic ring;

R^{10} is hydrogen, methyl or hydroxymethyl;

R^{11}, R^{12} and R^{13} are the same or different and each is hydrogen or methyl;

R^{14} is hydrogen, methyl, hydroxy, or hydroxymethyl, except 2-((10-(2-hydroxyethyloxy)-9-anthracenyimethyl-)amino-2-methyl-1,3-propanediol with a pharmaceutically acceptable carrier in the form of a tablet, capsule, syrup, or solution.

4,803,222

FLUORANTHENE DERIVATIVES

Kenneth W. Bair, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 661,674, Oct. 17, 1984, Pat. No. 4,720,587, which is a continuation-in-part of Ser. No. 496,853, May 23, 1983, Pat. No. 4,532,344. This application Aug. 28, 1987, Ser. No. 90,696

Claims priority, application United Kingdom, May 16, 1984, 84105584

Int. Cl.[4] C07C *62/2, 87/78*

U.S. Cl. 514—510 9 Claims

1. A pharmaceutical formulation containing a compound of formula (I)

$$ArCH_2R^1 \quad (I)$$

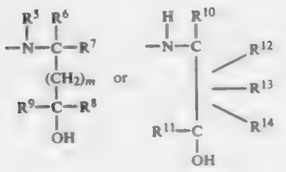
or a monomethyl or monoethyl ether thereof, the compound of formula (I) including its ethers containing no more than 30 carbon atoms in total); ethers, esters thereof; acid addition salts thereof;

wherein

Ar is a fluoranthene ring optionally substituted by one or two substituents. The substituents will contain not more than four carbon atoms in total when taken together being

the same or different and are selected from halogen; cyano; C_{1-4} alkyl or C_{1-4} alkoxy, each optionally substituted by hydroxy or C_{1-2} alkoxy; halogen substituted C_{1-2} alkyl or C_{1-2} alkoxy; a group $S(O)_nR^2$ wherein n is an integer 0,1 or 2 and R^2 is C_{1-2} alkyl optionally substituted by hydroxy or C_{1-2} alkoxy; or the fluoranthene ring is optionally substituted by a group NR^3R^4 containing not more than 5 carbon atoms wherein R^3 and R^4 are the same or different and each is a C_{1-3} alkyl group;

R^1 contains not more than eight carbon atoms and is a group



wherein

m is 0 or 1;

R^5 is hydrogen;

R^6 and R^7 are the same or different and each is hydrogen or C_{1-3} alkyl optionally substituted by hydroxy (providing that at least one hydroxy group is present);

R^8 and R^9 are the same or different and each is hydrogen or C_{1-3} alkyl;

—C—C— is a five- or six-membered saturated carbocyclic ring;

R^{10} is hydrogen, methyl or hydroxymethyl;

R^{11}, R^{12} and R^{13} are the same or different and each is hydrogen or methyl;

R^{14} is hydrogen, methyl, hydroxy, or hydroxymethyl

with a pharmaceutically acceptable carrier in the form of a tablet, capsule, syrup, or a solution for injection except that the formulation does not include 2-((3-fluoranthenylmethyl)amino)-2-methyl-1,3-propanediol or a pharmaceutically acceptable salt thereof.

4,803,223

SUBSTITUTED AMINOPHENYL UREA DERIVATIVES

Shozo Kato, Fujisawa, Japan, assignor to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

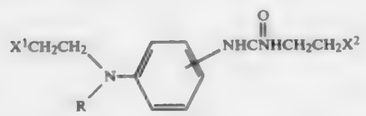
Filed Feb. 20, 1986, Ser. No. 831,266

Claims priority, application Japan, Feb. 21, 1985, 60-31510

Int. Cl.⁴ C07C *149/437, 127/19;* **A61K** *31/10, 31/17*

U.S. Cl. 514—521 **22 Claims**

1. A substituted aminophenylurea derivative represented by the formula



(I)

wherein X^1 and X^2 are identical or different and each represents a halogen atom, and

R is selected from the group consisting of C_1–C_6 alkyl, halo C_1–C_6 alkyl), C_1–C_6 alkoxy C_1–C_6 alkyl, C_1–C_6 alkylthio C_1–C_6 alkyl, phenoxy(C_1–C_6 alkyl), cyano(C_1–C_6 alkyl), C_2–C_6 alkenyl, halo(C_2–C_6 alkenyl), C_1–C_6 alkoxy C_2–C_6 alkenyl, C_1–C_6 alkylthio C_2–C_6 alkenyl, phenoxy C_2–C_6 alkenyl, cyano(C_2–C_6 alkenyl) and C_2–C_6 alkynyl, or an acid addition salt thereof.

19. A pharmaceutical composition comprising a tumor-inhibiting amount of a substituted aminophenylurea derivative of formula (I) given in claim 1 or a pharmaceutically acceptable acid addition salt thereof and a pharmaceutically acceptable adjuvant.

4,803,224

ANTIVIRAL ANTIBIOTIC COMPLEX

Osamu Tenmyo, Yokohama; Hiroaki Ohkuma, Tokyo, and Masataka Konishi, Kawasaki, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed May 1, 1986, Ser. No. 857,878

Int. Cl.⁴ C07C *103/50;* **A61K** *31/195*

U.S. Cl. 514—563 **2 Claims**

1. The antiviral antibiotic complex designated BU-2231 V or a pharmaceutically acceptable acid addition salt thereof comprising a complex of γ-homopolymers of D-α,γ-diaminobutyric acid, which antibiotic complex when purified and lyophilized is in the form of a white amorphous solid having (1) a melting point of about 165–167 deg. C., (2) a specific optical rotation $[\alpha]^{25}$ of −19 deg. (c 1.0, H_2O), (3) an elemental analysis corresponding to the formula $C_4H_8N_2O.1/3\ H_2CO_3$ of C-43.80% (43.08 calcd), H-7.84% (7.23 calcd), and N-23.00% (23.18 calcd), (4) an average molecular weight of about 5,700 when determined by gel filtration analysis and about 5,100-5,200 when determined by the dinitrophenylation method, and (5) an Rf value in thin layer chromatography analysis using silica gel of 0.02 with chloroform-methanol-28% aqueous ammonium hydroxide-water (1:4:2:1) and of 0.72 with chloroform-methanol-28% aqueous ammonium hydroxide, upper layer (1:1:1); which antibiotic complex is readily soluble in water and dimethyl sulfoxide, slightly soluble in methanol and ethanol, and only negligibly soluble in other organic solvents; which gives a positive response to ninhydrin, Dragendorff and Rydon-Smith reagents and a negative response to ferric chloride and anthrone reagents; which antibiotic complex gives an infrared spectrum substantially as shown in FIG. 1 which indicates amino (3400 cm^{-1}) and amide (1640 and 1540 cm^{-1}) functional groups when pelleted in potassium bromide and a high pressure liquid chromatographic spectrograph substantially as shown in FIG. 2; and which is effective in inhibiting growth of bacteria and viruses.

4,803,225

DIHYDROXY-PHENETHYLAMINO COMPOUNDS USEFUL AS PHARMACEUTICALS

John Dixon, Melton Mowbray, and Francis Ince, Loughborough, both of United Kingdom, assignors to Fisons, plc, Ipswich, England

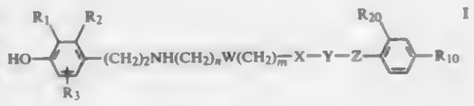
Division of Ser. No. 662,393, Oct. 18, 1984, Pat. No. 4,720,586. This application Dec. 2, 1987, Ser. No. 127,366

Claims priority, application United Kingdom, Dec. 6, 1983, 8332447; Dec. 6, 1983, 8332448; Dec. 6, 1983, 8332452; Jan. 24, 1984, 8401746; Jan. 24, 1984, 8401747; Jan. 24, 1984, 8401748; Jan. 24, 1984, 8401750

Int. Cl.⁴ A61K *31/135*

U.S. Cl. 514—654 **7 Claims**

1. A method of treatment of congestive heart failure, renal failure, angina pectoris, ischaemic heart disease, hypertension, reversible obstructive airways disease, hyperprolactinaemia, Parkinson's disease, glaucoma or gastric hypersecretion, which comprises administration to a patient suffering from such a condition of a therapeutically effective amount of a compound of formula I,



I

in which R_1 represents OH,

R_2 and R_3, which may be the same or different, each independently represent hydrogen, fluorine, chlorine, bromine, alkyl C_1 to C_6, nitro, nitrile, $(CH_2)_pR_9$ or SR_9,

W represents a single bond, a 1,2-, 1,3- or 1,4-disubstituted benzene ring; a —CH=CH— group or a 1,4-cyclohexanediyl group;

X represents NH;

Y represents $(CH_2)q$ and R_{20} represents hydrogen, or Y represents $CR_{15}\ R_{16}CR_{17}R_{18}$, wherein the carbon atom bearing R_{15} and R_{16} is adjacent to X and in which

R_{17} and R_{18}, together with the carbon atom to which they are attached form a carbonyl group, and R_{15}, R_{16} and R_{20} each represent hydrogen, or

R_{15} and R_{20} together form a chain $—CH_2—$, and R_{16}, R_{17} and R_{18} each represent hydrogen, or

R_{15}, R_{16}, R_{17}, and R_{18} each independently represent hydrogen or alkyl C_1 to C_6 and R_{20} represents hydrogen;

Z represents a single bond, NR_{19}, CH_2, O, CO, S or SO_2, in which R_{19} represents hydrogen or alkyl C_1 to C_6;

n and m each independently represent an integer from 1 to 4 inclusive;

q represents an integer from 1 to 3 inclusive;

p represents 0 or an integer from 1 to 3 inclusive;

R_9 represents phenyl or phenyl substituted by hydroxy, and

R_{10} represents hydrogen or chlorine,

provided that

(i) when R_2 and R_3 both represent hydrogen, Z represents a single bond or CH_2, and R_{20} represents hydrogen, then W does not represent a single bond, and

(ii) when R_2 and R_3 both represent hydrogen, W represents a single bond and Z represents CH_2, then R_{15} does not form a chain $—CH_2—$ with R_{20}, or

a pharmaceutically acceptable derivative thereof.

4,803,226

ANTHRACENE DERIVATIVES

Kenneth W. Bair, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 725,157, Apr. 22, 1985, Pat. No. 4,719,047, which is a continuation of Ser. No. 499,332, May 31, 1983, abandoned. This application Jan. 6, 1988, Ser. No. 141,199

Int. Cl.⁴ C07C *93/00, 87/28, 87/64*

U.S. Cl. 514—655 **7 Claims**

1. A pharmaceutical composition in the form of a tablet or capsule containing or a 2-((10-(2-hydroxyethyloxy)-9-anthracenylmethyl)amino)-2-methyl-1,3-propanediol or a pharmaceutically acceptable salt thereof together with a pharmaceutically acceptable carrier therefor.

4,803,227

AMINOALKYL ETHERS OF PHENOLS AS ANTICANCER AGENTS FOR THE BREAST AND COLON

Lorne J. Brandes, Winnipeg, and Mark W. Hermont, Mississauga, both of Canada, assignors to The University of Manitoba, Winnipeg, Canada

Continuation-in-part of Ser. No. 699,265, Feb. 7, 1985, abandoned. This application Jul. 6, 1987, Ser. No. 70,207

Claims priority, application Canada, Feb. 14, 1984, 447369

Int. Cl.⁴ A61K *31/135, 31/535*

U.S. Cl. 514—651 **5 Claims**

1. A pharmaceutical composition comprising

(a) about 1 to about 10 parts of a compound of the formula:



where R is



wherein R_1 and R_2 are ethyl groups and X when present, is a physiologically-acceptable salt forming acid; and,

(b) about 1 part of 1-(p-β-dimethylaminoethoxyphenyl)-trans-1,2-diphenyl-but-1-ene or a physiologically acceptable salt thereof.

4,803,228

UNSATURATED AROMATIC PEROXIDES AND THEIR USE IN PHARMACEUTICAL AND COSMETIC COMPOSITIONS

Bernard Jacquet, Antony; Michel Hocquaux, Paris; Didier Semeria, Gif Sur Yvette, and Didier Saint-Leger, Paris, all of France, assignors to L'Oreal, Paris, France

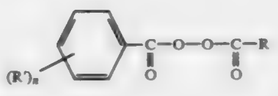
Filed Sep. 29, 1987, Ser. No. 102,492

Claims priority, application France, Sep. 30, 1986, 86 13606

Int. Cl.⁴ A61K *31/075;* **C07C** *179/18, 179/00*

U.S. Cl. 514—714 **14 Claims**

6. A pharmaceutical or cosmetic composition comprising in a pharmaceutically or cosmetically acceptable carrier for topical application to the skin, at least one peroxide having an aromatic radical and an unsaturated radical and having the formula:



(I)

wherein

R represents linear or branched, mono- or polyunsaturated alkenyl having 5 to 21 carbon atoms or cycloalkenyl having 5 to 10 carbon atoms,

n is 1 or 2 and

R' represents hydrogen, halogen, $—CF_3$, methoxy, ethoxy or acyl having 2 to 16 carbon atoms.

4,803,229

MODIFIED POLYISOCYANATE COMPOSITIONS AND MOLDED FLEXIBLE POLYURETHANE FOAM

Thirumurti Narayan, Grosse Ile; Edward R. Pray, Dearborn, and John R. Stoll, Woodhaven, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Jan. 6, 1986, Ser. No. 816,400

Int. Cl.⁴ C08G *18/79*

U.S. Cl. 521—160 **22 Claims**

1. A process of producing a flexible polyurethane foam having improved air flow and compression set consisting of reacting a polyol having an equivalent weight from 1000 to 3000 and a urea-biuret modified polyisocyanate mixture in the presence of a blowing agent and a urethane catalyst wherein said polyisocyanate mixture is composed of toluene diisocyanate and urea-biuret modified polymeric diphenylmethane diisocyanate.

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4,803,230

POLYOLS-POLYESTERS AND USE THEREOF IN THE PRODUCTION OF POLYURETHANE FOAMS

Renato Moroni, Arese, and Marino Brocci, Gallarate, both of Italy, assignors to Montedipe S.p.A., Milan, Italy

Filed Nov. 23, 1987, Ser. No. 124,680
Claims priority, application Italy, Nov. 28, 1986, 22494 A/86
Int. Cl.⁴ C08G *18/14*
U.S. Cl. 521—168 **9 Claims**

1. Polyols-polyesters obtained by esterification and transesterification of DMT process residues with a polyol wherein at least 5% by weight of the polyol is constituted by a glycol have the formula:

HO—R—OH (I)

wherein R is a halogen- and/or phosphorus-containing aliphatic, aromatic, cycloaliphatic or alkyl-aromatic radical.

4,803,231

THERMOPLASTIC COMPOSITIONS WITH VERY HIGH CONTENT OF PULVERULENT MINERAL MATERIALS FOR INCORPORATION INTO POLYMERS

Henri Seinera, Oullins; Patricia Laberne, Genevilliers; Claude Stock, Champs-Sur-Marne, and Patrick Trouve, Clamart, all of France, assignors to Pluess Staufer A. G., Oftringen, Switzerland

Filed Oct. 29, 1985, Ser. No. 792,523
Claims priority, application France, May 21, 1985, 85 07819
Int. Cl.⁴ C08K *5/52, 3/34, 3/26*
U.S. Cl. 523—219 **13 Claims**

1. A coherent thermoplastic aggregate with very high content of pulverulent mineral materials comprising:

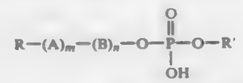
(a) 19.99 to 4.05 wt. % of at least one polyolefin polymer or copolymer having a fusion or softening temperature of at least 60° C. and an index of fluidity of at least 50,

wherein said polyolefin polymer or copolymer is selected from the group consisting of linear or branched low density polyethylenes; high density polyethylenes; polypropylene homopolymers; polyisobutylenes; copolymers obtained by copolymerization of at least two monomers selected from the group consisting of ethylene, propylene, and isobutylene; halogenated polyolefins, and polypropylene modified by grafting or copolymerization with EPDM or SEBS,

(b) 80–95 wt. % of a pulverulent mineral material, present in an amount of 400 to 1900 parts by weight per 100 parts by weight of the said polyolefin polymer or copolymer,

said pulverulent mineral material having a particular size distribution such that 95% of the particles have at least one dimension <30 microns; and

(c) as a fluidifacient agent in an amount of 0.01 to 0.95 wt. % of a phosphate having the following formula:



where A represents ethylene oxide; B represents propylene oxide; $0 \leqq (m+n) \leqq 24$; R represents a linear or nonlinear alkyl group which may be saturated or unsaturated, an aryl group, a saturated or unsaturated heterocycle, wherewith said alkyl, aryl, or heterocycle has 5–28 C atoms, or R is a steroid group; and R' is hydrogen, a carbon chain having 1–4 C atoms, or a group R as defined above; and wherein said aggregate has a density near to the theoretical density of said pulverulent mineral material while still providing excellent compatibility with said polymer or copolymer, and wherein the interparticle voids between the grains of said mineral material are filled by at least one said polymer or copolymer.

4,803,232

RUBBER-MODIFIED EPOXY ADHESIVE COMPOSITIONS

Dilipkumar N. Shah, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Jul. 30, 1987, Ser. No. 79,414
Int. Cl.⁴ C08K *5/05;* **C08L** *9/02, 63/00*
U.S. Cl. 523—456 **12 Claims**

1. An adhesive composition comprising a Component A comprising

(a) about 50 to 95 parts by weight of at least one epoxy resin having more than one epoxy group, and

(b) about 5 to 50 parts by weight of acrylate or methacrylate ester of aliphatic polyhydric alcohol and as a curing agent Component B comprising

(c) an amine-terminal butadiene-acrylonitrile rubber;

(d) at least one aliphatic or aromatic polyamine; and

(e) at least one polyamidoamine derived from dimerized fatty acids of 12 to 28 carbon atoms and aliphatic amines;

wherein the amount of (c) is about 5 to 40 weight percent, the amount of (d) is about 2 to 30 weight percent and the amount of (e) is about 8 to 30 weight percent, the amount of (c) through (e) being based on the total weight of (a), (b), (c), (d) and (e).

8. An adhesive composition according to claim 1 including about 1.0 to 5.0 parts of a polyol per 100 parts of Component A and about 100 to 400 parts of activated silica per 100 parts of polyol.

4,803,233

WATER-BASED SILICONE-ORGANIC POLYMER COMPOSITIONS AND METHOD THEREFOR

Dipak Narula, Midland, and Terence J. Swihart, Essexville, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 30, 1987, Ser. No. 115,493
Int. Cl.⁴ C08K *50/07*
U.S. Cl. 524—58 **24 Claims**

1. A process for preparing a silicone-organic polymer composition, said process comprising mixing components comprising (A) an aqueous, silicon compound emulsion composition and (B) an aqueous, organic polymer composition to provide a silicone-organic polymer composition wherein the weight ratio of said silicon compound to said organic polymer has a value of from 1/100 to 100/1, said aqueous, silicon compound emulsion composition comprising (i) an aqueous phase consisting essentially of at least 10 parts by weight of water and (ii) an oil phase consisting essentially of 100 parts by weight of a silicon compound having the average formula $R_aSiO_{(4-a)/2}$ wherein each R denotes a monovalent, silicon-bonded radical selected from the group consisting of the hydrogen atom, alkoxy radicals, hydroxy radicals, hydrocarbon radicals and substituted hydrocarbon radicals, the substituents of which are selected from radicals containing one or more atoms selected from the group consisting of nitrogen, oxygen, sulfur and halogen, there being at least one R radical per molecule of said silicon compound selected from the group consisting of hydroxy radicals and alkoxy radicals; has a value of from 1 to 4; and said aqueous phase and/or said oil phase further containing, in total,

(1) at least 3 millimols of a nonionic primary surfactant having an HLB number of from 13 to 15,

(2) from 1 to 5 millimols, per millimol of said nonionic primary surfactant, of a nonionic secondary surfactant having an HLB number of from 7 to 9 and

(3) at least 0.05 millimol of a nonionic tertiary surfactant having an HLB number of at least 16.

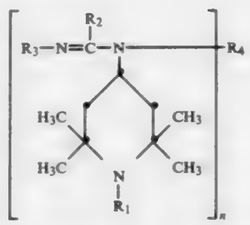
4,803,234

PIPERIDINE COMPOUNDS AND THEIR USE AS ANTI-OXIDATIVE, LIGHT OR THERMAL INDUCED DEGRADATION AGENTS

Giuseppe Cantatore, Bitonto, and Valerio Borzatta, Bologna, both of Italy, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

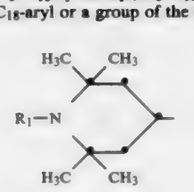
Filed Jan. 29, 1987, Ser. No. 8,220
Claims priority, application Italy, Jan. 30, 1986, 19230 A/86
Int. Cl.⁴ C08J *5/34;* **C09K** *15/16;* **C07D** *251/40*
U.S. Cl. 524—100 **18 Claims**

1. A compound of formula I



(I)

in which R_1 is hydrogen, O·, CN, NO, cyanomethyl, C_1–C_{12}-alkyl, C_3–C_{12}-alkenyl or C_3–C_{12}-alkynyl subject to the proviso that the carbon atom attached to the nitrogen atom is a primary carbon atom, C_7–C_{12}-aralkyl, C_1–C_{12}-alkanoyl, C_3–C_{12}-alkenoyl, C_3–C_{12}-alkynoyl, benzoyl or benzoyl substituted by one or more of C_1–C_4-alkyl or —OH 2,3-epoxypropyl, OH-monosubstituted C_2–C_6-alkyl or 2,3-dihydroxypropyl, R_2 is hydrogen, C_1–C_{18}-alkyl, C_5–C_{18}-cycloalkyl, C_6–C_{18}-aryl or C_7–C_{18}-aralkyl, R_3 is C_6–C_{18}-aryl or a group of the formula (II)



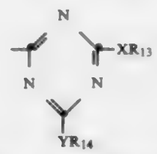
(II)

in which

R_1 is as defined above,

n is an integer from 1 to 3, and

R_4 is a triazinyl radical of a valency equal to n, with the proviso that when n is 1, R_4 is



where R_{13} and R_{14} are independently C_1–C_{18}-alkyl, C_2–C_6-alkyl substituted by OH, by C_1–C_{18}-alkoxy or by C_2–C_{18}-dialkylamino; C_5–C_{18}-cycloalkyl, C_3–C_{18}-alkenyl, C_6–C_{18}-aryl, C_7–C_{18}-aralkyl or a group of formula II, or R_{13} and R_{14} are hydrogen, and

X and Y are independently a direct bond, —O— or



where R_{16} is hydrogen, C_1–C_{18}-alkyl, C_5–C_{18}-cycloalkyl, C_3–C_{18}-alkenyl, C_6–C_{18}-aryl, C_7–C_{18}-aralkyl or a group of formula II, or R_{16} is OH-monosubstituted C_2–C_6-alkyl, or the groups $R_{13}X$ and $R_{14}Y$ are independently 1-pyrrolidinyl, 1-piperidyl or 4-methyl-1-piperazinyl,

when n is 2, R4 is



where

R_{22} is as defined for R_{13} and R_{14},

Z is as defined for X and Y, or $—ZR_{22}$ is 1-pyrrolidinyl, 1-piperidyl, 4-methyl-1-piperazinyl or halogen, and

when n is 3, R_4 is a 1,3,5-triazine-2,4,6-triyl group.

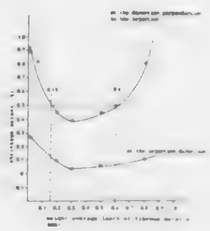
14. A composition of matter comprising a synthetic polymer subject to oxidative, thermal or light induced degradation stabilized with an effective stabilizing amount of a compound of claim 1.

4,803,235

COMPOSITION FOR INJECTION MOLDING

Tsuneyoshi Okada, Kawasaki, Japan, assignor to PolyPlastics Co., Ltd., Osaka, Japan

Filed Oct. 16, 1987, Ser. No. 108,997
Claims priority, application Japan, Oct. 17, 1986, 61-247097
Int. Cl.⁴ C08K *7/14, 7/06*
U.S. Cl. 524—494 **6 Claims**



1. A resin composition which comprises 40 to 80 percent by weight of a thermotropic, liquid crystalline polyester being capable of forming an anisotropic phase in the molten state and having a weight-average molecular weight of 2,000 to 20,000 and 20 to 60 percent by weight of a fibrous material having a tensile modulus of not less than 6,000 kg/mm², a weight-average length of 0.15 to 0.60 mm and an aspect ratio of not less than 10.

4,803,236

STABILIZATION OF AROMATIC POLYESTERS WITH MERCAPTOBENZOTHIAZOLE

Jerold C. Rosenfeld, Tonawanda, N.Y., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 833,938, Feb. 25, 1986, abandoned. This application Dec. 21, 1987, Ser. No. 135,480
Int. Cl.⁴ C08K *5/34*
U.S. Cl. 524—83 **21 Claims**

1. A resin composition comprising:

(A) an aromatic polyester produced by polymerization of a

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substantially equimolar mixture of the monomeric components

(a) terephthalic acid and/or an acid halide, dialkyl ester or diaryl ester thereof and/or isophthalic acid and/or an acid halide, dialkyl ester or diarly ester thereof, with he terephalic acid unit/isophthalic acid unit mole ratio being about 9:1 to aobut 1:9, and

(b) bisphenol A or a metal salt or diester of said bisphenol, said aromatic polyester being essentially the sole resinous component of said composition and

(B) about 0.01 to less than about 2% by weight, based on the aromatic polyester (A) of a stabilizer comprising 2-mercaptobenzothiazole.

4,803,237

REINFORCED POLYESTER MOLDING COMPOSITIONS

Ronald R. Light, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 22, 1988, Ser. No. 158,822
Int. Cl.[4] C08K *5/05;* **C08L** *67/02*
U.S. Cl. 524—385 **4 Claims**

1. A reinforced polyester molding composition comprising

(a) poly(ethylene terephthalate) having an I.V. of about 0.4–1.0 dl/g,

(b) about 10–60% by weight of the composition of glass fibers,

(c) about 1.0–5.0% by weight of the composition of at least one sodium or potassium salt of a hydrocarbon carboxylic acid of 7–25 carbon atoms or at least one sodium or potassium salt of an ionic hydrocarbon copolymer of an α-olefin of 2–5 carbon atoms and an α,β-ethylenically unsaturated carboxylic acid of 3–5 carbon atoms in which the carboxyl groups have been at least partially neutralized with Na^+ or K^+ cations, and

(d) about 0.5–10% by weight of the composition of a primary linear polymeric alcohol having the structure $CH_3(CH_2)_xCH_2OH$ where x has an average value of 28–48.

4,803,238

POLYMER COMPOSITION

Atsushi Sato, Tokyo; Keiji Endo, Yokosuka; Shigenobu Kawakami, Ichikawa; Eiichi Matsuzaka, Kawasaki, and Satoshi Narui, Ayase, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Japan

Continuation of Ser. No. 885,002, Jul. 14, 1986, abandoned. This application Oct. 29, 1987, Ser. No. 115,548
Claims priority, application Japan, Aug. 3, 1984, 59-163549
Int. Cl.[4] C08C *11/22, 13/04*
U.S. Cl. 524—486 **3 Claims**

1. A polymer composition comprising 100 parts by weight of a polymer selected from the group consisting of an NBR, an ethylene-vinyl acetate copolymer, an acrylic polymer, a urethane polymer, an epoxy polymer, a prepolymer of said polymers and mixtures thereof and 0.1 to 200 parts by weight of a compounding oil comprising a fraction containing a major amount of triaryldialkanes, said fraction characterized by a boiling point range of 350° to 450° C., said fraction of said compounding oil prepared by disproportionating a by-product oil fraction, said fraction containing a major amount of diarylalkanes, characterized by a boiling point range of between 260° and 320° C., said fraction obtained as a by-product of the reaction to prepare alkylated benzene or toluene by the reaction of said benzene or toluene with ethylene in the presence of an alkylation catalyst, said disproportionation reaction occurring at a temperature in the range between 20° and 500° C. in the presence of a disproportionation catalyst.

4,803,239

FLUOROCARBON ELASTOMER ARTICLES HAVING IMPROVED AMINE RESISTANCE

Mark S. Schaberg, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 14, 1987, Ser. No. 95,908
Int. Cl.[4] C08K *3/28*
U.S. Cl. 524—428 **11 Claims**

1. A fluorocarbon elastomer gum composition comprising a peroxide-curable fluorocarbon, elastomer gum with bromine or iodine atom cure sites and, dispersed in the gum, a normally solid, inorganic chloride or bromide salt which imparts amine resistance to the cured fluorocarbon elastomer article prepared from said gum composition.

4,803,240

STYRENE GRAFTED ISOPRENE PSA'S

Charles A. Midgley, Hixson, Tenn., and Orest N. Chick, Sarnia, Canada, assignors to BASF Corporation, Parsippany, N.J.

Filed Dec. 7, 1987, Ser. No. 129,166
Int. Cl.[4] C08J *0/00*
U.S. Cl. 524—504 **4 Claims**

1. An aqueous based pressure sensitive adhesive, which does not contain an organic solvent or diluent comprising per 100 parts by dry weight of a latex of an elastomeric polymer onto which has been grafted a thermoplastic polymer consisting of:

(A) from 70 to 95 weight percent of an elastomer comprising

(i) at least 85 weight percent of isoprene or chloroprene;

(ii) up to 15 weight percent of one or more monomers selected from the group consisting of C_{1-8} alykl and hydroxyalkyl esters of C_{3-6} ethylenically unsaturated carboxylic acids; and

(iii) up to 5 weight percent of one or more monomers selected from the group consisting of

(a) C_{3-6} ethylenically unsaturated carboxylic acid monomers;

(b) C_{3-6} ethylenically unsaturated aldehydes; and

(c) amides of C_{3-6} ethylenically unsaturated carboxylic acids, which amides may be unsubstituted or substituted at the nitrogen atom by up to two radicals selected from the group consisting of C_{1-4} alkyl and hydroxyalkyl radicals; from 40 to 80 weight percent of said elastomer being soluble in tetrahydrofuran and the tetrahydrofuran soluble portion of the elastomer having a median molecular weight from 10^3 to 10^5; and

(B) from 30 to 5 weight percent of a grafted thermoplastic having Tg from 35° C. to 120° C. and which is a polymer of one or more monomers selected from the group consisting of C_{8-12} vinyl or vinylidene aromatic monomers which may be unsubstituted or substituted by a C_{1-4} alkyl radical and C_{1-2} alkyl esters of acrylic and methacrylic acid;

from about 20 to 250 parts by dry weight of an aqueous emulsion of a tackifier resin which is selected from the group consisting of terpene resins, pinene resins, piperylene resins, and isoprene tackifiers.

4,803,241

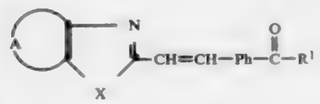
CONDENSATION POLYMERS CONTAINING STYRYLBENZAZOLE ULTRAVIOLET RADIATION-ABSORBING RESIDUES AND SHAPED ARTICLES PRODUCED THEREFROM

Max A. Weaver; Wayne P. Pruett, both of Kingsport; Samuel D. Hilbert, Jonesborough, and Robert D. Burpitt, Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 20, 1987, Ser. No. 75,374
Int. Cl.[4] C08K *5/35*
U.S. Cl. 524—719 **9 Claims**

1. A composition comprising a molding grade, linear polyester wherein the polyester acid moiety is comprised of at least about 50 mol % terephthalic or 2,6-naphthalenedicarboxylic acid residue, and the glycol moiety at least 50 mol % ethylene

glycol or 1,4-cyclohexanedimethanol residue having reacted or copolymerized therein about 2 to about 1500 ppm the residue of a styrylbenzazole compound or mixture of styrylbenzazole compounds having the formula:



wherein

A is the residue of a benzene ring of a benzoxazole, benzothiazole or benzimidazole radical;

X is —O—, —S—, or $—N(R^2)—$;

Ph is a phenylene radical; and

R^1 is halogen or $—Y—R^2$ wherein

Y is —O— or $—N(R^2)—$; and

each R^2 is hydrogen, alkenyl or an unsubstituted or substituted alkyl, cycloalkyl or aryl radical.

4,803,242

DIAPHRAGM FOR LOUDSPEAKERS

Kousaku Murata, Kobe; Satoshi Takayama, Osaka; Hiroyuki Takewa, Osaka; Shuji Seiki, Osaka, and Tsuneo Tanaka, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 3, 1987, Ser. No. 80,923
Claims priority, application Japan, Aug. 4, 1986, 61-182909
Int. Cl.[4] C08L *1/02, 5/08, 51/02;* **H04R** *9/06*
U.S. Cl. 524—35 **2 Claims**

1. A loudspeaker diaphragm comprising a uniform mixture of kraft pulp and chitin powder having 50–500 mesh size, and the ratio of said chitin powder in said uniform mixture ranging not larger than 30 weight percent.

4,803,243

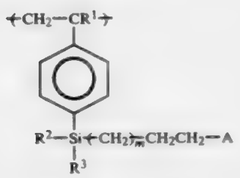
BLOCK-GRAFT COPOLYMER

Teruo Fujimoto; Mikio Shioso; Osamu Watanabe, all of Nagaoka, and Koichi Ito, Higashikurume, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1987, Ser. No. 30,074
Claims priority, application Japan, Mar. 26, 1986, 61-69366
Int. Cl.[4] C08F *287/00*
U.S. Cl. 525—100 **4 Claims**

1. A block-graft copolymer comprising:

a polymer block having a repeating unit represented by General Formula (I):



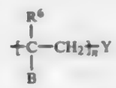
(I)

wherein R^1 represents a hydrogen atom, methyl group or ethyl group; R^2 and R^3 may be the same or different and each represent an alkyl group having 1 to 3 carbon atoms or phenyl group; m represents an integer of 0 to 4; and A represents any one of polymer residual groups represented by General Formulas (II) to (IV) shown below,



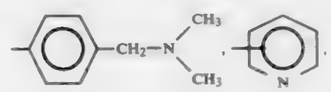
(II)

wherein R^4 may be the same or different and each represent methyl group, ethyl group or phenyl group; R^5 is as defined for R^4 or represents a group represented by the formula $—Si(R^4)_3$; and n is an integer of 1 to 1,000,

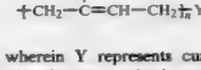


(III)

wherein R^6 represents a hydrogen atom or methyl group; and B represents a group represented by the formula $—COOR^2$, where R^2 is as defined above,



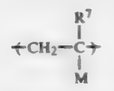
—CH═CH_2 or $—C(CH_3)═CH_2$; Y represents cumyl group, n-butyl group, s-butyl group or benzophenone residual group; and n is as defined above,



(IV)

wherein Y represents cumyl group, n-butyl group or s-butyl group, and n is as defined above,

and at least one of polymer blocks having a repeating unit represented by General Formula (V):



wherein R^7 represents a hydrogen atom, methyl group or ethyl group; M represents at least one selected from a group represented by the formula —CH═CH_2, $—C(CH_3)═CH_2$, —$COOCH_3$ or —$COOC_2H_5$ and phenyl group.

4,803,244

PROCESS FOR THE PREPARATION OF THERMOPLASTIC ELASTOMERS

Jeffrey D. Umpleby, Princeton, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 16, 1987, Ser. No. 120,969
Int. Cl.[4] C08F *8/00*
U.S. Cl. 525—105 **15 Claims**

1. A process for the preparation of a thermoplastic elastomer comprising admixing, under reaction conditions, an elastomer containing carbon-carbon double bonds; an essentially saturated thermoplastic homopolymer or copolymer; a multifunctional organosilicon compound containing an average of at least two Si—H groups per molecule; and a catalyst capable of hydrosilylating the carbon-carbon double bonds of the unsaturated elastomer.

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4,803,245

FLEXIBILIZED PHENOL/MERCAPTO RESINS AND THEIR SYNTHESIS

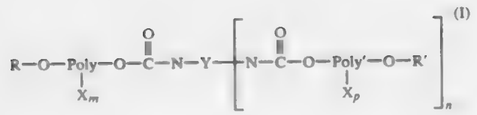
Laurence G. Dammann, Westerville, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 17, 1987, Ser. No. 27,008
Int. Cl.[4] C08G *18/06, 59/12, 63/08, 63/46*
U.S. Cl. 525—123 **16 Claims**

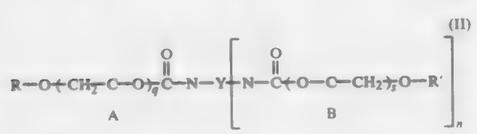
1. A method for improving the flexibility of a phenol or mercapto resin which comprises:

(a) reacting a component containing functionality selected from the group consisting of aliphatic hydroxyl functionality, epoxy functionality, or mixtures thereof, with a capping agent bearing functionality selected from phenol functionality, mercapto functionality, or mixtures thereof, and containing functionality reactive with said component to form a phenolic or mercapto functional adduct; and

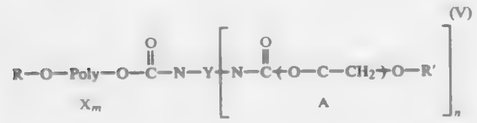
(b) reacting the adduct of the step (a) with a polyisocyanate in the substantial absence of a basic urethane catalyst, said reactants being present in a ratio to produce said resin predominating in one or more of the following general structures:



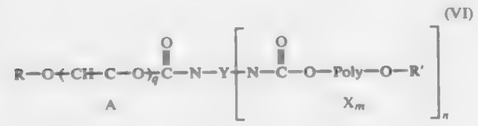
(I)



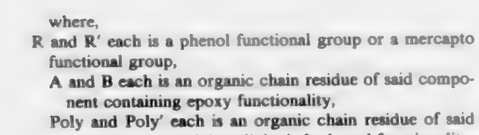
(II)



(V)



(VI)



where,

R and R' each is a phenol functional group or a mercapto functional group,

A and B each is an organic chain residue of said component containing epoxy functionality,

Poly and Poly' each is an organic chain residue of said component containing aliphatic hydroxyl functionality,

X is an aliphatic hydroxyl group,

the wavy line represents an organic chain residue of said polyisocyanate,

n is 1–4,

m and p each is 0–2, and

q and s each is 1–15.

4,803,246

PROCESS FOR THE PREPARATION OF POLYMERS CONTAINING HYDROXYL GROUPS AND THEIR USE FOR THE PRODUCTION OF POLYURETHANES

Manfred Dietrich, Leverkusen; Josef Pedain, Cologne; Klaus König, Leverkusen, and Peter Höhlein, Kempen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

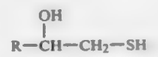
Filed Apr. 9, 1986, Ser. No. 849,649
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1985, 3515092
Int. Cl.[4] C08L *75/00*
U.S. Cl. 525—124 **14 Claims**

1. A process for the preparation of a polymer containing hydroxyl groups by reacting a copolymer containing carboxyl groups and prepared from

(A) acrylic acid, methacrylic acid or mixtures of acrylic acid and methacrylic acid and

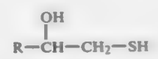
(B) at least one other olefinically unsaturated compound with an alkylene oxide in the presence of a catalyst comprising a member selected from the group consisting of

(a1) an addition product containing two thioether groups and prepared from (i) a mercaptoalkanol corresponding to the formula



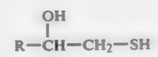
and (ii) a doubly unsaturated terpene hydrocarbon,

(a2) a condensation product with a maximum molecular weight of about 5,000 obtained by the self condensation of an addition product containing two thioether groups and prepared from (i) a mercaptoalkanol corresponding to the formula



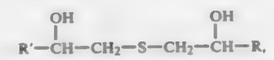
and (ii) a doubly unsaturated terpene hydrocarbon,

(a3) a condensation product with a maximum molecular weight of about 5000 obtained by the condensation of an addition product containing two thioether groups and prepared from (i) a percaptoalkanol corresponding to the formula

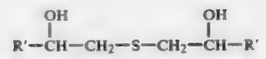


and (ii) a doubly unsaturated terpene hydrocarbon with a positive amount of up to about 50 hydroxyl equivalent %, based on the total number of hydroxyl groups in the condensation reaction mixture, of at least one polyhydric alcohol having a molecular weight of 62 to about 200,

(b1) a relatively high molecular weight thioether having a molecular weight of about 500 to 5000 obtained by the condensation of a thiodiglycol corresponding to the formula



(b2) a relatively high molecular weight thioether having a molecular weight of about 500 to 5000 obtained by the condensation of a thiodiglyol corresponding to the formula



in admixture with a positive amount of up to about 50 hydroxy equivalent %, based on the total number of hydroxyl groups in the condensation reaction mixture, of at least one polyhydric alcohol having a molecular weight of 62 to about 200 and

(c) mixtures of any of the above compounds (a1), (a2), (a3), (b1), and (b2),

wherein

R and R', which may be identical or different, represent hydrogen or a methyl group.

4,803,247

POLYAMIDE COMPOSITIONS HAVING NITRILE RUBBER AND COPOLYMER OF ETHYLENE AND ALPHA-OLEFIN THEREIN

Carl E. Altman, Warren, and Mocherla K. K. Rao, Middlesex, both of N.J., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Oct. 27, 1987, Ser. No. 113,933
Int. Cl.[4] C08L *77/00*
U.S. Cl. 525—179 **6 Claims**

1. A flexible, chlorofluorohydrocarbon permeation resistant composition comprising: from about 40 to 90 percent by weight of at least one polyamide, from about 5 to 40 percent by weight of at least one nitrile rubber, and from about 5 to 40 percent by weight of at least one reactive rubber comprising a copolymer of ethylene and an α-olefin having 3 to 8 carbons, said copolymer having an unsaturated reactive graft moiety reactive with the end groups of the polyamide.

4,803,248

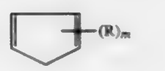
RUBBER COMPOSITIONS

Hitoshi Kondo, Higashimurayama; Makoto Sasaki, Yokohama, and Yukio Kobayashi, Koto, all of Japan, assignors to Bridgestone Corporation and Nippon Oil Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 12,468, Feb. 9, 1987. This application Apr. 25, 1988, Ser. No. 185,677
Int. Cl.[4] C08L *7/00, 9/00*
U.S. Cl. 525—211 **3 Claims**

1. A rubber composition which exhibits improved cut resistance and chipping resistance comprising 1 to 30 parts by weight of at least one resin, based upon 100 parts by weight of at least one rubber selected from the group consisting of natural rubber and synthetic diene rubbers, wherein said resin is a cyclopentadiene series hydrocarbon resin (R_3) obtained by copolymerizing:

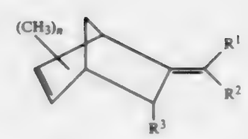
(i) 100 parts by weight of component (A), wherein component (A) is at least one compound selected from a cyclospentadiene ring containing the compound represented by the following formula:



(I)

wherein R_1 is an alkyl group having 1 to 3 carbon atoms and m is an integer of 0 to 6, and its Diels-Alder reaction adduct with,

(ii) 5 to 150 parts by weight of component (D), wherein component (D) is a 5-alkylidenenorbornene-2 or its derivative represented by the following general formula:



(II)

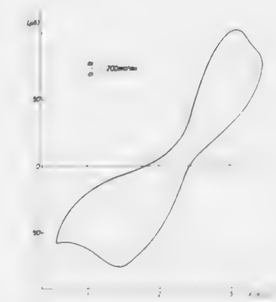
wherein R_1, R_2 and R_3 are hydrogen atom or an alkyl group having 1 to 3 carbon atoms and n is 0 or 1.

4,803,249

DERIVATIVES OF POLYCARBONE SULFIDES

Michel Armand, Echirolles; Mireille Fouletier, and Pierre Degott, both of Grenoble, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Division of Ser. No. 740,919, Jul. 10, 1985, Pat. No. 4,739,018. This application Jul. 25, 1986, Ser. No. 889,195
Claims priority, application France, Sep. 20, 1983, 83 14940; Jun. 28, 1984, 84 10254
Int. Cl.[4] C08F *114/18, 38/02*
U.S. Cl. 525—326.2 **10 Claims**



1. A linear sulphuretted carbon compound, comprising a copolymer of the formula (II)

$$[(CH)_p(R_xCS_m)_{1-p}]_n$$

wherein:

R is independently hydrogen, an alkali metal, silver, zinc, copper or cobalt;

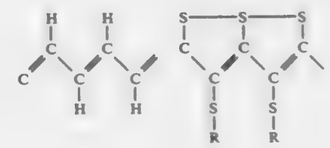
x represents the degree to which R is present in the structure and has a value of between 0 and m/(valency of the metal), these values being inclusive;

m represents the degree of substitution with sulphur and has a value of $0<m\leqq 1$;

$0>p>1$; and

n represents the number of formula (II) units in the copolymer;

wherein the copolymer comprises the structural formula (III)



(III)

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4,803,250

RUBBER COMPOSITION WITH BISMALEIMIDES

Hideo Nagasaki, Osaka, and Yasuzi Takemoto, Sakai, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 814,881, Dec. 30, 1985, abandoned. This application Mar. 2, 1987, Ser. No. 20,227

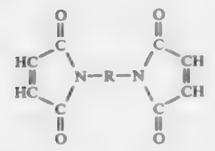
Claims priority, application Japan, Jan. 19, 1985, 60-7888; Jan. 22, 1985, 60-10226

Int. Cl.[4] C08C *19/20*

U.S. Cl. 525—329.3 **6 Claims**

1. A rubber composition comprising a rubber selected from the group consisting of natural rubber, styrene-butadiene rubber, butadiene rubber, isoprene rubber, acrylonitrile-butadiene rubber, chloroprene rubber, ethylene propylene-diene terpolymer and isoprene-isobutylene rubber, in combination with the following components:

(A) a bismaleimide compound represented by the general formula (I)



(I)

wherein R is a divalent acyclic aliphatic group, cyclic aliphatic group, aromatic group, or alkylaromatic group, and wherein these groups may contain a hetero atom selected from O, N, and S,

(E) an aromatic carboxylic acid anhydride,

(F) sulfur and/or a sulfur donor, and

(G) a vulcanization accelerator.

4,803,251

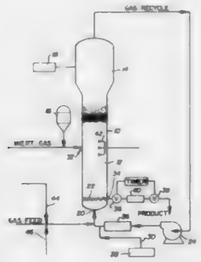
METHOD FOR REDUCING SHEETING DURING POLYMERIZATION OF ALPHA-OLEFINS

Mark G. Goode, St. Albans; Daniel M. Hasenberg; Thomas J. McNeil, both of Hurricane, and Thomas E. Spriggs, Cross Lanes, all of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 4, 1987, Ser. No. 116,538

Int. Cl.[4] C08F *2/00, 2/34, 2/38*

U.S. Cl. 526—59 **12 Claims**



1. A method for reducing sheeting during polymerization of alpha-olefins in a low pressure fluidized bed reactor utilizing titanium or vanadium based compounds as catalysts together with alkyl aluminum cocatalysts which comprises determining the electrostatic levels at the site of possible sheet formations in said reactor; if negative electrostatic levels are indicated then adding a positive charge generating chemical additive to the reactor said additive being selected from the group consisting of alcohols containing up to 7 carbon atoms, oxygen and nitric oxide; if positive electrostatic levels are indicated in said reactor then, adding a negative charge generating chemical additive to the reactor said chemical additive being a ketone containing up to 7 carbon atoms, said positive or negative charge generating chemical additive being added to said reactor as required in an amount sufficient to create and maintain neutral static charges in said reactor.

4,803,252

PARTICLES OF CROSSLINKED POLYMER PREPARED BY EMULSION POLYMERIZATION IN THE ABSENCE OF DISPERSION STABILIZER

Katsuaki Kida; Akio Kashihara, both of Osaka; Keizou Ishii, Hyogo, and Hiromichi Kayano, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jul. 29, 1986, Ser. No. 890,483

Claims priority, application Japan, Jul. 29, 1986, 60-168439

Int. Cl.[4] C08F *20/10, 120/10, 220/10*

U.S. Cl. 526—297 **2 Claims**

1. A method for preparing particles of a crosslinked polymer comprising reacting 0.5 to 50 parts by weight of di (meth) acryloyl bearing compound (A) of the formula



wherein R_1 and R_2 each represents hydrogen or methyl group, and n is an integer of 4 to 30, and 99.5 to 50 parts by weight of at least one other copolymerizable unsaturated monomer (B), in an aqueous medium and in the absence of a dispersion stabilizer, through an emulsion polymerization said copolymerizable unsaturated monomer (b) being selected from the group consisting of a carboxyl group bearing monomer, a hydroxyl group bearing monomer, a nitrogen containing alkyl acrylate or methacrylate, a copolymerizable amide, a polymerizable nitrile, an alkyl acrylate or methacrylate, a polymerizable aromatic compound, an α-olefin, a vinyl compound and a diene compound.

4,803,253

ETHYLENE POLYMER PRODUCED USING A CATALYST COMPRISING A PHOSPHATE AND WITH A BIS-(CYCLOPENTADIENYL)CHROMIUM(II) COMPOUND

Max P. McDaniel, and James N. Short, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 575,631, Jan. 31, 1984, abandoned, which is a division of Ser. No. 423,499, Sep. 24, 1982, Pat. No. 4,690,990, which is a division of Ser. No. 363,681, Mar. 30, 1982, Pat. No. 4,424,139. This application Mar. 29, 1985, Ser. No. 718,047

Int. Cl.[4] C08F *110/02, 4/78*

U.S. Cl. 526—352.2 **14 Claims**

1. An ethylene polymer having 0.3 to 2 mole percent methyl branches and an HLMI/MI ratio of no more than 29 made by polymerizing a monomer system consisting essentially of pure ethyelene which is essentially free of propylene.

4,803,254

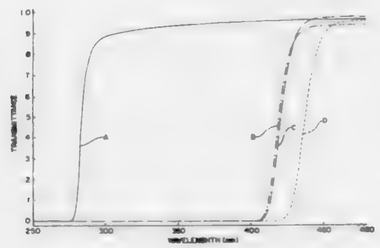
VINYLSILYLALKOXY ARYLBENZOTRIAZOLE COMPOUNDS AND UV ABSORBING COMPOSITIONS MADE THEREFROM

Gary B. Dunks, Upland; Akira Yamada, Claremont; Namasivaya Doddi, Upland, all of Calif., and Charles D. Beard, Montchanin, Del., assignors to Iolab Corporation, Claremont, Calif.

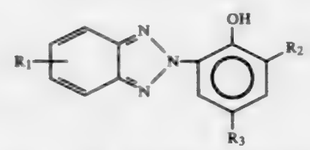
Filed Mar. 11, 1987, Ser. No. 24,638

Int. Cl.[4] C08F *283/12, 30/08*

U.S. Cl. 525—477 **12 Claims**



1. A vinylsilylalkoxy arylbenzotriazole compound of the formula:



I

wherein R_1 and R_3 individually represent hydrogen, halo, alkoxy of up to 6 carbon atoms, or X, wherein R_2 represents hydrogen or alkyl of up to six carbon atoms, and wherein X represents a group of the formula:

$$—O—R'Si(R'')_2CH=CH_2$$

wherein R' represents alkylene of from 1 to 10 carbon atoms, and wherein each R'' individually represents alkyl of up to 4 carbon atoms or aryl, provided that one, and only one, of R_1 or R_3 represents X.

5. An optically clear siloxane polymer having ultraviolet light absorbing properties, said polymer having covalently bonded therein the compound of claim 1.

4,803,255

LIGNIN AND LIGNIN DERIVATIVES AS COPOLYMERIZABLE COLORANTS FOR POLYESTERS

Wayne P. Pruett; John A. Hyatt, both of Kingsport, and Samuel D. Hilbert, Jonesborough, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 22, 1987, Ser. No. 64,646

Int. Cl.[4] C08H *5/02;* **C08G** *63/02*

U.S. Cl. 527—400 **27 Claims**

1. A shapable colored copolymer consisting essentially of a polyester having chemically linked into the polyester backbone color-imparting amounts of a compound selected from the group consisting of lignin and lignin compounds having functional groups chemically linkable into said polyester backbone; wherein said polyester comprises the polymeric reaction product of at least one diol, and at least one compound selected from aliphatic dicarboxylic acids, alicyclic dicarboxylic acids, aromatic dicarboxylic acids, esters of such dicarboxylic acids and anhydrides of such dicarboxylic acids.

13. A process for preparing a copolymer consisting essentially of a polyester having chemically linked into the polyester backbone color-imparting amounts of a compound selected from the group consisting of lignin and lignin compounds having functional groups chemically linkable into said polyester backbone, said process comprising the steps of:

polymerizing at least one diol with at least one compound selected from aliphatic dicarboxylic acids, alicyclic dicarboxylic acid, aromatic dicarboxylic acids, esters of such dicarboxylic acids and anhydrides of such dicarboxylic acids in the presence of a color-imparting amount of a compound selected from lignin and lignin compounds which can be chemically linked into said polyester backbone and recovering the resultant polyester.

4,803,256

METHOD OF ALTERING THE SURFACE OF A SOLID SYNTHETIC POLYMER

Roy Lackenbach, Charlotte, N.C., assignor to Dow Corning Corporation, Midland, Mich.

Filed Feb. 1, 1988, Ser. No. 150,877

Int. Cl.[4] C08G *63/12*

U.S. Cl. 525—420 **26 Claims**

1. A method of altering the surface of a solid synthetic polymer, the method comprising

(I) contacting the polymer with a bath of a swelling agent, or a mixture of swelling agents, and a base, at a pH of seven or greater;

(II) heating the bath to a temperature of at least 200 degrees F. for a time of at least 1 second;

(III) acidifying the bath to a pH of less than 7;

(IV) separating the polymer and the bath, whereby a polymer having an altered surface is obtained.

4,803,257

FLEXIBLE, STRUCTURAL POLYURETHANE ADHESIVES WITH INITIAL PRESSURE SENSITIVE ADHESIVE PERFORMANCE

Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Apr. 24, 1987, Ser. No. 42,070

Int. Cl.[4] C08G *18/30*

U.S. Cl. 528—45 **11 Claims**

1. A polyurethane structural adhesive having initial pressure sensitive adhesive performance comprising a mixture of a blocked polyisocyanate and a polyamine curing agent wherein the polyisocyanate is a prepolymer obtained by the reaction of a poly (alkylene oxide) polyol with a polyisocyanate and said prepolymer is blocked with a phenolic blocking agent selected from the group consisting of phenol, nonylphenol, cresol, napthol, an alkyl phenol and an alkoxy phenol and the polyamine curing agent is selected from the group consisting of ethylene diamine, propylene diamine, hexamethylene diamine, bis (aminomethyl) cyclohexane, dimer acid diamine, diethylene triamine, dipropylene triamine, triethylene tetramine, bis (aminopropyl) piperazine, poly (alkylene oxide) diamines and poly (alkylene oxide) triamines.

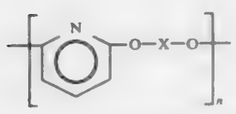
VOL 1099 ISS 1 FEB 7 1989 UMI

4,803,258
THERMOPLASTIC AROMATIC POLYETHER-PYRIDINE AND PROCESS FOR PREPARING SAME

Keizaburo Yamaguchi, Kawasaki; Hideaki Oikawa, Yokohama; Kenichi Sugimoto, Yokohama; Masahiro Ohta, Yokohama, and Akihiro Yamaguchi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

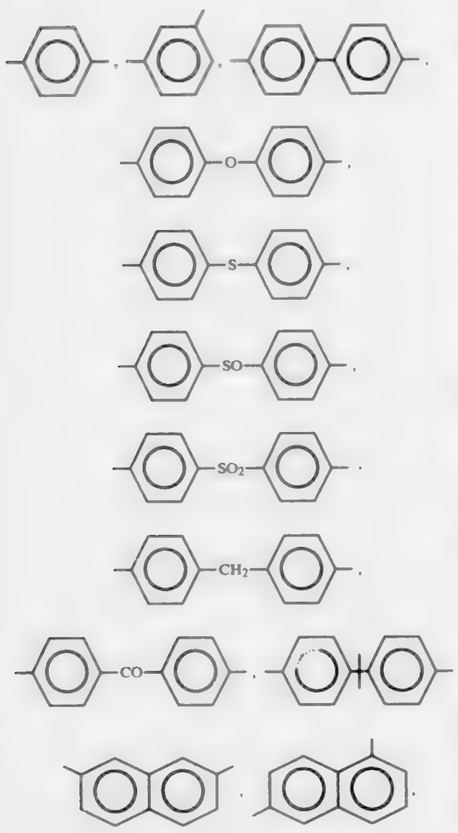
Filed Jul. 23, 1987, Ser. No. 76,873
Claims priority, application Japan, Aug. 1, 1986, 61-180180; Nov. 6, 1986, 61-262856
Int. Cl.[4] C08G *65/40*
U.S. Cl. 528—211 **5 Claims**

1. A thermoplastic aromatic polyether-pyridine composed of repeating structural units of the general formula

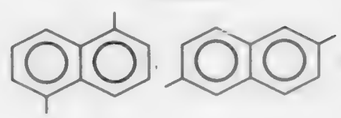


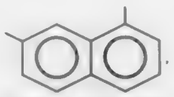
(1)

where X is a divalent radical selected from the group consisting of



-continued


and



one or two of such divalent radicals are present in the molecule, and n represents a degree of polymerization and is a whole number of 10 or greater.

4,803,259
ISOPROPANOLAMINES AS CATALYST DEACTIVATORS IN SOLUTION PROCESS FOR POLYMERIZATION OF ALPHA-OLEFINS

Vaclav G. Zboril, and David J. Mitchell, both of Kingston, Canada, assignors to Du Pont Canada Inc., Mississauga, Canada

Filed Apr. 22, 1987, Ser. No. 41,248
Claims priority, application United Kingdom, Apr. 25, 1986, 8610126
Int. Cl.[4] C08F *6/02, 6/10*
U.S. Cl. 528—483 **11 Claims**

1. A solution polymerization process for the preparation of high molecular weight polymers of alpha-olefins selected from the group consisting of homopolymers of ethylene and copolymers of ethylene and C_3–C_{12} hydrocarbon alpha-olefins, said process comprising feeding monomer selected from the group consisting of ethylene and mixtures of ethylene and at least one C_3–C_{12} hydrocarbon alpha-olefin, a coordination catalyst and inert hydrocarbon solvent to a reactor, said catalyst being a titanium-based and/or vanadium-based coordination catalyst containing halogen and/or alkyl radicals, polymerizing said monomer at a temperature of 105° to 320° C. and a pressure of less than 25 MPa, deactivating the catalyst by admixing the solution passing from the reactor with at least one trialkanolamine deactivating agent of the formula $N(ROH)(R'OH)_2$, where R is isopropyl and R' is alkyl of 2–4 carbon atoms, without taking steps to physically separate the deactivated catalyst from the solution, separating the hydrocarbon solvent and other volatile matter from the resultant solution, and recovering a composition of said high molecular weight polymer, the amount of deactivating agent being not more than 2.5 moles of deactivating agent per mole of halogen plus alkyl radicals in the coordination catalyst.

4,803,260
RECOVERY OF VINYL CHLORIDE RESIN WITH AID OF SCREEN

Masaaki Nishina, Takaoka, and Junsei Kawahuti, Kamakura, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1986, Ser. No. 823,573
Claims priority, application Japan, Jan. 31, 1985, 60-17429
Int. Cl.[4] C08F *6/24, 6/14*
U.S. Cl. 528—487 **9 Claims**

1. A method for recovering vinyl chloride resin selected from the group consisting of vinyl chloride homopolymer and vinyl chloride copolymers composed of at least 70% by weight of vinyl chloride and up to 30% by weight of at least one olefinic monomer copolymerizable with vinyl chloride, said homopolymer or copolymer being prepared by emulsion polymerization, fine suspension polymerization or suspension polymerization, from an aqueous dispersion thereof, said aqueous dispersion having a vinyl resin content of from 10 to 70% by weight, which comprises

(a) passing the aqueous dispersion of the vinyl chloride resin through a screen of 20 to 150 micron mesh;
(b) mixing the aqueous dispersion which has passed through said screen with an organic liquid which is difficultly soluble in water and does not dissolve or swell vinyl chloride resin, said mixing causing aggregation of the dispersed vinyl chloride resin;
(c) separating and removing the aqueous phase from the liquid mixture containing the resin aggregate obtained in step (b); and
(d) dehydrating and drying the resin aggregate from which the aqueous phase has been separated in step (c).

4,803,261
METHOD FOR SYNTHESIZING A PEPTIDE CONTAINING A NON-PEPTIDE

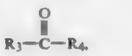
David H. Coy, and Simon J. Hocart, both of New Orleans, La., assignors to The Administrators of the Tulane Educational Fund, New Orleans, La.

Filed Jun. 27, 1986, Ser. No. 879,348
Int. Cl.[4] A61K *37/02*
U.S. Cl. 530—333 **6 Claims**



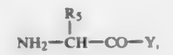
1. A method of solid-phase chemical modification of a peptide, comprising the steps of

(a) providing a carbonyl-containing compound of the formula



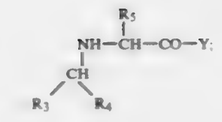
where R_3 and R_4, independently, comprise hydrogen, branched or straight chain lower alkyl group, or aryl group;

(b) providing a complex of the formula



where Y comprises a solid phase and R_5 is a side group of an amino acid; and

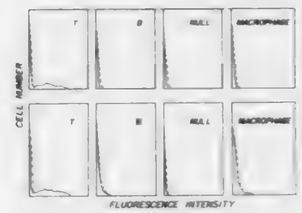
(c) reacting said carbonyl-containing compound with said complex in the presence of sodium cyanoborohydride to form



4,803,262
HYBRID CELL LINE FOR PRODUCING MONOCLONAL ANTIBODY TO HUMAN CYTOTOXIC AND SUPPRESSOR T CELLS, ANTIBODY, AND METHODS

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation of Ser. No. 643,593, Aug. 23, 1984, abandoned, which is a division of Ser. No. 432,455, Oct. 4, 1982, Pat. No. 4,637,983, which is a division of Ser. No. 82,515, Oct. 9, 1979, Pat. No. 4,364,932. This application Nov. 26, 1986, Ser. No. 935,167
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.[4] A61K *39/395;* **C07K** *15/02*
U.S. Cl. 530—387 **4 Claims**



1. Mouse monoclonal antibody that reacts with a same antigen as the monoclonal antibody produced by the hybridoma ATCC CRL 8013 or CRL 8016.

4,803,263
PROCESS FOR THE PREPARATION OF ALKYLATED GLYCOSYL FLUORIDES FREE FROM HYDROXYL GROUPS

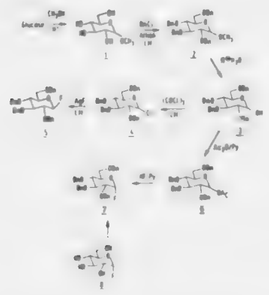
Joachim Thiem, Münster; Hans-Matthias Deger, Hofheim am Taunus; Wolfram Fritsche-Lang, Bensheim, and Matthias Kreuzer, Münster, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 7, 1986, Ser. No. 894,197
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1985, 3528654
Int. Cl.[4] C07H *15/00, 19/00, 21/00*
U.S. Cl. 536—18.6 **16 Claims**

1. A process for the preparation of alkylated glycosyl fluorides free from hydroxyl groups, which comprises alkylating glycosyl fluorides which contain hydroxyl groups with alkylating agents capable of producing an ether linkage between a saturated aliphatic hydrocarbon atom and oxygen, in the presence of a basic system of at least one compound selected from

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the group consisting of an oxide of the first group of the periodic table, a hydroxide of the first group of the periodic table,



an alkali metal alcoholate in which the alcohol component has up to 6 carbon atoms, and an alkali metal hydride.

4,803,264

PROCESS FOR THE PREPARATION OF A POLYSACCHARIDE IN OIL DISPERSION AND DISPERSION OBTAINED THEREBY

Wilhelmus J. Krijnen; Jacob B. Roest, and Jacob Bloembeuvel, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 25, 1986, Ser. No. 934,961

Claims priority, application United Kingdom, Dec. 9, 1985, 8530271

Int. Cl.[4] **C09K** *7/06;* **C08J** *3/02;* **E21B** *43/25*

U.S. Cl. 536—114 **9 Claims**

1. A process for the preparation of a polysaccharide in oil dispersion which comprises the steps of

(a) forming a water-in-oil emulsion by dispersing in oil an aqueous solution of polysaccharide, in the presence of at least one dispersion promoter,

(b) drying the resulting emulsion azeotropically, and

(c) physically isolating from the resulting azeotropically dried residue an oil phase containing oil and dispersion promotor and a polysaccharide in oil dispersion in the form of a suspension phase containing polysaccharide, dispersion promoter and oil.

4,803,265

METHOD FOR CARRYING OUT THE ORGANIC SYNTHESIS OF OLIGOSACCHARIDES CONTAINING GALACTOSAMINE-URONIC ACID PATTERNS, NOW OLIGOSACCHARIDES OBTAINED AND BIOLOGICAL APPLICATIONS THEREOF

Jean-Claude Jacquinet, Orleans-La Source; Maurice Petitou, Paris; Pierre Sinay, Orleans, and Jean Choay, Paris, all of France, assignors to Choay, S.A., Paris, France

Continuation of Ser. No. 624,628, Jun. 26, 1984, abandoned. This application Apr. 21, 1986, Ser. No. 856,855

Claims priority, application France, Oct. 27, 1982, 82 18003

The portion of the term of this patent subsequent to Aug. 19, 2003, has been disclaimed.

Int. Cl.[4] **A61K** *31/70;* **C07H** *5/06*

U.S. Cl. 536—123 **53 Claims**

1. A process for synthesizing an acid mucopolysaccharide condensation product having from 2-12 saccharides which process comprises condensing a first saccharide with a second saccharide to form a condensation product having a 1-4 beta linkage between the first saccharide and the second saccharide, wherein the first saccharide is selected from the group consisting of a protected D-galactosamine unit and an oligosaccharide comprised of alternating protected D-galactosamine and protected uronic acid units linked in the manner found in chondroitin sulfate and dermatan sulfate and having a terminal D-galactosamine at the reducing end, and

wherein the second saccharide is selected from the group consisting of a uronic acid unit and an oligosaccharide comprised of alternating protected D-galactosamine and protected uronic acid units linked in the manner found in chondroitin sulfate and dermatan sulfate and having a terminal uronic acid at the nonreducing end, further

wherein any uronic acid unit is selected from the group consisting of D-glucuronic acid and L-iduronic acid and further

wherein any D-galactosamine units have nitrogen containing groups at carbon 2, which nitrogen containing groups can be treated to form an amine.

4,803,266

3-OXOALKYLIDENE-2-AZETIDINONE DERIVATIVES

Yutaka Kawashima, Tatebayashi; Masakazu Satoh, Konosu; Yuichi Hatada, Tokyo; Fumiko Hazato; Yoshimoto Nakashima, both of Ageo, and Kaoru Sota, Tokorozawa, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Japan

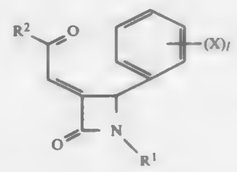
Filed Oct. 5, 1987, Ser. No. 104,152

Claims priority, application Japan, Oct. 17, 1986, 61-246638

Int. Cl.[4] **C07D** *205/08, 205/10, 405/04;* **A61K** *31/395*

U.S. Cl. 540—200 **1 Claim**

1. 2-Azetidinone derivatives represented by the following formula:

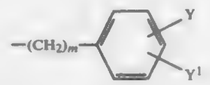


wherein:

X is hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl or cyano,

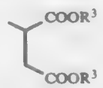
l is 1 or 2,

R^1 is lower alkyl, cycloalkyl, 1-naphthylmethyl, 1-phenethyl, 1-carboxy-2-phenethyl, a member of a group of the formula



wherein Y and Y′ are the same or different and each is hydrogen, halogen, lower alkyl, lower alkoxy, dimethylamino, carboxyl, dichloroacetyl or trifluoromethyl, or Y and Y′ together form methylenedioxy, and m is 0 or 1 or

R^1 is a member of a group of the formula



wherein R^3 is lower alkyl group, and

R^2 is lower alkyl, lower alkoxy, amino, adamantyl, lower alkoxycarbonylmethyl, or a member of a group of the formula



wherein Z is hydrogen, halogen, lower alkyl, lower alkoxy, phenyl or nitro, and n is 1 or 2.

4,803,267

PROCESS FOR PREPARING CEPHALOSPORIN COMPOUNDS

Gordon C. D. Smith, Wokingham, England, assignor to Glaxo Group Limited, London, England

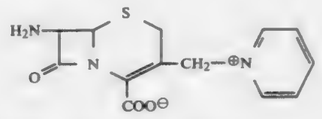
Division of Ser. No. 399,328, Jul. 19, 1982, Pat. No. 4,563,523. This application Aug. 30, 1985, Ser. No. 771,009

Claims priority, application United Kingdom, Jul. 17, 1981, 8122147

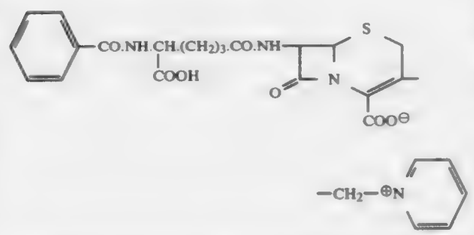
Int. Cl.[4] **C07D** *501/18*

U.S. Cl. 540—224 **3 Claims**

1. A process for the preparation of a 7-amino-cephalosporin compound of formula



or a salt thereof, which comprises removing the 7-side chain from a compound of the formula



or a salt thereof to form said 7-amino-cephalosporin compound in high yield and purity.

4,803,268

PROCESS FOR THE PREPARATION OF CYCLOHEXANEDIONECARBOXYLIC ACID DERIVATIVES

Hans-Georg Brunner, Lausen, and Urs Müller, Münchenstein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

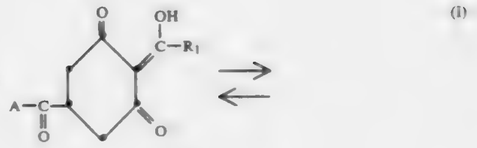
Continuation of Ser. No. 778,109, Sep. 20, 1985, abandoned. This application Jan. 29, 1987, Ser. No. 8,445

Claims priority, application Switzerland, Oct. 2, 1984, 4734/84

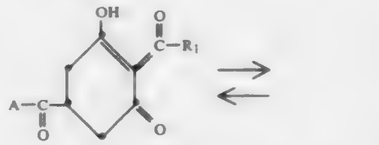
Int. Cl.[4] **C07D** *279/10;* **C07C** *67/22*

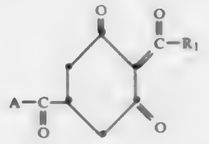
U.S. Cl. 544—58.4 **9 Claims**

1. A process for the preparation of a 4-acyl-3,5-cyclohexanedione-1-carboxylic acid derivative of formula I



(I)





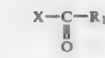
wherein

A is an OR_2 or $—NR_3R_4$ radical or a metal or ammonium salt thereof,

R_1 is C_1–C_6alkyl or C_3–C_6cycloalkyl, each unsubstituted or substituted by halogen, C_1–C_4alkoxy or C_1–C_4alkylthio,

R_2, R_3 and R_4 are each independently hydrogen, C_1–C_6alkyl, C_1–C_4haloalkyl, C_2–C_{10}alkoxyalkyl, C_2–C_{10}alkylthioalkyl; C_3–C_6alkenyl which is unsubstituted or substituted by halogen, C_1–C_4alkoxy or C_1–C_4alkylthio; C_3–C_6alkynyl; or phenyl wherein the phenyl nucleus is unsubstituted or substituted by halogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4haloalkyl, nitro or cyano, and

R_3 and R_4, together with the nitrogen atom to which they are attached, also form a 5- or 6-membered heterocyclic ring system which may contain an additional oxygen or sulfur atom in the ring, which process comprises combining, in an inert solvent, a reactive carboxylic acid derivative of formula III

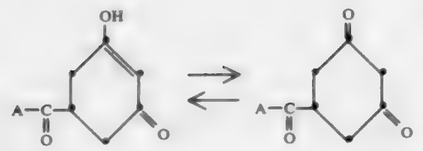


(III)

wherein X is a halogen atom, an alkylsulfonic or arylsulfonic acid radical or the molecular radical



which is necessary to form an anhydride and R_1 is as defined for formula I, and a metal cyanide, heating the reaction mixture to boiling point and, after cooling to a temperature in the range from 0° C. to room temperature, adding in succession to said mixture a Lewis acid, an equimolar amount, with respect to the carboxylic acid derivative of formula III, of a 3,5-cyclohexanedione-1-carboxylic acid derivative of formula II



(II)

wherein A is as defined for formula I, and, gradually, an organic base and, after acidifying the reaction mixture with an aqueous acid, isolating therefrom by extraction the 4-acyl-3,5-cyclohexanedione-1-carboxylic acid derivative of formula I.

4,803,269

4-MONOSUBSTITUTED AND 4,6-DISUBSTITUTED N-(α-PHENYLETHYL)PHENOXAZINES

Joseph M. Muchowski, Sunnyvale; Robert J. Greenhouse, Cupertino, both of Calif., and Angel Guzman, Mexico City, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

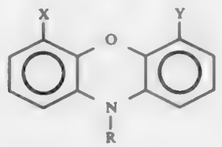
Continuation of Ser. No. 868,976, May 30, 1986, Pat. No. 4,707,473. This application Aug. 14, 1987, Ser. No. 85,595

The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.

Int. Cl.[4] C07D *279/24;* C07F *7/10*

U.S. Cl. 544—69 **21 Claims**

1. A compound represented by the formula:



where:

R is an α-phenylethyl protecting group;

X is alkyl, hydroxyalkyl, alkylthio, haloalkyl, $C(O)R^1$, $CH_2NR^2R^3$, or $Si(R^4)_2R^5$; where:

R^1 is hydrogen, hydroxy, alkyl, alkoxy, aryl, aryloxy, or amino;

R^2 and R^3 are independently hydrogen or alkyl, or NR^2R^3 together represent a heterocyclic ring having from four to seven members and containing no more than one hetero-atom additional to the nitrogen of NR^2R^3;

R^4 is lower alkyl or phenyl; and

R^5 is lower alkyl;

Y is the same as X or hydrogen; or a pharmaceutically acceptable salt thereof.

20. A method of preparing a 4-monosubstituted or 4,6-disubstituted phenoxazine, wherein said method comprises removing a N-α-phenylethyl protecting group from the corresponding N-α-phenylethyl-protected compound.

4,803,270

PROCESS OF PRODUCING FLUOROANILINE DERIVATIVES

Ichiki Takemoto, Toyonaka, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

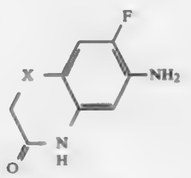
Filed Mar. 9, 1987, Ser. No. 23,387

Claims priority, application Japan, Mar. 10, 1986, 61-52300; Mar. 12, 1986, 61-53921; Nov. 14, 1986, 61-272570; Nov. 14, 1986, 61-272571

Int. Cl.[4] C07D *241/44, 265/36*

U.S. Cl. 544—105 **37 Claims**

1. A process for producing a fluoroaniline derivative of the formula:

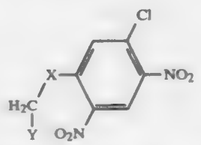


(I)

wherein X is an oxygen atom or an imino group, which comprises (a) reacting 1,5-dichloro-2,4-dinitrobenzene with a glycol derivative of the formula:

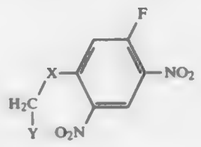
$$Y—CH_2—XH \quad \text{(II)}$$

wherein X is as defined above and Y is a cyano group, a carboxy group or a lower alkoxycarbonyl group to produce a chlorodinitrobenzene derivative of the formula:



(III)

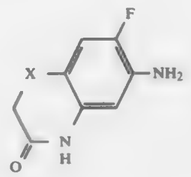
wherein X and Y are each as defined above, (b) reacting the chlorodinitrobenzene derivative (III) with a metal fluoride to produce a fluorodinitrobenzene derivative of the formula:



(IV)

wherein X and Y are each as defined above and (c) subjecting the fluorodinitrobenzene derivative (IV) to reductive cyclization.

2. A process for producing a fluoroaniline derivative of the formula:

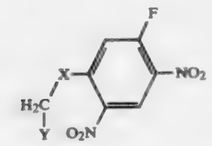


(I)

wherein X is an oxygen atom or an imino group, which comprises (a) reacting 1,5-difluoro-2,4-dinitrobenzene with a glycol derivative of the formula:

$$Y—CH_2—XH$$

wherein X is as defined above and Y is a cyano group, a carboxy group or a lower alkoxycarbonyl group to produce a fluorodinitrobenzene derivative of the formula:



wherein X and Y are each as defined above and (b) subjecting the fluorodinitrobenzene derivative to reductive cyclization.

4,803,271

PROCESS FOR PREPARING GUANINE DERIVATIVES

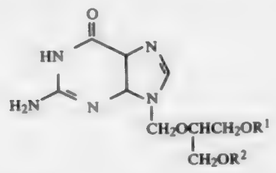
Julien P. H. Verheyden, Los Altos, and John C. Martin, Redwood City, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation of Ser. No. 26,815, Mar. 17, 1987, which is a continuation of Ser. No. 744,582, Jun. 13, 1985, Pat. No. 4,612,314, which is a continuation of Ser. No. 451,262, Dec. 22, 1982, which is a continuation-in-part of Ser. No. 344,703, Feb. 1, 1982, abandoned. This application Jun. 8, 1987, Ser. No. 59,290

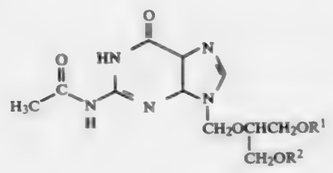
Int. Cl.[4] C07D *473/02;* A61K *31/52*

U.S. Cl. 544—276 **3 Claims**

1. A process for preparing the compound of the formula



wherein R^1 and R^2 are the same and are $—C(O)R^7$ wherein R^7 is 1-adamantyl, which comprises contacting a compound of the formula



with an alcoholic solution of a base.

4,803,272

S-MODIFIED ADENOSYL-1,8-DIAMINO-3-THIOOCTANE DERIVATIVES

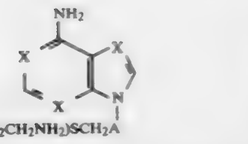
David L. Anton; Bruce D. Korant, and Chia-Lin J. Wang, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 24, 1987, Ser. No. 17,889

Int. Cl.[4] A61K *31/52;* C07D *473/34*

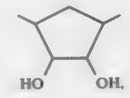
U.S. Cl. 544—277 **4 Claims**

1. A compound of formula (I)



$H_2N(CH_2)_3CH(CH_2CH_2NH_2)SCH_2A$

wherein X is N, and A is selected from the group consisting of $—CH_2OCH_2—$, $—CH_2CHOHCHOHCH_2—$, and



and salts thereof.

4,803,273

2-QUINOXALINYLOXY PHENOXY COMPOUNDS

Alexander Serban, Doncaster; Keith G. Watson, Box Hill North, and Grame J. Farquharson, Reservoir, all of Australia, assignors to ICI Australia Limited, Victoria, Australia

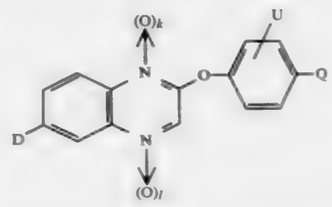
Division of Ser. No. 334,384, Dec. 24, 1981, Pat. No. 4,655,819, which is a continuation-in-part of Ser. No. 164,933, Jul. 1, 1980, abandoned. This application Dec. 9, 1986, Ser. No. 939,694

Claims priority, application Australia, Jul. 17, 1979, PD9617; Apr. 11, 1980, PE3093; Jun. 12, 1981, PE7201

Int. Cl.[4] A01N *43/06;* C07D *241/52, 241/44*

U.S. Cl. 544—354 **1 Claim**

1. A compound of formula VIII



wherein

D is chosen from the group consisting of fluorine and chlorine and U is fluorine substituted in the 2-position of the benzene ring;

k and l are independently chosen from 0 and 1; and

Q is chosen from hydroxy and C_1 to C_6 alkoxy.

4,803,274

NORFLOXACIN INTERMEDIATE

István Hermecz; Géza Kereszturi; Lelle Vasvári; Ágnes Horváth, all of Budapest; Mária Balogh, Dunakeszi; Gábor Kovács, Budapest, all of Hungary; Zoltán Mészáros, deceased, late of Budapest, Hungary (by Márta Mészáros, Márta Mészáros née Böröni, heiresses); Péter Ritli, Budapest, Hungary; Judit Sipos, Budapest, Hungary, and Anikó Pájor, Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

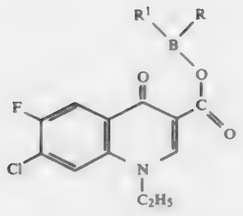
Filed Aug. 7, 1987, Ser. No. 105,298

Claims priority, application Hungary, Dec. 9, 1985, 4693/85

Int. Cl.[4] C07F *5/02;* C07D *215/56*

U.S. Cl. 546—13 **2 Claims**

1. A compound of the Formula (I)



wherein R and R^1 are each C_2 and C_5 alkanoyloxy or benzoyloxy.

4,803,275

2-OXO-5-METHYL-6-[4-HEPTENE]-2H-PYRANO[3,2-C]PYRIDINE

Tsuneo Kanamaru; Susumu Shinagawa, and Masayuki Muroi, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Japan

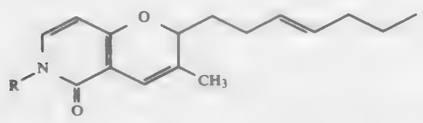
Filed Sep. 2, 1987, Ser. No. 92,310

Claims priority, application Japan, Sep. 11, 1986, 61-215074

Int. Cl.[4] C07D *471/02*

U.S. Cl. 546—116 **8 Claims**

1. A compound of the formula:



wherein R is hydrogen or lower alkyl and 3,4- and 3',4'-double bonds may be saturated with hydrogens.

4,803,276

1-(IMIDAZO[1,2-A]PYRIDIN-6-YL)-2-ALKANONE DERIVATIVES AND (IMIDAZO[1,2-A]PYRIDIN-6-YL) ACETALDEHYDE DERIVATIVES

Motosuke Yamanaka, Chiba; Kazutoshi Miyake, Ibaraki; Shinji Suda, Ibaraki; Hideto Ohhara, Ibaraki, and Toshiaki Ogawa, Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

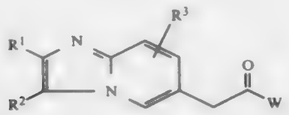
Division of Ser. No. 844,013, Mar. 26, 1986, Pat. No. 4,751,227. This application Oct. 9, 1987, Ser. No. 107,473

Claims priority, application Japan, Mar. 26, 1985, 60-59450

Int. Cl.[4] C07D *471/04*

U.S. Cl. 546—121 **1 Claim**

1. A compound represented by the formula:



R^1 represents a hydrogen atom, a lower alkyl group, phenyl group or a group shown by formula: $—CH_2R^4$ in which R^4 is a lower alkoxy group or a group shown by formula:



in which R^5 and R^6 are hydrogen atom or a lower alkyl group; R^2 represents hydrogen atom or a halogen atom; and R^3 represents hydrogen atom, a lower alkyl group or a halogen atom; and

(I) W represents hydrogen or a lower alkyl group.

4,803,277

NOVEL HETEROCYCLIC COMPOUNDS

Kozo Shiokawa, Kawasaki; Shinichi Tsuboi; Shoko Sasaki, both of Hino; Koichi Moriya, Tokyo; Yumi Hattori, and Katsuhiko Shibuya, Hachioji, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

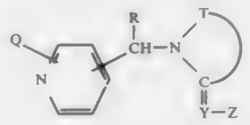
Filed Aug. 24, 1987, Ser. No. 88,932

Claims priority, application Japan, Sep. 10, 1986, 61-211753

Int. Cl.[4] C07D *401/06*; A61K *31/44*

U.S. Cl. 514—332 **11 Claims**

1. A heterocyclic compound of the formula



wherein

Q is at least one substituent selected from halogen atoms, C_1–C_4 alkyl groups optionally substituted by halogen, C_1–C_4 alkoxy groups optionally substituted by halogen, C_2–C_4 alkenyl groups optionally substituted by halogen, C_1–C_4 alkylsulfinyl groups, C_1–C_4 alkylsulfonyl groups and C_3–C_4 alkynyl groups,

R represents a hydrogen atom or a methyl group,

Y represents =N— or =CH—,

Z represents a nitro group or a cyano group, and

T represents 4 ring members of a 6-membered unsaturated heterocyclic ring which it forms together with the adjoining carbon atom and nitrogen atom, said 6-membered unsaturated heterocyclic ring optionally containing an additional ring nitrogen atom and optionally substituted by at least one of halogen atoms and C_1–C_4 alkyl groups optionally substituted by halogen.

4,803,278

PREPARATION OF 1,3-DIHYDRO-4-PYRIDOYL-2H-IMIDAZOL-2-ONES

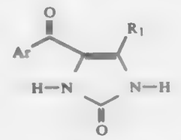
Richard A. Schnettler, and Chi-Hsin R. King, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 820,280, Jan. 17, 1986, abandoned, which is a continuation of Ser. No. 754,191, Jul. 10, 1985, abandoned, which is a continuation of Ser. No. 635,852, Jul. 30, 1984, abandoned. This application Oct. 7, 1986, Ser. No. 916,131

Int. Cl.[4] C07D *401/02*

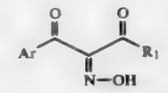
U.S. Cl. 546—278 **5 Claims**

4. A process for the preparation of a pyridoylimidazol-2-one of the formula

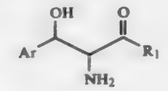


wherein Ar is a 2-, 3- or 4-pyridyl group and R_1 is a hydrogen or a 1 to 4 carbon atom alkyl group which comprises:

(a) reducing a diketo-oxime of the general formula

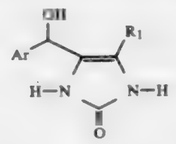


wherein Ar and R_1 are as defined above with hydrogen gas and a metallic catalyst or a dissolving metal to produce an hydroxyiminoketone of the formula



wherein Ar and R_1 are as defined above;

(b) cyclizing the thus produced hydroxyiminoketone by reaction with a cyanate ion to produce an hydroxymethylimidazol-2-one of the general formula



wherein Ar and R_1 are as defined above; and

(c) oxidizing the thus produced hydroxymethylimidazol-2-one with an N-haloimide to produce the desired pyridoylimidazol-2-one and isolating the product.

4,803,279

1,4-DIHYDRO-4-PYRIDYL-SUBSTITUTED IMIDAZO (2,1-b) THIAZOLES AND THE CORRESPONDING THIAZINES.

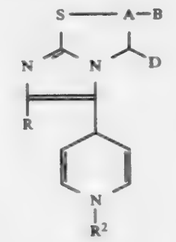
Paul E. Beader, Cherry Hill; Ivan Lantos, Blackwood, both of N.J.; Michael A. McGuire, Norristown, Pa.; Lendon N. Pridgen, Audubon, Pa., and Herbert B. Winicov, Blue Bell, Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 737,137, May 29, 1985, abandoned, and a continuation-in-part of Ser. No. 808,595, Dec. 12, 1985, abandoned. This application Apr. 28, 1986, Ser. No. 856,246

Int. Cl.[4] C07D *513/04*

U.S. Cl. 546—271 **7 Claims**

1. A compound of the formula



in which

A is —C—, —CH—, —CCH_2—, —CH_2C—, —$CHCH_2$— or —CH_2CH—; B and D are independently H, methyl, ethyl, or gem-dimethyl;

R is

(a) phenyl;

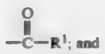
(b) monosubstituted phenyl wherein the substituent is halogen, C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_4 alkyl, CF_3, 2,2,2-trihaloethoxy, prop-ene-1-oxy, C_1–C_3 dialkylamino,

wherein R^a is H, CH_3, CH_2CH_3 and n is 0 to 2, pyrrolidino, or piperidino;

(c) disubstituted phenyl wherein the substituents are independently C_1–C_4 alkyl or C_1–C_3 alkoxy, or the substituents together form a methylene-dioxy group; or

(d) 3,4,5-trimethoxyphenyl;

R^2 is H or



R^1 is C_1–C_8 alkyl, C_1–C_8 alkoxy, phenyl, phenoxy, benzyl, or benzyloxy.

4,803,280

SUBSTITUTED 1,2,3-THIA-DIAZOLE-4-THIOLATES

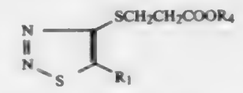
Ving J. Lee, Mousey, and William V. Curran, Pearl River, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Jul. 8, 1986, Ser. No. 883,189

Int. Cl.[4] C07D *285/06*

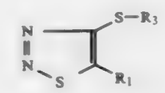
U.S. Cl. 548—127 **11 Claims**

1. A compound having the formula:



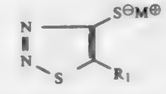
wherein R_1 is selected from the group consisting of hydrogen; alkyl(C_1–C_6); (multisubstituted)phenyl wherein the substituents are selected from alkyl(C_1–C_6), alkoxy(C_1–C_3), chloro, fluoro and trifluoromethyl; naphthyl; thienyl; phenylthio; tetrahydropyranyl; benzyl; and —$COOC_2H_5$; and R_4 is alkyl(C_1–(C_3).

2. A compound having the formula:



wherein R_1 from the group consisting of hydrogen; alkyl(C_1–C_6); polyfluorinated alkyls (C_1–C_6); phenyl; (multisubstituted)phenyl wherein the substituents are selected from alkyl (C_1–C_6), alkoxy(C_1–C_3), chloro, fluoro and trifluoromethyl; naphthyl; thienyl; phenylthio; tetrahydropyranyl; benzyl; and —$COOC_2H_5$; and R_3 is selected from the group consisting of alkyl(C_1–C_3); phenyl; alkenyl(CC_3–C_6) —$CH_2COOC_2H_5$; —$C(CH_3)_2COOC_2H_5$ and —CH_2CH_2CN.

3. A compound having the formula:



wherein Rl is selected from the group consisting of hydrogen; alkyl(C_1–C_6); polyfluorinated alkyls(C_1–C_6); phenyl; (multisubstituted)phenyl wherein the substituents are selected from alkyl(C_1–C_6), alkoxy(C_1–C_3), chloro, fluoro and trifluoro-

methyl; naphthyl; thienyl; phenylthio; tetrahydropyranyl: benzyl; and —$COOC_2H_5$: and M is sodium or potassium.

4,803,281

PREPARATION OF 4-METHYLIMIDAZOLE

Walter Mesch, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 7, 1987, Ser. No. 129,711

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1986, 3642484

Int. Cl.[4] C07D *233/58*

U.S. Cl. 548—335 **10 Claims**

1. A process for the preparation of 4-methylimidazole which comprises:

reacting hydroxypropanone and formamide in the presence of an addition to the reaction mixture of at least twice the molar amount of ammonia, based on the amount of hydroxypropanone, the reaction being carried out in the liquid phase at temperatures of from 100° to 200° C. and pressures of from 10 to 250 bar.

4,803,282

ALPHA-SUBSTITUTED KETONITRONE DERIVATIVES

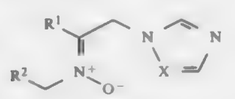
Vassil St. Georgiev, Rochester, and George B. Mullen, Avon, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 27, 1986, Ser. No. 900,856

Int. Cl.[4] C07D *409/06, 405/06, 233/61*

U.S. Cl. 548—336 **18 Claims**

1. A compound of the formula:



wherein;

R^1 is selected from 2-naphthyl, 2-furanyl, 2-thienyl, phenyl, and substituted phenyl having one or more of the meta and para hydrogens substituted by halogen, lower alkyl, lower alkoxy, or combinations thereof,

R^2 is selected from hydrogen and phenyl, and

X is a methyn group.

4,803,283

PREPARATION OF 4(5)-NITROIMIDAZOLE-5(4)-CARBOXYLIC ACIDS

Toni Dockner, Meckenheim; Uwe Kempe, Darmstadt-Schauernheim, and Hermann Koehler, Beindersheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 30, 1987, Ser. No. 126,867

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1986, 3641514

Int. Cl.[4] C07D *233/91*

U.S. Cl. 548—339 **14 Claims**

1. A process for the preparation of a 4(5)-nitroimidazole-5(4)-carboxylic acid, which comprises reacting an imidazole-4(5)-carboxylic acid with a mixture of sulfuric acid and nitric acid at not less than 80° C., the water content of the reaction mixture at the beginning of the reaction being no more than 5% by weight, based on the reaction mixture.

4,803,284

PROCESSES FOR THE PREPARATION OF 3-AMINO-2-(5-METHOXY-1H-INDOL-3-YL) PROPIONIC ACID MONOHYDRATE

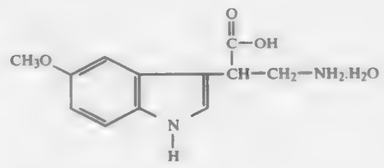
Pedro Joseph-Nathan, and Martha S. Morales-Rios, both of Mexico City, Mexico, assignors to Centro de Investigacion y de Estudios Avanzados Del Instituto Politecnico Nacional, Mexico City, Mexico

Filed Aug. 19, 1987, Ser. No. 87,040

Int. Cl.[4] C07D *209/20*

U.S. Cl. 548—497 **10 Claims**

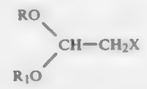
1. A process for preparing a therapeutically useful compound having Formula I



I

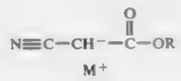
comprising the steps of:

(a) reacting a compound having Formula II



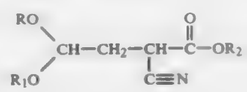
II

where R is a methyl group or an ethyl group, R_1 is a methyl group or an ethyl group, and X is chlorine, bromine or iodine with a compound having Formula III



III

where R is a methyl group or an ethyl group, and M^+ is an alkali metal cation, in a suitable solvent at temperatures in the range of from about 40° C. to 130° C. to provide a compound having Formula IV

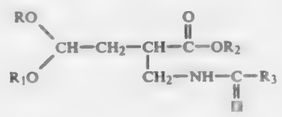


IV

where R is a methyl group or an ethyl group, R_1 is a methyl group or an ethyl group, and R_2 is a methyl group or an ethyl group;

(b) separating Compound IV from the reaction mass;

(c) hydrogenating the compound having Formula IV under pressure, in the presence of a catalyst in a suitable solvent selected from the group of acetyl chloride, propionyl chloride, benzoyl chloride, acetic anhydride or propionic anhydride to produce a compound having Formula V

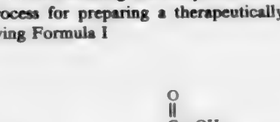


V

where R, R_1 and R_2 are as defined for Compound IV, and R_3 is a methyl group, an ethyl group or phenyl group;

(d) separating Compound V from the reaction mass;

(e) hydrolyzing the compound having Formula V in a suitable solvent with an aqueous acid solution at concentrations of about 0.1N to 10N for about 1 to 60 minutes at temperatures of from about 20° C. to 100° C. to provide a compound having Formula VI



VI

where R is a methyl group or an ethyl group and R_1 is a methyl group, an ethyl group or a phenyl group;

(f) reacting the compound having Formula VI with para-methoxyphenylhydrazine or para-methoxyphenyl hydrazine salts in a suitable solvent with an aqueous acid solution at concentrations of about 0.1N to 10N for about 5 to 100 minutes at temperatures of from about 20° C. to 100° C. to provide a compound having Formula VII



VII

where R and R_1 are as defined for Compound VI;

(g) reacting the compound having Formula VII in a suitable solvent with an acid in aqueous solution at concentrations of about 1N to 10N for about 20 to 120 minutes at temperatures of from about 60° C. to 100° C. to provide a compound having Formula VIII

VIII

where R and R_1 are as defined for Compound VII;

(h) separating Compound VIII from the reaction mass, and

(i) hydrolyzing the compound having Formula VIII with an aqueous alkali metal hydroxide at concentrations from about 3N to 11N for about 1 to 15 hours, at temperatures from about 60° C. to 105° C., acidifying the solution to the isoelectric region of Compound I at pH values from about 5.5 to 6.5 and isolating the compound having Formula I.

6. A process for preparing a therapeutically useful compound having Formula I

I

comprising the steps of:

(a) reacting a compound having formula II

II

where R is a methyl group or an ethyl group, R_1 is a methyl group or an ethyl group, and X is chlorine, bromine or iodine with a compound having Formula III

III

where R is a methyl group or an ethyl group, and M^+ is an alkali metal cation, in a suitable solvent at temperatues in the range of from about 40° C. to 130° C. to provide a compound having Formula IV

IV

where R is a methyl group or an ethyl group, R_1 is a methyl group or an ethyl group, and R_2 is a methyl group or an ethyl group;

(b) Separating Compound IV from the reaction mass;

(c) hydrolyzing the compound having Formula IV in a suitable solvent with an aqueous acid solution at concentrations of about 0.1N to 10N for about 1 to 60 minutes at temperatures of from about 20° C. to 100° C. to provide a compound having Formula IX

IX

where R is a methyl group or an ethyl group;

(d) reacting the compound having Formula IX with para-methoxyphenylhyrazine or para-methoxyphenylhydrazine salts in a suitable solvent with an aqueous acid solution at concentrations of about 0.1N to 10N for about 5 to 100 minutes at temperatures of from about 20° C. to 100° C. to provide a compound having Formula X

X

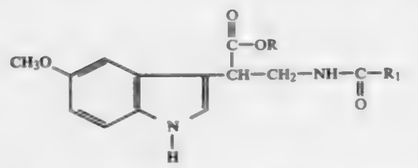
where R is as defined for Compound IX;

(e) reacting the compound having Formula X in a suitable solvent with an aqueous acid solution at concentrations of about 1N to 10N for about 20 to 120 minutes at temperatures of from about 60° C. to 100° C. to provide a compound having Formula XI

XI

where R is defined as for Compound X;
(f) separating Compound XI from the reaction mass;
(g) hydrogenating the compound having Formula XI under pressure, in the presence of a catalyst, in a suitable solvent selected from the group of acetyl chloride, propionyl chloride, benzoyl chloride, acetic anhydride or propionic anhydride to produce a compound having Formula VIII;

VIII

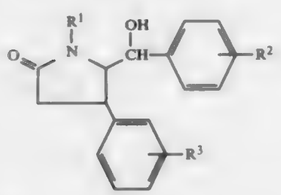


R is a methyl group or an ethyl group and R_1 is a methyl group, an ethyl group or a phenyl group;
(h) separating Compound VIII from the reaction mass, and
(i) hydrolyzing the compound having Formula VIII with an aqueous alkali metal hydroxide at concentrations from about 3N to 11N for about 1 to 15 hours, at temperatures from about 60° C. to 105° C., acidifying the solution to the isoelectric region of Compound I at pH values from about 5.5 to 6.5 and isolating the compound having Formula I.

4,803,285
GAMMA-BUTYROLACTAMS
Wolfgang Hartwig, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft & Chinese, Leverkusen, Fed. Rep. of Germany and Chinese Academy of Medical Sciences, Beijing, China
Division of Ser. No. 914,210, Oct. 1, 1986, Pat. No. 4,731,455. This application Aug. 27, 1987, Ser. No. 89,897
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1985, 3537074; Sep. 25, 1986, 3632589
Int. Cl.[4] C07D *207/12*
U.S. Cl. 548—551 **7 Claims**

1. A compound of the formula (II)

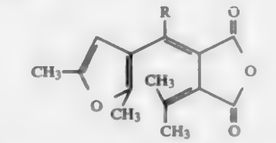
(II)



in which
R^1 represents hydrogen or alkyl with up to 10 carbon atoms, phenyl or benzyl and
R^2 and R^3 are identical or different and represent hydrogen, alkyl with up to 10 carbon atoms, alkoxy with up to 10 carbon atoms, phenyl, benzyl, phenoxy, benzyloxy, benzoyl, acetyl, trifluoromethyl, trifluoromethoxy, nitro, hydroxyl, halogen, amino, carboxyl, sulpho, dialkylamino with up to 4 carbon atoms in the alkyl groups or alkanoylamino with up to 18 carbon atoms,
or a racemate or an optical antipode of said compounds.

4,803,286
AMINO-2-HYDROXYPROPYLOXIMINOHETEROCYCLE α-BLOCKERS
John J. Baldwin, Gwynedd Valley; Gerald S. Ponticello, Lansdale; David C. Remy, North Wales; David A. Claremon, Audubon, and Stella W. King, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Aug. 19, 1987, Ser. No. 87,124
Int. Cl.[4] C07D *335/02;* **A61K** *31/38, 31/385*
U.S. Cl. 514—431 **7 Claims**

1. A compound of structural formula:



or a pharmacologically acceptable salt thereof wherein
X is —S—, or —$S(CH_2)_2S$—;
R^1 is C_{1-6} alkyl, or phenyl-C_{1-6}alkyl; and
R^2 and R^3 are independently
(a) hydrogen,
(b) C_{1-6} alkyl, either unsubstituted or substituted with —OH, —COR^1 or COAr or $OCOR^1$, or
(c) —$COOR^1$;

represents a saturated ring of from 5 to 8 members.

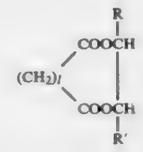
4,803,287
CERTAIN PHOTOCHROMIC FULGIDE COMPOUNDS AND METHOD FOR THEIR SYNTHESIS
Junichi Hibino, Kyoto, and Eiji Ando, Katano, both of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan
Filed Mar. 9, 1987, Ser. No. 23,253
Claims priority, application Japan, Apr. 16, 1986, 61-86188; Jul. 3, 1986, 61-155113; Oct. 17, 1986, 61-245363; Oct. 17, 1986, 61-245364
Int. Cl.[4] C07D *307/60*
U.S. Cl. 549—252 **4 Claims**

1. A photochromic material represented by the following general formula:

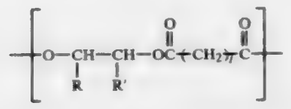
wherein R represents an alkyl chain having 13 to 31 carbon atoms.

4,803,288
PROCESS FOR PRODUCING MACROCYCLIC ESTER COMPOUNDS
Satoshi Kitasawa; Takashi Tobita, both of Chiba; Motoki Kanazawa, Tokyo, and Masahiro Shiozaki, Kanagawa, all of Japan, assignors to Nisso Petrochemical Industries Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 841,893, Mar. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 567,158, Jan. 4, 1984, abandoned, which is a continuation of Ser. No. 395,505, Jul. 6, 1982, abandoned. This application Dec. 17, 1987, Ser. No. 136,437
Int. Cl.[4] C07D *321/00*
U.S. Cl. 549—267 **1 Claim**

1. A process for producing a macrocyclic ester compound having the general formula:



in which R and R' both denote a hydrogen atom or one denotes a hydrogen atom and the other denotes an alkyl group selected from the group consisting of methyl and ethyl, l is a positive integer in the range of 6 to 14, said process comprising:
(1) maintaining a linear ester compound having the general repeating unit formula,

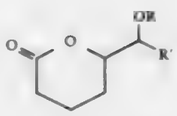


in which R, R' and l are as hereinbefore described, in a molten state with agitation under reduced pressure of 50 mmHg or less whereby the same glycol as one component of said linear ester compound is distilled off;
(2) distilling off said glycol component until said distillation terminates under reduced pressure of 40 to 50 mmHg;
(3) gradually reducing the reaction pressure of 0.1 to 1.0 mmHg to promote depolymerization-cyclization of said linear ester compound in the presence of a catalyst;
(4) distilling off said macrocyclic ester compound and said glycol to a point where agitation becomes difficult;
(5) adding the same said linear ester compound having the general repeating unit formula set forth in step (1) in which the average degree of condensation of said linear ester compound is 20 or less, said compound being added in proportion to the distillation rate of step (4); and then
(6) further removing by distillation said macrocyclic ester compound and said glycol.

4,803,289
PHEROMONES
Brian R. Laurence, London, and John A. Pickett, Kimpton, both of United Kingdom, assignors to National Research Development Corp., United Kingdom
PCT No. PCT/GB82/00301, § 371 Date Jun. 8, 1983, § 102(e) Date Jun. 8, 1983, PCT Pub. No. WO83/01621, PCT Pub. Date May 11, 1983
PCT Filed Oct. 22, 1982, Ser. No. 503,139
Claims priority, application United Kingdom, Oct. 27, 1981, 8132367
Int. Cl.[4] C07D *309/30*
U.S. Cl. 549—273 **15 Claims**

1. A compound of formula

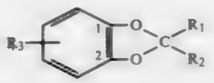
(I)



in which R is formyl or alkanoyl of two to ten carbon atoms and R' of six to twelve carbon atoms substantially free from by-products of manufacture not of the formula (I).

4,803,290
NONANOL/NONENE ANTIMICROBIAL COMPOSITIONS
Basil A. Burke, Palo Alto, Calif., and Muraleedharan Nair, East Lansing, Mich., assignors to PCRI, Inc., Dublin, Calif.
Filed May 29, 1987, Ser. No. 55,645
Int. Cl.[4] A01N *43/30;* **C07D** *317/50, 317/54*
U.S. Cl. 514—464 **16 Claims**

1. An antimicrobial composition comprising in operative combination:
(a) at least one substituted 1,2-alkylidenedioxybenzene compound in an antimicrobially sufficient amount in association with a carrier material for application to plants;
(b) said substituted 1,2-alkylidenedioxybenzene compound being selected from the group consisting essentially of compounds of the formula:



wherein R_3 is selected from 5'-hydroxy-5'-nonanyl and 5'-non-4'-enyl, and R_1 and R_2 are selected from H and C_1–C_5 alkyl, alkenyl and alkynyl groups.

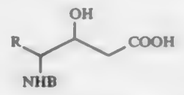
4,803,291
PARTICULATE COMPOSITIONS OF FERROMAGNETIC METAL OXALATES IN THE FORM OF SUBMICRONIC ACICULAR PARTICLES, THE PREPARATION OF SAME AND APPLICATION THEREOF
Abel Rousset, Ramonville St Agne; Christiane B. Salvaing, Toulouse; Paul Mollard, Domene; Alain Manoux, Corbeil Essones, and Philippe Tailhades, Mazamet, all of France, assignors to Centre National de la Recherche Scientifique, Paris and Universite Paul Sabatier, Toulouse, both of, France
PCT No. PCT/FR86/00338, § 371 Date Jul. 2, 1987, § 102(e) Date Jul. 2, 1987, PCT Pub. No. WO87/02033, PCT Pub. Date Apr. 9, 1987
PCT Filed Sep. 30, 1986, Ser. No. 62,941
Claims priority, application France, Sep. 30, 1985, 85 14438
Int. Cl.[4] C07F *11/00*
U.S. Cl. 556—31 **19 Claims**

1. A particulate composition of single or mixed oxalates of ferromagnetic metals, characterized by the fact that it comprises acicular particles having a length of between 0.05 and 0.5 micrometer, with an amount of more than 60% of the particles having a length equal to the average length ±0.1 μm and an acicular ratio of greater than 3, with said average length being between 0.15 and 0.35 μm.

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4,803,292
PROCESS FOR PRODUCING STATIN AND RELATED COMPOUNDS
Yasufumi Ohfune, and Masahiro Sakaitani, both of Osaka, Japan, assignors to Suntory Limited, Osaka, Japan
Filed Sep. 4, 1987, Ser. No. 93,271
Claims priority, application Japan, Sep. 4, 1986, 61-208573
Int. Cl.⁴ C07C *125/065*
U.S. Cl. 560—29 **8 Claims**

1. A process for producing statin having the general formula:



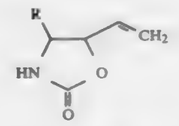
(wherein R is a C1 to C6 alkyl group, a phenyl group or a C7 to C8 phenylalkyl group and B is a protective group for an amino group) characterized by the steps of

treating a silyl carbamate having the formula



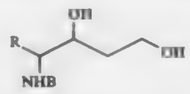
(wherein A is a t-butyldimethylsilyl or t-butyldiphenylsilyl group: X is a bromine atom, a chlorine atom, paratoluenesulfonyloxy or methanesulfonyloxy group and R is as defined above);

with a fluorine-containing ionic reagent in the presence of a null-valent or di-valent palladium and a trivalent organic phosphorus compound to form a cyclic carbamate having the general formula:



(wherein R has the meaning as defined above);

subjecting said cyclic carbonate to a hydroborating reaction, basic oxidation cracking and protection of the amino group to produce a diol having the general formula:



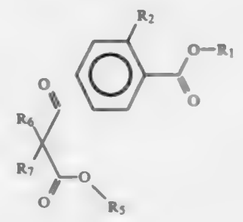
(wherein R and B have the meaning as defined above) and further oxidizing said diol.

4,803,293
TERTIARY AMINES
John Berge, Redhill, and Richard M. Hindley, Reigate, both of England, assignors to Beecham Group plc, Middlesex, England
Continuation of Ser. No. 667,757, Nov. 2, 1984, abandoned. This application Feb. 18, 1987, Ser. No. 17,002
Claims priority, application United Kingdom, Nov. 4, 1983, 8329490; Dec. 22, 1983, 8334294
Int. Cl.⁴ C07C *101/30*
U.S. Cl. 560—42 **1 Claim**

1. N-[2-(4-carbomethoxymethoxyphenyl)-1-methylethyl]-N-methyl-2-hydroxy-2-(3-chlorophenyl)ethanamine and pharmaceutically acceptable salts thereof.

4,803,294
PROCESS AND INTERMEDIATES FOR THE PREPARATION OF HALOGENATED PROTEASE INHIBITORS
Richard A. Mueller, Glencoe, and Richard A. Partis, Evanston, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.
Filed Oct. 29, 1987, Ser. No. 114,186
Int. Cl.⁴ C07C *69/76*
U.S. Cl. 560—54 **5 Claims**

1. A compound of the formula:



wherein R_1 is:
(a) straight or branched chain lower alkyl having 1–6 carbon atoms; or
(b) H;
wherein R_6 is:
(a) straight or branched chain higher alkyl having 13–25 carbon atoms; or
(b) straight or branched chain higher alkenyl having 13–25 carbon atoms;
wherein R_5 is:
(a) straight or branched chain alkyl having 1–6 carbon atoms; or
(b) benzyl;
wherein R_7 is:
(a) straight or branched chain lower alkyl having 1–6 carbon atoms; or
(b) H;
wherein R_2 is:
(a) —Cl, —Br, or —I; or
(b) $-CF_3$.

4,803,295
PURIFICATION OF DIPHENYL PHTHALATES
A. Lee Stautzenberger, and Robert W. Kunkel, both of Nueces, Tex., assignors to Hoechst Celanese Corporation, Bridgewater, N.J.
Filed Sep. 24, 1987, Ser. No. 100,493
Int. Cl.⁴ C07C *67/48*
U.S. Cl. 560—78 **5 Claims**

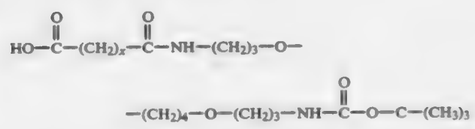
1. A method for purifying a crude diphenyl phthalate ester which comprises subjecting said ester to hydrogenation in the presence of a hydrogenation catalyst and hydrogen at temperatures ranging from about 30° C. to 175° C. for a period of time sufficient to reduce color impurities thereof, and thereafter recovering a diphenyl phthalate ester having improved color properties.

4,803,296
PROCESS FOR THE CO-PRODUCTION OF AROMATIC CARBOXYLATES AND ALKYL IODIDES
Guy R. Steinmetz; Mark Rule; Victor H. Agreda, and Lanney C. Treece, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 11, 1988, Ser. No. 166,948
Int. Cl.⁴ C07C *67/37, 11/00*
U.S. Cl. 560—80 **12 Claims**

1. A process for the co-production of an aromatic carboxylic ester and an alkyl iodide which comprises carbonylating an aromatic iodide in the presence of an ether and a catalytic amount of iridium under aromatic carboxylic ester and alkyl iodide-forming conditions of temperature and pressure.

4,803,297
CARBAMIC ACID ESTER USEFUL FOR PREPARING A NUCLEIC ACID PROBE
Corey H. Levenson, Oakland, and Kary B. Mullis, Kensington, both of Calif., assignors to Cetus Corporation, Emeryville, Calif.
Division of Ser. No. 888,252, Jul. 21, 1986, Pat. No. 4,705,886, which is a division of Ser. No. 791,332, Oct. 25, 1985, Pat. No. 4,617,261, which is a continuation-in-part of Ser. No. 683,263, Dec. 18, 1984, Pat. No. 4,582,789, which is a continuation-in-part of Ser. No. 591,811, May 21, 1984, abandoned. This application Jul. 13, 1987, Ser. No. 72,339
Int. Cl.⁴ C07C *125/06*
U.S. Cl. 560—159 **2 Claims**

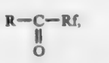
1. A compound of the formula:



wherein x is 2 or 3.

4,803,298
PROCESS FOR THE PREPARATION OF PERFLUOROALKYL KETONES
Catherine Francese, L'Hay les Roses; Marc Tordeux, Sceaux, and Claude Wakselman, Paris, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France
Filed Jul. 15, 1987, Ser. No. 73,708
Claims priority, application France, Jul. 25, 1986, 86 10988
Int. Cl.⁴ C07C *51/373*
U.S. Cl. 860—174 **12 Claims**

1. A process for the preparation of a perfluoroalkyl ketone of the formula



wherein R and Rf are as defined below, comprising the step of bringing into contact with one another, in the presence of at least one solvent, for a time sufficient to form said perfluoroalkyl ketone:

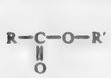
(1) a perfluoroalkyl halide of the formula (I)

Rf X (I)

wherein X represents Br or I and Rf represents a perfluoroalkyl radical containing 1 to 12 carbon atoms in its chain;

(2) zinc and

(3) an ester of the formula (II)



(II)

wherein R represents a cyano, perfluoroalkyl or alkoxycarbonyl group and R′ represents an alkyl, aryl, alkylaryl or arylalkyl group.

4,803,299
PREPARATION OF POLYTETRAMETHYLENE ETHER GLYCOL DIESTERS HAVING A LOW COLOR NUMBER
Herbert Mueller, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Apr. 6, 1987, Ser. No. 34,832
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1986, 3613106
Int. Cl.⁴ C07C *67/24*
U.S. Cl. 560—240 **14 Claims**

1. In a process for the preparation of a polytetramethylene ether glycol diester by catalytic polymerization of tetrahydrofuran in the presence of a carboxylic anhydride as a promoter and a bleaching earth as a cationic catalyst, the improvement for reducing the color number of the diester product which comprises:

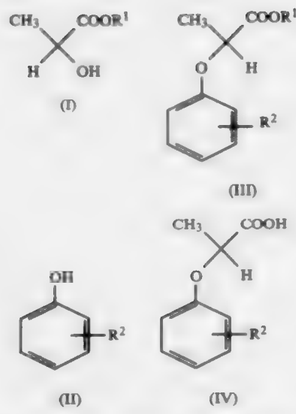
carrying out the polymerization in the presence of from 2 to 0.2% by weight, based on the tetrahydrofuran, of a 1,2-alkylene oxide.

4,803,300
PROCESS FOR SEPARATION OF N-PROTECTED-α-L-ASPARTYL-L-PHENYLALANINES
Toyoto Hijiya, Kawasaki; Tadashi Takemoto, Yokkaichi, and Toshihide Yukawa, Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed Aug. 11, 1987, Ser. No. 84,162
Claims priority, application Japan, Aug. 11, 1986, 61-188341
Int. Cl.⁴ C07C *99/12*
U.S. Cl. 562—450 **6 Claims**

1. A process for separating N-acyl-α-L-aspartyl-L-phenylalanine, which comprises selectively crystallizing N-acyl-α- L-aspartyl-L-phenylalanine from an acetic solution or an aqueous solution of N-acyl-α-L-aspartyl-L-phenylalanine containing (1)N-acyl-α-L-aspartyl-D-phenylalanine, (2)N-acyl-α-L-aspartyl-D-phenylalanine and N-acyl-β-L-aspartyl-L-phenylalanine, (3)N-acyl-α-L-aspartyl-D-phenylalanine and N-acyl-β-L-aspartyl-D-phenylalanine, or (4)N-acyl-α-L-aspartyl-D-phenylalanine, N-acyl-β-L-aspartyl-L-phenylalanine and N-acyl-β-L-aspartyl-D-phenylalanine at a temperature of −5° to 50° C.

4,803,301
PROCESS FOR PRODUCING OPTICALLY ACTIVE 2-PHENOXYPROPIONIC ACID
Masayuki Sakakibara, and Yasushi Nii, both of Machashi, Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 13, 1988, Ser. No. 181,078
Int. Cl.⁴ C07C *59/12*
U.S. Cl. 562—471 **6 Claims**

1. A process for producing an optically active 2-phenoxypropionic acid, which comprises allowing an optically active lactic ester represented by the following formula (I) to react with a phenol represented by the following formula (II) in the co-presence of a reagent A and a reagent B defined below to form an optically active 2-phenoxypropionic ester represented by the following formula (III), and liberating an optically active 2-phenoxypropionic acid represented by the following formula (IV) from the optically active 2-phenoxypropionic ester:



(I) (III) (II) (IV)

wherein R^1 represents a group to form a monovalent ester, which can be eliminated from the compound (III) under weakly basic to acidic conditions and R^2 represents a hydrogen atom or 1 to 5 substituents which do not interfere in the reaction between the compounds (I) and (II);

a reagent A being at least one compound selected from the group consisting of trialkylphosphine, trialkylphosphite, triarylphosphine and triarylphosphite; and

a reagent B being at least one compound selected from the group consisting of dialkylazodicarboxylate and diarylazodicarboxylate.

4,803,302

PROCESS FOR THE PRODUCTION OF METHACRYLIC ACID

Motomu Oh-Kita; Masaaki Kato, and Masao Kobayashi, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP87/00008, § 371 Date Aug. 21, 1987, § 102(e) Date Aug. 21, 1987, PCT Pub. No. WO87/04086, PCT Pub. Date Jul. 16, 1987

PCT Filed Jan. 6, 1987, Ser. No. 103,580

Claims priority, application Japan, Jan. 8, 1986, 61-1684; Jan. 9, 1986, 61-2632

Int. Cl.⁴ C07C *51/25, 57/055*

U.S. Cl. 562—534 **7 Claims**

1. A process for the production of methacrylic acid by the vapor phase catalytic oxidation of methacrolein with molecular oxygen comprising contacting a raw material gas containing methacrolein and molecular oxygen with a catalyst represented by the formula

$$P_aMo_bV_cFe_dCu_eZ_fX_gY_hO_i$$

wherein X represents at least one of the elements selected from the group consisting of potassium, rubidium, cesium and thallium, Y represents at least one of the elements selected from the group consisting of tellurium, lanthanum, boron, silver, chromium, magnesium and barium, Z represents any one of the elements of zirconium or antimony, a to i denote atomic ratios of the respective elements and b=12, a=0.3–4, c=0.01–3, d=0.1–4, e=0.01–3, f=0.01–3, g=0.01—3, h=0.001–5 and i denotes the number of oxygen atoms required for satisfying the valence number of said elements.

4,803,303

N-SUBSTITUTED PSEUDO-AMINOSUGARS, THEIR PRODUCTION AND USE

Satoshi Horii, Sakai; Yukihiko Kameda, Kanazawa, and Hiroshi Fukase, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Division of Ser. No. 334,986, Dec. 28, 1981, Pat. No. 4,701,559. This application Apr. 17, 1987, Ser. No. 39,277

Claims priority, application Japan, Jan. 5, 1981, 56-561; Jun. 2, 1981, 56-84635; Oct. 6, 1981, 56-159657

Int. Cl.⁴ C07C *87/36, 87/452*

U.S. Cl. 564—462 **4 Claims**

1. A compound of the formula



wherein A is a cyclic hydrocarbon group having 3 to 7 carbon atoms which may be substituted by hydroxy and B is hydrogen or hydroxyl.

4,803,304

RECOVERY OF BIS(HEXAMETHYLENE)TRIAMINE

Robert A. Smiley, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 15, 1987, Ser. No. 38,659

Int. Cl.⁴ C07C *85/26*

U.S. Cl. 564—498 **5 Claims**

1. A process for the recovery of bis(hexamethylene)triamine from hexamethylenediamine still heels, which comprises (1) contacting the still heels with an aliphatic hydrocarbon having a boiling point between about 34° C. and about 210° C. whereby the bis(hexamethylene)triamine is extracted from the still heels and dissolved in the aliphatic hydrocarbon, (2) separating the aliphatic hydrocarbon containing the dissolved bis(hexamethylene)triamine from the remaining components of the still heels, and then (3) separating the bis(hexamethylene)-triamine from the aliphatic hydrocarbon.

4,803,305

ISOBUTANE OXIDATION IN THE PRESENCE OF A SOLUBLE IRON COMPLEX AS CATALYST

John R. Sanderson, Leander; Edward T. Marquis, Austin, and Jiang-Jen Lin, Round Rock, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 27, 1987, Ser. No. 125,965

Int. Cl.⁴ C07C *179/025, 31/12*

U.S. Cl. 568—571 **4 Claims**

1. The method for oxidizing isobutane with an oxygen-containing material in the presence of an effective amount of a soluble catalyst of the formula $Fe_3O(Pivalate)_6(MeOH)_3Cl$.

4,803,306

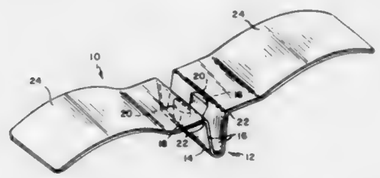
ELECTROMAGNETIC SHIELDING CLIP

Richard G. Malmquist, Winchester, Mass., assignor to Computervision Corporation, Bedford, Mass.

Filed Jun. 3, 1987, Ser. No. 57,610

Int. Cl.⁴ H05K *9/00*

U.S. Cl. 174—35 GC **28 Claims**



1. An electromagnetic shielding clip comprising an elongate metal strip of sheet material of uniform thickness and width, said strip having spaced, parallel sides and ends and embodying midway between its opposite ends a U-shaped deviation comprising an attaching portion embodying a bottom part and upwardly-diverging planar side parts, said strip further embodying at the upper ends of said diverging side parts outwardly-bent planar flange parts on each side of the side parts disposed at right angles to the vertical center line of the diverging side parts, a notch formed in each of the side parts below the flange parts defining a non-deformable ledge in the side parts spaced from and parallel to the flange parts at the upper ends of the side parts, said ledges, in conjunction with the flange parts, defining a clamp for attaching the structure to a panel containing an opening for receiving the attaching portion and a cantilever-supported contact wing constituting an extension of one of the flange parts extending from the distal end of said one of the flange portions.

4,803,307

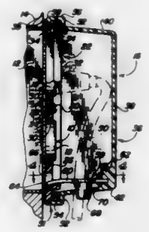
WEATHERPROOF OUTLET COVER

Michael J. Shotey, 7733 E. Cypress, Scottsdale, Ariz. 85257

Filed Jun. 29, 1987, Ser. No. 66,993

Int. Cl.⁴ H02G *3/18*

U.S. Cl. 174—67 **18 Claims**



1. A weatherproof cover for an outdoor electrical outlet, said cover comprising:

(a) a waterproof, corrosion-resistent, and electrically non-conductive mounting plate;

(b) fastener means for demountably securing said mounting plate to the outlet;

(c) said mounting plate including a top edge and a lip formed in said top edge;

(d) a waterproof, corrosion-resistant lid member for enclosing the outdoor electrical outlet and the plug of at least one electrical cord mountable therein, said lid member being movably attached to said mounting plate and having at least one access slot formed therein for allowing the electrical cord portion of the plug to extend from said lid member;

(e) said lid member including a top wall and a hook portion depending from said top wall for engaging said lip to pivotally engage said lid member with said mounting plate;

(f) a first sealing member for disposition between said mounting plate and the outlet for preventing passage of foreign elements therebetween; and

(g) a second sealing member disposed between said mounting plate and said lid member for preventing passage of foreign elements therebetween.

4,803,308

PRINTED CIRCUIT BOARD

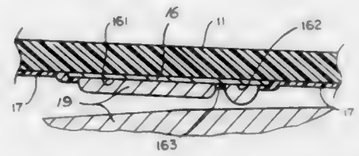
Toshimichi Taguchi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 17,153, Feb. 20, 1987, abandoned. This application May 27, 1988, Ser. No. 201,337

Claims priority, application Japan, Feb. 21, 1986, 61-24915[U]

Int. Cl.⁴ H05K *1/00*

U.S. Cl. 174—68.5 **13 Claims**



1. In a printed circuit board including a substrate having a surface and copper foil pieces attached on said surface with some areas of said pieces being covered and other areas exposed, said exposed areas of said copper foil pieces describing a pattern, the improvement wherein said pattern includes a first part and a second part, said first part being elongated along and defining a line and said second part being separated from said first part being shorter than said first part and located on said line.

4,803,309

ELECTRICAL CABLE WITH OPEN HELIX SCREEN WIRES ELECTRICALLY CONTACTING A LONGITUDINAL WIRE AND MANUFACTURE THEREOF

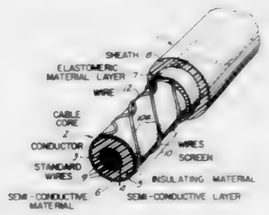
Carlo Marin, Pavia, and Cesare Sevese, Milan, both of Italy, assignors to Societa Cavi Pirelli S.p.A., Milan, Italy

Filed Feb. 25, 1987, Ser. No. 18,592

Claims priority, application Italy, Feb. 28, 1986, 19598 A/86

Int. Cl.⁴ H01B *7/22*

U.S. Cl. 174—106 R **11 Claims**



1. In an electrical cable comprising a cylindrical core which is formed by at least one electrical conductor with extruded insulation therearound and comprising a screen upon said core formed by a plurality of metal wires applied to said core along

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paths conforming to an open helix, the improvement comprising at least a further metal connecting wire which extends longitudinally along a path which is undulated with respect to a generatrix of said core, which extends in the direction of and parallel to a generatrix of said core, which extends transversely to said paths of said plurality of metal wires without encircling said core and which is in electrical contact with all the wires of said screen, and a layer of extruded material around said core and at least partially embedding said wires of said screen and said further metal connecting wire whereby said wires of said screen and said further connecting wire are held in their respective positions by said layer.

8. Process for applying a screen of metal wires in an open helix configuration around the core of a cable comprising:

while longitudinally advancing a core, depositing on the core a plurality of parallel metal wires while producing relative motion between said wires and the core in alternately different directions circumferentially of the core to cause said wires to follow paths conforming to an open helix configuration; and

before so depositing said plurality of metal wires on the core and while so advancing the core, depositing at least one other metal wire on the core in electrical contact with all said plurality of metal wires, said one other metal wire being deposited along a path which is undulated with respect to a generatrix of the core, which extends longitudinally and in the direction of and parallel to the generatrix of the core and which extends transversely to the paths of said plurality of parallel metal wires without encircling said core; and

at the point where said plurality of metal wires are deposited on the core, extruding a layer of material over said plurality of metal wires.

4,803,310

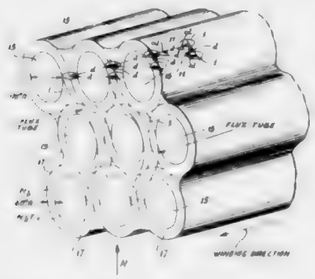
SUPERCONDUCTORS HAVING CONTROLLED LAMINAR PINNING CENTERS, AND METHOD OF MANUFACTURING SAME

Bruce A. Zeitlin, Cheshire, Conn.; Michael S. Walker, Schenectady, N.Y., and Leszek R. Motowidlo, Southington, Conn., assignors to Intermagnetics General Corporation, Guilderland, N.Y.

Filed May 4, 1987, Ser. No. 45,386

Int. Cl.⁴ H01B *12/00*

U.S. Cl. 174—128 S 24 Claims



1. A superconductor formed of an array of subfilaments, said superconductor having enhanced J_c for a predetermined field and substantially continuous, non-random pinning centers, said superconductor including

a plurality of parallel superconductive subfilaments of uniform cross-sectional area, said subfilaments being embedded in pinning jackets to provide pinning density, and said pinning jackets together forming a unitary structure having a honeycomb-like cross-section, with said structure extending uniformly and substantially continuously from one side of said superconductor to the other,

whereby a plurality of substantially continuous paths for fluxoids across said superconductor are provided, the total said pinning density of said superconductor is substantially increased, and the critical current of said superconductor is enhanced.

4,803,311

SUSPENSION INSULATOR

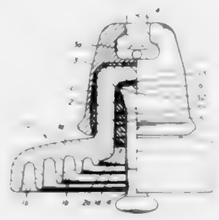
Tsutomu Moriya, Chita, and Hiroshi Nozaki, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Jan. 25, 1988, Ser. No. 147,999

Claims priority, application Japan, Feb. 4, 1987, 62-24214

Int. Cl.⁴ H01B *17/08*

U.S. Cl. 174—182 1 Claim



1. A suspension insulator, comprising:

a porcelain insulating member including a head portion and a shed portion extending radially from said head portion, said head portion having an inner pin hole with a closed top and an open bottom, said pin hole having an inside surface including a cylindrical surface portion adjacent said open bottom, a curved top surface portion facing said open bottom and a round corner surface portion forming a smooth boundary between said cylindrical surface portion and said curved top surface portion, said cylindrical surface portion having a radius equal to D and said round corner surface portion having a radius of curvature equal to Y, such that a ratio of Y/D is in the range of 0.3–0.45;

a metal cap cemented to the outer surface of said head portion; and

a metal pin cemented within said pin hole of said head portion, said inside surface of said pin hole including a cemented portion which has sands rigidly deposited thereon over a range extending from a bottom of said cemented portion adjacent said open bottom, to a level within ±3 mm of a junction between said cylindrical surface portion and said round corner surface portion.

4,803,312

INTERFACE BETWEEN PERSONAL COMPUTER AND TELEX COMMUNICATION SYSTEM

Jose D. Britos, Córdoba, Argentina, assignor to Asecom S.C.L., Cordoba, Argentina

Filed May 7, 1987, Ser. No. 47,935

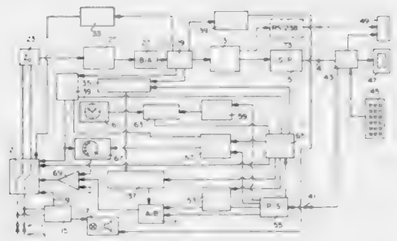
Claims priority, application Argentina, May 16, 1986, 303987

Int. Cl.⁴ H04L *13/08*

U.S. Cl. 178—17 R 15 Claims

1. An intelligent interface for connecting a personal computer or the like to a communication line in order to transform it into a telex transceiver, said personal or similar computer including an input and output port through which it is possible to receive and/or transmit texts in the accepted characters format, according to a conventional telex norm, and/or receive and/or transmit messages to or from the interface, and a medium of visualization of the text received and to be transmitted, said intelligent interface comprising: a call detector means connected to the communication line; a connecting means in

circuit with said line having control means for opening and closing the interface to an input signal to the said call detector means from said communication line; a Baudot signal receiver means having a data input connected to the communication line through said connecting means; a character analyzer means connected to an output of said Baudot signal receiver means that includes command and text detector means; a received texts memory means connected to the output of said Baudot signal receiver means through said character analyzer means and an output connectable to an input of the medium of visualization of the text received, a line exciter means having



an output connected to said communication line; Baudot signal transmitter means connected to an input of said exciter means; emerging texts memory means connected to an input of said Baudot signal transmitter means; a parallel to serial converter means which has an output connected to said emerging texts memory means, and an input connected to said input and output port; an answerback memory means connected between said character analyzer means and said Baudot signal transmitter means; an addressees' telex numbers memory means connected to said input and output port; and a dial connected between said addressees' telex numbers memory means, and said line exciter means.

4,803,313

ELECTRIC SWITCH WITH SEALED PLURAL COMPARTMENTS

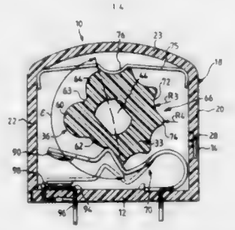
Wilfried Rolf, Oberursel, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Dec. 14, 1987, Ser. No. 132,349

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1986, 3644212

Int. Cl.⁴ H01H *21/08*

U.S. Cl. 200—6 BB 11 Claims



1. An electric switch comprising housing structure that defines two chambers, shaft structure rotatably carried in said housing structure, said shaft structure including a flange surface adjacent each end and two axially offset switching coulisses on said shaft structure for rotation therewith, each of said switching coulisses being disposed in a corresponding housing chamber and said housing structure including sealing flange members welded to the front and rear walls of said housing structure,

O-rings arranged pressure-tight between said flange surfaces adjacent the ends of said shaft structure and said sealing flange members,

each of the housing chambers having a contact spring and a fixed contact element disposed therein and connection lug structure external thereof for providing electrical connection to said contact spring and said contact element, each said contact spring carrying a movable contact element,

each of said switching coulisses being adapted to be rotated by said shaft structure to displace its associated contact spring between a first switch position in which said associated contact spring is in abutment with its said fixed contact element and a second position in which said associated contact spring is spaced from its said fixed contact element,

a first of said switching coulisses including a first circular segment on which at least one control cam is disposed and a second circular segment on which a series of ratchet elements are disposed, the two said circular segments of the first switching coulisse being arranged in a common plane; and

a detent spring loosely arranged in said housing structure, said detent spring including a bulge portion which is conformed to the profiles of said ratchet elements for fixing said switching coulisses in a series of angular positions.

4,803,314

MOMENTARY ROTARY SWITCH

Richard W. Sorenson, Avon; Milton N. Ives, Wolcott, and Frank P. Sapone, Waterbury, all of Conn., assignors to Carlingswitch, Inc., West Hartford, Conn.

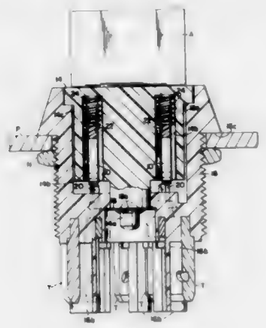
Continuation-in-part of Ser. No. 945,880, Dec. 22, 1986, Pat. No. 4,748,297, which is a continuation-in-part of Ser. No. 884,545, Jul. 11, 1986, abandoned. This application Jul. 30, 1987, Ser. No. 83,939

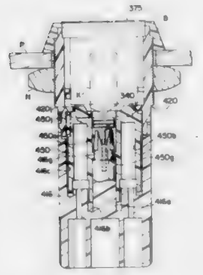
Int. Cl.⁴ H01H *15/58, 27/08*

U.S. Cl. 200—11 J 35 Claims

1. A rotary switch comprising a generally cylindrical dielectric body portion defining an upwardly open cavity of generally cylindrical shape, said cavity having a cylindrical wall and a longitudinal central axis, said body portion having a bottom wall defining a plurality of circumaxially spaced openings, fixed contacts provided in at least some of said openings such that upper ends thereof are located between said cavity axis and the cylindrical cavity wall, a generally cylindrical dielectric control member rotatably received in said cylindrical cavity, means for restraining said control member from movement axially in said cavity, said control member having at least one downwardly open recess spaced radially from said cavity axis the same distance as that for said fixed contact upper ends, a movable contact in said recess, means in said recess for biasing said movable contact downwardly toward said fixed contact upper ends, said bottom cavity wall having a contour that cooperates with said fixed contact upper ends to permit said movable contact to close adjacent fixed contacts in response to angular rotational movement of said control member, and torsion spring biasing means provided in a spring opening defined in part by said control member and in part by said body portion, said torsion spring means biasing said con-

trol member toward a predetermined angular position so that the rotary switch exhibits a momentary action as the control





member is rotated from said predetermined position to close said adjacent fixed contacts.

4,803,315

PRINTED CIRCUIT BOARD

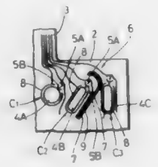
Mitsumasa Kako, Tokai, and Sadashi Hirano, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 16, 1987, Ser. No. 121,058

Claims priority, application Japan, Nov. 20, 1986, 61-277338

Int. Cl.⁴ H01H *13/14*

U.S. Cl. 200—5 A 14 Claims



1. A printed circuit board for a keyboard which has a plurality of keys substantially arranged along rows and columns so as to form a matrix-like key arrangement, comprising:

a dielectric film having opposite first and second surfaces and extending under the keyboard;

a plurality of first capacitor electrodes formed on said first surface of said dielectric film, each of said first capacitor electrodes having a predetermined area;

a plurality of switch electrode pairs formed on said first surface of said dielectric film, wherein a location of each of said switch electrode pairs corresponds to a location of each key, and each of said switch electrode pairs is connected to each other when a corresponding key is depressed, and each of said switch electrode pairs is disconnected to each other when the corresponding key is not depressed, and one side of each of said switch electrode pairs is connected to each of said first capacitor electrodes;

a plurality of first lead patterns formed on said first surface of said dielectric film, wherein each of said first lead patterns is connected to the other side of said switch electrode pairs;

a plurality of second capacitor electrodes formed on said second surface of said dielectric film and arranged in such a manner that each of said second capacitor electrodes opposes to each of said first capacitor electrodes whereby a pair of opposing said first and second capacitor electrodes form a capacitor; and

a plurality of second lead patterns formed on said second surface of said dielectric film, wherein said second lead patterns are connected to said second capacitor electrodes; wherein a plurality of said pairs of said first and second capacitor electrodes are arranged in such a manner that a space defined by adjacent said pairs is enlarged more than a hypothetical space to be defined by adjacent hypothetical capacitor electrode pairs if the same had the same shape and were arranged regularly with respect to the matrix-like key arrangement.

4,803,316

PUSH BUTTON SWITCH USING DOME SPRING AND SWITCH ELEMENT THEREOF

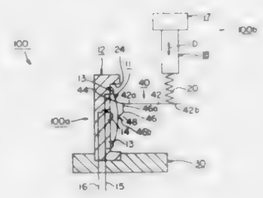
Kazutoshi Hayashi, Kawasaki; Hideo Nabetani, Nagano; Toshiaki Tanaka, Kawasaki, and Kazushi Ishida, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 16, 1986, Ser. No. 919,756

Claims priority, application Japan, Oct. 16, 1985, 60-158068[U]; Dec. 23, 1985, 60-197982[U]; Mar. 11, 1986, 61-035073[U]; **Apr. 18, 1986, 61-059208**[U]

Int. Cl.⁴ H01H *5/18*

U.S. Cl. 200—406 20 Claims



1. A push button switch comprising:

a bottom plate;

a plunger and an associated key top;

means for mounting said plunger and associated key top for limited, reciprocating movement along a generally vertical axis relative to a generally horizontal orientation of said bottom plate;

a terminal plate affixed to said bottom plate in a vertical orientation relative to said horizontal orientation of said bottom plate, the terminal plate having a first major surface generally parallel to the vertical axis, an indented surface with a periphery of a predetermined configuration displaced inwardly of and parallel to the major surface in a first horizontal direction relatively to the vertical axis and a central recess within the indented surface, further displaced from the indented surface in the first horizontal direction;

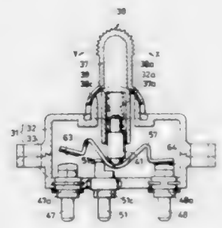
plural outer contacts fixedly mounted at predetermined positions on said terminal plate within and adjacent the periphery of the indented surface and disposed to protrude toward said first major surface; plural inner contacts and means for flexibily mounting said plural inner contacts within the recess in the indented surface of the terminal plate, centrally of the periphery of the indented surface and protruding toward the first major surface, the mounting means resiliently urging the plural inner contacts toward the first major surface and thus in a second horizontal direction, opposite to the first horizontal direction, and permitting limited, resiliently yielding movement of the plural inner contacts in the first horizontal direction;

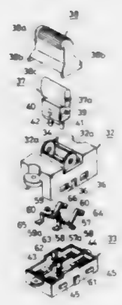
a dome spring disposed in a generally vertical orientation and having a convex configuration oriented in the second horizontal direction, said dome spring having a substantially continuous surface normally in the aforesaid convex configuration in the second horizontal direction and being susceptible to a depressing force applied thereto in the first, opposite horizontal direction to snap to a convex configuration oriented in the first horizontal direction and upon release of the force to resiliently return to the second horizontal direction, the periphery of the dome spring being normally in contact with the plural outer contacts in each of the first and second horizontal directions of its convex configuration; and

an actuator interconnecting said plunger and said dome spring and responsive to downward vertical movement of said plunger to apply a depressing force in the first horizontal direction for depressing and causing said dome spring to snap to the first horizontal direction, thereby to complete an electrical connection through said dome spring between said first and second contacts, the actuator comprising a lever having first and second arms extending at right angles from one another in a plane transverse to the main surface of the terminal plate and parallel to the generally vertical axis, the free end of the first arm defining a spring seat aligned with the generally vertical axis, means associated with the second arm of the lever for engaging and applying said depressing force to said dome spring and means for mounting the lever for limited pivotal movement about a pivot axis transverse to the first and second arms and adjacent and parallel to the plane of the indented surface of the terminal plate, the actuator further comprising a coil spring received on the spring seat of the first arm and connected to the plunger.

said first and second stationary contacts, and having an upper bearing surface and a cutout portion cut into said upper surface so as to form a fulcrum edge facing toward said center position;

said conductor plate having substantially an M-shape with a center portion provided with a lower bend between said first and second sides of said M-shaped conductor plate, wherein said lower bend is positioned substantially at said center position between said first and second stationary contacts facing toward said bottom wall, and said conductor plate has opposing lateral projections located in alignment with the off-center position of said intermediate stationary contact and extending in opposite lateral directions perpendicular to said longitudinal direction;





said casing having opposing lateral walls provided with guide grooves for receiving said lateral projections respectively therein for holding said conductor plate stably in position in said casing;

wherein when said rockable driver has its driving end abutting said lower bend of said M-shaped conductor plate, said conductor plate is in one stable position with said first side thereof bearing in contact against said fulcrum edge of said off-center intermediate stationary contact, and when said rockable driver is rocked in the first direction, said conductor plate is rocked over said fulcrum edge of said off-center intermediate stationary contact as a fulcrum point to bring said first movable contact into electrical contact with said first stationary contact in another stable position.

4,803,317

SUPPORT STRUCTURE FOR ROCKABLE CONDUCTIVE PLATE IN A SEESAW-TYPE SWITCH

Hiroki Satoh, Miyagi, and Kenji Sawada, Furukawa, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Oct. 15, 1987, Ser. No. 109,276

Claims priority, application Japan, Jan. 19, 1987, 62-4987[U]

Int. Cl.⁴ H01H *23/24*

U.S. Cl. 200—438 2 Claims

1. In a three-position seesaw-type switch comprising a casing having a bottom wall, a top wall, and a first side and a second side positioned opposite each other in a longitudinal direction, a first stationary contact provided on the bottom wall on the first side, a second stationary contact provided on the bottom wall on the second side, an intermediate stationary contact provided on the bottom wall between the first and second stationary contacts, a rockable conductor plate with a first movable contact on a first side thereof and a second movable contact on a second side thereof which are moved into contact with the first and second stationary contacts when the conductor plate is rocked in a first direction and in an opposite, second direction, respectively, and a rockable driver mounted through the top wall of the casing having a driving end slidable abutting on the conductor plate for rocking it in the first and second directions,

the improvement comprising:

said intermediate stationary contact being disposed at a position off-center toward said first side of said casing in the longitudinal direction from a center position between

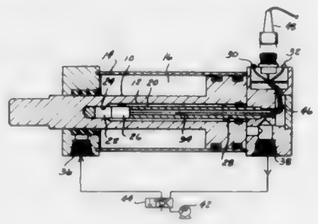
VOL 1099 ISS 1 FEB 7 1989 UMI

4,803,318

PROXIMITY SWITCH FOR A CYLINDER

Robert K. Lymburner, 4085 Clinton River Dr., Clinton River Mobile Park, Mt. Clemens, Mich. 48043

Filed Jan. 7, 1988, Ser. No. 141,552
Int. Cl.[4] H01H *35/38*
U.S. Cl. 200—82 R **13 Claims**



7. A proximity switch comprising:

a movable member having a first end, a second end and an aperture extending from the first end toward the second end, said movable member traveling along a fixed path between a first position and a second position, said aperture including a first protruding shoulder narrowing said aperture adjacent said first end and a second protruding shoulder narrowing said aperture adjacent said second end;

a housing having a first end and a second end, said housing enclosing the first end of the movable member with said second end of said movable member extending outwardly from said second end of said housing, said housing forming a first fluid chamber between said first end of said housing and said movable member and forming a second fluid chamber separate from said first fluid chamber between said second end of said housing and said movable member, wherein expansion of said first fluid chamber drives said movable member to said first position and expansion of said second fluid chamber drives said movable member to said second position;

a sensor-supporting member having a first end connected to the first end of said housing and a second end extending outwardly from said first end of said housing toward said second end of said housing, said sensor-supporting member engaged within said aperture of said movable member; and

sensor means mounted adjacent said second end of said sensor-supporting member for sensing said first position of said movable member by engagement with said first shoulder and for sensing said second position of said movable member by engagement with said second shoulder.

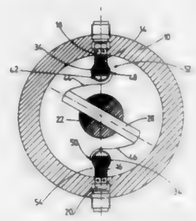
4,803,319

ROTARY SWITCH WITH CURVED ARC ROOT MIGRATION TRACK

Georges Bernard, St. Egreve; Bernard Bouvet, Echirolles; Richard Jacolin, Voiron; Guido Colleoni, Bergamo; Jacques Gaillard, Grenoble, and Robert Volay, Tullins, all of France, assignors to Merlin Gerin, Grenoble, France

Filed Jun. 14, 1988, Ser. No. 206,310
Claims priority, application France, Jun. 25, 1987, 87 09009
Int. Cl.[4] H01H *33/18, 33/60*
U.S. Cl. 200—147 A **10 Claims**

1. A medium voltage rotary switch comprising a sealed enclosure, having an internal periphery, two stationary contacts fixed at diametrically opposed points of said periphery, a contact bridge having ends arranged as movable contacts, each capable of cooperating with one of said stationary contacts to form a pair of contacts, a rotating operating shaft supporting said contact bridge, which can selectively occupy a closed position in which the two pairs of contacts are closed and an open position in which the two pairs of contacts are open, at least one of the contacts of one of said pairs comprising a migration track of the root of an arc drawn when the pair of contacts opens, said track extending in the opposite direction from the other contact of said one of said pairs, and



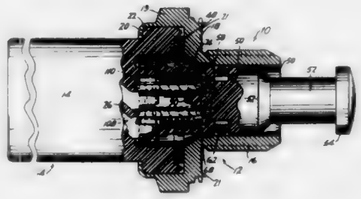
having a hidden location to enable the arc root and the associated hot spot to move towards said hidden location where the two hot spots associated with the two arc roots are not facing and a permanent magnet, securedly fixed to the migration track contact, is arranged to blow the arc root towards said hidden location to favor arc extinction and current breaking.

4,803,320

ELECTRIC SWITCH CONSTRUCTION

Peter J. Lupoli, Hamden, and Donald J. Mattis, Norwalk, both of Conn., assignors to Casco Products Corporation, Bridgeport, Conn.

Filed Jul. 8, 1987, Ser. No. 71,072
Int. Cl.[4] H01H *3/00*
U.S. Cl. 200—342 **6 Claims**



1. A self-adapting electric switch construction comprising, in combination:

(a) a body member having means for attaching it to a supporting structure, and having a stationary electrical contact,

(b) a movable electrical contact cooperable with said stationary contact for making and breaking an electrical circuit,

(c) means for movably mounting said movable contact on the body member,

(d) said body member having a movable plunger operable to actuate said movable contact, and

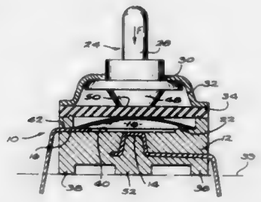
(e) a compression coil spring having an anchored end and an exposed, accessible free-standing end, said anchored end being carried by and retained by said plunger, said free-standing end being fully exposed and adapted for driving movement by an external actuator, thereby to constitute a yieldable driving means between the plunger and the external actuator.

4,803,321

AXIAL LOAD RESISTANT KEY SWITCH

Jean-Claude Lefebvre, Dole, France, assignor to ITT Composants Et Instruments, Bagneux, France

Filed Nov. 16, 1987, Ser. No. 121,206
Int. Cl.[4] H01H *1/14, 9/02*
U.S. Cl. 200—517 **6 Claims**



1. In a key switch comprising an electrically insulating base having a bottom and an upstanding lateral wall defining a cavity closed by a cap, a central contact and a lateral contact mounted on said bottom, a dome-shaped switching element mounted in said cavity over said contacts, the periphery of said element being in electrical contact with said lateral contact, said element being elastically yieldable to establish an electrical connection between said contacts in response to an axial load exerted on the convex face of said element, an actuator for exerting said axial load, said actuator having a facing portion disposed over said element and a stem passing through a central hole in said cap, the improvement which comprises:

said bottom of said base having a plane central portion facing said switching element;

said central contact comprising an upstanding projection having an essentially flat contacting surface facing said switching element, said projection being embedded in said base with said flat contacting surface being flush with said plane central portion; and

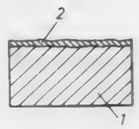
said facing portion of said actuator being a flat face generally parallel to said flat contacting surface.

4,803,322

ELECTRICAL CONTACTS FOR ELECTRIC BREAKERS

Akira Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo K.K., Tokyo, Japan

Filed May 9, 1985, Ser. No. 732,053
Claims priority, application Japan, May 19, 1984, 59-101451
Int. Cl.[4] B22F *3/00;* **H01H** *1/02*
U.S. Cl. 200—268 **5 Claims**



1. Electrical contacts for use with electric breakers and the like, consisting of a base made from a silver alloy containing tin and indium, and a thin layer clad over the base and being made from an other silver alloy, said other silver alloy being selected from the group consisting of Ag—Cd and Ag—Sn—Bi alloys, said silver alloys having been internally oxidized, and said other silver alloy layer having a thickness extremely smaller than that of said base.

4,803,323

ELECTRIC MANUAL SWITCHING DEVICE HAVING ENVIRONMENTALLY PROTECTED COMPONENTS

Karl-Heinz Besser, and Gerold Eckert, both of Bad Neustadt-/Saale, Fed. Rep. of Germany, assignors to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co., Bad Neustadt/Saale, Fed. Rep. of Germany

Filed Jan. 30, 1987, Ser. No. 8,823
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1986, 8602882
Int. Cl.[4] H01H *13/06*
U.S. Cl. 200—302.2 **1 Claim**



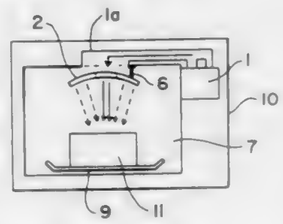
1. An electrical manual switching device comprising a housing; a printed circuit board having electrical conductors disposed thereon, said printed board mounted in said housing; a plurality of switching contacts provided on said printed circuit board; a plurality of pushbutton elements disposed on said housing, each of said plural pushbutton elements facing a corresponding one of said plural switching contacts; and a connecting cable, said switching contacts capable of electrical connection with said connecting cable via said electrical conductors; characterized in that said electrical manual switching device further comprises a foil extending continuously over said printed circuit board, said foil being disposed in said housing between said switching contacts and said pushbutton switching elements wherein said foil consists of a flexible material and seals said switching contacts and said printed circuit board conductors from the interior of said housing, said foil shaped like a bag, said printed circuit board with said switching contacts being inserted into said foil, said bag-shaped foil loosely enclosing said printed circuit board with said switching contacts, said foil tightly closed at both ends, with said connecting cable extending from one end, said foil introduced at said one end into a plug connection.

4,803,324

MICROWAVE HEATING AND INFRARED RAY HEATING APPLIANCE

Masanobu Fujii, Yao, and Tatsuya Tsuda, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 828,897, Feb. 13, 1986, abandoned. This application Dec. 15, 1987, Ser. No. 134,551
Claims priority, application Japan, Feb. 15, 1985, 60-20624[U]; Mar. 15, 1985, 60-38013[U]
Int. Cl.[4] H05B *6/80*
U.S. Cl. 219—10.55 F **4 Claims**



1. A heating appliance comprising:

a housing,

means for supporting an object in said housing,

means in said housing for generating microwaves and directing said microwaves to strike said object,

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a heating plate positioned between said microwave generating means and said supporting means so that a portion of said microwaves impinge on said heating plate, said heating plate absorbing and converting microwave energy into infrared radiation,

said heating plate having at least one opening therein so that a portion of said microwaves may freely pass through said heating plate and impinge on an object positioned on said supporting means,

said heating plate comprising a heat radiating plate and an infrared radiator layered on said heat radiating plate,

said infrared radiator including means producing infrared rays in response to said infrared radiator being heated by the conduction of heat from said heat radiating plate, whereby microwave energy is absorbed by said heat radiating plate and is converted into heat which is conducted to said infrared radiator which converts the heat into infrared radiation, and

said infrared rays, in addition to said freely passing microwaves, being directed to strike said supporting means and said object.

4,803,325

RESISTANCE SEAM WELDING MACHINE

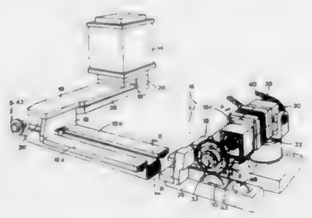
Matthias Frei, Wettingen; Willi Mueller, Berikon, and Werner Sutter, Oberehrendingen, all of Switzerland, assignors to Elpatronic AG, Switzerland

Filed Jan. 6, 1988, Ser. No. 141,927

Claims priority, application Switzerland, Feb. 9, 1987, 00446/87

Int. Cl.⁴ B23K *1/16*

U.S. Cl. 219—64 **11 Claims**



1. A resistance seam welding machine, particularly for the longitudinal-seam welding of can bodies (**4**), having a welding transformer (**14**) and having a secondary loop (**16**) consisting of feed and return lines, with a pendulum roller head (**20**) in which a pendulum arm (**24**) carrying an upper electrode roller (**8**) is mounted for rotation, having a lower arm (**26**) carrying a lower electrode roller, having a first busbar (**18**) leading from the welding transformer (**14**) to the pendulum roller from the welding transformer (**14**) to the lower arm (**26**), characterized in that the feed and return lines in the region of the secondary loop (**16**) situated between the welding transformer (**14**) and the lower arm (**26**) being a parallel line and in the region of the pendulum roller head (**20**) being in the form of a coaxial line.

4,803,326

WIRE-CUT ELECTRIC DISCHARGE MACHINE IN WHICH TWO ADJOINING SEGMENTS OF A COMMON ELECTRODE EFFECT MACHINING

Inoue Kiyoshi, Tokyo, Japan, assignor to Inoue Japax Research Incorporated, Tokyo, Japan

PCT No. PCT/JP86/00019, § 371 Date Sep. 17, 1986, § 102(e) Date Sep. 17, 1986, PCT Pub. No. WO86/04280, PCT Pub. Date Jul. 31, 1986

PCT Filed Jan. 17, 1986, Ser. No. 919,005

Claims priority, application Japan, Jan. 17, 1985, 60-05056; Jan. 18, 1985, 60-05943; Feb. 8, 1985, 60-21793; Mar. 29, 1985, 60-63241; Apr. 11, 1985, 60-75361; Apr. 16, 1985, 60-79400

Int. Cl.⁴ B23H *7/02, 7/10*

U.S. Cl. 219—69 W **20 Claims**



1. A wire-cut electric discharge machine comprising:

first and second vertically spaced working heads;

supply means on said first working head for a wire electrode;

collecting means on said first working head for collecting the wire electrode;

electrode returning means on said second working head for receiving the wire electrode from said supply means and for returning the wire electrode to said collecting means, said electrode returning means forming a loop in said wire electrode to provide a first segment thereof coming from the supply means and an adjacent second segment returning to the collecting means;

means supporting a workpiece between said heads;

said workpiece having an opening through which the first and second segments extend adjacent to one another in operative position for each to machine the workpiece;

means for providing relative movement between the workpiece and the segments of the wire electrode;

power means for supplying voltage pulses to said wire electrode for effecting electric discharge machining between the workpiece and the two segments of the wire electrode; and

means for supplying a working fluid into a working gap formed between the workpiece and the two adjacent segments of the wire electrode.

4,803,327

ELECTRICAL POWER FEEDER FOR A WIRE ELECTRODE TYPE ELECTRICAL DISCHARGE MACHINING APPARATUS

Haruki Obara, Sagamihara, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP87/00131, § 371 Date Dec. 4, 1987, § 102(e) Date Dec. 4, 1987, PCT Pub. No. WO87/05242, PCT Pub. Date Sep. 11, 1987

PCT Filed Mar. 3, 1987, Ser. No. 123,066

Claims priority, application Japan, Mar. 5, 1986, 61-49270

Int. Cl.⁴ B23H *7/10*

U.S. Cl. 219—69 W **6 Claims**

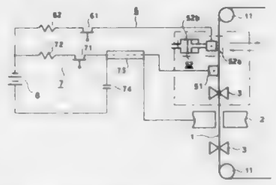
1. An electric power feeder for a wire electrode type electrical discharge machining apparatus having a wire electrode, said apparatus comprising:

a wire electrode guide for guiding a wire electrode;

first electric power supply means arranged along the wire

electrode for supplying a first machining power to the wire electrode; and

second electric power supply means, movably arranged to selectively connect with the wire electrode and disconnect the wire electrode from said first power supply means, for supplying a second machining power to the wire electrode so that the wire electrode is selectively contacted with either said first electric power supply means or said second electric power supply means.



4,803,328

WIRE GUIDE FOR ELECTRIC DISCHARGE WIRE CUTTING

Haruki Obara, Sagamihara, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

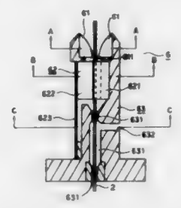
PCT No. PCT/JP86/00578, § 371 Date Sep. 14, 1987, § 102(e) Date Sep. 14, 1987, PCT Pub. No. WO87/02920, PCT Pub. Date May 21, 1987

PCT Filed Nov. 12, 1986, Ser. No. 85,406

Claims priority, application Japan, Nov. 14, 1985, 60-175827

Int. Cl.⁴ B23H *7/10, 7/02*

U.S. Cl. 219—69 W **4 Claims**



1. A wire guide for guiding a wire electrode in a wire electrode type electrical discharge machining apparatus, said wire guide comprising:

an arc-shaped guide arranged at a guiding end of said wire guide;

a three-point-supporting guide arranged close to said arc-shaped guide in an end-to-end arrangement so that the wire electrode can pass therethrough; and

an external tube member for holding said arc-shaped guide and said three-point-supporting guide therein, said external tube member having a center opening at a non-guiding end of said wire guide for allowing the wire electrode to pass therethrough, and a cooling liquid supply opening for supplying a cooling liquid for cooling the wire electrode.

4,803,329

WELDER HEAD

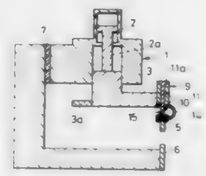
Syozo Nakata, Hyogo, and Satoshi Imai, Aichi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1987, Ser. No. 89,804

Claims priority, application Japan, Aug. 27, 1986, 61-200947

Int. Cl.⁴ B23K *9/32*

U.S. Cl. 219—86.25 **12 Claims**



1. A welder head, comprising:

a pair of welding electrodes arranged opposite to each other, workpieces to be welded being placed between said welding electrode;

an electrode holder including a sliding member for holding one of said welding electrodes and a support member for supporting said sliding member for slidable movement in a first direction;

a pressure mechanism for pressing said one of said welding electrodes toward the other of said welding electrodes;

an elastic member for urging said sliding member in said first direction; and

a flexible U-shaped electricity feeder having two legs provided between said one of said welding electrodes and said support member of said electrode holder with both legs surrounding said sliding member, for supplying a welding current to said one of said welding electrodes, wherein open ends of said U-shaped electricity feeder are separated from each other by electromagnetic forces generated by a current flowing through said U-shaped electricity feeder.

4,803,330

MACHINE FOR FLASH BUTT WELDING OF PIPES

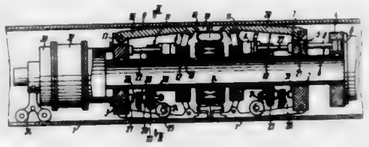
Sergei I. Kuchuk-Yatsenko; Vasily A. Sakharnov; Boris A. Galian, and Vladimir F. Zelensky, all of Kiev, U.S.S.R., assignors to Institut Elektrosvarki Imeni E.O. Patona Akademii Nak Ukrainskoi, Kiev, U.S.S.R.

PCT No. PCT/SU86/00024, § 371 Date Nov. 19, 1987, § 102(e) Date Nov. 19, 1987, PCT Pub. No. WO87/05840, PCT Pub. Date Oct. 8, 1987

PCT Filed Mar. 26, 1986, Ser. No. 156,919

Int. Cl.⁴ B23K *9/00*

U.S. Cl. 219—97 **1 Claim**



1. A machine for flash butt welding of pipes which is located in the bore of the pipes (**1**) welded together and which comprises a housing (**2**) arranged coaxially with said pipes (**1**) welding together and provided with a first supporting disc (**3**) and a second supporting disc (**4**) which are fitted to said housing at the opposite ends thereof; a pipe flashing-and-upsetting

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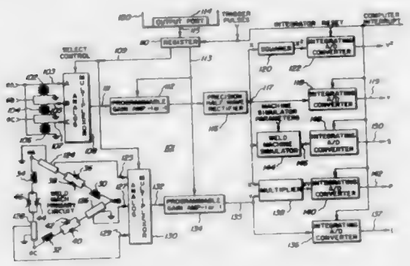
means (5) with a hydraulic actuator (6) serving to displace same along the axis of the housing 2, a carrier (7) of said means being located on the housing (2) of the machine next to the second supporting disc (4); two pipe clamping means (9, 10) with individual hydraulic actuators (11) for displacing same along the axis of the housing, carriers (12, 13) of pipe clamping means being located on the housing (2) between the first supporting disc (3) and the carrier (7) of the pipe flashing-and-upsetting means characterized in that bellcranks (24) pivotally attached to the outside surface of each carrier (12, 13) of the pipe clamping means (9, 10) are provided at least at three points spaced equidistantly apart all the way around the periphery of each carrier (12, 13) with provision for rocking in the radial direction about fulcrum pins (23) and rigid stops (27, 31) are provided on the first supporting disk (3) and on that side of the carrier (7) of the pipe flashing-and-upsetting means (5) which faces the pipe clamping means (9, 10) whereby every bellcrank (24) is fitted with provision for interacting at one side (26) of its free end with one of the rigid stops (27, 31) which equal the bellcranks (24) in number and at the other side (28) of the end, with a spring-loaded stop (29) provided on the carrier (12, 13) of every pipe clamping means (9, 10) and the opposite end of every bellcrank (24) is fitted with an aligning roller (25) contacting the inner wall of the pipes (1) welded together.

4,803,331

POWER CONTROL AND LINE VOLTAGE MONITOR/COMPENSATOR FOR RESISTANCE SPOT WELDING MACHINES

Robert K. Cohen, 244 Hansen Ave., Albany, N.Y. 12208

Filed Jan. 28, 1987, Ser. No. 7,940
Int. Cl.⁴ B23K *11/24*
U.S. Cl. 219—110 **33 Claims**



1. A method for pulse-by-pulse monitoring of variations in multi-phase AC input line power applied as sequential power pulses to a load through selectively triggered thyristor type devices of a power control, comprising the steps of:

monitoring a function of each of the multi-phase AC input line signals to the thyristor type devices, the function comprising one of current and voltage;

synthesizing from the monitored function, during the operation of the thyristor type devices, a first replica signal replicating the composite function passed to the load by the thyristor type devices, the commutation effect of the thyristor type devices being replicated in synthesizing the first replica signal; and

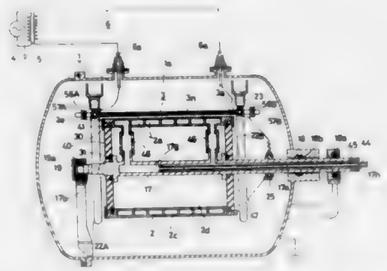
processing the first replica signal to produce an independent measurement of a circuit parameter for each individual power pulse.

4,803,332

APPARATUS FOR PLASMA TREATMENT OF A SHEET-LIKE STRUCTURE

Motoyasu Koyama, Kurashiki; Hidetoshi Teraoka, Soja; Takao Akagi; Shinji Yamaguchi, both of Kurashiki; Itsuki Sakamoto, Hiroshima; Akira Namba, and Isao Okagaki, both of Okayama, all of Japan, assignors to Kuraray Co., Ltd., Okayama, Japan

Filed Jun. 5, 1987, Ser. No. 58,858
Claims priority, application Japan, Jun. 10, 1986, 61-134067; Jun. 11, 1986, 61-135579
Int. Cl.⁴ B23K *9/00*
U.S. Cl. 219—121.52 **15 Claims**



1. A plasma treating apparatus for treating a sheet-like structure comprising:

a substantially drum-shaped first discharge electrode assembly;

a rotary shaft, rigidly connected to said first discharge electrode assembly, for rotating said first discharge electrode assembly;

a vacuum vessel surrounding said first discharge electrode assembly;

said rotary shaft extending through said vacuum vessel;

said sheet-like structure arranged about an outer periphery of said first discharge electrode assembly;

a second discharge electrode assembly, disposed within said vacuum vessel and confronting said first discharge electrode assembly;

an electric circuit for supplying electric power to said first and second discharge electrode assembly;

first insulating members for insulating electrically said vacuum vessel from said electric circuit; and

second insulating members for electrically insulating the drum of said first discharge electrode assembly from said rotary shaft.

4,803,333

VIEWING OPTICS FOR EXTERNAL-MOUNT ELECTRON BEAM WELDERS

Glen S. Lawrence, Naperville; Timothy J. Haynie, Hickory Hills; Joseph D. Ferrario, LaGrange, and Stefan P. Kyselica, Willow Springs, all of Ill., assignors to Ferranti Sciaky, Inc., Chicago, Ill.

Filed Apr. 6, 1988, Ser. No. 178,363
Int. Cl.⁴ B23K *15/00*
U.S. Cl. 219—121.13 **7 Claims**

1. In an electron beam welding machine consisting of: a vacuum chamber; an electron beam gun mounted upon said vacuum chamber; a means for directing an electron beam along a path from said electron beam gun to the inside of said chamber; a carriage mounted within said chamber and movable along two mutually perpendicular axes; a means for mounting on said carriage, workpieces to be welded along a seam by said electron beam; and an optical system mounted on said machine

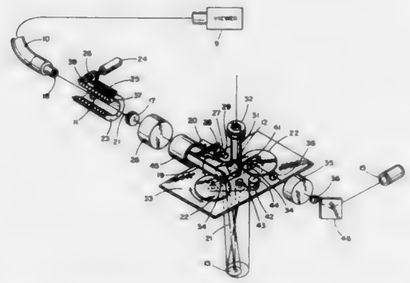
for viewing, from outside the chamber, the area to be welded on said workpieces, the said optical system comprising:

a telescope including an objective and a focusing lens system, arranged along an optical axis which is perpendicular to the path of said electron beam and passes through the center of the said lens system;

a pentaprism for bending the optic axis by 90 degrees mounted along the said optic axis, between the said objective lens and the path of the said electron beam;

a means for supporting and rotating the said pentaprism in a plane perpendicular to said optic axis;

a coherent fiber optics bundle having one end centered along the optic path and adjacent to the said focusing lens;



a means for moving said focusing lens along the optic path so as to project the image of a desired area on a workpiece upon which the said electron beam can impinge;

a means cooperating with the said means for moving said focusing lens for automatically rotating the said pentaprism in said plane so that it views an area on the workpiece upon which the said electron beam impinges, and which area is projected in sharp focus onto the said first end of the fiber optics bundle;

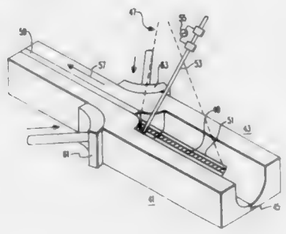
and means for viewing the image which is transmitted to the opposite end of the fiber optics bundle.

4,803,334

METHOD FOR LASER BEAM WELDING METAL MATRIX COMPOSITE COMPONENTS

Michael A. Burke, Pittsburgh, and Gerald G. Lessmann, Pleasant Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 16, 1987, Ser. No. 121,814
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121.64 **17 Claims**



1. The method of producing a conduction weld between first and second metal matrix composite components with a metal matrix composite material comprising:

placing first and second metal matrix composite components into abutting relationship to form an intersection between a portion thereof along which said components are to be joined, with a major portion of said metal matrix composite components spaced from each other;

directing a laser beam through said spacing in the area of said intersection and oscillating said beam across said intersection and alternately onto each of said spaced portions of said first and second components to produce a conduction weld therebetween with a shallow pool of metal matrix composite;

feeding a filler wire composed of a metal matrix composite into said pool, such that the volume of the melted matrix composite material from the two components is less than the volume of the metal matrix composite added thereto; and

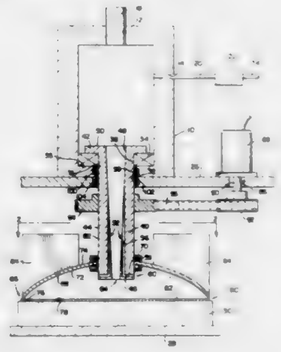
moving said laser beam and filler wire along said intersection such that solidification of the molten pool containing said filler wire metal matrix composite is effected to form a weld line without separation of the metal matrix composite into separate phases, so as to produce a substantially homogenous metal matrix composite weld between said first and second metal matrix composite components.

4,803,335

GAS SHROUD AND METHOD

William M. Steen, Surrey, Great Britain, and Vijitha M. Weerasinghe, London, England, assignors to Quantum Laser Corporation, Edison, N.J.

Filed Jan. 2, 1987, Ser. No. 56,771
Claims priority, application European Pat. Off., Jan. 7, 1987, 87300086.3
Int. Cl.⁴ B23K *26/14*
U.S. Cl. 219—121.84 **41 Claims**



1. A workpiece shroud, comprising:

(a) chamber means including a beam inlet, a fluid inlet and an outlet portion;

(b) shield means operably associated with said outlet portion and being rotatable relative to said chamber means;

(c) drive means operably associated with said shield means for rotating said shield means; and,

(d) diverter means operably associated with said shield means and rotatable therewith so that rotation of said diverter means causes a radially outwardly directed gas flow preventing the environment surrounding said shield means from entering said shield means.

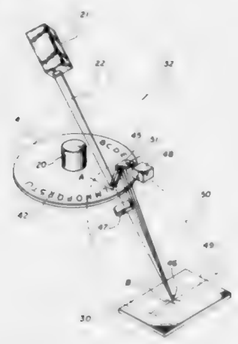
VOL 1099 ISS 1 FEB 7 1989 UMI

4,803,336

HIGH SPEED LASER MARKING SYSTEM

Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 14, 1988, Ser. No. 143,867
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121.68 **13 Claims**



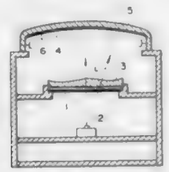
1. A high speed system for marking a symbol or group of symbols on a target, said system comprising:
laser means for generating a beam of electromagnetic energy and
symbol generating means for forming the image of a symbol on a target, said symbol generating means including:
reflective means for reflecting said beam of energy to form said image on said target, said reflective means including means for generating a plurality of symbols, and
means for selecting one of said plurality of symbols to be generated by said reflective means.

4,803,337

METHOD FOR PRODUCING A LIGHT TRANSMITTING FILTER

Reiji Ishikawa, and Tomohiro Kimura, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 673,728, Nov. 21, 1984, abandoned. This application Nov. 25, 1987, Ser. No. 125,828
Claims priority, application Japan, Nov. 28, 1983, 58-223894
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121.85 **9 Claims**



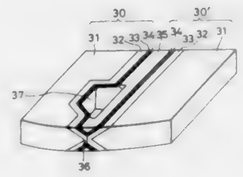
1. A method of producing a selective light transmitting filter for illuminance correction purposes in an exposure device adaptive for producing a phosphor screen of a cathode ray tube, comprising the steps of:
forming an opaque layer of heat mode optical recording material on a flat transparent base plate;
modulating a laser beam by an optical modulator operated by voltage pulses a pulse width or period of repetition of which is preset by the pattern to be formed in said layer; and
irradiating and applying said pulses of said modulated laser beam on said layer while moving said beam plate in perpendicular directions in the same plane for evaporating selected desired portions of said layer to produce a predetermined, varying pattern of light transmitting throughholes in said layer on said base plate in accordance with said predetermined light transmittance pattern.

4,803,338

MAGNETIC HEAD HAVING IMPROVED TRACK WIDTH NARROWING GROOVES

Noriyuki Kumasaka, Ohme; Shigekazu Otomo, Sayama; Takeo Yamashita, Tachikawa; Hideo Zama, and Juichi Morikawa, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 6, 1987, Ser. No. 777
Claims priority, application Japan, Jan. 10, 1986, 61-2008
Int. Cl.[4] G11B *5/22, 5/25*
U.S. Cl. 360—122 **19 Claims**



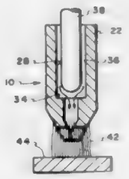
1. In a magnetic head having a metallic ferromagnetic material at a portion of said magnetic head which defines a transducing gap, and having track width narrowing grooves filled with a first glass over said metallic ferromagnetic material; a magnetic head characterized in that an oxide film or carbide film is provided on said metallic ferromagnetic material, a nonmagnetic metal film is provided on said oxide film or said carbide film, and said first glass is packed on said nonmagnetic metal film.

4,803,339

HOLLOW ELECTRODE AND ARC INITIATION METHOD

Stephen S. Gordon, Moorpark; Gerald E. Dyer, Canoga Park, both of Calif., and Lee A. Flanigan, Harvest, Ala., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 16, 1987, Ser. No. 97,233
Int. Cl.[4] B23K *35/04*
U.S. Cl. 219—145.21 **4 Claims**



1. A hollow electrode for use in an inert gas arc welding apparatus comprising:
(1) an electrically conductive cylindrical body having a proximate end and a working end;
(2) a first cylindrical throughbore originating at the proximate end and extending into the cylindrical body said first throughbore including a plunger movably retained within the first throughbore;

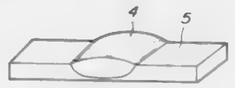
(3) a second cylindrical throughbore terminating at the working end and having an interior diameter of less than the first throughbore;
(4) a step including surface areas defining a juncture of the first and second throughbores;
(5) a passageway defined by the throughbores and extending into and through the electrode for conveying a working gas; and
(6) an electrode face forming a terminus at the working end of the hollow electrode and further comprising a lune-shaped radial surface and two tapered intersecting cone-shaped angled surfaces.

4,803,340

COVERED ARC-WELDING ELECTRODE

Kouki Sato; Junya Matsuyama, and Noboru Nishiyama, all of Chiba, Japan, assignors to Kawasaki Steel Corp., Hyogo, Japan

Filed Apr. 20, 1987, Ser. No. 40,343
Claims priority, application Japan, Apr. 23, 1986, 61-92269; Jul. 25, 1986, 61-173574
Int. Cl.[4] B23K *35/22*
U.S. Cl. 219—146.1 **8 Claims**



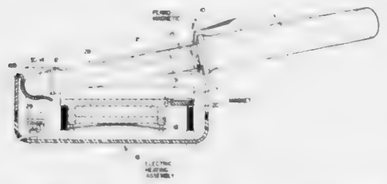
1. A covered arc welding electrode comprising:
a flux including 40 to 60% metal carbonate, 10 to 25% metal fluoride and 4 to 25% metal oxide by weight; and
a steel core wire, onto the outer periphery of which said flux is applied so as to comprise 24 to 32% of the total weight of said electrode,
said electrode as a whole being comprised of 0.005 to 0.05% carbon, 0.1 to 1.1% silicon, 1.5 to 2.5% manganese, not more than 0.007% sulfur and not more than 0.25% nickel by weight and in which the manganese/sulfur ratio is more than or equal to 350 to 1.

4,803,341

CORDLESS CURLING IRON WITH SEPARATE ELECTRIC HEATING STATION

Karlheinz Barowski, Hattersheim, and Günter Heibig, Mörfelden-Walldorf, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

PCT No. PCT/DE86/00397, § 371 Date Jun. 19, 1987, § 102(e) Date Jun. 19, 1987, PCT Pub. No. WO87/02555, PCT Pub. Date May 7, 1987
PCT Filed Sep. 26, 1986, Ser. No. 71,280
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1985, 3538545
Int. Cl.[4] H05B *1/02;* **A45D** *4/16, 2/36*
U.S. Cl. 219—222 **7 Claims**



1. An indirectly heatable curling iron and heating station comprising
a curling iron (10) having an elongated curling mandrel (12),
a separate heating station (11) which includes a heating assembly (18) having a cradle (17) for removably receiving said curling mandrel (12) of the curling iron for heating the mandrel (12) to a desired temperature prior to use, said cradle (17) providing direct intimate thermal contact between said mandrel (12) and the heating assembly when the mandrel (12) is inserted therein,
said curling iron (10) and heating station (11) including
means for producing first and second force components of relatively opposite direction and acting upon said mandrel (12) of the curling iron (10) when inserted into the cradle (17) of the heating assembly (18) of the heating station (11),
such that the first force component causes disengagement of the curling mandrel (12) from the heating assembly (18) to break intimate thermal contact therebetween while the second force component causes the curling mandrel (12) to engage the heating assembly (18) to establish said intimate thermal contact,
said means for producing the second component of force comprising a permanent magnet (20) arranged in the lateral boundary area of the cradle (17) of the heating assembly (18) and a ferromagnetic body (15) arranged on the curling mandrel (12) of the curling iron (10), the Curie point of the ferromagnetic body (15) corresponding substantially to the desired temperature of the curling mandrel (12),
said permanent magnet being embedded in a recess of said heating station (11) and said permanent magnet (20) and said ferromagnetic body (15) lying opposite each other when the curling mandrel (12) is inserted into the cradle (17) of the heating assembly, such that no direct contact exists between said permanent magnet and said ferromagnetic body (15),
the second force component varying in dependence upon the temperature of the curling mandrel (12), such that for temperatures of the curling mandrel (12), below a selected desired value, the value of the second force component exceeds the value of the first force component,
while for temperatures of the curling mandrel (12) above the adjustable desired value, the value of the first force component exceeds the value of the second force component, and that the temperature of the heating assembly (18) is set to a value above the desired temperature of the curling mandrel.

4,803,342

FLAT-IRON SAFETY DEVICE UTILIZING A DUAL INTERNAL TIMING CIRCUIT

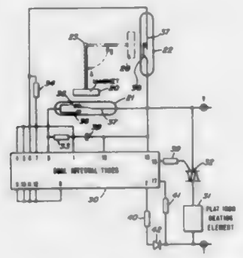
Michel Steers, La Queue en Brie; Michel Courdille, and Jean-Pierre Hazan, both of Sucy en Brie, all of France, assignors to U.S. Philips Corp., New York, N.Y.

Filed Dec. 3, 1986, Ser. No. 937,597
Claims priority, application France, Dec. 6, 1985, 8518102
Int. Cl.[4] H05B *1/02;* **D06F** *75/26*
U.S. Cl. 219—257 **7 Claims**

1. A safety device for controlling the supply of heating current to an electric flat iron comprising a movable permanent magnet adapted to be positioned in an iron and arranged for movement in a substantially horizontal direction in response to the iron being moved during ironing and actuating a first switch controlling a first timing circuit for causing the heating current supply of the iron to be interrupted in response to said permanent magnet having been motionless in said horizontal position for a predetermined time interval, characterized in that said first timing circuit is arranged to cause the power supply to be interrupted after a first predetermined time interval shorter than the time taken by the iron to reach its normal operating temperature and in that said movable permanent magnet actuates a second switch in response to the flat-iron being brought into a substantially vertical warming-up or waiting position, said second switch controlling another timing

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circuit to cause the heating current supply to the iron to be interrupted after a second predetermined time interval of non-



use in said vertical position longer than the time taken by the iron to reach its normal operating temperature.

4,803,343

ELECTRIC FLUID HEATING APPARATUS UTILIZING A VAPORIZABLE WORKING FLUID

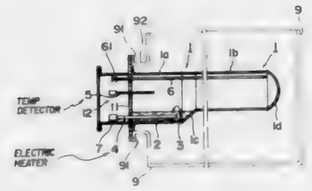
Junji Sotani, Yokohama; Tatsuya Koizumi; Shiro Endo, both of Tokyo; Nobuyoshi Mashino, Hidaka, and Susumu Seo, Yokohama, all of Japan, assignors to The Furukawa Electric Co., Ltd. and The Furukawa Construction Co., Ltd., both of Tokyo, Japan

Filed Dec. 23, 1986, Ser. No. 945,716

Claims priority, application Japan, Dec. 26, 1985, 60-297183; Mar. 20, 1986, 61-63333; Mar. 20, 1986, 61-63334

Int. Cl.[4] H05B *3/82;* **F28D** *15/02;* **F22B** *1/28;* **F24H** *1/20*

U.S. Cl. 219—326 **5 Claims**



1. A heating apparatus comprising:

(a) an elongated tubular receiver having a cover plate affixed to one end thereof, said receiver being positioned substantially horizontally;

(b) an electric cartridge heater inserted into a lower portion of said receiver through said cover plate;

(c) a vaporizable working fluid partially filling the lower portion of said tubular receiver to a level sufficient to cover said cartridge heater;

(d) a temperature detector inserted into said receiver through said cover plate at a location above the level of said working fluid;

(e) a sealed tubular heat exchange means in communication with said receiver through a single passage through which the vaporized working fluid flows from the receiver into the tubular heat exchange means and through which condensed working fluid from the tubular heat exchange means is returned to the receiver, said tubular heat exchange means having a surface in contact with a fluid to be heated;

(f) means for evacuating said sealed tubular heat exchange means and said receiver; and

(g) means for energizing said cartridge heater in response to the temperature detected by said temperature detector;

wherein said working fluid transfers heat from said cartridge heater to said fluid to be heated by evaporation at said receiver and condensation on the surface of said sealed tubular heat exchange means.

4,803,344

APPARATUS AND PROCESS FOR CONTROLLING THE SIMMERING OR COOKING TIME IN A COOKING VESSEL

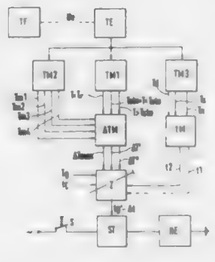
Kurt Wolf, and Wolfram K. Andre, both of Wildbad, Fed. Rep. of Germany, assignors to Fissler GmbH, Fed. Rep. of Germany

Filed Dec. 9, 1987, Ser. No. 130,784

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1987, 3642181

Int. Cl.[4] H05B *1/02*

U.S. Cl. 219—497 **20 Claims**



1. An apparatus for controlling a simmering or cooking time in a cooking vessel which is heated by means of an electrical cooking plate with a control circuit, comprising:

means for measuring a starting temperature (Tx) upon switching on said cooking plate;

means for determining a rate of increase (ΔT) of a temperature (T)in each of a plurality of "n" successive temperature measuring ranges (Tml to Tmn) in a heating phase below the temperature (Td) necessary for initiating significant steam formation producing "n" successive measured values (ΔT, ΔT2, ΔTn);

means for measuring a rate of increase (ΔT') of said temperature (T) only determined from "k" measuring values, wherein "k" is less than "n", and has the steepest rate of increase in temperature rise when said starting temperature (Tx) is lower than a set lower temperature boundary value (Tstu);

means for measuring a rate of increase (ΔT') of said temperature (T) determined from "m" measuring values, wherein "m" is less than "k", when said starting temperature (Tx) is greater than said lower temperature boundary value (Tstu), but less than an upper temperature boundary value (Tsto);

means for measuring a time period (t2) from reaching a boiling temperature (Ts) of water up to the reaching of a predetermined measuring temperature (Tn) lying slightly above said boiling temperature (Ts) when said starting temperature (Tx) is greater than said upper temperature boundary value (tsto); and

means for the premature switching off said cooking plate prior to a set cooking or simmering time a premature time period (Δt) derived from said rates of increase (ΔT, ΔT', ΔT") of said temperature (T) and said measured time period (t2), whereby said premature time period (Δt) is greater the slower said rates of increase (ΔT, ΔT', ΔT") of said temperature (T) and generally proportionately greater the longer said time period (t2).

4,803,345

CERAMIC HEATER APPARATUS WITH METAL ELECTRODES

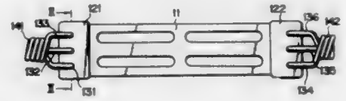
Hiroki Hoshizaki, Anjo; Kazuo Oyobe, Oobu; Hirofumi Suzuki, Kariya; Nobuaki Kawahara, Anjo; Hitoshi Niwa, Okazaki, and Terutaka Kageyama, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 10, 1987, Ser. No. 72,226

Claims priority, application Japan, Jul. 11, 1986, 61-163119; May 19, 1987, 62-119996

Int. Cl.[4] H05B *3/10*

U.S. Cl. 219—553 **22 Claims**



1. A ceramic heater apparatus having metal electrodes, comprising:

a heater body formed of a ceramic material and having electrode attaching ends for supplying power for heating;

means defining an opening respectively in each of the electrode attaching ends of the ceramic heater body;

a metallized layer formed at least on the inner peripheral surface of each of said openings;

a metal electrode inserted in each of the openings on the inner peripheral surface of which the metallized layer is formed; and

a brazing material filled, in a molten state, in a clearance between the metallized layer and the metal electrode to bond them together.

4,803,346

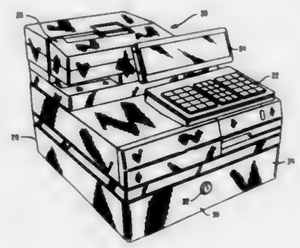
THEFT PROOF CASH DRAWER ASSEMBLY

Dale R. Lyons; David C. Wills, and George Heys, Jr., all of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed May 6, 1988, Ser. No. 190,808

Int. Cl.[4] G06C *5/00*

U.S. Cl. 235—7 R **7 Claims**



1. A data terminal device having a plurality of depending engaging members extending from a lower surface thereof;

a support member including a plurality of apertures for receiving said engaging members for slidably supporting said terminal device for movement to a locking position on said support member;

a cash drawer member slidably mounted within said support member for movement between an open and closed position; and

a plurality of depending stop members secured to the lower surface of the terminal device and located adjacent a rear of the cash drawer when in a closed position whereby the cash drawer member engages the stop members to block the movement of the terminal device when moved in an unlocking direction on said support member.

4,803,347

AUTOMATIC TRANSACTION MACHINE

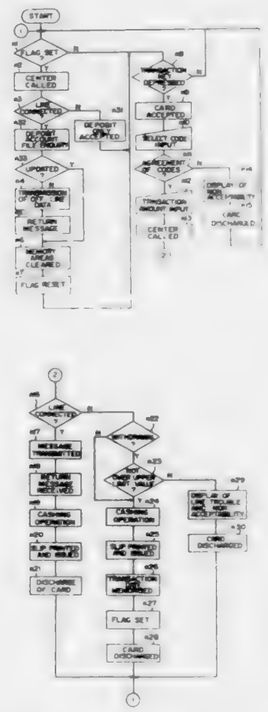
Youji Sugahara, Oizu, and Hideyuki Matsumura, Shiga, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 25, 1987, Ser. No. 29,895

Claims priority, application Japan, Mar. 25, 1986, 61-67677

Int. Cl.[4] G06F *15/30*

U.S. Cl. 235—379 **8 Claims**



1. An automatic transaction machine for executing customer transactions and communicating with a central station, said machine comprising:

means for receiving identifying data identifying a customer;

means for receiving a transaction amount;

means for receiving information concerning a desired transaction;

means for initiating an on-line transaction communication with said central station over a communications link;

means responsive to establishment of said on-line transaction communication with a central station for transmitting data including at least said identifying data and transaction amount over said communications link to said central station for updating an account file corresponding to said identificant data thereat;

means responsive to a first signal received from said central station indicating an updating of said account file for completing said desired transaction on-line;

means responsive to an absence of an on-line communication with said central station, after said on-line communication

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is initiated, for completing said desired transaction off-line; and

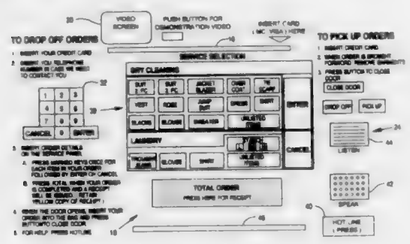
an off-line transaction memory means operative when said machine completes said desired transaction off-line for storing data concerning a completed off-line transaction for later transmission to said central station.

4,803,348

AUTOMATED CUSTOMER INTERFACE FOR SERVICES INVOLVING DROP-OFF AND PICKUP

David W. Lohrey, 339 Golden Gate Ave., Belvedere, Calif. 94920, and Alexander R. Danel, 660 Berkeley Ave., Menlo Park, Calif. 94025

Filed Jun. 30, 1987, Ser. No. 68,198
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—381 **39 Claims**



1. A system for automated drop-off and pickup of laundry and dry cleaning orders, remote from a central dry cleaning-/laundry plant, for unattended use by customers, comprising:

a storage facility for garment bags, soiled garments of unprocessed orders and processed laundry/dry cleaning orders, including means for storing garment bags and processed orders in positions for retrieval,

a customer interface panel at the front of the storage facility,

retrieval means in the storage facility for retrieving a garment bag or a processed order upon receipt of an appropriate command,

the customer interface panel including card reader means for reading encoded information on a customer's non-dedicated general purpose credit card, display means for presenting information and instructions to the customer, menu means for displaying to the customer a menu of services for selection for the customer's order, customer input means for enabling the customer to select desired services from the menu of services in accordance with the items the customer is dropping off, and printer means for printing and outputting to the customer a receipt reflecting the services selected by the customer on the customer input means,

a door adjacent to the interface panel between the customer's position and the storage facility, including door opening and closing means,

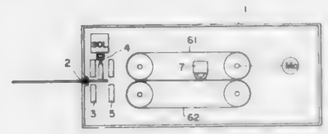
computer means including memory means, for issuing appropriate instructions to the customer on the display means after receiving information from the customer's credit card; for receiving the customer's input on the input means; for issuing a command to the retrieval means if the customer's order has been processed and placed in the storage means, to go to a particular storage position in the storage facility to retrieve the processed order and bring it to the door and open the door to enable the customer to remove the processed order; for creating and storing a transaction record of each transaction; and for driving the printer means and other functions.

4,803,349

CARD READ/WRITE DEVICE

Osamu Sugimoto, Iruma, and Masayuki Watabe, Wako, both of Japan, assignors to Kabushiki Kaisha Nippon Coinco, Tokyo, Japan

Filed Dec. 2, 1986, Ser. No. 937,065
Claims priority, application Japan, Dec. 5, 1985, 60-187578[U]
Int. Cl.[4] G06K *7/00*
U.S. Cl. 235—475 **4 Claims**



1. A card read/write device comprising:

an inlet sensor disposed at a card insertion inlet of a card transportation passage;

a shutter which is disposed adjacent to said card insertion sensor and opens in response to a detection signal from said inlet sensor;

a transportation mechanism driving sensor disposed in said card transportation passage backwardly of said shutter;

a card transportation mechanism disposed in said card transportation passage backwardly of said shutter for transporting the inserted card backwardly; and

card information read/write means disposed in said card transportation mechanism,

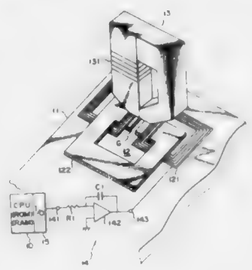
whereby when the trailing edge of the card passes through said transportation mechanism driving sensor in the case of returning the card, said card transportation mechanism is deactivated and when said transportation mechanism driving sensor is turned on again by the card pushed towards backward after staying in said card transportation mechanism, said card transporting mechanism is activated again to transport the card towards said card information read/write means so that the read/write operation of the card is carried out.

4,803,350

NON-CONTACT READING TYPE IC CARD WITH PRE-ENHANCEMENT FUNCTION

Fumio Izawa, Sagamihara, and Masayuki Shinozaki, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 28, 1988, Ser. No. 149,592
Claims priority, application Japan, Feb. 3, 1987, 62-21697
Int. Cl.[4] G06K *19/06*
U.S. Cl. 235—492 **20 Claims**



1. An IC card comprising:

a card substrate;

an IC element incorporated in said card substrate, said IC element including at least a memory in which data can be stored and from which data can be read out;

pre-processing means, incorporated in said card substrate, for receiving an output from said IC element, said pre-processing means pre-enhancing readout data from said memory of said IC element, to substantially attenuate a high-frequency component; and

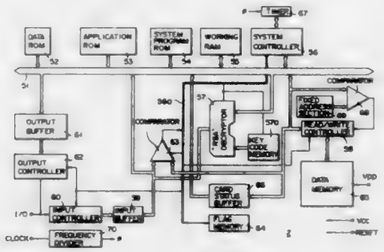
transducer means, incorporated in said card substrate, for receiving an output from said pre-processing means, said transducer means generating a magnetic field corresponding to the readout data supplied from said memory of said IC element via said pre-processing means.

4,803,351

IC CARD SYSTEM WITH CONTROL OF DATA-WRITING PROCESS

Yoshimi Shigesaga, Higashiyamato, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1987, Ser. No. 21,341
Claims priority, application Japan, Mar. 12, 1986, 61-54454
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—492 **7 Claims**



1. An IC card system comprising:

IC card means including at least one integrated circuit having a nonvolatile memory for storing data; and

card terminal means for writing data into said IC card means when said IC card means is electrically coupled to it;

said card terminal means including:

time-measuring means for measuring a predetermined period of time;

power-supply means for supplying data-writing power to said nonvolatile memory provided within said IC card means while said time-measuring means is measuring said predetermined period of time;

detecting means for detecting a response from said IC card means; and

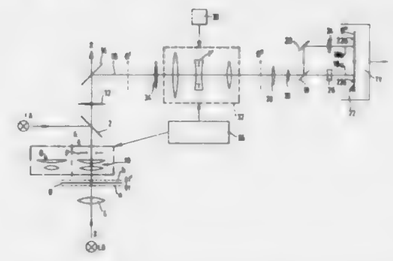
control means coupled to said power supply means and including means for initializing said time-measuring means when said detecting means detects said response from said IC card means, in order to supply said data-writing power from said power-supply means to said nonvolatile memory, and further including means for turning off said power-supply means when said time-measuring means finishes measuring said predetermined period of time, as a result of no response from said IC card means to said detecting means.

4,803,352

AUTOFOCUSING SYSTEM FOR A MICROSCOPE AND METHOD OF USING THE SAME

Fritz Bierleutgeb, Rottstrasse 16/19, A-1140 Wien, Austria

Filed May 14, 1987, Ser. No. 50,267
Claims priority, application Fed. Rep. of Germany, May 16, 1986, 3616544; Mar. 9, 1987, 3707487
Int. Cl.[4] G01J *1/20*
U.S. Cl. 250—201 **20 Claims**



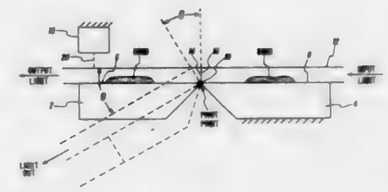
5. An autofocusing system for a variable power microscope having an imaging system, including an objective, for providing a magnified image from light received from an object, a focusing mechanism and means to direct a portion of the image-producing light from the objective to said autofocusing system, which comprises a beam divider to direct said portion along two paths, imaging optics located on each path, electro-optical means to convert light from said imaging optics into two electrical signals, each of said signals having one characteristic varying inversely to the one characteristic of the other as the microscope focus changes, means to modify said signals when the magnification is changed, and control means to drive the focusing mechanism in response to said signal, whereby deleterious effects of changes in magnification are reduced.

4,803,353

LIGHT ATTENUATION MOTION TRANSDUCER WHEREIN TWO FIBER OPTIC CABLES ABUT AT THE PIVOT AXIS OF PIVOTABLE MOUNTING MEMBERS

Robert M. Moorehead, 202 Hyde Park, Richardson, Tex. 75080

Filed Mar. 24, 1988, Ser. No. 172,367
Int. Cl.[4] H01J *5/16*; **G01D** *5/34*
U.S. Cl. 250—227 **5 Claims**



1. A transducer for converting linear motion into a predictable variation in the light attenuation characteristic of a fiber optic cable comprising; a fiber optic cable circumferentially severed with respective severed ends abuttable to effect a minimum attenuation of light being transmitted therethrough; an input coupling arm member, and means responsive to a linear motion of said input coupling arm member for effecting a variable angular relationship between the longitudinal axes of respective abutted severed ends of said cable by rotation of at least one of said abuttable pair of said severed cable ends about an axis lying in the plane defined by that abuttable pair of said

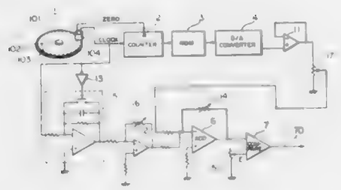
VOL 1099 ISS 1 FEB 7 1989 UMI

severed cable ends and tangent to a radius common to each pair of said abuttable severed cable ends.

4,803,354
CIRCUIT FOR CORRECTING OUTPUT PHASE OF ROTARY ENCODER

Yoichi Onodera, Hachioji; Hideyuki Horiuchi, Abiko, and Chiaki Shimbo, Mitaka, all of Japan, assignors to Hitachi Medical Corp., Tokyo, Japan

Filed Apr. 9, 1987, Ser. No. 36,482
Claims priority, application Japan, Apr. 9, 1986, 61-82643
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE 8 Claims

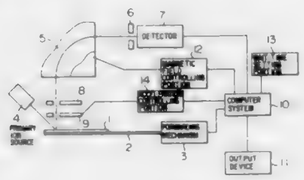


1. A circuit for correcting the output phase of a rotary encoder which delivers a train of output pulses representing the rotation angles of a rotating disc detected by a light detector, said circuit comprising:
correction data storing means for storing therein data for correction of an error caused by a variation in position of said rotary encoder; and
phase modulating means for phase-modulating the output pulses of said rotary encoder on the basis of the correction data outputted from said correction data storing means, wherein said phase modulating means produces the sum of an integrated value of the output pulses of said rotary encoder and a digital-to-analog converted value of the correction data of said correction data storing means and compares a value of the produced sum with a predetermined reference value to produce a rectangular waveform having a duration from a point of time at which the sum value reaches said predetermined reference value to a point of time at which the sum value becomes to be below said predetermined reference value.

4,803,355
MASS SPECTROMETER

Sadao Takahashi, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 26, 1987, Ser. No. 30,179
Claims priority, application Japan, Mar. 26, 1986, 61-65708
Int. Cl.⁴ H01J *49/04*
U.S. Cl. 250—288 6 Claims

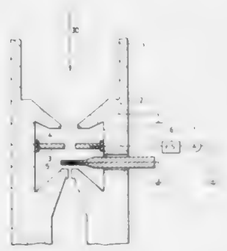


1. A mass spectrometer comprising:
means for irradiating a target with a primary beam;
means for forwarding said target from outside of a vacuum chamber;
means for analyzing the mass of secondary ions emitted by said target;
means for collecting data on the secondary ions thus mass-analyzed; and
means for synchronizing the timing for the forwarding of said target and that for the data collection and for stopping substantially the data collection during a predetermined period of time (T) after stopping of the forwarding of said target.

4,803,356
METHOD AND APPARATUS FOR MEASURING DEGREE OF VACUUM IN AN ELECTRON MICROSCOPE

Hiroki Kunahora; Tsuneyuki Hashimoto, both of Hitachi, and Eiichi Nishimura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 7, 1987, Ser. No. 70,549
Claims priority, application Japan, Jul. 7, 1986, 61-157833
Int. Cl.⁴ G21K *1/00*
U.S. Cl. 250—306 10 Claims



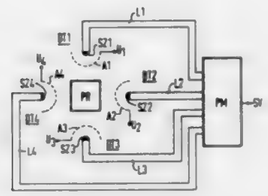
1. A measuring method for degree of vacuum in an electron microscope, wherein an electrode group consisting of an anode and cathodes provided on both sides of the anode is disposed at a portion where the degree of vacuum in the electron microscope is to be measured, comprising the steps of generating thermal electrons by colliding an electron beam with said cathodes, closing in the thermal electrons between said electrode group utilizing a magnetic field forming a lens system of said electron microscope, collecting a gas ionized by the thermal electrons closed therebetween and measuring an ionic current so as to obtain the degree of vacuum.

4,803,357
METHOD AND ARRANGEMENT FOR DETECTING SECONDARY PARTICLES TRIGGERED ON A SPECIMEN BY A PRIMARY PARTICLE BEAM

Hans-Detlef Brust, Dudweiler, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 27, 1987, Ser. No. 6,993
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1986, 3602366
Int. Cl.⁴ G01N *23/00*; **H01J** *3/14*
U.S. Cl. 250—310 18 Claims

1. A method for detecting secondary particles triggered on a specimen by a primary beam using a detector having at least one region sensitive to the secondary particles and a plurality of electrodes chargeable with voltages for deflecting and accelerating the secondary particles in the direction of the sensitive regions, the method comprising:
driving said individual electrodes with time dependent voltages of identical frequency;
phase-shifting said voltages supplied to said electrode arrangements so that a field rotating with a fixed sense is generated having a rotational frequency corresponding to the frequency of the voltages applied to the individual electrode arrangements, said rotating field causing successive deflections of the secondary particles in the direction of the individual sensitive regions; and

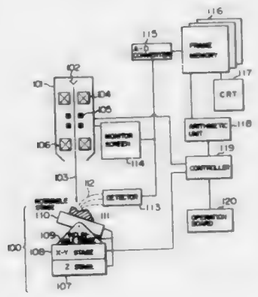


selecting a rotation time for said field at most equal to the dwell time of the primary particle beam on the measuring point of the specimen.

4,803,358
SCANNING ELECTRON MICROSCOPE

Makoto Kato, Kawasaki; Keiichi Hosono; Fuminobu Komura, both of Yokohama, and Toshihiro Furuya, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1988, Ser. No. 169,599
Claims priority, application Japan, Mar. 18, 1987, 62-61020
Int. Cl.⁴ H01J *37/20*
U.S. Cl. 250—310 6 Claims

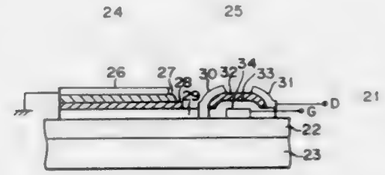


1. A scanning electron microscope for scanning the surface of a specimen with an electron beam to detect a signal emitting from the specimen, thereby forming an image of the surface of the specimen, the scanning electron microscope comprising:
a specimen table capable of making a vertical movement, a horizontal movement, a rotating operation and a tilting operation;
arithmetic means for converting the emitted signal into a digital signal to store the digital signal, and for calculating the amount of each of the vertical movement, horizontal movement, rotating operation and tilting operation of the specimen table, on the basis of the stored information, information on the present state of the specimen table, operating conditions of the scanning electron microscope and an indication given from the outside; and
a controller for controlling the specimen table on the basis of a calculated value from the arithmetic means.

4,803,359
METHOD FOR DETECTING RADIATION IMAGE

Yuichi Hosoi, and Junji Miyahara, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 15, 1984, Ser. No. 610,582
Claims priority, application Japan, May 16, 1983, 58-86226; May 16, 1983, 58-86227
Int. Cl.⁴ G03C *5/16*
U.S. Cl. 250—327.2 7 Claims

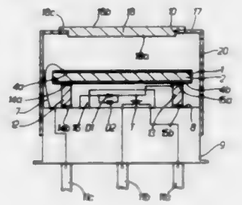


1. A method for detecting radiation image which comprises the steps of:
causing a radiation image storage panel which comprises a phosphor layer containing a stimulable phosphor to absorb a radiation having passed through an object or radiated from an object;
providing a photosensor composed of numerous photosensitive elements in regular and two-dimensional arrangement;
arranging said radiation image storage panel and said photosensor adjacent to each other in the form of layers;
irradiating the panel with an electromagnetic wave to release the radiation energy stored in the panel as stimulated emission; and
photoelectrically detecting the stimulated emission with said photosensor.

4,803,360
INFRARED RADIATION DETECTOR WITH FLANGED SEMICONDUCTOR WINDOW

Patrick J. R. Bell, Southampton, and David N. Vaughan, Totton, both of England, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 21,565, Mar. 2, 1987, which is a continuation of Ser. No. 766,177, Aug. 15, 1985. This application Sep. 25, 1987, Ser. No. 102,309
Claims priority, application United Kingdom, Sep. 19, 1984, 8423689
Int. Cl.⁴ G01J *5/08*
U.S. Cl. 250—338.3 5 Claims



1. An infrared radiation detector comprising:
a canister having an inwardly directed flange defining an aperture in the canister;
a pyroelectric detector element in the canister; and
a semiconductor window closing the aperture, said window

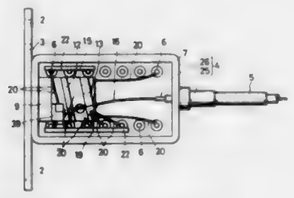
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transmitting radiation to be detected, said canister and window forming a hermetically sealed housing;
characterized in that:
the window has a first portion which is adapted to fit in and which is directly located in the aperture; and
the window has a second portion which is wider than the first portion, which is located outside the canister, and which forms a peripheral shoulder bearing directly against the flange.

4,803,361
PHOTOELECTRIC DEVICE WITH OPTICAL FIBER AND LASER EMITTING CHIP

Kunio Aiki; Atsushi Sasayama; Tagio Nemoto; Makoto Haseda, all of Komoro; Satoru Ishii, Tamamura; Haruo Kuginiya, Komoro, and Tutomu Kawasaki, Tsuchiura, all of Japan, assignors to Hitachi, Ltd. and Hitachi Tobu Semiconductor, Ltd., both of Tokyo, Japan

Filed May 26, 1987, Ser. No. 54,392
Claims priority, application Japan, May 26, 1986, 61-119235; May 26, 1986, 61-119234; May 26, 1986, 61-119233; May 26, 1986, 61-119236; May 26, 1986, 61-119219
Int. Cl.[4] H01J 5/16; G02B 6/36
U.S. Cl. 250—227 20 Claims



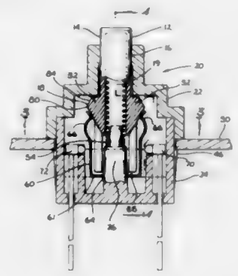
1. A photoelectric device comprising:
a package including a wall;
a laser light emitting chip disposed within the package and capable of emitting laser light along an optical axis;
an optical fiber having a tip at one end which faces said chip, said tip being positioned to receive said laser light and spaced from said chip;
a first fixing means for securing the optical fiber to the wall of said package;
a second fixing means disposed between the optical fiber tip and the first fixing means for fixing the position of the optical fiber tip within said package; and
said first fixing means being positioned to have an offset relation from the optical axis of the light emitting chip.

4,803,362
ELECTRO-OPTICALLY ACTIVATED SWITCH WITH TACTILE FEEDBACK

Gary C. Butts, Huntington Beach, Calif., assignor to Labworks, Inc., Costa Mesa, Calif.

Filed Oct. 27, 1987, Ser. No. 113,638
Int. Cl.[4] G01D 5/34
U.S. Cl. 250—229 21 Claims

1. An optical switch comprising:
emitter means for emitting electromagnetic energy;
detector means responsive to said energy emitted by said emitter means for producing an electrical output signal in response to said energy, said emitter means and detector means disposed at respective ends of an optical path;
a resilient shutter longitudinally moveable between said emitter means and detector means for selectively interrupting said optical path, said shutter having a first substantially relaxed position and a second substantially relaxed position; and
actuator means operable by a user and having a camming surface for operative engagement with said shutter such that operation of said actuator means causes said shutter to move between said first and second substantially relaxed positions with a snap action;

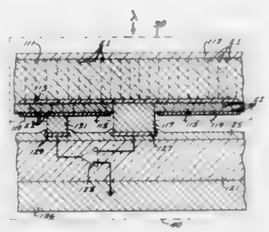


whereby said user receives tactile feedback coincident with said electrical output signal when said shutter moves between said first and second substantially relaxed positions.

4,803,363
INFRARED DETECTOR WITH INTEGRAL FEEDBACK CAPACITANCE

Steve D. Gaalema, Encinitas, and Frank L. Augustine, Escondido, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 27, 1987, Ser. No. 42,757
Int. Cl.[4] G01J 5/20; H01L 31/00, 27/14
U.S. Cl. 250—338.4 13 Claims

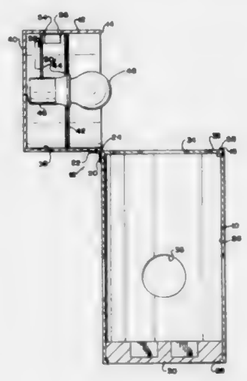


1. An infrared detector comprising:
a photosensitive layer;
first planar contact means conductively coupled over its entire planar area to said photosensitive layer for collecting charge carriers generated by radiation incident on said photosensitive layer;
second planar contact means associated with and separated from said first planar contact means, said first and second planar contact means being substantially coextensive to substantially confine the electric contact means in the region between said first and second planar contact means; and
dielectric means interposed between said first and second planar contact means for dielectrically separating them, said first and second planar contact means and said dielectric means forming a feedback capacitor which provides for feedback capacitance for an externally provided amplifier associated with said detector.

4,803,364
TOOTHBRUSH CONDITIONER

Charles H. Ritter, 3219 Thomasville Rd. #17A, Tallahassee, Fla. 32312

Filed Mar. 3, 1987, Ser. No. 21,252
Int. Cl.[4] A61L 3/00
U.S. Cl. 250—455.1 18 Claims



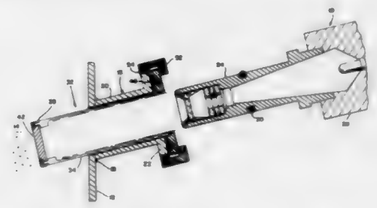
1. A toothbrush conditioning device, comprising:
(a) a body member having an upper end;
(b) a cover member hingedly mounted to said upper end for therewith providing a conditioning chamber;
(c) means mounted to said body member for selectively positioning within said chamber a toothbrush to be conditioned;
(d) toothbrush conditioning means for sterilizing and for driving moisture away from said toothbrush carried by said cover member and movable therewith for being selectively positioned within said chamber proximate the toothbrush to be conditioned when said cover member is mounted to said upper end;
(e) a plurality of openings in said body member for venting said chamber;
(f) hinge means pivotally connecting said cover member with said body member so that said cover member may be pivoted between an open and a closed position;
(g) control means for automatically intermittently operating said conditioning means when said cover member is in said closed position; and
(h) switch means operably associated with said cover member, said body member and said control means for permitting operation of said conditioning means when said cover member is in said closed position and for preventing operation when said cover member is in said open position.

4,803,365
OPTICAL PROBE MOUNTING DEVICE

Richard J. Krause, Perkasie; Jaw F. Lee, Newtown Sq., and Craig W. Breckenridge, Allentown, all of Pa., assignors to BioChem Technology, Malvern, Pa.

Filed May 8, 1987, Ser. No. 47,850
Int. Cl.[4] G01N 21/64
U.S. Cl. 250—461.2 5 Claims

1. An optical well for receiving the insertion end of a removable fluorescence measuring optical probe facilitating mounting on a biological reactor vessel window fitting comprising:
a rigid hollow cylinder extending within said vessel and sized to closely receive said removable probe to allow said probe to closely slide within the interior of said fitting;
window means sealed to said cylinder at a location within said vessel and closing off the insertion end of said cylinder, said window means being constructed from quartz to allow passage of ultraviolet light without undue attenuation;
a flange sealingly affixed to said cyliner outside said vessel and having a sealable surface positioned to contact said fitting to permit said cylinder to extend into said vessel a predetermined distance; and

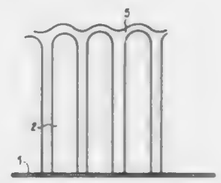


seal means extending along said sealable surface which sealingly contacts said fitting upon insertion of said well into said fitting to prevent leakage from said vessel along a path between said fitting and said well.

4,803,366
INPUT SCREEN SCINTILLATOR FOR A RADIOLOGICAL IMAGE INTENSIFIER TUBE AND A METHOD OF MANUFACTURING SUCH A SCINTILLATOR

Gérard Vieux, Pré de l'Achard 38330, St. Nazaire les Eymes, and Henri Rougeot, 5, rue Marcel Porte 38100, Grenoble, both of France

Filed Aug. 19, 1986, Ser. No. 897,938
Claims priority, application France, Aug. 23, 1985, 85 12688
Int. Cl.[4] H01J 1/62
U.S. Cl. 250—486.1 13 Claims



1. An input screen scintillator for a radiological image intensifier tube comprising a layer of juxtaposed cesium iodide needles having lateral sides extending transversally to said layer, said layer including gaps between the needles, wherein said needles are coated with a refractory material on their lateral sides within the gaps, and wherein said refractory material is transparent and has an optical refractive index approximately the same or less than that of said cesium iodide needles.

4,803,367
LIGHT BEAM SCANNING APPARATUS EMPLOYING BEAM MODULATION IN ACCORDANCE WITH THE START OF SCAN AND END OF SCAN SIGNALS

Masakazu Murase, and Hideo Ishizuka, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 4, 1987, Ser. No. 21,879
Claims priority, application Japan, Mar. 4, 1986, 61-47093
Int. Cl.[4] G01J 5/16
U.S. Cl. 250—236 4 Claims

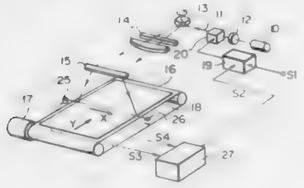
1. A light beam scanning apparatus wherein a light beam deflected by a rotating polygon mirror is scanned on a scan-

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ning surface in a main scanning direction, the scanning surface is moved with respect to the light beam in a sub-scanning direction, and a picture element clock signal is generated, the light beam scanning apparatus comprising:

(i) photodetectors for respectively detecting passage of said light beam over a main scanning start point and passage thereof over a main scanning end point, and

(ii) a clock signal generating circuit for receiving outputs of said photodetectors, calculating the time required for the main scanning for each of mirror surfaces of said rotating polygon mirror, and changing a period of said picture



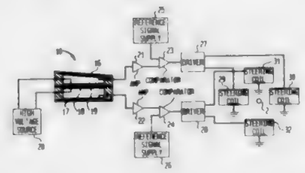
element clock signal in the course of each main scanning so that said period is proportional to said required time with respect to the mirror surface utilized for said main scanning, wherein said clock signal generating circuit comprises a memory for storing digital information on a jitter amount of said light beam for each of said mirror surfaces of said rotating polygon mirror such that a time required for the main scanning of each of the mirror surfaces is stored and is used by the apparatus for said main scanning, said picture element clock signal period being changed in accordance with said stored time for each of said mirror surfaces.

4,803,368

ASSEMBLY AND METHOD FOR MONITORING THE LATERAL POSITION OF A BEAM OF IONIZING RADIATION

Norbert Barthelmes, Walnut Creek, Calif., assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Dec. 28, 1987, Ser. No. 138,759
Int. Cl.[4] G01T *1/185, 1/29*
U.S. Cl. 250—385.1 **9 Claims**



1. A transmission ion chamber assembly for detecting the lateral displacement of an incident beam of ionizing radiation, said beam being projected along a beam axis, comprising:

(a) two ion chambers located one behind the other, each chamber having two base walls and a side wall extending therebetween;

(b) a pair of electrodes disposed in each chamber, each of said electrode pairs including a collecting electrode and a high voltage electrode, the electrodes of each pair being larger than the cross-section of the incident beam and being separated by a distance which varies gradually along a specific measuring axis, the measuring axes of both chambers being inclined with respect to each other; and

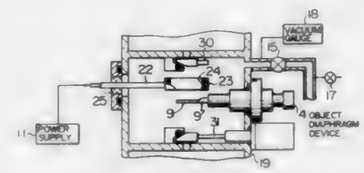
(c) means for deriving from each collecting electrode a current signal as a function of the position of said beam along the associated measuring axis.

4,803,369

PURIFICATION DEVICE FOR CHARGED PARTICLE BEAM DIAPHRAGM

Tadashi Otaka, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 6, 1987, Ser. No. 771
Claims priority, application Japan, Jan. 10, 1986, 61-2182
Int. Cl.[4] G01N *23/00*
U.S. Cl. 250—310 **11 Claims**



1. An electron beam apparatus comprising:

an evacuated envelope;

means for generating an electron beam in said envelope;

means for converging the electron beam on a sample;

a diaphragm plate positioned between the beam generating means and said sample, said plate having an aperture for defining an angular aperture of the electron beam;

means for holding the diaphragm plate in such a location as to become contaminated by reason of an association with the electron beam;

means for generating electrically conductive particles at a position adjacent the beam diaphragm while the beam diaphragm remains in the envelope; and

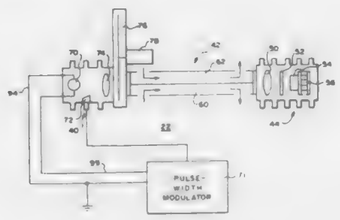
means for keeping the beam diaphragm at a degree of vacuum different from the degree of vacuum at the electron beam generating means under conditions so that said particles attach to the surfaces of the diaphragm plate and the diaphragm plate holding means while said diaphragm plate and diaphragm plate holding means remain in said envelope.

4,803,370

INFRARED LIGHT GENERATION

Robert D. Eckles, Malcolm, Nebr., assignor to Li-Cor, Inc., Lincoln, Nebr.

Filed May 18, 1987, Ser. No. 50,878
Int. Cl.[4] G01N *21/35*
U.S. Cl. 250—504 R **72 Claims**



1. A carbon dioxide analyzer comprising:

a source of infrared light;

a flow cell adapted to contain a gas;

a detector for converting infrared radiation to electrical signals; and

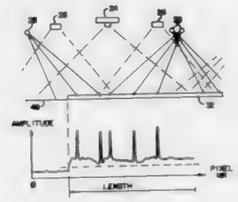
said source of infrared light including combined means energized from a single source for serving as a getter and an emitter of infrared light.

4,803,371

OPTICAL SCANNING METHOD AND APPARATUS USEFUL FOR DETERMINING THE CONFIGURATION OF AN OBJECT

Sven O. Durland, Lake Oswego, Oreg., assignor to The Coe Manufacturing Company, Painesville, Ohio

Filed Sep. 30, 1987, Ser. No. 103,029
Int. Cl.[4] G01B *11/02, 11/04*
U.S. Cl. 250—560 **25 Claims**



14. An apparatus useful for characterizing the configuration of a three-dimensional object comprising:

support means for supporting the object;

first light means for illuminating a plurality of positions on a surface of the object with light of a first intensity;

second light means for illuminating at least one region on a surface of the object with light of a second, different intensity while said object is also being illuminated by the first light means; and

photodetector means, positioned to view at least portions of the surfaces illuminated by the first and second light means, for producing a single output signal having a plurality of values corresponding to the intensity of light reflected by the object from both the first and second light means at a plurality of positions within the field of view of the photodetector means.

4,803,372

LINE POSITION DETECTING APPARATUS FOR DETECTING A V-SHAPED INDENT

Tadashi Hirata, Yamato; Katsumi Koyama, Hiratsuka; Hideaki Takahashi, Atsugi; Yasuhiro Harashima, Atsugi; Michio Kitahara, Atsugi; Katsuyuki Igarashi, Itabashi; Jun Kitamura, Yokohama; Hiroshi Kikuchi, and Kimiyuki Narisada, both of Tokyo, all of Japan, assignors to Amada Company, Limited, Japan

Filed Apr. 10, 1987, Ser. No. 37,144
Claims priority, application Japan, Apr. 11, 1986, 61-082369
Int. Cl.[4] G01B *11/00*
U.S. Cl. 250—561 **10 Claims**

1. A line position detecting apparatus for detecting a V-shaped indent described on a surface, which comprises:

(a) means for irradiating the surface to be measured with a light beam;

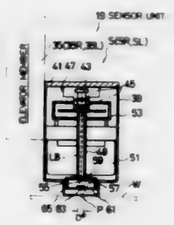
(b) means for rotating the light beam emitted from said measured surface irradiating means so as to describe a circular locus on the surface with a coordinates origin as its center;

(c) means for detecting an angular position of the light beam rotating means from a coordinates axis;

(d) means for detecting an intensity of light beam reflected from the V-shaped indent in the form of voltage; and

(e) means for detecting an angular position of at least one point of intersection between the V-shaped indent and the circular locus on the basis of change in voltage level of the detected signal indicative of the intensity of the reflected light beam and calculating the intersection point indicated by x-y coordinates on the basis of a diameter of the irradiated circular locus and the detected angular position;

wherein said angular position detecting means compares the detected voltage level indicative of the reflected light beam intensity with a reference voltage level Vc to obtain



four intersections θ_3, θ_4, θ_6 and θ_7, and said intersection point calculating means calculates two intermediate angular positions $\theta_5=(\theta_3+\theta_4)/2$ and $\theta_8=(\theta_6+\theta_7)/2$, a V-shaped angular position $\theta_9=(\theta_5+\theta_8)/2$, a V-shaped indent position as

$$-x=(D/2)\ \mathrm{Cos}\ \theta_9$$
$$y=(D/2)\ \mathrm{Sin}\ \theta_9$$

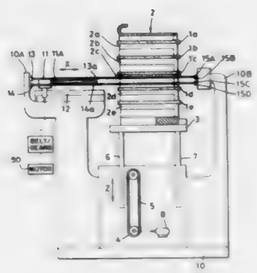
where D denotes a diameter of the irradiated circular locus.

4,803,373

CONVEYOR ARM APPARATUS WITH GAP DETECTION

Kazunori Imamura, Tokyo; Fuminori Hayano, Fujisawa; Yukio Kakizaki, Yokohama, and Jiro Kobayashi, Yamato, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 27, 1987, Ser. No. 7,190
Claims priority, application Japan, Jan. 29, 1986, 61-17250
Int. Cl.[4] G01N *21/86;* **G01V** *9/04*
U.S. Cl. 250—561 **32 Claims**



1. An apparatus for unloading a carrier means in which a plurality of substrates are stored substantially parallel to each other in locations spaced by a predetermined distance, comprising:

(a) stage means on which said carrier means is disposed;

(b) an arm member provided with a mounting surface for receiving each of said plurality of substrates, said arm member being formed such that said mounting surface is substantially parallel to each of said plurality of substrates stored in said carrier means;

(c) moving means for moving said arm member in a predetermined direction to insert a part of said arm member into

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a gap between adjacent ones of said plurality of substrates in said carrier means, said part of said arm member having said mounting surface, said predetermined direction being substantially parallel to said mounting surface;

(d) light detecting means;

(e) projecting means for projecting a pair of light beams to said light detecting means such that the light paths of said light beams are substantially parallel to said mounting surface with one of said light beams being disposed opposite to the other of said light beams with respect to said part of said arm member in a direction transverse to said mounting surface, said light detecting means being disposed at an opposite side of said stage means in said predetermined direction with respect to said projecting means, said light detecting means detecting intensity of each of said light beams and outputting light detecting signals corresponding to the detected intensities;

(f) substrate detecting means responsive to said light detecting signals for detecting that at least one of said plurality of substrates stored in said carrier means is in at least one of said light paths, and for outputting a substrate detecting signal; and

(g) control means responsive to said substrate detecting signal for causing relative displacement between said arm member and said stage means along a direction which is substantially perpendicular to said predetermined direction.

4,803,374

CONTINUOUS MEASUREMENT OF THE SURFACE ROUGHNESS OF A COLD-ROLLED PRODUCT

Guy A. Monfort, Montegnee, and Adolphe A. Bragard, Esneux, both of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum Voor Research in De Metallurgie, Brussels, Belgium

Filed Dec. 5, 1986, Ser. No. 938,239

Claims priority, application Luxembourg, Dec. 5, 1985, 86194

Int. Cl.⁴ G01H *21/86*

U.S. Cl. 250—571 **12 Claims**



1. A method for continuously optically measuring the surface roughness of a cold-rolled product, comprising:

determining permitted surface roughness values for said product;

transmitting an incident light beam having a wavelength at least equal to a maximum value of said permitted surface roughness values onto said product surface;

receiving a light beam reflected from said product surface;

measuring the light intensity of said received reflected light beam;

determining from said measured light intensity a measured value of surface roughness of the product; and

comparing said measured value of surface roughness with said permitted surface roughness values.

4,803,375

IMAGE SENSORS AND METHODS OF MANUFACTURING SAME INCLUDING SEMICONDUCTOR LAYER OVER ENTIRE SUBSTRATE SURFACE

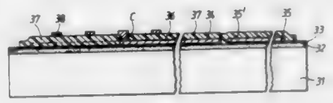
Tamio Saito, Tokyo; Satoshi Takayama, Kawasaki; Yoshiyuki Suda; Osamu Shimada, both of Yokohama, and Ken-ichi Mori, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 12, 1986, Ser. No. 941,192

Claims priority, application Japan, Dec. 27, 1985, 60-294054; Mar. 28, 1986, 61-68665

Int. Cl.⁴ H01J *40/14*; H01L *27/14*

U.S. Cl. 250—578 **27 Claims**



1. An image sensor, comprising:

a substrate;

a semiconductor layer continuously formed over the entire surface of said substrate;

a plurality of first electrode formed on said semiconductor layer, said plurality of first electrodes arranged in a predetermined arrangement and electrically connected to said semiconductor layer on a first region of said substrate;

a plurality of electrode portions formed on said semiconductor layer on said first region of said substrate and arranged in said predetermined arrangement, being electrically connected to said semiconductor layer on said first region, groups of said electrode portions each having a common second electrode formed on said semiconductor layer, said plurality of electrode portions having a predetermined arrangement and positioned adjacent said first plurality of electrodes wherein said electrode portions, said first electrodes and said semiconductor layer positioned therebetween comprise photo-sensing elements;

first wires formed on said semiconductor layer and respectively extended from said first electrodes to said semiconductor layer on a second region of said substrate;

an insulating layer formed on said first and second region, covering said photo-sensing elements and said first wires; and

second wires formed in parallel on said insulating layer of said second region, said second wires electronically connected to said first wires at through holes formed in said insulating layer.

4,803,376

CONTROL METHOD FOR A REVERSIBLE MOTOR - GENERATOR ELECTRICAL MACHINE FOR A MOTOR VEHICLE AND CONTROL INSTALLATION FOR THE IMPLEMENTATION OF SUCH METHOD

Huu Can N'Guyen, Rueil Malmaison, France, assignor to Valeo, Paris, France

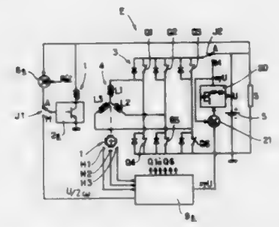
Filed Aug. 26, 1987, Ser. No. 89,393

Claims priority, application France, Sep. 11, 1986, 86 12697

Int. Cl.⁴ H02K *17/12, 17/42*

U.S. Cl. 290—22 **10 Claims**

1. A method of controlling a reversible electrical machine, which is capable of operating either as a generator (alternator) or as a motor, intended for a motor vehicle, said method comprising providing a machine comprising an armature winding, a regulator capable of regulating the voltage delivered by the armature to the electrical system of the vehicle and an inductor winding, the inductor winding being controlled during operation as an alternator by said regulator and operating said machine as a motor by controlling at least one of the supply voltage for the armature and the excitation in order to obtain the desired torque-speed characteristics, wherein the machine is controlled to operate as a starter motor, the method including establishing a regulated voltage from the battery voltage which is higher than said battery voltage, and using this regulated voltage at least for supplying the armature with power.



4,803,377

STARTER MOTOR CONTROL DEVICE FOR ENGINES

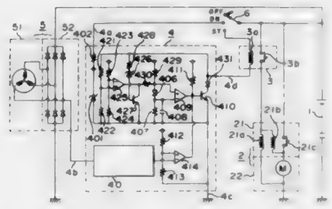
Shiro Iwatani, and Kazuya Tokugawa, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1988, Ser. No. 169,274

Claims priority, application Japan, Mar. 18, 1987, 62-40554[U]

Int. Cl.⁴ F02N *11/08*

U.S. Cl. 290—38 R **1 Claim**



1. A starter motor control device comprising:

a starter motor for starting an engine,

an auxiliary switch which can interrupt the energization to the starter motor,

a circuit for detecting the rotation speed of the engine or other mechanism related to the rotation speed of the engine to output a signal for preventing the starter motor from being conversely driven by the started engine,

a circuit for restraining the starter motor from being energized again for a predetermined time just after the energization to the starter motor is cut off,

a first detecting means having a first set value for judging the voltage at an auxiliary switch driving terminal for a switching element for driving the auxiliary switch,

a second detecting means having a second set value for judging the voltage of the auxiliary switch driving terminal, and

a circuit for determining the operation of the switching element based on the judgements given by the first and the second detection means.

4,803,378

PULSE GENERATOR

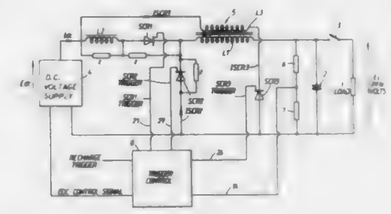
Robert Richardson, Essex, England, assignor to The Marconi Company Limited, Stanmore, England

Filed Jan. 28, 1986, Ser. No. 823,451

Claims priority, application United Kingdom, Jan. 31, 1985, 8502480

Int. Cl.⁴ B23P *1/02*

U.S. Cl. 307—108 **4 Claims**



1. A pulse generator, comprising:

a capacitor:

means for periodically discharging the capacitor to generate pulses of electricity;

means for recharging the capacitor between pulses;

sensing means for sensing a residual reverse polarity charge on the capacitor after generation of a pulse; and

residual charge utilization means controlled by the sensing means so that in response to the sensing of a reverse polarity charge the residual charge utilization means uses energy stored in the capacitor by virtue of the reverse charge to assist in recharging the capacitor for the next pulse,

wherein the means for recharging comprises an inductor, wherein the residual charge utilization means comprises a first switch for connecting the inductor across the capacitor, and wherein the sensing means comprises means for closing the first switch in response to detection of the reverse polarity charge and for opening the first switch when the energy giving the capacitor the reverse polarity charge has discharged through the inductor and recharged the capacitor with a forward charge.

4,803,379

CIRCUIT ARRANGEMENT FOR POWER SUPPLY FOR ELECTRICAL AND ELECTRONIC CONTROL OR REGULATING DEVICES

Ros Remigio, St. Georgen, and Storz Achim, Triberg, both of Fed. Rep. of Germany, assignors to Dieter Grlesllin Feinwerktechnik, Fed. Rep. of Germany

PCT No. PCT/DE86/00343, § 371 Date May 6, 1987, § 102(e) Date May 6, 1987, PCT Pub. No. WO87/01880, PCT Pub. Date Mar. 26, 1987

PCT Filed Aug. 28, 1986, Ser. No. 45,849

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1985, 3532758

Int. Cl.⁴ H03K *3/00*; H01L *9/12*

U.S. Cl. 307—112 **1 Claim**

1. A circuit arrangement comprising: a purely capacitive power supply having a series capacitor for providing current flow;

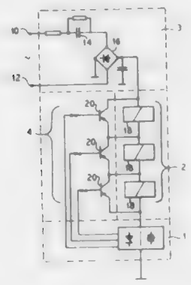
a plurality of power consumers connected in series with said power supply;

a plurality of semiconductor switches, each of said power consumers of said plurality of power consumers having one of said semiconductor switches of said plurality of semiconductor switches connected in parallel therewith;

a control element for causing power to be selectively supplied via a respective semiconductor switch to at least one of said plurality of power consumers and connected in

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series with said plurality of power consumers and said power supply, said current flow determined by said series



capacitive in said power supply and by said selected power consumers.

4,803,380

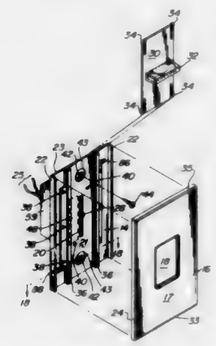
COVER AND SUPPORT PLATE ARRANGEMENT FOR WALL MOUNTED DEVICES

Elliot G. Jacoby, Jr., Glenside; Michael J. D'Aleo, Ottsville; David G. Lachaco, Macungie; Joel S. Spira, Coopersburg; Richard A. Wagner, Allentown; Stephen J. Yuhasz, Zionsville, all of Pa., and David H. Dowler, Raymond, Me., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Continuation-in-part of Ser. No. 839,296, Mar. 13, 1986, abandoned. This application Jun. 20, 1986, Ser. No. 877,229

Int. Cl.[4] H01H *47/00*; **H01C** *10/00*

U.S. Cl. 307—157 **218 Claims**



1. An apparatus comprising: a. a support plate adapted for mounting to a wall box embedded in a wall, the support plate having overall surface dimensions greater than the corresponding dimensions of the wall box and including a generally flat front and rear surface, the front surface having a pair of spaced upstanding portions disposed adjacent opposing vertical side edges thereof; b. a cover plate juxtaposed over the front surface of the support plate, spaced therefrom so as to provide an air gap between the rear surface of the cover plate and the front surface of the support plate and to provide a low profile with respect to the wall surface on which the support plate is to be mounted, the overall surface dimensions of the cover plate being greater the the corresponding dimensions of the support plate including first portions laterally extending beyond the vertical side edges of the support plate; c. an electric circuit having a heat generating controllably conductive device therein, the heat generating device thermally connected to the support plate and adapted to be connected in series with a controlled load and to be electrically coupled to field wiring from a power source provided to the wall box; and d. the front surface of the support plate, the rear surface of the cover plate and the pair of upstanding portions defining a chimney for the dissipation of heat generated by the controllably conductive device, the open opposing horizontal side edges of the support plate defining inlets and outlets of the chimney; whereby the laterally extending first portions of the cover plate cast shadows along vertical sides of the support plate such that the vertical sides of the support plate are visible only when viewed at extreme angles with respect to an imaginary line perpendicular to the plane of the support plate, thereby giving the appearance that the cover plate is floating from the wall.

4,803,381

BIAS CURRENT COMPENSATING CIRCUIT, PARTICULARLY FOR SAW-TOOTH WAVE GENERATORS

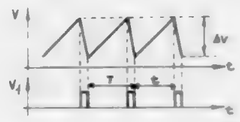
Silvano Gornati, Cascrezzo; Roberto Viscardi, Lissone, and Silvano Coccetti, Vittuone, all of Italy, assignors to SGS Microelettronica S.p.A., Catania, Italy

Filed Jan. 1, 1987, Ser. No. 55,952

Claims priority, application Italy, Jan. 18, 1986, 20836 A/86

Int. Cl.[4] H03K *4/08, 17/56, 4/10*; **G05F** *3/16*

U.S. Cl. 307—228 **5 Claims**



1. Bias current compensating circuit, in particular for saw-tooth wave generators, comprising a controllable current source stage, for feeding an adjustable value charge current to an external element, in particular a capacitor, a control element connected to the capacitor for alternately and periodically controlling charging and discharging of the capacitor, a buffer stage connected to the capacitor and for receiving therefrom a saw-tooth wave voltage generated by the capacitor during charging and discharging thereof, said buffer stage supplying to the capacitor an error current, a current sensor connected to said buffer stage for detecting said error current supplied to the capacitor and for generating an error current amplitude signal, and means connected between said current sensor and said controllable current source stage for reducing said adjustable value charge current generated by said controllable current source stage by an amount substantially equal to said error current amplitude signal.

4,803,382

VOLTAGE COMPARATOR CIRCUIT

Hiroshi Tsaimoto, Kawasaki, and Mikio Hayashibara, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 23, 1987, Ser. No. 136,974

Claims priority, application Japan, Dec. 25, 1986, 61-307957

Int. Cl.[4] H03K *5/08, 5/24*

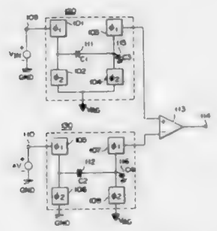
U.S. Cl. 307—362 **8 Claims**

1. A voltage comparator circuit comprising:

a first switched capacitor circuit for receiving a first signal voltage to be compared, said first switched capacitor circuit having a first switching element connected between an input terminal of said first signal voltage and one terminal of a first capacitor, a second switching element connected between said one terminal of said first capacitor and a first fixed potential point, a third switching element connected between an output terminal of said first switched capacitor circuit and the other terminal of said

first capacitor, and a fourth switching element connected between the other terminal of said first capacitor and said first fixed potential point;

a second switched capacitor circuit for receiving a second signal voltage to be compared, said second switched capacitor circuit having a fifth switching element connected between an input terminal of said second signal voltage and one terminal of a second capacitor, a sixth switching element connected between said one terminal of said second capacitor and a second fixed potential point, a



seventh switching element connected between an output terminal of said second switched capacitor circuit and the other terminal of said second capacitor, and an eighth switching element connected between the other terminal of said second capacitor and said first potential point, said second switched capacitor circuit matching with said first switched capacitor circuit; and

a differential voltage comparator having first and second input terminals for receiving outputs from said first and second switched capacitor circuits, respectively.

4,803,383

TRANSISTOR-TRANSISTOR LOGIC CIRCUIT

Katsuji Hirochi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 2, 1987, Ser. No. 115,870

Claims priority, application Japan, Oct. 31, 1986, 61-260942

Int. Cl.[4] H03K *19/003, 19/088, 17/60, 17/28*

U.S. Cl. 307—456 **18 Claims**

1. A transistor-transistor logic circuit, comprising:

first and second power supply lines;

at least one input terminal operatively connectable to receive an input signal;

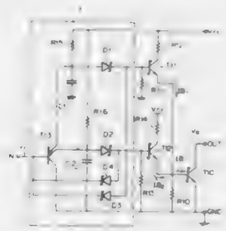
an output terminal;

an output transistor having a base, an emitter operatively connected to said second power supply line and a collector operatively connected to said output terminal;

resistors;

a plurality of phase-splitting transistors, each having a base, an emitter operatively connected to the base of said output transistor and a collector operatively connected through one of said resistors to said first power supply line; and

a delay circuit operatively connected between said input terminal and each base of said plurality of phase-splitting transistors, transmitting a change of the input signal applied to said input terminal to each base of said plurality of





phase-splitting transistors separately and at different propagation delay times.

4,803,384

PULSE AMPLIFIER SUITABLE FOR USE IN THE SEMICONDUCTOR LASER DRIVING DEVICE

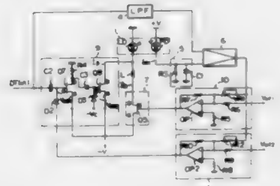
Kazuo Yamane; Masakazu Mori, both of Kawasaki; Takashi Tsuda, Tokyo; Yoshinori Ohkuma, and Kazuhiro Suzuki, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 21, 1986, Ser. No. 921,110

Claims priority, application Japan, Oct. 22, 1985, 60-234634; Mar. 19, 1986, 60-059464

Int. Cl.[4] G06G *7/12*; **H03L** *5/00*; **H01S** *3/00*

U.S. Cl. 307—490 **8 Claims**



1. A pulse amplifier for varying a pulse amplitude of an input pulse in response to a control signal, comprising:

first and second FETs connected in cascade and having pinch-off voltages determined by gate-source voltages under which currents flowing at their drains become zero;

said first FET formed having a gate electrode connected to receive an input pulse and a gate-source voltage variable

in response to a control signal and having a drain, said first FET biased such that, at the output of the drain, a first pulse is cut off at an upper portion and a lower portion of the inpout pulse at a pinch-off voltage thereof; and

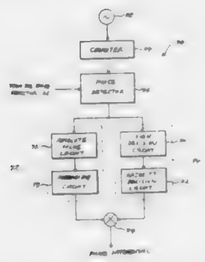
said second FET having a gate connected to receive the input pulse output from said first FET, having a drain and having a gate-source voltage biased such that the drain outputs a second pulse cut-off at the side portions of the first pulse corresponding to the upper and lower portions of the input pulse which are not cut off.

4,803,385

PHASE DETECTING CIRCUIT

Hisaru Nawata, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 24, 1987, Ser. No. 17,625
Claims priority, application Japan, Feb. 25, 1986, 61-39416
Int. Cl.⁴ H03B *3/64;* **G01R** *25/00;* **H03K** *5/26*
U.S. Cl. 307—516 **5 Claims**



1. A phase detecting circuit for detecting a phase differential between a bit timing and a reference clock, comprising:

a phase detector for producing a phase differential between said reference clock and an input signal including bit timing which has a same frequency as said reference clock;

an absolute value averaging circuit for averaging absolute values of a plurality of consecutive outputs of said phase detector;

a sign majority decision circuit for producing one of positive and negative signs of said consecutive outputs of said phase detector which is decided by majority; and

a multiplier for multiplying an output of said absolute value averaging circuit and an output of said majority decision circuit, the resulting product being delivered as a phase differential.

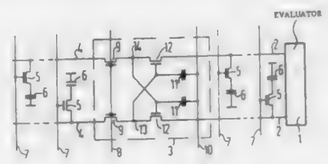
4,803,386

DIGITAL AMPLIFIER CONFIGURATION IN INTEGRATED CIRCUITS

Rainer Kraus, München; Oskar Kowarik, Grafing, and Manfred Paul, Unterföhring, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and München, Fed. Rep. of Germany

Filed Nov. 17, 1987, Ser. No. 121,521
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1987, 3639347
Int. Cl.⁴ G01R *19/00;* **H03K** *3/26;* **G11C** *7/00*
U.S. Cl. 307—530 **3 Claims**

1. Digital amplifier arrangement in an integrated circuit for amplification of a voltage difference, comprising a pair of bit lines having a pair of respective extension lines connected thereto via respective isolation transistors; a clock line controlling the isolation transistors; a digital amplifier containing the isolation transistors, said digital amplifier having a pair of cross-connected transistors for amplifying a voltage difference between said extension lines; and an evaluator connected to



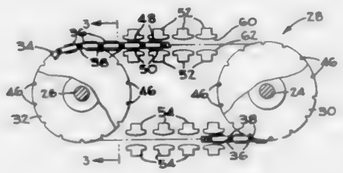
said cross-connected transistors via said bit lines for reading said voltage difference between the extension lines.

4,803,387

ELECTRIC DRIVE MOTOR

Gene J. Selder, Bloomington, Minn., assignor to FMC Corporation, Chicago, Ill.

Filed Jun. 29, 1987, Ser. No. 67,746
Int. Cl.⁴ H02K *41/06*
U.S. Cl. 310—12 **13 Claims**



1. A linear belt motor comprising:

a pair of aligned and rotatable sprockets:

a plurality of non-magnetic rigid links connected to form a belt;

said belt trained over said sprockets;

a pair of permanent magnets affixed to each of said links with opposite magnetic poles thereof adjacent the associated link;

a plurality of u-shaped stator poles positioned between said sprockets and straddling said belt;

each of said stator poles having a pair of pole faces of a large radius and a length substantially twice the width of said magnets;

a coil wound on each stator pole;

position sensing means to determine the position of said magnets relative to said stator poles; and

control circuit means responsive to said position sensing means to sequentially energize each of said coils in order to attract and repel the permanent magnets adjacent each of said stator poles.

4,803,388

LINEAR MOTOR

Hideo Nikura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 14, 1986, Ser. No. 918,151
Claims priority, application Japan, Oct. 28, 1985, 60-241144
Int. Cl.⁴ H02K *41/00*
U.S. Cl. 310—12 **2 Claims**

1. A linear motor, comprising:

a first yoke;

a second yoke spaced apart with width of a first gap from said first yoke;

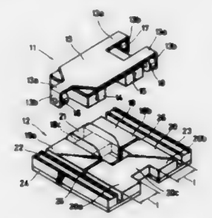
a member of nonmagnetic material connecting said first yoke to said second yoke to form a flat surface;

a magnet spaced apart the width of a second gap from and

arranged in opposed relation to said first yoke and said second yoke;

plural coils spaced apart the width of said second gap from and arranged in opposed relation to said first yoke and said second yoke;

a third yoke forming a magnetic circuit with one of said first



yokes and said second yoke and with said magnet and at least one of said coils, said third yoke being arranged parallel and opposed to said first yoke and said second yoke;

said plural coils being wound cores provided at end portions of said third yoke; and

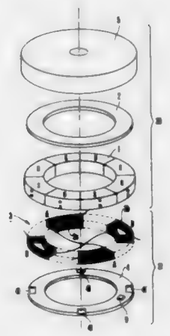
said magnet being fixed to said third yoke.

4,803,389

STEPPING MOTOR, METHOD OF DRIVING THE SAME AND DRIVE CIRCUIT THEREFOR

Shigeki Ogawa, Tokyo, and Eiichi Tsukada, Tokorozawa, both of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jul. 17, 1987, Ser. No. 74,823
Claims priority, application Japan, Jul. 22, 1986, 61-170814
Int. Cl.⁴ H02K *37/08*
U.S. Cl. 310—49 R **6 Claims**



1. A stepping motor comprising:

a first element including at least two permanent magnets each having a pair of N and S poles;

a second element including a yoke separated from said first element by a predetermined interval;

said first and second elements being relatively movable;

said second element including a two-phase coil arranged on said yoke at spaced locations corresponding to the relative spacing between said at least two permanent magnets, and means for generatin a static detent torque between said first and second elements at predetermined locations along the direction of movement diffusion from the locations of the detent torque due to the interaction between the magnetic field generated by the permanent magnets and the magnetic field generated by the coil when energized so that said first and second elements achieve a stable static detent position at one of said predetermined locations when the coil is de-energized;

means for supplying a drive current to one of the coils of said two-phase coil; and

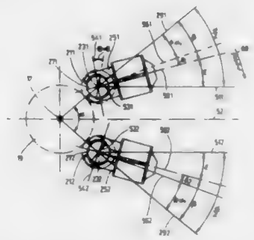
means for supplying said drive current to the other coil of said two-phase coil after said two-phase coil is energized.

4,803,390

DUAL MOTOR DRIVE ARRANGEMENT FOR A SMALL DOMESTIC APPLIANCE

Leo Bertram, Stolberg, Fed. Rep. of Germany; Hugo Schenmann, Schaesberg, Netherlands, and Raimund L. Rukenbeil, Klagenfurt, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 19, 1987, Ser. No. 122,982
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1986, 3640397
Int. Cl.⁴ H02K *7/14, 51/00*
U.S. Cl. 310—50 **11 Claims**



1. A drive arrangement for a small electrically driven appliance comprising

a common drive gear wheel which is connected to a load, said drive gear wheel being characterized by a pitch angle $\alpha_2 = \pi m / r_2$, where r_2 is the radius of the drive gear wheel and m is its module,

a pair of two-pole single phase synchronous drive motors each having a stator with a stator field and a permanent magnet rotor mounted on a rotor shaft and having a direction of polarization, each motor having a gear wheel mounted on its rotor shaft and meshing with said common drive gear wheel, the angle θ between the main direction of the stator field and the rotor field being the same for all rotors for a positive stator current, whereby when the stator coils are not energized the rest position $\theta = \theta_o$ established by the magnetic detent torque is maintained and all the motors experience a torque in the same direction when voltage is applied,

the lines connecting the rotor gear wheel axes to the common drive gear wheel axis enclosing an angle $\propto$ which is a multiple n' of the pitch angle $\propto_2$, the value of n' being derived from the relationship

$$\frac{\pi}{90} \arcsin \frac{mz_1/2 + K}{m(z_1 + z_2)/2} < n'\alpha_2 < 2\pi \frac{\pi}{90} \arcsin \frac{mz_1/2 + K}{m(z_1 + z_2)/2}$$

where

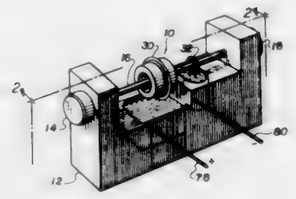
z_1 = the number of teeth of a rotor gear wheel,

z_2 = the number of teeth of the common drive gear wheel,

K = the whole depth of the teeth, and n' need not be an integer, all the length dimensions being expressed in mm.

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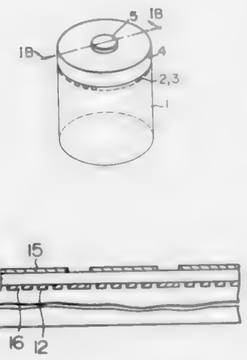
4,803,391
UNIPOLAR MOTOR AND MECHANICAL CONVERSION SYSTEM AND METHOD
Sidney Abrahams, Miami, Fla., assignor to Genedyne Corp., Miami, Fla.
Filed Apr. 17, 1987, Ser. No. 39,382
Int. Cl.[4] H02K *31/04, 13/00*
U.S. Cl. 310—178 **12 Claims**



1. An electro-mechanical converter for generating mechanical power from a D.C. power source comprising:
a rotatable rotor made of conductive but low permeable material;
at least one disk having a center and a periphery integral with and made of similar material as said rotor;
means for establishing a unidirectional and uniform magnetic field through a circumferential zone of said one disk between the center and said periphery over a substantially radial mid-section thereof;
means for introducing current from said D.C. power source at a fixed location relative to said rotatable rotor and at the periphery of said one disk;
circuit completing means connecting the center of the disk and the periphery of the disk in series and exteriorly of the disk, for current flow through the converter; and
said means for establishing said field comprising magnet means on one side of said disk.

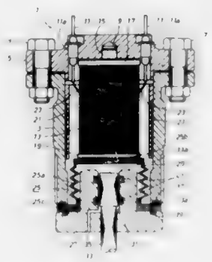
4,803,392
PIEZOELECTRIC TRANSDUCER
Keiko Kushida, Kuttachi; Hiroshi Takeuchi, Matsudo; Toshio Kobayashi, Tokyo; Kazumasa Takagi, Tokyo, and Kenzo Sasa, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 18, 1987, Ser. No. 86,488
Claims priority, application Japan, Sep. 26, 1986, 61-225935
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—311 **18 Claims**

1. A piezoelectric transducer comprising:
a substrate of a single crystal having a lattice constant substantially equal to that of a perovskite-type piezoelectric crystal, said substrate having a number of grooves formed on a main surface of
said substrate at intervals;
a first electrode comprising metal formed within said grooves of substrate;



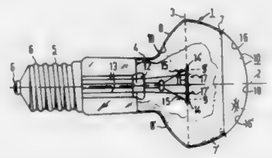
a piezoelectric thin film of said perovskite-type piezoelectric crystal so formed as to cover said main surface of said substrate and said first electrode within said grooves; and
a second electrode formed on said piezoelectric thin film.

4,803,393
PIEZOELECTRIC ACTUATOR
Takeshi Takahashi, Mishima, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Jul. 14, 1987, Ser. No. 73,155
Claims priority, application Japan, Jul. 31, 1986, 61-180349; Aug. 19, 1986, 61-126359[U]; Apr. 24, 1987, 62-102444
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—328 **15 Claims**



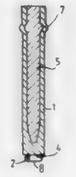
1. A piezoelectric actuator for moving an object member by utilizing a dimensional change of a piezoelectric element, comprising an envelope between the piezoelectric element and the object member, said envelope comprising a cylinder having a bellows in a side wall of the cylinder, one end of the cylinder being abutted on the piezoelectric element and the other end of the cylinder being closed by a cap member having a hole, said object member being slidably disposed in said hole, and said envelope hermetically containing a fluid, wherein said cylinder is contracted or expanded responsive to a dimensional increase or decrease in the piezoelectric element.

4,803,394
LAMP VESSEL FOR MULTIPLE LAMP TYPES
Petrus A. J. Holten, Weert, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 5, 1987, Ser. No. 22,160
Claims priority, application Netherlands, Feb. 25, 1987, 8700464
Int. Cl.[4] H01K *1/28, 1/32*
U.S. Cl. 313—113 **9 Claims**



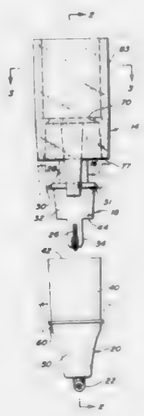
1. A symmetrical lamp envelope having an axis of symmetry, comprising:
(a) a neck shaped first portion:
(b) an internally concave second portion extending outwardly from said necked shaped portion and terminating at the largest diameter of said lamp envelope, said second portion extending more in a direction transverse to said axes of symmetry than along said axis, said second portion being a body of revolution of a parabola branch about said lamp envelope axis of symmetry, the axis of symmetry being between said parabola branch and the focus of said second branch, said parabolic portion having a locus of foci in a plane transverse to said axis of symmetry;
(c) an internally concave third portion smoothly merging with said second portion at said largest diameter and extending away from said largest diameter more along the axis of symmetry than transverse to said axis of symmetry, said third portion being a body of revolution of a circular arc about said axis of symmetry, the axis of symmetry lying between the center of curvature of said circular arc and said circular arc, said center of curvature lying in a region which extends from said locus of foci towards said neck portion; and
(d) an internally concave fourth wall portion opposite said first and second portions smoothly joining said third portion.

4,803,395
PROCESS FOR THE MANUFACTURE OF A PLATINUM-TIPPED BIMETALLIC CENTRAL ELECTRODE FOR AN IGNITION PLUG AND THE ELECTRODE PRODUCED ACCORDING TO THIS PROCESS
Michel Matesco, Mongt Montbrison, France, assignor to Eyquem, Nanterre, France
Filed Sep. 4, 1987, Ser. No. 93,003
Claims priority, application France, Sep. 8, 1986, 86 12558
Int. Cl.[4] H01T *21/02*
U.S. Cl. 313—141 **7 Claims**



1. Process for the manufacture of a platinum-tipped bimetallic central electrode for an ignition plug, consisting in introducing a copper slug (5) into a nickel cup (1), in extruding the cup-and-slug assembly and in shaping it to produce a bimetallic electrode, characterized in that, before the introduction of the said copper slug into the cup, a platinum tip (2) is positioned on the nickel cup (1) by electrical welding in order to ensure its being maintained in place and it is then permanently fastened by a brazing operation under vacuum.

4,803,396
LIGHTBULB ASSEMBLY HAVING LATCHING RETAINING MEANS
Gerald Kelner, 4101 N.W. 132 St., Miami, Fla. 33054
Continuation-in-part of Ser. No. 922,313, Oct. 23, 1986, abandoned. This application Sep. 14, 1987, Ser. No. 96,289
Int. Cl.[4] H01R *13/20*
U.S. Cl. 313—318 **11 Claims**



1. In combination:
an electrically wired socket including electrical connection means in the socket,
a lightbulb with an associated filament, a base, and electrical leads coupled to said filament and extending out of said base, said base being sized and configured for snug receipt in said socket with said electrical leads in electrical engagement with said electrical connection means, said base having an axial face adjacent said bulb of a greater diameter than said bulb,
keeper means having a hollow cylindrical form including a lateral portion with an opening through which the bulb extends, said lateral portion having an inner annulus, said inner annulus bearing axially against said axial face of said base outboard of said bulb and, latch means having first and second interengaging portions respectively integrally fixed on said socket and said cylindrical form for normal hooked-up engagement with one another to releasably maintain said lightbulb in said socket at all times in normal use.

4,803,397

INDIRECTLY HEATED DISPENSER METAL CAPILLARY CATHODE FOR ELECTRICAL DISCHARGE DEVICES

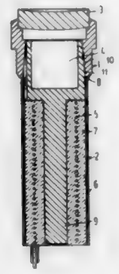
Hinrich Heynisch, Grasfelfing; Josef Hauser, Bad Wiessee, both of Fed. Rep. of Germany, and Erwin Hübner, deceased, late of Grafing, Fed. Rep. of Germany (by Rosa Maria Hübner, legal representative), assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 10, 1987, Ser. No. 83,146

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1986, 3627384

Int. Cl.[4] H01J *1/28, 19/22*

U.S. Cl. 313—337 **3 Claims**



1. An indirectly heated metal capillary dispenser cathode for electrical discharge vessels, comprising, a hollow-cylindrical head portion to which a porous emission wafer of refractory metal such as, for example, porous sintered tungsten vapor-deposited with osmium is attached at its outer end face, a cathode cartridge attached to said head portion and containing an active material supply such as, for example, barium oxide, and includes a helical heater formed therein and which is surrounded by a sleeve of, for example, molybdenum, wherein said hollow-cylindrical head portion (1) has a conically-shaped opening facing said cathod cartridge (2); and said cathode cartridge (2) is conically tapered and mates with said conical opening of said hollow-cylindrical head portion (1); and said hollow-cylindrical head portion (1) and said cathode cartridge (2) are connected together by a weld (8) formed in the edge region of said metal sleeve (6).

4,803,398

ELECTRON GUN WITH ONE DIRECTLY HEATABLE AND ONE INDIRECTLY HEATABLE CATHODE

Reinhardt Kraft, Altenstadt, and Horst Ranke, Aizenau, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Jul. 3, 1986, Ser. No. 881,709

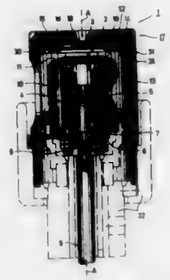
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1985, 3534792

Int. Cl.[4] H01J *1/20*

U.S. Cl. 313—337 **3 Claims**

1. In an electron gun comprising (a) a directly heatable first cathode; (b) a second, blocking cathode, mounted in front of said first cathode and indirectly heated thereby; (c) a carrier ring having a coaxial centering surface; (d) a plurality of separated, supporting braces connecting said blocking cathode with said carrier ring; and (e) a removeable external Wehnelt electrode having a central opening for passing focused electrons, said blocking cathode being mounted coaxially relative to said central opening of said Wehnelt electrode,

the improvement wherein said Wehnelt electrode and said carrier ring have mating centering surfaces; wherein said blocking cathode, said supporting braces and said carrier ring form a structural unit which may be inserted in said Wehnelt electrode from the side thereof facing said first cathode; thus requiring no assembly or fixture to any other part of the whole system and wherein said electron gun further comprises a removeable locking ring for clamping said carrier ring against said Wehnelt electrode with said centering surfaces in mating relationship, whereby said



structural unit may be assembled separately with said blocking cathode fixed in position with respect to said carrier ring, and said carrier ring may thereafter be clamped into position on said Wehnelt electrode with said blocking cathode in alignment with said central opening.

4,803,399

FLUORESCENT LAMP ARRANGEMENT FOR UNIFORMLY ILLUMINATING A DISPLAY PANEL

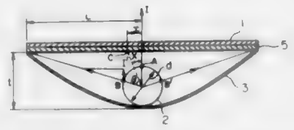
Soichiro Ogawa, Tokyo, and Toshihiko Sano, Ome, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 893,818, Aug. 6, 1986, abandoned. This application May 23, 1988, Ser. No. 198,600

Claims priority, application Japan, Aug. 14, 1985, 60-177517

Int. Cl.[4] H01J *61/42, 61/35;* **G02F** *1/13*

U.S. Cl. 313—493 **26 Claims**



1. A fluorescent lamp arrangement for uniformly illuminating a display panel having two parallel side edges, comprising:

a fluorescent lamp having a glass tube having a center axis and two opposite ends and provided with electrodes at said opposite ends, a fluorescent layer formed over an inner surface of said glass tube, and mercury and a rare gas sealed in said glass tube; and

a light-shading patterned layer formed on a circumferential part of a surface of said glass tube so as to effect a substantially uniform luminance on said display panel when said fluorescent lamp is mounted in a predetermined positional relationship with the display panel such that said display panel is parallelly disposed to the center axis of said glass tube and illuminated through said light-shading patterned layer by said fluorescent lamp, said circumferential part facing the display panel when said fluorescent lamp is mounted and wherein said part is defined as that part of said surface between two lines on said surface defined by a radial intersection of imaginary planes therethrough, each plane including said center axis and a respective one of said side edges thereby effecting in substantially uniform distribution of luminance comfort at viewing angles other than perpendicular to the display panel.

4,803,400

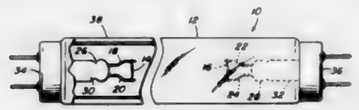
PRE-WATER-BASED SUSPENSION PHOSPHOR TREATMENT PROCESS

Thomas E. Peters, Chelmsford, and Roger B. Hunt, Jr., Medfield, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 2, 1987, Ser. No. 10,078

Int. Cl.[4] H01J *63/04*

U.S. Cl. 313—489 **11 Claims**



1. A pre-water-based suspension phosphor treatment method comprising the following steps:

Step 1—annealing a phosphor having a protective oxide coating at about 700° C. to about 850° C. and for a period of about 15 minutes to about 20 hours to preclude adversely affecting said protective oxide coating on said phosphor during subsequent water-based suspension processing and to preclude detrimentally altering said phosphor to form an annealed phosphor;

Step 2—cooling the annealed phosphor from step 1 to form a cooled annealed phosphor; and

Step 3—adding the cooled annealed phosphor from step 2 to a water-base suspension.

4,803,401

COMPACT FLUORESCENT LAMP

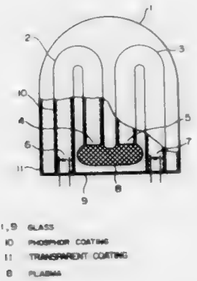
Hirouitsu Matsuno, Hachiojt; Tetsuo Ono, and Seiichi Murayama, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 16, 1986, Ser. No. 886,238

Claims priority, application Japan, Jul. 19, 1985, 60-158177

Int. Cl.[4] H01J *61/35, 61/42*

U.S. Cl. 313—489 **11 Claims**



1. A compact fluorescent lamp comprising an airtight outer bulb filled with a rare gas and mercury, inner tube means provided within said outer bulb, said inner tube means having opening to a space of the inside of said outer bulb, said inner tube means including therein electrodes spaced apart from each other, the inner tube means having an inner surface, the inner surface of the inner tube means being coated with phosphor material; and a coating formed on at least one of an inner surface of said outer bulb and an outer surface of each of said inner tube means, said coating being so transparent as substantially not to scatter visible rays and which consists of at least one material selected from the group consisting of an oxide and a phosphate, visible rays produced in said lamp not being substantially scattered or diffused by the lamp, whereby reduction in lumen output maintenance in the course of time is avoided while providing an initial lumen output that is not lowered as compared to that of a lamp without said coating.

4,803,402

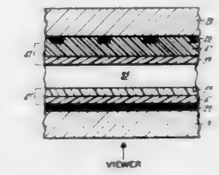
REFLECTION-ENHANCED FLAT PANEL DISPLAY

Peter E. Raber, Milford, and Robert E. Wisnieff, Weston, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 643,206, Aug. 22, 1984, abandoned. This application Apr. 14, 1987, Ser. No. 38,440

Int. Cl.[4] H01J *17/49;* **H05B** *33/02*

U.S. Cl. 313—509 **14 Claims**



1. A flat display panel for displaying a predetermined pattern of light in response to an alternating applied electric field comprising:

light means for producing light in response to the application of said alternating applied electric field;

a first plurality of parallel electrodes for establishing selected electric fields, said first plurality of electrodes being disposed on a rear side of said light means;

a second plurality of parallel electrodes for cooperating with said first plurality in the establishment of said selected electric fields, said second electrode plurality being disposed on a front side of said light means and being parallel to the plane of said first electrode plurality, said electrodes of said second plurality being generally orthogonal to said first plurality of parallel electrodes;

front and rear dielectric charge storage layers, disposed respectively between said first and second pluralities of parallel electrodes and said light means, whereby said applied electric field passes through said front and rear dielectric charge storage layers, said front charge storage layer being substantially transparent, characterized in that:

said rear dielectric charge storage layer includes at least one pair of rear dielectric sublayers of different index of refraction extending over said first plurality of parallel electrodes, each sublayer having an optical thickness of one-quarter wavelength of a predetermined optical wavelength in said visible spectrum, said optical thicknesses and indices of refraction being such that said pair of rear dielectric sublayers cooperate to provide increased reflectivity in said visible spectrum, whereby said at least one pair of rear dielectric sublayers is subjected to said applied alternating electric field and said rear dielectric charge storage layer performs both the functions of isolating said first plurality of electrodes from one another and storing charge and of reflecting light from said light means through said front dielectric charge storage layer.

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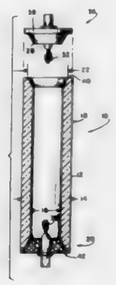
END SEAL FOR CERAMIC ARC DISCHARGE TUBES

Francis B. Makar, Jr., Plaistow, and George A. Fryburg, Hampton, both of N.H., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 528,716, Sep. 2, 1983, abandoned. This application Aug. 3, 1987, Ser. No. 88,461

Int. Cl.⁴ H01J *61/36*

U.S. Cl. 313—624 **4 Claims**



1. A hermetically sealed ceramic arc tube comprising: an elongated, substantially cylindrical, tubular body having an outside diameter, an inside diameter, and opposite ends each end having an end face, wherein, at a location adjacent each of said opposite ends, said inside diameter widens in a direction toward each of the end faces to a maximum diameter at each said end face which maxium diameter is greater than said inside diameter and less than said outside diameter to form a chamfer, and a sealing disc sealed into each of said ends, said sealing disc having a frusto-conical portion formed to mate with said chamfer and a circumferential flange formed to mate with the end face of said body, said circumferential flange having a diameter equal to said outside diameter.

4,803,404

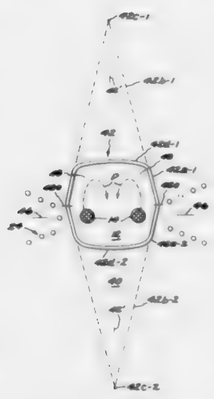
ENVELOPE FOR SMALL HIGH-INTENSITY-DISCHARGE ELECTRODELESS ARC LAMP

John M. Anderson, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 28, 1987, Ser. No. 138,006

Int. Cl.⁴ H01J *61/33;* **H05B** *41/24*

U.S. Cl. 313—634 **11 Claims**



1. An envelope of substantially transparent material for containing a gaseous arc-sustaining medium, comprising: a central portion formed of first and second slanted sidewalls each having a shape generally defined by a section of a cone having an apex located outside of said envelope and upon an opposite side of said envelope from the apex for the other one of the pair of sidewalls, each of said conical sections being truncated by opposed first and second endplanes, said first endplanes being larger than said second endplanes, and with the first endplanes of both of the first and second sidewalls being hermetically joined to each other; a first end portion substantially hermetically enclosing the second endplane of the first sidewall; and a second end portion substantially hermetically enclosing the second endplane of the second sidewall.

4,803,405

PLASMA PROCESSING APPARATUS AND METHOD

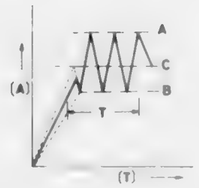
Etsuo Nakano, Sakura; Akira Furujo, Funabashi, and Tetsuya Iizuka, Tokyo, all of Japan, assignors to Kofke Seizo Kogyo Co., Tokyo, Japan

Filed Apr. 16, 1987, Ser. No. 40,565

Claims priority, application Japan, Apr. 18, 1986, 61-88076

Int. Cl.⁴ B23K *9/00*

U.S. Cl. 315—111.21 **7 Claims**



5. A method of starting a plasma processing system, which system comprises a dc plasma torch having a nozzle electrode, a central electrode, and means for introducing at least one gas therebetween, the method comprising the steps of:

generating an initial arc between said central electrode and said nozzle electrode from a d.c. power supply, to ignite said at least one gas;

increasing the d.c. current associated with said arc to a predetermined upper limit; and

periodically varying said d.c. current between a predetermined non zero lower limit and said upper limit for a fixed number of periods, whereby stabilized starting is facilitated.

4,803,406

HIGH-PRESSURE DISCHARGE LAMP OPERATING CIRCUIT

Makoto Yasuda, Kodaira; Tsune Miyashita, Tokyo; Seiichi Murayama, Kokubunji; Yoji Arai, Ome, and Fuzio Yamada, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 5, 1985, Ser. No. 795,268

Claims priority, application Japan, Nov. 5, 1984, 59-231413

Int. Cl.⁴ H05B *37/00*

U.S. Cl. 315—174 **15 Claims**

8. A high-pressure discharge lamp operating circuit, comprising:

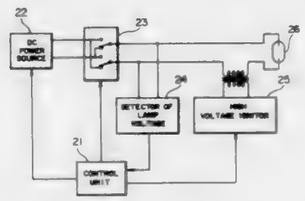
discharge ignition means for igniting a discharge between main electrodes of an arc tube;

first power supply means for supplying low-frequency AC power to the arc tube for placing an arc spot on the desired position of each of said main electrodes after said arc tube has been ignited;

second power supply means for supplying a DC power or a high-frequency AC power to said arc tube;

power switching means for selectively connecting said first power supply means or said second power supply means to said arc tube; and

control means for controlling said power switching means to connect said first power supply means to said arc tube after said arc tube has been ignited and until said arc spot has been placed with full contact on a desired position of each of said main electrodes and to disconnect said first power supply means and connect said second power supply means to said arc tube before the arc spot changes to minute contact on the tip of the main electrodes, including detecting means for detecting a condition which occurs prior to steady-state operation of said arc tube, said power switching means being operated by an output signal from said detecting means upon detecting said condition.



4,803,407

DIGITAL HORIZONTAL-DEFLECTION CIRCUIT

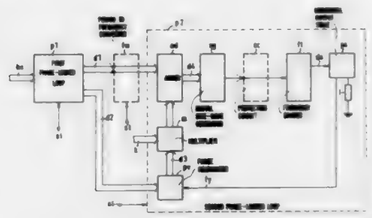
Soenke Meiergardt, March, Fed. Rep. of Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Jul. 16, 1987, Ser. No. 74,203

Claims priority, application European Pat. Off., Jul. 31, 1986, 86110576.5

Int. Cl.⁴ H01J *29/70, 29/72*

U.S. Cl. 315—364 **4 Claims**



1. A digital horizontal-deflection circuit for generating an analog horizontal deflection signal driving the horizontal output stage of a digital television receiver clocked with a system clock, comprising:

a first digital phase-locked loop which synchronizes the horizontal deflection signal with the horizontal synchronizing signal separated from the composite color signal and delivers for each line of video signal a first digital word representative of the horizontal frequency and a second digital word representative of the desired phase position of the horizontal flyback signal;

a second phase-locked loop which uses a digital phase comparator to generate a third digital word representative of the phase deviation of the horizontal flyback signal from the desired position and shifts the horizontal deflection signal in time so that the horizontal flyback signal takes up the desired phase position;

an adder having a first input to which said first digital word is fed and a second input to which said third digital word is fed via a multiplier serving as an amplifier;

a digital sine-wave generator having a control input to which the output of said adder is fed; and

a frequency divider to which the output of said digital sine-wave generator is supplied, the output of said frequency divider providing the horizontal deflection signal.

4,803,408

BRUSHLESS DC MOTOR SYSTEM WITH OPTICALLY SCANNABLE MEMBER FOR COMMUTATION

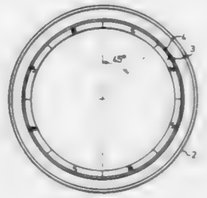
Dietmar Uhde, Kleingefeld; Günter Glein, AVS-Villingen; Hartmut Schandl, Villingen; Peter Hoch, Triberg, and Rüdiger Lehmann, St. Georgen, all of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Feb. 11, 1987, Ser. No. 13,435

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1986, 3604238

Int. Cl.⁴ H02K *29/10*

U.S. Cl. 318—254 **11 Claims**



1. A brushless DC motor system, comprising:

a DC motor which includes a plurality of stator coils to receive commutation current, a rotatable member having an optically scannable code, and a plurality of permanent magnets, fixedly positioned with respect to the scannable code, mounted along a circular path in the rotatable member opposite the coils so that the coils and magnets are spaced apart by gaps;

fixed scanner means with respect to the stator coils for scanning the code to generate scanner signals having phase positions; and

control means for evaluating the scanner signals with respect to their phase positions to determine the moment of commutation, and for supplying the commutation current to the coils,

wherein the motor requires n commutation steps during each revolution, n being an integer greater than 1,

wherein the rotatable member is composed of a rotationally symmetrical light-transmitting plastic element which includes a ring with an edge bearing the scannable code, the scannable code including a plurality of light-impermeable equidistant zones on the ring, the light-impermeable zones being distributed around the circumference of the ring, each light-impermeable zone corresponding to respective commutation step, and

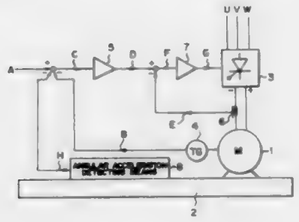
wherein there are n-1 first light-impermeable zones and one second light-impermeable zone, the second light-impermeable zone being shaped differently than the first light-impermeable zones.

4,803,409

ACCELERATION SIGNAL CORRECTED MOTOR SPEED CONTROL SYSTEM

Kazuo Horikawa, Kanagawa, Japan, assignor to Fuji Photo Film Co. Ltd., Minamiashigara, Japan

Continuation of Ser. No. 811,320, Dec. 19, 1985, abandoned, which is a continuation of Ser. No. 578,646, Feb. 9, 1984, abandoned. This application Jan. 1, 1987, Ser. No. 55,886
Claims priority, application Japan, Feb. 10, 1983, 58-19638
Int. Cl.⁴ H02P *5/00*
U.S. Cl. 318—310 **8 Claims**



1. In combination with means for controlling the speed of a motor supported on a supporting base the position of which is changed during operation, said motor having a shaft,

input command means for inputting a speed signal representing a desired speed of the motor;

sensing means for generating an actual speed signal representing the actual speed of said motor;

detecting means responsive to angular acceleration of said supporting base in directions perpendicular to the motor shaft, caused by changes in position of said supporting base for correcting said speed signal in accordance with an angular acceleration signal representing said detected angular acceleration of said supporting base;

comparison means comparing said speed signal corrected by the angular acceleration signal with said actual speed signal for outputting a speed error signal representing differences between the signals compared; and

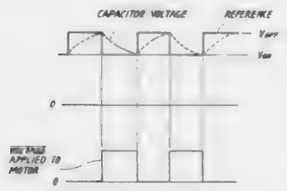
signal transmitting means operatively connecting the comparison means to the speed controlling means for substantially eliminating adverse disturbances of the rotational speed of the motor caused by the changes in the position of the supporting base.

4,803,410

VARIABLE DUTY RATIO SPEED CONTROLLER FOR DC MOTORS

Shigeru Shinohara, and Shun Suzuki, both of Katsuta, Japan, assignors to Hitachi Koki Company, Ltd., Japan

Filed Feb. 7, 1986, Ser. No. 827,194
Int. Cl.⁴ G05B *5/00*
U.S. Cl. 318—331 **11 Claims**



1. A speed controller for a DC motor comprising:

a semiconductor switching device connected in series with said motor and responsive to a switching control signal applied thereto for switching power to said motor from a voltage source on and off, whereby a current having an amplitude proportional to the amount of load on said motor flows in said motor when said power is switched on and a counter-electromotive force inversely proportional to said motor load is generated by said motor when said power is switched off; and

switching control means responsive to the amplitude of said current and said counter-electromotive force for generating said switching control signal which turns on said semiconductor switching device for a duration proportional to the amplitude of said current and turns off said switching device for an interval proportional to said counter-electromotive force, said switching control means comprising:

a time constant circuit including a capacitor connected in parallel with said switching device so that said switching device establishes a discharge circuit for said time constant circuit when the switching device is turned on and allows said capacitor to develop a first voltage when the switching device is turned off;

a variable reference source for generating a reference voltage variable between high and low values in response to said switching control signal; and

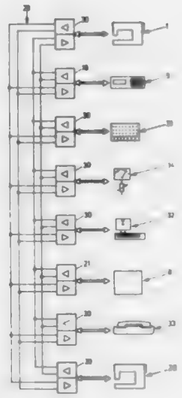
means for comparing said first voltage with said variable reference for generating an output selectively having high and low voltage levels dependent on the relative value of said first voltage to said variable reference and applying said output to said switching device and to said variable reference source as said switching control signal.

4,803,411

INDUSTRIAL SEWING MACHINE

Bernd Olbrich, Kotach, Fed. Rep. of Germany, assignor to Frankl & Kirchner GmbH & Co. KG, Schwetzingen/Baden, Fed. Rep. of Germany

Filed Sep. 28, 1987, Ser. No. 101,588
Int. Cl.⁴ G08C *19/16*
U.S. Cl. 318—564 **2 Claims**



1. An industrial sewing machine comprising:

a main shaft which can be driven by an electric motor drive;

a positioner disposed on the main shaft;

a regulating and control system controlling the electric motor drive in accordance with the positioner;

an operating and display system; and

an interfacing system for providing a connection between the regulating and control system, the operating and display system and additional components;

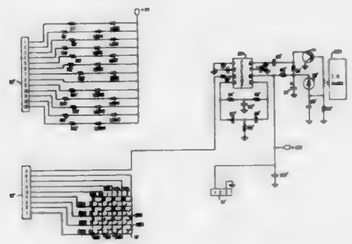
the interfacing system including, for the transmission back and forth of signals between n connected components, two lines for each of the n connected components, each of the n components including an output having a driver stage with a system for inverting the signal to be transmitted and an output for transmitting a non-inverted signal; said inverted signal and said non-inverted signal being transmitted via one line each, and each of the n components further including a difference detector, having two inputs connected to each said line, for forming the difference between the inverted and non-inverted signals.

4,803,412

PROGRAMMABLE ELECTRONIC ANTENNA ROTATOR

Larry W. Burton, Hurdle Mills, N.C., assignor to Avnet, Inc., Ellenville, N.Y.

Filed Jan. 30, 1987, Ser. No. 68,634
Int. Cl.⁴ G05B *19/10*
U.S. Cl. 318—567 **11 Claims**



1. In a system for automatically rotating an antenna to any one of a plurality of preprogrammed positions via operation of either different ones or combinations of keys of a keypad, the preprogramming method for said system comprising the steps of:

(A) synchronizing said system to a datum position via rotation of said antenna to a known reference position;

(B) manually operating said system via said keypad for rotating said antenna to stop at a desired position;

(C) storing in memory via operating of said keypad the desired position of said antenna for subsequent automatic selection;

(D) repeating steps (B) and (C) for storing in memory each one of said plurality of preprogrammed positions;

(E) selecting from memory via said keypad one of said preprogrammed positions;

(F) automatically rotating said antenna to the selected preprogrammed position under control of said microprocessor; and

(G) detecting a signal from a remote control device for manually operating said system to rotate said antenna to a desired position.

4,803,413

MAGNETIC ISOLATING AND POINTING GIMBAL APPARATUS

John R. Kendig, Peoria; William R. Hibble, and James A. Kiedrowski, both of Phoenix, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 15, 1986, Ser. No. 885,627
Int. Cl.⁴ B64C *17/02*
U.S. Cl. 318—648 **19 Claims**

1. A magnetic isolation and pointing gimbal apparatus, comprising:

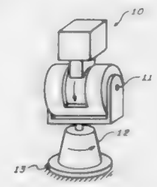
a housing;

a shaft rotatably mounted in the housing and having a centroidal axis extending coaxially within the housing;

a linear, two-axis, large gap, radial magnetic actuator mounted in the housing concentrically with the shaft;

a radial armature mounted on the shaft adjacent the radial magnetic actuator;

a set of linear, lrge gap, axial magnetic actuators mounted in the housing;



an axial armature connected to the shaft and extending between the axial magnetic actuators;

a torque motor connected to the shaft; and

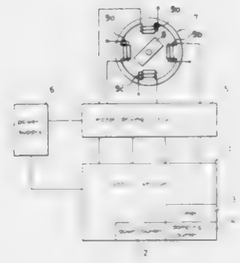
a large gap, rotational position sensor having a first portion connected to the shaft and a second portion connected to the housing.

4,803,414

METHOD OF CONTROLLING A STEP MOTOR

Mikio Kato, Aichi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

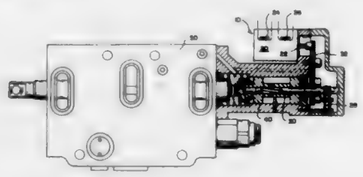
Filed Aug. 19, 1987, Ser. No. 87,036
Claims priority, application Japan, Aug. 20, 1986, 61-194942
Int. Cl.⁴ H02P *8/00*
U.S. Cl. 318—696 **4 Claims**



1. A method of controlling a step motor for halting and positioning a rotor of said step motor at a predetermined position by applying a driving voltage and a holding voltage lower than the driving voltage to a plurality of stator coils in the following order: (1) applying said driving voltage to a final magnetization phase for a first predetermined time period, (2) applying said holding voltage to the final magnetization phase for a second predetermined time period to minimize an oscillatory motion of said rotor, (3) applying said driving voltage again to said final phase for a third predetermined time period, and (4) applying said holding voltage to said final phase for a fourth predetermined time period, whereby the rotor is halted and positioned at the final magnetization phase.

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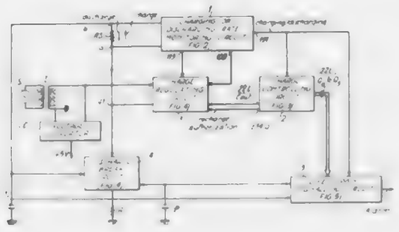
4,803,415
STEPPER MOTOR CONTROL CIRCUIT AND APPARATUS
Paul A. Sopory, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio
Filed Oct. 7, 1987, Ser. No. 106,059
Int. Cl.[4] H02P 8/00
U.S. Cl. 318—696 **26 Claims**



1. A motor control circuit and apparatus for controlling an electrical motor having a rotatable shaft adapted to rotate incrementally clockwise or counterclockwise in response to electrical currents applied to the motor comprising:
(a) input means including command signal input means for receiving an electrical command signal and power input means for receiving a sufficient electrical current to energize the control circuit and motor;
(b) clock means for providing periodic electrical clock signal pulses to the control circuit;
(c) up/down counter means electrically connected to said clock means for counting clock pulses on each clock signal pulse and for providing an output signal in the form of a binary representation of total clock pulses;
(d) comparing circuit means electrically connected to the up/down counter means and to the command signal input means for determining an up/down direction of the up/-down counter before each clock signal pulse so that the up/down counter counts in a single direction until the binary representation of total counts is equivalent to an incremental count nearest beyond the input command signal and thereafter oscillates between an incremental count at least one count nearest above and an incremental count at least one count nearest below said input command signal; and
(e) decoder means connected to the up/down counter and adapted to be connected to the motor for transmitting electrical currents to the motor to cause the shaft to rotate to and oscillate about a commanded average rotational position responsive to the binary representation of total counts of the up/down counter.

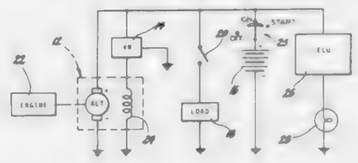
4,803,416
STORAGE BATTERY CONTROL DEVICE
Jacques Abiven, Coat Mael, Vieux Marché22420 Plouaret, and Eric Andrain, C341 Kervoalan, 22700 Perros Guirec, all of France
Filed Aug. 20, 1986, Ser. No. 898,392
Claims priority, application France, Aug. 23, 1986, 85 12679
Int. Cl.[4] H02J 7/04; G01R 11/66
U.S. Cl. 320—44 **7 Claims**

1. A control device for a storage battery, comprising
(a) means for supplying clock pulses having a variable frequency proportional to a battery charge and discharge current, said clock pulse supplying means being responsive to an estimation of charge energy efficiency and to an estimation of a self-discharge current of the battery, said self-discharge current estimation being a function of temperature;
(b) means for estimating an instantaneous capacity of the battery depending on a clock pulse up-down count;
(c) means including a supply voltage for recharging the battery as soon as said instantaneous capacity is less than a first capacity below the maximum capacity of the battery and as long as the instantaneous capacity differs from a second capacity substantially equal to said maximum capacity and more than said first capacity, said recharging means including means controlled by said estimating means for monitoring said charge current depending on the amplitude of said charge and discharge current and on temperature; and



(d) means for evaluating aging of the battery by counting pulses having a variable frequency depending on ambient temperature, on said charge and discharge current, and on said estimated instantaneous capacity of the battery, thereby producing an alarm signal when said variable frequency pulses reach in number a predetermined value.

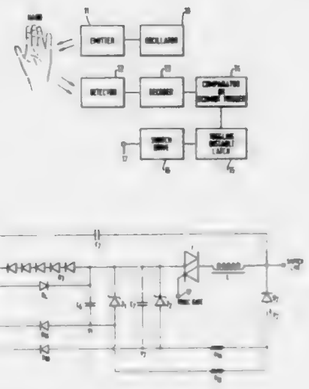
4,803,417
VEHICLE BATTERY DISCHARGING INDICATOR
Robert J. Nowakowski, Indianapolis, and Van V. Riesberg, Jr., Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 22, 1986, Ser. No. 944,753
Int. Cl.[4] H02J 7/16
U.S. Cl. 320—48 **6 Claims**



1. In a motor vehicle powered by an internal combustion engine including a storage battery having an open-circuit emf dependent upon battery conditions, an electrical load, and a unidirectional current source supplying current to the parallel combination of the battery and the load, the current source normally providing sufficient current to the battery and the load to impress upon the battery a voltage greater than the open-circuit emf of the battery thereby causing the battery to charge, wherein the battery discharges when the voltage impressed upon the battery is below the open-circuit emf of the battery, a method of indicating when the battery is discharging, comprising the steps of:
a. measuring a first voltage of the battery before cranking the engine each time the engine is started;
b. storing the first voltage as a reference voltage value, the reference voltage value representing the open-circuit emf of the battery compensated for the battery conditions existing when the first voltage is measured;
c. measuring a second voltage of the battery after the engine is started, the second voltage having a value less than the open-circuit emf of the battery when the battery is discharging;
d. comparing the second voltage with the stored reference voltage value; and

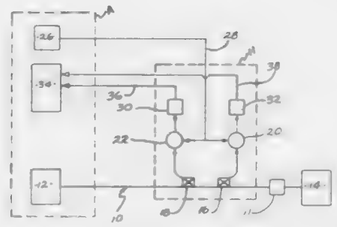
e. indicating that the battery is discharging when the second voltage is less than the reference voltage value.

4,803,418
IN-LINE ELECTRICAL SWITCH FOR AC POWER SUPPLY
Gordon S. Ritchie, 44B Gore Road, Victoria Park, Hackney, London, England E9 7HP
Filed Aug. 28, 1987, Ser. No. 90,579
Claims priority, application United Kingdom, Sep. 2, 1986, 8621209; Feb. 23, 1987, 8704151
Int. Cl.[4] H03K 17/945
U.S. Cl. 323—324 **25 Claims**



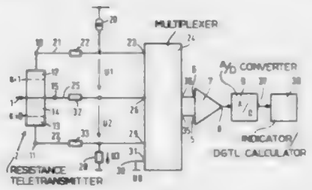
1. An electrical switch comprising:
a line terminal;
a switch terminal;
switching means for controlling current flow between the line terminal and the switch terminal;
switch control means for controlling the state of the switching means;
first impedance means for generating a voltage drop across itself connected in series between said line terminal and said switching means;
first and second power supply means for providing power respectively to a first part and a second part of the control means, such first and second power supply means each including charge storage means for holding a charge, the charge storage means having a first charge storage terminal and a second charge storage terminal, the first charge storage terminal being connected to the series connection between the switching means and the first impedance means, the charge storage means being charged, when the switching means is conductive, by a first current path which flows from the second charge storage terminal to the line terminal in cooperation with the potential across the first impedance means, and being charged, when the switching means is nonconductive, by a second current path which flows from the second charge storage terminal to the switch terminal in cooperation with the potential across the switching means.

4,803,419
TESTING HEAD DEVICE FOR A MICROWAVE NETWORK ANALYZER
Mark D. Rees, San Carlos, Calif., assignor to EIP Microwave, Inc., San Jose, Calif.
Filed Oct. 1, 1986, Ser. No. 914,039
Int. Cl.[4] G01R 27/04
U.S. Cl. 324—58 R **5 Claims**



1. A remote testing head for use with an apparatus for analyzing microwave devices including means for generating microwave frequency signals and local oscillator means for generating a local oscillator signal, said test head being adapted to be connected directly to a microwave device under test and comprising:
means on said test heads for connecting said test head to said DUT at a point remote from said analyzing apparatus;
coupler means in said test head for sampling said microwave frequency test signal and microwave signals reflected from said DUT;
mixer means in said test head coupled to said coupler means for mixing said sampled microwave signals with said signal from said local oscillator, thereby generating an intermediate frequency (IF) signal which includes information about the characteristics of said DUT; and
cable means interconnected between said analyzing apparatus and said test head for transmitting said microwave frequency test signals and said local oscillator signal from said analyzing apparatus to said test head and said IF signals from said test heat to said analyzing apparatus.

4,803,420
METHOD OF DETERMINING THE POSITION OF THE TAP ON A RESISTANCE TELETRANSMITTER
Jürgen K. Steinbrecher, Meitingen, and Ulrich Schnell, Bousstal, both of Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.
Filed Oct. 7, 1987, Ser. No. 106,076
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1986, 3634051
Int. Cl.[4] G01R 27/14
U.S. Cl. 324—64 **10 Claims**



1. A method of determining the position k of a tap on a resistance teletransmitter including two fixed resistance ranges, between which an effective resistance range is provided, in which the tap is adjustable, while a first connection of the

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resistance teletransmitter is connected to a current source and can be connected through a first conductor to an instrument amplifier, its tap constituting a central connection being connected to a second conductor and its second connection can be connected through a third conductor to the instrument amplifier, the method comprising:

(a) determining a voltage U1 between the first conductor and the second conductor that can also be connected to the instrument amplifier,

(b) determining a voltage U2 between the second conductor and the third conductor,

(c) recording a voltage U3 across a reference resistor Rs located between the third conductor and zero potential for determining the current flowing through the conductors, and

(d) calculating the tap position k in a digital computer with reference to the equation

$$k = \frac{U2 - U1}{U3} K1 + K2$$

with the constants

$$K1 = \frac{Rs}{2R} \text{ and } K2 = \frac{1}{2} + \frac{R1 - R2}{2R}$$

where $0 \leq k \leq 1$ and R1 and R2 are the resistance values of the fixed resistance ranges and R is the resistance value of the effective resistance range.

4,803,421

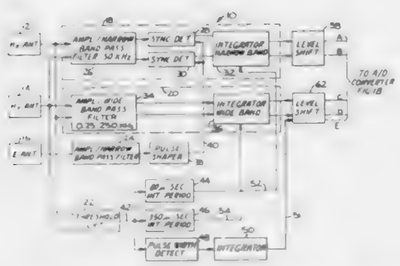
MULTI INPUT LIGHTNING DETECTION SYSTEM

Kenneth A. Ostrander, Columbus, Ohio, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 19, 1988, Ser. No. 145,276

Int. Cl.⁴ G01R *29/08;* **G01W** *1/16*

U.S. Cl. 324—72 **11 Claims**



1. An apparatus for determining geographic locations of electrical disturbances generated by weather phenomena relative to an observation location, comprising

means for independently receiving signals generated by said electrical disturbances which are indicative of the direction from the observation location to the location of the disturbance and which are related to at least two separate components of electromagnetic fields associated with such disturbances,

means for isolating from said received signals a first component, the intensity of which is an inverse function of one of three variables consisting of the distance between the discharge and the observation location, the square of said distance and the cube of said distance, and for isolating a second component the intensity of which is an inverse function of one of the other two variables,

means for simultaneously combining said first and second components and for deriving a range signal therefrom which is indicative of said distance, and

means responsive to said direction indicative received signals for deriving a direction signal, whereby said range and direction signals may be used to control display means to provide a map-like display of the location of said disturbances relative to said observation location.

4,803,422

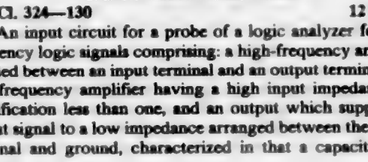
ELECTRICAL MONITORING OF FLIP-CHIP HYBRIDIZATION

John J. Ignatowski, Warren, Mich., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Dec. 28, 1987, Ser. No. 138,161

Int. Cl.⁴ G01R *31/28;* **H01L** *21/66*

U.S. Cl. 324—73 R **10 Claims**



1. In a process of electrically connecting an array of photosensors to a one-to-one corresponding array of capacitive sensors, each photosensor having a parasitic resistance, each capacitive storage cell having a parasitic resistance which is generally an order of magnitude or more greater than the parasitic resistance of its corresponding the photosensor, each connection if successfully made placing the parasitic resistance of a photosensor in electrical parallelism with the parasitic resistance of said photosensor's corresponding storage cell, the storage cells being individually readable as to their electrostatic charge level, a method of monitoring the electrical continuity of the connections comprising the steps:

(a) performing the connection process in the dark relative to the photosensors in order to minimize photocurrent,

(b) electrostatically charging the storage cells to a known level,

(c) waiting a period of time for some discharge ot the storage cells, the period being sufficient for there to be distinguishable differences between the charge levels of unconnected storage cells and the charge levels of connected storage cells, but not long enough for a full discharge of an unconnected storage cell,

(d) reading the electrostatic charge level of each storage cell, and

(e) deriving from the reading an indication of the number of unconnected storage cells.

4,803,423

INPUT CIRCUIT FOR A PROBE OF A LOGIC ANALYSER AND PROBE AND LOGIC ANALYSER PROVIDED WITH SUCH A CIRCUIT

Pierre-Henri Boutigny, Epinay-sous-Senart, France, assignor to U.S. Philips Corp., New York, N.Y.

Filed May 28, 1987, Ser. No. 55,639

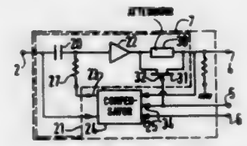
Claims priority, application France, Jun. 6, 1986, 86 08185

Int. Cl.⁴ G01R *19/06, 19/00*

U.S. Cl. 324—130 **12 Claims**

1. An input circuit for a probe of a logic analyzer for high frequency logic signals comprising: a high-frequency amplifier coupled between an input terminal and an output terminal, said high-frequency amplifier having a high input impedance, an amplification less than one, and an output which supplies an output signal to a low impedance arranged between the output terminal and ground, characterized in that a capacitance is

connected between the input terminal of the circuit and an input of the amplifier, and a compensation circuit is coupled in parallel between the input and output terminals for comparing a deviation between low-frequency d.c. components of respective signals occurring at the input and output terminals and



supplying a compensation signal intended to compensate for said deviation to the input of the amplifier by means of an injection element, the compensation circuit having an input controlled by a d.c. signal subject to a given offset in order to compensate for the d.c. component.

4,803,424

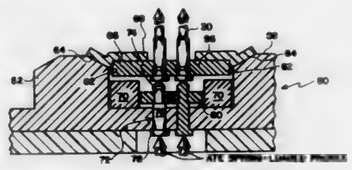
SHORT-WIRE BED-OF-NAILS TEST FIXTURE

Joseph A. Ierardi, North Attleboro, and Wayne S. Alden, III, Whitman, both of Mass., assignors to Augat Inc., Mansfield, Mass.

Filed Aug. 31, 1987, Ser. No. 91,593

Int. Cl.⁴ G01R *1/04, 1/073*

U.S. Cl. 324—158 F **16 Claims**



1. A short wire bed-of-nails vacuum-operated test fixture for use in combination with automatic testing equipment to test an electronic circuit device having a plurality of test points disposed in a predetermined configuration on one major surface thereof, vacuum pressure applied to said short wire bed-of-nails vacuum-operated test fixture acting on the one major surface of the electronic circuit device to removably retain the electronic circuit device in contact with said short wire bed-of-nails vacuum operated test fixture by means of atmospheric pressure acting on the other major surface of the electronic circuit device, the automatic testing equipment including spring-loaded probe means for mechanically and electrically engaging said short wire bed-of-nails vacuum-operated test fixture, said short wire bed-of-nails vacuum-operated test fixture comprising:

test head assembly means for removably retaining the electronic circuit device to be tested, said test head assembly means including

electrical contact means for wire wrapping disposed in a predetermined configuration corresponding to the predetermined configuration of test points on the one major surface of the electronic circuit device to be tested, and

means for resiliently contacting the predetermined configuration of test points of the electronic circuit device with vacuum pressure applied to said short wire bed-of-nails vacuum-operated test fixture;

short wire interface assembly means for interfacing with the automatic testing equipment and said electrical contact means of said test head assembly means to apply electrical test signals from the automatic testing equipment to the electronic circuit device to be tested said short wire interface assembly means including

cover plate means for interfacing with the automatic testing equipment, said cover plate means having a plurality of cavities formed therein,

interface contact means for wire wrapping with said electrical contact means of said test head assembly means to provide electrical continuity between said test head assembly means and said short wire interface assembly means,

rotatable interface strip means suspended in said plurality of cavities for captively retaining said interface contact means, said rotatable interface strip means sealingly engaging said cover plate means with vacuum pressure applied to said short wire bed-of-nails vacuum-operated test fixture, and

means disposed in said cover plate means and extending into said plurality of cavities for providing mechanical and electrical interfacing between said interface contact means and the spring-loaded probe means and for limiting initial loading effects exerted by the spring-loaded probe means with vacuum pressure applied to said short wire bed-of-nails vacuum-operated test fixture to maintain said rotatable interface strip means in sealing engagement with said cover plate means; and

short interconnect wire means for wire wrapping between said electrical contact means of said short wire interface assembly means and said interface contact means of said test head assembly means to provide electrical continuity between said test head assembly means and said short wire interface assembly means; wherein

said rotatable interface strip means is rotated approximately one hundred and eighty degrees to effect wire wrapping between said electrical contact means and said interface contact means and is reversely rotated approximately one hundred and eighty degrees for suspension in said plurality of cavities and sealing engagement with said cover plate means.

4,803,425

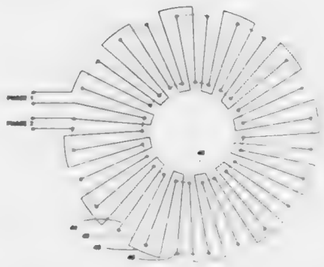
MULTI-PHASE PRINTED CIRCUIT BOARD TACHOMETER

Melvin E. Swanberg, Claremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 5, 1987, Ser. No. 104,726

Int. Cl.⁴ G01P *3/48, 3/487*

U.S. Cl. 324—173 **1 Claim**



1. A printed circuit winding pair for use in AC tachometers comprising:

a first winding on a board substrate, said winding having a first terminal and a second terminal, a continuous conductive trace from said first terminal to said second terminal, said trace following a generally serpentine pattern, said pattern being circular in shape, such that said serpentine

pattern comprises radial loops extending outwardly from a central point,

a second winding on said board substrate, said second winding having a first terminal and a second terminal, a continuous conductive trace from said first terminal to said second terminal, said trace following a generally serpentine pattern, said pattern being circular in shape, such that said serpentine patterns comprises radial loops extending outwardly from a central point,

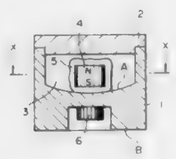
said second winding being rotated slightly from and interwined with said first winding, wherein the outer circular parts of said first winding is formed on the reverse side of said board substrate and connected to the radial traces of said first winding by plated through holes, and wherein the inner circular parts of said secured winding is formed on the reverse side of said board substrate and connected to the radial traces of said second winding by plated through holes, such that said first and second windings are electrically isolated from each other.

4,803,426

MAGNETIC TILT SENSOR

Yoshimoto Odagawa; Yasushi Yanagisawa, and Hiraku Imaizumi, all of Chiba, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 16, 1987, Ser. No. 74,249
Claims priority, application Japan, Jul. 21, 1986, 61-169930
Int. Cl.[4] G01B 7/14
U.S. Cl. 324—207 **4 Claims**



1. A magnetic tilt sensor comprising:

a nonmagnetic case having a space therein,

a permanent magnet housed to freely movable in said space,

a magnetic fluid attracted to said permanent magnet, said magnetic fluid being of an amount sufficient to substantially cover an entire surface of said permanent magnet, and

a magnetic sensing element fixed to said case in opposing relation to said space,

wherein said permanent magnet is moved to a lower position of the space by reason of its weight when said case is tilted so that magnetic sensed by said magnetic sensing element changes, thereby detecting that said case is tilted.

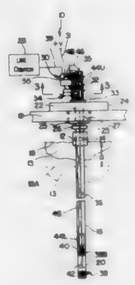
4,803,427

PRECISION MEASURING GAUGE HAVING SONIC DELAY LINE WITH FREE-STANDING MODE CONVERTER ARMATURE

Roy G. Mason, Sunnyvale, and Leif Andreasen, Fremont, both of Calif., assignors to Amcon, Inc., Sunnyvale, Calif.

Filed May 26, 1987, Ser. No. 53,620
Int. Cl.[4] G01B 7/26; H03H 9/22; G01F 23/30; H04B 11/00
U.S. Cl. 324—207 **8 Claims**

1. In a linear distance measuring device having an electrically conductive sonic delay line, a permanent magnet movable along the delay line, a coil, a pulse generator for supplying electrical pulses to said coil, and circuit means connected to the delay line and the pulse generator; the combination therewith of mode converter comprising a free-standing magnetostrictive armature having a first end thereof rigidly attached to the periphery of the delay line at a point thereon spaced from the magnet, and having an other end therof terminating dampingly within said coil, a first portion of said armature adjacent said other end thereof having a cross-sectional area determined by an internal dimension characteristic of said coil, and a second portion adjacent said first end having a second, smaller cross-sectional area determined jointly by a dimension characteristic of said delay line and by intrinsic properties of the representative materials from which said armature and said delay line are formed; a longitudinal stress wave initiated in the armature in response to an electrical pulse supplied to said coil



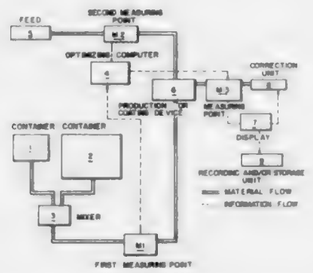
by said pulse generator, launching a sonic torsional pulse in the delay line upon arrival at said point thereon, said sonic torsional pulse generating an electrical signal in the delay line upon travelling past said magnet; and the circuit means including timing means responsive respectively to said pulse from the pulse generator and to said electrical signal from the delay line for defining the start and end of a time interval relating to the position of the magnet with respect to said point on the delay line.

4,803,428

METHOD AND APPARATUS FOR NON-DESTRUCTIVE MATERIAL TESTING, PARTICULARLY FOR DETERMINATION OF THICKNESS OF COATING LAYERS ON A BASE MATERIAL BY MEASURING ELECTRICAL CONDUCTIVITY OR MAGNETIC PERMEABILITY AT THE FINISHED SPECIMEN

Horst-Artur Crostack, Beringweg 2, 5860 Iserlohn, Fed. Rep. of Germany

Filed Jan. 13, 1987, Ser. No. 2,865
Int. Cl.[4] G01B 7/10; G01R 33/12; G01N 27/72
U.S. Cl. 324—230 **13 Claims**



7. An apparatus for non-destructively determining the thickness of pieces and layers of plastic components, as well as bonding and coating layers on a base material having means for determining the electrical conductivity or magnetic permeability of the finished or coated test specimen by using high-frequency electrical or magnetic alternating fields, characterized in that said apparatus comprising in combination:

a first container for supplying said plastic or bonding or coating material;

a second container for supplying electrically conductive or ferromagnetic particles;

a mixer for mixing said particles into said material;

means for processing said material impregnated with said particles for forming a test specimen;

a measuring point (M1) located after the mixer for measuring the electrical conductivity or magnetic permeability of the particle impregnated material prior to being processed by means of broad band test pulses, as far as amplitude and phase spectrum are concerned, generated by said alternating field; and

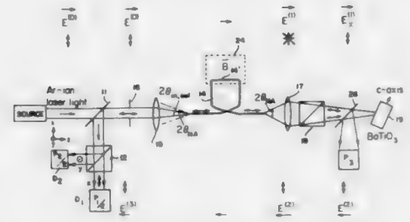
an optimizing unit to which the measuring data output of the measuring point (M1) is fed which generates one or more calibration signals or calibration curves, said signals or curves being fed to the said determining means for the finished or coated test specimen for optimizing the alternating field for the final thickness measurement, wherein said determining means comprises means for setting up the parameters of measuring pulses with predeterminable frequency (amplitude and phase) spectrum generated by the alternating field for the final thickness measurement in accordance with the calibration signal or calibration curves.

4,803,429

RECOVERING POLARIZATION OF LIGHT OF ARBITRARY POLARIZATION PROPAGATING THROUGH DISTORING MEDIUM BY PHASE CONJUGATION REFLECTION BACK THROUGH SAID MEDIUM

Kazuo Kyuma, Nishinomiya, Japan; Sae-Keung Kwong, Long Beach, and Amnon Yariv, San Marino, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Sep. 15, 1986, Ser. No. 907,667
Int. Cl.[4] G01R 33/02
U.S. Cl. 324—244 **9 Claims**



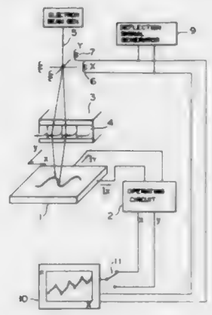
4. Apparatus for achieving true phase conjugation of an incident light wave of arbitrary polarization comprising a polarization and mode scrambling medium and a phase conjugation mirror in sequence, with said medium in front of said mirror for passing incident and reflected light through said medium to and from said mirror whereby a light wave of arbitrary polarization which is first passed through said polarization and mode scrambling medium to said phase conjugate mirror in one direction, and then reflected back as a phase conjugated light wave through said medium in a direction opposite said one direction by said phase conjugate mirror, regains its original polarization state regardless of the wave's transverse components of polarization with respect to the axis of said phase conjugate mirror.

4,803,430

MAGNETIC/ELECTRIC FIELD MEASURING DEVICE BY MEANS OF AN ELECTRON BEAM

Hiroyuki Shimada, Chofu; Hideo Todokoro, Tokyo, and Satoru Fukuhara, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 8, 1988, Ser. No. 154,183
Claims priority, application Japan, Feb. 20, 1987, 62-35513
Int. Cl.[4] G01R 33/02, 29/14
U.S. Cl. 324—250 **9 Claims**



1. A magnetic/electric field measuring device comprising:

electron beam generating means for generating an electron beam finely focused;

a sample table, on which a sample is to be placed;

electron beam deflecting means for scanning said electron beam two-dimensionally along an end surface of said sample;

two-dimensional semiconductor position detection element for generating a position signal corresponding to the incident position of said electron beam, which has passed along the end surface of said sample; and

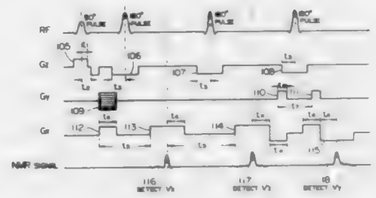
a display section for displaying the position signal coming from said two-dimensional semiconductor position detection element in synchronism with a scan signal for said electron beam.

4,803,431

METHOD FOR IMAGING THREE-DIMENSIONAL MOVING OBJECT

Koichi Sano, Sagamihara; Shinichi Sato, Yokohama; Tetsuo Yokoyama, Tokyo, and Hideaki Koizumi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 21, 1987, Ser. No. 75,947
Claims priority, application Japan, Jul. 25, 1986, 61-173643
Int. Cl.[4] G01R 33/20
U.S. Cl. 324—306 **4 Claims**



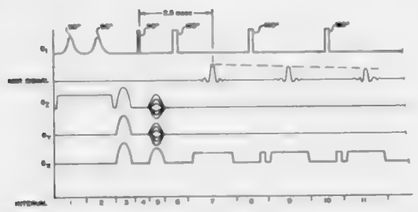
1. A single sequence method for imaging a three-dimensional moving object in an examined object located in a predetermined magnetic field comprising the following steps of:

(a) generating a high frequency pulse train used for exciting hydrogen spin in the examined object;

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(b) generating gradient magnetic fields in three orthogonal directions, which are utilized for measuring the speed of the moving object in the examined object;
(c) generating a 180° pulse a plurality of times for obtaining echo signals with respect to nuclear magnetic resonance signal produced by said high frequency pulse train;
(d) measuring variations in the phase in said three orthogonal directions on the basis of multi-echo signals obtained by said 180° pulses; and
(e) obtaining speed components in the phase in said three orthogonal directions of said moving object on the basis of the measured variations in the phase.

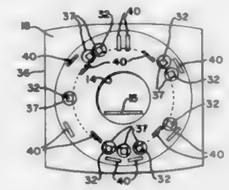
4,803,432
SHORT ECHO NMR IMAGING OF SODIUM
William H. Perman, Fitchburg, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.
Filed Aug. 13, 1987, Ser. No. 85,408
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—309 **6 Claims**



2. A method of producing an NMR signal from paramagnetic nuclei having a short T_2 relaxation constant, the steps comprising:
applying a selective RF saturation pulse in combination with a magnetic field gradient to saturate paramagnetic nuclei on each side of a selected slice of paramagnetic nuclei;
applying a nonselective RF excitation pulse to the paramagnetic nuclei in the selected slice;
applying position encoding magnetic field gradients to the paramagnetic nuclei;
applying a nonselective RF echo pulse to the paramagnetic nuclei in the selected slice;
acquiring an NMR echo signal which is produced by the paramagnetic nuclei in the selected slice; and
in which the RF excitation pulse and the RF echo pulse are each applied to the paramagnetic nuclei as two substantiall orthogonal excitation fields.

4,803,433
METHOD AND APPARATUS FOR SHIMMING TUBULAR SUPERMAGNETS
John J. McBride, Gibsonia, Pa., assignor to Montefiore Hospital Association of Western Pennsylvania, Inc., Pittsburgh, Pa.
Filed Dec. 21, 1987, Ser. No. 136,201
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—318 **12 Claims**

1. In a magnetic resonance imaging installation including a cylindrical casing containing a tubular supermagnet, improved shimming means for the electromagnetic field of said supermagnet comprising:
plural tubes formed from non-magnetic structural material secured to the said casing with the lengthwise axis of the said tubes being generally parallel to the longitudinal axis of the said tubular supermagnet, each said tube being open at at least one end, plural shim supporting rails, each formed from a nonmagnetic structural material, at least one magnetic material mass secured to each of said shim supporting rails, each said shim supporting rail being adapted to enter one of said plural tubes, the said magnetic material mass on each rail being of appropriate size and weight to function as a magnetic field shim for the said



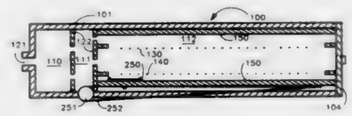
supermagnet in its existing location, said shim supporting rails being insertable into and removable from the said tubes through said open end.

4,803,434
TEST DEVICE FOR CIRCUIT BREAKERS HAVING ELECTRONIC TRIP UNITS
Christopher G. Walker, Coraopolis, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 18, 1988, Ser. No. 169,929
Int. Cl.[4] G01R *31/02, 31/32*
U.S. Cl. 324—424 **6 Claims**



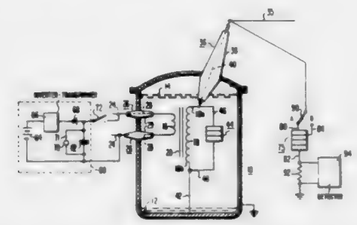
1. An electrical system for power distribution with current conductors, comprising:
a circuit interrupter connected to the current conductors and including an electronic trip unit having solid state components;
a current sensor on at least one of the conductors and having leads extending to the solid state components;
a source of power for the electronic trip unit;
an electronic test unit for monitoring the trip unit characteristics and having first, second, and third circuits;
the first circuit extending from one lead of the current sensor to a ground potential and including a first switch, a light-emitting diode, and a current limiting resistor;
the second circuit extending from one lead of the current sensor to an input test signal conductor and including the first switch, a first resistance, a potentiometer, and a second switch, the first resistance setting the lower limit of adjustability of the potentiometer;
the third circuit extending from the input test signal conductor to the ground potential and including the second switch, the potentiometer, a second resistance, and the second resistance setting the upper limit of adjustability of the potentiometer; whereby the test unit is internally powered by the source of power for the trip unit.

4,803,435
METHOD AND APPARATUS FOR DETECTING DIELECTRIC DEFECTS
Louis T. Mills, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 16, 1986, Ser. No. 920,104
Int. Cl.[4] G01N *27/60*
U.S. Cl. 324—456 **18 Claims**



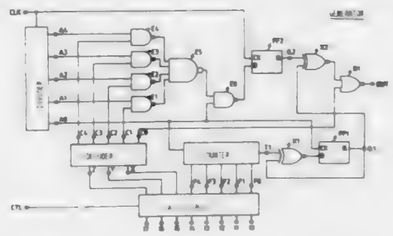
1. A method for detecting defects in a dielectric material, said method compriaing:
bombarding a first side of the dielectric material with gas ions in order to place a uniform charge on the first side of said dielectric material;
exposing a second side of the dielectric material to an electric potential opposite in charge to that of the gas ions;
exposing the dielectric material to an indicator substance having an affinity for the charge delivered by the gas ions; and
detecting the presence of defects in the dielectric material by accumulation of the indicator substance.

4,803,436
METHOD AND APPARATUS FOR EVALUATING THE CONDITION OF A GAPLESS METAL-OXIDE VARISTOR LIGHTNING ARRESTER USED FOR PROTECTING A DISTRIBUTION TRANSFORMER
James S. Kresge, Pittsfield, and Gordon E. Zaks, Dalton, both of Mass., assignors to General Electric Company, King of Prussia, Pa.
Filed Sep. 16, 1987, Ser. No. 97,028
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—549 **8 Claims**



8. Test apparatus for evaluating the condition of a first lightning arrester of the gapless metal-oxide varistor type that is connected across the high voltage winding of a distribution transformer that comprises: (i) a low voltage winding and a high voltage winding inductively coupled together, (ii) a housing in which said windings are located, (iii) a low voltage bushing including a low voltage lead for interconnecting an external low voltage circuit and one terminal of said low voltage winding, and (iv) a high voltage bushing including a high voltage lead for interconnecting an external high voltage circuit and one terminal of said high voltage winding, said test apparatus comprising:
(a) a second lightning arrester of the gapless metal-oxide varistor type having means for changing its breakdown voltage between a first value that is higher than the normal breakdown voltage of the first arrester and a second value that is lower than the normal breakdown voltage of the first arrester,
(b) means for selectively connecting said second arrester across said high voltage winding externally of said transformer housing in each of the following two modes: (i) with its breakdown voltage set at said first value and (ii) with its breakdwon voltage set at said second value,
(c) means for applying to said external low voltage circuit at different times first and second electric pulses that are each transformed by said windings to produce at said one terminal of said high voltage winding impulses that are each impressed across the parallel combination of said first and second arresters, the first impulse being impressed when said second arrester is connected as in mode (i) of paragraph (b) and being capable of rising to a voltage at least as high as said first value unless limited by said first arrester, the second impulse being impressed when said second arrester is connected as in mode (ii) of paragraph (b) and being capable of rising to at least said normal breakdown voltage of the first arrester unless limited by one of said arresters,
(d) and means for determining whether said second arrester has conducted significant surge discharge currents in response to impression of each of said first and second impulses across said two arresters.

4,803,437
DIGITAL TRANSMISSION SYSTEM
Peter P. F. Reusens, Destelbergen, Belgium, assignor to Alcatel N.V., Amsterdam, Netherlands
Filed Aug. 12, 1987, Ser. No. 84,250
Claims priority, application Belgium, Aug. 12, 1986, 2/61029
Int. Cl.[4] H03K *3/017, 3/02*
U.S. Cl. 328—59 **15 Claims**



1. A signal generator for generating a modulated output signal from a clock signal comprising:
a divider means connected to provide from the clock signal a square wave signal having a first fundamental frequency;
means connected to the divider means to provide from the clock signal a rectangular wave signal having a second fundamental frequency which is an even integral multiple of the first fundamental frequency of said square wave signal; and
a chopper means connected to chop the square wave signal by the rectangular wave signal as a chopping signal to provide the modulated output signal.

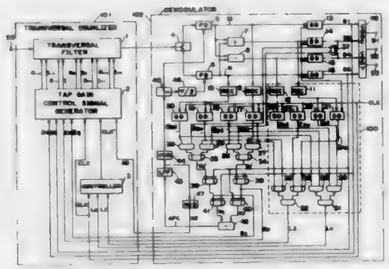
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4,803,438

8-PHASE PHASE-SHIFT KEYING DEMODULATOR

Shoichi Mizoguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 8, 1987, Ser. No. 71,108
Claims priority, application Japan, Jul. 9, 1986, 61-161376; Feb. 20, 1987, 62-37632
Int. Cl.[4] H03D *3/18;* **H03K** *9/06*
U.S. Cl. 329—50 **10 Claims**



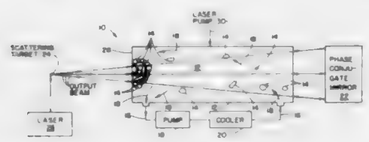
1. An 8-phase phase-shift keying demodulator comprising:
a transversal equalizer for equalizing an incoming 8-phase phase modulated signal, said transversal equalizer including a transversal filter and a tap gain control signal generator coupled to said transversal filter;
first means coupled to said transversal filter and coherently demodulating the equalized signal;
second means for generating a plurality of error signals
third means for receiving said plurality of error signals and determining whether a signal point of said 8-phase phase modulated signal is usable for controlling said transversal equalizer, said third means producing a first output;
fourth means for detecting asynchronism of said demodulator, said fourth means applying a second output to said tap gain control signal generator; and
fifth means interposed between said third means and said tap gain control signal generator, receiving said first output and controlling a plurality of selectors forming part of said tap gain control signal generator when said second output indicates asynchronism of the demodulator.

4,803,439

GLASS BEAD LASER AMPLIFIER WITH PHASE CONJUGATE MIRROR

Robert E Ryan, Levittown, N.Y., assignor to Grumman Aerospace Corportion, Bethpage, N.Y.

Filed Sep. 8, 1987, Ser. No. 94,116
Int. Cl.[4] H01S *3/02*
U.S. Cl. 330—4.3 **9 Claims**



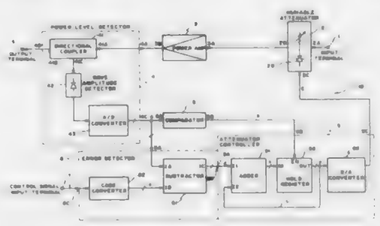
1. A glass laser amplifier, comprising:
a. a laser amplifier cavity having a plurality of adjacent and contiguous doped glass lasing elements therein in contiguous actual contact with and physically touching each other, with the shape of each glass element providing a relatively large ratio of the external area to volume of the glass lasing element, to provide for efficient cooling thereof;
b. a cooling system for said laser amplifier cavity, including a coolant fluid circulating through said laser cavity around and between the contiguous and physically touching glass lasing elements for cooling thereof, said cooling fluid having an index of refraction substantially matching that of the glass lasing elements to substantially reduce scattering of light passing through glass/cooling fluid interfaces in the laser amplifier cavity; and
c. a conjugate mirror positioned adjacent said laser amplifier cavity for reflecting the laser light passing through the laser amplifier cavity back through the laser amplifier cavity to cancel the initial optical distortions introduced into the laser beam as it initially passed through the laser amplifier cavity and the glass/cooling fluid interfaces therein, to produce an output laser beam substantially unaffected by the initial optical distortions therein.

4,803,440

AUTOMATIC ELECTRICAL POWER CONTROL CIRCUIT

Toshinori Hotta, and Osamu Yamamoto, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Sep. 16, 1987, Ser. No. 97,845
Claims priority, application Japan, Sep. 25, 1986, 61-227047
Int. Cl.[4] H03G *3/20*
U.S. Cl. 330—145 **9 Claims**



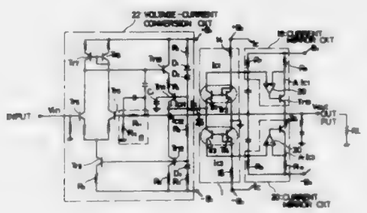
1. An automatic power control circuit comprising:
variable attenuator means disposed ahead of a power amplifier for variably setting the amount of attenuation of an input signal for the power amplifier;
power detection means for detecting a portion of the output from the power amplifier and for generating a power output signal corresponding to the power output level of the power amplifier;
comparison means for comparing the magnitude of the power output signal against a predetermined threshold value and for generating a decision signal based on said comparison indicating the presence or absence of power output from the power amplifier;
error detection means for detecting the difference between control data from an external power output control signal and the power output signal from the detection means and generating an error signal corresponding to said difference;
attenuator control means for integrating the error signal and generating an integrated correction value when the decision signal indicates the presence of power output from the power amplifier, and for generating the most recent prior integrated correction value when the decision signal indicates the absence of power output from the power amplifier; and
means for transmitting said integrated correction value as a control signal to the variable attenuator.

4,803,441

AMPLIFYING CIRCUIT

Masao Noro, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 10, 1987, Ser. No. 24,028
Claims priority, application Japan, Mar. 14, 1986, 61-56631
Int. Cl.[4] H03F *3/30*
U.S. Cl. 330—257 **5 Claims**



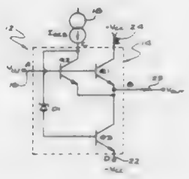
1. An amplifying circuit comprising:
a voltage-current conversion circuit for voltage-current converting an input signal to be amplified;
a current-current conversion circuit comprising a first transistor, a second transistor, a third transistor and a fourth transistor, emitters of said first and third transistors being connected to each other, collector and base of said second transistor being connected to each other, collector and base of said fourth transistor being connected to each other, emitters of said second and fourth transistors being connected to each other, bases of said first and second transistors being connected to each other, bases of said third and fourth transistors being connected to each other, output current of said voltage-current conversion circuit being supplied to the emitters of said first and third transistors and a constant current being supplied to said second and fourth transistors;
an output circuit for synthesizing and outputting collector currents of said first and third transistors after amplifying these collector currents, wherein said output circuit comprises (a) a first current mirror circuit for providing a first output current which is a predetermined multiple of an output current of the first transistor, said first current mirror circuit including first control means having first and second resistors whose resistance ratio determines the predetermined multiple, (b) a second current mirror circuit for providing a second output current which is a predetermined multiple of an output current of the third transistor, said second current mirror circuit including second control means having third and fourth resistors whose resistance ratio determines the predetermined multiple for the second current mirror circuit, and (c) means for combining the first and second output currents to produce a composite output; and
a circuit for negative-feeding back an output of said output circuit to said voltage-current conversion circuit;
wherein (a) the first current mirror circuit includes a first output transistor, a first differential amplifier driving a base of the first output transistor and having a first input coupled to one terminal of the first resistor and the collector of the first transistor and a second input coupled to one terminal of the second resistor, the other terminals of the resistors being connected to a supply voltage, and (b) the second current mirror circuit comprises a second output transistor, a second differential amplifier driving base of the second output transistor and having a first input coupled to one terminal of the third resistor and the collector of the third transistor and a second input coupled to one terminal of the fourth resistor, the other terminals of the resistors being connected to a supply voltage.

4,803,442

LOW POWER BUFFER AMPLIFIER

Dennis Hogg, Moorpark, Calif., assignor to Micropolis Corporation, Chatsworth, Calif.

Filed Nov. 16, 1987, Ser. No. 120,610
Int. Cl.[4] H03F *3/26*
U.S. Cl. 330—274 **23 Claims**



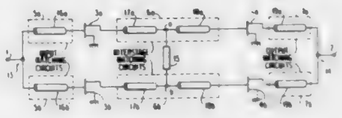
1. A high efficiency, low crossover distortion, current amplifier circuit comprising:
a first transistor having a base, an emitter and a collector;
a second transistor having a base directly connected to the base of said first transistor, an emitter directly connected to the emitter of said first transistor, and a collector;
means for applying an input signal to the base electrodes of said first and second transistors;
a third transistor having a base, an emitter, and a collector which is directly connected to the emitters of said first and second transistors;
said first, second and third transistors all being of the same polarity type;
constant current source means for supplying current to the collector of said second transistor, and to the base of said third transistor;
DC biasing means for applying a potential to the collector of said first transistor;
DC biasing means for applying a potential to the emitter of said third transistor; and
voltage-level shifting means for biasing said third transistor off when said second transistor is substantially conducting and consumes all of the current from the constant current source, and for biasing said third transistor on when said second transistor is not fully conducting and does not consume all of the current from the constant current source;
whereby said first and second transistors are in full amplification mode during one polarity swing of the input signal, and said third transistor is in full amplification mode during the opposite polarity swing of the input signal, resulting in a low power consumption as well as low crossover distortion.

4,803,443

MICROWAVE POWER COMBINING FET AMPLIFIER

Tadashi Takagi; Kiyoharu Seino, and Fumio Takeda, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1988, Ser. No. 177,738
Claims priority, application Japan, Apr. 10, 1987, 62-87954
Int. Cl.[4] H03F *3/68*
U.S. Cl. 330—277 **6 Claims**

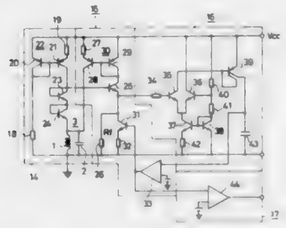


1. A microwave power combining FET amplifier, comprising:

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(a) an input T-type branch circuit (13) for splitting a microwave input signal into two components,
(b) a pair of multistage FET amplifiers connected in parallel, each of said amplifiers being formed by a microwave integrated circuit and comprising, in series, an input matching circuit (5*a*, 5*b*) connected to said branch circuit and receiving one of said split signal components, a prestage FET (3*a*, 3*b*), an interstage matching circuit (6*a*, 6*b*), a post-stage FET (4*a*, 4*b*), and an output matching circuit (7*a*, 7*b*),
(c) an output T-type branch circuit (14) connected to said output matching circuits for combining said split signal components, and
(d) a resistance circuit (15) having a predetermined resistance value connected between predetermined, opposite positions (a, b) of said interstage matching circuits for absorbing odd propagation mode microwaves reflected back from the output branch circuit due to non-uniformities between the characteristics of said amplifiers.

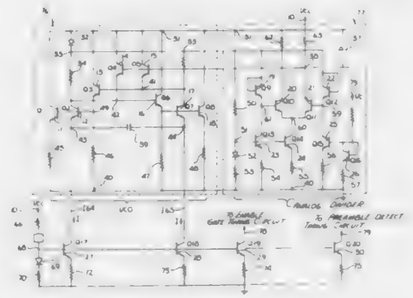
4,803,444
PROXIMITY SWITCH
Fumito Takahashi, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan
Filed Dec. 2, 1987, Ser. No. 127,403
Claims priority, application Japan, Jan. 14, 1987, 62-6732
Int. Cl.[4] H03B *5/12*
U.S. Cl. 331—65 **6 Claims**



1. A proximity switch comprising:
high-frequency oscillation means including a detection coil for generating an output voltage signal when an object approaches said detection coil;
rectification means for rectifying and smoothing said output voltage signal from said high-frequency oscillation means into a feedback signal;
feedback means for feeding back said feedback signal from said rectification means to said high-frequency oscillation means to maintain said output voltage signal substantially constant; and
output means for generating a detection signal when the quantity of feedback by said feedback means exceeds a predetermined value, said detection signal generated by said output means indicating detection of said approaching object.

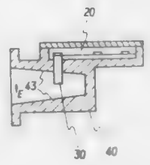
4,803,445
VARIABLE FREQUENCY OSCILLATOR
Richard G. Yamasaki, Torrance, Calif., assignor to Silicon Systems, Inc., Tustin, Calif.
Filed Apr. 22, 1987, Ser. No. 41,767
Int. Cl.[4] H03K *3/281*
U.S. Cl. 331—177 R **9 Claims**

1. A circuit for providing a variable frequency oscillator (VFO) comprising:
oscillating means having a center frequency and outputting a first clock signal;
first control means coupled to a control voltage and said oscillating means for controlling said first clock signal;



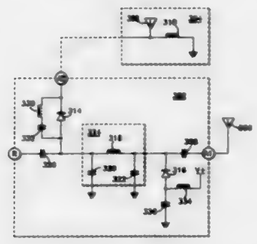
second control means coupled to said oscillating means for controlling said center frequency and outputting a plurality of second clock signals, said second control means independent of said first control means.

4,803,446
LOW NOISE MICROWAVE AMPLIFIER
Hiroshi Watanabe, Gyoda, and Masanobu Suzuki, Nagareyama, both of Japan, assignors to New Japan Radio Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 843,948, Mar. 26, 1986, abandoned. This application Aug. 7, 1987, Ser. No. 82,695
Claims priority, application Japan, Mar. 28, 1985, 60-64795
Int. Cl.[4] H03H *5/00*
U.S. Cl. 333—26 **3 Claims**



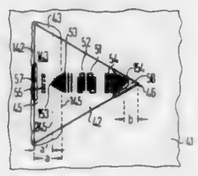
1. A 4 GHz-band low noise microwave amplifier comprising:
a converter for converting a microwave input from a waveguide into a coaxial stripline; and
an amplifier portion for amplifying an output from the converter,
wherein the converter comprises a waveguide having a pair of wider walls and a pair of narrower walls, and a probe provided within a cavity of the waveguide defined by said walls, a distance between a pair of narrower walls is narrowed near a portion where the probe is provided so that the cutoff frequency comes from 80% to 90% of a lower limit frequency of a desirable amplifying bandwith, and the amplifier portion is connected to the probe of the converter, and comprises a microstrip line formed on a substrate made of dielectric and an amplifying element.

4,803,447
THREE TERMINAL REMOTELY CONTROLLED SPDT ANTENNA SWITCH
Charles A. Schultz, Sunrise; Paul D. Marko, Pembroke Pines, and Giovanni Jarmuffo, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 29, 1988, Ser. No. 161,502
Int. Cl.[4] H03H *11/36;* **H01P** *1/15*
U.S. Cl. 333—103 **6 Claims**



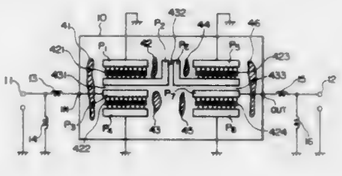
4. A remote antenna switching system, comprising in combination:
a remote antenna system including a remote antenna and a low pass filter coupled to said remote antenna; and
a three terminal antenna switch including a radio terminal, first and second antenna terminals, said first antenna terminal being suitable for connection to a local antenna, first coupling means for coupling radio frequency signals between said radio terminal and said first antenna terminal when said second antenna terminal is unterminated, and second coupling means for coupling the radio frequency signals between said radio terminal and said second antenna terminal and for impeding the flow of the radio frequency signals between said radio terminal and said first antenna terminal when said second antenna terminal is coupled to said remote antenna;
such that DC current flow between said remote antenna system and said antenna switch when said second antenna terminal is coupled to said remote antenna, and said DC current causes said second coupling means to be activated.

4,803,448
CANTILEVER MOUNT OF A SUBSTRATE LAMINA OF A SURFACE WAVE DEVICE
Peter Zhis, and Wolfgang Pahl, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Continuation of Ser. No. 937,416, Dec. 3, 1986, abandoned. This application Dec. 14, 1987, Ser. No. 133,235
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1985, 3543079; Feb. 26, 1986, 3606214
Int. Cl.[4] H03H *9/145, 9/25, 9/64*
U.S. Cl. 333—151 **20 Claims**



1. A mounting means for a substrate lamina of a surface wave component, said substrate lamina includes a transducer structure and at least one reflector structure and is mounted on a foundation, means for joining said substrate lamina and said foundation, whereby at least one of the reflector structures mounted on the substrate being a defining structure defining prescribed properties of the component comprising, said substrate lamina (42) has a tapered shape so that the substrate lamina has a broad, first end (45) and an opposite, second end (46) which is narrower than said first end, said joining means (43) located only in the region (143) of said first end (45) of said substrate lamina (42) and said joining means extending maximally only up to about the middle position (145) of this defining reflector structure (53) which is positioned closest to said first end on said substrate surface; said second end (46) being free-flosting relative to said foundation, so that mechanical distortions of the material of said substrate lamina (42) which could act on the substrate lamina in the region of said transducer and reflector structure mounted on said substrate surface are minimized.

4,803,449
FILTER COMBINING SURFACE ACOUSTIC WAVE RESONATORS
Mitsutaka Hikita, Hachioji; Yoichi Seigo, Kanagawa, and Kazuhito Kurosawa, Nakaminato, all of Japan, assignors to Hitachi Video Engineering, Inc., Tokyo, Japan and Hitachi, Ltd., Tokyo, Japan
Filed Nov. 18, 1987, Ser. No. 122,325
Claims priority, application Japan, Nov. 25, 1986, 61-278642
Int. Cl.[4] H03H *9/64, 9/25*
U.S. Cl. 333—193 **18 Claims**



1. A filter combining surface acoustic wave resonators comprising:
a piezoelectric substrate;
a plurality of resonators disposed on said piezoelectric substrate so as to comprise a series circuit formed by connecting in series a plurality of circuit elements each including a capacitance element having a corresponding pair of electrodes, and wherein individual resonators in the form of one-port surface acoustic wave resonators are respectively coupled between an electrode of each said circuit element and a common ground;
a first external matching circuit inserted between a signal input terminal and said resonator; and
a second external matching circuit inserted between a signal output terminal and said resonator.

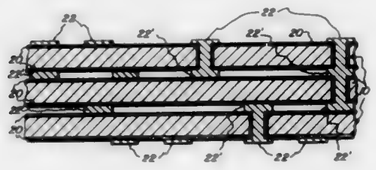
4,803,450
MULTILAYER CIRCUIT BOARD FABRICATED FROM SILICON
James F. Burgess, Schenectady; Homer H. Glascock, II; Harold F. Webster, both of Scotia; Constantine A. Neugebauer, Schenectady, and James A. Loughran, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 14, 1987, Ser. No. 134,268
Int. Cl.[4] H01P *3/08;* **H05K** *3/36;* **B32B** *9/06;* **B23K** *31/02*
U.S. Cl. 333—238 **19 Claims**

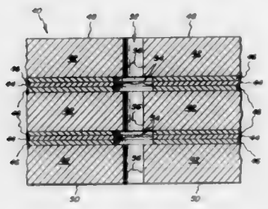
1. A multilayer silicon circuit board structure, comprising:
a plurality of silicon substrates, each of said silicon substrates having a first conductive pattern formed on a top surface and a second conductive pattern formed on a bottom surface of said substrate, each of said conductive patterns-

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comprising a high melting point holder on a wettable conductor;

conductive vias formed in each of said silicon substrates so as to electrically connect, in said each of said silicon substrates, said first conductive pattern with said second conductive pattern, said first and second conductive patterns on adjacent silicon substrates, respectively, being mirror images of each other;





said plurality of silicon substrates being arranged in a stack; and

said high melting point solder of said first and second conductive patterns on adjacent silicon substrates, respectively, being merged with one another to form a bond.

4,803,451

TECHNIQUE FOR CALIBRATING AN ELECTROMAGNETIC RELAY

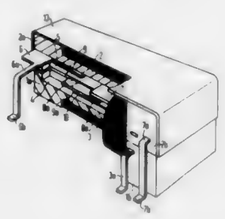
Klaus Lueneburger, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 28, 1987, Ser. No. 55,563

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1986, 3620941

Int. Cl.⁴ H01F *7/13*

U.S. Cl. 335—273 15 Claims



1. A method for calibrating the switching characteristics of an electromagnetic relay including at least one flat pole plate and an armature being resiliently mounted, and opposing the pole plate with overlapping pole faces while leaving a prescribed air gap are accommodated in a housing, the method comprising the steps of initially securing at least one element of a group including the at least one pole plate and the armature in the housing, positioning at least one unsecured element in a guide slot in the housing while maintaining a prescribed air gap in a manner wherein it can slide back and forth parallel with the pole faces; varying the overlap of the pole faces by incrementally displacing the sliding element while measuring the different characteristics relating to the relay's response and drop; and securing the sliding element in a fixed position in the housing when the characteristics are within a prescribed range.

4,803,452

SUPERCONDUCTOR FOR MAGNETIC FIELD SHIELDING

Yoshiro Saji, 7-6 Satakedai 5-chome, Suita-shi, Osaka; Eichi Tada, Kobe; Hiroaki Toda, Shiki, and Yoshiaki Kawahara, Himeji, all of Japan, assignors to Yoshiro Saji and Kostsu Gas Co., Ltd., both of Osaka, Japan

Continuation-in-part of Ser. No. 826,291, Feb. 5, 1986, abandoned. This application Dec. 29, 1987, Ser. No. 139,604

Claims priority, application Japan, Feb. 8, 1985, 60-24254

Int. Cl.⁴ H01F *7/00*

U.S. Cl. 335—301 13 Claims



1. A magnetic field shield including a superconductor film having a magnetic field shielding effect which abruptly increases from the vicinity of the origin to a turning point of a graph illustrating the relationship between the thickness of a single layer of said superconductor film and the magnetic field shielding effect of said superconductor film, and after said turning point gradually increases as the thickness of said superconductor film increases, said magnetic field shield being characterized in that it comprises at least one composite lamination comprising a thin film of said superconductor, said thin film having a thickness not more than that obtained at said turning point and not less than 0.05 μm but not more than 2.0 μm.

4,803,453

LAMINATED TRANSFORMER

Kunisaburo Tomono; Harufumi Mandai; Toshio Kawabata; Yukio Sakamoto; Toyoaki Tsunematsu, and Toshimi Kaneko, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Sep. 15, 1987, Ser. No. 96,407

Claims priority, application Japan, Sep. 22, 1986, 61-224650

Int. Cl.⁴ H01F *27/30*

U.S. Cl. 336—183 4 Claims

1. A laminated transformer comprising:

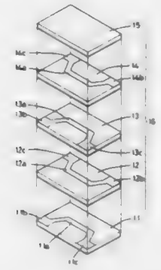
a laminated sintered body comprising a plurality of ferrite sheets,

each of said ferrite sheets having end faces, and a conductor pattern thereon having each end extending to different portions of said end faces,

the conductor patterns of some of said plurality of ferrite sheets serving as the primary of the transformer and the conductor patterns of the remainder of said plurality of ferrite sheets serving as the secondary of the transformer; and

a pair of primary electrodes connecting the conductor patterns serving as the primary of the transformer in parallel, and a pair of secondary electrodes connecting the conductor patterns serving as the secondary of the transformer in parallel,

said pair of primary electrodes electrically connected to ends of only the conductor patterns serving as the primary of the transformer at first and second locations from and to which the conductor patterns serving as the primary of the transformer extend, respectively, and



said pair of secondary electrodes electrically connected to ends of only the conductor patterns serving as the secondary of the transformer at third and fourth locations from and to which the conductor patterns serving as the secondary of the transformer extend, respectively.

4,803,454

IGNITION COIL

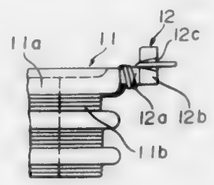
Tomokazu Umezaki, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1988, Ser. No. 192,637

Claims priority, application Japan, May 13, 1987, 62-117421

Int. Cl.⁴ H01F *15/10*

U.S. Cl. 336—192 1 Claim



1. An ignition coil having a secondary winding wound on and around a secondary bobbin, having one end of the secondary winding connected to a high voltage terminal, and having a portion of the secondary winding close to the connected end engaged with a binding portion formed on a circumferential edge of one end of the secondary bobbin, wherein the binding portion comprises a winding piece which projects outwardly in the radial direction of the secondary bobbin and around which an end portion of the secondary winding is wound in several turns, and an engaging piece which is formed to extend from the leading edge of the winding piece along the central axis the secondary bobbin and which has a side surface formed with a groove for inserting the secondary winding for clipping.

4,803,455

AUTOMATIC AND MANUALLY RESETTABLE MINIATURIZED CIRCUIT BREAKER

Robert A. Kaczynski, 520 Springfield Ave., Westfield, N.J. 07090

Filed Dec. 28, 1987, Ser. No. 138,562

Int. Cl.⁴ H01H *71/16*

U.S. Cl. 337—68 19 Claims

1. A miniature circuit breaker comprising,

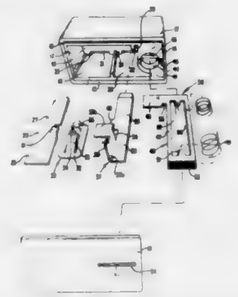
a. sized housing means having, wall means including, a back wall, a front wall, spaced side walls therebetween, and an end wall defining an element chamber,

b. spaced mounting guides on the element chamber surface of the back wall disposed parallel to the longitudinal line of the housing,

c. spaced slot means in the end wall respectively disposed in alignment with an associated one of said spaced mounting guides,

d. first elongated current carrying means disposed in one of said spaced mounting guides and having a portion thereof extending through one of the aligned slot means to form a first terminal means,

e. second elongated current carrying means disposed in another of said spaced mounting guides also having a portion thereof extending through another of said aligned slot means to form a second terminal means aligned with and parallel to said first terminal means,



f. first contact means in said element chamber fixedly connected to said first elongated current carrying means,

g. bimetallic actuating means in said element chamber connected to said second elongated current carrying means having, a bimetallic element disposed in alignment with the second elongated current carrying means,

h. second contact means on said bimetallic element movable for engagement and disengagement with the first contact means as a function of the operation of said bimetallic element, and

i. said first elongated current carrying means, said second elongated current carrying means, and said bimetallic actuator so mounted, assembled and nested in the housing that the bimetallic element is free for substantial amplitude of movement to permit operation of the circuit breaker in the cycling mode.

4,803,456

SUPERCONDUCTIVE SWITCH

Jay F. Benesch, Schenectady, N.Y., assignor to General Electric Company, Milwaukee, Wis.

Filed Dec. 22, 1987, Ser. No. 136,890

Int. Cl.⁴ H01L *43/00*

U.S. Cl. 338—32 S 11 Claims

1. A superconducting switch, comprising:

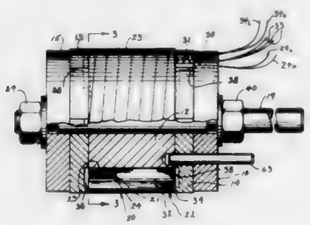
a housing;

at least two lengths of superconductor in said housing, each said length being electrically insulated from the other length and having ends which extend outside of the housing for connection to a superconducting circuit; and

a heater element in said housing, said heater element being in

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thermal communication with each length of superconductor;



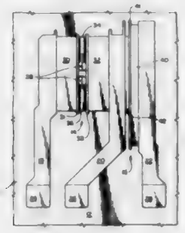
wherein the heater element controls whether both lengths of superconductor are persistent or non-persistent and does so substantially simultaneously.

4,803,457

COMPOUND RESISTOR AND MANUFACTURING METHOD THEREFORE

Roy W. Chapel, Jr., 23417 93rd Ave. W., Edmonds, Wash. 98020; David N. Duperon, 9911 84th St. NE., Lake Stevens, Wash. 98258, and Joseph E. Meadows, 4841 268th Ave. NE., Redmond, Wash. 98053

Filed Feb. 27, 1987, Ser. No. 19,669
Int. Cl.[4] H01C *10/00*
U.S. Cl. 338—195 13 Claims



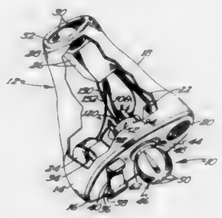
1. A compound resistor comprising:
a first portion having a first resistance and a first temperature coefficient of resistance; and
a second portion connected to said first portion having a second resistance and a second temperature coefficient of resistance, said first resistance different in magnitude from said second resistance and said second temperature coefficient of resistance different in magnitude from and opposite in direction from said first temperature coefficient of resistance, at least one of said first and second portions configured to have a temperature coefficient of resistance which substantially cancels out the temperature coefficient of resistance of the other said first and second portions to provide a substantially zero composite temperature coefficient of resistance for said compound resistor.

4,803,458

CONTROL SWITCH AND POTENTIOMETER FOR HEARING AIDS AND THE LIKE

John A. Trine, Lake Elmo; David A. Samdahl, White Oak, and Daryle L. Petersen, Eagan, all of Minn., assignors to Willbrecht Electronics, Inc., St. Paul, Minn.

Filed Aug. 28, 1987, Ser. No. 90,687
Int. Cl.[4] H01C *10/50*
U.S. Cl. 338—198 24 Claims



1. A switch and potentiometer assembly for use in electrical connection with a hearing aid having a microphone, an amplifier, and a speaker to be inserted within an ear canal of a user, said switch and potentiometer assembly comprising:
a housing;
a driver shaft extending within said housing and mounted for rotational motion around an axis of rotation and reciprocal motion generally parallel with said axis of rotation;
a knob member connected to and carried on said driver shaft, said knob member being positioned such that said knob member may be gripped by the user while inserting or removing the hearing aid from the ear canal, said knob member and said driver shaft further being movable between a retracted position proximate to said housing and an extended position displaced outwardly from said housing and from said retracted position;
normally closed switch means movable between a closed position completing a first electrical circuit and an open position interrupting said first electrical circuit, said switch means being movable from said closed position to said open position responsive to said driver shaft being moved from said retracted position to said extended position; and variable resistance means for varying a resistance of a second electrical circuit, said variable resistance means varying said resistance of said second electrical circuit in response to rotation of said driver shaft around said axis of rotation, whereby the hearing aid may be moved against a resistive force by the user pulling on or pushing against the knob member such that the first electrical circuit is disconnected and the hearing aid is turned off when the hearing aid is moved against the resistive force by the user pulling on the knob member and moving the driver shaft to the retracted position, and the first electronic circuit is completed and the hearing aid turned on when the hearing aid is moved against the resistive force by the user pushing on the knob member and moving the driver shaft to the retracted position.

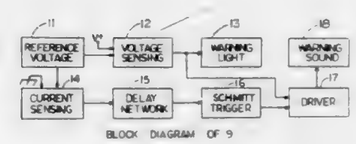
4,803,459

ELECTRONIC MULTI-PURPOSE WARNING DEVICE FOR MOTOR VEHICLES AND MOTOR BOATS

S. Henry Ta, 6240 E. Tangrind, Agoura, Calif. 91301

Filed Apr. 14, 1987, Ser. No. 38,002
Int. Cl.[4] B60Q *1/00*; G08B *21/00*
U.S. Cl. 340—52 R 18 Claims

1. A method for monitoring and indicating the conditions of a plurality of electrical functions and compnen in a motor vehicle or motorboat, comprising the steps of:
(a) automatically sensing the discharge current of a storage battery used in a motor vehicle or motorboat by means of sensing an equivalent voltage drop signal caused by said discharge current;
(b) automatically comparing said voltage drop signals to a preset value of an adjustable reference voltage by means of a voltage comparator;
(c) automatically indicating the result of the comparison with a first indicator means to provide an audio warning indication when said voltage drop signal exceeds the preset value of said adjustable reference voltage;
(d) determining a low-charge battery voltage hereinafter referred to as a cut-off voltage at which the vehicle starting motor can only be cranked very slowly but still be able to start the engine;
(e) deriving from the voltage between the positive and negative battery cables or clamps by which the battery terminals are connected to the load a fixed reference voltage which remains constant independently of the battery load conditions and is at a lesser voltage than said cut-off voltage, said voltage between the battery cables or clamps being referred hereinafter as supply voltage;
(f) deriving from said supply voltage a first voltage which varies proportionally with the battery voltage under different load conditions;
(g) storing the value of said first voltage to a first copacitor to discharge from its initially stored value down to an actual value of said first voltage during engine start-up is



BLOCK DIAGRAM OF 9

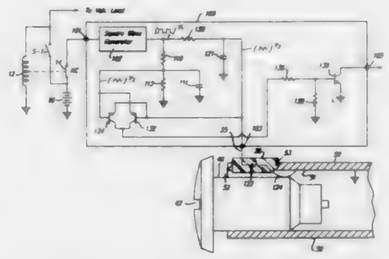
equal to the time for the battery current to stabilize after initial loading of said battery by a starting motor;
(h) applying said fixed reference voltage to an inverting input of a latching/voltage comparator and said first voltage to a noninverting input of said latching voltage comparator, and adjusting said first voltage to such a value that at battery voltage equal to/or less than said cut-off voltage, the output terminal of said latching voltage comparator is driven toward ground level;
(i) automatically indicating the comparison result from said latching voltage comparator with said first indicator means and with a light emitting diode as a second indicator means to provide a combined audio-visual warning indication when the output of said latching voltage comparator is driven toward ground level;
(j) connecting the electrodes of said light emitting diode to the inverting input and the output terminal of said latching voltage comparator such that when said output terminal is driven toward ground level, said light emitting diode conducts and latches said output terminal to ground whereby said first indicator means and said light emitting diode as a second visual indicator means are also latched to their "on" state until the applying power is removed;
(k) protecting said voltage comparator, said latching voltage comparator, and said indicator means against a connection to the battery cables or battery cable clamps when in wrong polarity.

4,803,460

ANTI-THEFT SYSTEM

Dennis W. Rhea, Bloomfield Hills, and Sidney R. Fletcher, Franklin, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 18, 1987, Ser. No. 50,814
Int. Cl.[4] B60R *25/00*
U.S. Cl. 340—63 3 Claims



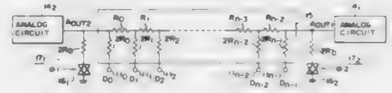
1. An anti-theft lock assembly comprising:
a lock housing having an electrically grounded inner surface and first open end for receiving a lock assembly;
switch means mounted in said housing for closing an electrical path when said lock assembly is received in said housing and for opening an electrical path when said lock assembly is removed from said housing including a resilient spring contact member that is compressed against said grounded inner surface when said lock assembly is received in said housing and a resistor having a predetermined value of resistance in series with said resilient spring contact member; and
electrical means connected to said switch means providing a signal to said resistor for sensing any change in the electrical resistance to ground of said switch means and for outputting an alarm signal when the electrical resistance of said switch means exceeds the predetermined value.

4,803,461

R-2R TYPE D/A CONVERTER CIRCUIT

Akira Yamaguchi, Yokohama, and Toshimasa Kawasi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 16, 1987, Ser. No. 97,105
Claims priority, application Japan, Sep. 16, 1986, 61-217515
Int. Cl.[4] H03M *1/12*
U.S. Cl. 341—154 4 Claims



1. An R-2R type D/A converter circuit comprising:
an R-2R type ladder resistor circuit which receives a digital signal, said R-2R type ladder resistor circuit having two output terminals located at two corresponding respective sides of the R-2R ladder type resistor circuit;
a first series circuit, connected between one output terminal of said ladder resistor circuit and the ground, and provided with a first resistor and a first switch which are series-connected;
a second series circuit, connected between the other output terminal of said ladder resistor circuit and the ground, and provided with a second resistor and a second switch which are series-connected; and

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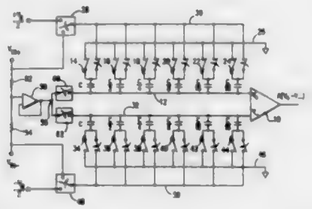
signal means for selectively turning on a selected one of said first and second switches, and for obtaining an analog signal from one of said two output terminals of said ladder resistor circuit, located on the side of said ladder resistor circuit corresponding to the other one of said first and second switches which is turned off.

4,803,462

CHARGE REDISTRIBUTION A/D CONVERTER WITH INCREASED COMMON MODE REJECTION

Richard K. Hester, Whitewright, and Michiel de Wit, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 11, 1987, Ser. No. 84,276
Int. Cl.[4] H03M 1/38
U.S. Cl. 341—172 **24 Claims**



1. A differential analog-to-digital converter, comprising:
differential amplifier means for receiving a differential input voltage and outputting a signal proportional thereto;
a positive capacitor array of binary weighted capacitors having a common top plate connected to the positive differential input of said amplifier means;
a negative capacitor array of binary weighted capacitors having a common top plate connected to the negative differential input of said amplifier means;
sample means for sampling an analog differential input voltage onto the capacitors in said positive and negative arrays such that the top plates in said positive and negative capacitor arrays have a differential voltage impressed therebetween that is proportional to the analog differential input voltage;
shift means for shifting the common mode voltage on the top plates of the positive and negative capacitor arrays to a predetermined common mode input voltage for input to said amplifier means; and
redistribution means for redistributing the charge in the capacitors in said positive and negative arrays to provide a zero differential voltage on the input of said amplifier means in accordance with a successive approximation technique that is responsive to the output signal of said amplifier means to determine the digital value corresponding to the voltage level of the analog differential input voltage.

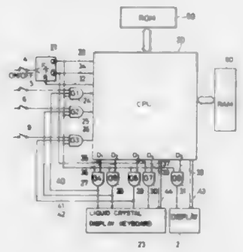
4,803,463

KEY INPUT MEANS WITH CHANGEABLE DISPLAY MEANS FOR DISPLAYING KEY FUNCTIONS

Ichiro Sado, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 532,145, Sep. 14, 1983, abandoned. This application Dec. 17, 1986, Ser. No. 942,920
Claims priority, application Japan, Sep. 21, 1982, 57-163096
Int. Cl.[4] G06F 3/02
U.S. Cl. 341—23 **5 Claims**

1. An electronic apparatus comprising:
a plurality of first key means for designating power ON of a power source;
a plurality of second key means for inputting data;
display means responsive to the operation of said first key means for displaying a definition of each key of said first key means and said second key means on each key of said first and second key means; and



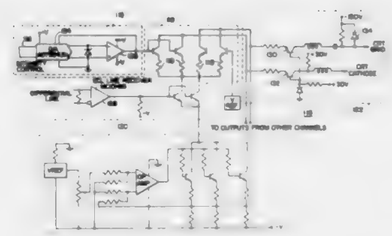
control means for controlling said display means to display on one of said first key means that said one is a key for designating power OFF of the power source.

4,803,464

ANALOG DISPLAY CIRCUIT INCLUDING A WIDEBAND AMPLIFIER CIRCUIT FOR A HIGH RESOLUTION RASTER DISPLAY SYSTEM

Richard E. Holmes, Bellbrook, and Joe A. Mays, Xenia, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 600,890, Apr. 16, 1984, abandoned. This application Feb. 9, 1988, Ser. No. 150,486
Int. Cl.[4] G09G 1/28
U.S. Cl. 340—732 **1 Claim**



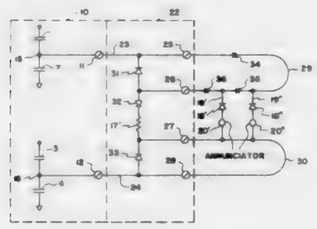
1. A high speed analog display circuit, coupled to receive a signal for each pixel of an image to be displayed, for driving a cathode ray tube in a raster display system, comprising:
a first multichannel amplifier, a second multichannel amplifier and a third multichannel amplifier, each of said first, second and third multichannel amplifiers comprising: a plurality of independent signal channels, each of said independent signal channels, comprising:
a digital to analog converter for receiving a low speed intensity control signal, said digital to analog converter producing an analog intensity signal in response to said low speed intensity control signal;
a differential amplifier current switching circuit having a differential amplifier coupled to said digital to analog converter to receive said analog intensity signal therefrom and to produce an output current signal in response to said analog intensity signal;
a differential line pair for receiving a high speed digital attribute data signal;
a switch coupled to said differential line pair and to said differential amplifier enabling or disabling said differential amplifier in response to the presence or absence of the high speed digital attribute data signal on said differential line pair;
means for coupling said output current signals of each of said differential amplifiers in parallel, said coupling means receiving one of said output current signals at a time; and
a current to voltage converter coupled to said coupling means to receive said selected output current signals and to produce an analog voltage chroma signal for driving a cathode ray tube in response thereto.

4,803,465

APPARATUS FOR IMPROVING THE RELIABILITY OF AN ALARM CIRCUIT

Daniel G. Prysby, Elk Grove Village, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 1, 1986, Ser. No. 880,626
Int. Cl.[4] G08B 29/00
U.S. Cl. 340—507 **8 Claims**



1. A module for a central control panel having first and second terminal means for providing output signals to a class B alarm circuit to allow said central control panel to be connected to a class A alarm circuit, said module comprising:
support means for holding electrical compoaents;
first and second terminal means for electrically connecting to said central control panel, said module first and second terminal means being physically attached to said support means;
third, fourth, fifth and sixth terminal means for electrically connecting a class A alarm circuit, said third terminal means being directly electrically connected to said module first terminal means, and said sixth terminal means being directly electrically connected to said module second terminal means, said third, fourth, fifth and sixth terminal means being physically attached to said support means;
first connecting means for electrically connecting said fourth terminal means to said fifth terminal means, said first connecting means being physically attached to said support means;
said third and fourth terminal means being connectable to a first loop of a pair of loops of a class A alarm circuit; and
said fifth and sixth terminal means being connectable to a second loop of said pair of loops.

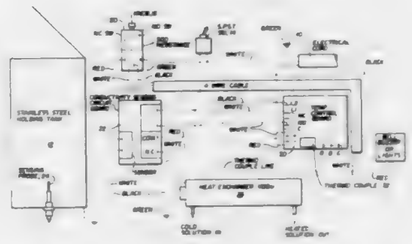
4,803,466

CLEANING MACHINE FOR CARPET, UPHOLSTERY AND DRAPERIES

Bernard Gurstein, Canoga Park, and Russell S. Gurstein, Agoura Hills, both of Calif., assignors to U.S. Products, Inc., Agoura Hills, Calif.

Filed Sep. 11, 1987, Ser. No. 95,302
Int. Cl.[4] G08B 21/00
U.S. Cl. 340—603 **8 Claims**

1. A cleaning machine comprising, in combination, a liquid holding means; sensing means within said holding means for determining whether a liquid in said holding means is aqueous or non-aqueous, said sensor providing input to a signal providing means for providing one signal when said liquid is aqueous and a different signal when said liquid is non-aqueous; heating means in fluid communication with said holding means; means for limiting the maximum temperature to which said heating means can raise said liquid, said limiting means receiving input



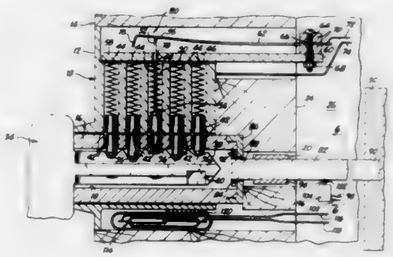
from said signal providing means and being in electrical communication with said heating means, said maximum temperature significantly varying according to said signal received from said signal providing means.

4,803,467

MAGNETIC KEY LOCK PROVIDED WITH AN ALARM SYSTEM

George Peters, 201 Ryder Ave., Brooklyn, N.Y. 11230

Filed Feb. 23, 1988, Ser. No. 159,209
Int. Cl.[4] E05B 45/06; H01H 27/06
U.S. Cl. 340—542 **20 Claims**



1. A magnetic key lock being opened and locked by a proper associated magnet-bearing key, said key lock comprising:
a key slot for receiving the proper associated magnet-bearing key therein to open and lock said key lock;
an alarm system including electrical means to activate said alarm system when an improper key, lock pick and the like is inserted into said key slot;
first and second switches electrically connected to said electrical means of said alarm system, said first switch being normally closed when said key lock is locked, and said first switch being open when said key lock is open, said second switch being normally open when nothing is inserted in said key slot;
said electrical means activating said alarm system when said first and second switches are both closed, said second switch being closed when a key, lock pick and the like is inserted into said key slot, said alarm system normally being inactivated when said first switch is open; and
magnetic sensor means electrically connected to said electrical means of said alarm system to delay activating effect of said second switch on said electrical means when said second switch is closed by the insertion of the proper magnet-bearing key in said key slot;
said magnetic sensor means being disposed adjacent to said

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key slot to be activated by the proper magnet-bearing key when inserted into said key slot;

said delay being for a selected time period in order to allow the proper magnet-bearing key to open said key lock and, at the same time, open said first switch to inactivate said alarm system.

4,803,468

SECURITY FENCE WITH SECURITY WIRES FASTENED TO POSTS VIA SENSORS

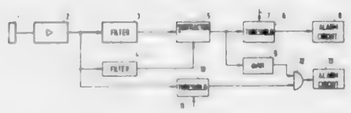
Harald Seifert, Hofheim, Fed. Rep. of Germany, assignor to KTV Sicherheitstechnik GmbH, Amberg, Fed. Rep. of Germany

Filed Jul. 10, 1987, Ser. No. 71,808

Claims priority, application Fed. Rep. of Germany, May 8, 1987, 87106681

Int. Cl.⁴ G08B *13/12*

U.S. Cl. 340—566 **5 Claims**



1. A security fence comprising wires fastened to posts via sensors, at least one electronic evaluation circuit connected to the sensors for releasing an alarm signal when one of the sensors signals a contact to the wire connected to it, each evaluation circuit being comprised of first and second low pass filters to which each sensor is connected, each filter having different cutoff frequencies, one cutoff frequency being above and the other cutoff frequency being below the frequency spectrum of a sensor signal which occurs when the wire is deflected by a person, a subtraction circuit being connected to the outputs of the low pass filters for providing the difference between the output signals of the low pass filters, a first threshold circuit for receiving the output signals of the subtraction circuit for applying the output signals above a predetermined amplitude to a first alarm circuit, a second threshold circuit for receiving signals from the sensors connected to the low pass filters and for passing sensor signals above a predetermined amplitude, an AND gate for receiving the sensor signals above a predetermined amplitude at one input, a differentiator for receiving the output signal of the subtraction circuit and for providing an output signal comprised of the time differential of the output signal of the subtraction circuit to a second input of the AND gate, and a second alarm circuit connected to the output of the AND gate and being enabled when a signal appears at both inputs of the AND gate.

4,803,469

FIRE ALARM SYSTEM

Eiji Matsushita, Yamato, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed Jul. 14, 1986, Ser. No. 884,976

Claims priority, application Japan, Jul. 18, 1985, 60-158569

Int. Cl.⁴ G08B *17/06*

U.S. Cl. 340—577 **18 Claims**

1. A fire alarm system which comprises:

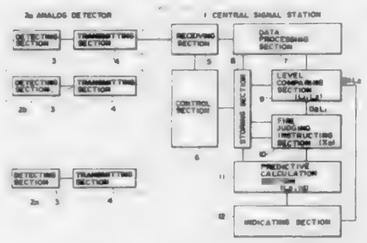
one or more detecting sections for detecting a change in the surrounding phenomena due to a fire and outputting data in an analog mode;

a data processing section receiving said outputted analog data from the detecting section or sections at intervals and smoothing said analog data by interrelating analog data from a plurality of said intervals;

a storing section for storing the smoothed data output from the data processing section;

a level comparing section for comparing a data level represented by present smoothed data output from the detecting section or sections with a preset level and producing a comparison signal when such level is exceeded;

a fire judging instructing section which extracts a plurality of data stored during a predetermined period of time preceding the time when a comparison signal is obtained from the level comparing section, calculates a change amount between the respective extracted data, determines



the number of data for which such change amounts exceed a predetermined value, and generates a signal for instructing the start of a fire judgment calculation when the number of such data exceeds a predetermined number; and

a fire judging section for making a fire judgment calculation in response to the signal from the fire judging instructing section.

4,803,470

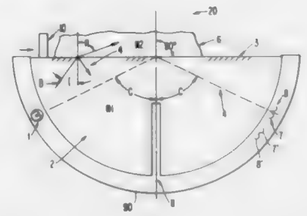
SUBSTANCE DETECTOR DEVICE

Howard Fineman, 13305 Lockgate Pl., Herndon, Va. 22071

Filed Apr. 23, 1986, Ser. No. 854,801

Int. Cl.⁴ G08B *19/02*

U.S. Cl. 340—583 **18 Claims**



1. A substance detection device comprising:

an optically transparent element having a polished surface;

a first light source for transmitting light through said optically transparent element to said polished surface;

a pair of photodetectors positioned on opposite sides of a critical angle determined in accordance with a substance the presence of which is to be detected on said polished surface for detecting an intensity of light reflected from said polished surface of said optically transparent element, said photodetectors being positioned such that one of said photodetectors is fully illuminated by light reflected at said critical angle when said substance is present on said surface and the other of said photodetectors is not illuminated by light when said substance is present on said surface;

means for determining a difference in detected reflected light intensity on said pair of photodetectors to determine a change in critical angle of an optical interface at said polished surface and outputting an on/off alarm signal indicative of the presence of said substance on said polished surface when said difference reaches a predetermined amount indicative one of said photodetectors being fully illuminated and the other of said photodetectors not being illuminated.

4,803,471

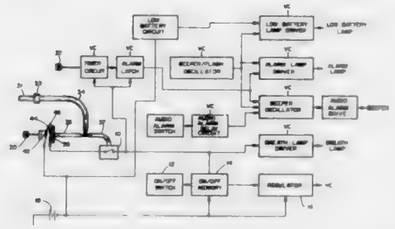
VENTILATOR MONITOR AND ALARM APPARATUS

Robert O. Rowland, Hemet, Calif., assignor to Hudson Oxygen Therapy Sales Co., Temecula, Calif.

Filed Oct. 24, 1986, Ser. No. 923,022

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—626 **8 Claims**



1. A ventilator monitor and alarm apparatus including pressure sensing means for sensing ventilator pressure in a respiratory circuit, alarm means, and electronic circuit means including alarm circuit means cooperating with said pressure sensing means and said alarm means for creating an alarm condition and energizing said alarm in response to failure of said pressure sensing means to detect a preselected minimum pressure in said respiratory circuit, manual on/off switching means for turning the apparatus on and off, and a memory circuit which maintains said apparatus turned on until said manual on/off switching means is actuated to turn said apparatus off, comprising digital logic circuit means cooperating with said pressure sensing means for turning the apparatus on independent of said manual on/off switching means in response to a preselected minimum pressure sensed by said pressure sensing means said digital logic circuit means including means for monitoring the condition of said on/off switching means.

4,803,472

PHASE SIGNAL DETECTING DEVICE

Bruno Murari, Monza; Pietro Menniti, Milan, and Fabio Marchiò, Gallarate, all of Italy, assignors to SGS Microelettronica S.p.A., Catania, Italy

Filed Dec. 8, 1986, Ser. No. 939,328

Claims priority, application Italy, Dec. 10, 1985, 23150 A/85

Int. Cl.⁴ H03K *5/00*; **G08B** *21/00*

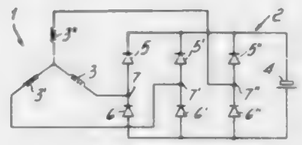
U.S. Cl. 340—658 **4 Claims**

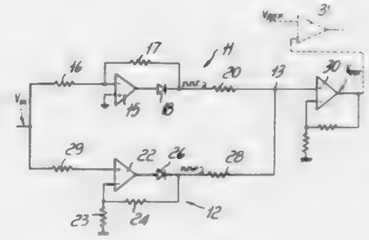
1. In an alternator, in particular for motor vehicles, comprising at least one phase coil, a rectifier bridge including at least two rectifying elements connected in series to each other and defining two opposite terminals and an intermediate tap, and a voltage source connected between said two opposite terminals, said intermediate tap being connected to said phase coil and supplying an alternating substantially rectangular phase signal having positive and negative components,

a phase signal detecting device including active rectifying means having an input connected to said intermediate tap for rectifying said phase signal and generating a rectified output signal with constant polarity,

said active rectifying means comprising:

first amplifier means and second inverting amplifier means mutually arranged in parallel, with said first and second amplifier means having respective amplifier means inputs connected together and to said intermediate tap and respective amplifier means outputs connected together, said first and second amplifier means alternately and selectively amplifying each one of said positive and negative components of said phase signal and alternately generating amplifier means output signals of a same polarity,





and adder means having an adder means input connected to said amplifier means outputs, said adder means alternately receiving said amplifier means output signals and generating said rectified output signal.

4,803,473

TRANSMITTER COVER

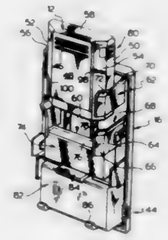
Stephen C. Taylor, Mississauga, Canada, assignor to Dicon Systems Limited, Toronto, Canada

Filed Jan. 20, 1988, Ser. No. 145,928

Claims priority, application Canada, Nov. 9, 1987, 551371

Int. Cl.⁴ G08B *23/00*

U.S. Cl. 340—693 **6 Claims**



1. A display case for receiving a transmitter module and retaining said module in place, said display case being used in a security system and housing one of many types of sensors or controllers such as fire detectors, door/window open sensors, intrusion detectors, emergency alerts, appliance failure sensors and the like, said transmitter module having a generally rectangular-shaped body portion with front and rear faces, opposing sides and opposing ends, said case having separable case front and case back, said case front having a rectangular-shaped opening provided in its front face as defined by opening edges of said case front, said opening edges being dimensioned to frame said front face of said transmitter module and thereby expose said transmitter module front face through the case

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front to indicate presence of said module in said case, said case having means for retaining said module in said case and means for releasably fastening said case front to said case back.

4,803,474

CURSOR CONTROL MATRIX FOR COMPUTER GRAPHICS

George R. Kulp, Hatfield, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Mar. 18, 1986, Ser. No. 840,941
Int. Cl.⁴ G09G *3/02*
U.S. Cl. 340—709 **3 Claims**



1. A computer-controlled industrial process control system provided with a plurality of controllable elements each constituted by adjustable means such as a valve, a switch or a control knob and having a computer terminal providing on a screen a graphics display of the system being controlled, each of said controllable elements being represented on the display by an action point whereby a plurality of such action points are dispersed at various positions on the display, and an arrangement making it possible for an operator viewing the screen to select any action point thereon regardless of its position so as to carry out, with the controllable element related thereto, an action appropriate to the selected point; said arrangement comprising:

A. a cursor movable on the display to provide a distinctive symbol thereon;

B. a key matrix manipulatable by the operator to cause the cursor to occupy a position coinciding with any action point on the display, said matrix being constituted by a center key representing home surrounded by eight keys, each having an arrow thereon, the respective arrows on the eight keys being directed to the major axes of a compass rose;

C. means to interlink the key matrix with the cursor to render the center key effectively coincident with a currently selected action point on the display which is then the center of the compass rose, whereby the operator, in order to select a new action point then presses the arrow key which most closely points in the compass rose direction of the desired new action point to cause the cursor to jump one step to the newly selected action point; but if more than one action point lies between the currently selected point and the desired point, the operator must then repeatedly press said arrow key to cause the cursor to jump one step at a time until the cursor rests on the desired action point, said means being constituted by a software routine in which each action point and its coordinates on the screen are entered into a table, whereby each time one of the arrow keys is pressed, a software routine is executed which accepts as its input the currently-selected screen position and one of the eight arrow key directions, and then generates as its output the next screen position to be jumped to, this jump being effected by examining the table of coordinates for the closest entry in the designated direction; and

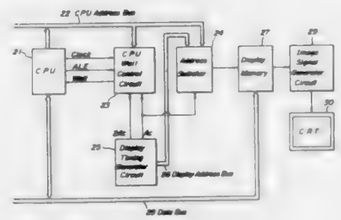
D. an alphanumeric keyboard associated with said computer adjacent to said key matrix whereby the operator may control the selected action point from the keyboard.

4,803,475

IMAGE DISPLAY APPARATUS

Akira Matsueda, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Nov. 24, 1986, Ser. No. 933,881
Claims priority, application Japan, Dec. 10, 1985, 60-277210
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—750 **16 Claims**



1. An image display apparatus comprising:

an input/output controlling means for controlling input/output of image information;

a display control means for controlling display of an image;

a display memory which is accessed by said input/output controlling means and said display control means in a time division multiplex mode; and

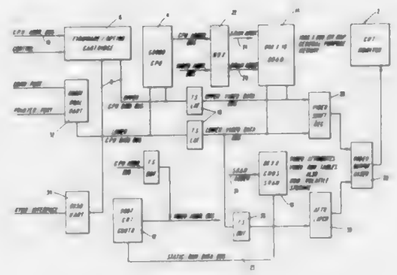
a means connected to said input/output controlling means and said display memory for detecting a time deviation between a start time of a time period during which said display memory can be accessed by said input/output controlling means and a start time of a machine cycle during which said display memory can be accessed by said input/output controlling means to derive a time deviation signal, and for controlling a duration of a wait condition in said input/output controlling means in accordance with said time deviation signal.

4,803,476

VIDEO TERMINAL FOR USE IN GRAPHICS AND ALPHANUMERIC APPLICATIONS

Edward Knapton, Milford, and Ernest Vincent, Windham, both of N.H., assignors to Visual Technology Incorporated, Lowell, Mass.

Filed Oct. 24, 1986, Ser. No. 922,669
Int. Cl.⁴ G09G *1/16*
U.S. Cl. 340—750 **6 Claims**



1. A bit-mapped computer terminal comprising:

a display including a plurality of picture elements;

first memory means for storing a display bit map that defines characteristics of individual picture elements of said display;

second memory means for storing attribute information for individual groups of said picture elements of said display;

video control means for selectively lighting individual picture elements of said display in response to said bit map and said attribute information;

a serial communications port having a plurality of electrical contacts;

a receiver including a differential amplifier having a first input and a second input;

a first line coupling one of said electrical contacts with said first differential amplifier input; and

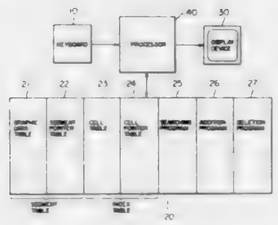
switch means for selectively grounding said second input, said switch means being open for reception of a dual differential data transmission and being closed for reception of a single-ended data transmission.

4,803,477

MANAGEMENT SYSTEM OF GRAPHIC DATA

Takafumi Miyatake, Hachioji; Hitoshi Matsushima, Tachikawa; Shigeko Ohtani, Tokyo, and Junichi Higashino, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1986, Ser. No. 942,633
Claims priority, application Japan, Dec. 20, 1985, 60-285512
Int. Cl.⁴ G09G *1/14*
U.S. Cl. 340—747 **6 Claims**



1. A graphic data management system for searching, adding or deleting graphic elements of graphic data comprising:

first memory means for storing coordinate data of characteristic points constituting graphic data which is placed in a multidimensional coordinate space;

means for partitioning said graphic data into cells in accordance with the spatial position of said graphic data, each cell being identified by a cell number;

second memory means for storing indexes which includes information indicative of graphic data contained within each cell, said graphic data is indicated in said index as being within a cell when a graphic element of a line segment or a point of said graphic data passes through said cell and said graphic data is an open figure and when a graphic element of a boundary line of said graphic data passes through said cell or said cell is included within an inner area of said boundary line and said graphic data is a closed figure;

means for obtaining cells within a specified range of said graphic data, said specified range being input to said system by a user of said system in order to specify graphic data to be processed, and for reading out graphic data within said cells of said specified range from said second memory means; and

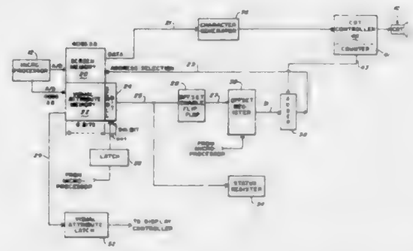
means for reading out from said first memory means coordinate data corresponding to said graphic data read-out from said second memory means and for determining whether each characteristic point of said coordinate data read-out from said first memory means is within said specified range.

4,803,478

HORIZONTAL SCROLL METHOD AND APPARATUS

Richard Olsen, Littleton, Mass., assignor to Prime Computer, Inc., Natick, Mass.

Filed Feb. 21, 1986, Ser. No. 831,715
Int. Cl.⁴ G09G *1/16*
U.S. Cl. 340—726 **12 Claims**



1. In a computer system having a video display screen and means for providing the present screen address, apparatus for providing horizontal scrolling on a character-by-character basis, said apparatus comprising:

video memory means having means for storing multiple data word corresponding to a greater number than screen character locations and including, associated with each data word, n attribute bits for defining various characteristics associated with the character with which the attribute bits are associated,

scroll control memory means associated with said video memory means for storing at least bit n+1 for controlling horizontal scrolling on a character-by-character basis, one of the states of said bit indicating horizontal scrolling of that character and the other state of said bit indicating non-scrolling,

means coupled to an input of said scroll control memory means, for writing into said scroll control memory means an enable bit only in those locations corresponding to characters that are to be scrolled,

means for establishing an offset number under computer control and including an offset register having an enable input,

means coupled from said scroll control memory means to the offset register enable input to enable said offset register when the enable bit is in said horizontal scrolling state,

adder means coupled from said offset register for adding said offset number from said offset register to the present screen address to provide an offset address,

and means for coupling the offset address to the video memory means for display of the character associated with the offset address in the screen address position.

4,803,479

ELECTRICAL PHASE MEASUREMENT MEANS AND METHOD FOR ACCURATE DETERMINATION OF WELL LOGGING CABLE LENGTH

Peter Graebner, Santa Ana; Swan A. Sie, Placentia, and Jorg A. Angelera, Brea, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 879,854, Jun. 27, 1986, Pat. No. 4,722,603.
This application Oct. 21, 1987, Ser. No. 111,245
Int. Cl.⁴ G01V *1/40*
U.S. Cl. 340—860 **4 Claims**

1. Apparatus for determining the change in length of a well logging cable holding a tool comprising:

a sinusoidal electrical signal generating means;

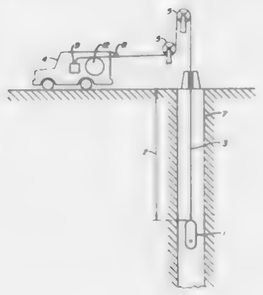
a first conductive means of a fixed length;

a second conductive means, said second conductive means

VOL 1099 ISS 1 FEB 7 1989 UMI

extending downwardly into a wellbore and rigidly connected to the cable;

a third conductive means, said third conductive means extending upwardly from the tool in the wellbore to the surface and operably connected to said second conductive means; and



a means for comparing the phase shift of a signal between said first conductive means and said third conductive means.

means for calculating the change in length of the well logging cable based on said phase shift.

4,803,480

LIQUID CRYSTAL DISPLAY APPARATUS

Mitsuo Soseda, and Yoshikazu Hazama, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

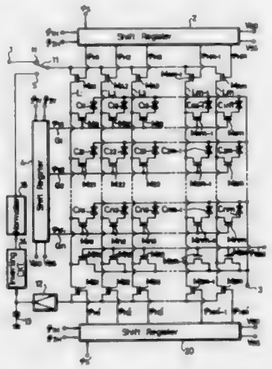
PCT No. PCT/JP85/00508, § 371 Date May 12, 1986, § 102(e) Date May 12, 1986, PCT Pub. No. WO86/01926, PCT Pub. Date Mar. 27, 1986

PCT Filed Sep. 12, 1985, Ser. No. 871,427

Claims priority, application Japan, Sep. 12, 1984, 59-190783

Int. Cl.[4] G09G *3/36*

U.S. Cl. 340—784 8 Claims



1. In a liquid crystal display apparatus in which video signals are sequentially supplied to a number of conducting column lines corresponding to the number of effective horizontal picture elements through first horizontal switching elements which are turned on by first picture element switching signals, which are sequentially formed at a horizontal picture element period, scanning line switching signals, which are sequentially formed for different horizontal scanning periods and are sequentially supplied to a number of lines corresponding to the number of effective horizontal scanning lines, and a switch means through which said video signals are sequentially supplied to said column lines in a first switch position, a plurality of picture element switching means mounted at intersections between said column lines and row lines and said picture element switching means turned on by said scanning line switching signals, a plurality of liquid crystal cells each of which forms one picture element, said liquid crystal display apparatus being characterized in that second horizontal switching elements, which are driven when said switch is in a second position by second picture element switching signals which have an advanced phase which is advanced relative to said first picture element switching signals and are connected to said column lines, said video signals stored in said liquid crystal cells are obtained during a period in which said second horizontal switching elements are turned on, said signals so obtained are inverted and said inverted signals have a phase which has been delayed by an amount corresponding to said phase advance are sequentially supplied through said first horizontal switching elements to said column lines to thereby display a still picture when said switch is in said second position, and characterized in that a reset voltage is supplied to each of said columns through third switching elements which are turned on at every horizontal blanking period of said video signal.

4,803,481

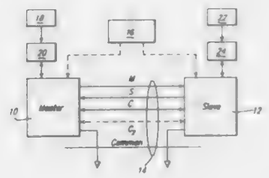
ASYNCHRONOUS COMMUNICATIONS SYSTEM

Peter W. Mueller, Redford, and Jack M. Lesson, Royal Oak, both of Mich., assignors to Peaktronics, Inc., Royal Oak, Mich.

Filed Mar. 30, 1987, Ser. No. 33,050

Int. Cl.[4] H04Q *1/00*

U.S. Cl. 340—825.5 38 Claims



1. A communications system comprising:

a master;

a slave;

a communication transmission means connecting said master and said slave, the communication means having a master channel, a slave channel and a call channel, said master channel, said slave channel and said call channel each being separate and logically distinct;

said master having circuit means to selectively place said master channel in high and low logical states;

said slave having circuit means to selectively place said slave channel to high and low logical states;

said master and slave having protocol establishing means for enabling said master to control said call channel when said master channel and said slave channel are at a first logical relationship to one another, and for enabling said slave to control said call channel when said master channel and said slave channel are at a second logical relationship to one another.

4,803,482

EXIT CONTROL AND SURVEILLANCE SYSTEM

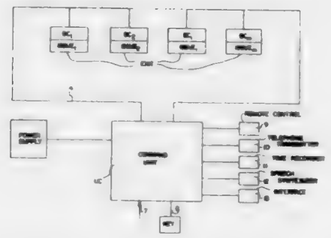
Alain Verstycken, 3, rue du Val Saint Martin, 77260 La Ferté-sous-Jouarre, France

Filed Feb. 17, 1987, Ser. No. 15,051

Claims priority, application France, Feb. 19, 1986, 86 02359

Int. Cl.[4] G08B *25/00, 13/08*

U.S. Cl. 340—825.31 5 Claims



1. An exit surveillance control system for monitoring exits having opening request bars and locks, said system having a central command post from which said system is controlled and a plurality of control boxes, each of said control boxes being associated with an exit and being electrically connected to the control post, said system comprising means responsive to the operation of an opening request bar for initiating a transmission of information to via an associated control box, means responsive to said transmitted information for triggering a first delay period during which the exit in question can be forbidden to open during a second delay period, means for authorizing the opening of the exit in question at the end of either the first delay period or at the end of the second delay period, and means for providing a third delay period which can be triggered during the second delay period in order to authorize the opening of the exit in question during the third delay period by cancelling the effect of the second delay period.

4,803,483

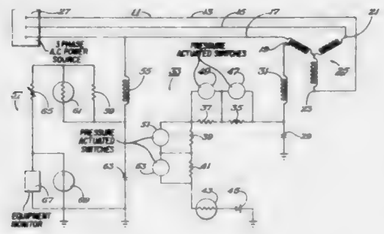
DOWNHOLE PRESSURE AND TEMPERATURE MONITORING SYSTEM

Joseph E. Vandervier, Claremore, and Clinton A. Boyd, Tulsa, both of Okla., assignors to Hughes Tool Company, Houston, Tex.

Filed Jul. 16, 1987, Ser. No. 74,389

Int. Cl.[4] G01V *1/42*

U.S. Cl. 340—856 7 Claims



1. In a submersible pump assembly of the type having an insulated power cable suspended in a well bore, providing AC power from the surface to an electrical motor in the well bore, an apparatus for monitoring the pressure in the well bore, comprising:

source means located at the surface electrically connected to the power cable for superimposing a sensing signal on the power cable;

an electrical network means located in the well bore electrically connected to the power cable for providing an electrical response to the sensing signal;

a plurality of pressure actuated switch means, each switch means for switching from a first condition to a second condition when pressure in the well bore reaches a selected level, the selected level for each switch means differing from the other switch means;

means for connecting each pressure actuated switch means into the electrical network means and for altering the electrical response of the electrical network means when each pressure actuated switch means switches between said first condition and said second condition; and

means at the surface for monitoring the sensing signal to determine the electrical response of the electrical network means and thus determine which of the pressure actuated switch means has switched between said first condition and said second condition, for providing an indication of the well bore pressure level.

4,803,484

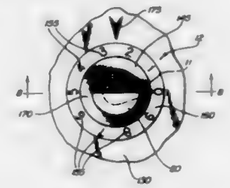
OPTICALLY READABLE AND HUMAN READABLE DIAL

Walter L. Schutrum, and Thomas L. Jay, both of Kettering, Ohio, assignors to Energy Innovations, Inc., Dayton, Ohio

Filed Jan. 16, 1987, Ser. No. 4,551

Int. Cl.[4] G08B *23/00*; G08C *15/06*

U.S. Cl. 340—870.02 14 Claims



1. A utility meter reading system, comprising:

meter means for measuring the consumption of a metered utility service or commodity by a consumer, said meter means including a plurality of indicator shafts, the angular positions of which indicate service or commodity consumption,

a plurality of dial means, each such dial means being mounted for rotation on an associated one of said indicator shafts, each such dial means defining

a patterned disc for concentric rotation with a shaft, and

a beveled circumferential surface extending around said patterned disc and bearing a plurality of numerical indicia, and

a noncontact shaft angle detector for detecting the angular positions of said patterned discs, said detector being mounted adjacent said dial means and the angular position of said dial means being viewable with ease from a lateral viewing position by the consumer by virtue of the orientation of the numerical indicia beveled surface.

4,803,485

LAN COMMUNICATION SYSTEM AND MEDIUM ADAPTER FOR USE THEREWITH

Chandos A. Rypinski, Tiburon, Calif., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 23, 1987, Ser. No. 28,946

Int. Cl.[4] H04Q *9/00*; H04J *3/00*

U.S. Cl. 340—825.050 24 Claims

1. A medium adapter for use in a communication system

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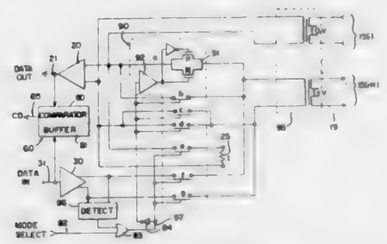
having multiple transmission medium segments in a ring configuration forming a system communication path, comprising:

means for receiving signals from a first transmission medium segment;

means for transmitting signals over the next-successive transmission medium segment;

means for selectively coupling or isolating said transmitting means with respect to said next-successive segment;

means not including said transmitting means operatively connected to said first segment and said next-successive segment for selectively maintaining or breaking the continuity of a segment communication path from said first segment to said next-successive segment; and



means for controlling said transmitter coupling means and said breaking means such that said transmitting means is isolated from said next-successive segment and said breaking means maintains continuity of said segment communication path when said control means is in a first state and wherein said segment communication path assumes a ring topology when said control means is in said first state, and such that said transmitting means is coupled to said next-successive segment and said breaking means breaks the continuity of said segment communication path when said control means is in a second state and wherein said medium adapter is operable to initiate a bus formed over said system communication path when said control mens is in said second state.

4,803,486

MATRIX SWITCH CIRCUIT

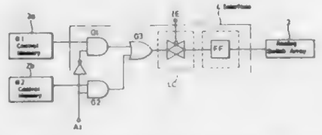
Shinichi Sano; Yasuhito Takeuchi; Yoshiro Tanezumi; Takao Higashikuni, and Tsuyoshi Kakizawa, all of Tokyo, Japan, assignors to Yokogawa Medical Systems, Limited, Tokyo, Japan

Continuation of Ser. No. 920,999, filed as PCT JP86/00066 on Feb. 14, 1986 published as WO86/05049 on Aug. 28, 1986, abandoned. This application Feb. 22, 1988, Ser. No. 159,487

Claims priority, application Japan, Feb. 15, 1985, 60-27769

Int. Cl.[4] H04Q *1/00*

U.S. Cl. 340—825.79 **1 Claim**



1. A delay map former circuit for use in ultrasonography, comprising

an array of a plurality of analog switches disposed at the intersection of a plurality of plurality of vertical and horizontal signal lines;

a first memory means for storing control signals for closing and opening respective ones of the analog switches of said array;

control means for generating an interface enable signal and a most significant address signal; and

interface means connected between said array of analog switches and said first and second memory means and under the control of said control means for selectively controlling said analog switches according to control signals stored in said first and second memory means;

wherein said interface comprises

a first AND circuit connected to said control means and to said first memory means,

a second AND circuit connected to said control means and to said second memory means,

a single switching means connected commonly to said first and second AND circuits and to said control means, and

a single holding means connected to said switching means and to said array; and

wherein said control means applies said most significant signal to said first and second AND circuits to select one of said first and second AND circuits for transmitting control signals therethrough

wherein said control means applies said interface enable signal to said switching means to cause said control signals from the selected one of said first and second memory means to be transmitted through said switching means to said holding means, said holding means holding the transmitted control signals, and then applying the held control signals to selectively control selected ones of said analog switches of said array,

wherein said control means enters control signals into said selected one of said first and second memory means after transmission of stored control signals through said AND circuits and said switching means to said holding means, and

wherein said control means causes control signals stored in another of said first and second memory means to be transmitted through said AND circuits and said switching means to said holding means, after selected control signals are transmitted to said holding means to operate selected ones of said analog switches of said array, so that entering of control signals into said first and second memory means is independent of the selective operation of said analog switches of said array.

4,803,487

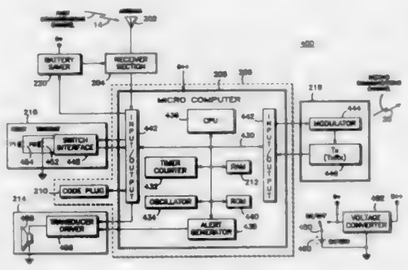
PORTABLE COMMUNICATIONS RECEIVER WITH SEPARATE INFORMATION PRESENTATION MEANS

David F. Willard, Plantation, and Philip P. Macnak, West Palm Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1987, Ser. No. 44,875

Int. Cl.[4] H04Q *7/00*

U.S. Cl. 340—825.440 **40 Claims**



1. A personal message receiving apparatus, for presenting to a user selective call messages, having selective call address and

message information, being transmitted on a first radio frequency communications channel, said device comprising:

a portable communications receiver intended to be carried by the user, said receiver having,

a first receiver portion for receiving and detecting the selective call address and messages information being transmitted on the first radio frequency communications channel,

message storage means responsive to the detected selective call address information for effecting the storing of the received message information, and

transmitter means, coupled to said message storage means, and further responsive to the message information being stored for subsequently transmitting on a second communications channel, the stored message information; and

a presentation unit further intended to be carried by the user, said unit having

a second receiver means, separate from said portable communications receiver, for receiving and detecting the message information transmitted on the second communications channel, and

presentation means, coupled to said second receiver means, for presenting the message information received on the second communications channel.

4,803,489

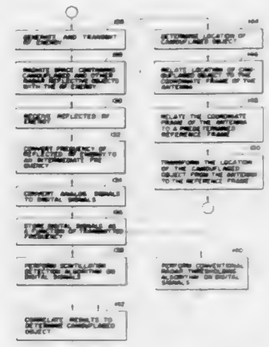
METHOD FOR DETECTING A CAMOUFLAGED OBJECT AND SYSTEM

Francis A. Giori, Williamsville, N.Y., assignor to LTV A&D Sierra Research Division, Buffalo, N.Y.

Filed Jan. 29, 1987, Ser. No. 68,178

Int. Cl.[4] G01S *13/32*

U.S. Cl. 342—192 **17 Claims**



1. A method for detecting by radar an object hidden by camouflage within a predetermined space, wherein the camouflage has apertures extending completely therethrough, the method comprising the steps of:

activating a radar system to generate RF energy radiating the predetermined space containing the camouflage object said RF energy being generated at a frequency swept over a predetermined frequency band so that said generated RF energy radiates through the apertures of the camouflage and is radiated through the apertures after reflection from the object to create an identifiable scintillation in the reflected RF energy;

receiving the reflected RF energy to generate a received RF signal; and

performing a scintillation-detection algorithm on said received RF signal to detect the camouflaged object.

4,803,488

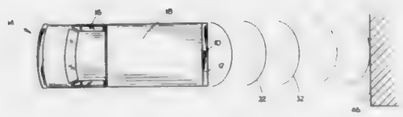
DRIVER ALERTING DEVICE

Anthony E. Dombrowski, Omaha, Nebr., assignor to Steven F. Sommers, Omaha; Bruce E. Schreiner, Grand Island; Land Paving Company, Omaha; Omni Holding Company, Omaha; Jerry Rouk, Omaha and Robert Wichser, Omaha, all of, Nebr.

Continuation of Ser. No. 579,160, Feb. 10, 1984, abandoned. This application Aug. 13, 1986, Ser. No. 895,537

Int. Cl.[4] G08G *1/00*

U.S. Cl. 340—904 **10 Claims**



1. A driver alerting device for a vehicle having a back-up light circuit reverse switch, comprising, a transceiver comprising a micro-wave radar device using the doppler shift principle to detect the present of a target within the transceiver range,

means for supporting said transceiver at the rearward end of a vehicle for directing the wave output thereof rearwardly of the vehicle,

means for supplying to said transceiver return wave signals from any target within the transceiver range, an intermediate frequency amplifier operatively connected to said transceiver, said amplifier being operative to amplify and shape said return wave signals, a remote indicator adapted for placement within or adjacent the passenger compartment of a vehicle,

means for electrically connecting said remote indicator to said transceiver for activation of said indicator in response to detection by said transceiver of return wave signals from any target within the transceiver range, and

means for electrically connecting said transceiver to the back-up light circuit reverse switch of a vehicle for activation of said transceiver in response to activation of said back-up light circuit reverse switch of a vehicle, said device being substantially unaffected, in operation, by varying weather conditions.

4,803,490

HORIZON STABILIZED ANTENNA BEAM FOR SHIPBOARD RADAR

Bradford E. Kruger, Woodland Hills, Calif., assignor to ITT Gilfillan, A Division of ITT Corporation, Van Nuys, Calif.

Filed Oct. 26, 1984, Ser. No. 665,275

Int. Cl.[4] G01S *13/46*; H01Q *3/46, 1/34*

U.S. Cl. 342—158 **3 Claims**

1.

A shipboard radar system for search, said system comprising:

a gyro;

a pitch sensor connected with said gyro to produce an output signal which is a function of the ship's pitch;

a roll sensor connected with said gyro to produce an output signal which is a function of the ship's roll;

an antenna to radiate a beam of electromagnetic energy;

a Rotman lens actuable to move said beam in elevation;

main means responsive to said pitch and roll sensor output signals to control said Rotman lens in a manner to keep said beam pointed toward the horizon,

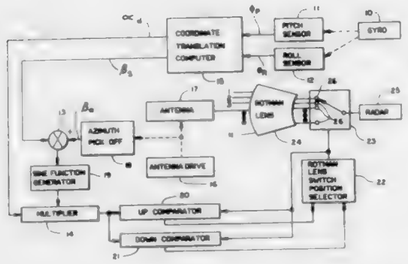
a coordinate translation computer connected to receive said pitch and roll sensor output signals for producing output signals proportional to the deck dip and strike angles;

second means to rotate said antenna in azimuth, an azimuth

angle pick-off, said second means rotating said pick-off with said antenna;

a sine function generator;

a subtractor connected to receive said strike angle output signal of said coordinate translation computer and to receive said pick-off output signal for supplying an input to said sine function generator; and



a multiplier connected to receive said dip angle output signal of said coordinate translation computer and connected to receive the output signal of said sine function generator, the output signal of said multiplier being proportional to the elevation of said antenna beam relative to said gyro independent of a component of said strike angle in the direction of boresite.

4,803,491

ANTENNA FOR WIRELESS COMMUNICATION EQUIPMENT

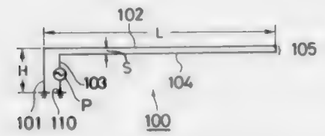
Hideo Hikuma, Ichikawa, Japan, assignor to Uniden Corporation, Ichikawa, Japan

Filed May 6, 1987, Ser. No. 46,426

Claims priority, application Japan, May 9, 1986, 61-104837

Int. Cl.[4] H01Q *1/24*

U.S. Cl. 343—702 **7 Claims**



1. An antenna for wireless communication equipment, said antenna having a feeding point at which sigals are coupled to and from said antenna, comprising:

a conductive main vertical planar part having a first width, standing erect, and having one end thereof connected to the ground;

a conductive main horizontal planar part having a second width, extending at substantially right angles toward said main vertical planar part, and having one end thereof connected to the other end of said main vertical planar part;

a conductive secondary vertical linear part facing toward and extending in parallel to said main vertical planar part, and having one end thereof connected to the feeding point;

a conductive secondary horizontal linear part extending in parallel to said main horizontal planar part, having one end thereof connected to the other end of said secondary vertical linear part, and separated from said main horizontal planar part by a distance selected to provide a predetermined desired impedance at the feeding point; and

a coupling part for electrically connecting the other end of said secondary horizontal linear part to said main horizontal planar part.

4,803,492

VEHICLE WINDOW GLASS ANTENNA

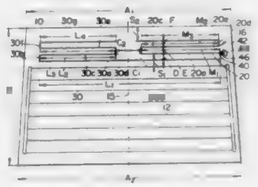
Hiroshi Isabe; Masao Shimai; Kazuya Nishikawa; Tamotsu Saitoh, and Tokio Tsukada, all of Matsuoka, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Nov. 21, 1986, Ser. No. 933,207

Claims priority, application Japan, Nov. 25, 1985, 60-262690; Dec. 13, 1985, 60-279131

Int. Cl.[4] H01Q *1/32*

U.S. Cl. 343—713 **12 Claims**



1. A two-element antenna attached to a vehicle window glass having right and left side marginal regions and a middle region containing a center axis of the window glass between said side marginal regions; said antenna comprising:

a main antenna element formed of a conductive strip which extends subtantially horizontally from one side marginal region of the window glass to said middle region of the window glass without intersecting said center axis and is folded in said middle region so as to have a turn-back part which extends substantially horizontally toward said one side marginal region;

a phase adjusting antenna element formed of a conductive strip which extends substantially parallel to said main element from said one side marginal region of the window glass along a length not shorter than $(\lambda/4)\alpha-(\lambda/20)\alpha$, wherein λ is the wavelength of an FM wave to be received and is the wavelength shortening coefficient of the antenna; and

an interconnection line which extends within said side marginal region of the window glass substantially perpendicularly to the main and phase adjusting antenna elements and connects an end of said phase adjusting element to an end of said main element, the antenna being electrically connected at an arbitrary point on said interconnection line to a feed point.

4,803,493

MOBILE ANTENNA CIRCUIT WITH VARIABLE LINE LENGTH

Wayne L. Jamison, P.O. Box 75144, Houston, Tex. 77234

Filed Dec. 1, 1986, Ser. No. 936,354

Int. Cl.[4] H01Q *1/10, 3/22*

U.S. Cl. 343—745 **12 Claims**

1. A mobile antenna circuit for resonant transmitting from an RF signal source comprising:

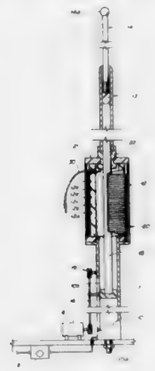
an antenna having a base and at least first and second conductive sections, one of said first and second sections being extendable and retractable to lengthen and shorten said antenna;

a motor operatively connected to said first antenna section for extending and retracting said antenna in response to control signals thereto;

impedance matching circuit means coupling said RF signal source to the base of said antenna for matching the impedance thereof at a specified frequency;

control means connected to said motor to produce said control signals for extending and retracting said first antenna section so as to resonantly tune said antenna at said specified frequency;

a phase angle detector connected between said RF signal source and said impedance matching circuit means for developing a voltage differential proportional to the phase shift between RF line voltage and RF line current, said voltage differential being fed to said control means for



producing said control signals to extend and retract said first antenna section to automatically tune said antenna at said specified frequency; and

feed line selection means connected between said phase angle detector and said antenna base by which a specified length of feed line may be placed in series with said impedance matching circuit and in combination therewith create a phase shift between said RF line voltage and RF line current equal to one-quarter or any multiple of one-quarter wave length of feed line for said specified frequency.

4,803,494

WIDE BAND ANTENNA

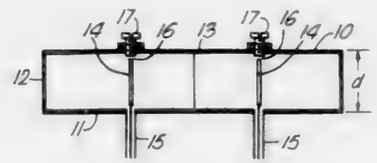
Andrew P. Norris, Great Dunmow, and Martin S. Smith, Chelmsford, both of Great Britain, assignors to STC PLC, London, England

Filed Jan. 20, 1988, Ser. No. 145,930

Claims priority, application United Kingdom, Mar. 14, 1987, 8706114

Int. Cl.[4] H01Q *13/10*

U.S. Cl. 343—770 **3 Claims**



1. A cavity backed crossed slot antenna wherein the cavity depth is less than one eighth of the operating wavelength at the lowest frequency of operation, the major dimension of the cavity in the plane of the slots is less than one half of the wavelength at the lowest operating frequency, and the slots are excited by four capacitive coupled feed probes extending through the bottom wall of the cavity, the probes being located symmetrically with respect to the crossed slots and the ends of the probes being separated from the top wall by gaps to provide the capacitive coupling.

4,803,495

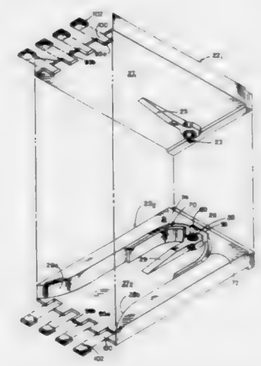
RADIO FREQUENCY ARRAY ANTENNA WITH ENERGY RESISTIVE MATERIAL

George J. Monser, Goleta, and Albert A. Roy, Lompoc, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 690,074, Jan. 9, 1985. This application Nov. 26, 1986, Ser. No. 936,918

Int. Cl.[4] H01Q *3/00, 13/02*

U.S. Cl. 343—777 **8 Claims**



1. An array antenna comprising a plurality of antenna elements, adjacent ones of the plurality of antenna elements having a conductive wall disposed therebetween, said conductive wall being disclosed in the H-plane of the antenna and having a conductive radiating edge having a plurality of discontinuities formed therein, including radio frequency energy resistive material disposed within the regions of the discontinuities.

4,803,496

METHOD FOR RECORDING A COLOR IMAGE

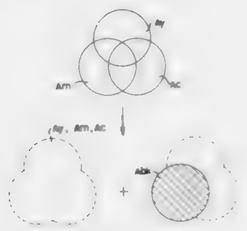
Haruko Kawakami, Funabashi; Hidekazu Sekizawa, Yokohama, and Naofumi Yamamoto, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 30, 1986, Ser. No. 879,943

Claims priority, application Japan, Jan. 28, 1985, 60-142150

Int. Cl.[4] G01D *15/00*

U.S. Cl. 346—76 PH **5 Claims**



1. In a method for recording a full color image with the use of three reference color inks of yellow, magenta, and cyan, and a black ink, the black ink being last printed so as to be superim-

VOL 1099 ISS 1 FEB 7 1989 UMI

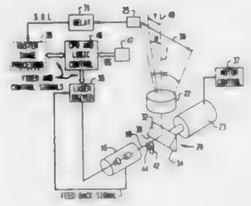
posed on an area in which all the reference color inks are superimposed, an area ratio BK of the black ink occupied relative to a pixel area in a unit pixel is set smaller than area ratios occupied by the respective reference inks superimposed within the unit pixel.

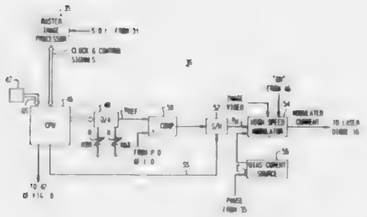
4,803,497

LASER DIODE OUTPUT POWER STABILIZATION IN A LASER IMAGESETTER

John A. Kennedy, Jr., Ridge, and Walter Hansen, Cold Spring Harbor, both of N.Y., assignors to Dr.-Ing. Rudolf Hell GmbH, Kiel, Fed. Rep. of Germany

Filed Aug. 31, 1987, Ser. No. 91,681
Int. Cl.[4] G01D *9/42*
U.S. Cl. 346—108 **13 Claims**





8. A method for controlling a multi-resolution mode image setting apparatus including a controllable semiconductor laser diode for providing a light beam, the energy of said light beam having a dependency on an internal temperature within said laser diode, said image setting apparatus further including an apparatus for causing scanning of said light beam after it has been modulated with image-representative information including OFF-states and ON-states, so as to set an image in a selected one of first and second resolutions, said second resolution being greater than said first resolution, comprising the following steps:

(a) keeping said internal temperature at an elevated level during said OFF-states by applying a bias current to said laser diode irrespective of the selection of said first or second said resolution of said apparatus;

(b) electrically controlling the optical power output of said laser diode when changing to said second resolution from said first resolution so that said optical power output is a given amount greater than that necessary for proper setting of said image at said second resolution; and

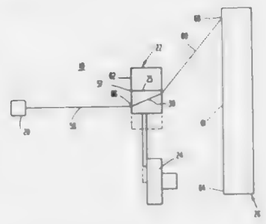
(c) optically attenuating said light beam so as to reduce the optical power of said light beam by said given amount in order that setting of images in said second resolution can take place.

4,803,498

LASER PRINTER RECORDING SYSTEM

Oren Aharon, Haifa, Israel, assignor to Blaser Industries, Incorporated, Los Angeles, Calif.

Filed Jul. 13, 1987, Ser. No. 72,464
Int. Cl.[4] G01D *9/42*; **G02B** *26/08*
U.S. Cl. 346—108 **2 Claims**



1. A laser printer recording system comprising:

a laser light source for generating a beam of light;

a photoresistive recording medium having an image forming surface disposed perpendicular to the path of said beam of light as it emanates from said light source for recording an image as said beam of light is scanned repetitively across said image forming surface along straight lines;

a transmissive optical unit having a magnification ratio greater than one positioned between said laser light source and said photoresistive recording medium and through which said beam of light passes from said laser light source to said photoresistive recording medium;

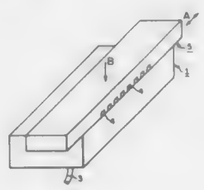
and a slider crank assembly coupled to said transmissive optical unit for imparting oscillatory motion to said transmissive optical unit along a straight-line path parallel to said image forming surface of said photoresistive recording medium to refract said beam of light in increasing amounts as said transmissive optical unit is displaced from the path of said beam of light as it emanates from said light source, thereby scanning said beam of light across said image forming surface along a straight line for each cycle of oscillation of said transmissive optical unit over a distance greater than the distance between the end points of displacements of said transmissive optical unit.

4,803,499

MOVEABLE INK JET THERMAL PRINTING HEAD

Mamoru Hayamizu, Chiba, Japan, assignor to Sourtec Corp, Minato, Japan

Filed Feb. 18, 1987, Ser. No. 15,902
Claims priority, application Japan, Feb. 27, 1986, 61-40330; Jul. 15, 1986, 61-164732
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R **3 Claims**



1. An ink jet thermal printing head for spraying ink onto a printing surface comprising:

(a) a thermal head having a plurality of thermal dot elements

for creating heat, said thermal head having a recessed portion defining an ink gathering portion;

(b) a guide member slideably mounted for reciprocal movement on said thermal head so as to be in operative engagement with said thermal dot elements, said guide member defining a plurality of grooves in proximity to said thermal dot elements, said plurality of grooves being of greater number than said plurality of thermal dot elements, said reciprocal movement being in a direction substantially perpendicular to said grooves, whereby said reciprocal movement of said guide member relative to said thermal head substantially prevents said grooves from becoming blocked and for maintaining a flow of said ink during operation, wherein said guide member and said thermal printing head form channels therebetween to carry ink from said ink gathering portion of said thermal head to said thermal dot elements, wherein the ink can be heated and caused to bubble and spray the ink out of said channels and onto the printing surface; and,

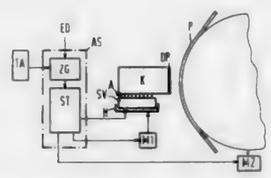
(c) an ink supplying means for supplying said channels with ink operatively engaged to said guide member so as to supply ink to said ink gathering portion of said thermal head.

4,803,500

INK PRINTER MEANS COMPRISING INTERCHANGEABLE INK HEADS

Artur Milbrandt, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 24, 1987, Ser. No. 66,069
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1986, 3622506
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R **4 Claims**



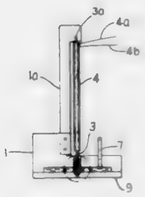
1. An ink printer means for multi-color printing of a recording medium comprising an ink printer head provided on a printer carriage movable in line-fashion via a drive means in a print mode, said ink printer head containing a plurality of nozzles from which ink is ejected onto the recording medium to be printed, said nozzles of the ink printer head being individually driven via a multi-color control drive circuit, said ink printer head on the printer carriage being interchangeably mounted via a retaining mechanism, a first type of ink printer head being allocated to single-color ink printing and a second type of ink printer head being allocated to the multi-color ink printing and a sensing means for sensing the type of ink printer head used and, dependent thereon, switching a coding matrix connecting the nozzles to the multi-color drive circuit.

4,803,501

DEVICE FOR GENERATING FLUID DROPS

Klaus Mielke, Mölnlycke, Sweden, assignor to Swedot System AB, Göteborg, Sweden

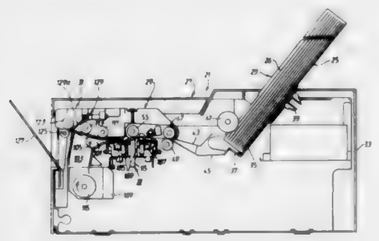
PCT No. PCT/EP86/00281, § 371 Date Feb. 9, 1987, § 102(e) Date Feb. 9, 1987, PCT Pub. No. WO86/06684, PCT Pub. Date Nov. 20, 1986
PCT Filed May 13, 1986, Ser. No. 13,830
Claims priority, application Sweden, May 13, 1985, 8502374-5
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R **14 Claims**



1. A device for generating ink drops, comprising: a housing having walls defining an ink chamber, having an ink supply terminating in said ink chamber, having an ink outlet opening in one of said walls defining said ink chamber, and having in another of said walls an aperture; an elastic sealing element provided in said aperture; a rod-shaped actuation member having a first end portion with an end surface, having a second end portion, and having an intermediate portion extending between said end portions, said actuation member having a longitudinal axis which is aligned with said ink outlet opening, said actuation member being made of a magnetostrictive material; and a magnetizing coil, said actuation member varying dimensionally in response to a magnetic field applied thereto by said magnetizing coil; wherein said actuation member extends through said sealing element and said aperture so that its first end portion extends into said ink chamber while its second end portion lies outside said ink chamber, said actuation member being supported by support means on said housing at a location spaced from said first end portion while having said end surface on its first end portion facing toward the vicinity of said ink outlet opening; wherein said intermediate portion and said second end portion of said actuating member are disposed outside said ink chamber; wherein said actuation member is supported by said support means at said second end portion so that solely said first end portion extends into said ink chamber; wherein said housing includes a support portion and said support means includes a yoke-shaped portion supporting said second end portion of said actuation member; and wherein said yoke-shaped portion is made of a magnetostrictive material which responds to the influence of the magnetic fields produced by said magnetizing coil oppositely to said magnetostrictive actuation member, by respectively expanding and contracting dimensionally in directions parallel to said longitudinal axis of said actuation member as said actuation member respectively contracts and expands dimensionally parallel to said longitudinal axis.

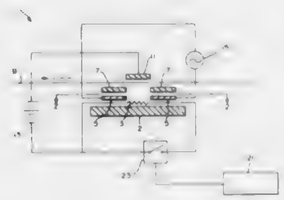
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4,803,502
IMAGE FORMATION CARTRIDGE AND IMAGE FORMING APPARATUS USING THE SAME
Kiyoshi Hashimoto, Ichikawa; Kazuhisa Kimura, and Takashi Hatakeyama, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 30, 1987, Ser. No. 103,129
Claims priority, application Japan, Sep. 30, 1986, 61-232365
Int. Cl.⁴ G01D *15/16*
U.S. Cl. 346—140 R **20 Claims**



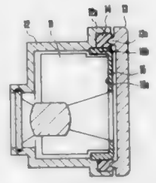
1. A detachable image formation cartridge for an image formation apparatus having a thermal head, comprising:
a movable image formation sheet including an ink permeable portion;
a pair of rotatable shaft means for supporting the image formation sheet therebetween, the image formation sheet being alternatively wound on each of the rotatable shaft pair means as the shaft pair means rotate in corresponding alternate directions;
rotatable ink applying roller means for contacting the image formation sheet and rolling along the image formation sheet as the rotatable shaft means wind the image formation sheet for transferring ink to the image formation sheet; and
ink feeding means for drawing ink from a supply thereof and for uniformly applying the drawn ink to the surface of said roller means along at least a portion of the length thereof.

4,803,503
THERMALLY ACTIVATED ELECTROSTATIC CHARGING METHOD AND SYSTEM
Edward F. Mayer, Cromwell, Conn., assignor to Ricoh Corporation, San Jose, Calif.
Filed Nov. 27, 1987, Ser. No. 125,896
Int. Cl.⁴ G01D *15/00*
U.S. Cl. 346—159 **18 Claims**



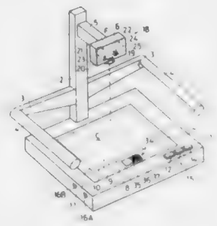
1. A method of forming an electrostatic image on a solid dielectric material comprising the steps of:
applying a first potential to a first electrode adjacent the dielectric material,
applying a time varying potential to a second electrode adjacent an opposite side of said dielectric material from said first electrode,
selectively heating gases in the region of said second electrode to selectively generate ions in the region of one of said electrodes to form the electrostatic image on the dielectric material, whereby the magnitude and frequency of the time varying potential are selected such that substantially no ionization will occur unless the region between said first and second electrodes has been heated.

4,803,504
WATERPROOF CAMERA
Hiroshi Maeno, and Hideo Tamamura, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 772,147, Sep. 3, 1985, abandoned. This application Dec. 23, 1987, Ser. No. 136,477
Claims priority, application Japan, Sep. 3, 1984, 59-132682; Sep. 3, 1984, 59-132683; Sep. 3, 1984, 59-132684
Int. Cl.⁴ G03B *17/08*
U.S. Cl. 354—64 **30 Claims**



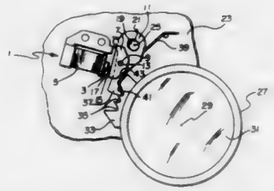
25. A camera, comprising:
(A) a camera cover having an aperture part for loading photosensitive means;
(B) a lid for covering said aperture part for loading photosensitive means;
(C) sealing means for tightly closing said aperture part when said lid is closed; and
(D) a camera body covered by said camera cover, said camera body constituting together with said camera cover a holding part for holding said sealing means.

4,803,505
MICROFILM CAMERA
Takao Saijo, Tama, and Masafumi Fujita, Kawasaki, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Sep. 1, 1987, Ser. No. 91,967
Claims priority, application Japan, Sep. 3, 1986, 61-207059; Sep. 3, 1986, 61-207060
Int. Cl.⁴ G03B *29/00*
U.S. Cl. 354—80 **11 Claims**



1. A microfilm camera for photographing images of documents on a film on a reduced scale, comprising:
a document table for placing the document thereon;
optical means for projecting an image of the document placed on the document table onto the film by reduction in scale to photograph the image thereon;
restricting means positioned in the optical path of said optical means for restricting an area on the film to be exposed to light by the optical means, said restricting means being capable of varying the area;
forming means for forming variable size marks indicative of the size of the photographed image, on the film, in the vicinity of each film image photographed;
input means for inputting the size of the area which is to be restricted by said restricting means; and
control means for controlling the restricting means and the forming means with a predetermined relationship to each other to vary the restricted area and the size mark corresponding to the size inputted by said input means.

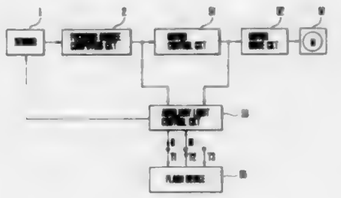
4,803,506
ELECTROMAGNETIC CONTROL DEVICE FOR CAMERAS
Conrad Diehl, and Anthony DiRisio, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 14, 1988, Ser. No. 143,789
Int. Cl.⁴ G03B *3/00*
U.S. Cl. 354—400 **6 Claims**



1. An improved electromagnetic control device for a camera or other photographic apparatus, wherein said control device is of the type provided with (a) a control member, (b) magnet means having an attracting face, (c) an armature pivotally connected to said control member for movement about a pivot axis to allow tilting of an attracted face of said armature into face contact with said attracting face of the magnet means, and (d) means pivotally mounting said control member for movement about a pivot axis to swing said armature to urge its attracted face against said attracting face of the magnet means until said attracted face is tilted into face contact with said attracting face, and wherein the improvement comprises:
some mounting means including free play means for allowing some degree of free play of said control member at its pivot axis to, in turn, allow the control member to move about the pivot axis of said armature after said attracted face of the armature is tilted into face contact with said attracting face of the magnet means, whereby said control member will be moved first about its pivot axis and then about the pivot axis of said armature.

4,803,507
AUTOMATIC FOCUSING DEVICE
Akira Akashi, and Masanori Yamada, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Japan
Continuation of Ser. No. 696,878, Jan. 31, 1985, abandoned, which is a continuation of Ser. No. 558,768, Dec. 6, 1983, abandoned. This application Oct. 1, 1985, Ser. No. 783,056
Claims priority, application Japan, Dec. 7, 1982, 57-214405; Jan. 26, 1983, 58-11052
Int. Cl.⁴ G03B *3/00*
U.S. Cl. 354—400 **13 Claims**

1. An automatic focusing device comprising:
(a) a focus detecting circuit arranged to repeatedly measure a focus state of an object to be photographed and illuminated with an auxiliary light in response to an illumination start signal which is produced for driving an auxiliary light source, whereby said auxiliary light source is repeatedly actuated for illuminating the object for each focus detecting action;
(b) lens driving circuit for driving a lens on the basis of detecting results after each focus state detecting action by said focus detecting circuit is completed, said driving circuit driving the lens an amount corresponding to the detection results and stopping the lens, and said focus detecting circuit operating again in synchronism with the illumination start signal while the lens is stopped; and
(c) an inhibiting circuit arranged to inhibit the actuating



action of said illumination start signal on said auxiliary light source when an in-focus is detected by said detecting circuit, whereby a re-starting of said auxiliary light source is inhibited in response to a detection of an in-focus state, thus stopping the repeated illumination.
9. An automatic focusing device comprising:
(a) a detection circuit for detecting a focus state of an object to be photographed repeatedly at a predetermined interval of time;
(b) a driving circuit for driving a lens to an in-focus state on the basis of an output of the focus detection circuit; and
(c) a control circuit for rendering longer the detection interval of the focus detection circuit after the in-focus state is attained than before.

4,803,508
FOCUS DETECTION SYSTEM AND LIGHTING DEVICE THEREFOR
Tohru Matsui, Sakai, and Takeshi Egawa, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 940,190, Dec. 9, 1986, Pat. No. 4,690,538, which is a continuation of Ser. No. 807,642, Dec. 11, 1985, abandoned. This application Aug. 13, 1987, Ser. No. 85,088
Claims priority, application Japan, Dec. 11, 1984, 59-261194; Jan. 17, 1985, 60-7178; Jan. 19, 1985, 60-7686; Jan. 21, 1985, 60-9716
Int. Cl.⁴ G03B *3/00*
U.S. Cl. 354—403 **4 Claims**

1. A focus detection system for detecting focus condition of an objective lens of a camera with respect to an object within a focus detection area which spreads at a solid angle centering at the optical axis of said objective lens, comprising:
a light projecting optical system for projecting a flux of light which crosses said focus detection area at a predetermined angle;
a light source for emitting light, said light source including:
a light emitting diode adapted to emit said light from its front surface and its side surfaces;
a transparent molded member disposed in front of said front surface of said light emitting diode and having a spherical surface;
a concave light reflective member surrounding said side surfaces of said light emitting diode to reflect said light emitted from said side surfaces of said light emitting diode towards said transparent molded member;

a projective pattern including a plurality of alternatively arranged transparent portions and opaque portions; and

a projecting lens for projecting said light forward as said flux of light, wherein said light source fulfills the following conditions:

$0.6<l/R<1.1$



$l=h-R$

wherein: h represents a distance between the top of the spherical surface of the transparent molded member and the front face of the light emitting diode; and R represents a radius of curvature of the transparent molded member.

4,803,509

CAMERA SYSTEM OPERABLE BY CARRYING DATA FROM A CAMERA ACCESSORY TO A CAMERA BODY

Masaaki Nakai, Kawachinagano; Masayoshi Sahara, Sennan, and Nobuyuki Taniguchi, Nishinomiya, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 578, Jan. 5, 1987, abandoned, which is a division of Ser. No. 790,511, Oct. 23, 1985, Pat. No. 4,673,275, which is a continuation of Ser. No. 478,910, Mar. 25, 1983, Pat. No. 4,560,267. This application Dec. 9, 1987, Ser. No. 130,990

Claims priority, application Japan, Mar. 26, 1982, 57-49768; Mar. 30, 1982, 57-52740; Apr. 1, 1982, 57-55187; Nov. 5, 1982, 57-194968; Feb. 2, 1983, 58-14929[U]

Int. Cl.⁴ G03B *7/095, 7/20*

U.S. Cl. 354—410 **4 Claims**



1. In a camera system having a camera body with a mount on which a first type of attachment, subject to an aperture size adjustment from the camera body, or a second type of attachment, incapable of the aperture size adjustment from the camera body, can be interchangeably mounted, the camera body comprising:

first means for controlling an exposure of the camera in accordance with a manual setting;

second means for controlling an exposure of the camera in accordance with a fully open aperture through the lens (TTL) light measurement;

third means for controlling an exposure of the camera in accordance with an actually stopped-down aperture TTL light measurement;

means for identifying whether the attachment mounted on the mount is of the first type or of the second type, and

means, responsive to said identifying means, for enabling said first and second controlling means when said identifying means identifies that the mounted attachment is of the first type, and for enabling said third controlling means when said identifying means identifies that the mounted attachment is of the second type.

4,803,510

COPYING MACHINE HAVING REMOVABLE PROCESS UNIT IN A HOUSING

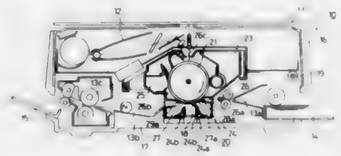
Masahiko Maeda, Izumiotsu, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Feb. 27, 1987, Ser. No. 19,721

Claims priority, application Japan, Feb. 28, 1986, 61-29917[U]; Feb. 28, 1986, 61-29918[U]; Feb. 28, 1986, 61-29919[U]; Feb. 28, 1986, 61-45050; Feb. 28, 1986, 61-45051; Feb. 28, 1986, 61-45052; Feb. 28, 1986, 61-45053; Feb. 28, 1986, 61-45054

Int. Cl.⁴ G01G *15/00*

U.S. Cl. 355—3 R **18 Claims**



1. A copying machine comprising the body of said copying machine and a process unit attachable to and detachable from the body of said copying machine, wherein said process unit comprises a generally closed housing, and a photosensitive drum, a charging device, a developing apparatus, and a cleaning apparatus completely within said housing of said process unit, said process unit having a route of conveyance for recording paper that tunnels through said housing in the region under said photosensitive drum; and the shape of the housing of said process unit is a right-angled parallel-piped.

4,803,511

SLIDING PLATE ASSEMBLY

Peter G. Izzo, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

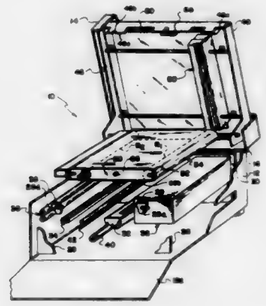
Continuation of Ser. No. 93,847, Sep. 8, 1987, abandoned. This application May 10, 1988, Ser. No. 195,481

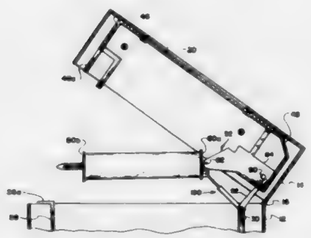
Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 R **5 Claims**

1. In an improved electrostatographic apparatus including a housing having a lower portion containing electrostatographic process stations and an upper portion connected thereto containing a support assembly for a dielectric member mounted for movement about a closed loop path, and wherein said upper housing portion is movable relative to said lower housing portion to a first position whereby said dielectric member is in operative relation to such electrostatographic process statons and a second position wherein said dielectric member is remote from said electrostatographic process stations to enable ready access to such process stations, and wherein said dielectric member support assembly is movable relative to said upper housing portion to a position intermediate said upper and lower housing portions when said upper portion is in its second position, said improvement comprising:

means for inhibiting movement of said upper housing portion from its second position to its first position when said





dielectric member support assembly is in its intermediate position, whereby damage to said dielectric member by movement of said upper housing portion is prevented.

4,803,512

IMAGE FORMING CARTRIDGE FOR PROVIDING UNIFORM CORONA CHARGING

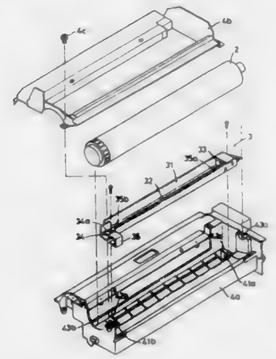
Mitsuru Ogura, Nara; Takeshi Yoshida, and Shoichiro Yoshiura, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 14, 1987, Ser. No. 49,512

Claims priority, application Japan, May 16, 1986, 61-74214[U]

Int. Cl.⁴ G03G *15/00, 15/02;* **H01T** *19/00*

U.S. Cl. 355—3 CH **3 Claims**



1. An image forming cartridge for housing and supporting at least a charger unit integrally with a photoreceptor within a copying machine, comprising an image forming cartridge body having an upper frame and lower frame, a photoreceptor mounted on said cartridge body, a charger unit mounted on said upper frame of said cartridge body said charger unit including a charge wire extending longitudinally in said charger unit, said upper frame of said cartridge body having positioning members of a predetermined height projecting therefrom and said charger unit has holes therein corresponding to said positioning members such that said positioning members extend through said corresponding holes so as to engage said charge wire and maintain said charge wire at a specified distance from said photoreceptor to permit uniform charging of said photoreceptor by said charge wire.

4,803,513

TONER SUPPLYING DEVICE

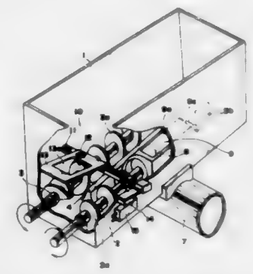
Hideya Nishise, Toyohashi; Susumu Sakakibara, Toyokawa, and Masaru Imaizumi, Shinshiro, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 28, 1987, Ser. No. 7,897

Claims priority, application Japan, Jan. 28, 1986, 61-011317[U]

Int. Cl.⁴ G03G *15/08*

U.S. Cl. 355—3 DD **7 Claims**



1. A toner supplying device for supplying toner to an electrostatic latent image developing unit, said toner supplying device comprising:

a storage tank for accommodating a toner therein;

a first transport member disposed within said storage tank for transporting the toner;

a second transport member disposed within said storage tank for transporting the toner in a direction opposite to the direction of transporting by said first transport member;

a supply opening in the bottom of said storage tank below said first transport member for passing said toner therethrough; and

a cover covering said supply opening and defining a tunnel in which said first transport member is at least partially disposed for partially restricting the flow of toner through said supply opening.

VOL 1099 ISS 1 FEB 7 1989 UMI

4,803,514
MULTI-COLOR IMAGE FORMING METHOD AND APPARATUS

Seiichiro Hiratsuka; Satoshi Hasoda, and Hisashi Shoji, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP85/00588, § 371 Date Aug. 5, 1986, § 102(e) Date Aug. 5, 1986, PCT Pub. No. WO86/02745, PCT Pub. Date May 9, 1986
PCT Filed Oct. 21, 1985, Ser. No. 874,177
Claims priority, application Japan, Oct. 22, 1984, 59-220387; Nov. 13, 1984, 59-237581; Dec. 5, 1984, 59-255795
Int. Cl.⁴ G03G *15/01*
U.S. Cl. 355—4 **8 Claims**

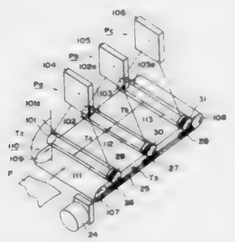


1. A method of forming a multicolor image by repeating such whole-surface exposure and development on a multicolor image forming photosensitive member, which has: an insulating layer on one side of a photoconductive layer; a conductive layer on the other side, at least one of said insulating layer and said conductive layer being light transmissive and comprising a plurality of kinds of filters, as will produce a potential pattern in a portion of a specific kind one of the filters of said photosensitive member, after said photosensitive member has been charged and subjected to an image exposure, characterized in that said photosensitive member is recharged before the second and layer whole-surface exposure so that the surface potential of the photosensitive member is made uniform substantially and at least one of said image exposing, whole-surface exposing and developing steps is made variable to control the color reproduction of said multicolor image.

4,803,515
IMAGE FORMING APPARATUS

Osamu Hoshino, and Kazuyoshi Chiku, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1987, Ser. No. 67,539
Claims priority, application Japan, Jul. 3, 1986, 61-155134; Jul. 3, 1986, 61-155135
Int. Cl.⁴ G03G *15/01*
U.S. Cl. 355—4 **12 Claims**

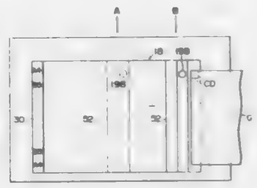


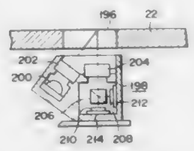
1. An image forming apparatus, comprising:
a movable image bearing member;
driving means for driving said image bearing member;
means for forming a latent image on said image bearing member;
developing means for developing the latent image formed on said image bearing member by said latent image forming means; and
means for transferring a developed image developed by said developing means onto an image receptor;
wherein the time interval required for said image bearing member to move from a latent image forming position at which said latent image forming means forms the latent image on said image bearing member to a transfer position at which said transfer means transfers the developed image onto the image receptor is an integer multiple of a period of a drive non-uniformity inherent in said driving means.

4,803,516
COLOR IMAGE FORMING APPARATUS WITH COLOR INFORMATION DETECTION

Junji Watanabe, and Hirobumi Kensoku, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 26, 1987, Ser. No. 66,555
Claims priority, application Japan, Jun. 30, 1986, 61-153527
Int. Cl.⁴ G03G *15/01*
U.S. Cl. 355—4 **14 Claims**



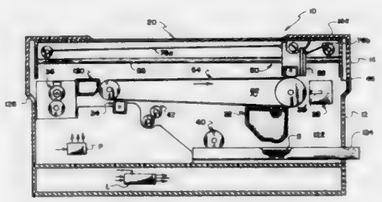


1. An image forming apparatus comprising:
latent image forming means for forming a latent image corresponding to an image of a document, said latent image forming means comprising a photosensitive member, said photosensitive member being arranged such that light corresponding to the image of the document is incident thereon to attenuate a charge after a surface thereof is uniformly charged, thereby forming a latent image on said surface;
a plurality of developing means for developing the latent image using different color agents;
detecting means for detecting developing-color information which is provided on the document and represents one of the color agents to be used for developing the latent image, said developing-color information having a color of a wave length which provides higher sensitivity than that of said photosensitive body and is not formed as a latent image on said surface of said photosensitive body; and
selecting means for selecting one of said plurality of developing means on the basis of the developing-color information.

4,803,517
MULTI-MODE ELECTROPHOTOGRAPHIC REPRODUCTION APPARATUS

William H. Bruce, Jr., Walworth, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 5, 1987, Ser. No. 81,765
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—3 CH **11 Claims**



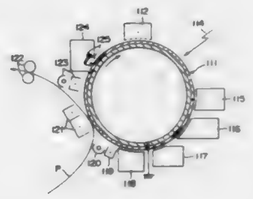
1. Apparatus utilizing a photoconductive member mounted for movement about a closed loop path through electrophotographic process stations for electrophotographically reproducing electronically generated information or information from a document, said apparatus compriaing:
means, located in fixed relation to said photoconductive member closed loop path, for producing images from signals corresponding to electronically generated information;
means, operatively associated with said photoconductive member, for supporting a primary charger, a lamp and a lens assembly for movement relative to a transparent document-supporting platen, said primary charger located relative to said lamp so as to be immediately upstream thereof in the direction of movement of said photoconductive member about it's closed loop path; and
means for controlling movement of said photoconductive member and said supporting means whereby during reproduction of a document, said photoconductive member is held stationary while said supporting means is moved to expose said member to a reflected light image of a document on such platen and said primary charger is activated as said supporting means is moved to uniformly charge said photoconductive member prior to exposure, and during reproduction of electronically generated information, said supporting means being held stationary and said photoconductive member is moved past said image producing means, said primary charge being activated to uniformly charge said photoconductive member as said member moves past said supporting means prior to moving past said image producing means.

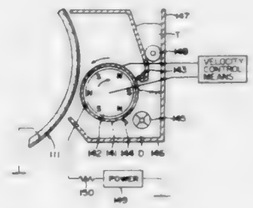
4,803,518
APPARATUS FOR FORMING A MULTI-COLOR TONER IMAGE

Satoshi Hasoda; Hisashi Shoji, and Seiichiro Hiratsuka, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 838,247, Mar. 10, 1986, abandoned, which is a division of Ser. No. 751,749, Jul. 2, 1985, Pat. No. 4,666,804. This application Aug. 7, 1987, Ser. No. 83,870
Claims priority, application Japan, Jul. 6, 1984, 59-139974; Jul. 6, 1984, 59-139975
Int. Cl.⁴ G03G *15/01*
U.S. Cl. 355—4 **19 Claims**

1. An apparatus for forming a toner image on an image retainer comprising image forming means for forming a latent image by uniformly charging said image retainer and by imagewise exposing said image retainer, a plurality of negative developing means for developing at least one latent image using different colored toners, whereby said toners are provided only on irradiated area of said image retainer, switching means for switching to a first mode and a second mode;
when said apparatus is in said first mode, a latent image is formed by said means for forming a latent image and developed by at least two developing means in a non-contact manner, a first controlling means, responsive to said switching means, operative to cause one of said developing means to develop said latent image and to form a first color image, said first controlling means operative to cause at least one other of said developing means to develop said latent image to form a second color image on said first color image, whereby said toner image is formed;
when said apparatus is in said second mode, imagewise





exposing said image retainer to form a first latent image, a second controlling means, responsive to said switching means, operative to cause one of said developing means to form an unfixed third color image, said second controlling means operative to cause said image forming means to form a second latent image in the presence of said third unfixed color image, said controlling means operative to cause one other of said developing means to form a fourth unfixed color image on said third unfixed color image, whereby said toner image is formed, each said latent image being separately developed using a predetermined means selected from a plurality of said developing means and means for transferring said toner image to an image receiver and fixing said image thereon.

4,803,519
ELECTROPHOTOGRAPHIC COPYING MACHINE WITH DOCUMENT-WINDING DRUM AND DOCUMENT TABLE

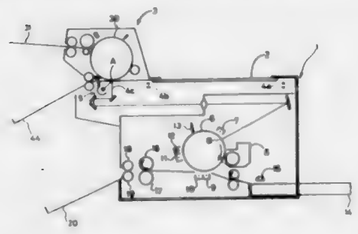
Atsushi Asada, and Shunju Anzai, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 711,822, Mar. 14, 1985, abandoned. This application Dec. 16, 1987, Ser. No. 134,203
Claims priority, application Japan, Mar. 15, 1984, 59-50721
Int. Cl.⁴ G03G *15/04*
U.S. Cl. 355—8 **14 Claims**

1. An electrophotographic copying machine including:
a document table having a support surface for supporting a first document to be copied;
a document drum for receiving and winding a second sheet-

like document thereon to be copied positioned at the same level of the support surface of said document table;

a substantially planar reciprocating light scanning source positioned relative to each of said document drum and document table so that by selective movement of said light scanning source either of said first or second documents can be scanned by said light scanning source, said light



scanning source being positioned when not in operation between said document table and said drum with said document drum being positioned at one extremity of the range of movement of said light scanning source; and

selection means for operating said light scanning source to selectively scan either of said first or said second documents.

4,803,520

ELECTROPHOTOGRAPHIC APPARATUS FOR MAKING SUPERPOSED IMAGES

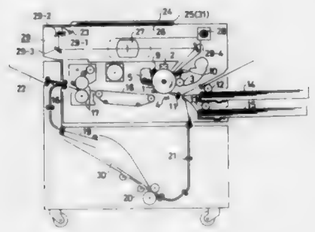
Masahiro Tomosada, Kawasaki; Hiroshi Ogawa; Yoshikuni Tokyama, both of Yokohama; Hideki Adachi, Kawasaki; Tadashi Suzuki, Yokohama, and Naoyuki Ohki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

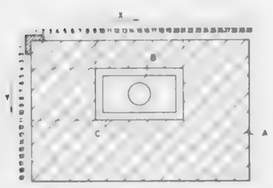
Filed Oct. 31, 1985, Ser. No. 794,399

Claims priority, application Japan, Nov. 7, 1984, 59-234345

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—7 **53 Claims**





1. An image forming apparatus comprising:

area designating means for designating a desired image area of an original, wherein in said area designating means outputs area information indicating said designated area;

exposing means for exposing said original;

image forming means for forming an image corresponding to said original exposed by said exposing means; and

control means for controlling said image forming means such that after an image of a first area corresponding to said area information output from said area designating means is formed on area recording sheet, an image of a second area corresponding to said area information output from said area designating means is formed on said recording sheet;

wherein said control means comprises blank margin forming means for forming a blank margin at the boundary between said images of said first area and of said second area by erasing a portion of said image of said first area when forming said image of said first area or erasing a portion of said image of said second area when forming said image of said second area.

4,803,521

PROCESS KIT AND IMAGE FORMING APPARATUS USING THE SAME

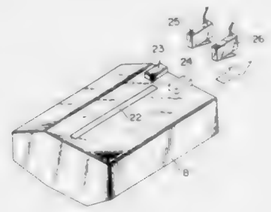
Haruhisa Honda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 435,956, Oct. 22, 1982, abandoned. This application Sep. 9, 1987, Ser. No. 96,250

Claims priority, application Japan, Oct. 29, 1981, 56-173555

Int. Cl.⁴ G03G *21/00*

U.S. Cl. 355—14 R **22 Claims**



1. A process kit receivable into an image forming apparatus having a main body portion, comprising:

process means including a photosensitive member and means actable thereon for repetitive image formation, for cooperating with means of the image forming apparatus to form images repetitively on image transfer material;

supporting means for supporting said process means as a kit; and

signal source means disposed on said process kit for indicating to the main body of said image forming apparatus information corresponding to a processing property of said process means within the kit, for use by said main body to provide a display indicating said property so as to visually confirm said property.

4,803,522

SHEET REFEEDING APPARATUS

Hiromu Sasaki, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 16, 1987, Ser. No. 62,838

Claims priority, application Japan, Jan. 16, 1986, 61-140499

Int. Cl.⁴ G03B *27/32, 27/52*

U.S. Cl. 355—26 **9 Claims**

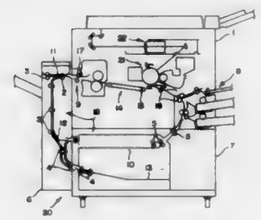
1. A sheet refeeding apparatus for use in combination with an image forming system including an image forming device having sheet conveying means forming a sheet conveying path between the sheet feed section and the sheet discharge section, said sheet refeeding apparatus comprising:

secondary sheet conveying means;

variable speed driving means for regulating the operating speed of said secondary sheet conveying means;

control means, responsive to said image forming system, for controlling an operating mode and said variable speed driving means;

memory means storing a plurality of control data for controlling said variable speed driving means; and



selecting means for selecting control data for controlling said variable speed driving means so that said secondary sheet conveying means operates synchronously with said sheet conveying means of the image forming device from among those control data stored in said memory means.

4,803,523

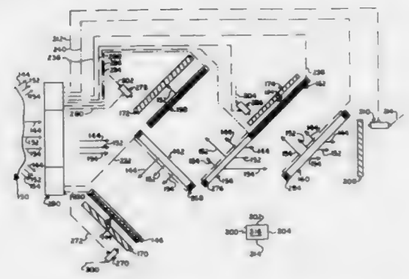
MEANS AND METHOD FOR COLOR SEPARATION AND FOR REPRODUCTION

Robert E. Pearson, Portland, Oreg., assignor to T. W. Secrest, Chehalis, Wash., a part interest

Division of Ser. No. 718,886, Apr. 2, 1985, Pat. No. 4,668,078, which is a continuation-in-part of Ser. No. 419,304, Sep. 17, 1982, Pat. No. 4,509,854, which is a continuation-in-part of Ser. No. 399,805, Sep. 24, 1973, Pat. No. 4,355,888. This application May 13, 1987, Ser. No. 49,771

Int. Cl.⁴ G03B *27/32, 27/52, 5/23;* **G02F** *1/01*

U.S. Cl. 355—32 **15 Claims**



1. A means for controlling electromagnetic wave energy to realize desired wave length light waves, said means comprising:

a. a control responsive to light waves;

b. said control in response to said light waves, controlling the electromagnetic wave energy to realize said desired wave length light waves;

c. said control being a filter;

d. said control comprising a sensor responsive to said light waves;

e. said sensor conveying information to a unit for directing electromagnetic waves onto said filter and the intensity of said electromagnetic waves controlling the optical density of the filter;

f. a means for converting said desired wave length light waves to analogue information;

g. a display; and,

h. a means for processing said analogue information into a form for displaying in said display.

4,803,524

METHOD OF AND APPARATUS FOR DETECTING THE ACCURACY OF SUPERPOSITION EXPOSURE IN AN EXPOSURE APPARATUS

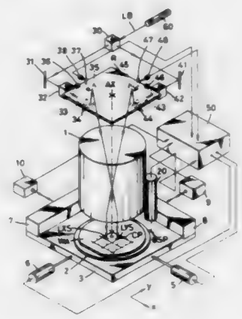
Koichi Ohno, Kanagawa; Kenji Higuchi, Saitama, and Hiroki Tateno, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 889,785, Jul. 28, 1986, abandoned. This application Jan. 9, 1987, Ser. No. 60,021

Claims priority, application Japan, Aug. 3, 1985, 60-171419; Jan. 9, 1986, 61-131902

Int. Cl.⁴ G03B *27/42*

U.S. Cl. 355—53 **21 Claims**



1. An apparatus having stage means on which a substrate is placed, holding means for holding a mask formed with at least one mark, and exposing means for exposing the image of said at least one mark on the exposure surface of said substrate which is coated with photoresist, said apparatus including:

(a) displacing means for imparting relative displacement between said stage means and said holding means;

(b) control means for controlling said exposing means and said displacing means and executing a first exposure and a second exposure successively, said control means executing said first and said second exposure by exposing the image of said at least one mark on a plurality of predetermined areas of the exposure surface of said substrate placed on said stage means, and controlling said exposing means and said displacing means so that the amount of deviation between the position of the image of said at least one mark in each of said plurality of predetermined areas during said first exposure and the position of said image during said second exposure assumes a predetermined value;

(c) developing means for developing said substrate in response to the termination of said second exposure;

(d) deviation amount detecting means for detecting the amount of deviation between the position of the image of said at least one mark in each of said plurality of predetermined areas of said developed substrate during said first exposure and the position of said image during said second exposure and producing a detection signal; and

(e) determining means for determining the accuracy of said apparatus in accordance with said detection signal and said predetermined value.

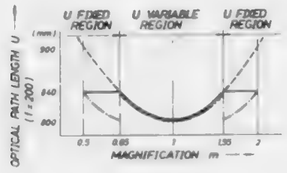
VOL 1099 ISS 1 FEB 7 1989 ÚMI

4,803,525

VARIABLE MAGNIFICATION COPYING MACHINE

Mitsuru Nagaoki, Hachioji, Japan, assignor to Konishiroku Photo Industry Company Ltd., Shinjuku, Japan

Filed Nov. 21, 1986, Ser. No. 933,416
Claims priority, application Japan, Dec. 3, 1985, 60-271894
Int. Cl.[4] G03B *27/52*; G03G *15/28*
U.S. Cl. 355—55 **12 Claims**



1. A variable magnification system capable of achieving any magnification throughout a variable magnification range, comprising:

means defining an original object;

means upon which an image of said original object is to be formed;

mirror means, and lens means defining a plurality of focal lengths, interposed between said original object means and said image-forming means, for defining an optical path between said original object means and said image-forming means which is variable in length; and

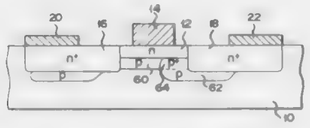
means for varying said optical path length while fixing said focal length of said lens means at a predetermined one of said plurality of focal lengths within a first predetermined portion of said variable magnificaton range so as to achieve any one of said magnification values within said first predetermined portion of said variable magnification range, and for fixing said optical path length at a predetermined value while varying said focal length of said lens means during a second predetermined portion of said variable magnification range so as to achieve any one of said magnification values within said second predetermined portion of said variable magnification range.

4,803,526

SCHOTTKY GATE FIELD EFFECT TRANSISTOR AND MANUFACTURING METHOD

Toshiyuki Terada, Kawasaki; Mayumi Hirose, and Kenji Ishida, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 781,930, Sep. 30, 1985, abandoned. This application Feb. 17, 1987, Ser. No. 19,682
Claims priority, application Japan, Nov. 2, 1984, 59-231711; Mar. 28, 1985, 60-64423
Int. Cl.[4] H01L *29/48*
U.S. Cl. 357—15 **6 Claims**



1. A field effect transistor comprising:

a semi-insulative substrate;

a gate layer formed on said substrate and made of a conductive material forming a Schottky junction between said source and drain regions formed in said substrate to have a first conductivity type;

a semiconductor active layer formed in a surface portion of said substrate in a manner so as to be in contact with said source and drain regions at first and second end portions, respectively, thereof to serve as a channel of said transistor; and

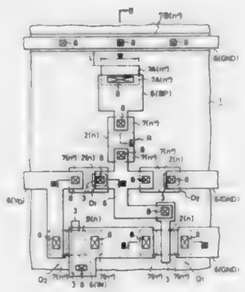
barrier layer means formed in said substrate to have a second conductivity type and to be in contact with an entire bottom portion of said active layer and at least said drain region, for forming therein an impurity concentration gradient under said active layer and said drain layer such that the impurity concentration of said barrier layer means under the second end portion of said active layer is higher than that under a middle portion of said active layer and that under said drain region, for suppressing current leakage from at least said drain region to said substrate, and for suppressing a depletion layer from over-expanding in a middle portion of said active layer due to a junction between said channel and said barrier layer means, to thereby improve a current drivability of said transistor.

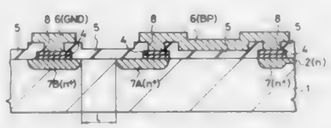
4,803,527

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING SEMI-INSULATOR SUBSTRATE

Yasushi Hatta, Tokyo; Kazumichi Mitsunaga, Kodaira; Hirotoshi Tanaka, Yamanashi, and Takehisa Hayashi, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 20, 1986, Ser. No. 876,466
Claims priority, application Japan, Jun. 21, 1985, 60-134019
Int. Cl.[4] H01L *29/90*, *29/78*
U.S. Cl. 357—13 **7 Claims**





1. A semiconductor device formed in a semi-insulator substrate comprising:

an internal circuit including a MESFET formed in said semi-insulator substrate;

an electrostatic destruction protect circuit formed in said semi-insulator substrate;

external terminals formed over said semi-insulator substrate;

a first semiconductor region of a first conductivity type formed in said semi-insulator substrate and connected to said external terminals; and

a second semiconductor region of the first conductivity type formed in said semi-insulator substrate and receiving a predetermined fixed potential, said second semiconductor region being formed as one continuous region along a periphery of said semi-insulator substrate and formed apart from said first semiconductor region with a predetermined distance so that said first and second semiconductor regions form a protection means for said MESFET and said electrostatic destruction protect circuit,

wherein said MESFET formed in said semi-insulator substrate in said internal circuit comprises source and drain regions of the first conductivity type, a channel region and a Schottky gate electrode formed on said channel region, said channel region being shallower than said source and drain regions and having a lower impurity concentration than said source and drain regions,

wherein said electrostatic destruction protect circuit is connected to said external terminals and includes a resistance element having one of the ends thereof connected to said external terminal with the other end being connected to said Schottky gate electrode of said internal circuit, and

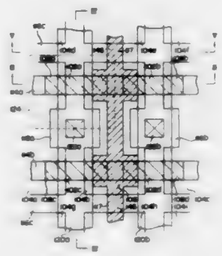
wherein said first semiconductor region includes said resistance element of said electrostaic destruction protect circuit.

4,803,529

ELECTRICALLY ERASABLE AND ELECTRICALLY PROGRAMMABLE READ ONLY MEMORY

Fujio Masuoka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 13, 1981, Ser. No. 321,322
Claims priority, application Japan, Nov. 20, 1980, 55-163931; Nov. 20, 1980, 55-163932; Nov. 20, 1980, 55-163933; Nov. 29, 1980, 55-168616; Nov. 29, 1980, 55-168617; Nov. 29, 1980, 55-168618; Nov. 29, 1980, 55-168619; Nov. 29, 1980, 55-168620; Dec. 20, 1980, 55-180951; Jan. 21, 1981, 56-7558; Jul. 30, 1981, 56-119782
Int. Cl.[4] H01L *29/78, 27/02*; G11C *11/40*
U.S. Cl. 357—23.5 **29 Claims**

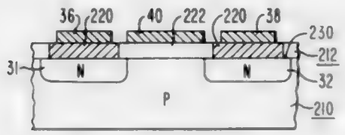


4,803,528

INSULATING FILM HAVING ELECTRICALLY CONDUCTING PORTIONS

Jacques I. Pankove, Princeton, N.J., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 172,757, Jul. 28, 1980, Pat. No. 4,339,285. This application May 20, 1982, Ser. No. 380,284
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.1 **1 Claim**



1. A selectively electrically conducting structure comprising:

a layer of oxygenated, doped, non-single crystalline silicon film;

a semiconductor substrate having a surface, the substrate including spaced source and drain regions of an insulated gate field effect device at said surface;

the layer of oxygenated, doped, non-single crystalline silicon film is disposed on said surface and selectively laser irradiated so as to form substantially conducting irradiated portions disposed over the source and drain regions, and a substantially insulating non-irradiated portion disposed on the substrate surface between the source and drain regions;

source and drain electrodes disposed respectively on the conducting portions of the silicon film disposed on the source and drain regions; and

a gate electrode disposed over the insulating portion of the silicon film so as to form an insulated gate.

1. A semiconductor memory device with a plurality of memory cells arranged in a matrix form, each of said memory cells comprising:

a semiconductor region of a first conductivity type;

source and drain regions of a second conductivity type formed in said semiconductor region;

a gate insulation film formed on a part of said semiconductor region between said source and drain regions;

a field insulation film, formed on said semiconductor region, for separating each memory cell from the other memory cells;

an erase gate formed over said field insulation film;

a floating gate formed on said gate insulation film and extending over said field insulation film, a portion of said floating gate, which is formed over said field insulation film, overlapping a part of said erase gate, said floating gate being arranged symmetrically about said erase gate, and said erase gate of one of said memory cells being commonly formed for a plurality of said memory cells, floating gate;

a first insulating film interposed between said floating gate and said erase gate;

a control gate formed over said floating gate and said erase gate;

a second insulating film interposed between said control gate and said floating gate; and

a third insulating film interposed between said control gate and said erase gate;

whereby said control gate is insulated from said erase gate and said floating gate, and

wherein said portion of said floating gate overlapping said part of said erase gate is provided between said field insulation film and said control gate.

4,803,530

SEMICONDUCTOR INTEGRATED CIRCUIT FORMED ON AN INSULATOR SUBSTRATE

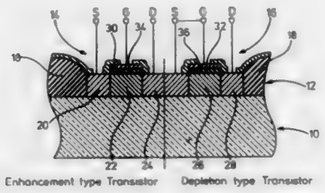
Shinji Taguchi, and Hiroyuki Tango, both of c/o Toshiba Research & Development Center, Toshiba-cho No. 1, Komukai, Saiwai-ku, Kawasaki-shi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 615,703, May 29, 1984, abandoned, which is a continuation of Ser. No. 934,493, Aug. 17, 1978, abandoned. This application Feb. 19, 1986, Ser. No. 830,868

Claims priority, application Japan, Aug. 22, 1977, 52-99549

Int. Cl.⁴ H01L *27/12, 29/78*

U.S. Cl. 357—23.7 **1 Claim**



1. A semiconductor integrated circuit with temperature compensation, comprising

an enhancement-depletion semiconductor integrated circuit containing a silicon on sapphire substrate including a drive transistor of an enhancement type and a load transistor of a depletion type,

said depletion type load transistor including a channel region having a layer of insulator material thereon, thereby to define an insulated gate depletion mode transistor,

said depletion mode channel region having a donor concentration N_D in the range of 2×10^{13}–$3.6\times10^{15}/cm^3$ and said depletion mode gate insulator having a surface charge Q_{ss} that has a substantially constant value of about 8×10^{-9} coulomb/cm^2-eV at a temperature of about 20° C.,

said depletion type load transistor having a threshold voltage between −2.1V and −1.7V when the ambient temperature of said circuit is in the range of −60° C. to 60° C., and

said circuit having a variation rate of delay time t_{pd} and power consumption P_d at a substantially constant value within about 10%, thereby significantly reducing temperature dependency of the delay time and power consumption.

4,803,531

IMAGING CHARGE-COUPLED DEVICE HAVING AN ALL PARALLEL OUTPUT

Larry D. Riley, Beaverton, and Denis L. Heidtmann, Portland, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 18, 1987, Ser. No. 98,574

Int. Cl.⁴ H01L *29/78;* **G11C** *19/28*

U.S. Cl. 357—24 **4 Claims**

1. A charge-coupled device comprising:

a substrate of semiconductor material having at least first and second buried channels formed therein,

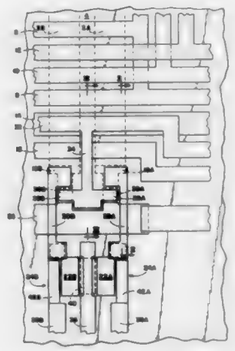
at least two sets of clock electrodes overlying both the first and second buried channels, so that by application of predetermined potential levels to the clock electrodes, electrical charge may be propagated in controlled fashion along each of the buried channels towards an output end thereof,

a floating diffusion at the output end of each buried channel for receiving charge propagated along the channel,

output transistors associated with the buried channels respectively and each having a control electrode connected to the floating diffusion of the associated buried channel,

an output diffusion formed in the substrate at a location between the floating diffusions of the channels and the control electrodes of the transistors and extending transversely of the channels,

a reset gate associated with each channel and lying over the substrate between the floating diffusion of the associated channel and the output diffusion, so that by application of a predetermined potential to the reset gate a conductive



channel is formed in the substrate between the floating diffusion and the output diffusion, and

a reset bus extending over the substrate on the opposite side of the floating diffusions from the reset gate, the reset bus having a bus extension which extends over the substrate between the floating diffusions and is connected to the reset gates.

4,803,532

VERTICAL MOSFET HAVING A PROOF STRUCTURE AGAINST PUNCTURE DUE TO BREAKDOWN

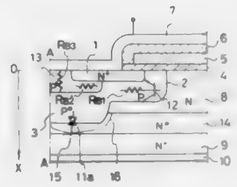
Teruyoshi Mihara, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Division of Ser. No. 767,628, Aug. 20, 1985, abandoned, which is a continuation-in-part of Ser. No. 865,598, May 22, 1986, Pat. No. 4,686,551, which is a continuation of Ser. No. 555,050, Nov. 25, 1983, abandoned. This application Feb. 25, 1987, Ser. No. 18,867

Claims priority, application Japan, Nov. 27, 1982, 57-208293; Aug. 24, 1984, 59-176038

Int. Cl.⁴ H01L *29/78, 29/06, 27/02*

U.S. Cl. 357—234 **7 Claims**



1. An MOS transistor comprising:

a drain region having a low resistivity region of a first conductivity type, a redistributed region of said first conductivity type above said low resistivity region, and a high resistivity region of the first conductivity type above said redistributed region;

a well region of a second conductivity type having a first well portion with a curved section in contact with said high resistivity region and having a second well portion, said second well portion and being narrower than said first well portion, said second well portion extending below said first well portion into contact with said redistributed region;

a channel region of the second conductivity type contained in said first well portion;

a source region of the first conductivity type adjacent to the channel region of said well region;

a gate electrode formed above the channel region on an insulator layer;

a source electrode formed in contact with the source region and in contact with the upper surface of the second well portion of the well region, and

a drain electrode formed on the bottom surface of the low resistivity region.

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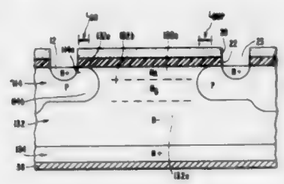
IGT AND MOSFET DEVICES HAVING REDUCED CHANNEL WIDTH

Mike F. Chang, Cary; Hamza Yilmaz, Raleigh; George L. Geuffreau, Cary, and King Owyang, Carboro, all of N.C., assignors to General Electric Company, Fairfield, Conn.

Filed Sep. 30, 1986, Ser. No. 913,785

Int. Cl.⁴ H01L *29/78*

U.S. Cl. 357—23.4 **6 Claims**



1. An insulated gate device, comprising:

a substrate having a major top surface;

a drain region having a vertical portion that extends to the top surface;

first and second channel-forming well portions projecting into the substrate from the top surface to a first predetermined depth, the first and second channel-forming well portions being contiguous with the drain region and being laterally spaced by the vertical portion of the drain region;

the drain region including at least three layers: (a) an upper layer of the vertical portion, that includes a relatively slow-diffusing dopant and extends to a second predetermined depth, the second predetermined depth being shallower than said first predetermined depth; (b) a lower layer of the vertical portion, that includes a relatively fast diffusing dopant and extends from said second predetermined depth to said first predetermined depth; and (c) a background layer, extending beneath said first predetermined depth;

the upper layer of the vertical portion being more heavily doped than the lower layer of the vertical portion and the lower layer of the vertical portion being more heavily doped than the background layer, such that the spacing between the first and second channel-forming well portions is greater between the top substrate surface and the second predetermined depth than it is between the second predetermined depth and the first predetermined depth.

4,803,534

SEMICONDUCTOR DEVICE SRAM TO PREVENT OUT-DIFFUSION

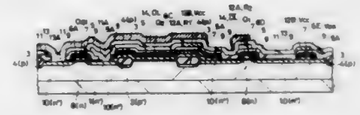
Atsuyoshi Koike, Kokubunji; Shuji Ikeda, Koganei, and Kouichi Nagasawa, Kunitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 18, 1986, Ser. No. 875,674

Claims priority, application Japan, Jun. 21, 1985, 60-134018

Int. Cl.⁴ H01L *23/48*

U.S. Cl. 357—71 **24 Claims**



1. A semiconductor device comprising:

a first conductor layer comprised of one of a refractory metal film and a refractory metal silicide film provided on an upper side of a polycrystalline silicon film into which is diffused an impurity for lowering the resistance thereat;

a stopper layer provided on the upper side of said first conductor layer and being disposed over and having the same pattern shape as said first conductor layer;

an insulator film formed overlying said first conductor layer and said stopper layer;

a contact hole formed through a portion of said insulator film above said first conductor layer; and

a second conductor layer comprised of a polycrystalline silicon film provided on the upper side of said insulator film and electrically connected to said first conductor layer through said contact hole and said stopper layer; said stopper layer being such that is inhibits the impurity contained in said first conductor layer from being diffused into said second conductor layer.

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DYNAMIC RANDOM ACCESS MEMORY TRENCH CAPACITOR

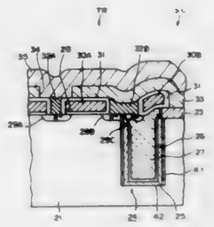
Masao Taguchi, Sagamihara, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 2, 1987, Ser. No. 20,983

Claims priority, application Japan, Mar. 3, 1986, 61-045823; Mar. 3, 1986, 61-045824; Mar. 14, 1986, 61-057309

Int. Cl.⁴ H01L *29/78, 49/02, 27/02*

U.S. Cl. 357—23.6 **8 Claims**



1. A dynamic random access memory having a trench capacitor, comprising:

a semiconductor substrate;

a trench formed in said semiconductor substrate;

an insulating layer formed on an inner surface of said trench and having an opening at a bottom of said trench;

a first conductive layer formed at the opening and on said insulating layer, said first conductive layer being ohmically connected to said semiconductor substrate at said

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opening, an upper end of said first conductive layer being located lower than a top level of said trench for preventing said first conductive layer from being exposed outside said trench;

a dielectric layer formed on said first conductive layer;

a second conductive layer formed on said dielectric layer so as to fill said trench,

a said first conductive layer, said dielectric layer, and said second conductive layer constituting a charge storage capacitor; and

a MIS transistor formed in said semiconductor substrate,

wherein said second conductive layer is ohmically connected to a source or drain region of said MIS transistor.

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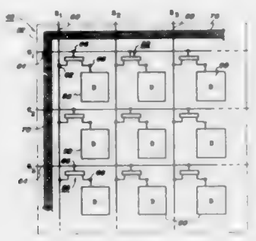
ELECTROSTATIC DISCHARGE PROTECTION NETWORK FOR LARGE AREA TRANSDUCER ARRAYS

Hsing C. Tuan, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 24, 1986, Ser. No. 922,603

Int. Cl.⁴ H01L *45/00, 27/12, 29/78*

U.S. Cl. 357—23.13 **3 Claims**



1. An electrostatic discharge protection network for a large area transducer array, said array including a substrate on which is formed a plurality of thin film transducer elements and a thin film addressing circuit associated with each transducer element for changing the state of said transducer element, each of said addressing circuits including at least one thin film amorphous silicon transistor having a source terminal electrode and a drain terminal electrode spaced from one another and contiguous to a semiconductor layer, a gate electrode spaced from said semiconductor layer by a gate dielectric layer and located so as to control the current flow from said source terminal electrode to said drain terminal electrode, through said semiconductor layer, and a plurality of input contact pads for receiving external signals, connected to said addressing circuit, for controlling the state of said transducer elements said protection network including

a strip of n+ amorphous silicon resistive material extending across all of said input contact pads, and

resistor means comprising inter contact pad portions of said stripe of resistive material for providing current leakage paths to equalize the potential across all of said gate dielectrics during an electrostatic discharge and wherein said resistor means as connected to said circuits and functioning to provide current leakage paths does not affect the normal operation of said thin film transistors.

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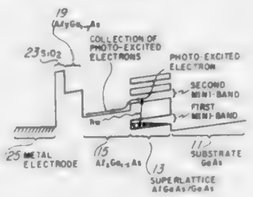
INFRARED DETECTOR SYSTEM BASED UPON GROUP III-V EPITAXIAL MATERIAL

Adam J. Lewis, and William R. Frensley, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 926,814, Oct. 31, 1986, abandoned, which is a continuation of Ser. No. 570,463, Jan. 13, 1984, abandoned. This application Mar. 14, 1988, Ser. No. 170,604

Int. Cl.⁴ H01L *27/14, 31/00*

U.S. Cl. 357—30 **6 Claims**



1. A semiconductor detector for infrared radiation, comprising:

(a) an absorption superlattice with first and second mini-bands, said mini-bands separated by an energy about equal to the energy of the photons of a frequency of infrared radiation to be detected, said superlattice with carriers in said first mini-band but not in said second mini-band;

(b) a collector abutting said superlattice, said collector with energy band edge between said mini-bands at said superlattice so carriers in said first mini-band are blocked from said collector but carriers photo-excited by said infrared radiation from said first mini-band to said second mini-band can pass into said collector; and

(c) a sensor coupled to said collector to detect carriers in said collector.

4,803,538

THYRISTOR WITH ADJUSTABLE BASE-TO-EMITTER RESISTANCE

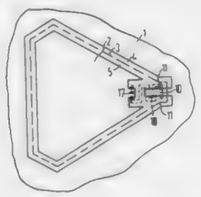
Peter Voss, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 4, 1987, Ser. No. 21,473

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1986, 3607256

Int. Cl.⁴ H01C *29/74*

U.S. Cl. 357—38 **3 Claims**



1. Thyristor having a semiconductor body with an emitter zone and a base zone formed thereon, an emitter electrode seated on the emitter zone, and a base electrode seated on the base zone, the emitter electrode being formed with a recess, comprising a base-emitter p-n junction disposed within the recess and adjoining a surface of the semiconductor body, a gate electrode seated on the base zone, an ohmic resistance integrated in the semiconductor body between the emitter electrode and said gate electrode, said p-n junction being locally bridged by one of said gate and emitter electrodes, said ohmic resistance having a value adjustable in accordance with a removal of a part of at least one of said gate and emitter electrodes, said p-n junction being locally bridged by the emitter electrode, and said ohmic resistance being formed by the base zone, the base zone having a finger projecting into the emitter zone, and a metal bridge connected to the emitter electrode and contacted by said finger, said gate electrode being formed with a recess at the periphery thereof, said metal bridge projecting into said last-mentioned recess.

4,803,539

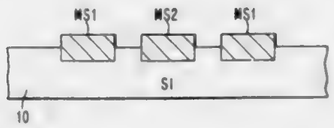
DOPANT CONTROL OF METAL SILICIDE FORMATION

Peter A. Psaras, Ossining; King-Ning Tu, Chappaqua, and Richard D Thompson, Lake Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1985, Ser. No. 717,984

Int. Cl.⁴ H01L *23/48*

U.S. Cl. 357—67 **23 Claims**



1. A metal silicide-silicon structure including thermally formed metal silicides including the same metal and having first and second compound phases in first and second regions of said structure, comprising:

a substrate having a first region thereof which is doped with a selected dopant to a level sufficient to cause said first region to affect the compound phase of a metal silicide thermally formed thereon,

said substrate including a second region that is either undoped or doped with an impurity incapable of affecting the comound phase of a metal silicide formed thereon or doped with an impurity capable of affecting said phase in an amount sufficiently low that said phase is unaffected,

a metal silicide thermally formed on said first and second regions and including the same metal in said first and second regions, the compound phase of said metal silicide in said first region being different than the compound phase of said metal silicide formed in said second region.

4,803,540

SEMICONDUCTOR INTEGRATED CIRCUIT PACKAGES

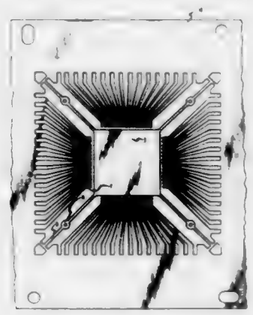
Harold W. Moyer, South Whitehall Township, Lehigh County, and Harry R. Schelz, Lower Macungie Township, Lehigh County, both of Pa., assignors to American Telephone and Telegraph Co., AT&T Bell Labs, Murray Hill, N.J.

Filed Nov. 24, 1986, Ser. No. 934,062

Int. Cl.⁴ H01L *23/48*

U.S. Cl. 357—70 **5 Claims**

1. A semiconductor integrated circuit package comprising: a semiconductor integrated circuit chip; a lead frame, said lead frame having a paddle on which said chip is mounted and paddle support arms; and an external mounting frame having a plurality of fingers, electrical connections from said chip to said fingers, said paddle being connected to said external mounting frame by said paddle support arms CHARACTERIZED IN THAT said paddle support arms comprise a deformation absorbing member, said paddle being depressed with respect to said external mounting frame, said deformation absorbing member localizing deformation during paddle downsetting and maintaining desired physical characteristics.



4,803,541

SEMICONDUCTOR DEVICE

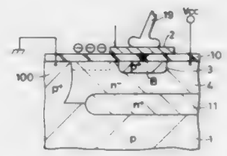
Toyomasa Kondo, Takasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 728,201, Apr. 29, 1985. This application Apr. 4, 1988, Ser. No. 178,847

Claims priority, application Japan, May 23, 1984, 59-102567

Int. Cl.⁴ H01L *29/78, 29/90, 29/40, 23/48*

U.S. Cl. 357—68 **24 Claims**



1. A semiconductor device comprising:

(1) an island region of a first type of conductivity selectively formed on a semiconductor substrate of a second conductivity type opposite to the first conductivity type, the island region being electrically connected to a power source;

(2) a semiconductor region of the second type of conductivity formed in said island region, said semiconductor region being electrically separated from said semiconductor substrate;

(3) an insulating film formed on surfaces of said semiconductor region, said island region and said semiconductor substrate;

(4) a bonding pad formed on a portion of said insulating film located over said semiconductor region so that said bond-

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ing pad is electrically separated from said semiconductor region; and

(5) a bonding wire connected to said bonding pad;

wherein said semiconductor region of the second type of conductivity, in plan view, is located, in its entirety, inside of the periphery of the bonding pad that exists over said semiconductor region of the second type of conductivity, so that, in plan view, the entire periphery of the semiconductor region is spaced from, and inside of, the entire periphery of the bonding pad.

4,803,542

CARRIER ELEMENT FOR AN IC-MODULE

Yahya Haghiri-Tehrani, and Joachim Hoppe, both of Munich, Fed. Rep. of Germany, assignors to Gao Gesellschaft fur Automation und Organisation mbH, Fed. Rep. of Germany

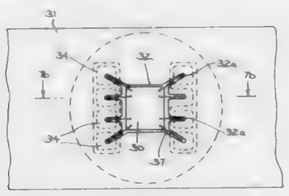
Continuation of Ser. No. 649,159, Sep. 10, 1984, which is a continuation of Ser. No. 288,384, Jul. 31, 1981. This application May 18, 1987, Ser. No. 51,850

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1981, 3029667

The portion of the term of this patent subsequent to Nov. 24, 2004, has been disclaimed.

Int. Cl.⁴ H01L *23/30, 23/14, 23/48*

U.S. Cl. 357—72 **3 Claims**



1. A carrier element for an IC-chip suitable for incorporation, as a unit, into a financial or identification card, said carrier element comprising:

a single layer carrier stratum having an aperture with a periphery, said carrier stratum further having recesses outside the periphery of said aperture through said stratum;

an electrically conductive film laminated to said carrier stratum and spanning said recesses;

contact surfaces formed out of said electrically conductive film but electrically isolated therefrom, said contact surface lying outside the periphery of said aperture and accessible through said recesses;

an IC-chip positioned in the aperture of said carrier stratum;

connection means in said recesses for connecting said IC-chip to said contact surfaces, said connection means being unsupported by said carrier stratum; and

a hardened resin filling said aperture and recesses, said resin surrounding said IC-chip in said aperture and said connection means in said recesses.

4,803,543

SEMICONDUCTOR DEVICE AND PROCESS FOR PRODUCING THE SAME

Hideo Iizuyoshi, Kokubunji; Akira Suzuki, Ome; Kunihiro Tsubouchi, Hino; Toyoichi Ueda, Katsuta; Daisuke Makino; Noboo Ichimura, both of Hitachi, and Kazunari Suzuki, Tokyo, all of Japan, assignors to Hitachi, Ltd.; Hitachi Chemical Co. and Hitachi Microcomputer Engineering Ltd., all of Tokyo, Japan

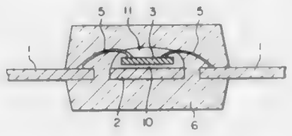
Filed Dec. 4, 1981, Ser. No. 327,554

Claims priority, application Japan, Dec. 10, 1980, 55-173287

Int. Cl.⁴ H01L *23/28, 39/02*

U.S. Cl. 357—72 **22 Claims**

1. A semiconductor device comprising a semiconductor element, the back main face of which is fixed to a supporting member with an adhesive layer formed by heat-curing an adhesive composition to bond the semiconductor element through its back main face to the supporting member, the adhesive composition comprising an epoxy resin, a novolak-



type phenolic resin as a hardener, a solvent capable of dissolving both of said resins, and powdered silver, said adhesive layer being positioned between the back main face and the supporting member.

4,803,544

PREFABRICATED STRIP CONDUCTOR NETWORK ASSEMBLY UNIT AND PROCESS FOR MAKING SAME

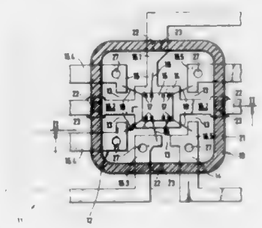
Wolfgang Holzschuh, Lauterbach, and Wolfgang Ganter, Schramberg, both of Fed. Rep. of Germany, assignors to Junghans Uhren GmbH, Schramberg, Fed. Rep. of Germany

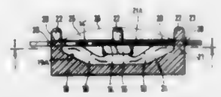
Filed Jul. 9, 1987, Ser. No. 71,303

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1986, 3623419

Int. Cl.⁴ H01L *23/28, 23/02, 23/48*

U.S. Cl. 357—72 **4 Claims**





1. A strip conductor network module adapted to be installed in a circuit board of an electromechanical clock movement, said module comprising:

a strip conductor network defining first and second sides and having gaps disposed between selected strip conductors thereof, at least some of said strip conductors including through-holes,

a circuit chip mounted on said first side of said network, and bond wiring connecting said circuit chip with said network,

only one of said sides of said network being overlain by a protective cap, said one side comprising said first side, said protective cap including:

a plurality of pins frictionally mounted in said holes, and

an inner surface spaced from said chip to form a closed cavity therearound, said cavity being filled with a hardenable plastic mass encasing said chip and said wiring.

4,803,545

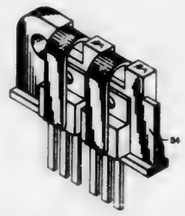
SELF-FIXTURING HEAT SINK

Alan D. Birkle, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 17, 1988, Ser. No. 169,549

Int. Cl.⁴ H01L *23/02*

U.S. Cl. 357—81 **4 Claims**



1. A heat sink for a plurality of transistors that are to be held on the heat sink by two-legged clips, comprising:

an elongated base member having a front side, a back side, and top and bottom edges, the front side having a substantially flat surface on which each transistor is to be held in place, at a pre-selected transistor site, by one leg of a clip,

the back side of the base member being adapted to receive a plurality of clip legs at a corresponding plurality of clip-leg sites, each such clip leg site being positioned directly opposite a transistor site on the front side for receiving the other leg of the same clip that holds a transistor at said opposite transistor site;

a ledge formed on the front side of the base member, the ledge running substantially parallel to the bottom edge of the base member to form a stop for transistors situated at the transistor sites; and

a clip-stop for each clip-leg site, each clip-stop being formed on the back side by a flat surface extending substantially parallel to the bottom edge of the base member.

4,803,546

HEATSINK PACKAGE FOR FLIP-CHIP IC

Masahiro Sugimoto, Yokosuka, and Yasumasa Wakasugi, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 76,762, Jul. 23, 1987, Pat. No. 4,742,024, which is a division of Ser. No. 937,414, Dec. 3, 1986, Pat. No. 4,698,663. This application Feb. 9, 1988, Ser. No. 154,046

Int. Cl.⁴ H01L *23/12, 23/36*

U.S. Cl. 357—81 **1 Claim**



1. A semiconductor device comprising:

a substrate having a top surface;

at least one wiring layer formed on the top surface of said substrate;

a semiconductor element having a top face mounted on the top surface of said substrate and electrically coupled to said wiring layer, having a bottom face and having side faces;

a cap having an external shape substantially the same size as that of said substrate and a convex shape in the cross section thereof, a peripheral portion of said cap being adhered to a peripheral portion of the top surface of said substrate and surrounding the side faces of said semiconductor element, said cap having a flat portion parallel to said substrate at a top portion of the convex shape and having an opening in the flat portion, which is smaller than said substrate, the opening exposing substantially the entire bottom face of said semiconductor element; and

a heatsink mounted on the flat portion of said cap and on the exposed bottom face of said semiconductor element so as to be supported by said cap and said semiconductor element, said heatsink having an external shape substantially the same size as that of said substrate.

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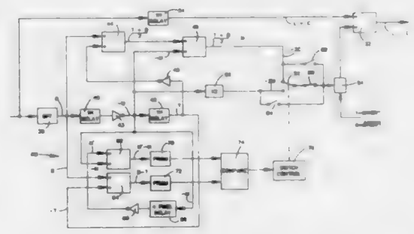
ADAPTIVE COMB FILTERING SYSTEM FOR PROCESSING VIDEO SIGNALS

Boyd L. Stratton, Woodside, Calif., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 10, 1987, Ser. No. 36,851

Int. Cl.⁴ H04N *9/78*

U.S. Cl. 358—31 **10 Claims**



1. An adaptive comb filtering system for use in separating luminance and chrominance components of a composite video signal which includes a plurality of successive scan lines comprising:

means for receiving said composite video signal and separating said video signal into a middle (M) scan line component and vertically adjacent top (T) and bottom (B) scan line components;

means responsive to said middle, top and bottom scan line components for deriving a combed chroma signal therefrom;

means for deriving from one of said scan line components an uncombed chroma signal; and

signal selection control means for selecting as a chrominance output signal either said combed chroma signal or said uncombed chroma signal in dependence upon the relative relationship of any vertical transition of two of said scan line components to any horizontal transition of one of said scan line components.

4,803,548

COLOR VIDEO IMAGE ENHANCEMENT

Richard A. Kirk, Herts, England, assignor to Crosfield Electronics Limited, London, England

Filed Dec. 1, 1987, Ser. No. 127,144

Claims priority, application United Kingdom, Jan. 12, 1987, 8700565

Int. Cl.⁴ H04N *9/64*

U.S. Cl. 358—36 **7 Claims**

1. A method of enhancing a video image defined by luminance information and chromaticity information representing said image as a plurality of regions, the method comprising for each of a number of said selected regions of the image

(a) determining a statistical relationship between said luminance information and said chromaticity information for the selected region; and,

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(b) generating modified chromaticity information for at least a portion of said selected region by applying said determined statistical relationship to said luminance information for the said portion.



4,803,549

LOW-PASS FILTER FOR LIMITING THE FREQUENCY BAND OF A LUMINANCE SIGNAL

Karl-Heinz O. Kupfer, Krefeld, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 30, 1986, Ser. No. 880,401

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1985, 3523753

Int. Cl.⁴ H03H *7/01*

U.S. Cl. 358—39 **8 Claims**



1. A low-pass filter for limiting the frequency band of a luminance signal, in particular the luminance signal in the recording channel of a video recording apparatus, comprising an input terminal and an output terminal, a signal path extending between said input and output terminals, a delay line coupled in said signal path, a ceramic filter connected to said signal path and to a point of constant potential to attenuate signal components above a cut-off frequency, and a 5.5 MHz attenuating filter connected in said signal path at a location before the connection of said ceramic filter.

4,803,550

IMAGING APPARATUS HAVING ILLUMINATION MEANS

Hisao Yabe, Hachioji; Kenji Kimura, Tachikawa; Masahide Kasuo, Hachioji; Kiyoshi Tsuji, Tasa; Jun Yoshinaga, Hino; Takeshi Yokoi; Kazuhiko Ozeki, both of Hachioji; Shinichi Nishigaki, Tokyo; Takeaki Nakamura, Hino; Yoshikazu Tojo, Hachioji, and Hiromasa Suzuki, Akishima, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1988, Ser. No. 181,133

Claims priority, application Japan, Apr. 17, 1987, 62-94448; May 8, 1987, 62-112004; Oct. 7, 1987, 62-254068

Int. Cl.⁴ A61B *1/04, 1/06*

U.S. Cl. 358—98 **13 Claims**

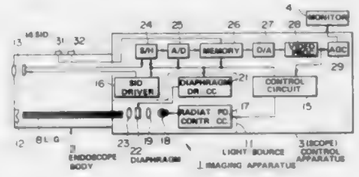
1. An imaging apparatus comprising:

illumination means including a light source lamp for generating illumination light, mechanical transmissive light quantity restricting means disposed at a forward position on an optical path of said light source lamp and adapted to restrict a quantity of transmissive light of said illumination light, and lamp radiation controlling means for controlling the radiation of said light source lamp;

imaging means formed by using a solid-state imaging device;

solid-state device driving means for outputting a drive signal so as to read a signal photoelectrically converted by said solid-state imaging device;

signal processing means for generating a video signal of a predetermined system with respect to a signal read by said solid-state imaging device upon application of said drive signal thereto;



imaging controlling means for substantially inhibiting imaging by said solid-state imaging device during a transient period of time until said transmissive light quantity restricting means reaches a predetermined amount of opening; and

means for controlling said transmissive light quantity controlling means which is adapted to decrease an amount of opening of said transmissive light quantity controlling means in a predetermined imaging period after a time when said transmissive light quantity controlling means has reached said predetermined amount of opening.

4,803,551

MODULE FOR USE IN RECEIVING TELETEXT SIGNAL

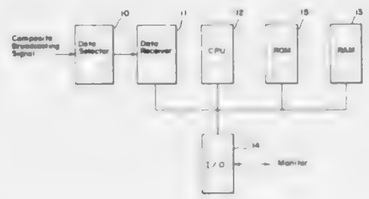
Chong S. Park, Kyungkeedo, Rep. of Korea, assignor to Gold Star Co. Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 813,716, Dec. 27, 1985, abandoned. This application Feb. 1, 1988, Ser. No. 150,503

Claims priority, application Rep. of Korea, Dec. 31, 1984, 1984-8574

Int. Cl.⁴ H04N *7/04*

U.S. Cl. 358—147 **2 Claims**



1. A module for receiving teletext data contained in a composite video signal, for use with a personal computer or a videotex decoder system, comprising:

data selector means for separating said teletext data from said composite video signal;

data receiver means for receiving said teletext data from said data selector means, checking said teletext data for the existence of errors, comparing an address of said teletext data with a preselected address stored in said data receiver means, and outputting teletext data with an address corresponding to said preselected address;

processing means for processing said teletext data outputted by said data receiver means; and

input/output interface means, connectable to said personal computer or said videotex system, for outputting said processed teletext data for display by said personal computer or videotex system, and for inputting said preselected address to said data receiver means from a keyboard of said personal computer or said videotex system.

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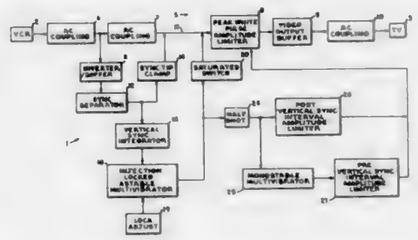
VERTICAL BLANKING INTERVAL STANDARDIZER CIRCUIT

Roger A. Marin, Portland, Oreg., assignor to Xantech Corporation, Sylmar, Calif.

Filed Dec. 3, 1986, Ser. No. 937,494

Int. Cl.⁴ H04N *5/04*

U.S. Cl. 358—148 **10 Claims**



7. A vertical blanking interval standardizer circuit comprising:

(a) limiter amplifier means having a video signal passing from an input to an output thereof, said limiter amplifier means being biasable to a cutoff state;

(b) timing means operatively detecting the occurrence of a vertical blanking interval of said video signal and generating a timing signal indicative of said vertical blanking interval; and

(c) limiter control circuit means connected between said amplifier means and said timing means, said control circuit means, in response to said timing signal, biasing said amplifier means to be cutoff by a video signal level occurring in said video signal during said vertical blanking interval which exceeds a selected blanking level and limiting the output level of said amplifier means to said selected blanking level;

(d) said video signal including a vertical sync interval occurring during said vertical blanking interval and wherein;

(e) said timing means including early timing means generating an early timing signal indicating an early portion of said vertical blanking interval beginning substantially at the beginning of said vertical blanking interval and extending until at least the beginning of said vertical sync interval;

(f) said timing means including late timing means generating a late timing signal indicating a late portion of said vertical blanking interval beginning at the end of said vertical sync interval and extending until the end of said vertical blanking interval;

(g) said limiter control circuit means including early limiter control circuit means cooperating with said early timing means to limit the output of said amplifier means during the occurrence of a pulse having a level which exceeds said selected blanking level; and

(h) said limiter control circuit means including late limiter control circuit means cooperating with said late timing means to limit the output of said amplifier means during the occurrence of a pulse having a level which exceeds said selected blanking level.

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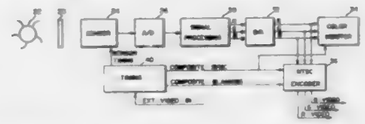
VIDEO TIMING SYSTEM WHICH HAS SIGNAL DELAY COMPENSATION AND WHICH IS RESPONSIVE TO EXTERNAL SYNCHRONIZATION

Anthony W. Schrock, Rochester, and David E. McCauley, Henrietta, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 11, 1988, Ser. No. 143,110

Int. Cl.⁴ H04N *5/04*

U.S. Cl. 358—149 **8 Claims**



7 Apparatus for generating a video signal, the apparatus comprising:

a. means, responsive to an image, for outputting at a first time a first signal which begins with data representing a first element of an image;

b. means for receiving the first signal at a time which is later than the first time by a first time differential, and for generating an internal video signal for displaying the image by a raster;

c. timing means including

(1) first means for adjusting the internal video signal generating means so that the internal video signal begins the raster at a second time in response to receipt of an external synchronizing signal, and at a third time in response to nonreceipt of the external synchronizing signal.

(2) second means for adjusting the first signal outputting means in a manner to begin outputting the first element ahead of the raster by a time which is equal to the time differential, so that the raster begins with the first element of the image when the raster starts at the second time and at the third time.

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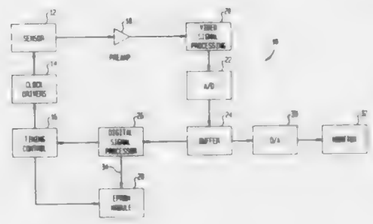
ELECTRONIC IMAGING CAMERA UTILIZING EPROM MEMORY

David D. Pape, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 30, 1987, Ser. No. 102,859

Int. Cl.⁴ H04N *5/225*

U.S. Cl. 358—209 **16 Claims**



9. A process for electronically sensing and storing a still image comprising the steps of:

sensing scene light with a predetermined number of discrete image sensing elements and providing an analog information signal corresponding to the intensity of illumination incident to each of the discrete image sensing elements;

converting the analog electronic information signals to digital electronic information signals so that a separate and

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distinct digital electronic information signal comprising a plurality of binary bits corresponds to the intensity of illumination incident to each of the image sensing elements;

temporarily storing the digital electronic information signals; and

finally storing the digital electronic information signals which define each still image in a select one of a plurality of different groups of electronically programmable read only memories (EPROM's) in a manner whereby a different plurality of the binary bits of the digital electronic information signals are simultaneously stored in respective ones of the EPROM's in the selected group.

4,803,555

METHOD OF DRIVING A SOLID STATE IMAGE PICKUP DEVICE

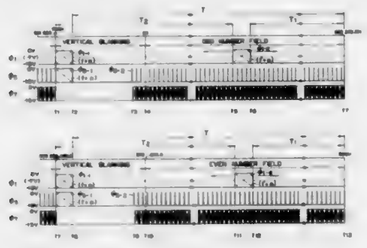
Kenichi Shinbori, and Kazuo Ishikawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 903,828, Sep. 3, 1986, abandoned, which is a continuation of Ser. No. 843,829, Mar. 26, 1986, abandoned, which is a continuation of Ser. No. 596,406, Apr. 3, 1984, abandoned. This application Aug. 24, 1987, Ser. No. 89,045

Claims priority, application Japan, Apr. 6, 1983, 58-61098

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213.19 **55 Claims**



1. A method of driving a solid-state image pickup device of the frame transfer type having an image sensing part, a storage part, and a readout part, said method comprising:

(a) a first step of periodically transferring an image charge signal in the image sensing part to the storage part during a first time interval;

(b) a second step of periodically reading out the image charge signal from the storage part one line by one through the readout part each during a second time interval shorter than said first time interval; and

(c) a third step of transferring the image charge signal in the image sensing part one line by one to the storage part during a third time interval shorter than said second time interval within said first time interval, wherein said first time interval corresponds to the field time interval of a standard television signal.

4,803,556

SCAN LAMP INTENSITY CONTROL FOR RASTER INPUT SCANNERS

Thomas R. Belkirch, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 15, 1987, Ser. No. 61,628

Int. Cl.⁴ H04N *5/238, 1/10*

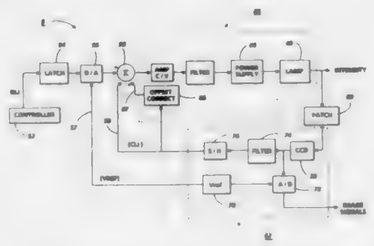
U.S. Cl. 358—228 **13 Claims**

1. A method of operating a raster input scanner having at least one linear array of photosensors for scanning an image line by line and generating analog image signals representative of the image line scanned, at least one lamp for illuminating the image for scanning by said array, and an adjustable power supply for operating said lamp, comprising the steps of:

(a) with each line scanned, additionally scanning an area of predetermined reflectance to provide reflectance signals with said image signals;

(b) separating the reflectance signals from said image signals;

(c) deriving a first signal representing current lamp intensity from said reflectance signals;



(d) providing a second signal representing desired lamp intensity;

(e) comparing at least said first and second signals with one another to provide an error signal; and

(f) adjusting said power supply in response to said error signal to control the illumination intensity of said lamp and provide said desired lamp intensity when scanning.

4,803,557

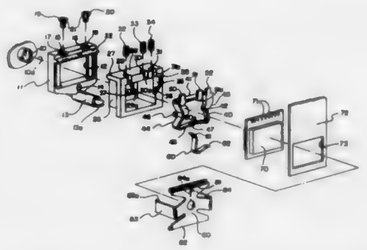
ADJUSTABLE MOUNT FOR IMAGE SENSOR

Mark E. Bridges, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 11, 1988, Ser. No. 142,762

Int. Cl.⁴ H04N *5/225, 3/14*

U.S. Cl. 358—229 **13 Claims**



11. An adjustable mount for positioning an image sensor along the optical axis of a device for generating video signals, said mount comprising:

a sensor carriage moveable along the optical axis, said carriage having a central opening on the optical axis, a centrally located spherical bearing recess in a lower surface thereof, and two threaded and countersunk screw holes extending downwardly from the upper surface of the carriage, one of said screw holes being on each side of and spaced from the optical axis, a portion of the countersunk section of each screw hole being open and facing in the same direction as said recess,

a flat head screw with a tapered head section in each screw hole,

an intermediate element mounted in said central opening of the carriage and having a male part complementary to and engaging said recess, said element having a transversely

extending rib in proximity to the open portions of the carriage screw holes,

said intermediate element having a central opening on the optical axis, one side wall of which opening has a downwardly sloping ramp surface, said element having threaded screw holes in its upper surface extending downwardly into said central opening, a first of said screw holes being located over said ramp surface, a second of said screw holes being on one side of the optical axis and a third being on the other side of the optical axis,

screws in the screw holes in the intermediate element,

a resilient frame-like element for receiving the sensor, said element being located in the opening in the intermediate element and having thickened areas located below the respective second and third screw holes as well as an enlarged portion below said first screw hole, said enlarged portion having a ramp surface complementary to and engaging said ramp surface of the intermediate element,

biasing means urging the frame-like element and sensor sideways toward the ramp surface of the intermediate element and upwardly, and

means for clamping the mount parts and sensor together such that:

(a) the rib of the intermediate element is biased against the tapered head sections of the screws in the carriage whereby rotation of the screws causes movement of the intermediate element about horizontal and vertical axes, depending upon whether one or both screws are rotated and the degree of rotation,

(b) rotation of the screw in the first screw hole in the intermediate element causes movement of the ramp surfaced portion of the frame-like element along the ramp surface of the intermediate element resulting in sideways movement of the sensor, and

(c) rotation of said second and third screws in the intermediate element causes rotation of the sensor about the optical axis and up and down movement of the sensor, depending upon whether one or both screws are rotated and the degree of rotation.

4,803,558

HALFTONE IMAGE ESTIMATION METHODS FOR DITHER IMAGES

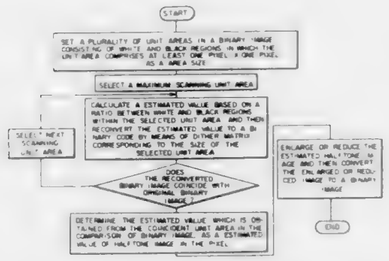
Seiichiro Hiratsuka; Masahiko Matsunawa, and Yoshinori Abe, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1986, Ser. No. 929,622

Claims priority, application Japan, Nov. 15, 1985, 60-257489; Nov. 15, 1985, 60-257495

Int. Cl.⁴ H04N *1/40*

U.S. Cl. 358—283 **16 Claims**



1. A method of estimating a halftone image from an original binary image formed of an array of a plurality of pixels, each of said pixels having one of two different components characteristic of a binary image, comprising the steps of:

(a) selecting a group of differently configured scanning area units ("SAU's"), each of said SAU's being adapted to enclose a portion of the original binary image having a predetermined number of pixels of said array to be represented with a halftone level;

(b) selecting a first target pixel from among the array of a plurality of pixels;

(c) choosing one of said group of SAU's;

(d) setting said chosen SAU onto a portion of the original binary image which includes said first target pixel;

(e) obtaining a counted value of the number of pixels in the portion of the original binary image enclosed within said chosen SAU which have the same one of the two characteristic components of a binary image;

(f) assigning a halftone level related to said counted value to each of the pixels in the portion of the original binary image enclosed within the chosen SAU;

(g) converting the assigned halftone level into a converted binary image with a threshold value matrix, said threshold vlaue matrix having a plurality of threshold values corresponding in number to the predetermined number of pixels in the portion of the original binary image enclosed within the chosen SAU;

(h) comparing an image pattern of the converted binary image with that of the portion of the original binary image enclosed by said chosen SAU to obtain a comparison result;

(i) determining whether the comparison result satisfies a predetermined condition and, if it does, to provide an identified SAU for the first target pixel;

(j) if the comparison result does not satisfy the predetermined condition of step (i) for the chosen SAU, repeating steps (c)–(i) for other SAU's in said group of SAU's chosen in sequence until an identified SAU is found;

(k) generating an estimated halftone image for the first target pixel related to the assigned halftone level obtained with the identified SAU in step (f);

(l) sequencing to a next target pixel in the array of a plurality of pixels; and

(m) repeating steps (c)–(k) for the next target pixel.

4,803,559

METHOD OF MOUNTING A DEFLECTION UNIT ON A CATHODE RAY TUBE ENVELOPE AND COMBINATION RESULTING THEREFROM

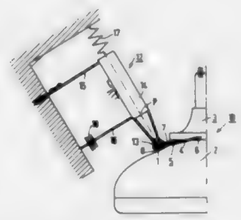
Hermanus M. J. R. Soemers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 27, 1987, Ser. No. 125,857

Claims priority, application United Kingdom, Dec. 3, 1986, 8628906

Int. Cl.⁴ H01J *9/236, 9/42*

U.S. Cl. 358—248 **2 Claims**



1. A method of mounting a deflection-unit on a cathode ray tube envelope, comprising thermally compression bonding metal mounting pads at predetermined positions on the envelope; providing at least six connecting members to the deflection unit, pairs of the connecting members having corresponding ends connected at spaced apart positions to the deflection unit, each connection point being contiguous with a connec-

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tion point of an end of an adjacent member of another pair, the members of each pair being mutually convergent so that their terminal points are contiguous, providing each terminal point with a semi-spherical part having a hole therein through which a portion of the terminal point is visible; disposing a deflection unit on the envelope; resiliently urging manipulators each comprising a socket against respective semi-spherical parts in such a manner that the socket frictionally engages the respective semi-spherical part and that the contiguous terminal portions of the pairs of connecting members are contacting substantially tangentially their respective mounting pad; displaying a test pattern on the cathode ray tube; and actuating the manipulators to adjust the deflection unit until an optimum test pattern is obtained and with the manipulators in engagement with the semi-spherical parts laser-welding the terminal portion to their respective mounting pad via a laser-beam produced within each manipulator and passing through the hole in its associated semi-spherical part.

4,803,560

LIQUID-CRYSTAL TELEVISION RECEIVER WITH CASSETTE TAPE RECORDER

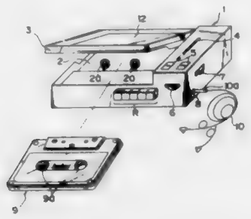
Tsuyoshi Matsunaga, and Hideaki Shimizu, both of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1987, Ser. No. 12,721

Claims priority, application Japan, Feb. 21, 1986, 61-22955[U]; Mar. 31, 1986, 61-46283[U]; Dec. 24, 1986, 61-197321[U]

Int. Cl.⁴ H04N *5/64*

U.S. Cl. 358—236 **12 Claims**



1. A liquid-crystal television receiver in combination with a tape recorder, comprising:

a main body including a cassette tape driving mechanism and having a cassette loading section;

a television reception circuit means for receiving a television signal;

a first pivotal lid pivotally coupled to said main body and adapted to cover a cassette tape when a cassette tape is loaded into said cassette loading section;

a second pivotal lid pivotally arranged relative to said first pivotal lid;

an optical means comprising a reflection mirror arranged on a surface of said first pivotal lid for facing said second pivotal lid; and

a transmission type liquid-crystal display means arranged on the second pivotal lid for displaying, in cooperation with said optical means, a television image corresponding to the television signal received by said television reception circuit.

4,803,561

IMAGE READING METHOD AND APPARATUS

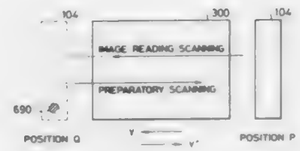
Jun Kubota, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 13, 1987, Ser. No. 3,008

Claims priority, application Japan, Jan. 13, 1986, 61-4851

Int. Cl.⁴ H04N *1/04*

U.S. Cl. 358—285 **7 Claims**



5. An image reader, comprising a one-dimensional sensor arranged along a first direction;

means for moving said sensor from a first position to a second position and from said second position to said first position along a direction non-parallel to said first direction;

means for measuring, by means of one-dimensional sensor, reading conditions of said one image while said moving means moves said one-dimensional sensor from said second to said first position; and

means for two-dimensionally scanning said one image, by means of said one-dimensional sensor, while said moving means moves said one-dimensional, sensor from said first to said second position.

4,803,562

IMAGE SENSING APPARATUS

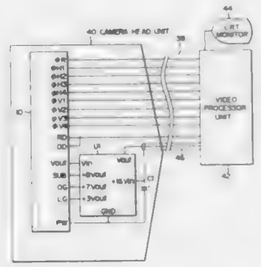
Teruo Eino, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 11, 1987, Ser. No. 62,098

Claims priority, application Japan, Jan. 20, 1986, 61-144514; Jan. 20, 1986, 61-144517

Int. Cl.⁴ H04N *7/18, 3/18*

U.S. Cl. 358—98 **14 Claims**



1. An image sensing apparatus comprising:

video processor means for generating a drive signal; and

camera head means connected to said video processor means, said camera head means having

solid-state image sensing means which requires a plurality of power supply voltages for operating in response to the drive signal supplied from said video processor means so as to generate an image signal, and

emitter follower means connected to a power supply voltage terminal of said solid-state image sensing means, the plurality of power supply voltages being applied to said solid-state image sensing means through said emitter follower means.

4,803,563

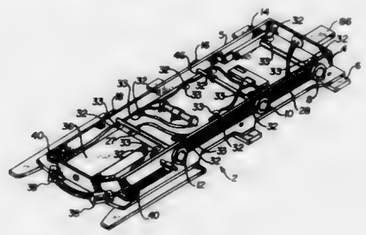
ROTOR-IN-STATOR EXAMINATION MAGNETIC CARRIAGE AND POSITIONING APPARATUS

George F. Dailey, Plum Borough, and Paul E. Morrison, Trafford, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 2, 1987, Ser. No. 92,790

Int. Cl.⁴ H06N *7/18*

U.S. Cl. 358—100 **19 Claims**



1. A moveable carriage comprising:

chassis means adapted for movement along a surface;

magnet means attached to said chasis means for moveably securing said chasis means to the surface; and

separator means interposed between said magnet means and the surface for relatively positioning said magnet means out of contact with the surface.

4,803,564

ELECTRONIC BLACKBOARD SYSTEM

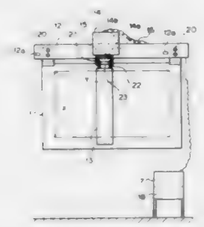
Katsuyoshi Sakai, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1987, Ser. No. 92,427

Claims priority, application Japan, Sep. 8, 1986, 61-211017

Int. Cl.⁴ H04N *1/10*

U.S. Cl. 358—294 **21 Claims**



1. An electronic blackboard system comprising:

an attachment means fixed to the upper portions of an information writing board such as a white board or a blackboard attached to a wall surface or fixed to a wall surface above such an information writing board;

said attachment means comprising a pair of spacedly disposed angle members each respectively located adjacent an upper corner of the information writing board;

means securing the angle members to the information writing board in such spaced apart relationship;

a guide rail secured by said attachment means and horizontally disposed along an upper edge of said information writing board;

means securing the guide rail at ends thereof to respective angle members;

a driving unit placed on said rail an moving thereon in the horizontal direction;

a photoelectric conversion device, connected to said driving unit in such a manner as to face the surface of said information writing board, for reading written information;

a memory for storing pieces of image information of a whole picture obtained by moving said photoelectric device in the direction intersecting the read-out line;

a hard-copy device for reading out said image information stored in said memory and recording said image information; and

a roller secured to the lower end of said photoelectric conversion device, said roller rolling while being in contact with said information writing board.

4,803,565

OPTICAL WRITE HEAD

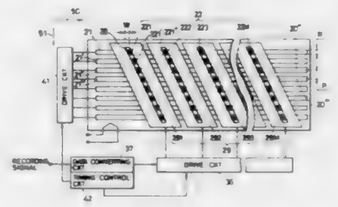
Toru Tenhigawara; Kazuo Terao, both of Kanagawa; Hiroshi Watanabe, and Yukihiko Shimizu, both of Chiba, all of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo and Futaba Corporation, Chiba, both of Japan

Continuation of Ser. No. 897,829, Aug. 19, 1986, abandoned. This application Jul. 29, 1988, Ser. No. 226,548

Claims priority, application Japan, Dec. 12, 1985, 60-278044

Int. Cl.⁴ H04N *1/23*

U.S. Cl. 358—300 **3 Claims**



1. An optical write head for an electrostatic recorder adapted to form a latent image on photosensitive material moving relative thereto, the head comprising:

at least first and second adjacent rows of light emission element arrays each including a plurality of light emission elements, said row-arrays having center lines and being disposed with said center lines parallel o each other and spaced at predetermined intervals in the direction perpendicular to the row-wise direction, the light emission elements on adjacent arrays being staggered in row-wise position for disposing all of the light emission elements at equal row-wise direction intervals when viewed from a direction perpendicular to the arrays;

dynamic driving circuit means for activating the rows of light emission elements at different times to emit light successively array by array in the order from said first array to said second array to irradiate the photosensitive material for forming a latent image comprised of a matrix of dots arranged regularly in the row-wise direction and in the direction perpendicular thereto, a latent image of one line comprised of dots arranged in a direction perpendicular to the row-wise direction being formed on the photosensitive material once each of the rows of light emission elements emits light, and

said predetermined intervals between the respective center lines of the light emission element arrays being determined from the following relationship:

$$P=(X\cdot N+1)S/N$$

wherein P represents said predetermined intervals between said center lines, S represents the pitch of the printed dots

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in the direction perpendicular to the row-wise direction, X represents an integer, and N represents the number of the light emission elements arrays, and

wherein the minus sign is used when said photosensitive material moves said selected distance in the direction from the first light emission element array toward the second light emission element array, and said driving circuit means is operative to activate said second array to emit light earlier in time than said first array, and the plus sign is used when said photosensitive material moves said selected distance in the direction from the first light emission element array toward the second light emission element array, and said driving circuit means is operative to activate said second array to emit light later in time than said first array.

4,803,566

DIGITAL TIME BASE CORRECTION USING A REFERENCE BIT

Elwyn R. Berlekamp, Berkeley; James A. Bixby, San Diego, and James U. Lemke, Del Mar, all of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 1, 1983, Ser. No. 518,995

Int. Cl.⁴ G11B *5/00, 5/09, 27/19, 27/28*

U.S. Cl. 360—26 **13 Claims**



1. Apparatus for assuring time coherence among data bits in a multi-channel bit-processing system, groupings of said bits comprising respective bytes, and said bytes occurring in a time sequence, said apparatus comprising:

(a) respective clockable multi-bit buffer means for receiving the bits of said sequenced bytes,

(b) means for detecting the occurrence of a reference bit for, and from within, each of a plurality of said bytes, and

(c) means responsive to reference bit occurrences for producing a clock having a frequency corresponding thereto, said clock being applied to each of said buffer means for clocking therefrom data bits which are essentially devoid of time incoherence thereamong, said means for detecting the occurrence of a reference bit being means for detecting the median-occuring bit of each of said plurality of bytes.

4,803,567

VIDEO REPLAY STORE FOR A MULTI-CHANNEL DIGITAL VIDEO TAPE RECORDER

James H. Wilkinson, Yokohama, Japan, and Richard J. A. Avis, Basingstoke, United Kingdom, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 30, 1986, Ser. No. 925,377

Claims priority, application United Kingdom, Nov. 6, 1985, 8527321

Int. Cl.⁴ H04N *5/78*

U.S. Cl. 360—33.1 **7 Claims**

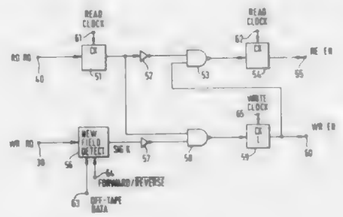
1. A video replay store for a multi-channel digital video tape recorder, the video replay store, comprising:

a respective channel store for each channel, each said channel store comprising a plurality of field stores which are written in and read from cyclically;

a respective field boundary detector for each channel, each said field boundary detector supplying a first pulse in response to each field boundary where an odd field changes to an even field, and a second pulse in response to each field boundary where an even field changes to an odd field, in the off-tape data in the respective channel;

a replay store controller for supplying write requests and read requests in a predetermined sequence to all of said channel stores, said replay store controller stepping on from one state to a next state in said predetermined sequence in response to stepping pulses formed by each first said first pulse following a said second pulse and each first said second pulse following a said first pulse; and

a control circuit for each said respective channel store, each said control circuit including a first gate circuit for gating each write request received from said replay store con-



troller with a read request received from said replay store controller so as to derive a first output signal used to form a write enable, and a second gate circuit for gating each read request received from said replay store controller with said first output signal to derive a second output signal used to form a read enable, whereby said control circuit supplies write enables and read enables to said field stores with read enables dominating over write enables in the event of contention between a read enable and a write enable.

4,803,568

MOTOR CONTROL APPARATUS EFFECTING PHASE CONTROL ON ROTATING BODY

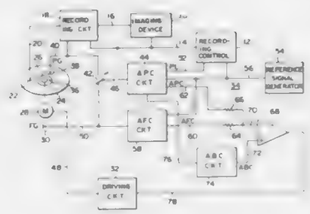
Izumi Miyake; Kiyotaka Kaneko, and Kazuya Oda, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 2, 1986, Ser. No. 937,038

Claims priority, application Japan, Dec. 2, 1985, 60-269495

Int. Cl.⁴ H04N *5/781;* **G11B** *19/20*

U.S. Cl. 360—33.1 **9 Claims**



1. A motor control apparatus comprising:

drive means including a motor for rotating a body at a predetermined rotating speed and phase;

reference position detecting means for determining a reference position in the rotation of the body and generating a phase signal representative of the reference position;

phase control means, responsive to said reference position detecting means, for controlling said drive means by use of a bias signal, said bias signal representing an offset of the phase of the rotating body;

said phase control means causing the rotation of the body to be brought within a predetermined range with respect to a reference signal, said reference signal representing said predetermined rotating speed; and

bias control means, operatively connected to said phase control means, for determining a difference between said phase signal and said reference signal and for providing said drive means with said bias signal according to the determined difference;

said phase control means including first counter means for counting a period within the predetermined range;

said bias control means including second counter means, responsive to said first counter means, for incrementing a control count when a count contained in said first counter means is below a lower limit of the predetermined range and for a decrementing said control count when the count exceeds an upper limit of the predetermined range, said control count representing a value of said bias signal, thereby generating said bias signal according to the value of said control count of said second counter means.

4,803,570

ROTARY HEAD TYPE MULTICHANNEL INFORMATION SIGNAL REPRODUCING APPARATUS HAVING SUB-INFORMATION SEARCH FUNCTION

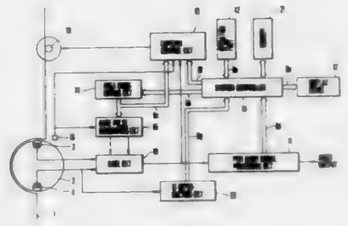
Motokazu Kashida, Tokyo; Toshiyuki Masui, Kanagawa; Tsutomu Fukutsu, Kanagawa; Koji Takahashi, Kanagawa; Masahiro Takei, Kanagawa, and Kenichi Nagasawa, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1986, Ser. No. 891,253

Claims priority, application Japan, Aug. 6, 1985, 60-172739; Aug. 7, 1985, 60-173792

Int. Cl.⁴ G11B *5/02*

U.S. Cl. 360—61 **13 Claims**



1. An apparatus for reproducing main information and additional information from a tape-shaped record bearing medium which has a plurality of areas extending longitudinally and in parallel with each other, each area having many helical slant tracks on each of which the main and additional information are recorded, said main information in one of said many helical tracks being larger in quantity than said additional information, comprising:

(a) a rotary head arranged to transversely trace the plurality of areas provided on said tape-shaped record bearing medium;

(b) area designating means for designating one of said plurality of areas;

(c) gate means arranged to gate a signal reproduced by said rotary head in response to said area designating means for outputting informations recorded on said one of said plurality of areas;

(d) first process means for processing said main information gated by said gate means;

(e) second process means for processing said additional information reproduced by said rotary head; and

(f) manually operable means for changing over a plurality of operation modes of the apparatus, the plurality of modes including

a first mode in which: said first process means outputs said main information recorded in the area designated by said area designating means, and said second process means only outputs said additional information recorded in the same area from which said main information is being outputted by said first process means; and

a second mode in which: said second process means simultaneously outputs said additional information from at least two of said plurality of areas.

4,803,569

WRITE ENABLE RING SENSING ARRANGEMENT FOR A MAGNETIC TAPE REEL

Ernst Kegler; Konrad Svenka, and Klaus Thierauf, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 7, 1983, Ser. No. 558,879

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 3304261

Int. Cl.⁴ G11B *15/05, 15/06*

U.S. Cl. 360—60 **6 Claims**



1. A sensing arrangement for detecting the presence and absence of a write enable ring within a groove of a rotatable magnetic tape reel, comprising:

a write enable ring to be received in the groove of the rotatable magnetic tape reel;

a sensing ring mounted for rotation and axial movement including a portion to be received in the groove of the magnetic tape reel in the absence of the write enable ring, a peripheral reflective surface of high reflectivity, and a mark on said surface;

a single sensing element positioned to scan and sense said peripheral reflective surface and said mark to produce scanning signals only when said write enable ring is located in the groove and said sensing ring rotates; and

an evaluation stage for evaluating the scanning signals for determining the axial position and rotation of said sensing ring.

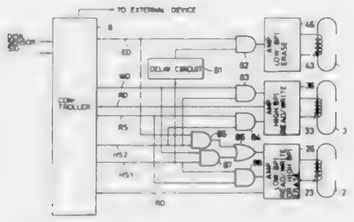
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4,803,571

FLOPPY DISC MAGNETIC HEAD APPARATUS COMPATIBLE WITH BOTH HORIZONTAL AND PERPENDICULAR RECORDING MEDIA

Toshiyuki Fujioka, Nishitama; Masahiro Kasunoki, Tachikawa, and Koji Onofune, Nishitama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 31, 1987, Ser. No. 32,442
Claims priority, application Japan, Mar. 31, 1986, 61-70731
Int. Cl.[4] G11B 5/48
U.S. Cl. 360—63 **6 Claims**



1. A magnetic head apparatus compatible with both horizontal and perpendicular recording media, comprising:

(a) first magnetic head means for recording and reproducing information in or from said horizontal recording medium at a first predetermined recording density;

(b) second magnetic head means, arranged backward from said first magnetic head means in a magnetic recording medium travel direction, for recording and reproducing information in or from said perpendicular recording medium at a second predetermined recording density higher than that of said horizontal recording medium; and

(c) head selecting means for selecting any one of the first and second magnetic head means in response to a signal indicative of the presence of any one of the horizontal and perpendicular recording mediums.

4,803,572

RECORDING/REPRODUCING METHOD AND APPARATUS OF MAGNETIC DISK UNIT IN WHICH PLAYBACK COMMENCES BEFORE THE MAGNETIC HEAD IS COMPLETELY CENTERED ON THE TRACK

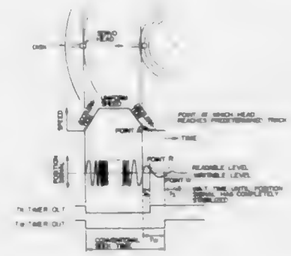
Toshiyuki Haruna, Odawara; Kenji Nishimura, Kanagawa; Yuji Yoshida, Odawara; Kiyotaka Takahashi, Atsugi; Tsuneo Hirose, Odawara; Katsuhiro Tsuneta, Odawara; Riichi Nakano, Odawara; Kazuto Takahashi, Hadano; Akira Kurano, and Tadayuki Ichiba, both of Odawara, all of Japan, assignors to Hitachi, Ltd. and Hitachi Computer Peripherals Co., Ltd., both of Tokyo, Japan

Filed Apr. 20, 1987, Ser. No. 40,126
Claims priority, application Japan, Apr. 21, 1986, 61-89935
Int. Cl.[4] G11B 5/55, 15/87
U.S. Cl. 360—60 **10 Claims**

1. A recording/reproducing method of an information disk unit effecting data recording/reproducing operation by means of a head on the basis of a seek command and a recording/reproducing command received from a host processor and performing a seek operation, comprising:

a first step for starting the data reproduction on the basis of said data reproducing command in response to detection of such a state that said head has sought to an extent that the data on the desired track can be marginally reproduced; and

a second step for starting the data recording on the basis of said data recording command in response to detection of



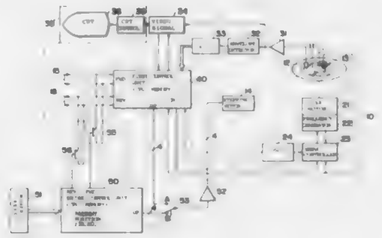
such a state that the position of said head has stabilized on the desired track by means of the seek operation.

4,803,573

TRACK ACCESS APPARATUS HAVING HIGH-SPEED RANDOM ACCESS USING A SINGLE STEPPING MOTOR IN A MAGNETIC RECORDING/PLAYBACK SYSTEM

Nobuo Minoura, Yokohama; Katsuo Nakadai; Toshikatsu Harase, both of Tokyo, and Satoshi Iwamatsu, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 15, 1986, Ser. No. 919,140
Claims priority, application Japan, Oct. 15, 1985, 60-227918; Oct. 15, 1985, 60-227919; Oct. 15, 1985, 60-227920; Oct. 15, 1985, 60-227921; Oct. 15, 1985, 60-227922
Int. Cl.[4] G11B 5/55
U.S. Cl. 360—78.13 **6 Claims**



1. In a magnetic recording/playback system having a magnetic recording/playback head freely movable radially across a rotatable magnetic disk on which are provided a plurality of circular, concentrically arranged recording tracks; a single magnetic recording/playback head transfer mechanism which includes a single stepping motor, responsive to first and second drive pulses, for moving the magnetic recording/playback head; an envelope detector circuit for detecting an envelope of a signal read from the disk by the magnetic recording/playback head; and tracking control means for generating said first drive pulses to be applied to the stepping motor of said magnetic recording/playback head transfer mechanism for controlling the magnetic recording/playback head transfer mechanism to move the magnetic recording/playback head in a forward/reverse direction in response to a forward-feed/reverse-feed signal, and to position the magnetic recording/playback head on an adjacent one of said recording tracks in the forward/reverse direction in response to an output from the envelope detector circuit; a track access apparatus comprising:

means for designating a track number of a track to be accessed;

means for storing a track number of a track at which the magnetic recording/playback head is presently located;

fast-feed control means for performing a fast feed operation including determining a head feed direction of movement of the magnetic recording/playback head based on the designated track number, generating said second drive pulses to be supplied to the stepping motor of said recording/playback transfer mechanism, and controlling the magnetic recording/playback head transfer mechanism to move the magnetic recording/playback head in the head feed direction to a track that is one track short of the designated track; and

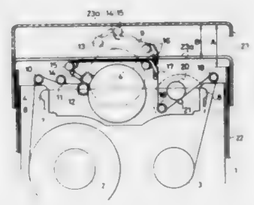
means for providing the tracking control means with one forward-feed/reverse-feed signal corresponding to the head feed direction after the fast-feed control operation performed by said fast-feed control means.

4,803,574

ARRANGEMENT OF RECORDING AND/OR REPRODUCING APPARATUS

Akio Konishi; Satoshi Kikuya; Osamu Zaitsu, and Hideaki Yoshio, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 2, 1987, Ser. No. 10,958
Claims priority, application Japan, Feb. 3, 1986, 61-21437; Sep. 5, 1986, 61-209866; Nov. 5, 1986, 61-263395
Int. Cl.[4] G11B 5/027
U.S. Cl. 360—85 **10 Claims**



1. A recording/reproducing apparatus comprising tape winding means describing a locus of movement for rotationally moving around a tape guide drum and for pulling out a tape from a tape cassette and winding the pulled-out tape around said tape guide drum, said recording/reproducing apparatus having a movable casing section member which moves from a position remotely located relative to the locus of the rotational movement of said tape winding means to a position entering into the locus of movement after said tape winding means is rotationally moved through a predetermined angle.

4,803,575

TAPE CASSETTES HAVING BOTTOM GROOVES FOR USE IN TAPE RECORDER HAVING BOTTOM PROJECTION IN CASSETTE HOLDER

Akihiro Nishimura, Osaka; Masao Kawagishi, Nara; Hideki Sakamoto; Masahiko Matsui, both of Osaka, and Yoshinori Shioni, Okayama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 10, 1987, Ser. No. 36,971
Claims priority, application Japan, Apr. 11, 1986, 61-84504
Int. Cl.[4] G11B 15/675, 23/087
U.S. Cl. 360—94 **12 Claims**

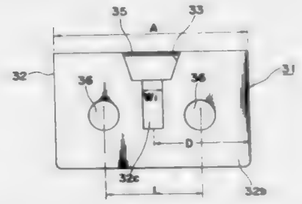
1. A cassette for use in a tape recorder having a cassette holder defined by a bottom plate, opposite side plates, a projection on the bottom plate extending parallel to the side plates and reel shaft openings on opposite sides of the projection, said cassette comprising:

a top shell;

a bottom shell connected with said top shell to define a rectangular casing having end walls parallel to the side plates of the cassette holder;

reels in said casing for storing a magnetic tape wound on said reels, said reels being spaced a distance corresponding to the spacing of the reel shaft openings on the cassette holder;

said rectangular casing having an overall length slightly



smaller than the distance between the opposite side plates of the cassette holder;

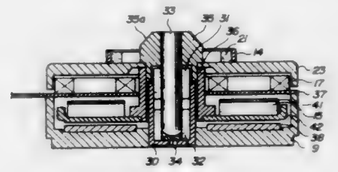
said bottom shell having a groove extending parallel to said end walls and facing outwardly from the bottom thereof, said groove having a width substantially wider than the width of the projection, whereby when said cassette is inserted into or ejected from the cassette holder, said cassette is guided by the opposite side plates and the projection is received in said groove with substantially no contact between the bottom shell and the projection.

4,803,576

DISC DRIVING DEVICE

Masao Ohkita, and Shinichi Ohmori, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Aug. 21, 1987, Ser. No. 88,694
Claims priority, application Japan, Nov. 5, 1986, 61-168991[U]
Int. Cl.[4] G11B 5/012, 5/016
U.S. Cl. 360—99.08 **5 Claims**



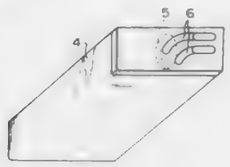
1. A disk driving device, comprising a fixed base, a metal bearing secured to said base, a spindle shaft mounted for rotation relative to said base by means of said metal bearing, a spindle fitted at an end portion of said spindle shaft remote from said base, a turntable secured to said spindle for receiving a disk for integral rotation therewith, a circuit board securely mounted on said base, a driving coil secured to said circuit board, a driving magnet secured to said spindle for electromagnetically cooperating with said driving coil to rotate said spindle, a stator yoke secured to said base, said driving magnet being located between said circuit board and said stator yoke, and a buffer member mounted on a face of said driving magnet opposing to said circuit board.

4,803,577

VERTICAL MAGNETIC RECORDING SYSTEM USING RIGID DISK

Jolchiro Ezaki, and Kazunosu Fukuda, both of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jun. 9, 1986, Ser. No. 872,240
Claims priority, application Japan, Jun. 12, 1985, 60-128874; Jun. 12, 1985, 60-128875
Int. Cl.⁴ G11B *5/60, 15/64, 17/32, 21/20*
U.S. Cl. 360—102 **3 Claims**



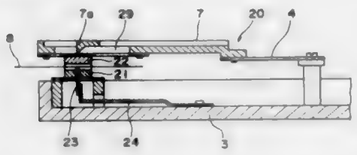
1. A system for recording and reproducing information on a magnetic recording medium by using a magnetic head through relative movement between the head and the recording medium comprising a recording disk having a rigid disk substrate made of alumina silicate resin glass, and a vertical magnetic anisotropic film coupled with said substrate, the maximum surface roughness R_{max} of said disk being less than 50 Å and the spacing between said head and said disk in operation being less than 0.1 micron.

4,803,578

ASSEMBLY FOR STABLY MOUNTING MAGNETIC HEAD ON CARRIAGE

Hideo Fujiwara; Akito Sakemoto, and Osamu Inagoya, all of Ibaragi, Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed May 9, 1986, Ser. No. 861,349
Claims priority, application Japan, May 9, 1985, 60-96598
Int. Cl.⁴ G11B *5/54*
U.S. Cl. 360—105 **15 Claims**



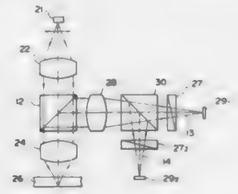
1. A magnetic head carriage assembly for use with a magnetic disc having a single recording side which comprises:
- a head carriage for slidably receiving a rotatable magnetic disc;
- a clamper resiliently mounted on said head carriage and biased toward said head carriage so that said magnetic disc rotates between said clamper and said head carriage;
- a first clamp shoe resilient member mounted on said clamper;
- first clamp shoe means resiliently mounted on said clamp shoe resilient member for contacting said magnetic disc, wherein the movement of said first clamp shoe means is confined to a direction perpendicular to the rotational plane of said magnetic disc, and wherein said first clamp shoe means is biased to oppose said head carriage;
- a second clamp shoe resilient member mounted on said head carriage;
- a second clamp shoe means resiliently mounted on said second clamp shoe resilient member for contacting said magnetic disc, wherein said second clamp shoe means is biased to oppose said first clamp shoe means;
- a head support resilient member mounted on said head carriage; and
- a magnetic head resiliently mounted on said head support resilient member for contacting said recording side of said magnetic disc, said magnetic head being biased so as to oppose said first clamp shoe means and being inserted through an insertion opening formed in said second clamp shoe means whereas said magnetic head is mounted such that is moves independent of movement of each of said clamp shoe means.

4,803,579

MAGNETO-OPTICAL INFORMATION REPRODUCING APPARATUS IN WHICH DIVIDED REPRODUCING LIGHTS ARE DIFFERENTIALLY DETECTED BY A PHOTODETECTOR HAVING NO AMPLIFYING ACTION THROUGH AN ANALYZER WHOSE TRANSMISSION AXIS AZIMUTH IS OPTIMIZED

Osamu Koyama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1987, Ser. No. 106,786
Claims priority, application Japan, Oct. 17, 1986, 61-246614
Int. Cl.⁴ G11B *11/10*
U.S. Cl. 360—114 **5 Claims**



1. A magneto-optical information reproducing apparatus comprising means for applying a light beam polarized in a predetermined direction onto a recording medium on which information is magnetically recorded, means for dividing the reflected or transmitted light beam from said recording medium modulated into a polarized state in conformity with said information by the magneto-optical effect, a plurality of analyzer means having their optic axes inclined in opposite directions with respect to said predetermined direction and analyzing said divided light beams, a plurality of photodetectors having no amplifying action and photoelectrically detecting the light beams transmitted through said plurality of analyzer means, and a signal processing means for amplifying the detection signals of said plurality of photodetectors, differentiating them and reproducing said information, the angle θ_A formed between the optic axes of said plurality of analyzer means and said predetermined direction satiafying the following conditions:

$$\sin^2\theta_A \sim \frac{S+T}{(1-\eta_A)\cdot S}\left(1-\sqrt{\frac{\eta_A S+T}{S+T}}\right)$$

$$S = 2\epsilon\kappa|t_A|^2|R|^2 I_0 \cdot \Delta B$$

where I_0 is the quantity of light of the incident light beam on said recording medium, R is the amplitude reflectance of said recording medium, ϵ is the light utilization efficiency of the optical system from the recording medium to the photodetectors except said analyzer means, κ is the photoelectric conversion efficiency of said photodetectors, e is the amount of charge, T is the thermal noise of said amplifying means in a magneto-optical signal observation frequency, ΔB is the band width of the detection signals, t_A is the amplitude transmittance

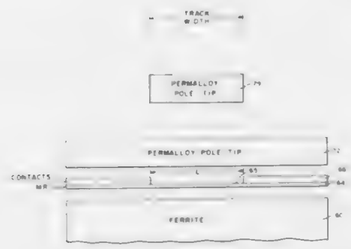
of said analyzer means, and η_A is the extinction ratio of said analyzer means.

4,803,580

DOUBLE-GAP MAGNETORESISTIVE HEAD HAVING AN ELONGATED CENTRAL WRITE/SHIELD POLE COMPLETELY SHIELDING THE MAGNETORESISTIVE SENSOR STRIP IN THE READ GAP

Greg S. Mowry, Burnsville, Minn., assignor to Magnetic Peripherals Inc., Minnetonka, Minn.

Filed Feb. 17, 1987, Ser. No. 15,204
Int. Cl.⁴ G11B *5/127, 5/33*
U.S. Cl. 360—113 **2 Claims**



1. In a magnetoresistive head having a read/write surface; a pair of inductive write poles and a soft/magnetic shield forming two gaps at said read/write surface, a first gap between the poles, a second gap between one of said poles and said shield, said write poles magnetically connected in a back gap region, the write pole forming a portion of the second gap comprising a trailing pole, and the other write pole comprising a leading pole; and a magnetoresistive strip having a central sense region mounted in said second gap; the improvement comprising:
- said leading one of said poles having a length defining a track width L,
- the magnetoresistive strip being substantially longer than said track width L,
- a pair of current contacts contacting the lateral ends of said magnetoresistive strip and defining a central sense region therebetween, wherein the central sense region of the magnetoresistive strip has approximately the same length as the leading pole, and
- the trailing pole having a length at least as long as the strip, the length of the trailing pole thereby being longer than said track width L;

whereby the leading and trailing inductive write poles have substantially unequal lengths and a track is written on said read/write surface by magnetic mirroring between the leading and trailing poles, the width of the track defined by the length of the leading pole; and where by the trailing pole completely shields the elongated magnetoresistive strip from the high magnetic fields present between the leading and trailing write poles during write operations.

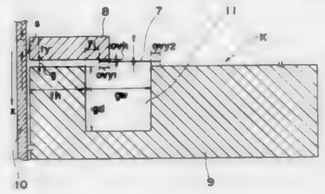
4,803,581

THIN FILM YOKE-TYPE MAGNETORESISTIVE HEAD

Toru Kira, Tsuri; Teiichi Miyauchi, Nara; Kiyohito Nakai; Kengo Shiiba, both of Tsuri, and Mitsuhiko Yoshikawa, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 575,928, Feb. 1, 1984, abandoned. This application Mar. 16, 1987, Ser. No. 27,088
Claims priority, application Japan, Sep. 26, 1983, 58-178909
Int. Cl.⁴ G11B *5/33*
U.S. Cl. 360—113 **7 Claims**

1. A thin film magnetic head comprising:
- a lower yoke which is made of magnetic material having a high permeability;
- a magnetoresistive element having upper and lower major surfaces, a front end portion facing a magnetic recording medium and a distal end portion spaced from said front end; and
- an upper yoke, having a rectangular cross section, for transmitting magnetic flux to said magnetoresistive element, which is placed above said lower yoke so as to extend from the recording medium facing portion of said thin film magnetic head such that said magnetoresistive element is interposed between said lower yoke and said upper yoke;



said upper yoke overlapping only said front end portion of said magnetoresistive element such that the upper major surface at said distal end portion thereof is free of any magnetic material;

said lower yoke being formed, at a portion thereof confronting the lower major surface of said magnetoresistive element, with a groove such that the distal end portion of said magnetoresistive element overlaps said lower yoke;

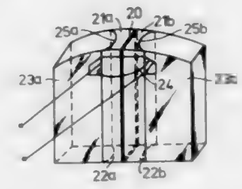
said upper and lower yokes separated by a magnetic gap of a width enabling detection of magnetization in a longitudinal direction.

4,803,582

PERPENDICULAR MAGNETIZATION TYPE MAGNETIC HEAD HAVING A MAGNETIC POLE PART WHICH FORMS A CLOSED MAGNETIC PATH

Kunihide Sakai, Ebina, Japan, assignor to Victor Company of Japan Ltd., Kanagawa, Japan

Filed Jul. 16, 1984, Ser. No. 630,660
Claims priority, application Japan, Jul. 19, 1983, 58-111981
Int. Cl.⁴ G11B *5/23*
U.S. Cl. 360—119 **8 Claims**



1. A perpendicular magnetization type magnetic head comprising:
- a main magnetic pole part wound with a coil, for subjecting a magnetic recording medium to magnetic fluxes which pass perpendicularly through a magnetic layer of the magnetic recording medium;
- a non-magnetic part located on both sides of said main magnetic pole and adjacent to said magnetic recording medium, so as to sandwich said main magnetic pole; and
- a closed magnetic path forming magnetic pole part for forming a closed magnetic path of said magnetic flux with respect to said main magnetic pole part,

said closed magnetic path forming magnetic pole part having an edge which is bounded on said non-magnetic part,

said edge facing the recording medium and being non-parallel to said main magnetic pole part.

4,803,583

CLEANING CASSETTE WITH AN INTERNAL DRIVE MOTOR

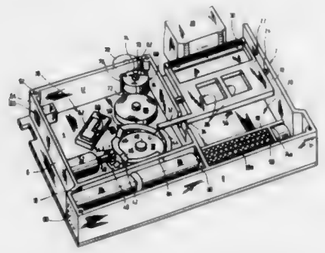
Michael Bogdanski, Salzkotten, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Apr. 16, 1987, Ser. No. 39,558

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1986, 8610911[U]

Int. Cl.⁴ G11B *5/10, 5/127, 5/41*

U.S. Cl. 360—128 **22 Claims**



1. An improved cleaning cassette for cleaning an electromagnetic transducer head of a cassette tape deck, and of the type having a cassette housing capable of being inserted in the cassette receptacle of the deck, a cleaning head movably mounted in the cassette housing, and a drive system coupled to the cleaning head for moving the cleaning head relative to the transducer head, wherein the improvement comprises:

said drive system including a drive motor (52, 152) arranged inside the cassette housing (2, 102) and drivingly connected with the cleaning head (22, 122); and

means for mounting the cleaning head on said cassette housing for oscillating movement relative to said transducer head.

4,803,584

DISK CARTRIDGE WITH CLEANING SHEET OF NON-WOVEN FABRIC

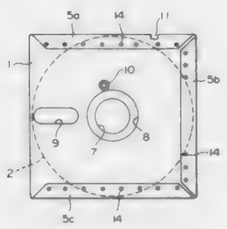
Hajime Doi; Norio Akai, and Fujio Matsumoto, all of Ibaraki, Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Apr. 24, 1987, Ser. No. 42,340

Claims priority, application Japan, Apr. 25, 1986, 61-94874; May 30, 1986, 61-123545

Int. Cl.⁴ G11B *23/03*

U.S. Cl. 360—133 **14 Claims**



1. A disk cartridge which comprises a cartridge case, a disk rotatably encased in the cartridge case, and a cleaning sheet supported on the inside surface of the cartridge case by welding, the cartridge case being composed of a thermoplastic synthetic resin, and the cleaning sheet being composed of non-woven fabric made mainly of acrylic fibers at least on the disk-facing side of the cleaning sheet, said acrylic fibers containing more than about 85% acrylonitrile, and being fixed to the inside surface of the cartridge case by ultrasonic or heat welding.

4,803,585

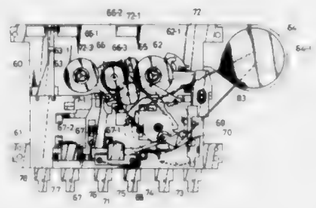
TAPE RECORDER STOP MECHANISM

H. T. Cheng, Taipei, Taiwan, assignor to Lisonic Electronic Co. Ltd., Taipei, Taiwan

Filed Feb. 17, 1987, Ser. No. 15,146

Int. Cl.⁴ G11B *15/22, 21/14*

U.S. Cl. 360—96.3 **1 Claim**



1. An improvement of a tape recorder-player stop mechanism having a stop operation lever for stopping the transport of a magnetic tape which comprises:

a swivel arm, located about the pivot of a winding gear of a transmission mechanism, a split spring being connected to said swivel arm and transmission mechanism, said swivel arm being coupled to a winding intermediate gear and a push-back angle plate, said swivel arm having a middle portion positionally located below a winding reel shaft center;

a knock-back slider having a "U" shaped notch formed therein, said knock-back slider having a knock-back angle plate located on one end thereof and a knock-back edge located on an opposing end to provide a two step operation of said stop operation lever;

an angle plate located on said stop operation lever engaged within said "U" shaped notch of said knock-back slider when either a magnetic head operation lever or a record operation lever is operably engaged; said transport of said magnetic tape being substantially instantaneously stopped by partially depressing said stop operation lever to a first of said two step operation, said partial depression of said stop operation lever causing said knock-back slider to engage said swivel arm, said swivel arm rotates about the center of said winding reel shaft in a counter clockwise direction responsive to said engagement with said knock-back slider, said winding intermediate gear thereby being disengaged from said transmission mechanism while substantially simultaneously said knock-back angle plate causes disengagement of a pinch roller for stopping said transport of said tape, said rotation of said swivel arm also causing a magnetic head to be displaced from prior contact with said tape, the depressing of said stop operation lever to a second step of said two step operation by continued depressing of said stop operation lever results in removal of power from an electric motor coupled to said transmission mechanism.

4,803,586

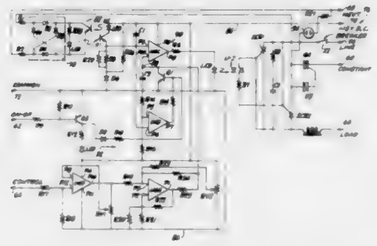
VOLTAGE CONTROL MODULE

Jim Tabor, and Richard Counts, both of Dallas, Tex., assignors to Prescolite, Inc., San Leandro, Calif.

Continuation of Ser. No. 886,904, Jul. 16, 1986, abandoned. This application Nov. 30, 1987, Ser. No. 126,422

Int. Cl.⁴ H02H *3/26*

U.S. Cl. 361—18 **2 Claims**



1. A wall box mounted remotely operated voltage control module utilizing a low voltage DC control signal to regulate the amount of electrical power transferred from a source of A.C. electrical power to a load comprising:

a. means used for rectifying the AC electrical power from the source thereof, to produce a relatively high voltage pulsation DC signal;

b. means used for transforming the relatively high voltage pulsating DC signal to relatively low voltage pulsating DC signal;

c. a power semiconductor having power leads between the source of AC electrical power and the load, and having a gate for controlling the quantity of power delivered from the source of AC electrical power to the load;

d. comparator means used for generating an output signal for triggering said gate of said power semi-conductor in accordance with said relatively low voltage pulsating DC signal and the low voltage DC control signal, said comparator means further comprising voltage compensation means used for substantially maintaining delivery of a constant quantity of power from the source to the load through said power semi-conductor during variations in the voltage of the AC electrical power from the source thereof, said means used for transforming includes an optically coupled semi-conductor device being connected between the source of AC electrical power and said comparator;

e. another optically coupled semi-conductor device for triggering said power semi-conductor, said another optically coupled semi-conductor device being connected between the output terminal of said comparator and the power semi-conductor;

f. relay means for on-off switching of said triggering signal from said comparator means;

g. means for compensating said high voltage pulsating DC power signal for changes in ambient temperature relative to the wall box, said temperature compensation means including;

a first optically coupled transistor including a light emitting diode portion, said light emitting diode portion of said first optically coupled transistor connected in parallel with said rectifying means; and

a second optically coupled transistor including a light emitting diode portion, said light emitting diode portion of said second optically coupled transitor connected in series with said transistor of said first optically coupled transistor connected in parallel with said light emitting diode of said first optically coupled transistor.

4,803,587

ARRANGEMENT FOR CHANGE-OVER CONTACT APPARATUS PROTECTION WITH INTERLOCKING MEMBER AND MODULE

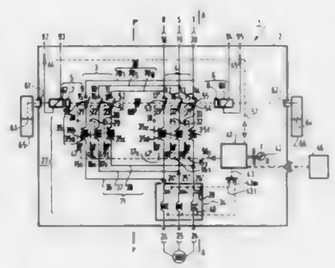
Bernard Fournier, le Plessis Bouchard; Maurice Coutal, Nanterre, and André Vergez, Villenes, all of France, assignors to La Telemecanique Electrique, France

Filed Apr. 15, 1987, Ser. No. 38,671

Claims priority, application France, Apr. 23, 1986, 86 06138

Int. Cl.⁴ H02H *7/08;* **H01H** *50/18*

U.S. Cl. 361—24 **14 Claims**



1. A change-over contact apparatus comprising in a main case having first and second inner spaces defined by a median plane and a supporting base at right angles with said median plane:

i- first and second isolated three phase switch system each having input terminals and output terminals, said first and second systems being respectively housed in the respective first and second spaces;

ii- first and second electromagnets having respective coils and separate means for energizing said respective coils, the first and second electromagnets being respectively housed in the respective first and second spaces and having first and second respective armatures which respectively control the first and second switch systems;

iii- mechanical inter armature locking means disposed between the first and second respective armatures and extending from side to side of the median plane;

iv- an elongate first bundle of electric conductors providing cross connection of the input terminals of the respective switch systems for causing a reversal of two phases, said bundle being oriented substantially at right angles with said median plane and located in a region close to said supporting base;

v- a removable thermal and magnetic overload detector module removably connecting the output terminal of the second switch system to output terminals of the apparatus, said detection module, the input and output terminals of the second switch and the output terminals of the apparatus being housed in said second space;

vi- an elongate second bundle of electric conductors providing direct phase to phase connection of the output terminals of the respective switch systems and

vii- a tripping mechanism housed in said second space and coupled to the overload detector module and to the first and second switch systems for opening the said switch systems when the overload detector module has detected an overload.

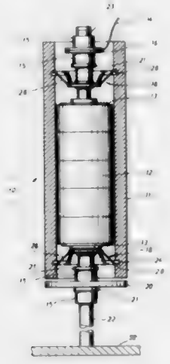
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4,803,588

SURGE ARRESTER

Richard J. Badak, Allegany, N.Y., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Apr. 14, 1986, Ser. No. 852,004
Int. Cl.[4] H02H *3/20*
U.S. Cl. 361—118 **9 Claims**



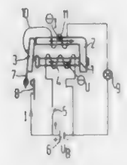
1. A surge arrester comprising:
an insulating tubular housing open at one end;
retaining means located within said housing;
at least one varistor block;
a first spring clip having open areas for the free flow of oil, mounted within said housing in electrical contact with one face of said varistor block and in contact with said retaining means to flexibly retain said varistor block in said housing;
a second spring clip having open areas for the free flow of oil, mounted within said housing in electrical contact with the opposite face of said varistor block and in contact with said retaining means to flexibly retain said varistor block in said housing wherein said retaining means is an annular groove in said housing.

4,803,589

ELECTROMAGNETIC RELAY

Rolf-Dieter Kimpel, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 9, 1987, Ser. No. 1,979
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1986, 3601519
Int. Cl.[4] H01H *47/00, 9/00;* **H01F** *5/00*
U.S. Cl. 361—210 **4 Claims**



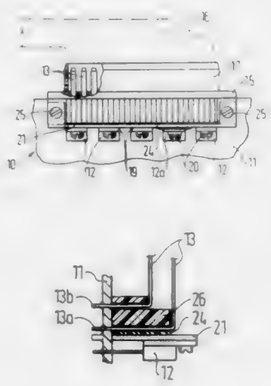
1. An electromagnetic relay having an excitation winding connectable to a voltage source ahd having a core within the winding forming an excitation flux circuit together with a yoke disposed outside of the winding to conduct electromagnetic flux in a first direction, an armature seated at the yoke forms a working air gap with a free end of the core, at least one switch contact being actuatable by the armature when said electromagnetic flux is conducted in the first direction, comprising:
power supply elements connecting the at least one switch contact to a load circuit and to the voltage source, the voltage source being connectable to the excitation winding, at least one of the power supply elements being conducted around a part of the excitation flux circuit substantially fewer times than the excitation winding so that current connected by said at least one switch contact from said voltage source to the load circuit flows through said power supply elements to produce an auxiliary excitation in said part isodirectionally with said first direction of said electromagnetic fluxes of the excitation winding, both said excitation winding and said load circuit being connected across said voltage source so that a peak load current caused by closing of said at least one switch contact flows through said power supply elements simultaneously with a drop in voltage across the excitation winding to add said auxiliary excitation to said electromagnetic flux of the excitation of said excitation winding thereby holding the armature closed during a drop in the flux of the excitation winding caused by the drop in voltage.

4,803,590

ELECTRIC SWITCHING DEVICE

Reinhard Fassel, Oberasbach; Georg Haubner, Berg, and Hartmut Zöel, Fürth/Bay, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE86/00110, § 371 Date Mar. 23, 1987, § 102(e) Date Mar. 23, 1987, PCT Pub. No. WO87/01007, PCT Pub. Date Feb. 12, 1987
PCT Filed Mar. 14, 1986, Ser. No. 41,084
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1985, 3527208
Int. Cl.[4] H05K *7/20*
U.S. Cl. 361—386 **10 Claims**



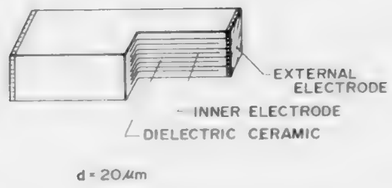
1. Switching device including at least one power switching component arranged in a completely insulated housing, comprising at least one heat conducting cooling body arranged in said housing for supporting said power switching component; a plurality of connector parts arranged opposite said cooling body and being fed through said housing; heat conducting, electrically insulating means having an area contact with said cooling body and enclosing portions of said connector parts in said housing to establish a path for abducting out of said housing the heat generated by said power switching component.

4,803,591

DIELECTRIC CERAMIC COMPOSITION FOR MULTILAYER CAPACITOR

Yasuo Miyashita, Chichibu, and Masao Kashima, Yokoze, both of Japan, assignors to Mitsubishi Mining & Cement Company, Ltd., Japan

Continuation-in-part of Ser. No. 697,201, Jan. 25, 1985, abandoned, which is a continuation-in-part of Ser. No. 451,930, Dec. 21, 1982, abandoned. This application Jan. 30, 1987, Ser. No. 8,668
Claims priority, application Japan, Jul. 20, 1982, 57-125138
Int. Cl.[4] H01G *4/12;* **C04B** *35/46*
U.S. Cl. 361—321 **3 Claims**



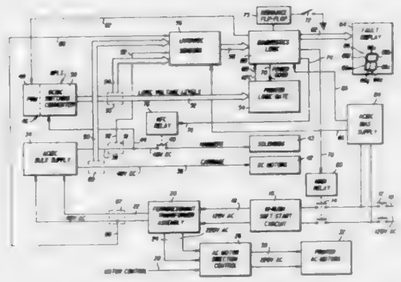
1. A multilayer ceramic capacitor comprising a plurality of ceramic layers, a plurality of inner electrodes interposed between said ceramic layers, and outer electrodes on opposing sides of said capacitor for connecting alternate inner electrodes, wherein said ceramic layers consist essentially of 94.70–99.39 mole % of barium titanate, 0.50–3.00 mole % of niobium pentoxide, 0.10–1.00 mole % of zinc oxide, and 0.01–0.30 mole % of manganese dioxide.

4,803,592

POWER CONTROL AND FAULT ISOLATION INDICATOR

Donald J. Ashley, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 877,857, Jun. 24, 1986, abandoned. This application Jan. 19, 1988, Ser. No. 146,132
Int. Cl.[4] H02H *3/04*
U.S. Cl. 361—79 **12 Claims**



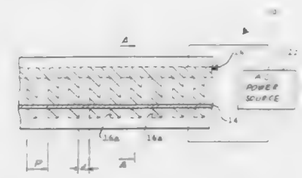
1. A power control and fault isolation indicator, comprising:
means for sensing conditions in output lines from voltage source sections of a power supply system, said means for sensing including a plurality of sense lines, each corresponding to a point on one of said output lines, one logic level on a sense line representing a normal condition at said corresponding point and a second logic level on a sense line representing a fault condition at said corresponding point;
first logic circuit means connected to said sense lines and responsive to said second logic level on one of said sense lines for generating a code signal representing said corresponding point at which said fault condition occurred, and including storage means having output terminals for storing said code signal, said code signal appearing as a particular pattern of logic levels on a plurality of code lines connected from said output terminals;
second logic circuit means connected to receive inputs from said code lines and responsive to said code signal when said code signal signifies a fault condition at one of said points to generate at least a first shutdown signal;
means in said power supply system responsive to said first shutdown signal for shutting down said power system; and
indicating means responsive to said code signal on said code lines for indicating said point at which said fault condition occurred.

4,803,593

FLAT SOLID DISCHARGING DEVICE

Kazuyoshi Matsumoto, Tokyo; Seiichi Miyakawa, Nagareyama; Eishu Obdake, and Shigeru Suzuki, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 8, 1987, Ser. No. 105,610
Claims priority, application Japan, Oct. 14, 1986, 61-156138[U]; Oct. 28, 1986, 61-254602
Int. Cl.[4] G03G *15/02;* **H01T** *19/00*
U.S. Cl. 361—225 **11 Claims**



1. A flat solid discharging device comprising:
a dielectric substrate substantially rectangular in shape;
a thin hairline type first electrode placed on one side of said dielectric substrate extending along the length of said discharging device;
a second electrode placed directly on the other side of said dielectric substrate to face said first electrode through said dielectric substrate; and
a means for applying an ac voltage across said first and second electrodes to produce ions in a space adjacent to said first electrode;
wherein said second electrode comprises a plurality of comblike conductive strips having spaces therebetween each extending crosswise relative to the length of said first electrode through said dielectric substrate.

4,803,594

WAVE-SHAPED ELECTROSTATIC DISCHARGE

George Zagravu, Arlington, Mass., assignor to KeyTek Instrument Corp., Wilmington, Mass.

Filed Feb. 26, 1988, Ser. No. 160,645
Int. Cl.[4] H01T *23/00*
U.S. Cl. 361—230 **11 Claims**

1. In apparatus for applying through a conductive test tip a test electrical surge to equipment under test, said apparatus including a discharge capacitor series connected through a first RL circuit to an input terminal of switching means for selectively applying a discharge from said capacitor to said test tip, said input terminal also being series connected through a second RL circuit to one electrically conductive plate of a first free space capacitance, the improvement comprising:
a resistor, one end of which is connected to the output terminal of said switching means;

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first and second inductances series connected to one another and between the other end of said resistor and said test tip;



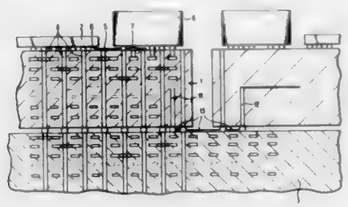
a second electrically conductive plate connected to the junction of said first and second inductances so as to form part of a second free space capacitance.

4,803,595

INTERPOSER CHIP TECHNIQUE FOR MAKING ENGINEERING CHANGES BETWEEN INTERCONNECTED SEMICONDUCTOR CHIPS

Charles J. Kraus, Poughkeepsie, and Leon L. Wu, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 931,488, Nov. 17, 1986, abandoned.
This application Nov. 25, 1987, Ser. No. 129,404
Int. Cl.[4] H05K *1/18*
U.S. Cl. 361—412 6 Claims



1. A structure for making engineering changes to form a replacement wiring network between designated chips on a common substrate without requiring any changes to the common substrate or the use of discrete wires, said structure comprising:

interposers being located between each of said designated chips and said common substrate,

each interposer having conductive vias and stacked internal multiple wiring planes insulated from each other and from said vias,

said vias making electrical connections between said chips and said substrate so that said chips are connected to each other and to said common substrate via said interposers, and

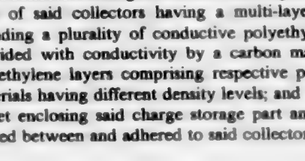
replacement interposers which lie at the beginning and at the end of the replacement wiring network for making engineering change connections without the use of discrete wires and associated engineering change pads so that the electrical connections between said chips are changeable in accordance with changes in the connections between said vias and said wiring planes of said replacement interposers.

4,803,596

SOLID-STATE CAPACITOR WITH AN ELECTROCONDUCTIVE POLYMER AS CONSTITUENT OF THE SOLID ELECTROLYTE

Gerhard Hellwig, Stegen; Ottmar Baur, Freiburg; Klaus Feiner, Kirchzarten; Helmut Moehwald, Heidelberg, and Helmut Muenstedt, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 23, 1987, Ser. No. 111,604
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1986, 3636100
Int. Cl.[4] H01G *9/00*; B01J *17/00*
U.S. Cl. 361—525 8 Claims



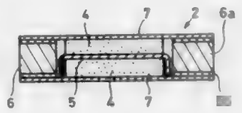
1. A solid-state capacitor comprising a first metallic electrode, an oxide layer on the electrode as the dielectric layer and a counter electrode consisting of an intrinsically conductive polymer of a 5- or 6-membered aromatic heterocyclic compound, said polymer have been formed by oxidative polymerization of the monomers on the surface of the dielectric layer by means of an oxidant.

4,803,597

ELECTRIC DOUBLE-LAYER CAPACITOR

Kouichi Watanabe; Michinobu Maesaka, and Michihiro Murata, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jan. 19, 1988, Ser. No. 145,530
Claims priority, application Japan, Jan. 21, 1987, 62-12972
Int. Cl.[4] H01G *9/00*
U.S. Cl. 361—502 13 Claims



1. An electric double-layer capacitor having one or more electric double-layer capacitor elements,

each of said electric double-layer capacitor elements including:

a charge storage part;

a pair of collectors arranged to hold said charge storage part, each of said collectors having a multi-layer structure including a plurality of conductive polyethylene layers provided with conductivity by a carbon material, said polyethylene layers comprising respective polyethylene materials having different density levels; and

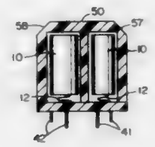
a gasket enclosing said charge storage part and being arranged between and adhered to said collectors.

4,803,598

ELECTROLYTIC CAPACITOR ASSEMBLY

Thomas W. Efford, and Lester C. Dain, both of West Jefferson, N.C., assignors to Sprague Electric Company, North Adams, Mass.

Filed Jan. 19, 1988, Ser. No. 145,440
Int. Cl.[4] H01G *9/00*
U.S. Cl. 361—541 5 Claims



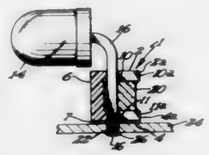
1. An electrolytic capacitor assembly comprising a plurality of tab-wound capacitor sections, each of said sections having at least one electrode tab connected to one electrode foil and extending from said section, at least one other electrode tab connected to another electrode foil and extending from said section, a rectangular parallelepiped case having an insulating cover and an insulating base, a conductive termination attached at one end to each of said tabs and passing out of said case through said base, at least one vertical wall inside said case dividing said case interiorly into isolated chambers, each of said chambers containing one of said sections, at least one vent located in said cover at a junction of a top surface of said cover and a side wall of said cover parallel to said vertical wall, whereby under internal pressure said side wall parts as a smooth gap from said top surface, said cover being sealed to said base including an edge of said vertical wall being sealed to said base.

4,803,599

MOUNTING BAR STRUCTURE FOR ELECTRICAL SIGNALLING AND INDICATING DEVICES

John A. Trine, Lake Elmo, and Daryle L. Petersen, Eagan, both of Minn., assignors to Wilhrecht Electronics, Inc., St. Paul, Minn.

Filed Nov. 6, 1987, Ser. No. 118,199
Int. Cl.[4] F21V *21/00*
U.S. Cl. 362—249 13 Claims



1. An indicator light assembly comprising:

an elongated mounting bar having planar wall means extending longitudinally thereof;

a plurality of apertures extending through said wall means at predetermined locations along the length of said bar;

a plurality of indicator lights supported on said mounting bar at predetermined, spaced-apart locations thereon as defined by said apertures, each of said indicator lights having a plurality of electrical connector leads attached thereto and extending therefrom in the same direction whereby each indicator light is freely suspended along one end of a pair of said leads, and said apertures being arranged in laterally adjacent sets, with the rest of leads for each indicator light being contained within a set of said apertures to extend in a direction generally perpendicular to the longitudinal direction of extent of said wall means at a desired position of adjustment along said lead direction, with each of said indicator light being freely supported at a desired height a predetermined displacement distance from said planar wall means only along said one end of a pair of said leads;

means securing each of said connector leads within said apertures and affixing said leads to said mounting bar only along the opposite ends thereof from said one end, with a predetermined lead portion opposite said one end thereof being exposed for connection to an electrical contact means; and

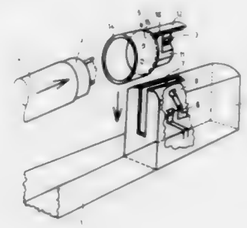
each of said connector leads being made of conductive metal which is malleable and bendable, yet rigid enough to be self-supporting and to hold any position to which it is bent, whereby the lengths of said leads projecting outwardly from said mounting bar between said mounting bar and said indicator lights may be bent to any desired angle or configuration so as to orient each of said indicator lights in a predetermined, desired position.

4,803,600

LUMINAIRE FOR A ROD-SHAPED FLUORESCENT LAMP

Franz Pepping, Pulheim, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 14, 1988, Ser. No. 143,896
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1987, 3708762
Int. Cl.[4] F21S *3/00*
U.S. Cl. 362—217 16 Claims



1. A luminaire for a rod-shaped fluorescent lamp provided with pin bases at both ends and having an elongated support profile whose width is only slightly larger or smaller than the diameter of the lamp envelope and which at both ends has sockets provided with contacts each having a groove to accommodate the base pins when inserting the lamp in an axially parallel manner, characterized in that intermediate members of an insulating material are arranged on the lamp bases, the rear side of each member being provided with a cross limb extending parallel to the base pins and being formed in such a manner that the individual base pins are located on different sides of the cross limb which, when inserting the lamp in the luminaire, engages the groove of a socket in a lock-tight manner, whereby the base pins come into contact with the socket contacts.

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4,803,601

MOTOR VEHICLE HEADLIGHT, SUITABLE FOR EMITTING A BEAM LIMITED BY A CUT-OFF, AND INCLUDING A MODIFIED REAR PORTION

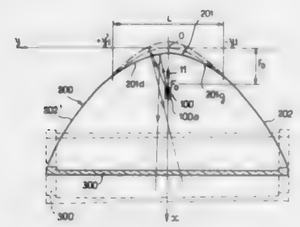
Patrice Collot, Pantin, and Bernard Luciani, Paris, both of France, assignors to Cible Projecteurs, France

Filed Dec. 31, 1987, Ser. No. 140,241

Claims priority, application France, Dec. 30, 1986, 86 18341; Dec. 30, 1986, 86 18342

Int. Cl.⁴ F21V 7/00

U.S. Cl. 362—80 **18 Claims**



1. A motor vehicle headlight of the type suitable for emitting at least one beam that is delimited by a top cut-off and that includes an approximately central concentration spot, the headlight comprising: a filament lamp; a reflector; and an enclosure glass; the headlight including the improvements whereby said reflector comprises:

at least two lateral zones that form small images of the filament defining said concentration spot and forming said cut-off; and

a central zone which reflects the light rays emitted by the filament to cause them to converge in a region at a substantial distance from the closure glass while simultaneously forming large filament images which are spread out below said cut-off;

with said lateral zones and said central zone joining one another with second order continuity in two essentially vertical planes that are parallel to a central optical axis of the headlight and are disposed on either side thereof.

4,803,602

SUN VISOR WITH ILLUMINATED MIRROR

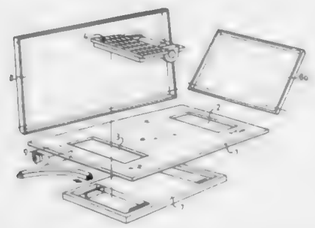
E. Gunnar Svensson, Malung, Sweden, assignor to Autopart Sweden AB, Malung, Sweden

Filed Oct. 14, 1987, Ser. No. 108,012

Claims priority, application Sweden, Oct. 24, 1986, 8604556

Int. Cl.⁴ F21V 33/00

U.S. Cl. 362—135 **5 Claims**



1. An illuminated frameless mirror for a vehicle sun visor, comprising

(a) a self supporting planar mirror plate having a reflective surface and containing at least one opening;

(b) a unitary illumination device arranged in said mirror plate opening and removably connected therewith, said illumination device including

(1) a lamp holder containing an illumination lamp;

(2) a prism arranged adjacent the lamp of said lamp holder, the light from said illumination lamp being transmitted from said illumination unit via said prism to provide indirect illumination to the user; and

(c) electrical contact means connected with said illumination unit for supplying electrical energy to said illumination lamp.

4,803,603

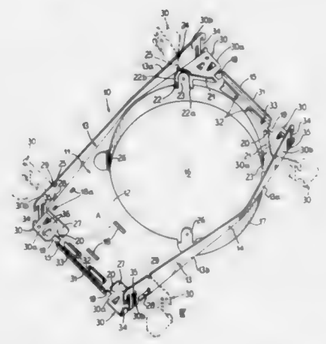
PLASTER FRAME

Douglas W. Carson, Downey, Calif., assignor to Thomas Industries, Inc., Los Angeles, Calif.

Filed Feb. 16, 1988, Ser. No. 156,324

Int. Cl.⁴ F21S 1/02

U.S. Cl. 362—150 **18 Claims**



1. A plaster frame for recessed lighting fixtures which comprises a flat metal plate, an aperture through the plate, a collar depending from the aperture, and bendable corners on the plate swingable from axial to transverse positions and constructed and arranged to receive hanger bars for mounting the frame in axial and perpendicular orientations between joists.

4,803,604

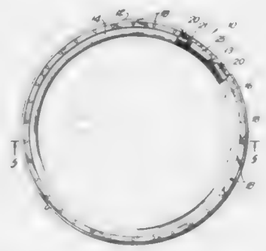
ILLUMINATED SERVING TRAY

Nancie L. Nichols, c/o James Berman, 204 E. 63rd St., New York, N.Y. 10021, and Bjorn Svensen, Pingvinveien 4, 3200 Sandefjord, Norway

Filed Feb. 26, 1988, Ser. No. 161,086

Int. Cl.⁴ F21V 33/00

U.S. Cl. 362—154 **15 Claims**



1. An illuminated serving tray comprising:

a tray housing having a peripheral rim;

a substantially flat serving surface recessed within said rim;

a light means positioned on said rim such that the light from said light means is visible from both above and below said illuminated tray and such that said light illuminates said serving surface; and

self-contained means for energizing said light means, said energizing means being positioned in a manner that is substantially symmetric with respect to the center of said tray such that the illuminated tray is balanced about any diameter.

4,803,605

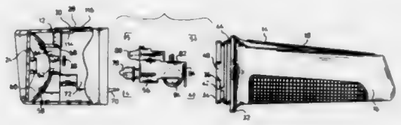
FLASHLIGHT WITH A BACKUP SYSTEM

David R. Schaller, Janesville; El-Sayed Megahed, Madison; James Neyer, Middleton, all of Wis., and Ter Petterson, Palos Verdes Peninsula, Calif., assignors to Rayovac Corporation, Madison, Wis.

Filed Aug. 4, 1987, Ser. No. 81,655

Int. Cl.⁴ F21L 7/00

U.S. Cl. 362—184 **20 Claims**



1. A hand-held flashlight comprising:

a flashlight head with a transparent lens and sidewalls defining a first cavity;

a flashlight body with at least one longitudinal wall and a second cavity;

housing interconnecting means for interconnecting said body and head to form a common enclosure;

a primary electrical system disposed in said enclosure for generating a primary beam through said lens;

a backup electrical system disposed in said enclosure and separate from said primary electrical system for generating a backup light beam through said lens, said backup electrical system comprising a backup battery disposed in said first cavity; and

activation means for selectively activating said primary and backup systems.

4,803,606

MOBILE UNIVERSAL SHOP LIGHT

Karl Rotter, 116 Pinecrest Dr., Dartmouth, N.S., Canada (B3A 2J9)

Filed Jul. 14, 1987, Ser. No. 73,110

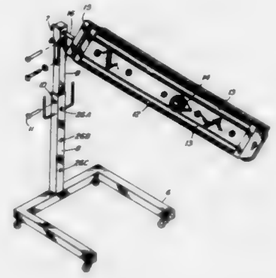
Claims priority, application Canada, Jun. 19, 1987, 540158

Int. Cl.⁴ F21V 21/22, 21/26

U.S. Cl. 362—250 **11 Claims**

1. A mobile shop light comprising a lower stand mounted on means to provide mobility, a lower stand bar rigidly attached to the lower stand and which extends upward from the lower stand in a direction perpendicular to the plane of the lower stand, an upper stand bar which telescopes into the lower stand bar so as to allow the upper end of the upper stand bar to be positioned at different heights, means to secure the upper stand bar in position relative to the lower stand bar, attaching means connected to the upper end of the upper stand bar which adjustably attaches to the upper stand bar an elongated light fixture containing illuminating means and power supply means, said attaching means allowing the fixture to rotate about its longitudinal axis and to be positioned with its longitudinal axis perpendicular to the upper stand bar and at intermediate angles to the perpendicular; and

the attaching means is comprised of a body with two parallel flanges disposed from the body being rotatably attached to the upper stand bar, the fixture rotatably attached to the main body, the main body constrained to rotate about a



centre and being fixed in various positions by means of pinning through holes located in flanges connected to the upper stand bar.

4,803,607

SURGICAL OPERATING ROOM LAMP OR SIMILAR LAMP

Stig Jönsson, Blomstermala, Sweden, assignor to Landstingens inkopscentral LIC, ekonomisk forening, Solna, Sweden

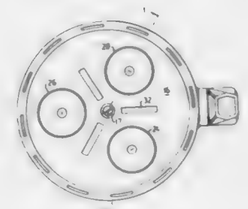
PCT No. PCT/SE87/00251, § 371 Date Jan. 19, 1988, § 102(e) Date Jan. 19, 1988, PCT Pub. No. WO87/07354, PCT Pub. Date Dec. 3, 1987

PCT Filed May 20, 1987, Ser. No. 143,554

Claims priority, application Sweden, May 20, 1986, 8602278

Int. Cl.⁴ F21V 11/14

U.S. Cl. 362—250 **3 Claims**



1. Surgical operating room lamp comprising a lamp housing supporting at least three reflectors associated each with at least one bulb or similar lamp and being angularly adjustable to focus the light beams to a predetermined area along the central optical axis of the lamp housing, the reflectors being spaced equally around the optical axis, characterized in that the reflectors (24,26,28) and their bulbs are supported by a flexible diaphragm member (16) mounted in the lamp housing with its peripheral edge resting against a shoulder (14) or similar abutment; and that the diaphragm member is supported at its center by an axially adjustable control device (20,22) to displace the center of the diaphragm member away from the open end of the lamp housing to set those portions of the diaphragm member supporting the reflectors at the same angle to the optical axis thereby adjusting the angular position of all reflectors simultaneously.

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4,803,606

REAR LIGHTS FOR BICYCLES AND OTHER VEHICLES

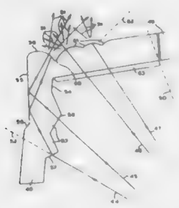
Nigel J. R. Dashwood, Hertfordshire, England, assignor to Duracell Inc., Bethel, Conn.

Filed Dec. 18, 1986, Ser. No. 944,151

Claims priority, application United Kingdom, Dec. 19, 1985, 8531275

Int. Cl.⁴ F21V *33/00*

U.S. Cl. 362—72 **4 Claims**



1. A light comprising a lamp, means defining an optical axis close to which the major part of the emergent light is distributed and a lens system having formed on its nearer face to the lamp one or more prisms adjacent an edge thereof and being arranged to trap direct light from the lamp and distribute it by total internal reflection through the material of said lens system so that it emerges from the edge at more than 100° to the optical axis.

4,803,609

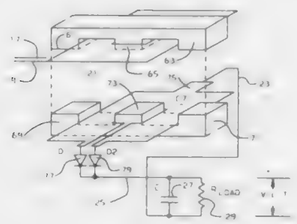
D. C. TO D. C. CONVERTER

John B. Gillett, Woodstock, and James H. Spreen, Stone Ridge, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 81,401, Aug. 4, 1987, abandoned, which is a continuation-in-part of Ser. No. 793,520, Oct. 31, 1985, abandoned. This application May 2, 1988, Ser. No. 191,822

Int. Cl.⁴ H02M *3/335*

U.S. Cl. 363—17 **6 Claims**



1. A combined power transformer/output filter inductor structure comprising, in combination,

a core of magnetic material with two closed flux paths sharing a common segment,

a secondary structure,

said secondary structure comprising a first and second conducting path joined at a common node,

said first and second conducting paths being connected to an external circuit via terminals, which define said first and second conducting paths,

a first of said terminals connected to said common node,

second and third of said terminals connected to the respective ends of said secondary structure but remote from said common node whereby current flow through said secondary conducting paths in the same direction to or from said common node generates opposing magnetomotive forces in said common segment of said two closed flux paths, and

a primary conducting path connected to an external circuit via two terminals, the turns of said primary conducting path additively produce flux in said common segment of said flux path,

said primary and secondary conducting paths being positioned in close physical proximity to provide tight magnetic coupling between said primary conducting path and said secondary structure while simultaneously providing significantly weaker magnetic coupling between said primary conducting path and each of said secondary conducting paths taken individually.

4,803,610

SWITCHING POWER SUPPLY

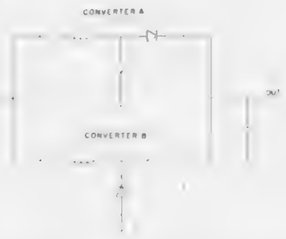
Zdzislaw Gulczynski, P.O. Box 441, Winchester, Mass. 01890

Filed Apr. 7, 1987, Ser. No. 35,479

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1986, 3611556

Int. Cl.⁴ H02M *3/335*

U.S. Cl. 363—70 **20 Claims**



1. Switching power supply, for converting an input signal into an output signal, comprising:

a pair of switching converter means each having an input and output terminals, and a reference terminal being coupled to ground;

the input terminal of each switching converter means being coupled to the output terminal of the remaining switching converter means; and

a capacitor being coupled to ground;

one of the converter means having the input terminal coupled to receive the input signal and the output terminal coupled to the capacitor with the output signal of the switching power supply appearing thereacross.

4,803,611

APPARATUS FOR CORRECTING DC COMPONENT OF OUTPUT VOLTAGE IN INVERTER

Nobuo Sashida, and Yushin Yamamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1987, Ser. No. 108,126

Claims priority, application Japan, Feb. 12, 1987, 62-28353

Int. Cl.⁴ H02P *13/20*; **H02M** *1/12*

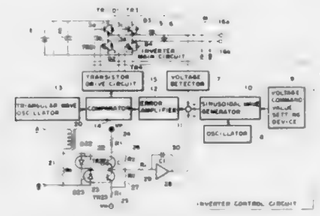
U.S. Cl. 363—98 **4 Claims**

1. Apparatus for correcting a DC component of an output voltage in an inverter, wherein a DC power source is converted into AC voltage by an inverter main circuit, the output voltage of the inverter main circuit is detected by a voltage detector, and an input signal to correct the DC component is outputted through an inverter control circuit to the inverter main circuit,

said apparatus being provided in the inverter control circuit with:

current detecting means connected in parallel to output of the inverter main circuit; and

polarity discrimination means for automatically discriminating polarity of current flowing through the current detecting means and for supplying the inverter control circuit with said DC component correcting signal;



said current detecting means being constituted by a saturable reactor connected to one output end of the inverter main circuit.

4,803,612

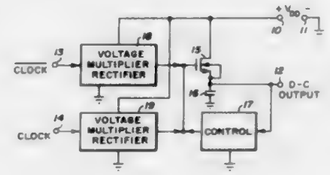
CLOCK RIPPLE REDUCTION IN A LINEAR LOW DROPOUT C/DMOS REGULATOR

Timothy J. Skovmand, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 8, 1988, Ser. No. 203,966

Int. Cl.⁴ G05F *1/56*

U.S. Cl. 323—284 **4 Claims**



1. A C/DMOS voltage regulator connectable to a source of operating power and to a source of clock pulses for producing a regulated d-c output, said voltage regulator comprising:

a DMOS pass transistor having a gate electrode, its drain electrode coupled to said source of operating power and its source electrode providing said regulated d-c output;

a first voltage multiplier rectifier having an input coupled to receive said source of clock pulses and an output coupled to said gate of said DMOS transistor;

a second voltage multiplier rectifier having an input coupled to receive the complement of said source of clock pulses and an output coupled to said gate of said DMOS transistor; and

a control circuit responsive to said d-c output and operative to control the potential of said gate of said DMOS transistor.

4,803,613

DECENTRALIZED MASTER-SLAVE CONTROL APPARATUS

Masatsugu Kametani, Ibaraki; Kengo Segiyama, Abiko; Takashi Kogawa, Sakura, and Takeshi Hanada, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 7, 1986, Ser. No. 860,430

Claims priority, application Japan, May 10, 1985, 60-97701

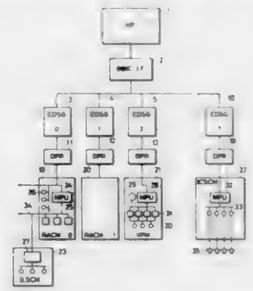
Int. Cl.⁴ G06F *15/46, 15/16, 9/40*

U.S. Cl. 364—132 **20 Claims**

1. A control apparatus for controlling a controlled object which includes a plurality of controlled elements, comprising:

a host processor for supervising said control apparatus and for interpreting successive steps of subprograms included within a control program to generate commands for the control of said controlled elements in response to respective demand signals, each command including first designation information for designating a subprogram to be processed after the execution of said each command;

a plurality of slave modules each slave module being allotted to one of said controlled elements, respectively, and includes a processor for interpreting and executing said



commands to generate control signals for said allotted controlled element and for generating, upon completion of the execution of said each command, a demand signal for requesting said host processor to generator another one of said commands, said demand signal includes second designation information for designating a subprogram to the processed in said host processor; and

communication means for transmitting said demand signals from said slave modules to said host processor and said commands from said host processor to said slave modules.

4,803,614

SYSTEM FOR RETRIEVING DISTRIBUTED INFORMATION IN A DATA BASE

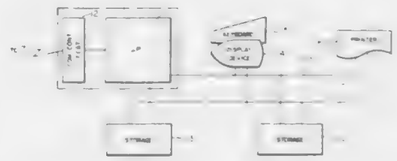
Fumiyasu Banba, Hadano, and Yoshinori Okami, Odawara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 11, 1986, Ser. No. 828,342

Claims priority, application Japan, Feb. 21, 1985, 60-33447

Int. Cl.⁴ G06F *12/00, 12/08, 12/02, 12/10*

U.S. Cl. 364—200 **13 Claims**



7. An information retrieval system in which a plurality of data keys are assigned respectively to each of a plurality of stored retrieval data for identifying each stored retrieval data and in which a retrieval condition for retrieving said data keys is inputted to obtain a predetermined stored retrieval data satisfying said retrieval condition, so that the obtained retrieval data is outputted for visual display, comprising:

a central computer including;

first storage means for storing a set of said data keys,

retrieving means, connected to said first storage means, for retrieving from said first storage means a data key satisfying said retrieval condition, and

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means, connected to said retrieving means, for transmitting said retrieved data key to a terminal device; and

said terminal device including;

second storage means for storing a set of said retrieval data as a image file;

input means for inputting said retrieval condition;

transceiving means, connected to said input means, for transmitting to said central computer said retrieval condition inputted from said input means and for receiving said data key retrieved by and transmitted from said central computer;

means, connected to said second storage means, for extracting from said second storage means said predetermined retrieval data specified by said data key; and

means for outputting said predetermined retrieval data extracted from said second storage means for visual display.

4,803,615

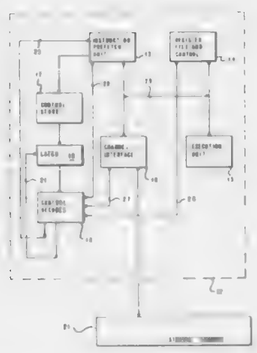
MICROCODE CONTROL OF A PARALLEL ARCHITECTURE MICROPROCESSOR

William M. Johnson, Leander, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 666,789, Oct. 31, 1984, abandoned. This application Jun. 8, 1987, Ser. No. 59,167

Int. Cl.[4] G06F *9/22*

U.S. Cl. 364—200 **6 Claims**



1. A microprogrammed parallel processor including a plurality of processing units, operable under control of microinstructions each containing a plurality of micro-operations, said microprogrammed parallel processor comprising:

means for executing, during a cycle, each of said plurality of micro-operations, within a microinstruction, for which a required processing unit is available;

means connected to said executing means for indicating which micro-operations were not executed during the cycle;

means, connected to said executing means and said indicating means for recycling only those micro-operations within said microinstruction for which said indicating means indicated as not executed during the cycle, for execution by said executing means in a subsequent cycle as each required processing unit becomes available; and

means, connected to said means for recycling, for storing said microinstruction until all of said plurality of micro-operations within said microinstruction are executed.

4,803,616

BUFFER MEMORY

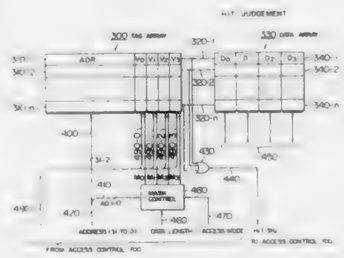
Kunio Uchiyama, Hachioji; Tadahiko Nishimukai, Sagamihara, and Atsushi Hasegawa, Koganei, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Eng. Ltd., both of Tokyo, Japan

Filed Sep. 30, 1985, Ser. No. 781,512

Claims priority, application Japan, Oct. 1, 1984, 59-204179

Int. Cl.[4] G06F *13/00, 12/06*

U.S. Cl. 364—200 **4 Claims**



1. A buffer memory system comprising:

(1) a data array having a plurality of word lines, and means for storing a plurality of data blocks on each of said plurality of word lines;

(2) a tag array having a plurality of word coincidence lines each of which is connected to a respective one of said plurality of word lines of said data array, said tag array having a first area which stores upper bits of address data of one of a plurality of data blocks in a main memory, said first area having first means for selecting one of said plurality of word coincidence lines so as to read out at least one of said plurality of data blocks from one of said plurality of word lines corresponding to said selected one of said plurality of word coincidence lines, and said tag array having a second area which stores a plurality of validity flags along each of said plurality of word coincidence lines, each of said plurality of validity flags along each respective one of said plurality of word coincidence lines corresponding to a respective one of said plurality of data blocks along the respective word line of said data array and means for searching the first and second areas to detect coincidence between said stored upper bits and an address signal supplied as a search input;

(3) mask control means responsive to lower bits of said address signal as well as to a data length signal indicating the length of data blocks to be read out from said array for generating a plurality of mask signals, each mask signal indicating whether a corresponding validity flag in each word coincidence line is to be used or not used as a search object by said searching means, said plurality of mask signals being supplied to said second area of said tag array to mask said validity flags selectively; and

(4) hit judgement means having a plurality of inputs which are connected to said plurality of word coincidence lines of said tag array, said hit judgement means including means for generating a hit signal indicating that a requested data is present in said data array when coincidence is detected by said searching means.

4,803,617

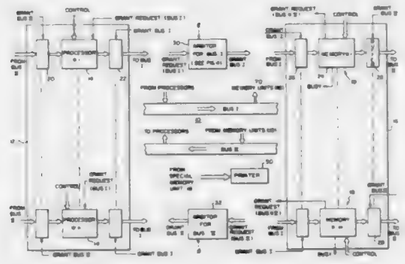
MULTI-PROCESSOR USING SHARED BUSES

Thomas N. Berarducci, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 827,565, Feb. 10, 1986, abandoned. This application Mar. 3, 1988, Ser. No. 166,756

Int. Cl.[4] G06F *13/40, 13/14, 15/16*

U.S. Cl. 364—200 **1 Claim**



1. Multi-processor apparatus for processing digital image data in accordance with digital image processing algorithms and delivering an enhanced digital image to an image printer, comprising:

a. an array of separately addressable memory units for storing a digital image, each including input and output data storage means, each memory unit providing a request signal when it is ready to transfer digital image data and a particular address indicating where image data are to be transferred, a particular memory unit being adapted to deliver an enhanced digital image to such printer;

b. an array of individually addressable processor which operate in accordance with stored algorithms to enhance a digital image, each including input and output data storage means, and address decoding means, each processor providing a request signal when it is ready to transfer digital image data to a particular memory unit;

c. a first unidirectional data bus connected to said memory units and said processors for transferring digital image data from a selected one of the output data storage means of a particular processor to a selected one of the input data storage means of a particular memory unit;

d. a second unidirectional data bus connected to said memory units and said processors for transferring digital image data from a selected one of the output data storage means of a particular memory unit to a selected one of the input data storage means of a particular processor after its decoding means decodes its particular address; and

e. data transfer controller means including a first arbitor circuit responsive to all the processor request signals for controlling the transfer of digital image data on said first bus and a second arbitor circuit independent of said first arbitor circuit and responsive to all the memory unit request signals for controlling the transfer of digital image data on said second bua.

4,803,618

MULTIPROCESSOR SYSTEM HAVING COMMON MEMORY

Noboru Ita, and Shigeru Mitsugi, both of Yamato, Japan, assignors to Panafacom Limited, Kanagawa, Japan

Filed Jan. 17, 1986, Ser. No. 819,658

Claims priority, application Japan, Jan. 19, 1985, 60-008073

Int. Cl.[4] G06F *15/16, 13/00*

U.S. Cl. 364—200 **10 Claims**

1. A multiprocessor system comprising:

(a) a plurality of processors, one of the processors to be operated as a master processor, the remaining processors being slave processors, said plurality of processors producing at least write request signals;

(b) a common memory to be accessed by the plurality of processors one by one in a time division control mode by a time division data bus;

(c) a first means for storing therein a write permission flag from the master processor through the time division data bus, the write permission flag being allotted to each of the processors by the master processor;

(d) a second means for receiving both the write permission flag from the first means and write request signals issued



from the plurality of processors through the time division control bus, the second means producing a write enable signal to be applied to the common memory for activating the same, if the write permission flag from the master processor and the write request signal from one of the processors are generated simultaneously; and

(e) a third means for determining timing for providing said write enable signal to the common memory, under the time division control mode, pertaining to each of the plurality of processors wherein said slave processors being inhibited only from a write operation to the common memory during an initial program load.

4,803,619

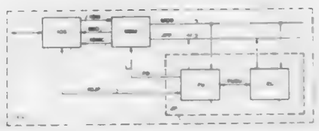
DIGITAL DATA PROCESSING SYSTEM INCORPORATING APPARATUS FOR RESOLVING NAMES

David H. Bernstein, 41 Bay Colony Dr., Ashland, Mass. 01721; Walter A. Wallach, 1336 Medfield Rd., Raleigh, N.C. 27607; Michael S. Richmond, Fearrington Post Box, Pittsboro, N.C. 27312; John K. Ahlstrom, 1309 San Domar, Mountain View, Calif. 94043; John F. Pilat, 1308 Ravenhurst Dr., Raleigh, N.C. 27609; David A. Farber, 1700 Lakewood Ave., Durham, N.C. 27707; Richard A. Belgard, 21250 Gleanmoat Dr., Saratoga, Calif. 95070, and Richard G. Bratt, 9 Brook Trail Rd., Wayland, Mass. 01778

Continuation of Ser. No. 589,401, Mar. 15, 1984, abandoned, which is a continuation of Ser. No. 266,533, May 22, 1981, abandoned. This application Jun. 20, 1986, Ser. No. 877,699

Int. Cl.[4] G06F *13/00, 09/00*

U.S. Cl. 364—200 **17 Claims**



1. In a digital computer system including

(1) processor means for performing operations on data items by executing procedures of data items containing instruc-

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tions by responding to the instructions contained in each said procedure when executing said procedure, and

(2) memory means for storing said data items and providing said data items to said processor means in response to memory signals from said processor means,

and wherein

each of said memory signals derived from a descriptor including at least an address of one of said data items in said memory means, and said data items further include

(a) a plurality of process data items, each process data item being associated with the execution of specified procedures, and including

(i) one or more frames of said process data items, each frame corresponding to the execution of one of said specified procedures, and

(ii) a static data area of said process data items which are not associated with the execution of any specified procedure and further including

means for deriving certain of said addresses in said descriptors by using a plurality of architectural base addresses which are contained in a region of said memory means associated with the procedure which said processor means is currently executing, said plurality of architectural base addresses including

(a) a frame address from which locations in the frame associated with the currently executed procedure are calculated,

(b) a static data area address from which locations in the static data area associated with the currently executed procedure are calculated, and

(c) a procedure address from which locations in the procedure currently being executed are calculated,

means for performing a call operation suspending the execution of a current procedure and commencing the execution of another procedure and means for performing a return operation terminating the execution of said other procedure and resuming the execution of the suspended procedure, said call operation performing means including,

(a) means for saving the plurality of architectural base addresses associated with the execution of the current procedure and a program counter value specifying the next instruction to be executed in said current procedure when said call operation occurs,

(b) means for locating a region of said memory means associated with a procedure whose execution is being commenced by said call operation,

(c) means for obtaining a plurality of architectural base addresses from the region of said memory means associated with the procedure whose execution is being commenced by said call operation, and

(d) means for obtaining a program counter value for the first instruction in the procedure whose execution is being commenced by said call operation and commencing the execution of said procedure using the plurality of architectual base addresses associated with the procedure whose execution is being commenced in order to obtain the instructions for said procedure; and

said return operation performing means including,

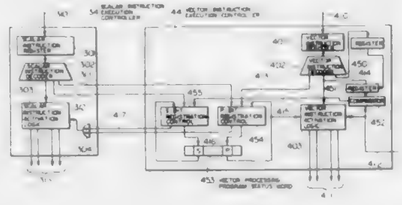
means for restoring the saved plurality of architectural base addresses associated with the procedure whose execution is being resumed and the program counter value specifying the next instruction to be executed when the execution of the procedure which was suspended by said call instruction is resumed and resuming the execution of said suspended procedure containing the next instruction using said saved architectural base addresses.

4,803,620

MULTI-PROCESSOR SYSTEM RESPONSIVE TO PAUSE AND PAUSE CLEARING INSTRUCTIONS FOR INSTRUCTION EXECUTION CONTROL

Yasuhiro Inagami, Kodaira; Takayuki Nakagawa, Kokubunji, and Shigeo Nagashima, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 5, 1987, Ser. No. 445
Claims priority, application Japan, Jan. 8, 1986, 61-563
Int. Cl.[4] G06F *9/30, 15/16*
U.S. Cl. 364—200 9 Claims



1. A multi-processor system comprising a first processor and a second processor connected to said first processor for supplying said first processor with data required for execution of instructions by said first processor;

said first processor including a first instruction register for holding an instruction to be executed thereby; first decoding means connected to said first instruction register for decoding the instruction held by said first instruction register; first activation control means connected to said first decoding means for controlling activation of the decoded instruction; indication means connected to said activation control means for indicating thereto an operation state of said first processor;

a registration control means connected to respond to decoding of a pause instruction by said first decoding means for setting at said indication means a pause indication indicating that said first processor is in a pause state;

said first activating control means including means connected to respond to said pause indication for suspending activation of a succeeding instruction decoded after the pause instruction so long as said pause indication is issued by said indication means;

said second processor including a second instruction register for holding an instruction to be executed thereby; second decoding means connected to said second instruction register for decoding the instruction held by said second instruction register; and second activation control means connected to said second decoding means for controlling activation of the instruction decoded by said second decoding means;

said registration control means including means connected to said second decoding means and responsive to decoding of a pause clearing instruction by said second decoding means and to indication of a pause state by said indication means for resetting said pause indication and for supplying to said second activation control means a completion signal indicating that said pause indication has been reset and responsive to the decoding of a pause clearing instruction and to indication of a non-pause state by said indication means for supplying to said second activation control means an incompletion signal; and

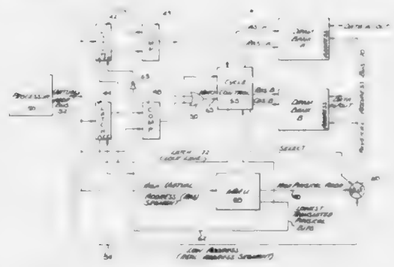
said second activation control means including means responsive to said incompletion signal for suspending activation of a succeeding instruction decoded after decoding of the pause clearing instruction by said second decoding means until said completion signal is received by said second activation control means.

4,803,621

MEMORY ACCESS SYSTEM

Edmund J. Kelly, San Jose, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 24, 1986, Ser. No. 890,075
Int. Cl.[4] G06F *13/00*; G11C *7/00*
U.S. Cl. 364—200 15 Claims



1. A memory access system comprising:

memory means for storing data, said memory means including N banks of memory arrays, each of said memory arrays comprising a dynamic random access memory having static column access, wherein data is stored at a plurality of locations, each of said locations specified by a real row address and a column address and wherein said data at said specified location is accessed after receipt of said real row address followed by a row address strobe (RAS) signal and said column address followed by a column address strobe (CAS) signal;

address generation means for generating a virtual row address and said column address corresponding to a desired data location in one of said memory arrays, said address generation means comprising a processor;

latch means electrically connected to said address generation means, said latch means including N latches, one for each of said N banks of memory arrays, for receiving said virtual row address and storing said virtual row address upon receipt of a clock signal;

comparator means electrically connected to said latch means and said address generation means, said comparator means including N comparators, one for each of said N banks of memory arrays, for comparing a current virtual row address from said address generation means to a preceding virtual row address currently stored in said latch means and for providing an output indicating the results of said comparison, said comparator means further including an OR gate for receiving the outputs of said comparators and providing an output;

a memory management unit (MMU) for translating said virtual row address into a real row address;

cycle control means electrically connected to said output of said OR gate, said latch means, said MMU, and said memory means for receiving said comparator output and for providing said real row and column addresses and said RAS and CAS signals to said one memory array, wherein said real row address and said RAS signal are provided to said one memory array only if said comparator output indicates that said current virtual row address is not the same as said preceding virtual row address, and wherein only said column address and said CAS signal are provided to said one memory array when said comparator output indicates that said current virtual row address is the same as said preceding virtual row address;

said cycle control means including clock means for providing said clock signal when said comparator output indicates that said current virtual row address is not the same as said preceding virtual row address.

4,803,622

PROGRAMMABLE I/O SEQUENCER FOR USE IN AN I/O PROCESSOR

William L. Bain, Jr., Beaverton; Robert C. Bedichek, Hillsboro; George W. Cox, Portland, all of Oreg.; Gerhard Grassl, Land Bayern, Fed. Rep. of Germany; Craig B. Peterson, Portland, Oreg.; Justin R. Rattner, Beaverton, Oreg.; Gurbir Singh, Portland, Oreg.; Gurbir Singh, Portland, Oreg., and John L. Wipfli, Hillsboro, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 7, 1987, Ser. No. 46,633
Int. Cl.[4] G06F *3/00*
U.S. Cl. 364—200 3 Claims



1. In a data processing system having I/O devices connected to an I/O bus, a register file (14), and an Execution Unit (EU-10) which executes a plurality of tasks comprised of a sequence of instructions;

said tasks including a sending task and a destination task;

a bus sequencer (12) for providing a data path between said devices and said register file (14), comprising:

PLA means (18) for storing a program;

service table means (20) connected to said PLA means, said service table means including a plurality of service table entries divided into service table fields (FIG. 5), one of said service table fields (IOS command) containing means for instructing said PLA as to what kind of operation said bus sequencer is to perform;

a plurality of I/O request lines (30);

line selection logic means (22) connected to said I/O request lines (30), to said PLA means (18), and to said service table means (20) for determining which service table entry said PLA means is to use; and,

bus interface means (26) connected to said I/O bus (28), said register file (14), and to said PLA means (18) for routing data between said register file (14) and said I/O bus (28);

each one of said service table fields further including first and second register-set descriptors (Table section A, table section B, FIG. 5), each register set descriptor including means for storing first bits (data pointer) which identify a register set buffer in said register file (14) and second bits indicative of the status of said register set buffer;

said PLA (18) including means for decoding an ACCESS instruction to start an operation by loading said first and second bits of said first register-set descriptor, and means for decoding a first SUPPLY instruction of sequential SUPPLY instructions to continue said operation by loading said first and second bits of said second register-set descriptor,

each subsequent SUPPLY instruction being decoded by said PLA to continue said operation by loading said first and second bits of whichever one of said first and second register-set descriptors corresponds to an empty register set buffer.

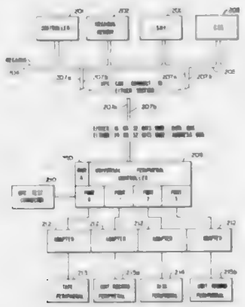
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4,803,623

UNIVERSAL PERIPHERAL CONTROLLER SELF-CONFIGURING BOOTLOADABLE RAMWARE

John A. Kiashka, North Andover; Sidney L. Kaufman, Stoughton; Krzysztof A. Kowal, Framingham, all of Mass.; Richard P. Lewis, Sandown, N.H.; Susan L. Raisbeck, Chelmsford, and John L. McNamara, Jr., Tewksbury, both of Mass., assignors to Honeywell Bull Inc., Minneapolis, Minn.

Filed Oct. 31, 1986, Ser. No. 925,431
Int. Cl.[4] G06F *13/10*
U.S. Cl. 364—200 **15 Claims**



1. A computer peripheral controller system having at least a system bus, at least a control subsystem (CSS), said CSS also including an erasable programmable memory (EPROM), and at least one random access memory (RAM) all coupled to the system bus, said computer peripheral controller system for controlling different types of peripheral devices (e.g. tape drives, disk drives, diskette drives, unit record drives, printers, etc.) coupled to said system bus, said peripheral computer system controller comprising:

(a) adapter means coupled to said computer peripheral controller for coupling said peripheral devices to said system bus;

(b) processor means coupled to said computer peripheral controller for controlling access to said system bus;

(c) Ramware means in one of said peripheral devices for providing at least one configuration of peripheral devices for coupling to said system bus, from a plurality of configurations of peripheral devices capable of being coupled to said system bus;

(d) utility loading means for automatically loading said Ramware means from one of said peripheral devices into said RAM; and,

(e) instruction means in said computer peripheral controller system for servicing said configuration of peripheral devices coupled to said system bus.

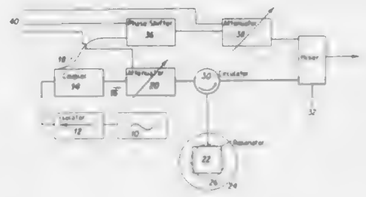
4,803,624

ELECTRON SPIN RESONANCE SPECTROMETER

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Filed Jul. 14, 1987, Ser. No. 73,213
Claims priority, application Australia, Sep. 19, 1986, PH08127
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—316 **22 Claims**

1. An electron spin resonance spectrometer for analyzing and determining at least one property of a sample, said spectrometer comprising a microwave source for providing microwave radiation to a sample arm and to a reference arm, said sample arm having a first circulator for directing the radiation to a resonator in which the sample for analysis is deposited and for receiving the radiation from said resonator and directing the radiation to a detector, said detector detecting the radiation



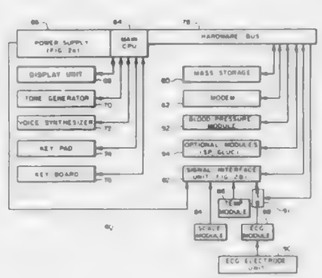
from said sample arm and said reference arm to determine the property or properties of the sample, said sample arm and said reference arm being formed as an integrated microwave bridge.

4,803,625

PERSONAL HEALTH MONITOR

Ping W. Fu, Des Plaines, and Thomas J. Manning, Chicago, both of Ill., assignors to Buddy Systems, Inc., Northbrook, Ill.

Filed Jun. 30, 1986, Ser. No. 879,900
Int. Cl.[4] G06F *15/42*
U.S. Cl. 364—413.03 **30 Claims**



1. A personal health monitor comprising:

means for determining a plurality of health parameters, each indicative of the physical condition of a patient;

means for prompting the patient with selected messages;

means for storing a prescribed parameter schedule for selected ones of the health parameters;

means for storing a prescribed medication schedule for at least one medication;

first means for automatically controlling the prompting means to request the patient to use the determining means to determine selected ones of the health parameters in accordance with the prescribed parameter schedule and for automatically storing the determined health parameters in a composite log;

second means for automatically controlling the prompting means to request the patient to take medication in accordance with the prescribed medication schedule;

means for automatically recording in the composite log information indicative of patient compliance with the prescribed medication schedule; and

means for automatically transmitting the composite log to a central location for analysis by trained medical personnel;

said composite log providing information indicative of both the determined health parameters and patient compliance with the prescribed medication schedule at the central location, thereby assisting the trained medical personnel in assessing the health of the patient.

7. A personal health monitor adapted to be powered by an alternating circuit power source, said monitor comprising:

means for collecting information indicative of the physical condition of a patient;

means for recording the collected information; and

means for supplying a DC supply voltage to power the collecting means and the recording means, said supplying means comprising:

a rechargeable battery connected to the collecting means and the recording means;

a battery charger adapted for connection to the alternating circuit power source and comprising means for supplying a charging current to the battery;

a switch positioned to interrupt the flow of charging current from the battery charger to the battery and switchable between a first state, in which the switch isolates the battery from the charging circuit, and a second state, in which the switch allows the charging current to flow to the battery;

first means for automatically placing the switch in the first state during at least selected periods of interaction between the patient and the collecting means; and

second means for automatically placing the switch in the second state during at least selected periods characterized by an absence of interaction between the patient and the collecting means.

16. A personal health monitor comprising:

first means for automatically collecting a first set of data indicative of a first set of parameters indicative of the physical condition of a patient;

second means for automatically comparing the first set of data with a set of test criteria and for indicating when the first set of data fails to meet the test criteria;

third means for automatically collecting a second set of additional data from the patient only when the first set of data fails to meet the test criteria, said second set of additional data indicative of at least one additional parameter, not included in the first set of parameters, selected to provide additional diagnostic information useful in interpreting the first set of data; and

fourth means for automatically transmitting the first and second sets of data to a central location for analysis by trained medical personnel;

wherein the first set of data comprises information indicative of at least one physical measurement of a parameter included in the first set of parameters and indicative of the physical condition of the patient;

wherein the second set of data comprises information indicative of at least one physical measurement of said additional parameter.

20. A person health monitor comprising:

means for automatically monitoring a plurality of parameters indicative of the physical condition of a patient, said plurality of parameters including at least first and second parameters selected such that the correlation between the first and second parameters is diagnostically significant;

means for storing information indicative of a selected range of normal values of the first parameter, said selected range of normal values varying in accordance with the second parameter such that the selected range of normal values when the second parameter has a first value is different from the selected range of normal values when the second parameter has a second value;

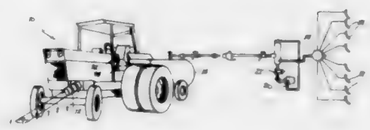
means for alerting a central station only when the first parameter is outside the selected range of normal values.

4,803,626

UNIVERSAL CONTROLLER FOR MATERIAL DISTRIBUTION DEVICE

Wesley J. Bachman, Auburn, and Steven G. Stone, Virden, both of Ill., assignors to Dickey-john Corporation, Auburn, Ill.

Filed Sep. 15, 1987, Ser. No. 97,451
Int. Cl.[4] G06F *15/50*
U.S. Cl. 364—424.07 **15 Claims**



1. A monitoring and control system for a mobile material distribution apparatus wherein the rate of material distribution per unit area varies as a predetermined function of the ground speed of the mobile apparatus and of the rate of operation of variable rate delivery means for delivering material at a controllable rate to material distribution means for distributing the material along the path of travel of the mobile apparatus; said system comprising: ground speed sensor means for developing a ground speed signal corresponding to the ground speed of the mobile apparatus and delivery rate sensor means for developing a delivery rate signal corresponding to a rate of delivery of material by said variable rate delivery means; monitoring and control circuit means responsive to said ground speed signal and to said delivery rate signal for developing a control signal for controlling the operation of said variable rate delivery means to achieve and maintain a desired rate of distribution of material along the path of travel of the mobile distribution apparatus, said monitoring and control circuit means further comprising processing means responsive to said ground speed and delivery rate signals for producing said control signals and for further producing display signals corresponding to associated functions and conditions of the mobile apparatus, and memory means for storing data and instructions for enabling said processing means to respond to delivery rate signals from each of a plurality of different types of delivery rate sensor means, means for identifying a particular type of delivery rate sensor means coupled with said control and monitoring circuit means; and said processing means being responsive to said sensor identifying means for selecting from said memory means data and instructions for enabling response to the delivery rate sensor means identified thereby.

4,803,627

SYSTEM FOR VEHICLE BODY ROLL CONTROL DETECTING AND COMPENSATING STEERING OPPOSITELY TO VEHICLE TURNING DIRECTION

Osamu Yasuike; Yasuji Arai; Hiroyuki Ikemoto; Nobutaka Owa, all of Toyota, and Shunichi Doi, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 24, 1987, Ser. No. 17,592
Claims priority, application Japan, Feb. 25, 1986, 61-039551
Int. Cl.[4] B60G *21/06*
U.S. Cl. 364—424.05 **9 Claims**

1. For a vehicle comprising a body and a plurality of wheels upon which said vehicle runs, a vehicle roll control system of vehicle height adjustment type, comprising:

a plurality of actuator assemblies, each corresponding to one of said vehicle wheels and resiliently suspending a corresponding said vehicle wheel from the vehicle body, each one of said actuator assemblies being adapted to increase or decrease vehicle height at a location corresponding to said corresponding vehicle wheel in accordance with signals supplied thereto;

a plurality of control means, each corresponding to one of

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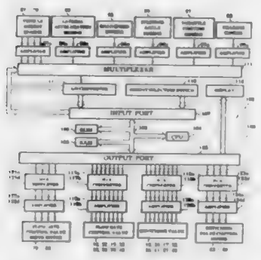
said actuator assemblies and serving to supply said control signals to said corresponding actuator assembly;

a vehicle speed detecting means for sensing a road speed of the vehicle;

a steering angle detecting means for sensing a steering angle of the vehicle;

a lateral acceleration detecting means for detecting a lateral acceleration of said vehicle body; and

a means for computing and control adapted to predictingly compute the roll angle of the vehicle body based upon the vehicle speed sensed by said vehicle speed detecting means and the steering angle sensed by said steering angle



detecting means and to control said plurality of actuator assemblies, via said plurality of control means, in accordance with said computed roll angle, so as to keep the rolling of said vehicle body within a determinate range; said computing and control means including means to compare a direction of the vehicle steering as detected by said steering angle detecting means with a direction of the lateral acceleration of said vehicle body as detected by said lateral acceleration detecting means, and not to effect said controlling of said plurality of actuator assemblies via said plurality of control means, when said direction of the vehicle steering is opposite to said direction of the lateral acceleration of said vehicle body.

4,803,628

METHOD AND APPARATUS FOR CONTROLLING ELECTRO-MAGNETIC PARTICLE CLUTCH

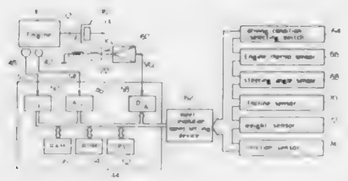
Takashi Hayashi; Setsuo Tokoro; Tomoyuki Watanabe, all of Susono, and Takashi Shigematsu, Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 31, 1986, Ser. No. 891,317

Claims priority, application Japan, Aug. 2, 1985, 171665/85

Int. Cl.⁴ F16H *5/66;* **B60K** *20/02*

U.S. Cl. 364—424.1 **53 Claims**



1. An apparatus for controlling an electromagnetic particle clutch in a vehicle comprising:

a first detecting means for detecting a throttle opening and for outputting a first detected signal;

a memory means for memorizing seven relationships;

a second detecting means for detecting an actual engine revolution speed and for outputting a second detected signal;

processor means comprising first, second, third and fourth calculating means, and first, second and third determining means;

said first calculating means for receiving the first and second detected signals and for calculating an engine torque utilizing a first of said seven relationships which uses the detected actual engine revolution speed and the detected throttle opening as parameters, the first calculating means outputting a first calculated signal;

said second calculating means for receiving the first detected signal and for calculating a tentative revolution speed utilizing a second of said seven relationships which uses the detected throttle opening as a parameter, the second calculating means outputting a second calculated signal;

a third detecting means comprising at least one detecting means for detecting at least one condition in which the vehicle begins moving and for outputting at least one of a plurality of third detected signals;

said first determining means for receiving at least said third detected signal and for determining a total compensation value utilizing a plurality of third of said seven relationships, said plurality of third relationships using at least said third detected signal as a parameter, the first determining means outputting a first determined signal;

said third calculating means for receiving said second calculated signal and said first determined signal and for calculating a desired revolution speed utilizing a fourth of said seven relationships, said fourth relationship using said calculated tentative revolution speed and said determined total compensation value as parameters, said third calculating means outputting a third calculated signal;

said fourth calculating means for receiving the first detected signal, and for calculating a feed back gain utilizing a fifth of said seven relationships which uses the detected throttle opening as a parameter, the fourth calculating means outputting a fourth calculated signal;

said second determining means for receiving the first, third and fourth calculated signals and the second detected signal, and for determining an optimum torque utilizing the sixth of said seven relationships which uses the calculated engine torque, the detected actual engine revolution speed, the calculated feed back gain and the calculated desired revolution speed as parameters, the second determining means outputting the second determined signal;

said third determining means for receiving the second determined signal and for determining a control voltage utilizing a seventh of said seven relationships which uses at least the determined optimum torque as a parameter, the third determining means outputting the third determined signal; and

a controlling means for receiving the third determined signal and for controlling electric current supplied to a magnetizing coil of the electro-magnetic particle clutch corresponding to the determined control voltage, whereby a torque transmitted from an engine to a transmission means by said electro-magnetic particle clutch is controlled utilizing at least one of the detected various conditions.

4,803,629

POWER STEERING APPARATUS AND CONTROL SYSTEM FOR POWER STEERING APPARATUS HAVING A STEERING WHEEL ANGLE DETECTION DEVICE

Yasuo Noto, Katsuta, and Nobuo Sugiura, Mito, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 7, 1987, Ser. No. 1,325

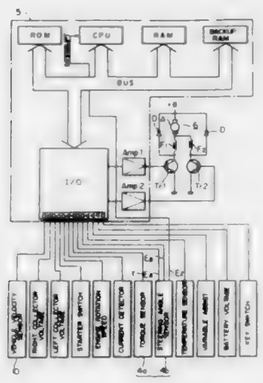
Claims priority, application Japan, Jan. 8, 1986, 61-644

Int. Cl.⁴ B62D *50/06*

U.S. Cl. 364—424.05 **12 Claims**

1. A control system for a power steering apparatus including a steering angle sensor means for detecting each revolution of a steering wheel from a predetermined datum including at said datum and to produce an output signal indicative thereof, said steering angle sensor means also being for detecting discrete angular positions of said steering wheel during each revolution

thereof and to produce a signal indicative of each said angular position; a counter means for counting the signals indicative of each angular position; vehicle velocity determination means; resetting means for said counter means, whereby said resetting means reset the counter means when the vehicle velocity



determination means indicates a velocity above a predetermined value and said steering angle sensor produces an output signal indicative of said predetermined datum; and control means for effecting power steering control by utilising the count of said counter means as a parameter.

4,803,630

VEHICLE HEIGHT CONTROL SYSTEM

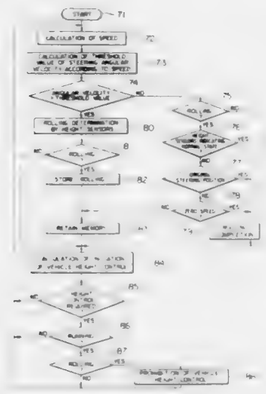
Shozo Takizawa; Mitsunori Maruyama; Minoru Tatemoto, all of Okazaki, and Shigeki Obtagaki, Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 766,955, Aug. 19, 1985, abandoned. This application May 3, 1988, Ser. No. 195,475

Claims priority, application Japan, Aug. 28, 1984, 59-178754

Int. Cl.⁴ B60G *17/00*

U.S. Cl. 364—424.05 **7 Claims**



1. A vehicle height control system on a vehicle having a body supported on front and rear wheels by a suspension means, said control system including:

vehicle body height sensors associated with said front and rear wheels detecting and producing outputs representing height of the vehicle body on both sides of the vehicle with respect to the vehicle wheels,

a steering angle sensor detecting and producing an output representing steering angle of a steering wheel of the vehicle,

a vehicle speed sensor detecting and producing an output representing speed of the vehicle wheels, and

a control unit connected to operate said suspension means to adjust the height of said vehicle body to maintain a reference level based upon the outputs of said front and rear wheel body height sensors,

said control unit comprising first means for determining whether the vehicle is turning and in a rolling state,

said first means including means for determining vehicle speed based on the output of said vehicle speed sensor, for determining steering angular velocity based on the output of said steering angle sensor, and for detecting a rolling state of the vehicle based on:

(1) that the vehicle speed is not zero,

(2) a threshold value of steering angular velocity according to vehicle speed, and

(3) comparing the outputs of said vehicle body height sensors to determine, based on the pattern of their outputs, an amount of side-to-side inclination of the vehicle body indicating the rolling state, and

second means for inhibiting said control unit from operating said suspension means to adjust the height of the vehicle body when the vehicle is turning and in the rolling state as determined by said first means.

4,803,631

DOPPLER-ADAPTIVE FILTER FOR NON-ZERO MEAN DROPOUT NOISE

Anthony K. Newman, Woburn, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sep. 25, 1987, Ser. No. 101,091

Int. Cl.⁴ G06F *15/20;* **G06G** *7/78, 7/34;* **G01S** *13/08*

U.S. Cl. 364—462 **2 Claims**



1. A method for computing the trajectory of a first object moving relative to a second object, the first object carrying a transmitter and the second object carrying at least four receivers disposed to form a multi-static receiving system for signals from the transmitter, said method comprising steps, repeated until the difference between successively estimated trajectories is less than a predetermined difference, as follows:

(a) storing in a storage means representations of the signals received at each one of the at least four receivers;

(b) estimating the trajectory of the first object relative to the second object which could have produced the received signals;

(c) filtering the stored representations of the received signals using a filter adapted to pass signals such as would be received at each of the at least four receivers from an object carrying a transmitter and moving relative to the second object along the trajectory estimated in step (b);

(d) estimating the trajectory of the first object relative to the second object which could have produced the received signals as filtered in step (c), said estimation comprising the steps of:

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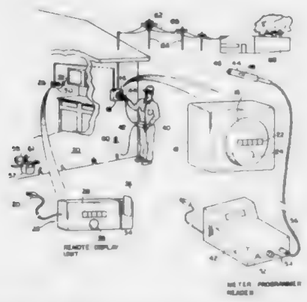
(i) deriving, from the received signals in each one of the at least four receivers, corresponding signals indicative of the Doppler shift frequency of each one of the received signals;
(ii) integrating each one of the corresponding signals to produce position signals;
(iii) combining the position signals in pairs to form a first plurality of matrix equations;
(iv) independently processing each one of the matrix equations in the first plurality thereof to produce solutions for such equations;
(v) forming, from the solutions found in step (iv), a second matrix wherein the terms correspond to the coefficients of the Taylor series describing an estimate of the trajectory of the first body relative to the second body; and
(vi) solving the second matrix to derive the coefficients of the Taylor series describing the trajectory of the first body relative to the second body; and
(e) repeating steps (c) and (d) until the difference between successively produced estimates of the trajectory of the first object relative to the second object is less than a predetermined value.

4,803,632

INTELLIGENT UTILITY METER SYSTEM

Larry H. Frew, Simi Valley, and Melvin L. Fuller, Ventura, both of Calif., assignors to Utility Systems Corporation, Tarzana, Calif.

Filed May 9, 1986, Ser. No. 861,560
Int. Cl.[4] G01R *21/133*; G06F *15/20*
U.S. Cl. 364—464.04 **12 Claims**



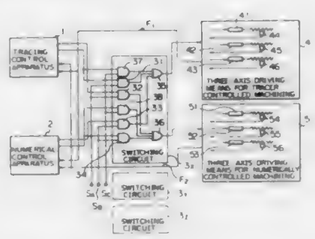
7. An intelligent utility meter system installation for measuring A.C. electric energy having repetitive A.C. cycles, comprising:
(1) an "outside" principal meter unit including:
(a) means for sampling current and voltage and for calculating power consumption at least 300 times per second; said sampling occurring asynchronously and not in any fixed timed relationship with respect to the A.C. electricity cycles;
(b) said outside unit further including means for determining the total kilowatt hours used, and the present billing status; and
(c) alphanumeric display means for displaying power being used, total kilowatt hours and present billing status;
(2) a remote "inside" unit including:
(a) alphanumeric means for displaying the information displayed by said "outside" unit;
(b) means for selectively retaining a desired continuously updated display; and
(c) means for reading a credit card and automatically changing the billing status information within the intelligent utility meter as credit card information is read; and
(3) said system including means for determining both the magnitude and direction of the electric power passing through said meter system.

4,803,633

MACHINE TOOL FOR TRACER CONTROLLED MACHINERY AND NUMERICAL CONTROLLED MACHINERY

Hajime Kishi; Mitsuo Matsui, and Hitoshi Arasaki, all of Tokyo, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Continuation of Ser. No. 793,070, filed as PCT JP85/00073 on Feb. 20, 1985, published as WO85/03667 on Aug. 29, 1985, abandoned. This application Nov. 23, 1987, Ser. No. 129,374
Claims priority, application Japan, Feb. 20, 1984, 59-28803
Int. Cl.[4] B28Q *15/00, 35/12*
U.S. Cl. 364—474.03 **6 Claims**



1. A machine tool control system for tracer controlled machining and numerically controlled machining comprising:
a tracing control means for delivering a control instruction based on an externally generated input for tracer controlled machining;
a numerical control means for delivering a control instruction based on an externally generated input for numerically controlled machining;
three-axis driving means for tracer controlled machining for driving X, Y, and Z axis motions of tracer controlled operation and for detecting positions in X, Y, and Z axis directions;
three-axis driving means for numerically controlled machining for driving X, Y, and Z axis motions of numerically controlled operation and for detecting positions in X, Y, and Z axis directions, signals of the detection of positions in X, Y, and Z directions from said three-axis driving means for tracer controlled machining and said three-axis driving means for numerically controlled machining being fed back to said tracing control means and said numerical control means;
a plurality of switching circuits each of which has a logic gate circuit means for receiving instructions from said tracing control means and said numerical control means, and three kinds of operation selection signals through an array of input side gate circuits having groups of three logic gate circuits and delivering two kinds of output signals through an array of output side gate circuits to be supplied to said three-axis driving means for tracer controlled machining and said three-axis driving means for numerically controlled machining, wherein the outputs of said tracing control means and said numerical control means are connected to first input terminals of said array of input side gate circuits; and
operation selection inputting means having first, second, and third terminals receiving externally generated operation selection signals corresponding to a tracer controlled operation, a numerically controlled operation, and a tracer and numerically controlled operation, wherein said first, second and third terminals are connected to second input terminals of said array of input side gate circuits;

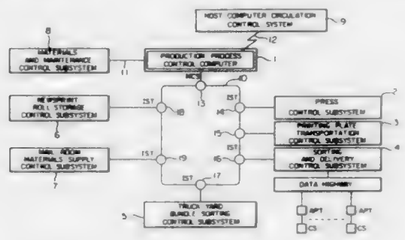
instructions from said tracing control means and said numerical control means being supplied to said first input terminals of said array of input side gate circuits in said switching circuits;
signals from said terminals of said operation selection inputting means being supplied to said second input terminals of said array of input side gate circuits in said switching circuits, such that
(a) when the first terminal in said operation selection inputting means is selected, both of said three-axis driving means for tracer controlled machining and for numerically controlled machining are controlled by the control instruction from said tracing control means,
(b) when the second terminal in said operation selection inputting means is selected, both of said three-axis driving means for tracer controlled machining and for numerically controlled machining are controlled by the control instruction from said numerical control means, and
(c) when the third terminal in said operation selection inputting means is selected, the three-axis driving means for tracer controlled machining is controlled by the control instruction from said tracing control means and the three-axis driving means for numerically controlled machining is controlled by the control instruction from said numerical control means, concurrently, respectively and independently, said positions being continuously monitored even when switching between one of said first, second, and third terminals.

4,803,634

PRODUCTION PROCESS CONTROL SYSTEM IN NEWSPAPER PRINTING

Kiniehiro Ohno, Tokyo, and Tomoshi Kawata, Yokohama, both of Japan, assignors to Tokyo Kikai Seisakusho, Ltd., Japan

Filed Sep. 12, 1986, Ser. No. 907,305
Claims priority, application Japan, Sep. 12, 1985, 60-202383
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—478 **7 Claims**



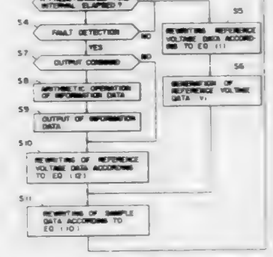
1. A production process control system for a news printing system using rotary presses comprising:
(a) a press control subsystem means for controlling the presses;
(b) a subsystem means for controlling sorting and delivery;
(c) at least one of:
(i) a subsystem means for controlling printing plate transportation,
(ii) a subsystem means for controlling newsprint storage,
(iii) a subsystem means for controlling mailroom materials supply, and
(iv) a subsystem means for controlling truck yard bundle sorting,
(d) a production process control subsystem means for supervising and controlling each said subsystem means;
(e) each subsystem means comprising a station and each station comprising an intelligent input/output processor unit;
(f) a ring-like data highway means for connecting each station to the other stations;
(g) a circulation control subsystem means for controlling newspaper sales business processing; and
(h) connecting means for connecting the circulation process control subsystem means directly to the production process control subsystem means.

4,803,635

INFORMATION DATA OUTPUT DEVICE FOR ELECTRIC-POWER SYSTEMS

Fumio Andow, Hachioji, Japan, assignor to Kabushi Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 6, 1986, Ser. No. 927,382
Claims priority, application Japan, Nov. 7, 1985, 60-247959
Int. Cl.[4] G06F *15/56*; G01R *19/00*
U.S. Cl. 364—483 **12 Claims**



1. A method for obtaining information data in the form of a digital data obtained from an electric power system through detection of a fault in the system, comprising the steps of:
initiating an operation of fault detection;
judging whether or not a predetermined time has passed since initiating the operation of fault detection;
sampling data from said electric power system a predetermined number of times for each cycle of an electric quantity of said electric power system so as to produce sampled data successively;
rewriting a reference voltage data by another reference voltage data produced from the sampled data until said predetermined time has passed;
detecting a fault from the sampled data when said predetermined time has passed;
judging whether or not an output command exists when the fault is detected;
computing information data according to a predetermined formula when the output command exists,
outputting the result obtained by computation according to the output command;
rewriting the reference voltage data by another reference voltage data produced from the sampled data;
rewriting the sampled data by a new sampled value; and
repeating the steps above-mentioned in sequence.

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4,803,636

CIRCUIT TRANSLATOR

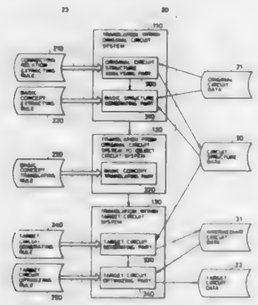
Tamotsu Nishiyama, Hirakata; Toshinori Watanabe, Sagamihara; Noboru Horie, Takasaki; Makoto Furihata, Gunma; Yasuo Kominami, Takasaki, and Fumihiko Mori, Yokohama, all of Japan, assignors to Hitachi Ltd. and Hitachi Micro Computer Eng. Ltd., both of Tokyo, Japan

Filed Sep. 25, 1986, Ser. No. 911,324

Claims priority, application Japan, Sep. 27, 1985, 60-213964

Int. Cl.[4] G06F *7/00, 15/60*

U.S. Cl. 364—491 **11 Claims**



1. A circuit translator for translating an original circuit constituted by a set of first elements into a logically equivalent target circuit constituted by a set of second elements, comprising:

a first memory section which stores translation rules for translating in the set of said first elements;

a second memory section which stores translation rules for translation in the set of said second elements;

a third memory section which stores translation rules for translation of the set of said first elements into the set of said second elements and

translation means which permits translation rules automatically selected from said first memory section to act upon original circuit data to translate the data into first intermediate data, which permits translation rules automatically selected from said third memory section to act upon said first intermediate data to translate the data into second intermediate data, and which permits translation rules automatically selected from said second memory section to act upon said second intermediate data to translate the data into target circuit data.

4,803,637

CRUISE CONTROL SYSTEM FOR A VEHICLE

Tetsuya Tada; Masumi Nagaoka; Hiroaki Tabuchi, all of Toyota, and Tatsuo Teratani, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 6, 1987, Ser. No. 70,188

Claims priority, application Japan, Jul. 17, 1986, 61-166803; Jan. 31, 1987, 62-19641

Int. Cl.[4] B60K *31/00*

U.S. Cl. 364—426.04 **6 Claims**

1. A cruise control system for a vehicle having an internal combustion engine, an engine output control member, and an accelerator pedal connected to said engine output control member for operating said engine output control member in accordance with a requirement by an operator, said system comprising:

actuator means connected to said engine output control member for controlling engine output without operation of said accelerator pedal by an operator;

first detecting means for detecting an actual vehicle speed;

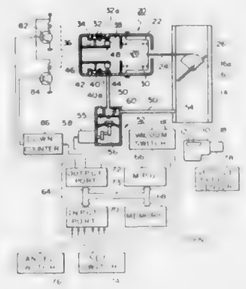
target value setting means for setting a target vehicle speed to be maintained by said cruise control system;

second detecting means for detecting commencement of a cruise control mode of operation;

electric signal forming means for forming electric signals for operating the actuator means and thereby controlling engine output and vehicle speed;

timer means for detecting first and second predetermined time lapses after detection of commencement of the cruise control mode of operation by said second detecting means;

first control means for controlling said electric signal forming means, prior to detection of said first predetermined time lapse by said timer means, so as to form a fixed level



electric signal for quickly moving the actuator means to prevent a temporary decrease of the vehicle speed;

second control means for calculating feedback factors based upon deviations between the actual vehicle speed detected by said first detecting means and the target vehicle speed set by said target value setting means, and for controlling said electric signal forming means, after detection of said first predetermined time lapse by said timer means, so as to form electric signals which are modified by said feedback factors; and

feedback gain control means for controlling gain of said feedback factors so that a value of said gain deceases after detection of said second predetermined time lapse by said timer means, whereby a quick and stable feedback control is realized.

4,803,638

ULTRASONIC SIGNAL PROCESSING SYSTEM INCLUDING A FLAW GATE

Lawrence D. Nottingham, Charlotte, N.C.; Thomas E. Michaels, and Jennifer E. Michaels, both of Freeville, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 26, 1986, Ser. No. 878,817

Int. Cl.[4] G01N *29/04*

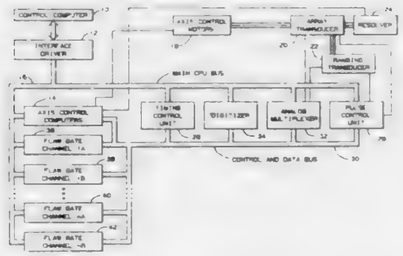
U.S. Cl. 364—507 **13 Claims**

1. An ultrasonic signal processing system for an ultrasonic transducer, comprising:

transducer control and signal digitizing means for controlling transmit signal production, digitizing reflection signals and indicating transducer position; and

flaw indication processing means for storing the digitized reflection signals as a reflection waveform, comparing the reflection waveform to a threshold waveform, producing

and storing flaw indications when the reflection waveform exceeds the threshold waveform, and storing the



transducer position in association with the flaw indications.

4,803,639

X-RAY INSPECTION SYSTEM

Douglas S. Steele; Larry C. Howington, both of West Chester; James W. Schuler, Oxford; Joseph J. Sostarich, Fairfield; Charles R. Wojciechowski, West Chester; Theodore W. Sippel, Cincinnati; Joseph M. Portaz, Hamilton; Ralph G. Isaacs, Cincinnati, all of Ohio; Henry J. Scudder, III, Medford; Thomas G. Kincaid, Lexington, both of Mass.; Kristina H. V. Hedengren, Schenectady, N.Y.; Rudolph A. A. Koegl, Niskayuna, N.Y.; John P. Keaveney, Schenectady, N.Y.; Joseph Czechowski, III, Clifton Park, N.Y.; John R. Breham, Cincinnati, Ohio; James M. Brown, Jr., Albany, N.Y.; David W. Oliver, Schenectady, N.Y.; George E. Williams, Schenectady, N.Y., and Richard D. Miller, Schenectady, N.Y., assignors to General Electric Company, Cincinnati, Ohio

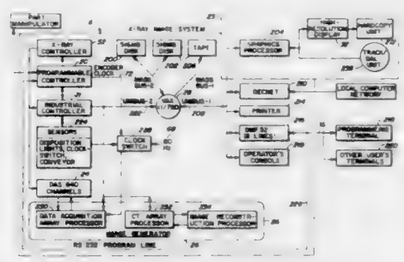
Filed Feb. 25, 1986, Ser. No. 832,511

Int. Cl.[4] G06F *15/20;* **G01N** *23/02*

U.S. Cl. 364—507 **18 Claims**

MICROFICHE APPENDIX INCLUDED

(81 Microfiche, 4703 Pages)



9. A computer based system for non-destructive measuring and testing of a manufactured part by X-ray analysis comprising:

a loading station for loading a part into a part holding mechanism, said mechanism being adapted to hold the part in a predetermined orientation;

conveyor means for transporting the part from the loading station to an inspection station;

an X-ray source for generating a high intensity X-ray radiation beam;

a linear array X-ray detector for converting received X-ray radiation into electrical signals representative thereof;

means in said inspection station for grasping said part holding mechanism and for positioning the part in an X-ray radiation path between the X-ray source and the X-ray detector;

means coupled to said grasping means for effecting relative motion between the part and said X-ray radiation beam; and

means for converting said electrical signals to data suitable for two dimensional representation such that the part can be measured and defects recognized from the representation.

4,803,640

CONTROL ARRANGEMENT FOR AN INDUSTRIAL ROBOT

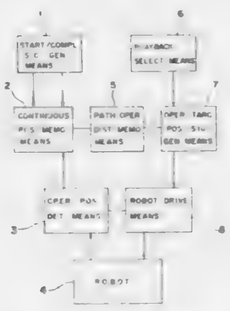
Takashi Mitomi, Higashiosaka, and Hitoshi Kubota, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 11, 1987, Ser. No. 48,631

Claims priority, application Japan, May 12, 1986, 61-107902

Int. Cl.[4] G06F *15/46;* **G05B** *19/42*

U.S. Cl. 364—513 **10 Claims**



1. A control arrangement for an industrial robot, which comprises a continuous position memory means which detects and stores operating positions of the industrial robot moved per each predetermined period of time, after detecting and storing an operation starting position of the industrial robot, a start/completion signal generating means which generates an operation starting signal and an operation completion signal of said continuous position memory means based on instructions by an operator, a path operating distance memory means which obtains for storing, the operating distances of the industrial robot on the taught path from said operation starting position to the respective operating positions as stored in said continuous position memory means, an operation target position signal generating means which generates an operation target position signal through calculation of the operation target position of the industrial robot per each predetermined period of time, according to the operating speed as designated, by interpolating respective rotational and orthogonal components of the operating positions on the path memorized during the teaching by the operating distance from the starting position, and means for driving the industrial robot according to said operation target position signal thus generated.

4,803,641

BASIC EXPERT SYSTEM TOOL

Steven Hardy, Palo Alto, and Robert H. Joyce, San Jose, both of Calif., assignors to Teknowledge, Inc., Palo Alto, Calif.

Continuation of Ser. No. 20,327, Feb. 19, 1987, abandoned, which is a continuation of Ser. No. 617,791, Jun. 6, 1984, Pat. No. 4,648,044. This application Nov. 25, 1987, Ser. No. 125,714

Int. Cl.[4] G06F *15/18*

U.S. Cl. 364—513 **19 Claims**

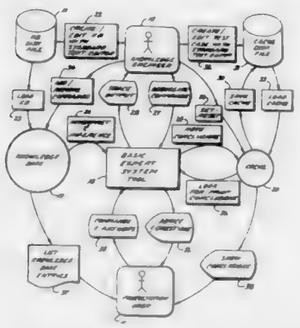
6. A knowledge system comprising a computer having a memory, said memory storing a knowledge base including

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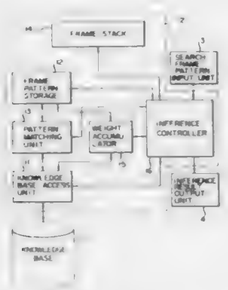
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expressions and knowledge for determining values for said expressions, said memory including a cache porton for storing certain ones of said expressions and corresponding determined values for the stored expressions, said memory also storing a control procedure executable by said computer for interpreting the knowledge base to determine values for said expressions, said control procedure including

means for recognizing the occurrence of an expression in the knowledge base, means for searching the cache to determine whether the recognized expression is stored in the cache, means for obtaining from the cache the corresponding value of the recognized expression when the recognized expession is in the cache, and means for applying the knowledge in the knowledge base to determine a corresponding value for the recognized expression when the recognized expression is not in the cache and then storing the recognized expression and its corresponding value in the cache.



4,803,642
INFERENCE SYSTEM
Tetsuro Muranaga, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 16, 1987, Ser. No. 74,029
Claims priority, application Japan, Jul. 21, 1986, 61-171081
Int. Cl.[4] G09B *7/12;* **G06F** *12/00, 7/00*
U.S. Cl. 364—513 **9 Claims**

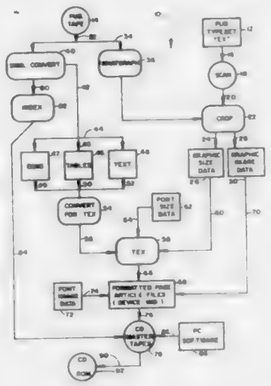


1. An inference system comprising:

a knowledge base storing knowledge about objects, each of said objects being described by a frame comprising plural sets of slot-value pairs which represent an attribute of the respective object or a relation between the respective object and another object and to which a weight indicating the semantic strength of said attribute or said relation is assigned; and,

an inference processing unit for receiving a search frame pattern, said inference processing unit accessing said knowledge base on the basis of the search frame pattern, and executing an inference process in accordance with a specified frame specified by the search frame pattern or specified by a frame of a generic concept whose slot-value pairs are inherited by said specified frame, and also in accordance with a priority defined by said weight, thereby to obtain the results of said inference process.

4,803,643
SYSTEM AND METHOD FOR CREATING MEMORY-RETAINED, FORMATTED PAGES OF TEXT, TABULATION, AND GRAPHIC DATA
Thomas B. Hickey, Columbus, Ohio, assignor to OCLC Online Computer Library Center Incorporated, Dublin, Ohio
Filed Aug. 10, 1987, Ser. No. 83,779
Int. Cl.[4] G06F *15/62*
U.S. Cl. 364—523 **45 Claims**



1. A system for converting visual illustrations on paper and associated magnetic media retained text and tabulation typesetting data of a printed publication of articles, into universally outputable digital data form retained in master memory, comprising:

graphics locator means for determining the insertion locations referenced within said text and tabulations typesetting data representing the positioning of said visual illustrations;

scanning means for converting said visual illustrations to digital graphic data;

means for generating graphic property data representing the graphics size characteristics of said digital graphic data;

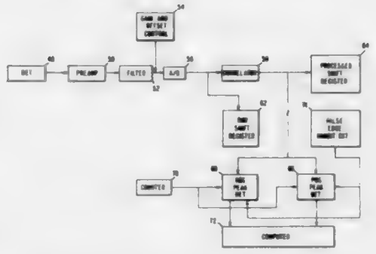
means for providing font size data for the text characters represented by said text typesetting data;

means for providing font image defining data;

formatting means responsive to said insertion location, said text typesetting data, said graphic property data and said font size data for generating device independent formatted page files; and

mastering means responsive to said digital graphic data, said device independent formatted page files, and said font image defining data for deriving said universally outputable digital data retained within said master memory.

4,803,644
ALIGNMENT MARK DETECTOR FOR ELECTRON BEAM LITHOGRAPHY
James F. Frazier, Pacific Palisade; Oberdan W. Otto, Culver City, and John Paniecznik, Jr., Malibu, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Sep. 20, 1985, Ser. No. 778,572
Int. Cl.[4] G01B *15/00;* **G01N** *23/00*
U.S. Cl. 364—559 **15 Claims**



15. In a system for detecting a single alignment mark which has a pair of opposed edges that are traversed by a scanning electron beam in at least one scan, in which the backscattered electrons from the mark are detected to provide an indication of the surface topology over which the beam is scanned, the improvement comprising:

circuit means responsive to the detected backscattered electron signal during each scan for generating a multi-bit scanning signal which corresponds to the backscattered electron signal resulting from that scan,

means for providing a predetermined multi-bit reference signal representive of an expected backscattered electron beam traversing an edge of the single alignment mark,

a plurality of correlator banks corresponding in number to the number of reference signal bits, each bank including a plurality of paired multi-cell scanning and reference signal shift registers corresponding in number to the number of bits in the scanning signal,

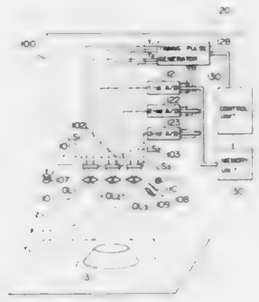
means for providing the bits of the multi-bit scanning signal to respective scanning shift registers within each correlator bank,

means for providing the individual bits of the reference signal to each reference signal shift register within respective correlator banks,

means for cross-multiplying the scanning signal held in each scanning shift register by the reference signal held in the corresponding reference shift register during each scan, accumulating and weighting the results in accordance with the significance of the scanning signal bit for each pair and the reference signal bit for each bank, to produce a weighted correlation output signal which is updated as scanning proceeds, and

means for detecting the locations of the maximum and negative peak correlation values, said means for detecting comprising, for each peak, a scan location counter that locates the scanning signal with respect to the surface being scanned, a location storage means, means for applying a location signal from the scan location counter to the location storage means, a correlation storage means, means for applying a correlation signal from the comparing means to the correlation storage means, a comparator connected to compare the correlation signal with the signal sotred in the correlation storage means, the comparator connected to cause the location storage means and correlation storage means to load in their respective applied location and correlation signals when the correlation signal exceeds a level determined by the signal stored in the correlation storage means, and means for resetting the location storage means and correlation storage means for each successive scan, whereby after each scan the correlation storage means is storing the maximum signal correlation during the scan, and the location storage means is storing the location at which the maximum correlation occurred.

4,803,645
METHOD AND APPARATUS FOR MEASURING COORDINATES
Fumio Ohtsuno, Asaka, and Hitoshi Otani, Tokyo, both of Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 18, 1986, Ser. No. 909,254
Claims priority, application Japan, Sep. 19, 1985, 60-207676
Int. Cl.[4] G01B *11/14;* **G01C** *11/12;* **G06F** *15/20*
U.S. Cl. 364—560 **7 Claims**



1. Apparatus for measuring the coordinates of a point on a three-dimensional object, said apparatus comprising:

detection means for viewing said object from at least three different directions and deriving three uniquely different kids of image information representative of a point on said object respectively designated first, second and third image information;

correlation means coupled to said detection means including means for setting said second image information as a measured reference point, means for deriving a correlation between said first image information and said second image information for producing information defining a first corresponding point correspondent to said measured reference point, and means for deriving a correlation between said second image information and said third image information for producing information defining a second correspondent point corresponding to said measured reference point;

computation means for computing a first signal representing first coordinates of said point from information defining said measured reference point and said first corresponding point, and for computing a second signal representing second coordinates of said point from information defining said measured reference point and said second corresponding point; and

decision circuit means connected to receive said first and second signals respectively representing said first and second coordinates for determining whether or not said first and second coordinates are substantially in coincidence with each other and for indicating a mismatch when they are not substantially coincident.

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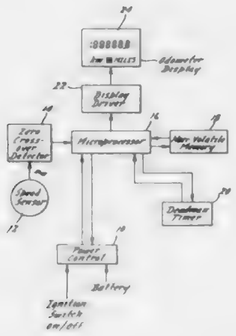
ELECTRONIC ODOMETER

Michael J. Burke, Detroit; Richard A. Pidsosny, Canton, and Gerald J. Lehner, Westland, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 656,626, Oct. 1, 1984, Pat. No. 4,710,888. This application Aug. 26, 1987, Ser. No. 89,466

Int. Cl.[4] **G01C** *22/00*

U.S. Cl. 364—561 **6 Claims**



1. An electronic odometer for an automotive vehicle comprising:

sensor means on said vehicle for detecting movement of said vehicle and providing an output signal indicative of predetermined portions of distance traveled;

computer means connected to said sensor means for accumulating said output signals from said sensor means into predetermined increments of distance and outputting an odometer data value as the summation of all increments of distance said vehicle has traveled;

memory means, connected to said computer means, having a plurality of non-volatile and individually addressable locations each one having the capacity for storing an odometer data value corresponding to a summation of all predetermined increments of distance traveled by said vehicle along with predetermined parity codes; and

means connected to said computer means for displaying the odometer data value for visual observation within said vehicle,

said computer means programmed to read the most recently written parity correct odometer data value stored in one of the separately addressable locations of said non-volatile memory means as a base value, to accumulate data values from said sensor means output signal until each time an accumulated data value equals a predetermined increment of distance value to accumulate the occurrences of said accumulated data values equaling said predetermined increment of distance value, to sum the value of said accumulated increment occurrences and the base value read from said non-volatile memory means as the newest odometer data value, to write said newest odometer data value and a predetermined parity code to one of the individually addressable locations of said non-volatile memory means having an address that is different from that of the location containing the most recently stored odometer data value, whenever said newest odometer data value exceeds said base value by a predetermined amount that is greater than said predetermined increment, and whenever said newest odometer data value exceeds the most recently written odometer data value by said predetermined amount.

4,803,647

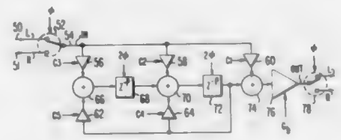
SAMPLED DATA AUDIO TONE CONTROL APPARATUS

Charles B. Dieterich, Kingston, N.J., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed May 30, 1986, Ser. No. 868,669

Int. Cl.[4] **G06F** *15/31*

U.S. Cl. 364—724.17 **3 Claims**



1. Tone control apparatus for processing sampled data audio signals, comprising:

a signal input terminal for applying said sampled data audio signals;

a cascade connection of alternating combining means and delay elements wherein each delay element is coupled between two combining means, each of said combining means having at least two input terminals and an output terminal, each of said delay elements having an input terminal coupled to the output terminal of the immediately preceding combining means and an output terminal coupled to an input terminal of the immediately succeeding combining means of said cascade connection;

a first plurality of weighting circuits for weighting samples applied thereto by respective coefficient values, each of said weighting circuits having an input terminal coupled to said signal input terminal, having respective coefficient input terminals and having respective output terminals coupled to input terminals of respective combining means;

a second plurality of weighting circuits for weighting samples applied thereto by respective coefficient values, each of said weighting circuits of said second plurality having an input terminal connected at the output terminal of the lastmost delay element of said cascade connection, having respective coefficient input terminals, and having respective output terminals coupled to input terminals of the firstmost and respective intermediate ones of said combining means of said cascade connection;

a further weighting means having an input terminal coupled to the output terminal of the lastmost combining means of said cascade connection, having a coefficient input terminal and having an output terminal at which tone controlled audio signals is available;

coefficient providing means having user input controls, and programmed to provide predetermined sets of coefficient values responsive to user input stimuli; and

means for coupling said predetermined sets of coefficient values to the coefficient input terminals of said first and second pluralities and further weighting means.

4,803,648

ECHO CANCELLER USING AN ADAPTIVE FINITE IMPULSE RESPONSE FILTER

Rudolf F. I. Dierckx, Wilrijk; Daniel Sallaerts, Aarschot, and Pierre-Paul F. Guebels, Edegem, all of Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Jun. 27, 1985, Ser. No. 749,354

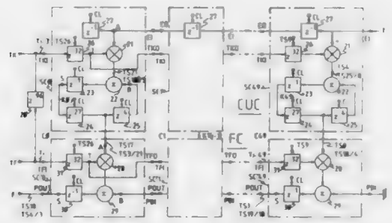
Claims priority, application European Pat. Off., Jul. 12, 1984, 84201049.8

Int. Cl.[4] **G06F** *15/31*

U.S. Cl. 364—724.19 **14 Claims**

1. Signal processing arrangement including at least one processing device with a series of interconnected processing cells (SC'0/49, SC0/49) which are each to calculate a same

function of the type p+mn of three periodic variables m, n and p which are applied to first (TFI, TKI), second (A) and third (B) inputs of said cells which further have a first output (TFO, TKO) connected to the firs tinput of a following cell considered in the direction from a first cell to a last cell and a second output (S) on which appears the result of a cell calculation, said variables m and n being input variable sand said variable p being the result of the calculation of said function p+mn in a previous cell, and corresponding variables m, n and p applied to said cells and provided by said cells being successively time shifted with respect to one another, characterized in that each of said cells (SC'0/49, SC0/49) includes calculation means (37, 36) which calculates said function in a bit serial way and provides an output bit in every time slot, with said variable m



(T_{i-k}) having a duration of q (32) time slots and said variable n ($K_{k,i}$, D^j) comprising a number of at most q bits each having a duration of one time slot, and that in each cell said first input (TFI, TKI) is connected to said first output (TFO, TKO) via a sample and hold circuit (310, 311; 260, 261) whose output is connected to an input (T0, T1) of said calculation means to supply said variable m thereat, the sample and hold circuits of said successive cells being controlled by respective ones of time shifted control signals (UPD0/49) which are successively delayed with respect to one another by one time slot when considered in a direction opposite to said first mentioned one, in such a way that the variables m supplied to said successive cells are mutually delayed by q−1 time slots when considered in said first mentioned direction.

4,803,649

MODULO-2-ADDER FOR THE LOGIC-LINKING OF THREE INPUT SIGNALS

Heinz-Peter Holzapfel, Munich, and Karlheinrich Horsinger, Eglharting, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 17, 1987, Ser. No. 26,736

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1986, 3610058

Int. Cl.[4] **G06F** *7/50*

U.S. Cl. 364—784 **16 Claims**

1. A modulo-2-adder for the logic linking of three input signals (A,B,C), comprising, in combination:

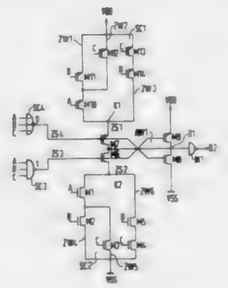
a first circuit component (SC1) having three circuit arms (ZW1, ZW2, ZW3) connected to receive said three input signals, each arm comprising two switching elements (M10, M11; M10, M12; M13, M14) which are arranged between a first fixed potential (VDD) and a first node (K1) and which apply an intermediate signal (ZS1), corresponding to the first binary value ("1"), to the first node when two input signals each assume the other binary value ("0");

first connecting means for connecting said input signals (A,B,C) individually to the switching elements of said first circuit component (SC1);

a second circuit component (SC2) have three circuit arms (ZW4, ZW5, ZW6) connected to receive said three input signals, each arm comprising two series-connected switching elements (M1, M2; M1, M3; M4, M5) which are arranged between a second fixed potential (VSS) and a second node (K2) and which apply an intermediate signal (ZS2), corresponding to the other binary value, to the second node when two input signals each assume the first binary value;

second connecting means for connecting said input signals (A,B,C) individually to the switching elements of said second circuit component (SC2);

a third circuit component (SC3) having three inputs for said three input signals for emitting a third intermediate signal (ZS3), corresponding to the other binary value, when all said input signals (A,B,C) assume the first binary value;



a fourth circuit component (SC4) having three inputs for said three input signals and which generates a fourth intermediate signal (ZS4), corresponding to the first binary value, when all said input signals assume the second binary value; and

an analysis circuit (AW) connected to said first, second, third and fourth circuit components, operative to switch through the first or second intermediate signals (ZS1, ZS2) to the output when the third intermediate signal (ZS3) assumes the first binary value and the fourth intermediate signal (jZS4) assumes the other binary value, but which otherwise switches through the third or fourth intermediate signal in inverted form to the output.

4,803,650

METHOD OF CONFIGURING AN N- TH DEGREE SWITCHED CAPACITOR FILTER

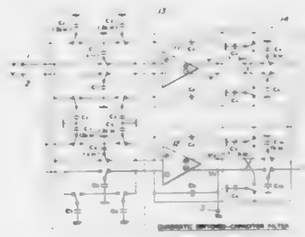
Toshimichi Nishimura, and Atsushi Kikuchi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 31, 1986, Ser. No. 846,192

Claims priority, application Japan, Apr. 8, 1985, 60-73892

Int. Cl.[4] **G06G** *7/02*

U.S. Cl. 364—825 **4 Claims**



1. A method of configuring an n-th degree switched capacitor filter circuit having transfer characteristics expressed by

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$$H(z) = \frac{a_n z^{-n} + a_{n-1} z^{-n+1} + \ldots + a_1 z^{-1} + a_0}{B_n z^{-n} + B_{n-1} z^{-n+1} + \ldots + B_1 z^{-1} + B_0} \quad (1)$$

where n is greater than 1, z is a variable, and a and B are coefficients, as any given n-th degree transfer function H(z), characterized in a step of expanding the above n-th degree transfer function H(z) in the form of an n-element linear simultaneous state equation of n state voltages V_1 to V_n inclusive of a last-stage output voltage as

$$\begin{bmatrix} V_1 \\ \cdot \\ \cdot \\ V_n \end{bmatrix} = \begin{bmatrix} a_{11}a_{12}z^{-1} \\ \cdot \\ \cdot \\ a_{n2}a_{n2}z^{-1} \end{bmatrix} \begin{bmatrix} V_I \\ \cdot \\ V_I \end{bmatrix} + \begin{bmatrix} b_{11}z^{-1} \ldots b_{1n}z^{-1} \\ \cdot \\ \cdot \\ b_{n1}z^{-1} \ldots b_{nn}z^{-1} \end{bmatrix} \begin{bmatrix} V_1 \\ \cdot \\ \cdot \\ V_n \end{bmatrix} \quad (2)$$

where V_I denotes an input voltage, z is the variable, and a and b are coefficients calculated from the transformation of equation (1) to the linear simultaneous state equation (2) with respect to inner state voltages V_1 to V_n of the filter circuit; and a step of configuring selected circuit components of a filter circuit to correspond practically to each of the coefficients a_{11} to b_{nn} determined in a solution to the n-element linear simultaneous state equation (2) above.

4,803,651

METHOD FOR ENCODING AND DECODING ACYCLIC, LINKED-LIST DATA STRUCTURES FOR EFFICIENT STORAGE, RETRIEVAL AND SEARCHING

Jan T. Galkowski, Endicott, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Filed Feb. 10, 1986, Ser. No. 827,690
Int. Cl.[4] G06F *9/40, 15/40, 12/08*
U.S. Cl. 364—900 **14 Claims**



11. A method of incorporating spatial information into machine readable hierarchical information to enable said hierarchical information to be efficiently machine searched against target hierarchical information with respect to string equality, spatial equality or overall equality, said method comprising the steps of:

(a) storing said machine readable hierarchical information in a form which includes information identifying a distance between an initial character on the line and an reference line,

(b) scanning said stored hierarchical information to add a pair of spatial characters thereto, one or more of a first spatial character inserted prior to an initial character on a line and one or more of a second spatial character inserted after a line ending, said spatial characters explicitly representing spatial information,

(c) scanning the result of step (b) to produce a pair of byproduct strings, a first byproduct string comprising four distinct symbols, each instance of a first symbol representing a different instance of said first spatial character, each instance of a second symbol representing a different instance of said second spatial character, each instance of a third symbol representing a different instance of a contiguous string in said hierarchical information and each instance of a fourth symbol representing each different string of blanks in said hierarchical information, and a second byproduct string comprising a sequence of the non-blank strings in said hierarchical information, and

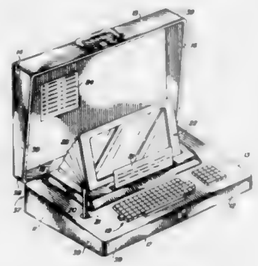
(d) storing said first and second strings.

4,803,652

PORTABLE TRANSCEIVER

William C. Maeser, 4425 N. 78th St., B-233, Scottsdale, Ariz. 85251, and Ward W. Maeser, 2093 E. 10th St., Tempe, Ariz. 85281

Filed Sep. 30, 1986, Ser. No. 913,743
Int. Cl.[4] G06F *1/00*
U.S. Cl. 364—708 **2 Claims**



1. A portable terminal device adapted to be carried to a site and to perform transaction operations by transmitting and receiving data to and from a central unit through communication means, said portable terminal device comprising:

(a) means for inputting transaction defining data;

(b) memory means for storing transaction defining data entered by said input means;

(c) control means coupled to said memory means for determining

(i) when sufficient transaction defining data is stored in said memory means for a transaction and said terminal device is in a transaction ready state, and

(ii) when insufficient transaction defining data is stored in said memory means for a transaction and said terminal device is in a transaction inhibit state;

(d) transmission means coupled to said memory means for transmitting selected transaction defining data stored in said memory means through said communication means to said central unit when said control means determines said terminal device is in said transaction ready state;

(e) a housing for said input, memory, transmission and control means, said housing including at least one wall having

(i) an intermediate layer of plastic material,

(ii) an outer and inner layer of corrugated cardboard material, and

(iii) an outer layer of tensioned resilient material adjacent and covering said outer layer of corrugated cardboard, said plastic material

being resilient when a force is applied against a selected area of said plastic material and said plastic material can flex to resist said force generally without permanent deformation of said plastic material, and

being readily compressed and permanently deformed when a force is applied to said plastic material and said material cannot flex to resist said force,

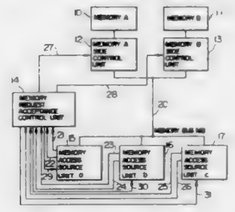
said outer and inner layers of cardboard being biased with respect to one another.

4,803,653

MEMORY CONTROL SYSTEM

Kenji Suzuki; Toshiyuki Takagi, and Tomoya Nishi, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 6, 1986, Ser. No. 893,817
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—900 **10 Claims**



1. A memory control system comprising:

a plurality of individually operable memory units;

a plurality of memory access source units for generating an access request and applying the generated access request to one of the plurality of memory units;

a signal memory bus in data communication between the plurality of memory units and the plurality of memory access source units, for selectively transmitting address information and data during one of a plurality of time slots;

means for receiving a present access request from the memory access source units;

first means for detecting a memory conflict between the present access requested and a previous access request received prior to the present access request;

means for predicting which future time slots are to be used for transmitting data and address information, the prediction being based on the type of access request generated, the relationship between the type of access request and the future time slots of the bus being predefined;

second means for detecting a bus conflict between one of the predicted time slots and a previously predicted time slot for the previous access request; and

means for rejecting the present access request when a conflict on the bus or in the requested memory unit is detected by the detection means.

4,803,654

CIRCULAR FIRST-IN, FIRST OUT BUFFER SYSTEM FOR GENERATING INPUT AND OUTPUT ADDRESSES FOR READ/WRITE MEMORY INDEPENDENTLY

Joseph D. Rasberry, Bethel, and Karl D. Nitschke, Brookfield, both of Conn., assignors to General Datacomm Industries, Inc., Middlebury, Conn.

Filed Jun. 20, 1985, Ser. No. 747,095
Int. Cl.[4] G06F *12/02*
U.S. Cl. 364—900 **12 Claims**

1. A first in, first our buffer system comprising:

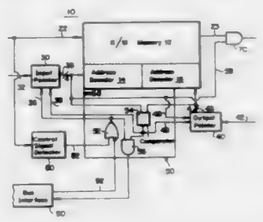
an addressable read/write memory means comprising a data input and a data output, means for storing data applied to said data input at a first address specified by a first address input and means for providing to said data output data stored at a second address specified by a second address input,

an input address decoder for selecting a specific address in said read/write memory means at which data is to be stored in response to the first address input,

an output address decoder for selecting a specific address in said read/write memory means from which stored data is to be provided to said data output in response to the second address input,

an input counter for generating said first address which is applied to said input address decoder,

an output counter for generating said second address which is applied to said output address decoder,



means for resetting said input and output counters,

means for enabling the input counter so that it can be incremented in response to a signal applied to an input of said counter,

means for enabling the output counter so that it can be incremented in response to a signal applied to an input of said counter, and

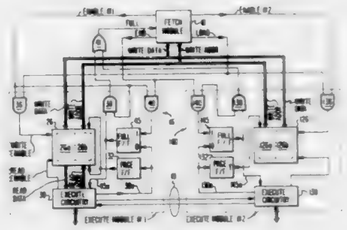
means for comparing the output of said input counter and the output of said output counter and for activating said resetting means when the outputs of said counters are the same.

4,803,655

DATA PROCESSING SYSTEM EMPLOYING A PLURALITY OF RAPIDLY SWITCHABLE PAGES FOR PROVIDING DATA TRANSFER BETWEEN MODULES

Laurence P. Flora, Covina, Calif., assignor to Unisys Corp., Detroit, Mich.

Continuation of Ser. No. 327,626, Dec. 4, 1981, abandoned. This application Dec. 28, 1987, Ser. No. 139,074
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—900 **8 Claims**



1. In a data processing system, the combination comprising:

a memory containing instructions;

a fetch module for retrieving instructions from said memory and for preparing instruction data required for execution; and

an execute module for performing data processing operations in response to instruction data applied thereto from said fetch module;

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said execution module including a randomly addressable read/write scratch pad memory having a plurality of logically switchable pages operable to permit said execute module to randomly read instruction data from one of said pages for the performance of a data processing operation while concurrently permitting said fetch module to randomly write instruction data required for use in a subsequent data processing operation into a different one of said pages;

said execute means being operable to provide for logical page switching without any transfer of data therebetween in a manner such that, after said execute module has completed data processing with respect to instruction data read from one page, the pages are logically switched so that another page can be randomly read by said execute module while said one page becomes available to have new instruction data randomly written therein by said fetch module;

said execute module being operable following said switching to signal said fetch module that a page is available in said scratch pad memory for receiving new instruction data.

4,803,656

SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANCY CIRCUIT PORTION

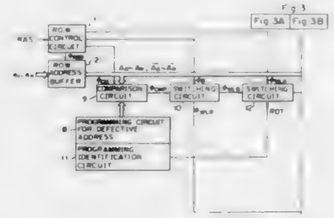
Yoshihiro Takemae, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 20, 1987, Ser. No. 28,463

Claims priority, application Japan, Mar. 20, 1986, 61-060929

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—200 2 Claims



1. A semiconductor memory device comprising:

a regular memory cell array in which a plurality of word lines and bit lines are provided, and a plurality of memory cells are arranged at each intersection of said word lines and bit lines;

a redundancy memory cell array in which one or more word lines and bit lines are provided,. and a plurality of memory cells are arranged at each intersection of said word lines and bit lines in said redundancy memory cell;

control means for generating a first control signal;

means for programming defective address bits corresponding to a defective memory cell existing in said regular memory cell array;

means for comparing each logic state of input address bits with each of said defective address bits;

a first switching means for generating a second control signal when at least one logic state of said input address bits does not coincide with a corresponding one of said defective address bits and for supplying a third control signal to a predetermined word line or bit line belonging to said redundancy memory cell array without generating said second control signal when each logic state said input address bits coincides with each of said defective address bits;,

means for identifying whether or not said defective address bits are programmed in said programming means; and

a second switching means for supplying said second control signal input from said first switching means to a selected word line or bit line belonging to said regular memory cell array when said identifying means indicates that said defective address bits are programmed in said programming means and for supplying said first control signal input from said control means to said selected word line or bit line when said identifying means indicates that said defective address bits are not programmed in said programming means.

4,803,657

SERIAL FIRST-IN-FIRST-OUT (FIFO) MEMORY AND METHOD FOR CLOCKING THE SAME

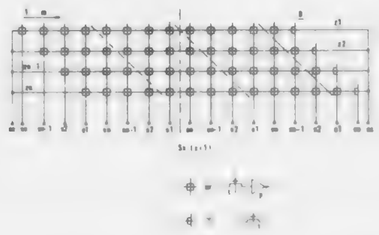
Burkhard Giebel, Deutzlingen, and Ulrich Theus, Gundelfingen, both of Fed. Rep. of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Apr. 28, 1987, Ser. No. 43,384

Claims priority, application European Pat. Off., May 2, 1986, 86106049.9

Int. Cl.⁴ G11C *19/28*

U.S. Cl. 365—221 5 Claims



1. An improvement in a serial FIFO memory comprising a plurality of insulated-gate field-effect transistors of the same conductivity and control type, each having an input and output, said plurality of transistors being arranged and configured into n signal branches ($z_1 \ldots z_n$), each with m cells, which comprise parallel signal paths, the inputs thereof being coupled to a signal input (s_e) of said memory and the outputs thereof being coupled to a signal output (s_o) of said memory, each signal branch comprising m transfer transistors, each having a source-drain section arranged in a series signal path for transmitting therethrough input signals having a predetermined data rate, a gate of each of the transfer transistors in each signal branch being supplied with clock signals whose effective pulses, in direction from the m-th to the first transfer transistor in each branch, are in such a timely succesaion that the transistors are rendered conductive one at a time in turn, said improvement comprising:

wherein said memory exclusively serves as a memory for digital signals;

wherein the number of clock signals equals n, and their repetition rate equals one n-th of said data rate of said input signals;

wherein of said m transfer transistors in each signal branch:

in the first signal branch (z_1),

the first, the (n+1)th, the (2n+1)th, . . . , and the (qn+1)th transfer transistors are clocked by the n-th clock signal (s_n), the second, the (n+2)th, the (2n+2)th, . . . , and the (qn+2)th transfer transistors are clocked by the (n−1)th clock signal (s_{n-1}), and so forth in an identical pattern for each remaining transfer transistor and clock signal until the n-th, the 2n-th, the 3n-th, . . . , and the qn-th transfer transistors are clocked by the first clock signal (s_1),

in the second signal branch (z_2)

the first, the (n+1)th, the (2n+1)th, . . . , and the (qn+1)th transfer transistors are clocked by the (n−1)th clock signal (s_{n-1}), the second, the (n+2)th, the (2n+2)th, . . . , and the (qn+2)th transfer transistors are clocked by the (n=2)th clock signal and so forth in an identical pattern for each remaining transfer transistor and clock signal until the n-th, the 2n-th, the 3n-th, . . . , and the qn-th transfer transistors are clocked by the n-th clock signal, and

continuing in an identical pattern for each remaining signal branch until in the last signal branch (z_n)

the first, the (n+1)th, the (2n+1)th, . . . , and the (qn+1)th transfer transistors are clocked by the first clock signal (s_1), the second, the (n+2)th, the (2n+2)th, . . . , and the (qn+2)th transfer transistors are clocked by the n-th clock signal (s_n), and so forth in an identical pattern for each remaining transfer transistor and clock signal until the n-th, the 2n-th, the 3n-th, . . . , and the qn-th transfer transistors are clocked by the second clock signal, with q indicating the number of complete blocks consisting of n times n transfer transistors as counted from the signal input, and

where in each signal branch, a level generator (p) is connected to the output of the source-drain section of each transfer transistor except the m-th one; and

wherein said inputs of said signal branches are directly applied to said signal input (s_e) and said outputs thereof are directly applied to said signal output (s_o).

4,803,658

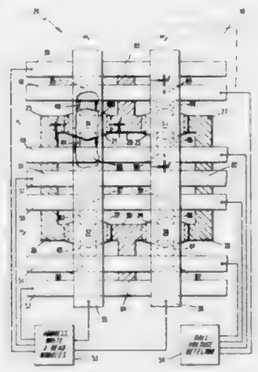
CROSS TIE RANDOM ACCESS MEMORY

Elizabeth H. Grimes, Ellicott City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 15, 1987, Ser. No. 3,536

Int. Cl.⁴ G11C *11/14*

U.S. Cl. 365—87 8 Claims



1. A cross tie random access memory comprising: spaced binary memory elements of thin film magneto-resistive material;

a source, drain, and channel under each memory element forming a transistor with the memory element acting as the gate of the transistor;

means for addressing selected ones of the memory elements;

means for applying a WRITE voltage across the source and the drain under an addressed one of the elements to create a write current of magnitude and direction in the channel under the addressed memory element sufficient to change the binary memory state of the addressed memory element;

means for applying a READ voltage across the source and the drain under the addressed memory element to create a read current in the channel under the addressed memory element insufficient to change the memory state of the addressed memory element and sufficient to generate a Hall voltage in the channel under the addressed memory element at times when that element is in one of its binary memory states; and

means for sensing the presence and absence of a generated Hall voltage in the channel under the addressed memory element to determine the binary memory state of that element.

4,803,659

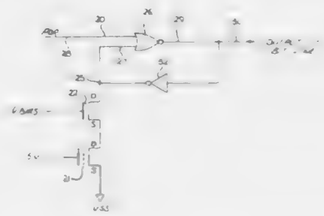
EPROM LATCH CIRCUIT

Kirby S. Hallenbeck, Shingle Springs, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jan. 22, 1987, Ser. No. 5,925

Int. Cl.⁴ G11C *7/00, 17/00, 11/34, 11/40*

U.S. Cl. 365—94 10 Claims



1. A circuit for latching a state of a memory, comprising:

a first gating means coupled to said memory for reading said state of said memory;

said first gating means also coupled to receive an enabling signal which activates said reading of said memory;

said first gating means further coupled to the output of a feedback means and to the input of a second gating means;

said second gating means having a first input, said first input being coupled to said first gating means for receiving said state of said memory when said first gating means is activated;

said second gating means having a second input, said second input coupled to a reset signal;

said second gating means having an output, said output being determined by said state of said memory once said reset signal is deactivated;

said feedback means coupled to said output and said first input of said second gating means to latch said first input to said memory state, such that when said first gating means is deactivated, said input is latched to coincide with said memory state.

4,803,660

OPTICAL RECORDING MEDIUM

Tadashi Kobayashi, Chiba; Katsumi Suzuki, Tokyo, and Naomasa Nakamura, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 24, 1987, Ser. No. 18,282

Claims priority, application Japan, Feb. 28, 1986, 61-41681; Mar. 24, 1986, 61-63936; Mar. 24, 1986, 61-63937

Int. Cl.⁴ G11C *13/00*

U.S. Cl. 365—113 5 Claims

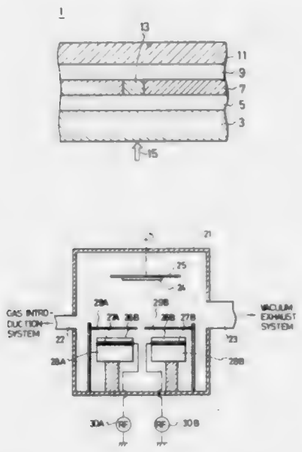
1. An optical recording medium of phase transition type comprising:

(a) a substrate; and

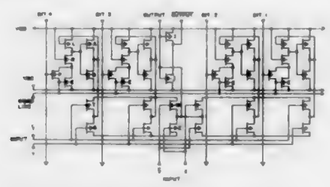
(b) a recording layer supported on said substrate, said recording layer comprising more than 80% by volume of an intermetallic compound having one kind of crystalline structure in an intermediate solid phase with a melting point between 300° to 800° C. capable of undergoing phase-changing from an equilibrium phase to a non-

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equilibrium phase when said recording layer is heated by a laser beam and then quenched, and from a non-equilibrium phase to an equilibrium phase when said recording layer is heated by a laser beam and then cooled gradually.

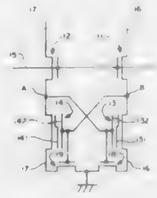


4,803,661
LOW POWER EPROM LOGIC CELL AND LOGIC ARRAYS THEREOF
William J. Mandl, Canoga Park, Calif., assignor to Aerojet-General Corporation, La Jolla, Calif.
Filed Aug. 6, 1987, Ser. No. 82,167
Int. Cl.[4] G11C *11/34, 7/00*
U.S. Cl. 365—184 **10 Claims**



1. A programmable logic cell comprising:
a plurality of circuit sections each having a threshold alterable transistor;
a plurality of bit lines, at least one such bit line respectively connected to each said circuit section for altering the programming threshold of said transistor;
a plurality of input lines connected to said cell for receiving input logic signals;
at least one output line connected to said cell for transferring an output logic signal from said cell; and
a plurality of driver transistors including at least one driver transistor associated with each threshold alterable transistor, each such driver transistor providing the output signals to said output line and being connected for buffering said threshold alterable transistor thereby reducing the current handling requirement of said threshold alterable transistor;
the respective programming thresholds of said alterable transistors determining the Boolean logic function of said logic cell, the logic state of said output logic signal being dependent on said cell Boolean logic function and the logic states of said input logic signals, the logic cell having all possible Boolean logic functions for the number of said input signals.

4,803,662
EEPROM CELL
Kenichi Tanaka, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 15, 1986, Ser. No. 896,719
Claims priority, application Japan, Oct. 21, 1985, 60-235946
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—185 **9 Claims**

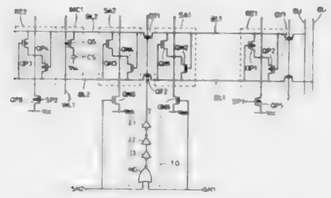


1. An EEPROM cell for a memory device comprising
a pair of floating-gate transistors consisting of a first memory transistor and a second memory transistor, and
a pair of bit lines consisting of a first bit line corresponding to said first memory transistor and a second bit line corresponding to said second memory transistor,
each of said floating-gate transistors having a floating gate and a control gate, the floating gate of said first floating-gate transistor being coupled to said first bit line, the floating gate of said second floating-gate transistor being coupled to said second bit line, the control gate of said first floating-gate transistor being connected to said second bit line and the control gate of said second floating-gate transistor being connected to said first bit line,
wherein information stored in said cell is determined by detecting which of said memory transistors has a floating-gate in charged condition and which in uncharged condition, and application of a higher voltage on one of said bit lines and a lower voltage to the other of said bit lines causes one of said memory transistors to be in charged condition and the other of said memory transistors to be in uncharged condition.

4,803,663
SEMICONDUCTOR MEMORY HAVING DIVIDED BIT LINES AND INDIVIDUAL SENSE AMPLIFIERS
Hiroaki Miyamoto, and Michihiro Yamada, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 18, 1987, Ser. No. 27,536
Claims priority, application Japan, Mar. 18, 1986, 61-62052
Int. Cl.[4] G11C *7/00, 11/40;* **H03K** *5/24*
U.S. Cl. 365—189 **10 Claims**

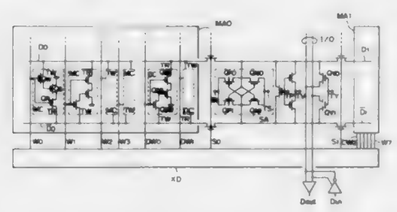
1. A semiconductor memory comprising:
a plurality of word lines for selecting a memory cell,
a plurality of pairs of folded bit lines, each of said pairs of folded bit lines comprising a plurality of pairs of divided bit lines (BL1, BL1, BL2, BL2),
a plurality of memory cells connected between a divided bit line of each of said pairs of divided bit lines and each of said word lines,
first switching means (QT1, QT2) provided for each of said pairs of divided bit lines for connecting and disconnecting adjacent divided bit lines to each other,
sense amplifiers (SA1, SA2) provided for each of said pairs of divided bit lines, respectively, each restore circuit comprising a transistor of a first conductivity type for detecting and amplifying the potentials on the divided bit lines,

restore circuits (RE1, RE2) provided for each of said pairs of divided bit lines, respectively, and comprising a transistor of a second conductivity type for pulling up the potential on the bit line at a high potential,
delay means responsive to an activating signal of said sense amplifiers for establishing a predetermined delay time, and
control means (TG) coupled to first switching means and to



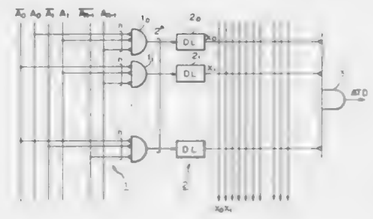
said delay means and responsive to an activating signal of said sense amplifier provided for the pair of divided bit lines connected to the selected memory cell when information stored in the memory cell selected from said memory cells is read out, for controlling by turning said first switching means on after the predetermined delay time since the sense amplifier was operated, so that said pair of divided bit lines connected to the selected memory cell and a pair of divided bit lines adjacent thereto may be connected to each other.

4,803,664
DYNAMIC RANDOM ACCESS MEMORY HAVING A GAIN FUNCTION
Kiyoo Itoh, Higashikurume, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 27, 1987, Ser. No. 31,002
Claims priority, application Japan, Mar. 28, 1986, 61-68326; Jun. 20, 1986, 61-143001
Int. Cl.[4] G11C *7/02*
U.S. Cl. 365—210 **42 Claims**



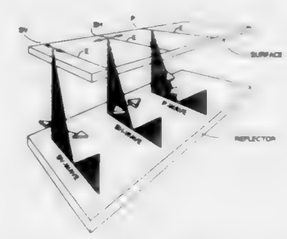
1. A dynamic random access memory including a plurality of pairs of data lines, a plurality of word lines intersecting the data lines, a plurality of memory cells each one having a read terminal, a write terminal and a gain function, and a common data line connected to the data lines, wherein:
said plurality of memory cells are connected to said plurality of pairs of data lines each respective pair of data lines being associated with a plurality of memory cells arranged in such a manner that the electrical characteristics of each pair of data lines are substantially balanced; and
each pair of data lines receive differential signals.

4,803,665
SIGNAL TRANSITION DETECTION CIRCUIT
Yasushi Kasa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Aug. 7, 1987, Ser. No. 82,547
Claims priority, application Japan, Aug. 7, 1986, 61-184264
Int. Cl.[4] G11C *7/00, 8/00;* **H03K** *19/094, 19/20*
U.S. Cl. 365—230 **4 Claims**



1. A signal transition detection circuit comprising:
decoder means for decoding a plurality of signals to generate decoding signals;
delay means, connected to said decoder circuit and having plural outputs, for delaying the decoding signals, said delay means having a rise delay time period and a fall delay time period which are different from each other;
and wherein each or said delay means comprise a plurality of delay circuits, each including:
a first capacitor connected to said decoder means;
two serially-connected inverters connected to said first capacitor and having an output, each of said serially-connected inverters having a rise time period and a fall time period which are different from each other; and
a second capacitor connected to the output of said serially connected inverters; logic means, connected to said delay means, for performing a logic operation upon the outputs of said delay means to generate a pulse signal indicating a transition of said plurality of signals.

4,803,666
MULTISOURCE MULTIRECEIVER METHOD AND SYSTEM FOR GEOPHYSICAL EXPLORATION
Richard M. Alford, Broken Arrow, Okla., assignor to Standard Oil Company (Indiana), now Amoco Corp., Chicago, Ill.
Filed Jul. 20, 1984, Ser. No. 633,160
Int. Cl.[4] G01V *1/30*
U.S. Cl. 367—36 **68 Claims**



1. A method for geophysical exploration of the earth's subterranean formations comprising the steps of:
imparting seismic wave energy into the earth's subterranean formations with a seismic source having at least two linearly independent lines of action; and
detecting at least two linearly independent components of the seismic wave energy imparted by the seismic source

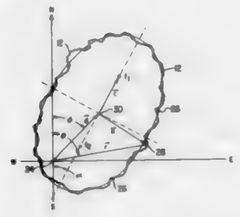
along each individual line of action after the seismic wave energy has interacted with the earth's subterranean formations.

4,803,667

TELEVIEWER PROCESSING SYSTEM

Robert W. Siegfried, II, Frisco, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 13, 1986, Ser. No. 930,169
Int. Cl.[4] G01V *1/28*
U.S. Cl. 367—69 8 Claims



1. A method of displaying the detailed contour of a borehole comprising the steps of:

(a) measuring, for a plurality of angles in a horizontal plane with respect to a horizontal reference point, the relative travel time of a signal transmitted from a sonde in said borehole, reflected by an area in the wall of said borehole and received by said sonde;

(b) calculating a best fit ellipse from said relative travel times;

(c) correlating said relative travel times with said best fit ellipse to provide corrected travel times; and

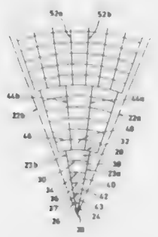
(d) displaying said corrected travel times so as to indicate said detailed contour of said borehole.

4,803,668

METHOD OF 3-D SEISMIC IMAGING FOR STRUCTURES WITH APPROXIMATE CIRCULAR SYMMETRY

John R. Berryhill, and John C. Wride, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed May 27, 1988, Ser. No. 199,942
Int. Cl.[4] G01V *1/36, 1/38*
U.S. Cl. 367—72 9 Claims



1. Method of acquiring seismic imaging reflection data for input to a 3-D migration process, comprising

locating a central position that is universally central to the dominant dip directions from a peaked stratigraphic subsurface,

orienting radial survey lines for the taking of common mid-point reflection data with polar symmetry with respect to said central position, and

establishing annular sector binning units for the acquired and sorted survey data within a ratio of substantially 2-to-1 for the largest bin to the smallest bin by increasing the number of bins within a revolution as the radial distance from the center is increased,

wherein said largest bin size provides data density for valid migration processing.

4,803,669

THREE-COMPONENT THREE-DIMENSIONAL SEISMIC DATA ACQUISITION

Tom P. Airhart, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 19, 1986, Ser. No. 944,401
Int. Cl.[4] G01V *1/00*
U.S. Cl. 367—72 2 Claims



1. A method for producing three-component three-dimensional seismic data for use in analyzing subsurface structures in which at least one receiver used to produce such acquisition does not lie on a seismic line of the seismic source comprising the steps of:

(a) establishing a connect line joining said off-line receiver and said seismic source at a location where said seismic source injects a seismic signal into the subsurface having shear wave components, and determining the angle between said connect line and the source shot line and the angle between said connect line and the receiver shot line; and

(b) normalizing the signals received by two shear wave detectors of said receiver by performing a mathematical rotation transformation on said receiver and a mathematical rotation transformation on said source to produce a signal equivalent to what would have been detected by said two shear wave detectors if said receiver and said seismic source had been physically oriented along a seismic line extending between said acoustic source and said receiver.

4,803,670

ULTRASONIC RANGING DEVICE

Ming-Hui Chen, Taipei, Taiwan, assignor to Li-Ling Lin, Taipei, Taiwan

Filed Jul. 7, 1987, Ser. No. 70,564
Int. Cl.[4] G01S *15/93*; G08G *1/16*
U.S. Cl. 367—99 1 Claim

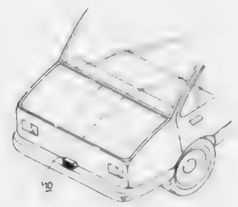
1. In an improved ultrasonic ranging device having an ultrasonic sensor unit with a protective cover fixedly provided therein for detecting the distance between a ground object and the rear end of a vehicle during reverse movement, a control circuit electrically connected to the ultrasonic sensor unit for effecting electrical control operations, and a motor mechanism connected to the control circuit for providing forward and reverse rotations, the improvement which comprises:

a body structure composed of a front casing and a rear casing with a round opening formed in each end thereof and an auxiliary illuminating light provided on one side of the front casing and electrically connected to the control circuit for illuminating the rear path and providing a warning signal when the reverse gear of a vehicle is set to make a backward movement;

a plurality of switches respectively coupled with the ultrasonic sensor unit and the control circuit for being automatically operated to effect distance detecting and rotation control operations; and

transmission means furnished at each end of said body structure and rotatably coupled with the motor mechanism as well as movably kept in contact with said switches for being driven to open and close said body structure as well as to turn on and off said switches in performing detecting operations; whereby, distance detecting operations can be effectively started and stopped along with the backward and forward movements of the vehicle;

said transmission means comprising a triangular shaped cover having a pair of annular side lugs integrally formed



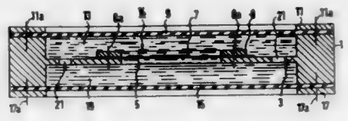
at each end for being movably connected to said body structure at each end thereof through said round openings; a pair of wheels each having a gear disk provided in a center area thereof and separately fixed within each end of said triangular shaped cover through an axle with one gear disk of said gear disks at one side being rotatably engaged with a reduction gear of the motor mechanisms, and another gear disk at another side being provided with a sector rail on a top surface for being rotated to make contact with respective switches in connection with a positive rotation and a reverse rotation of the motor mechanism; so that when the reverse gear is set to move the vehicle backward, said transmission means will drive said triangular shaped cover to raise up from said body structure for range detection operation, while, as the gear is shifted to move the vehicle forward, said transmission means will drive said triangular shaped cover to lower down from said body structure for protecting the ultrasonic sensor unit from water, dust and mud.

4,803,671

SENSOR FOR ACOUSTIC SHOCKWAVE PULSES

Hans Rochling, Bamberg, and Karl H. Schloe, Neunkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 29, 1987, Ser. No. 79,177
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1986, 3625820
Int. Cl.[4] H01L *41/04*
U.S. Cl. 367—166 12 Claims



1. A sensor for acoustic shockwave pulses, comprising:

a pair of spaced coupling membranes defining an intervening space;

a piezo-electric measuring membrane arranged between said pair of coupling membranes;

a coupling medium filling said intervening space for transmitting acoustic shockwave pulses;

a housing ring having end faces and a partition with a central opening;

retaining rings being having faces generally the same shape as said end faces of

said housing ring and clamping said coupling membranes to said end faces of said housing ring; and

said measuring membrane being mounted covering said central opening in said partition.

4,803,672

ELECTRIC TIMEPIECE

Klaus D. Zang, Homburg, Fed. Rep. of Germany, assignor to Walter GmbH, Mettlach, Fed. Rep. of Germany

Filed Aug. 6, 1987, Ser. No. 82,787
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1986, 8621553
Int. Cl.[4] G04C *17/00*
U.S. Cl. 368—241 14 Claims



1. An electrically operated timepiece comprising a housing; a dial provided on said housing and having at most seventeen radiation sources to indicate hours and minutes, said sources including twelve first radiation sources forming a substantially annular first symmetrical array, and a second symmetrical array of four second radiation sources within the confines of said first array, said radiation sources being arranged to emit radiation in response to connection with a source of electrical energy, said dial having a substantially square or rectangular outline and including four corner portions and said housing having means for maintaining said dial in such orientation that one of said corner portions is located at a level below all other corner portions when the maintaining means is placed onto a substantially horizontal surface; and means for selectively connecting said radiation source to an energy source.

4,803,673

STRIKING MECHANISM CLOCK WITH SWITCHABLE LIFTING STUD CYLINDER

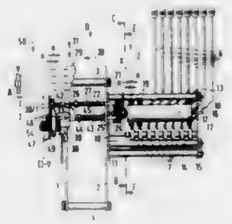
Rolf Hepfer, Bad Durrheim, and Jürgen Rinnler, Spaichingen, both of Fed. Rep. of Germany, assignors to Joseph Kieninger Uhrenfabrik GmbH, Fed. Rep. of Germany

Filed Jun. 3, 1988, Ser. No. 213,785
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1988, 3809702
Int. Cl.[4] G04B *21/00*
U.S. Cl. 368—269 10 Claims

1. A striking mechanism clock, comprising a clock movement and a mechanical striking mechanism including a plurality of striking hammers having contact levers, the hammers being disposed on one common turning arbor of a hammer shaft, a lifting stud cylinder with a mantle surface having a plurality of groups of lifting studs disposed staggered axially

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with respect to each other, each group of which effecting a different striking sequence of the striking hammers, and each group adapted to being brought into a working position by an axial displacement of the lifting stud cylinder in relation to contact levers of the striking hammers; a manually adjustable correcting element which has several correcting steps disposed crosswise to the axis of the lifting stud cylinder and shiftable on a work bedplate, said correcting element being connected to the lifting stud cylinder by a contact slider, said contact slider



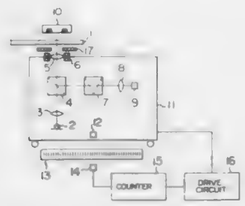
being spring biased toward the correcting steps running parallel to the axis of the lifting stud cylinder, the lifting stud cylinder being set in response to said clock movement into one of a plurality of working positions; means for manually adjusting the working position of the lifting stud cylinder including the corresponding element; and means for automatically adjusting the position of the lifting stud cylinder including a cam disk with an annular step cam adapted to be brought into operative connection with the contact slider of the lifting stud cylinder alternatively instead of the manual control element.

4,803,674

MAGNETO-OPTICAL RECORDER WITH SMALL-SIZED, LOW-POWERED ELECTROMAGNETIC COIL

Takeshi Nakao, Sagamihara, and Yutaka Akiba, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 20, 1986, Ser. No. 932,578
Claims priority, application Japan, Nov. 20, 1985, 60-258535
Int. Cl.[4] G11B *11/14, 13/04*
U.S. Cl. 369—13 **22 Claims**



1. A magneto-optical recorder for use with a recording medium having a magnetic recording film, comprising:

an optical head for irradiating said recording medium with a light beam, and including a focusing lens for focusing said light beam on said recording medium; and

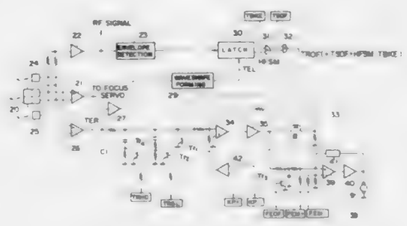
magnetic field generating means disposed in a facing relation with said focusing lens through said recording medium, for generating a magnetic field, said magnetic field generating means including an electromagnetic coil, said electromagnetic coil including a magnetic core having a magnetic main pole and a magnetic sub-pole and a coil winding, said coil winding being wound on said magnetic main pole and at least a part of said magnetic sub-pole contacting at least a part of a periphery of said coil winding wherein said magnetic sub-pole of said magnetic core has a length in a direction transverse to the recording and reproducing direction on said recording medium which is smaller than the length of said magnetic main pole of said magnetic core.

4,803,675

HIGH SPEED, LOW POWER CONSUMPTION PICKUP HEAD POSITION CONTROL DEVICE IN AN OPTICAL TYPE DISC REPRODUCING DEVICE

Hirotake Komatsu, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan and Hirotake Komatsu

Filed May 29, 1985, Ser. No. 738,826
Claims priority, application Japan, Jun. 1, 1984, 59-113680
Int. Cl.[4] G11B *17/22, 7/00*
U.S. Cl. 369—32 **5 Claims**



1. A pickup head position control device in an optical type disc reproducing device comprising:

an optical head having an optical system projecting a laser beam from a laser source on a disc and receiving reflected or transmitted laser beam from the disc thereby to read information recorded on the disc, and a tracking actuator for changing an optical path of said optical system for performing a tracking control;

optical head feed means having a feed motor for moving the optical head, means for generating an optical head feeding drive signal and means for servo-controlling the feed operation;

tracking control means having tracking error detection means, means for generating a tracking actuator drive signal in response to a tracking error signal and means for servo-controlling the tracking control;

tracking servo switching means for periodically switching on and off the tracking servo-control operation, wherein said tracking servo switching means includes means for detecting when the tracking error has a value which will result in braking of the optical head and means for causing the tracking servo-control operation to be switched on in a period of time during which the tracking error will result in braking;

kick pulse drive means for generating a kick pulse for jumping over tracks and driving said tracking actuator when the tracking servo-control operation is in an off state; and

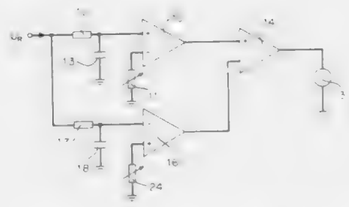
position information detection means for detecting position of the disc which the optical head is presently accessing by reading position information recorded on the disc, said detection being performed when the tracking servo-control operation is in an on state.

4,803,676

CIRCUITRY FOR AN AUDIO OR VIDEO DISK PLAYER

Dieter Baus, Kehl, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

PCT No. PCT/EP86/00126, § 371 Date Dec. 22, 1986, § 102(e) Date Dec. 22, 1986, PCT Pub. No. WO86/05308, PCT Pub. Date Sep. 12, 1986
PCT Filed Mar. 8, 1986, Ser. No. 945,575
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1985, 3508422
Int. Cl.[4] G11B *19/20, 21/10*
U.S. Cl. 369—143 **11 Claims**



1. An arrangement for an audio or video disk player with remote scanning by a scanning component for carrying out servo track readjustment in a track guidance system, comprising:

a combination of coarse-drive means and fine precision-drive means for radial servo readjustment of said scanning component;

having a control parameter providing a radial-error signal for operating said coarse-drive means;

means for applying pulses dependent on said radial-error signal to said coarse-drive means for starting up said coarse-drive means;

said precision-drive means comprising a fine tracking actuator and said coarse-drive means comprising a coarse positioning actuator;

a processing circuit for receiving said radial-error signal, said processing circuit having a comparator with a variable threshold for detecting the direction in which said coarse-drive means is to be driven.

4,803,677

ROTARY RECORDING MEDIUM HAVING A GUIDE TRACK AND RECORDING AND REPRODUCING APPARATUS THEREFOR

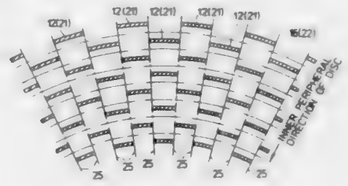
Hirohisa Yamaguchi; Hiroshi Ueami, both of Tokyo; Tadao Nagai, Sagamiko, and Akira Mashimo, Tokorozawa, all of Japan, assignors to TEAC Corporation, Tokyo, Japan

Filed Jun. 12, 1986, Ser. No. 873,407
Claims priority, application Japan, Jun. 28, 1985, 60-141695; Jun. 28, 1985, 60-141696
Int. Cl.[4] G11B *7/007, 7/095*
U.S. Cl. 369—44 **8 Claims**

1. A rotary recording medium comprising:

a recording surface which is divided into a plurality of imaginary equiangular sectoral regions each of which is defined by two of a plurality of imaginary radial lines; and

a guide track formed on said recording surface, said guide track comprising a spiral track or concentric tracks, each track turn of said guide track being constituted by a row of pits formed in every other of said equiangular sectoral regions, said pit being only formed in one of two mutually adjacent track turns of the guide track in each of said equiangular sectoral regions so that the pits are formed in every other track turns of the guide track in a radial direction of the rotary recording medium in each of said equiangular sectoral regions, each pit having two ends which respectively lie on two imaginary radial lines defining said each pit,



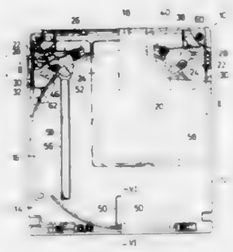
an intermediate part between center lines of said two mutually adjacent track turns of the guide track being used for forming a recording track for an information signal at a time of a recording.

4,803,678

DISC CARTRIDGE

Kimio Tanaka, and Haruo Shiba, both of Nagano, Japan, assignors to TDK Corporation, Japan

Filed Dec. 16, 1986, Ser. No. 942,495
Claims priority, application Japan, Dec. 18, 1985, 60-194560
Int. Cl.[4] G11B *23/03*
U.S. Cl. 369—291 **13 Claims**



1. A disc cartridge, comprising:

a casing comprising an upper cover plate and a lower cover plate joined together to define a space therein;

a disc rotatably housed in said space of said casing;

a shutter for operating at least one window provided in said casing to allow insertion of a disc driving mechanism therethrough into said disc cartridge;

actuator means arranged in said casing and engaged with said shutter to releasably lock said shutter; and

a disc receiver arranged in said casing and operatively connected to said actuator means to selectively receive therein a part of a peripheral portion of said disc;

said disc receiver being formed at a portion thereof approachable to said disc into a sideways U-shape so as to define therein a recess which selectively receives a part of said peripheral portion of said disc therein due to movement of said actuator means.

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4,803,679

COMMUNICATION NETWORK CAPABLE OF AUTOMATICALLY INFORMING A SUBSCRIBER OF OCCURRENCE OF AN IDLE CHANNEL

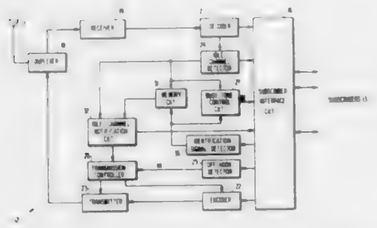
Toshimitsu Shimizu, c/o NEC Corporation, 33-1, Shiba 5-chome, Minato-ku, Tokyo, Japan

Filed Apr. 9, 1987, Ser. No. 36,520

Claims priority, application Japan, Apr. 9, 1986, 61-81894; May 9, 1986, 61-104970

Int. Cl.⁴ H04J *3/16*

U.S. Cl. 370—95 6 Claims



1. In a communication network comprising a station which accommodates a plurality of subscribers and to which a plurality of output channels are assigned, said subscribers carrying out communication through said station and said output channels, said station comprising first detecting means for detecting whether or not an idle one of said output channels is present, second detecting means for detecting off-hook states of said subscribers, and tone supplying means coupled to said first and said second detecting means for supplying a specific tone to an off-hook one of said subscribers that is in the off-hook state when no idle channel is detected by said first detecting means, the improvement wherein said station comprises:

storage means coupled to the respective subscribers and to said first detecting means for storing an identification signal indicative of said off-hook subscriber when no idle channel is detected by said first detecting means; and

informing means, coupled to said storage means and said first detecting means, for informing said off-hook subscriber of presence of an idle channel when said idle channel is detected by said first detecting means.

4,803,680

DESTUFFING CIRCUIT WITH A DIGITAL PHASE-LOCKED LOOP

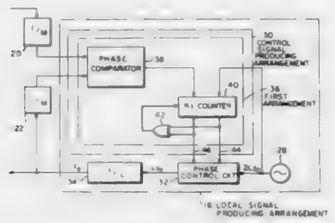
Yoshinori Rokugo, and Botaro Hirosaki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 29, 1986, Ser. No. 947,240

Claims priority, application Japan, Dec. 27, 1985, 60-293247; May 15, 1986, 61-109572

Int. Cl.⁴ H04J *3/07*

U.S. Cl. 370—102 6 Claims



1. In a destuffing circuit responsive to an input pulse sequence comprising data pulses, stuffing pulses, and control pulses, and to a data pulse timing signal, for producing an output pulse sequence in which said stuffing and said control pulses are removed, said destuffing circuit comprising local signal producing means responsive to said data pulse timing signal for producing a local signal and destuffing means responsive to said input pulse sequence for producing said output pulse sequence by using first through M-th timing sequences derived from said data pulse timing signal and first through M-th local sequences derived from said local signal where M represents a predetermined number, said local signal producing means comprising:

main local clock generating means for generating a main local clock sequence having a controllable phase;

control signal producing means responsive to a predetermined one of said first through the M-th timing sequences and a preselected one of said first through the M-th local sequences for producing a control signal;

phase controlling means responsive to said control signal for controlling said controllable phase of the main local clock sequence to produce a controlled clock sequence; and

divider means for frequency dividing said controlled clock sequence to produce said local signal;

said control signal producing means comprising:

first means for digital processing said predetermined one of the first through the M-th timing sequences and said preselected one of the first through the M-th local sequences to produce one of a first addition instruction pulse and a first subtraction instruction pulse at a time; and

intermediate means coupled to said first means for producing each of said first addition instruction pulse and said first subtraction instruction pulse as said control signal;

said first means comprising:

additional local clock generating means for generating an additional local clock sequence which has a frequency not higher than that of said main local clock sequence;

multiple state quantization phase comparator means responsive to a predetermined phase difference and said additional local clock sequence for detecting a detected phase difference by subtracting a phase of said preselected one of the first through the M-th local sequences from a phase of said predetermined one of the first through the M-th timing sequences, said multiple state quantization phase comparator means producing a lag indicating pulse when said detected phase difference is larger than said predetermined phase difference, said multiple state quantization phase comparator means producing a lead indicating pulse when said detected phase difference is smaller than said predetermined phase difference;

first up/down counter means coupled to said multiple state quantization phase comparator and having a first initial value, a first upper threshold value, and a first lower threshold value, said first upper threshold value being higher than said first initial value, said first lower threshold value being lower than the first initial value, said first up/down counter means being responsive to said lag indicating pulse and said lead indicating pulse for counting up and down a first count in synchronism with said lag indicating pulse and said lead indicating pulse, respectively, said first up/down counter means producing said first addition instruction pulse whenever said first count increases up to said first upper threshold value, said first up/down counter means producing said first subtraction instruction pulse whenever said first count decreases down to said first lower threshold value; and

first initializing means for initializing the first count in said first up/down counter means to said first initial value whenever said first up/down counter means produces one of said first addition instruction pulse and said first subtraction instruction pulse.

4,803,681

DATA TRANSMISSION CONTROL SYSTEM

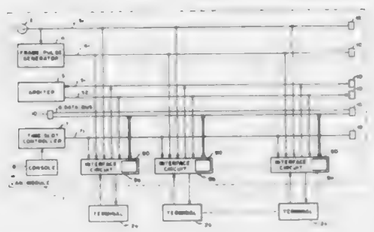
Kiyoh Takahashi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 6, 1987, Ser. No. 70,036

Claims priority, application Japan, Jul. 8, 1986, 61-161120

Int. Cl.⁴ H04J *3/26*

U.S. Cl. 370—85 7 Claims



1. A data transmission control system comprising:

a plurality of terminal means, each of said terminal means having a data transmit path connected to a data bus, said terminal means transmitting transmit data to said data transmit path after confirming that transmit data is absent on said data bus, and said terminal means retransmitting said transmit data after again confirming that transmit data is absent on the data bus in response to said terminal means failing to receive from an addressee an acknowledge information which is indicative of a receipt of the transmit data within a predetermined period of time;

a plurality of data transmission control means, each of said data transmission control means being disposed between a respective one of the data transmit paths of the terminal means and the data bus connected thereto, upon receipt of the transmit data from said terminal means said data transmission control means temporarily storing said transmit data and making a request for a data transmission right to the data bus, and transmitting the transmit data from the terminal to the data bus only when said transmission control means has gained said data transmission right;

an arbiter means responsive to a receipt of the requests for a data transmission right from the data transmission control means for granting the data transmission right to the data bus to the data transmission control means according to a predetermined priority order;

means in any of the data transmission control means which has requested the data transmission right but failed to gain the data transmission right for erasing the temporarily stored transmit data.

4,803,682

RESETTING SYSTEM

Seiji Hara, and Satoshi Kobayashi, both of Saitama, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 4, 1985, Ser. No. 707,609

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 371—12 8 Claims

1. A resetting system in an apparatus provided with a main CPU for controlling the whole apparatus and a plurality of slave CPUs each controlling a respective terminal portion of the apparatus to be controlled, the main CPU and said slave CPUs being connected through a common transmission line through which response data is sent from a particular slave CPU to the main CPU as a result of the main CPU sending a command including an address code to address said particular slave CPU, the system comprising:

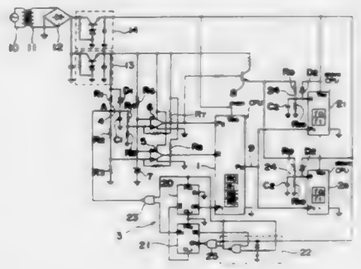
a programming unit provided in the main CPU, including means for

outputting strobe signals at a given period of time,

determining the existence of communication errors when the response data is not sent in accordance with a predetermined format, and

outputting a first reset signal when a predetermined number of communication errors are generated in succession;

a watch-dog timer for receiving the strobe signals and outputting a second reset signal upon the absence of said strobe signals;



main CPU reset means for resetting the main CPU in response to the outputting of the second reset signal; and

slave CPU reset means for resetting said plurality of slave CPUs in response to the outputting of either the first reset signal or the second reset signal.

4,803,683

METHOD AND APPARATUS FOR TESTING A DISTRIBUTED COMPUTER SYSTEM

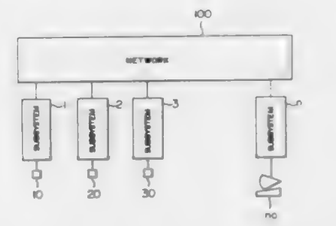
Kiaji Mori, Yokohama; Yasuo Suzuki, Ebina; Katsumi Kawano, Fuchu; Masayuki Orino, Machida; Minoru Koizumi, Yokohama; Hirokazu Kasajima, Hitachi, and Konan Nakai, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 11, 1986, Ser. No. 895,375

Claims priority, application Japan, Aug. 30, 1985, 60-191782; Dec. 11, 1985, 60-281418

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 371—19 17 Claims



1. A method for testing a program in a distributed processing system including a plurality of processors connected through a network, each of said processors operating independently form each other, said method comprising the steps of:

determining whether or not said program in said distributed processing system is to be test-run by a particular one of said plurality of processors;

acquiring test information corresponding to said program when said program is determined to be test-run by said particular one of said plurality of processors; and

executing said test-run of said program on the basis of said test information;

wherein said determining, acquiring and executing steps are

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performed during on-line operation of said distributed processing system.

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APPARATUS FOR DATA ERROR CORRECTION USING ROUNDING TECHNIQUE

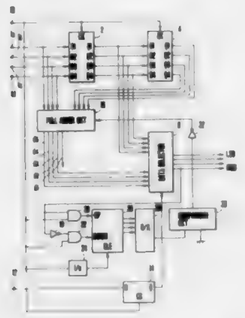
Susumu Kozaki, Tokyo; Masahiro Takei, Kanagawa; Toshiyuki Masui, Kanagawa; Masahide Hirasawa, Kanagawa, and Motokazu Kashida, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1985, Ser. No. 697,399

Claims priority, application Japan, Feb. 7, 1984, 59-20517; Feb. 8, 1984, 59-21087; Feb. 8, 1984, 59-21083; Feb. 22, 1984, 59-31685

Int. Cl.⁴ G06F *15/353*

U.S. Cl. 371—31 11 Claims



1. A data processing device, comprising:

(a) input means for inputtng a data sequence consisting of a number of binary data of n bits obtained by sampling an information signal, n being an integer more than 2;

(b) computing means connected to said input means for computing a plurality of binary data included in said data sequence for providing an interpolation data;

(c) rounding means connected to said computing means for raising a fraction which is arranged below a predetermined bit of said interpolation data as a unit one bit above said predetermined bit or cutting away the same thus producing rounded interpolation data;

(d) replace means connected to said input means and said rounding means for replacing an incorrect binary data included in said data sequence with said rounded interpolation data; and

(e) control means for controlling said rounding means so that said raising the fraction to a unit and said cutting away the fraction to a unit by said rounding means are performed alternately every time said replace means replaces said incorrect binary data with said rounded interpolation data.

4,803,685

METHOD AND DEVICE FOR THE TRANSMISSION OF DIGITAL DATA BY MESSAGES ORGANIZED IN FRAMES

Christian Oget, Dravell, France, assignor to Cimsa Sintra, Asnieres, France

Filed Mar. 3, 1987, Ser. No. 21,253

Claims priority, application France, Mar. 6, 1986, 8603133

Int. Cl.⁴ G08C *25/02*

U.S. Cl. 371—33 17 Claims

16. A device for data transmission, by messages made up of frames, comprising transmitter and receiver stations designed to work in duplex, wherein each station comprises:

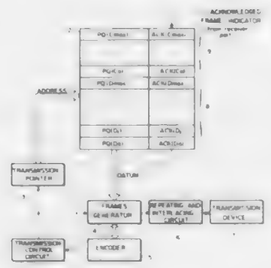
a transmission control circuit included in said transmitter station and coupled to a transmission pointer;

a transmission memory for storing information packets to be transmitted in said frames and for storing an acknowledgement indicator associated with each of said information packets, the input of said transmission memory being coupled to said transmission pointer which addresses said information packets;

a frames generator coupled to the output of said tansmission memory, coupled to said transmission control circuit, and coupled to an encoder which is linked to memory;

a repetition and interlacing circuits coupled to said frame generator's output, said repetition and interlacing circuit being coupled to a transmission device;

a receiver device included in said receiver station and coupled to a reordering circuit;



a correlating circuit coupled to said re-ordering circuit;

a decision circuit functioning by majority vote coupled to the data output of said correlating circuit;

a receiver memory for storing properly-received said information packets and for storing a reception indicator linked to said information packets, the input of said receiver memory being coupled to the validated data output of said decision circuit;

an error-rate measuring circuit linked to the output of said correlating circuit,

a reception control circuit connected to the output of said error-rate measuring circuit, said reception control circuit having outputs which are coupled to said decision circuit and to said reordering circuit, said reception control circuit being connected to transmission memory.

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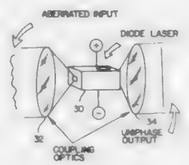
SPATIAL FILTER WITH GAIN

John C. Brock, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 3, 1987, Ser. No. 80,855

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—44 7 Claims



5. Apparatus for providing an amplified uniphase reference beam from a weak and wavefront-aberrated input probe beam, the apparatus comprising:

means for splitting off a portion of the input probe beam;

a laser cavity containing a non-linear gain medium and providing a single transverse mode of oscillation;

means for injecting the portion of the input probe beam into the laser cavity to provide four-wave mixing within the cavity; and

means for deriving a uniphase output beam from the laser cavity.

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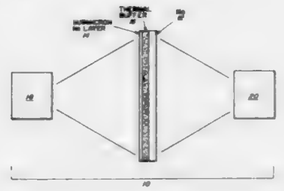
THERMALLY BUFFERED SODIUM-NEON LASER TARGET FOR COHERENT X-RAY PRODUCTION

Frederick Cochran, Alexandria; Jack Davis, Annandale, and John Apruzese, Springfield, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 7, 1985, Ser. No. 795,795

Int. Cl.⁴ H01S *3/30*

U.S. Cl. 372—5 6 Claims



1. A lasing system for generating frequency coherent x-rays, comprising:

a sodium layer;

a first heating means for heating said sodium layer until Na X is present;

a neon layer, wherein said neon layer is kept frozen until laser heating begins;

a second heating means for heating said neon layer until Ne IX is present, so that Ne IX is pumped by Na X to achieve the necessary population for lasing to occur;

a thermal transparent buffer layer located between and in contact with said sodium and neon layers, wherein said buffer layer absorbs thermal waves from said sodium layer and wherein said neon layer is maintained at a lower temperature and density than said sodium layer for lasing to occur; and

means for containing said sodium-buffer-neon layered combination.

4,803,688

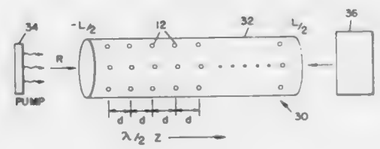
ORDERED COLLOIDAL SUSPENSION OPTICAL DEVICES

Nabil M. Lawandy, 52 Humboldt Ave., Providence, R.I. 01906

Filed Mar. 28, 1988, Ser. No. 174,001

Int. Cl.⁴ H01S *3/10*

U.S. Cl. 372—21 48 Claims



1. An optical apparatus comprising:

means for receiving incident electromagnetic radiation;

means, responsive to at least one characteristic of said received radiation, for modulating said received radiation; and

means for emitting said modulated radiation;

wherein each of said means for receiving, said means for modulating and said means for emitting comprise:

a crystalline colloidal suspension having a lattice structure comprised of a plurality of parallel planes of ordered, electrically charged spheres suspended in an optically active medium, adjacent ones of the planes having a substantially uniform spacing therebetween; and wherein

said optically active medium comprises molecules selected to have a predetermined index of refraction, radiation absorption, radiation emission or a nonlinear optical response property at a wavelength substantially equal to twice the spacing between said planes.

4,803,689

SEMICONDUCTOR LASER MODULE

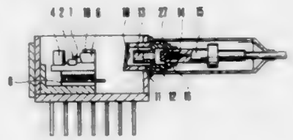
Naoki Shibasawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 14, 1987, Ser. No. 95,711

Claims priority, application Japan, Sep. 12, 1986, 61-216482

Int. Cl.⁴ H01S *3/045*

U.S. Cl. 372—36 5 Claims



1. A semiconductor laser module, in which a semiconductor laser and a Peltier element for controlling a temperature of said semiconductor laser are mounted in a box shaped metal case, and which has a light-outputting fiber, a portion near distal end of which is protected by a metal cylinder, comprising: said metal case having a window glass which is hermetically sealed in a side wall portion thereof; a substrate fixed on said Peltier element which is fixed in said metal case; said semiconductor laser fixed on said substrate through a chip carrier; a first lens, a light-receiving element, and a thermister fixed on said substrate; a second lens, an outer surface of which is supported by a holder bonded to said side wall around said window glass of said case; and a slide ring having an inner diameter slightly larger than an outer diameter of said metal cylinder, said slide ring being bonded to said holder, and said metal cylinder being bonded to said slide ring.

4,803,690

SEMICONDUCTOR LASER

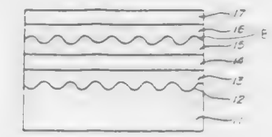
Haruhisa Takiguchi; Shinji Kaneiwa, both of Nara; Toshihiko Yoshida, and Sadayoshi Matsui, both of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 13, 1986, Ser. No. 839,869

Claims priority, application Japan, Mar. 15, 1985, 60-52606

Int. Cl.⁴ H01S *3/09, 3/08*

U.S. Cl. 372—45 2 Claims



1. In a semiconductor layer comprising a substrate and a

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multilayer structure formed on said substrate, said multilayer structure comprising at least a triple-layered structure composed of an active layer for layer oscillation, a pair of optical guiding layers sandwiching said active layer therebetween, and diffraction gratings positioned on the outer side of each of said optical guiding layers, each of said diffraction gratings having a different pitch, the refractive index of each of said optical guiding layers being smaller than that of said active layer, and the bandgap of each of said optical guiding layers being greater than that of said active layer.

4,803,691

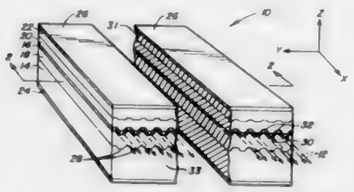
LATERAL SUPERRADIANCE SUPPRESSING DIODE LASER BAR

Donald R. Scifres, San Jose; Hsing Kung, Sunnyvale; Peter Cross, Palo Alto, all of Calif.; Robert D. Burnham, Wheaton, Ill., and William Streifer, Palo Alto, Calif., assignors to Spectra Diode Laboratories, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 731,652, May 7, 1985, abandoned. This application Aug. 28, 1987, Ser. No. 90,333

Int. Cl.[4] H01S *3/19*

U.S. Cl. 372—150 **29 Claims**



1. A diode laser bar comprising,

a plurality of semiconductor layers disposed one atop another on a semiconductor substrate, with the layers having a length defining a longitudinal direction, a width defining an edge-to-edge lateral direction and a depth defining a transverse direction, said directions being mutually perpendicular, at least one of said layers forming an active lasing region, said layers being doped to provide a p-n junction adjacent to said active region,

electrode means for supplying current to said active region,

feedback means for providing an optical cavity in the longitudinal direction of said active region, and

active region interrupting means at space apart intervals in said active region for suppressing amplified spontaneous emission in the lateral direction, wherein the lasing region is at least 50 percent of the total active region interrupting means plus said lasing region.

4,803,692

SEMICONDUCTOR LASER DEVICES

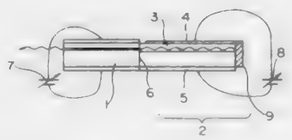
Shinji Sakano, Kokubunji, and Hiroyoshi Matsumura, Saitama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 3, 1986, Ser. No. 903,376

Claims priority, application Japan, Sep. 4, 1985, 60-193742

Int. Cl.[4] H01S *3/19*

U.S. Cl. 372—50 **24 Claims**



1. A semiconductor laser device comprising:

a semiconductor laser including a semiconductor active layer formed on a semiconductor substrate and having a pair of light emitting and reflecting end surfaces, thereby defining an internal cavity, and a pair of electrodes operably connected to said semiconductor active layer for allowing a current to flow through the semiconductor active layer;

a resonator having end surfaces which define an external cavity with an optic axis aligned with said semiconductor laser, the resonator being optically coupled to the semiconductor laser, the external cavity of the resonator being in contact with the internal cavity of the semiconductor laser so as to form a junction between said external cavity and said internal cavity, the resonator being made of a material which can electrically change an optical path of said external cavity; and

means coupled to said resonator for electrically controlling the optical path of said external cavity.

4,803,693

DEVICE FOR THE PREPARATION OF A GAS MIXTURE

Herbert Schramm, Höchstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 30, 1987, Ser. No. 103,406

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1986, 3633201; Oct. 13, 1986, 3634867

Int. Cl.[4] H01S *3/22*

U.S. Cl. 372—58 **8 Claims**



1. In a device for the preparation of a gas mixture including a closed circuit, means for feeding mixture components of a gas mixture with greatly differing partial pressures ranging from low to highest partial pressures to said closed circuit, means for circulating the gas mixture in said closed circuit, means for replenishing at least one of said mixture components with low partial pressure at increasingly shorter intervals, and means for completely exchanging the gas mixture when a given minimal length of the intervals is reached, the improvement comprising at least one branch parallel to a section of said closed circuit conducting the gas mixture substantially completely free of flow losses, said at least one branch including a magnetic valve, a differential pressure sensor in series with said magnetic valve having a total measuring range corresponding to the low partial pressures, said differential pressure sensor controlling the replenishment of the mixture components having the low partial pressure exclusively while said magnetic valve is closed, and an absolute pressure sensor controlling at least the replenishment of the mixture component having the highest partial pressure.

4,803,694

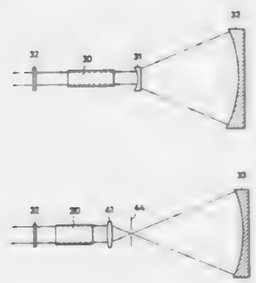
LASER RESONATOR

Chun-Shou Lee, Torrance, and Stanley L. Reese, Laguna Beach, both of Calif., assignors to Amada Company, Limited, Japan

Filed Jul. 8, 1987, Ser. No. 71,155

Int. Cl.[4] H01S *3/13*

U.S. Cl. 372—98 **9 Claims**



1. A laser resonator having a cavity for the propagation of a laser beam having a wavefront in which a lasing medium is positioned, comprising:

(a) a retro-reflector means including:

(1) optical means disposed in said cavity for expanding the wavefront leaving the lasing medium; and

(2) aspherical concave mirror means disposed in said cavity facing said optical means for reflecting the expanded wavefront toward the lasing medium again and correcting wavefront aberrations induced when the laser beam passes through the lasing medium; and

(b) output coupler means arranged facing said retro-reflector means with the lasing medium positioned within an intracavity formed between said output coupler means and said optical means, for providing feedback for regenerative action of the laser beam.

4,803,695

SEMICONDUCTOR LASER APPARATUS HAVING AN EXTERNAL REFLECTING MEANS

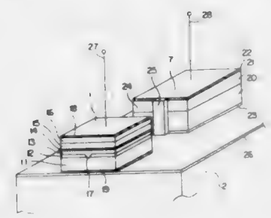
Osamu Yamamoto, Nara; Hiroshi Hayashi, Kyoto, and Saburo Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 13, 1986, Ser. No. 873,991

Claims priority, application Japan, Jun. 14, 1985, 60-130559

Int. Cl.[4] H01S *3/19*

U.S. Cl. 372—92 **2 Claims**



1. A semiconductor laser apparatus comprising a semiconductor laser device and a semiconductor device, both of which are fixed on a single mounting base with a spacing of several mm or less therebetween in such a manner that one of the side faces of said semiconductor device faces a laser-emitting facet of said semiconductor laser device in a parallel manner, the side face of said semiconductor device being a facet, at least a part of which is coated with a reflecting dielectric film functioning so as to have laser light from said semiconductor laser device return to said semiconductor laser device therefrom.

4,803,696

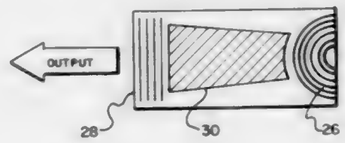
LASER WITH GRATING FEEDBACK UNSTABLE RESONATOR

David M. Pepper, Malibu, and Richard R. Craig, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 30, 1987, Ser. No. 67,893

Int. Cl.[4] H01S *3/08*

U.S. Cl. 372—95 **16 Claims**



1. An unstable resonator laser, comprising:

a gain medium,

a partially reflective output coupler positioned on one side of the gain medium to partially reflect back into the gain medium and partially transmit optical radiation received from the gain medium, and

a reflector positioned on the other side of the gain medium to reflect optical radiation received from the gain medium back into the gain medium,

at least one of said output coupler and said reflector comprising a material capable of supporting an optical spatial grating, and having an optical spatial grating therein which is curved to produce unstable resonation through the gain medium in response to lasing stimulation.

4,803,697

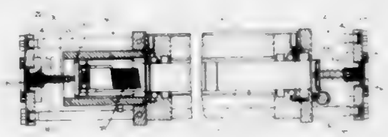
COLD WELDED LASER MIRROR ASSEMBLY

Edwin G. Chaffee, Salt Lake City, Utah, assignor to American Laser Corporation, Salt Lake City, Utah

Filed Nov. 5, 1987, Ser. No. 117,668

Int. Cl.[4] H01S *3/08*

U.S. Cl. 372—107 **2 Claims**



1. A gas laser apparatus, comprising:

(a) a gas laser tube having a bore extending between cathode and anode ends;

(b) said laser tube terminating at each end with a bellows assembly operative to extend the length of the tube bore;

(c) each said bellows assembly comprising:

(i) an adjustably positionable metal bellows secured to a selected end of said tube;

(ii) a tubular pedestal secured at one end to said bellows to form an extension thereof and at the opposite end providing a mirror mount surface;

(iii) a mirror secured to said surface;

(iv) a cold weld material located between said mirror and mirror mount surface; and

(v) retaining means secured to said pedestal encasing the

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outer portion of said mirror and operative to apply pressure to said cold weld material to establish a cold weld seal between said mirror and mirror mount surface to retain said mirror on and prevent shifting of said mirror with respect to said mirror mount surface.

4,803,698

ELECTRICALLY HEATED FOREHEARTH

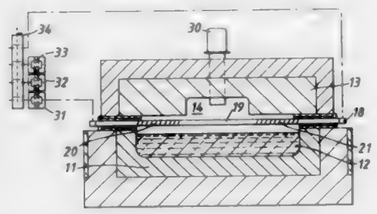
Alan Stephens, South Ruislip, Great Britain, assignor to B.H.F. (Engineering) Limited, Middlesex, England

Filed Sep. 17, 1985, Ser. No. 776,906

Claims priority, application United Kingdom, Sep. 20, 1984, 8423801

Int. Cl.⁴ C03B *18/18*

U.S. Cl. 373—27 **1 Claim**



1. In an electrically heated forehearth for molten glass, which forehearth comprises a refractory trough and a refractory roof thereover, there is provided, along the length of the forehearth above the molten glass level in the forehearth, a plurality of radiant heating elements, each element traversing the forehearth substantially at right angles to the direction of glass flow and each element comprising a heating zone at each edge portion and a central, non-heating zone an wherein said roof has a longitudinal substantially central cooling channel and in which the heating zones of each said element extent substantially to under the edges of said channel and the non-heating zone of each said element extends under the channel.

4,803,699

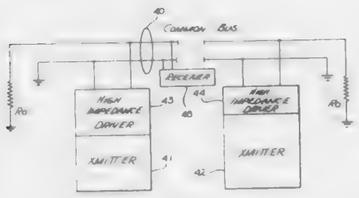
BUS APPARATUS WITH A PLURALITY OF TRANSMITTERS

Martin H. Graham, Berkeley, Calif., assignor to Rolm Corporation, Santa Clara, Calif.

Continuation of Ser. No. 613,025, May 22, 1984, abandoned. This application Oct. 23, 1986, Ser. No. 899,431

Int. Cl.⁴ H03K *19/03, 19/94*

U.S. Cl. 375—36 **5 Claims**



1. In an electrical bus apparatus which includes a bus having a characteristic impedance and at least two transmitters coupled onto said bus for transmitting signals on said bus, a method for improving the performance of said bus where a propagation time along said bus between any two of said transmitters is significant compared to a period of transmission cycles used by said transmitters, comprising the steps of:

providing high impedance current drivers between said transmitters and said bus to drive time division multiplexed signals transmitted from said transmitters;

transmitting a first of said time division multiplexed signals onto said bus from a first of said transmitters;

transmitting a second of said time division multiplexed signals onto said bus from a second of said transmitters, while said first signal is still on said bus;

inhibiting signal loss on said bus when both said first and second signals collide on said bus.

4,803,700

METHOD OF, AND DEMODULATOR FOR, DIGITALLY DEMODULATING AN SSB SIGNAL

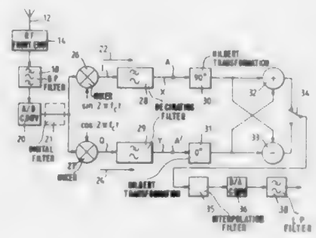
Richard J. Dewey, Reigate, and Christopher J. Collier, Carshalton Beeches, both of England, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jun. 10, 1986, Ser. No. 872,775

Claims priority, application United Kingdom, Jun. 12, 1985, 8514824

Int. Cl.⁴ H03D *1/24*

U.S. Cl. 375—77 **9 Claims**



1. An improved method of demodulating an SSB signal, which method comprises:

analog filtering the SSB signal;

subjecting the filtered SSB signal to analog-to-digital conversion at a sampling frequency f_s and to quadrature mixing with a locally generated carrier wave at a frequency $f_c = fs/y$, where y is an integer greater than 1, so as to derive a pair of quadrature-related digital signals;

applying the respective quadrature-related digital signals to respective signal transmission paths in which they are each digitally filtered and decimated; and

combining the decimated digital signals from both of said transmission paths to derive a demodulated digital SSB signal;

such improvement being characterized in that:

the quadrature-related digital signals are digitally filtered and decimated in each transmission path using a decimation factor whichis an odd-numbered integer greater than 1; and

in one of said paths the decimated digital signal therein is thereafter subjected to a Hilbert transform operation producing a $-90°$ phase shift of frequency components thereof which are in an upper sideband extending from fc to $+fs/2$ and producing a '90° phase shift of frequency components thereof which are in a lower sideband extending from f_c to $-fs/2$;

whereby the combined demodulated digital SSB signal is derived in a frequency passband which is flanked by frequency stopbands.

4,803,701

DIGITAL DETECTION CIRCUIT

Melvin H. Rhodes, Cedar Rapids, Iowa, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 25, 1987, Ser. No. 66,290

Int. Cl.⁴ H03K *5/153*

U.S. Cl. 375—102 **6 Claims**



1. A digital pulse detection apparatus comprising in combination:

a low pass filter receiving a digital signal, said low pass filter filtering said digital signal to remove high frequency components therefrom, said low pass filter providing a digital signal output,

a delay unit operatively connected to said low pass filter unit to receive said digital output signal therefrom, said delay unit delaying said digital output signal by a predetermined time to provide a delayed digital signal,

a first differential amplifier unit operatively connected respectively to said low pass filter and said delay unit, said first differential amplifier unit including inverting input and a non-inverting input, said delayed digital signal being applied to said inverting input, said digital signal output being applied to said non-inverting input, said first differential amplifier unit providing a differential output signal, which is defined by the equation, $V_o = K[V(t) - V(t-T)]$, where K is the gain constant for said first differential amplifier unit, V(t) is the present time t input signal, V(t−T) is the signal present at time, t−T, and said differential output signal V_o represents the delta derivative of the input signal which is a measure of the voltage slope in delta V/delta t, and,

a second differential amplifier unit with a voltage hysteresis that may be set to a predetermined value, said second differential amplifier unit operatively connected to said first differential amplifier unit to receive said differential output signal therefrom, said second differential amplifier unit providing a corrected digital output signal.

4,803,702

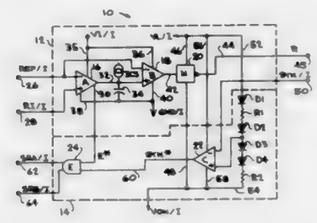
RESET AND SYNCHRONIZATION INTERFACE CIRCUIT

Shallop J. Chen, Milpitas, Calif., and Jan Johansson, Balsta, Sweden, assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 5, 1986, Ser. No. 893,432

Int. Cl.⁴ H04L *7/00*

U.S. Cl. 375—106 **17 Claims**



1. A rest and circuit synchronization interface circuit for use in a subscriber power controller comprising:

resetting means including first comparator means, second comparator means, and network means generating a reset signal at a first node;

said first comparator means being formed of first comparator having hysteresis for comparing an input signal with a reference voltage to produce a first output signal;

said second comparator means being formed of a second comparator for comparing the first output signal from the first comparator with the reference voltage to produce a second output signal;

said network means being responsive to the second signal for inverting and shifting the level of the second output signal to produce the reset signal;

synchronizing means including a third comparator means and an AND logic gate for generating a modified synchronizing signal at a second node;

said third comparator means being formed of a third comparator for inverting of a synchronizing clock signal to generate a complementary synchronizing clock signal; and

said logic gate combining logically the first output signal from said first comparator with the complementary synchronizing clock signal to produce the modified synchronizing signal.

4,803,703

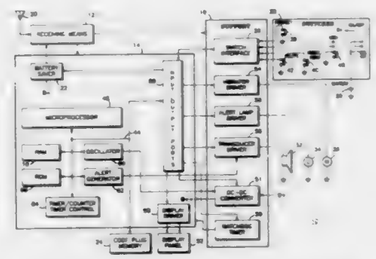
APPARATUS AND METHOD FOR FINE SYNCHRONIZATION OF A COMMUNICATION RECEIVER

Michael J. DeLuca, Boca Raton, and David F. Willard, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1987, Ser. No. 44,377

Int. Cl.⁴ H04C *7/00*

U.S. Cl. 375—116 **31 Claims**



1. A method for synchronizing a decoding means of a communication receiver, said method comprising the steps of:

(a) receiving digitally encoded signals transmitted to the communication receiver, the digital signals including a bit synchronization signal

(b) synchronizing the decoding means to the bit synchronization signal for generating a timing signal in response thereof;

(c) measuring a phase relationship between the timing signal and a subsequent portion of the received digitally encoded signals; and

(d) adjusting the timing signal on the basis of the measured phase relationship to establish a predetermined phase relationship between the timing signal and the remaining digitally encoded signals.

4,803,704

CIRCUIT ARRANGEMENT FOR THE RECOGNITION OF IMPERMISSABLE PHASE ERRORS IN A PHASE LOCKED LOOP

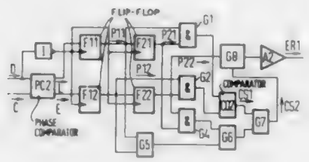
Erik Solhjell, Oslo, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Filed Jul. 6, 1987, Ser. No. 70,191

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1986, 3643966

Int. Cl.⁴ H04L *7/02*

U.S. Cl. 375—120 **7 Claims**



1. A phase-locked loop circuit arrangement for recognition of impermissable phase errors in binary data signals fed to the phase-locked loop, comprising:

an oscillator means for generating clock signals;

means for generating phase signals indicating phase differences between said binary data signals and said clock signals by a phase comparison;

means connected to a control input of said oscillator means for modifying a repetition rate of said clock signals dependent on said phase signals; and

a switching means connected to receive said binary data signals and said phase signals for recognizing impermissable phase errors when two successive phase differences between said binary data signals and said clock signals have directions opposite one another, and for inhibiting said means for modifying the repetition rate of said clock signals given presence of said impermissable phase errors.

4,803,705

ANALOG PHASE LOCKED LOOP

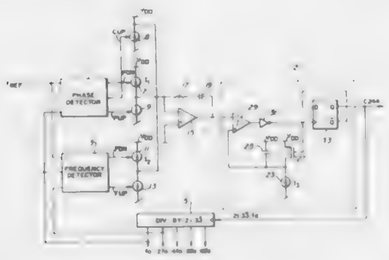
Peter Gillingham, Ottawa, and Jan H. Erkku, Nepean, both of Canada, assignors to Mitel Corporation, Ontario, Canada

Filed Aug. 19, 1987, Ser. No. 87,049

Claims priority, application Canada, Aug. 29, 1986, 517,262

Int. Cl.⁴ H03D *3/24*

U.S. Cl. 375—120 **14 Claims**



1. A phase locked loop for synchronizing a local digital signal with a remote digital signal, comprised of:

(a) first means for receiving and comparing said local and remote digital signals, and upwardly adjusting the frequency of said local signal in the event the local signal frequency is less than the remote signal frequency, and downwardly adjusting the frequency of said local signal in the event the local signal frequency is greater than the remote signal frequency,

(b) second means for receiving and comparing said local and remote signals, and upwardly adjusting the frequency of said local signal in the event the local signal phase lags the remote signal phase, and downwardly adjusting the frequency of said local signal in the event the local signal phase leads the remote signal phase, and

(c) means for detecting elongated pulse widths of said remote digital signal and upwardly adjusting the frequency of said local signal in response thereto, for counteracting downward adjustment of the local signal frequency by said first and second means in response to detection of said elongated remote signal pulse widths,

whereby said local and remote signals are phase and frequency locked regardless of pulse width anomalies of said remote signal.

4,803,706

VARIABLE DELAY CHARGE COUPLED DEVICE

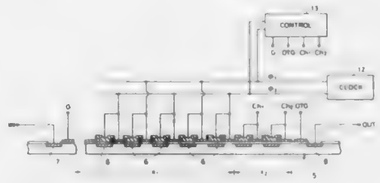
Jin Murayama; Takashi Miida, and Ryuji Kondo, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 9, 1987, Ser. No. 71,682

Claims priority, application Japan, Jul. 9, 1986, 61-159546

Int. Cl.⁴ G11C *19/28*; **H01L** *29/78*

U.S. Cl. 377—63 **4 Claims**



1. A CCD delay element, comprising:

a delay stage of a plurality of charge-coupled-device unit cells arranged in a transfer direction;

an adjusting stage of at least one charge-coupled-device unit cell of a same configuration as those of said delay stage and arranged in series with said unit cells of said delay stage;

clocking means for applying clocking signals to said unit cells of said delay stage to transfer data signals along said transfer direction; and

selective means for selectively applying at least one of said clocking signals and a predetermined locking potential to said unit cell of said adjusting stage, said locking potential applied to said unit cell of said adjusting stage causing said unit cell of said adjusting stage to be a conduction channel to transfer said data signals thereacross without delay, said one of said clocking signals applied to said unit cell of said adjusting stage to transfer said data signals thereacross with a delay determined by a period of said clocking signals, whereby said data signals are transferred across said delay stage and said adjusting stage with a selective delay.

4,803,707

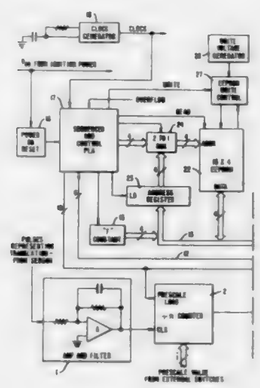
NONVOLATILE ELECTRONIC ODOMETER WITH EXCESS WRITE CYCLE PROTECTION

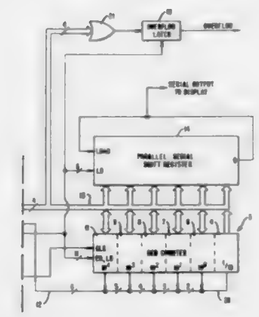
Ernest W. Cordan, Jr., Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 21, 1987, Ser. No. 135,200

Int. Cl.⁴ G01C *22/00*

U.S. Cl. 377—24.1 **7 Claims**





1. A circuit for digitally accumulating and storing odometer information, comprising:

a source of digital signals representing odometer data;

a binary counter configured from volatile electronic devices and operable to accumulate in successive stages information representing digital odometer data;

a nonvolatile memory array which stores at individually addressable locations binary words representing decimal odometer data;

a bus connecting the nonvolatile memory array to the stages of the binary counter;

means for defining a correspondence between a binary counter stage and a nonvolatile memory array addressable location for purposes of reading or writing data;

means for relocating a first addressable location assigned to store binary data representing first decimal value odometer data by generating a first new address from first high value decimal odometer data; and

means for relocating a second addressable location assigned to store binary data representing second decimal value odometer data by generating a second new address from second high value decimal odometer data.

4,803,708

TIME-OF-DAY COINCIDENCE SYSTEM

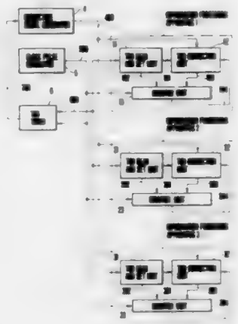
Yuya Momose, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 3, 1987, Ser. No. 92,523

Claims priority, application Japan, Sep. 11, 1986, 61-214762

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 377—28 **4 Claims**



1. A time of day coincidence system for coinciding time of day values of a plurality of apparatuses, comprising:

clock pulse generating means for generating clock pulses having a predetermined interval;

TOD timer means controlled by the clock pulses;

correction signal generating means for generating a correction signal in a predetermined interval which is a predetermined multiple of the count cycle of said TOD timer means;

said clock pulse generating means, said TOD timer means, and said correction signal generating means being arranged commonly for said apparatuses;

a counter, a count of which is incremented in response to the clock pulse;

reading and setting means for reading out current time of day information from said TOD timer means in response to an external instruction and setting the time of day information in said counter; and

correcting means for correcting the count of said counter in response to the correction signal in accordance with a predetermined rule,

said counter, said reading and setting means, and said correcting means being arranged in each of said apparatuses.

4,803,709

ELIMINATION OF KTC NOISE IN A CHARGE COUPLED DEVICE

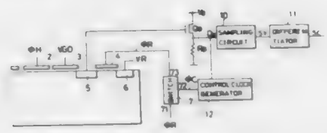
Masafumi Kimata, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Itami, Japan

Filed Jul. 27, 1987, Ser. No. 78,198

Claims priority, application Japan, Aug. 29, 1986, 61-204498

Int. Cl.⁴ G11C *19/28*; **H01L** *29/78*

U.S. Cl. 377—58 **17 Claims**



1. An output circuit of a charge coupled device comprising a first transistor having a floating diffusion provided to receive

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a series of signal charges from a charge transfer section, each signal charge being transferred to the floating diffusion in synchronism with a drive clock applied to the charge transfer section, the first transistor having a gate electrode connected to receive a reset clock ($\phi R'$), and interval means for causing the reset clock ($\phi R'$) to have an interval longer than the period of the drive clock.

4,803,710

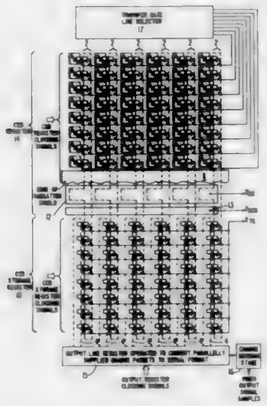
STORAGE REGISTERS WITH CHARGE PACKET ACCUMULATION CAPABILITY, AS FOR SOLID-STATE IMAGERS

Hasmann Elabd, Mercer County, N.J., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 817,536, Jan. 9, 1986, abandoned. This application Mar. 4, 1987, Ser. No. 22,587

Int. Cl.⁴ G11C *19/28;* **H01L** *29/78, 27/14, 31/00*

U.S. Cl. 377—60 **17 Claims**



1. A charge-coupled-device (CCD) storage register located along a surface of a substrate of semiconductor material, said CCD storage register comprising:

a first set of CCD charge transfer channels arranged in a first parallel array with intervening spaces, said first set of CCD charge transfer channels having respective input ports in parallel alignment with each other and having respective successions of charge transfer stages arranged in rows;

a second set of CCD charge transfer channels, each located in a respective space adjacent to a corresponding one of said first set of CCD charge transfer channels, with no intermediate charge packet storage locations between any one of said first set of charge transfer channels and the corresponding one of said second set of charge transfer channels, said second set of CCD charge transfer channels having respective successions of charge transfer stages also arranged in said rows and having respective output ports in parallel aligment;

means for parallelly transferring successive lines, or ranks, of charge packets into the input ports of said first set of charge transfer channels;

means for parallelly advancing charge packets in rows of charge transfer stages in said first set of CCD charge transfer channels to suceeding ones of those rows;

transfer gate electrode structures between corresponding ones of said first and second charge transfer channels, receptive of pulsed voltages for selectively transferring ranks of charge packets from ones of the charge transfer stages in each of said first set of CCD charge transfer channels to adjacent charge transfer stages in the same row and in said adjacent one of said second set of CCD channels, which transfer gate electrode structures implement exclusive means for transferring charge packets into said second set of CCD charge transfer channels, the selective transferring taking place between selected ones of the advances of ranks of charge packets in said first set of CCD charge transfer channels; and

means for parallelly advancing each rank of charge packets transferred into said second set of CCD charge transfer channels through said second set of CCD charge transfer channels to be supplied from their output ports.

4,803,711

X-RAY INSPECTION APPARATUS

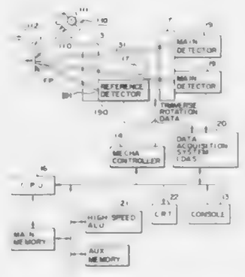
Osamu Tsujii, Fuchu, and Masashi Fujii, Hachioji, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 911,100, Sep. 24, 1986, abandoned. This application Jan. 9, 1988, Ser. No. 204,922

Claims priority, application Japan, Sep. 26, 1985, 60-0211034; Sep. 30, 1985, 60-216520

Int. Cl.⁴ G01N *23/02;* **G06F** *15/42*

U.S. Cl. 378—4 **14 Claims**



11. An X-ray CT scanner comprising:

X-ray generator means for generating X-ray beams for a given focal point;

main X-ray detector means, facing said given focal point, for detecting an amount of the X-ray beams passing through an object to provide projection data of an object to be inspected; and

reference detector means, facing said focal point, for detecting variations in size of said focal point, and removing errors, contained in said projection data and caused by the focal point size variations, based on the result of the detection of said focal point size variations.

4,803,712

X-RAY EXPOSURE SYSTEM

Yukio Kembo; Minoru Ikeda, both of Yokohama, and Motoya Taniguchi, Kamakura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 20, 1987, Ser. No. 4,880

Int. Cl.⁴ G03F *9/00*

U.S. Cl. 378—034 **25 Claims**

11. An X-ray exposure system comprising:

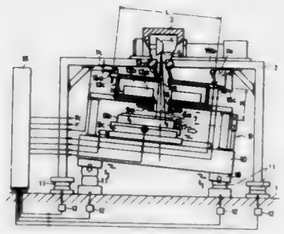
mask-wafer alignment means including a wafer holder for holding a wafer, a mask holder for holding a mask having an exposure pattern, alignment detecting means for detecting a relative displacement between an alignment pattern of the mask and an alignment pattern of the wafer, and alignment means for aligning the wafer and the mask by moving at least one of the wafer holder and the mask holder in accordance with the relative displacement detected by the alignment detecting means;

a supporting base fixedly mounted to and supporting the mask-wafer alignment means;

vibration isolator means for supporting the supporting base to that vibration does not propagate to the mask-wafer alignment means;

a frame set on a floor;

X-ray source means for generating X-rays, said X-ray source means being fixedly provided on the frame so that an



X-ray generated from the X-ray source means is irradiated toward the mask and the wafer;

detecting means for detecting the three dimensional position of the mask-wafer alignment means with respect to the X-ray source means; and

correcting means for correcting for dislocation of the projection of the said exposure pattern on the wafer on the basis of position data detected by the detecting means.

4,803,713

X-RAY LIGHOGRAPHY SYSTEM USING SYNCHROTRON RADIATION

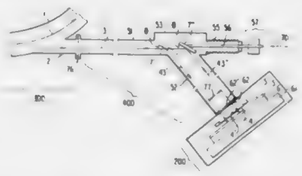
Kiyoshi Fujii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 5, 1987, Ser. No. 116,816

Claims priority, application Japan, Nov. 5, 1986, 61-261830

Int. Cl.⁴ G21K *5/00, 5/10*

U.S. Cl. 378—34 **4 Claims**



1. An X-ray lithography system using synchrotron radiation including X-rays, said system comprising a beam line structure and an X-ray lithography exposure apparatus, said beam line structure including a first line portion extending in a first direction, a second line portion extending in a second direction inclined from said first direction, a chamber connecting said first and second line portions, a mirror for reflecting said X-rays provided in said chamber, and a means for moving said mirror in said first direction while keeping a constant angle from said first direction, whereby X-rays traveling in said first direction within said first line portion are reflected by said mirror to said second direction and travel within said second line portion and said X-rays within said second line portion can be scanned in a third direction perpendicular to said second direction in correspondence with the movement of said mirror in said first direction by said means, and said X-ray lithography exposure apparatus being positioned at the end of said second line portion of said beam line structure and including an X-ray mask provided along said third direction such that said scanning X-rays irradiate perpendicularly to the surface of said mask in all exposure areas of said mask.

4,803,714

METHOD POR FORMING A RADIOGRAM USING SLIT-SCANNING RADIOGRAPHIC TECHNIQUES

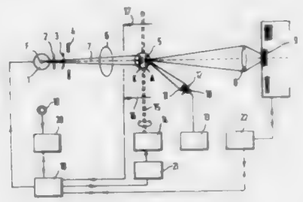
Hugo Vlasbloem, Maasland, Netherlands, assignor to B. V. Optische Industrie "De Oude Delft", Delft, Netherlands

Filed Sep. 7, 1984, Ser. No. 648,787

Claims priority, application Netherlands, Sep. 13, 1983, 8303156

Int. Cl.⁴ G01N *23/04*

U.S. Cl. 378—62 **1 Claim**



1. A method for forming a radiogram of an object, which comprises the steps of:

(a) energizing an X-ray source to a low level of radiation intensity, said X-ray source including a slit diaphragm;

(b) pivoting said X-ray source during a first scanning of said object;

(c) moving an elongated X-ray detector along a position corresponding to a position of said X-ray source during said first scanning thereby to generate output signals of radiation intensity;

(d) measuring said output signals during at least a portion of said first scanning;

(e) energizing said X-ray source to a higher level of radiation intensity as determined by step (d) to form a radiogram;

(f) pivoting said X-ray source during a second scanning of said object at said higher level of radiation intensity;

(g) moving said elongated X-ray detector along said position corresponding to said position of said X-ray source during said second scanning thereby to generate second output signals of radiation intensity; and

(h) forming said radiogram from said second output signals.

4,803,715

THICKNESS MEASUREMENT WITH AUTOMATIC CORRECTION FOR CHANGES IN COMPOSITION

Boong Y. Cho, Columbus, Ohio, assignor to Process Automation Business, Inc., Columbus, Ohio

Filed Oct. 10, 1986, Ser. No. 918,162

Int. Cl.⁴ G01B *15/02*

U.S. Cl. 378—90 **9 Claims**

9. An apparatus for measuring the thickness of a sheet of metal alloy, which apparatus is calibrated with samples of a reference alloy, and which sheet has a composition that may vary from the reference alloy, comprising:

means positioned on one side of the sheet for irradiating the sheet with X-rays;

means positioned on the one side of the sheet for detecting X-rays that are emitted by the irradiating means to produce a reference signal expressive of the intensity of emitted X-rays;

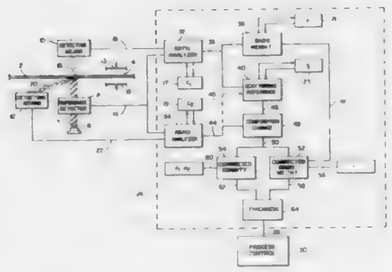
means positioned on the opposite side of the sheet for detecting X-rays that are transmitted through the sheet to produce a transmission signal expressive of the intensity of transmitted X-rays;

means positioned on the one side of the sheet for detecting

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X-rays that are backscattered by the sheet to produce a scattering signal expressive of the intensity of backscattered X-rays;

signal processing means, responsive to the reference, transmission, and scattering signals, with means for producing a thickness response expressive of the thickness of the sheet, the magnitude of which thickness response depends upon the degree to which a ratio response differs from a



comparison response, wherein the signal processing means comprises means to produce the ratio response in response to the reference and scattering signals, and means to produce the comparison response in response to the reference and transmission signals, and wherein the comparison response indicates what the ratio response should be if the composition of the sheet is equal to the reference alloy.

4,803,716

X-RAY DIAGNOSTICS INSTALLATION FOR RADIOGRAPHS

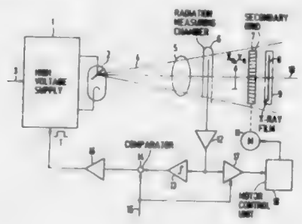
Ernst Ammann, Bubenreuth, and Paul Marhoff, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 21, 1987, Ser. No. 75,995

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1986, 3625856

Int. Cl.⁴ G21K *1/02*

U.S. Cl. 378—155 **1 Claim**



1. An x-ray diagnostics installation comprising:

means for generating an x-ray beam having a central ray directed at an examination subject;

x-ray film disposed in the path of said x-ray beam after said examination subject for recording radiation from said means for generating attenuated by said examination subject;

means disposed between said examination subject and said x-ray film for generating an electrical signal corresponding to the exposure time;

a secondary radiation grid also disposed between said examination subject and said x-ray film having lamellae;

means for moving said secondary radiation grid perpendicularly with respect to said central ray of said x-ray beam; and

control means for controlling the speed of movement of said secondary radiation grid dependent on said exposure time including means for integrating said signal corresponding to the exposure time, and wherein said signal corresponding to said exposure time is also supplied as a control signal for said means for moving said secondary radiation grid, such that the speed of said secondary radiation grid is controlled for all exposure times to avoid imaging said lamellae of said secondary grid on said x-ray film.

4,803,717

AUTOMATIC ANSWERING TELEPHONE WITH MEMORY STORAGE HAVING STORAGE INDICATION AND AN ALARM

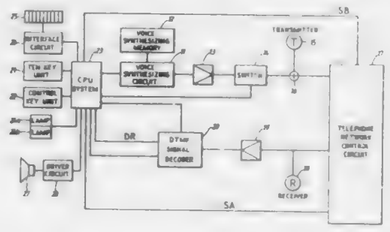
Kuniyoshi Marui, Tokorozawa, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Jul. 23, 1985, Ser. No. 757,868

Claims priority, application Japan, Jul. 30, 1984, 59-157232

Int. Cl.⁴ H04M *1/65*

U.S. Cl. 379—67 **26 Claims**



1. In a telephone system automatically responsive to transmitted DTMF signals containing information received from a calling originator, the method of receiving and processing said signals for storing said information in a memory of the telephone system, said information comprising at least one characteristic of the calling originator, comprising the steps of:

determining the number of vacant areas within said memory available for storing said information;

generating and transmitting a synthesized voice message corresponding to a first predetermined response message to the calling originator to request said calling originator to transmit DTMF signals if there are vacant areas available for storage;

receiving said transmitted DTMF signals;

generating a synthesized voice message corresponding to said received signals;

transmitting said synthesized voice message to said calling originator for confirmation of said DTMF signals received from said calling originator;

displaying the number of vacant areas available for storage; and

storing said received information in said memory if there are vacant areas available for storage, said stored information being selectively read in any order as required by a user of the telephone system; and

automatically generating and transmitting a synthesized voice message corresponding to a second predetermined response message to said calling originator if there are no vacant areas available for storage.

4,803,718

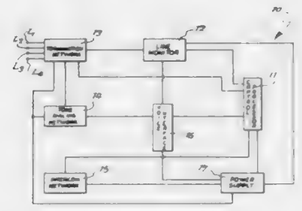
HOLD DETECTING AND CONTROL CIRCUIT FOR A KEY TELEPHONE SYSTEM

James E. Neil, Buffalo; Victor Demjanenko, North Tonawanda, and Christopher R. Calle, Williamsville, all of N.Y., assignors to Tree Technologies Corporation, Williamsville, N.Y.

Filed Mar. 6, 1987, Ser. No. 22,890

Int. Cl.⁴ H04M *1/00, 9/06*

U.S. Cl. 379—163 **65 Claims**



1. A hold detecting circuit for a key telephone system, for determining a telephone line state of on-hook, hold, or off-hook, comprising:

means for periodidally detecting a line voltage to obtain a detected line voltage;

means for determining a representative stable on-hook line voltage using detected voltge obtained when the telephone line is in an on-hook state;

means for storing the value of said stable on-hook line voltage;

means for determining a representative stable off-hook line voltage using detected voltage obtained when the telephone line is in an off-hook state;

means for storing the value of said stable off-hook line voltage;

means for calculating a first transition threshold voltage separating off-hook and hold line states using the stored stable on-hook and stable off-hook voltages and known system constants;

means for calculating a second transition threshold voltage separating hold and on-hook line states using the stored stable on-hook and stable off-hook voltages and known system constants; and

means for comparing said detected line voltage with said first and second threshold voltages to determine off-hook, on-hook and hold line states.

4,803,719

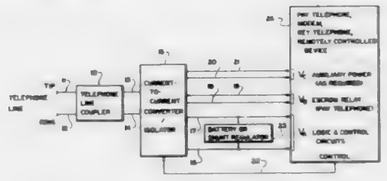
METHOD FOR POWERING TELEPHONE APPARATUS AND TELEPHONE APPARATUS POWERED DIRECTLY FROM THE TELEPHONE LINE WITHOUT EXTERNAL POWER

Thomas J. Ulrich, 14 Brookfield Rd., Binghamton, N.Y. 13903

Filed Jun. 4, 1987, Ser. No. 58,253

Int. Cl.⁴ H04M *19/00*

U.S. Cl. 379—399 **25 Claims**



1. A telephone apparatus powered directly from a telephone line, comprising:

a telephone device;

means, connectable with first and second conductors of a telephone line, for limiting current drawn from said telephone line, and for producing a constant current output;

a transformer including a primary winding and at least one secondary winding connected to said telephone device, said at least one secondary winding being electrically isolated from said primary winding;

switching means, connected to said constant current output, for alternately connecting and disconnecting said constant current output to and from said primary winding at a substantially constant frequency and duty cycle; and

means connected across one of said at least one secondary winding for regulating voltages on all windings of said transformer and for producing regulated output voltages corresponding to respective ones of said at least one secondary winding.

4,803,720

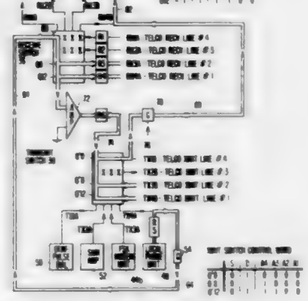
DUAL PLANE CROSS POINT SWITCH ARCHITECTURE FOR A MICRO-PBX

Darryl C. Newell, Boca Raton, Fla.; Karl F. Schroeder, Gaithersburg, and Bruce J. Wilkie, Ijamsville, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 22, 1986, Ser. No. 910,055

Int. Cl.⁴ H04M *3/56*

U.S. Cl. 379—202 **1 Claim**



1. In a micro-PBX system, a telephone switching network for interconnecting a plurality of dissimilar shared telephone resource units, comprising:

a software reconfigurable cross point switch having a first switching plane for interconnecting a first subplurality of shared telephone resource units and having a second, idependently switched switching plane for selectively interconnecting a second subplurality of shared telephone resource units;

a stored program data processing means having an input-/output bus connected to a control input of said cross point switch, for selectively setting the switching state of switching elements in said first and said second switching planes thereof;

said send and the receive paths in a telephonic communications session being independently switched between respective ones of said shared telephone resource units;

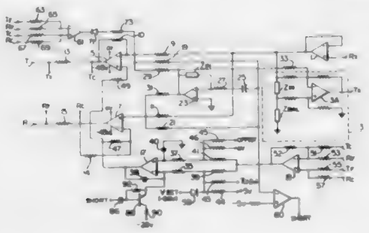
at least two telephone receive lines connected through respective build-out resistors to a common node in said first switching plane;

a summing amplifier having an input connected to said common node in said first switching plane and an output

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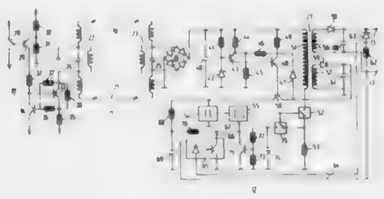
connected through an impedance device to an input node of said second switching plane;
said input node of said second switching plane being connected to transmit lines associated with said receive lines;
whereby the analog signals on said receive lines can be algebraically summed for telephone conference communications.

4,803,721
DC CONTROL CIRCUIT
Pierre J. Schingh, Gatineau, Canada, assignor to Mitel Corp., Kanata, Canada
Filed Dec. 2, 1987, Ser. No. 127,902
Claims priority, application Canada, Dec. 24, 1986, 526334
Int. Cl.[4] H04M *9/00*
U.S. Cl. 379—399 **10 Claims**



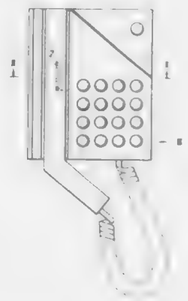
1. In a telephone interface circuit including tip and ring lead differential driver circuits connected via respective output resistors to tip and ring terminals for carrying nominal DC line voltages, the improvement comprising a DC control circuit comprised of means for comparing the DC voltage carried by said tip terminal with a predetermined DC offset voltage, and in response generating and applying a DC bias signal to each of said tip and ring terminals via respective ones of said driver circuits, such that the DC voltages carried by said tip and ring terminals are maintained at respective predetermined levels offset from said nominal voltages by an amount equivalent to said predetermined DC offset voltage.

4,803,722
CIRCUIT FOR REMOTE SUPPLY OF SUBSCRIBER LINE TERMINALS IN A TELECOMMUNICATION SYSTEM
Harald Schreiber, Salzkotten, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany
Filed Apr. 10, 1986, Ser. No. 849,977
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1985, 3513625
Int. Cl.[4] H04M *19/00*
U.S. Cl. 379—413 **20 Claims**



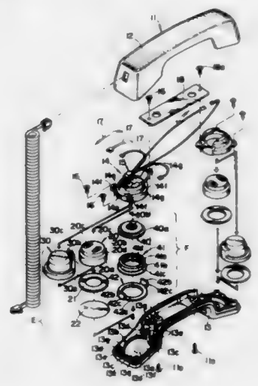
1. An improved circuit for remotely supplying electrical power to subscriber line terminals in a telecommunication system, from a central source of electrical current by way of a supply circuit and a subscriber line, wherein each terminal is connected to the subscriber line by a switching current converter having a primary side and a primary side energy reservoir connected to the subscriber line so as to supply power to the current converter, said switching current converter being switchable between an on and off state in response to a switching signal and supplying a preselected level of current, wherein the improvement comprises:
said switching current converter having an output voltage and including a control circuit for controlling the switching of said converter in accordance with said output voltage, said control circuit including means for generating a control signal for controlling the switching of said converter, said control signal having a rising flank of finite slope when said converter is switched on and possessing characteritistics to prevent said preselected current level from being exceeded,
said converter further including a switching circuit having a primary side controlled by switching pulses, and
said control circuit including a voltage controlled pulse width modulator for generating said switching pulses, and means for controlling the voltage applied to said modulator, said voltage controlling means including a resistance and a capacitance arranged as a delay circuit.

4,803,723
TELEPHONE
Gordon Willis, St Albans, Great Britain, assignor to STC PLC, London, United Kingdom
Filed Oct. 16, 1987, Ser. No. 109,107
Claims priority, application United Kingdom, Dec. 24, 1986, 86 30895
Int. Cl.[4] H04M *1/08*
U.S. Cl. 379—424 **4 Claims**



1. A telephone subscriber's instrument, which includes;
an instrument body with a recess of generally rectangular cross-section in the instrument body;
a handset a substantial part of the length of which is of generally rectangular cross-section and so proportioned that the handset fits smoothly into the recess;
an upstanding locating member in the bottom of the recess and a blind hole in the handset which fits over the upstanding locating member when the handset is in the recess, so as to locate said handset in the recess;
hook-switch contact means within the instrument body and adjacent to one side of the recess; and
a pivotted member located in an upright side with respect to the bottom of the recess, said pivotted member mounted in the instrument body with a portion of said pivotted member extending into said recess;
wherein:
when the handset is fitted into said recess with its blind hole over said upstanding member the side of the handset rocks said pivotted member about its pivot point in such a direction as to operate said contact means against spring urgence into the on hook condition of said contact means; and
wherein when the handset is removed from said recess said spring urgence drives the contact means to its off-hook condition and causes the pivotted member to pivot about its said pivot point to its off-hook condition.

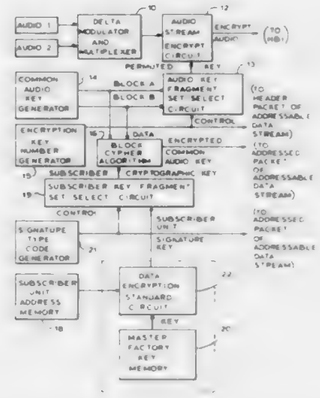
4,803,724
HAND SET
Yoshihiro Utoh, Hino, and Koichiro Suda, Fuchu, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 24, 1987, Ser. No. 17,702
Claims priority, application Japan, Feb. 28, 1986, 61-28758[U]
Int. Cl.[4] H04M *1/03*
U.S. Cl. 379—433 **13 Claims**



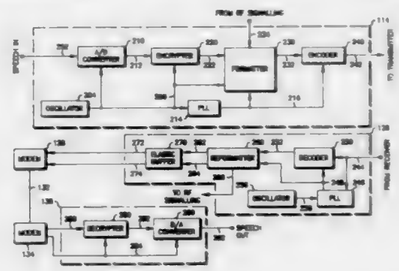
1. A hand set, comprising:
a case including a talk sending surface having a plurality of sound holes therein and a first fastenable portion disposed proximate said talk sending surface;
a holder including a second fastenable portion and means for firmly placing in the alternative on said talk sending surface of said case both a pressure contact set type sender assembly and a float set type sender assembly, said holder having a cavity with an upper part which accommodates the placed one of said pressure contact set type sender assembly and said float set type sender assembly; and
fastening means for fastening said first and second fastenable portions together and for clamping said placed one of said pressure contact set type sender assembly and said float set type sender assembly between said placing means of said holder and said talk sending surface of said case.

4,803,725
CRYPTOGRAPHIC SYSTEM USING INTERCHANGEABLE KEY BLOCKS AND SELECTABLE KEY FRAGMENTS
Donald R. Horne, Don Mills, and John M. Jeffers, Downsview, both of Canada, assignors to General Instrument Corp., New York, N.Y.
Division of Ser. No. 710,385, Mar. 11, 1985, Pat. No. 4,694,491.
This application May 14, 1987, Ser. No. 50,635
The portion of the term of this patent subsequent to Sep. 15, 2004, has been disclaimed.
Int. Cl.[4] H04L *9/02*; H04K *1/06*; H04N *7/167*
U.S. Cl. 380—44 **35 Claims**

21. A receiver for use in a system broadcasting information of the type comprising a key having more than one key fragment, the key fragments having been arranged in a selected order to form a permuted key, data indicative of the selected order of the key fragments in the permuted key, and information encrypted using the permuted key, the receiver comprising means for receiving the key, data and encrypted information, means for obtaining the permuted key from the received key in accordance with the received data and means for decrypting the received information using the obtained permuted key.



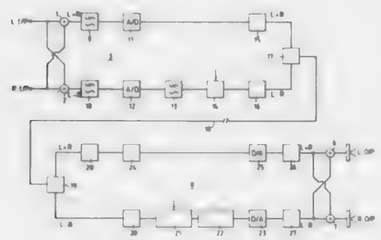
4,803,726
BIT SYNCHRONIZATION METHOD FOR A DIGITAL RADIO TELEPHONE SYSTEM
Stephen N. Levine, Itasca; Larry C. Puhl, Sleepy Hollow; Harry M. Bliss, and Gerald E. Corrigan, both of Chicago, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 31, 1986, Ser. No. 948,199
Int. Cl.[4] H04K *1/02*; H04L *7/00*
U.S. Cl. 380—48 **52 Claims**



22. A method of maintaining continuous bit synchronization of digitally encrypted speech transmitted over both landline and radio frequency (RF) data transmission paths between a land station and a remote station through a base station, said bit synchronization in the remote station:
converting an analog input speech signal into digital speech data to provide an input data stream having a first bit rate;
encrypting said input data stream to provide an encrypted data stream;
interleaving a predetermined number of data bits of said encrypted data stream with a plurality of predetermined signalling words to provide a combined data message having a second bit rate;
encoding said combined data message into a digital format;

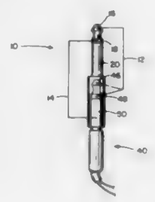
transmitting said encoded data message via said RF transmission path;
in the base station:
receiving said transmitted data message from said RF transmission path;
phase-locking a clock signal to said received data message and clocking said received data message through subsequent steps with said phase-locked clock signal;
decoding said received data message;
correlating said signalling words of said received data message with known signalling words to provide a correlation detect signal;
counting a number of data bits of said received data message occurring after said correlation detect signal until said predetermined number of data bits have been counted;
separating said counted number of data bits from said received data message to provide a plurality of separated data words having an instantaneous bit rate corresponding to said phase-locked clock signal;
buffering said separated data words to provide a continuous data stream at said first bit rate;
adjusting the clock rate of said continuous data stream to meet predetermined data rate tolerance requirements of landline transmission equipment;
transmitting said adjusted data stream via said landline transmission path;
in said land station:
receiving said tansmitted data stream from said landline transmission path;
decrypting said received data stream and
converting said decrypted data stream into an analog signal, thereby reconstructing said input speech signal.

4,803,727
TRANSMISSION SYSTEM
Christopher E. Holt, and John M. Rollett, both of Ipswich, England, assignors to British Telecommunications public limited company, Great Britain
Filed Nov. 24, 1987, Ser. No. 124,512
Claims priority, application United Kingdom, Nov. 24, 1986, 8628046
Int. Cl.[4] H04S 1/00
U.S. Cl. 381—1 **17 Claims**



1. A transmission system for audio signals in which at a transmitter: a monophonic signal and a difference signal are derived from multiple input signals, a digital version of the difference signal is bandlimited to a predetermined bandwidth smaller than that of the monophonic signal, the sampling rate of the digital bandlimited difference signal is reduced; and the monophonic and resulting difference signals are transmitted to a receiver; and in which at a receiver: upon reception, the sampling rate of the digital difference signal is increased, frequencies above the predetermined bandwidth in the difference signal are attenuated, and left and right output signals are derived from the monophonic and resultant difference signals; and in which, either at the transmitter or receiver, compensation for differential delays in the monophonic and difference signals is introduced.

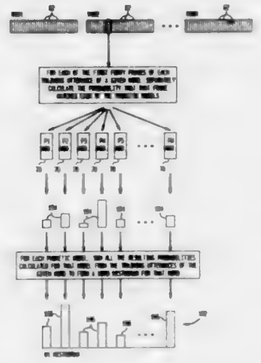
4,803,728
STEREO MIXING JACK
Jeffrey A. Laeken, 514 Rolling Hills Dr., NW., Bemidji, Minn. 56601
Filed Jun. 23, 1987, Ser. No. 65,507
Int. Cl.[4] H04S 1/00
U.S. Cl. 381—25 **2 Claims**



1. An apparatus for use between the output of a stereophonic source having a left channel, right channel and common ground outputs, and the input of a headphone set having a standard headphone set plug with corresponding left channel, right channel and common ground inputs, to suppress lead instrumental and vocal audio signals, comprising:
(a) an adapter having a male plug portion and a female receptacle portion;
(b) said male plug portion adapted to mate with the output of the stereophonic source, said male plug portion having first, second, and third electrical conductivity connections corresponding respectively to the left channel, right channel and common ground outputs of the stereophonic source;
(c) said female receptacle portion being adapted to receive the standard headphone set plug, said female portion being in electrical communication with said male plug portion;
(d) said adapter having electrical paths constructed and arranged to electrically connect said male plug portion to the input of the headphone set when the headphone set plug is received by said female receptacle,
wherein one said electrical path electrically connects said first conductivity connection of said male plug to the left and right channel inputs of the headphone set; and
(e) a second electrical path electrically connects said second conductivity connection of said male plug to the common ground input of the headphone set.

4,803,729
SPEECH RECOGNITION METHOD
James K. Baker, West Newton, Mass., assignor to Dragon Systems, Inc., Newton, Mass.
Filed Apr. 3, 1987, Ser. No. 34,843
Int. Cl.[4] G10L 5/00
U.S. Cl. 381—43 **29 Claims**

1. A method of speech labeling comprising:
representing speech to be labeled as a sequence of acoustic frames;
storing a plurality of acoustic frame models, each of which represents a certain class of sounds, with the acoustic models representing at least twenty different phonetic classes of sound;
storing a plurality of transition probabilities, each of which indicates the probability that a frame associated with a first acoustic model will neighbor a frame associated with a second, but not necessarily different, acoustic model;
associating one or more of the acoustic models with a given frame as a function of (a) the closeness with which the given frame compares to each of a plurality of the acoustic models, (b) an indication of which one or more of the acoustic models most probably correspond with a frame which neighbors the given frame, and (c) one or more transition probabilities which indicate, for one or more acoustic models associated with the neighboring frame, the probability that the given frame is associated with a given acoustic model; and



labeling each frame in said sequence of acoustic frames with a label identifying said one or more associated acoustic models.

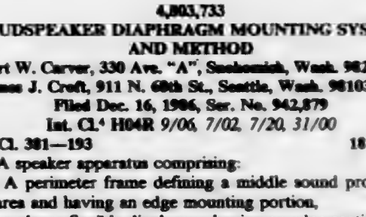
4,803,730
FAST SIGNIFICANT SAMPLE DETECTION FOR A PITCH DETECTOR
David L. Thomson, Aurora, Ill., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 31, 1986, Ser. No. 926,013
Int. Cl.[4] G10L 1/00
U.S. Cl. 381—49 **16 Claims**



1. An apparatus responsive to a digitized signal comprising a plurality of segments each having a plurality of samples for determining a set of significant samples from said digitized signal, comprising:
means for searching in reverse order through said samples of one of said segments to determine a set of candidate samples; and
means for searching in a forward order through said set of candidate samples to determine a set of significant samples for said one of said segments.

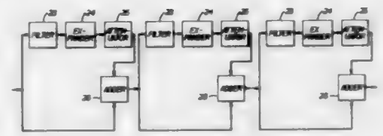
4,803,731
REVERBATION IMPARTING DEVICE
Koji Niisi; Yuji Kakubo, and Yuji Ikegaya, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan
Continuation of Ser. No. 643,976, Aug. 22, 1984, abandoned. This application Aug. 24, 1987, Ser. No. 89,907
Claims priority, application Japan, Aug. 31, 1983, 58-161065; Aug. 31, 1983, 58-161066; Aug. 31, 1983, 58-161067
Int. Cl.[4] H03G 3/00
U.S. Cl. 381—63 **12 Claims**

1. A reverberation imparting device comprising:
a single delay memory receiving and storing samples of input signal data in different memory locations;
addressing means for causing the delay memory to be addressed to read out a plurality of delay signals corresponding to predetermined delay times;
adjusting means for controlling the operation of the addressing means to cause different memory locations to be addressed to collectively alter said predetermined delay times by a common factor;



addition means for adding a first group of said delay signals to produce a first added signal and adding a second group of said delay signals to produce a second added signal; and output means for receiving and electrically adding the added signals and outputting a single reverberation signal.

4,803,732
HEARING AID AMPLIFICATION METHOD AND APPARATUS
Harvey A. Dillon, 17 Chakola Ave., Hornsby Heights, New South Wales 2077, Australia
PCT No. PCT/AU84/00223, § 371 Date Jun. 17, 1985, § 102(e) Date Jun. 17, 1985, PCT Pub. No. WO85/02085, PCT Pub. Date May 9, 1985
PCT Filed Oct. 25, 1984, Ser. No. 758,557
Claims priority, application Australia, Oct. 25, 1983, PG2040
Int. Cl.[4] H04R 25/00; H03G 5/00, 7/00, 9/20
U.S. Cl. 381—68.2 **13 Claims**



1. A method of amplifying a signal received by a microphone of a hearing aid, said method comprising the steps of:
(a) compressing the output signal from the microphone;
(b) dividing the compressed signal into a plurality of separate frequency bands within a hearer's frequency range;
(c) expanding the signal within each separate frequency band;
(d) combining the expanded signals of each separate frequency band; and
(e) modifying the combined signal by a signal which is derived from the envelope of the output signal from the microphone.

4,803,733
LOUDSPEAKER DIAPHRAGM MOUNTING SYSTEM AND METHOD
Robert W. Carver, 330 Ave. "A", Snohomish, Wash. 98290, and James J. Croft, 911 N. 60th St., Seattle, Wash. 98103
Filed Dec. 16, 1986, Ser. No. 942,879
Int. Cl.[4] H04R 9/06, 7/02, 7/20, 31/00
U.S. Cl. 381—193 **18 Claims**

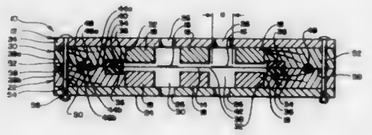
1. A speaker apparatus comprising:
(a) A perimeter frame defining a middle sound producing area and having an edge mounting portion,
(b) a planar flexible diaphragm having an edge section con-

VOL 1099 ISS 1 FE 7 1989 UMI

nected to the edge mounting portion of the frame and a middle sound producing section with at least one electrically conductive element thereon, positioned in the sound producing area defined by the frame,

(c) a magnet means mounted to the frame and positioned to create a magnetic field in the sound producing area to interact with said conductive element to cause the sound producing portion of the diaphragm to move back and forth,

(d) said edge mounting portion of the frame having a tensioning groove means extending along at least part of the



edge mounting portion of the frame and receiving therein a portion of the edge section of the diaphragm

(e) an elongate tensioning member positioned at said tensioning groove means and extending along said portion of the edge section of the diaphragm to press said portion of the edge section of the diaphragm into the tensioning groove means and thus tension the diaphragm, and

(f) said perimeter frame being arranged with pressing means to press the elongate tensioning member at least partially into the tensioning groove means, to obtain a desired tensioning over the sound producing section of the diaphragm.

4,803,734

METHOD OF AND APPARATUS FOR DETECTING PATTERN DEFECTS

Hiroyuki Onishi, Otsu; Tetsuo Sano; Tetsuo Hoki, both of Kyoto; Eiji Kodama, Higashiosaka; Hisayuki Tsujisaka, and Ryuji Kitakado, both of Kyoto, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Dec. 10, 1986, Ser. No. 940,272

Claims priority, application Japan, Dec. 13, 1985, 60-281558

Int. Cl.[4] G06K *9/64*

U.S. Cl. 382—8 **14 Claims**

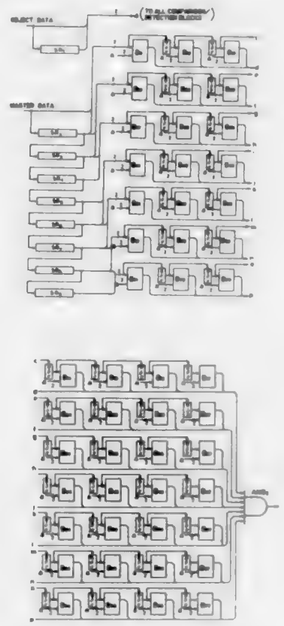
1. A method of detecting pattern defects by comparing a unit area of a two-dimensional object pattern, said unit area having a prescribed size and formed by digitized picture signals obtained sequentially along scanning lines, with a plurality of areas of a digitized two-dimensional master pattern, said method comprising the steps of:

defining a reference area by expanding the periphery of an area of said master pattern to positionally correspond to an area of said object pattern expanded by a predetermined number of pixels for defining said plurality of said master pattern areas, each of said master pattern areas being two-dimensionally misregistered pixel-by-pixel by prescribed different amounts over the expanded area; and

comparing the digitized signals of said master pattern areas with the digitized signals of said unit area of said object pattern corresponding to said master pattern areas to perform defect detection by:

(a) while scanning defect inspection windows, sized to contain a plurality of pixels, over said unit area of said object pattern and said master pattern areas, comparing each one of said plurality of master pattern areas with said unit area of said object pattern to determine for each pair-wise comparison that said patterns are mismatched when all digitized signals representing corresponding pixels included in said windows are mismatched in any scanning position;

(b) determining that said object pattern is defective when said object pattern area is determined to be mismatched with respect to each one of said plurality of master pattern areas; and



(c) determining that said object pattern is not defective when said object pattern area is determined not to be mismatched with respect to at least one of said master pattern areas.

4,803,735

METHOD AND APPARATUS FOR CALCULATING POSITION AND ORIENTATION BY COMBINATION OF FEATURES OF PARTIAL SHAPES

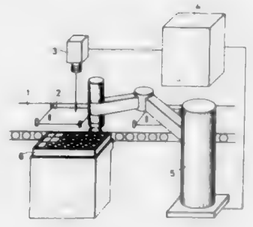
Yoshie Nishida, Yokohama; Seiji Hata, Fujisawa, and Masao Tsuji, Funabashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 9, 1986, Ser. No. 917,053

Claims priority, application Japan, Oct. 11, 1985, 60-224857

Int. Cl.[4] G06K *9/32*

U.S. Cl. 382—8 **9 Claims**



1. A position and orientation calculating method comprising the steps of:

inputting a two-dimensional picture image of an object article obtained from an image detector;

extracting at least two two-dimensional images from at least two windows defining image processing ranges corresponding to two portions of the object article in accordance with coordinates of each of said two windows, and extracting data describing coordinates of a sequence of points from a sequence of segments approximated as a polygon for an image designating a contour of a portion of the object article between each of said two windows;

calculating a center of gravity from said data with respect to a pattern adapted for extraction of an entirety of a partial shape from said two two-dimensional images and calculating a straight line by a linear equation from said data with respect to the pattern adapted for extraction of the partial shape from said windows; and

calculating calculated data describing position and orientation of the object article from said center of gravity and calculating the orientation of said object article from a combination of said center of gravity and the intersection of said straight line and a perpendicular line extending thereto from said center of gravity.

4,803,736

NEURAL NETWORKS FOR MACHINE VISION

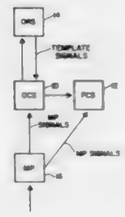
Stephen Grossberg, Newton Highlands, and Ennio Mingolla, Newton, both of Mass., assignors to The Trustees of Boston University, Boston, Mass.

Continuation-in-part of Ser. No. 802,777, Nov. 27, 1985, abandoned. This application Jul. 23, 1987, Ser. No. 102,018

Claims priority, application PCT Int'l Appl., Nov. 26, 1986, PCT/US86/02556

Int. Cl.[4] G06K *9/48*

U.S. Cl. 382—22 **7 Claims**



1. A Boundary Contour System for detecting the boundaries of images having contrast distribution comprising:

(a) mask means responsive to signals corresponding to said contrast distribution for weighting such signals with an orientational weighting function to produce mask output signals proportional to the degree of orientational congruence between the weighting function and the contrast distribution;

(b) node means responsive to said mask output signals for enhancing said mask signals by suppressing the strength of mask output signals emanating from regions of the image of homogeneous contrast distribution to produce enhanced orientational mask signals;

(c) feedback means responsive simultaneouly to the orientational signals emanating from either side of spatial domains about a region of said image for generating a feedback signal to said node means when the orientated signals from both sides of said spatial domains are of sufficient value and orientation to indicate that a boundary contour is present in the region of the image between said domains.

4,803,737

OPTICAL DIGITIZER

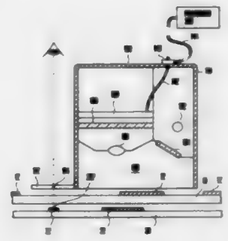
Yoichi Sato, and Kazuo Ichinokawa, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Continuation of Ser. No. 762,144, Aug. 2, 1985, abandoned. This application Sep. 30, 1987, Ser. No. 104,525

Claims priority, application Japan, Aug. 7, 1984, 59-165310

Int. Cl.[4] G06K *9/82, 9/22*

U.S. Cl. 382—65 **20 Claims**



1. An optical digitizer comprising a light active surface located above a graphic data recording medium and optical recognition means movable over said light active surface, said optical digitizer executing a processing for determining position coordinates and a rotational angle of said optical recognition means;

said light active surface comprising a light emitting media arranged to define a coordinate correlative pattern in the form of a lattice consisting of a plurality of longitudinal and lateral straight lines which intersect each other and have respectively coded spacings set at a multiple of an integer of unit length, binary digits (ones and zeros) being assigned to respective coordinate locations corresponding to the multiple of said integer of unit length in the longitudinal and lateral directions of said lattice pattern depending upon whether or not said longitudinal and lateral lines exist at said respective coordinate locations, said binary digits expressing said respective coordinate locations by means of a code sequence defining a maximum period sequence which is created by N stages of a circulating shift register and which is defined by a repetition of a bit pattern having a bit length of (2^N-1) in order to create (2^N-1) kinds of successive N-bit codes which are different from each other;

said optical recognition means comprising:

first means associated with said optical recognition means for visually tracing a data location on said recording medium in accordance with a movement of said optical recognition means to effect a positioning of said optical recognition means with respect to said data location; and

second means within said optical recognition means for sensing light emitted from a partial pattern which falls within a predetermined limited visual range of said coordinate correlative pattern to produce a corresponding electric signal, said emitted light having a wavelength which is different from the wavelength of light irradiated by said second means, said corresponding electrical signal effecting a computation for determining position coordinates of the graphic data on said recording medium, said computation being carried out by finding data which is indicative of an arbitrary single straight line from said projected image data corresponding to said partial pattern which is optically recognized by said second means to calculate said rotational angle with respect to said longitudinal or lateral lines within said visual range by using said data which is indicative of said arbitrary single straight line, calculating respec-

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tive spacings between a plurality of longitudinal and lateral lines within said visual range to determine a corresponding successive N bit code from said respective spacings in order to identify a section to which said center of said visual range belongs, thus to calculate position coordinates of said center of said visual range.

4,803,738

RADIO COMMUNICATIONS SYSTEM WITH REDUCED D/U RATIO VARIATIONS

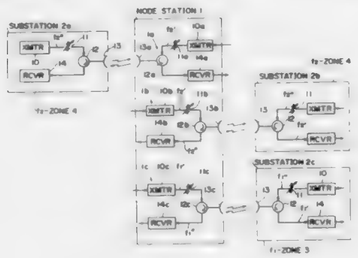
Kiyoshi Ikeda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 9, 1987, Ser. No. 12,227

Claims priority, application Japan, Feb. 10, 1986, 61-25981

Int. Cl.[4] H04B *1/60, 7/02*

U.S. Cl. 455—10 1 Claim



1. A radio communications system for covering an area which is divided into "k" concentric zones each being assigned a pair of particular frequencies or polarizations, comprising:

a node station located at the center of said area and having a plurality of node station transceivers; and

a plurality of substations located in said concentric zones at distance 1 from said node station and at distance 1_k from a boundary between (k-1)th and k-th zones and having a plurality of substation transceivers corresponding respectively to said node station transceivers to establish a plurality of pairs of two-way radio links therebetween,

each of said node and substations having a fine-weather reception field strength at each of said radio links, the fine-weather reception field strength at each end of longer distance radio links being greater than the fine-weather reception field strength at each end of shorter distance radio links, there being a linear relationship between said fine-weather reception field strength at each of said radio links and the distance of each link, wherein said linear relationship is given by:

$$RL = RL_k - \frac{(ML_k - ML_{(k-1)})}{2} \times \frac{l_k - 1}{l_k - l_{(k-1)}}$$

where,

RL=fine-weather reception field strength of each of said links at distance 1;

RL_k=fine-weather reception field strength of each of said links at distance l_k;

ML_k=difference between the fine-weather reception field strength of each of said links at distance l_k and tolerable rainfall reception field strength thereat; and

$ML_{(k-1)}$=difference between the fine-weather reception field strength of each of said links at distance $l_{(k-1)}$ and tolerable rainfall reception field strength thereat.

4,803,739

SSB COMMUNICATION SYSTEM

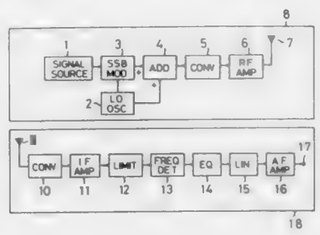
Kazuhiro Daikoku, and Shigeaki Ogose, both of Tokyo, Japan, assignors to Nippon Telegraph and Telegraph Corporation, Tokyo, Japan

Filed Dec. 9, 1985, Ser. No. 806,991

Claims priority, application Japan, Dec. 10, 1984, 59-259354; Jan. 28, 1985, 60-12618; Feb. 12, 1985, 60-23646; Apr. 19, 1985, 60-82530; Apr. 19, 1985, 60-82531; May 23, 1985, 60-109438; May 31, 1985, 60-116528; Jun. 21, 1985, 60-134213; Jun. 24, 1985, 60-136095; Oct. 24, 1985, 60-236449

Int. Cl.[4] H04B *1/68;* **H03C** *1/52*

U.S. Cl. 455—47 9 Claims



1. An SSB communication system compriaing:

a transmitter transmitting an SSB amplitude modulation signal composed of both a single sideband carrier suppressed signal and a carrier signal; and

a receiver including

(a) an amplitude limiter which removes amplitude variations of received SSB amplitude modulation signal,

(b) a frequency detector connected to an output of said amplitude limiter to demodulate the SSB amplitude modulation signal,

(c) an equalizer, which is composed of an integrator, connected to an output of said frequency detector to compensate a frequency response of a frequency-detected signal, and

(d) a linearizer connected to an output of said equalizer to cancel out distortions contained in the demodulated signal, said linearizer comprises a Hilbert transformer providing a Hilbert transform of an input signal from said frequency detector, a multiplier providing a product of said Hilbert transformer output and the input signal, and a subtractor subtracting a second order product, derived from said multiplier, from the input signal.

DESIGN PATENTS

GRANTED FEB. 7, 1989

ERRATA

For CLASS	See PATENT NO.
D14-116	299,703

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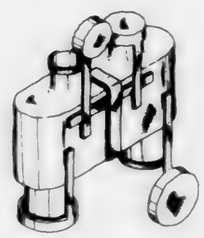
DESIGNS

FEBRUARY 7, 1989

299,680
APRON
Daniel L. Ochsner, 2888 Bluff St., Boulder, Colo. 80302
Filed Oct. 20, 1986, Ser. No. 920,878
Term of patent 14 years
U.S. Cl. D2—228

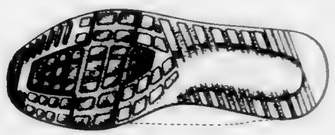


299,682
BINOCULAR PROTECTIVE COVER
Ray L. Winstead, R.D. #1, Box 263, Penn Run, Pa. 15765
Filed Dec. 27, 1985, Ser. No. 814,038
Term of patent 14 years
U.S. Cl. D3—33

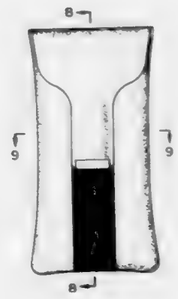


299,681
SHOE SOLE
David E. Miller, Carver, and Juan A. Diaz, Weymouth, both of Mass., assignors to Reebok International Ltd., Canton, Mass.
Filed Jul. 20, 1988, Ser. No. 221,775
Term of patent 14 years
U.S. Cl. D2—320





299,683
END FLAP SPECTACLE CASE
Robert J. Marks, Las Vegas, Nev., assignor to California Optical Leather, Inc., San Leandro, Calif.
Filed Oct. 28, 1985, Ser. No. 791,993
Term of patent 14 years
U.S. Cl. D3—34

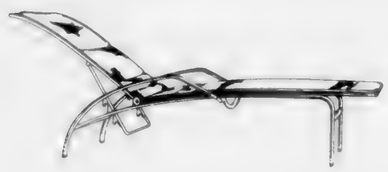


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299,684
CHAISE
Richard Frinier, Long Beach, Calif., assignor to Brown Jordan Company Limited Partnership, El Monte, Calif.
Filed Sep. 16, 1986, Ser. No. 908,100
Term of patent 14 years
U.S. Cl. D6—361



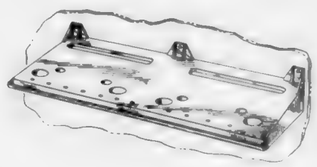
299,685
ADJUSTABLE CHAISE
Richard Frinier, Long Beach, Calif., assignor to Brown Jordan Company Limited Partnership, El Monte, Calif.
Filed Sep. 16, 1986, Ser. No. 908,103
Term of patent 14 years
U.S. Cl. D6—361



299,686
DISPENSER FOR NON-STERILE SURGICAL GLOVES
Ron. J. Jonas, 1320 North St., #30, Santa Rosa, Calif. 95404, and Linnette Birdsall, 417 Poppyhill Dr., Healdsburg, Calif. 95448
Filed Dec. 22, 1987, Ser. No. 136,390
Term of patent 14 years
U.S. Cl. D6—515



299,687
SHELF
Milton E. Handler, Northbrook, and Michael Peterson, Evanston, both of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Feb. 19, 1987, Ser. No. 16,238
Term of patent 14 years
U.S. Cl. D6—574



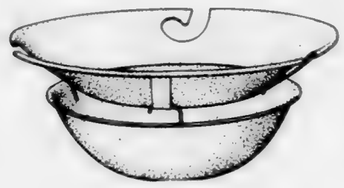
299,688
BEVERAGE MUG OR SIMILAR ARTICLE
Saiwha Chung, 3-1 Samchundong, JongroKu, Seoul, Rep. of Korea
Filed Apr. 25, 1986, Ser. No. 857,470
Claims priority, application Rep. of Korea, Nov. 1, 1985, 1985-15431
Term of patent 14 years
U.S. Cl. D7—9



299,689
MICROWAVE WATER DISPENSER
Paul T. Laycock, Box 42, Elton, Wis. 54430
Filed Jun. 16, 1986, Ser. No. 875,397
Term of patent 14 years
U.S. Cl. D7—313



299,690
BARBEQUE GRILL ASH COLLECTOR
J. Jay Schaack, 32 Las Vegas Rd., Orinda, Calif. 94563, and Mark D. Wilson, 2745 Acacia Rd., Walnut Creek, Calif. 94595
Filed Jan. 27, 1987, Ser. No. 7,251
Term of patent 14 years
U.S. Cl. D7—402



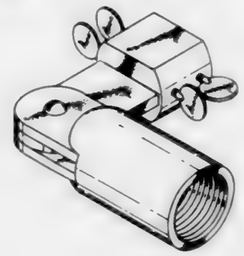
299,691
PANEL CARRIER
Joseph M. Green, 3795 Vancouver, Dallas, Tex. 75229
Filed Aug. 26, 1985, Ser. No. 769,402
Term of patent 14 years
U.S. Cl. D8—14



299,692
WIRE STRIPPER OR THE LIKE
Richard A. Steiner, East Haddam, Conn., assignor to Rostra Tool Company, Branford, Conn.
Filed Nov. 17, 1987, Ser. No. 121,734
Term of patent 14 years
U.S. Cl. D8—98



299,693
COUPLING FOR A PAINTBRUSH AND EXTENSION POLE
David H. Wick, Rte. 3, Box 269, Covington, Ky. 41017
Filed May 30, 1986, Ser. No. 875,359
Term of patent 14 years
U.S. Cl. D8—396



299,694
PERFUME FLASK
Reinold Geiger, Neuilly, France, assignor to Ateliers de Moulage Specialise Packaging, France
Filed Sep. 16, 1985, Ser. No. 776,289
Claims priority, application France, Mar. 14, 1985, 851 175
Term of patent 14 years
U.S. Cl. D9—300

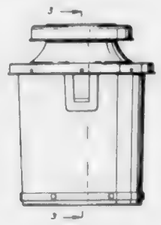


299,695
DECANTER
Jacques Hine, Jarnac, France, assignor to Cognac Hine S.A., Jarnac, France
Filed Feb. 6, 1986, Ser. No. 826,728
Term of patent 14 years
U.S. Cl. D9—318

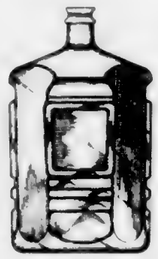


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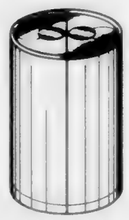
299,696
COMBINED PACKAGING CONTAINER AND LID THEREFOR
Paul C. Dallas, Fareham, United Kingdom, assignor to Sweetheart International Limited, Hampshire, England
Filed Sep. 5, 1985, Ser. No. 772,718
Claims priority, application United Kingdom, Mar. 8, 1985, 1025 456
Term of patent 14 years
U.S. Cl. D9—352



299,697
BOTTLE
Carl E. Frahm, 1428 Oak Meadow Rd., and B. Joseph Rokus, 1420 Oak Meadow Rd., both of Arcadia, Calif. 91006
Filed Aug. 29, 1985, Ser. No. 770,778
Term of patent 14 years
U.S. Cl. D9—386



299,698
CAN OR THE LIKE
Alfred C. DeBose, Jr., 11518 Stone Bridge, Houston, Tex. 77064
Filed Aug. 7, 1985, Ser. No. 763,419
Term of patent 14 years
U.S. Cl. D9—399



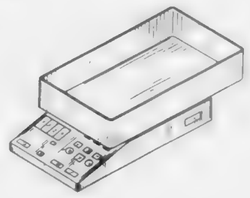
299,699
CAP FOR CONTAINERS
Sören M. Ask, Sigtuna, Sweden, assignor to Pharmacia AB, Upsala, Sweden
Filed Mar. 15, 1985, Ser. No. 712,150
Claims priority, application Sweden, Sep. 20, 1984, 84-2499
Term of patent 14 years
U.S. Cl. D9—453



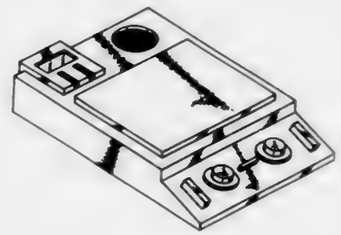
299,700
ELECTRONIC THERMOMETER
Takahisa Yubisui; Hiroshi Sakaguchi, and Masaki Kawamura, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Sep. 24, 1986, Ser. No. 911,622
Claims priority, application Japan, Mar. 24, 1986, 61-11040
Term of patent 14 years
U.S. Cl. D10—57



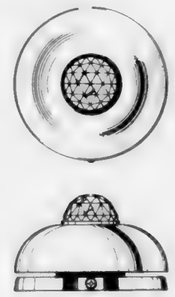
299,701
POCKET SIZE DIGITAL SCALE
Hannah S. Brewer, and David K. Brewer, both of 3720 Cheyenne Blvd., Sioux City, Iowa 51104
Filed May 19, 1986, Ser. No. 864,895
Term of patent 14 years
U.S. Cl. D10—91



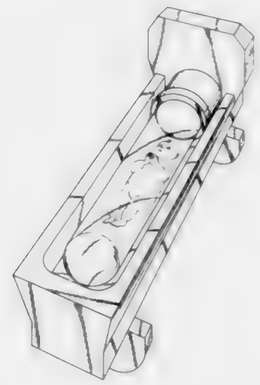
299,702
WEIGHT ALARM DIGITAL SCALE
Richard L. Heim, 4922A Murdoch St., St. Louis, Mo. 63109
Filed Jun. 19, 1986, Ser. No. 876,346
Term of patent 14 years
U.S. Cl. D10—91



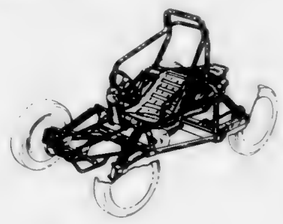
299,703
COMBINED BELL AND LAMP
Tatsuya Arai, Kitamoto, Japan, assignor to Kobishi Electric Co., Ltd., Japan
Filed Sep. 6, 1985, Ser. No. 773,822
Claims priority, application Japan, Aug. 30, 1985, 60-36767
The portion of the term of this patent subsequent to Jan. 12, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—116



299,704
NOVELTY FIGURINE
Charles W. Culpepper, 11035 Cedar Bend Ave., Baton Rouge, La. 70814
Filed Aug. 19, 1985, Ser. No. 766,579
Term of patent 14 years
U.S. Cl. D11—160

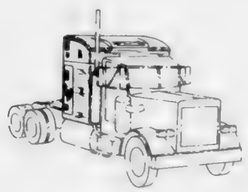


299,705
MOTOR VEHICLE BODY
Carlo Carpanelli, and Stefano Seremari, both of Bologna, Italy, assignors to GO PRO S.r.l., Bologna, Italy
Filed Aug. 27, 1985, Ser. No. 769,948
Term of patent 14 years
U.S. Cl. D12—88



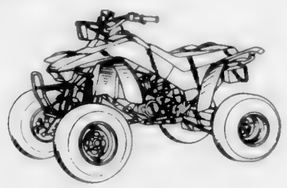
VOL 1099 ISS 1 FEB 7 1989 UMI

299,706
STAND UP SLEEPER BOX FOR A TRUCK
Randal P. Whitmer, Fremont, and Jeffrey Paul, Union City, both of Calif., assignors to Paccar Inc., Bellevue, Wash.
Filed May 30, 1986, Ser. No. 869,024
Term of patent 14 years
U.S. Cl. D12—96

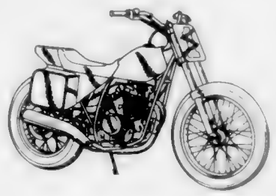




299,707
FOUR-WHEELED MOTORCYCLE
Akio Makita, Saitama; Tooru Nishino, Tokyo; Tetsuya Nakazawa, Saitama, and Kazutaka Kimura, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 22, 1986, Ser. No. 821,571
Claims priority, application Japan, Jul. 22, 1985, 60-31308
Term of patent 14 years
U.S. Cl. D12—107



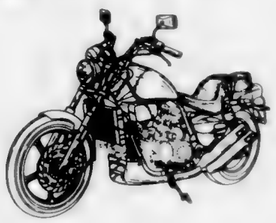
299,708
MOTORCYCLE
Shinichi Yamase, Saitama; Hiroaki Tsujui, and Yoshihiko Aoyama, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 24, 1986, Ser. No. 822,023
Claims priority, application Japan, Jul. 25, 1985, 60-31879
Term of patent 14 years
U.S. Cl. D12—110



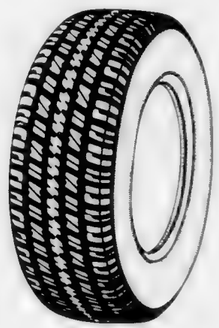
299,709
MOTORCYCLE
Takeo Miura, and Kiyoshi Takagi, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 29, 1986, Ser. No. 927,302
Term of patent 14 years
U.S. Cl. D12—110



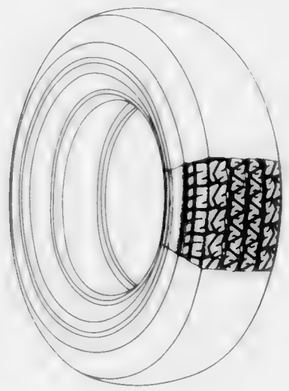
299,710
MOTORCYCLE
Masato Iwakura, Saitama; Kooichi Nakayama, Tokyo, and Eiji Ozawa, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 16, 1986, Ser. No. 942,577
Claims priority, application Japan, Jan. 25, 1986, 61-24679
Term of patent 14 years
U.S. Cl. D12—110



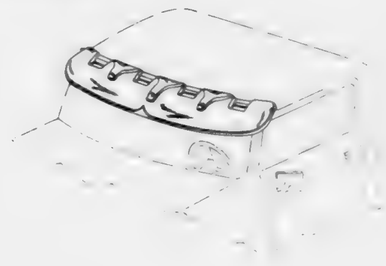
299,711
TIRE
Bill J. Wallet, Marshallville, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jun. 12, 1986, Ser. No. 873,638
Term of patent 14 years
U.S. Cl. D12—147



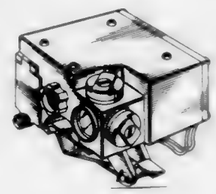
299,712
TIRE
Douglas J. Slagh, Greer, S.C., assignor to Michelin Recherche et Technique S.A., Basel, Switzerland
Filed Jul. 9, 1986, Ser. No. 883,908
Term of patent 14 years
U.S. Cl. D12—147



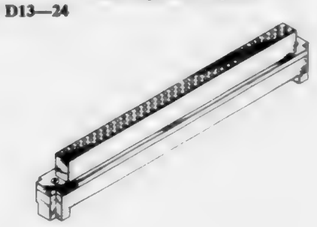
299,713
VEHICLE SUNVISOR
Leslie N. Dunham, 234 Division St., Boonton, N.J. 07005
Filed Dec. 15, 1986, Ser. No. 941,940
Term of patent 14 years
U.S. Cl. D12—191



299,714
LASER OPERATED REPEATING SMALL ARMS TRANSMITTER
Daniel R. Colker; Lawrence J. Gallagher, both of Arcadia, and Antonio R. Vega, Pasadena, all of Calif., assignors to Loral Electro Optical Systems, Pasadena, Calif.
Filed Oct. 31, 1985, Ser. No. 793,672
Term of patent 14 years
U.S. Cl. D13—19

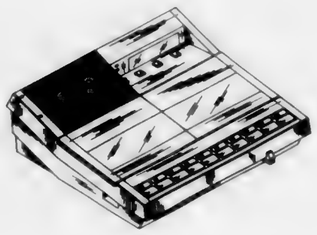


299,715
HIGH DENSITY RECEIVER MODULE
Jeffery P. Stowers, Mt. Sidney, and Henri T. Burgers, Grottoes, both of Va., assignors to Virginia Panel Corporation, Waynesboro, Va.
Filed Dec. 4, 1985, Ser. No. 804,584
Term of patent 14 years
U.S. Cl. D13—24



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299,716
TELEPHONE ANSWERING MACHINE
Sandor F. Weisz, Stamford, Conn., and Andrew J. Blance, Mamaroneck, N.Y., assignors to Dictaphone Corporation, Rye, N.Y.
Filed Oct. 31, 1986, Ser. No. 925,868
Term of patent 14 years
U.S. Cl. D14—141



299,717
COMBINATION TELEPHONE AND ANSWERING SET
Satoshi Fukutome, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Nov. 17, 1987, Ser. No. 121,741
Claims priority, application Japan, May 26, 1987, 62-21011
Term of patent 14 years
U.S. Cl. D14—141





299,718
KEYPAD FOR TELECOMMUNICATIONS INSTRUMENTS
David J. Steer, Lincoln; Steven Hawker, Arnold, and Leonard Colebourne, Nottingham, all of England, assignors to Plessey Overseas Limited, Ilford, England
Filed Oct. 22, 1986, Ser. No. 922,987
Claims priority, application United Kingdom, Apr. 22, 1986, 1033654
Term of patent 14 years
U.S. Cl. D14—247





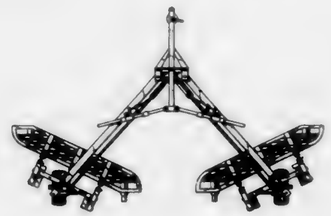
299,719
HANDSET RADIO TELEPHONE
Nils E. V. Martensson, Woking; Anthony B. Harrup, Weybridge; Mark Powell, Havant; Roger Wilkins, Southsea; Ron Major, Stroud, Chris M. Harrison, Frimley, Andrew Homan, Chessington and Francis Baldry, Haslemere, all of Great Britain, assignors to Technophone Limited of Ashwood House, Surrey, England
Filed Mar. 16, 1987, Ser. No. 25,933
Claims priority, application United Kingdom, Sep. 22, 1986, 1036854
Term of patent 14 years
U.S. Cl. D14—138



299,720
WATER PUMP
Byung K. Yoo, 266-3, Nonhyon-Dong, Kangnam-ku, Seoul, Rep. of Korea
Filed Jan. 5, 1985, Ser. No. 741,612
Term of patent 14 years
U.S. Cl. D15—7

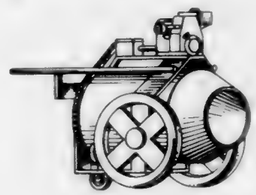


299,721
UNITIZED HAY RAKE
Emmett G. Webster, New Holland, Pa.; Douglas G. Branham, Canton, Mich.; Edmund O. Howell, and John K. Hale, both of New Holland, Pa., assignors to Ford New Holland, Inc., New Holland, Pa.
Filed Sep. 24, 1986, Ser. No. 911,685
Term of patent 14 years
U.S. Cl. D15—11

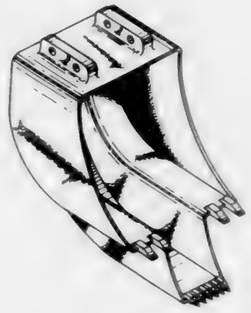




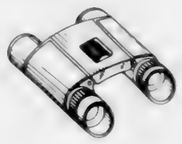
299,722
CEMENT MIXER
Fred E. Mehr, PO Box 1117, Hilo, Hi. 96721
Filed Oct. 7, 1985, Ser. No. 785,277
Term of patent 14 years
U.S. Cl. D15—19



299,723
UTILITY TRENCH BUCKET
Lamont Frawley, 3215 Roosevelt Dr., Arlington, Tex. 76016
Filed Sep. 11, 1986, Ser. No. 906,186
Term of patent 14 years
U.S. Cl. D15—32

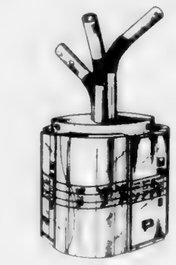


299,724
BINOCULARS
Akira Aoki, Tokyo, Japan, assignor to Seiwa Instruments Mfg. Co., Ltd., Saitama, Japan
Filed Sep. 9, 1985, Ser. No. 773,932
Claims priority, application Japan, Apr. 9, 1985, 60-14056
Term of patent 14 years
U.S. Cl. D16—133



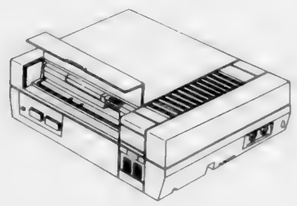
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299,725
VENDING MACHINE
John H. Brandes, Atlanta, and Paul A. Phillips, Marietta, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Aug. 5, 1987, Ser. No. 93,514
Term of patent 14 years
U.S. Cl. D20—5

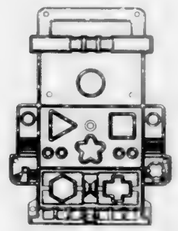




299,726
VIDEO GAME CONTROL UNIT
Masayuki Yakawa, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan
Filed Nov. 4, 1985, Ser. No. 803,871
Claims priority, application Japan, Aug. 1, 1985, 60-33210
Term of patent 14 years
U.S. Cl. D21—1



299,727
POUNDING ACTIVITY TOY
Ruth Elliott, Bramhall, United Kingdom, assignor to Hestair Kiddicraft Limited, Great Britain
Filed Apr. 22, 1986, Ser. No. 857,435
Claims priority, application United Kingdom, Nov. 4, 1985, 1030230
Term of patent 14 years
U.S. Cl. D21—59



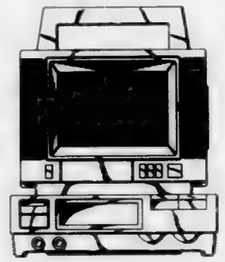
299,728
CRADLE RATTLE
Robert Kay, Stockport, and Peter A. Broadbent, Alderley Edge, both of United Kingdom, assignors to Hestair Kiddicraft Limited, Great Britain
Filed Apr. 29, 1986, Ser. No. 858,276
Claims priority, application United Kingdom, Nov. 4, 1985, 1030225
Term of patent 14 years
U.S. Cl. D21—64



299,729
AUDIBLE TOY
Masaharu Takei, Nagano, Japan, and Edward Ferguson, Westminster, Calif., assignors to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Aug. 26, 1986, Ser. No. 901,158
Term of patent 14 years
U.S. Cl. D21—64



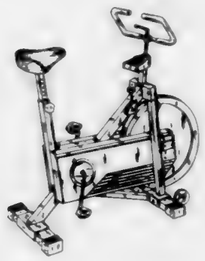
299,730
TOY VCR DEVICE
Michael W. Nuttel, Carson, Calif., and Toshinori Tabata, Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Apr. 25, 1986, Ser. No. 857,788
Claims priority, application Japan, Oct. 25, 1985, 60-44878
Term of patent 14 years
U.S. Cl. D21—111



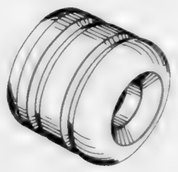
299,731
BUG FIGURE LOTTERY TICKET HOLDER
Jean A. Vetter, 10481 Salter Rd., North Rose, N.Y. 14516
Filed Sep. 5, 1985, Ser. No. 772,648
Term of patent 14 years
U.S. Cl. D21—185



299,732
BICYCLE EXERCISER
Tore L. Gustafsson, Varberg, Sweden, assignor to Mosark AB, Sweden
Filed Jul. 29, 1986, Ser. No. 891,542
Claims priority, application Sweden, Jan. 29, 1986, 86-0213
Term of patent 14 years
U.S. Cl. D21—194

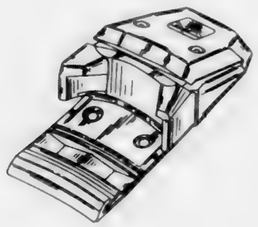


299,733
SKATEBOARD WHEEL OR SIMILAR ARTICLE
Nickolas G. Tamisich, 10040 Kermont Ave., South Gate, Calif. 90280
Filed Sep. 3, 1987, Ser. No. 92,698
Term of patent 14 years
U.S. Cl. D21—226



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299,734
TOEPIECE FOR SKI BINDING
Gerhard Sedlmair, Farchant, Fed. Rep. of Germany, assignor to Marker Deutschland GmbH, Garmisch-Partenkirchen, Fed. Rep. of Germany
Filed Jun. 20, 1985, Ser. No. 746,955
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1984, 11AR4737/84
Term of patent 14 years
U.S. Cl. D21—230



299,735
HANDLE FOR A FISHING ROD
James E. Andreasen, Magnolia Springs; Casey J. Childre; David B. Pond, both of Foley, all of Ala., and Wadie S. Shahid, Fort Walton Beach, Fla., assignors to Lew Childre & Sons, Inc., Foley, Ala.
Filed Feb. 20, 1986, Ser. No. 834,471
Term of patent 14 years
U.S. Cl. D22—142



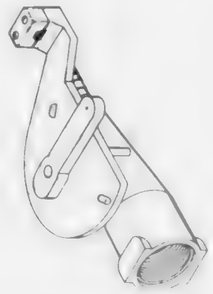
299,736
HANDLE FOR A FISHING ROD
James E. Andreasen, Magnolia Springs; Casey J. Childre, and David B. Pond, both of Foley, all of Ala., assignors to Lew Childre & Sons, Inc., Foley, Ala.
Filed Feb. 20, 1986, Ser. No. 834,472
Term of patent 14 years
U.S. Cl. D22—142



299,737
HANDLE FOR A FISHING ROD
James E. Andreasen, Magnolia Springs, Ala., assignor to Lew Childre & Sons, Inc., Foley, Ala.
Filed Feb. 20, 1986, Ser. No. 834,474
Term of patent 14 years
U.S. Cl. D22—142



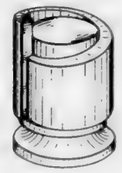
299,738
COMBINED VALVE AND CLAMPED CABLE OPERATOR
Glenn R. Hankey, Box 66, Elora, Tenn. 37328
Filed Jun. 29, 1987, Ser. No. 68,852
Term of patent 14 years
U.S. Cl. D23—245



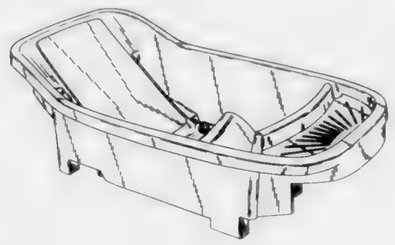
299,739
LEVER HANDLE
Herbert V. Kohler, Jr., Kohler, Wis., and Paul P. Kolada, Bexley, Ohio, assignors to Kohler Co., Kohler, Wis.
Division of Ser. No. 819,878, Jan. 16, 1986, Pat. No. Des. 297,257. This application Apr. 18, 1988, Ser. No. 183,030
Term of patent 14 years
U.S. Cl. D23—252



299,740
FAUCET KNOB
Herbert Reinecke, Iserlohn-Sümmern, Fed. Rep. of Germany, assignor to Aloys F. Dornbracht GmbH & Co., Iserlohn, Fed. Rep. of Germany
Filed Oct. 18, 1985, Ser. No. 789,057
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1985, MR 7435
The portion of the term of this patent subsequent to Jun. 30, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—254



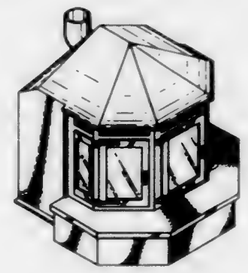
299,741
INFANT BATH TUB
Paul Thom, Woburn, Mass., assignor to Kiddie Products, Inc., Avon, Mass.
Filed Aug. 19, 1986, Ser. No. 898,027
Term of patent 14 years
U.S. Cl. D23—278



299,742
SHOWER ENCLOSURE
Mary J. Reid, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 12, 1987, Ser. No. 2,257
Term of patent 14 years
U.S. Cl. D23—283



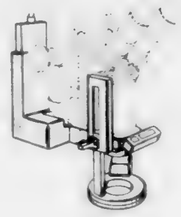
299,743
FIREPLACE
Rodney E. Criqui, 275 Moss Creek Dr., Hilton Head, S.C. 29928
Filed Jun. 19, 1986, Ser. No. 876,345
Term of patent 14 years
U.S. Cl. D23—344



299,744
IMMUNOASSAY TEST KIT OR THE LIKE
Robert J. Bauer, Chicago, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Jan. 9, 1986, Ser. No. 817,325
Term of patent 14 years
U.S. Cl. D24—17



299,745
KERATOMETER
Hiroaki Sasaki, Yokohama, and Yukitsugu Nakamura, Sagamihara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 8, 1986, Ser. No. 858,904
Term of patent 14 years
U.S. Cl. D24—17

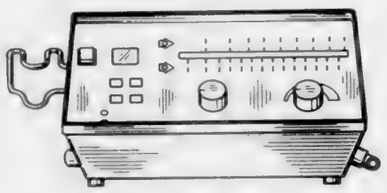


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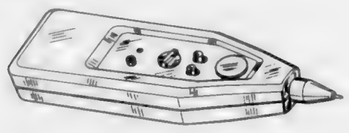
299,746
INSTRUMENT FOR MEASURING NERVE CONDUCTION VELOCITIES
Jack Guidalian, Jr., Lawrenceville, N.J., assignor to Neurotron, Inc., Lawrenceville, N.J.
Filed Aug. 21, 1986, Ser. No. 856,134
Term of patent 14 years
U.S. Cl. D24—17



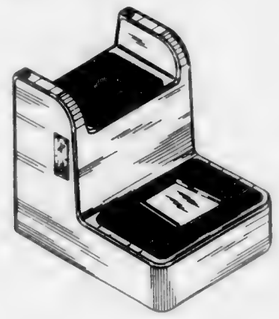
299,747
ELECTROTHERAPY TREATMENT CABINET
John H. Wilson; Kenneth W. Coffey, both of Tulsa; Toby E. Smith, Broken Arrow; David Richards, Choteau; Maqsood Mohd, Tulsa, and Lee Cody, Isola, all of Okla., assignors to Rich-Mar Corporation, Tulsa, Okla.
Filed Dec. 8, 1986, Ser. No. 939,467
Term of patent 14 years
U.S. Cl. D24—40



299,748
ELECTRONIC ACUPUNCTURE UNIT
David E. Robertson, Belair, Australia, assignor to Acuhealth Pty. Ltd., Wayville, Australia
Filed Nov. 13, 1986, Ser. No. 930,858
Claims priority, application Australia, May 13, 1986, 5194/86
Term of patent 14 years
U.S. Cl. D24—41



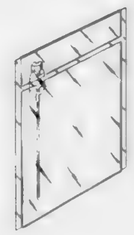
299,749
FOOT MASSAGER
Nancy C. Duncan, 1096 Farroll, Arroyo Grande, Calif. 93420, and Louis O. Schorsch, Grover City, Calif., assignors to Nancy C. Duncan, Arroyo Grande, Calif.
Filed May 5, 1986, Ser. No. 859,758
Term of patent 14 years
U.S. Cl. D24—42



299,750
INFANT BOTTLE HOLDER
Jorce L. Garcia, 2318 S. Avers Ave., and Jose H. Garcia, 3924 W. 24th St., both of Chicago, Ill. 60623
Filed Jul. 10, 1986, Ser. No. 884,263
Term of patent 14 years
U.S. Cl. D24—48



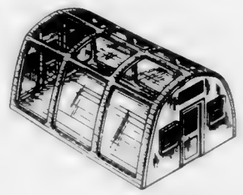
299,751
REAGENT SOLUTION RESERVOIR
Paul K. Hsei, Huntington Beach, Calif., assignor to Smithkline Diagnostics, Sunnyvale, Calif.
Filed Apr. 14, 1986, Ser. No. 851,696
Term of patent 14 years
U.S. Cl. D24—58



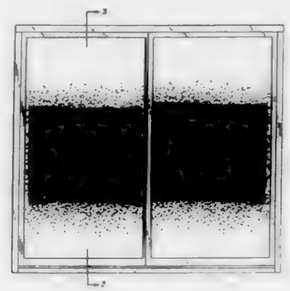
299,752
BUILDING
Michael J. Anania, Jr., and Donna J. Anania, both of 1407 Lewis, Des Moines, Iowa 50315
Filed Jan. 31, 1986, Ser. No. 824,670
Term of patent 14 years
U.S. Cl. D25—8



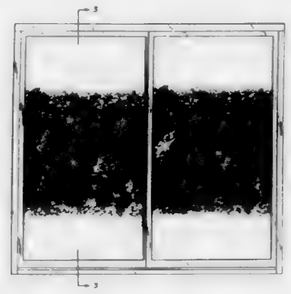
299,753
GREENHOUSE
Del P. Virgilio, 53 Greenings Ave., Pittsfield, Mass. 01201
Filed Sep. 17, 1986, Ser. No. 908,510
Term of patent 14 years
U.S. Cl. D25—15



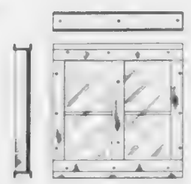
299,754
DECORATIVE SLIDING DOOR
Roger M. VanWeelden, Chicago, Ill., assignor to USG Corporation, Chicago, Ill.
Filed Jun. 7, 1985, Ser. No. 732,663
Term of patent 14 years
U.S. Cl. D25—48



299,755
DECORATIVE SLIDING DOOR
Lawrence R. Martinelli, Wheeling, Ill., assignor to USG Corporation, Chicago, Ill.
Filed May 10, 1985, Ser. No. 732,667
Term of patent 14 years
U.S. Cl. D25—48

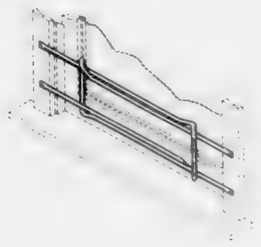


299,756
INDUSTRIAL WINDOW
Jose Alestra, 9251 Billy Mitchell Blvd., Roseville, Calif. 95678
Filed May 27, 1986, Ser. No. 867,392
Term of patent 14 years
U.S. Cl. D25—52



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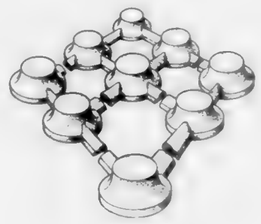
299,757
BURGLAR BAR
Richard G. Kluge, Pell Lake, Wis., assignor to John Sterling Corporation, Richmond, Ill.
Filed Jan. 19, 1988, Ser. No. 144,939
Term of patent 14 years
U.S. Cl. D25—53



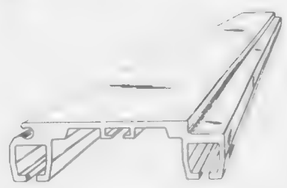
299,758
TILE INSERT FOR A WALL
James O. Kelley, Spring Lake, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.
Filed Mar. 21, 1986, Ser. No. 845,422
Term of patent 14 years
U.S. Cl. D25—58



299,759
INTERSPACED EROSION PREVENTION STRUCTURE
Lok M. Sharma, 9227-187 St., Edmonton, Canada, T5T1R8
Filed Jul. 17, 1985, Ser. No. 755,883
Claims priority, application Canada, Dec. 19, 1984, 19-12-84-14
Term of patent 14 years
U.S. Cl. D25—117



299,760
RAIL GUIDE FOR PLIABLE PLASTIC PREHUNG DOORS
Hans R. Högg, Enköping, Sweden, assignor to Stiftelsen Westmannaprodukter, Västerås, Sweden
Filed Feb. 12, 1986, Ser. No. 828,675
Term of patent 14 years
U.S. Cl. D25—119



299,761
LANTERN HEAD
Ming K. Chan, 1st Floor, 59 Hung To Road, Kowloon, Hong Kong
Filed Oct. 18, 1985, Ser. No. 789,190
Claims priority, application United Kingdom, May 1, 1985, 1026527
Term of patent 14 years
U.S. Cl. D26—40



299,762
WALL LAMP
Perry King, and Santiago Miranda, both of Milan, Italy, assignors to Flos S.p.A., Italy
Filed Mar. 17, 1986, Ser. No. 845,011
Claims priority, application Italy, Sep. 19, 1985, 7103-B/85
Term of patent 14 years
U.S. Cl. D26—87



299,763
TABLE LAMP
Perry King, and Santiago Miranda, both of Milan, Italy, assignors to Flos S.P.A, Brescia, Italy
Filed Mar. 17, 1986, Ser. No. 845,048
Term of patent 14 years
U.S. Cl. D26—93



299,764
CONVERTIBLE CURLING IRON/STYLING BRUSH
Robert Oberheim, Liederbach, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany
Filed Mar. 16, 1987, Ser. No. 26,097
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1986, 73 MR 9509
Term of patent 14 years
U.S. Cl. D28—35

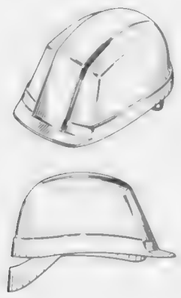






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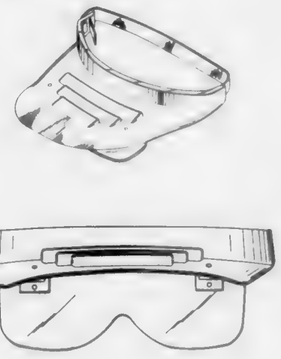
299,765
HELMET OR SIMILAR ARTICLE
Stephen B. Lewis, St. Annes on Sea; Cyril Smith, Naphill, and John R. Feeney, Bagnley, all of England, assignors to Protector Safety Industries Limited, Australia
Filed Aug. 30, 1985, Ser. No. 770,914
Claims priority, application United Kingdom, Aug. 14, 1985, 1025330
Term of patent 14 years
U.S. Cl. D29—14



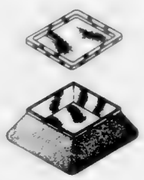
299,766
RIDING HAT HARNESS
Ronald S. Friedson, 95 Bayberry La., Westport, Conn. 06880
Filed Sep. 18, 1986, Ser. No. 909,096
Term of patent 14 years
U.S. Cl. D29—16



299,767
COMBINED SUN VISOR AND EYE SHIELD
Hsi-Wei Hsin, No. 80, Nei Keng Ts'un, Ta Liao Hsiang, Kao Hsiung, Taiwan
Filed Jun. 2, 1986, Ser. No. 869,934
Term of patent 14 years
U.S. Cl. D29—18



299,768
COMBINED PET FOOD DISH AND COVER
Patricia T. Wisdom, 6535 Langdon Ave., Van Nuys, Calif. 91406
Filed Jul. 28, 1987, Ser. No. 78,541
Term of patent 14 years
U.S. Cl. D30—129



299,769
PET BED
Betty James, San Clemente, Calif., assignor to Flexi-Mat Corporation, Chicago, Ill.
Filed Apr. 25, 1988, Ser. No. 185,924
Term of patent 14 years
U.S. Cl. D30—119



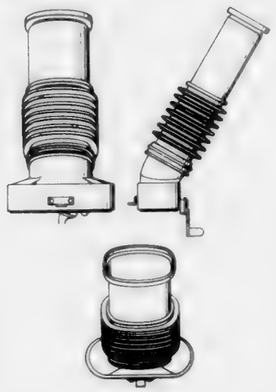
299,770
BIRD FEEDER
Jerry W. Coffer, 3207 S.E. 36th, Portland, Oreg. 97202
Filed May 31, 1988, Ser. No. 201,098
Term of patent 14 years
U.S. Cl. D30—127



299,771
PET BOWL
John Kennedy, 26516 Del Mar Dr., Mission Viejo, Calif. 92691
Filed Nov. 9, 1987, Ser. No. 118,634
Term of patent 14 years
U.S. Cl. D30—130



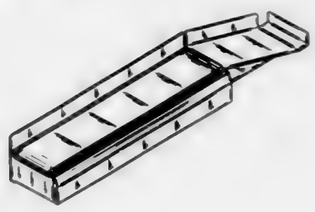
299,772
VACUUM CLEANER HOSE COUPLING
Maurice E. Smith, P.O. Box 526, Camino, Calif. 95709
Filed Mar. 10, 1986, Ser. No. 842,422
Term of patent 14 years
U.S. Cl. D32—31



299,773
REFUSE AND STORAGE CONTAINER
Don Kracke, 39 Crespa Verde, Rolling Hills Estates, Calif. 90274
Filed Dec. 11, 1986, Ser. No. 940,256
Term of patent 14 years
U.S. Cl. D34—7

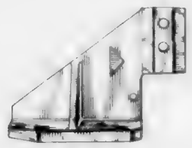


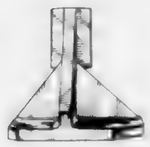
299,774
ENVELOPE CONVEYOR/STACKER
Edward A. Krupotich, Los Altos, Calif., assignor to Ovation Corporation, Mountain View, Calif.
Filed Sep. 5, 1986, Ser. No. 904,258
Term of patent 14 years
U.S. Cl. D34—29



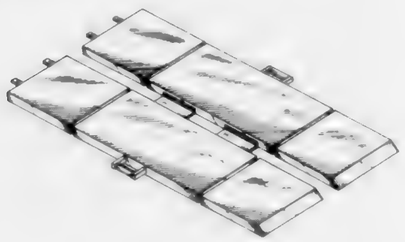
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299,775
LIFTING BED ACCESSORY FOR THE REPAIR OF VEHICLE BODIES
Germain Celette, Vienne, France, assignor to Celette S. A., Vienne, France
Filed Oct. 28, 1986, Ser. No. 924,167
Claims priority, application World Int. Prop. O., Apr. 28, 1986, GM/006843
Term of patent 14 years
U.S. Cl. D34—31





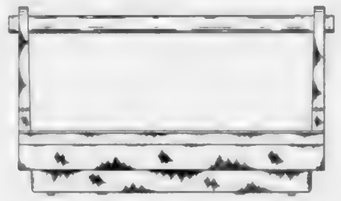
299,776
PORTABLE RAMP
Edward Canterberry, Rte. #4, Box 290, Winfield, Ala. 35594
Filed Oct. 14, 1986, Ser. No. 918,797
Term of patent 14 years
U.S. Cl. D34—32



299,777
CADDY FOR TRANSPORTING A PORTABLE PROPANE BOTTLE IN A HORIZONTAL MODE
Robert L. Michau, 927 Embercrest Dr., Arlington, Tex. 76017
Filed Jan. 13, 1986, Ser. No. 818,541
Term of patent 14 years
U.S. Cl. D34—38



299,778
TOOL CARRIER
M. Allyson Smith, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Nov. 1, 1985, Ser. No. 794,055
Term of patent 14 years
U.S. Cl. D34—40



299,779
CRUCIFIX
Chaim Kohen, Raanana, and Ephraim Rodensky, Petach, both of Israel, assignors to Jordan Trading Corporation, Miami, Fla.
Filed Jan. 21, 1986, Ser. No. 820,362
Term of patent 14 years
U.S. Cl. D99—27



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF FEBRUARY, 1989

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Ableitner, Erich, to Daimler-Benz Aktiengesellschaft. Cap tappet with hydraulic play compensation device. 4,802,448, Cl. 123-90.550.
Abo, Toshimi, to Nissan Motor Company Limited. Knocking control system and method for an internal combustion engine. 4,802,455, Cl. 123-425.000.
Abrahams, Sidney, to Genedyne Corp. Unipolar motor and mechanical conversion system and method. 4,803,391, Cl. 310-178.000.
Abromaitis, Andre T.; and Keyes, Marion A., IV, to Babcock & Wilcox Company, The. Carbon monoxide detector. 4,803,052, Cl. 422-91.000.
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Adamson, Thomas. Drill head. 4,802,798, Cl. 408-112.000.
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Advanced Micro Devices, Inc.: *See*—
Bower, Robert W., 4,803,176, Cl. 437-33.000.
Chen, Shallop J.; and Johansson, Jan, 4,803,702, Cl. 375-106.000.
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Patterson, John F., 4,803,044, Cl. 376-444.000.
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Wash, Steven E., 4,802,338, Cl. 62-98.000.
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Mandl, William J., 4,803,661, Cl. 365-184.000.
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Steinmetz, Guy R.; Rale, Mark; Agreda, Victor H.; and Treece, Lanney C., 4,803,296, Cl. 560-80.000.
Agri-Diagnostics Associates: *See*—
Petersen, Frank P.; Maybroda, Adrianna M.; and Miller, Sally A., 4,803,155, Cl. 435-7.000.
Aharon, Oren, to Blaser Industries, Incorporated. Laser printer recording system. 4,803,498, Cl. 346-108.000.
Ahlstrom, John K.: *See*—
Bernstein, David H.; Wallach, Walter A.; Richmond, Michael S.; Ahlstrom, John K.; Pilat, John F.; Farber, David A.; Belgard, Richard A.; and Bratt, Richard G., 4,803,619, Cl. 364-200.000.
Ahn, Kie Y.; Basavaiah, Saryadevara; Brodsky, Stephen B.; Cortellino, Charles A.; and Levine, Joseph E., to International Business Machines Corporation. Coated mask for photolithographic construction of electric circuits. 4,803,110, Cl. 428-137.000.
Aichi Steel Works, Limited: *See*—
Ooki, Takao; and Eguchi, Jun, 4,802,918, Cl. 75-10.610.
Aidlin Automation Corp.: *See*—
Aidlin, Stephen H.; and Bailey, Russell, 4,802,569, Cl. 198-346.100.
Aidlin, Stephen H.; and Bailey, Russell, to Aidlin Automation Corp. Two station robotic welder. 4,802,569, Cl. 198-346.100.
Aiki, Kunio; Sasayama, Atsushi; Nemoto, Tugio; Haneda, Makoto; Ishii, Satoru; Kugimiya, Haruo; and Kawasaki, Tutomu, to Hitachi, Ltd.; and Hitachi Tobu Semiconductor, Ltd. Photoelectric device with optical fiber and laser emitting chip. 4,803,361, Cl. 250-227.000.
Air Products and Chemicals, Inc.: *See*—
Spector, Marshall, 4,802,905, Cl. 71-68.000.
Airhart, Tom P., to Atlantic Richfield Company. Three-component three-dimensional seismic data acquisition. 4,803,669, Cl. 367-72.000.
AirSep Corporation: *See*—
Vrana, Edward E.; and Bansal, Ravinder K., 4,802,899, Cl. 55-161.000.
Ajinomoto Co., Inc.: *See*—
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Akagi, Takao: *See*—
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Akai, Norio: *See*—
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Akasaka, Nobuhiro: *See*—
Fukuma, Masumi; and Akasaka, Nobuhiro, 4,802,732, Cl. 350-96.230.
Akashi, Akira; and Yamada, Masanori, to Canon Kabushiki Kaisha. Automatic focusing device. 4,803,507, Cl. 354-400.000.
Akebono Brake Industry Co., Ltd.: *See*—
Ogino, Kinji, 4,802,713, Cl. 303-119.000.
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Ogino, Kinji, 4,802,713, Cl. 303-119.000.
Akiba, Yosuke. Absorbent for a gas preservative atomosphere. 4,802,574, Cl. 206-204.000.
Akiba, Yutaka: *See*—
Nakao, Takeshi; and Akiba, Yutaka, 4,803,674, Cl. 369-13.000.
Akopov, Ernest M.; Schitinin, Valery E.; and Arapova, Anna V., to Vsesojuzny Nauchno-Issledovatelsky I Ispytatelny Institut Meditsinskoi Tekhniki. Surgical instrument. 4,802,578, Cl. 206-339.000.
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Falk, Karl-Erik L.; Hugonson, Sven M.; Rosinski, Adam; and Sjogren, John A., 4,803,081, Cl. 424-465.000.
ALC Co., Inc.: *See*—
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Alfatechnic AG: *See*—
Dubach, Werner F., 4,802,597, Cl. 215-307.000.
Alford, Richard M., to Standard Oil Company (Indiana), now Amoco Corp. Multisource multireceiver method and system for geophysical exploration. 4,803,666, Cl. 367-36.000.
Alfred Karcher GmbH & Co.: *See*—
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Alfred Teves GmbH: *See*—
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Algoma Steel Corporation, Limited, The: *See*—
McBain, Robert M.; Becze, Garry J.; Kruppert, Friedrich W.; and Leistner, Jack W., 4,803,037, Cl. 266-78.000.
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Allied-Signal Inc.: *See*—
Altman, Carl E.; and Rao, Mocherla K. K., 4,803,247, Cl. 525-179.000.
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Allio, Roland; Chifflet, Raymond; and Jeantin, Phillipe, to Compagnie Generale D'Automatisme CGA-HBS. Conveyor device for flat objects. 4,802,665, Cl. 271-225.000.
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Amano, Jiro; Shimada, Masato; Takano, Kouzou; and Tohyama, Shunroku, to Toray Industries Incorporated. Waterproof fabric having high moisture permeability and method of making same. 4,803,116, Cl. 428-286.000.
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Hellman, Robert R., Jr., to Eastman Kodak Company. Gel plate assembly for electrophoresiscu4,802,969, Cl. 204-299.00R.

Hellwig, Gerhard; Baur, Ottmar; Feiist, Klaus; Moehwald, Helmut; and Muenstedt, Helmut, to BASF Aktiengesellschaft. Solid-state capacitor with an electroconductive polymer as constituent of the solid electrolytecu4,803,596, Cl. 361-525.000.

Hendrix, Howard A.; Schmidt, Howard W., Jr.; and Ward, Ernest S., to International Business Machines Corporation. RF plasma processing apparatuscu4,802,968, Cl. 204-298.000.

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Henry, David W.: *See*—
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Hensler, J. Raymond, to Bausch & Lomb Incorporated. Dual purpose sunglass lens having gold appearance and method of manufacturecu4,802,755, Cl. 351-163.000.

Hensley, Norman G., to Teepak, Inc. Shirred tubular materialcu4,802,511, Cl. 138-118.100.

Hepfer, Rolf; and Runzler, Jurgen, to Joseph Kieninger Uhrenfabrik GmbH. Striking mechanism clock with switchable lifting stud cylindercu4,803,673, Cl. 368-269.000.

Herbst, Joseph A.; Owen, Hartley; and Schipper, Paul H., to Mobil Oil Corporation. Single riser fluidized catalytic cracking process utilizing hydrogen and carbon-hydrogen contributing fragmentscu4,802,971, Cl. 208-13.000.

Hercules Incorporated: *See*—
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Hermecz, Istvan; Kereszturi, Geza; Vasvari, Lelle; Horvath, Agnes; Balogh, Maria; Kovacs, Gabor; Meszaros, Zoltan, deceased (by Meszaros, Marta, Marta Meszaros nee Boloni, heiresses); Ritli, Peter; Sipos, Judit; and Pajor, Aniko , to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Norfloxacin intermediatecu4,803,274, Cl. 546-13.000.

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Heynisch, Hinrich; Hauser, Josef; and Hubner, Erwin, deceased (by Hubner, Rosa Maria, legal representative), to Siemens Aktiengesellschaft. Indirectly heated dispenser metal capillary cathode for electrical discharge devicescu4,803,397, Cl. 313-337.000.

Heys, George, Jr.: *See*—
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Hibino, Junichi; and Ando, Eiji, to Director-General of the Agency of Industrial Science and Technology. Certain photochromic fulgide compounds and method for their synthesiscu4,803,287, Cl. 549-252.000.

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Mesch, Walter, to BASF Aktiengesellschaft. Preparation of 4-methylimidazolecu4,803,281, Cl. 548-335.000.
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Diehl, Werner K.; Fieseler, Heinrich; and SaBmann, Gerhard, 4,802,598, Cl. 215-348.000.
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Hermecz, Istvan; Kereszturi, Geza; Vasvari, Lelle; Horvath, Agnes; Balogh, Maria; Kovacs, Gabor; Meszaros, Zoltan, deceased; Ritli, Peter; Sipos, Judit; and Pajor, Aniko , 4,803,274, Cl. 546-13.000.
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Meyers, Andrew H.; and Minkoff, Jeffrey, to Meyers, Andrew H. Lightweight, compact orthotic device for controlling knee instabilitiescu4,802,466, Cl. 128-80.00C.
Mezhinsky, Victor B., to Excellon Industries. Pick and place machine having improved centering jawscu4,802,816, Cl. 414-736.000.
Miano, Richard J. Ear protectorcu4,802,245, Cl. 2-209.000.
Michaels, Jennifer E.: *See—*
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Michaels, Leonard H.; and Miller, Robert A., to Molex Incorporated. Right angle strain relief adapter for electrical connectorscu4,802,864, Cl. 439-457.000.
Michaels, Thomas E.: *See—*
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Micropolis Corporation: *See—*
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Midgley, Charles A.; and Chick, Orest N., to BASF Corporation. Styrene grafted isoprene pas'scu4,803,240, Cl. 524-504.000.
Mielke, Klaus, to Swedot System AB. Device for generating fluid dropscu4,803,501, Cl. 346-140.00R.
Mihara, Teruyoshi, to Nissan Motor Co., Ltd. Vertical MOSFET having a proof structure against puncture due to breakdowncu4,803,532, Cl. 357-234.000.
Miida, Takashi: *See—*
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Mijares, Ernest R.: *See—*
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Miki, Ryota: *See—*
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Milbrandt, Artur, to Siemens Aktiengesellschaft. Ink printer means comprising interchangeable ink headscu4,803,500, Cl. 346-140.00R.
Miller, Calvin M., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Optical fiber tapcu4,802,723, Cl. 350-96.150.
Miller, Francis G. Method for recovering fine clean coalcu4,802,976, Cl. 209-12.000.
Miller, George, to Hidrotronic Watercleaning Systems, Ltd. Method and apparatus for water purificationcu4,802,991, Cl. 210-705.000.
Miller, James G.; Pellet, Regis J.; Shamshoum, Edwar S.; and Rabo, Jule A., to UOP. Octane boosting catalystcu4,803,185, Cl. 502-65.000.
Miller, Michael A. Solar controlled water wellcu4,802,829, Cl. 417-12.000.
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Mills, Louis T., to Hewlett-Packard Company. Method and apparatus for detecting dielectric defectscu4,803,435, Cl. 324-456.000.
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Law, Kam W.; and Goethel, Walter W., 4,802,896, Cl. 51-298.000.
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Schaberg, Mark S., 4,803,239, Cl. 524-428.000.
Skorjanec, Joseph; and Moe, Carmen D., 4,803,130, Cl. 204-192.200.
Minolta Camera Kabushiki Kaisha: *See—*
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Mita Industrial Co., Ltd.: *See—*
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Mitchell, David J.: *See—*
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Schingh, Pierre J., 4,803,721, Cl. 379-399.000.
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Edajima, Toshikazu, 4,802,379, Cl. 74-502.600.
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Iwatani, Shiro; and Tokugawa, Kazuya, 4,803,377, Cl. 290-38.00R.
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Nakata, Syozo; and Imai, Satoshi, 4,803,329, Cl. 219-86.250.
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Sakai, Katsuyoshi, 4,803,564, Cl. 358-294.000.
Sashida, Nobuo; and Yamamoto, Yushin, 4,803,611, Cl. 363-98.000.
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Mitsubishi Mining & Cement Company, Ltd.: *See—*
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Mitsubishi Rayon Company, Ltd.: *See—*
Ikeda, Hiroyuki; Matsumoto, Yukihiro; and Nishimura, Koyu, 4,803,026, Cl. 264-216.000.
Oh-Kita, Motomu; Kato, Masaaki; and Kobayashi, Masao, 4,803,302, Cl. 562-534.000.
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Mitsui Mining Company, Limited: *See—*
Yamada, Izumi; Oishi, Tetsuya; and Hanashita, Kazuhiko, 4,802,891, Cl. 44-51.000.
Mitsui Toatsu Chemicals, Incorporated: *See—*
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Miyake, Izumi; Kaneko, Kiyotaka; and Oda, Kazuya, to Fuji Photo Film Co., Ltd. Motor control apparatus effecting phase control on rotating bodycu4,803,568, Cl. 360-33.100.
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Miyake, Toshio: *See—*
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Miyama, Hidetoshi: *See*—
Ikeda, Hidekatsu; Miyama, Hidetoshi; and Kashiwabara, Yoshihiko, 4,802,567, Cl. 198-345.000.

Miyamoto, Hiroshi; and Yamada, Michihiro, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory having divided bit lines and individual sense amplifierscu4,803,663, Cl. 365-189.000.

Miyashita, Tsune: *See*—
Yasuda, Makoto; Miyashita, Tsune; Murayama, Seiichi; Arai, Yoji; and Yamada, Fuzio, 4,803,406, Cl. 315-174.000.

Miyashita, Yasuo; and Kashima, Masao, to Mitsubishi Mining & Cement Company, Ltd. Dielectric ceramic composition for multilayer capacitorcu4,803,591, Cl. 361-321.000.

Miyatake, Takafumi; Matsushima, Hitoshi; Ohtani, Shigeko; and Higashino, Junichi, to Hitachi, Ltd. Management system of graphic datacu4,803,477, Cl. 340-747.000.

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Miyazawa, Akiyasu; Harada, Mineo; Tajima, Eiji; and Abe, Takao, to Hitachi, Ltd. Print head having a wear resistant rotational fulcrumcu4,802,776, Cl. 400-124.000.

Mizoguchi, Shoichi, to NEC Corporation. 8-phase phase-shift keying demodulatorcu4,803,438, Cl. 329-50.000.

Mizukoshi, Yasumasa; and Ishijima, Minoru, to Nippon Seiko Kabushiki Kaisha. Clamp bandcu4,802,261, Cl. 24-20.0TT.

Mizuno, Chiaki: *See*—
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Chen, Nai Y.; Degnan, Thomas F.; and Weisz, Paul B., 4,803,186, Cl. 502-66.000.
Herbst, Joseph A.; Owen, Hartley; and Schipper, Paul H., 4,802,971, Cl. 208-13.000.

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Molex Incorporated: *See*—
Michaels, Leonard H.; and Miller, Robert A., 4,802,864, Cl. 439-457.000.

Molins PLC: *See*—
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Momoki, Yasuhito; and Hasebe, Kazunori, to Fuji Photo Film Co., Ltd. Silver halide photographic material containing novel chloride contentcu4,803,152, Cl. 430-567.000.

Momose, Yuya, to NEC Corporation. Time-of-day coincidence systemcu4,803,708, Cl. 377-28.000.

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Monfort, Guy A.; and Bragard, Adolphe A., to Centre de Recherches Metallurgiques-Centrum Voor Research in De Metallurgie. Continuous measurement of the surface roughness of a cold-rolled productcu4,803,374, Cl. 250-571.000.

Monroe Auto Equipment Company: *See*—
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Monsanto Company: *See*—
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Monser, George J.; and Roy, Albert A., to Raytheon Company. Radio frequency array aatenna with energy resistive materialcu4,803,495, Cl. 343-777.000.

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Montedison S.p.A.: *See*—
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Montefiore Hospital Association of Western Pennsylvania, Inc.: *See*—
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Montino, Franco; and Spoto, Giuseppe, to Montedison S.p.A. Process for preparing titanium dioxide in the form of spherical particles by hydrolysis of Ti(IV)cu4,803,064, Cl. 423-612.000.

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Moore, Terry R.: *See*—
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Mori, Kinji; Suzuki, Yasuo; Kawano, Katsumi; Orimo, Masayuki; Kouzumi, Minoru; Kasajima, Hirokazu; and Nakai, Kozou, to Hitachi, Ltd. Method and apparatus for testing a distributed computer systemcu4,803,683, Cl. 371-19.000.

Mori, Masakazu: *See*—
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Morimoto, Tadaoki: *See*—
Usami, Kenichi; Kirihara, Seishin; Morimoto, Tadaoki; Doi, Hiroyuki; and Okada, Michiya, 4,802,894, Cl. 48-77.000.

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Moriya, Tsutomu; and Nozaki, Hiroshi, to NGK Insulators, Ltd. Suspension insulatorcu4,803,311, Cl. 174-182.000.

Moroney, John W.; and Ralli, Jugal K., to Spalding & Evenflo Companies, Inc. Crib spring hanger assemblycu4,802,248, Cl. 5-11.000.

Moroni, Renato; and Brocci, Marino, to Montedipe S.p.A. Polyolspolyesters and use thereof in the production of polyurethane foamscu4,803,230, Cl. 521-168.000.

Morris, Alan J.; and Coe, Merlin D., to Kerr-McGee Chemical Corporation. System for increasing the capacity of a titanium dioxide producing processcu4,803,056, Cl. 422-156.000.

Morris, Marion C.: *See*—
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Morse, Chris L. Overflow spillage preventer for fuel tanks in boatscu4,802,514, Cl. 141-86.000.

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Motoi, Taiko: *See*—
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Birkle, Alan D., 4,803,545, Cl. 357-81.000.
Burger, Marilyn S.; and McKee, John M., 4,802,638, Cl. 242-85.100.
DeLuca, Michael J.; and Willard, David F., 4,803,703, Cl. 375-116.000.
Duncan, William, 4,802,325, Cl. 53-444.000.
Levine, Stephen N.; Puhl, Larry C.; Bliss, Harry M.; and Corrigan, Gerald E., 4,803,726, Cl. 380-48.000.
Reid, James B., 4,802,640, Cl. 244-3.190.
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Willard, David F.; and Macnak, Philip P., 4,803,487, Cl. 340-825.440.

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Mouche , Richard J.; and Lin, Mei-Jan L., to Nalco Chemical Company. Biocide treatment to control sulfate-reducing bacteria in industrial process waste waterscu4,802,994, Cl. 210-759.000.

Mouche', Richard J.; and Lin, Mei-Jan L., to Nalco Chemical Company. Biocides for treating industrial waters, particularly flue gas desulfurization scrubber sludgecu4,802,996, Cl. 210-764.000.

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Smith, Martin S.: *See—*
Norris, Andrew P.; and Smith, Martin S., 4,803,494, Cl. 343-770.000.
Smith, Marven M., II: *See—*
Lefevre, Marcel R.; and Smith, Marven M., II, 4,803,018, Cl. 261-111.000.
Smith & Nephew Associated Companies p.l.c.: *See—*
Edwards, Linda M., 4,803,066, Cl. 424-132.000.
Smith, Peter, to Marconi Company Limited, The. Thrustercu4,802,333, Cl. 60-260.000.
Smith, Raymond H. Adjustable earth-moving attachment for a vehiclecu4,802,293, Cl. 37-108.00R.
Smith, Robert E.; and Fox, Eugene N., to Fluorodiagnostic Limited Partners. Composition, article and process for detecting a microorganismcu4,803,162, Cl. 435-36.000.
Smith, Roy E., to Urban Transportation Development Corporation. Steered axle for a railway vehiclecu4,802,419, Cl. 105-171.000.
Smith, Steven L.: *See—*
Raniere, Jean E.; Smith, Steven L.; Gehrke, Russell P.; and Johnson, Richard E., Jr., 4,803,102, Cl. 428-35.200.

Smithers, Michael J.: *See—*
Brewster, Andrew G.; Brown, George R.; and Smithers, Michael J., 4,803,220, Cl. 514-452.000.
SmithKline Beckman Corporation: *See—*
Bender, Paul E.; Lantos, Ivan; McGuire, Michael A.; Pridgen, Lendon N.; and Winicov, Herbert B., 4,803,279, Cl. 546-271.000.
Dalton, Barbara J.; and Rees, Robert C., 4,803,072, Cl. 424-85.50C.
Garris, Charles R.; Ruttenberg, Kenneth M.; and Neiswender, James L., Sr., 4,802,323, Cl. 53-53.000.
Snitovski, Jacov. Insulating block unit, a method for its manufacture, and a method of erecting a wall by means of such blockscu4,802,318, Cl. 52-309.120.
Soartec Corp: *See—*
Hayamizu, Mamoru, 4,803,499, Cl. 346-140.00R.
Societas Cavi Pirelli S.p.A.: *See—*
Marin, Carlo; and Seveso, Cesare, 4,803,309, Cl. 174-106.00R.
Societe Anonyme de Telecommunications: *See—*
Fraize, Claude R.; Forja, Christian; and Calevo, Robert, 4,802,724, Cl. 350-96.200.
Societe Berthoud S.A.: *See—*
Nissels, Robert, 4,802,382, Cl. 74-579.00R.
Societe D'Exploitation de Brevets pour L'Industrie et la Marine: *See—*
Gemignani, Andre; Boulogne, Serge J.; and Schaumburg, Gerald, 4,802,505, Cl. 137-492.000.
Societe Europeenne de Propulsion: *See—*
Beboux, Jean, 4,803,038, Cl. 264-3.300.
Societe Industrielle de Liaisons Electriques: *See—*
Fraize, Claude R.; Forja, Christian; and Calevo, Robert, 4,802,724, Cl. 350-96.200.
Societe Nationale d-Etude et de Construction de Moteurs d-Aviation (SNECMA): *See—*
Caruel, Jacques E. J., 4,802,337, Cl. 60-749.000.
Societe Nationale d'Etude et Moteurs d'Aviation "S.N.E.C.M.A." : *See—*
Gastebois, Philippe M. D.; and Imbault, Jean-Francois R., 4,802,824, Cl. 416-193.00A.
Societe Nationale Elf Aquitaine: *See—*
Armand, Michel; Fouletier, Mireille; and Degott, Pierre, 4,803,249, Cl. 525-326.200.
Soemers, Hermanus M. J. R., to U.S. Philips Corporation. Method of mounting a deflection unit on a cathode ray tube envelope and combination resulting therefromcu4,803,559, Cl. 358-248.000.
Sogi, Hidehito; and Hori, Toshiyuki, to E. I Du Pont de Nemours and Company; and Toyo Tire & Rubber Company. Composite cushioncu4,803,118, Cl. 428-246.000.
Sohda, Chiharu: *See—*
Watanabe, Yoshimi; Kawamura, Hiroshi; and Sohda, Chiharu, 4,802,871, Cl. 440-75.000.
Soil Machine Dynamics Limited: *See—*
Grinsted, Timothy W.; and Reece, Alan R., 4,802,793, Cl. 405-161.000.
Solhjell, Erik, to Tandberg Data A/S. Circuit arrangement for the recognition of impermissable phase errors in a phase locked loopcu4,803,704, Cl. 375-120.000.
Sommargren, Gary E.: *See—*
Young, Peter S.; and Sommargren, Gary E., 4,802,764, Cl. 356-349.000.
Young, Peter S.; and Sommargren, Gary E., 4,802,765, Cl. 356-349.000.
Sommers, Steven F.: *See—*
Dombrowski, Anthony E., 4,803,488, Cl. 340-904.000.
Sonderegger, Hans-Conrad: *See—*
Calderara, Reto; Sonderegger, Hans-Conrad; and Wolfer, Peter, 4,802,371, Cl. 73-862.040.
Soneda, Mitsuo; and Hazama, Yoshikazu, to Sony Corporation. Liquid crystal display apparatuscu4,803,480, Cl. 340-784.000.
Sony Corporation: *See—*
Ishikawa, Reiji; and Kimura, Tomohiro, 4,803,337, Cl. 219-121.850.
Nikura, Hideo, 4,803,388, Cl. 310-12.000.
Nishimura, Toshimichi; and Kikuchi, Atsushi, 4,803,650, Cl. 364-825.000.
Soneda, Mitsuo; and Hazama, Yoshikazu, 4,803,480, Cl. 340-784.000.
Wilkinson, James H.; and Avis, Richard J. A., 4,803,567, Cl. 360-33.100.
Sorenson, Richard W.; Ives, Milton N.; and Sapone, Frank P., to Carlingswitch, Inc. Momentary rotary switchcu4,803,314, Cl. 200-11.00J.
Sostarich, Joseph J.: *See—*
Steele, Douglas S.; Howington, Larry C.; Schuler, James W.; Sostarich, Joseph J.; Wojciechowski, Charles R.; Sippel, Theodore W.; Portaz, Joseph M.; Isaacs, Ralph G.; Scudder, Henry J., III; Kincaid, Thomas G.; Hedengren, Kristina H. V.; Koegl, Rudolph A. A.; Keaveney, John P.; Czechowski, Joseph, III; Brehm, John R.; Brown, James M., Jr.; Oliver, David W.; Williams, George E.; and Miller, Richard D., 4,803,639, Cl. 364-507.000.
Sota, Kaoru: *See—*
Kawashima, Yutaka; Satoh, Masakazu; Hatada, Yuichi; Hazato, Fumiko; Nakashima, Yoshimoto; and Sota, Kaoru, 4,803,266, Cl. 540-200.000.
Sotani, Junji; Koizumi, Tatsuya; Endo, Shiro; Mashino, Nobuyoshi; and Seo, Susumu, to The Furukawa Electric Co., 03, Ltd.; and Furukawa Construction Co., Ltd., The. Electric fluid heating apparatus utilizing a vaporizable working fluidcu4,803,343, Cl. 219-326.000.
Southwest Research Institute: *See—*
Hill, Ralph H., Jr., 4,802,762, Cl. 356-318.000.
Spalding & Evenflo Companies, Inc.: *See—*
Moroney, John W.; and Ralli, Jugal K., 4,802,248, Cl. 5-11.000.
Spector, Marshall, to Air Products and Chemicals, Inc. Method for protecting plants and plant matter from stresscu4,802,905, Cl. 71-68.000.
Spectra Diode Laboratories, Inc.: *See—*
Scifres, Donald R.; Kung, Hsing; Cross, Peter; Burnham, Robert D.; and Streifer, William, 4,803,691, Cl. 372-150.000.
Spicciati, Frank A.: *See—*
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Spira, Joel S.: *See—*
Jacoby, Elliot G., Jr.; D'Aleo, Michael J.; Luchaco, David G.; Spira, Joel S.; Wagner, Richard A.; Yuhasz, Stephen J.; and Dowler, David H., 4,803,380, Cl. 307-157.000.
Spissinger, Friederich H.: *See—*
Wong, David L. W.; Leung, Paul C. P.; and Spissinger, Friederich H., 4,802,675, Cl. 273-310.000.
Sports Bio-Mechanics Research Inc.: *See—*
Gardiner, Roy J. W., 4,802,494, Cl. 128-779.000.
Spoto, Giuseppe: *See—*
Montino, Franco; and Spoto, Giuseppe, 4,803,064, Cl. 423-612.000.
Sprague Electric Company: *See—*
Efford, Thomas W.; and Dain, Lester C., 4,803,598, Cl 361-541.000.
Spreen, James H.: *See—*
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Spriggs, Thomas E.: *See—*
Goode, Mark G.; Hasenberg, Daniel M.; McNeil, Thomas J.; and Spriggs, Thomas E., 4,803,251, Cl. 526-59.000.
Spruit, Abraham C.: *See—*
Schmidt, Gunter H. R.; Joge, Hans-Dieter; Sauer, Wilhelm R.; and Spruit, Abraham C., 4,802,603, Cl. 220-268.000.
SRI International: *See—*
Eckerle, Joseph S., 4,802,488, Cl. 128-672.000.
Stackhouse, Susan: *See—*
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Stadler, Brigitte M., heir: *See—*
Donatsch, Peter; Engel, Gunter; Hugi, Bruno; Richardson, Brian P.; Stadler, Paul A., deceased; Stadler, Hildegard R., heir; Stadler, Brigitte M., heir; Stadler, Sigrid A., heir; and Breuleux, Gerald, legal representative, 4,803,199, Cl. 514-214.000.
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Donatsch, Peter; Engel, Gunter; Hugi, Bruno; Richardson, Brian P.; Stadler, Paul A., deceased; Stadler, Hildegard R., heir; Stadler, Brigitte M., heir; Stadler, Sigrid A., heir; and Breuleux, Gerald, legal representative, 4,803,199, Cl. 514-214.000.
Stadler, Paul A., deceased: *See—*
Donatsch, Peter; Engel, Gunter; Hugi, Bruno; Richardson, Brian P.; Stadler, Paul A., deceased; Stadler, Hildegard R., heir; Stadler, Brigitte M., heir; Stadler, Sigrid A., heir; and Breuleux, Gerald, legal representative, 4,803,199, Cl. 514-214.000.
Stadler, Sigrid A., heir: *See—*
Donatsch, Peter; Engel, Gunter; Hugi, Bruno; Richardson, Brian P.; Stadler, Paul A., deceased; Stadler, Hildegard R., heir; Stadler, Brigitte M., heir; Stadler, Sigrid A., heir; and Breuleux, Gerald, legal representative, 4,803,199, Cl. 514-214.000.
Stahlwerke Peine-Salzgitter AG: *See—*
Fasterding, Gunter; and Frenzel, Jurgen, 4,802,623, Cl. 238-44.000.
Stamm, Erich: *See—*
Rempfler, Hermann; Stamm, Erich; and Thummel, Rudolph C., 4,802,909, Cl. 71-92.000.
Standard Oil Company, The: *See—*
Mazanec, Terry I.; and Cable, Thomas L., 4,802,958, Cl 204-80.000.
Standard Oil Company (Indiana), now Amoco Corp.: *See—*
Alford, Richard M., 4,803,666, Cl. 367-36.000.
Standke, Helmut, to Consolidated Controls Corporation. Thermal modulating control valvecu4,802,621, Cl. 236-93.00R.
Stanley, Ian W., to British Telecommunications public limited company. Positioning optical components and waveguidescu4,802,727, Cl. 350-96.200.
Stanley, Kerry G.; and Ho, Winston, to McNeilab, Inc. 3-aminoalkyl-1H-indole-5-urea and amide derivativescu4,803,218, Cl. 514-414.000.
Stanton, Robert. Regulated aeration of gases exhausting through a propellercu4,802,872, Cl. 440-89.000.
Stanton, Thomas H.; Clagett, James A.; Schindele, Deborah C.; Renzoni, George E.; Andersen, Niels H.; and Opheim, Kent E., to Ultra Diagnostics Corporation. Competitive immunoassay method, device and test kitcu4,803,170, Cl. 436-518.000.
Stark, Joachim: *See—*
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Stark, Ullrich: *See—*
Yngve, Paul W.; Artzt, Peter; Egbers, Gerhard; Stark, Ullrich; and Muller, Heinz, 4,802,330, Cl. 57-238.000.
Stasz, Peter: *See—*
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Stauffer Chemical Co.: *See—*
Baker, Don R., 4,802,912, Cl. 71-100.000.
Stautzenberger, A. Lee; and Kunkel, Robert W., to Hoechst Celanese Corporation. Purification of diphenyl phthalatescu4,803,295, Cl. 560-78.000.

STC PLC: *See*—
Norris, Andrew P.; and Smith, Martin S., 4,803,494, Cl. 343-770.000.
Willis, Gordon, 4,803,723, Cl. 379-424.000.
Steele, Douglas S.; Howington, Larry C.; Schuler, James W.; Sostarich, Joseph J.; Wojciechowski, Charles R.; Sippel, Theodore W.; Portaz, Joseph M.; Isaacs, Ralph G.; Scudder, Henry J., III; Kincaid, Thomas G.; Hedengren, Kristina H. V.; Koegl, Rudolph A. A.; Keaveney, John P.; Czechowski, Joseph, III; Brehm, John R.; Brown, James M., Jr.; Oliver, David W.; Williams, George E.; and Miller, Richard D., to General Electric Company. X-ray inspection systemcu4,803,639, Cl. 364-507.000.
Steen, William M.; and Weerasinghe, Vijitha M., to Quantum Laser Corporation. Gas shroud and methodcu4,803,335, Cl. 219-121.840.
Steers, Michel; Courdille, Michel; and Hazan, Jean-Pierre, to U.S. Philips Corp. Flat-iron safety device utilizing a dual internal timing circuitcu4,803,342, Cl. 219-257.000.
Steffey, Ronald E.: *See*—
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Steinbrecher, Jurgen K.; and Schnell, Ulrich, to U.S. Philips Corp. Method of determining the position of the tap on a resistance tele-transmittercu4,803,420, Cl. 324-64.000.
Steiner, Ronald M.: *See*—
Gilgenbach, Hubert S.; and Steiner, Ronald M., 4,802,822, Cl. 416-235.000.
Steiner, Walter. Clothes drying apparatuscu4,802,596, Cl. 211-197.000.
Steinhilber, Helmut. Desk with an additional lecterncu4,802,714, Cl. 312-196.000.
Steinijans, Volker: *See*—
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Steinmetz, Guy R.; Rule, Mark; Agreda, Victor H.; and Treece, Lanney C., to Eastman Kodak Company. Process for the co-production of aromatic carboxylates and alkyl iodidescu4,803,296, Cl. 560-80.000.
Stendel, Wilhelm: *See*—
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Stephens, Alan, to B.H.F. (Engineering) Limited. Electrically heated forehearthcu4,803,698, Cl. 373-27.000.
Stetter, Jorg: *See*—
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Stevenson, David L.; Moore, Terry R.; and Brammall, Terrence N., to Trans-Guard Industries, Inc. Locking sealcu4,802,700, Cl. 292-327.000.
Stevenson, Robert L. Removable skirt and trouser clip for garment hangercu4,802,265, Cl. 24-335.000.
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Stidworthy, Frederick M. Variable phase and oscillatory drivescu4,802,376, Cl. 74-394.000.
Stock, Claude: *See*—
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Stocker, Bruno: *See*—
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Stodt, Enno, to J. M. Voith GmbH. Friction-disc clutchcu4,802,564, Cl. 192-70.280.
Stoll, John R.: *See*—
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Stone, Steven G.: *See*—
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Stratton, Boyd L., to Harris Corporation. Adaptive comb filtering system for processing video signalscu4,803,547, Cl. 358-31.000.
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Streifer, William: *See*—
Scifres, Donald R.; Kung, Hsing; Cross, Peter; Burnham, Robert D.; and Streifer, William, 4,803,691, Cl. 372-150.000.
Strick, Nathan: *See*—
Neurath, Alexander R.; Kent, Stephen B. H.; and Strick, Nathan, 4,803,156, Cl. 435-7.000.
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Striebig AG: *See*—
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Stryd, Thomas N. Continuous perforated paper sheet for printercu4,802,692, Cl. 281-5.000.
Studeneer, Adolf: *See*—
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Stuhrmann, Heinz: *See*—
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Styles, George R.; Jones, K. Tom; and Bloom, Devin A., to Pacific BioSystems, Inc. Cyclically varying pulsating fluid supply systemcu4,802,508, Cl. 137-624.130.
Suda, Koichiro: *See*—
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Suda, Shigeyuki: *See*—
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Sugahara, Youji; and Matsumura, Hideyuki, to Omron Tateisi Electronics Co. Automatic transaction machinecu4,803,347, Cl. 235-379.000.
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Sugimori, Shuighi; and Kawamura, Tomihiko, to Mitsubishi Rayon Company Ltd. Porous water-treating materialcu4,802,985, Cl. 210-502.100.
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Sugimoto, Masahiro; and Wakasugi, Yasumasa, to Fujitsu Limited. Heatsink package for flip-chip ICcu4,803,546, Cl. 357-81.000.
Sugimoto, Osamu; and Watabe, Masayuki, to Kabushiki Kaisha Nippon Coinco. Card read/write devicecu4,803,349, Cl. 235-475.000.
Sugimoto, Yuji; Tsuji, Masaru; and Yoshiura, Shoichiro, to Sharp Kabushiki Kaisha. Pressure applying mechanism for fixing rollers of a copying apparatuscu4,802,439, Cl. 118-116.000.
Sugisaki, Takashi: *See*—
Maruhashi, Yoshitsugu; Iida, Setsuko; Sugisaki, Takashi; Mizutani, Yohji; and Kishida, Nobuhiro, 4,803,036, Cl. 264-526.000.
Sugiura, Noboru: *See*—
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Sugiyama, Kengo: *See*—
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Suld, George: *See*—
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Sullins, Harry P., to Richland Industrial, Inc. Method for coating pipe with refractory materialcu4,802,940, Cl. 156-187.000.
Sullivan, James C.; and Epperly, William R., to Fuel Tech, Inc. Process for the reduction of nitrogen oxides in an effluent using a hydroxy amino hydrocarboncu4,803,059, Cl. 423-235.000.
Sullivan, Patrick J.: *See*—
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Sumida, Shuji: *See*—
Iida, Yoshimitsu; Terazono, Takashi; and Sumida, Shuji, 4,803,213, Cl. 514-355.000.
Sumitani, Shigeto; Noguchi, Haruo; and Araya, Hiroyuki, to Kabushiki Kaisha Toshiba. Refrigerant-heating type heating apparatuscu4,802,529, Cl. 165-29.000.
Sumitiomo Chemical Company, Limited: *See*—
Kojimoto, Susumu; Nii, Fumio; and Mori, Toshio, 4,802,305, Cl. 47-57.600.
Sumitomo Chemical Company, Limited: *See*—
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Okada, Toyokazu; Higashi, Koji; and Taguchi, Satoshi, 4,802,745, Cl. 350-397.000.
Okumura, Takuzo; Okada, Toyokazu; and Kikui, Hitoshi, 4,803,014, Cl. 252-585.000.
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Sumitomo Electric Industries, Ltd.: *See*—
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Sumitomo Metal Industries, Ltd.: *See*—
Yamada, Tsuneo; Sakashita, Tsutomu; Tomono, Hiroshi; Kimura, Takashi; Maehara, Yasuhiro; and Yasumoto, Kunio, 4,802,356, Cl. 72-184.000.
Sumitomo Rubber Industries, Ltd.: *See*—
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Sumiya, Kenji: *See*—
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Sumpman, Wayne C.: *See*—
Nathenson, Richard D.; Alexion, Christopher C.; and Sumpman, Wayne C., 4,802,531, Cl. 165-104.280.
Sun Microsystems, Inc.: *See*—
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Sun Refining and Marketing Company: *See*—
Lyons, James E.; Ellis, Paul E., Jr.; Myers, Harry K., Jr.; Suld, George; and Langdale, Wayne A., 4,803,187, Cl. 502-200.000.
Sundberg, Michael W.; Babb, Bruce; and McClune, Gregory, to Eastman Kodak Company. Hydrolyzable fluorescent substrates for phosphatases and analytical use thereofcu4,803,157, Cl. 435-21.000.
Sundelin, Kurt G. R.; Salanitro, Joseph P.; and Stackhouse, Susan, to International Minerals & Chemical Corp. Substituted 2,3-diphenyl-1,2-dihydroquinoxalinescu4,803,209, Cl. 514-249.000.
Sundstrand Corporation: *See*—
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Sunpower, Inc.: *See*—
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Suntory Limited: *See*—
Ohfune, Yasufumi; and Sakaitani, Masahiro, 4,803,292, Cl. 560-29.000.
Sunwell Engineering Company Ltd.: *See*—
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Susa, Kenzo: *See*—
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LIST OF STATUTORY INVENTION REGISTRATIONS

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454.5 4,802,504
492 4,802,505
556 4,802,506
613 4,802,507
624.13 4,802,508

CLASS 138
110 4,802,509
118.1 4,802,511
125 4,802,510

CLASS 140
149 4,802,512

CLASS 141
86 4,802,514
97 4,802,515
311 R 4,802,513
392 4,802,516

CLASS 144
34 E 4,802,517
193 R 4,802,518

CLASS 148
12.7 B 4,802,930
23 4,802,932
302 4,802,931
403 4,802,933
404 4,802,934
437 4,802,935

CLASS 152
325 4,802,519
454 4,802,520

CLASS 156
4,802,936
118 4,802,937
149 4,802,938
155 4,802,939
187 4,802,940
244.13 4,802,942
244.18 4,802,941
244.23 4,802,943
247 4,802,944
4,802,945
264 4,802,946
380.5 4,802,947
500 4,802,948
540 4,802,949
629 4,802,950
630 4,802,951
634 4,802,952

CLASS 160
168.1 4,802,522
172 4,802,521
354 4,802,523

CLASS 162
263 4,802,953
301 4,802,955
348 4,802,954

CLASS 164
48 4,802,525
97 4,802,524
287 4,802,526
358 4,802,527
428 4,802,528
440 4,802,436

CLASS 165
29 4,802,529
80.3 4,802,532
94 4,802,530
104.28 4,802,531

CLASS 166
252 4,802,533
381 4,802,534

CLASS 169
70 4,802,535

CLASS 172
42 4,802,536
812 4,802,537

CLASS 173
1 4,802,538

CLASS 174
35 GC 4,803,306
67 4,803,307
68.5 4,803,308
106 R 4,803,309
128 S 4,803,310
182 4,803,311

CLASS 175
329 4,802,539

CLASS 177
211 4,802,540
212 4,802,541

CLASS 178
17 R 4,803,312

CLASS 180
65.5 4,802,542
79.1 4,802,543
4,802,544
132 4,802,546
135 4,802,545
216 4,802,547
219 4,802,682
274 4,802,548
322 4,802,549

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CLASS 181

131 4,802,550
146 4,802,551

CLASS 182

187 4,802,552
204 4,802,471
222 4,802,553

CLASS 184

14 4,802,554
15.1 4,802,555
102 4,802,556

CLASS 187

127 4,802,557

CLASS 188

134 4,802,558
196 A 4,802,559
264 F 4,802,560
318 4,802,561

CLASS 192

1.23 4,802,562
13 A 4,802,563
70.28 4,802,564

CLASS 194

350 4,802,566

CLASS 198

345 4,802,565
4,802,567
346.1 4,802,569
388 4,802,568
627 4,802,571
791 4,802,572

CLASS 200

5 A 4,803,315
[illegible] 4,803,313
11 J 4,802,314
82 R 4,803,318
147 A 4,803,319
[illegible] 4,803,322
302.2 4,803,323
342 4,803,320
406 4,803,316
438 4,803,317
517 4,803,321

CLASS 201

39 4,802,573

CLASS 203

42 4,802,956

CLASS 204

1 T 4,802,957
60 4,802,970
[illegible] 4,802,958
[illegible] 4,802,959
[illegible] 4,802,960
[illegible] 4,802,961
145 R 4,802,962
157.5 4,802,963
180.1 4,802,964
182.4 4,802,965
4,802,966
192.14 4,802,967
192.2 4,803,130
[illegible] 4,802,968
299 R 4,802,969

CLASS 206

[illegible] 4,802,574
225 4,802,376
232 4,802,575
278 4,802,577
339 4,802,578
366 4,802,579
378 4,802,580
[illegible] 4,802,581
390 4,802,582
427 4,802,583
[illegible] 4,802,587
447 4,802,584
449 4,802,585
511 4,802,588
4,802,589
556 4,802,586
[illegible] 4,802,590

CLASS 208

13 4,802,971
107 4,802,972
[illegible] 4,802,973
217 4,802,974
390 4,802,975

CLASS 209

12 4,802,976
143 4,802,977
[illegible] 4,802,591

CLASS 210

104 4,802,978
132 4,802,979
[illegible] 4,802,592
4,802,980
198.2 4,802,981
247 4,802,982
490 4,802,984
502.1 4,802,985
635 4,802,986
640 4,802,987
4,802,988
688 4,802,989
699 4,802,990
705 4,802,991
709 4,802,992
725 4,802,993
759 4,802,994
761 4,802,995
764 4,802,996

CLASS 211

[illegible] 4,802,593
20 4,802,594
[illegible] 4,802,595
197 4,802,596

CLASS 215

307 4,802,597
348 4,802,598

CLASS 219

10.55 F 4,803,324
64 4,803,325
69 W Re.32,855
4,803,326
4,803,327
4,803,328
86.25 4,803,329
97 4,803,330
110 4,803,331
121.13 4,803,333
121.52 4,803,332
121.64 4,803,334
121.68 4,803,336
121.84 4,803,335
121.85 4,803,337
145.21 4,803,339
146.1 4,803,340
222 4,803,341
257 4,803,342
326 4,803,343
497 4,803,344
553 4,803,345

CLASS 220

1 C 4,802,599
1.5 4,802,600
4 R 4,802,601
85 H 4,802,602
268 4,802,603
324 4,802,604
338 4,802,605

CLASS 221

39 4,802,606

CLASS 222

82 4,802,607
142.1 4,802,608
158 4,802,609
481.5 4,802,610
600 4,802,611

CLASS 224

204 4,802,613
[illegible] 4,802,612

CLASS 227

19 4,802,614
67 4,802,615

CLASS 228

4.1 4,802,616
180.1 4,802,617

CLASS 225

68 R 4,802,618
125.19 4,802,619
125.42 4,802,620

CLASS 235

7 R 4,803,346
379 4,803,347
381 4,803,348
475 4,803,349
492 4,803,350
4,803,351

CLASS 236

93 R 4,802,621

CLASS 238

10 R 4,802,622
44 4,802,623
317 4,802,624

CLASS 239

3 4,802,625
36 4,802,626
112 4,802,627
227 4,802,628
265.19 4,802,629
428 4,802,630

CLASS 241

[illegible] 4,802,635
88.1 4,802,631

CLASS 242

58.5 4,802,632
67.1 R 4,802,636
71.1 4,802,633
72 R 4,802,637
85.1 4,802,638
107.4 A 4,802,634

CLASS 244

2 4,802,639
3.19 4,802,640
137.4 4,802,641
200 4,802,642

CLASS 248

49 4,802,643
251 4,802,644
309.1 4,802,645
316.5 4,802,646
544 4,802,647
550 4,802,648

CLASS 249

21 4,802,649

CLASS 250

201 4,803,352
227 4,803,353
4,803,361
229 4,803,362
231 SE 4,803,354
236 4,803,367
288 4,803,355
306 4,803,356
310 4,803,357
4,803,358
4,803,369
327.2 4,803,359
338.3 4,803,360
338.4 4,803,363
385.1 4,803,368
455.1 4,803,364
461.2 4,803,365
486.1 4,803,366
504 R 4,803,370
560 4,803,371
561 4,803,372
4,803,373
571 4,803,374
578 4,803,375

CLASS 251

117 4,802,650
161 4,802,651
181 4,802,652

CLASS 252

8.514 4,802,998
8.6 4,802,997
18 4,802,999
32.5 4,803,000
47 4,803,001
49.6 4,802,893
4,803,002
51.5 A 4,803,003
4,803,004
58 4,803,005
62.51 4,803,006
70 4,803,007
135 4,803,058
162 4,803,008
171 4,803,009
174.21 4,803,010
500 4,803,011
544 4,803,012
580 4,803,013
585 4,803,014

CLASS 254

126 4,802,653

CLASS 260

402 4,803,015
403 4,803,016
501.15 4,803,017

CLASS 261

111 4,803,018

CLASS 264

3.1 4,803,019
3.3 4,803,038
22 4,803,020
25 4,803,021
4,803,022
45.4 4,803,023
63 4,803,025
80 4,803,024
210.5 4,803,027
216 4,803,026
255 4,803,031
263 4,803,028
264 4,803,029
278 4,803,030
[illegible] 4,803,032
339 4,803,033
504 4,803,034
519 4,803,035
526 4,803,036

CLASS 266

51 4,802,654
78 4,803,037
218 4,802,655
225 4,802,656

CLASS 267

64.24 4,802,657
140.1 4,802,658
149 4,802,659
182 4,802,660

CLASS 269

48.1 4,802,661

CLASS 271

[illegible] 4,802,662
201 4,802,664
225 4,802,665
227 4,802,663

CLASS 272

73 4,802,666
123 4,802,667

CLASS 273

1 GE 4,802,668
26 C 4,802,669
55 R 4,802,670
63 E 4,802,671
73 D 4,802,678
77 A 4,802,672
94 4,802,880
153 S 4,802,673
235 A 4,802,674
310 4,802,675
363 4,802,676
416 4,802,677

CLASS 277

12 4,802,679

CLASS 279

33 4,802,680

CLASS 280

47.18 4,802,681
291 4,802,684
304.1 4,802,683
414.1 4,802,685
477 4,802,686
615 4,802,687
[illegible] 4,802,688
[illegible] 4,802,689
713 4,802,690
751 4,802,691

CLASS 281

5 4,802,692
7 4,802,693

CLASS 283

87 4,802,694
91 4,802,695
317 4,802,696
319 4,802,697
363 4,802,698

CLASS 290

22 4,803,376
38 R 4,803,377

CLASS 292

327 4,802,699
4,802,700
340 4,802,701

CLASS 294

65.5 4,802,702
99.2 4,802,703
4,802,704

CLASS 296

39.2 4,802,705
[illegible] 4,802,706
214 4,802,707

CLASS 297

252 4,802,708

CLASS 298

10 4,802,709

CLASS 303

11 4,802,710
[illegible] 4,802,711
114 4,802,712
119 4,802,713

CLASS 307

108 4,803,378
112 4,803,379
157 4,803,380
228 4,803,381
362 4,803,382
456 4,803,383
490 4,803,384
516 4,803,385
530 4,803,386

CLASS 310

12 4,803,387
4,803,388
49 R 4,803,389
50 4,803,390
178 4,803,391
311 4,803,392
328 4,803,393

CLASS 312

196 4,802,714
299 4,802,715
330 R 4,802,716

CLASS 313

113 4,803,394
141 4,803,395
318 4,803,396
337 4,803,397
4,803,398
489 4,803,400
4,803,401
493 4,803,399
509 4,803,402
624 4,803,403
634 4,803,404

CLASS 315

111.21 4,803,405
174 4,803,406
364 4,803,407

CLASS 318

254 4,803,408
310 4,803,409
331 4,803,410
564 4,803,411
567 4,803,412
648 4,803,413
696 4,803,414
4,803,415

CLASS 320

44 4,803,416
48 4,803,417

CLASS 322

61 Re.32,857

CLASS 323

284 4,803,612
324 4,803,418

CLASS 324

58 R 4,803,419
64 4,803,420
72 4,803,421
73 R 4,803,422
130 4,803,423
158 F 4,803,424
173 4,803,425
207 4,803,426
4,803,427
230 4,803,428
244 4,803,429
250 4,803,430
306 4,803,431
309 4,803,432
316 4,803,624
318 4,803,433
424 4,803,434
456 4,803,435
549 4,803,436

CLASS 328

59 4,803,437

CLASS 329

50 4,803,438

CLASS 330

4.3 4,803,439
145 4,803,440
257 4,803,441
274 4,803,442
277 4,803,443

CLASS 331

65 4,803,444
177 R 4,803,445

CLASS 333

26 4,803,446
103 4,803,447
151 Re.32,859
4,803,448
193 4,803,449
238 4,803,450

CLASS 335

261 Re.32,860
273 4,803,451
301 4,803,452

CLASS 336

183 4,803,453
192 4,803,454

CLASS 337

68 4,803,455

CLASS 338

32 S 4,803,456
195 4,803,457
198 4,803,458

CLASS 340

52 R 4,803,459
63 4,803,460
507 4,803,465
539 Re.32,856
542 4,803,467
566 4,803,468
577 4,803,469
583 4,803,470
603 4,803,466
626 4,803,471
658 4,803,472
693 4,803,473
709 4,803,474
726 4,803,478
732 4,803,464
747 4,803,477
750 4,803,475
4,803,476
784 4,803,480
825.050 4,803,485
825.31 4,803,482
825.440 4,803,487
825.5 4,803,481
825.79 4,803,486
856 4,803,483
860 4,803,479
870.02 4,803,484
904 4,803,488

CLASS 341

23 4,803,463
154 4,803,461
172 4,803,462

CLASS 342

158 4,803,490
192 4,803,489

CLASS 343

702 4,803,491
713 4,803,492
745 4,803,493
770 4,803,494
777 4,803,495

CLASS 346

76 PH 4,803,496
[illegible] 4,803,497
4,803,498
140 R 4,803,499
4,803,500
4,803,501
4,803,502
159 4,803,503

CLASS 350

1.3 4,802,717
3.6 4,802,718
3.65 4,802,719
6.6 4,802,720
6.8 4,802,721
96.10 4,802,722
96.15 4,802,723
96 20 4,802,724
4,802,725
4,802,726
4,802,727
4,802,728
96.21 4,802,729
96.23 4,802,730
4,802,731
4,802,732
96.34 4,802,733
117 4,802,734
162.12 4,802,735
163 4,802,736
166 4,802,737
257 4,802,738
332 4,802,739
339 F 4,802,743
4,802,744
339 R 4,802,742
341 4,802,740
392 4,802,741
397 4,802,745
418 4,802,746
427 4,802,747

507 4,802,748
516 4,802,749
619 4,802,750
626 4,802,751
631 4,802,752

CLASS 351

88 4,802,753
138 4,802,754
163 4,802,755
200 4,802,756

CLASS 354

64 4,803,504
80 4,803,505
400 4,803,506
4,803,507
403 4,803,508
410 4,803,509

CLASS 355

3 CH 4,803,512
4,803,517
3 DD 4,803,513
3 R 4,803,510
4,803,511
4 4,803,514
4,803,515
4,803,516
4,803,518
7 4,803,520
[illegible] 4,803,519
14 R 4,803,521
26 4,803,522
32 4,803,523
53 4,803,524
55 4,803,525

CLASS 356

2 4,802,757
31 4,802,760
71 4,802,758
301 4,802,761
318 4,802,762
319 4,802,763
349 4,802,764
4,802,765
350 4,802,766
4,802,767
376 4,802,759
417 4,802,768

CLASS 357

13 4,803,527
15 4,803,526
23.1 4,803,528
23.13 4,803,536
23.4 4,803,533
23.5 4,803,529
23.6 4,803,535
23.7 4,803,530
24 4,803,531
30 4,803,537
38 4,803,538
67 4,803,539
68 4,803,541
70 4,803,540
71 4,803,534
72 4,803,542
4,803,543
4,803,544
81 4,803,545
4,803,546
234 4,803,532

CLASS 358

31 4,803,547
36 4,803,548
39 4,803,549
98 4,803,550
4,803,562
100 4,803,563
147 4,803,551
148 4,803,552
149 4,803,553
209 4,803,554
213.19 4,803,555
228 4,803,556
229 4,803,557
236 4,803,560
248 4,803,559
283 4,803,561
285 4,803,564
294 4,803,565
300

CLASS 360

26 4,803,566
33.1 4,803,567
4,803,568
60 4,803,569
4,803,572
61 4,803,570
63 4,803,571
78.13 4,803,573
85 4,803,574
94 4,803,575
96.3 4,803,585
[illegible] 4,803,576
102 4,803,577
105 4,803,578
113 4,803,580
4,803,581
114 4,803,579
119 4,803,582
122 4,803,338
128 4,803,583
133 4,803,584

CLASS 361

[illegible] 4,803,586
24 4,803,587
79 4,803,592
118 4,803,588
210 4,803,589
225 4,803,593
230 4,803,594
321 4,803,591
386 4,803,590
412 4,803,595
502 4,803,597
525 4,803,596
541 4,803,598

CLASS 362

72 4,803,608
80 4,803,601
135 4,803,602
150 4,803,603
154 4,803,604
184 4,803,605
217 4,803,600
249 4,803,599
250 4,803,606
4,803,607

CLASS 363

17 4,803,609
[illegible] 4,803,610
[illegible] 4,803,611

CLASS 364

132 4,803,613
200 4,803,614
4,803,615
4,803,616
4,803,617
4,803,618
4,803,619
4,803,620
4,803,621
4,803,622
4,803,623
413.03 4,803,625
424.05 4,803,627
4,803,629
4,803,630
424.07 4,803,626
424.1 4,803,628
426.04 4,803,637
462 4,803,631
464.04 4,803,632
474.03 4,803,633
478 4,803,634
483 4,803,635
491 4,803,636
507 4,803,638
4,803,639
513 4,803,640
4,803,641
4,803,642
523 4,803,643
559 4,803,644
560 4,803,645
561 4,803,646
567 Re.32,861
[illegible] 4,803,652
716 Re.32,858
724.17 4,803,647
724.19 4,803,648
784 4,803,649
825 4,803,650
900 4,803,651
4,803,653
4,803,654
4,803,655

CLASS 365

87 4,803,658
94 4,803,659
113 4,803,660
184 4,803,661
185 4,803,662
189 4,803,663
200 4,803,656
210 4,803,664
221 4,803,657
230 4,803,665

CLASS 366

75 4,802,769
177 4,802,770
270 4,802,771

CLASS 367

[illegible] 4,803,666
[illegible] 4,803,667
72 4,803,668
4,803,669
99 4,803,670
166 4,803,671

CLASS 368

241 4,803,672
269 4,803,673

CLASS 369

13 4,803,674
32 4,803,675
[illegible] 4,803,677
143 4,803,676
291 4,803,678

CLASS 370

[illegible] 4,803,681
95 4,803,679
102 4,803,680

CLASS 371

12 4,803,682
19 4,803,683
31 4,803,684
33 4,803,685

CLASS 372

5 4,803,687
21 4,803,688
36 4,803,689
44 4,803,686
45 4,803,690
[illegible] 4,803,692
58 4,803,693
92 4,803,695
95 4,803,696
98 4,803,694
107 4,803,697
[illegible] 4,803,691

CLASS 373

27 4,803,698

CLASS 374

205 4,802,772

CLASS 375

36 4,803,699
77 4,803,700
102 4,803,701
106 4,803,702
116 4,803,703
120 4,803,704
4,803,705

CLASS 376

216 4,803,039
4,803,040
261 4,803,041
272 4,803,042
442 4,803,043
444 4,803,044

CLASS 377

24.1 4,803,707
28 4,803,708
58 4,803,709
60 4,803,710
63 4,803,706

CLASS 378

4 4,803,711
34 4,803,713
62 4,803,714
90 4,803,715
034 4,803,712
155 4,803,716

CLASS 379

67 4,803,717
163 4,803,718
202 4,803,720
399 4,803,719
4,803,721
413 4,803,722
424 4,803,723
433 4,803,724

CLASS 380

[illegible] 4,803,725
48 4,803,726

CLASS 381

1 4,803,727
25 4,803,728
43 4,803,729
49 4,803,730
63 4,803,731
68.2 4,803,732
193 4,803,733

CLASS 382

[illegible] 4,803,734
4,803,735
22 4,803,736
65 4,803,737

CLASS 383

16 4,802,773

CLASS 384

12 4,802,774
450 4,802,775

CLASS 400

124 4,802,776
4,802,781
144.2 4,802,777
496 4,802,779
624 4,802,778
643 4,802,780
660 4,802,795

CLASS 401

122 4,802,797
138 4,802,782

CLASS 402

1 4,802,789

CLASS 403

2 4,802,783
24 4,802,784
27 4,802,785
232.1 4,802,786

CLASS 404

90 4,802,787
[illegible] 4,802,788
132 4,802,790

CLASS 405

53 4,802,792
63 4,802,791
161 4,802,793
168 4,802,794

CLASS 406

141 4,802,796

CLASS 408

112 4,802,798
144 4,802,799

CLASS 409

131 4,802,800
168 4,802,801

CLASS 411

107 4,802,802
183 4,802,803
263 4,802,805
383 4,802,806
387 4,802,807
433 4,802,804

CLASS 414

217 4,802,809
414 4,802,810
478 4,802,811
[illegible] 4,802,812
607 4,802,813
680 4,802,815
686 4,802,814
736 4,802,816
789.2 4,802,808
790 4,802,570

CLASS 415

157 4,802,817
170 A 4,802,818
199.3 4,802,819
201 4,802,820
210 4,802,821

CLASS 416

97 A 4,802,823
193 A 4,802,824
231 B 4,802,825
235 4,802,822
241 B 4,802,828

CLASS 417

12 4,802,829
243 4,802,826
356 4,802,827

CLASS 418

55 4,802,831
150 4,802,830

CLASS 420

57 4,803,045
83 4,803,046

CLASS 422

5 4,803,047
58 4,803,048
4,803,049
65 4,803,050
[illegible] 4,803,051
91 4,803,052
101 4,803,053
109 4,803,054
156 4,803,056
297 4,803,055

CLASS 423

6 4,803,057
235 4,803,059
326 4,803,060
415 A 4,803,061
492 4,803,062
502 4,803,065
588 4,803,063
612 4,803,064

CLASS 424

63 4,803,067
[illegible] 4,803,068
4,803,071
74 4,803,069
85.5 C 4,803,072
92 4,803,070
101 4,803,073
122 4,803,074
132 4,803,066
423 4,803,075
438 4,803,076
439 4,803,077
445 4,803,078
468 4,803,079
488 4,803,080
4,803,081
493 4,803,082

CLASS 425

126.1 4,802,832
131.1 4,802,833
135 4,802,267
138 4,802,834
205 4,802,835
230 4,802,837
253 4,802,836
311 4,802,838
439 4,802,839
464 4,802,840

CLASS 426

3 4,803,083
[illegible] 4,803,084
[illegible] 4,803,085
73 4,803,087
87 4,803,086
107 4,803,088
239 4,803,089
242 4,803,090
439 4,803,091
646 4,803,092

CLASS 427

3 4,802,924
35 4,803,093
40 4,803,094
54.1 4,803,095
121 4,803,096
307 4,803,097
309 4,803,098
314 4,803,099
387 4,803,100

CLASS 428

34.5 4,803,103
35.1 4,803,104
35.2 4,803,102
40 4,803,105
64 4,803,106
68 4,803,107
104 4,803,109
116 4,803,101
118 4,803,108
137 4,803,110
139 4,803,111
141 4,803,132
161 4,803,112
182 4,803,113
200 4,803,124
208 4,803,114
228 4,803,117
246 4,803,118
285 4,803,115
286 4,803,116
321.3 4,803,119
323 4,803,120
329 4,803,121
349 4,803,122
367 4,803,123
411.1 4,803,125
447 4,803,126
457 4,803,127
577 4,803,128
694 4,803,129
4,803,131
695 4,803,133

CLASS 429

16 4,803,134
56 4,803,136
116 4,803,135
194 4,803,137
4,803,138

CLASS 430

57 4,803,139
58 4,803,140
4,803,141
106.6 4,803,142
4,803,143
4,803,144
138 4,803,148
166 4,803,145
248 4,803,146
264 4,803,149
288 4,803,147
502 4,803,150
562 4,803,151
567 4,803,152

CLASS 431

47 4,802,841

CLASS 432

5 4,802,842
8 4,802,843
126 4,802,844
236 4,802,845

CLASS 433

19 4,802,849
26 4,802,850
75 4,802,846
93 4,802,851
127 4,802,852
176 4,802,847
215 4,802,853
225 4,802,848

CLASS 434

157 4,802,855
159 4,802,854
253 4,802,856
265 4,802,857
274 4,802,858

CLASS 435

[illegible] 4,803,153
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4,803,155
4,803,156
4,803,169
21 4,803,157
25 4,803,158
26 4,803,159
29 4,803,160
4,803,161
36 4,803,162
68 4,803,163
4,803,164
172.3 4,803,165
240.22 4,803,168
240.27 4,803,167
253.3 4,803,166

CLASS 436

518 4,803,170
530 4,803,171

CLASS 437

[illegible] 4,803,172
29 4,803,173
31 4,803,174
4,803,175
33 4,803,176
51 4,803,177
4,803,178
[illegible] 4,803,179
222 4,803,180
228 4,803,181

CLASS 439

74 4,802,859
79 4,802,860
83 4,802,862
247 4,802,861
387 4,802,863
457 4,802,864
461 4,802,865
496 4,802,866
587 4,802,867
4,802,869
689 4,802,868
860 4,802,870

CLASS 440

75 4,802,871
89 4,802,872

CLASS 445

[illegible] 4,802,874
[illegible] 4,802,873

CLASS 446

46 4,802,875
95 4,802,876
175 4,802,879
222 4,802,877
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98	4,803,183

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65	4,803,185
66	4,803,186
200	4,803,187
205	4,803,190
232	4,803,188
439	4,803,189

CLASS 503

200	4,803,191
209	4,803,193
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227	4,803,194

CLASS 512

4	4,803,195

CLASS 514

198	4,803,196
211	4,803,197
212	4,803,198
214	4,803,199
228.2	4,803,202
230.5	4,803,203
231.2	4,803,200
232.8	4,803,204
239.2	4,803,201
249	4,803,209
254	4,803,205
255	4,803,206
267	4,803,207
282	4,803,208
293	4,803,210
332	4,803,277
338	4,803,212
355	4,803,213
361	4,803,211
383	4,803,214
407	4,803,215
	4,803,216
409	4,803,217
414	4,803,218
431	4,803,286
452	4,803,220
464	4,803,290
469	4,803,219
510	4,803,221
	4,803,222
521	4,803,223
563	4,803,224
651	4,803,227
654	4,803,225
655	4,803,226
714	4,803,228

CLASS 521

160	4,803,229
168	4,803,230

CLASS 523

219	4,803,231
456	4,803,232

CLASS 524

35	4,803,242
58	4,803,233
83	4,803,236
100	4,803,234
385	4,803,237
428	4,803,239
486	4,803,238
494	4,803,235
504	4,803,240
719	4,803,241

CLASS 525

100	4,803,243
105	4,803,244
123	4,803,245
124	4,803,246
179	4,803,247
211	4,803,248
326.2	4,803,249
329.3	4,803,250
420	4,803,256
477	4,803,254

CLASS 526

59	4,803,251
297	4,803,252
352.2	4,803,253

CLASS 527

400	4,803,255

CLASS 528

45	4,803,257
211	4,803,258
483	4,803,259
487	4,803,260

CLASS 530

333	4,803,261
387	4,803,262

CLASS 536

18.6	4,803,263
114	4,803,264
123	4,803,265

CLASS 540

200	4,803,266
224	4,803,267

CLASS 544

58.4	4,803,268
68	4,803,269
105	4,803,270
276	4,803,271
277	4,803,272
354	4,803,273

CLASS 546

13	4,803,274
116	4,803,275
121	4,803,276
271	4,803,279
278	4,803,278

CLASS 548

127	4,803,280
335	4,803,281
336	4,803,282
339	4,803,283
497	4,803,284
551	4,803,285

CLASS 549

252	4,803,287
267	4,803,288
273	4,803,289

CLASS 556

31	4,803,291

CLASS 560

29	4,803,292
42	4,803,293
73	4,803,294
78	4,803,295
80	4,803,296
159	4,803,297
240	4,803,299

CLASS 562

450	4,803,300
471	4,803,301
534	4,803,302

CLASS 564

462	4,803,303
498	4,803,304

CLASS 568

571	4,803,305

CLASS 604

93	4,802,885

CLASS 860

174	4,803,298

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D2—	228	299,680
	320	299,681
D3—	33	299,682
	34	299,683
D6—	361	299,684
		299,685
	515	299,686
	574	299,687
D7—	9	299,688
	313	299,689
	402	299,690
D8—	14	299,691
	18	299,692
	396	299,693
D9—	300	299,694
	318	299,695
	352	299,696
	386	299,697
	399	299,698
	453	299,699
D10—	57	299,700
	81	299,701
		299,702
D11—	64	299,704
D12—	88	299,705
	96	299,706
	107	299,707
	110	299,708
		299,709
		299,710
	147	299,711
		299,712
	191	299,713
D13—	19	299,714
	24	299,715
D14—	116	299,703
	138	299,719
	141	299,716
		299,717
	247	299,718
D15—	7	299,720
	11	299,721
	19	299,722
	32	299,723
D16—	133	299,724
D20—	8	299,725
D21—	1	299,726
	59	299,727
	64	299,728
		299,729
	111	299,730
	185	299,731
	194	299,732
	226	299,733
	230	299,734
D22—	142	299,735
		299,736
		299,737
D23—	245	299,738
	252	299,739
	254	299,740
	278	299,741
	283	299,742
	344	299,743
D24—	17	299,744
		299,745
		299,746
	40	299,747
	41	299,748
	42	299,749
	48	299,750
	80	299,751
D25—	8	299,752
	15	299,753
	18	299,754
		299,755
	52	299,756
	53	299,757
	58	299,758
	117	299,759
	119	299,760
D26—	40	299,761
	87	299,762
	93	299,763
D28—	35	299,764
D29—	14	299,765
	16	299,766
	18	299,767
D30—	119	299,769
	127	299,770
	129	299,768
	130	299,771
D32—	31	299,772
D34—	7	299,773
	29	299,774
	31	299,775
	32	299,776
	38	299,777
	40	299,778
D99—	27	299,779

CLASSIFICATION OF PLANTS

P.—	4	6,596	16	6,582	68	6,593	74	6,586	78	6,581	88	6,592
	7	6,583	34	6,588		6,595		6,590		6,589		6,585
	10	6,584	51	6,594	69	6,587		6,591				

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	4,803,019		4,802,717		4,803,459		4,803,314		4,803,117		4,802,653
04 :	4,802,251		4,802,750		4,803,466		4,803,320	15 :	4,802,245		4,802,699
	4,802,259		4,802,752		4,803,471		4,803,402		4,802,469		4,802,700
	4,802,482		4,802,768		4,803,479		4,803,503		4,802,666		4,802,798
	4,802,506		4,802,784		4,803,485		4,803,654		4,803,176		4,802,849
	4,802,508		4,802,801		4,803,490	10 :	4,802,330	16 :	4,802,474		4,802,927
	4,802,640		4,802,805		4,803,495		4,802,346		4,802,670		4,803,166
	4,802,678		4,802,809		4,803,536		4,802,413	17 :	4,802,354		4,803,417
	4,802,930		4,802,812		4,803,547		4,802,906		4,802,389	19 :	4,802,517
	4,803,307		4,802,813		4,803,566		4,802,908		4,802,393		4,802,626
	4,803,413		4,802,816		4,803,603		4,802,911		4,802,411		4,802,685
	4,803,652		4,802,826		4,803,612		4,803,009		4,802,496		4,802,705
05 :	4,802,553		4,802,846		4,803,621		4,803,101		4,802,537		4,802,708
06 :	4,802,248		4,802,856		4,803,632		4,803,163		4,802,549		4,803,701
	4,802,250		4,802,866		4,803,641		4,803,209		4,802,677	20 :	4,802,265
	4,802,258		4,802,870		4,803,644		4,803,272		4,802,684		4,802,288
	4,802,277		4,802,875		4,803,655		4,803,304		4,802,696		4,802,293
	4,802,278		4,802,893		4,803,659	11 :	4,802,593		4,802,792		4,802,357
	4,802,284		4,802,912		4,803,661	12 :	4,802,260		4,802,799	21 :	4,802,254
	4,802,301		4,802,945		4,803,686		4,802,303		4,802,807		4,802,402
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	4,802,304		4,802,968		4,803,694		4,802,334		4,802,864		4,802,522
	4,802,306		4,802,982		4,803,696		4,802,463		4,802,877	22 :	4,802,552
	4,802,310		4,803,002		4,803,699		4,802,467		4,802,878		4,802,855
	4,802,314		4,803,022		4,803,702		4,802,481		4,802,879		4,803,261
	4,802,316		4,803,048	08 :	4,802,317		4,802,569		4,802,972	23 :	4,802,297
	4,802,345		4,803,049		4,802,364		4,802,638		4,802,975	24 :	4,802,276
	4,802,353		4,803,050		4,802,444		4,802,679		4,802,980		4,802,472
	4,802,362		4,803,060		4,802,492		4,802,683		4,802,992		4,802,515
	4,802,363		4,803,075		4,802,542		4,802,766		4,802,994		4,802,595
	4,802,397		4,803,085		4,802,651		4,802,772		4,802,995		4,802,693
	4,802,415		4,803,102		4,802,897		4,802,782		4,802,996		4,802,854
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	4,802,468		4,803,254	09 :	4,802,283		4,803,396		4,803,094	25 :	4,802,255
	4,802,479		4,803,269		4,802,458		4,803,447		4,803,134		4,802,280
	4,802,485		4,803,271		4,802,516		4,803,487		4,803,294		4,802,335
	4,802,486		4,803,290		4,802,541		4,803,703		4,803,333		4,802,398
	4,802,488		4,803,297		4,802,614		4,803,720		4,803,465		4,802,441
	4,802,533		4,803,336		4,802,730	13 :	4,802,343		4,803,545		4,802,459
	4,802,540		4,803,339		4,802,764		4,802,425		4,803,625		4,802,461
	4,802,560		4,803,348		4,802,765		4,802,514		4,803,626		4,802,491
	4,802,575		4,803,362		4,802,823		4,802,582		4,803,726		4,802,507
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	4,802,607		4,803,419		4,802,969		4,802,672		4,802,266		4,802,984
	4,802,609		4,803,425		4,803,045		4,802,691		4,802,338		4,803,053
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	4,802,635		4,803,442		4,803,076		4,802,726		4,802,511		4,803,167

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4,803,306
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4,803,554
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4,802,558
4,802,605
4,802,622
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4,802,697
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4,802,757
4,802,786
4,802,818
4,802,843
4,802,869
4,802,902
4,802,931
4,803,107
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4,803,205
4,803,229
4,803,233
4,803,318
4,803,422
4,803,460
4,803,481
4,803,646
27 : 4,802,320
4,802,324
4,802,342
4,802,349
4,802,367
4,802,399
4,802,476
4,802,478
4,802,535
4,802,791
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4,803,007
4,803,029
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4,803,130
4,803,239
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29 : 4,802,244
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4,803,058
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31 : 4,802,606
4,803,370
4,803,488
33 : Re.32,857
4,803,113
4,803,403
4,803,476
34 : Re.32,858
4,802,268
4,802,323
4,802,423
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4,802,933
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4,802,466
4,802,509
4,802,586
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4,802,671
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4,802,735
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4,802,851
4,802,862
4,802,899
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4,803,017
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4,803,061
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4,803,161
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4,803,185
4,803,208
4,803,212
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C. William Verity, *Secretary*
PATENT AND TRADEMARK OFFICE
Donald J. Quigg, *Commissioner*

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Oct. 1, 1988, and was announced in the *Official Gazette* at 1094 O.G. 2 on Sept. 6, 1988.

Domestic PCT fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Danish declaration under PCT Article 64 (1)(a), that Denmark shall not be bound by PCT Chapter II, as from Nov. 1, 1988, was announced at 1095 O.G. 2 on Oct. 4, 1988.

The withdrawal of the Norwegian declaration under PCT Article 64(1)(a), that Norway shall not be bound by PCT Chapter II, as from Jan. 1, 1989, was announced at 1096 O.G. 34 on Nov. 22, 1988.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1160.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

DONALD J. QUIGG,
Oct. 26, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on February 11, 1986 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,569,086 through 4,570,265
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 9, 1982 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,314,379 through 4,315,333
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED NOVEMBER 27, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,484,360	06/541,430	11/27/84
4,484,361	06/541,703	11/27/84
4,484,363	06/554,966	11/27/84
4,484,366	06/476,488	11/27/84
4,484,367	06/483,846	11/27/84
4,484,368	06/423,824	11/27/84
4,484,375	06/282,023	11/27/84
4,484,379	06/439,469	11/27/84
4,484,390	06/424,552	11/27/84
4,484,392	06/297,342	11/27/84
4,484,394	06/439,911	11/27/84
4,484,395	06/515,396	11/27/84
4,484,397	06/506,340	11/27/84
4,484,402	06/481,985	11/27/84
4,484,410	06/430,345	11/27/84
4,484,421	06/427,518	11/27/84
4,484,439	06/285,224	11/27/84
4,484,446	06/470,446	11/27/84
4,484,456	06/544,173	11/27/84
4,484,465	06/435,647	11/27/84
4,484,473	06/565,518	11/27/84
4,484,480	06/507,960	11/27/84
4,484,493	06/343,277	11/27/84
4,484,499	06/394,339	11/27/84
4,484,501	06/418,091	11/27/84
4,484,502	06/474,514	11/27/84
4,484,503	06/513,550	11/27/84
4,484,523	06/479,424	11/27/84
4,484,525	06/395,508	11/27/84
4,484,541	06/461,918	11/27/84
4,484,542	06/370,121	11/27/84
4,484,543	06/499,344	11/27/84
4,484,546	06/351,178	11/27/84
4,484,547	06/575,483	11/27/84
4,484,558	06/492,015	11/27/84
4,484,564	06/402,605	11/27/84
4,484,572	06/468,353	11/27/84
4,484,580	06/335,599	11/27/84
4,484,582	06/301,165	11/27/84
4,484,583	06/267,046	11/27/84
4,484,585	06/414,299	11/27/84
4,484,589	06/392,776	11/27/84
4,484,590	06/344,836	11/27/84
4,484,594	06/507,498	11/27/84
4,484,608	06/435,759	11/27/84
4,484,612	06/509,590	11/27/84
4,484,613	06/501,192	11/27/84
4,484,616	06/342,307	11/27/84
4,484,646	06/440,361	11/27/84
4,484,649	06/526,157	11/27/84
4,484,671	06/391,626	11/27/84
4,484,678	06/482,360	11/27/84
4,484,679	06/331,404	11/27/84
4,484,680	06/599,479	11/27/84
4,484,692	06/543,409	11/27/84
4,484,696	06/422,476	11/27/84
4,484,699	06/521,535	11/27/84
4,484,701	06/554,891	11/27/84
4,484,706	06/502,620	11/27/84
4,484,708	06/374,566	11/27/84
4,484,710	06/474,398	11/27/84

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Patent Number	Serial Number	Issue Date
4,484,711	06/540,891	11/27/84
4,484,712	06/347,047	11/27/84
4,484,716	06/410,460	11/27/84
4,484,717	06/449,444	11/27/84
4,484,722	06/393,834	11/27/84
4,484,730	06/431,114	11/27/84
4,484,732	06/383,419	11/27/84
4,484,735	06/375,312	11/27/84
4,484,739	06/475,452	11/27/84
4,484,740	06/378,773	11/27/84
4,484,742	06/443,396	11/27/84
4,484,743	06/475,191	11/27/84
4,484,744	06/460,231	11/27/84
4,484,746	06/370,379	11/27/84
4,484,747	06/424,354	11/27/84
4,484,750	06/548,542	11/27/84
4,484,754	06/575,709	11/27/84
4,484,759	06/428,385	11/27/84
4,484,765	06/334,696	11/27/84
4,484,773	06/417,134	11/27/84
4,484,775	06/410,214	11/27/84
4,484,780	06/311,237	11/27/84
4,484,782	06/340,590	11/27/84
4,484,790	06/480,190	11/27/84
4,484,795	06/394,250	11/27/84
4,484,799	06/330,781	11/27/84
4,484,802	06/410,998	11/27/84
4,484,818	06/354,996	11/27/84
4,484,829	06/434,926	11/27/84
4,484,830	06/387,727	11/27/84
4,484,833	06/307,190	11/27/84
4,484,842	06/453,908	11/27/84
4,484,853	06/330,081	11/27/84
4,484,861	06/351,102	11/27/84
4,484,862	06/362,650	11/27/84
4,484,877	06/444,388	11/27/84
4,484,887	06/568,935	11/27/84
4,484,889	06/470,983	11/27/84
4,484,897	06/367,899	11/27/84
4,484,900	06/524,692	11/27/84
4,484,904	06/454,682	11/27/84
4,484,905	06/328,588	11/27/84
4,484,915	06/479,720	11/27/84
4,484,918	06/516,927	11/27/84
4,484,929	06/432,963	11/27/84
4,484,930	06/410,075	11/27/84
4,484,934	06/574,311	11/27/84
4,484,939	06/551,004	11/27/84
4,484,942	06/518,771	11/27/84
4,484,944	06/545,849	11/27/84
4,484,947	06/487,463	11/27/84
4,484,979	06/600,524	11/27/84
4,484,992	06/342,615	11/27/84
4,485,002	06/470,996	11/27/84
4,485,006	06/463,398	11/27/84
4,485,010	06/451,966	11/27/84
4,485,012	06/408,149	11/27/84
4,485,030	06/587,872	11/27/84
4,485,042	06/409,958	11/27/84
4,485,068	06/272,005	11/27/84
4,485,075	06/448,854	11/27/84
4,485,090	06/425,103	11/27/84
4,485,108	06/423,441	11/27/84
4,485,119	06/601,707	11/27/84
4,485,128	06/337,627	11/27/84
4,485,129	06/518,795	11/27/84
4,485,152	06/389,679	11/27/84
4,485,155	06/470,473	11/27/84
4,485,178	06/499,684	11/27/84
4,485,219	06/556,889	11/27/84
4,485,237	06/473,300	11/27/84
4,485,248	06/399,343	11/27/84
4,485,249	06/511,538	11/27/84
4,485,265	06/443,394	11/27/84
4,485,268	06/503,855	11/27/84
4,485,274	06/415,287	11/27/84
4,485,276	06/519,885	11/27/84
4,485,278	06/395,058	11/27/84
4,485,280	06/431,378	11/27/84
4,485,282	06/462,095	11/27/84
4,485,283	06/412,445	11/27/84
4,485,294	06/476,617	11/27/84
4,485,306	06/350,163	11/27/84
4,485,310	06/372,546	11/27/84
4,485,311	06/385,032	11/27/84
4,485,319	06/352,989	11/27/84
4,485,322	06/360,767	11/27/84
4,485,352	06/413,052	11/27/84
4,485,360	06/398,852	11/27/84
4,485,374	06/466,482	11/27/84
4,485,382	06/396,163	11/27/84
4,485,384	06/251,266	11/27/84
4,485,388	06/400,543	11/27/84
4,485,391	06/315,862	11/27/84
4,485,398	06/325,406	11/27/84
4,485,402	06/311,821	11/27/84
4,485,426	06/566,671	11/27/84
4,485,430	06/425,074	11/27/84
4,485,443	06/267,700	11/27/84
4,485,449	06/344,542	11/27/84
4,485,450	06/338,972	11/27/84
4,485,451	06/343,699	11/27/84
4,485,457	06/499,128	11/27/84
4,485,482	06/391,831	11/27/84
4,485,485	06/288,543	11/27/84

Notification of Acceptance of Delayed Payment of Maintenance Fee (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below is considered as not having expired but is subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,373,913	06/264,036	2/15/83	5/15/81	12/27/88
4,387,852	06/301,404	6/14/83	9/11/81	1/12/89

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,628,881, Re. S.N. 284,472, Filed Dec. 14, 1988, Cl. 123/447, PRESSURE CONTROLLED FUEL INJECTION FOR INTERNAL COMBUSTION ENGINES, Niels J. Beck, Owner of Record: *BKM Inc., San Diego, Calif.,* Attorney or Agent: Albert L. Gabriel, Ex. Gp.: 342

4,649,388, Re. S.N. 279,453, Filed Dec. 5, 1988, Cl. 342/26, RADAR DETECTION OF HAZARDOUS SMALL SCALE WEATHER DISTURBANCES, David Atlas, Owner of Record: *Inventor,* Attorney or Agent: William L. Gates, Ex. Gp.: 222

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,860,003, Reexam. No. 90/001,673, Requested: Dec. 19, 1988, Cl. 128/287, CONTRACTABLE SIDE PORTIONS FOR DISPOSABLE DIAPER, Kenneth B. Barclay, Owner of Record: *Procter & Gamble Co., Cincinnati, Ohio,* Attorney or Agent: Frederick H. Braun, Ex. Gp.: 330, Requester: Francis Bouda, Cleveland, Ohio

4,230,830, Reexam. No. 90/001,672, Requested: Dec. 19, 1988, Cl. 525/222, ADHESIVE BLENDS CONTAINING THERMALLY GRAFTED ETHYLENE POLYMER, Stephen R. Tanny, et al., Owner of Record: *E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.,* Attorney or Agent: Elliott A. Katz, Ex. Gp.: 150, Requester: Owner

4,342,565, Reexam. No. 90/001,675, Requested: Dec. 12, 1988, Cl. 8/532, BRUSHED STRETCH DENIM FABRIC AND PROCESS THEREFOR, Edward W. Teague, et al., Owner of Record: *Burlington Ind., Inc., Greensboro, N.C.,* Attorney or Agent: Robert A. Vanderhye, Ex. Gp.: 150, Requester: Owner

4,464,223, Reexam. No. 90/001,674, Requested: Dec. 20, 1988, Cl. 156/643, PLASMA REACTOR APPARATUS AND METHOD, Georges J. Gorin, Owner of Record: *Tegal Corp., Petaluma, Calif.,* Attorney or Agent: Paul F. Wille, Ex. Gp.: 130, Requester: Owner

Errata

"All reference to Patent No. 4,784,176, to Ancel M. Clough of Tex. for 'ANTI-WATER HAMMER FLOW REGULATOR VALVE' appearing in the Official Gazette of Nov. 15, 1988 should be deleted since no patent was granted."

"All reference to Patent No. 4,784,826 to John M. Corwin of Mich. for 'OXIDATION RESISTANT IRON BASE ALLOY COMPOSITIONS' appearing in the Official Gazette of Nov. 15, 1988 should be deleted since no patent was granted."

"All reference to Patent No. 4,785,011 to Rainer Gross, et al., of Germany for 'DIHYDROPYRIDINE COMBINATION PRODUCT COMPRISING A DIHYDROPYRIDINE COMPOUND AND A CARDIOACTIVE NITRATE' appearing in the Official Gazette of Nov. 15, 1988 should be deleted since no patent was granted."

"All reference to Patent No. 4,786,077 to Bengt O. J. S. Morner of Sweden for 'SAFETY BELT SYSTEM' appearing in the Official Gazette of Nov. 22, 1988 should be deleted since no patent was granted."

"All reference to Patent No. 4,795,245 to Sidney Argyle, et al., of Calif. for 'IN-LINE MULTIPASS TELESCOPE' appearing in the Official Gazette of Jan. 3, 1989 should be deleted since no patent was granted."

"All reference to Patent No. 4,795,249 to Gerard Muller of Switzerland for 'CONTACT LENS FOR ORIENTED OPTICAL CORRECTIONS' appearing in the Official Gazette of Jan. 3, 1989 should be deleted since no patent was granted."

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceedings sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Associated Foods, Inc., Chicago, Ill., Reg. No. 705,373, for the mark "EVERKRISP", Canc. No. 16,931.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For JEFFREY M. SAMUELS,
Assistant Commissioner
for Trademarks.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Sasieni Ltd., New York, N.Y., Reg. No. 502,239, for the mark "SASIENI", Canc. No. 16,506.

Sasieni Ltd., New York, N.Y., Reg. No. 568,366, for the mark "SASIENI", Canc. No. 16,507.

Tarmac Products, Inc., Hialeah, Fla., Reg. No. 1,204,629, for the mark "VOLCANO", Canc. No. 16,924.

Drumstick Enterprises, Inc., Denver, Colo., Reg. No. 875,715, for the mark "BOX CAR", Canc. No. 17,153.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For JEFFREY M. SAMUELS,
Assistant Commissioner
for Trademarks.

Patents Available for Licensing or Sale

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers. Applications for license may be addressed to Counsel Patent and Legal Operation, Corporate Research and Development, General Electric Co., P. O. Box 8, Bldg. K-1, Rm. 4A70, Schenectady, N.Y. 12301.

4,741,928. METHOD FOR SELECTIVE DEPOSITION OF TUGSTEN BY CHEMICAL VAPOR DEPOSITION ONTO METAL AND SEMICONDUCTOR SURFACES.

4,780,334. METHOD AND COMPOSITION FOR DEPOSITING SILICON DIOXIDE LAYERS.

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Otis Engineering Corp. is prepared to grant licenses under the following patents subject to reasonable terms and conditions. These patents relate generally to pumping units for oil wells. Address inquiries to Patent Group Manager, Otis Engineering Corp. P. O. Box 819052, Dallas, Tex. 75381.

4,491,055. CONTROL OF CONTINUOUS RECIPROCATION OF A FLUID POWER CYLINDER.
4,571,939. HYDRAULIC WELL PUMP.
4,680,930. HYDRAULIC CONTROL CIRCUIT AND VALVE ASSEMBLY.
4,691,511. HYDRAULIC WELL PUMP.
4,693,171. POSITION RESPONSIVE VALVE CONTROL FOR HYDRAULIC CYLINDER.
4,696,221. DUAL VALVE CONTROL FOR DOUBLE ACTION HYDRAULIC CYLINDER.
4,776,401. FOOT VALVE FOR PUMPING WELLS.

4,135,596. HOSE TRAY FOR LIQUID TRANSPORTER. *Glen Silba*, R.R. 7, Box 357A, Springfield, Mo. 65802.

4,185,407. DISPLAY DEVICE ELECTRIC OR BATTERY RUN. *Jack W. Lamb*, 10822 Magnolia Blvd., #142, North Hollywood, Calif. 91601.

4,497,854. ARTIFICIAL CROSS-COUNTRY SKI SURFACE. *John Mykrantz*, 6510 Page Blvd., St. Louis, Mo. 63133.

4,505,902. SKIN TREATMENT PREPARATION. *Mary Millard*, 2068 Belover Dr., Memphis, Tenn. 38127.

4,576,178. AUDIO SIGNAL GENERATOR. *David Johnson*, Box 68, 436 E. 69th St., New York, N.Y. 1002!.

4,702,704 TETRAHEDRAL CODON STEREO-TABLE. Leonard Svensson, Birch, Stewart, Kolasch & Birch, P. O. Box 747, Falls Church, Va. 22046.

4,710,124. AUTOMATIC PART AND RUNNER SEPARATOR. *Bruce Brunda*, 24221 Calle de la Louisa, Suite 401, Laguna Hills, Calif. 92653.

4,739,532. BRISTLE SHAFT DEVICE FOR SUBGINGIVAL TREATMENT OF PERIODONTAL POCKETS, PERIODONAL POCKET RIMS AND TOOTH SURFACES. *Michael Striker*, 360 Lexington Ave., New York, N.Y. 10017.

4,741,874. AUTOMATIC PART AND RUNNER SEPARATOR PROCESS. *Bruce Brunda*, 24221 Calle de la Louisa, Suite 401, Laguna Hills, Calif. 92653.

4,792,399. LIQUID COLLECTING AND RETAINING DEVICE. *Kyle Haney*, P. O. Box 16741, Atlanta, Ga. 30321.

4,800,371. FREEZE ALARM. Joe Arsi, J & G Consultants, P. O. Box 248, 1209 Wellington Rd., Colonial Heights, Va. 23834.

07/103,351. CLOSED DRAPERY HOOK. *Maxine Schlicker*, 1266 March Dr., P. O. Box 38, Mio, Mich. 48647.

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,256,173, Yih-Wan Tsai and Robert H. Duffus, TWO REGENERATOR-FLUE SYSTEM FOR REGENERATIVE FURNACES, Interference No. 101,640, decided Aug. 9, 1988, claims 1-4.

Patent No. 4,298,372, K. Lawrence Stover, Alejandro G. Bueno, James W. Miller and Donald E. Shamp, COMBUSTION AIR FLOW CONTROL FOR REGENERATORS, Interference No. 101,640, decided Aug. 9, 1988, claims 1-8.

Patent No. 4,414,031, Josef Studinka and Peter E. Meier, FIBER-CONTAINING PRODUCTS MADE WITH HYDRAULIC BINDER AGENTS, Interference No. 101,498, decided July 12, 1988, claims 1-21.

Patent No. 4,415,706, William H. Staas, COMPATIBLE BLENDS OF POLYGLUTARIMIDES AND POLYAMIDES, Interference No. 101,348, decided Mar. 19, 1987, claims 1-21, 26 and 32.

Patent No. 4,437,865, Dhan N. Parekh and Paul R. Schweyen, FLEXIBLE BACKING MATERIAL FOR USE IN COATED ABRASIVES, Interference No. 101,951, decided Nov. 21, 1988, claims 1-21.

Patent No. 4,520,219, Haruhito Sato, PROCESS FOR THE PRODUCTION OF PSEUDOCUMENE OR DURENE, Interference No. 101,550, decided Sept. 26, 1988, claims 1-16.

Patent No. 4,551,388, James A. Schlademan, ACRYLIC HOT MELT PRESSURE SENSITIVE ADHESIVE COATED SHEET MATERIAL, Interference No. 101,578, decided Sept. 22, 1988, claims 1-4.

Patent No. 4,554,751, Carl T. Nicolosi, Thomas F. Nicolosi and Ryan D. McCreedy, MULTI-FUNCTION VEHICULAR GEAR SHIFT LEVER FOR SNOW-PLOW OPERATION, Interference No. 101,646, decided Oct. 25, 1988, claims 1-4.

Patent No. 4,588,257, Jack J. Maranto, SEPARABLE SPLICE FOR OPTIC FIBERS, Interference No. 101,975, decided Nov. 15, 1988, claims 1-7.

Patent No. 4,608,791, Richard R. McClure, SLOPE BUILD-UP SYSTEM FOR ROOFS, Interference No. 101,909, decided Dec. 8, 1988, claims 1-15.

Patent No. 4,618,616, Kenneth Richardson, Robert J. Bass, and Kelvin Cooper, CYCLOPROPYLIDENE ANTIFUNGAL AGENTS, Interference No. 101,841, decided Dec. 7, 1988, claims 1-10.

Patent No. 4,636,912, Yoshio Ohtani, CIRCUIT FOR CONTROLLING SOLENOID CLUTCH, Interference No. 101,905, decided Nov. 17, 1988, claims 1-9.

Patent No. 4,639,389, Masaharu Nishimatsu, Toshiaki Ide and Hiroyuki Arioka, MAGNETIC RECORDING MEDIUM, Interference No. 101,953, decided Dec. 2, 1988, claims 1-10.

Patent No. 4,674,970, Heikki I. Kankkunen, RAM CASTING MACHINE FOR CONCRETE SLABS, Interference No. 101,915, decided Nov. 23, 1988, claims 1-4.

Patent No. 4,674,971, Heikki I. Kankkunen, CONCRETE SLAB EXTRUDER WITH SHEAR-ACTION CORING MEMBERS, Interference No. 101,914, decided Nov. 23, 1988, claims 1-8.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Appeals and Interferences.

Reexamination Litigation Policy

This notice is intended to set forth the PTO's current policy and guidelines relating to reexamination practice when the patent undergoing reexamination has been or concurrently is involved in litigation. This policy results from the decision of the U.S. Court of Appeals for the Federal Circuit in *Ethicon* v. *Quigg* 849 F.2d 1142, 7 USPQ 2d 1152 (Fed. Cir. 1988). The Court's decision sets forth the principle that the "special dispatch" provision of the reexamination statute requires the PTO to continue its examination of claims in reexamination proceedings without stays even if there is court litigation involving allegations of invalidity of the patent under reexamination. More particularly, the Court held that the only circumstances under which the PTO may discontinue a reexamination are when a district court finds the claims under reexamination to be invalid and that decision is either upheld on appeal or not appealed, i.e., "final." Accordingly, the following policy and guidelines will be followed in order to implement the principles set forth in the *Ethicon* decision where reexamination and related litigation are present.

I. *Stay of Reexamination*

The Court held that the PTO's previous policy, set forth in 37 CFR §1.565(b) and MPEP 2286, of *staying* a reexamination proceeding when a trial on the merits *starts* in related litigation conflicts with the statutory requirement for "special dispatch." 35 U.S.C. §305. Accordingly, the previous policy of the Office of *sua sponte* staying a reexamination proceeding upon the start of the trial in related litigation has been rescinded. The reexamination will continue concurrently with the pending litigation notwithstanding the stage of the litigation.

II. *Issuance of Court Decision During Reexamination*

A *non-final* district court decision concerning a patent under reexamination shall have no binding effect on a reexamination proceeding.

The issuance of a *final* district court decision upholding validity during a reexamination also will have no binding effect on the examination of the reexamination. This is because the Court states in *Ethicon* that the PTO is *not* bound by a court's holding of patent *validity* and should continue the reexamination. The Court notes that district courts and the PTO use different standards of proof in determining invalidity and thus on the same evidence could quite correctly come to different conclusions. Specifically, invalidity in a district court must be shown by "clear and convincing" evidence, whereas in the PTO it is sufficient to show nonpatentability by a "preponderance" of evidence. Since the "clear and convincing" standard is harder to satisfy than the "preponderance standard," deference will ordinarily be accorded to the factual findings of the court where the evidence before the PTO and the court is the same. If sufficient reasons are present, claims held valid by the court may be rejected in reexamination.

On the other hand, the Court states that a *final* holding of *invalidity* is binding on the PTO and the reexamination may be discontinued. Upon the issuance of a holding of claim invalidity or unenforceability by a district court, reexamination of those claims will continue in the PTO until the court's decision becomes *final*. Upon the issuance of a *final* holding of invalidity or unenforceability, the claims held invalid or unenforceable will be withdrawn from consideration in the reexamination. The reexamination will continue as to any remaining claims. If all of the claims are *finally* held invalid or unenforceable, the reexamination will be vacated as no longer containing a substantial new question of patentability.

III. *Initial Determination of a Substantial New Question of Patentability*

When the initial question as to whether the prior art raises a substantial new question of patentability as to a patent claim is under consideration, the existence of a final court decision of claim *validity* in view of the same or different prior art does not necessarily mean that no new question is present, in view of the different standards of proof employed by the district courts and the PTO. Thus, while the PTO may accord deference to factual findings made by the court, the determination of whether a substantial new question of patentability exists will be made independently of the court's decision on validity as it is not controlling on the PTO. A *non-final* holding of claim *invalidity* or unenforceability will not be controlling on the question of whether a substantial new question of patentability is present. A *final* holding of claim *invalidity* or unenforceability, however, is controlling on the PTO. In such cases a substantial new question of patentability would *not* be present as to the claims held invalid or unenforceable.

Identification of Current Stays

The PTO is currently attempting to identify all reexamination proceedings which are currently stayed pursuant to concurrent litigation in order to lift the stays. To assist the PTO, the patent owner in any such stayed reexamination proceeding should alert the PTO of the stayed proceeding and request that the stay be lifted. Any third party requester may alert the PTO of a stayed proceeding in a notice of ligitation under 37 CFR 1.565(a).

DONALD J. QUIGG,
Jan. 18, 1989. *Assistant Secretary and Commissioner of Patents and Trademarks.*

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PATENT NOTICES

Certificates of Correction for the Week of Feb. 14, 1989

Re. 32,649	4,734,282	4,758,123	4,768,470
D. 297,544	4,734,431	4,758,358	4,769,039
D. 297,645	4,734,988	4,758,624	4,769,054
D. 297,939	4,735,279	4,758,753	4,769,619
4,361,871	4,735,822	4,758,834	4,769,718
4,516,532	4,737,455	4,758,855	4,769,946
4,612,502	4,738,843	4,758,980	4,770,183
4,660,106	4,738,952	4,759,168	4,770,347
4,662,005	4,738,953	4,759,398	4,770,672
4,672,298	4,739,256	4,759,498	4,771,397
4,674,781	4,741,405	4,759,926	4,771,398
4,675,741	4,741,811	4,759,946	4,771,504
4,677,051	4,742,149	4,760,007	4,771,523
4,678,773	4,744,615	4,760,230	4,771,616
4,688,933	4,745,060	4,760,376	4,771,928
4,689,443	4,745,225	4,760,409	4,772,285
4,690,148	4,745,403	4,762,031	4,772,607
4,697,315	4,745,433	4,762,433	4,772,667
4,699,552	4,746,297	4,762,548	4,772,837
4,699,989	4,746,534	4,763,016	4,772,853
4,702,320	4,748,149	4,763,305	4,772,923
4,704,426	4,749,472	4,763,323	4,773,137
4,706,481	4,749,546	4,763,337	4,773,227
4,708,527	4,750,053	4,763,836	4,773,228
4,712,490	4,751,002	4,764,202	4,773,240
4,713,380	4,751,183	4,764,846	4,773,358
4,714,701	4,751,492	4,765,013	4,773,515
4,716,282	4,751,573	4,765,029	4,773,772
4,719,080	4,751,574	4,765,034	4,773,782
4,720,382	4,751,581	4,765,515	4,773,854
4,721,106	4,751,589	4,765,597	4,774,199
4,721,562	4,753,827	4,765,613	4,774,714
4,722,047	4,754,053	4,765,813	4,774,741
4,723,539	4,754,328	4,766,347	4,774,770
4,723,824	4,754,401	4,766,395	4,774,838
4,724,120	4,755,517	4,766,908	4,775,027
4,724,523	4,755,757	4,767,034	4,775,054
4,726,019	4,756,107	4,767,168	4,775,341
4,726,377	4,756,112	4,767,187	4,775,766
4,726,547	4,756,152	4,767,417	4,776,391
4,726,740	4,756,757	4,767,761	4,776,995
4,727,415	4,756,951	4,768,100	4,780,176
4,729,116	4,757,215	4,768,171	4,782,490
4,731,808	4,757,331	4,768,413	
4,733,301	4,758,081	4,768,455	

Disclaimers

4,356,518.—*Maurice G. Lemoine* and *Leonard A. Pasdera*, both of Redwood City, Calif. HIGH FREQUENCY DIGITAL PCM DECODING APPARATUS. Patent dated Oct. 26, 1982. Disclaimer filed Jan. 5, 1989, by the assignee, *Ampex Corp.*

Hereby enters this disclaimer to the entire term of said patent.

4,509,939.—*Hans Muller*, Leimen, Fed. Rep. of Germany. FOLDING DEVICE FOR WEB-FED ROTARY PRINTING PRESSES. Patent dated Apr. 9, 1985. Disclaimer filed Dec. 16, 1988, by the assignee, *Heidelberger Druckmaschinen AG.*

Hereby enters this disclaimer to claims 4 and 5 of said patent.

4,669,375.—*Horace R. Newsom*, Midland and *Michael W. Lockman*, Hewitt, both of Tex. APPARATUS FOR COMPACTING LOW DENSITY ARTICLES. Patent dated June 2, 1987. Disclaimer filed Dec. 12, 1988, by the assignee, *Mosley Machinery Co., Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

4,691,021.—*Pen C. Wand*, Midland, Mich.; *Van I. W. Stuart*, Missouri City, Tex.; *Ronald L. Yates*; *Steven P. Crain*, both of Midland, Mich. AMINOALKYL HYDANTOINS AND GLYCIDYL DERIVATIVES THEREOF. Patent dated Sept. 1, 1987. Disclaimer filed Nov. 25, 1988, by the assignee, *The Dow Chemical Co.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 11, 12, 15, 17 and 18 of said patent.

4,735,002.—*Robert J. Rath*, San Clemente, Calif. SURFACE MOUNTED TURBINE-DRIVEN HAIR DRYER. Patent dated Apr. 5, 1988. Disclaimer filed Dec. 5, 1988, by the *inventor.*

Hereby enters this disclaimer to all claims of said patent.

SPECIAL BOXES FOR MAIL

Special PTO mail box numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they are intended.

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Box 6	Mail for the Office of Procurement.
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 8	All papers for the Office of the Solicitor except communications relating to pending litigation.
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PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.

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	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 31, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-4-87
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	1-21-86
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	1-20-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	7-31-86
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-24-86
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	6-8-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-27-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-28-87
DESIGN, GROUP 290—K. L. CAGE, Director	1-23-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	1-12-88
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	7-7-87
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	1-20-87
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-22-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-4-88

Expiration of patents: The patents within the range of numbers indicated below expire during December 1988, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,624,839 to 3,631,538, inclusive

Plant Patents ..... None

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REEXAMINATIONS

FEBRUARY 14, 1989

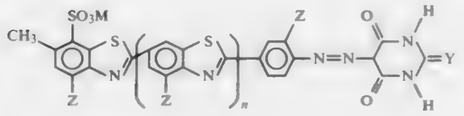
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,071,312 (1011th)
GREEN-YELLOW TO ORANGE MANDAZO PAPER DYES
John Blackwell, Kennett Square, Pa., assignor to Mobay Chemical Corporation
Reexamination Request No. 90/001,293, Jul. 30, 1987.
Reexamination Certificate for Patent No. 4,071,312, issued Jan. 31, 1978, Ser. No. 297,957, Oct. 16, 1972.
Continuation-in-part of Ser. No. 82,119, Oct. 19, 1970, abandoned.
Int. Cl.[4] C09B *29/36;* D21H *1/46*
U.S. Cl. 534—728

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

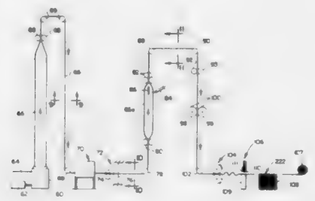
The patentability of claims **1–10** is confirmed.

1. A green-yellow to orange fluorescent dye of the formula



where
Y=O or S
Z=H or CH_3
n=**0** or **1** and
M=H, Li, Na, K, NH_4 or the protonated form of a tertiary lower alkylamine or alkanolamine.

B1 4,526,565 (1012th)
METHOD OF MAKING FLAT BOTTOM PLASTIC BAG
John E. Hummel, and William E. Basb, both of Tulsa, Okla., assignors to HWM Products Inc., South Tulsa, Okla.
Reexamination Request No. 90/001,394, Dec. 4, 1987.
Reexamination Certificate for Patent No. 4,526,565, issued Jul. 2, 1985, Ser. No. 469,028, Feb. 23, 1983.
Int. Cl.[4] B31B *35/00*
U.S. Cl. 493—196



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** and **11** is confirmed.

Claim **10** is cancelled.

New claims **12–20** are added and determined to be patentable.

1. A method of forming a plurality of flat bottom bags from a continuously formed tube of plastic film, said bags being formed such that when opened have opposed longitudinal sidewalls and end walls and a generally rectangular integral bottom wall, said method comprising the steps of:
forming a continuous plastic film tube;
collapsing said tube to a substantially flat band having opposed sidewalls;
passing said tube through means for forming at least one continuous longitudinal band seal;
slitting said tube along said at least one band seal to form at least two continuous tubes each having at least one longitudinal heat sealed seam;
passing said tubes through pleat forming guides wherein said tubes each are folded along opposed longitudinal fold lines to form pairs of opposed longitudinal inwardly folded pleats between said sidewalls;
providing a pair of opposed dies associated with each pair of pleats of a tube and an anvil plate insertable between opposed ones of said pleats of each pair of pleats on each of said tubes;
passing said tubes between said dies while inserting an anvil plate between opposed ones of said pleats of each pair of pleats on each of said tubes and between said dies, and causing said dies to be pressed against said anvil plates to heat seal a portion of each of said sidewalls to said pleats, respectively, along respective diagonal lines extending toward respective ones of said longitudinal fold lines;
heat sealing said sidewalls of each of said tubes along a transverse line at the convergence of respective pairs of diagonal lines with said longitudinal fold lines to form a center seam of said bottom wall and to form opposed triangular gussets of said bottom wall; and
cutting said tubes adjacent said center seam to define the bottom end of one bag and the top end of another bag formed of each of said tubes.

B1 4,579,583 (1013th)
NOVEL SULFONYLUREAS
Werner Föry, Basel; Karl Gass, Magden, and Willy Meyer, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Reexamination Request No. 90/001,468, Mar. 15, 1988.
Reexamination Certificate for Patent No. 4,579,583, issued Apr. 1, 1986, Ser. No. 527,599, Aug. 29, 1983.
Claims priority, application Switzerland, Sep. 8, 1982, 5337/82; Apr. 28, 1983, 2283/83
Int. Cl.[4] C07D *401/12;* A01N *47/36*
U.S. Cl. 71—92

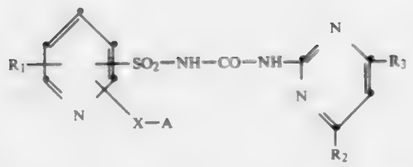
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended

Claims **2–17**, dependent on an amended claim, are determined to be patentable.

1. An N-pyridylsulfonyl-N'pyrimidinylurea of the formula

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wherein

A is a C_3–C_6alkynyl radical, or a C_1–C_6alkyl radical which is substituted by halogen or C_1–C_4alkoxy, or A is a C_2–C_4alkenyl radical which is unsubstituted or substituted by halogen or C_1–C_4alkoxy, or A is a phenyl radical which is unsubstituted or substituted by halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl or —X—C_1–C_4alkyl [or A—X— forms an amino radical —NR_6R_7,]

R_1 is hydrogen, halogen or C_1–C_4alkyl,

R_2 is C_1–C_3alkyl which is unsubstituted or substituted by 1 to 3 halogen atoms, or is C_1–C_3alkoxy,

R_3 is hydrogen, halogen, an amino group —NR_4R_5 or C_1–C_3alkyl which is unsubstituted or substituted by 1 to 3 halogen atoms, or is C_1–C_4alkoxy which is unsubstituted or substituted by methoxy, ethoxy or 1 to 3 halogen atoms,

R_4 is hydrogen or methyl,

R_5 is hydrogen, C_1–C_2alkyl or methoxy,

[R_6 and R_7 are each independently hydrogen, C_1–C_4alkyl, C_3–C_6alkenyl, C_3–C_6alkynyl, or both together with the nitrogen atom to which they are attached also form a saturated 5- or 6-membered heterocyclic ring system which may also contain oxygen, sulfur or an —NR_8 radical,

R_8 is hydrogen, C_1–C_4alkyl or benzyl,] and

X is oxygen or sulfur, or a salt thereof.

REISSUES

FEBRUARY 14, 1989

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,862

ELECTRONIC MUSICAL INSTRUMENT

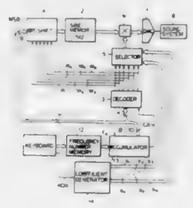
Masatada Wachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Original No. 4,282,790, dated Aug. 11, 1981, Ser. No. 67,693, Aug. 20, 1979. Application for reissue Sep. 9, 1985, Ser. No. 774,092

Claims priority, application Japan, Aug. 29, 1978, 53-104345

Int. Cl.[4] G10H *1/08, 7/00*

U.S. Cl. 84—1.21 **19 Claims**



18. An electronic musical instrument comprising:

means for repeatedly generating a waveshape having a frequency which changes as a function of time from the start point of said waveshape, including:

means for generating uniformly progressing phase angle information beginning from a predetermined phase point of the fundamental period of a musical tone to be generated,

phase modifying means for modifying the generated uniformly progressing phase information, and

a waveshape memory storing samples of a sinusoidal waveshape, and means for reading out the same in accordance with said modified phase information from said phase modifying means, the frequency of said read out waveshape effectively changing as the generated phase information is modified during said fundamental period; and

amplitude control means for controlling the amplitude of said waveshape in correspondence with said frequency changing as a function of time within said fundamental period, including:

means, responsive to said uniformly progressing phase angle information, for providing amplitude control information which varies with time within said fundamental period, and

multiplier means for multiplying the waveshape sample values read out from said waveshape memory by said amplitude control information; and

sound system means for producing a musical tone from the output of said multiplier means.

Re. 32,863

LOCKING NUT ASSEMBLY FOR A GUITAR

William H. Edwards, 8892 N. 56th St., Temple Terrace, Fla. 33617

Original No. 4,579,033, dated Apr. 1, 1986, Ser. No. 748,009, Jul. 26, 1985. Continuation-in-part of Ser. No. 544,122, Oct. 21, 1983, abandoned. Application for reissue Mar. 25, 1988, Ser. No. 173,742

Int. Cl.[4] G10D *3/12*

U.S. Cl. 84—314 N **34 Claims**

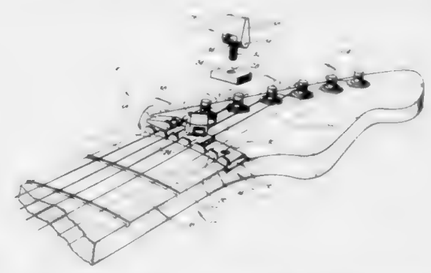
13. In a musical instrument having a fretboard, string, a tuning peg, and string nut means mounted on said instrument at a location between the end of said fretboard and said tuning peg, said string nut means being engaged by said string the improvement comprising:

a string locking assembly for retaining said string at a constant tension over said fretboard and operatable by finger pressure, said assembly comprising:

(a) support means mounted on said instrument at a location between said string nut means and said tuning peg, said support means defining a string support surface for engagement by a portion of said string;

(b) a locking block relatively movable with respect to said string support surface for clamping said string portion against said string support surface;

(c) hand-tightenable means to effect force on said string portion between said locking block and said string support surface,



said hand-tightenable means by itself, when hand tightened, not achieving force sufficient to clamp said string portion adequately to accure prevention of longitudinal movements thereof; and

(d) hand-operable means, including a lever and a cam means, to effect a holding force on said string portion between said locking block and said string support surface, said hand operable means being hand operable from a release position to a locked position, said hand operable means having a mechanical advantage large in comparison to that of said hand tightenable means so that operation thereof to said locked position achieves force sufficient to clamp said string portion adequately and assure prevention of longitudinal movements thereof.

Re. 32,864

CONNECTOR WITH LOCK MECHANISM

Tadayoshi Ezure, Isesaki, Japan, assignor to Hosiden Electronics Co. Ltd., Osaka, Japan

Original No. 4,548,455, dated Oct. 22, 1985, Ser. No. 660,680, Oct. 15, 1984. Application for reissue Oct. 6, 1987, Ser. No. 105,153

Claims priority, application Japan, Oct. 24, 1983, 58-164196[U]

Int. Cl.[4] H01R *13/629*

U.S. Cl. 439—152 **46 Claims**

1. A connector with a lock mechanism, comprising:

(a) a *plug having a* plug body of an insulating material;

(b) at least one plug contact mounted on said plug body;

(c) a cap mounted on a rear portion of said plug body;

(d) a coupling sleeve disposed coaxially around said cap and said plug body and axially movable;

(e) at least one locking spring supported on said plug body and projecting forwardly thereof, said locking spring having on a front end thereof a protrusion projecting radially outwardly or inwardly with respect to an axis of

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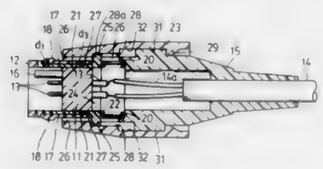
said plug body, said locking spring being resiliently displaceable in a direction opposite to the direction in which said protrusion projects;

(f) at least one support bar held against said locking spring on a side opposite from said protrusion [and], *said support bar being formed separately from said coupling sleeve and being* axially movable *relative to said coupling sleeve;*

(g) an engagement member connected to a rear end of said support bar and axially engaging said coupling sleeve, said engagement member being axially movable *relative to said coupling sleeve;*

(h) a coil spring for normally urging said engagement member and said coupling sleeve in a forward direction;

(i) a socket body of an insulating material, *said socket body being connectable to said plug when said plug is grasped by*



the hand of a user at any desired portion of said cap or coupling sleeve;

(j) at least one socket contact mounted on said socket body and electrically connectable to said plug contact;

(k) said socket body having an insertion slot defined in a front surface thereof for receiving said locking spring and said support bar, said insertion slot having a width smaller than the sum of the thickness of said locking spring including said protrusion and the thickness of said support bar and larger than the sum of the thickness of said locking spring other than said protrusion and the thickness of said support bar; and

(l) said socket body having a recess defined in said insertion slot and axially engageable with said protrusion when said locking spring and said support bar are inserted into said insertion slot.

Re. 32,865

FIBERGLASS SUCKER ROD CONSTRUCTION

Woodrow T. Rutledge, Jr.; Russell P. Rutledge; Jon B. Freeman, and Stephen D. Clark, all of Big Spring, Tex., assignors to Fiberflex Products Ltd., Houston, Tex.

Original No. 4,360,288, dated Nov. 23, 1982, Ser. No. 76,373, Sep. 17, 1979. Application for reissue Apr. 1, 1987, Ser. No. 33,414

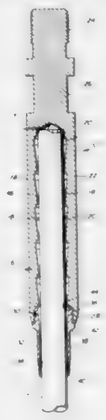
Int. Cl.[4] F16B *11/00;* **F04B** *47/02*

U.S. Cl. 403—268 **16 Claims**

1. A sucker rod construction for use in producing oil wells, said sucker rod construction comprising:

a [first] connector member *having an outer surface and* being formed to define a rod receptacle having a closed axially [outer] *inner* end and an open axially [inner] *outer* end, said rod receptacle having a plurality of integrally formed axially spaced apart outwardly converging tapered frusto-conical [annular] **annular** *internal* surfaces, [each of said surfaces having substantially the same taper] **each of said surfaces having substantially the same taper,** *said outer surface of said connector member and said internal surfaces defining between them a rod receptacle wall, said outer surface being substantially cylindrical laterally adjacent all said frusto-conical internal surfaces except the one most near said axially outer open end of said rod receptacle, the outside surface of the connector member laterally adjacent that one internal surface most near the said open end having a gradual axially convergent taper whereby the rod receptacle wall along said one internal surface is less thick at portions nearer said open end than at portions nearer and laterally adjacent the axially upper reach of said one internal surface;*

a cylindrical fiberglass rod having an end having a uniformly cylindrical uninterrupted outer surface being received within said rod receptacle through said [inner] *outer* end and cooperating therewith to define an annular chamber



between said outer surface of said end of said rod and said outwardly converging tapered frusto-conical surfaces;

and a body of initially liquid adhesive material filling said annular chamber that cures to bond to said outer surface of said end of said rod and to harden to form a plurality of shear and compression resistant frusto-conical wedges to cooperate with said frusto-conical surfaces.

Re. 32,866

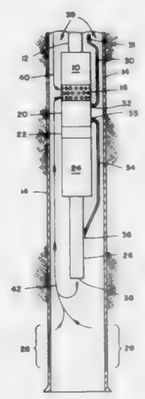
METHOD AND APPARATUS FOR DISTRIBUTING FLUIDS WITHIN A SUBTERRANEAN WELLBORE

Don S. Cruise, Buras, La., assignor to Chevron Research Company, San Francisco, Calif.

Original No. 4,580,634, dated Apr. 8, 1986, Ser. No. 591,626, Mar. 20, 1984. Application for reissue Nov. 26, 1986, Ser. No. 936,537

Int. Cl.[4] E21B *37/06*

U.S. Cl. 166—310 **9 Claims**



5. A method for distributing fluids within a subterranean borehole around equipment to be protected comprising the steps of:

introducing into the borehole at a first location apparatus comprising a submersible pump having an intake port connected to a first end of an intake duct and having an output port connected to a first end of an output duct;

positioning a free second end of said intake duct within the borehole at a second location from which fluid is to be withdrawn, the second location being on a first side of the equipment to be protected;

locating a free second end of said output duct within the borehole at a third location into which fluid is to be introduced, the third location being on a second side of the equipment to be protected;

activating said submersible pump; and

providing a treatment fluid to said second location, said treatment fluid selected from the group consisting of a corrosion inhibitor, scale inhibitor, a defoamer, an emulsion breaker, a flocculant, a paraffin inhibitor, a bactericide and mixtures thereof.

7. Apparatus for introducing inhibiting chemicals into a wellbore comprising:

(a) a production pump at a first location in the wellbore;

(b) a secondary pump at a second location within the wellbore further comprising:

(i) an intake tube; and

(ii) a discharge tube;

(c) a motor for driving said production pump above discharge tube.

Re. 32,868

ANTIHYPERLIPIDEMIC COMPOSITIONS

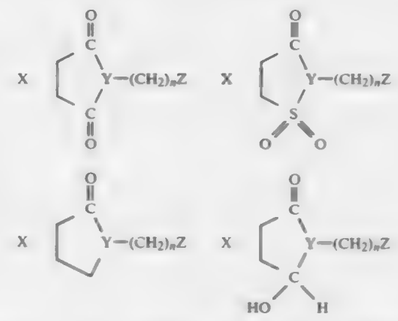
Iris H. Hall; George H. Cocolas, both of Chapel Hill, and James H. Chapman, Jr., Ashville, all of N.C., assignors to Research Corporation, Tucson, Ariz.

Original No. 4,395,417, dated Jul. 26, 1983, Ser. No. 142,678, Apr. 22, 1980. Application for reissue Jul. 26, 1985, Ser. No. 759,549

Int. Cl.[4] A61K *31/045, 31/19*

U.S. Cl. 514—421 **14 Claims**

1. Antihyperlipidemic compositions comprising a pharmaceutically acceptable carrier and, as the principal active ingredient, *N-phthalimido-o-acetophenone or* a compound of the group represented by the [formulas] *formulae:*



wherein X is aryl, cycloalkyl, or cycloalkylene containing up to ten carbon atoms; Y is CH or N; Z is alkyl containing up to five carbon atoms, carboxyl, carboalkoxyl wherein the alkyl group contains up to four carbon atoms, acyl containing up to four carbon atoms, alkylene, aryl, aralkyl or [aralhylene] *aralkylene*; n is 1 to 10; and further compounds wherein the group represented by X is replaced with at least one hydrogen on each of the carbon atoms adjacent the oxygen bearing functional groups and *wherein X is unsubstituted or mono-substituted with halogen or alkyl group containing up to 5 carbon atoms and* pharmaceutically acceptable acid[,] and alkali metal addition salts thereof.

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PLANT PATENTS

GRANTED FEBRUARY 14, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,597

RASPBERRY PLANT — AUTUMN BLISS CULTIVAR

Elizabeth Keep, Maidstone, England, assignor to National Seed Development Organisation, Cambridge, England

Filed Sep. 10, 1987, Ser. No. 94,898
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—46 **1 Claim**

1. A new and distinct variety of primocane-fruiting raspberry plant substantially as herein shown and described together with the parts thereof.

6,598

ROSE PLANT—MEILONTIG VARIETY

Marie-Louise Meilland, deceased, late of Antibes, France (by Jean-Pierre Le Naour, legal representative), assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jun. 10, 1987, Ser. No. 60,305
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of shrub rose plant characterized by the following combination of characteristics:

(a) forms in moderation attractive single white blossoms,

(b) exhibits an extremely rapid growth habit,

(c) forms rambling arching canes which become horizontal as the plant matures,

(d) exhibits an excellent aptitude for rooting and growing on its own roots, and

(e) is particularly well suited for growing in the landscape; substantially as herein shown and described together with the parts thereof.

6,599

ROSE PLANT NAMED 'DEVALE'

Kiyoshi Ohkawa, Shizuoka, Japan, assignor to Kanagawa Prefecture, Yokohama, Japan

Filed Jun. 1, 1987, Ser. No. 57,443
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinctive rose plant and parts thereof, substantially as herein shown and described, characterized in particular by its very light pink, Neyron Rose-like coloration for the outer petals and a Dawn Pink coloration at the base of the central petals; and by its profuse and continuous production of flowers of large size, and its vigorous, sturdy and upright growth habit.

6,600

CARNATION VARIETY NAMED BAGATEL

Theo Segers, Hoofddorp, Netherlands, assignor to Euser's Greenhouses, Inc., Wheat Ridge, Colo.

Filed Sep. 8, 1987, Ser. No. 94,123
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. The new and distinct spray carnation cultivar and parts thereof, substantially as herein shown and described, particularly characterized by its profuse production of medium sized, pure white flowers spaced vertically adjacent the top of a tall flowering stem having abundant foliage and a strong, sturdy, upright growth habit.

6,601

AFRICAN VIOLET PLANT NAMED VANESSA

Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uder die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 55,860
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Vanessa, as described and illustrated, and particularly characterized by its violet-shaped, pink flowers with slightly ruffled edges; strong upright wire-like flower stems; a tight bouquet free above the leaves; profuse flowering; vigorous growth habit; oval to heart-shaped leaves; and long lasting and non-dropping flowering habit.

6,602

GERANIUM PLANT NAMED PINK SILVER CROWN

Peter Jacobsen, P.O. Box 2, Hyde Park, Ontario, Canada

Filed Aug. 26, 1987, Ser. No. 89,519
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct geranium plant named Pink Silver Crown, as described and illustrated, and particularly characterized by its pink flower color, variegated green and white leaves, short leaf internodes, good branching, and compact growth habit.

6,603

AFRICAN VIOLET PLANT NAMED CLAUDIA

Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 56,474
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Claudia, as described and illustrated, and particularly characterized by its round, dark pink flowers with frilled edges; upright flower stems, producing a tight bouquet above the foliage; profuse flowering; vigorous growth habit; bright green and shiny leaves; and long lasting and non-dropping flowering habit.

6,604

AFRICAN VIOLET PLANT NAMED MARY

Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergeminschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 56,411
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Mary, as described and illustrated, and particularly characterized by its white flowers with pink center radiating irregularly towards the very delicately frilled edges; tight bouquet above the leaves; strong upright flower stems curving slightly toward the center; profuse flowering; vigorous growth habit; medium green, velvety, round, serrated leaves; and long lasting and non-dropping single flowers.

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6,605
GERANIUM PLANT NAMED RED SILVER CROWN
Peter Jacobsen, P.O. Box 2, Hyde Park, Ontario, Canada
Filed Aug. 26, 1987, Ser. No. 89,520
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct geranium plant named Red Silver Crown, as described and illustrated, and particularly characterized by its bright red facing to red-pink flower color, variegated green and white foliage, short leaf internodes, good branching, and compact growth habit.

6,606
CANDYMINT SARGENT CRABAPPLE TREE
Thomas R. Simpson, Vincennes, Ind., assignor to Simpson Orchard Company, Inc., Vincennes, Ind.
Filed Sep. 18, 1987, Ser. No. 98,322
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—34 **1 Claim**

1. The new and distinctive Sargent crabapple tree and parts thereof, substantially as herein shown and described, particularly characterized by its relatively short height and its low spreading and very horizontal form, and its foliage being of a purplish green coloration, darker than that of a normal Sargent variety.

6,607
AZALEA PLANT NAMED IKON
Henry W. Motzkau, Lacey, Wash., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Feb. 26, 1987, Ser. No. 19,360
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—56 **1 Claim**

1. A new and distinct cultivar of Azalea named Ikon, as described and illustrated, and characterized particularly as to novelty by its evergreen foliage, fuchsia red flower color, large single hose-in-hose flower form, compact, semi-vigorous growth habit, cold tolerance, ease of budding, and excellent shipping and cooler tolerance.

6,608
HIBISCUS PLANT NAMED VISTA
Frank C. Moser, Alva, Fla., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed May 21, 1987, Ser. No. 52,434
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct cultivar of *Hibiscus rosa-sinensis* named Vista, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of cartwheel, completely overlapped single flower form, dark pink flower color with a dark red eye, ruffled petal margin, heart shaped, medium sized leaves, compact growth, flower life of a single day, excellent shipping ability, and ease of rooting cuttings.

6,609
ALSTROEMERIA NAMED EVENING GLOW
Cornelis van Duyn, NA Rijnsburg, Netherlands, assignor to Groot Associates II, Irvine, Calif.
Filed Jun. 1, 1987, Ser. No. 57,236
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive Alstroemeria cultivar, substantially as herein shown and described, characterized by the distinctive coloration of its medium and profusely blooming flowers.

6,610
ALSTROEMERIA NAMED WESTLAND
Cornelis van Duyn, NA Rijnsburg, Netherlands, assignor to Groot Associates II, Irvine, Calif.
Filed Jun. 1, 1987, Ser. No. 57,237
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive Alstroemeria cultivar, substantially as herein shown and described, characterized by the distinctive coloration of its medium and profusely blooming flowers.

6,611
ALSTROEMERIA NAMED SWEETHEART
Cornelis van Duyn, NA Rijnsburg, Netherlands, assignor to Groot Associates II, Irvine, Calif.
Filed Jun. 1, 1987, Ser. No. 57,238
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive Alstroemeria cultivar, substantially as herein shown and described, characterized by the distinctive coloration of its medium and profusely blooming flowers.

6,612
ROSE PLANT JACMEY
William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Jul. 1, 1987, Ser. No. 69,692
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant and parts thereof of the hybrid tea class substantially as herein shown and described, characterized particularly as to novelty by a very high cut flower production, long and exceptionally straight stems, deep yellow buds contrasted with semi-glossy dark green leaves, downward hooking reddish colored thorns, five or seven leaflet leaves, and resistance to infection by powdery mildew.

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ERRATA

For CLASS	See PATENT NO.
016-237	4,803,749
040-124	4,803,795
040-414	4,803,796
474-113	4,803,804
072-248	4,803,877
072-296	4,803,878
072-322	4,803,879
072-354	4,803,880
072-392	4,803,881
070-339	4,803,902
112-083	4,803,941
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128-898	4,804,054
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524-445	4,804,793
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323-300	4,804,916
341-156	4,804,939
341-133	4,804,940
341-140	4,804,941
360-135	4,805,065

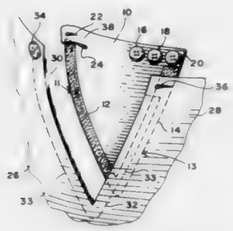
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GENERAL AND MECHANICAL

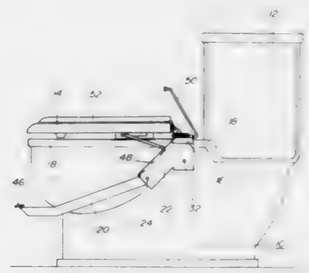
4,803,740
CLOTHING ADAPTOR FOR EARLY TERM PREGNANCY
Marian Dawson, 601 Northwest 22nd St., Wilton Manors, Fla. 33304
Filed May 4, 1987, Ser. No. 45,933
Int. Cl.[4] A41D *1/14*
U.S. Cl. 2—215 2 Claims



1. A method for adapting a lower body garment having in the midriff area a vertical waist fastening zipper, a fastening button and a corresponding buttonhole, which method is for use during early term pregnancy, said method comprising the steps of:
(a) securing, at both sides of said vertical zipper of said garment, strips of hook and pile type fastener fabric;
(b) providing an adaptor means in the nature of an inverted triangle, formed of a flexible fabric, with strips of hook and pile type fastener material along both diagonal sides of said triangle;
(c) providing a plurality of buttons along the horizontal base of said inverted triangle of said adaptor means at one vertex thereof;
(d) providing a buttonhole at an opposite vertex of the horizontal base of said adaptor means;
(e) press-fitting said velcro-like elements near said vertical zipper against said hook and pile type fastener material of said adaptor means;
(f) fastening a selected one of said plurality of buttons to said buttonhole of said lower body garment; and
(g) fastening said buttonhole of said adaptor means to said button of said lower body garment,
whereby a regular-use lower body garment may be adapted for use during early term pregnancy through the insertion thereinto of said adaptor means and the securement thereof to the lower body garment in accordance with Steps (e), (f), and (g) above.

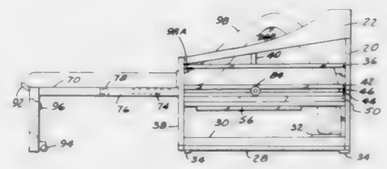
4,803,741
TOILET SEAT LIFTER
Taylor B. Ellison, P.O. Box 1508, Lake Placid, Fla. 33852
Filed Oct. 13, 1987, Ser. No. 107,107
Int. Cl.[4] A47R *13/10*
U.S. Cl. 4—251 1 Claim

1. A toilet seat assembly with a lifting arrangement to move a toilet seat from the horizontal position to an almost vertical position, comprising, in combination:
(a) a bowl (**10**) with a top (**18**) having a rear part;
(b) a toilet seat (**14**), with a front and rear section, a seat bracket (**16**) for securing said toilet seat rear section to the top rear part of said bowl, a down-turned flange (**22**) carried by said bracket (**16**);
(c) a motion transmitting linkage (**26**) including angularly related outwardly extending lower and upper arms (**28**, **30**), with a pivot (**32**) between the arms mounted on said flange (**22**), an underside to said lower arm and an outer end on said upper arm;
(d) a foot actuated lever (**20**) with a fulcrum point (**24**), an inner end (**44**) and an outer end, said fulcrum point (**24**) being coupled to said flange (**22**) with a foot pedal (**46**) at the outer end;
(e) a roller (**34**) mounted on a stud (**36**) at the inner end (**44**) engaging and actuating the underside of the lower arm



(**28**) with an arm bracket (**45**) carried by said arm (**28**) to hold said lever (**20**) in contact with the underside of the lower arm (**28**); and,
(f) a roller (**38**) mounted on the outer end of the upper arm (**30**) and extending at right angles to the arm and extending under the seat (**14**) to elevate the seat when the lever (**20**) is actuated, also, air-cylinder means between the flange (**22**) and the seat to cushion the downward movement of the seat.

4,803,742
CONVERTIBLE BED
Glen L. Rasnick, Siler City, N.C., and Albert R. St. Clair, Lilburn, Ga., assignors to Simmons U.S.A. Corporation, Atlanta, Ga.
Filed Jun. 9, 1986, Ser. No. 872,338
Int. Cl.[4] A47C *17/04*
U.S. Cl. 5—18 R 16 Claims

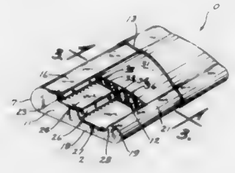


1. A convertible bed assembly comprising:
a one piece mattress means having a headward and a footward end;
a frame assembly, said frame assembly including a front end, a rear end, and a first section having a first support surface that supports at least part of said mattress means;
means for urging said mattress means positioned on said frame assembly along a predetermined path such that the headward end of said mattress means moves downwardly and below said first support surface, and the footward end of said mattress means moves rearwardly over said first support surface; and
mattress end supporting means located below said first sup-

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port surface for stopping travel of said mattress means proximate said end at a predetermined point along said predetermined path such that an intermediate portion of said mattress means bows upwardly and out of said predetermined path.

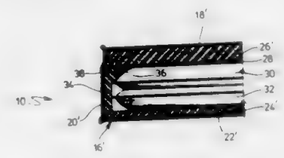
4,803,743
PILLOW
Kent S. Greenawalt, 1100 Mela Dr., Dubuque, Iowa 52001
Filed Jun. 17, 1985, Ser. No. 745,609
Int. Cl.[4] A47G *9/00*
U.S. Cl. 5—434 **1 Claim**



1. A pillow for supporting the head and neck of a person lying in a supine or side position, comprising:
a first pillow member having upper opposite sides, opposed edges, a planar surface, and an irregular surface extended between said sides and having an upper wall and a lower wall generally parallel to said planar surface, the said sides extended partially over said planar surface; and
a second pillow member having one irregular surface mated with said first member irregular surface such that said second member is nested between said opposite sides, and having a second surface forming a relatively smooth surface with the opposite sides of said first member, wherein said pillow members have differing consistencies to present different resistances, and wherein said first pillow member opposed edged have different thicknesses, said pillow being reversible whereby to provide a quartet of different support positions for the head and neck of the person using same;
and further wherein said pillow members form at least a pair of different resistances between the opposite sides, a first resistance comprised of a thin cross-section of general constant thickness of said second pillow member and a thick cross-section of general constant thickness of said first pillow member, and a second resistance comprised of a thick cross-section of general constant thickness of said second pillow member and a thin cross-section of general constant thickness of said first pillow member.

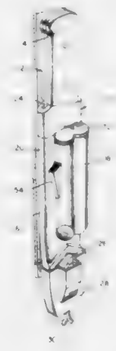
4,803,744
INFLATABLE BED
William H. Peck, Oldenburg, and Michael E. Poehner, West Harrison, both of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.
Filed May 19, 1987, Ser. No. 52,676
Int. Cl.[4] A47C *27/10*
U.S. Cl. 5—453 **28 Claims**

1. An improved inflatable bed system which comprises:
(A) A first inflatable bladder positioned to be distal from a person who lies on said bed;
(B) A second inflatable bladder positioned in contacting proximity to said first inflatable bladder and located proximate to said first inflatable bladder and located proximate to a person who lies on said air bed;
(C) Means for holding said first and second inflatable bladders together so that they co-operate as a unit;
(D) A source of inflating fluid providing a pressure sufficient to inflate said first and second inflatable bladders to the degree necessary to support a person lying on said first and second inflatable bladders; and
(E) Fluid circuit means, operatively connecting said source of inflating fluid and said first and second inflatable bladders for controlling the flow of said inflating fluid, said fluid circuit means including a differential pressure valve having a single inlet connected to said source of inflating



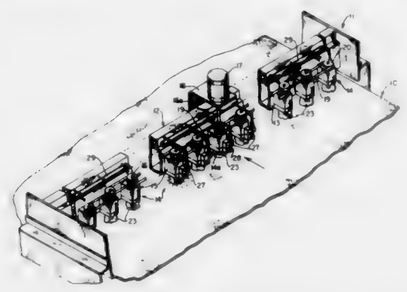
fluid and having two outlets, one of said outlets being connected to said first inflatable bladder and the other of said two outlets being connected to said second inflatable bladder such that a pre-selected pressure differential is maintained between said first and second inflatable bladders and the first inflatable bladder is always at least partially inflated before inflation of said second bladder begins.

4,803,745
SURVIVAL KNIFE SHEATH
Agustin Izquierdo, Bolivia, 1-1, Toledo, Spain
Filed Jun. 25, 1987, Ser. No. 66,197
Int. Cl.[4] B25F *1/00*
U.S. Cl. 7—170 **10 Claims**



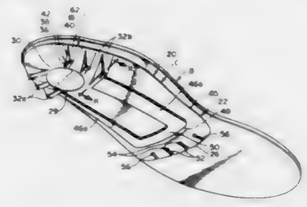
1. A survival knife sheath including a vertically elongated body having opposite upper and lower ends, one side of said body defining an upwardly opening knife blade receiving cavity, the other side of said body defining a pair of upwardly opening compartments, one of said compartments defining an aerial flare storage compartment and having at least one aerial flare removably received therein including an impact actuatable primer equipped base end and a flare assembly discharge end, the other of said compartments defining an aerial flare firing compartment and including means for receiving and releasably anchorably supporting at least the base end of said flare within said other compartment with said flare assembly discharge end facing upwardly, a firing pin slidably mounted from said body beneath said other compartment and for movement between a lower retracted position below said other compartment and an upper position projecting upwardly into said other compartment for impact engagement with said primer, biasing means yieldingly biasing said firing pin upwardly relative to said body toward said upper position, and manually engageable force transmission means operable from the exterior of said body to shift said firing pin from said upper position toward said lower position and thereafter releasable to allow said biasing means to bias said firing pin in an unrestricted manner upwardly toward said upper position and impact with the primer equipped base end of said aerial flare.

4,803,746
METHOD AND APPARATUS FOR APPLYING A RANDOM SPECKLED DYE PATTERN TO CARPET MATERIAL AND THE LIKE
Clifford A. Bryant, Dalton, Ga., assignor to WestPoint Pepperell, West Point, Ga.
Filed Apr. 4, 1988, Ser. No. 176,927
Int. Cl.[4] D06B *1/02, 11/00*
U.S. Cl. 8—151 **8 Claims**



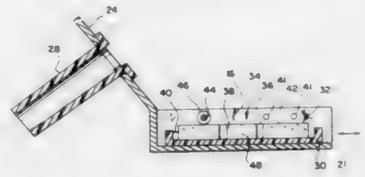
1. Apparatus for applying liquid material to a moving web in a random speckled pattern, which comprises
(a) means for advancing a web of material to be treated,
(b) support means extending across the width of said web,
(c) a plurality of distributor units mounted on said support means,
(d) each of said distributor units mounting a shaft and distributor disc,
(e) drive means for rotating said shafts,
(f) means for flowing said liquid material onto the surfaces of said discs, during rotation thereof, to effect centrifugal atomization and distribution of said liquid,
(g) said discs being formed with a randomly irregular peripheral contour, whereby said atomization and distribution is in a randomly speckled pattern.
7. The method of applying liquid to the surface of a moving web in a randomly speckled pattern, which comprises
(a) advancing said web continuously through a treating station,
(b) distributing the liquid material over the surface of said web from a plurality of closely spaced distribution points across the width of said web,
(c) said distributing step being carried out at each distribution point by flowing the liquid onto the surface of a rotating flat disc having a randomly irregular peripheral contour, whereby said liquid is atomized by centrifugal force into droplets of random size and is discharged from said discs at randomly varying radial and tangential velocities.

4,803,747
ORTHOTIC AND METHOD OF MAKING OF THE SAME
Dennis N. Brown, 8528 Custer School Rd., Custer, Wash. 98240
Division of Ser. No. 837,584, Mar. 7, 1986, Pat. No. 4,718,179.
This application Jan. 11, 1988, Ser. No. 142,722
Int. Cl.[4] A43B *13/41, 13/40*
U.S. Cl. 12—142 N **11 Claims**



1. A method of making a custom fit orthotic, said method comprising:
a. providing a relatively rigid cap made of a material which is characterized in that at a lower temperature, the material is resilient and upon deformation tends to return to its original shape, and at a moderately elevated temperature, can take a permanent deformation which then becomes fixed at said lower temperature;
b. providing a relatively flexible blank member configured to fit beneath and engage a plantar surface of a foot;
c. heating said cap member to said moderately elevated temperature;
d. fitting said blank against an upper surface of said cap;
e. placing said cap and said blank against the plantar surface of the foot, while the cap is at the elevated temperature, and applying a substantially uniform pressure against an outer surface of at least said cap so as to cause said cap to assume a configuration and contour matching the plantar surface of the foot;
f. permitting said cap and said blank to cool so as to become bonded to one another and to form said orthotic which is contoured to properly fit against the plantar surface of the person's foot.

4,803,748
CLEANING UNIT FOR SOLDERING IRON OR SOLDER EXTRACTOR TIPS
Robert S. Quasney, Sr., Pasendena, Md., assignor to Pace Incorporated, Laurel, Md.
Filed Feb. 22, 1988, Ser. No. 158,754
Int. Cl.[4] B05C *11/105;* **B23K** *37/00*
U.S. Cl. 15—104.92 **6 Claims**



1. A cleaning unit for cleaning the tip of a soldering iron or solder extractor or the like, said unit comprising
a well for containing a liquid which will shock surface oxides from said tip;
a sponge disposed within the well for absorbing said liquid, said sponge having an opening extending therethrough; and
a nonmetallic liner in contact with the surface of the opening in the sponge, said nonmetallic liner having an abrasive surface

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whereby particulate matter may be removed from said tip by said abrasive surface by rubbing the tip thereagainst and said surface oxides may be removed by being brought into contact with the liquid absorbed in the sponge.

4,803,749

MOUNTING PLATE FOR A HINGE FOR MOUNTING A DOOR ON FURNITURE FRAMES OF VARYING THICKNESS

Erich Röck, Höchst, and Helmut Rupprechter, Lauterach, both of Austria, assignors to Julius Blum Gesellschaft M.B.H., Höchst, Austria

Continuation of Ser. No. 509,231, Jun. 28, 1983, Pat. No. 4,554,706. This application Apr. 9, 1985, Ser. No. 721,661
Claims priority, application Austria, Jul. 8, 1982, 2666/82; Apr. 7, 1983, 1224/83
The portion of the term of this patent subsequent to Nov. 2[illegible], 2002, has been disclaimed.
Int. Cl.[4] E05D *7/04*
U.S. Cl. 16—237 **3 Claims**



1. A mounting plate of a hinge for mounting on a frame of an article of furniture a door of the article of furniture, said mounting plate comprising:

a member having a U-shaped configuration defined by parallel first and second side flanges adapted to extend vertically along opposite sides of a furniture frame, and a center flange connecting said side flanges and adapted to extend vertically along a front face of the frame;

said first side flange having means for supporting a hinge arm;

said second side flange including means for accommodating varying thicknesses of the frame to ensure a snug fit of said mounting plate on the frame prior to rigid attachment therebetween, said accommodating means comprising a plate member formed integrally as part of said second side flange and extending substantially coplanar with said second side flange and constructed to resiliently contact the adjacent side of the frame, said mounting plate having therein, at an edge between said center flange and said second side flange, a slot separating said center flange from said plate member; and

at least one fastening screw fitting through said center flange for rigidly attaching said mounting plate to the frame.

4,803,750

FORK AND COMB CLEANING TOOL

Brent Christopher, 8810 Mendenhall Loop Rd., Juneau, Ak. 79801, and George Spector, 233 Broadway Rm. 3815, New York, N.Y. 10007

Filed Apr. 24, 1987, Ser. No. 42,457
Int. Cl.[4] A47L *17/00*
U.S. Cl. 15—104.52 **1 Claim**

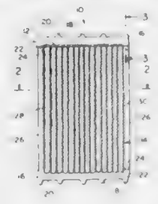
1. A fork and comb cleaning tool comprising:

(a) a rectangular frame having hand grip ends adapted to be held in hand of user of said tool;

(b) a plurality of bristle wires spaced apart and extending longitudinally between said ends of said frame which will remove food particles from between prongs of a fork and remove scalp particles from between the teeth of a comb held in other hand of the user of said tool;

(c) each of said hand grip ends having a track thereon perpendicular to the wires with a plurality of spaced transverse slots intersecting said track;

(d) a pair of elongated rods forming part of said frame, spaced apart connecting said hand grip ends, each of said rods being thin enough to fit between the fork prongs and the comb teeth yet strong enough for structure support;



(e) a plurality of hooks each having a loop retaining end another end disposed within one of said slots; and

(f) a series of individual replaceable extensible wire loops each having a spring th erein for extensibility each said wire loops removeably held at each end by one of said hook wherein said bristle wires are provided on said wire loops.

4,803,751

SCRAPER

Morison Cousins, 229 E. 28th St., New York, N.Y. 10016

Filed Jul. 16, 1987, Ser. No. 73,988
Int. Cl.[4] A47L *13/02*
U.S. Cl. 15—236.05 **24 Claims**



1. A scraper comprising:

a front portion having a guard portion;

a handle portion having a top face, a bottom face and a blade portion which is adapted to receive and retain a blade on the top face;

a first hinge means for hingeably connecting said front portion to said blade portion; and

a second hinge means affixed within said front portion between said blade portion and said guard portion to hingeably connect said guard portion to the remainder of said front portion;

said first hinge means permitting said front portion to fold in a first direction towards the bottom face of said handle portion, and said second hinge means permitting said guard portion to fold in a second direction towards the top face of said handle portion.

4,803,752

CLEANING DEVICE

Nobuhiro Kasama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 523,145, Aug. 15, 1983. This application Sep. 9, 1986, Ser. No. 906,577
Claims priority, application Japan, Aug. 23, 1982, 57-145806
Int. Cl.[4] G03G *21/00*
U.S. Cl. 15—256.51 **29 Claims**

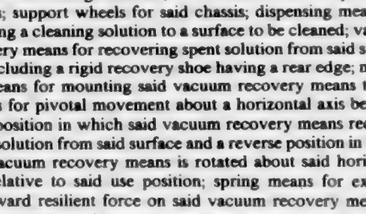
19. A cleaning device for cleaning off developing agents from a surface of an image bearing member, comprising:

an elastic cleaning blade having a free end portion for cleaning and contacting the image bearing member and a sandwiching portion;

first and second sandwiching members for sandwiching said elastic cleaning blade therebetween; and

tightening members for tightening said first and second sandwiching members to generate forces on said first and second sandwiching members for sandwiching the sandwiching portion of said elastic cleaning blade;

said first sandwiching member having a buffer portion for each tightening member for buffering partial propagation of tightening force from the respective one of said tightening members, said buffer portions being disposed on said first sandwiching member between a portion thereof tightened by said tightening members and an edge portion of said first sandwiching member near said free end portion of said elastic cleaning blade thereby to render the tightening force across the blade adjacent said edge portion of said first sandwiching member more uniform;



wherein said free end portion has a cleaning edge contacting the surface of the image bearing member for cleaning off the developing agents remaining on the image bearing member and said first and second sandwiching members are positioned downstream of said cleaning edge with respect to the rotation direction of the image bearing member; and

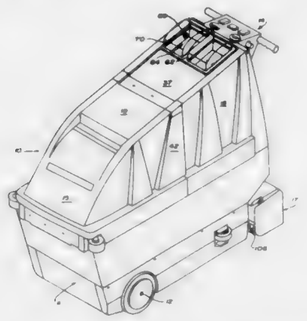
wherein said first sandwiching member is an L-shaped plate member, one face of which closely contacts a face of said elastic cleaning blade forming said cleaning edge, and said tightening members are arranged so as not to pierce said elastic cleaning blade.

4,803,753

SELF-PROPELLED CARPET SCRUBBING MACHINE

Gary E. Palmer, Roselle, Ill., assignor to Hako Minuteman, Inc., Addison, Ill.

Filed Oct. 19, 1987, Ser. No. 110,130
Int. Cl.[4] A47L *7/00*
U.S. Cl. 45—320 **8 Claims**



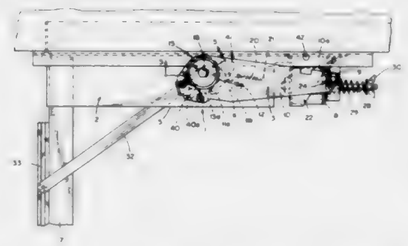
1. In a cleaning machine, the combination comprising: a chassis; support wheels for said chassis; dispensing means for applying a cleaning solution to a surface to be cleaned; vacuum recovery means for recovering spent solution from said surface and including a rigid recovery shoe having a rear edge; mounting means for mounting said vacuum recovery means to said chassis for pivotal movement about a horizontal axis between a use position in which said vacuum recovery means recovers spent solution from said surface and a reverse position in which said vacuum recovery means is rotated about said horizontal axis relative to said use position; spring means for exerting downward resilient force on said vacuum recovery means in said use position; said vacuum recovery means characterized in that when said vehicle is operated in a forward direction, said vacuum recovery means is in said use position and said spring means exerts said force thereon, and said vacuum recovery means is stable and operative for recovering spent solution, and when said vehicle is operated in a reverse direction, said rear edge of said vacuum recovery means catches on said surface and said vacuum recovery means is rotated forwardly about said horizontal axis against said spring force to said reverse position.

4,803,754

ELECTROMECHANICAL DOOR HOLDER-CLOSER

Frank D. Roberts, North Reading, Mass., assignor to Conrac Corporation, Stamford, Conn.

Filed May 5, 1987, Ser. No. 46,156
Int. Cl.[4] E05F *3/00*
U.S. Cl. 16—49 **9 Claims**



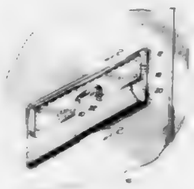
1. (Amended) In a door holder-closer including a door closer having a door drive spindle attachable to a door, a door holder attachable to the spindle to lock the spindle at a door hold-open position comprising a lever adapted to be coupled to the spindle to lock the spindle to a door hold-open position in response to the application of two concurrently applied latching forces and to release a door from the hold-open position in response to the removal of one of the latching forces, a first mechanism effecting a primary latch and electrically latching the lever during door opening in response to the application of an energizing electrical current to the first mechanism, [and] a second mechanism effecting a secondary latch and mechanically latching the lever to the spindle in response to rotation of the spindle to the door hold-open position, the second latching mechanism including a pair of adjustable clamping elements seated over the spindle with one of the clamping elements being locked to the spindle and the other clamping element driving the lever in a door opening movement and also driving the lever in a door closing movement with [The combination of claim 2 in which] the two clamping elements [present] presenting inner and outer mating clamping surfaces of a generally frustoconical cross-section.

4,803,755

INSULATING PAD FOR AUTOMOBILE DOOR HANDLE

Nancy L. Pohlman, 21 E. Dawn Dr., Tempe, Ariz. 85284

Filed Jan. 25, 1988, Ser. No. 148,299
Int. Cl.[4] B65D *23/10*
U.S. Cl. 16—116 R **6 Claims**



1. A thermally non-conductive automobile door handle assembly, said assembly comprising:

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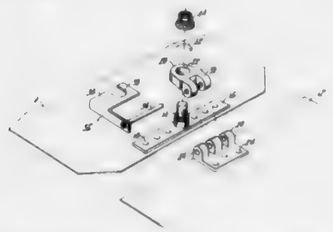
(a) an automobile door;
(b) a metal door handle, said door handle being generally L-shaped in cross-section and including a pivot arm extending outwardly from said automobile door and a rectangular gripping member depending perpendicularly from said pivot arm;
(c) a recess formed in said door beneath said handle; and
(d) an insulating pad secured to the inner surface of said rectangular gripping member of said handle, said pad being obscured from view by said rectangular gripping member and including,
I. a strip of thermal insulating and cushioning material sized and otherwise configured to match the shape and dimensions of the inner surface of the door handle, and
II. fastening means joined to said insulating material for securing the strip of thermal insulating and cushioning material to the inner surface of the door handle.

4,803,756

HINGE PIN RETAINING ASSEMBLY HAVING AN INTEGRAL SLOTTED PLATE AND HINGE PIN

Nick L. Hufnagel, Tequesta, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 17, 1988, Ser. No. 157,004
Int. Cl.⁴ E05D *7/10*
U.S. Cl. 16—252 **2 Claims**



1. A hinge assembly for securing first and second members comprising:
a stud secured to and perpendicular to the surface of said first member;
a hinge arm slideably engaged with said stud and having a first hinge knuckle extending outwardly from the axis of said stud;
a second hinge knuckle secured to said second member and interlockable with said first knuckle;
a pin structure having a plate and a pin rigidly secured to said plate, said pin passing through and engaging said first and second knuckles, said plate having a slot engaging said stud; and
locking means secured to the end of said stud for retaining both said hinge arm and said plate to said stud.

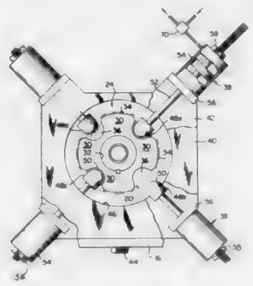
4,803,757

CASING SIZING MEANS METHOD AND APPARATUS

Vytas A. Raudys, Chicago, Ill., assignor to Viskase Corporation, Chicago, Ill.

Filed Sep. 30, 1982, Ser. No. 430,582
Int. Cl.⁴ A22C *11/00*
U.S. Cl. 17—49 **28 Claims**

1. (Amended) Sizing means for use in stretching a stretchable tubular casing prior to stuffing, said sizing means including:
a) attachment means for connecting said sizing means about the outlet of a casing stuffing apparatus;
b) at least one member extending outwardly from said attachment means, said member being of a size which is receivable within a tubular casing and which permits said sizing means to be oriented within the casing in a plane perpendicular to the longitudinal axis of the casing without peripherally stretching said casing; and
c) said member terminating in an outer peripheral surface adapted to contact the casing inner periphery, said surface having at least one recess therein such that the



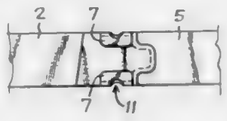
peripheral length of said surface at every cross section normal to the axis of the casing is greater than the unstretched inner periphery of said casing.

4,803,758

CLAMP AND METHOD OF PRODUCING SAME

Lionel Calmettes, Ozoir La Ferriere, France, assignor to Etablissements Caillau, Issy-Les-Moulineaux, France

Continuation of Ser. No. 700,734, Feb. 11, 1985, abandoned.
This application Apr. 3, 1987, Ser. No. 33,900
Claims priority, application France, Feb. 17, 1984, 84 02451
Int. Cl.⁴ B65D *63/00*
U.S. Cl. 24—20 R **4 Claims**



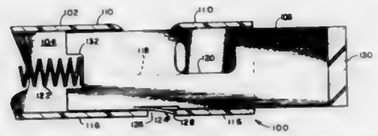
1. A clamp for encircling a pipe and being of the type comprising two pieces of band joined one to the other, a first piece having at one of its ends a lug equipped with means for fastening a number of raised sections provided on the other band, wherein the the end of the first piece of band, at the end opposite the lug is provided with a tongue element having sides extending in a direction for encircling the pipe and the first piece of said band further includes two lateral tabs formed out of and extending from the lateral edge of said first band piece at the base of said tongue element and adapted for folding over in the plane of said first piece, so as to grip the end of the second piece opposite that containing the raised sections while avoiding a rectilinear discontinuity at the inner face of the clamp near said lateral tabs and wherein said end of the second piece is correspondingly formed with a depression formed by a rimmed depression in the shape of said tongue element to receive the tongue element of the first piece and having wall portions extending in said direction for encircling the pipe, said end of the second piece having a thickness, at areas adjacent the rimmed depression, which is substantially equal in thickness to the remainder of the second piece and the thickness of the tongue element, and wherein said end of the second piece further includes a free end and two lateral notches forming two seats for the lateral tabs of the first piece, whereby a rectilinear discontinuity is avoided at the junction of the first and second pieces at the inner face of the clamp containing the pipe when the two pieces are joined together, with said second piece being secured over said first piece, and the entire end of the second piece from said depression to said seats to said free end laterally displaced from the remainder of the second piece by the thickness of the first piece.

4,803,759

MANUALLY OPERATED BAG CLOSURE DEVICE

Edward J. Kemble, 1181 NW. 5 Ct., Pompano Beach, Fla. 33060

Continuation-in-part of Ser. No. 71,403, Jul. 9, 1987, Pat. No. 4,763,388. This application Jun. 22, 1988, Ser. No. 209,859
Int. Cl.⁴ A44B *13/02;* **B65D** *77/10*
U.S. Cl. 24—30.5 R **4 Claims**



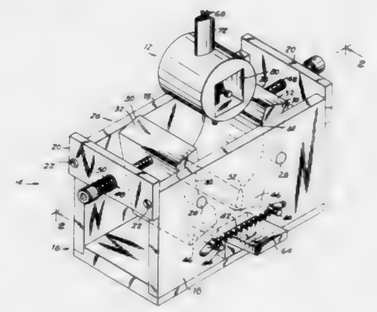
1. A manually operated bag closure device for closing the opened end of a bag comprising:
a housing having a cavity formed therein,
a plunger compatibly configured with a housing and disposed therein for reciprocal movement in the cavity,
a first slot formed in the housing,
a second slot formed in the plunger,
the device having a bag insertion position where the plunger reaches a point of maximum travel into the housing and the first and second slots are substantially aligned to allow the insertion of the neck of a bag therein,
the device having a bag closure position where the plunger reaches a point of maximum travel out of the housing and the first and second slots are substantially misaligned to close the neck of the bag,
bias means in the housing for forcing the plunger from the bag insertion position to the bag closure position,
means for retaining the plunger within the housing cavity against the force of the bias means,
the plunger retaining means including a projection formed in the plunger and an abutment surface formed in a rear wall of the housing, and
the projection extending upwardly and angling outwardly towards the exterior of the cavity,
whereby the projection stops against the abutment surface when the plunger reaches the point of maximum travel out of the cavity to retain the plunger therein.

4,803,760

COUPLING SYSTEM WITH CABLE

Jerome D. Gelula, 535 E. 86th St., New York, N.Y. 10028

Continuation of Ser. No. 26,492, Mar. 16, 1987. This application Aug. 26, 1987, Ser. No. 89,702
The portion of the term of this patent subsequent to Jul. 29, 2003, has been disclaimed.
Int. Cl.⁴ A44B *17/00*
U.S. Cl. 24—631 **1 Claim**



1. An improved latching system, comprising, in combination;
a supporting structure,
at least one capture member supported for movement between capturing and releasing positions by said supporting structure,
first spring means carried by said supporting structure normally biasing said capture members towards said releasing position,
a locking member for said capture member supported for movement between interfering and noninterfering positions by said supporting structure, wherein in said interfering position said capture member is in said capturing position and in said non-interfering position said capture member is in said releasing position,
second spring means carried by said supporting structure normally biasing said locking member toward said interfering position,
connector means adapted to be releasably captured by said capture member in said capturing position, said connector means forming an internal cavity,
cable means having portions thereof disposed within said cavity for influencing said locking member from a position remote from said locking member,
anchor pin means disposed within said cavity for guiding portions of said cable means,
actuating means disposed within said cavity and extending from said connector member and movable from a non-release position to a release position in response to movement of said cable means, said locking member being movable to said non-interfering position in response to movement of said actuating means to said release position.
third spring means carried by said connector means normally biasing said actuating means towards said non-release position,
gripping means carried by said connector means and disposed within said cavity means for holding said cable means against the top portion of said actuating member, said connector means defining an aperture to said cavity, said gripping means including a horizontal pin member secured to said connector means and horizontally disposed within said cavity to a position spaced over said actuating means wherein a gripping space is formed between said pin member and said actuating means adapted to accept a portion of said cable means,
said actuating means including a vertical cylindrical pin portion and a top head portion, said horizontal pin portion being positioned over said head portion, said gripping space being defined by said horizontal pin member and said head portion,
said head portion being generally cylindrical and larger in diameter than said pin portion, said head portion forming a pair of opposed grooves adapted to slidably hold portions of said cable means,
said third spring means being a helical compression spring positioned in said cavity around said pin portion of said actuating means between said head portion and said connector means,
said cavity being defined by a rear pair of side walls, and opposed top and bottom walls, said anchor pin means including a pair of anchor pins horizontally extending from said rear wall into said cavity proximate to said bottom wall and each of said side walls, said anchor pins being approximately parallel with said pin portion of said actuating means,
said anchor pins including cylindrical anchor bodies and pin heads larger than said pin bodies, said anchor pin heads being positioned adjacent to said bottom wall and said side walls of said cavity,
said cable means including a cable strand member positioned in said cavity over said head portion and in said grooves of said actuating means and extending under said pin bodies of said anchor pins, said strand member being slidably held in position between said pin member and said head portion in said grooves of said head portion and by said pin bodies and said anchor pin heads,
said connector means being a cylindrical connector member, said aperture being generally transverse to the axis of said cylindrical connector member, said horizontal pin mem-

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ber of said gripping means and said anchor pins being generally lateral to said axis of said cylindrical connector member,

said cable strand member forming a cable loop with said gripping space and said anchor pins being generally parallel with said aperture of said cavity and orthogonic with said horizontal pin member and said anchor pins,

said hollow of said capture member being partly cylindrical, said cylindrical connector member being adapted to be held in said hollow in said capturing position,

said at least one capture member having a pair of capture members forming opposed partly cylindrical hollows, said cylindrical connector member being movable back and forth in directions transverse in respect to the axis of its length a distance which is predetermined and limited by the surfaces defining the opening within which it is disposed, said cable means capable of being manipulated by the user of the latching system to effect releasing of said capture member by increasing tension in the cable means to a predetermined and desired magnitude,

said latching system further comprising adjustment means for providing hand-operated movement of at least one alignment stop against which a relatively upper portion of said capture member comes into contact under the biasing forces of said first spring means.

4,803,761

PROCESS FOR REGULATING THE CLOTH TENSION ON CYLINDER NAPPING MACHINES

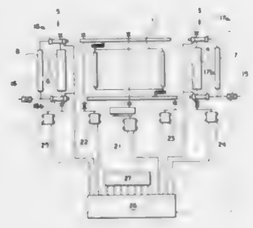
Karl H. Langers, Tonisvorst, Fed. Rep. of Germany, assignor to Leo Sistig KG, Fed. Rep. of Germany

Filed Nov. 6, 1986, Ser. No. 927,763

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1985, 3540689

Int. Cl.⁴ D06L *11/00*

U.S. Cl. 26—35 **4 Claims**



1. The process for monitoring and regulating the cloth tension of a length of cloth processed on a cylinder napping machine where the cloth is drawn in at an inlet by a driven feed roller, exposed to pile and counterpile raising energy on the cylinder by pile and counterpile rollers, and drawn off at an outlet by a delivery roll driven independently of the feed roll, and where the actual tension on the length of cloth is measured at the inlet by means of a tension feeler, compared with a selectable preset control value, and automatically adjusted back to the predetermined control value in the event a devintion is found from the control value, comprising the steps of:

continuously measuring the actual cloth tension at the outlet;

comparing the actual values of the cloth tension determined at the inlet and at the outlet with reset control values and also with each other;

automatically readjusting the cloth tension by independent regulation of the rotational speeds of the feed roll, delivery roll, the cylinder, the pile rollers, and the counterpile rollers in response to the comparison of the actual values for the cloth tension at the inlet and outlet ends with each other and with the preset control values; and

using a data processing system to compare the actual and control values and to readjust the rotational speeds.

4,803,762

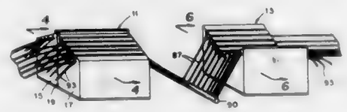
METHOD FOR SPLICING LENGTHS OF FIBER TOW

Richard W. Sheehan, Johnson City, Tenn., assignor to World Tech Fibres, Inc., Johnson City, Tenn.

Filed Feb. 26, 1988, Ser. No. 163,230

Int. Cl.⁴ B65H *69/06;* **D04H** *3/10*

U.S. Cl. 28—104 **6 Claims**



1. A method of splicing the lead and tail portions of lengths of fiber tow, comprising:

dividing each of the lead and tail portions into a plurality of separate bundles;

overlapping bundles of the lead portions with bundles of the tail portions to form overlapped pairs of bundles;

providing a plurality of pairs of separate, longitudinally spaced-apart, open-ended cylindrical passageways;

confining each of the overlapped pairs of bundles in one of said pairs of separate, longitudinally spaced-apart, open-ended cylindrical passageways; and

subjecting the overlapped pairs in each passageway of each pair of passageways to a plurality of longitudinally spaced-apart jets of gaseous fluid oriented generally perpendicularly to the length of the overlapped pairs, the jets being directed substantially at the longitudinal axes of the passageways and the jets in one passageway of each of said pairs of passageways being generally oppositely directed relative to the jets in the other passageway, whereby fibers in the pairs of bundles from the lead portion and from the tail portion become entangled to form a splice between the lengths of fiber tow.

4,803,763

METHOD OF MAKING A LAMINATED PIEZOELECTRIC TRANSDUCER

Yasuda Eturo; Matsuoka Hiroshi, both of Okazaki; Yoshida Hiroyuki, Nishio; Kotanshi Yoichi, Okazaki, and Sawada Yasushi, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 26, 1987, Ser. No. 89,408

Claims priority, application Japan, Aug. 28, 1986, 61-200111; Dec. 18, 1986, 61-302297

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 29—25.35 **9 Claims**



1. A process of manufacturing a laminated piezoelectric transducer, comprising the steps of:

forming a laminate of a plurality of piezoelectric plates and paste electrodes, said paste electrodes being disposed between and bonding together said piezoelectric plates;

electrolessly plating onto said pasted electrodes to make first and second rows of metal extrusions extruding from said laminate at portions of the peripheral outer surface of said laminate, said first and second rows of said metal extrusions being separated in the direction of the peripheral outer surface of said laminate and electrically connected to different alternate paste electrodes respectively; and

electrically connecting said metal extrusions to each other in each row of said first and second rows.

4,803,764

APPARATUS FOR MANUFACTURING A SPACER FRAME FOR INSULATING GLASS

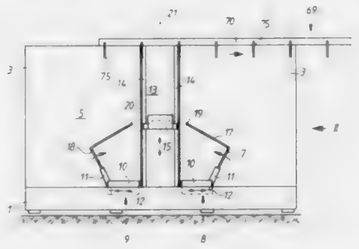
Karl Leuhardt, Neuhausen-Hamberg, and Uwe Bogner, Pforzheim-Huchenfeld, both of Fed. Rep. of Germany, assignors to Lenhardt Maschinenbau GmbH, Neuhausen-Hamberg, Fed. Rep. of Germany

Filed Jun. 17, 1987, Ser. No. 63,297

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1986, 3620531

Int. Cl.⁴ B23P *23/04*

U.S. Cl. 29—33 K **21 Claims**



1. Apparatus for manufacturing a rectangular spacer frame for use in the manufacture of insulating glass in a process in which a tubular bar having two opposite free end portions, is bent four time in a common bending plane to form said frame and said free end portions are joined to each other to close said frame, comprising

a backing wall having an edge and a backing surface defining said bending plane;

a holder extending adjacent to and along said edge and adapted to support said tubular bar adjacent to said bending plane;

bending tool means disposed adjacent to said horizontal edge and operable to bend said tubular bar in said bending plane when said tubular bar is supported by said holder adjacent to said bending plane, said bending tool means being operable to perform a final bending operation in which said free end portions of said bar are caused to approach each other to form said frame;

the improvement residing in that said apparatus comprises

a frame-closing tool for assuming a frame-closing position and for joining said free end portions of said bar to each other so as to close said frame when said tool is in said frame-closing position after said final bending operation and for carrying said frame when it has been closed;

tool-displacing means for displacing said frame-closing tool to and away from said frame-closing position along a path which extends parallel to said backing surface and at right angles to said edge of said backing wall;

deflecting means carried by said tool and arranged to deflect one of said free end portions out of said bending plane when said tool is in said frame-closing position during said final bending operation;

locating means carried by said tool and operable to locate said free end portions after said final bending operation in an aligned position, in which said free end portions are axially aligned and spaced apart;

two grippers, which are carried by said tool and adapted to respectively grip said free end portions in said aligned position at two points spaced apart along said edge; and

gripper displacing means, which are carried by said tool and operable to displace said grippers along said edge toward each other so that said free end portions are gripped by said grippers in said aligned position and are moved close to each other.

4,803,765

INDEX HEAD

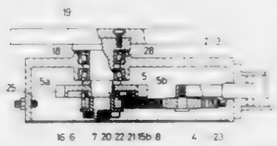
Hidetoshi Ito, Nagano, Japan, assignor to Mikado Metal Industry Co., Ltd., Japan

Filed Apr. 21, 1988, Ser. No. 184,436

Claims priority, application Japan, Apr. 27, 1987, 62-104063

Int. Cl.⁴ B23B *29/32;* **B23Q** *17/02*

U.S. Cl. 29—48.5 R **6 Claims**



1. An index head comprising a rotary shaft fitted at its top end an index table located outside of a body casing; a disk coaxially fitted to a middle portion of the rotary shaft within the body casing and provided at its circumferential edge a plurality of cut-out portions which are of a number equal to a number of divisions to be indexed and located with an equal angular distance therebetween; said disk having at its bottom surface and along its circumferential edge one or more ratchet pawls which are located with an equal angular distance therebetween when the pawls are more than one; a main toothed wheel located under the disk, journaled to the rotary shaft so as to be able to rotate idle, and provided at its top and along its circumferential edge one or more horizontal projections which are integral with the main toothed wheel and with an equal angular distance therebetween when the projections are more than one; either of said ratchet pawls and said horizontal projections being of a number corresponding to the number of divisions when the other of them is single, and said ratchet pawls being biased so as to be partly within a rotary path of the horizontal projections and so as to be ratchedly engageable with the projections only in a predetermined rotary direction of the main toothed wheel; a cylinder provided to the body casing and having a piston rod which is directed to a central axis of the rotary shaft and having pivotably mounted at its forward end a horizontally extending pinion; a long rack which meshes with said horizontal pinion and is slidable towards and from the main toothed wheel; and a short rack which faces the long rack in parallel therewith and with the pinion therebetween and which is slidably supported by a supporting fixture; either one of said short rack and said supporting fixture being provided with mechanisms which retard the sliding movement of the short rack until the forward end of the piston rod reaches to a predetermined position and which release such retardation when said forward end reaches said predetermined position so that said forward end which is shaped so as to be engageable with the cut-out portions of the disk, comes into engagement with one of said cut-out portions.

4,803,766

MOUNTING OF CERAMIC TIP ON METAL ROCKER ARM

Shigeaki Akao; Masato Taniguchi, and Takio Kojima, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Dec. 17, 1987, Ser. No. 134,042

Claims priority, application Japan, Dec. 27, 1986, 61-202324[U]

Int. Cl.⁴ B23P *15/00*

U.S. Cl. 29—156.4 R **4 Claims**

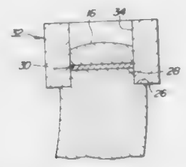
1. A method of mounting a ceramic tip on a metal rocker arm, comprising:

preparing a rocker arm proper made of metal;

forming an end of said rocker arm proper in such a way that said end of said rocker arm proper includes a base section

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and a mounting section projecting outwardly from said base section;
preparing a jig in the form of a framework and capable of fittingly receiving therein said mounting section when installed on said base section, said jig being also capable of fittingly receiving therein said ceramic tip and said brazing metal;



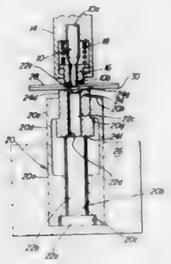
inserting said brazing metal and said ceramic tip into said jig and allowing the same to be sequentially laid one upon the other on said mounting section; and
heating said end of said rocker arm proper, said ceramic tip and said brazing metal by a continuous furnace and thereby brazing said ceramic tip to said mounting section.

4,803,767

CLINCHING TOOL

Robert E. Obrecht, Bloomfield Hills, and Edward J. Waltonen, Southfield, both of Mich., assignors to Lamb Robo, Bloomfield Hills, Mich.

Filed Aug. 29, 1986, Ser. No. 901,621
Int. Cl.[4] B23P *11/00*
U.S. Cl. 29—243.5 **2 Claims**



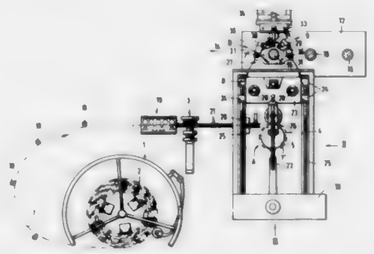
1. A clinching tool for fastening two sheets of material together, said tool comprising:
(A) a punch mounted in a punch retainer; and
(B) a die cooperable with said punch and including
(1) a split bushing,
(2) a collet including a base portion and a plurality of spring fingers extending in cantilever fashion from said base portion in circumferentially spaced relation to the axis of said punch to define a central axial passage aligned with said punch axis and including free end portions yieldably engaging circumferentially spaced locations on said bushing,
(3) a pin member including a head portion, a shank portion, and an annular transverse shoulder at the juncture of said head and shank portions, and
(4) means mounting said pin member in said collet with said shank portion extending into said bushing with its free end inset with respect to the end of said bushing adjacent said punch by a distance related to the thickness of the materials to be joined together and with said shoulder abutting a transverse annular surface defined adjacent the end of said split bushing remote from said punch.

4,803,768

METHOD OF, AND APPARATUS FOR, APPLYING SHEET METAL COLLARS ONTO THE NIPPLES OF ANODE BARS

Franz Golla, Lunen, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed Feb. 17, 1987, Ser. No. 15,046
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1986, 3605608
Int. Cl.[4] B23P *17/00*
U.S. Cl. 29—417 **12 Claims**



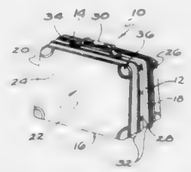
1. Apparatus for applying sheet metal collars onto the nipples of anode bars, the apparatus comprising means for unwinding a sheet metal band from a coil, a cutting unit for cutting strips of predetermined length from the metal band, a bending unit mounted in a machine frame for bending the strips into collar-shaped parts, a collar laying station, a transfer device for conveying said parts to said collar laying station, said transfer device being provided with a gripper having gripper jaws which are movable towards one another, said gripper jaws each having a movable finger, and a closure unit at said collar laying station for closing said parts around the nipples to form closed collars.

4,803,769

LUGGAGE CORNER CONSTRUCTION METHOD

Richard B. Gibbs, 11548 Thurston Cir., Los Angeles, Calif. 90049

Division of Ser. No. 948,009, Dec. 31, 1986, abandoned. This application Oct. 19, 1987, Ser. No. 109,867
Int. Cl.[4] A45C *13/36*
U.S. Cl. 29—416 **17 Claims**



1. A method of constructing a contoured corner for a flexible luggage wall, comprising:
providing a rigid, generally rectangular luggage body having rounded corners;
providing a rectangular, flexible wall having a primary plane and overall dimensions generally matching the periphery of the luggage body;
cutting a curved notch from a corner of the rectangular wall to obtain a notch remnant;

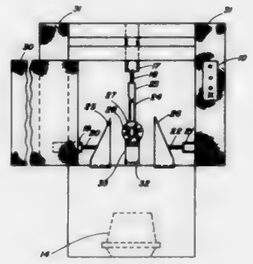
folding a portion of the wall adjacent the notch downwardly to form a wall notch flange;
folding downwardly the periphery of the notch remnant to form a notch remnant flange;
placing a flexible piping along the curved notch and replacing the notch remnant adjacent the piping and sewing the wall notch flange, the piping and the notch remnant flange together in a manner causing the notch remnant to form a three-dimensional, arch-shape; and
sewing the wall and the attached notch remnant to the luggage body.

4,803,770

PROCESS FOR REMOVING YARN OR FILM WRAPPED AROUND A TUBE

Charles C. Weatherby, and Marcus C. Martin, Jr., both of Columbia, S.C., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Sep. 2, 1982, Ser. No. 414,209
Int. Cl.[4] B23P *19/02*
U.S. Cl. 29—476.4 **10 Claims**



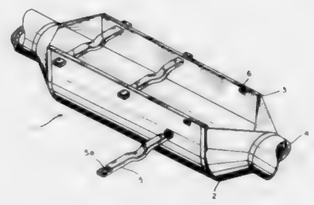
1. Apparatus for removing yarn which is wrapped around a tube and forms a yarn package, comprising:
(a) means for applying a sufficient amount of pressure to a part of the yarn package to cause the tube to pleat substantially along its length;
(b) means for releasing the pressure; and
(c) means for withdrawing the pleated tube.

4,803,771

PROCESS FOR REMOVING ASBESTOS USING TAPED TROUGHS

William G. Lyons, 34 Freemens Bridge Rd., Scotia, N.Y. 12302

Filed Jan. 7, 1988, Ser. No. 141,711
Int. Cl.[4] B23P *19/02*
U.S. Cl. 29—426.4 **10 Claims**



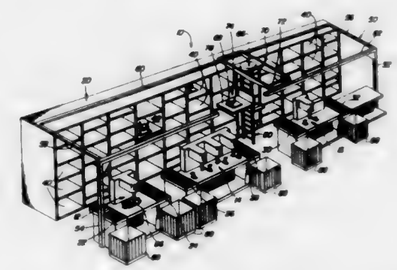
1. A process for complete wet removal of asbestos insulation covering and like hazardous materials from pipes, joints and valves comprising:
placing at least one trough about an asbestos covered pipe;
securing said trough about said asbestos covered pipe by trough securing means;
removably adhering waterproof tape to end walls of said trough and said pipe to form a sealing continuum between said end walls and said pipe;
adding an aqueous solution to the sealed off trough to completely immerse said pipe for a period sufficient to soften said asbestos;
draining off the aqueous solution;
removing the asbestos with a tool; and
wiping the pipe with an oil or water soaked rag.

4,803,772

SYSTEM FOR MAXIMIZING MACHINE UTILIZATION

Steven J. Leverenz, Sun Prairie, Wis., assignor to Deere & Company, Moline, Ill.

Filed Mar. 20, 1987, Ser. No. 28,370
Int. Cl.[4] B23Q *3/156*
U.S. Cl. 29—568 **7 Claims**



1. A system for maximizing machine utilization and minimizing tool changeover time, said system comprising:
a plurality of individual tooling, each having means operatively connected thereto, for rapidly and accurately positioning any one of said individual tooling on said machine;
at least one machine having a machine bed for selectively operating said plurality of individual, tooling, said machine bed having an upper and a lower surface, said bed having at least two hydraulically actuated clamps and at least two location means operatively positioned on said bed, said positioning means further comprising:
a sub-plate operatively connected to each of said individual tooling, said sub-plate having a V-slot formed therein for interacting with said location means;
tooling storage means, located proximate to said machine, for storing each of said plurality of individual tooling in an individual location therein;
pre-staging means, operatively positioned proximate said machine, for pre-staging at least two of said plurality of individual tooling thereon for utilization by said machine;
post-staging means, operatively positioned proximate said machine, for post-staging at least one of said tooling after utilization in said machine and prior to said tooling being returned to said storage means; and
transfer means, operative between said pre-staging means, said post-staging means and said storage means, for transferring any specific one of said plurality of individual tooling from its individual location in said storage means to said prestaging means and for transferring said individual tooling from said post-staging means to said tooling storage means.

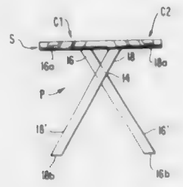
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4,803,773

METHOD OF MAKING MAGNETIC CORES

Erick O. Schonstedt, Reston, Va., assignor to Schonstedt Instrument Company, Reston, Va.

Filed Aug. 1, 1986, Ser. No. 891,995
Int. Cl.[4] H01F *41/02*
U.S. Cl. 29—605 **14 Claims**



1. A method of making a magnetic core, that comprises wrapping about an elongated support at least one piece of magnetically permeable material constituted by elongated elements, the arrangement of the elements being such that as the material is wrapped about the support the elements form simultaneously two sets of convolutions on the support with different helix angles, wherein said elements are strips formed into a preform configuration that converges from one pair of spaced end regions to a central region and then diverges from said central region to another pair of spaced end regions, wherein the end regions of one of said pairs are placed upon said support initially at corresponding longitudinally space areas of said support, and, during the wrapping, convolutions are simultaneously formed progressively toward a central area between said spaced areas, then said central region is placed upon the support, and thereafter convolutions are simultaneously formed progressively away from said central area until the end regions of the other of said pairs are placed upon said support.

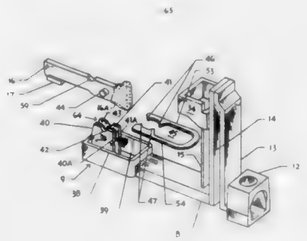
4,803,774

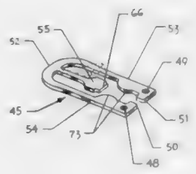
METHOD OF MAKING MOLDED CASE CIRCUIT BREAKER CONTACT ARRANGEMENT

Robert A. Morris, Burlington; James M. Mitsch, West Hartford; Irenaeus S. Panus, New Britain; Yuet-Ying Yu, Waterbury, and Roger N. Castonguay, Terryville, all of Conn., assignors to General Electric Company, New York, N.Y.

Division of Ser. No. 941,974, Dec. 15, 1986, Pat. No. 4,733,033.
This application Oct. 28, 1987, Ser. No. 113,836
Int. Cl.[4] H01H *11/00*
U.S. Cl. 29—622 **1 Claim**

1. A method for assembling a molded case circuit breaker including the steps of:
providing a molded plastic circuit breaker case having first and second ends;
inserting a fixed contact support, a line terminal lug, and a fixed contact at said first end of said case;
inserting a pivot end of a movable contact carrier within a movable contact carrier slot defined between a pair of arms integrally formed within a movable contact carrier support member;
inserting a circuit breaker operating mechanism intermediate said first and second ends;
inserting said movable contact carrier support member and a load terminal lug at said second end of said case;
arranging a spring clip retainer about said movable contact carrier slot;
inserting an arm on said spring clip retainer within said movable contact carrier slot; and





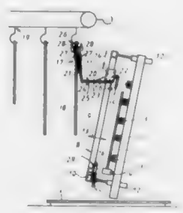
displacing said spring clip retainer arm from said slot by contacting a spring clip retainer end with said pivot end of said movable contact carrier.

4,803,775

DEVICE FOR THE ATTACHMENT OF SPACER FRAMES

Peter Lisec, Bahnhofstrasse 34, A-3363 Amstetten-Hausmening (Niederosterreich), Austria

Filed Jun. 3, 1987, Ser. No. 57,943
Claims priority, application Austria, Jun. 5, 1986, 1534/86; Jul. 30, 1986, 2057/86
Int. Cl.[4] C03C *27/12*
U.S. Cl. 29—822 **23 Claims**



1. In a device for the attachment of spaced frames to glass panes (5) during the course of the manufacture of insulating glass panes, with an essentially vertically disposed supporting wall (1) for the glass panes (5) and with a frame-like holder (8) for the spacer frames (18) arranged in front of the supporting wall (1), wherein clamping devices (16) and retractable locating pins (15) for the spacer frame to be attached are arranged on the frame-like holder (8), and wherein an upper, horizontal leg (11) of the frame-like holder (8) can be displaced upwards and downwards in parallel to the supporting wall (1); the improvement in which at least two grippers (17) are mounted on said upper, horizontal leg (11) of the frame-like holder (8), these grippers being movable to and fro between a frame-

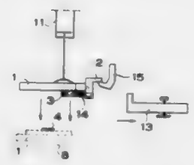
receiving position adjacent the end of an overhead conveyor (19) for spacer frames (18) and a delivery position wherein the spacer frames are set down into contact with the locating pins (15) of the frame-like holder (8).

4,803,776

APPARATUS FOR LOADING REEL HUBS INTO CASSETTES

Toyokide Kubo, Tokushima, Japan, assignor to AWA Engineering Co., Ltd., Tokushima, Japan

Filed Oct. 14, 1987, Ser. No. 108,204
Claims priority, application Japan, Mar. 12, 1987, 62-57993
Int. Cl.[4] B23Q *7/00*
U.S. Cl. 29—806 **5 Claims**



1. An apparatus for loading reel hubs into cassettes which have an openable and closable front cover and a sliding hub lock with hub lock extension arms with catches thereon interlockable with outside catches on the front cover, said apparatus comprising:
a cassette case retainer for holding an open cassette case;
an opening and closing device movable toward and away from said cassette case retainer for opening the cassette front cover and pulling the sliding hub lock forward; and
a reel hub holder movable toward and away from said cassette case retainer for loading reel hubs into a cassette case;
said front cover opening and closing device having an alignment means for engaging the sliding hub lock extension arms for aligning the catches on the ends of said sliding hub lock extension arms with the loci described by the outside catches on the front cover as the front cover opens, whereby when said opening and closing device opens the front cover, the sliding hub lock extension arm catches are aligned with the front cover outside catches by said alignment means.

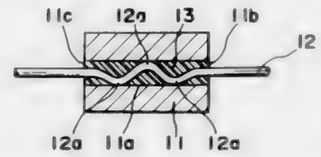
4,803,777

METHOD OF MANUFACTURING AN ELECTRIC COMPONENT WITH A LEAD WIRE SECURED IN A THROUGH HOLE

Masayuki Nakagawa, Murata Seisakuso Tenjin-Ryo, 5-41, Tenjin 4-chome, Nagaokakyo-shi, Kyoto-fu; Makoto Tabuchi, 22-20, Sakurai 5-chome, Shimamoto-cho, Mishima-gun, Osaka-fu, and Mitsuro Hamuro, 12-2, Kyoyaoka 1-chome, Nagaokakyo-shi, Kyoto-fu, all of Japan

Filed Aug. 6, 1985, Ser. No. 762,963
Claims priority, application Japan, Aug. 7, 1984, 59-166204; Dec. 27, 1984, 59-281615; Feb. 12, 1985, 60-25410
Int. Cl.[4] H01R *43/00*
U.S. Cl. 29—856 **5 Claims**

1. A method of manufacturing electronic components comprising the steps of:
inserting a lead wire through a through hole of a cylindrical electronic component element, and
securing the inserted lead wire with bonding agent to the electronic component element, and further comprising the steps of:
forming said lead wire to have a bent portion, which has a bent width d' which is larger than an inner diameter of the through hole of the electronic component element, the lead wire having a diameter smaller than the inner diameter of the through hole of the electronic component element,
inserting the lead wire from a first end opening of the through hole of said electronic component element and pressing the bent portion into the through hole, thereby forming a capillary gap which leads from the first end of



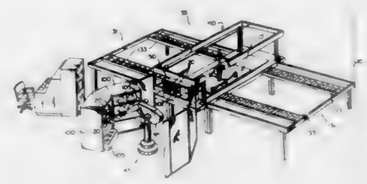
the through hole to the other second end, said capillary gap being disposed between the through hole and the lead wire forming the bent portion, and
penetrating the liquid bonding agent from the outside of the through hole into the interior thereof by capillarity through the capillary gap, to fill the through hole with the bonding agent.

4,803,778

METHOD FOR MAKING A WIRE HARNESS

Dan A. Cross, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 798,827, Nov. 18, 1985, Pat. No. 4,715,100, and a continuation-in-part of Ser. No. 741,318, Jun. 4, 1985, Pat. No. 4,677,734, which is a continuation-in-part of Ser. No. 539,768, Oct. 7, 1983, Pat. No. 4,520,966. This application Aug. 19, 1987, Ser. No. 87,733
Int. Cl.[4] H01R *43/00*
U.S. Cl. 29—857 **10 Claims**

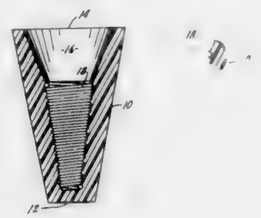


1. A method of routing a wire with a robot into a particular position in a wire harness assembly, wherein the wire harness assembly includes at least one connector having a plurality of pin-receiving points, comprising the steps of:
(a) cutting the wire to a predetermined length;
(b) terminating both ends of the wire length, at least one end being terminated with a pin;
(c) positioning the pin of the wire with a robot adjacent to the connector, including the substeps of:
(1) acquiring the terminated wire with a tool on the robot;
(2) moving the robot to position the tool adjacent to the connector;
(3) identifying a predetermined, pin-receiving point on the connector with the robot; and
(4) positioning the pin end of the wire with the robot in alignment with the predetermined pin-receiving point;
(d) inserting the pin of the wire with the robot into the first predetermined pin-receiving point on the connector, including the substeps of:
(1) securing a first point of the wire with a first foot of the tool;
(2) sliding a second foot of the tool to a second point of the wire removed from the first point;
(3) securely holding the wire at the second point with the second foot;

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(4) moving the second foot from the second point to a point adjacent the first foot while allowing the wire to slide through the first foot to insert the wire into the connector;
(e) thereafter laying the wire with the robot into its particular position within the wire harness assembly; and
(f) releasing the wire from the robot.

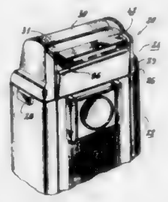
4,803,779
METHOD FOR MAKING A SCREW-ON ELECTRICAL CONNECTOR
William E. Blaha, Elgin, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.
Division of Ser. No. 874,072, Jun. 13, 1986, Pat. No. 4,707,567.
This application Aug. 21, 1987, Ser. No. 88,550
Int. Cl.[4] H01R *5/12*
U.S. Cl. 29—878 **5 Claims**



1. A method of making an electrical connector of the screw-on type which includes a shell of thermoplastic insulating material having a central bore closed at one end by an integral end wall and open at the other end for the reception of the stripped ends of two or more electric wires and a generally tapered wire coil of a size and shape to be disposed in the central bore and arranged to receive and to be turned down on the stripped ends of the wires by rotation of the shell relative to the wires, including the steps of disposing the shell and coil in aligned relation, the small end of the coil toward the open end of the bore of the cap, causing the coil and shell to be brought together with the coil in the bore of the shell, applying sufficient heat to the bore of the shell to soften it and cause it to flow into an adherent relation with outer portions of the coil, and discontinuing the heating step when sufficient interlock has been created between the exterior of the coil and the interior of the shell such that the thus created interlock will be sufficient to withstand the forces applied thereto when the connector is turned down on the stripped ends of a plurality of electric wires.

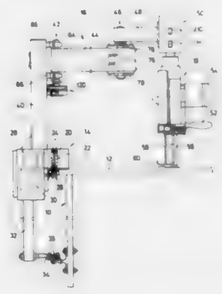
4,803,780
ELECTRIC DRY SHAVER HAVING AN IMPROVED TRIMMER ARRANGEMENT
David R. Locke, Bridgeport; Aivars Miska, Stratford, and Richard M. McCarthy, Bridgeport, all of Conn., assignors to Remington Products, Inc., Bridgeport, Conn.
Filed Sep. 17, 1986, Ser. No. 908,330
Int. Cl.[4] B26B *19/10*
U.S. Cl. 30—34.1 **10 Claims**

1. An improved electric dry shaver comprising:
a. A hand-held housing having an end thereof;
b. A cutter head including a hair pocket mounted at said end of said housing;
c. Said hair pocket including a short hair cutter member and a hair trimmer assembly;
d. Said hair pocket including an elongated recess integrally formed therein for receiving said trimmer assembly;
e. Said trimmer assembly positioned in said elongated recess;
f. Said hair trimmer assembly including:
(1) An elongated comb member having a generally U-shaped cross sectional configuration and an elongated edge segment having a plurality of teeth formed therein, said U-shaped cross sectional configuration defining an elongated comb channel;
(2) An elongated cutter member having a generally U-shaped cross sectional configuration and an elongated edge segment having a plurality of teeth formed therein, said U-shaped cross sectional configuration defining an elongated cutter channel;
(3) Said comb channel nested in said cutter channel along the length of said comb;
(4) Said comb and cutter teeth juxtapositioned for sliding engagement between surfaces thereof;



(5) A spring bias member for maintaining said comb and cutter teeth surfaces in sliding engagement;
(6) Means for mounting said comb and trimmer members to said hairpocket in said recess, said means comprising an elongated cover member extending substantially co-extensively in length with said comb member, said cover member including means for engaging said hair pocket for mounting said assembly to said hair pocket; and,
g. Means for imparting reciprocating motion of said trimmer cutter member.

4,803,781
CUTTING MACHINE FOR FLAT MATERIAL SUCH AS CLOTH, SHEET MATERIAL AND THE LIKE
Rolf Jung, Waiblingen, and Walter Schweitzer, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Krauss u. Reichert GmbH & Co. KG Spezialmaschinenfabrik, Feilbach, Fed. Rep. of Germany
Filed Jul. 23, 1982, Ser. No. 401,366
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1981, 3132127
Int. Cl.[4] B26B *7/00*
U.S. Cl. 30—275 **17 Claims**



1. A cutting machine for flat material such as cloth, sheet material and the like comprising a table for receiving the flat material to be cut, a carriage, means mounting said carriage for reciprocating movement along said table, a drive for moving said carriage, a cantilever, means mounting said cantilever for pivotal movement on said carriage with said cantilever extending above said table, said cantilever comprising an inner arm mounted on the carriage for pivotal movement about a vertical axis and an outer arm connected to the inner arm by a pivot having a vertical pivot axis, a cutting apparatus mounted on the outer arm for pivotal movement about a vertical axis, and means for switching the carriage drive on and off for controlling the direction of carriage travel, said switching means comprising a first automatic switching means for controlling the carriage drive for limiting the deviations of the angle formed by said inner and outer cantilever arms from an angle of 90°.

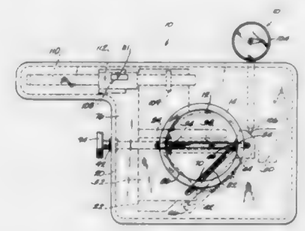
4,803,782
LETTER OPENER
Hin C. Lok, 10454 Neal Dr., Westminster, Calif. 92683
Filed Nov. 23, 1987, Ser. No. 124,267
Int. Cl.[4] B26B *29/00*
U.S. Cl. 30—294 **6 Claims**



6. An implement for opening envelopes comprising a body defining a cavity therewithin and forming a transverse channel of a predetermined width, a blade disposed within said cavity and having a cutting edge directed toward said transverse channel, means actuable externally of said body for effectuating relative movement between said blade and said body in longitudinal reciprocal fashion between a position in which said blade resides retracted within said cavity and a position in which said cutting edge of said blade projects longitudinally into said channel, and adjustable blade movement control means which limits the extent to which said cutting means projects into said channel to a predetermined distance which is less than the width of said channel and which is comprised of a dial eccentrically mounted upon said body, and said externally actuable means is mounted on said body for longitudinal reciprocal movement relative thereto, and said eccentrically mounted dial is located in the path of longitudinally reciprocal movement of said externally actuable means.

4,803,783
APPARATUS FOR GAUGING THE DIAMETER AND CONCENTRICITY OF A BORE
Mark D. Tiegs, Winona, Minn., and Edward C. Gamoke, Arcadia, Wis., assignors to Hein-Werner Corporation, Waukesha, Wis.
Filed Jun. 12, 1987, Ser. No. 62,460
Int. Cl.[4] G01B *5/08*
U.S. Cl. 33—178 R **41 Claims**

1. An apparatus for gauging the diameter and concentricity of a bore in a workpiece, the bore having an inner surface, said apparatus comprising
a base,
a first surface engaging member supported by said base for movement along an axis and relative to a reference point,
a second surface engaging member supported by said base for movement along said axis, said second surface engaging member and said reference point defining the diameter of a circle,
a third surface engaging member movably supported by said base and located on said circle,
said first, second, and third surface engaging members being adapted to be housed in the bore and to engage the inner surface of the bore,
means for selectively adjusting the position of said second surface engaging member relative to said reference point,
means for moving said third surface engaging member in response to movement of said second surface engaging member to maintain location of said third surface engaging member on said circle,
means for biasing said first surface engaging member away



from said second surface engaging member and against the inner surface of the bore,
means for indicating the diameter of said circle, said means for indicating the diameter of said circle including a member connected to said second surface engaging member, and means on said base for sensing the position of said member relative to said base, and
means for indicating movement of said surface engaging member from said reference point so that, when the workpiece is positioned with said surface engaging members engaging the inner surface of the bore, said indicating means indicates deviation of the diameter of the bore from said diameter and, when the workpiece is rotated about said surface engaging members, said indicating means gauges the concentricity of the bore.

4,803,784
PORTABLE STAND FOR A SURVEYOR'S ROD
Donald P. Miller, 9239 S. 19th Ave., Phoenix, Ariz. 85041
Filed Jun. 8, 1987, Ser. No. 59,568
Int. Cl.[4] G01C *15/06*
U.S. Cl. 33—293 **22 Claims**



1. A portable stand for a surveyor's rod, said stand comprising in combination:
(a) a base;

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(b) means for engaging the surveyor's rod, said engaging means including at least a partial spherical surface having an upper part and a lower part;
(c) means for attaching said engaging means to said base;
(d) said attaching means including a lower annular band having an upper and a lower edge for receiving said lower part of said spherical surface, an upper annular band having an upper and a lower edge for receiving and said upper part of said spherical surface and means for interconnecting said base with one of said lower annular band and said upper annular band; and
(e) said attaching means including means for frictionally restraining movement of said engaging means relative to said base, said restraining means including means for urging said upper annular band and said lower annular band toward one another, said urging means including means associated with said lower edge of said upper annular band and with said upper edge of said lower annular band for drawing said upper annular band and said lower annular band toward one another;

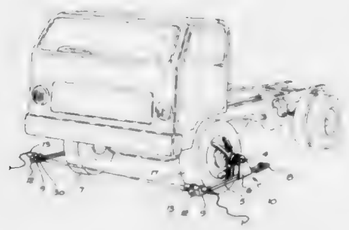
whereby, the surveyor's rod is maintained immobile relative to said stand.

4,803,785

WHEEL ALIGNMENT APPARATUS

Bruce J. Reilly, Narellan, Australia, assignor to Joyce Lynette Reilly, Narellan, Australia

Filed Jan. 7, 1987, Ser. No. 1,025
Claims priority, application Australia, Jan. 17, 1986, PH4245
Int. Cl.⁴ G01B 5/255
U.S. Cl. 33—288 **12 Claims**



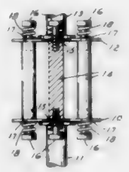
1. A wheel or axle alignment apparatus comprising:
a directionally adjustable mounting shaft adapted to be mounted parallel to the axis of rotation of a wheel of a vehicle;
hanger means adapted to hook over said directionally adjustable mounting shaft comprising a bottom, two spaced parallel side plates, at least one transverse separating member between said side plates for separating said side plates, identical recesses in each of said side plates adapted for receiving said directionally adjustable mounting shaft therein, a pair of contact points on each of said side plates within each recess thereof engageable with said directionally adjustable mounting shaft, and clamping means adapted to contact said directionally adjustable mounting shaft at right angles and to clamp said directionally adjustable mounting shaft in a triangulated manner between said clamping means and said pairs of contact points;
a transverse suspension member rigidly connected to said bottom of said hanger means and having ends thereon;
a non-adjustable mounting shaft at one end of said transverse suspension member; and
a light source retaining bracket comprising two spaced parallel side plates, at least one transverse separating member between said bracket side plates for separating said bracket side plates, identical recesses in each of said bracket side plates adapted for receiving said non-adjustable mounting shaft therein, a pair of contact points on each of said bracket side plates within each recess thereof engageable with said non-adjustable mounting shaft, and bracket clamping means adapted to contact said non-adjustable mounting shaft at right angles to clamp said non-adjustable mounting shaft in a triangulated manner between said clamping means on said bracket and said pairs of contact points on said bracket so that said bracket is at least partially rotatable on said non-adjustable mounting shaft, and a light source retaining means on said bracket so that a beam of light from a light source retained by said retaining means is projectable at approximately right angles with respect to said transverse suspension member.

4,803,786

PRECISION PARALLEL MECHANICAL FLOAT

Robert F. Cusack, Grosse Pointe Park, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Filed Dec. 15, 1986, Ser. No. 941,679
Int. Cl.⁴ G01B 5/25
U.S. Cl. 33—644 **6 Claims**



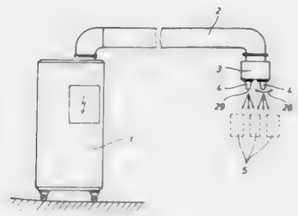
1. Precision parallel float mechanism comprising a base including three substantially equally spaced first registration surfaces in a fixed plane of reference, a relatively displaceable member having three directly opposed corresponding second registration surfaces, said directly opposed corresponding second registration surfaces being positioned in another plane of reference parallel to said fixed plane of reference whereby a pair of opposed registration surfaces are formed with each first registration surface and a respective directly opposed corresponding second registration surface, three rigid columns, each rigid column having a contact surface at each opposite end forming a pair of contact surfaces, each pair of contact surfaces engaging, respectively, a pair of said opposed registration surfaces, a plurality of yieldable preloaded resilient means, each preloaded resilient means being operably associated with a respective rigid column for establishing compressive engagement between respective registration surfaces and contact surfaces, said displaceable member being movable from a rest position to a non-rest position in response to a predetermined force, each contact surface having a periphery and a side edge about the entire periphery wherein the entire side edge contacts a respective registration surface when said displaceable member is at the rest position and a lesser portion of the side edge contacts a respective registration surface when said displaceable member is tilted to a non-rest position.

4,803,787

METHOD AND DEVICE FOR PREVENTING CONDENSATION ON COOLED TOOLS OF PLASTIC WORKING MACHINE

Emmo Amann, Hohenems, Austria, assignor to Gottfried Amann & Sohn Ges.m.b.H. & Co., Hohenems, Austria

PCT No. PCT/EP85/00403, § 371 Date Apr. 2, 1986, § 102(e) Date Apr. 2, 1986, PCT Pub. No. WO86/01144, PCT Pub. Date Feb. 27, 1986
PCT Filed Aug. 7, 1985, Ser. No. 889,931
Claims priority, application Austria, Aug. 7, 1984, 2561/84; Aug. 7, 1984, 2582/84
Int. Cl.⁴ F26B 21/08
U.S. Cl. 34—50 **5 Claims**



1. An apparatus for applying dry air for use on one or more tools which are heated by use, are cooled by internally circulating coolant during use, and can be run at varying operating speeds, comprising:
a transportable housing;
a pre-drier within said housing receiving ambient air through said housing;
an absorption-principle drier;
a first communication means between said pre-drier and said drier;
a fan disposed in said first communication means;
a blower box having one or more swivelling nozzles for directing dry air onto said tools;
a dry air duct running from said drier to said blower box;
control means for adjusting the temperature of said coolant and rate of operation of said tools; and
means for measuring the temperature and relative air humidity of said dry air directed onto said tools, said measuring means disposed at a point as close as possible to the surface of said tool used in production, said measuring means signaling said control means.

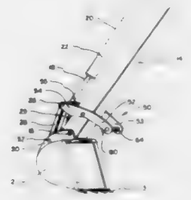
4,803,788

CLAMPING ATTACHMENT FOR BACKHOE

Randall D. Sorenson, Sandy, Utah, assignor to SoCo Manufacturing, Sandy, Utah

Filed Jan. 19, 1988, Ser. No. 145,820
Int. Cl.⁴ E02F 3/76
U.S. Cl. 37—117.5 **9 Claims**

1. A clamping apparatus for a hydraulically actuated digging apparatus, the digging apparatus including a dipper boom, a bucket pivotally mounted to the end of the dipper boom, a hydraulic actuator, and linkage for interconnecting the bucket to the hydraulic actuator to accommodate the hydraulic actuator moving the bucket pivotally about the end of the dipper boom, the linkage including a pair of link plates pivotally mounted at a first end to each side of the dipper boom with the hydraulic actuator pivotally mounted to a second end of the link plates, with struts pivotally mounted between the second end of the link plates and the bucket, the improvement comprising a cantilever means comprising lever arms as an extension of said link plates beyond said first end, the length of said lever arms being predetermined so as to cooperate with said bucket to create a clamping action between said bucket and said lever arms when said bucket is pivoted toward said lever arms the linkage pivoting lever arms toward the dipper boom when the bucket is pivoted toward the lever arms but at a slower angular rate so that the bucket engages the lever arms



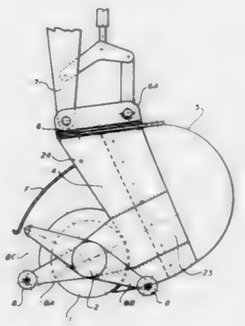
in a clamping action, the length of said lever arms being predetermined so that said lever arms are essentially retracted from said bucket when said bucket is pivoted away from said lever arms.

4,803,789

MILLING DEVICE

Alfred Hackmack, Am Deich 30, D-2095 Obermarschacht, Fed. Rep. of Germany

Filed Feb. 6, 1987, Ser. No. 11,733
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1986, 3603675
Int. Cl.⁴ E02F 3/28, 3/78
U.S. Cl. 37—117.5 **20 Claims**



1. Earth moving equipment for cutting into the earth, comprising:
a container having a forward opening;
a holder mounted in front of said opening about in the middle thereof; and
a milling device mounted on said holder for cutting into the earth and producing cuttings, said milling device being positioned in front of said container said cuttings being thrown into said container, said milling device further comprising:
right and left milling drums having respective axes subtending an obtuse angle with respect to each other, said milling drums each having a plurality of picks for cutting into the earth, said milling drums having a combined width exceeding that of said container so that said container can follow the milling device into locations cut out by said milling device, said milling drums being closely spaced to allow said picks to cut completely across said combined width without leaving an uncut region between said milling drums.

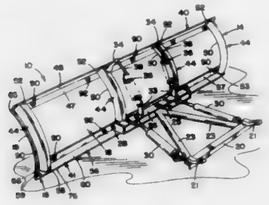
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4,803,790

PLASTIC MOLDBOARDS FOR SNOW PLOWS AND THE LIKE

James C. Cluis, Mentor, Ohio, assignor to The Louis Berkman Company, Cleveland, Ohio

Filed Mar. 28, 1988, Ser. No. 174,142
Int. Cl.[4] E01H *5/06*
U.S. Cl. 37—266 **24 Claims**



1. A plow of the type used to clear snow and debris from roadways and similar surfaces comprising:

a frame including a top and a bottom longitudinally extending mounting member approximately equal in length to the length of said plow, a plurality of vertically extending, transversely spaced brace members, each brace member fixed at one end to said top mounting member and at its opposite end to said bottom mounting member and each brace member further having an inwardly curved forward edge surface extending between said top and bottom mounting members and facing towards the front of said plow and a rearward surface, and means associated with said rear surface of at least one of the braces for lifting said plow;

an inwardly curved high density polyethylene moldboard having a low coefficient of friction approximately equal in length to said plow having a forward facing, inwardly curved snow removal surface at one side and a rearward facing, similarly inwardly curved surface on its opposite side;

fastening means for securing said moldboard in a flexed, prestressed manner to said top and bottom mounting members with a predetermined curvilinear shape which is inwardly curved such that said rearward surface of said moldboard is spaced away from said forward edge surface of said brace members a predetermined distance sufficient to prevent contact between said braces and said rear surface of said moldboard during normal plow operation while permitting brace contact during excessive debris impact.

4,803,791

DEVICE FOR EXHIBITING ADVERTISING

Giuseppe Dell'Acqua, Via Verga 12, 20010 Bareggio (Province of Milan), Italy

Filed Jun. 15, 1987, Ser. No. 61,742
Claims priority, application Italy, Jun. 19, 1986, 22308/86[U]
Int. Cl.[4] G09F *13/00*
U.S. Cl. 40—433 **20 Claims**

1. Device for exhibiting advertizing images of objects to be advertized continuously rotatable about axes arranged in a space, said device comprising:

a supporting framework,

at least one fixed element rigidly associated with said supporting framework,

at least one first image supported by said fixed element,

at least one support member rigidly associated with said framework,

at least one shaft rotatably connected to said support member and having a shaft axis,

at least one rotatable element rigidly associated with said shaft,

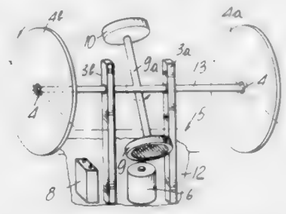
at least one second image supported by said rotatable element,

support means rigidly associated with said shaft, and,

counterweight means attached to said support means, said device further comprising electronic circuit means comprising;

first magnetic means rigidly associated with said supporting framework and having a first magnetic polarity,

second magnetic means rigidly associated with said support means and having a second magnetic polarity, said second magnetic polarity being identical to said first magnetic



polarity, said counterweight means being adapted for balancing said second magnetic means on said support means,

at least one battery powering at least one of said first magnetic means and said second magnetic means, said first magnetic means and said second magnetic means repelling each other upon said battery powering at least one of said first magnetic means and said second magnetic means thereby causing rotational movement of said rotatable element, said second image, said support means, said second magnetic means and said counterweight means with respect to said fixed element and said first image about said shaft axis.

4,803,792

FIREARM CLEANING DEVICE

Leland C. Brown, Jr., Pittsburgh; Neil A. Jones, Saegertown, both of Pa., and Ferris Pindell, Connersville, Ind., assignors to U.S. Products Co., Pittsburgh, Pa.

Filed Oct. 29, 1987, Ser. No. 114,060
Int. Cl.[4] F41C *31/00*
U.S. Cl. 42—95 **19 Claims**



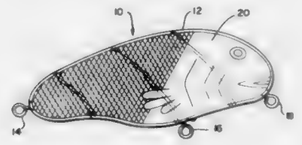
1. An improved cleaning rod device for entry into the bore of the barrel of a gun from its breech end which comprises, a longitudinally extending substantially rigid cleaning rod, a bore conditioning element adapted to be mounted on a front end of said rod for entry into the breech end of a gun bore, a substantially rigid longitudinally extending carrier sleeve adapted to relatively loosely slidably receive said rod for back and forth sliding movement therealong, a breech mounting front plug secured on a front end portion of said carrier sleeve and having a front end portion for entry into the gun barrel from its breech end and having a back end portion of enlarged diameter for abutment with the breech end of the gun barrel, said front end portion of said breech mounting front plug having a through-extending bore for slidably by-passing said rod therethrough, a rear positioning sleeve secured on a terminating back end portion of said carrier sleeve and having a back end mouth portion, a guide sleeve carried by the back end mouth portion of said positioning sleeve and having a relatively close sliding relation on said rod to guide said rod during its back and forth movement within said carrier sleeve, means cooperating with said carrier sleeve to positively retain said breech mounting plug in an abutting position with respect to the breech of a gun to be cleaned, and said rod being adapted to be moved back and forth along said breech mounting plug and said carrier sleeve and in a guided relation within said guide sleeve for cleaning a bore of the gun.

4,803,793

LIFE LIKE FISHING LURE

Fredrick Schellenberg, III, 836 Milford St., Clarksburg, W. Va. 26301

Filed Dec. 22, 1987, Ser. No. 136,720
Int. Cl.[4] A01K *85/01*
U.S. Cl. 43—42.33 **2 Claims**



1. A fishing lure for providing a life like simulation of live bait comprising:

A hollow transparent lure body formed in the shape of a bait fish;

first and second photographs of a live bait fish disposed within said lure body, said first photographs being visible from outside a first side of said lure body, and, said second photograph being visible from outside a second side of said lure body;

a noise making rattle disposed within a bottom portion of the lure body for attracting fish;

means to retain said photographs against an inner wall of said lure body, and to cause the sound of said noise making rattle to be projected downwardly from the bottom of said lure body, said means comprising a body of foam material which substantially fills the interior of said lure body; and,

means to enable the lure body to be easily visible to a fisherman, said means comprising a fluorescent or phosphorescent colored groove disposed along a center of a topside of said body.

4,803,794

FISHING ROD HOLDER FOR ATTACHMENT TO DOCKS

Xavier B. P. Lopez, 22980 NW. Dogwood, Orenco, Oreg. 97124

Filed Mar. 12, 1987, Ser. No. 24,972
Int. Cl.[4] A01K *97/10*
U.S. Cl. 43—21.2 **3 Claims**

1. A fishing rod holder in combination with a dock of a type having a plurality of spaced apart planks for providing a horizontal surface for people to walk upon; wherein said fishing rod holder consists of:

a base member, said base member being substantially wider than a predetermined distance between adjacent planks on an average dock, said base member being substantially flat on the bottom thereof;

holding means of a tubular shape integrally attached at a lower end to the top of said base member whereby said lower end is closed by said base member for holding the handle of a fishing rod;

a hole extending through said base member, said hole being spaced from said rod holding means;

an anchor bolt having a longitudinal axis and extending through said hole in said base member, said anchor bolt having a loop on the lower end thereof and threads on the upper end thereof, said loop having a horizontal length and a horizontal width, said horizontal width being narrow enough to permit said loop to pass between a space of said predetermined distance between adjacent planks on a dock in one orientation of said anchor bolt about said longitudinal axis with respect to said planks, said horizontal length of said anchor bolt being longer than a said predetermined distance between adjacent planks to prevent said anchor bolt from passing between said planks in a second orientation of said anchor bolt about said longitudinal axis; and,



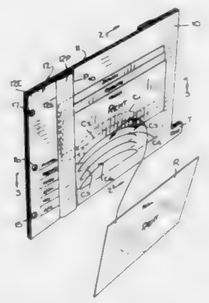
wing nut means for selectively threadably engaging the threads on the upper end of said anchor bolt whereby rotation of said wing nut means forces said loop toward said base member and rotation of said wing nut means in an opposite direction causes said loop to move away from said base member.

4,803,795

HOME ORGANIZER

Roger Questel, 136 E. 74th St., New York, N.Y. 10021, and Gene P. Seidman, 33 Riverside Dr., Apt. 9FA, New York, N.Y. 10023

Filed Aug. 12, 1987, Ser. No. 84,134
Int. Cl.[4] G09F *1/10*
U.S. Cl. 40—124.2 **7 Claims**



1. A home organizer having a full year capacity constituted by a single rectangular panel adapted to store the monthly receipts for telephone bills or other billed services for which paper receipts are provided to indicate payment; said panel comprising superposed front and rear plies of relatively stiff sheet material each having an end pocket and a transverse array adjacent the end pocket of six like crescents die cut in the ply to define elongated, concentric, arcuate slots therein; a face of the end pocket of the front ply being marked in registration

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with the slots with the names of the first six months of the year and a face of the end pocket of the rear ply being similarly marked with the names of the last six months whereby a receipt for a given month in the year can be stored in the slot assigned to that month by inserting the lower edge of the receipt in the slot with the leading end of the receipt being received in the related end pocket to securely hold the receipt in place, the end pocket in the front ply being in a position opposed to that of the rear ply end pocket, the receipt being readily removed by its trailing end from the organizer, said slots being equi-spaced and the receipts held therein are therefore in overlapping relation to facilitate removal thereof.

4,803,796
ANIMATED FIGURE
Dwight M. Ottinger, 1777 Wren, Corona, Calif. 91719
Filed Mar. 16, 1987, Ser. No. 26,061
Int. Cl.[4] G09F *19/08*
U.S. Cl. 40—414 **9 Claims**



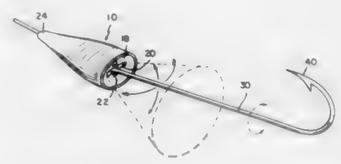
1. An animating mechanism for a figure in the form of a body having multiple movable appendages with paths of movement in diverse directions relative to the body and to each other, said mechanism comprising a frame having a base member with an appendage support section on said base member, a motor on the frame having a drive shaft, a rotating member non-rotatably mounted on and carried by the drive shaft, a pivot member eccentrically mounted on the rotating member at a first radial location on said rotating member, a first appendage means having a pivotal mounting on the support section, said first appendage means having an appendage carrying end on one side of the pivotal mounting, and a link connecting the other end of the first appendage means with the pivot member, a second appendage means comprising a rod rotatably mounted on the support section, said second appendage means having an appendage carrying end and a cam on the end remote from the appendage end, and an eccentric cam track on said rotating member at a second radial location on said rotating member operably receptive of the cam whereby to rotate said rod and the appendage carrying end of the rod.

4,803,797
COMPACT FISHING DEVICE
Reginald D. Barham, 12317 Almeda Rd., Houston, Tex. 77045
Filed Jul. 1, 1987, Ser. No. 69,014
Int. Cl.[4] A01K *87/00*
U.S. Cl. 43—18.1 **14 Claims**



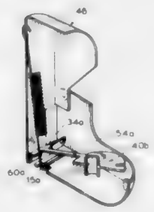
1. Apparatus adapted for use with a fishing line comprising:
a fishing device forming a first longitudinal axis and having a first end and a second end, said fishing device having a fixed spool aligned with the first longitudinal axis of the fishing device,
a first frustroconical surface positioned between said second end and said fixed spool to operably aid in releasing the fishing line,
a handle disposed at said first end, said spool disposed adjacent said handle to operably allow releasing or locking of the fishing line on said spool; and
a first member means extending coaxially outwardly from said fixed spool with means for providing unattended support of the fishing device.

4,803,798
FISHING AID
Dan L. Hannah, R.R. 1, Box 144A, Elnora, Ind. 47529
Filed Aug. 17, 1987, Ser. No. 86,070
Int. Cl.[4] A01K *83/00*
U.S. Cl. 43—43.13 **21 Claims**



17. The combination of a fishing sinker and a fishhook, the sinker comprising
a body having an oval cross section formed to include a line hole along an axis of the body to receive a fishing line coupled to the fishhook, the body being mirror symmetric about two orthogonal planes through the axis to orient the body in a predetermined position inside the fish's mouth when the fish strikes the body, and
means for securing the fishhook in a predetermined orientation with respect to the body so that when a fish strikes the body a main barb of the hook is directed toward either the upper or lower portion of the fish's mouth.

4,803,799
MOUSE AND RAT TRAP
Lubomir Vajs, and Helena Vajs, both of Toronto, Canada, assignors to H.L. International Marketing Corporation, Scarborough, Canada
Continuation-in-part of Ser. No. 838,325, Mar. 11, 1986, Pat. No. 4,665,644. This application Feb. 24, 1987, Ser. No. 17,597
Int. Cl.[4] A01M *23/26*
U.S. Cl. 43—82 **8 Claims**



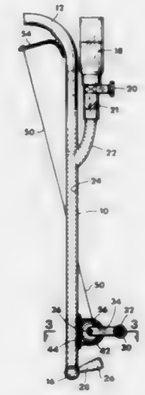
1. A trap of the type for killing mice or rats comprising a molded plastic base hingedly securing a striker at an elevated position adjacent an upper corner area of said base either side thereof, said striker being of a molded plastic and including journal means either side of said striker received in appropriately sized apertures in said base adjacent said upper corner areas, a helical extension spring secured at a forward portion of said striker and to said base at a position such that said forward portion, said journal means and said base portion are generally aligned when said striker is in a set position with said spring expanded for urging said striker to a non-operative position in engagement with a forward portion of said base, and actuator means hingedly secured to said base and movable to a position for maintaining said striker in said set position and when depressed moving to a non-maintaining position freeing said striker to move under the influence of said spring to said non-operative position and wherein said striker is movable past an aligned position such that said spring biases said striker away from said non-operative position and said actuator means maintaining said striker in said set position by providing a stop limiting movement of said striker and acting as a lever to urge, when depressed, said striker past the aligned configuration whereupon said spring causes said striker to move to the non-operative position.

4,803,800
SYNTHETIC SUBSTRATE FOR FILAMENTOUS FUNGI
C. Peter Romaine, Boalsburg, Pa.; Charles E. Nelsen, Davis, and Roxanne Davis, Sacramento, both of Calif., assignors to Plant Genetics, Inc., Davis, Calif.
Filed Mar. 27, 1987, Ser. No. 31,512
Int. Cl.[4] A01G *1/04*; C05G *1/00*
U.S. Cl. 47—1.1 **113 Claims**

1. A process for cultivating filamentous fungi comprising the steps of:
(a) providing a synthetic substrate for filamentous fungi, said substrate comprising:
a nutrient capable of sustaining growth of said filamentous fungi; and
a hydrated hydrogel matrix forming a capsule which includes said nutrient therein, said capsule being capable of supporting growth of said filamentous fungi on substantially its entire surface; and
(b) inoculating the external surface of said capsule with said filamentous fungi.

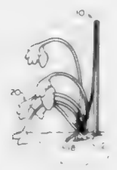
4,803,801
WEEDBEATER
Frederick S. Nelson, Jr., 10454 S. Jamestown, Tulsa, Okla. 74137
Filed May 21, 1987, Ser. No. 53,389
Int. Cl.[4] A01C *23/00*
U.S. Cl. 47—1.5 **5 Claims**

1. An apparatus to treat undesirable vegetation with a herbicide which comprises:
a first and a second wheel spaced apart and an axle supporting said spaced apart wheels;
a frame supported from said axle;
a supply sponge pad supported from said frame and extending between said wheels;
a reel supported by said frame, each said reel having a plurality of arms circumferentially spaced about said reel, each arm is parallel to said axle, each said arm having an arm sponge mounted thereon for retaining said herbicide, said arms being positioned with respect to said sponge pad so



that rotation of said reel causes said arm sponges to intermittently contact said supply sponge pad.

4,803,802
PLANT STAKE
William P. Strumbos, 85 Middleville Rd., Northport, N.Y. 11768
Filed Aug. 6, 1984, Ser. No. 637,966
Int. Cl.[4] A01G *17/14*
U.S. Cl. 47—47 **11 Claims**



1. A plant stake comprising: an elongated rigid stem having a first end and a second end distal therefrom, and at least a single flexible elongated plant tie removably fixed lengthwise along the length of said stem, whereby at least a predetermined length of said tie can be separated from said stem for use when an end of said stake is inserted into the ground adjacent a plant to secure said plant to said stem such that said plant is supported thereby.

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4,803,803

GROWING MEDIUM FOR PLANTS

Frank W. Moffet, Jr., 944 Allens Creek Rd., Rochester, N.Y. 14618

Filed Apr. 24, 1986, Ser. No. 855,757
Int. Cl.[4] A01G *31/00*
U.S. Cl. 47—59 **2 Claims**

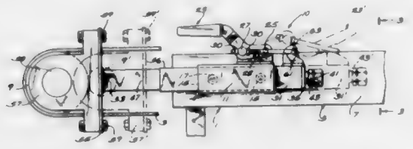
1. The method of making a plant growth media which comprises mixing mineral wool fiber with expanded vermiculite particles and powdered phenol-formaldehyde resin having an acid pH, said mixing being continued until the mineral wool forms tufts of about 1" in diameter and thereafter subjecting the mixture to a hammer mill until the tufts are reduced in size to about ¼"–½" in diameter.

4,803,804

TELESCOPIC BELT TIGHTENER

Charles B. Bryant, 32380 Wildwood Pt. Rd., Hartland, Wis. 53029

Filed Sep. 14, 1987, Ser. No. 95,772
Int. Cl.[4] F16H *7/10*
U.S. Cl. 474—113 **14 Claims**



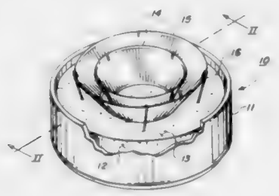
1. A telescopic belt tensioner comprising:
a. a hollow housing;
b. an outer tube slidably received within the housing and having first and second ends;
c. an inner tube having first and second ends and slidably received within the outer tube;
d. means connected to the inner tube second end for supporting a belt roller;
e. means connected to the outer tube and inner tube first ends for telescopically adjusting the positioning of the inner tube with respect to the outer tube; and
f. quick release means for telescopically reciprocating the outer tube and inner tube in unison with respect to the housing.

4,803,805

FLOWER ARRANGING DEVICE

Harold Goldberg, 4507 Ellenita Ave., Tarzana, Calif. 91356

Filed Jul. 24, 1987, Ser. No. 77,192
Int. Cl.[4] A01G *5/00;* **A47G** *7/07*
U.S. Cl. 47—41.12 **11 Claims**



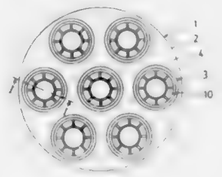
1. A flower arranging device comprising a housing; a floral foam base disposed within said housing and having an upper surface; a plurality of truncated cone members extending above said upper surface each cone member spaced in concentric relationship to an adjacent cone member, each such cone member having a lateral surface for supporting a plurality of flowers leaned thereagainst and engaging said upper surface of said foam base to define a different discrete angle therewith, and a plurality of pin members operatively associated with each of said cone members in spaced relationship to each other to secure said cone members to said foam base.

4,803,806

MATERIAL FOR MULTI-LEVEL FLOWER BEDS

Takami Ito, 20, B–40, 1-chome, Minamikasugaoka, Ibaragi-shi, Osaka, fu, Japan

Filed Sep. 21, 1987, Ser. No. 99,254
Claims priority, application Japan, Sep. 30, 1986, 61-151395[U]
Int. Cl.[4] A47G *7/00;* **A01G** *9/02*
U.S. Cl. 47—39 **12 Claims**



1. A base assembly for constructing a three-dimensional flower bed comprising:
a base frame including a base plate, said base plate being formed in a desired shape and having a plurality of through mounting openings formed at desired positions; and
a plurality of plant holders which are individually received in a respective one of said mounting openings, each said plant holder including a side wall provided with irrigation openings, an open top, an outwardly projecting flange around the periphery of said top which prevents said plant holder from passing through a respective said mounting opening, and a plurality of projections located at spaced locations around said said wall and spaced from said flange such that each said plant holder is removably and positively engaged in a respective said mounting opening by said projections on one side of said base plate and said flange on the other side of said base plate.

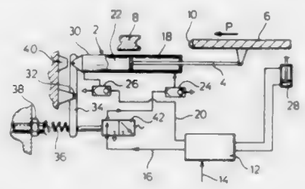
4,803,807

SAFETY DEVICE FOR A DOOR SYSTEM

Horst Stockermann, Sauerlach; Herman Bohm, Augsburg; Josef Grober, Munich, and Wolfgang David, Donauworth, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 10, 1987, Ser. No. 72,020
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1986, 3624823
Int. Cl.[4] E05F *15/02*
U.S. Cl. 49—26 **9 Claims**

1. A safety device for a door system, in particular for an automatic sliding door of a vehicle, having a pressure medium-operated servomotor for providing an opening force and a closing force to the door panel, and further including a door control with an operating pressure supply line associated with the pressure side of the servomotor acting in a closing direction of the door panel, and further comprising, in order to limit the closing force for the door panel, closing force sensor means for resiliently sensing the drive force of the servomotor during the closing process, and control valve means coupled to the means and moving therewith for automatically venting unthrottled the closing pressure side of the servomotor above a given response value of the closing force sensor means.

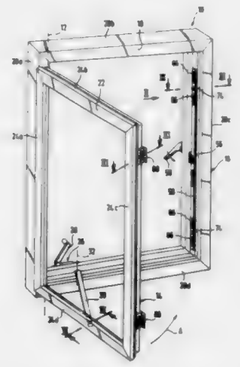


4,803,808

WINDOW INCLUDING A CASEMENT FRAME PIVOTED TO A STATIONARY FRAME AND A LOCKING DEVICE FOR THE CASEMENT FRAME MOUNTED ON THE STATIONARY FRAME

Paul Greiner, Telgte, Fed. Rep. of Germany, assignor to Aug. Winkhaus GmbH & Co. KG, Fed. Rep. of Germany

Filed Jun. 8, 1987, Ser. No. 58,992
Int. Cl.[4] E05C *9/02*
U.S. Cl. 49—394 **12 Claims**



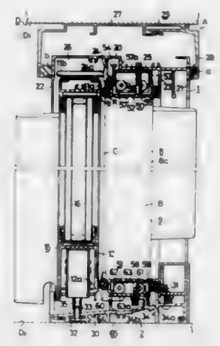
1. A window comprising a casement frame pivoted to a stationary frame, said stationary frame consisting of stationary frame members which extend along a rectangle defining a frame plane, with a frame exterior parallel to the plane of the stationary frame and a frame interior lying opposite to the frame exterior, said casement frame consisting of a casement frame members which extend along a rectangle defining a casement plane, with a casement exterior parallel to the casement plane and with a casement interior lying opposite to the casement exterior;
said window further comprising pivot bearing means which pivotably connect a first stationary frame member of the stationary frame with a first casement frame member, said first casement frame member being parallel to said first stationary frame member, for the pivoting movement of the casement frame in relation to the stationary frame between a closed position and an open position of the casement frame about a pivot axis, parallel to the first stationary frame member, in the region of the frame outer face of the stationary frame, where, in the closed position of the casement frame, the frame exterior has the same orientation as the casement exterior and where the opening movement of the casement frame takes place from the closed position into the open position in the direction from the frame interior to the frame exterior;
a device for the movement of the casement frame between the closed position and the open position;
drive rod means which are fitted on a second stationary frame member lying opposite to the first stationary frame member, for movement along the second stationary frame member;
an operating handle on the second stationary frame member, on the frame interior, said handle being coupled with the drive rod means for the movement of the drive rod means between a release position and a locking position;
at least one locking element fitted on the drive rod means; and
at least one locking plate, which is fitted on a second casement frame member of the casement frame lying opposite to the first casement frame member and upon which said at least one locking element acts, wherein the locking plate is formed with a locking protuberance protruding over the casement interior, which, in the closed position of the casement frame, engages in a groove of the second stationary frame member, with, at most, a slight spacing between a locking protuberance side face substantially perpendicular to the casement plane and substantially parallel to the second casement frame member and a side face of the groove and with a blocking face, extending substantially perpendicularly of the side face, on a side of the locking protuberance lying opposite to the side face, with which blocking face the locking element engages in the closed position of the casement frame and, at the same time, in the locking position of the drive rod means.

4,803,809

SINGLE SLIDING SASH WINDOW

Masami Takemura, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 24, 1987, Ser. No. 137,730
Claims priority, application Japan, Dec. 25, 1986, 61-196218[U]
Int. Cl.[4] E05D *15/06;* **E06B** *1/04*
U.S. Cl. 49—404 **5 Claims**

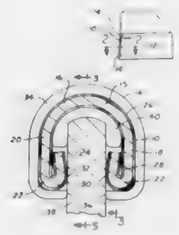


1. An improved single sliding sash window for buildings of the type including a fixed sash immovably mounted within a window frame adjacent to one jamb thereof and disposed on an interior side of the window frame, and a movable sash horizontally slidably mounted within the window frame on an exterior side thereof, wherein the improvement comprises:
(a) a generally inverted L-shaped mounting flange formed integrally with and extending longitudinally of a sill of the window frame, said mounting flange being disposed on the interior side of said window frame and including a vertical wing projecting from said sill and a horizontal

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wing extending from an upper end of the horizontal wing and supporting thereon a bottom rail of the fixed sash;
(b) means defining a guide groove extending longitudinally in said one jamb of the window frame and sealingly receiving therein an abutment stile of the fixed sash;
(c) an upper attachment member extending between the opposite jamb of the window frame and a meeting stile of the fixed sash and secured by thread fasteners to a head of the window frame; and
(d) a lower attachment member extending between said opposite jamb and said meeting stile and secured by thread fasteners to said horizontal wing of said mounting flange.

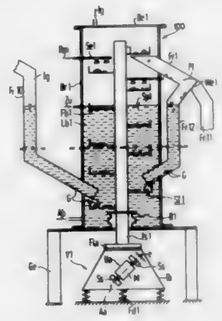
4,803,810
END CAP FOR DOOR EDGE GUARD
Robert Adell, Sunnyvale, Tex., assignor to U.S. Products Development Company, Sunnyvale, Tex.
Filed Nov. 10, 1987, Ser. No. 118,989
Int. Cl.[4] E05F *7/00*
U.S. Cl. 49—462 **6 Claims**



1. In combination with the trailing edge of a swinging closure, such as an automobile door, onto which is fitted an elongate ornamental and protective metallic edge guard having a transverse cross section comprising a curved base from which extend inner and outer legs that apply self-retention forces to opposite sides of said trailing edge, said edge guard being cut off at the lengthwise ends thereof so that the metal at the points of cutting is exposed, at least one end cap fitted onto at least one of said cut-off ends of the elongate edge guard, said end cap comprising an exterior wall of transverse cross section fitting closely onto the exterior of the cross section of the edge guard in covering relation to the base and the legs of the edge guard, an interior wall of transverse cross section that fits closely in covering relation onto the interior of the cross section of the edge guard in covering relation to at least the interior of the edge guard base but leaving distal ends of the edge guard's legs uncovered by said interior wall so that the self-retention force of the legs on the edge is unencumbered by the end cap at the cut-off end of the edge guard onto which the end cap is disposed, and an end wall joining the interior and exterior walls of the end cap in covering relation to the cut-off end of the edge guard onto which the end cap is disposed.

4,803,811
LAPPING DEVICE FOR SURFACE ENHANCEMENT OF BULK MATERIAL
Siegfried Birkle, D8552 Hoechstadt/Aisch, and Johann Gehring, D8521 Spardorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jun. 30, 1986, Ser. No. 880,078
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1985, 3524476
Int. Cl.[4] B24B *31/073*
U.S. Cl. 51—7 **35 Claims**

1. A lapping device for surface enhancement of bulk goods as a pretreatment for the electrodeposition of aluminum from an aprotic, oxygen-free and water-free, aluminum-organic electrolyte, said device comprising: a stationary, closable gas-tight treatment chamber, means for charging the treatment chamber with an inert gas, a lapping abrasive bath being contained in the treatment chamber, at least one vibratory conveyor having a conveyor track being arranged in the treatment chamber to carry said goods through said bath, means for



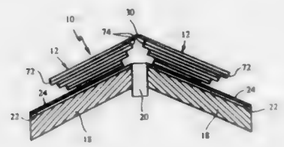
vibrating said conveyor track relative to said chamber, means for feeding said goods into and out of said chamber without loss of said inert gas to permit continuous treatment of said goods, and the lapping abrasive bath in the treatment chamber providing lapping of the goods as they are transported by the vibratory conveyor passing through the bath.

4,803,812
POST GROUND ANCHOR AND METHOD
Walter A. Alexander, Sr., Marietta, Ga., assignor to VSAR Systems of Atlanta, Inc., Marietta, Ga.
Filed Nov. 23, 1987, Ser. No. 123,709
Int. Cl.[4] E02D *5/80*
U.S. Cl. 52—157 **13 Claims**



1. A ground anchor for anchoring a post comprising an elongated prop adapted to be driven by rotary drive means and to which an end of the post may be telescopically mounted, a spike rigidly mounted to and extending from an end of said prop that bears a shoulder of a width greater than the width of said spike, a bit mounted adjacent an end of said spike located distally from said prop, and a platform configured to be mounted about said spike in abutment with said post shoulder.

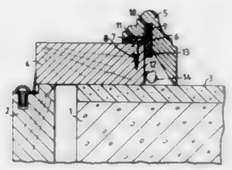
4,803,813
FOLDABLE CORRUGATED PLASTIC ROOF VENTILATOR
Michael Fiterman, Minnetonka, Minn., assignor to Liberty Diversified Industries, New Hope, Minn.
Filed Aug. 1, 1988, Ser. No. 227,080
Int. Cl.[4] L04H *12/28*
U.S. Cl. 52—199 **20 Claims**



1. A ventilator cover for disposing over an open cutout in a peak of a roof and permitting ventilation thereto from an exterior region surrounding said ventilator cover, said ventilator cover comprising:
a blank cut and scored from a double-faced corrugated sheet material, said blank having a length and a width, said double-faced corrugated sheet material having a pair of generally planar spaced-apart plies and an intermediate corrugated ply extending between and connected to each of said planar plies to form a single layer of a multiplicity of partially enclosed channels extending across the width of said blank and defining a grain, said blank being divided into a plurality of generally parallel hingedly interconnected panels by a plurality of lengthwise score lines extending through at least one of the planar plies at a generally perpendicular angle relative to said grain, each panel having a pair of opposing planar surfaces and a pair of opposing side edges and a multiplicity of partially enclosed air passages extending between said opposing side edges, such that the panels of the blank may be folded across the score lines into a ventilating configuration with at least one of the planar surfaces of each of the panels being in close confronting contact with at least one of the planar surfaces of an adjoining one of the panels to form a pair of ventilator sections, said ventilator sections being hingedly connected, whereby the ventilator cover may be disposed over the open cutout of the peak of the roof with each one of the ventilator sections positioned generally parallel to and on opposing sides of the peak of the roof and fastened thereto, such that the channels permit ventilation between the open cutout in the peak of the roof and the exterior region surrounding the ventilator cover.

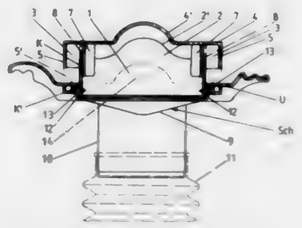
4,803,815
ENCLOSURE FRAME FOR FACING A WALL OPENING
August Bürgers, Erkelenz-Gerderath, Fed. Rep. of Germany, assignor to Europatest S.A., Luxembourg
Filed Apr. 29, 1988, Ser. No. 188,289
Claims priority, application Fed. Rep. of Germany, May 5, 1987, 8706403[U]
Int. Cl.[4] E06B *1/04*
U.S. Cl. 52—210 **3 Claims**

1. An enclosure frame for covering or facing a wall opening for a door, window, or the like, said frame comprising:
a liner that is disposed in said wall opening and has an edge;
at least one casing that is disposed on said edge of said liner, extends at right angles to the latter, and is also disposed on a surface of a wall, with said casing having a wide side that is remote from and parallel to said wall surface, and with said casing also having a side face that extends perpendicular to said wide side and to said wall surface and is disposed on an end of said casing that is remote from said liner;
a retaining strip that is disposed on that end of said casing that is remote from said liner, with said retaining strip having a mounting leg that rests on said wide side of said casing and is secured thereto, and with said retaining strip also having an insertion leg that is connected to said mounting leg and extends from said casing at right angles to said wide side thereof; and
an edge strip that is disposed on said end of said casing that is remote from said liner, with said edge strip having a first portion that is disposed on said wide side of said casing,



and a second portion that extends to said wall surface in the vicinity of said side face of said casing; said edge strip has an inner side that faces said wall surface and is provided with a longitudinally extending, slot-like recess into which said insertion leg of said retaining strip can be introduced in a self-clamping manner; said edge strip is furthermore provided with a channel for receiving said mounting leg of said retaining strip and for covering said mounting leg from sight.

4,803,816
ROOFING SLAB
Johannes Klöber, Ennepetal, Fed. Rep. of Germany, assignor to Hans Klöber KG, Ennepetal, Fed. Rep. of Germany
Filed Sep. 4, 1987, Ser. No. 93,805
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1986, 8626769
Int. Cl.[4] E04D *13/14*
U.S. Cl. 52—219 **7 Claims**



1. In a roofing slab with vent opening which is arranged in a central region thereof and is limited by a peripheral edge collar and over which a cover extends in hood-like manner and with which opening there is coordinated a hose connection pipe directed towards a bottom side of the roofing slab, the improvement wherein
the edge collar projects beyond the bottom side of the roofing slab and extends into a dish having a bottom, and
said hose connecting pipe is in sealing fluid communication with the bottom of said dish.

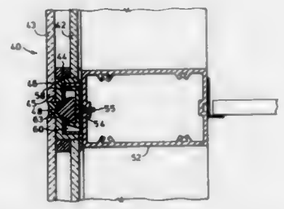
VOL 1099 ISS 2 FE 14 1989 UMI

4,803,817

GLAZING ASSEMBLY AND METHOD FOR GLAZING A BUILDING

Harold J. White; Richard M. House, both of Thornhill, and Worsel Vaughn, Mississauga, all of Canada, assignors to Thornhill Glass & Mirror Inc., Concord, Canada

Filed Apr. 24, 1987, Ser. No. 43,254
Int. Cl.⁴ E04B *2/88*
U.S. Cl. 52—235 **9 Claims**



1. A glazing assembly for a building, comprising:

a glazing structure having rigid channel forming members bonded about the periphery of a sheet of glazing material, the channel forming members having channels which open to the periphery of the structure; and

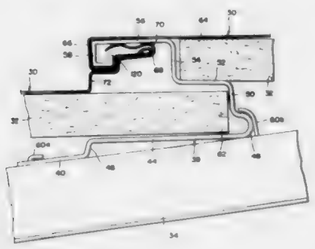
pressure plates insertable into the channels, each pressure plate being engageable with a channel forming member of an adjacent glazing structure, the plates being mechanically fastenable directly to structural members of the building, thereby enabling each glazing structure to be positioned on and affixed to the building, said pressure plates each being of a width enabling the maximum simultaneous occupancy of about two thirds of the depth of each channel which allows each glazing structure to be adjustably positioned on the building.

4,803,818

ROOF STRUCTURE AND FIXTURE THEREFOR

Motokatsu Funaki, 430 Shimotsuchidana, Fujisawa-shi, Kanagawa-ken, Japan

Filed Sep. 23, 1986, Ser. No. 910,576
Claims priority, application Japan, Sep. 26, 1985, 60-210958; Sep. 26, 1985, 60-210959; Dec. 16, 1985, 60-280999
Int. Cl.⁴ E04D *1/28, 1/34*
U.S. Cl. 52—520 **7 Claims**



1. A roof structure for a roof extending at a downward incline from a ridge to an eave comprising:

a plurality of roof boards connected to one another in adjacent side-by-side relation between the ridge and the eave and mounted on a roof support means, said roof boards each comprising a flat surface section, a ridge side connection portion formed at the side of said flat surface section facing the ridge and an eaves side connection portion formed at the side of said flat surface section facing the eave, each two adjacent roof boards of said roof boards including an upper roof board closest to the ridge and a lower roof board closest to the eave; and

a fixture disposed in the region in which the ridge side connection portion and eaves side connection portion of each two adjacent roof boards are adjacent, said fixture being fixed to the roof support means at a position beyond the side facing the eave of the upper roof board of each two adjacent roof boards;

said ridge side connection portion and said eaves side connection portion of said adjacent roof boards and said fixture being adapted to permit the connection between each two adjacent roof boards and said fixture so that the eaves side connection portion of the upper roof board, the ridge side connection portion of the lower roof board and the fixture are coupled to aid in the support and positioning of the upper and lower roof boards; a backing member arranged under each of said roof boards, wherein said fixture is formed into a substantially C-shape so as to have a base section mounted on said roof support means, a first support section extending substantially in the direction of the ridge from said base section through a step formed between said base section and said first support section and adapted to support the ridge side end portion of the backing member under the lower roof board of each two adjacent roof boards, an outward projection section formed at a distal end of said first support section and engaged with a pawl supported on said roof support means, a first stopper section extending from said projection section substantially in a direction away from said roof support means and adapted to be at the ridge side end of said backing member under said lower roof board to limit the displacement of the backing member under the lower roof board of each two adjacent roof boards by engagement by the lower roof board, a second support section extending substantially in the direction of said eave from a distal end of said first stopper section and adapted to support the side facing the eave of the backing member below the upper roof board of said adjacent two roof boards, a second stopper section extending substantially in a direction away from said second support section and adapted to limit the displacement of the backing member under the upper roof board by engagement by the side facing the eave of the backing member under the upper roof board, a third support section extending substantially in the direction of the eave from said second stopper section and adapted to support a portion of the flat surface section adjacent the eave side connection portion of said upper roof board, and a bent end section extending substantially toward said roof support means from said third support section for receiving said ridge side connection portion of said lower roof board.

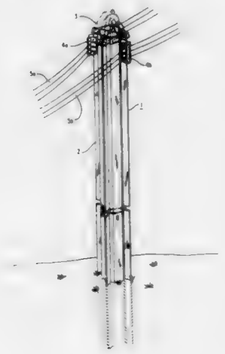
4,803,819

UTILITY POLE AND ATTACHMENTS FORMED BY PULTRUSION OF DIELECTRIC INSULATING PLASTIC, SUCH AS GLASS FIBER REINFORCED RESIN

Frank Kelsey, 1002 Mauna Loa Dr., Forked River, N.J. 08731

Filed Nov. 3, 1986, Ser. No. 925,976
Int. Cl.⁴ E04C *3/30*
U.S. Cl. 52—309.1 **20 Claims**

1. Supporting means for an electrical current delivery system which comprises a hollow utility pole of thermoset fiber-reinforced resin, of substantially uniform overall cross-sectional dimension throughout its length, integrally-formed by the process of pultrusion, and including integrally-formed internal supporting means comprising inwardly-projecting ribs



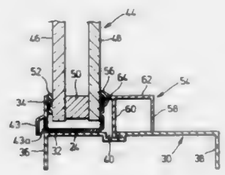
and projections from the outer surface for accommodating utility wire supports.

4,803,820

TAPE FOR SEALING GLAZING UNIT

Stanley G. Metrick, Don Mills, Canada, assignor to AFG Glass Inc., Willowdale, Canada

Filed Mar. 21, 1988, Ser. No. 171,445
Int. Cl.⁴ E04B *1/62*
U.S. Cl. 52—397 **4 Claims**



1. In combination:

a glazing unit which includes parallel outer and inner panes, and an intermediate spacing means between the outer and inner panes, the unit having rectilinear edges,

a frame member which includes a first flat portion perpendicular to the planes of the panes and running parallel to one of said edges, and a second flat portion that is perpendicular to said first flat portion and in a plane parallel to the planes of the panes.

a seal member between the second flat portion and one of the panes,

and a piece of sealing tape impervious to air and water disposed in sealing relation with respect to the glazing unit, the tape having parallel side edges and being divided intermediately into a first portion adjacent one edge and a second portion adjacent the other edge, the first tape portion having adhesive on one surface of the tape and the second tape portion having adhesive on the other surface of the tape, said first tape portion being adhered to said first flat portion of the frame member adjacent the glazing unit, with the adhesive surface away from the glazing unit, said second tape portion extending substantially at right angles with respect to the first tape portion and being adhered to one pane of the glazing unit,

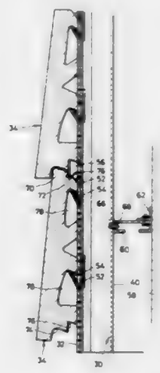
and means for clamping the glazing unit against said seal member.

4,803,821

TILED WALL STRUCTURE

Motokatsu Funaki, 430 Shimotsuchidana, Fujisawa-shi, Kanagawa-ken, Japan

Filed Jan. 29, 1988, Ser. No. 150,175
Claims priority, application Japan, Mar. 5, 1987, 62-48862
Int. Cl.⁴ E04F *13/08*
U.S. Cl. 52—387 **19 Claims**



1. A tiled wall structure comprising:

a mounting plate including a plurality of mounting surface sections extending in parallel to each other and a reinforcing groove defined between each two said mounting surface sections adjacent to each other;

at least one holding plate fixedly mounted on said mounting plate and provided on an outer surface thereof with tile block holding means; and

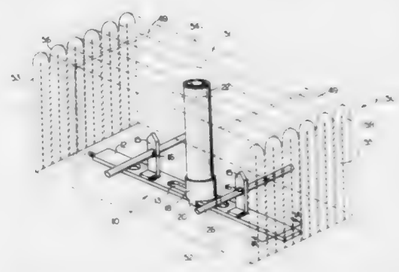
at least one tile block held on said outer surface of said holding plate, said tile blocks being formed on at least an inner surface thereof with at least one recess in which said tile block holding means of said holding plate is securely fitted to cause said tile block to be held on said holding plate therethrough.

4,803,822

MODULAR FURNACE LINING AND HARDWARE SYSTEM THEREFOR

Gary W. Deres, Tonawanda, N.Y., assignor to Stemcor Corporation, Cleveland, Ohio

Filed Jan. 30, 1987, Ser. No. 8,892
Int. Cl.⁴ F23M *5/00;* **E04B** *1/62, 1/80*
U.S. Cl. 52—506 **25 Claims**



1. Attachment hardware for mounting an insulation module on a surface, said module including a hot face for presentation

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to the interior of a furnace and a cold face for presentation to an inside surface of a furnace, the hot face and cold face defining between them a module thickness, a pair of side faces which between them define a module length and a top face and a bottom face which between them define a module width, said hardware comprising:

a base bar for extending along some portion of the module length and width, said base bar including a slot formed therein extending in the direction of the length of the base bar;

at least one tine having opposed ends, said tine depending from the base bar toward the hot face, said tine having an aperture therein adjacent its end distal from the base bar;

a collar of tubular configuration depending from the base bar toward the hot face, said collar including a pair of diametrically opposed flanges which retain the collar in sliding engagement with the base bar;

an extension tube having an outside diameter complementary to the inside diameter of the collar, the tube being fitted into the collar and projecting generally perpendicularly from the base bar toward the hot face; and

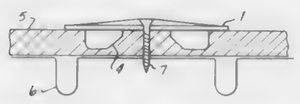
support rod means received in said aperture of said tine, for extending longitudinally through at least some portion of the length of the module.

4,803,823

RIGID INSULATION CORNER FASTENER

John F. Stenson, 34144 Alta Loma Dr., Farmington, Mich. 48024

Filed Apr. 28, 1987, Ser. No. 43,490
Int. Cl.[4] E04B *1/38*
U.S. Cl. 52—506 **10 Claims**



1. A fastener for use in a roof assembly having a substrate and rigid insulation panels disposed side-by-side over the substrate with opposing side and end edges of adjacent panels facing one another to form intersecting joints, the fastener comprising:

a one-piece plate means having a central aperture with a longitudinal axis and a generally flat planar surface engageable with outer faces of adjacent rigid insulation panels when disposed over one of said intersecting joints for securing said panels against wind lift-off by compressively engaging said rigid insulation panels between the planar surface of the plate means and said substrate when the plate means is anchored to said substrate through the central aperture; and

projection means extending perpendicularly outwardly from the planar surface of the plate means toward said substrate for securing said rigid insulation panels against lateral movement by inserting the projection means between opposing side and end edges of adjacent panels at intersecting corner joints.

4,803,824

TRUSS STRUCTURE AND METHOD AND APPARATUS FOR CONSTRUCTION THEREOF

Anthony P. Coppa, Merion, Pa., assignor to General Electric Company, Valley Forge, Pa.

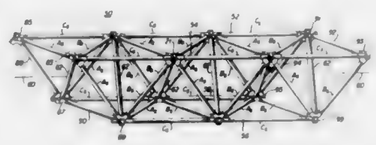
Filed Dec. 12, 1985, Ser. No. 808,602
Int. Cl.[4] E04H *12/00*
U.S. Cl. 52—648 **16 Claims**

1. An elongate prism-form truss structure comprising a plurality of planar, congruent, triangular frame elements, said structure being defined by four longitudinal edges parallel to a central longitudinal axis and having a right cross section in the form of a square;

each of said frame elements having A-, B- and C-sides located opposite A-, B- and C- vertices respectively and having dimensions defined by:

$$\cos\alpha = NC/4B$$

where



α = included angle at A-vertex of $<90°$,
B = length of B-side,
C = length of C-side, and
N = integer >1;

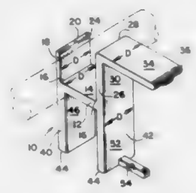
said elements being joined at their vertices and being arranged such that said longitudinal edges are formed substantially only of said C-sides.

4,803,825

BEAM CHAIR

Charles F. Wheeler, 6141 NW. 34th Way, Fort Lauderdale, Fla. 33309-2221

Filed Nov. 30, 1987, Ser. No. 126,613
Int. Cl.[4] E04C *5/16*
U.S. Cl. 52—677 **14 Claims**



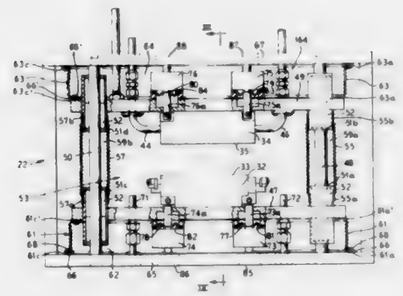
1. A beam chair for supporting, locating and restraining a reinforcing bar in a structural member formed by placing concrete in a form defined by a bottom and sides comprising a horizontal support member having a horizontal support surface and a pair of side edges, a first generally vertical support member extending upwardly from one of said side edges, a second generally vertical support member extending upwardly from the other of said side edges, said second vertical support member having an inner surface, said horizontal support member and said first and second vertical support members together forming an open cavity for receiving said reinforcing bar, an upper side extension extending outwardly from said second vertical support member in a direction away from said horizontal support member, said upper side extension having an outer side edge adapted to abut said sides of said form, a first depending member extending downwardly from said first vertical support member, a second depending member extending downwardly from said second vertical support member, said first and second depending members terminating in a lower edge, a lower side extension extending outwardly from said second depending member in a direction away from said horizontal support member, said upper and lower side extensions being parallel to each other, said lower edges of said first and second depending members and said lower side extension being adapted to rest against said bottom of said form, the horizontal distance from said outer edge of said upper side extension to said inner surface of said second vertical support member being such that said reinforcing bar is adapted to be maintained at least 1½ inches inside said sides of said form, and the vertical distance from said lower edges of said depending members to said horizontal support surface being such that said reinforcing bar is adapted to be maintained at least 1½ inches above said bottom of said form for a beam and at least ¾ of an inch above said bottom of said form for a slab.

4,803,827

MEANS FOR SEGREGATING STERILE AND NONSTERILE ENVIRONMENTS IN A PACKAGING MACHINE

John L. Posey, McHenry; Ronald W. Swank, Crystal Lake, and Frederic L. Grude, Ringwood, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Nov. 17, 1987, Ser. No. 121,488
Int. Cl.[4] B65R *9/06;* **B65B** *55/04*
U.S. Cl. 53—167 **23 Claims**



1. A packaging machine comprising:

a sterile area through which a web of flexible film is fed;

a nonsterile area;

a plurality of pleated, flexible rubber members for segregating the sterile areas from the nonsterile areas;

means for venting the pleated, flexible rubber members to prevent a build-up of pressure, the means for venting being so constructed and arranged that the nonsterile area is vented without contaminating the sterile area; and sealing means for heat sealing a web or film, the sealing means including a sealing member and means for urging the sealing bar against the web of film, the packaging machine including means for circulating air through portions of the sealing means to cool same, at least one of the rubber members cooperating with the means for circulating to allow air to circulate and cool the portion of the sealing means while preventing contamination of the sterile areas.

4,803,828

FIXTURE FOR PGA CARRIERS

H. Wayne Tan; Dunh C. Tran, and Walter McGreevy, all of San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 30, 1987, Ser. No. 79,729
Int. Cl.[4] B23Q *3/02*
U.S. Cl. 53—390 **20 Claims**

1. A fixture for loading and unloading of a pin grid array (PGA) chip package (**12**) into and out of a chip carrier (**10**) comprising:

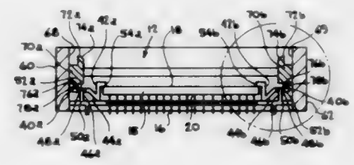
a substantially rectangular-shaped solid body member having a central cavity (**58**), said body member being formed of a left side member (**60**), a right side member (**62**), a top side member (**64**), and a bottom side member (**66**);

first actuating means (**70***a*) being formed on an interior surface (**68**) of said left side member for contacting a first tab (**38***a*) of the chip carrier (**10**);

said first actuator means (**70***a*) being formed of a first outer, upwardly extending projection (**72***a*) and a first inner, downwardly extending projection (**76***a*);

second actuator means (**70***b*) being formed on an interior surface (**69**) of said left side member for contacting a second tab (**38***b*) of the chip carrier;

said second actuator means being formed of a second outer, upwardly extending projection (**72***b*) and a second inner, downwardly extending projection (**76***b*);



said first and second upwardly extending projections (**72***a*, **72***b*) being used to move said first and second tabs from an unlatched position to a latched position so as to allow for the loading and unloading of the chip package; and

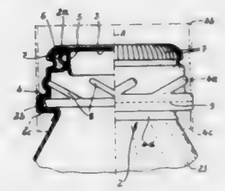
said first and second downwardly extending projections (**76***a*, **76***b*) being used to move said tabs from the latched position back to the unlatched position so as to retain the package in the chip carrier.

4,803,829

HEAT-SHRUNK THREADED BOTTLE CAP

Albert Scheidegger, Villeurbanne, France, assignor to Etablissements Scheidegger W. & CIE S.A., Villeurbanne, France

Filed Dec. 16, 1986, Ser. No. 942,523
Claims priority, application France, Jan. 27, 1986, 86 01408
Int. Cl.[4] B65B *7/28, 53/06;* **B67B** *5/00, 3/02*
U.S. Cl. 53—442 **9 Claims**



1. A method of capping a recipient having an axially upwardly open neck formed with at least one radially projecting neck screw thread, the method comprising the steps of:

(a) forming a circumferentially thermally shrinkable polyvinyl chloride sleeve with a convex annular screw bulge;

(b) fitting the circumferentially thermally shrinkable polyvinyl chloride sleeve around a plug;

(c) fitting the plug into the open neck to block same;

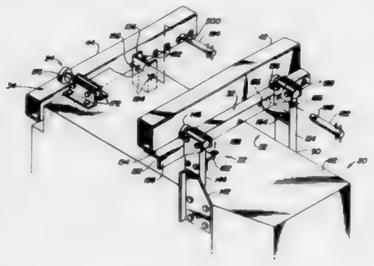
(d) fitting the sleeve also around the neck over the neck screw thread so that the bulge corresponds with the neck screw thread;

(e) heating the sleeve and thermally shrinking the sleeve circumferentially into tight engagement with the plug; and

(f) heating the sleeve and thermally shrinking the sleeve circumferentially into tight engagement with the neck and a threading engagement with the neck screw thread, wherein said sleeve may be repeatedly screwed onto and unscrewed from said neck screw thread.

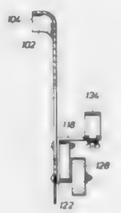
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4,803,830
SUPPORT ARRANGEMENT FOR COTTON HARVESTER ROW UNITS
Steve A. Junge, Johnston, and Timothy A. Deutsch, Newton, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Aug. 19, 1987, Ser. No. 87,073
Int. Cl.[4] A01D *46/08*
U.S. Cl. 56—28 **24 Claims**



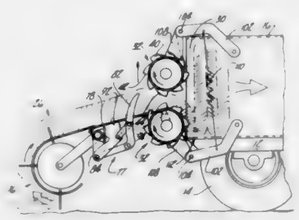
1. In a cotton harvester including a fore-and-aft extending main frame supported for forward movement over a field having rows of cotton plants, and a fore-and-aft extending row unit having a center of gravity, said row unit including a plant passage for receiving a row of cotton plants and harvesting structure for removing cotton from the plants, row unit support structure comprising:
a transversely extending row unit support frame including a horizontal rail member;
lift structure connecting the support frame to the main frame;
means adjustably supporting the row unit from the support frame for lateral movement of the unit with respect to the support frame including roller means supported on the rail member and connected to the row unit generally above the center of gravity of the unit for selectively rolling the unit transversely on the support frame.

4,803,831
ATTACHMENT TO A LAWN TRIMMER
Benjamin C. Carmine, 415 Shadow Creek Dr., Seabrook, Tex. 77586
Continuation-in-part of Ser. No. 812,757, Dec. 23, 1985, Pat. No. 4,679,385. This application Jul. 13, 1987, Ser. No. 72,790
The portion of the term of this patent subsequent to Jul. 14, 2004, has been disclaimed.
Int. Cl.[4] A01D *34/84*
U.S. Cl. 56—16.9 **19 Claims**



1. An attachment for converting a lawn trimmer into a lawn edger, the lawn trimmer including a housing enclosing a gasoline engine mounted at one end of an elongate shaft, a line cutter head mounted at the opposite end of said shaft and a shield plate mounted on the elongate shaft, the attachment comprising:
(a) a base plate detachably mounted to the elongate shaft in substantial planar contact with the shield plate, said base plate including a hole for receiving the spool and line housing therethrough;
(b) a deflection shield extending along an arcuate edge of said base plate, said deflection shield being integrally formed with said base plate and protruding outwardly therefrom, said deflection shield defining a curved surface projecting from said base plate for deflecting grass clippings and debris outwardly from said base plate;
(c) an edge guide depending downwardly from a bottom edge of said base plate for guiding the lawn trimmer along a path;
(d) bracket means for detachably mounting said base plate to said elongate shaft; and
(e) wheel means supported on said bracket means for rolling the lawn edger along a path.

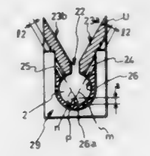
4,803,832
METHOD AND APPARATUS FOR FORMING BALES
Alexander Crawford, Mississauga, Canada, assignor to Massey-Ferguson Inc., Detroit, Mich.
Filed Jun. 22, 1981, Ser. No. 276,448
Int. Cl.[4] A01D *39/00*
U.S. Cl. 56—341 **58 Claims**



1. A method of baling crop material comprising the following steps:
providing a bale chamber having an inlet end and also providing spaced apart feeding means associated with the inlet end of the bale chamber each feeding means supporting an effective one way aggressive feed surface;
conveying a mat of crop material in a rearward direction towards the bale chamber;
simultaneously engaging opposed surfaces of the rearwardly conveyed mat of crop material with the one way aggressive feed surfaces and alternately feeding opposed surfaces of the mat of crop material in a rearward direction to a location adjacent the inlet end of the bale chamber;
moving the feeding means and the fed mat of crop material back and forth across the inlet end of the bale chamber to form successive layers of folded crop material within the bale chamber; and
utilizing the feeding means as it is moved back and forth across the face of the bale chamber to compact the layers of folded crop material within the bale chamber without tearing the successive layers of folded crop material.

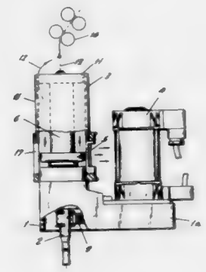
4,803,833
PNEUMATIC YARN SPLICING APPARATUS
Kiyoyuki Uchihara, Takatsuki, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Mar. 10, 1988, Ser. No. 166,408
Claims priority, application Japan, Mar. 16, 1987, 62-60299
Int. Cl.[4] D01H *15/00*
U.S. Cl. 57—22 **6 Claims**
1. A pneumatic yarn splicing apparatus characterized in that

air nozzles are opened non-tangentially on the inner periphery of a yarn splicing hole on the opposite sides of a yarn inserting slit of the yarn splicing hole to spurt compressed air toward



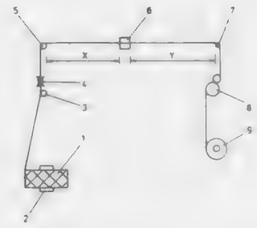
yarn ends positioned on a side away from said slit, said air nozzles each having a shape of an elongated slot extending in the axial direction of said yarn splicing hole.

4,803,834
TEXTILE SPINDLE
Walter Vogel, Niederwerrn; Wolfgang Schaucker, Hammelburg; Erwin Leurer, Fuchsstadt, all of Fed. Rep. of Germany, and Francois Beel, Lockeren, Belgium, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany and N.V. Van der Eecken & Co., Belgium
Filed Dec. 21, 1987, Ser. No. 135,844
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1986, 3643932
Int. Cl.[4] D01H *1/244*
U.S. Cl. 57—308 **13 Claims**



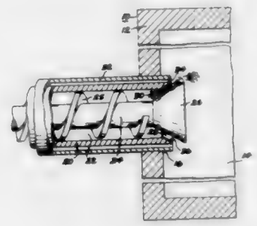
1. A spindle system, comprising:
a textile spindle;
a motor disposed in proximity to the spindle and coupling means for coupling the motor to the spindle in a manner which enables the motor to rotate the spindle, and rotation of the spindle causing air to move past the spindle;
a stationary jacket disposed about the spindle, the jacket including air inlet opening means for enabling air to enter into the jacket in response to rotation of the spindle and air exit opening means for allowing air drawn into the jacket to exit therefrom upon rotation of the spindle and for directing that exiting air to flow toward the motor.

4,803,835
METHOD FOR MODIFYING A YARN
Andre Varga, 417 Russell Hill Road, Toronto, Ontario, Canada (M4V 2V3); Harry Cripps, 18 Sunnyfield Road, Heaton Mersey, Stockport, Cheshire, SK4 3HS, England, and Paul McHugh, 105 Heatherbrook Rd., Greenville, S.C. 29615
Filed Mar. 24, 1987, Ser. No. 31,260
Claims priority, application United Kingdom, Mar. 25, 1986, 8607326
Int. Cl.[4] D02G *1/02*
U.S. Cl. 57—350 **6 Claims**



1. A method of modifying a spun yarn composed of a highly twisted strand of fibers, comprising the steps of driving the originally twisted spun yarn along a predetermined path of travel, subjecting the spun yarn to a false untwisting process during movement of the spun yarn along said path of travel, and then causing or allowing the spun yarn to revert at least partly to the true twist originally present in the spun yarn.

4,803,836
METHOD AND APPARATUS FOR FEEDING AN EXTRUDABLE FUEL TO A PRESSURIZED COMBUSTION CHAMBER
John C. Blanton, and Anthony H. Furman, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 903,369, Sep. 3, 1986, abandoned, which is a continuation of Ser. No. 628,668, Jul. 6, 1984, abandoned. This application Jan. 6, 1988, Ser. No. 141,863
Int. Cl.[4] F02C *3/26*
U.S. Cl. 60—39.464 **3 Claims**



1. Apparatus for feeding an extrudable fuel to a pressurized combustion chamber defined by a combustion chamber wall, said apparatus comprising:
an extruder body having a generally cylindrical shaped extrusion channel defined therethrough, the end of said channel being bevelled radially outwardly and in flow communication with the combustion chamber;
a screw extruder situated in said extruder body for transporting fuel to the combustion chamber, said screw extruder being movable in the axial direction and having a frusto-conically shaped end member, the vertex angle of the frusto-conically shaped end member corresponding to the

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bevel angle at the end of the extruder body, the bevelled end of the extruder body and the frusto-conical end of the extruder defining an annular opening having a reduced cross-sectional area relative to the passage transferring fuel, so that the extruded fuel is compacted, said annular opening being closable by the axial movement of said screw extruder seating said frusto-conically shaped end member against the bevelled end of the generally cylindrically shaped extrusion channel in the extrusion body to provide a pressure seal for the pressurized combustion chamber, even in the absence of fuel in the annular opening; and

means for atomizing the compacted fuel after the fuel is introduced into said combustion chamber.

4,803,837

DUAL CYCLE GAS TURBINE ENGINES

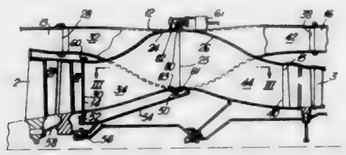
Roy Simmons, Bristol, England, assignor to Rolls-Royce plc, London, England

Filed Mar. 8, 1977, Ser. No. 776,789

Claims priority, application United Kingdom, Mar. 9, 1976, 09263/76

Int. Cl.⁴ F02K *3/02*

U.S. Cl. 60—226.3 **4 Claims**



1. A gas turbine engine comprising a first compressor having an outlet duct, a second compressor disposed downstream of the first compressor and having an inlet passage, an auxiliary inlet duct and an auxiliary outlet passage, a change-over valve disposed in flow series between said compressors, said valve having inlets and outlets for communication with said ducts and passages respectively, and having internal passageways therein which provide flow connections between the inlets and outlets, means being provided for rotating an upstream part of the valve relative to the remainder whereby either one of the ducts may be put into flow communication with a selected one of the passages, and wherein the downstream part of the valve is formed as a main structural element of the engine casing and a support member is connected thereto which extends forwardly therefrom and which carries bearings for rotatably supporting both the rotatable part of the valve and the outer casing of first compressor.

4,803,838

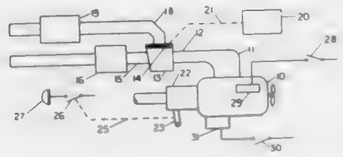
DIESEL PARTICULATE INFUSION CONTROLLER

Henry E. Kaeser, Hillcrest Rd., Elmira, N.Y. 14903

Filed Dec. 24, 1987, Ser. No. 137,589

Int. Cl.⁴ F01N *3/02*

U.S. Cl. 60—288 **10 Claims**



1. A system for removing particulates from exhaust gas of a vehicle internal combustion engine comprising

first gas flow means connected to the exhaust of said engine,

valve means connected to said first gas flow means for normally directing exhaust to a first output when in the non-activated condition and for directing exhaust to a second output when in the activated condition,

second gas flow means connected to said valve means first output for exhausting particulate-containing exhaust to the atmosphere,

third gas flow means connected to said valve means second output for removing exhaust gas particulates before delivering said exhaust gas to the atmosphere,

means responsive to the starting of said engine for activating said valve means for a predetermined period of time, and

means responsive to a second condition within said vehicle for activating said valve means.

4,803,839

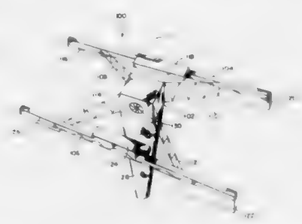
APPARATUS FOR CONVERTING OCEAN MOTION TO USEABLE ENERGY

Baldassare Russo, III, 4461 - 137th S.E., Bellevue, Wash. 98006

Filed Dec. 28, 1987, Ser. No. 138,592

Int. Cl.⁴ F03B *13/12*

U.S. Cl. 60—501 **12 Claims**



1. Apparatus for converting water wave motion to useable electrical energy, comprising:

a gear housing;

raft means for buoyantly supporting said gear housing, said raft means having buoyant flotation members extending over a length sufficient to span a plurality of waves;

a float for floating in the water and providing motion relative to said raft means in response to the rise and fall of waves;

float guide means for restricting the motion of the float to bidirectional substantially vertical motion, said float guide means including a frame connected to said float for travel therewith and having a pair of spaced-apart, generally horizontal support members;

at least one shaft rotatably supported by said gear housing;

first means for converting upward motion of said float into rotation of said shaft in a predetermined rotational direction, said first means including:

(a) a second member rotatably mounted to said shaft to permit rotation of said second member relative to said shaft;

(b) a first member mounted to said shaft to prevent rotation of said first member relative to said shaft;

(c) first drive means for drivably rotating said first member in said predetermined direction in response to rotation of said second member in a first rotational direction, and for permitting rotation of said second member in a second rotational direction opposite said first rotational direction without drivably rotating said first member; and

(d) first flexible means for rotating said second member in said first rotational direction in response to upward motion of said float, said first flexible drive means including a first flexible elongated member;

second means for converting downward motion of said float into rotation of said shaft in said same predetermined rotational direction, said second means including:

(a) a fourth member rotatably mounted to said shaft to permit rotation of said fourth member relative to said shaft;

(b) a third member mounted to said shaft to prevent rotation of said third member relative to said shaft;

(c) second drive means for drivably rotating said third member in said predetermined direction in response to rotation of said fourth member in a third rotational direction, and for permitting rotation of said fourth member in a fourth rotational direction opposite said third rotational direction without drivably rotating said third member; and

(d) second flexible means for rotating said fourth member in said third rotational direction in response to downward motion of said float, said second flexible drive means including a second flexible elongated member, each said first and second flexible elongated members having a first end securely coupled to one of said support members and a second end securely coupled to the other said support members, said first elongated member being wound around said second member in a direction to rotate said second member in said first rotational direction in response to upward motion of said frame with said float and said second elongated member being wound around said fourth member in a direction to rotate said fourth member in said third rotational direction in response to downward motion of said frame with said float; and

conversion means supportably mounted in said gear housing for converting the rotation of said shaft in said predetermined direction to useable electrical energy.

4,803,840

HYDRAULIC BRAKE SYSTEM FOR AUTOMOTIVE VEHICLES

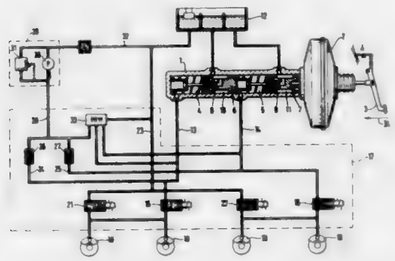
Wolfram Seibert, Pfungstadt; Norbert Ocvirk; Guenter Trach, both of Offenbach; Otto Determann, Darmstadt, and Horst P. Becker, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 23, 1987, Ser. No. 6,685

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1986, 3601914

Int. Cl.⁴ F15B *7/00*

U.S. Cl. 60—545 **1 Claim**



1. A hydraulic brake system for an automotive vehicle comprising a brake master cylinder including a working chamber connected to an unpressurized reservoir by way of a master cylinder valve for isolating said working chamber and reservoir, said working chamber connected to pressure control valves of a brake slip control apparatus, at least one wheel brake connected downstream of said control valves, said working chamber connectable to a pressure fluid source on actuation of said brake slip control apparatus, said pressure fluid source having a pressure exceeding a maximum attainable brake pressure by actuation of said master cylinder, and said master cylinder valve opening during actuation of said slip control apparatus to limit and maintain the maximum attainable pressure in said working chamber to a level which is less than the pressure of said pressure fluid source upon actuation of said brake slip control apparatus, wherein the pressure fluid source includes a pump having drive means controllable by the brake slip control apparatus, wherein a non-return valve is interposed between an outlet of the pump and the working chamber of the brake master cylinder, wherein the pressure in the working chamber and at the outlet of the pressure fluid source pump is monitored by a differential pressure alarm switch which disconnects the brake slip control apparatus when a predetermined pressure difference is exceeded.

4,803,841

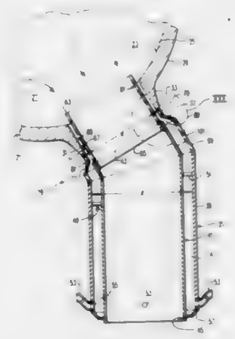
MOISTURE SEPARATOR FOR STEAM TURBINE EXHAUST

Homer G. Hargrove, Maitland, and George J. Silvestri, Jr., Winter Park, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 30, 1987, Ser. No. 102,973

Int. Cl.⁴ F01K *17/00*

U.S. Cl. 60—657 **22 Claims**



1. A moisture pre-separator for an exhaust portion of a steam turbine including an exhaust hood having a wall and an exhaust nozzle passing therethrough, said exhaust nozzle terminating as an annular wall, comprising;

a first cylindrical conduit affixed in sealing relationship to said annular wall, said first cylindrical conduit having a radially outwardly extending section adjacent said annular wall, and a cylindrical wall section larger in diameter than said annular wall, extending from said radially outwardly extending wall section;

drain lines on the cylindrical wall section of said first cylindrical conduit for draining water therethrough;

a second cylindrical conduit coaxially positioned within said first cylindrical conduit having an inlet end and outlet end, the inlet end spaced from the annular wall of said nozzle, whereby a first collection chamber is formed between said first and second cylindrical conduits;

a third cylindrical conduit positioned within said second cylindrical conduit extending into said exhaust nozzle to form a second collection chamber between said third cylindrical conduit and said exhaust nozzle, said second collection chamber directly communicating with said first collection chamber; and

a bottom wall between said first and second cylindrical conduits closing the lower portion of said first collection chamber, such that a substantial portion of the water flowing on the wall of said exhaust hood flows into said

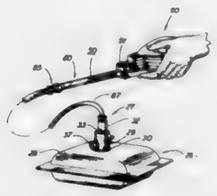
VOL 1099 ISS 2 FEB 14 1989 UMI

second collection chamber and then directly into said first collection chamber and is drained through said drain lines.

4,803,842
DIRECT CONTACT COOLING OF FOODSTUFFS WITH HALOCARBON HEAT TRANSFER LIQUIDS
Philip H. Coelho, and Victor Comerchero, both of Folsom, Calif., assignors to Castleton, Inc., Rancho Cordova, Calif.
Filed Feb. 9, 1987, Ser. No. 12,197
Int. Cl.[4] F25D *17/02*
U.S. Cl. 62—64 **11 Claims**

1. A process of chilling articles comprising the steps of exposing said articles to direct contact with a heat transfer liquid selected from the group consisting of the chlorofluorocarbon 1,1,2 trichloro-1,2,2 trifluoro-ethane (Freon 113), and the fluorocarbons perfluoropentane (C_5F_{12}), perfluorohexane (C_6F_{14}), perfluoromethylcyclohexane (C_7F_{14}), perfluoroheptane (C_7F_{16}), perfluoromonomethyldimethylcyclohexanes (C_7F_{14}/C_8F_{16}), perfluorodecalin isomers ($C_{10}F_{18}$), mixed perfluorodecalin and methyldecalin isomers ($C_{10}F_{18}+C_{11}F_{20}$), and perfluorinated polyethers ($[OCF(CF_3)CF_2]_m$-$(OCF_2)_m$ or mixtures of said chlorofluorocarbon with at least one of said fluorocarbons, maintaining said liquid at a temperature, sufficiently low enough to cool said articles to the desired temperature in the desired amount of time.

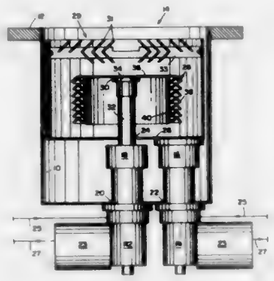
4,803,843
LOW PRESSURE REFRIGERANT CONTAMINANT TESTER
Nancy M. Otto, Clay, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Feb. 12, 1987, Ser. No. 155,487
Int. Cl.[4] F25B *47/00*
U.S. Cl. 62—85 **12 Claims**



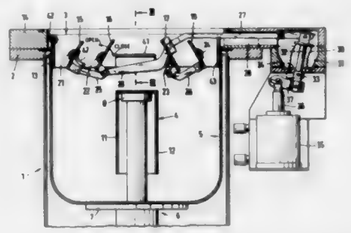
1. A method of testing a low pressure refrigerant for contamination that includes the steps of
metering a predetermined amount of low pressure refrigerant from a refrigeration unit into an inflatable bag,
sealing the refrigerant in the bag and allowing the refrigerant to equilibrate at ambient pressure whereby a homogeneous gas sample is formed within the bag,
drawing a representative amount of the equilibrated sample through a contaminant tester tube to measure the amount of one or more selected contaminants in said representative sample.

4,803,844
CRYOPUMP WITH MULTIPLE REFRIGERATORS
Allen J. Bartlett, Milford, Mass., assignor to Helix Technology Corporation, Waltham, Mass.
Filed Jan. 27, 1987, Ser. No. 7,019
Int. Cl.[4] B01D *8/00*
U.S. Cl. 62—55.5 **18 Claims**

1. A cryopump comprising: first and second independently driven refrigerators, each having a cold finger to separately control the temperature of a radiation shield and a primary pumping surface such that said shield is in thermal contact with a cold end of the cold finger of the first refrigerator, and such that the primary pumping surface is spaced from and surrounded by the radiation shield, and is in thermal contact with the cold finger of the second refrigerator.

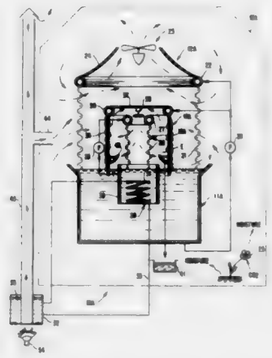


4,803,845
CONTROLLABLE THROTTLE FOR A VACUUM PUMP
Wilhelm Stranner, Bergisch Gladbach, and Axel Veit, Pulheim, both of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Cologne, Fed. Rep. of Germany
Filed Jan. 26, 1988, Ser. No. 148,629
Claims priority, application European Pat. Off., Jan. 28, 1987, EP 87101153.2
Int. Cl.[4] B01D *8/00*
U.S. Cl. 62—55.5 **8 Claims**



1. In a cryovacuum pump, including means defining an inlet opening for gases to be pumped, a controllable throttle assembly arranged for varying a flow passage cross section of said inlet opening; the throttle assembly including a flange surrounding said inlet opening; a frame disposed in said inlet opening and being secured to said flange; a plurality of slats each having a longitudinal axis; said slats being supported in said frame and being rotatable therein about respective said longitudinal axes for varying an inclination of said slats and an actuating rod operatively connected to said slats for turning said slats about said respective longitudinal axes; said flange having a throughgoing bore through which said actuating rod passes; the improvement wherein said slats have a substantially constant width along the longitudinal axis thereof; further wherein said longitudinal axes are oriented parallel to one another; further wherein said slats form a first and a second slat group; said actuating rod having a first end being articulated to one of said slats; the improvement further comprising a linkage means connecting said slats with one another for turning the slats forming said first slat group and the slats forming said second slat group in opposite directions upon operating said actuating rod; means defining a chamber situated externally of said inlet opening and communicating with said throughgoing bore; a pivotal lever situated in said chamber and being articulated to a second end of said actuating rod; said pivotal lever projecting outwardly from said chamber; and a swingable bellows supported in said chamber and surrounding said pivotal lever for providing an airtight separation of at least one part of said pivotal lever from said chamber.

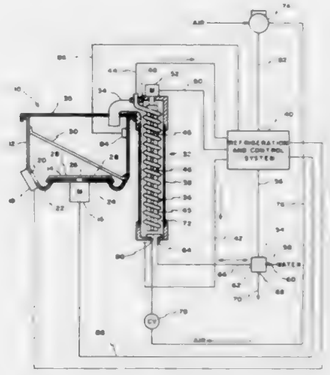
4,803,846
METHOD OF AND MEANS FOR CONTROLLING THE CONDITION OF AIR IN AN ENCLOSURE
Gad Assaf, Rehovot, Israel, assignor to Geophysical Engineering Company, Seattle, Wash.
Filed Apr. 16, 1984, Ser. No. 600,882
Int. Cl.[4] F25D *17/06*
U.S. Cl. 62—94 **36 Claims**



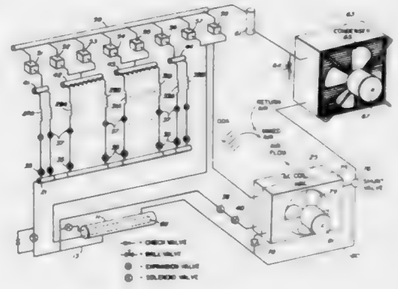
1. In a system for conditioning air in an enclosure comprising a reservoir of brine, a direct contact air-brine-vapor heat exchanger operable to exchange brine with the reservoir for condensing vapor from the air in the enclosure on the brine thereby diluting the same, and a brine regenerator that exchanges brine with the reservoir for evaporating water from the brine into segregated air separate from the air in the enclosure thereby concentrating the brine, the improvement comprising: apparatus constructed and arranged to return substantially all of the heat of vaporization of water evaporated in the regenerator to the air in the enclosure concurrently with the operation of said direct contact heat exhanger, said apparatus including a condenser for receiving vapor produced when water is evaporated from the brine, the condenser being in heat exchange relationship with the brine in the reservoir for heating the same when the vapor condenses.

4,803,847
CONTROL SYSTEM FOR ICEMAKER AND ICE DISPENSER AND METHOD
Robert M. Keeneman, Oak Brook; Benjamin D. Miller, Chicago, and Thaddeus M. Jablonski, Palatine, all of Ill., assignors to Remcor Products Company, Franklin Park, Ill.
Continuation of Ser. No. 60,043, Jun. 8, 1987, abandoned. This application May 9, 1988, Ser. No. 193,198
Int. Cl.[4] F25C *5/18*
U.S. Cl. 62—68 **18 Claims**

12. A control system for an ice dispenser having a hopper for storage of a mass of particles of ice and an agitator for the ice, an icemaker for manufacturing and introducing ice into the hopper, and a sensor for sensing the level of ice in the hopper, said control system comprising means for operating the icemaker, when the sensed level of ice in the hopper is below a selected level, to periodically introduce ice for limited periods of time into the hopper to fill the hopper; and means, responsive to said icemaker operating means initiating introduction of ice into the hopper, and independent of the level of ice in the hopper, for operating the agitator a plurality of discrete times while the icemaker is introducing ice into the hopper.



4,803,848
COOLING SYSTEM
James C. LaBrecque, P.O. Box 214, Farmington, Me.
Filed Jun. 22, 1987, Ser. No. 65,306
Int. Cl.[4] F25B *39/04*
U.S. Cl. 62—183 **2 Claims**



1. Cooling apparatus comprising:
a plurality of evaporator loads requiring differing suction pressures, one of said loads being an evaporator for air conditioning;
a high side header;
a plurality of compressors working across different pressure differentials appropriate for said differing refrigeration loads, the outlets of said compressors being connected in common to said high side header;
a single condenser unit connected to said high side header for receiving refrigerant therefrom;
a variable speed fan coupled to said condenser unit for controlling the amount of heat rejected from the refrigerant passing through said condenser unit;
an air cooled heat reclaim exchanger connected to selectively receive refrigerant from the output side of said condenser, said reclaim exchanger being provided with valving means for bypassing refrigerant flow around said reclaim exchanger;
means for receiving refrigerant from said condenser unit and

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said heat reclaim exchanger and for providing refrigerant to said evaporator loads; and

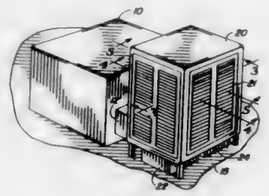
a blower coupled to said air conditioning evaporator and said heat reclaim exchanger for driving air through them sequentially for effecting cooling of said reclaim exchanger from said air conditioning evaporator.

4,803,849

REFRIGERATION/EVAPORATIVE COOLER UNIT

Henry E. Diaz, 555 W. Warner Rd., Space 125, Chandler, Ariz. 85224

Filed May 31, 1988, Ser. No. 200,458
Int. Cl.[4] F28D *5/00*
U.S. Cl. 62—311 **12 Claims**



1. An evaporative cooler unit for use with an existing refrigeration air-conditioning unit having an air outlet for supplying air to a point of use and an air inlet for receiving air from said point of use for recirculation through said refrigeration unit, said cooler unit including in combination:

an evaporative cooler housing with air inlets and a housing air outlet therein;

blower means in said cooler housing, and separate from any air moving means in said refrigeration unit, for drawing air into said cooler housing through the air inlets thereof and supplying air to a blower outlet;

first coupling means coupling said blower outlet with the air outlet of said refrigeration unit in common to said point of use, said first coupling means including first pressure actuated damper means for selectively providing an air flow path from one only of said blower outlet and said refrigeration unit outlet to said point of use; and

second coupling means coupling the air outlet in said cooler housing with said air inlet of said air-conditioning unit, said second coupling means including second pressure actuated damper means closing said air outlet in said cooler housing when said refrigeration unit is operated and opening said air outlet in said cooler housing when said blower means is operated to discharge air from said point of use into the area surrounding said cooler housing.

4,803,850

APPARATUS AND METHOD OF DISPENSING PARTICULATE ICE AND COLD BEVERAGE WITH IRREVERSIBLE SEPARATION OF COOLING ICE

Marvin H. Josten, Garner, Iowa; Henry C. Kovar, Anoka, Minn., and Kenneth W. Schneider, Mason City, Iowa, assignors to Schneider Metal Manufacturing Co., Mason City, Iowa

Filed Feb. 22, 1988, Ser. No. 158,510
Int. Cl.[4] B67D *5/62*
U.S. Cl. 62—98 **21 Claims**

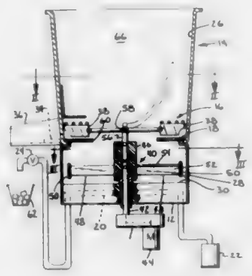
1. Apparatus for dispensing particulate ice and beverage, comprising:

a. an ice bin having upright walls;

b. a cold plate in a bottom of the bin, said cold plate having heat exchange means for cooling beverage flowing therethrough by melting of ice in the bin and atop the cold plate; said cold plate having a fluid inlet connectible to a source of beverage and an outlet connectible to a beverage dispensing valve;

c. an ice dispensing chute spaced upwardly from the cold plate and extending outwardly from the bin;

d. an ice dispensing rotor directly above and spaced upward from the cold plate, said rotor being selectively rotatable about an upright axis, for expelling particulate ice out of the bin and into the dispensing chute, said rotor having a plurality of arcuately spaced apart paddlewheels on the outside of the rotor for said expelling of the ice into the chute and an opening through a central section of the rotor; and



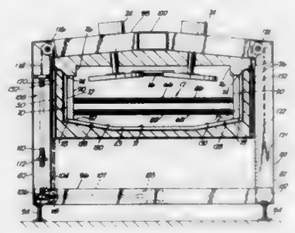
e. a generally toroidal shaped upper bottom directly under said rotor, said upper bottom being spaced upwardly of said cold plate and being generally coplanar with said chute, said upper bottom having an aperture under said rotor central section opening for irreversible passage of ice downward from a dispensing level above the upper bottom to an exclusive cooling level below the upper bottom.

4,803,851

FOOD FREEZING APPARATUS

Malcolm L. Stokes, Surrey, England, assignor to The BOC Group plc, Surrey, England

Filed May 7, 1987, Ser. No. 47,378
Claims priority, application United Kingdom, May 12, 1986, 8611539
Int. Cl.[4] F25D *17/02*
U.S. Cl. 62—374 **13 Claims**



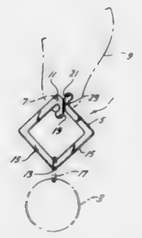
1. Apparatus suitable for freezing food, comprising a tunnel defined by an outer trough member and a roof member; a conveyor extended through the tunnel from its entrace to its exit and having an upper run and a lower run; means for introducing liquefied gas into the tunnel; means for creating in the tunnel turbulence in cold gas formed as a result of vaporisation of the liquefied gas; and an inner trough member spaced from the outer trough, having a floor extending underneath the upper run of the conveyor and having sides which prevent direct impingement of liquefied gas onto the outer trough and which co-operate with said roof member to inhibit the passage of cold gas from within said inner trough member over said sides.

4,803,852

EARRING DEVICE FOR SUSPENDING A VARIETY OF CHARMS OR THE LIKE

Fay L. Waldron, 5124 Reynosa Dr., St. Louis, Mo. 63128

Filed Feb. 27, 1987, Ser. No. 19,762
Int. Cl.[4] A44C *7/00*
U.S. Cl. 63—13 **13 Claims**



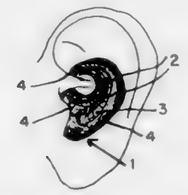
1. An earring for suspending any of a variety of charms or the like therefrom, the earring comprising a loop member forming only one loop bounding an open space, and means on the backside of the loop member for attaching the loop member to an ear, the loop member having a generally narrow throat adapted for allowing a link of a charm to be pulled therethrough into said open space to attach or detach the charm to the earring, the throat being positioned along the loop member generally adjacent said attaching means so that the throat is closed by the ear of the wearer when the earring is attached to the ear, thereby to secure the charm to the loop, said loop member being spring-biased from an open position wherein the link of a charm may be passed through the throat into said open space toward a closed position wherein the throat is narrower than the link of a charm thereby to secure the charm to the loop member.

4,803,853

ORNAMENTAL EAR INSERT AND HEARING AID

Reiner Hoerkens, Bahnhofstrasse 31, D-6903 Neckargemünd, Fed. Rep. of Germany

Filed Jul. 8, 1987, Ser. No. 70,917
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1986, 8619008[U]
Int. Cl.[4] A44C *7/00, 25/00*
U.S. Cl. 63—14.1 **11 Claims**



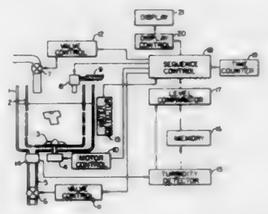
1. An ornamental ear insert comprising a flexible mesh screen formed to possess at least one pleat, said mesh screen being configured to the wearer's external ear to engage the inner portion of the ear adjoining the ear canal, said mesh screen having predetermined curvilinear portions for engaging projecting portions of said external ear, thereby securing said ear insert to said external ear.

4,803,854

PROGRESS INDICATOR FOR A WASHING MACHINE

Koji Kikuchi, Osaka; Takatomo Matsumi, Fujiidera, and Kazutoshi Takimoto, Yao, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 790,318, Oct. 23, 1985, abandoned. This application Nov. 24, 1987, Ser. No. 129,894
Claims priority, application Japan, Jan. 9, 1985, 60-2796
Int. Cl.[4] D06F *33/02*
U.S. Cl. 68—12 R **9 Claims**



1. In a washing machine which contains detectors for monitoring conditions therein during an operating cycle such as washing, rinsing and spinning and is adapted to determine the time to end said cycle on the basis of output signals indicative of said conditions from said detectors, a progress indicator comprising

a display means for displaying progress of operation of said washing machine, and

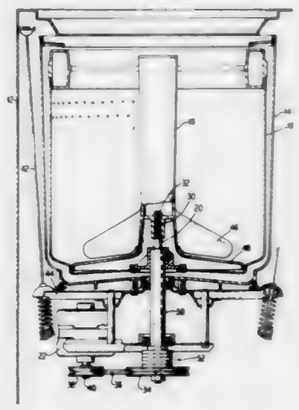
a display control means adapted to switch the display pattern of said display means in a step-wise manner directly in response to said output signals.

4,803,855

SINGLE SHAFT AGITATE AND SPIN DRIVE FOR AUTOMATIC WASHER

William L. Kennedy, Coloma Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 10, 1987, Ser. No. 83,183
Int. Cl.[4] D06F *13/02*
U.S. Cl. 68—23.7 **12 Claims**



7. An automatic washer comprising:

a vertical axis agitator;

a wash basket concentrically mounted with said agitator;

a vertical agitator shaft drivingly connected to said agitator

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at a top end and having a bottom end protruding below said basket;

a motor drivingly connected to said bottom end of said agitator shaft to selectively drive said agitator in an oscillatory manner and a rotational manner;

a lost motion mechanism drivenly connected at a bottom end to said agitator shaft and drivingly connected at a top end to said basket;

said lost motion mechanism comprising a plurality of discs stacked on said agitator shaft, a lowermost of said discs being drivingly connected to said agitator shaft and an uppermost of said discs being engageable with a portion of said basket, said discs having engagement means formed thereon to provide positive driving engagement between each of said discs upon sufficient relative rotational movement between said discs;

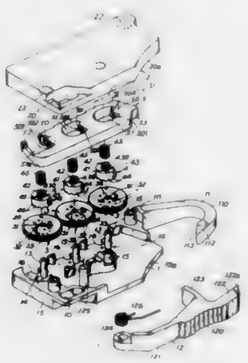
said lost motion mechanism absorbing a predetermined amount of rotational movement of said agitator shaft prior to transmitting additional rotational movement to said basket; whereby, oscillatory motion of said agitator shaft is absorbed by said lost motion mechanism and is not transmitted to said basket, but rotational motion of said agitator shaft beyond a predetermined angle does cause driving rotation of said basket.

4,803,856

PLANARLY-OPERATING COMBINATION PADLOCK

Chong-Kuan Ling, P.O. Box 53-58, Taipei, Taiwan

Filed Jun. 27, 1988, Ser. No. 211,919
Int. Cl.[4] E05B *37/14*
U.S. Cl. 70—28 **8 Claims**



1. A planarly operating combination padlock comprising:

a first cover having a fixed hasp secured on a left corner of said cover and a biasing actuator pivotally secured on a right corner opposite to said left corner resiliently closing an opening end of said fixed hasp, said actuator being coplanar to said fixed hasp;

a second cover having a dimension corresponding to said first cover for forming a padlock casing in combination with said first cover;

a plurality of dials pivotally mounted on said first cover, each dial having a diameter parallel to said first or second cover;

a plurality of sleeves superimposedly engageable with said dials, each sleeve retained by a spring held between said sleeve and said second cover to resiliently couple each said sleeve with said dial, each sleeve having a notch formed therein diverging outwardly from a center of the sleeve; and

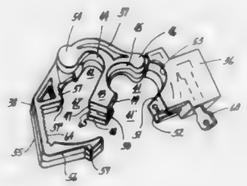
a resilient sliding latch slidably formed in the casing opposite to said biasing actuator including a plurality of sleeve holes each sleeve hole operatively engaging each sleeve having a tongue portion operatively engaging said notch of said sleeve, and a first restoring spring formed on a lower portion of said latch normally pulling said latch downwardly, and an upper extension formed on an upper portion of said latch operatively retarding said biasing actuator for locking said padlock; said casing having a recess formed on a right corner thereof, whereby upon rotation of said dials to an opening combination of said padlock, each said tongue portion of said latch is engaged with each said notch of said sleeve to lower said latch and said upper extension of said latch without retarding said actuator so as to allow an inward depression of said actuator to open said hasp and said padlock, and upon a rotation of the dials to close the padlock, each said notch of said sleeve will thrust each said tongue portion of said latch to raise said upper extension of said latch, remaining the depression of said actuator and locking the padlock.

4,803,857

BICYCLE AIR PUMP RESTRAINING DEVICE

David R. Hall, Plymouth, and Warren J. Clark, Whitmore Lake, both of Mich., assignors to HCC Corporation, Plymouth, Mich.

Filed Nov. 5, 1987, Ser. No. 116,917
Int. Cl.[4] E05B *73/00*
U.S. Cl. 70—58 **5 Claims**



1. A locking device for securing a tubular pump or the like to an elongated frame member of a bicycle, in a spaced parallel relationship, the pump having an elongated body with an outwardly flared guard, said device comprising:

a housing having an opening;

a first jaw;

a second jaw having locking structure receivable in said opening;

first pivot means for connecting the first jaw to the housing for movement between an open position in which the first jaw cooperates with the housing to form an opening for receiving said elongated frame member in a first secured position between the housing and the first jaw along a path of motion transverse to the longitudinal axis of the elongated frame member, and a closed position in which the first jaw and the housing cooperate to encircle the elongated frame member in said opening to prevent removal thereof from said first secured position in a reverse direction of motion;

second pivot means for connecting the second jaw to the first jaw such that the second pivot means and the second jaw are swingable in an arc about the first pivot means as the first jaw is being moved between said open position and said closed position;

the second jaw being moveable with respect to the first jaw between an open position in which the second jaw cooperates with the first jaw to form an opening for receiving the outwardly flared guard of the bicycle pump body in a second secured position between the first jaw and the second jaw in which the bicycle pump body is generally parallel to the elongated frame member, and a closed position of the second jaw in which:

(a) the second jaw cooperates with the first jaw in encircling the bicycle pump body the prevent removal thereof from said parallel position;

(b) the locking structure on the second jaw is received in the housing opening; and

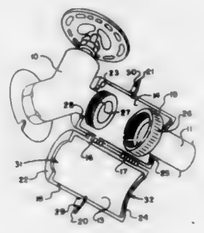
(c) locking means mounted in the housing engages the locking structure of the second jaw received in the housing opening to releasably lock same to the housing to prevent either the first jaw or the second jaw from being pivoted toward their respective open positions.

4,803,858

GARDEN HOSE PROTECTOR

Frank L. Parker, 5701 Grand Ave. South, Minneapolis, Minn. 55419

Filed Apr. 11, 1988, Ser. No. 180,358
Int. Cl.[4] F16B *41/00*
U.S. Cl. 70—231 **3 Claims**



1. A garden hose protection device for removably protecting the coupling of a garden hose with a faucet assembly wherein the protection device comprises;

first and second elongate cylinders,

said first elongate cylinder being comprised of a pair of hingedly connected cylinder halves having top and bottom ends and elongate sides,

said top end of said cylinder halves having an inwardly directed pair of retaining lips for releasably engaging the neck portion of a faucet assembly when said cylinder halves are moved to a closed position,

at least one locking tab on one elongate side of each cylinder half,

said locking tabs being oriented on their respective cylinder half to form an overlapping relationship when said cylinder halves are moved to a closed position,

said second elongate cylinder having an inner diameter sufficient to encircle said first elongate cylinder when said cylinder halves are in said closed position,

said second cylinder having top and bottom ends,

a locking tab positioned adjacent to said top end of said second cylinder wherein said locking tab is oriented to fit in alignment with the locking tabs of said first cylinder,

the bottom end of said second cylinder having an inwardly directed retaining lip to prevent the removal of a snap type coupling therethrough.

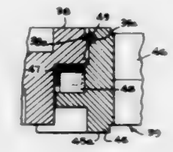
4,803,859

TUMBLER WHEEL STRUCTURE FOR RADIOLOGICAL DETECTOR RESISTANT COMBINATION LOCK

Harry C. Miller, 105 Bridle Ct., Nicholasville, Ky. 40356, and Stephen Helesfai, 26 Vassar St., Rochester, N.Y. 14607

Division of Ser. No. 1,221, Jan. 7, 1987. This application Feb. 5, 1988, Ser. No. 152,892
Int. Cl.[4] E05B *15/14*
U.S. Cl. 70—323 **1 Claim**

1. Tumbler wheel for a plural tumbler wheel combination lock capable of manipulation to change the lock combination, comprising an annular outer rim portion and an inner annular hub portion, the outer rim portion of each tumbler wheel having a center opening having a diameter corresponding substantially to the outer diameter of the center hub portion, said center opening of the rim portion and the outer perimeter of said hub portion having confronting substantially cylindrical surfaces adapted to releasably abut each other with the rim and hub portions in coplanar alignment and interrupted by tooth formations on each of the hub and rim portions to interfit with each other restraining the associated hub and rim against relative rotation when in the coplanar normal operating position, the surface of the perimeter of each hub portion having a protruding ramp formation formed with a pair of inclined ramp surfaces converging to a crest, the ramp formation encircling the hub portion and the confronting portions of the center opening surface of the associated rim portion having a circular recess therein receiving a spring member encircling the confronting hub portion and distorted from circular configuration



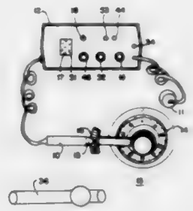
to project portions thereof from said recess into engagement with the confronting perimeter surface of the associated hub portion, the spring member engaging and being disposed adjacent one inclined surface of the protruding ramp formation when the hub and rim portions are in normal operating, coplanar interlocked position and being distorted by the ramp formation upon movement of the associated hub portion to combination change position displaced from the plane of the associated rim portion to engage an opposite inclined portion of the ramp formation and resiliently restrain the associated hub and rim portions in the combination change position to provide snap action relative movement of the hub portion to fully projected change position or to fully retracted coplanar interlocked position upon passage of the spring member over said crest.

4,803,860

MANIPULATION ASSISTANCE DEVICE AND METHOD

Randall L. Moore, 1696 Forest Hill Ct., Crofton, Md. 21114

Continuation of Ser. No. 890,292, Jul. 29, 1986, abandoned. This application Jul. 24, 1987, Ser. No. 77,241
Int. Cl.[4] E05B *17/00*
U.S. Cl. 70—446 **21 Claims**



1. A locksmith tool for assisting a locksmith in the manipulation of a combination lock comprising;

decoder means,

sound detection means positioned proximate to said lock to detect sounds internal to said lock and connected to said decoder means for supplying first signals to said decoder means corresponding to said detected sounds,

position detecting means connected to said decoder means

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and to the dial of said combination lock, for supplying second signals to said decoder means corresponding to the position of said dial, and

display means connected to said decoder for display of dial position information, wherein

said decoder means includes means for correlating said first signals with said second signals.

4,803,861

GUIDE STRUCTURE FOR PIERCED HOLLOWS

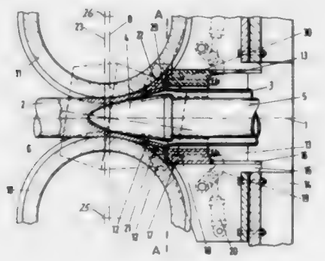
Rolf Kaemmerling, Duisburg; Manfred Mueller, Duesseldorf; Klaus-Peter Schirmag, Ratingen, and Wilhelm Nickel, Mulheim, all of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 16, 1987, Ser. No. 3,830

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1986, 3602176

Int. Cl.[4] B21B *19/04*

U.S. Cl. 72—97 **4 Claims**



1. In a rolling stand for piercing using barrel-shaped or conical rolls arranged with inclined axes in relation to each other, further including a mandrel or a mandrel rod, a guide structure comprising in combination:

driven guide disks having axes both being arranged in a first plane (23) being in or upstream from a second plane 8 said second plane running through points of closest distance of the rolls and establishing therewith a guided space for widening of pierced stock; and

guide bars arranged downstream from said planes in space between said disks and the rolled stock, for controlling widening of a hollow that has been pierced by the mandrel in combination with the rolls.

4,803,862

POSITIONING OF EDGE ROLLS

Dieter Schulze, Ratingen, and Karl-Heinz Margraf, Langenfeld, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 21, 1987, Ser. No. 76,068

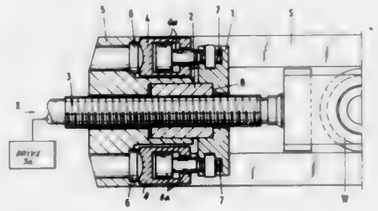
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1986, 3624958

Int. Cl.[4] B21B *31/20*

U.S. Cl. 72—199 **4 Claims**

1. A positioning device for rolls in an edging stand, there being hydraulic cylinder piston adjusting means and spindle adjusting means including at least one nut, the stand further including a cross head, and one or more adjusting spindles, the improvement comprising:

there being two cylinders, the two cylinders of the cylinder piston adjusting means being positioned outside of said cross head, and laterally offset to the spindle or spindles, laterally being in relation to a spindle axis, the cross head having central means for holding the, at least one nut, the cylinders being laterally spaced from said central means; and



a coupler plate holding and positioning said nut and being coupled to said cylinder piston adjusting means.

4,803,863

APPARATUS FOR ROLLING BAR STOCK

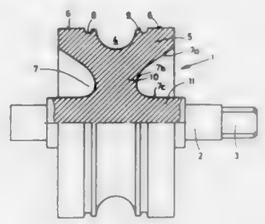
Hugo Feldmann, Alsdorf-Warden; Hubert Müller, Grevenbroich, and Claus Schlanzke, Ratingen, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag AG, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 20, 1987, Ser. No. 111,381

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1986, 3635566

Int. Cl.[4] B21B *27/02, 1/16, 13/10*

U.S. Cl. 72—199 **5 Claims**



1. An apparatus for rolling bar stock, comprising:

a mill frame; and

two rolls mounted in said frame, said rolls defining a closed-periphery passage of a workpiece to be rolled, each of said rolls being rotatable about an axis of rotation and comprising:

a rim comprising a peripheral surface bearing on the other roll and provided with a groove coaxial with said axis and delimiting said passage,

two deformable wings flanking said groove, each of said wings having setback transition portions adjacent said groove, said setback portions having respective cylindrical peripheral surfaces,

deformable portions extending outwardly beyond said transition setback portions, each of said deformable portions being of a substantially larger axial width than said setback portions,

a respective recess decoupling each respective deformable portion from the respective setback portion, said recesses having depths less than that of said groove, and

a web extending inwardly from the respective rim, said web being formed with annular axially inwardly extending undercuts inwardly of the respective wings, and

means for pressing said rolls against each other with an applied force (Fa) exceeding a rolling force (Fv) applied to the workpiece to be rolled by a prestressing force (Fw) acting on said deformable portions of said wings, so that a

dimension of said passage is varied by regulating said prestressing force.

4,803,864

REMOVABLE TUNNEL FOR MAINTAINING THE TEMPERATURE OF A PRODUCT HOT ROLLED IN A CONTINUOUS ROLLING TRAIN

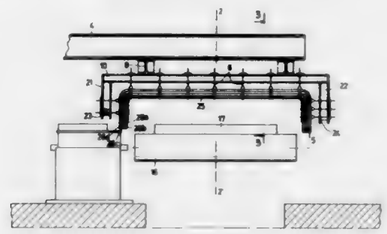
Jean M. Brysbaert, Bourbourg, and Alain Vautrain, Esquelbecq, both of France, assignors to Usinor Aciers, Puteaux, France

Filed Nov. 23, 1987, Ser. No. 123,940

Claims priority, application France, Nov. 24, 1986, 8616330

Int. Cl.[4] B21B *43/00, 45/02*

U.S. Cl. 72—202 **11 Claims**



1. A removable tunnel for maintaining the temperature of a product hot rolled in a continuous rolling train, comprising at least one section extending in a longitudinal direction of the rolling mill and including a rigid metal framework having a plurality of interconnected cross-members, a covering unit for the rolled product having a U-shaped cross section and constituted by a smooth metal sheet having an outer side, a thermal insulation material placed on said outer side of the metal sheet, and a raising means for shifting the framework and the covering unit between a service position, in which the covering unit is placed over the moving rolled product which it covers over a given length, the cross-members of the framework extending transversely of the mill, and an out of service position in which the covering unit is raised away from the rolled product, and means for suspending the covering unit under the metal framework in the region of each of the crossmembers comprising a plurality of pivotable link means connected to the cross-member at one end thereof and to the covering unit at an opposite end thereof so as to allow the covering unit to pivot freely relative to the rigid framework under the effect of thermal expansions and contractions of said covering unit.

4,803,865

STAND-SUPPORTED BENDING DEVICE FOR AXIALLY SLIDABLE ROLLS OF A MULTIROLL ROLLING MILL

Johannes Jansen, Hilchenbach; Friedel Mogendorf, Duisburg, and Karl-Heinz Simon, Langenfeld, all of Fed. Rep. of Germany, assignors to SMS Schloemann—Siemag Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 17, 1987, Ser. No. 74,794

Int. Cl.[4] B21B *31/18, 31/32*

U.S. Cl. 72—245 **20 Claims**

1. A rolling mill stand comprising:

a pair of uprights formed with respective windows;

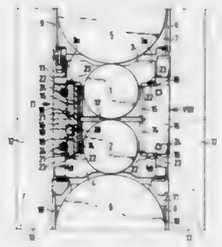
a pair of working rolls and at least one pair of backup rolls disposed above and below said working rolls and received between said uprights, said rolls being rotatable about respective axes of rotation parallel to one another and at least said pair of working rolls being axially slidable relative to said uprights;

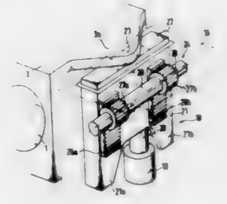
axially slidable mounts journaling opposite ends of said working rolls in said windows, said mounts being formed with respective pairs of lugs extending horizontally laterally, each of said lugs having a counterpressure surface located at a transverse central plane of a radial bearing formed by the respective mount;

at least one supporting block in each of said windows anchored to said uprights and located between respective lugs of each pair of said mounts in a respective window, said supporting blocks guiding said mounts horizontally and vertically;

at least one vertically displaceable piston-and-cylinder unit in each of said blocks producing bending forces for bending said working rolls; and

bending force transmitting means in each of said blocks shiftable vertically and operatively connected with the respective piston-and-cylinder unit for transmitting said bending forces to the lugs, each of said transmitting means including a ram-shaped member guided independently from the respective piston-and-cylinder units and having a substantially horizontal pressing surface in continuous contact with the respective counterpressure surface, said ram-shaped members projecting from the respective supporting blocks over lengths parallel to said axes equal at least to a maximum axial displacement of said pair of





working rolls and being so guided linearly on the respective blocks that said piston-and-cylinder units are free from transverse forces and provide the respective mounts with a continuous, constant and tilt-free transfer of said bending forces from said units.

6. In a bending device for the axially slidable rolls of a multiroll rolling mill with at least four of said rolls which is located in at least one supporting block guiding a plurality of mounts for said axially slidable rolls, said bending device comprising at least one bending cylinder with an hydraulically actuated piston for each of said supporting blocks which transmits the bending forces to one of at least two laterally extending engaging lugs of said mount, the improvement wherein an intermediate piece is positioned between said piston and said mount, said intermediate piece having a planar substantially horizontal pressing surface directed parallel to the roll axes on the end of said intermediate piece projecting from said block which extends at least over the maximum displacement of said axially slidable rolls and said mount is provided with an opposing pressing surface for receipt of said bending forces which is located at a transverse central plane of a radial bearing formed by said mount, two guiding members being provided on said

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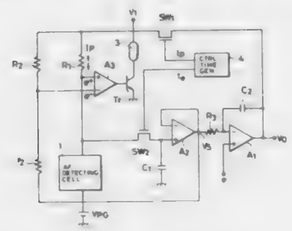
intermediate piece spaced from each other in the direction of said roll axes located symmetrically relative to a symmetry plane of said piston, said intermediate piece being coupled with said block by a positively actuated mechanical synchronizing device, said positively actuated synchronizing device comprising a rack and pinion gear which includes at least one rack and at least one pinion meshing therewith and supported slidably relative thereto.

4,803,866

AIR-FUEL RATIO DETECTING DEVICE

Masayuki Miki, Katsuta, and Seikou Suzuki, Hitachiota, both of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed May 4, 1987, Ser. No. 45,412
Claims priority, application Japan, May 8, 1986, 61-105550
Int. Cl.[4] G01N *27/12*
U.S. Cl. 73—23 **26 Claims**



1. An air-fuel ratio detector, comprising:
an air-fuel ratio detecting cell (1) for detecting an air-fuel ratio from components of an exhaust gas of an automobile,
an electric current detecting resistor (R) and a switching element (SW) connected in series between said detecting cell (1) and a power sourece (Vo),
a sample hold circuit (SW_2, C_1, A_2) for sample-holding an output voltage from said detecting cell (1) when said switching element is turned off,
comparator means (A_1) for comparing an output from said sample hold circuit with an electromotive force control value (e),
a temperature setting resistor (r_2) and a load resistor (R_2) connected in series between an output terminal of said sample hold circuit and said switching element, and
a differential amplifier (A_3) to which voltages (e^+, e^-) respectively from a node of said detecting cell and said electric current detecting resistor and a node of said temperature setting resistor and said load resistor are supplied,
said air-fuel ratio detector further including a potential ground (V_{PG}) connected to a cathode of said detecting cell, and means (Tr) for controlling an electric current flowing into a heater contained in said detecting cell, on the basis of an output from said differential amplifier and thereby controlling internal resistance (r) of said detecting cell to a predetermined level.

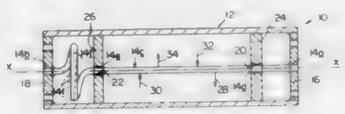
4,803,867

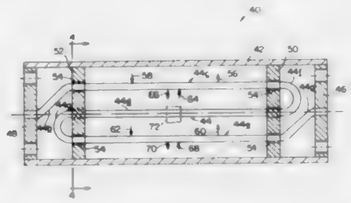
FLUID MEASUREMENT APPARATUS PROVIDING FLOW TUBE STRAIN RELIEF

Erik B. Dahlin, 1936 Arroyo Seco Dr., San Jose, Calif. 95125

Filed Apr. 28, 1987, Ser. No. 43,341
Int. Cl.[4] G01N *9/00*; G01F *1/84*
U.S. Cl. 73—32 A **19 Claims**

1. A fluid meter for measuring a characteristic of a material flowing therethrough comprising:
a base;
at least one flow tube having an inlet end and an outlet end, said flow tube ends being fixedly mounted to said base, said material flowing through said tube, said at least one flow tube including at least one section having a longitudinal axis and interposed said inlet end and said outlet end and having an end associated with each of said inlet end and said outlet end, at least one of said section ends being spaced from the associated one of said inlet end and said outlet end;
means for vibrating each of said at least one section intermediate said section ends;
at least one linear bearing mounting each of said at least one section end spaced from said associated flow tube end relative to said base in a manner allowing movement of said section end along the longitudinal axis of said section end and preventing movement transverse to said longitudinal axis of said section end in at least the directions of vibrational movement of said section, with said linear bearing being mounted to said base by a thermally insulating material; and
means for measuring at least one parameter of the motion of said flow tube section.



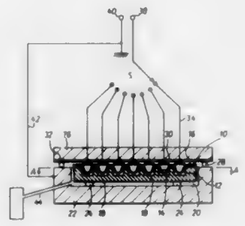


4,803,868

HERMETICALLY SEALED PACKAGE TESTER

Melvin Vinton, and Anthony D. McI. Hawes, both of Cambridge, England, assignors to Analytical Instruments Limited, Pampisford, England

Filed Aug. 31, 1987, Ser. No. 90,905
Claims priority, application United Kingdom, Aug. 29, 1986, 8620966
Int. Cl.[4] G01M *3/36*
U.S. Cl. 73—49.3 **13 Claims**



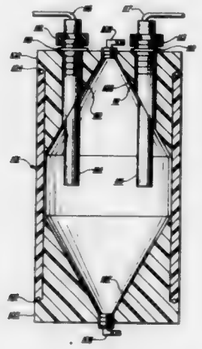
1. Apparatus for testing fexible sealed packages of the blister pack type whose one side is made of an electrically non-conductive plastics material defining individual sealed blister compartments which are closed off by a common, flexible, electrically conductive foil defining the opposite side of the pack, the apparatus comprising:
(a) a chamber adapted to support a package under test therewithin;
(b) means for selectively evacuating the chamber;
(c) a plurality of first fixed electrodes in said chamber positioned so as to lie opposite to the respective parts of the foil corresponding to the individual blisters when a blister pack under test is supported in the chamber;
(d) a second fixed electrode in said chamber which, in use, lies on the non-conductive side of the pack whereby a series capacitance arrangement is obtained, with a first fixed capacitance (C_F) being effectively formed between said second, fixed electrode and said flexible, electrically conductive foil of the package and a second variable capacitance (C_P) being effectively formed between the flexible, electrically conductive foil of the package and said first fixed electrodes; and
(e) a multiplexing means enabling sequential monitoring of the capacitance between the respective part of the foil or metallic laminate corresponding to each blister and the respective one of said first fixed electrodes.

4,803,869

FLOW-THROUGH ANALYTICAL MEASUREMENT APPARATUS AND METHOD

Michael J. Barcelona, Urbana; Edward E. Garske, Mundelein, and Michael R. Schoch, Champaign, all of Ill., assignors to Board of Trustees, University of Illinois, Urbana, Ill.

Filed May 22, 1987, Ser. No. 53,302
Int. Cl.[4] G01N *33/18*
U.S. Cl. 73—53 **25 Claims**



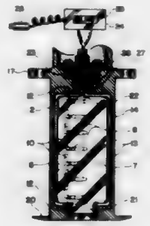
1. Flow-through analytical measurement apparatus, for the analytical determination of characteristic parameters of a liquid sample, comprising:
(a) a transparent, hollow cylindrical pipe section, to be maintained in a vertical position during analysis, having first and second open ends;
(b) first and second transparent, solid, cylindrical blocks, each having one flat outer end wall whose diameter substantially corresponds to the outside diameter of the cylindrical pipe section, and one concave interior end wall whose diameter is selected to be snugly received by the respective first or second open ends of the hollow cylinder, thereby defining an enclosed volume described by the inner dimensions of a central portion of the length of the hollow cylindrical pipe section and the concave interior walls of the first and second cylindrical blocks;
(i) said first cylindrical block having a centrally located threaded opening therethrough, to receive a line for the upwardly flowing entry of the liquid sample;
(ii) said second cylindrical block having a centrally located threaded opening therethrough, to receive a line to accommodate the exit of the liquid sample; and
(iii) said second cylindrical block additionally having a plurality of threaded openings extending therethrough and spaced about the centrally located opening, to receive at the flat outer wall of the second cylindrical block a plurality of selected analytical electrodes or sensors;
(c) sealing means for effecting a liquid-tight seal between the open ends of the hollow cylindrical pipe section and the respective flat outer walls of the cylindrical blocks;
(d) a plurality of interchangeable threaded electrodes or sensors, sealably fitted to the flat outer wall of the second cylindrical block and extending into a central portion of the enclosed volume; and
(e) external meter means, attached to said electrodes or sensors for measurement of the characteristic parameters associated therewith.

4,803,870

VORTEX SHEDDING FLOWMETER WITH MECHANICALLY AMPLIFYING PRESSURE SENSOR

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed Feb. 9, 1987, Ser. No. 12,680
Int. Cl.[4] G01F *1/32*
U.S. Cl. 73—861.22 **19 Claims**



1. A vortex generator-detector for measuring flow rate of fluids comprising in combination :
(a) a bluff body of elongated structure disposed across a flow passage in approximately perpendicular angle with respect to the direction of fluid flow, said bluff body including a blunt leading edge face disposed substantially perpendicular to the direction of the fluid flow and a first lateral face and a second lateral face disposed intermediate said leading edge face and trailing edge of said bluff body;
(b) a planar cavity included in said bluff body intermediate said first and second lateral faces of the bluff body;
(c) a planar member disposed within said planar cavity in a substanially parallel relationship with clearance wherein at least one extremity of said planar member is secured to the bluff body;
(d) a first set of pressure transmitting openings extending from said first lateral face of the bluff body to the first side surface of said planar cavity and a second set of pressure transmitting openings extending from said second lateral face of the bluff body to the second side surface of said planar cavity, wherein said first side surface is opposite to said second side surface defined in relation to one of the two lateral faces of the bluff body;
(e) a transducer means connected to the other extremity of said planar member opposite to said one extremity for coverting oscillatory mechanical deflections of said planar member created by oscillatory pressure differences across said first and second lateral faces of the bluff body to electrical signals.

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4,803,871

INSPECTION DEVICE FOR INSPECTING PROJECTIONS ON THE SURFACE OF PARTS

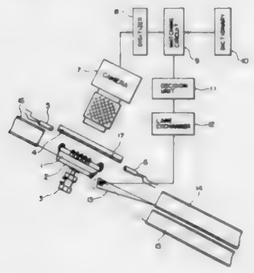
Osamu Harada, Atsugi; Akio Kojima, Hadano; Soubei Ikeda, Ayase; Yoshihisa Watanabe, and Yoshihisa Tsuji, both of Hadano, all of Japan, assignors to Hitachi, Ltd, Tokyo and Hitachi Computer Engineering Co., Ltd, Kanagawa, both of, Japan

Filed May 11, 1987, Ser. No. 48,725

Claims priority, application Japan, May 20, 1986, 61-115189; Sep. 1, 1986, 61-205528; Nov. 20, 1986, 61-277108

Int. Cl.[4] G01B *11/24, 7/28, 5/20, 7/16*

U.S. Cl. 73—104 **17 Claims**



1. An inspection device for inspecting projections on the surface of a part, comprising:

a part having projections on the surface thereof;

a member having a two-dimensional surface to which said projections of said part are pressed;

means for two-dimensionally pressing said projections of said part to said surface of said member at a predetermined pressure;

means for detecting a pressure distribution pattern of said projections on said two-dimensional surface of said member; and

means for converting said pressure distribution pattern to electronic pattern information.

4,803,872

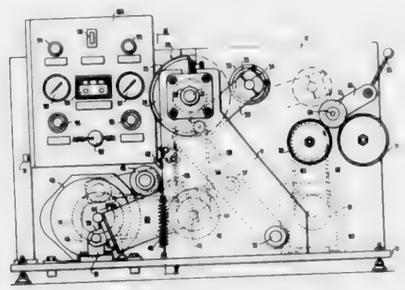
PAPER PRINTABILITY TESTER

Steven M. Crawford; Eugene W. Crowder, and Timothy H. Sparks, all of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,549

Int. Cl.[4] G01L *5/00*; **G01M** *19/00*

U.S. Cl. 73—150 R **8 Claims**



1. An apparatus for testing the printability of paper comprising:

A. means for substantially uniformly distributing a measured quantity of ink to the rotating surfaces of a plurality of ink distributing cylinders;

B. means for rotating a specimen of paper about a fixed axis of revolution;

C. applicator roll means for transfer of an ink film from the surface of one of said ink distributing cylinders to the surface of said rotating specimen;

D. translational means comprising an articulated arm to support said applicator roll means at one end thereof for substantially free rotation about an axis of revolution and the other end pivotably secured about a fixed rotational axis for oscillatory movement between a first position of rolling nip engagement of said applicator roll with said one ink distributing cylinder and a second position of rolling nip engagement with said rotating specimen; and,

E. reversible motor means for driving said translational means between said first and second positions, said motor means including pressure regulation means for selectively adjusting the pressure said applicator roll bears against said ink distributing cylinder in the first position and against the rotating specimen in the second position.

4,803,873

PROCESS FOR MEASURING FLOW AND DETERMINING THE PARAMETERS OF MULTILAYER HYDROCARBON PRODUCING FORMATIONS

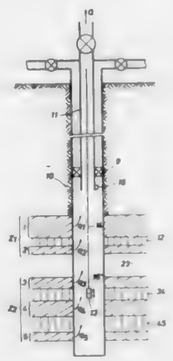
Christine Ehlig-Economides, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 889,438, Jul. 23, 1987, abandoned. This application Dec. 2, 1987, Ser. No. 127,584

Claims priority, application France, Jul. 23, 1985, 85 11260; Jul. 23, 1985, 85 11261

Int. Cl.[4] E21B *47/10*

U.S. Cl. 73—155 **12 Claims**



1. A method for determining a physical characteristic of a system made up of underground formations traversed by a fluid producing wellbore, comprising the steps of:

flowing the wellbore at a first constant rate;

obtaining first measurements characteristic of the pressure and flow rate of the fluid at successive depths of the wellbore;

flowing the wellbore at a second constant rate which is different from said first constant rate;

obtaining second measurements characteristic of the pressure and flow rate of the fluid at successive depths of the wellbore;

obtaining third measurements characteristic of the pressure and flow rate of the fluid at successive depths of the wellbore during the transitory period when the wellbore flow rate is changed from said first flow rate to said second flow rate; and

deriving from said first, second and third measurements a characteristic of fluid production from at least one of said underground formations.

4,803,874

DEVICE AND METHOD FOR DETERMINING THE ORIENTATION OF FRACTURES IN A GEOLOGICAL FORMATION

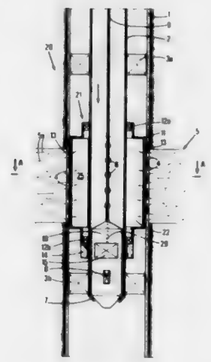
Jacques Marrast, Marly Le Roi; Andre Pasc, Villennes S/Seine, and Christian Wittrisch, Rueil-Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 30, 1986, Ser. No. 947,751

Claims priority, application France, Dec. 30, 1985, 85 19464

Int. Cl.[4] E21B *47/10*

U.S. Cl. 73—155 **13 Claims**



1. A device for determining the orientation of fractures or drains in a geological formation having a substantially vertical or oblique fracture zone, from a well, including a tubular element whose cross section is substantially circular, said tubular element being connected to a hydraulic fluid source and having at least one flow orifice through which the fluid may escape, including in combination:

(a) at least one chamber through which said fluid may flow from said tubular element towards the fracture, this chamber being in communication with said flow orifice,

(b) at least one mobile orientation element situated substantially at the same depth as the fracture zone, this element being mounted for rotation about said tubular element and being adapted to move by rotation towards a final position, following discharge of said fluid from said chamber towards the fracture zone, and

(c) means for locating said final position of said orientation element, said final position being in relation with the orientation of the fracture.

4,803,875

APPARATUS FOR DETERMINING THE FLOW RATE OF A FLOWING MEDIUM

Ulrich Kuhn, Renningen, and Sybille Stumpf, Markgroningen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

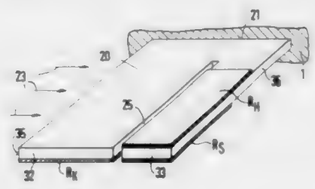
Filed Oct. 13, 1987, Ser. No. 107,149

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1986, 3638137

Int. Cl.[4] G01F *1/68*

U.S. Cl. 73—204.26 **23 Claims**

1. An apparatus for determining the flow rate of a flowing medium through a flow passage, having a substrate retained by at least one end in the flow passage by a fastening means, said substrate having a leading edge and a trailing edge, a layer-like, temperature-dependent measuring resistor as well as a layer-like heating resistor located on said substrate and spaced from said fastening means, a resistor detection device which regulates a heat output of said heating resistor as a function of the flow rate of the flowing medium, said heating resistor and said measuring resistor being disposed on said substrate in an electrically insulated manner,



said heating resistor (R_H) extends farther toward said fastening means (**21**) from an end opposite from said fastening means than said measuring resistor (R_S) and the resistance value per unit of surface area of the heating resistor (R_H) decreases toward the fastening means (**21**).

4,803,876

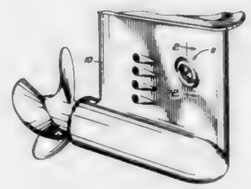
SIGHT GLASS FOR OBSERVING LUBRICANT IN THE LOWER GEARCASE OF MARINE ENGINES

James B. Haynes, 5 Ridge Dr., Naples, Fla. 33963

Filed Jun. 20, 1988, Ser. No. 208,586

Int. Cl.[4] G01F *23/02*

U.S. Cl. 73—334 **2 Claims**



1. Apparatus for providing a sight glass in the lower gearcase of a marine engine comprising

a lower gearcase of a marine engine with a circular opening in its side, said opening having three concentric circular stepped segments each having a different diameter,

the first segment having the largest diameter and opening to the outer surface of the gearcase being internally threaded,

the second segment being sized to accommodate a disc-shaped transparent sight glass,

the third segment having a diameter less than that of the second segment with the surface between the second and third segments containing an annular groove,

an O-ring of resilient waterproof material adapted to fit into the annular groove between the second and third segments of the opening in the gearcase,

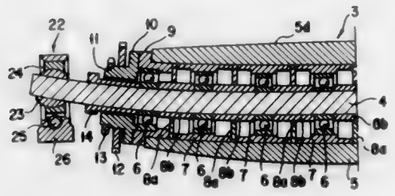
a disc-shaped transparent sight glass having a first one of its two outer edges being pressed against the O-ring, and

a ring shaped window cover having a flat annular face firmly pressed against the second outer edge of the sight glass and threadedly joined to the threaded segment of the opening in the gearcase.

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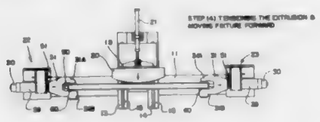
4,803,877
PINCH APPARATUS USING ROLLS
Akechi Yano, 2, Kikusuidori 4-chome, Moriguchishi, Osakafu, Japan
Filed Apr. 7, 1987, Ser. No. 35,566
Claims priority, application Japan, Apr. 19, 1986, 61-91042
Int. Cl.[4] B21B *31/16, 27/02*
U.S. Cl. 72—248 5 Claims





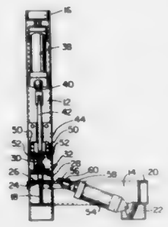
1. A pinch apparatus comprising:
a pinch section consisting of a pair of rolls constituted by supporting rollers, whose peripheral length decreases from a central part in an axial direction towards each end, rotatably mounted on a curved roller shaft, said pair of rolls being arranged opposedly; and
and adjusting means for adjusting an amount of roll in the pinch section, said adjusting means includes a shaft angle adjusting portion for rotating each said curved roller shaft, and a roll ascending and descending portion.

4,803,878
METHOD AND APPARATUS FOR FORMING ELONGATE TUBULAR MEMBERS INTO A PREDETERMINED SHAPE WHILE EXTRUSION IS GAS PRESSURIZED AND PRODUCT
Edward E. Morosey, Matthews, N.C., assignor to The Cyril Bath Company, Monroe, N.C.
Filed Jan. 20, 1987, Ser. No. 5,214
Int. Cl.[4] B21D *11/02*
U.S. Cl. 72—296 6 Claims



1. An apparatus for forming an elongate tubular member into a predetermined shape while preventing crimping of the walls of the member, comprising:
(a) holding means for holding the member at its opposing ends;
(b) pressurizing means for pressurizing the interior of the member with a gas to a predetermined pressure greater than atmospheric pressure while being held sufficient to provide increased effective rigidity and crimp resistance to the walls of the member;
(c) tensioning means cooperating with said holding means to urge said holding means away from each other for tensioning the member into its yield state;
(d) forming means for exerting a force against the member sufficient to form the member into a predetermined shape while pressurized and in its yield state; and
(e) pressure releasing means for releasing the pressure within the member after the member has been formed into its desired shape.

4,803,879
SLIP LOCK FORMING APPARATUS
Robert J. Crawford, Box 108 Burnett Rd., Wakefield, Quebec, J0X 3G0, Canada
Filed Feb. 3, 1987, Ser. No. 10,532
Claims priority, application Canada, Dec. 30, 1986, 526492
Int. Cl.[4] B21D *5/04*
U.S. Cl. 72—322 16 Claims





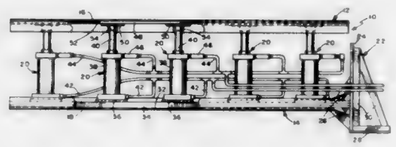
1. A slip lock forming apparatus comprising:
a support structure;
a press clamp mechanism mounted on said support structure and comprising a pair of press clamp members at least one of which is movable relative to the other between a first position in which said surfaces are in contact and a second position in which said surfaces are spaced apart from each other;
a forming die integral with one of said press clamp members and including a forwardly extending wedge section having a leading edge and first and second surfaces extending back from said leading edge, wherein said first surface is adapted to engage a workpiece, said die further including a stopping and forming surface projecting from said second surface at an angle β up to about 90 degrees to said second surface; and
a forming bar mounted on said structure and movable between a retracted position adapted to lie on the opposite side of a workpiece from said forming die, and an extended position, wherein said bar includes a leading edge and is oriented such that said leading edge in moving between said retracted and extended position follows a path which is generally parallel to said second surface of said forming die, said leading edge in said extended position of said bar lying substantially at said second surface such that a workpiece between said bar and said second surface would be jammed against said second surface.

4,803,880
HOLLOW ARTICLE FORGING PROCESS
Steven M. Hopkins, North Palm Beach, and William G. Askey, Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 21, 1987, Ser. No. 135,769
Int. Cl.[4] B21C *23/00*; B21D *37/02*
U.S. Cl. 72—354 4 Claims



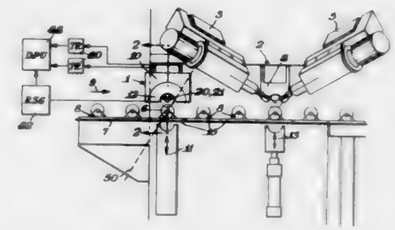
2. A method for producing hollow articles from superalloys and titanium alloys which have been preconditioned to establish a low strength high ductility condition including the steps of:
a. forging a workpiece between a flat face punch and a matching recessed die having a projecting die mandrel to cause outward radial flow of the workpiece to form an intermediate article;
b. converting the flat face punch into a hollow punch; and
c. forging the intermediate article using the hollow punch to cause radial flow inwards and upwards around the die mandrel and into the hollow punch; whereby a hollow forged article results.

4,803,881
PIPE STRETCHING APPARATUS
Winfred L. Dudley, 2409 Debesa Rd., El Cajon, Calif. 92021
Filed Feb. 2, 1987, Ser. No. 9,454
Int. Cl.[4] B21D *51/14*
U.S. Cl. 72—392 10 Claims



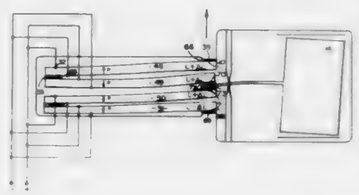
1. An apparatus for stretching pipe, comprising:
first and second elongated mandrels having opposite ends, each having a longitudinal axis and an outer surface of a predetermined cross-section transverse to each respective axis for engaging an internal surface of a pipe; and
displacement means coupled to said first and second mandrels for adjusting the relative distance between said first and second mandrels by moving at least one of said first and second mandrels with respect to the other, wherein said displacement means comprises a plurality of hydraulic jacks disposed between said first and second mandrels at spaced intervals along the longitudinal extent of the first and second mandrels and between the opposite ends thereof, each jack having a cylinder coupled at one end to an inner surface of said second mandrel and a piston coupled at one end to an inner surface of said first mandrel.

4,803,882
UNBALANCE MEASURING STATION AND METHOD FOR UNBALANCE MEASUREMENT
Harald Schonfeld, Darmstadt; Rainer Jarschel, Egelsbach, and Helmut Frank, Dieburg, all of Fed. Rep. of Germany, assignors to Carl Schenck AG, Fed. Rep. of Germany
Filed Jan. 25, 1987, Ser. No. 66,335
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1986, 3638158; European Pat. Off., Nov. 21, 1986, 86116150.3
Int. Cl.[4] G01M *1/02*; B65G *47/00*
U.S. Cl. 73—462 17 Claims



1. In an unbalance measuring station toward which a rotor to be balanced is carried by a transport system, the station having an unbalance measuring unit and a device for loading a rotor into engagement with the measuring unit, bearings for the rotor, means for rotating the rotor, a measurement transducer for sensing effects of the unbalance of the rotor, a reference signal generator and a data processing unit for processing the measured signal in combination with the reference signal, the improvement according to which the transport system is arranged in a line passing through the unbalance measuring station, and the measuring unit being located above the path of movement of the transport system and having a loading side facing the transport system.

4,803,883
ACCELEROMETER
Sidney G. Shutt, Brea, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Nov. 9, 1987, Ser. No. 118,510
Int. Cl.[4] G01P *15/13*
U.S. Cl. 73—517 B 6 Claims



1. An accelerometer comprising:
a frame having an input axis (y) and a cross axis (x) orthogonal to and co-planar with said input axis;
a proofmass;
a flexible beam having a first end coupled to said proofmass, a second end and a pivot axis support location interposed between said first and second ends:
a pivot support coupled to said frame and providing support to said flexible beam at said flexible beam pivot axis support location at a point between said beam's first and second ends, said flexible beam being free to pivot on said pivot support, said pivot support forming a relatively

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frictionless pivot axis (z), said pivot axis passing through the intersection of said input axis (y) and said cross axis (x) and being normal to the plane of said input axis and cross axis;

a rotator having at least a first reference surface coupled to said frame and an output surface for delivering a restoring force having a first or second polarity, said restoring force being applied in a direction parallel to said input axis (y) said flexible beam second end in response to a drive signal having a respective first or second polarity;

said flexible beam second end being coupled to receive said restoring force, said flexible beam being further characterized to restore said proofmass to a reference position in response to an acceleration along said input axis;

position signal means for providing an error signal proportional to the displacement of said proofmass from said reference position;

a servo means responsive to said error signal for applying said drive signal to said rotator to develop said restoring force to drive said flexible beam second end in a direction along said input axis and with a displacement characterized to restore said proofmass to its reference position and thereby drive said error signal to substantially zero;

a boundary acoustic wave device on said flexible beam surface and oriented for significant frequency sensitivity to strain in said flexible beam, and

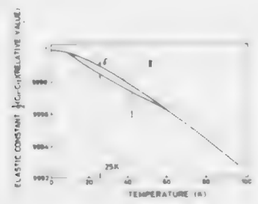
circuit means for providing an output signal having a frequency responsive to the boundary acoustic velocity of a wave in said boundary acoustic wave device.

4,803,884

METHOD FOR MEASURING LATTICE DEFECTS IN SEMICONDUCTOR

Hiroshi Kaneta, Kawasaki; Tsutomu Ogawa, Machida; Haruhisa Mori, Yokohama, and Kunihiko Wada, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 22, 1987, Ser. No. 136,691
Claims priority, application Japan, Dec. 26, 1986, 61-314984
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—598 11 Claims



1. A method for measuring lattice defects in a semiconductor crystal, comprising the steps of:

applying an ultrasonic pulse to said semiconductor crystal;

setting said semiconductor crystal at a predetermined temperature;

detecting said ultrasonic pulse passed through said semiconductor crystal;

measuring an ultrasonic velocity of said detected ultrasonic pulse passed through said semiconductor crystal with respect to said predetermined temperature to obtain an elastic constant of said semiconductor crystal corresponding to said ultrasonic velocity; and

determining a difference between the elastic constant of the semiconductor crystal and an elastic constant of a semiconductor crystal known to have no lattice defects at the same predetermined temperature, said difference correlating to a concentration or density of lattice defects producing low energy unharmonic excitation.

4,803,885

TORQUE MEASURING APPARATUS

Yutaka Nonomura, Nagoya; Kouji Tsukada, Seto; Yuji Nishibe, Aichi, and Masaharu Takeuchi, Owariasahi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichiken, Japan

Filed Apr. 17, 1987, Ser. No. 39,390
Claims priority, application Japan, Apr. 21, 1986, 61-91910
Int. Cl.[4] G01L *3/10*
U.S. Cl. 73—862.36 17 Claims



1. A torque measuring apparatus comprising magnetic detection means for non-contact measuring strains in a rotating shaft of ferromagnetic material which is adapted to transmit torques, the detected strains being used to determine the levels of transmitted torques, said magnetic detection means comprising:

exciting coil means wound around the outer periphery of said rotating shaft and adapted to magnetize said rotating shaft in its axial direction;

detecting core ring means in the form of an integral unit which includes a plurality of detecting cores arranged around the circumferential area of the rotating shaft to form a ring, each of said detecting cores forming an independent magnetic circuit between said detecting core and said rotating shaft; and

magnetic detecting elements for detecting variable magnetic fluxes in each of said detecting cores depending on the level of the transmitted torque;

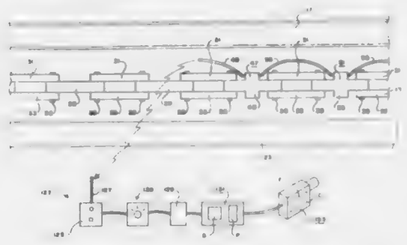
whereby the strains in said rotating shaft can be measured in non-contact manner, based on the sum of output signals from said magnetic detecting elements.

4,803,886

CHAIN PULL ANALYZER SYSTEM

Larry May, 3971 Lakewood Dr., South, Memphis, Tenn. 38128; Peter Curtiss, 3641 Winchester Square West, Memphis, Tenn. 38118, and Terry Foshee, 2104 Westchester Dr., #1, Memphis, Tenn. 38134

Filed Jan. 14, 1988, Ser. No. 143,673
Int. Cl.[4] G01L *5/10*
U.S. Cl. 73—862.39 15 Claims



1. A chain pull analyzer system for monitoring the tensile stresses of a conveyor chain while under load and in operation, said chain including a plurality of elongated center links, a plurality of connecting plates, and a plurality of connecting pins for pivotally connecting said center links to said connecting plates, said system comprising:

(a) telemetry means for sensing the strain experienced by said chain while under load and in operation and for transmitting a radio frequency signal proportional to said strain, said telemetry means including:

(i) a strain sensing means for sensing said strain experienced by said chain while under load and in operation and for producing an electrical signal based on said strain, said strain sensing means including a body member for replacing one of said center links of said chain;

(ii) a signal conditioning means for converting said electrical signal produced by said strain sensing means to an analog signal, said signal conditioning means including a body member for replacing one of said center links of said chain;

(iii) a radio frequency transmitter means for transmitting said analog signal of said signal conditioning means, said radio frequency transmitter including a body member for replacing one of said center links of said chain;

(iv) a source of electrical energy for energizing said strain sensing means, said signal conditioning means and said radio frequency transmitter; and

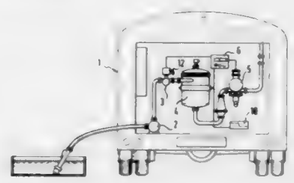
(b) data means for receiving said radio frequency signal transmitted by said telemetry means and for producing strain data output based on said radio frequency signal.

4,803,887

FLOW-METERING SYSTEM FOR MILK-COLLECTING VEHICLE

Ulrich-Christian Sandau, Hildesheim, and Manfred Kaune, Schellerten, both of Fed. Rep. of Germany, assignors to Diesel GmbH & Co., Hildesheim-Bavenstedt, Fed. Rep. of Germany

Filed Jan. 2, 1987, Ser. No. 286
Int. Cl.[4] G01N *1/10*
U.S. Cl. 73—863.01 21 Claims



1. A flow-meter system for milk-collecting vehicles comprising in sequential arrangement in an operational direction a pump, a pulse-controlled sampling device, an air separator and a flow-meter with pulse generator and display and a computer provided in said display for analysis, wherein said computer has means for storing the value of a given quantity of milk delivered the day before by the suppliers and said values are correlated to a particular supplier, a given number of pulses are assigned to all previous-day quantities by said computer, said pulses having a quantity-dependent pulse-train computed from said values and released by said flow-meter, whereby different previous-day quantities correspond to different delivered-quantity/pulses and where said pulses (11) drive said sampling device (3).

4,803,888

RESISTANCE WIRE TENSION MEASURING GAUGE

Pierre Choquet, 3433 Chemin Saint-Louis, Apt. 2, Ste-Foy Québec, Canada (G1W 1S1)

Filed Aug. 19, 1987, Ser. No. 86,879
Int. Cl.[4] G01L *5/04*
U.S. Cl. 73—862.39 9 Claims



1. An apparatus for measuring either tension load or strain in cables or rods comprising

at least one resistance wire;

said resistance wire being contained in a wrap around cover designed to protect said wire against aggressive agents;

means for mounting said at least one resistance wire along said cable or rod so that said wire undergoes a variation of its electrical resistance when said cable or rod is subject to a variation of tension load or strain; and

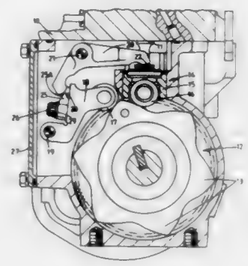
means to measure the variation in resistance in said wire so as to determine the tension load or strain of said cables or rods.

4,803,889

FUEL INJECTION PUMP

Kenneth M. Harris, Maidstone, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Jun. 19, 1987, Ser. No. 64,825
Claims priority, application United Kingdom, Jul. 11, 1986, 8616964; Oct. 22, 1986, 8625330
Int. Cl.[4] F16H *53/00*
U.S. Cl. 74—53 4 Claims



1. A fuel injection pump for supplying fuel to an internal combustion engine comprising a pumping plunger which is positively reciprocated by a cam mechanism of the desmodromic type, the mechanism comprising a first cam follower located at one end of the plunger, the cam follower being engageable by a cam lobe on a rotary multilobe cam to impart inward movement to the plunger in a direction to pump fuel, a second cam follower engageable with a cam lobe, said second cam follower being mounted at one end of a first pivotal lever, the other end of the first pivotal lever being mounted on a housing of the pump, a second pivotal lever being pivotally mounted intermediate its ends on said housing, one end of said second pivotal lever engaging with said plunger and the other end of the second pivotal lever being operatively coupled to said first pivotal lever, so that movement of the second cam follower by the cam lobe will cause pivotal movement of the levers and outward movement of the plunger; adjustment means carried by one of said levers and engaging with the other of said levers whereby the backlash in the mechanism

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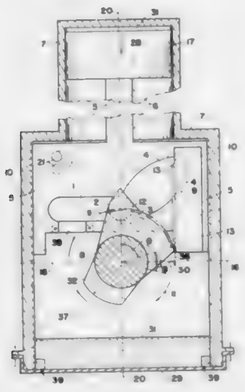
can be adjusted, said adjustment means comprising a wedge-shaped shoe adjustably mounted on said first lever, a surface defined on said shoe for engagement by the second lever and a bolt engaging said shoe and said first lever for securing the shoe to the first lever, the bolt having a head which engages with a further surface defined by the shoe, said further surface of the shoe being inclined to a surface defined on said first lever and against which the shoe is secured by the screw, whereby lateral movement of said shoe relative to the surface defined on said first lever will be restrained by a wedge action.

4,803,890

PISTON/POWER SHAFT COUPLING

Robert L. Giuliani, 1456 Thurston Ave. A-1204, Honolulu, Hi. 96822; Mark A. Giuliani, and Karen A. Giuliani, both of 45-310 Akimala Pl., Kaneohe, Hi. 96744

Filed Nov. 27, 1987, Ser. No. 125,882
Int. Cl.[4] F16H *19/04, 21/22, 29/20*
U.S. Cl. 74—131 **5 Claims**



1. An apparatus for converting motion between linear reciprocal motion and rotary motion, the combination comprising:
- a housing;
- a power shaft rotatably supported by the housing;
- at least one first element capable of linear reciprocal motion; the first element supported by the housing;
- a first communication means between the first element and the power shaft for transmitting the motion between a first reciprocal motion and said rotary motion;
- the first communication means comprising a fixed length moment arm; and
- a second communication means between the first element and the power shaft for transmitting the motion between a second reciprocal motion and said rotary motion wherein the second communication means comprises a scotch yoke.

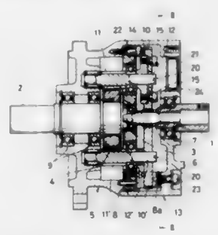
4,803,891

TRANSMISSION FOR CONTROLLED EQUIPMENT

Takashi Takahashi, 26-18, Kamisoshigaya 1, Setagaya-ku, Tokyo, Japan

Filed Jan. 29, 1987, Ser. No. 67,056
Claims priority, application Japan, Mar. 12, 1987, 62-55293
Int. Cl.[4] F16H *55/18*
U.S. Cl. 74—409 **2 Claims**

1. A reversible transmission for controlled equipment comprising: a pair of intermediate gears in mesh with an input gear; another pair of intermediate gears in mesh with an output gear; and a pair of intermediate shafts, each connecting one of the intermediate gears engaged with the input gear with one of the intermediate gears engaged with the output gear, thus forming a pair of gear trains, one of said pair of gear trains transmitting power from said input gear to said output gear when said input gear is driven in a first power transmission direction and the other of said pair of gear trains transmitting power from said input gear to said output gear when said input gear is driven in an opposite power transmission direction, said power transmission direction being reversible without backlash between said gears, one intermediate gear of one of said pair of intermediate gears being adjustably mounted on one of said pair of intermediate shafts and being securely fixable to said one of said pair of intermediate shafts by a secure fixing means, said adjustably mounted intermediate gear being slightly turnable in opposite directions on said one intermediate shaft to take-up any backlash between said gears in one of said pair of gear trains in sai



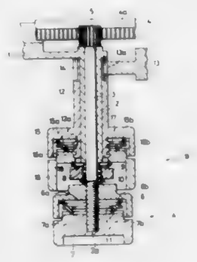
first power transmission direction and between said gears in the other of said pair of gear trains in said opposite power transmission direction, said adjustably mounted intermediate gear being securely fixed to said one intermediate shaft with said secure fixing means when said backlash is taken-up in one of said power transmission directions and securely fixing said adjustably mounted intermediate gear to said one intermediate shaft for eliminating backlash in both of said power transmission directions, said secure fixing means comprising bolts passing through through-holes formed in said adjustably mounted intermediate gear with a gap between said bolts and inner surfaces of said through-holes and a disk secured to said intermediate shaft, said adjustably mounted intermediate gear being securely fixed to said disk when said bolts are tightened.

4,803,892

MANUALLY OPERABLE DEVICE FOR DISPLACING MOVABLE STAGES

Hidehiko Furuhashi, Fujisawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 11, 1988, Ser. No. 166,922
Claims priority, application Japan, Mar. 30, 1987, 62-77036
Int. Cl.[4] G02B *21/26*
U.S. Cl. 74—479 **5 Claims**



1. A manually operable device for displacing a first stage in one direction and displacing a second stage movably disposed on said first stage in other direction oriented at a right angle

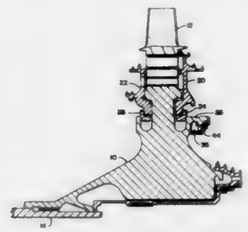
relative to the direction of movement of the first stage comprising:
- a support shaft provided on the first stage and having a flange fixedly secured thereto at one end;
- a first rotational shaft rotatably provided through said support shaft to displace said second stage;
- a second rotational shaft rotatably provided about the support shaft for displacing said first stage;
- a pair of main handles fixedly mounted on said first rotational shaft and said second rotational shaft for performing rotational operation, respectively;
- first couple adjusting means provided between one of said pair of main handles and said flange and including a first sub handle being rotatable and axially displaceable relative to said one main handle;
- second couple adjusting means provided between other one of said pair of main handles and said flange and including a second sub handle being rotatable and axially displaceable relative to said other main handle; and
- frictional engaging means for inhibiting rotation of each of the main handles relative to the corresponding sub handle so as to allow each of the main handles and the corresponding sub handle to be rotated together.

4,803,893

HIGH SPEED ROTOR BALANCE SYSTEM

Robert A. Bachinski, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 24, 1987, Ser. No. 100,793
Int. Cl.[4] F16F *15/22*
U.S. Cl. 74—572 **3 Claims**



1. A compact balance system for a high speed gas turbine engine rotor comprising:
- a bladed disk;
- a closely spaced collar secured to said disk, said collar having an inwardly racing circumferential groove and a plurality of inwardly facing axial slots contiguous with, and axially outboard of said groove with respect to said disk;
- at least one balance weight located in said groove and one of said slots, and having an axially extending side;
- a circumferential cover place of L cross section secured within said collar including an axially extending leg covering the inwardly facing side of said groove, weight and slots and having a radially extending leg covering the axially extending side of said weight and slots.

4,803,894

BICYCLE PEDALLING APPARATUS

Richard J. Howell, Winooski, Vt., assignor to The Shelburne Corporation, Shelburne, Vt.

Continuation of Ser. No. 701,311, Feb. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 583,890, Feb. 27, 1984, Pat. No. 4,640,151. This application Dec. 16, 1986, Ser. No. 941,581
The portion of the term of this patent subsequent to Feb. 3, 2004, has been disclaimed.
Int. Cl.[4] G05G *1/14*
U.S. Cl. 74—594.6 **30 Claims**



1. Pedalling apparatus for releasably and replaceably coupling a rider's foot to a pedal arranged to revolve about a pedal axis, said pedalling apparatus having the improvement comprising
- A. latch means upwardly projecting on said pedal and having first and second latch members selectively directed along a latch axis longitudinal with said pedal axis,
- B. at least one said latch member being deflectable and resiliently biased relative to the other along said latch axis,
- C. means forming a thrust surface on said latch means arranged for extending vertically and longitudinally relative to said pedal axis, and
- D. releasable,seating means arranged for wearing on a rider s foot and having a latch-receiving recess for replaceably receiving said latch means and having first and second selectively directed latch seats for releasably and replaceably coupling by seating, against the action of said resilient bias, said latch members of said latch means received in said recess,
- E. said recess of said seating means having a seating portion that mountingly receives said latch means when seated therein and having means forming a surface which engagingly abuts said thrust surface of said latch means received therein in response to at least a forward cycling thrust of the rider's foot, said recess further having a guide portion forward of said seating portion for receiving said latch means for accommodating selected relative movement of said latch means longitudinally backward into and forward out of said seating portion,
- F. whereby said seating means resists unseating of said latch means coupled therewith and transmits to said latch means a cycling thrust in response to pedalling forces and movements, and said latch means unseats from said seating means in response to selected non-pedalling actions.

4,803,895

BALANCING MECHANISM

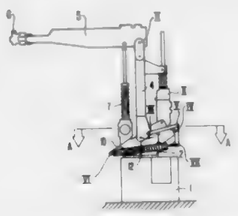
Shunichi Nishizawa; Toshio Tsubota, and Takashi Chikura, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 833,714, Feb. 27, 1986, abandoned. This application May 20, 1987, Ser. No. 52,160
Claims priority, application Japan, Mar. 1, 1985, 60-28037[U]
Int. Cl.[4] B66C *1/00;* **G05G** *1/00*
U.S. Cl. 74—603 **9 Claims**

1. In an industrial robot having a support body, a vertically

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extending first arm having a first end and a second end opposite said first end, pivotally mounted at said first end to said support body for rotation about a first horizontal axis, a second arm having a third end and a fourth end opposite said third end, pivotally mounted to said second end of said first arm at said third end for rotation about a second horizontal axis, and a balancing means, including spring members which expand when said first and second arms pivot, for respectively balancing said first and second arms when said first and second arms pivot, the improvement wherein said balancing means includes a first link pivotally connected at one end thereof to said first arm for rotation about a third horizontal axis spaced from said first horizontal axis, a first lever pivotally connected to said support body for rotation about a fourth horizontal axis and



pivotally connected to said first link for rotation about a fifth horizontal axis at another end of said first link opposite said one end on one side of said fourth horizontal axis, and a first expandable spring member pivotally mounted at one end to said support body for rotation about a sixth horizontal axis and pivotally connected at an opposite end to said first lever for rotation about a seventh horizontal axis on another side of said fourth horizontal axis angularly spaced about said fourth horizontal axis from said one side, each of said first, second, third, fourth, fifth, sixth and seventh horizontal axes extending parallelly to one another, whereby rotation of said first arm about said first horizontal axis pivots said first lever about said fourth horizontal axis through said first link, thereby to expand said first spring member and pivot said first spring member about said sixth horizontal axis.

4,803,896

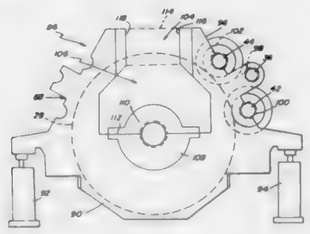
MARINE GEAR CASING

Richard A. MacGregor, Wakefield, Mass., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 668,128, Nov. 5, 1984. This application Oct. 6, 1986, Ser. No. 915,961

Int. Cl.[4] F16H *57/02*

U.S. Cl. 74—606 R **3 Claims**



1. A gearing assembly comprising:

a one-piece gear casing; including an integral oil pan and gear casing without horizontal joint;

a downward protrusion extending downward from said one-piece gear casing;

first and second vertical opposed edges defining therebetween a vertical slot longitudinally disposed throughout a longitudinal dimension of said one-piece gear casing;

a transverse slot in said vertical slot;

a wide portion adjacent a lower extremity of said vertical slot;

a bull gear having first and second shafts coaxially affixed thereto;

at least one of said first and second shafts being supportingly fittable upon said wide portion;

said vertical slot and said transverse slot having transverse and longitudinal dimensions sufficient to permit the lowering of said bull gear with its affixed first and second shafts therethrough for fitting said at least one of said first and second shafts upon said at least one wide portion;

said downward protrusion being disposed for permitting a lower portion of said bull gear to enter therein;

at least one upper bearing half fittable within said wide portion over said at least one of said first and second shafts;

at least one cross brace fittable between said first and second vertical opposed edges for bracing an upper portion of said one-piece gear casing;

at least one inclined upper surface in said one-piece gear casing;

a plurality of lower bearing halves in said at least one inclined upper surface;

a plurality of shafts rotatably supportable in said plurality of lower bearing halves;

at least one pinion affixed to one of said plurality of shafts and having a surface thereof in meshed contact with a surface of said bull gear; and,

gear means for driving said at least one pinion from an external source of torque whereby said bull gear is forcibly rotated;

In further response to the above identified Office Action, Applicant submits the following arguments for allowance and respectfully requests that the Examiner reconsider his position.

4,803,897

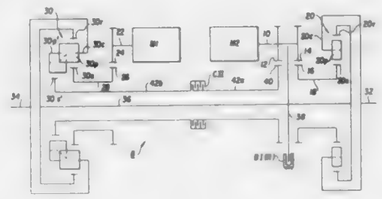
DRIVE SYSTEM FOR TRACK-LAYING VEHICLES

Bradley O. Reed, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Sep. 18, 1987, Ser. No. 98,164

Int. Cl.[4] F16H *37/06*

U.S. Cl. 74—720.5 **19 Claims**



1. A drive system for a track-laying vehicle comprising, in combination:

A. a first motor for providing a bidirectional first mechanical input infinitely variable in speed over a predetermined range;

B. a second motor similar to and independent of said first motor for providing a bidirectional second mechanical input infinitely variable in speed over an essentially identical predetermimed range; and

C. a transmission having first and second track driving outputs, and including

(1) a first output gear set drivingly connected to said first transmission output,

(2) a second output gear set drivingly connected to said second transmission output,

(3) first means interconnecting said first and second output gear sets,

(4) second means applying said first mechanical input to said first output gear set, said first mechanical input providing both steering power and propulsion power to said first output gear set,

(5) third means applying said second mechanical input to said second output gear set, said second mechanical input providing both steering power and propulsion power to said second output gear set,

(6) fourth means conditioning said first and second output gear sets to respectively produce first range propulsion and steering power at said first and second transmission outputs, and

(7) fifth means operating in coordination with said fourth means to apply said first mechanical input to said second output gear set to produce second range propulsion power and first range steering power at said first range and second transmission outputs.

4,803,898

APPARATUS FOR DETECTING A NEUTRAL STATE OF A TRANSMISSION GEAR OF A VEHICLE ENGINE SYSTEM

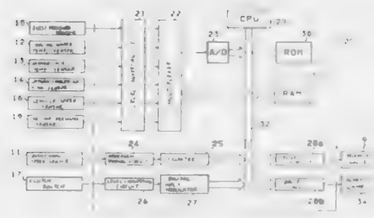
Yoshitaka Hibino; Takeshi Fukuzawa; Hiromitsu Sato; Masahiko Asakura, and Atsushi Totsune, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1987, Ser. No. 2,948

Claims priority, application Japan, Jan. 13, 1986, 61-005499

Int. Cl.[4] B60K *41/08*

U.S. Cl. 74—860 **3 Claims**



1. An apparatus for detecting a neutral state of a transmission gear of a vehicle having an internal combustion engine and said transmission gear for transmitting an output torque of said internal combustion engine supplied through a clutch, comprising:

means for detecting a rotational speed of said internal combustion engine;

means for detecting a vehicle speed;

means for detecting a condition in which said output torque of said internal combustion engine is transmitted by said clutch to said transmission gear; and

judging means which receive detection signals from said means for detecting, for judging that said transmission gear is operated in the neutral state when a ratio between said rotational speed of said internal combustion engine and said vehicle speed is outside of a plurality of ranges determined correspondingly to each shift position of said transmission gear while said output torque of said internal combustion engine is transmitted to said transmission gear by said clutch.

4,803,899

START UP CONTROL FOR TRANSMISSION

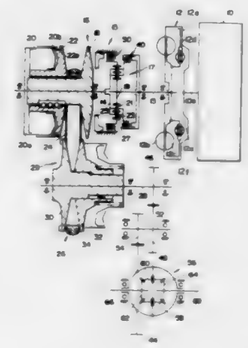
Haruyoshi Kamura, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 882,352, Jul. 7, 1986. This application Feb. 22, 1988, Ser. No. 161,353

Claims priority, application Japan, Jul. 8, 1985, 60-148402

Int. Cl.[4] B60K *41/12, 41/18*

U.S. Cl. 74—866 **3 Claims**



1. A control device for a transmission for a motor vehicle having an engine and a brake adapted to be activated by a brake pedal, the transmission being shiftable in selected one of a plurality of shift patterns, the plurality of shift patterns including a predetermined shift pattern which provides the best acceleration performance, the control device comprising:

brake sensor means for detecting activation of the brake and generating a brake activation indicative signal when the brake is activated;

means for detecting engine load on the engine and generating an engine load indicative signal indicative of the engine load detected;

means for comparing said engine load indicative signal with a predetermined value;

means responsive to said brake activation indicative signal and the result of said comparison by said comparing means for determining a stall start up condition by sensing when the load indicative signal is greater than the predetermined value at the same time that the brake is activated and selecting the predetermined shift pattern during said stall start up condition.

4,803,900

TRANSMISSION RATIO CONTROL SYSTEM FOR A CONTINUOUSLY VARIABLE TRANSMISSION

Hiroya Ohkuno, Koganei, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1986, Ser. No. 944,837

Claims priority, application Japan, Dec. 23, 1985, 60-289791

Int. Cl.[4] B60K *41/18*

U.S. Cl. 74—866 **9 Claims**

6. In a control system for a continuously variable transmission for transmitting the power of an internal combustion engine having a throttle valve to driving wheels of a motor vehicle through a clutch, the transmission having a drive pulley including a hydraulically shiftable disc and a first hydraulic cylinder for shifting the disc, a driven pulley including a hydraulically shiftable disc and a second hydraulic cylinder for operating the disc of the driven pulley, and a belt engaged with both pulleys, the control system having a transmission ratio control valve having ports and a shiftable spool, and a first hydraulic circuit having a pump for supplying oil to the first hydraulic cylinder via the transmission ratio control valve and

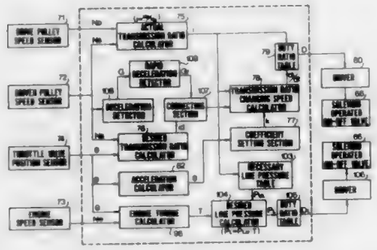
VOL 1099 ISS 2 FEB 14 1989 UMI

to said second hydraulic cylinder, the improvement in the system comprising:

sensor means for sensing operating conditions of said engine and for producing a corresponding first signal;

first means responsive to the first signal for determining a desired transmission ratio;

second means responsive to the desired transmission ratio for shifting the spool of the transmission ratio control valve so as to provide an actual transmission ratio of the transmission corresponding to the desired transmission ratio;



detecting means for detecting actual rapid deceleration of the vehicle above a predetermined value of rapid deceleration and producing a rapid deceleration signal when said actual rapid deceleration is above said predetermined value; and

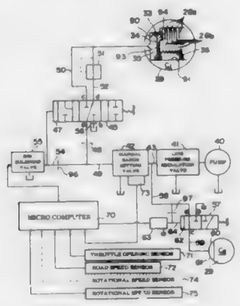
third means responsive to the rapid deceleration signal for increasing the desired transmission ratio so as via the second means to increase the actual transmission ratio.

4,803,901

METHOD AND SYSTEM FOR DETECTING THE ROTATION RATE OF THE OUTPUT SHAFT OF A TORQUE CONVERTER

Yukio Hamano; Seitoku Kubo, and Yutaka Taga, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 6, 1986, Ser. No. 915,651
Claims priority, application Japan, Oct. 7, 1985, 60-223356
Int. Cl.⁴ B60K *41/22*
U.S. Cl. 74—867 **4 Claims**



1. An automatic transmission for a vehicle equipped with an engine, comprising:

a torque converter having a rotational power input member adapted to be driven by said engine and a rotational power output member;

a gear transmission mechanism for selectively providing a plurality of speed stages including a first and lower speed stage, a second and substantially high speed stage, and a reverse stage, said gear transmission mechanism comprising a first rotational power input member, a second rotational power input member, a first clutch for selectively connecting, when engaged, said first rotational input member thereof with said rotational power output member of said torque converter, and a second clutch for selectively connecting, when engaged, said second rotational power input member thereof with said rotational power output member of said torque converter, said gear transmission mechanism providing said first speed stage when said first clutch is engaged with said second clutch being disengaged and providing said second speed stage or said reverse stage when said second clutch is engaged;

an oil pressure control system for selectively supplying an oil pressure to said first and second clutches for selectively engaging said first and second clutches, said oil pressure control system including an oil pressure and modification means for selectively modifying the pressure of the oil supplied to said first clutch to be lowered from a full pressure thereof to a medium pressure which partially engages said first clutch;

a speed sensor for detecting the rotational speed of said second rotational input member of said gear transmission mechanism; and

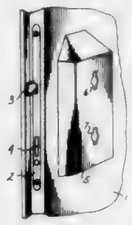
a creep control system including means for detecting a certain vehicle operating condition that the vehicle is substantially at stoppage with the engine being in idling condition while said first clutch is supplied with the oil pressure, said creep control system, when said certain vehicle operating condition is being detected, partially overriding said oil pressure control system so as to engage said second clutch while controlling said oil pressure modification means so as to modify the oil pressure supplied to said first clutch so as to maintain a predetermined condition for the rotational speed of said rotational power output member of said torque converter, said rotational speed of said rotational power output member of said torque converter being detected by said speed sensor.

4,803,902

REENCODING OF LOCKS

Guenter Mauer, Heiligenhaus, Fed. Rep. of Germany, assignor to Mauer GmbH, Heiligenhaus, Fed. Rep. of Germany

Filed Nov. 9, 1987, Ser. No. 118,795
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1986, 3638186
Int. Cl.⁴ E05B *35/12*
U.S. Cl. 70—339 **8 Claims**



1. Adjustable and encodible lock for room doors, safe deposit boxes or the like, under utilization of two separate lock structures comprising in combination;

two separate sets of tumblers;

a main slide coupled to an existing lock cylinder or to the common lock or latch or both, said main slide having two follower pins (13*b* and 13*c*);

first and second control slides (21, 22) respectively associated with the separate two lock and tumbler sets and

respectively provided with cutouts (21*c*, 22*c*) for engagements with said two follower pins;

a first one of the tumbler set being provided for being operated by a customer key, the other one of the sets provided for operation by a management key;

each tumbler of the first tumbler sets having funnel shaped control cutouts; and

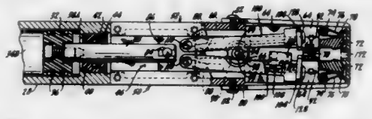
an intermediate slide with a cam for engagement with the management key and having a control pin for operating and reorganizing the tumbler elements of the first tumbler set as a customer key for new adjustment is inserted in for engagement with the first tumbler set.

4,803,903

POWERED WIRE STRIPPER

Eric H. Wolter, Rockford, and James A. Weasenar, Sycamore, both of Ill., assignors to Ideal Industries, Inc., Sycamore, Ill.

Filed Sep. 17, 1987, Ser. No. 97,869
Int. Cl.⁴ H02G *1/12*
U.S. Cl. 81—9.43 **19 Claims**



1. A powered wire stripper, comprising:

a housing including first and second frame members and right and left covers, and having at least one wire-receiving opening at one end for receiving wire to be stripped;

a cylinder connected to the housing and having a piston movable therein with a piston rod connected to the piston extending from the cylinder to the housing;

a valve for supplying pressure fluid to the cylinder on either side of the piston;

a pair of blade holders pivotable about at least one pivot pin between open and closed conditions, the blade holders and pivot pin being slidable in the housing between ready and retract positions;

first and second blades mounted in opposing relation on the blade holders and cooperating when the blade holders are closed to cut the insulation of a wire inserted into the wire-receiving opening;

at least one puller plate which is connected to the piston rod and slidable in the housing along a longitudinal axis, the puller plate having a pair of slots therein disposed at an angle to the longitudinal axis; and

a pair of slide pins slidably mounted in the slots of the puller plate and pivotally engaging the blade holders such that longitudinal motion of the puller plate causes the blade holders to pivot about the pivot pin.

4,803,904

EXTENSION DEVICE FOR POWER SCREWDRIVER

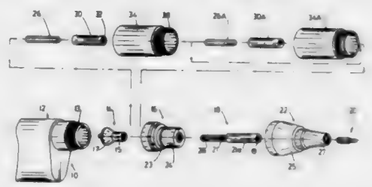
Louis Stanich, 34 McNicoll Ave., Willowdale, Ontario, Canada (M2H 2A8), and Henry D. Sweeny, 152 Stoneybrook Drive, Kitchener, Ontario, Canada (N2M 4L7)

Continuation-in-part of Ser. No. 888,303, Jul. 22, 1986, Pat. No. 4,766,783. This application May 26, 1988, Ser. No. 199,295
Int. Cl.⁴ B25B *21/00*
U.S. Cl. 81—54 **12 Claims**

1. In an apparatus for driving screws into a receiving medium, the apparatus normally including power means, bit means, polygonal drive means removably connecting said power means to said bit means and depth gauge means threadedly connected to said power means, the improvement comprising an extension device for increasing the distance between the power means and the bit means, said device comprising:

first elongated polygonal extension rod means connectable to said power means in place of the polygonal extension drive means;

first elongated cylindrical sleeve means having a polygonal bore therein for receiving said first extension rod means in a press fit at one end thereof and for receiving the polygonal drive means in a press fit at the other end thereof, said drive means carrying said bit means; and



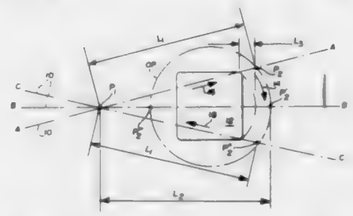
first adaptor means for receiving said first sleeve means therein, said first adaptor means having threaded sections at each end thereof, one of said sections threadedly connecting said first adaptor means to said power means in place of said depth gauge means, and the other of said sections threadedly receiving the depth gauge means thereon.

4,803,905

METHOD AND APPARATUS FOR CUTTING COLUMNAR ARTICLES

Rainer Koch, Senden, Fed. Rep. of Germany, assignor to Lingl GmbH & Co. KG, Neu-Ulm, Fed. Rep. of Germany

Filed Oct. 23, 1987, Ser. No. 111,740
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1986, 3636375
Int. Cl.⁴ B26D *5/00*; B28B *11/14*
U.S. Cl. 83—13 **40 Claims**



1. Apparatus for cutting a columnar article comprising:

(a) at least one cutting wire;

(b) means for orbitally moving one end of said at least one cutting wire around the columnar article to be cut while positionally maintaining the other end of said at least one cutting wire relative to the column thereby causing said at least one cutting wire to sever the columnar article along a predetermined plane established by said orbitally moving one end; and

(c) means for rectilinearly moving said at least one cutting wire within said established plane continually during said orbital movement of said one end.

4,803,906

NECK FOR GUITAR

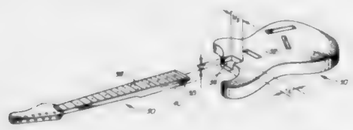
C. Leo Fender, 1510 Dana Pl., Fullerton, Calif. 92635

Filed Sep. 15, 1986, Ser. No. 907,238
Int. Cl.⁴ G10D *1/08*
U.S. Cl. 84—293 **7 Claims**

1. An electric guitar having a body, a neck extending from the body, and a fret board of a preselected end width supported by the neck, the body having a slot of predetermined depth, width, and length, the slot width being less than the end width of the fret board, the neck having a mounting end for fitting into the body slot and comprising (a) a blunt end face having width and height dimensions of the same width and depth, respectively, as the body slot, (b) opposed top and bottom surfaces, the bottom surface having the length and width of the

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body slot, the top surface having a width equal to the end width of the fret board, and (c) opposed side surfaces, the side surfaces having a mounting portion with dimensions at least



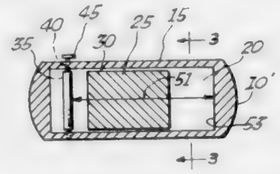
equal the depth and length of the body slot, a portion of at least one of the side surfaces extending beyond the mounting portion and having a broadened portion that flairs outwardly toward the top surface and fret board.

4,803,907

DRUM BEATER BALL

Gary Minker, 4271 122nd Dr. N., Royal Palm Beach, Fla. 33411

Filed Nov. 13, 1987, Ser. No. 120,099
Int. Cl.[4] G10D *13/02*
U.S. Cl. 84—422 R **7 Claims**



1. A drum engaging-impact system for providing a first drum membrane engagement and impact followed by an automatic second impact comprising:

a drum engaging device including;

a casing surrounding a relatively long chamber therein having an inner surface and a drum engaging surface at one end of said chamber;

a freely movable weighted body within said chamber, freely movable therein, said body having an exterior surface in contact with said inner surface;

said exterior surface of said body being generally contiguously spaced from said inner surface of said casing; and

said chamber having a rear surface and a forward surface positioned behind said drum engaging surface;

said body having a rear body surface engageable with said chamber rear surface when said device is initially accelerated and a front body surface engageable with said chamber forward surface after a relatively short time of said device engaging a drum surface, thereby providing second impact.

4,803,908

AUTOMATIC MUSICAL INSTRUMENT TUNING SYSTEM

Neil C. Skinn, 712 Sycamore, Fort Collins, Colo. 80521, and Stephen J. Freeland, 2008 Bennington Cir., Fort Collins, Colo. 80526

Filed Dec. 4, 1987, Ser. No. 128,685
Int. Cl.[4] G10G *7/02*
U.S. Cl. 84—454 **13 Claims**

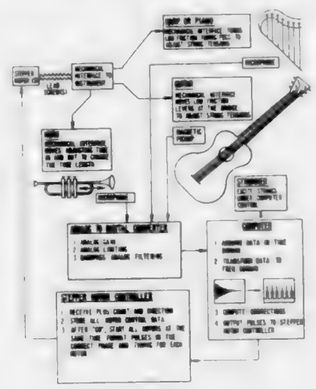
1. A system for automatically tuning a musical instrument having adjustment means for changing the frequency of a musical tone produced by said instrument; said system comprising:

(a) a detection means adapted to detect a musical tone produced by said instrument and produce a signal;

(b) converter means adapted to convert said signal to a digital signal;

(c) processing means adapted to convert said digital signal to a frequency signal;

(d) comparator means for comparing said frequency signal to a predetermined frequency value and producing an electrical signal;



(e) motor means activated by said electric signal; wherein said motor means is operably connected to said adjustment means for adjusting said frequency to correspond with said predetermined value;

wherein said instrument comprises a stringed instrument including a plurality of strings; wherein said adjustment means comprises a plurality of tensioning means corresponding to the number of said strings to be tuned, each said tensioning means being connected to one of said strings, wherein said motor means is operably connected to said tensioning means, and wherein all said strings to be tuned are tuned simultaneously.

4,803,909

APPARATUS AND METHOD FOR AUTOMATED BRAIDING OF SQUARE ROPE AND ROPE PRODUCT PRODUCED THEREBY

Michael F. Smith, 19534 55th Ave., N.E., Seattle, Wash. 98155

Filed Apr. 13, 1987, Ser. No. 37,332
Int. Cl.[4] D04C *1/12, 3/06, 3/12*
U.S. Cl. 87—6 **20 Claims**

16. A method for braiding rope having a generally square shaped cross section, comprising the steps of:

providing an elongate center core member to define a rope formation axis there along;

feeding plurality of rope strands toward a braiding point on said rope formation axis in which the plurality of strands are each fed from a supply bobbin;

transporting a first set of said supply bobbins in a first set orbit around the rope axis in one direction and transporting a second set of said supply bobbins in a second set orbit around the rope axis in the opposite direction wherein the first set and second set orbits are characterized by a crossing pattern in which the first set orbit passes radially outside of the second set orbit in first and second diametrically opposed sectors relative to the rope axis, and wherein the second set orbit passes radially outside of said first set orbit in third and fourth diametrically opposite sectors relative to the rope axis and wherein the third and fourth sectors are the complements of the first and second sectors; and

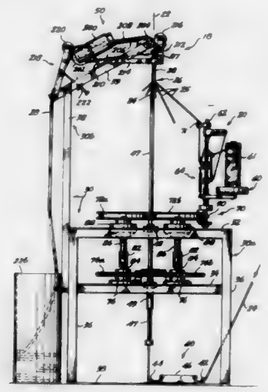
applying take-off tension to rope formed downstream of said

braiding point so as to cause the strands to be withdrawn from the orbiting supply spools into said braiding point to form said rope.

19. A braided rope having a generally square shaped cross section comprising:

an elongate center member extending along the center line of the rope; and

a plurality of at least eight outer strands braided onto said



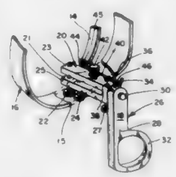
center member in a pattern characterized by a generally square cross section in which each of the four corners are formed by adjacent, parallel outer strand segments extending diagonally to the center line in which each adjacent pair of said outer strand segments overlap an inner strand segment that extends diagonally oppositely to said adjacent pair of outer strand segments and that emerges midside between corners to form with other parallel like emerging strands the adjacent corner.

4,803,910

MULTIPLE FIRING GUN TRIGGER EXTENSION ASSEMBLY

Vincent F. Troncoso, 14090-6100 Rd., Montrose, Colo. 81401

Filed Sep. 30, 1987, Ser. No. 102,631
Int. Cl.[4] F41D *11/02*
U.S. Cl. 89—27.3 **8 Claims**



1. A multiple firing gun trigger extension assembly for a semi-automatic gun having a trigger and trigger guard, said assembly comprising, in combination:

a. a mounting block having a slot for releasably receiving the lower portion of a gun trigger guard having an upper portion and a lower portion, said block including means for releasably securing said block to said trigger guard; and,

b. a gun trigger-actuating component rotatably secured to said block and including

i. a supplemental trigger below said block, moveable between a resting position and a sequential firing position,

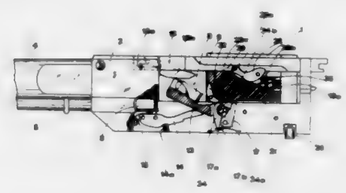
ii. a plurality of spaced trigger-activating fingers disposed in an arc along a path of travel above said supplemental trigger and rotatable therewith, and a trip lever comprising a spring releasably securable to a gun trigger in said trigger guard, and secured to said block, said spring having two opposite ends and an intermediate portion, one of said opposite ends being disposed in the path of travel of said trigger-activating fingers and rotatable thereby, the other of said opposite spring ends being releasably secured to said trigger and said intermediate portion of said spring being wound around a stud in said block, to effect sequential firing of a gun.

4,803,911

SEMI-AUTOMATIC TARGET PISTOL

Cesare Morini, Vezia, Switzerland, assignor to Morini Competition Arm S.A., Switzerland

Filed Aug. 7, 1987, Ser. No. 83,641
Claims priority, application European Pat. Off., Dec. 8, 1986, 86830229.0
Int. Cl.[4] F41D *7/08*
U.S. Cl. 89—194 **5 Claims**



1. An improved semi-automatic piston, comprising:

a piston body;

a barrel having an axial bore therethrough connected to an upper forward portion of the piston body;

a tubular magazine for retaining a number of cartridges in coaxial, nose-to-tail fashion, the tubular magazine being connected to the pistol body so as to be parallel and immediately beneath the barrel, the tubular magazine having a magazine spring therein for resiliently urging cartridges out of the magazine, tail end first, through an open rearward end thereof, a rear portion of the magazine extending to the open end being slotted to form at least one radially resilient tongue for retaining cartridges in the magazine against the urging of the magazine spring;

a trigger on the piston body for causing firing of a cartridge loaded in the barrel;

a breechblock slidably connected to an upper portion of the pistol body rearward of the barrel and resiliently urged forwardly toward the barrel by a recoil spring, the breechblock being slidable between a closed position occluding the barrel bore for firing the loaded cartridge, and an open position spaced rearwardly away from the barrel, the breechblock including:

firing means responsive to the trigger for striking the loaded cartridge and thereby firing the pistol; and

ejecting means responsive to sliding movement of the breechblock from the closed position to the open position for ejecting from the pistol a shell remaining in the barrel bore after the loaded cartridge has been fired;

the pistol further comprising loading means responsive to sequential rearward then forward sliding movement of the breechblock, for extracting a cartridge from the tubular magazine and transferring the cartridge to the barrel bore for firing, the loading means comprising:

a cradle for elevating a cartridge to be loaded from the tubular magazine to the barrel bore, the cradle being pivotably mounted at its rearward end to the pistol body below the breechblock and pivotable between a first car-

tridge-receiving position coaxial with the magazine and a second cartridge-loading position wherein the forward end of the cradle is in close proximity to the barrel bore rear end;

a first lever pivotably mounted to the pistol body at a point below the cradle and biased toward the cradle by a first tension means attached to both the first lever and the pistol body, the first lever in turn urging the cradle toward the second cartridge-loading position;

a second lever pivotably mounted to the first lever, having at one end a catch positioned to coincide with a rearward end of a bottom slot in the tubular magazine, the catch end of the second lever being biased upwardly by a second tension means attached to both the first and second levers, the second lever further having at the other end thereof a shank positioned to contact an internal surface of the pistol body so as to cause the catch end to clear the magazine bottom slot when the cradle is in the first cartridge-receiving position;

a third lever pivotably mounted to the pistol body at a point below the breechblock, having a relief thereon for engaging a rear end of the cradle so as to retain the cradle in the first cartridge-receiving position when the breechblock is in the closed position, and so as to release the cradle when the breechblock slides rearwardly to the open position, the third lever being biased by a third tension means toward engagement with the cradle rear end; and

a movable cartridge guide pivotably mounted to the pistol body at a point above the breechblock, the movable cartridge guide being pivotable between a raised position when the breechblock is in the closed position and a lowered position in which an end of the cartridge guide is adjacent the rear end of the barrel bore, above and parallel to the bore axis, the movable cartridge guide being biased by a fourth tension means toward the lowered position whenever the breechblock is in the open position.

4,803,912

BRAKE BOOSTER WITH SLEEVE AND DETENT RETAINED PRESSURE PLATE

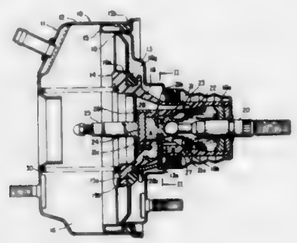
Michiharu Nishii, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 825,999, Feb. 4, 1986, abandoned. This application Oct. 6, 1987, Ser. No. 105,979

Claims priority, application Japan, Feb. 4, 1985, 60-14534[U]

Int. Cl.[4] F15B *9/10*

U.S. Cl. 91—369.2 **5 Claims**



1. A servomotor device, comprising:

a housing;

a power piston disposed within said housing;

a diaphragm member having an inner bead and which is disposed within said housing and engaged with said power piston for dividing said housing into a constant pressure chamber and a variable pressure chamber wherein said power piston further comprises hub means having an outer peripheral portion having a groove formed therein, a first shoulder and at least one second shoulder wherein said first shoulder faces towards said variable pressure chamber and said at least one second shoulder faces toward said constant pressure chamber;

a pressure plate having an inner sleeve portion positioned in said groove formed on said outer peripheral portion of said hub means, said inner sleeve portion engaging with said first shoulder of said hub means so as to prevent movement of said pressure plate toward said constant pressure chamber; and

a control valve for controlling a differential pressure between said constant pressure chamber and said variable pressure chamber, said pressure plate including at least one detent portion unitarily formed thereon and engageable with said second shoulder of said hub means so as to prevent movement of said pressure plate toward said variable pressure chamber, said hub means including a first groove formed on a variable pressure chamber side of said pressure plate for hermetically retaining said inner bead of said diaphragm member; such that said inner bead is attachable to and detachable from said first groove without release of connection between said pressure plate and said hub means.

4,803,913

HYDRAULIC POWER STEERING VALVE WITH THREE-ORIFICE REACTIVE CHAMBER PRESSURE CONTROL

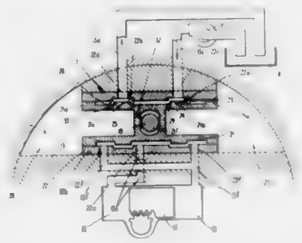
Hiroshi Hachisuka, Nishio, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 741,243, Jun. 4, 1985, abandoned. This application Apr. 13, 1988, Ser. No. 183,395

Claims priority, application Japan, Jun. 18, 1984, 59-126221; Oct. 12, 1984, 59-214890

Int. Cl.[4] B62D *5/06, 5/08;* **F15B** *13/14*

U.S. Cl. 91—371 **5 Claims**



1. A power steering system for use in a motor vehicle, comprising:

(a) a reciprocable fluid-pressure cylinder assembly for moving a steering link mechanism of the motor vehicle, said reciprocable fluid-pressure cylinder assembly having first and second fluid-pressure chambers and a piston disposed therebetween and coupled to an input shaft;

(b) a reservoir;

(c) a fluid-pressure pump for supplying a working fluid from the reservoir to said reciprocable fluid-pressure cylinder assembly;

(d) a control valve device comprising a valve cylinder having a first passage communicating with said fluid-pressure pump, a second passage communicating with said reservoir, and further passages communicating with said first and second fluid-pressure chambers, and a valve spool slidably disposed in said valve cylinder and axially movable therein in response to rotation of said input shaft, the arrangement being such that when said input shaft is rotated in one direction, the working fluid flows from said pump into said first fluid-pressure chamber and flows from the second fluid-pressure chamber into said reservoir, and when said input shaft is rotated in the opposite direction, the working fluid flows from said pump into said second fluid-pressure chamber and flows from said first fluid-pressure chamber into said reservoir;

(e) a first reactive pressure chamber in which a first end of said valve spool is exposed, said first reactive pressure chamber communicating with said first fluid-pressure chamber only through a first orifice; and

(f) a second reactive pressure chamber in which a second end of said valve spool is exposed, said second reactive pressure chamber communicating with said first fluid-pressure chamber through a third orifice and with said second fluid-pressure chamber through a second orifice, said second reactive pressure chamber further communicating with said first reactive pressure chamber through said third orifice and said first orifice, said third orifice being communicated with said first orifice through a third passage defined by a space between said spool and said valve cylinder which connects said first orifice with one of said fluid-pressure pump and said reservoir when said input shaft is rotated in a respective one of said one direction and said opposite direction.

4,803,914

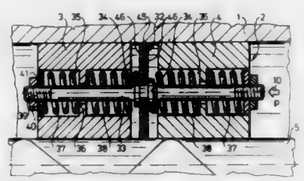
ROTATIONAL WORKING CYLINDER

Sándor Vékony, and Klára J. Vékonyné, both of Miskolc, Hungary, assignors to Innofinance Altalanos Innovacios Penzintezet, Hungary

Filed Nov. 4, 1986, Ser. No. 927,057

Int. Cl.[4] F01B *3/00*

U.S. Cl. 92—31 **6 Claims**



1. A fluid-operated working cylinder comprising:

(a) a shaft within, and coaxial with, said working cylinder, one end of said shaft extending out of said cylinder;

(b) two piston portions also within, and coaxial with, said cylinder and matingly engaging with, and moveable with respect to both the interior surface of said cylinder and the exterior surface of said shaft, said shaft passing through central holes in said piston portions dimensioned and configured to accommodate said shaft;

(c) a sealing plate between said piston portions within, and coaxial with, said cylinder, comprising a middle plate made of a sealing material and two stiffener plates supporting the middle plate, said sealing plate bearing sealingly against, but moveable with respect to said interior surface of the cylinder and said exterior surface of the shaft passing through a central hole in said sealing plate;

(d) interconnection means holding said piston portions in a tensed position; and

(e) forced trajectories between said cylinder and both the sealing plate and said piston portions and between both the sealing plate and said piston portions and the shaft, respectively, wherein one of said trajectories is formed as a longitudinal spiral path.

4,803,915

FRICTION YARN FALSE TWISTING APPARATUS

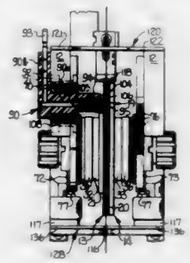
Detlev Oberstrass, Tönisheide, Fed. Rep. of Germany, assignor to Barmag AG, Remscheid, Fed. Rep. of Germany

Division of Ser. No. 780,193, Sep. 26, 1985, Pat. No. 4,667,576, which is a division of Ser. No. 459,992, Jan. 21, 1983, Pat. No. 4,559,775, which is a continuation of Ser. No. 429,796, Sep. 30, 1982, Pat. No. 4,481,762, and Ser. No. 273,076, Jun. 12, 1981, Pat. No. 4,389,841, and Ser. No. 272,940, Jun. 12, 1981, Pat. No. 4,372,106. This application Mar. 9, 1987, Ser. No. 23,799

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022421; Jul. 9, 1980, 3025921; Dec. 23, 1980, 3048615; Jul. 24, 1982, 3227711; Sep. 10, 1982, 3233624

Int. Cl.[4] F01B *31/00*

U.S. Cl. 92—110 **2 Claims**



1. A piston adapted for use in an apparatus for applying a biasing force to an adjacent member which is moving relative thereto, the comprising

a stem portion and an end portion, with said stem portion and end portion being aligned along a central axis, said end portion having a generally flat outwardly facing end surface which is perpendicular to said central axis, and which includes a circumferential periphery, a first recess formed in said circumferential periphery and communicating with said end surface and defining a laterally facing shoulder and an outwardly facing ledge, and a second recess formed in said circumferential periphery and communicating with said end surface and defining a laterally facing wall surface, and

a duct extending through said stem portion and said end portion coaxially along said central axis and communicating with said flat end surface for admitting the passage of air or the like therethrough.

4,803,916

MACHINE FOR RAPIDLY COOKING BATCHES OF SPAGHETTI

Antonio Tacconi, Florence, Italy, assignor to Soimex S.r.L., Florence, Italy

PCT No. PCT/IT86/00063, § 371 Date Mar. 31, 1987, § 102(e) Date Mar. 31, 1987, PCT Pub. No. WO87/00741, PCT Pub. Date Feb. 12, 1987

PCT Filed Jul. 31, 1986, Ser. No. 46,914

Claims priority, application Italy, Jul. 31, 1985, 9470 A/85

Int. Cl.[4] A47J *27/18, 27/14*

U.S. Cl. 99—352 **10 Claims**

1. A machine for rapidly cooking individual portions of spaghetti or the like comprising, in combination:

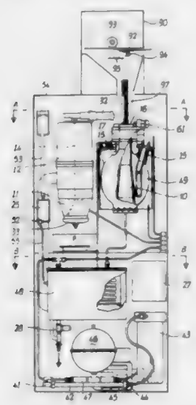
a batcher device for forming and delivering at an outlet a desired portion of raw spaghetti;

a pressurized water system including a boiler for heating and containing hot water under pressure;

a first vertically oriented chamber for partial cooking and a second vertically oriented chamber cascade connected with said first chamber for completing the cooking;

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said first chamber being supported inside said boiler below the outlet of said batcher device and provided with a normally closed first gate valve through which, when opened, a portion of raw spaghetti is introduced into said first chamber, a second normally closed gate valve operative when opened to introduce pressurized hot water from said boiler into said first chamber for rapidly partially cooking said portion of spaghetti, and a third normally closed gate valve, which when opened and said second



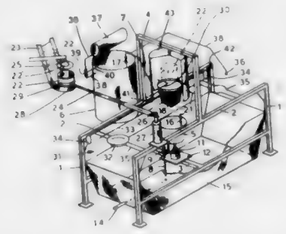
valve is closed, causes a sudden pressure drop and formation of steam in said first chamber and transfer of said portion of partially cooked spaghetti and residual water into said second chamber for completion of the cooking; said second chamber having sufficient volume to allow expansion of steam transferred thereto from said first chamber and being closed at its lower end with a normally closed door through which, when opened, said portion of completely cooked spaghetti is removed by gravity.

4,803,917

AUTOMATIC APPARATUS TO COOK AND SERVE READY-TO-EAT PASTA HELPINGS AFTER THE ITALIAN MANNER

Giovanni Barbieri, via Marosticana n. 18, Dueville (Vicenza), Italy

Filed Jan. 5, 1988, Ser. No. 141,093
Claims priority, application Italy, Jan. 7, 1987, 84901 A/87
Int. Cl.[4] A47J *27/00, 27/10, 27/18*
U.S. Cl. 99—356 **11 Claims**



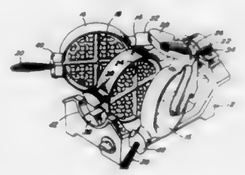
1. An automatic apparatus to cook and serve ready-to-eat pasta helpings such as helpings of spaghetti, ravioli or the like differently seasoned, comprising: a cooking vessel for holding hot water coming from a boiler through a feeding line and also having an evacuation pipe provided with an exhaust valve, said cooking vessel being associated with a drive mechanism for causing the vessel to move vertically, according to the predetermined operating steps, between a higher position and a lower position respectively; a basket for holding a pasta helping to be cooked, disposed in register with the higher position of the cooking vessel, the sizes of said basket being smaller than those of the vessel so that it can be introduced thereinto when the cooking vessel is at its higher position; a charging device for taking up a container holding a previously metered pasta helping from a feed member, according to said predetermined operating steps, to transport it in register with the basket after an opening device has acted on the container, and to discharge the contents thereof into the basket; a conveyer movable in feed direction, according to said predetermined operating steps, designed to make a dish pass under the basket so that the latter may discharge a cooked pasta helping thereon; at least one condiment-dispensing member disposed downstream of the basket relative to the feed direction of the conveyer and designed to put a predetermined condiment quantity coming from a suitable tank through a feeding pipe on a pasta helping laid down on the dish.

4,803,918

DOUBLE BAKER FOR WAFFLES, PANCAKES AND SIMILAR FOOD ITEMS

Fred S. Carbon, deceased, late of Buchanan, Mich., and by Donald A. Carbon, executor, 105 Days Ave., Buchanan, Mich. 49107

Continuation-in-part of Ser. No. 825,565, Feb. 3, 1986. This application Apr. 24, 1987, Ser. No. 42,413
Int. Cl.[4] A47J *37/00*
U.S. Cl. 99—377 **8 Claims**



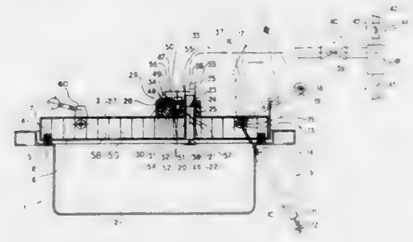
1. In a baker for waffles, pancakes and similar food items, said baker including said first and second outer shell members each having a hinge part and a handle part and a concave food receiving part, an inner shell member having a hinge part and oppositely located concave food receiving parts, said inner shell member positioned between said outer shell members with hinge elements interconnecting said shell member hinge parts to enable each outer shell member to be pivoted about said hinge parts relative to the inner shell member between a closed position overlying the inner shell member with the concave food receiving part of the outer shell member overlying a said concave food receiving part of the inner shell member and an open position spaced from the inner shell member, heating element means in at least one of said shell members for baking food items held in overlying concave food receiving parts when the outer shell member thereof is in its closed position, a base cradling said shell members for rotation about a generally horizontal axis with the outer shell members in their closed positions, said base constituting means for supporting said inner shell member and an outer shell member in its closed position with the other outer shell member in its open position, the improvement wherein said inner shell member includes means for supporting both ends thereof by said base independently of said outer shell members to allow the outer shell members to be both simultaneously placed in their open positions.

4,803,919

COOKING APPARATUS FOR COMMUNITIES

Edgar Fritsch, and Norbert Fritsch, both of Wittenheim, France, assignors to Robert Fritsch S.A., Whittenheim, France

Filed Jan. 4, 1987, Ser. No. 58,284
Claims priority, application France, Jan. 6, 1986, 86 00325
Int. Cl.[4] A47J *27/00, 27/08*
U.S. Cl. 99—340 **20 Claims**



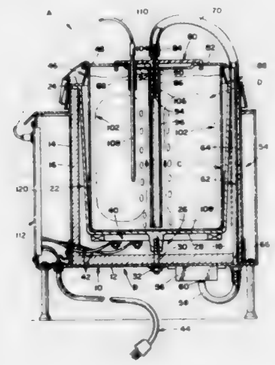
1. A cooking apparatus comprising:
(a) a cooking vat having an interior;
(b) a lid movably attached to said cooking vat;
(c) a single opening extending through said lid, said single opening having an inner end and an outer end, said inner end communicating said single opening with said interior of said cooking vat;
(d) means for vacuumizing said cooking vat;
(e) means for pressurizing said cooking vat; and
(f) means for selectively operably associating said outer end of said single opening with said means for vacuumizing said cooking vat and said means for pressurizing said cooking vat.

4,803,920

COOKING APPARATUS FOR FLUID CONTAINER

Raymond P. Kovalics, Solon, and Kenneth C. Sidoti, Maple Heights, both of Ohio, assignors to The Meyer Company, Cleveland, Ohio

Continuation of Ser. No. 849,780, Apr. 9, 1986, abandoned. This application Jan. 14, 1988, Ser. No. 144,314
Int. Cl.[4] A61J *27/00*
U.S. Cl. 99—348 **9 Claims**



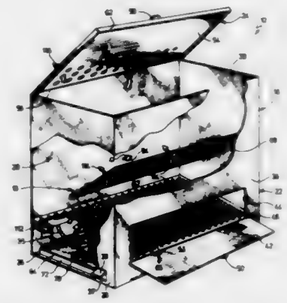
1. A cooking apparatus for soups, chili, and the like comprising:
a base portion having a recessed area defined therein;
a removable fluid container adapted for close receipt in said recessed area;
a heating element disposed in said base portion for heating said recessed area;
means for insulating said base portion adjacent said recessed area and limiting heat loss therefrom; and
means for supplying compressed air to bubble upwardly through the associated soup, chili, and the like, said supplying means being received in said fluid container wherein the associated soup, chili, and the like is slowly mixed and generally uniformly heated.

4,803,921

FOOD RECEPTACLE AND HEATING APPARATUS

Carol E. Nuss, 411 W. Lincoln, Wellington, Kans. 67152

Filed Jan. 29, 1987, Ser. No. 8,557
Int. Cl.[4] A47J *43/00*
U.S. Cl. 99—483 **6 Claims**



1. A food receptacle and heating apparatus adapted to receive food products such as chips therein for the purpose of receiving, holding, displaying, heating, and dispensing therefrom, comprising:
(a) a main container housing having an enclosed basic housing assembly with a lid member pivotally connected thereto and a lower outlet door member selectively movable from a closed to an opened condition to remove the food product therefrom;
(b) said lid member having a plurality of holes therein to permit the flow of discharge air therethrough;
(c) a food support assembly mounted within the interior of said basic housing assembly having a first inclined screen member extended upwardly from said outlet door member to receive the food product thereon for transfer under the force of gravity and downwardly and laterally thereon;
(d) said first inclined screen member having a lower edge positioned adjacent a lower edge of said outlet door member to support and direct the food product thereto;
(e) an air flow and temperature control assembly having a main blower assembly, a heater assembly, and a circuit control assembly operably connected to the main container assembly;
(f) said heater assembly connected to an output of said main blower assembly to heat the air flowing therethrough and direct the heated air internally of said basic housing assembly below said food support assembly; and
(g) said circuit control assembly operable to selectively energize said main blower assembly and said heater assembly to control the heating of the air flow through said food support assembly to properly heat the food product mounted thereon.

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4,803,922

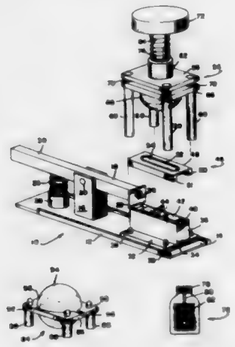
TRANSFER PRINTING APPARATUS

Joseph C. Densceen, 62 Bridge St., Beverly, Mass. 01915, assignor to Joseph C. Densceen and Thomas C. Stover, both of Marblehead, Mass.

Continuation-in-part of Ser. No. 431,354, Sep. 30, 1982, abandoned. This application Dec. 2, 1985, Ser. No. 803,414

Int. Cl.[4] B41F *17/00*

U.S. Cl. 101—41 **41 Claims**



1. An apparatus for transfer pad printing comprising a printing plate having a surface with a grooved pattern therein, means to apply ink on said surface and in said grooved pattern, means to remove the ink from said surface while leaving it in said grooved pattern, a separate unconfined and freely movable portable pad holder having a transfer pad mounted thereon, which pad holder is a resiliently mounted plunger which is completely detached from said printing plate, manual means to contact said pad with the grooved surface to pick up the inked pattern thereon, means to remove the so-inked pad from the grooved surface and manual means to contact said pad with an article to print said pattern thereon, said printing plate being mounted in a plate holder having a first indexing means and said plunger having a second indexing means to engage said first indexing means and permit the accurate indexing of said plunger and pad with said plate holder and pattern.

4,803,923

INK BLADE ADJUSTING SYSTEM WITH ZERO POINT MEMORY

Mizuno Kenichi, Ebina, Japan, assignor to Dai Nippon Printing Co., Ltd., Tokyo and Toshiba Automation Co., Ltd., Kanagawa, both of, Japan

Filed Dec. 22, 1987, Ser. No. 136,820

Claims priority, application Japan, Dec. 29, 1986, 61-313329

Int. Cl.[4] B41F *31/04*

U.S. Cl. 101—365 **6 Claims**

1. A device for adjusting the amount of ink supplied for use in a printing press, comprising:

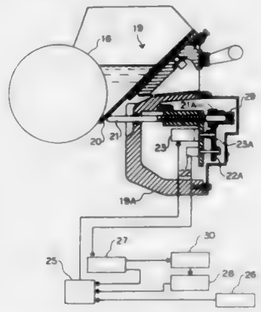
an ink blade disposed along the longitudinal direction of an ink fountain roller;

ink adjusters respectively disposed for each of the longitudinally divided areas of said ink blade so as to move each area toward or away from said ink fountain roller and thereby adjust the gap between said ink blade and said ink fountain roller;

ink blade position detectors for detecting the position of said ink blade adjusted by said ink adjusters; and

ink blade position control means for controlling the position of said ink blade through said ink adjusters on the basis of the zero point of said ink blade position detectors,

wherein the improvement comprises a zero point memory for storing therein the zero point for detection of said ink blade position detectors and a zero point memory setting means for changing the setting of said zero point memory by setting a new zero point for detection in said zero point memory, said new zero point for detection being the value



which is detected by each of said ink blade position detectors when zero point adjustment of the position of said ink blade has been effected by said ink adjusters.

4,803,924

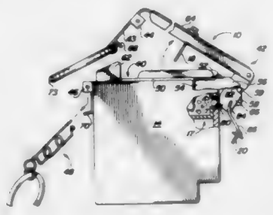
MANUAL ACTIVATOR FOR RESERVE BATTERIES

Peter H. Von Sloun, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 16, 1988, Ser. No. 155,910

Int. Cl.[4] F42C *15/00, 15/40*

U.S. Cl. 102—293 **19 Claims**



1. A manual activator (**10**) for a reserve battery (**17**) of the type including a deformable casing (**32**) surrounding a fracturable ampule (**24**) containing an electrolyte (**25**), said activator (**10**) comprising:

(a) a support element (**40**) for mounting said activator (**10**) in juxtaposed relation to said reserve battery (**17**);

(b) a lever (**42**) pivotably connected to said support element (**40**); and

(c) a cam surface (**80**) formed on said lever; and

(d) means for cooperating with said cam surface to impart a linear mechanical force to the deformable casing of the battery, causing the casing to indent and the ampule to fracture when said lever is pivoted away from said support element.

4,803,925

DEVICE FOR THE LIMITATION OF GAS PRESSURE IN A COMBUSTION CHAMBER PROVIDED INSIDE A PROJECTILE

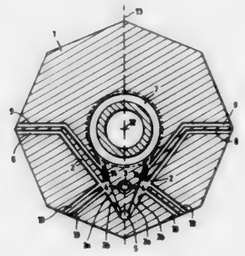
Sigfrid Bächale-Buecher, Meerbusch-Strümp, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 25, 1987, Ser. No. 101,217

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1986, 3632553

Int. Cl.[4] F42B *15/00*; **F02K** *9/38*

U.S. Cl. 102—381 **6 Claims**



1. A device for the limitation of gas pressure in a projectile having an outer shell by the production of a control stream comprising:

means defining a combustion chamber disposed inside said projectile; said combustion chamber having a combustion chamber lid; control lines connected to be charged by gas from said combustion chamber for transferring the gas pressure from said combustion chamber; monostable fluidic elements arranged in said control lines in a region of said combustion chamber lid for assisting in confining the control stream; branching lines disposed in said lid and connected with said monostable fluidic elements, said branching lines including vent openings in said outer shell for releasing gas to the atmosphere and an overpressure element for permitting gas to be expelled from said combustion chamber when an overpressure exists therein; said monostable fluidic elements comprise at least two wall-jet elements, with each of said wall-jet elements having a first wall for directing the gas toward said control lines and a second wall which has an opening for at least one of said branching lines; each of said wall-jet elements and said branching lines being mirror images of the other of said respective wall-jet elements and said branching lines along a plane of symmetry; said branching lines further comprise outlet openings; with said outlet openings pointing in respectively opposite directions; and said overpressure element is disposed in said plane of symmetry and said overpressure element comprises control openings in said first wall, so that when said predetermined pressure is exceeded in said combustion chamber a part of said gas passes through said control openings, whereby gas expelled via said overpressure element assists in the production of the control stream.

4,803,926

DOUBLE RAMMING PROJECTILE ASSEMBLY FOR GUNS

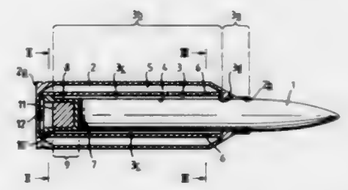
Arthur E. M. Barton, and Spencer D. Meston, both of Bristol, United Kingdom, assignors to British Aerospace PLC, London, England

Filed Jun. 3, 1986, Ser. No. 870,014

Claims priority, application United Kingdom, Jun. 4, 1985, 8514032

Int. Cl.[4] F42B *5/02*

U.S. Cl. 102—430 **6 Claims**



1. A projectile assembly for insertion into a gun of the type having a breech and a barrel and which involves a double ramming technique wherein the assembly is inserted into the breech, the projectile is moved from the assembly into the barrel and the remaining part of the assembly ejected and replaced by a propellant cartridge, the assembly including:

a projectile carrier having an internal bearing surface defining an axially directed cylinder having an open forward end;

a projectile slidably engaging said surface;

means within said cylinder at the aft end of said projectile for urging the latter out of said open end;

means constraining said urging means for movement only within said cylinder; and

means controlling said movement of said urging means and hence movement of said projectile from said carrier, whereby when said assembly is inserted into the breech of a gun, said projectile can be urged to a predetermined position in the barrel, and the spent projectile carrier subsequently removed from the breech to be replaced by a propellant cartridge which, when fired, propels said projectile from said predetermined position in the barrel.

4,803,927

AMMUNITION ROUND AND METHOD OF MANUFACTURE THEREOF

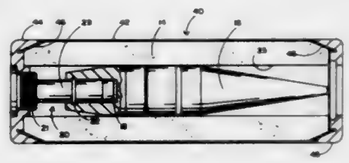
William J. Washburn, San Clemente, Calif., assignor to Aerojet-General Corporation, La Jolla, Calif.

Continuation-in-part of Ser. No. 825,429, Feb. 3, 1986, abandoned. This application Jan. 15, 1987, Ser. No. 3,527

The portion of the term of this patent subsequent to Nov. 8, 2005, has been disclaimed.

Int. Cl.[4] F42B *5/02*

U.S. Cl. 102—434 **4 Claims**



1. An improved telescoped ammunition round having a projectile and a cartridge case, said cartridge case having a main propellant charge forming an axial bore for receiving said

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projectile, the projectile having a forward end and an aft end; the improvement comprising:

an imperforate booster tube having (1) a closed first end affixed to said cartridge case adjacent the aft end of said projectile and extending toward said projectile within said axial bore to an open second end, and (2) a first annular recess formed in an external surface of said booster tube,

said projectile being contained within said cartridge case and having an axial recess extending from its aft end for receiving said second end of said booster tube, said axial recess including an internal conical portion, a cylindrical portion and a second annular recess interfacing with said conical portion and said cylindrical portion therebetween, where said internal conical portion extends from said projectile aft end toward said second annular recess,

said booster tube including a frangible retaining means for releasably coupling said projectile to said booster tube when each of said respective first and second annular recesses are aligned each to the other, said frangible retaining means being contained at least partially within each of said annular recesses, said booster tube further having means for generating ignition gases within said projectile recess for propelling said projectile away from said booster tube within said bore whereby said gases are exposed to said main propellant charge at said second end of said booster tube for igniting said main propellant charge after predetermined motion of said projectile;

at least one end seal for interconnection to said cartridge case, said end seal being formed integrally in a one piece formation and having an inner conically shaped surface extending to a slotted annular surface for receiving an end of said case for a press-fit engagement therewith, said slotted annular surface forming an angle coincident with an angle formed by said inner conically shaped surface.

4,803,928

TANDEM CHARGE PROJECTILE

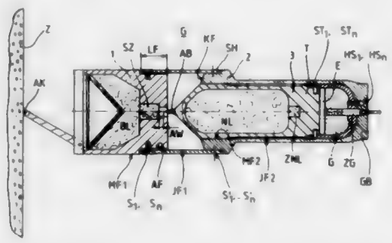
Stefan Kramer, Schlott 18, 8899 Hohenwart, and Georg Aschenbrenner, Sankt Sebastian-Str. 15, 8898 Schrobenhausn, both of Fed. Rep. of Germany

Filed Jul. 21, 1987, Ser. No. 76,148

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1986, 3626305

Int. Cl.[4] F42B *13/12*

U.S. Cl. 102—476 **2 Claims**



1. A projectile having a tandem charge comprising a shaped charge and a secondary firing charge, the projectile comprising a tubular housing, the secondary firing charge and a propellant charge being stored in a part of the tubular housing, the tubular housing comprising:

a first housing part containing the shaped charge and a percussion igniter arranged toward the rear thereof and axially centered and further having at a rearward outside surface thereof an outer surface with a defined guide length;

a second housing part having an inside surface which is slipped with a forward part of the inside surface onto the outside surface of the first housing part defined by the guide length and being held by first detachable shearable fastening means thereto and having at a rear end thereof a housing bottom sealing the second housing part;

a third housing part containing the secondary firing charge, a firing device therefor and a propulsion reflector which is supported with an outer surface thereof with a sliding fit in a rearward part of the inside surface of the second housing part and having a tip having a piercing bolt which is arranged axially centered and adjacent the percussion igniter and being fastened to the second housing part with second detachable shearable fastening means;

the projectile further having an expansion space and a gas generator arranged at a bottom of the third housing part adjacent the bottom of the second housing part, the gas generator being initiated by an igniter started by a percussion contact, said expansion space being arranged between the propulsion reflector and the gas generator;

said gas generator, upon or in proximity to impact of the projectile on a target, generating pressurized gas to cause said first and second detachable shearable fastening means to shear upon impact, whereby said second housing part moves in a direction opposite the direction of motion of the projectile upon impact, said second housing part being guided on said defined guide length in a defined direction opposite that of the direction of the projectile upon impact, and said third housing part being guided on the inside surface of the second housing part in a direction opposite that of the second housing part thereby allowing said secondary firing charge to impact upon said percussion igniter thereby to ignite said shaped charge.

4,803,929

PROJECTILE HAVING A ROTATING BAND DISPOSED ON THE PROJECTILE BODY

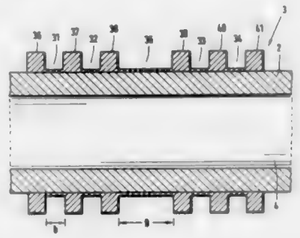
Heinz-Josef Kruse, Ratingen, and Klaus D. Karins, Jüchen, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 3, 1987, Ser. No. 92,688

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1986, 3630000

Int. Cl.[4] F42B *31/00*

U.S. Cl. 102—524 **8 Claims**



1. A projectile for firing from a gun barrel comprising: a projectile body having radial and longitudinal directions; a rotating band disposed on said projectile body and having a width in said longitudinal direction and including at least three band rings; one of said band rings being located at each end of said width of said rotating band; at least one material receiving grooves in said rotating band to accommodate rotating band material sheared off during passage of said projectile through the gun barrel; and at least one pressure relief groove located in a region of said rotating band where said projectile body is subjected to maximum stress in said radial direction, and wherein said pressure relief groove and said material receiving groove each have a width in said longitudinal direction; the width of said pressure relief groove being greater than the width of said material receiving groove.

4,803,930

TABLES BOLTED TO A WALL

Pietro Crocoli, Via Filippo Serafini 33, Roma, Italy

Filed Jan. 19, 1906, Ser. No. 876,091

Claims priority, application Italy, Jan. 20, 1985, 48250 A/85

Int. Cl.[4] A47B *5/00*

U.S. Cl. 108—48 **6 Claims**



1. A table comprising:

a table member having a thickness defined by first and second opposed sides and an extent defined by first and second opposed ends, said first side being a generally flat surface;

at least three elongated tracks secured to said table member below said generally flat surface, each of said tracks having an open end, two of said tracks being positioned such that there open ends are adjacent said first end of said table member and one of said tracks being positioned such that its open end is positioned adjacent said second end of said table;

at least first, second and third legs movably positioned in said first, second and third tracks, respectively, each of said legs having a first end and a second end, said first end of each of said legs being disposed adjacent said open end of a respective track when a respective leg is retracted into a respective track, said second end of each of said legs being disposed adjacent said open end of a respective track when a respective leg is fully extended from a respective track; and

pivoting means for pivoting coupling said second end of at least one of said legs to its respective track adjacent said open end of said respective track, said pivoting means being actuable only when said second end of said at least one leg is adjacent said open end of its track.

4,803,931

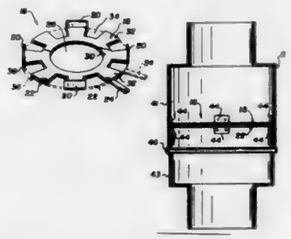
FLUE RESTRICTOR

Brian Carson, 8621 Byron Road, North Delta, British Columbia, Canada V4C 7P7

Filed Apr. 9, 1986, Ser. No. 849,665

Int. Cl.[4] F23L *13/04*

U.S. Cl. 110—163 **1 Claim**



1. A flue restrictor to control air flow in a combustion apparatus to burn oil or gas and having an exhaust system that includes a flue, the restrictor comprising:

a housing to be attached in the flue and comprising a first sub-housing and a second sub-housing having continuous, imperforate side walls;

a first valve member fixed at an end of the first sub-housing;

a second valve member fixed at an end of the second sub-housing, each valve member comprising a plate having a central opening within an inner ring with discrete fins extending outwardly from the inner ring and spaces between each fin;

the first and second sub-housings being positioned with the first and second valve members located against each other with the central openings of the valve members aligned, the valve members cooperating with each other to act as a valve, the sub-housings being rotatable relative to each other between a closed position of the valve where the fins of one valve member align with the spaces of the other valve member to an open position where the spaces of each valve member align;

means to lock the sub-housings in a predetermined relative position to control air flow in the restrictor and thus in the combustion apparatus;

the central openings in each valve member being so dimensioned that when the valve is closed the flow through the aligned central openings is about 30% of the flow through the unrestricted flue; and

the sub-housings being enlarged relative to the flue so that when the valve is opened flow through the restrictor is the same as flow through the unrestricted flue.

4,803,932

BURNER FOR A SUSPENSION OF FINE-GRAINED COAL IN LIQUID

Olle L. Siwerson, Helsingborg; Arne E. Wall, Landskrona, and Jan A. T. Lodberg, Nyhamnslage, all of Sweden, assignors to AB Scantairvestor, Helsingborg, Sweden

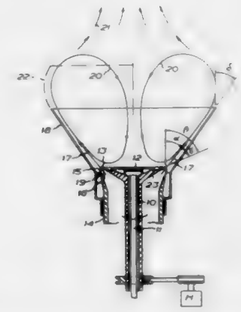
Continuation of Ser. No. 783,396, Oct. 3, 1985, abandoned, which is a continuation of Ser. No. 690,548, Jan. 11, 1985, abandoned, which is a continuation of Ser. No. 543,596, Oct. 19, 1983, abandoned, which is a continuation of Ser. No. 367,145, Apr. 9, 1982, abandoned, which is a continuation of Ser. No. 261,322, May 7, 1981, abandoned, which is a continuation of Ser. No. 58,409, Jul. 17, 1979, abandoned. This application Nov. 10, 1987, Ser. No. 129,892

Claims priority, application Sweden, Jul. 31, 1978, 808371

The portion of the term of this patent subsequent to Apr. 14, 2004, has been disclaimed.

Int. Cl.[4] F23C *1/02*

U.S. Cl. 110—260 **12 Claims**



1. A rotary burner for burning a fuel consisting of a suspension of fine coal particles in a liquid, particularly water containing a suspending agent, said burner comprising:

a hollow conical rotary body with at least the outer rim portion of the inner side of said body forming an angle of 35°–80° with the axis of said body;

means defining a primary air supply nozzle surrounding said

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hollow conical rotary body and adapted to supply air along the peripheral edge of said body as a diverging air stream directed outwards away from said axis of said body at an angle of 30°–70°, the diverging air stream making less of an angle with said axis of said hollow conical rotary body than does said at least said outer rim portion of said inner side of said body;

a distribution baffle arranged transversely of said axis of said hollow conical rotary body;

an axially directed first fuel supply means having an outlet behind said distribution baffle for supplying thereto a fuel consisting of a suspension of fine coal particles in a liquid;

means for rotating said hollow conical rotary body to impart centrifugal force to the fuel, conveying the fuel outwardly and along said inner side of said hollow conical rotary body to the peripheral edge thereof;

a conical guide baffle surrounding said air supply nozzle defining means and said hollow conical rotary body and radially spaced from said air supply nozzle to form a gap between said conical guide baffle and said air supply nozzle, said conical guide baffle forming approximately the same angle with said axis of said hollow conical rotary body as does the diverging air stream;

said air supply nozzle defining means including guide means adapted to stabilize the diverging air stream and to counteract the rotation of the products of combustion and of the flame about said axis of the said hollow conical rotary body; and

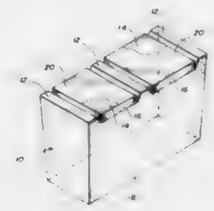
second fuel supply means having an outlet behind said distribution baffle for supplying a second fuel to said distribution nozzle.

4,803,933

REFRACTORY BRICK HAVING AN INCREASED INSULATING VALUE

Loucius Carey, Jr., Pittsburgh, and Leigh F. Brooks, Clairton, both of Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 30, 1984, Ser. No. 666,532
Int. Cl.⁴ F23M *5/02*
U.S. Cl. 110—338 **5 Claims**



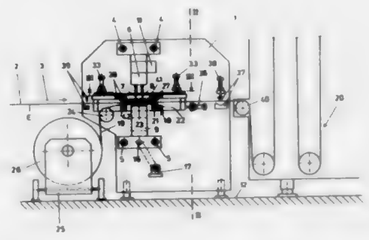
1. In a refractory brick having a recessed cold face and including at least one insulation insert located on the recessed cold face of the brick, the improvement comprising: heat reflective means provided on a surface of the insert disposed parallel to the cold face of the brick to reduce the amount of heat radiated through this region of the brick; wherein the heat reflective means is aluminum foil disposed on the cold surface of the insert.

4,803,934

DEVICE FOR PRODUCING A HEAT AND TENSION RESISTANT AS WELL AS FLEXIBLE CONNECTION BETWEEN THE ENDS OF WEB-LIKE MATERIALS

Josef Gstöhl, Ackerstrasse 35, CH-8604 Hegnau, Switzerland

PCT No. PCT/EP87/00035, § 371 Date Oct. 2, 1987, § 102(e) Date Oct. 2, 1987, PCT Pub. No. WO87/04735, PCT Pub. Date Aug. 13, 1987
PCT Filed Jan. 27, 1987, Ser. No. 117,069
Claims priority, application Austria, Feb. 3, 1986, 241/86; Oct. 27, 1986, 2853/86
Int. Cl.⁴ D05B *3/00*
U.S. Cl. 112—121.14 **23 Claims**



1. Device for producing a heat and tension resistant as well as flexible connection between a thread layer having a plurality of parallel threads and a web-shaped material, said device comprising a first retention arrangement for temporarily clamping a free end of the web-shaped material which is coiled on a storage drum and drawable therefrom, the first retention arrangement being arranged on a side of a transport plane of the thread layer; and a clamping device for temporarily clamping the thread layer, said clamping device being arranged downstream of said first retention arrangement in the transport direction of the thread layer, said clamping device having jaws which are movable toward each other, the transport plane of the thread layer extending between said jaws, characterized in that said device further comprises guides provided on both sides of the transport plane of the thread layer and transversely to the transport direction; a needle head containing at least one sewing needle for an upper thread, said needle head being arranged at one of the guides; and a shuttle head having a shuttle or gripper mechanism for a lower thread, said shuttle head being arranged at another of said guides located on the other side of the transport plane of the thread layer; wherein both said needle head and said shuttle head are driven synchronously and displaced synchronously along said guides. the first retention arrangement for temporarily clamping the free end of the web-shaped material being situated after an imagined plane, in the transport direction of the thread layer, which contains both said needle and shutter heads with the needles and shuttles.

4,803,935

BELTLOOP FORMING AND TRANSFER METHOD AND APPARATUS

Joseph W. A. Off, Irving, Tex., assignor to Automated Machinery Systems, Inc., Richmond, Va.

Filed Aug. 28, 1987, Ser. No. 90,542
Int. Cl.⁴ D05B *3/12, 35/00*
U.S. Cl. 112—121.27 **12 Claims**

1. Apparatus for forming and transferring a beltloop for attachment to a waistband of a pair of trousers, comprising

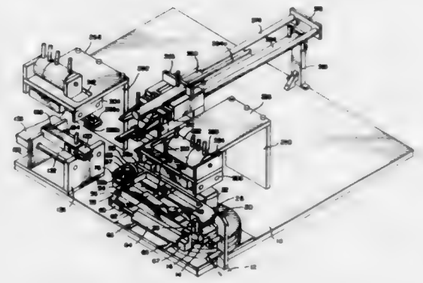
means for providing a desired length of beltloop material,

means for engaging the desired length of beltloop material,

means for engaging the desired length of beltloop material inwardly from the ends thereof in a manner to provide free ends,

spaced folder means,

means for establiahing a wiping action between the free ends of the beltloop and said folder means to fold downwardly the free ends of the beltloop as said free ends move to positions closely adjacent the folder means,



means for transferring the folder means inwardly to fold the free ends of the beltloop inwardly and under the remainder of the beltloop, and

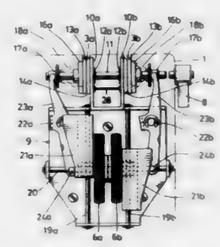
beltloop feeder means for engaging the folded-under ends of the beltloop.

4,803,936

THREAD TENSION DEVICE FOR OVEREDGE SEWING MACHINES

Yoshio Mikuni, and Osamu Koshinaka, both of Osaka, Japan, assignors to Maruzen Sewing Machine Co., Ltd., Osaka, Japan

Filed Nov. 4, 1987, Ser. No. 116,732
Int. Cl.⁴ D05B *47/02*
U.S. Cl. 112—254 **16 Claims**



1. A thread tension device for overedge sewing machines, comprising:

a shaft having a longitudinal dimension axially thereof;

support means for supporting said shaft with its axis held in a fixed position;

a plurality of tension disk assemblies mounted on said shaft so that they are spaced apart from each other in axially distributed relationship, each of said tension disk assemblies having corresponding first and second tension disks forming a pair to hold therebetween a thread to be tensioned;

each said first tension disk being axially movable in either direction with respect to said shaft;

each said second tension disk being inhibited from moving axially in at least one direction away from a corresponding one of said first tension disks; and

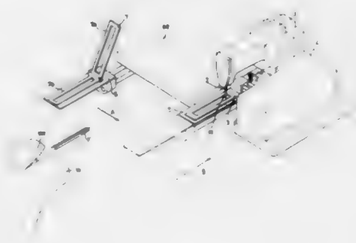
tension adjusting spring means for each of said tension disk assemblies, having an active portion for exerting a resilient force on the corresponding first tension disk, said active portion serving to urge said corresponding first tension disk against the corresponding second tension disk as it is displaced in the direction of action of said resilient force, wherein said shaft is rotatable around its axis, and further including thread tension releasing means for displacing said active portion of said tension adjusting spring means in a direction opposite to the direction of action of said active portion in response to the rotation of said shaft in one direction, thereby inhibiting said first tension disk from being urged against said second tension disk, and manual operating means for rotatively operating said shaft in at least said one direction.

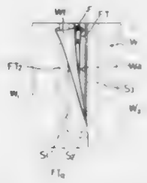
4,803,937

METHOD AND APPARATUS FOR ATTACHING A ZIPPER TO A GARMENT

Toors Hiramatsu; Kazuya Tani, and Shigeru Tobita, all of Tokyo, Japan, assignors to Juki Corporation, Tokyo, Japan

Filed Feb. 18, 1988, Ser. No. 157,388
Claims priority, application Japan, Feb. 19, 1987, 62-36392
Int. Cl.⁴ D05B *97/00, 21/00*
U.S. Cl. 112—265.2 **2 Claims**





1. A method of attaching a zipper, the zipper having a zipper tape on each side thereof and a zipper bottom connected to the zipper tapes, to a garment, comprising the steps of:

(a) attaching one of the zipper tapes and the zipper bottom to the garment;

(b) forming a flap in the garment;

(c) attaching the other of the zipper tapes to the garment such that said flap covers the zipper surface; and

wherein the attachment of said one of the zipper tapes and the zipper bottom to the garment is by a perfect stitch and the other zipper tape is attached to the garment by a hitch stitch.

2. A sewing machine for attaching a zipper, the zipper having a zipper tape at each side thereof and a zipper bottom connected to said zipper tapes, to a garment, comprising:

(a) means for attaching one of the zipper tapes and the zipper bottom to the garment;

(b) means for forming a flap in the garment;

(c) means for attaching the other of the zipper tapes to the garment such that said flap covers the zipper surface; and

wherein said means for attaching said one of the zipper tapes and the zipper bottom performs a perfect stitch and said means for attaching the other of the zipper tapes performs a hitch stitch.

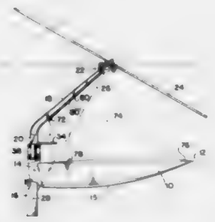
VOL 1099 ISS 2 14 1989 FE UMI

4,803,938

ROTOR POWERED SAILBOAT

Ron Sergeant, 15931 E. Wind Cir., Sunrise, Fla. 33326

Filed Dec. 21, 1987, Ser. No. 135,680
Int. Cl.[4] B63H *9/06*
U.S. Cl. 114—39.1 36 Claims



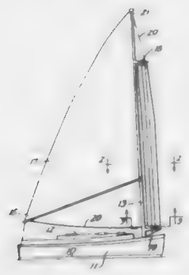
1. A rotor powered sailboat comprising:
a hull having a centerline and stern;
a stern mounted rudder;
a center of lateral resistance that is a resultant of lateral resistance of the hull and lateral resistance of the rudder;
a boom upwardly angled and selectively rotatable above a support connected to the hull;
a rotor mount attached to an upper end of the boom; and
an autogyro rotor rotatably disposed upon the rotor mount, which rotor mount is pivotable with respect to the boom so the rotor can be canted, said rotor having an axis of rotation that passes through the center of lateral resistance when the rotor is canted for any position of the boom with respect to the centerline of the hull.

4,803,939

SLOT-FORMING FOIL CONSTRUCTION FOR SAILING YACHTS

Theodore A. Jones, New Hampton, N.H., assignor to Christopher Gardner, Greenwich, Conn., a part interest

Filed Aug. 28, 1987, Ser. No. 90,677
Int. Cl.[4] B63H *9/04*
U.S. Cl. 114—39.1 11 Claims



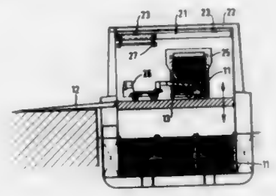
1. A slot-forming foil structure for a sailing vessel having a working sail, which comprises
(a) a forward foil section generally symmetrical cross-section, formed of relatively solid, rigid material,
(b) means mounting said forward foil section in front of said working sail for pivoting movement about the axis of symmetry of said foil section and about an axis generally parallel to the luff of said working sail,
(c) said forward foil section having a trailing edge located on the plane of symmetry thereof,
(d) an aft foil section, formed of relatively solid, rigid material, pivotally mounted along the trailing edge of said forward foil section,
(e) said aft foil section being pivotable between alternate working positions, and
(f) said forward and aft foil sections forming a reversible asymmetrical foil structure of generally convex contours on one side and generally concave contours on the other side.

4,803,940

SHIP AND SHIP LOADING AND UNLOADING SYSTEM

Jaakko Ebeling; Jarmo Pesonen, both of Helsinki, Finland, and Inge Saadaas, Grimstad, Norway, assignors to Ugland Trading Co. A/S, Grimstad, Norway and Jaakko Poyry Oy, Helsinki, Finland

Filed Oct. 10, 1986, Ser. No. 917,681
Int. Cl.[4] B63B *25/22, 25/02, 27/10, 27/14*
U.S. Cl. 114—72 14 Claims



1. A ship having opposite sides between which there is a cargo space extending longitudinally of the ship along a substantial portion of the length of the ship; a superstructure supported by the ship, said superstructure having a ceiling located above and extending over the cargo space, a rail system supported from the ceiling and extending longitudinally over the cargo hold; a crane movable longitudinally over the cargo hold and longitudinally along the rail system; an intermediate cargo deck mounted in the cargo space for vertical movement relative to the sides of the ship; at least one cargo opening in at least one side of the ship through which cargo may be moved by a transfer container; a door residing in said opening, the door having a lower edge pivoted to the intermediate cargo deck, the arrangement of the door and vertically movable intermediate cargo deck being such that the door can swing away from the side of the ship to function as a loading ramp which can be positioned generally horizontally and at the level of the upper surface of a guay, within limits, irrespective of the height of the guay above water level thereby allowing mixed cargoes assembled into cargo units to be taken by a transfer trailer through said opening and into the cargo space for final positioning by said crane.

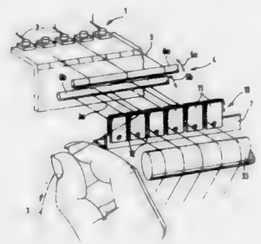
4,803,941

EMBROIDERY MACHINE EQUIPPED WITH THREAD GUIDE AND CLAMPING DEVICE

Max Schreiber, and Armin Kobler, both of Arbon, Switzerland, assignors to Adolph Saurer AG, Arbon, Switzerland

Filed Nov. 2, 1987, Ser. No. 115,520
Claims priority, application Switzerland, Nov. 6, 1986, 4430/86
Int. Cl.[4] D05C *11/00*
U.S. Cl. 112—83 16 Claims

1. An embroidery machine comprising:
a plurality of axially displaceably guided embroidery needles coacting with embroidery threads;
said embroidery needles being arranged in at least one row at embroidery locations;
a thread delivery device comprising conjointly to-and-fro oscillatingly driven adjacently arranged thread guides;
said embroidery threads partially being trained about said conjointly to-and-fro oscillatingly driven adjacently arranged thread guides for selectively accomplishing a thread feed and thread retraction;
a thread guide and clamping device arranged at the region of said thread guides;
said thread guide and clamping device comprising guide elements serving for guiding of the embroidery threads,



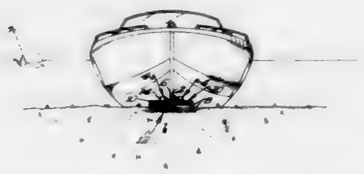
clamping of the embroidery threads and cutting of thread ends of the embroidery threads;
said guide elements corresponding in number to the number of embroidery locations;
a machine-fixed holder member; and
said guide elements being arranged adjacent one another in a row along said machine-fixed holder member.

4,803,942

BOAT, KEEL AND HULL PROTECTOR

Joseph Dren, P.O. Box 1021, Gilbert, Minn. 55741, and Allen Dren, 418 First St. North West, Chisholm, Minn. 55719

Filed Dec. 2, 1986, Ser. No. 936,890
Int. Cl.[4] B63B *59/02*
U.S. Cl. 114—219 17 Claims



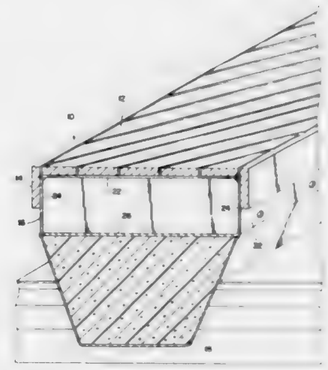
10. Apparatus for protecting the keel and hull of a boat or the like during landing of the boat on a beach comprising, in combination: a mat having an upper surface and a bottom surface; and means located on the upper surface of the mat for guiding the keel of the boat and for supporting the hull of the boat for protecting the boat during landing of the boat on the beach, with the mat and the guiding and supporting means being formed of resilient and generally solid, substantially noncompressible material for acting as a shock absorber to the boat and for supporting the boat on the beach, and with the mat and the guiding and supporting means being flexible and with the bottom surface of the mat adapted for engagement with the beach.

4,803,943

FLOATING DOCKS

Reg D. Corbett, 23116 Roberts Run, Bay Village, Ohio 44140

Filed May 15, 1987, Ser. No. 49,859
Int. Cl.[4] B63B *35/72*
U.S. Cl. 114—263 12 Claims



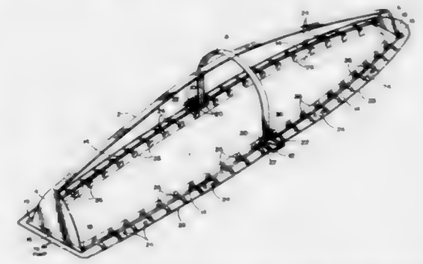
1. A floating dock unit comprising:
a unibody construction consisting of a hollow longitudinal box beam member, a rigid flotation unit, and a top surface deck where the flotation unit and surface deck are secured on a level with the box beam member;
the box beam member comprising an upper wall, a lower wall, and a pair of laterally spaced upright side walls secured together to provide the longitudinal box beam member;
the flotation unit having a transverse cross-section of an inverted trapezoid with a top base line of a length at least equal to the lower wall of the box beam member to which it is integrally secured and adapted to support the floating dock unit in water;
the top surface deck comprising a plurality of planks secured to the upper wall of the longitudinal box member, said planks secured diagonally relative to the longitudinal dimension of the box beam member, where the box beam member and the flotation unit and the top surface deck form an integral structural unit.

4,803,944

METHOD AND APPARATUS FOR MAKING A BOAT

Robert F. Roberson, San Clemente, Calif., assignor to Hot Sports, Inc., Corona del Mar, Calif.

Filed Sep. 8, 1987, Ser. No. 93,912
Int. Cl.[4] B63B *3/00, 3/48, 5/24*
U.S. Cl. 114—359 16 Claims



1. Apparatus for making a vessel having a hull with opposing

VOL 1099 ISS 2 FEB 14 1989 UMI

sides, said hull to be connected to a deck, said apparatus comprising:

movable arm means including at least one arm located adjacent and movable towards a respective side of said hull;

vacuum assembly means attached to each of each movable arms and movable therewith for engaging the sides of said hull when said arms are moved towards said sides;

means communicating with said vacuum assembly means for creating a vacuum and for thereby causing said vacuum assembly means to become attached to the sides of the hull for positioning said hull relative to said deck; and

pivot means located at a first end of each of said arms to that said arms can be rotated towards said respective sides of said hull for correspondingly moving said vacuum assembly means into engagement with said sides.

4,803,945

FISHING BOAT BACK REST AND POST MOUNT

Theodore J. Adams, 4280 NW. 10th Ter., Ft. Lauderdale, Fla. 33309, and Burton W. Crowell, 250 SW. 32 Ave., Deerfield Bch., Fla. 33443

Filed Sep. 29, 1987, Ser. No. 102,376

Int. Cl.[4] B63B *17/00*

U.S. Cl. 114—363 **5 Claims**



1. In combination with a boat of the type including a generally horizontal large plan area surface from which fishing operations may be carried out by a standing fishing person who may wish to stand in various positions on and spaced about a predetermined central area of said surface and face in horizontal directions extending outward from said central area of and positions on said surface, a backrest including an upright standard having upper and lower ends, means stationarily mounting the lower end of said standard from said central area of said surface, a waist, backside support comprising a horizontally elongated abutment member of appreciably greater horizontal length than height and having opposite ends and defining an upright generally horizontally outwardly facing longitudinal side abutment surface extending between said opposite ends of said abutment member, mounting means mounting said abutment member from the upper end of said standard with said abutment surface closely spaced horizontally outward from said standard in the direction in which said abutment surface faces and for angular displacement of said abutment member about an upright axis generally centered relative to said standard and spaced centrally intermediate said opposite ends, said abutment surface being longitudinally arcuate and outwardly concave, said abutment member and at least the upper half of said standard being free of structures supported therefrom and projecting in said direction past a vertical plane containing the opposite end portions of said abutment surface.

4,803,946

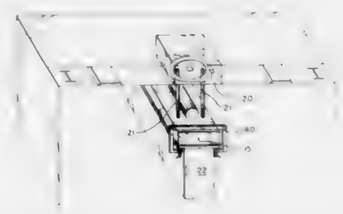
CONTINUOUS BULK DRAIN FOR PHOTORESIST

Gurumurthi Ravishankar, Chandler, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Filed Oct. 6, 1987, Ser. No. 106,619

Int. Cl.[4] B11C *13/00*

U.S. Cl. 118—52 **15 Claims**



1. A drain system for collecting and draining liquid during a manufacturing process, comprising:

a collection tank;

a collector coupled with said collection tank for collecting said liquid;

said collector comprising a funnel and a stem;

said stem further comprising an opening into said collection tank;

said collection tank having a first drain for draining said liquid from said collection tank;

said first drain located on said collection tank, and above a plane perpendicular to said opening of said stem,

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4,803,947

APPARATUS FOR FORMING DEPOSITED FILM

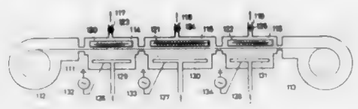
Masao Ueki, Chiba; Masaaki Hirooka, Toride; Junichi Hanna, and Isamu Shimizu, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1987, Ser. No. 3,053

Claims priority, application Japan, Jan. 15, 1986, 61-5952; Jan. 15, 1986, 61-5953; Jan. 15, 1986, 61-5954

Int. Cl.[4] C23C *16/00*

U.S. Cl. 418—719 **17 Claims**



1. An apparatus for forming a deposited film on a substrate by a chemical reaction between a gaseous starting material for formation of the deposited film and a gaseous oxidizing agent having the property of oxidation action on said gaseous starting material, comprising:

at least one deposition chamber in which said deposited film is formed, said chamber including a gaseous releasing means having a first orifice for introducing said gaseous starting material and a second orifice for introducing said gaseous oxidizing agent, said first and second orifices positioned adjacent one another so as to create a reaction mixture between said gaseous starting material and gaseous oxidizing agent; and

at least one etching chamber in which the etching of said substrate or the deposited film formed thereon occurs, said etching chamber including a gas orifice with a narrowed tip to dispense etchant gas.

4,803,948

HEAT PROCESSING APPARATUS FOR SEMICONDUCTOR MANUFACTURING

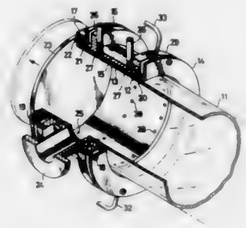
Keiji Nakagawa, Kadoma; Ikuyoshi Nakatani, Hazukashi; Takamasa Sakai, Kusatsu, and Yusuke Muraoka, Osaka, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Apr. 10, 1987, Ser. No. 36,803

Claims priority, application Japan, Apr. 14, 1986, 61-54753[U]

Int. Cl.[4] C23C *16/00*

U.S. Cl. 118—725 **5 Claims**



1. A heat processing apparatus for manufacturing semiconductors comprising:

a cylindrical tube having one end thereof tapered to a smaller diameter than that of a main body of said cylindrical tube and the other end thereof open, said open end having an equal diameter to that of said main body of said cylindrical tube;

a ring shaped packing wound on the outer circumference of said cylindrical tube adjacent to said open end;

an inner tube coaxial with and longitudinally adjacent said open end of said cylindrical tube;

an outer tube fitted over the outer circumferences of said cylindrical tube and said inner tube;

a ring body disposed on the outer circumference of said cylindrical tube adjacent and opposing said outer tube, said outer tube and ring body having respective tapered edges facing said cylindrical tube and cooperating to define a channel in which said ring shaped packing is located, said tapered edges forcing said ring shaped packing against the outer circumference of said cylindrical tube with a force determined by the axial spacing between said ring body and said outer tube;

a fastening means for adjusting the axial distance between said ring body and said outer tube and thereby adjusting the pressure with which said ring shaped packing presses radially on said outer circumference of said cylindrical tube; and

lid means for closing an open end of said outer tube in an airtight manner and said inner tube.

4,803,949

FISH CULTURING METHOD AND SAC-FRY POND FOR USE IN PRACTICING SAME

Shin Kiyokawa, Sohka, Japan, assignor to Minato Plaheat Mfg. Ltd., Saitama, Japan

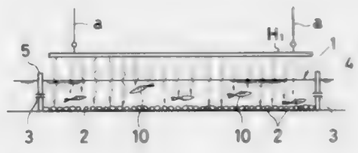
Filed Jul. 10, 1987, Ser. No. 72,183

Claims priority, application Japan, Jul. 17, 1986, 61-166575; Mar. 3, 1987, 62-46679

Int. Cl.[4] A01K *61/00*

U.S. Cl. 119—3 **8 Claims**

5. A sac-fry pond comprising means for applying, from an artificial source, heat rays containing far infrared rays but substantially no visible rays over substantially the whole area of the sac-fry pond and for shutting off said pond from substantially all other light sources, said means being provided on one side of said pond.



4,803,950

AUTOMATIC MILKING APPARATUS

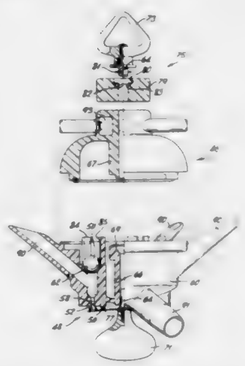
Tony K. Griffin, Wokingham; Robert J. Grindal, Reading, and Barry R. Marshall, Ramsden, all of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 933,335, Nov. 20, 1986, abandoned, which is a continuation of Ser. No. 738,650, May 28, 1985, abandoned. This application Mar. 16, 1988, Ser. No. 170,646

Claims priority, application United Kingdom, May 31, 1984, 8413861; Dec. 6, 1984, 8430804

Int. Cl.[4] A01J *5/04*

U.S. Cl. 119—14.55 **6 Claims**



1. An automatic milking apparatus comprising:

a clawpiece;

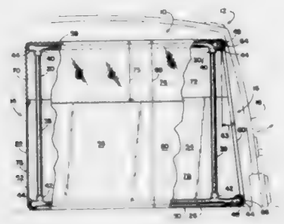
non-return valves in said clawpiece to allow flow of milk away from the teats but to inhibit milk flows in the contrary direction;

teat-embracing surfaces presented by teat liners to the teats in use of the apparatus;

transfer means presenting an air-tight passageway for the milk from each of said teat-embracing surfaces to a corresponding one of said non-return valves, each of said passageways being apertured for the supply of atmospheric air thereto and including valve means adapted to shut off the supply of air to each of said passageway apertures during milking; and

control means operative at will to operate said valve means and vent said passageways to atmosphere.

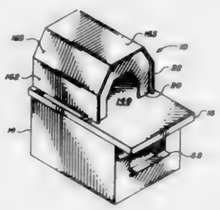
4,803,951
ENCLOSURE FOR PETS
L. Dan Davis, 4139 Viewcrest Rd., South Salem, Oreg. 97302
Filed Oct. 2, 1987, Ser. No. 104,347
Int. Cl.[4] A01K *1/02*
U.S. Cl. 119—19 14 Claims

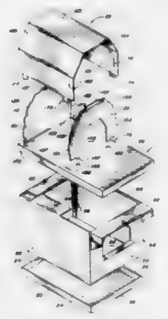


1. A lightweight pet carrier for restraining a pet within a motor vehicle without obstructing the vehicle operator's rearward field of vision, comprising:
(a) a supporting frame having at least a pair of upstanding support members, and at least a pair of transverse horizontal support members; and
(b) a cover of flexible fabric fitting snugly about said frame and defining a front wall, a pair of opposite side walls, a bottom, and a top, said bottom and a respective lowermost portion of each of said front wall and said side walls being of water-impervious material, and at least the uppermost one-fourth of each of said front wall and said side walls being of substantially transparent flexible material, wherein at least a portion of said substantially transparent flexible material is sufficiently pervious to air to provide ample ventilation for an animal located within the space surrounded by said cover supported by said frame.

4,803,952
PORTABLE SHELTER FOR SMALL ANIMALS
David B. Houser, 5136 E. Evergreen St. #1079, Mesa, Ariz. 85205
Filed Jul. 6, 1987, Ser. No. 70,070
Int. Cl.[4] A01K *1/03*
U.S. Cl. 119—19 16 Claims

1. A portable animal shelter comprising a base assembly; a first story assembly seated in said base assembly and extending upwardly therefrom; a rear wall member; a front wall member; a roof assembly; and an intermediate assembly seated upon said first story assembly and having means defined therein for supporting said rear wall member and said front wall member in upstanding secure relationship, said roof assembly extending between said rear wall member and said front wall member in overlying relationship thereto and in interlocking relationship with said intermediate member, said first story assembly having an elongated body portion having a plurality of vertically extending fold lines formed therein creating a seam panel, a rear panel, a first side panel, a front panel, and a second side panel therewith, said body portion being foldable into a generally rectangular frame with said seam panel overlapping a portion of said second side panel and secured thereto, said frame having an upper edge for receiving said intermediate assembly thereupon, a lower edge for seating said frame, said





front panel having an opening defined therein in communication with the interior of said frame.

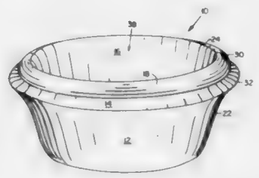
4,803,953
CAT TOY
Michael S. Graves, 10409 Valley Spring La., Toluca Lake, Calif. 91602
Filed Oct. 5, 1987, Ser. No. 104,292
Int. Cl.[4] A01K *15/00*
U.S. Cl. 119—29 2 Claims



1. A static cat toy for propelling and retracting a missile therefrom comprising the combination of:
a stationary and non-movable base constituting an anchor;
means operably mounted in said base for propelling an article attractive to a cat;
means operably mounted in said base for retracting said article;
release means pivotally carried on said stationary base operable in response to said propelling and said retraction means for alternately propelling and retracting said article; and

motor means carried on said release means movable between two positions for engaging and disengaging with said retraction means and alternating between said positions in response to pivotal movement of said release means;
said retraction means including a rotatable drum selectively engageable by said motor means;
a line having one end attached to said drum and the other attached to said article; and
said line cooperates with said propelling means to compress a spring when said motor means is engaged with said drum.

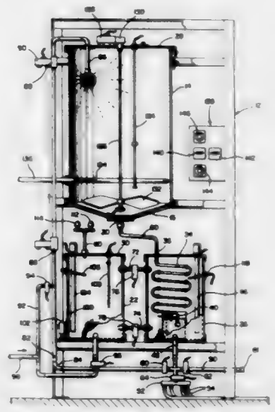
4,803,954
CRAWLING INSECT-PROOF PET BOWL APPARATUS AND METHOD
Harland A. Welch, 13005 Pollard Dr., Austin, Tex. 78727; Lorenzo Perales, 8307-A Bowling Grn., and Don Livingston, 8206 Exmoor Dr. #B, both of Austin, Tex. 78758
Filed Apr. 13, 1987, Ser. No. 37,580
Int. Cl.[4] A01K *5/00*
U.S. Cl. 119—61 8 Claims



1. A crawling insect-proof pet feed bowl comprising:
(A) an outer liner with upwardly extending sides attached to a base;
(B) a first downwardly sloping lip formed at an upper limit of said outer liner's upwardly extending sides;
(C) a removably attachable inner liner with upwardly extending sides that conform to said outer liner's upwardly extending sides but which touch said outer liner only at a base of said inner liner and which sides gradually angle away from said outer liner so that a gap with walls is accomplished; wherein crawling insects are trapped and cannot escape by a non-toxic barrier means applied to the walls of said gap
(D) a second downwardly sloping lip formed at an upper limit of said inner liner that conforms with said first downwardly sloping lip and maintains said gap but which extends only part way down said first sloping lip.

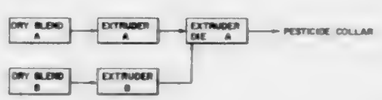
4,803,955
MILK CALF FEEDING SYSTEM WITH AUTOMATIC CLEANING CYCLE
Patrick Gonsalves, 3636 Monte Vista, Ceres, Calif. 95307
Filed Apr. 9, 1987, Ser. No. 36,905
Int. Cl.[4] A01K *9/00*
U.S. Cl. 119—71 14 Claims

1. A liquid nutrient animal feeding system including a liquid nutrient receptacle including means for admitting a supply of liquid nutrient thereinto and a liquid nutrient outlet, a warming tank, heat exchange means in said warming tank including inlet and oulet means, first conduit means communicating said liquid nutrient outlet with said heat exchange means inlet means, nipple means diposed exteriorly of said warming tank, second conduit means communicating said heat exchange means outlet with said nipple means, and first heating means operatively



associated with said warming liquid tank for warming the liquid therein substantially to a predetermined temperature.

4,803,956
CO-EXTRUSTION OF MULTI-COMPONENT INSECTICIDAL PET COLLARS
Eugene J. Corrigan, Chesterfield, and Earl R. Atkinson, Jr., Mechanicsville, both of Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.
Filed Oct. 15, 1984, Ser. No. 661,101
Int. Cl.[4] A01K *27/00*
U.S. Cl. 119—106 9 Claims



1. An animal collar for controlling fleas and ticks on an animal, comprising a plastic matrix containing at least one insecticide and a plastic barrier layer, said matrix and said layer being co-extruded.

4,803,957
GAS/LIQUID HEAT EXCHANGER
Ulrich Presnel, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany
Filed Mar. 17, 1988, Ser. No. 169,299
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1987, 3709339
Int. Cl.[4] F22D *1/00*
U.S. Cl. 122—7 R 12 Claims

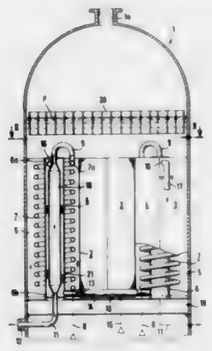
1. In a gas/liquid heat exchanger having an upright pressure tank that includes a water chamber, at least one heat-transfer-surface unit, which is disposed in said water chamber and extends along said pressure tank, a saturated steam chamber disposed above said water chamber, and built-in components that divide said water chamber into zones of: water that flows upwardly along said heat-transfer-surface unit, water that flows downwardly, and calm water, with each heat-transfer-surface unit including a displacement body and heat-transfer-surface elements, especially helical heat-transfer-surface elements, that are disposed about said displacement body and

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have hot process gas under pressure flowing through them, the improvement comprising:

means for conveying process gas from said heat-transfer-surface elements through said displacement body; and

means for introducing feed water into said displacement



body at a bottom end region thereof, conveying said feed water through said displacement body in countercurrent heat-exchange flow relative to said process gas, withdrawing said feed water from said displacement body at an upper end region thereof, and introducing said feed water into a zone of downwardly flowing water.

4,803,958

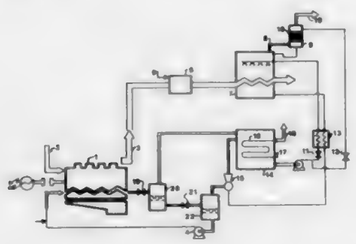
ABSORPTION HEAT PUMPED COGENERATION ENGINE

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Sep. 8, 1987, Ser. No. 94,391

Int. Cl.[4] F22B *1/00*

U.S. Cl. 122—21 18 Claims



1. An apparatus for producing steam at a useful pressure above about 300 kPa absolute from both the combustion exhaust gas heat and the cooling system heat of an internal combustion engine, comprised of:

a. a means for producing at least one supply of low pressure steam at a pressure below about 200 kPa from the said cooling system heat; and

b. an absorption apparatus which is designed, dimensioned, and adapted for containing and circulating a liquid absorbent solution capable of reversibly absorbing and desorbing water vapor, said absorption apparatus comprised of:

(i) an absorption heat exchanger wherein said low pressure steam is contacted by and absorbed into said absorbent solution, and wherein the heat released thereby is indirectly transferred via said absorption heat exchanger to boiling feedwater, whereby part of said useful pressure steam is produced;

(ii) a solution pump for increasing the pressure of the absorbent solution from the absorption heat exchanger to at least approximately said useful pressure;

(iii) a desorption heat exchanger wherein said absorbent solution from said solution pump undergoes indirect heat exchange with said combustion exhaust gas, whereby a second part of said steam at useful pressure is desorbed from said absorbent solution; and

(iv) a means for reducing the pressure of said absorbent solution from said desorption heat exchanger and recycling said solution to said absorption heat exchanger.

4,803,959

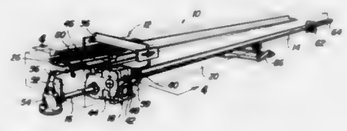
INDEXING SOOTBLOWER

Ronald E. Sherrick; Dean C. Ackerman, both of Lancaster; Dean E. Draxton, Rapid City; John C. Matthews; Don W. Smith, both of Lancaster, and John G. Stevens, Thornville, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 24, 1988, Ser. No. 172,709

Int. Cl.[4] F22B *37/18, 37/48*

U.S. Cl. 122—379 11 Claims



1. A sootblower having a lance tube with one or more nozzles for projecting a stream of blowing medium against surfaces within a boiler, said lance tube being periodically advanced into and out of the boiler and simultaneously rotated such that the stream of blowing medium projecting from the nozzle traces a helical path, said sootblower comprising:

drive train means for driving said lance tube to undergo said longitudinal and rotational motions in a synchronized manner thereby causing said nozzles to trace said helical path, and

indexing means for displacing the position of said helical path from one sootblower actuation cycle to another such that the helical paths traced by said nozzle are longitudinally offset between said actuation cycles.

4,803,960

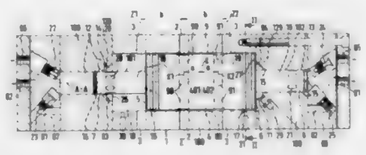
INTERNAL COMBUSTION ENGINE, PARTICULARLY, A FREE-PISTON ENGINE

Detlef Köppen, Rotwandstrasse 3, D-8023 Pullach, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 56,425

Int. Cl.[4] F02B *71/00*

U.S. Cl. 123—46 A 33 Claims



1. An internal combustion engine, more specifically a free-piston engine, having at least one cylinder (1) comprising one piston (4) therein arranged and guided to be movable and sealed, which piston may perform axial stroke elements within a cylinder chamber (9), and featuring cylindrical projections (7,8) extending axially away from said piston (4) to either side and having at least over part of their length of diameter smaller

than the diameter of the piston (4), said projections (7,8) being guided at least over some part of their length within axial cylinder bores (12,13) and therein partially sealed; and having combustion chambers (10,11) within the cylinder (1), said combustion chambers being formed and delimited by certain parts of an inside cylinder wall defining the cylinder chamber (9) and by certain surface parts of the piston (4) and its projections (7,8), the surfaces defining said combustion chambers (10,11) being formed more particularly by end faces (5 and 26, or 6 and 27); and having inlet ports (2) arranged in a longitudinal cylinder wall (100) to admit air, and outlet ports (3) arranged within the longitudinal cylinder wall (100) so as to permit exhaust gases to be expelled, said inlet ports (2) and outlet ports (3) being opened and closed depending upon the axial position of the piston (4) and its projections (7, 8); and having ducts (18,19) within said piston (4) and its projections (7,8), wherein said ducts permit the controlled passage of gases such as air and fuel/air mixtures by forming flow path connections linked to bores (20,21) located in lateral surfaces (101,102) of the projections (7,8), and said ducts may be brought into open flow connection and blocked with respect to said inlet ports (2) depending upon the axial position of said piston (4) and its projections (7,8) relative to the cylinder (1), said ducts may also be brought into open flow connection with said combustion chambers (10,11) via said bores (20,21) and blocked by means of said axial cylinder bores (12,13) at approximately identical axial piston positions relative to said cylinder (1); and wherein said ducts (18 and 19) are arranged separately from each other, one each within one of two longitudinal piston halves (401 and 402) and their respective projection (7 or 8), located to either side of a symmetry plane (K) arranged perpendicularly with respect to the longitudinal axis (A-A) of the piston (4); each of said ducts (18 or 19) being connected with a corresponding orifice (90 or 91) located within a peripheral surface (80) of the piston (4), said orifices (90 or 91) being arranged in an area of radial planes (K1 or K2) located parallel to and at a distance (a) from said symmetry plane (K) of the piston (4); all ports (2) located in the longitudinal cylinder wall (100) being arranged in the area of the symmetry plane (Z) of the cylinder (1); said outlet ports (3) for the combustion chambers (10 or 11) being separate from each other in areas located in radial planes (Z1 or Z2) in parallel to and at a second distance (b) from the symmetry plane (Z) of the cylinder (1); the first distance (a) of the orifices (90 or 91) at either side of the symmetry plane (K) of the piston (4) and the second distance (b) of said outlet ports (3) at either side of the symmetry plane (Z) of the cylinder (1) being defined so that all the inlet ports (2) may be in open flow path connection with the orifices (90 or 91), the ducts (18 or 19), the bores (20 or 21) and the combustion chamber (10 or 11) associated with one of said longitudinal halves (401 or 402) of said piston whenever the end face (6 or 5) of the opposite longitudinal half of the piston (402 or 401) is near the respective end face (27 or 26) of the cylinder chamber (9).

4,803,961

AIR SUCTION DEVICES FOR MULTICYLINDER ENGINES

Tetsuo Hiraoka, Hiroshima; Shinji Seike; Kouichi Hatamura, both of Hiroshima, and Minoru Akizuki, Higashihiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 932,198, Nov. 18, 1986, abandoned. This application Jul. 5, 1988, Ser. No. 214,824

Claims priority, application Japan, Nov. 19, 1985, 60-259394; Nov. 19, 1985, 60-177864[U]; Apr. 3, 1986, 61-49028[U]

Int. Cl.[4] F02B *75/18*

U.S. Cl. 123—52 MV 19 Claims

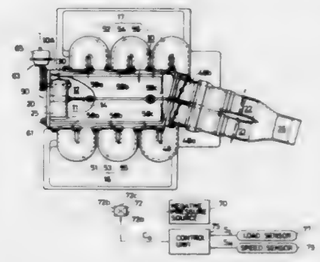
1. An air suction device for a multicylinder engine comprising:

a first group of inlet passages each having one end connected to one of a first group of cylinders operative to work with their respective suction strokes which are not successive to one another,

a second group of inlet passages each having one end connected to one of a second group of cylinders operative to work with their respective suction strokes which are not successive to one another,

a surge chamber separated off by a partition-wall member into a first compartment for air expansion provided with a plurality of first openings each coupled with the other end of one of said first group of inlet passages and a second compartment for air expansion provided with a plurality of second openings each coupled with the other end of one of said second group of inlet passages, said partition-wall member being provided with a cutout portion thereon, and

a valve unit including a body member forming an air passage and a closing valve disposed in the body member for closing selectively the air passage, said valve unit being fitted to said cutout portion provided on the partition-wall member in said surge chamber so as to form with said air



passage thereof a connecting passage provided for interconnecting said first and second compartments and closed selectively by said closing valve, and wherein the surge chamber is constituted with a rear wall portion provided thereon with air inlets, a front wall portion opposite to the rear wall portion, a first side wall portion on which the first openings are formed, and a second side wall on which the second openings are formed, and wherein the front wall portion is provided with an opening continuing to the cutout portion provided on the partition-wall member, and wherein the body member of the valve unit comprises a flange portion fixed to the front wall portion of the surge chamber and a valve housing engaging with the cutout portion provided on the partition-wall member, and wherein the cutout provided on the partition-wall member is formed at a portion of the partition-wall member close to the front wall portion of the surge chamber, and wherein the closing valve has a rotating shaft with one end thereof projecting outward from the flange portion of the body member.

4,803,962

INTAKE PASSAGE APPARATUS FOR INTERNAL COMBUSTION ENGINE

Yoshiro Asai, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 830,553, Feb. 18, 1986, abandoned. This application Mar. 15, 1988, Ser. No. 142,330

Claims priority, application Japan, Feb. 22, 1985, 60-23577[U]

Int. Cl.[4] F02B *75/18*

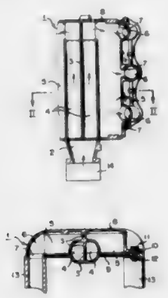
U.S. Cl. 123—52 MC 2 Claims

1. An intake passage apparatus of an internal combustion engine disposed between an air cleaner and engine cylinders for supplying air to the cylinders, said apparatus comprising:

a surge tank including two divisions having respective flat surfaces superimposable on each other and extending along an air flow passing through the surge tank, the surge

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tank having first and second passages connected to the air cleaner for receiving a flow of air from the air cleaner, a partition plate for partitioning the first and second passages from each other, a first tank section communicating with the first passage for receiving the air from the first passage, and a second tank section communicating with the second passage for receiving air from the second passage wherein the first and second passages and the first and second tank sections are formed when the flat surfaces of the two divisions are superimposed on each other and joined together;



at least one adhesive agent layer interposed between the joined surfaces to thereby bond the two divisions in air-tight relationship;

fixing means operatively connected to the joined surfaces of the two divisions for mechanically clamping and fixing the two divisions together; and

an intake manifold connected to the first and second tank sections for providing a flow of air from the tank sections to the engine cylinders.

4,803,963

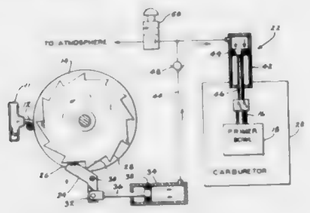
AUTOMATIC PRIMING SYSTEM FOR A MARINE ENGINE

Kenneth L. Kleinhans, North Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Apr. 11, 1988, Ser. No. 179,964

Int. Cl.[4] F02M *1/10*

U.S. Cl. 123—187.5 R **9 Claims**



1. An automatic priming system for an outboard marine engine having a manual pull start of the type utilizing a rope wound recoil pulley and a primer button operably connected to a primer bowl of a carburetor so that depression of the primer button causes said engine to be primed, said system comprising,

a first means for translating the rotational movement of the recoil pulley into linear movement,

priming means having a linearly moving portion in operable engagement with the primer button so that movement of said portion results in depression of the primer button, and

linkage means connecting said first means to said linearly moving portion of said priming means so that linear movement of said first means caused by the rotational movement of the recoil pulley results in linear movement of said priming means portion and depression of the primer button.

4,803,964

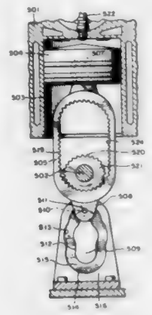
INTERNAL COMBUSTION ENGINE

Wladyslaw Kurek, and Andrzej Startek, both of 2815 S. 49th Ave., Cicero, Ill. 60650

Filed Dec. 11, 1986, Ser. No. 940,289

Int. Cl.[4] F02B *75/32*

U.S. Cl. 123—197 AC **25 Claims**



1. A crankless internal combustion engine comprising:

(a) a cylinder;

(b) a piston slidably disposed for rectilinear reciprocal movement within said cylinder;

(c) a continuous internally facing force transfer means pivotally mounted to said piston;

(d) a drive shaft;

(e) a drive means keyed to said drive shaft and internally adjacent to said force transfer means, a portion of said drive means engaging a portion of said force transfer means; said drive means and/or said force transfer means being shaped in accordance with the variable forces applied to the piston during rectilinear reciprocal movement of said piston within said cylinder; and

(f) means for guiding said force transfer means such that said drive means cooperatively associates with said force transfer means to convert the rectilinear movement of the piston into rotary movement of the drive shaft.

25. A method for converting the rectilinear movement of a piston within a cylinder of a crankless internal combustion engine into rotary movement of a drive shaft, wherein said engine comprises, a combustion chamber defined by said piston and said cylinder, a continuous internally facing force transfer means pivotally mounted to said piston and having a plurality of segments, one of which is substantially linear, and a drive means internally adjacent to and engaged with said force transfer means, and nonrotatably keyed to said drive shaft, said drive means and/or said force transfer means being shaped in accordance with the variable forces applied to the piston during rectilinear reciprocal movement of said piston within said cylinder, said method comprising:

(a) introducing a combustible fuel into said combustion chamber;

(b) combusting said fuel thereby causing said piston and said force transfer means to move away from said combustion chamber, said piston moving rectilinearly in a power stroke;

(c) rotating said drive shaft by guiding said force transfer means during the power stroke of said piston such that said drive means cooperatively associates with said force transfer means to convert the rectilinear movement of said piston into rotary movement of the drive shaft.

4,803,965

STEEL LAMINATE TYPE CYLINDER HEAD GASKET

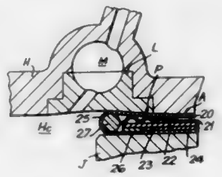
Tsunekazu Udagawa, Ichikawa, and Yoshio Yamada, Koshigaya, both of Japan, assignors to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1987, Ser. No. 69,670

Claims priority, application Japan, Jul. 7, 1986, 61-104213[U]

Int. Cl.[4] F02F *11/00*

U.S. Cl. 123—193 CH **8 Claims**



1. A steel laminate type cylinder head gasket to be installed in an internal combustion engine having a cylinder block with a cylinder bore, a cylinder head with an auxiliary combustion chamber and a mouth plate attached to the cylinder head for defining the auxiliary combustion chamber, comprising:

a first plate having at least one first sealing area around the cylinder bore and at least one second sealing area adjacent the first sealing area, on which the mouth plate is placed, said second sealing area being defined by a curved outer line corresponding to a part of a contour of the mouth plate and an inner line corresponding to a part of a contour of the cylinder bore, said first plate having a plurality of curved beads disposed at a predetermined distance away from each other and situated inside and outside the second sealing area, said beads being formed so that resiliency of the bead decreases gradually from an inner bead to an outer bead, and

at least one second plate situated adjacent to the first plate to form the steel laminate gasket.

4,803,966

ENGINE CONTROL SYSTEM

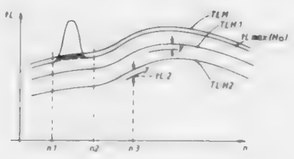
Helmut Denz, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 25, 1988, Ser. No. 173,553

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1987, 3710081

Int. Cl.[4] F02D *41/30, 43/00*

U.S. Cl. 123—478 **9 Claims**



1. An engine control system wherein the injection of fuel is dependent upon elevation, the system comprising:

a load sensor for determining the engine charge;

a rotational speed sensor for detecting engine speed;

first function means for storing a characteristic curve (TLM) indicative of the maximum charge and having values dependent upon said speed which are slightly above the actual values (tLmax) obtained at sea level (H0);

second function means for storing additional characteristic curves (TLH1, TLH2) for the maximum engine charge, said curves (TLH1, TLH2) corresponding to respective elevations (H1 and H2); and,

comparison means for comparing the actual value of the load signal measured at full load with the stored characteristic curves (TLM, TLH1, TLH2) and for detecting the instantaneous elevation when there is a drop below any one of said additional characteristic curves (TLH1, TLH2).

4,803,967

SYSTEM FOR CONTROLLING IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE

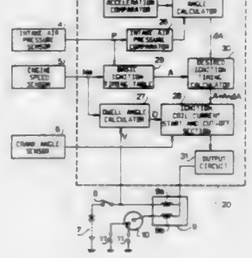
Hiroya Ohkumo, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1987, Ser. No. 135,656

Claims priority, application Japan, Dec. 26, 1986, 61-310255

Int. Cl.[4] F02P *5/04*

U.S. Cl. 123—422 **4 Claims**



1. In a system for controlling ignition timing of an automotive engine mounted on a vehicle, having detector means for detecting engine operating conditions including engine speed and for producing an operating signal dependent on the detected conditions, basic ignition timing calculating means responsive to said operating signal for producing a basic ignition timing, load detecting means for detecting load on said engine and for producing a load signal when the load is larger than a predetermined first load value, advance angle decision means responsive to said load signal for producing an advance angle, desired ignition timing decision means for adding said advance angle to said basic ignition timing and for producing a desired ignition timing, and adjusting means responsive to said desired ignition timing for exciting an ignition coil of said engine to form a spark at a spark plug at the desired ignition timing, the improvement in the system wherein said detector means comprises

acceleration detecting means for detecting acceleration of the vehicle and for producing an acceleration signal when the acceleration is larger than a predetermined acceleration value, and

said advance angle decision means being arranged to produce said advance angle in response to said load signal and said acceleration signal.

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APPARATUS FOR DELIVERING FUEL TO INTERNAL COMBUSTION ENGINES

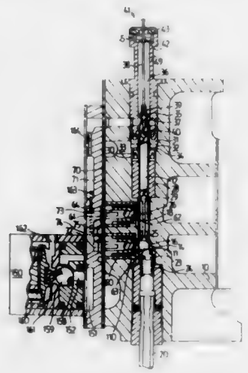
Peter W. Czwienczek, Padbury; Christopher N. F. Sayer, Ferndale; Darren A. Smith, Scarborough; Michael L. McKay, Willetton, and Robin M. Briggs, Marmion, all of Australia, assignors to Orbital Engine Company Proprietary Limited, Balcatta, Australia

Division of Ser. No. 866,425, May 23, 1986, Pat. No. 4,754,739. This application Mar. 10, 1988, Ser. No. 169,468

Claims priority, application Australia, May 24, 1985, PH0731

Int. Cl.[4] F02M *67/02, 69/08*

U.S. Cl. 123—533 **13 Claims**



1. Apparatus for metering fuel for delivery to an engine comprising a chamber elongated in one direction and having opposite end walls, a metering member projecting into the chamber through one end wall and a fuel discharge port in the other end wall and that end of the metering member within the chamber being moveable to thereby vary the quantity of fuel receivable in the chamber and displacable therefrom through the discharge port, and a fuel inlet port in a side wall of said chamber extending between the end walls of the chamber, said fuel inlet port being located adjacent the junction of said side wall and the other end wall and the discharge port being located offset from the centre of the other end wall in a direction away from the fuel inlet port.

4,803,969

PROCESS FOR THE LOAD-DEPENDENT CONTROL OF A HYDRAULIC DRIVE FOR A COMPRESSOR ARRANGED AT AN INTERNAL-COMBUSTION ENGINE

Hermann Hiereth, Esslingen, and Dieter Messerschmidt, Kornital, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jul. 1, 1987, Ser. No. 69,205

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1986, 3623676

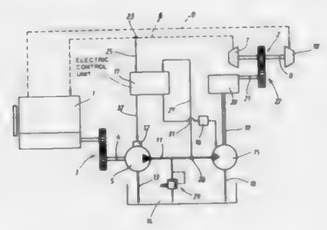
Int. Cl.[4] F02B *39/08*

U.S. Cl. 123—561 **10 Claims**

1. A process for the load-dependent control of a hydraulic drive for a compressor supercharger which supplies charging pressure to an internal-combustion engine, having a hydraulic pump driven by said internal-combustion engine, said hydraulic pump connected to drive a hydraulic motor via its hydraulic output pump pressure connected to said motor from said hydraulic pump via a hydraulic pipe, said hydraulic motor connected to drive said compressor via a drive train, a delivery flow of said hydraulic output pump pressure to said hydraulic motor being changeable between a minimum and a maximum, comprising the steps:

adjusting said hydraulic pump into a full-delivery position during the idling of the internal-combustion engine;

guiding said hydraulic pump from said full-delivery position to a zero-delivery position according to a predetermined schedule after a positive load change of said internal-com-



bustion engine from said idling and after a predetermined hydraulic output pump pressure in said hydraulic pipe is reached; and

disconnecting said drive from said hydraulic pump to said compressor supercharger after a predetermined charging pressure limit is reached.

4,803,970

MISSILE PROJECTING DEVICE

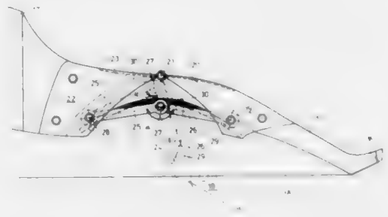
Claus Mattheck, Leimersheim, and Siegfried Kremer, Rimbach, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe G.m.b.H., Karlsruhe, Fed. Rep. of Germany

Filed Jun. 5, 1987, Ser. No. 58,865

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1986, 3622628

Int. Cl.[4] F41B *5/00*

U.S. Cl. 124—23 R **2 Claims**



1. A spring-loaded device for storing energy and releasing such stored energy to a missle, such as an arrow, said device comprising a center holding part with outwardly projecting support portions extending from said center holding part in opposite directions, bow members extending further outwardly from said projecting support portions in opposite directions, with one end of each bow member being pivotally mounted to one of the opposite ends of said support portions, and a string extending between the free other ends of said pivotal bow members, an elbow linkage extending between each of said projecting support portions and the associated bow member, each elbow linkage consisting of arms pivotally joined at one end by an elbow joint and having their other ends connected to said support portions and the associated bow member by arm joints disposed at a location such that a line extending through said joints is spaced from the pivot joints of said bow parts and that pivoting of said bow parts causes bending of said elbow linkage, spring means disposed in engagement with said linkage, said spring means comprising leaf

spring means that extend over the full length of said elbow linkage and having a center portion resting on said elbow joint at the side thereof opposite said string and opposite ends resting on said arm joints at the sides thereof facing said string, said leaf spring means being pretensioned so as to resiliently force said linkages toward their stretched positions, said linkages being bent toward the adjacent pivot joints of said bow parts and said string being sufficiently short so as to retain said elbow linkages bent toward said pivot joint such that the elbow linkage angle opposite said string is always smaller than 180° thereby to insure bending of said elbow linkage toward said pivot joints when said bow arms are pivoted by pulling said string.

4,803,971

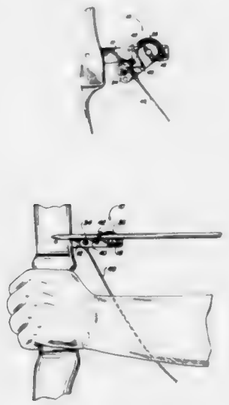
BOW-LIMB-OPERATED PULL-DOWN ARROW REST SUPPORT

James D. Fletcher, P.O. Box 337, Bodfish, Calif. 93205

Filed Nov. 9, 1987, Ser. No. 118,436

Int. Cl.[4] F41B *5/00*

U.S. Cl. 124—41 A **13 Claims**



1. A pull-down arrow rest support for an archery bow comprising:

attachment means for attaching said arrow rest support to said bow;

support means attached to said attachment means for supporting an arrow;

elastic restoring means for holding said support means in first and second positions corresponding to relaxed and drawn states of said bow, respectively; and

retracting means for holding said support means in said first position when said bow is relaxed and for moving said support means away from the path of said arrow as it is being fired;

continuously and smoothly horizontally adjustable and width-adjustable rest means on said support means for adjusting a position of said arrow with respect to its horizontal distance from said attachment means and for accommodating different sized arrow shafts;

continuously and smoothly adjustable upper limit means for limiting the height of said support means when it is in said second position;

stop means for limiting the range of motion of said support means between said first position and a third position; and

guard means to the rear of said rest means on said support means for catching said arrow should it fall off said support means.

4,803,972

SOLAR-ENERGY COLLECTOR

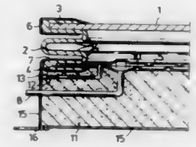
Gösta Jansson, Badvagen 7-9, S-139 00 Varmdo, Sweden

Continuation of Ser. No. 918,948, filed as PCT SE86/00034 on Jan. 29, 1986, published as WO86/04669 on Aug. 1, 1986, abandoned. This application Jan. 7, 1988, Ser. No. 142,250

Claims priority, application Sweden, Feb. 12, 1985, 8500639

Int. Cl.[4] F24J *2/56*

U.S. Cl. 126—450 **5 Claims**



1. A solar energy collector, comprising:

(a) a tray-like casing having a planar bottom wall and relatively low side walls upstanding therefrom,

(b) a generally planar energy absorber unit (5 31) disposed within the casing overlying the bottom wall thereof,

(c) a planar, substantially rigid cover plate (1) pervious to solar radiation and disposed overlying the energy absorber unit, and

(d) resilient, gas impervious, suspension mounting and sealing means (2 20) forming a part of the casing and extending continuously between an outer peripheral edge portion of the cover plate to which a peripheral edge portion of said suspension mounting and sealing means is sealingly joined, and a surrounding edge portion of the side walls to define, in cooperation with the cover plate, a hermetically sealed chamber, a dry gas, preferably nitrogen, filling said sealed chamber said peripheral edge portion of said suspension mounting and sealing means together with said peripheral edge of the cover plate being free and unrestrained against movement perpendicular to the plane of the cover plate, and said means being configured to enable substantial bi-directional movement of said cover plate perpendicular to the plane thereof without any deflection of said cover plate to compensate, without any significant gas pressure change, for volumetric expansions and contractions of the dry gas within the chamber due to temperature changes.

4,803,973

GRATE FOR COAL STOVE

Dane P. Harmaa, Halifax, Pa., assignor to Harman Stove and Welding, Inc., Halifax, Pa.

Filed Dec. 14, 1987, Ser. No. 132,809

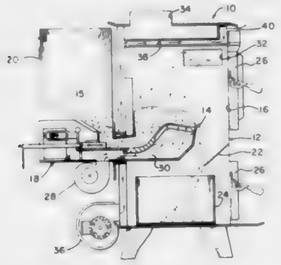
Int. Cl.[4] F24B *13/04*

U.S. Cl. 126—73 **10 Claims**

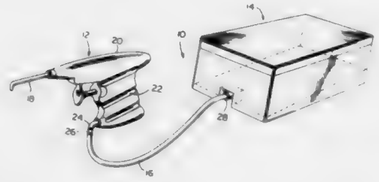
1. A stove grate for guiding fuel in two flows, the grate including a stationary floor extending between opposed ends of the grate; spaced sidewalls extending along the sides of the floor between the ends of the grate; the floor including an entrance section at one end of the gate, a fire support section at the other end of the grate above the entrance section and rise section means extending upwardly between the entrance section and the fire support section for guiding a lower fuel flow upwardly along the floor to the fire support section and for guiding an upper fuel flow located above the first flow up to fill a fuel reservoir located above the floor at the entrance section and at the lower part of the rise section means without overflowing the sidewalls; and a plurality of combustion air

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openings in the floor of the grate extending along the upper part of the rise section means and along the fire support section, the entrance section and the lower part of the rise section means being free of combustion air openings.



4,803,974
ORAL LAVAGE APPARATUS
James R. Powell, 480 Roe Ave., Elmira, N.Y. 14901
Filed Oct. 7, 1987, Ser. No. 105,733
Int. Cl.[4] A61H *9/00*
U.S. Cl. 128—66 **11 Claims**



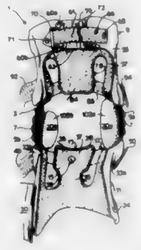
1. An oral lavage apparatus comprising a hand-held trigger actuated dental jet stream device having pump means therein for delivering liquid through said device into an oral cavity, tube means connected to said device for delivering said liquid to a human mouth, an external reservoir means for containing and supplying liquid to said device, and first connecting means for connecting said external reservoir means to said device, said reservoir means comprising a top portion and a bottom portion, said bottom portion containing second connecting means for connecting said first connecting means to said reservoir means and wherein said top and bottom portions are sized so that when the device is in use said top portion is attached to said bottom portion to enclose the liquid contained in said reservoir means, the interior of said reservoir means comprising retaining means for securing said device, tube means and first connecting means to the interior of said reservoir means when said device is not in use.

4,803,975
ORTHOTIC DEVICE FOR CONTROLLING KNEE INSTABILITIES
Andrew H. Meyers, 31 The Birches, Roslyn Estates, N.Y. 11576
Filed Mar. 31, 1987, Ser. No. 32,230
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—80 C **17 Claims**

6. An orthotic device for controlling knee instabilities, comprising:

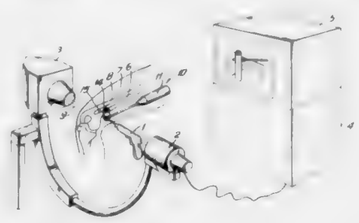
(a) a joint structure including a pair of sidebars having pivotable joints in their middle portions,

(b) upper and lower support assemblies for circumscribing the leg above and below the kneejoint and connected to the upper and lower ends of the sidebars for supporting the sidebars over the sides of the kneejoint, and a condyle pad positioned between each of said sidebars and each of the condylar regions of the knee, each of said pads including a layer of resilient material for engaging its respective pad against its respective condylar region, and



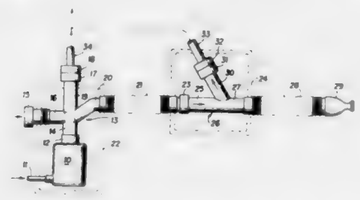
(c) a brace member forming a portion of said lower support assembly having a tibial retention means including a tibial support member that is cantilevered from the brace member, and a strap means for maintaining the support member in intimate supporting contact against an upper portion of the tibia for supporting the upper tibia against anterior displacement.

4,803,976
SIGHTING INSTRUMENT
Robert Frigg, Bern; Paul Gisin, Waldenburg; Stephan M. Perren, Davos Dorf; Urs Jenny, Niederdorf, and Gebhard Ritter, Mainz, all of Switzerland, assignors to Synthes, Paoli, Pa.
Continuation of Ser. No. 852,576, Apr. 16, 1986, abandoned. This application Apr. 8, 1988, Ser. No. 183,490
Claims priority, application Switzerland, Oct. 3, 1985, 4280/85
Int. Cl.[4] A61B *17/18, 6/00*
U.S. Cl. 128—92 VD **34 Claims**



1. A sighting instrument for use in bone surgery for drilling holes in bones comprising a tool socket structured to receive drill guides for drills of varying diameter, a direction finder connected to said socket and having an axis at a predetermined angle to the axis of the tool socket for indicating the axial alignment of the tool socket and an elongated handle connected to said direction finder and tool socket whereby the socket and direction finder may be held in a predetermined orientation between a radiation source and a radiation receiver.

4,803,977
METHOD AND APPARATUS FOR THE DIAGNOSIS OF RESPIRATORY DISEASES AND ALLERGIES
Carl P. Kremer, Jr., Darien, Conn., assignor to Mallinckrodt, Inc., St. Louis, Mo.
Division of Ser. No. 838,197, Mar. 7, 1986, Pat. No. 4,660,547, which is a continuation of Ser. No. 736,519, May 20, 1985, abandoned, which is a continuation of Ser. No. 608,563, May 9, 1984, abandoned, which is a continuation of Ser. No. 361,767, Mar. 25, 1982, abandoned. This application Mar. 27, 1987, Ser. No. 30,595
Int. Cl.[4] A61B *6/00*
U.S. Cl. 600—3 **9 Claims**



1. A method of diagnosing diseases, comprising:

(a) continuously producing a radioactive mist having particles that do not exceed about 1.2 microns in diameter with a major portion of the particles being within the range of about 0.056 microns to about 1 micron, by continuously aspirating a radioactive liquid utilizing gas under pressure;

(b) continuously introducing the radioactive mist into a first conduit through a first inlet therein;

(c) continuously admitting a gas containing oxygen into the first conduit through a second inlet therein;

(d) continuously mixing the gas containing oxygen with said radioactive mist in said first conduit to form a radioactive aerosol mixture;

(e) passing the radioactive aerosol mixture from the first conduit to a second conduit through a first unidirectional control valve that permits unidirectional flow from the first conduit to the second conduit;

(f) feeding the radioactive aerosol mixture from the second conduit into a patient's airways during the patient's breathing to substantially uniformly distribute the radioactive aerosol mixture throughout the patient's airways and deposit the radioactive mist on surfaces therein;

(g) receiving exhaled aerosol from the patient's airway into the second conduit during the patient's breathing;

(h) passing exhaled aerosol from the second conduit through a second unidirectional flow valve to permit unidirectional flow of exhaled aerosol from inside the second conduit to outside the second conduit with the first unidirectional flow valve preventing exhaled aerosol in the second conduit from passing into the first conduit;

(i) preventing development of excessive pressure within the first conduit while exhaled aerosol is being received into the second conduit during the patient's breathing; and

(j) producing radioactive image scans of the patient's airways after depositing the radioactive mist therein.

4,803,978
APPARATUS FOR ACTUATING AN INHALER
John J. Johnson, IV, 80 Calle San Blas, Albuquerque, N. Mex. 87109, and John J. Johnson, Jr., 720 University Ave., Las Vegas, N. Mex. 87701
Continuation of Ser. No. 764,189, Aug. 9, 1985, abandoned. This application Aug. 21, 1987, Ser. No. 88,994
Int. Cl.[4] A61M *15/00*
U.S. Cl. 128—200.23 **19 Claims**

1. Apparatus usable with an inhaler having a body, a nozzle and a valve responsive to relative displacement between the body and the nozzle for discharging the charge of medicated vapor for actuating the inhaler to discharge a charge of medicated vapor from the inhaler directly into the oral cavity of a user upon inhalation by the user, said apparatus comprising in combination:

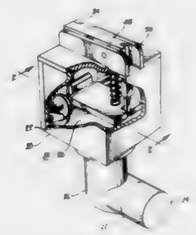
(a) an enclosure;

(b) a housing means associated with said enclosure for retaining the nozzle of the inhaler in a fixed location and for slidably supporting the body of the inhaler;

(c) an actuating means disposed in said enclosure for actuating the valve of the inhaler to eject a charge of the medicated vapor by slidably repositioning the body of the inhaler toward the nozzle of the inhaler;

(d) a triggering means disposed in said enclosure for triggering operation of said actuating means;

(e) a conduit in fluid communication with said enclosure and having an outlet port insertable within the user's mouth for channelling the charge of medicated vapor through the outlet port;



(f) said triggering means including a trigger valve disposed within said enclosure for initiating operation of said triggering means to trigger said actuating means, said trigger valve being responsive to a pressure drop within said enclosure;

(g) means mechanically attached to said actuating means and extending from said enclosure for cocking said actuating means upon cessation of the pressure drop within the enclosure, said cocking means being operable while said outlet is within the user's mouth; and

(h) means for essentially precluding a flow of air into said enclosure before, during, and after operation of said triggering means;

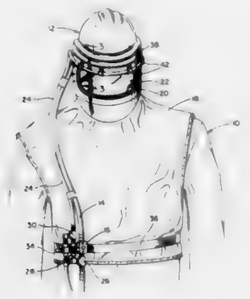
whereby, on placement of said outlet port within the user's mouth and upon inhalation by the user, a pressure drop within said enclosure occurs to trigger said actuating means and bring about a discharge and channelling of medicated vapor from the inhaler into the user's oral cavity and lungs.

4,803,979
PULSATING WATER AND AIR JET STRUCTURE FOR CLEANING HELMET WINDOW
Edmund C. Fischer, 5918 Southern Hills Dr., Houston, Tex. 77069
Filed May 27, 1987, Ser. No. 54,804
Int. Cl.[4] A61M *15/00*; **B08B** *3/02*
U.S. Cl. 128—201.15 **8 Claims**

1. A helmet including a forward facing window panel for forward viewing by a wearer of the helmet from therewithin and wherein the window panel includes at least one major dimension margin, a plurality of spray jet means supported from said helmet and spaced along said margin for discharging spray jets of fluid therefrom onto said margin at an acute angle thereon for directing the discharged fluid across said window panel toward the opposite margin thereof, means for supplying a fluid mixture comprising air and water under pressure to said

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spray jet means, said helmet including an air supply line to which air under pressure is supplied and which opens into the



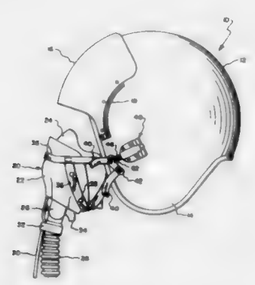
interior of said helmet for admitting ventilation and breathing air into the interior of said helmet.

4,803,980

AUTOMATIC BREATHING MASK RELEASE MECHANISM

Donald E. Nowakowski, and Carlton W. Naab, both of Safety Harbor, Fla., assignors to Conax Florida Corporation, St. Petersburg, Fla.

Filed Oct. 20, 1986, Ser. No. 922,075
Int. Cl.[4] A62B *17/04*; **B63C** *11/02*; **A42B** *3/00*
U.S. Cl. 128—201.23 **30 Claims**



1. Apparatus for automatically releasing a breathing mask from a protective head enclosing helmet sufficiently to enable the wearer to breathe freely of the mask upon the occurrence of a predetermined event, the mask and helmet having coacting means for releasably securing the former to the latter in a secured relationship and in a position of use against the face of the wearer and manual release means associated with the coacting means permitting the wearer to manually separate the mask from the secured relationship with the helmet and thereby release the mask from the helmet comprising:

(a) explosively actuated means operatively associated with said coacting means for effecting separation thereof and thereby releasing the mask from the helmet;

(b) means responsive to the occurrence of the predetermined event for activating said explosively actuated means, said explosively actuated means being operable independently of the manual release means so that separation of said coacting means is effected by the explosive force of the explosively actuated means without actuation of the manual release means; and

(c) said activating means comprising sensing means responsive to the predetermined event and circuit means operatively connected to said sensing means and to said explosively actuated means for actuating same in response to the predetermined event being sensed by said sensing means.

4,803,981

ANAESTHESIA MASK

Ian M. Veikery, The Laurels, 42 Grange Court Road, Westbury-on-Trym, Bristol BS94DR, England

Continuation-in-part of Ser. No. 420,803, Sep. 21, 1982, abandoned. This application Mar. 25, 1985, Ser. No. 715,826
Claims priority, application United Kingdom, Sep. 22, 1981, 8128614
Int. Cl.[4] A62B *9/00*
U.S. Cl. 128—206.24 **9 Claims**



1. A component for an anaesthesia mask comprising a relatively thick-walled resiliently compressible polymeric foam moulding having an opening to receive the nose of the patient, the opening being bounded by face-contacting surfaces of substantial width, lateral ports being provided in the sides of the foam moulding for the inlet and outlet of gases, the region of the foam moulding forming the periphery of the mask around the opening being resiliently compressible and shaped so as to have a lower region adapted to bear upon the base of the upper lip, an upper region adapted to contact the inferior region of the nasal bones, and lateral regions joining the upper and lower regions, the lateral regions being shaped so as to contact the nasal processes of the maxilla and the maxilla itself, and to meet the lower region where the lateral aspects of the upper lip meet the nasolabial grooves so that portions of the face-contacting surfaces extend at least over said naso-labial grooves, said face-contacting surfaces being shaped to provide a squashable seal around said periphery and thus in the region of said naso-labial grooves, the face-contacting surfaces which contact the inferior and lateral surfaces of the nasal bones and the maxilla on either side of the nose being chamfered inwardly with respect to the interior of the mask.

4,803,982

CRANIAL PERFORATOR

John W. Baker, 4 Wachusett Dr., Acton, Mass. 01720

Filed Mar. 26, 1987, Ser. No. 31,522
Int. Cl.[4] A61B *17/16*
U.S. Cl. 128—310 **16 Claims**



1. An improved drilling implement for drilling holes in bone

structures comprising a drill head assembly and a drill head drive assembly;

said drill head assembly comprising a hollow outer drill member and an inner drill member coaxially disposed within said outer drill member;

said outer drill member comprising an outer end having a plurality of cutting flutes and an inner end having three circumferentially-spaced lips that extend in a plane at right angles to the longitudinal axis of said outer drill member, each of said lips having a drive surface extending in a plane that intersects the plane of said lip;

said inner drill member comprising an outer end having a plurality of cutting flutes and an inner end having (1) an end surface, (2) three circumferentially-extending, mutually-spaced lugs projecting from said end surface parallel to the center axis of said inner drill member, each of said lugs having a cam surface extending circumferentially and at an angle to the longitudinal axis of said inner drill member and disposed to engage one of said drive surfaces and thereby drive said outer drill member when said inner drill member is rotated in a first direction, and (3) a threaded center hole;

said drill head drive assembly comprising a drive member, a drill head/drill drive coupling member, a drive adaptor, and biasing means;

said drive member comprising an end surface extending transversely of its axis and interrupted by three recesses for receiving said three lugs, each of said recesses being defined in part by side surfaces extending in planes extending parallel to the center axis of said drive member;

said coupling member being screwed into said threaded center hole so that it and said inner drill member will rotate as a unit when said inner drill member is rotated in said first direction;

said drive adaptor being connected to said drive member so that said drive adaptor and said drive member will rotate as a unit when said drive adaptor is rotated in said first direction;

said biasing means being disposed so as to bias said coupling member and said inner drill member axially away from said drive adaptor;

said drill head assembly and said drill head drive assembly being arranged so that when said drive adaptor is rotated in said first direction, (a) so long as said inner drill member encounters a predetermined resistance to penetration, said lugs will remain engaged with said side surfaces and said inner drill member will cause said outer drill member to rotate with it as a unit with said drive adaptor, and (b) when said inner drill member no longer encounters said predetermined resistance to penetration, said cam surfaces will coact with said drive surfaces to force said inner drill member forward relative to said outer drill member and said drill head drive assembly sufficiently for said lugs and said side surfaces to be disengaged, whereby said inner and outer drill members will slip relative to said drive member as said drive adaptor is rotated in said first direction,

the improvement wherein:

said cam surfaces are beveled outwardly toward an outer surface of said inner drill member in a helical twist, and further wherein the degree of bevel increases progressively along the length of each of said cam surfaces.

4,803,983

MUSCLE BIOPSY CLAMP

Irwin M. Siegel, 1404 Forest Ave., Evanston, Ill. 60201

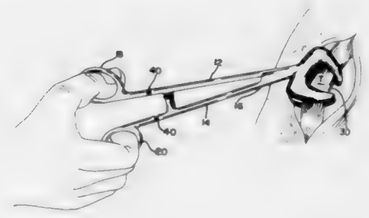
Continuation of Ser. No. 029,068, Mar. 23, 1987, abandoned. This application May 13, 1988, Ser. No. 195,429
Int. Cl.[4] A61B *17/28*
U.S. Cl. 128—321 **4 Claims**

1. A muscle biopsy clamp comprising:

a pair of elongated mutually hinged handle members;

finger grip means of one end of said handle members, said handle members and finger grip means extending in a common plane containing a hinge; and

opposed jaw members at the opposite end of said handle members, each of which comprises an open-ended two-pronged fork having gripping serrations on its opposed inner faces and cooperable for securely gripping a tissue



specimen therebetween such that a portion of the specimen remains in its original state and extending in a plane transverse to said common plane and inclined from said handle members,

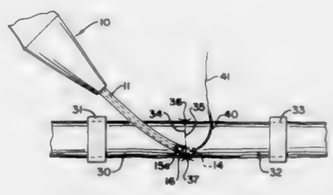
said prongs tapering smoothly and terminating in reduced diameter tips the tips of each jaw member converging toward each other at the open end of the fork.

4,803,984

METHOD FOR PERFORMING SMALL VESSEL ANASTOMOSIS

Krishna Narayanan, and Marc D. Liang, both of Pittsburgh, Pa., assignors to Montefiore Hospital Association of Western Pennsylvania, Pittsburg, Pa.

Filed Jul. 6, 1987, Ser. No. 70,076
Int. Cl.[4] A61B *17/04*
U.S. Cl. 128—334 R **6 Claims**



1. A method for anastomosizing two small vessels comprising:

securing an open end of a first vessel in confronting relation with an opening in a second vessel at the anastomosis site;

introducing the tubular distal end portion of a microsurgery tool having an open trough between the two vessels and into said first vessel;

extending the point of a suture needle through the wall of said first vessel into the open trough of said distal end portion and advancing the said point toward the shaft of said microsurgery tool;

withdrawing the said distal end portion of said microsurgery tool from said first vessel, engaging the convex surface of said distal end portion on the outer surface of the second vessel;

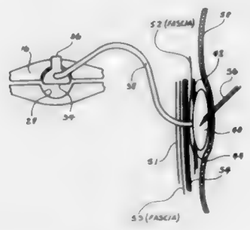
introducing the point of said suture needle into the said second vessel and penetrating the inner wall of said second vessel with the needle point passing through the wall of said second vessel adjacent to the said convex surface;

withdrawing the said microsurgery tool from said anastomo-

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sis site, advancing the said needle with its trailing suture through the wall of said second vessel;
tying the ends of said trailing suture across the confronting openings of said vessels with the confronting vessel ends engaged.

4,803,985
GASTROPLASTY METHOD
Carl W. Hill, 1360 6th St., Suite 370, San Pedro, Calif. 90732
Filed Feb. 14, 1986, Ser. No. 830,288
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—346 **2 Claims**



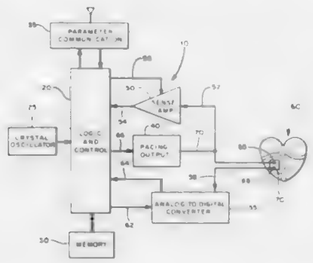
1. In a method of gastric partitioning for obesity control, the steps of;
(a) placing a clamp having two arms, at least one of which includes a pressure-relief portion, across a stomach with said two arms disposed, respectively, adjacent opposite exterior surfaces of the stomach;
(b) partially closing the interspace between said arms so as to partition said stomach into two chambers with said pressure-relief portion of the clamp defining a flow passage between said chambers;
(c) providing an adjustable-volume member between one of said arms and the exterior surface of the stomach; and
(d) providing distally-positioned means for adjusting the dimensions of said member and thereby controlling the effective cross-sectional area of said flow passage.

4,803,986
ERGONOMETRIC TRANSCUTANEOUS ELECTRICAL NERVE STIMULATOR
Joel R. Dufresne; Alan P. Dieken, both of St. Paul, Minn., and John E. Studer, Jr., Madison, N.J., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 24, 1987, Ser. No. 42,291
Int. Cl.[4] A61N *1/00*
U.S. Cl. 128—385 **10 Claims**



1. A transcutaneous electrical nerve stimulator comprising:
electrical means for generating and controlling a predetermined set of electrical stimulus signals which are adapted to be applied to a body;
a housing containing said electrical means, said housing being of a generally flattened convex disk shape with well-rounded edges;
a first switch means mounted on a side edge of said housing and coupled to said electrical means said first switch means for controlling the intensity of one of said set of electrical stimulus signals; and
a second switch means mounted on a side edge of said housing and coupled to said electrical means, said second switch means for controlling the power of said electrical means.

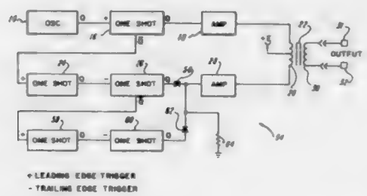
4,803,987
TEMPERATURE RESPONSIVE CONTROLLER FOR CARDIAC PACER
Richard V. Calfee, Houston; Robert A. Adkins, Angleton, both of Tex.; Eckhard U. Alt, Munich, Fed. Rep. of Germany, and Ross G. Baker, Jr., Houston, Tex., assignors to Intermedics, Inc., Angleton, Tex.
Filed Jun. 11, 1986, Ser. No. 872,824
Int. Cl.[4] A61N *1/00*; H05G *00/00*
U.S. Cl. 128—419 PG **45 Claims**



1. A cardiac pacemaker adapted to vary its pacing rate according to the physiological state of the pacemaker patient, comprising:
means for detecting the patient's central venous blood temperature; and
means responsive to the detected blood temperature for adjusting the pacing rate according to predetermined relationships between blood temperature and desired heart rate including non-exercise related and exercise related terms that depend upon variations in the blood temperature relative to a respective reference temperature, said adjusting means including means for determining a moving dynamic reference temperature that establishes a moving temperature reference value from which to measure the current change in blood temperature indicative of the metabolic need and means to adequately adjust the pacing rate accordingly.

4,803,988
NERVE FIBER STIMULATION USING PLURAL EQUALLY ACTIVE ELECTRODES
Thomas H. Thomson, Boulder, Colo., assignor to Staodynamics, Inc., Longmont, Colo.
Continuation-in-part of Ser. No. 667,873, Nov. 2, 1984, Pat. No. 4,640,286. This application Feb. 2, 1987, Ser. No. 9,927
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—421 **16 Claims**

1. A device for providing optimized electrical stimulation through plural active electrodes to preselected nerve fibers having known refractory periods and enhanced excitability conditions that occur during known periods following the occurrence of an action potential, said device comprising:
generating means for generating a series of output pulse groups with each said group including at least first and second pulses of positive and negative polarity, respectively, and with said first pulse occurring timewise before said second pulse, said first and second pulses of each said pulse group being spaced from one another a distance, in time, substantially equal to that of the known refractory period of said preselected nerve fibers to be stimulated, each said pulse group of said series of pulse groups occurring so as to be timewise spaced from each adjacent pulse group a distance not substantially greater than the timewise occurrence of said enhanced excitability condition of said preselected nerve fibers to be stimulated and having a pulse of negative polarity that occurs timewise prior to the first pulse of the immediately succeeding pulse group with a timewise spacing therebetween substantially equal to that of the known refractory period of said preselected nerve fibers to be stimulated;



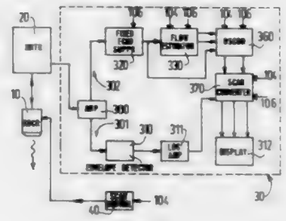
first and second electrodes; and
coupling means connected with said generating means and said first and second electrodes to apply said series of output pulse groups to said preselected nerve fibers through said first electrode and to apply said series of output pulse groups in inverted polarity to said preselected nerve fibers through said second electrode, whereby an applied pulse of positive polarity of each said pulse group sets said preselected nerve fibers, and so that a later occurring applied pulse of negative polarity of said pulse groups occurs substantially at the end of said refractory period to excite said preselected nerve fibers, with said first and second electrodes thereby both being made active to optimize stimulation of said preselected nerve fibers and thereby substantially increase the activity thereof.

4,803,989
FULL WIDTH METATARSAL PAD
Jack N. Collins, 2875 Joyce St., Fayetteville, Ark. 72703
Filed Feb. 8, 1988, Ser. No. 152,994
Int. Cl.[4] A61F *5/14*; A43B *7/14*
U.S. Cl. 128—586 **20 Claims**



1. A metatarsal pad for a human foot and with a y axis extending in a heel to toe direction, an x axis extending in an outside to inside direction and a z axis extending in a down to up direction, comprising:
a body of resilient substantially incompressible material adapted to be placed in a shoe just posteriorly of the position of the heads of the metatarsal bones of said foot, said body having a maximum z axis dimension substantially less than one-third of the x axis of y axis maximum dimension,
the maximum x axis dimension being more than sufficient to bridge across all five metatarsal bones of the foot, the maximum z dimension at the outside and inside edges being at least one-third of the maximum z dimension,
the frontal edge being convexly curved in the mid-portion thereof and concavely curved in at least one lateral portion thereof,
the constant-x cross sections of said body generally having an airfoil-like shape,
for any x coordinate the maximum z dimension being located at no less than two-thirds of the distance heel to toe of the y axis dimension, and
the outline of said body viewed in the y direction from the heel having a convex upper middle segment and at least one concave segment adjacent thereto.

4,803,990
EXAMINING MOVING OBJECTS BY ULTRASOUND ECHOGRAPHY
Odile M. A. Bonnefous, Nogent-Sur-Marne, and Patrick R. Pesque, Perigny, both of France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 25, 1986, Ser. No. 900,296
Claims priority, application France, Dec. 3, 1985, 85 17851; Mar. 25, 1986, 86 04225
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—661.08 **4 Claims**



1. In apparatus examining objects by means of ultrasound echography of the type which comprises: means for directing periodic pulses of ultrasound energy onto said objects; means for detecting and generating signals representative of echoes of said energy which are reflected from said objects; means for suppressing from said echo signals echoes which originate from stationary objects to produce moving object echo signals which are representative of echoes which originate only from moving objects; means which correlate said moving object echo signals from two successive periodic pulses and which estimate parameters of flow therefrom; and means for displaying said parameters of flow as a function of the point of origin of said echoes, the improvement comprising a validation circuit which includes:
means which subtract moving object echo signals produced by two successive of said periodic pulses to produce a difference signal therefrom;
means which calculate the energy in a portion of said difference signal which originates from a local region of the objects being examined; and
means which compare the calculated energy from said local region with a predetermined threshold energy level and which suppress the display of parameters of flow in said local region if the calculated energy is less than said predetermined threshold energy level.

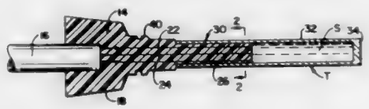
VOL 1099 ISS 2 FE 14 1989 UMI

4,803,991

THREE ELECTRODE HYDROQUINONE SUBCUTANEOUS EQUILIBRATING TONOMETER

Richard L. Alena, and William H. McIntyre, both of San Francisco, Calif., assignors to Baxter Healthcare Corporation, Irvine, Calif.

Filed Sep. 24, 1986, Ser. No. 911,277
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—635 **8 Claims**



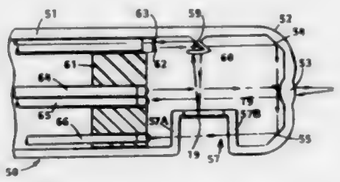
1. A tonometer for placement subcutaneously in a patient for the measurement of oxygen tension, said tonometer comprising:
an oxygen equilibrating tube, closed at one end and open at the other end;
a solution filling said tube, said solution including an electrolyte and a hydroquinone; a dielectric base plugging the open end of said tube to maintain said solution as a closed bath confined by said dielectric base and tube; and,
said dielectric base having at least three nobie metal electrodes with attached conductors communicated to said closed bath,
one of said electrodes comprising a reference electrode,
said reference electrode measuring the voltage of aid solution filling said bath;
a second of said electrodes serving as an anode;
a third of said electrodes serving as a cathode;
means responsive to the voltage from said reference electrode to maintain the voltage at said anode such that the voltage between the bath and cathode remains constant and therefore the current between cathode and anode will be a function solely of oxygen tension in the equilibrated solution.

4,803,992

ELECTRO-OPTICAL INSTRUMENTS AND METHODS FOR PRODUCING SAME

Jerome H. Lemelson, 48 Parkside Dr., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 848,024, Apr. 3, 1986, and a continuation-in-part of Ser. No. 843,990, Mar. 25, 1986, which is a continuation-in-part of Ser. No. 636,239, Jul. 31, 1984, Pat. No. 4,578,061, which is a continuation of Ser. No. 201,531, Oct. 28, 1980, Pat. No. 4,588,395. This application Apr. 29, 1986, Ser. No. 857,055
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—634 **8 Claims**



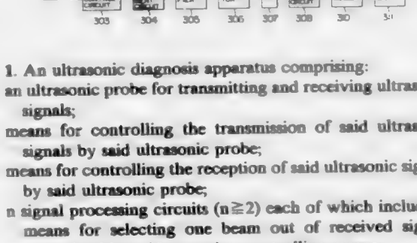
1. A medical instrument comprising:
(a) a support,
(b) an operating head having side and end walls supported by said support, wherein said side and end walls form a cavity region inside of said operating head,
(c) a recess in one of said walls, said recess being defined by light transmissive walls and; a diaphragm supported by said light transmissive walls which moves with respect to said head cavity when subjected to pressure differences between the cavity pressure and the surrounding body pressure.
(d) a first light transmission means in said cavity for directing light to said diaphragm,
(e) a first measurement means for receiving light reflected from said diaphragm and for measuring pressure therefrom,
(f) a second light transmission means for directing light through said recess walls, whereby light passes through a first wall from said cavity, into said recess, then into a second wall of said recess and back into said cavity, and
(g) a second measurement means for receiving said second light transmission light which passes back into said cavity and for measuring parameters of matter in said recess from the received light.

4,803,993

ULTRASONIC DIAGNOSIS APPARATUS

Hiroshi Ikeda, Hachioji, Japan; Shinichiro Umemura, Urbana, Ill.; Shizuo Ishikawa, Kanagawa; Kageyoshi Katakura, Tokyo; Noriyoshi Ichikawa, Ibaraki, and Tsuyoshi Mitake, Nagareyama, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Jun. 22, 1987, Ser. No. 64,564
Claims priority, application Japan, Jun. 25, 1986, 61-146948
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660.01 **11 Claims**



1. An ultrasonic diagnosis apparatus comprising:
an ultrasonic probe for transmitting and receiving ultrasonic signals;
means for controlling the transmission of said ultrasonic signals by said ultrasonic probe;
means for controlling the reception of said ultrasonic signals by said ultrasonic probe;
n signal processing circuits ($n \geqq 2$) each of which includes,
means for selecting one beam out of received signals received by said reception controlling means;
means for providing an envelope signal of said one beam;
means for converting said envelope signal from an analog signal to a digital signal; and
means for digitally filtering and emphasizing high frequency components of said digital signal;
means for changing filtering characteristics of said digitally filtering and emphasizing means by controlling said converting means and said digitally filtering and emphasizing means;
means for storing an output signal from said digitally filtering and emphasizing means; and
a display for displaying the stored output signal stored in said storing means as an image,
wherein said n signal processing circuits have the same filtering characteristics set by said changing means so to select n beams.

4,803,994

BACKSCATTER DATA COLLECTION TECHNIQUE FOR ULTRASOUND

Thomas M. Burke, Rancho Cordova, Calif., assignor to General Electric Company, Milwaukee, Wis.

Filed Aug. 12, 1987, Ser. No. 84,228
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660.06 **13 Claims**



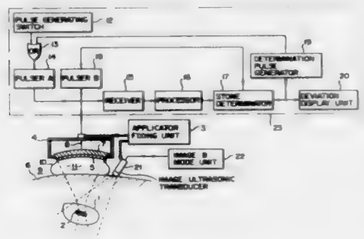
1. An ultrasound apparatus for obtaining a two-dimensional backscatter image comprising:
transducer means for transmitting ultrasound into and receiving ultrasound from an object to be studied, said transducer means having a fundamental frequency;
pulse means coupled to said transducer means for driving said transducer means to emit narrowband ultrasonic waves, said waves having a bandwidth sufficiently narrow to obtain said image without range gating; and
processing means coupled to said transducer means for calculating independent measurements of the backscatter intensity for a plurality of target areas in said object directly from echo waves received by said transducer means.

4,803,995

ULTRASONIC LITHOTRITY APPARATUS

Akinori Ishida, Kawasaki, and Ayao Itoh, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 19, 1987, Ser. No. 63,910
Claims priority, application Japan, Jun. 27, 1986, 61-149562; Jul. 22, 1986, 61-170834
Int. Cl.[4] A61B *17/22*
U.S. Cl. 128—660.01 **1 Claim**



1. An ultrasonic lithotrity apparatus comprising:
first ultrasonic transducer means for forming an image in a living body;
second ultrasonic transducer means for emitting and receiving an ultrasonic wave which forms a focal point to break up a stone;
adjusting means for adjusting both positions of said first and second ultrasonic transducer means such that a position of the focal point of the ultrasonic wave coincides with the position of the stone;
first driving means for driving said second ultrasonic transducer means to emit an ultrasonic wave for determining the presence/absence of said stone at the focal point;
determining means for receiving, from said second ultrasonic transducer means, a reflected wave of the ultrasonic wave from the living body, and determining in accordance with the received wave whether the focal point of the ultrasonic wave coincides with the position of said stone; and
second driving means, connected to said determining means, and when said determining means determines that the focal point of the ultrasonic wave coincides with the position of said stone, for receiving a determination signal therefrom and driving said second ultrasonic transducer means to emit an ultrasonic wave for breaking up said stone, the intensity (w/cm^2) of the ultrasonic wave for breaking up said stone being different from the intensity (w/cm^2) of the ultrasonic wave for determining the presence/absence of said stone.

4,803,996

CARDIOVASCULAR MONITOR

H. Herbert Peel, San Antonio; Merle E. Converse, Helotes; William H. McGinnis, San Antonio; Donald J. Shirley, Boerne, and John P. Pradhomme, Converse, all of Tex., assignors to Nippon Colin Co., Ltd., Komaki, Japan

Filed Sep. 28, 1987, Ser. No. 101,812
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—710 **5 Claims**



1. A device for monitoring acoustical and electrical indicia of the heart and coronary artery activity of a patient as measurable through electrocardiogram and phonocardiogram means, comprising:
sensing means comprising a plurality of electrocardiogram electrodes which, when placed on said patient for monitoring said activity and electrically connected to a source of electrical power for operation of said electrodes, each produce a primary ECG analog signal representative of electrical potentials resultant of said activity.
said sensing means further comprises a phonocardiogram microphone which, when operably placed on said patient, produces a primary PCG analog signal in response to acoustically measurable indicia of said patient's cardiac activity;
recording means comprising a magnetic tape recorder having first and second input means for receiving and recording analog signals on first and second channels of magnetic recording tape and first and second output means for transmitting recordation of said analog signals respectively on said first and second channels to signal processing means; and
means for electrically isolating said electrodes from said recording means whereby said patient is protected from dangerously high voltages existing in said recording means and from sources of electrical power associated with said recording means, said electrode isolating means comprising a first isolation amplifier, said primary ECG analog signals produced by said electrodes being fed to said first isolation amplifier in response to which said first isolation amplifier produces isolated secondary ECG analog signals corresponding to said primary ECG analog signals in frequency and amplitude values, said secondary ECG analog signals being conducted to said recording means solely through said recording means' electrical connection with said first isolation amplifier;
means for electrically isolating said microphone from said recording means whereby said patient is protected from dangerously high voltages existing in said recording means and from sources of electrical power associated

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with said recording means, said microphone isolating means comprising a second isolation amplifier, said primary PCG analog signal produced by said microphone being fed to said second isolation amplifier in response to which said second isolation amplifier produces an isolated secondary PCG analog signal corresponding to said primary PCG analog signal in frequency and amplitude values, said secondary PCG analog signal being conducted to said recording means solely through said recording means' electrical connection with said second isolation amplifier;

signal conditioning means for conditioning said secondary analog signals prior to transmission to said input means of said recording means comprising:

modulator means electrically connected to said first isolation amplifier which produces said secondary ECG analog signals for converting said secondary ECG analog signals into a frequency modulated signal,

a first low-pass filter means electrically connected to said second isolation amplifier which produces said secondary PCG analog signal for producing a first limited signal from said secondary PCG analog signal, said first limited signal being the frequency band of said secondary PCG analog signal with frequencies less than approximately 1000 Hertz,

bandpass filter means electrically connected to said second isolation amplifier which produces said secondary PCG analog signal for producing a second limited signal, said second limited signal being the frequency band of said secondary PCG analog signal lying in the frequency range of approximately 100 to 1000 Hertz, and

means for summing said frequency modulated signal and said first limited signal, thereby producing a combined signal for recording on said first channel by said recorder, input ports of said summing means being electrically connected with said modulator and with said low pass filter and an output port of said summing means being electrically connected to said first channel of said recorder, said bandpass filter being electrically connected with said second channel of said recorder whereby said second limited signal is recorded on said second channel of said recorder; and

means for preventing ground loop currents between said signal conditioning means and said recording means, said preventing means comprising one or more isolation transformers providing sole electrical connections for conveying signals from said signal conditioning means to said recording means.

4,803,997

MEDICAL MONITOR

Bruce R. Bowman, Eden Prairie, Minn., assignor to Edentec Corporation, Eden Prairie, Minn.

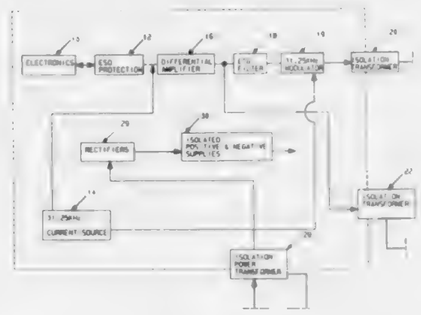
Filed Jul. 14, 1986, Ser. No. 885,231
Int. Cl.[4] A61B *5/08*
U.S. Cl. 128—723 **14 Claims**

1. A medical monitor comprising:

means for receiving a respiration signal indicative of breathing activity;

a first detector means, logically connected to the means for receiving, for sensing, at a first sensitivity, a characteristic of the respiration signal and for producing a first event signal indicative of possible breath;

a second detector means, logically connected to the means for receiving, for sensing, at a second sensitivity, the characteristic of the respiration signal and for producing a second event signal indicative of possible breath;



means for determining, based upon the first and second event signals, whether a breath occurred.

4,803,998

SWAB RETAINING VIAL CAP AND METHOD OF USE

C. Albert Kezes, Toronto; F. Walter Schmidt, Oakville, and Amsey Buehler, Cobourg, all of Canada, assignors to NCS Diagnostics, Inc., Mississauga, Canada

Filed Jan. 27, 1986, Ser. No. 822,766
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—759 **12 Claims**



1. A combination of a swab applicator, a containment vial therefor, and a cap for said vial comprising:

an elongate vial having one open end and a closed end;

a cap for said vial having a rim for attachment of said cap to said vial and a central section closing the area inside said rim, said central section having a central, axially extending bore portion adapted to fit capture and retain same;

and a swab applicator having a long shaft and swab material at one end of said shaft, said shaft having a first section having a length corresponding approximately to the inside length of the vial and a second section joined to said first section by a frangible joint;

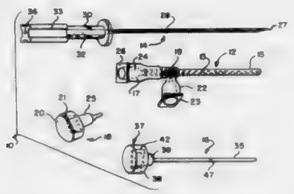
wherein after use of said swab applicator to obtain a culture sample, said swab applicator can be inserted into the open end of the vial so that said first section is contained in said vial, said second section can be broken off by the user, and said cap can be attached to said vial to seal said vial and capture and retain one end of said first section of the applicator.

4,803,999

CATHETER SYSTEM

Kenneth B. Liegner, 8 Barnard Rd., Armonk, N.Y. 10504

Continuation-in-part of Ser. No. 321,696, Nov. 16, 1981, abandoned, which is a continuation of Ser. No. 77,396, Sep. 20, 1979, abandoned. This application Jan. 25, 1988, Ser. No. 147,784
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—763 **11 Claims**



1. A catheter system, which comprises;

a one-piece cannula defining a continuously extending lumen for accommodating fluid flow, said cannula having an open proximal end, an open distal end, and an opening intermediate said open ends communicating with said lumen, said open distal end of said cannula accommodating cleansing and sterilization thereof;

an obturator adapted by size and configuration for fully occluding and filling said lumen, slidably inserted in the lumen, said obturator having a distal end and a proximal end, said proximal end being slidably insertable in said lumen through the open distal end thereof, said obturator being movable in said lumen between a first position wherein its proximal end extends proximally of said intermediate opening in which position said obturator fully occludes and fills said lumen for blocking fluid flow between said opening and said proximal end of said cannula, and a second position wherein the obturator proximal end terminates distally of said opening in which position fluid flow through said distal end of said cannula is blocked and fluid flow between said opening and said proximal end of said cannula is unobstructed;

a valveless member integral with said cannula at said intermediate opening, said member and said cannula thereby defining an integral construction, said member having a member lumen therein having a first end communicating with said opening and a second end open to the outside of the member, said member lumen being tulip-shaped and dimensioned for ready access to accommodate visually observable thorough mechanical cleansing and sterilization thereof as by an antiseptic soaked cotton tip applicator swab when said obturator is in said first position and fluid through said opening is blocked; said member lumen having a length to diameter ratio at the second end of less than 2:1; said member lumen having an axis perpendicular to the cannula lumen; and

removable means for closing the second open end of said member lumen.

4,804,000

DYNAMIC SAGITTAL KNEE TEST APPARATUS

Steve Lamb, 6724 Corte Del Vista, Pleasanton, Calif. 94545, and Larry W. Lamoreux, 5470 Manila Ave., Oakland, Calif. 94618

Filed Jan. 21, 1987, Ser. No. 5,921
Int. Cl.[4] A61B *5/10*
U.S. Cl. 128—774 **20 Claims**

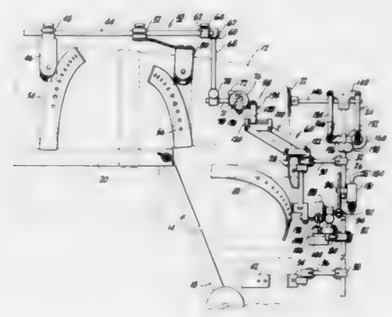
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 78 Pages)

1. A dynamic sagittal knee test apparatus for measuring knee laxities of a patient comprising:

a. a first elongated rod element constructed and adapted to be secured to the anterior portion of a patient's thigh with the first element fixed in position relative to the thigh along the femur;

b. a second elongated rod element constructed and adapted to be secured to a patient's shin with a supporting part of the second element in contact with the tibial tubercle and with the second element fixed in position relative to the shin along the tibia;

c. a displaceable contact member connected to the second element and constructed and adapted to contact a patient's patella, the contact member having means to maintain the member in contact with the patella during anterior and posterior displacement so the tibial tubercle relative to the patella;



d. first measuring means connected to the contact member for measuring anterior and posterior displacement of the tibial tubercle relative to the patella on application of anterior or posterior forces on the patient's lower leg;

e. linkage means adapted to be located on the side of the patient s leg interconnecting the first element and the second element the linkage means including means for accommodating displacement differentials occasioned by non-axial motion of the patient's knee on the flexion; and,

f. second measuring means connected to the linkage means and adapted to be located at the side of the knee for measuring the relative angle between the first element and the second element on flexion of the patient's leg.

4,804,001

DYNAMIC JOINT MOTION ANALYSIS TECHNIQUE

Paul C. McLeod, Jr., Little Rock, Ark., assignor to Physical Diagnostics, Inc., Conway, Ark.

Division of Ser. No. 304,070, Sep. 21, 1981, abandoned, which is a division of Ser. No. 135,908, Mar. 31, 1980, Pat. No. 4,306,571. This application May 26, 1987, Ser. No. 56,612
Int. Cl.[4] A61B *5/10*
U.S. Cl. 128—782 **3 Claims**

1. A method of selecting for an athlete a pair of shoes from a group of shoes, which minimizes stresses to the knees of said athlete for a given playing surface having a known surface characteristic comprising:

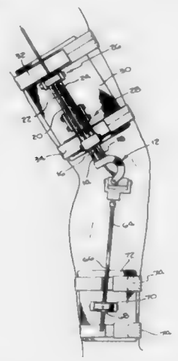
measuring and recording the motion of the knee about three substantially orthogonal axes under predetermined movement test maneuver patterns on said playing surface having a known surface characteristic with one pair of shoes from said group;

repeating the measuring and recording using the same predetermined movement test maneuver patterns but with each different pair of shoes from the group;

comparing the angular displacements produced in perform-

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ing each of predetermined movement test maneuver patterns tests; and



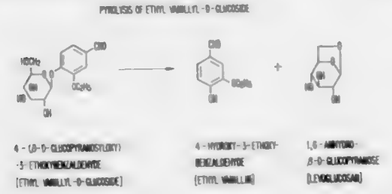
selecting the pair of shoes for which said angular displacements are the least for said predetermined test maneuver patterns.

4,804,002

TOBACCO PRODUCT CONTAINING SIDE STREAM SMOKE FLAVORANT

Herron, Brevard, N.C., assignor to P. H. Glatfelter Company, Spring Grove, Pa.

Filed May 29, 1987, Ser. No. 55,599
Int. Cl.[4] A24B *3/12;* **A24D** *1/02*
U.S. Cl. 131—365 **34 Claims**



1. A tobacco product wrapper containing a flavorant glycoside comprising an acetal of a carbohydrate and an aromatic agent or derivative thereof, said flavorant having substantially no aroma below the temperatures at which it pyrolyzes to produce said aromatic agent or derivative thereof, said flavorant being of a character and present in said wrapper in an amount such that during smoldering of said tobacco product which produces a sidestream smoke, said smoldering pyrolyzes said flavorant to release said aromatic agent or derivative thereof which masks the offensive odor of said sidestream smoke and does not significantly transfer to the mainstream smoke produced during smoking of said tobacco product, thereby producing a mainstream of smoke which is not substantially flavored or masked by said aromatic agent or derivative thereof.

4,804,003

COMBINED HEAD COVERING AND WIGLET

Leanna L. Moen, 3701 14th St., Moline, Ill. 61265

Continuation of Ser. No. 741,035, Jun. 4, 1985, abandoned. This application Nov. 17, 1987, Ser. No. 106,205
Int. Cl.[4] A45D *8/40;* **A41G** *5/00*
U.S. Cl. 132—53 **3 Claims**

1. A head covering comprising: a body portion formed of a soft, porous stretch fabric, said body portion including a preformed inherent, circular central portion surrounded by a preformed inherent continuous circularly-extended side portion terminating in a circular rim portion integral with and not originally separate from said body portion, the width of said side portion between said central portion and said rim portion being sufficiently large to cause said rim portion to circumscribe the head of the wearer and to be below the normal hairline of the wearer, the circumference of said rim portion being sufficiently small to establish a resilient peripheral grip about the head of the wearer to fully support the residuum of said body portion fitting loosely on and completely over the wearer's head without additional support, and the circumfer-



ential line of said rim portion extended substantially parallel the circumferential line formed by the junction of said central portion with said side portion; the formation pf said head covering such that when embracing the head of a wearer, the rim portion normally is disposed from high on the forehead to low on the back of the neck of the wearer, and said side portion is adapted to have a substantially frusto-conical shape in side elevation;

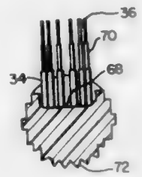
and further wherein at least one gathering means is secured to said side portion for gathering a portion of said side portion, said gathered portion beginnning at said rim portion and extended normal thereto.

4,804,004

MOLDED MASCARA APPLICATOR

Charles H. Taylor, 165 Front St., Chicopee, Mass. 01013

Division of Ser. No. 820,181, Jan. 17, 1986, Pat. No. 4,660,582, which is a division of Ser. No. 476,473, Mar. 18, 1983, Pat. No. 4,565,205. This application Dec. 15, 1986, Ser. No. 941,804
Int. Cl.[4] A45D *40/26*
U.S. Cl. 132—218 **3 Claims**



1. A mascara applicator comprising

an elongated plastic material base having a longitudinal axis, a rearward end, a forward end, an elongated flat surface and a peripheral outer surface;

a plurality of filament-like plastic material brush elements extending from the base,

the brush elements being integrally formed with the base and being fabricated of the same plastic material as the material of the base,

the brush elements comprising stepped diameter sections of increasing diameters, the section closest to the base being of greatest diameter,

the stepped diameter sections being continuous and comprising a first, large diameter section, a second medium diameter section and a third, small diameter section, the large diameter section having a diameter between 0.010 and 0.013 inches, the small diameter section having a diameter of approximately 0.005 inches,

the brush elements extending upwardly from the said flat surface; and

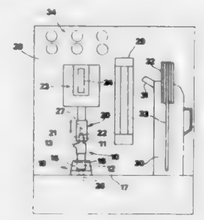
wherein the base is provided with a plurality of longitudinally extending, peripherally positioned wells.

4,804,005

CLEANING SYSTEM

Robert Hartopp, 85 Lower Eastern Green Lane, Coventry, West Midlands, England

Continuation of Ser. No. 865,112, May 20, 1986, abandoned. This application May 2, 1988, Ser. No. 188,693
Claims priority, application United Kingdom, May 21, 1985, 8512824
Int. Cl.[4] B08B *3/08, 9/00*
U.S. Cl. 134—57 R **8 Claims**



1. A cleaning system for fuel injectors which includes a closed circuit for cleaning fluid, locating means for locating an injector to be cleaned releasably in communication with the circuit for passage of the fluid through the injector, pump means for pumping the fluid through the circuit, flow rate measuring means, valve means for selectively directing fluid through the injector in one of three paths, and control means for the valve means, the paths including a first path in which fluid passes in one direction through the injector, a second path in which fluid passes in the opposite direction through the injector, and a third path in which the fluid passes through the injector and the flow rate measuring means in order to determine the cleanliness of the injector, operation of the valve means and its control means causing the cleaning fluid to pass through the injector in alternating directions and for predetermined time periods in each direction, and the flow of the fluid removing material from the surfaces of the injector flow passages.

4,804,006

WASHING WATER DISPERSION ASSEMBLY FOR A DISHWASHER

John B. Shaw, 4425 Gateway Dr., Moroeville, Pa. 15146

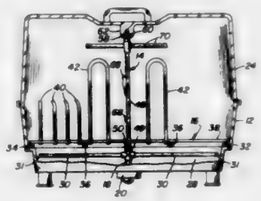
Filed Aug. 10, 1987, Ser. No. 83,046
Int. Cl.[4] B08B *3/02*
U.S. Cl. 134—177 **8 Claims**

1. In a portable, water-pressure-powered dishwasher, the combination comprising:

a nozzle structure rotatably supported within the dishwasher for rotation about a substantially vertical axis, and

a dish rack adapted to be supported within the dishwasher in surrounding relationship with said vertical axis intermediate the axial ends of said nozzle structure,

said nozzle structure comprising an upstanding tubular spindle portion and tubular media-dispersing arm portions which extend radially outward from said vertical axis, said arm portions including a first pair of tubular arms extending radially in opposite directions from said spindle portion beneath said dish rack, said arm portions further including a second pair of tubular arms extending radially in opposite directions from said spindle portion above said dish rack, said second pair of arms including media-dispersing orifice means for dispersing washing media under pressure only horizontally outwardly and from a plurality of openings in the tubular side walls thereof at locations spaced along substantially the entire lengths of said second



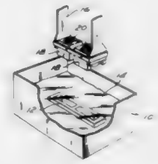
pair of arms, and said first pair of arms including media-dispersing orifice means for dispersing washing media under pressure only vertically upwardly and from a plurality of openings in the tubular top walls thereof at locations spaced along substantially the entire lengths of said first pair of arms, onto articles carried by the dish rack.

4,804,007

CLEANING APPARATUS

Mario E. Bran, Garden Grove, Calif., assignor to Verteq, Inc., Anaheim, Calif.

Filed Apr. 29, 1987, Ser. No. 43,852
Int. Cl.[4] B08B *3/10*
U.S. Cl. 134—184 **12 Claims**



1. Megasonic cleaning apparatus, comprising:

a container for receiving a cleaning solution and articles to be cleaned in the solution;

a transducer array mounted in an opening in a wall of the container to transmit megasonic energy into the container directed at the articles to be cleaned so as to loosen particles on the surfaces of such articles, said transducer array including a rigid plate having an interior surface exposed to the interior of the container, and a smooth, flat exterior surface not so exposed, and one or more spaced transducers having a flat, smooth surface bonded to said plate flat surface, said transducers being adapted to oscillate at a frequency for propagating a beam of megasonic energy into said container, said plate being of a material and of a desired thickness that will cause the plate to efficiently transmit said energy into said container, said plate being of sufficient thickness that it can support said transducer and withstand the weight of the material in the container and the mechanical vibrations produced by the megasonic energy, said plate material being hard, durable and relatively inert so as to be able to withstand exposure to cleaning solutions in said container without contaminating the solution, said transducer having an electrically conductive layer on said transducer flat face and having an electri-

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cally conductive layer on the surface of said transducer opposite from said flat face wherein said plate material is made of quartz or sapphire or boron nitride; and

means connecting said conductive surfaces to a source of negasonic energy for oscillating the transducer.

4,804,006

WINDPROOF UMBRELLA

Peter M. Ryder, c/o George Spector, 233 Broadway, Rm 3815, and George Spector, 233 Broadway, Rm 3815, both of, New York, N.Y. 10007

Filed Oct. 28, 1987, Ser. No. 113,591
Int. Cl.[4] A45B *25/22*
U.S. Cl. 135—35 V **5 Claims**



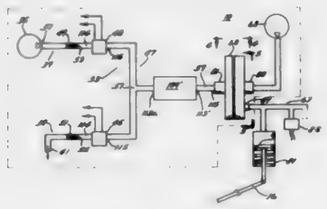
1. A windproof umbrella of the type having a fabric cover affixed to a collapsible frame attached to a rod comprising a plurality of normally closed vents, each of which is sandwiched to and perforates said fabric cover whereby when air pressure builds up from below said cover said vents will open to release said air pressure and prevent rain water from entering.

4,804,009

PNEUMATIC INTERFACE APPARATUS FOR CONTROL OF PROCESS SYSTEMS

Mark S. Bergmann, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Continuation of Ser. No. 386,408, Jun. 8, 1982, abandoned. This application Aug. 24, 1984, Ser. No. 644,148
Int. Cl.[4] G05D *16/00*
U.S. Cl. 137—84 **9 Claims**



1. An open loop pneumatic interface apparatus for converting digital electrical input signals to a pneumatic output signal in a heating, ventilating and air conditioning system and including:

pneumatic input means adapted to be connected to a first source of compressed gas at a substantially constant pressure, said first source being connectable at a single point of said input means, said input means including normally closed first and second solenoid valves, said valves being adapted to receive pulsed electrical input signals from a direct digital system controller, said first valve being energizable for flowing compressed gas from said first source to a reservoir, said second valve being energizable for flowing compressed gas from said reservoir to an area of ambient pressure;

a pressure repeater including an input section comprising a first chamber coupled to said input means and an output section comprising a second chamber adapted to be coupled to a second source of compressed gas at a substantially constant pressure and to a pneumatic transducer to be controlled, said first chamber and said second chamber being in fluid flow isolation one from the other, said repeater providing an analog output pressure signal at said second chamber which has a noninverted magnitude that is in a predetermined ratio to the magnitude of said first pressure signal, said ratio being a function of the configuration of said repeater;

a reservoir coupled between said input means and said repeater for controlling the rate of change of said analog output pressure signal resulting from the energization of one of said valves; said input means, said first chamber and said reservoir Cooperating to define a predetermined substantially constant volume of fluid, thereby resulting in changes in said analog output pressure signal having a magnitude which is solely a function of the duration of energization of one of said solenoid valves;

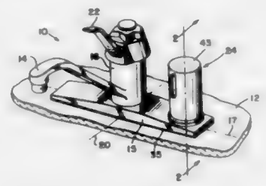
said apparatus thereby being operable by said digital system controller to positionably control said transducer.

4,804,010

FAUCET ASSEMBLY

Loyd G. Meissenburg, 208 S. Barranca, Sp. 39, Glendora, Calif. 91740

Filed Mar. 14, 1988, Ser. No. 167,866
Int. Cl.[4] F16K *24/00*
U.S. Cl. 137—216 **9 Claims**



1. A faucet having an anti-syphon device incorporated therein and comprising a baseplate adapted to seat on the upper face of a sink deck, and a valve body projecting upwardly from a central point on the baseplate, said anti-syphon device comprising:

a cylindrical hollow body having an externally threaded section extending through aligned openings in the baseplate and sink deck,

a tubular water inlet means connected to said hollow body at a point below the sink deck,

a tubular water outlet means connected to said hollow body at a point below the sink deck,

said hollow body defining an inverted U-shaped passage having two connected vertical legs communicating respectively with said inlet means and said outlet means, and at least one air vent opening in an upper wall section of the U-shaped passage for preventing a vacuum condition therein,

shoulder means carried by the hollow body for seating on an upper face of the baseplate, and

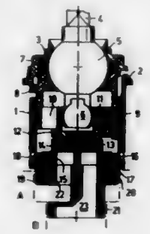
nut means threadable on the threaded section of the hollow body to clamp the faucet and anti-syphon device onto the sink deck.

4,804,011

CARTRIDGE WITH SEPARATE BOTTOM FOR A MIXING VALVE

Alfons Knapp, Biberach/Riss, Fed. Rep. of Germany, assignor to Masco Corporation, Taylor, Mich.

PCT No. PCT/US86/01180, § 371 Date Jun. 1, 1987, § 102(e) Date Jun. 1, 1987, PCT Pub. No. WO86/07431, PCT Pub. Date Dec. 18, 1986
PCT Filed May 30, 1986, Ser. No. 54,580
Claims priority, application Italy, Jun. 13, 1985, 67555 A/85
Int. Cl.[4] F16K *11/06*
U.S. Cl. 137—270 **10 Claims**



1. A cartridge for a mixing valve faucet that regulates the flow rate and mixing proportions of liquid from two supply inlets to said faucet, said cartridge characterized by:

a main shell;

an operating mechanism mounted to said shell;

a movable valve element operably connected to said operating mechanism:

a separate bottom member mounted to said shell;

said bottom mounting a fixed valve seat to cooperate with said movable valve element;

a joint means for mounting said bottom to said shell and being resistant against separation of the bottom and shell by pulling alone;

said joint means positioned and cooperating with said shell and bottom to mount said bottom to said shell in at least two rotated positions;

said joint means being constructed to mount said bottom in two different rotated positions to cause the communication of said supply inlets to be inverted with said fixed valve seat at said respective two positions.

4,804,012

AQUARIUM AIR VALVE SYSTEM AND HANGER UNIT

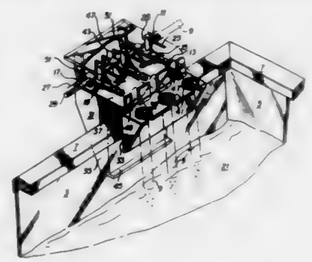
Jerome Goldman, New York; Marvin Goldman, Great Neck; Gerald Phillips, Glen Cove, and Terry Goldman, New York, all of N.Y., assignors to Penn Plax Plastics, Inc., Garden City, N.Y.

Filed Jan. 17, 1987, Ser. No. 62,973
Int. Cl.[4] F16L *3/00*
U.S. Cl. 137—343 **18 Claims**

1. An aquarium valve system and hanger unit comprising:

a noncorrosive valve system having a hollow valve system body, with at least one exit orifice in the form of a valve projecting from an intermediate point thereon, the valve having a hollow projection for connecting air line tubing thereto, and a control means for controlling air flow through the hollow projection, the valve body further having an entry orifice in the form of a hollow projection projecting from an end of the valve body for connecting air line tubing thereto, the valve system is mounted upon a valve hanger unit, on an outer surface of a top wall thereof,

the hanger unit having a front lip, projecting at a right angle from a front portion of a top wall, and a back wall projecting at right angle from back portion of the top wall, forming a substantially U shape, the top wall of the of the



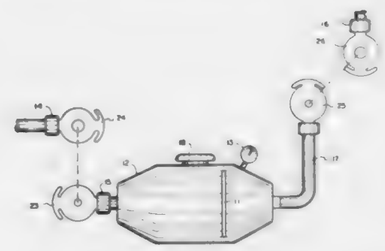
hanger unit having a means for adjusting the length of the top wall to differing sizes.

4,804,013

FLUID LINE DEICER

Donald W. Wilson, 3349 Amie East, Dade City, Fla. 33525

Filed Oct. 19, 1987, Ser. No. 109,588
Int. Cl.[4] B60T *17/18*
U.S. Cl. 137—351 **1 Claim**



1. In an air brake system of a tractor trailer having a compressed air supply line extending from a compressor and compressed air storage tank in the tractor and connected by "glad hands" connectors to an air brake distribution line in the trailer, the improvement comprising:

an alcohol storage tank having a hollow interior without baffles or other obstructions;

said storage tank having a cylindrical body portion with oppositely tapering first and second frustoconical ends, each of said ends having a circular end wall;

a volume of alcohol received within said tank;

said alcohol storage tank mounted on a front exterior wall of said trailer;

said alcohol storage tank having an inlet formed centrally in said first circular end wall provided with a "glad hands" connector coupled to said tractor air supply line and an outlet formed centrally in said second circular end wall having a "glad hands" connector coupled to said trailer brake distribution line;

a screw on cap on said alcohol storage tank for adding alcohol to said storage tank;

a sight glass on said storage tank for monitoring the alcohol level within said tank; and

a pressure gage on said tank for monitoring pressure within said tank.

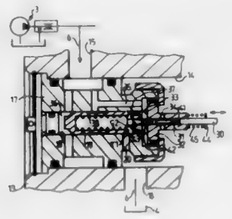
VOL 1099 ISS 2 FE 14 1989 UMI

4,804,014

SERVO DEVICE FOR CONTROLLING THE FLOW RATE OF A HYDRAULIC SYSTEM, IN PARTICULAR THE POWER-ASSISTED STEERING OF A VEHICLE

Marc Francois, Vincennes, France, assignor to Bendix France, Drancy, France

Filed May 6, 1986, Ser. No. 860,358
Claims priority, application France, May 15, 1985, 85 07353
Int. Cl.[4] B62D *5/08;* **G05D** *7/00*
U.S. Cl. 137—501 **2 Claims**



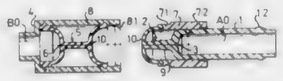
1. A servo device for controlling the fluid of a hydraulic system, in particular the power-assisted steering of a vehicle, comprising a pressure source having an outlet connected to a system for controlling a hydraulic motor, the device being intended to be interposed in a branch line between the outlet of the pressure source and a tank, and comprising, inside a body, a modulator assembly with a modulator slide biased by a spring and forming a first variable constriction between an inlet passage, intended to be connected to the outlet of the pressure source, and an outlet passage intended to be connected to the tank, the position of the slide being controlled, in dependence of an electrical control signal, by an electromagnetic actuating member, characterized in that the electromagnetic actuating member has a piston actuated by an electrical servomotor and which biases an output member cooperating functionally with the modulator slide so as to modify the position of the modulator slide in accordance with the position of the output member as determined by the piston, the slide separating two chambers communicating with the inlet passage and the outlet passage, respectively, the output member forming, between the two chambers, a second variable constriction in accordance with the position of the output member, so that the servo device produces a continuous gradual regulation of fluid flow, the slide mounted slideably inside a first bore, and the output member further comprising a rod mounted slideably and sealingly inside a second bore which is coaxial with the first bore and opens into the latter and into which open, at locations spaced axially apart from each other, openings communicating with the inlet passage and the outlet passage, respectively, the rod having a portion of reduced diameter capable of establishing a communication between the openings.

4,804,015

CONNECTION DEVICE AVOIDING CONTAMINATION

Carl G. U. Albinsson, Mölndal, Sweden, assignor to Steridose Systems AB, Askim, Sweden

Filed Dec. 16, 1986, Ser. No. 942,166
Claims priority, application Sweden, Dec. 20, 1985, 8506074
Int. Cl.[4] F16L *29/00*
U.S. Cl. 137—614.03 **8 Claims**



1. A connection device for establishing communication between first and second spaces in a manner that prevents exposure of the spaces to contamination from the environment and vice versa comprising;

a first unit adapted to communicate with the first space and including a first connector part, a first tubular member of flexible material having an inner sealing surface adapted to seal the first space from the environment by engaging either itself or a surface of a component of the first unit, and an actuating member movable relative to the first connector part between first and second positions;

a second unit adapted to communicate with the second space and including a second connector part and a second tubular member of flexible material having a sealing surface adapted to seal the second space from the environment by engaging itself or a surface of a component of the second unit;

the first and second units being engageable such that a portion of the tubular member of at least one of the units is in sealed relation with a portion of a component of the other unit when the member is in the first position; and

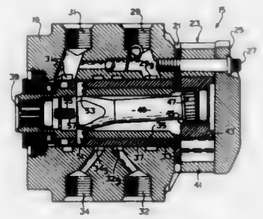
the actuating member being adapted upon movement from the first to the second position to invert the first tubular member inside out such that the sealing surface thereof is brought into sealing engagement with a surface of the second connector part and also being adapted to move the sealing surface of the second tubular member into sealing engagement with a surface of a component of the first unit, the inversion of the first tubular member and movement of the second tubular member being such as to displace portions thereof that have been exposed to contamination away from portions of the units that have not been exposed to contamination.

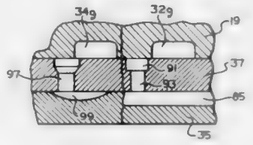
4,804,016

FLUID CONTROLLER WITH IMPROVED PRESSURE BALANCING

William J. Novacek, Bloomington, and Dwight B. Stephenson, Savage, both of Minn., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 9, 1988, Ser. No. 204,333
Int. Cl.[4] B62D *5/08;* **F16K** *39/00*
U.S. Cl. 137—625.23 **9 Claims**





1. A controller operable to control the flow of fluid from a source of pressurized fluid to a fluid pressure operated device; said controller being of the type including housing means defining an inlet port for connection to the source of pressurized fluid, a return port, and first and second control fluid ports for connection to the fluid pressure operated device; valve means disposed in said housing means, and including a primary, rotatable generally cylindrical valve member and a relatively rotatable, generally cylindrical and hollow follow-up valve member surrounding said primary valve member, said valve members defining a neutral position and an operating position; said housing means and said valve means cooperating to define a main fluid path communicating between said inlet port and said first control fluid port when said valve means is in said operating position; fluid actuated means for imparting follow-up movement to said follow-up valve member in response to the flow of fluid through said main fluid path; said housing means and said follow-up valve member being configured such that pressurized fluid contained in said main fluid path when said valve means is in said operating position may become trapped as said valve means returns to said neutral position, said trapped pressurized fluid being disposed about said follow-up valve member, and tending to bias said follow-up valve member into engagement with said primary valve member; characterized by:

(a) said primary and follow-up valve members cooperating to define, at the interface thereof, a plurality of recessed balancing areas spaced circumferentially about said valve members; and

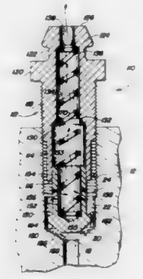
(b) said primary and follow-up valve members cooperating to define at least one balancing passage means being operable to communicate said trapped pressurized fluid into said recessed balancing areas when said valve means returns to said neutral position, whereby said trapped pressurized fluid in said recessed balancing areas opposes said trapped pressurized fluid disposed about said follow-up valve member to substantially prevent clamping engagement of said follow-up valve member to said primary valve member.

4,804,017

BRAKE BLEEDER VALVE APPARATUS HAVING INTEGRAL CHECK VALVE AND METHOD FOR BLEEDING BRAKES

Paul A. Knapp, 1303 W. 9th St., Tempe, Ariz. 85282

Continuation-in-part of Ser. No. 909,789, Sep. 22, 1986, abandoned. This application Feb. 17, 1988, Ser. No. 157,514
Int. Cl.[4] F16K *15/18*
U.S. Cl. 137—614.16 **6 Claims**



1. Bleeder valve apparatus for bleeding a hydraulic system having a valve seat, comprising, in combination:

primary valve body means movable between an open, bleeding position and a closed, sealing position, including:

a primary valve body, including an end,

means for securing the primary valve body to the hydraulic system to be bled, and

first bore means in the primary valve body extending from the end through the primary valve body;

secondary valve body means movable relative to the primary valve body means, including:

a first portion disposed and movable in the first bore means of the primary valve body and having an outer end,

a second portion remote from the outer end adapted to seat against the valve seat of the hydraulic system to seal the hydraulic system and the primary and secondary valve body means,

second bore means in the first portion communicating with the first bore means of the primary valve body, and extending from the second portion to the outer end of the first portion, and

aperture means extending through the first portion between the outer end and the second portion, and covered by the first bore means when the primary valve body means is in the sealing position, to provide communication between the second bore means and the hydraulic system when the valve body means is moved to the bleeding position to provide relative motion between the primary and secondary valve body means to uncover the aperture means; and

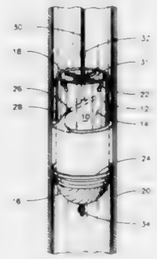
spring means disposed in the first and second bore means to urge the secondary valve body means away from the primary valve body means and to urge the second portion of the secondary valve body means against the valve seat to seal the hydraulic system.

4,804,018

GROUTED CLOSURE ASSEMBLY

Thomas N. Carr, New Orleans, and David M. Crimmins, Metairie, both of La., assignors to McDermott International, Inc., New Orleans, La.

Filed Oct. 30, 1987, Ser. No. 114,915
Int. Cl.[4] F16L *55/10;* **E02D** *23/02*
U.S. Cl. 138—93 **5 Claims**



1. A plugging assembly for closing the interior of a tubular member comprising:

(a) a rigid plug configured to be inserted within a generally cylindrical tube for separating a first area of said tube from a second area of said tube;

(b) alignment means for concentrically aligning said plug within said tube;

(c) a passageway extending through said plug and connecting between said first and second areas of said tube;

(d) a pressure relief mechanism secured to said passageway, said mechanism releasing pressure from within said first area when said pressure exceeds that of said second area, but said mechanism maintaining the pressure differential when said pressure in said first area is less than that of said second area;

(e) a grout packer secured to said plug and sealing against the inside surface of said tube, said grout packer defining the lower boundary of an annular space between said plug and said tube; and

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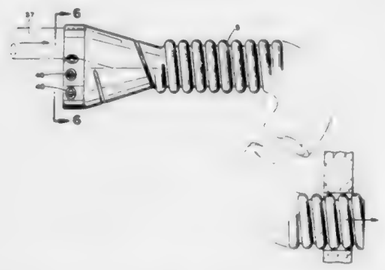
(f) sealing means for sealing between said plug and said tube, said sealing means comprising supply means for supplying a sealant into said annular space thereby permanently sealing or plugging said tube.

4,804,019

END ADAPTOR FOR FLEXIBLE CORRUGATED TUBE

Vance M. Kramer, Jr., 1913 Greendale Ave., Findlay, Ohio 45840

Filed Feb. 12, 1987, Ser. No. 14,273
Int. Cl.⁴ F16L *9/16*
U.S. Cl. 138—109 **1 Claim**



1. In a flexible corrugated tube having a major axial length portion and, an one end, an integral, outwardly flared end adapter of frustoconical form, the major length portion having both internal and external helical ridges and grooves, the improvement wherein said tube is made by:

placing a sleeve of uncured rubber on a forming mandrel having a main, axially extending outer surface portion defining an external helical groove and at one end, axially aligned with said main surface portion, an end mold with a frustoconical, axially outward portion having a flared, relatively smooth outer surface and an axially inward portion defining an external helical groove that registers with and has the same diameter, pitch, and width as the external helical groove on the main surface portion, the sleeve being placed about the end mold for the entire axial length thereof;

wrapping a flexible cord around the uncured sleeve along the main surface portion of the mandrel and the inward portion of the end mold to press the sleeve into the helical grooves so that axial length portions of the sleeve conform to the helical grooves and another axial length portion conforms to said smooth frustoconical outer surface of said axially outward portion of said end mold to define a smooth flared end of said sleeve wherein both the interior and exterior surfaces of the flared end are smooth; and

thereafter curing the partially corded, uncured sleeve while on the mandrel to set the flared end and the helical corrugations and to form a flexible tube with a helically corrugated major axial length portion and an outwardly flared frustoconical end adapter having a smooth exterior surface and a smooth interior surface on an axially outward length portion and exterior helical groove on an axially inward length portion.

4,804,020

CONDUIT LINER ASSEMBLY AND METHOD FOR INSTALLATION

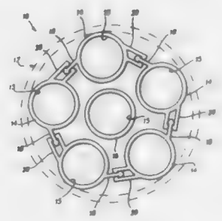
Donald D. Bartholomew, Marine City, Mich., assignor to Proprietary Technology, Inc., Mt. Clemens, Mich.

Filed May 27, 1987, Ser. No. 54,777
Int. Cl.⁴ G02B *6/44;* **F16L** *9/18*
U.S. Cl. 138—111 **20 Claims**

1. A conduit liner assembly adapted for insertion into a conduit for retaining a plurality of fiber optics elements in discreet and separate chambers in the conduit comprising:

a plurality of individual inserts each having at least one fiber optic element receiving chamber; and

connection means for causing said inserts to be held in bundled engagement one to another, said bundled inserts adapted to move through a conduit having curvatures or



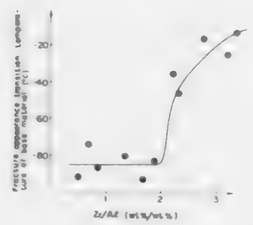
bends during insertion and said connection means enabling each of said inserts in said bundled engagement to individually move longitudinally with respect to each of said inserts adjacent thereto such that each of said inserts may move independently of the other inserts as the conduit liner assembly is inserted through the curvatures or bends of the conduit.

4,804,021

HIGHLY TOUGH ERW STEEL PIPE WITH DISTINGUISHED SOUR RESISTANCE

Yasushi Hasegawa, and Hiroyo Haga, both of Sagamihara, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 24, 1987, Ser. No. 124,863
Claims priority, application Japan, Nov. 28, 1986, 61-281841
Int. Cl.⁴ F16L *9/02*
U.S. Cl. 138—171 **8 Claims**



1. A highly tough, ERW steel pipe having improved sour resistance,

having been prepared from steel consisting essentially of 0.01 to 0.35% by weight of C; 0.02 to 0.5% by weight of Si; 0.1 to 1.8% by weight of Mn; more than 0.005 to 0.05% by weight of Al; 0.0005 to 0.008% by weight of Ca; 0.001 to 0.015% by weight of Zr; not more than 0.015% by weight of P; not more than 0.003% by weight of S; a ratio of Zr/Al being less than 2 by weight; and the balance being Fe and impurities as a steel material; and

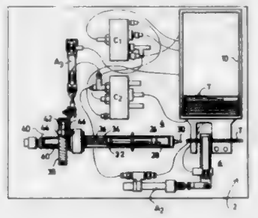
having a welded slam in which the content of Al_2O_3 contained in inclusions at welding heat affected zone is not more than 50% by weight.

4,804,022

APPARATUS FOR DISPENSING LIQUID INTO TUBES

Moshe Berger, Hadera, Israel, assignor to Ariel and Berger Industries Ltd., Hadera, Israel

Filed Dec. 17, 1987, Ser. No. 134,384
Claims priority, application Israel, Apr. 10, 1987, 82156
Int. Cl.⁴ B65B *43/48*
U.S. Cl. 141—164 **20 Claims**



1. Apparatus for dispensing predetermined doses of a liquid into individual tubes, comprising: a dispensing station; a tube feeder movable from a normal position to an actuated position for feeding the tubes individually to said dispensing station; a dispensing device at said dispensing station including a discharge nozzle for dispensing a predetermined dose of the liquid with each actuation of the dispensing device; a manipulator at said dispensing station; means for feeding a tube to said manipulator; said manipulator being movable from a home position for receiving a tube fed thereto by said feeding means with one end of the tube spaced from said discharge nozzle, to an actuated position bringing said one end of the tube into dispensing position with respect to said discharge nozzle; and a control system for controlling said tube feeder, manipulator, and dispensing device; said control system including a first sensor for sensing the tube feeder in its actuated position, a second sensor for sensing the tube feeder in its normal position, a third sensor for sensing the presence of a tube in the manipulator, and means controlled by said sensors for first actuating said manipulator to its actuated position and then actuating said dispensing device to dispense a dose of the liquid when the tube feeder is in its actuated position and a tube is present in the manipulator, and for actuating said tube feeder to feed another tube when a tube is not present in the manipulator and the tube feeder is in its normal position, said manipulator being pivotably mounted by its actuator from its home position to receive a tube fed by the tube feeder, to its actuated position bringing one end of the tube into dispensing position with respect to said discharge nozzle.

4,804,023

HYDRAULIC FLUID REPLENISHMENT DEVICE

William H. Frearson, Letchworth, England, assignor to Avdel Limited, British Company, Hertfordshire, England

Filed May 19, 1987, Ser. No. 51,328
Claims priority, application United Kingdom, May 23, 1986, 8612689; Jun. 20, 1986, 8615100
Int. Cl.⁴ F16D *65/24*
U.S. Cl. 141—65 **16 Claims**

1. A hydraulic fluid replenishment device for replenishing hydraulic fluid in a hydraulic system, comprising:

a first reservoir for holding old hydraulic fluid removed from the system;

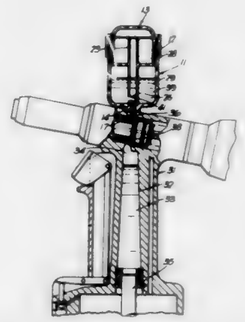
a second reservoir for holding new hydraulic fluid to be added to the system;

a single hydraulic fluid connection for connecting the replenishment device to the hydraulic system, whereby old hydraulic fluid enters the device through said connection and new hydraulic fluid leaves the device through said connection;

an entry port to the first reservoir, said entry port being opposite said hydraulic fluid connection;

means for trapping old hydraulic fluid, said old hydraulic fluid having entered the first reservoir through the entry port, against return through the entry port;

whereby, when the replenishment device is connected to the hydraulic system by means of said single connection and the hydraulic system is preasurised by being subjected to positive hydraulic pressure, at least one of air and old



hydraulic fluid enters the device at speed through the single connection and due to its speed and momentum passes through the entry port into the first reservoir and at least the old oil is trapped therein;

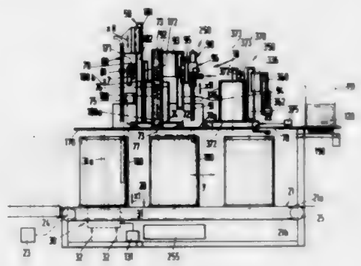
and whereby when the hydraulic system is thereafter depressurised by being subjected to negative hydraulic pressure, new hydraulic fluid is drawn through the single connection from the second reservoir into the hydraulic system.

4,804,024

APPARATUS POR FILLING CONTAINERS WITH A FLOWABLE MEDIUM

Gerhard Arnemann, Am Krönrey 11, D-2083 Halstenbek, Fed. Rep. of Germany

Filed Jul. 10, 1987, Ser. No. 72,466
Claims priority, application European Pat. Off., May 13, 1987, 87106911.8
Int. Cl.⁴ B65B *7/28;* **B67C** *3/30*
U.S. Cl. 141—165 **15 Claims**



1. An apparatus for pouring a flowable medium into containers, particularly drums, having bungholes sealed with screw plugs or otherwise constructed plugs, the screw plugs preferably being covered with fitted safety caps; each container having a laterally projecting edge, an outer wall surface, a base

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plate with an outer circumferential rim, wherein the filling apparatus is arranged in a machine frame, comprising:

(a) a horizontal conveyor belt for moving the containers along a forward path and having a length at least twice the diameter of a container, said conveyor having a feed end, the conveyor belt comprising two spaced endless chain belts drive in a revolving manner and having upper sides which guide the containers, said belt having a container entrance region and a container discharge region.

(b) lifting means for raising the individual containers from the chain belts arranged on the feed end of the conveyor belt between the upper sides of the two chain belts, said lifting means comprising

(b1) a hydraulically, pneumatically or electromotively driven raisable and lowerable lifting frame engaging the individual containers on their circumferential laterally projecting edges in the region between the two chain belts,

(b2) at least three container supporting and centering pulleys arranged in raisable and lowerable manner together with the lifting frame between the upper sides of the two chain belts on a circular line with a diameter at least corresponding to the container diameter and with bearing axes or spindles running radially to a vertical substantially central axis about which the container can rotate, the supporting and centering pulleys being freely displaceable along their bearing axes and being automatically centering towards the center of the circular line, so that a container standing on the supporting and centering pulleys is horizontally displaceable in all directions and

(b3) three alignment pulleys having vertical bearing axes or spindles and arranged in the circumferential region of the container and standing on the supporting and centering pulleys and engageable on the container outer wall surface, or on the circumferential rim of a container base plate, a drive mechanism for driving at least one of said alignment pulleys being driven in rotary manner, one of said alignment pulleys simultaneously serving as a fixed, lateral boundary stop for the container, while the two other alignment pulleys facing said first alignment pulley being overhung on their bearing spindles, at least one of said three alignment pulleys being swingable out of its container outer wall surface engagement position,

(c) a first work station having plug unscrewing means unscrewing the screw plugs, a bunghole seeking device, and centering means having a centering moisture measuring probe or with a centering device, the first work station comprising

(c1) a horizontal mounting plate above the conveyor belt at a distance above the same at least corresponding to the heights of the container and which roughly extends over the length of said conveyor belt, below which is arranged a scanning mechanism for detecting the screw plugs of an entering empty container and which is constructed as a proximity switch, photoelectric element or the like and which is used for controlling the alignment pulleys for centering each empty container on the devices of the work station arranged above the container belt and

(c2) a rotary disk rotatable on the mounting plate in a container entry region about a vertical axis by means of a drive mechanism, a central, vertical support connection or vertical guides on the rotary disk for supporting the plug unscrewing means, said support connection or vertical guides having guide slides, the bunghole seeking device and the moisture measuring probe in an angular position with respect to one another by means of naturally projecting radially directed arms fixed on the guide slides in such a way as to be vertically displaceable, an opening in the mounting plate facing the bunghole of the container and located centrally with respect to the forward path of the containers,

(d) a second work station having a filling device with a filling connection movable in the vertical direction and swingable into a container bunghole and arranged on the mounting plate such that the filling connection of the filling device is centrally arranged in the container forward path and with a balance arranged below the conveyor belt, the filling device and balance facing one another and following the first work station and the mounting plate is provided with an opening for the passage of the filling connection,

(e) a third work station with a plug screw-in device and with a device for receiving and mounting safety caps on the screw plugs screwed into a container bunghole, the third work station comprises a rotary disk rotatable by means of a drive mechanism about a vertical axis in the container discharge region and having a central vertical support connection or vertical guides on the rotary disk for supporting the plug screw-in device and safety cap mounting device, said supporting connections or vertical guides having guide slides and being vertically displaceably arranged in an angular position with respect to one another by means of laterally projecting, radially directed arms fixed to the guide slides, the mounting plate in its region facing the container discharge region and centrally with respect to the container feedpath having an opening for the passage of the plug screw-in device, the third work station being located after the second work station along the path of the containers,

(f) a plug conveyor belt running parallel to the container conveyor belt having a plug feed end located in a pivoting region of the plug unscrewing device of the first work station and a plug discharge end in the pivoting region of the plug screw-in device of the third work station and

(g) parallel to the container conveyor belt and preferably as an extension of the plug conveyor belt is provided a conveyor belt for the supply of safety caps to the device for receiving and mounting said safety caps of the third work station,

whereby after aligning the empty container which has entered the filling device with its screw plug of the screw-in device of the first work station which is in the screw plug unscrewing position, the same is lowered on to the screw plug, removes the screw plug, raises the screw plug from the container filling opening and places it on the screw plug conveyor belt, puts the bunghole seeking device into operation and inserts the moisture measuring probe in the container interior and removes it therefrom, then supplies the empty container to the second work station, is filled here by means of the filling device, then the filled container is supplied to the third work station, in which the screw plug removed from the screw plug conveyor belt by means of the plug screw-in device is brought into a plug screw-in position by pivoting the screwing device and is screwed on to the container bunghole and the screw cap removed from the conveyor belt is placed on the screwed down screw plug by means of the screw-in device.

4,804,025

CARRYING HARNESS FOR SURFBOARDS AND THE LIKE

Deborah A. Bear, 412 Halladay St., Seattle, Wash. 98109

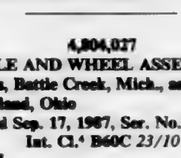
Filed May 7, 1987, Ser. No. 47,728
Int. Cl.[4] A45F *3/14*; A63C *11/02*
U.S. Cl. 224—202 15 Claims

1. Apparatus for facilitating human portage of a sailboard, surfboard or the like having ends, comprising:

a spreader bar having ends and a longitudinal center;

a pair of slings supported at first and second spaced locations on said spreader bar, said bar having sufficient rigidity to keep said first and second locations separated, along the length of said spreader bar, by a distance of at least twelve inches, during use of said apparatus;

a fastener attaching each of said slings into a loop, the size of which may be adjusted to fit around said sailboard, surfboard or the like, said loops separated from one another, along the length of said spreader bar by a distance substantially equal to the distance between said first and second locations, said spreader bar maintaining separation between said loops, when said apparatus is in use, along the length of said sailboard, surfboard or the like, by means of the separation between said first and second locations, without attachment between said loops and said ends of said sailboard, surfboard or the like;



a strap, supporting said spreader bar at third and fourth spaced locations, said third and fourth locations separated, along the length of said spreader bar, by a distance of at least twelve inches, said strap forming a shoulder harness having an adjustable length for accommodating different-sized people, the length of said strap being greater than the distance between said spreader bar and the top of said sailboard, surfboard or the like to thereby permit said spreader bar to be used as a handle while said strap is used as a shoulder harness.

4,804,026

SELF-SUPPORTING FUNNEL

Thomas F. Bailey, 200 W. Bolivar Ave., Milwaukee, Wis. 53207

Filed Feb. 16, 1988, Ser. No. 155,989
Int. Cl.[4] B65B *39/02*; B67C *11/00*
U.S. Cl. 141—340 5 Claims



1. A funnel comprising a conical body having a spout formed integrally with the narrow end of said body,

means provided around the outer periphery of said body for supporting said body in the opening in the neck of a tank,

said means including three flexible straps, one end of each strap being connected to the top of said body and the other end of each of said straps being connected to the bottom of said spout,

said straps being spaced from said body and spout throughout their length to provide sufficient flexibility to support the funnel in the neck of a tank.

4,804,027

AXLE AND WHEEL ASSEMBLY

Thomas L. Runels, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

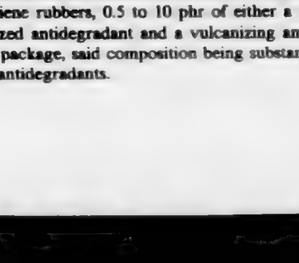
Filed Sep. 17, 1987, Ser. No. 98,343
Int. Cl.[4] B60C *23/10*
U.S. Cl. 152—417 8 Claims

1. A vehicle axle and wheel assembly including a wheel and tire rotatably mounted on axially spaced bearings, a pressurized air source on said vehicle, and an air circuit for conducting pressurized air from said source to said tire, the improvement comprising;

a non-rotatable annular member supported inboard of said bearings and adjacent an axial end of said wheel, said non-rotatable annular member having first passage means connected to said source of pressurized air, said first passage means terminating in a first outlet having a radially outward sealing surface;

said wheel having a rotatable hub member having portion spaced radially from said non-rotatable member and having second passage means therein terminating in a second outlet, conduit means for communicating air from the second passage means in said rotatable hub member to said tire, said first and second outlets being axially aligned;

said rotatable hub member having a radially facing annular sealing surface on each axial side of said first and second outlets;



an annular sealing assembly secured to said non-rotatable member in sealing relationship with the sealing surface of said non-rotatable member;

said annular sealing assembly having a pair of annular radially expandable lobes axially aligned with the radially facing annular sealing surface on each axial side of said first and second outlets which upon pressurization expand radially into sealing engagement with the sealing surfaces of said hub member, and;

a normally closed check valve means operably connected to said sealing assembly for permitting the flow of pressurized air to said lobes to expand said lobes radially into sealing relationship with the sealing surfaces of said hub member to seal the same and prevent leakage between the non-rotatable member and hub, said check valve having means to prevent it from opening until said lobes are pressurized, said check valve when opened permitting the flow of pressurized air into said tire.

4,804,028

NON-STAINING VULCANIZED ELASTOMERIC COMPOSITION AND TIRES HAVING SIDEWALLS COMPRISING SAID COMPOSITION

Thomas J. Botzman, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 5, 1986, Ser. No. 836,367
Int. Cl.[4] C08L *9/00, 23/16*; B60C *1/00*
U.S. Cl. 152—525 4 Claims

1. A tire having an outer layer in a sidewall comprising a nonstaining elastomeric composition which prior to vulcanization comprises by weight 25 to 90 parts diene rubber, 10 to 75 parts of EPDM that has been modified to increase its crosslinkability to diene rubbers, 0.5 to 10 phr of either a grafted or copolymerized antidegradant and a vulcanizing amount of a sulfur cure package, said composition being substantially free of staining antidegradants.

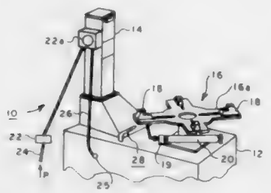
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4,804,029

TIRE BEAD SEATER

Richard Glogovsky, Libertyville, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed Sep. 14, 1987, Ser. No. 95,945
Int. Cl.[4] B60C *25/07*
U.S. Cl. 157—1.1 **7 Claims**



1. Apparatus for inflating a tubeless tire mounted on a vehicle wheel, said tire having an inflation/deflation valve mounted thereto, comprising in combination

a base,

a vehicle wheel support structure carried

by said base and movably mounted relative to said base,

said support structure having a central hub portion and a plurality of support arms extending radially from said hub,

wheel engageable clamping means for fixedly mounting a vehicle wheel to said support structure,

said clamping means including a plurality of clamps respectively mounted for adjustable radial movement along said support arms,

a tubular nozzle fixedly mounted to said base and disposed below said support structure such that said support structure is

movably mounted relative to said nozzle,

means for controlling the supply of air under pressure to said nozzle,

said nozzle having at its upper end a single orifice positioned to direct air in a generally upward direction through the space between adjacent ones of said arms positioned on opposite sides of said orifice, and

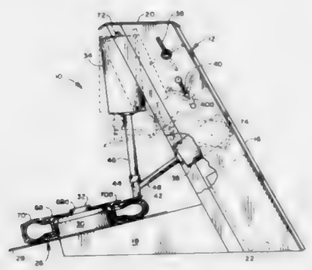
said orifice being elongated in its horizontal direction.

4,804,030

TIRE BEAD SEPARATOR

Melvin A. Mandelko, P.O. Box 756, Fort Dodge, Iowa 50501

Continuation of Ser. No. 924,910, Oct. 30, 1986, abandoned. This application May 23, 1988, Ser. No. 198,664
Int. Cl.[4] B60L *25/06*
U.S. Cl. 157—1.17 **4 Claims**



1. Apparatus for separating a tire bead from a wheel upon which the tire is mounted, said apparatus comprising:

a portable frame including an inclined base attached thereto;

hydraulic control means mounted to said portable frame and coupled to a tire bead engaging shoe element for displacing said engaging element between a first retracted position and an extended position for contacting and displacing the tire bead from the wheel, said hydraulic control means including a first cylinder coupled to an upper portion of said portable frame and oriented vertically and a second cylinder coupled to an intermediate portion of said portable frame and oriented horizontally, each of said first and second cylinders having a respective extendible piston rod directly coupled to said engaging shoe element to permit the separation of a tire bead from wheels having a full range of widths without requiring repositioning of said engaging element relative to said control means, wherein said hydraulic control means is pneumatically actuated and includes a pneumatic pressure system with a manually operated hydraulic transfer valve and a closed hydraulic system with a reservoir and a manually operated pneumatic charging valve; and

a rotatable support table mounted to said inclined base in an inclined orientation and adapted to receive the tire mounted on the wheel and to provide support therefor in an inclined orientation, wherein said support table includes a low portion and an upraised portion, with said upraised portion disposed vertically below said first cylinder and said low portion positioned in closely spaced relation to a support surface upon which the apparatus is disposed such that the tire and wheel may be positioned upon said support table without lifting the tire and wheel off of the support surface, said rotatable support table further including a wheel alignment insert adapted for insertion in an aperture in the wheel and a wheel mounting ring adapted for insertion within and engagement with a concave portion of the wheel and for maintaining the tire and wheel on said support table during separation of the tire bead from the wheel upon which the tire is mounted, and

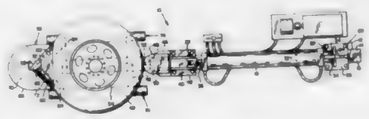
the extendible piston rod of said first cylinder being extendible in a substantially vertical direction directly above said rotatable support table and said tire, and the extendible piston rod of said second cylinder being extendible in a substantially horizontal direction above and laterally disposed from said rotatable support table and said tire.

4,804,031

TIRE REMOVAL APPARATUS

Michael W. Rouse, West Linn, and Robert L. Thelen, Woodburn, both of Oreg., assignors to Waste Recovery, Inc., Dallas, Tex.

Filed Apr. 14, 1987, Ser. No. 38,282
Int. Cl.[4] B60C *25/07*
U.S. Cl. 157—1.21 **14 Claims**



1. A device for deforming metal wheels in order to facilitate separation of tires therefrom, comprising:

(a) an elongate horizontal main structural beam member having a length and a pair of opposite sides;

(b) a linear motor located atop said main structural beam member and having a portion thereof attached thereto;

(c) a ram head drivably connected to said linear motor and movable longitudinally of said main structural beam member by said linear motor said ram head being configured to engage and deform metal wheels;

(d) an upwardly extending abutment structure attached to said main structural beam member and spaced apart from said linear motor longitudinally of said main structural beam member, said abutment structure and ram head lying in a straight line parallel with said longitudinally extending main structural beam member, said abutment structure including a pair of fixed upright members each having a respective upright, generally planar face, said planar faces defining an interior angle said pair of upright members being located with said interior angle facing toward said ram, so as to hold a wheel and tire generally stationary during movement of said ram toward said abutment structure; and

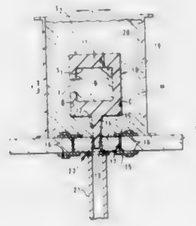
(e) means for supporting a wheel in a horizontal attitude adjacent said abutment structure so that the axis of the wheel extends vertically, between said ram head and said abutment structure.

4,804,032

METHOD OF MAKING METAL CASTINGS

Philip S. A. Wilkins, Evesham, United Kingdom, Assignor to Cosworth Research & Development Limited, Worcester, United Kingdom

PCT No. PCT/GB86/00732, § 371 Date Jul. 27, 1987, § 102(e) Date Jul. 27, 1987, PCT Pub. No. WO87/03229, PCT Pub. Date Jun. 4, 1987
PCT Filed Dec. 1, 1986, Ser. No. 97,970
Claims priority, application United Kingdom, Nov. 29, 1985, 8529380
Int. Cl.[4] B22C *9/04*; B22D *18/04*
U.S. Cl. 164—34 **17 Claims**



1. A method of making metal castings comprising the steps of providing an in situ destroyable pattern, then embedding the pattern in unbonded sand and consolidating the sand to form a mould in which is defined a mould cavity comprising at least one preformed moulding feature which is included in said pattern, then feeding a molten metal selected from the group consisting of aluminum and aluminum alloys into the cavity and permitting the metal to solidify within the cavity to form a casting and interrupting the feed of metal to the cavity and removing the casting from the cavity, wherein at least part of the mould is formed of sand which comprises at least substantially wholly sand selected from the group consisting of zircon sand and other particulate material suitable for making a mould having a bulk density lying in the range 2–3 gm/cc.

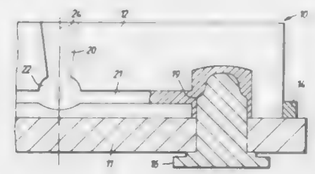
12. A mould for making metal castings comprising consolidated unbonded sand in which is embedded an in situ destroyable pattern to define a mould cavity, there being provided in the mould cavity a moulding feature which has upper and lower surfaces for contact with the metal and which projects inwardly of the mould cavity from a main wall thereof and has a configuration such that a mould made of 100% silica sand, except for usual impurities, and LM25 aluminum alloy is the metal cast, a part of the casting resulting from the moulding feature is displaced by at least 5% from its designed position relative to the nearest part of the casting defined by the main wall of the cavity and comprising at least substantially wholly sand selected from the group consisting of zircon sand and other particulate material suitable for making a mould having a bulk density lying in the range 2–3 gm/cc.

4,804,033

PRODUCTION OF ENGINEERING COMPONENTS

William J. Hepworth, Hampton-in-Arden, and Albert E. Bolton, Sutton Coldfield, both of England, assignors to AE PLC, Rugby, England

Filed Jul. 15, 1986, Ser. No. 885,719
Claims priority, application United Kingdom, Jul. 26, 1985, 8518909
Int. Cl.[4] B22D *19/14, 13/06*
U.S. Cl. 164—97 **15 Claims**



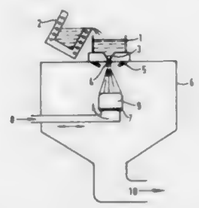
1. A process for the production of an engineering component, the process comprising the steps of rotating a die assembly having a cavity having a reinforcing insert therein and substantially of the shape of the component to be cast about a center of rotation remote from said die cavity, introducing molten metal into said die cavity from an external supply after said die cavity is rotating at a desired speed wherein the speed of rotation of said die cavity is sufficient to produce an acceleration of at least 200'g' on said metal in said cavity.

4,804,034

METHOD OF MANUFACTURE OF A THIXOTROPIC DEPOSIT

Alan Leatham, Swansea, and Andrew Ogilvy, Neath, both of Wales, assignors to Osprey Metals Limited, Neath, Wales

Continuation of Ser. No. 842,941, Mar. 24, 1986, abandoned. This application Dec. 24, 1987, Ser. No. 139,105
Claims priority, application United Kingdom, Mar. 25, 1985, 8507646; Nov. 12, 1985, 8527859
Int. Cl.[4] B22D *25/06, 27/09*
U.S. Cl. 164—46 **13 Claims**



1. A method of making a thixotropic deposit on a collector comprising the steps of

atomising a stream of molten metal or metal alloy by subjecting the stream of molten metal or metal alloy to relatively cold gas directed at the stream, thereby forming a spray of metal or metal alloy droplets,

directing the resultant spray of droplets at the collector,

modifying the spray by rapidly extracting heat at a controlled rate from the droplets in flight to form a spray predominantly comprising semi-liquid/semi-solid particles with dendritic solidification of the particles having been initiated,

depositing the particles onto the collector with sufficient velocity to fragment dendrites formed during flight into

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dendrite nuclei, the nuclei being interdispersed in a deposit surface comprising a thin film of semi-liquid/semi-solid metal,

rapidly growing the dendrite nuclei by passing the relatively cold atomising gas over the surface of the growing deposit to form substantially spherical nodules of rapidly solidified metal within a network of segregated liquid phase metal, and

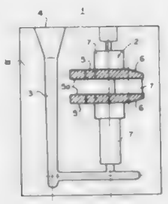
slowly cooling the segregated liquid by conduction to produce a network of segregated solid metal around the rapidly solidified metal modules which has a melting point less than the melting point of the nodules.

4,804,035

METHOD OF GRAVITY CASTING

Takeshi Murai, and Norifumi Sagawa, all of Hiroshima, Japan, assignors to Mazda Motor Corporation and Sinto Kogio, Ltd., both of Aki, Japan

Filed Apr. 24, 1987, Ser. No. 42,063
Claims priority, application Japan, Apr. 24, 1986, 61-95177
Int. Cl.[4] B22C *1/00, 3/00*
U.S. Cl. 164—125 **12 Claims**



1. A method of casting a product by pouring molten ductile iron into a cavity of a mold under the force of gravity, said cavity having a longitudinal axis, characterized by the steps of forming a heat insulating coating material solely on the side surface portions of an increased cross section portion in the cavity of the mold at which the cross sectional area is relatively large and at which flow speed of the molten ductile iron is lowered, and subsequently pouring the molten ductile iron into the cavity, said molten ductile iron entering at the bottom end of said cavity by being forced through a pouring gate and then a passage to said cavity under the force of gravity.

4,804,036

ELECTROMAGNETIC EXHAUST VALVE FOR USE IN METAL CASTING

Noriyuki Motomura, Zama, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1988, Ser. No. 188,454
Claims priority, application Japan, Apr. 30, 1987, 62-65809[U]
Int. Cl.[4] B22D *17/00, 27/02*
U.S. Cl. 164—147.1 **4 Claims**

1. An electromagnetic exhaust valve incorporated with a casting mold for use in metal casting comprising:

a stationary metal mold;

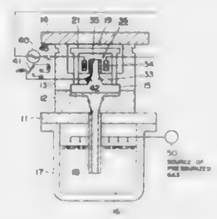
a movable metal mold;

said stationary and movable metal molds defining a mold cavity therebetween when they are mated together;

an exhaust opening extending from one side of said mold cavity through said movable metal mold;

an electromagnetic pump surrounding said exhaust opening;

a molten metal sensor provided in said exhaust opening for energizing said electromagnetic pump when said molten metal comes into contact with said molten metal sensor; and



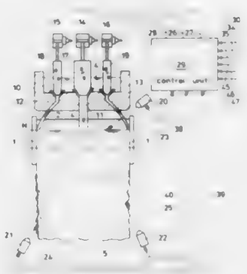
means for supplying said molten metal into said mold cavity from the other side thereof.

4,804,037

DUAL-ROLL TYPE CONTINUOUS CASTING MACHINE

Akihiro Nomura, Yokohama; Hisahiko Fukase, Meguro; Kunio Matsui, Yokohama, and Atsushi Hirata, Hiratsuka, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Japan

Filed Jun. 7, 1988, Ser. No. 203,429
Claims priority, application Japan, Jun. 18, 1987, 62-152141
Int. Cl.[4] B22D *11/18, 11/06*
U.S. Cl. 164—449 **1 Claim**



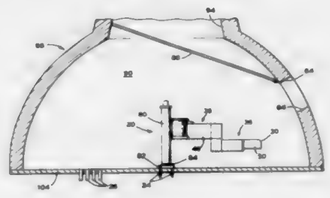
1. A dual roll type continuous casting machine comprising two cooling rolls having side weirs, a basin defined by said cooling rolls and side weirs, a tundish disposed above said basin and having a main passage and side passages, said side passages being directed to supply melt to opposite triple point regions in said basin, flow rate control means for controlling flow rates of melt flowing through said main and side passages independently of each other, level sensor means for sensing level of the melt in said basin, shape sensor means for sensing shapes of lateral side surfaces of a casting and a control unit for controlling said flow rate control means at the side passages in response to detection outputs from said shape sensor means and controlling said flow rate control means at the main passage in response to a detection output from said level sensor means.

4,804,038

REMOTELY INSTALLED, OPERATED AND REMOVED MANIPULATOR POR STEAM GENERATOR

Francis C. Klaba, Huddleston; Charles E. Werner, Lynchburg, and Floyd A. Fasnacht, Jr., Forest, all of Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 540,221, Oct. 11, 1983, abandoned. This application Jun. 3, 1988, Ser. No. 203,612
Int. Cl.[4] B25J *9/04*
U.S. Cl. 165—11.2 **6 Claims**



1. A remote manipulator for use in connection with tubes disposed within a tubesheet within the head of a nuclear steam generator, comprising;

an elongated mast having a longitudinal axis and opposite ends;

cable fastening means connected to one of the opposite ends of the mast;

winch means including a cable operatively connectable to the cable fastening means for hoisting the mast into the head of a nuclear steam generator;

a turntable fixed to one of the opposite ends of the mast;

a mast base rotatably mounted to the turntable;

at least one locator pin fixed to and extending from the mast base for insertion into a tube of a tubesheet to locate the mast base at a selected position with respect to the tubesheet;

at least one anchoring finger connected to and extending from the mast base for insertion into another tube of the tubesheet for anchoring the mast base to the tubesheet at the selected position;

a lengthwise screw mounted to the mast, the lengthwise screw having a longitudinal axis extending parallel to the longitudinal axis of the mast, the screw being rotatable about its longitudinal axis;

carrier means engaged to the screw for lengthwise movement along the mast in response to rotation of the screw;

means for rotating the screw;

a trolley plate mounted to the carrier means for lengthwise movement of the trolley plate relative to the mast with movement of the carrier means;

an articulating arm;

a pneumatic coupler for detachably locking the articulating arm onto the trolley plate for lengthwise movement with the trolley plate;

the articulating arm comprising an inner arm pivotally mounted to the trolley plate about an axis extending substantially parallel to and spaced laterally from the longitudinal axis of the mast, and an outer arm pivotally mounted to the inner arm about an axis extending substantially parallel to and spaced laterally from the longitudinal axis of the mast;

a pneumatic latch for detachably connecting tools to the outer arm of the articulating arm;

means for pivoting the inner arm with respect to the trolley plate;

means for pivoting the outer arm with respect to the inner arm; and

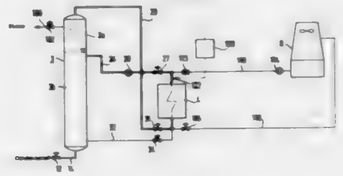
means for governing the position of the inner and outer arms with respect to the mast and the trolley plate with respect to the mast so that the tools are capable of reaching all of the tubes in the tubesheet and so that the tools are movable in a rectilinear pattern in a direction lengthwise of the mast and radially of the mast.

4,804,039

PROCESS AND APPARATUS FOR ALTERNATELY HEATING AND COOLING A HEAT EXCHANGER

Otmar U. Schäfer, Pienzenauerstr. 7a, Munich 80, Fed. Rep. of Germany (8000)

Filed Jun. 17, 1987, Ser. No. 63,260
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1986, 3620623
Int. Cl.[4] F28D *21/00*
U.S. Cl. 165—2 **8 Claims**



1. A process for alternately heating and cooling a heat exchanger including the following steps:

(a) preheating the heat exchanger by connecting same to a storage means containing water at a temperature which is higher than the initial temperature of the heat exchanger,

(b) heating the exchanger by connecting same to a steam-heated hot water-producing means,

(c) pre-cooling the heat exchanger by re-connecting same to the storage means, and

(d) cooling the heat exchanger by connecting same into a cooling circuit, characterised in that

(e) after step (c) and before (d) the heat exchanger is connected to the hot water-producing means to reduce the pressure,

(f) during steps (c) and (e) the steam feed conduit to the hot water-producing means is shut off and

(g) the heat exchanger in step (d) is connected into a cooling circuit open to ambient pressure.

4,804,040

PLATE HEAT EXCHANGER

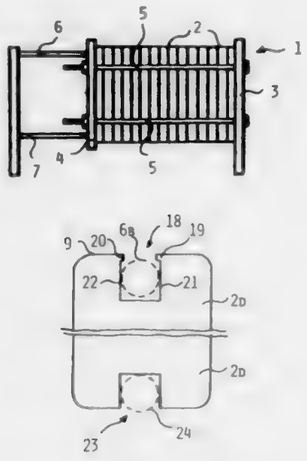
Bergqvist Jan-Ove, Malmö ; Nilsson Ebbe, Arlöv, and Andersson Jarl, Lund, all of Sweden, assignors to Alfa-Laval Thermal AB, Tumba, Sweden

PCT No. PCT/SE87/00314, § 371 Date Jun. 19, 1988, § 102(e) Date Jun. 19, 1988, PCT Pub. No. WO88/00323, PCT Pub. Date Jan. 14, 1988
PCT Filed Jul. 2, 1987, Ser. No. 153,831
Claims priority, application Sweden, Jul. 9, 1986, 8603059
Int. Cl.[4] F28F *3/08*
U.S. Cl. 165—78 **1 Claim**

1. Plate heat exchanger comprising several heat exchange plates (2, 2A–D), which are arranged between a frame plate (3) and a pressure plate (4) and are supported by a lower carrying bar (7), said lower carrying bar (7) and an upper guiding bar (6, 6B) extending through recesses (8, 16, 17, 18) in lower and upper parts, respectively, of the heat exchange plates (2, 2A–D), and at least the upper part of each heat exchange plate (2, 2A–D) being provided with at least one lug (13, 14, 15, 19, 20) extending into the upper recess (8, 16, 17, 18) and forming an upper constriction of said recess for retention of the heat exchange plate (2, 2A–D) in position on said guiding bar (6, 6B), characterized in that each heat exchange plate (2, 2A–B) is flexible enough in the area of said lug (13, 14, 15, 19, 20) to allow the lug to be bent aside perpendicularly to the plane of

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the heat exchange plate (2, 2A–D), providing an opening for insertion of the guiding bar (6, 6B) into the recess (8, 16, 17,



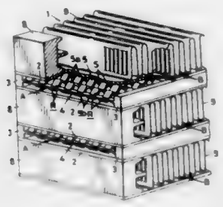
18), and to spring back after mounting of the plate in the plate heat exchanger (1).

4,804,041

HEAT-EXCHANGER OF PLATE FIN TYPE

Kaoru Hasegawa, Utsunomiya; Shozo Uto, and Suzushi Hashimoto, both of Oyama, all of Japan, assignors to Showa Aluminum Corporation, Osaka, Japan

Filed May 13, 1986, Ser. No. 862,721
Claims priority, application Japan, May 15, 1985, 60-104768
Int. Cl.[4] F28F *3/00*
U.S. Cl. 165—166 1 Claim



1. An oil cooler having an oil flow channel and air flow channel which are arranged alternately and formed by at least three flat plates arranged in parallel with one another at a predetermined spacing and opposed side walls provided between the adjacent flat plates, wherein the oil flow channel is formed from a blank of extruded aluminum material comprising opposed side walls and a platelike connecting wall interconnecting the opposed side walls, the platelike connecting wall being provided with a number of projections, arched when seen from one side, formed by cutting the platelike connecting wall and projecting upward and downward, the arched projections on the platelike connecting wall are arranged in the front-to-rear direction to provide a plurality of projection rows, the connecting wall further having a fluid passage opposite to every arched projection, the arched projections of each row projecting upward and downward alternatively with a flat portion formed between each arched projection and the arched projection adjacent thereto in the front-to-rear direction, the upwardly arched projections and the downwardly arched projections of the rows adjacent to each other being in a staggered arrangement transversely of the rows, so that each upward projection is adjacent to a downward projection in the transverse direction,

each arched projection of the connecting wall having a wall thickness of 0.5 to 1.5 mm, a width of 1 to 10 times the wall thickness and a height of 2 to 10 mm, and the projections are arranged in the front-to-rear direction of the exchanger at a pitch of 3 to 30 mm.

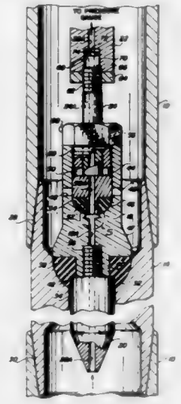
4,804,042

BOTTOM HOLE SHUT-IN TOOL

Robert C. Knight, Page, Ariz., and Gerald W. Haws, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Nov. 24, 1987, Ser. No. 124,736
Int. Cl.[4] E21B *33/28, 34/12*
U.S. Cl. 166—184 8 Claims





1. A bottom hole shut-in tool for preventing fluid flow in tubing extending within a fluid wel bore, comprising:

a concave arcuate seat in a portion of the tubing, the arcuate seat surrounding a fluid passageway;

a valve body having a convex arcuate lower end portion substantially conforming in shape to that of the arcuate seat;

the arcuate lower end portion of the valve body being comprised of an elastomeric material adapted to seal against fluid flow through the passageway when engaged with the arcuate seat;

a probe extending downwardly from the valve body and into the fluid passageway, the valve body and the probe containing aligned bores through which fluid may flow;

the valve body containing a cavity connecting with the bore in the valve body, the valve body further including pressure equalizing valve means in the cavity; and

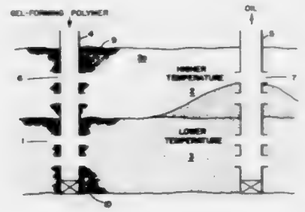
the valve body further containing at least one aperture connecting the cavity with the space between the valve body and the tubing, the pressure equalizing valve means comprising plug means for blocking fluid flow from the cavity to the apertures, the cavity containing a concave arcuate seat portion surrounding the bore in the valve body and the plug means having a convex arcuate lower end portion substantially conforming in shape to that of the arcuate seat portion of the cavity.

4,804,043

PROCESS FOR SELECTIVE PLACEMENT OF POLYMER GELS FOR PROFILE CONTROL IN THERMAL OIL RECOVERY

Paul Shu, Princeton Junction, N.J., and Winston R. Shu, Dallas, Tex., assignors to Mobil Oil Corp., New York, N.Y.

Filed Jul. 1, 1987, Ser. No. 68,290
Int. Cl.[4] E21B *33/138, 43/24, 43/243*
U.S. Cl. 166—263 18 Claims



1. A method for recovering oil from a subterranean, viscous oil-containing formation having relatively high permeability zones and relatively low permeability zones penetrated by at least one injection well and at least one spaced-apart production well, said wells being in fluid communication with a substantial portion of the formation comprising:

(a) injecting a high temperature medium into the formation via said injection well that preferentially enters the high permeability zones and recovering fluids including oil from the formation via said production well until breakthrough of the high temperature medium occurs at the production well thereby forming a thermally-swept zone in the formation, said thermally-swept zone having a temperature in excess of 350° C. in the vicinity of the injection well;

(b) injecting a predetermined amount of a high temperature selective gel-forming solution comprising an aqueous solution of high molecular weight polyacrylamide with 30% or less hydrolysis mixed with phenol and formaldehyde into the formation via the injection well in sufficient amount to flow into said thermally-swept zones and allowing said solution to set in said high thermally-swept zones to form a rigid gel therein thereby plugging said zones, said gel-forming solution capable of forming a rigid gel in the thermally-swept zones at temperatures above 350° F.;

(c) recovering ungelled gel-forming solution from the formation in the vicinity of the injection well via said injection well; and

(d) thereafter injecting the high temperature flooding medium into the formation via the injection well and recovering fluids including oil from the formation via the production well.

4,804,044

PERFORATING GUN FIRING TOOL AND METHOD OF OPERATION

David S. Wesson, Katy, Tex.; Michael E. McMahan, Duncan, Okla., and Flint R. George, Katy, Tex., assignors to Halliburton Services, Duncan, Okla.

Filed Apr. 20, 1987, Ser. No. 40,219
Int. Cl.[4] E21B *43/116*
U.S. Cl. 166—297 25 Claims



1. An apparatus for completing a cased borehole, comprising:

a pipe string suspended within the cased borehole;

a packer disposed on the pipe string for forming a lower annulus and an upper annulus;

a flow valve located in the pipe string above the packer for preventing fluid flow through the flow bore of the pipe string when in the closed position;

an annulus access valve located in the wall of the pipe string below the flow valve and above the packer for permitting fluid flow from the upper annulus into the flow bore of the pipe string when in the open position;

a perforating gun suspended on the lower end of the pipe string;

a pressure responsive firing head disposed below the packer and connected to the perforating gun;

means for increasing the fluid pressure in the upper annulus;

a valve operating means for closing the flow valve while substantially simultaneously opening the annulus access valve to permit the increased fluid pressure in the upper annulus to be transmitted through the flow bore of the pipe string to the firing head so as to actuate the firing head and detonate the perforating gun.

8. A method of completing a cased borehole, comprising:

suspending with the well a pipe string comprising a flow valve, an annulus access valve below the flow valve, a packer located below the annulus access valve, a pressure responsive firing head located below the packer and a perforating gun operated by the firing head located below the packer and adjacent to a hydrocarbon bearing formation;

setting the packer to form an upper annulus and a lower annulus;

closing the flow valve to prevent fluid flow through the flow bore of the pipe string;

opening the annulus access valve to permit fluid communication between the upper annulus and the firing head;

increasing the pressure in the upper annulus to a pressure sufficient to operate the firing head;

closing the annulus access valve and opening the flow valve;

detonating the perforating gun to perforate the casing into the formation; and

flowing hydrocarbons from the formation through the perforations and up the flow bore of the pipe string to the surface.

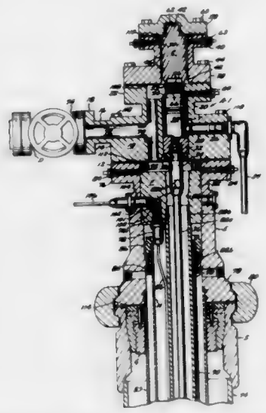
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4,804,045

OIL AND GAS WELL DIVERSIONARY SPOOL ASSEMBLY

Lehman T. Reed, 3219 Candlewood Dr., Bakersfield, Calif. 93306

Filed Nov. 6, 1986, Ser. No. 927,576
Int. Cl.[4] E21B *33/03, 34/02*
U.S. Cl. 166—65.1 **15 Claims**



1. In combination with an oil and gas well that includes a casing head from which a string of tubing extends downwardly in a bore hole to a fluid producing zone, a diversionary spool assembly situated in a fixed position relative said well head to control fluid flow from said well and also serve as a temporary mounting for a Christmas tree array of valves when maintenance work is to be performed on said well, said array of valves including an anchor flange on a lower end thereof, said diversionary spool assembly including;

a. a rigid body mounted on said well head, said body having a top surface, and a plurality of passages therein, a first of said passages extending upwardly through said body and vertically aligned with said tubing string, said first passage having an upper end portion, and a second passage through which fluid flows;

b. valve means for controlling the flow of fluid through said second passage;

c, a plug removably and sealingly mounted in said upper end portion, said plug including an upper engageable portion;

d. first movable means on said body for removably engaging said plug to maintain said plug at a fixed position in said first passage;

e. a bonnet mounted on said top surface of said body that seals said upper end portion of said first passage; and,

f. second means for removably securing said bonnet to said body that is also capable of securing said anchor flange of said christmans tree array of valves to said body after said bonnet is removed from the latter, said spool assembly when mounted on said well head capable of having oil and gas produced from said well, and said spool assembly permitting access to said well through said tubing string for maintenance work to be performed on said well by removing said bonnet from said body and thereafter securing said anchor flange of said array of valves to said body by said second means, moving said first means to disengage from said plug, engaging said engageable portion of said plug and moving said plug upwardly and outwardly from said first passage through said array of valves, performing the maintenance work, and thereafter reversing the above described procedure to return the diversionary spool assembly to an oil and gas producing condition.

4,804,046

SHUT-OFF DEVICE FOR A SPRINKLER ASSEMBLY

Vincent J. Capasso, Lansdale, Pa., assignor to Fire Sprinkler Specialties, Inc., Chalfont, Pa.

Continuation-in-part of Ser. No. 834,594, Jan. 30, 1987, Pat. No. 4,676,320. This application Jan. 29, 1987, Ser. No. 67,479
Int. Cl.[4] A62C *37/10*
U.S. Cl. 169—90 **9 Claims**



1. A device for terminating fluid flow in a temperature-activated sprinkler comprised of a water conduit, flange, baffle plate and cut-off valve, which comprises:

(1) a cylindrical hollow body having at one end a recess portion contoured to receive a flange of truncated oviform design said body being comprised of a thermoplastic composition which melts at temperatures corresponding essentially to sprinkler-activating temperatures;

(2) a flat seat which extends perpendicularly from the inner sidewalls of said body and abuts said recess portion, said seat being adapted to receive said baffle plate and simultaneously impress into said conduit a cut-off valve for terminating fluid flow; and

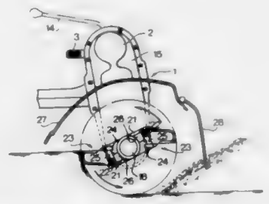
(3) two apertures oppositely disposed within the sidewalls of said recess portion, both of which are adapted to engage said flange and provide a locking means.

4,804,047

ROTARY MOWER AND TILLING DEVICE

Teruhisa Kobashi; Ichiro Kobashi; Yoshio Touki, and Yasuhiro Kobiki, all of Okayama, Japan, assignors to Kobashi Kogyo Co., Ltd., Okayama, Japan

Filed Nov. 17, 1986, Ser. No. 931,743
Claims priority, application Japan, Nov. 20, 1985, 60-261959; Nov. 22, 1985, 60-262957
Int. Cl.[4] A01B *33/04, 49/04*
U.S. Cl. 172—91 **10 Claims**



1. A rotary tilling device comprising:

a frame;

a rotary shaft rotatably supported on said frame;

a plurality of supporting members centrally secured to the rotary shaft;

at least two cutters pivotally mounted by a bolt on each of the supporting members at opposite positions thereof;

each of the cutters having a vertical portion, the latter at one end having a base end portion at which the cutter is pivoted about the bolt, and a lateral portion bent at another end of the vertical portion in the axial direction of the rotary shaft, and having a soil cutting edge and a grass cutting edge on both sides of the vertical and lateral portions;

holding means provided on the supporting member for holding the cutter in a first pivoted soil cutting tilling position and for releasing the cutter in a second pivoted grass cutting position;

said holding means comprises a stopper mounted on the supporting member for engaging the cutter when the latter is pivoted thereagainst in the tilling position;

transmitting means for transmitting power of a tractor to the rotary shaft to rotate it;

selector means for selectively rotating the rotary shaft in opposite directions and for rotating the rotary shaft in a grass cutting direction at a higher speed than a soil cutting direction;

a holding member fixedly secured to said rotary shaft with said bolt passing through said holding member with said cutter between said holding member and said supporting member; and

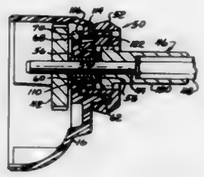
a spring at one end thereof engaging said bolt and having a bent portion pressing said cutter to said supporting member so as to restrain said cutter from deflecting in the axial direction of the bolt, said spring having another end engaging in a notch in said stopper when said cutter is in the tilling position such that said spring is prevented from rotation.

4,804,048

HAND-HELD TOOL WITH SHAFT LOCK

Chris H. Porth, Jr., Bloomingdale, Ill., assignor to Skil Corporation, Chicago, Ill.

Filed Feb. 4, 1983, Ser. No. 463,998
Int. Cl.[4] B25B *21/00*
U.S. Cl. 173—47 **6 Claims**



1. In a hand-held power screwdriver or like tool having a housing and a spindle for receipt of tool bits therein, the spindle being retained on a shaft for rotation on the housing, the spindle and shaft defining an axis of rotation; the improvement comprising spindle locking means including:

(a) a collet having a cylindrical body portion and exposed means for grasping the collet, the body having a longitudinal axis and an opening centered on the axis for passage of the spindle and shaft therethrough, said opening defining an inner body surface, axial ridges on the outer surface of the body, spindle engaging means on the inner surface of the body;

(b) a collet recess in the housing, the recess having a substantially cylindrical outer wall surface disposed in symmetric relationship about the axis of rotation and having axial slots in the wall surface, the recess with slots therein being adapted to receive the collet body and ridges for unrestricted axial sliding movement between first locked and second unlocked limits and to block the collet against rotation about its axis with respect to the housing;

(c) a collet body engaging means on the spindle, said means adapted to engage the spindle engaging means on the collet body when the collet is slidably positioned in the first locked limit position thereby rigidly locking the collet and the spindle against relative rotational movement;

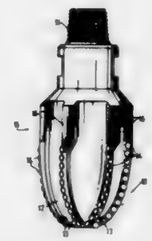
whereby the collet may be selectively positioned to alternatively permit the motor driven rotation of the spindle on the housing or to rigidly lock the spindle against rotational movement on the housing thereby permitting operation of the power operated tool in the manual mode in which rotational forces applied to the housing are directly transmitted to the spindle and tool bit therein.

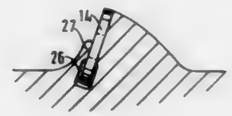
4,804,049

ROTARY DRILL BITS

John D. Barr, Cheltenham, England, assignor to NL Petroleum Products Limited, England

Filed Nov. 30, 1984, Ser. No. 676,710
Claims priority, application United Kingdom, Dec. 3, 1983, 8332342
Int. Cl.[4] E21B *10/46*
U.S. Cl. 175—329 **8 Claims**





1. A rotary drill bit including a bit body, at least a portion of which is formed from a matrix formed by a powder metallurgy process, and a plurality of cutting elements mounted on the bit body, each cutting element being formed from material which is thermally stable at the temperature of formation of the matrix, and having a rearward surface in engagement with a support structure on the bit body and a front face, a first portion of the cutting element providing a cutting edge projecting from the bit body, and the matrix forming the bit body being formed with an integral extension which engages and extends over the front surface of a second portion of the cutting element opposite the cutting edge, the thickness of the cutting element, between said front and rearward surfaces, being several times smaller than the dimension of said front face measured centrally thereacross in the direction between said cutting edge and said second portion, said extension and said support structure being adapted to offer less resistance to forward deflection of said second portion of the cutting element than to rearward deflection of the first portion, thereby to reduce bending stresses imparted to the cutting element, in use of the bit by rearward deflection thereof in the vicinity of the cutting edge.

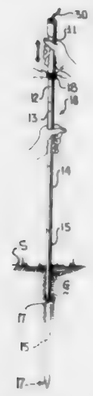
VOL 1099 ISS 2 FE 14 1989 UMI

4,804,050

METHOD OF UNDERGROUND FLUID SAMPLING

William B. Kerfoot, Falmouth, Mass., assignor to K-V Associates, Inc., Falmouth, Mass.

Filed Apr. 30, 1987, Ser. No. 44,261
Int. Cl.[4] E21B *49/08*; G01N *1/22*
U.S. Cl. 175—20 7 Claims



1. A method of subsurface sampling comprising the steps of:
providing a probe having a sample inlet in fluid communication with a sample outlet in turn in fluid communication with a tube through which a subsurface sample medium can be conducted from a desired subsurface point below earth's surface to a second point thereabove;
covering the sample inlet;
inserting the probe with the sample inlet covered into the earth to the desired subsurface point;
performing the probe inserting step by utilizing at least one tubular member in external telescopic relationship to the tube;
performing the sample inlet covering step by exteriorly surrounding the sample inlet with a tubular end portion of the tubular member;
uncovering the sample inlet while the probe is below surface by moving the tubular member and its tubular end portion upwardly thereby creating a flow path for sample medium at the desired subsurface point into the sample inlet to and through the sample outlet and into the tube whereby monitoring of the sample medium can be effected;
withdrawing the tubular member entirely from the earth while leaving the probe and tube in place; and
monitoring the sample medium through the tube after the tubular member has been entirely withdrawn from below the earth's surface.

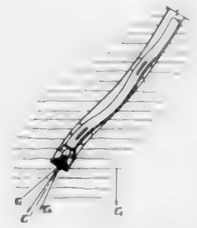
7. A method of subsurface sampling comprising the steps of:
providing a probe having a sample inlet in fluid communication with a sample outlet in turn in fluid communication with a tube through which a subsurface sample medium can be conducted from a desired subsurface point below ground surface to a second point thereabove;
covering the sample inlet with an impact sleeve having a sample inlet of a size to permit flow of sample medium therethrough without extraneous material passage;
effecting fluid communication between the probe sample inlet and the impact sleeve sample inlet while the probe sample inlet remains covered by the sleeve;
inserting the probe progressively downwardly below ground surface toward the desired subsurface point while the probe sample inlet is covered by the sleeve; and
while the probe sample inlet remains covered by the sleeve drawing a subsurface sampling medium into and through the sleeve sample inlet, through the fluid communication means, and into and through the probe sample inlet and outlet and into the tube whereby monitoring of the sample medium can be effected.

4,804,051

METHOD OF PREDICTING AND CONTROLLING THE DRILLING TRAJECTORY IN DIRECTIONAL WELLS

Hwa-Shan Ho, Spring, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Sep. 25, 1987, Ser. No. 100,912
Int. Cl.[4] E21B *7/08*
U.S. Cl. 175—26 16 Claims



1. A method for predicting the drilling trajectory of a drill bit in a directional well through an earth formation, comprising the steps of:
a. making a first determination of the dip of the said formation;
b. making a second determination of the anisotropy index of the said formation;
c. making a third determination of the anisotropy index of the said drill bit; and
d. combining said first, second and third determinations to produce the instantaneous drilling trajectory of said drill bit.

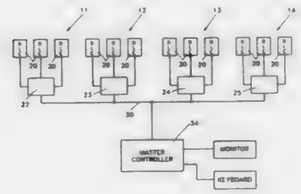
4,804,052

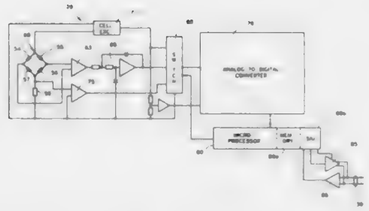
COMPENSATED MULTIPLE LOAD CELL SCALE

Neil C. Griffen, Westerville, Ohio, assignor to Toledo Scale Corporation, Worthington, Ohio

Filed Nov. 30, 1987, Ser. No. 126,271
Int. Cl.[4] G01G *19/40, 19/52*; G01L *25/00*
U.S. Cl. 177—25.14 17 Claims

1. Weighing apparatus comprising a plurality of load cells, load receiving means supported by said load cells, means associated with said load cells for providing a digital representation of a load on each load cell, means for storing a mathematical expression for load corrected for load position, and means for applying said mathematical expression to said digital load representations to produce a digital representation of the total load on said load receiving means corrected for load position.



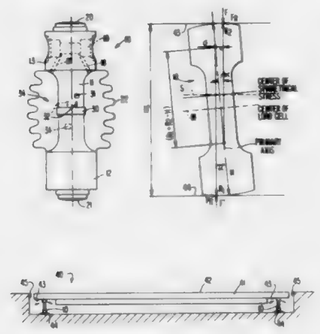


4,804,053

ROCKER PIN LOAD CELL

Kjell H. Nordstrom, Västerås, Sweden, assignor to Flintab AB, Västerås, Sweden

Filed Nov. 10, 1987, Ser. No. 118,949
Int. Cl.[4] G01G *3/14, 21/24*; G01L *1/22*
U.S. Cl. 177—211 15 Claims



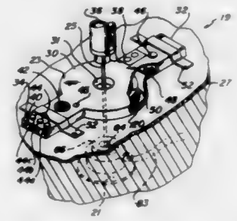
1. A compression type load cell consisting essentially of:
an elongated dumbbell shaped column with a predetermined length having convex top and bottom surfaces and a midsection with symmetry about a primary axis of the column, said convex bottom surface being a surface portion of a first sphere having a first radius and a first center located on said primary axis, and said convex top surface being a surface portion of a second sphere having a second radius and a second center located on said primary axis, the sum of said first radius and said second radius being larger than said predetermined length so that said column will be self-stabilizing when placed in a vertical position between two substantially horizontal surfaces:
strain gage means affixed to said midsection midway between said first and said second centers at a right angle to said primary axis for integrating compressive strains around said column:
sealing means for protecting said strain gage means from moisture and other environmental effects; and
means for electrically connecting said strain gage means to circuits outside said sealing means.

4,804,054

DEVICE AND METHOD FOR PRECISE SUBCUTANEOUS PLACEMENT OF A MEDICAL INSTRUMENT

David C. Howson, Denver; J. Donald Pauley, Estes Park, and Gary T. Carroll, Boulder, all of Colo., assignors to Intelligent Medicine, Inc., Englewood, Colo.

Filed Jun. 1, 1987, Ser. No. 55,986
Int. Cl.[4] A61B *19/00*
U.S. Cl. 128—898 30 Claims



1. A system for monitoring medical instrument placement with respect to a reservoir in a body to ensure accurate positioning of an opening in an inserted end portion of said instrument at a preselected location with respect to reservoir, said system comprising:
electrical means positioned outside said body for providing an electrical power output;
signal generating means positioned outside said body connected with said electrical means for receiving said electrical power output to thereby supply output signals;
sensing means separate from connection with said instrument and adapted to receive said output signals from said signal generating means, said output signals being modified in accordance with the position of said instrument with respect to said reservoir, to thus utilize said signals to provide an electrical output indicative of at least a predetermined desired positioning of said inserted end portion of said instrument at said preselected location within said body;
signaling means connected with said sensing means to receive said electrical output therefrom and responsive thereto provide an electrically induced output signal; and
indicating means receiving said output signal from said signaling means and utilizing said output signal to provide an indication at least that said desired positioning of said inserted end portion of said instrument at said preselected location is then established.

4,804,055

TRACTOR ATTACHMENT

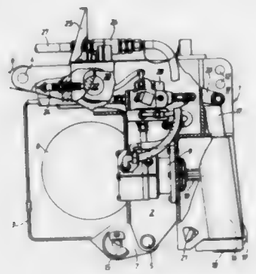
Pentti Kostamo, Jyväskylä, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed Sep. 18, 1987, Ser. No. 98,217
Int. Cl.[4] B60K *17/28, 25/00*
U.S. Cl. 180—53.3 9 Claims

1. An attachment for mounting at a rear end of a tractor to

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provide a rear power take off shaft for the tractor, which attachment comprises a frame which is demountable from the tractor, a hydraulic motor having a power take off shaft mounted on the frame, a pivotal attachment mounted for an upper link of a three point hitch, lifting arms pivotally mounted on the frame for raising and lowering the lower links of the



three point hitch by means of swinging link arms connected between the lower links and the lifting arms, hydraulic rams mounted on the frame for raising and lowering the lifting arms, and respective releasable hydraulic couplings connected to the hydraulic motor and to the rams for connection to a hydraulic system of the tractor.

4,804,056

FRAME TYPE TRACTOR

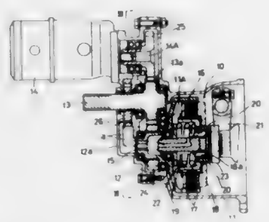
Nobuyuki Toshikusa, Neyagawa; Masao Takagi, Hashimoto, and Nobuyuki Nishiguchi, Sakai, all of Japan, assignors to Kubota Limited, Osaka, Japan

Filed Oct. 21, 1987, Ser. No. 110,816

Claims priority, application Japan, Dec. 22, 1986, 61-197167; Jul. 21, 1987, 62-182813; Aug. 7, 1987, 62-198830

Int. Cl.[4] B60K *20/00*

U.S. Cl. 180—70.1 8 Claims



1. A frame type tractor comprising:
at least one pair of drive wheels,
a body frame,
an engine mounted on a forward region of the body frame,
an engine output shaft extending from said engine,
an input shaft connected at one end thereof to said output shaft of said engine and including a drive gear on one end thereof, and
a transmission mounted on a rear region of said body frame, said transmission including;
an input section including a transmission drive gear driven by said input shaft, and a wet type multidisk clutch, said input shaft being connected to one end of said engine output shaft and said drive gear drives said transmission drive gear, said wet type multidisk clutch establishing and breaking transmission of a drive received from said transmission gear through said input shaft, a wet type multidisk clutch input member driven by said transmission drive gear and a wet type multidisk clutch output member providing a drive from said multidisk clutch to a clutch output shaft disposed laterally of said input shaft,
a change speed section for changing a speed of the drive received from said input section, and
an output section for transmitting the drive received from said change speed section to the drive wheels.

4,804,057

POWER-ASSISTED STEERING GEAR

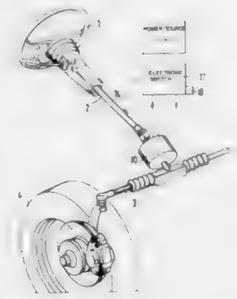
Abdul R. Saeed, Markgroningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 21, 1987, Ser. No. 40,669

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1986, 3626686

Int. Cl.[4] B62D *5/04*

U.S. Cl. 180—142 13 Claims



1. A power-assisted vehicle steering gear comprising a pitman shaft coupled to an electrical power assist means connected between a steering wheel and a steering linkage which controls turning of the wheels, said electrical power-assist device including a housing, said housing forming a multi-polar magnetic device having a inner face (11), a rotor (6) in a bore in said housing which rotor is surrounded by said multi-polar magnetic device and includes a rotor face (8) opposite said inner face of said housing, said pitman shaft engaging one end of said rotor (6) for rotation thereof and for steering of said wheels, and said housing inner face (11) is disposed opposite said rotor face (8) in a power transmitting relationship and that a torque supplied to said pitman shaft (2) is reduced corresponding to a difference in the circumferential length of the housing face (11) and that of the rotor face (8).

4,804,058

ARRANGEMENT FOR CONTROLLING AT LEAST ONE MAGNITUDE INFLUENCING THE DRIVING TORQUE OF AN INTERNAL COMBUSTION ENGINE OF A MOTOR VEHICLE

Heinz Leiber, Oberriexingen; Hans Ohnemueller, Reutlingen, and Klaus Kastner, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Dec. 23, 1987, Ser. No. 136,932

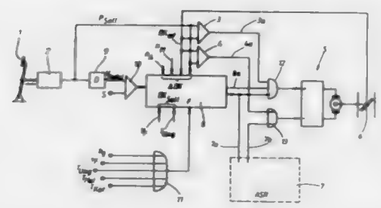
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1986, 3644137

Int. Cl.[4] B60K *26/04, 28/16*

U.S. Cl. 180—197 20 Claims

1. An arrangement for controlling at least one magnitude influencing the driving torque of an internal combustion engine of a motor vehicle, comprising a drive pedal, position transmitter means converting the drive pedal position into a desired value signal, comparator means in which the magnitude to be

controlled is compared with the desired value signal, adjusting means which produces a signal for the increase of the magnitude to be controlled when the desired value signal exceeds the actual value and which is operable to produce a signal for reducing the magnitude to be controlled when the desired value signal drops below the actual value, first regulating means which regulates the magnitude influencing the driving torque if the driven wheels of the motor vehicle tend to slip, and second regulating means which is operable to trigger a regulating operation when the desired value signal is larger than the actual value of the magnitude to be regulated and at the same time the desired value-increase velocity exceeds a predeterminable threshold value, said second regulating means being further operable to specify an internal desired value for the magnitude to be regulated coordinated to the driving ve-



locity and/or the outside temperature and causing a follow-up control of the actual value to the internal desired value with an increase velocity dependent on magnitudes determining the driving torque, said second regulating means keeping the actual value constant for a predetermined holding period after reaching the internal desired value and after the lapse of the holding period increasing the internal desired value by a factor depending on at least one predetermined influencing magnitude and subsequently again causing a follow-up of the actual value, keeping the same constant for the holding period and repeating these operating steps until the actual value is equal to the desired value signal and therewith and the regulating operation is terminated, the regulating operation being interrupted as soon and for such length of time as the first regulating means is active.

4,804,059

SYSTEM FOR CONTROLLING A TRANSFER CLUTCH OF A FOUR-WHEEL DRIVE VEHICLE

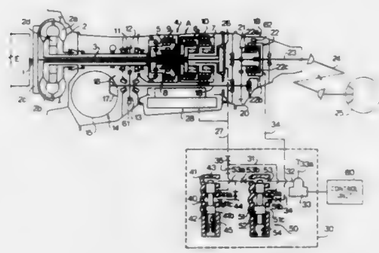
Ryuzo Sakakiyama, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1987, Ser. No. 101,057

Claims priority, application Japan, Sep. 30, 1986, 61-233485

Int. Cl.[4] B60K *23/08, 31/00*

U.S. Cl. 180—197 8 Claims



1. In a control system for a four-wheel drive vehicle having an engine having a throttle valve operatively connected with an accelerator pedal, a transmission operatively connected to the engine, main drive wheels operatively connected to an output shaft of the transmission, auxiliary drive wheels, a transfer clutch actuated by pressurized oil for continuously transmitting the output of the transmission to the auxiliary drive wheels, first speed sensing means for operatively detecting an output of the transmission for sensing speed of the main drive wheels for producing a first speed signal dependent on said speed, second speed sensing means operatively detecting an output of the transfer clutch for sensing speed of the auxiliary drive wheels for producing a second speed signal dependent thereon, and means for controlling torque of the transfer clutch in accordance with driving condition of the vehicle, the improvement in the system which comprises
throttle position sensing means for detecting an opening degree of the throttle valve,
speed ratio calculating means responsive to the output signals of the first and second sensing means for calculating a speed ratio of the first and second speed signals for producing a speed ratio signal depending on the driving condition of the vehicle,
mode detecting means for deciding a straight driving mode, and a steering mode and a slipping mode by comparing said speed ratio signal with a maximum steering angle value predetermined by a characteristic of the vehicle for producing a straight driving mode signal, a steering mode signal and a slipping mode signal, respectively,
clutch torque decision means responsive to said second speed signal and an output signal of the throttle position sensing means for deciding a clutch torque dependent on load ranges of the vehicle for producing a clutch torque signal, and
correcting means responsive to the mode signal of the mode detecting means for correcting said clutch torque signal dependent on each respective mode, so as to continuously control the pressurized oil supplied to said transfer clutch depending on the driving condition of the vehicle of straight driving, cornering driving by steering, and slipping of the wheels.

4,804,060

FRAME TYPE TRACTOR

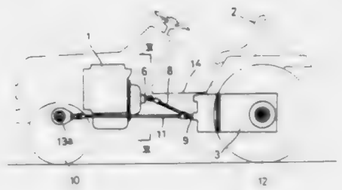
Hirofumi Iritani, Sakai, Japan, assignor to Kubota Limited, Osaka, Japan

Filed Oct. 5, 1987, Ser. No. 104,182

Claims priority, application Japan, Nov. 4, 1986, 61-263320; Nov. 21, 1986, 61-279381; Dec. 8, 1986, 61-188973[U]

Int. Cl.[4] B60K *17/34*

U.S. Cl. 180—233 5 Claims



1. A frame type tractor comprising:
vehicle frames,
an engine mounted on a front region of the vehicle frames,
a transmission case housing a transmission and mounted on a rear region of the vehicle frames,
a transmission shaft for operatively connecting the engine to the transmission,
front and rear wheels driven by power changed by the transmission, the front wheels being steerable and disposed forwardly of the engine,
a steering mechanism for the front wheels, and

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a front wheel drive shaft for operatively connecting the transmission to the front wheels,

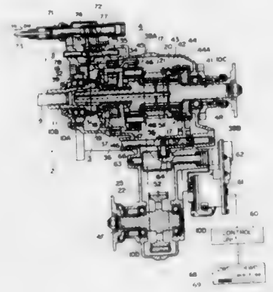
wherein the transmission shaft extends from a lower portion of the transmission case to the engine, the front wheel drive shaft extends from the lower portion of the transmission case, passing by a lateral side of a lower portion of the engine, to the front wheels, and an operator's step is disposed above the transmission shaft and front wheel drive shaft.

4,804,061

POWER TRANSMISSION FOR FOUR WHEEL DRIVE VEHICLE

Osamu Kameda, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 20, 1988, Ser. No. 145,955
Claims priority, application Japan, Apr. 27, 1987, 62-105878
Int. Cl.[4] F16H *37/06*
U.S. Cl. 180—247 13 Claims



1. In a power transmission for a vehicle having front and rear wheel drive shafts laterally spaced from and located in parallel with each other, a transfer gear assembly which has a transfer input member coupled to an output shaft of a primary-transmission and a transfer output member and which is shiftable between a high and a low speed drive range, and a center-differential gear assembly which has a differential input member coupled to said transfer output member of said transfer gear, first differential output member coupled to said rear wheel drive shaft, and second differential output member and which is shiftable between two and four drive modes and between differential-free and differential-locked drive modes, the improvement comprising:

said transfer gear assembly comprised of a first planetary gear assembly having a sun gear as said transfer input member;

said center-differential gear assembly comprised of a second planetary gear assembly having a ring gear as said differential input member and being coaxially arranged with and adjacent to said first planetary gear assembly;

first shifting means disposed on one side of said first planetary gear assembly opposite to said second planetary gear assembly for shifting said transfer gear assembly between said high and low speed drive ranges; and

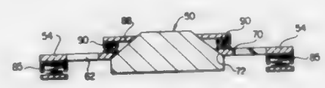
second shifting means disposed on one side of said second planetary gear assembly opposite to said transfer gear assembly for shifting said center-differential gear assembly between said two and four wheel driving modes and between said differential-free and differential-locked drive modes.

4,804,062

BASEPLATE ASSEMBLY FOR SEISMIC WAVE GENERATOR

Tom P. Airhart, Plano, Tex., assignor to Atlantic Refining Company, Los Angeles, Calif.

Filed Mar. 2, 1987, Ser. No. 20,415
Int. Cl.[4] G01V *1/04*
U.S. Cl. 181—121 3 Claims



1. An apparatus for generating a seismic wave in the earth comprising:

(a) a mass;

(b) means for releasably supporting the mass at a distance above the earth;

(c) means cooperating with the means for supporting the mass for driving the mass along a downward path toward the earth;

(d) a target of circular cross-section for receiving an impact from the mass;

(e) a frame defining an open-ended aperture of like circular cross-section to that of the target and adapted to receive the target therein in slidable concentric relation, the frame being positionable on the earth such that the target is disposed in axial alignment with the path;

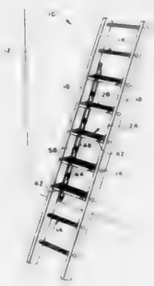
(f) means for resiliently supporting the target from the frame within the aperture so that the target contacts the earth and so as to permit downward movement of such target against the earth responsive to the impact of the mass, thereby generating such seismic wave, the resilient means being such as to also enable the target to shift position rotationally with respect to the aperture to better follow and make firm contact with irregular ground surfaces.

4,804,063

AUXILIARY SAFETY STEP FOR ROUND LADDER RUNGS

Ben J. Farris, 304 Burleson, Smithville, Tex. 78957

Filed Jul. 18, 1988, Ser. No. 220,574
Int. Cl.[4] E06C *7/08*
U.S. Cl. 182—121 9 Claims



1. An auxiliary safety step for a ladder of the type including round fluted rungs having alternate ribs and grooves formed about the periphery, said step comprising:

a traction body extending longitudinally between ends and defining a generally flat tread surface on which a loading is to be imposed;

a semi-cylindrical arcuate surface defined about the underside of said traction body for engagement with the periphery of a ladder rung on which the step is to be installed;

said traction body having longitudinal rib means extending laterally outward from said semi-cylindrical surface and adapted to interfit in a groove between adjacent ribs on the ladder rung to effect a rotational interlock therewith; and

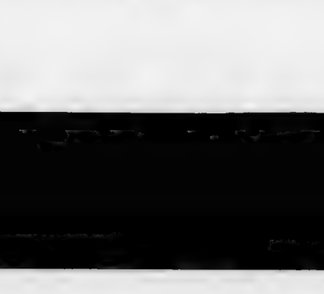
means for securing the step to a rung on which it is placed by restraining said rib/groove interfit against separation.

4,804,064

ADJUSTABLE, COLLAPSIBLE SAWHORSE

Thomas Coultrup, Santa Ana, and James E. Wessling, El Toro, both of Calif., assignors to Variety International, Inc., Irvine, Calif.

Filed Aug. 13, 1987, Ser. No. 84,989
Int. Cl.[4] B27B *21/00*; **B25H** *1/06*
U.S. Cl. 182—155 10 Claims



1. An adjustable sawhorse which is collapsible in three transversely aligned directions to form a compact package suitable for transport and storage, said sawhorse comprising:

first and second pairs of legs, each of said legs comprising an inner tube and an outer sleeve, said inner tube being movable through said outer sleeve to adjust the length of a respective leg;

a cross member extending between said first and second pairs of legs, said cross member comprising an inner and an outer member, said inner member being movable through said outer member to adjust the length of said cross member between said pairs of legs; and

means to rotate said legs in a third direction through an arc from a vertical position to a substantially horizontal position.

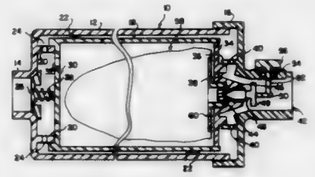
4,804,065

DEVICE FOR DOSING A FLOWING FLUID

Edgar P. Scragg, 60 Mulder Street, Florida Park Extn 3, Florida, Transvaal Province, South Africa

Filed Jul. 15, 1987, Ser. No. 73,452
Claims priority, application South Africa, Jul. 15, 1986, 86/5267
Int. Cl.[4] F16N *11/00*
U.S. Cl. 184—39 7 Claims

1. A device for dosing a flowing fluid which comprises a casing having an inlet for the fluid and an outlet for the fluid, means within the casing defining a fluid flow path leading from said inlet to said outlet, a passage within said casing along which additive flows from a supply of additive to said fluid flow path, a control valve in said passage, the control valve including an element which is in said flow path and is so positioned that, when fluid is flowing along said path, it impinges on said element and urges the valve in the direction which opens said passage, and means operable from externally of the casing for limiting movement of the valve in the opening direction, and for varying the distance through which the valve can move in the opening direction.

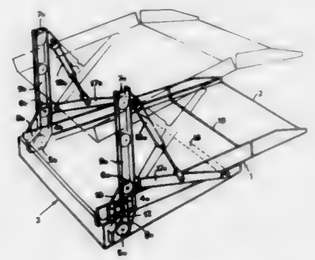


4,804,066

DEVICE FOR THE ELEVATED POSITIONING OF AUTOMOBILES

Angelo Fusaro, Via Roma 72, and Giancarlo Galeazzi, Via Bozzolo 57, both of Volta Mantovana (Prov. of Mantova), Italy

Filed May 8, 1987, Ser. No. 47,087
Claims priority, application Italy, Dec. 15, 1986, 18125 A/86
Int. Cl.[4] B60J *13/00*
U.S. Cl. 187—8.71 6 Claims



1. In a device for elevating vehicles in a parking room, comprising a base frame which is anchored on the floor of the parking room and included two lateral substantially vertical and parallel side mats, guide means extending along said mats substantially longitudinally thereof, a vehicle supporting platform having a front entry for vehicles and an opposite rear end, said platform being mounted on said base frame inwardly of said mats and extending in a rest position substantially parallel to said floor at least one pair of superposed rollers rotatably mounted on each side of said platform proximate said rear end portion thereof said rollers being arranged for being slidingly received by said guide means to thereby maintain said platform substantially parallel to itself during elevation thereof, a pair of lever arms having one end thereof fixedly pivoted to said respective vertical mats and the other end thereof connected to said platform substantially centrally thereof for supporting said platform, means operatively connected to said lever arms for actuating pivoting thereof to thereby cause raising of a transverse crossbar and hoisting of said platform from a lower rest position to an upper operative position, the improvement in which said substantially vertical guide means have bottom end portions which are sloped with respect to the remainder vertical portions thereof such that said platform is caused to tilt during raising thereof by passage of said pairs of rollers from said sloped to said vertical portions of said guide means, and wherein the rollers of each pair are mounted on a respective supporting means connected to said platform laterally thereof, said supporting means including at least one fixed and one removable portion reciprocally connectible in selected posi-

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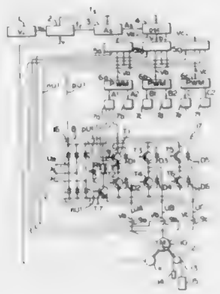
tions by removable coupling means for connecting said fixed and said removable portions to thereby permit repositioning of said rollers with respect to said platform, whereby tilting of said platform is selectively adjustable for optimum fitting thereof to the available parking space.

4,804,067

INVERTER CONTROL APPARATUS FOR ELEVATOR MOTOR

Matti Kähkipuro, Kauppalankatu 3, 05800 Hyvinkää , Finland

Filed Mar. 16, 1987, Ser. No. 26,028
Claims priority, application Finland, Mar 19, 1986, 861146
Int. Cl.⁴ B66B *1/30*
U.S. Cl. 187—119 **10 Claims**



1. An apparatus for controlling a three-phase inverter supplying the a.c. motor of an elevator;

said inverter having a power stage implemented using semiconductor switches; and

said apparatus comprising

electronic control means (1) for producing a velocity reference value (v*);

tachometer generator means (11) for producing an actual velocity value (v);

voltage measuring means (9*a*–9*c*) for measuring phase voltages at the inverter output;

pulse width modulator means (6*a*–6*c*) and controller means for controlling semiconductor switches in said inverter power stage by control signals (A1,A2,B1,B2,C1,C2) obtained from said pulse width modulator means (6*a*–6*c*);

speed regulator means for forming the frequency (fr) of the rotor current and the frequency (fs) of the reference input voltages from said actual velocity value (v) and from said velocity reference value (v*);

curve calculator means for forming the amplitude of the reference voltages from said rotor current frequency (fr) and from the frequency (fs) of said reference input voltages;

three-phase oscillator (4) means for forming additional reference voltages (Va*,Vb*,Vc*) from the frequency (fs) and the amplitude (As) of said reference input voltages; and

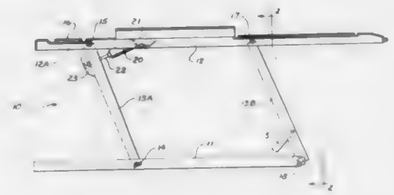
voltage regulator means (5*a*–5*c*) for producing control voltages (Va',Vb',Vc') for controlling said pulse width modulator means (6*a*–6*c*) from said additional reference voltages (Va*,Vb*Vc*) and from the actual value voltages (Va,Vb,Vc) obtained from the output of said inverter.

4,804,068

VEHICLE ELEVATING APPARATUS AND METHOD OF ASSEMBLY THEREOF

Edward V. Carter, Edwardsville, Ill., assignor to Hunter Engineering Company, Bridgeton, Mo.

Filed Jun. 17, 1987, Ser. No. 63,069
Int. Cl.⁴ B60S *13/00*
U.S. Cl. 187—8.72 **8 Claims**



1. A vehicle elevating apparatus comprising:

(a) a pair of assemblies each including a base, a runway on which a vehicle is lifted, and leg means pivotally interconnecting the runway with the base, the pair of assemblies being movable to assume cooperative side-by-side positions with the runways in parallel spaced apart positions to substantially match the vehicle wheel tread dimension;

(b) motor means operatively mounted in each of said pair of assemblies for effecting the elevation of said runway relative to said base by causing said leg means in each of said pair of assemblies to coordinate the elevating of said runway away from said base so that said runways remain substantially horizontal to level the vehicle as it is elevated; and

(c) motion equalizing means interconnecting at least one leg means in each of said pair of assemblies, said motion equalizing means including an elongated and torsionally stiff member extending between said pair of assemblies and crank arm means secured adjacent the opposite ends of said torsionally stiff member and engaged with said at least one leg means in each of said pair of assemblies, said torsionally stiff member and crank arm means serving to maintain said runway in each of said pair of assemblies upon elevation at substantially the same distance from said bases.

4,804,069

CONTIGUOUS FLOOR CHANNELING ELEVATOR DISPATCHING

Joseph Bittar, and Kandasamy Thangavelu, both of Avon, Conn., assignors to Otis Elevator Company, Farmington, Conn.

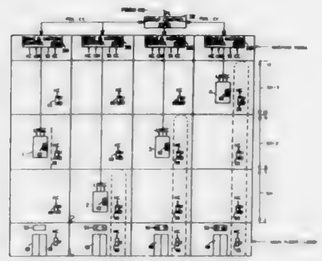
Filed Feb. 12, 1988, Ser. No. 157,542
Int. Cl.⁴ B66B *1/20*
U.S. Cl. 187—125 **12 Claims**

1. An elevator system comprising a plurality of cars for transporting passengers from a main floor to a plurality of contiguous floors above or below the main floor; car call means for entering car call for each car; indicating means at the main floor for indicating the intended floor stops for a car; car motion control means for moving each car; car position means for providing a position signal indicating the location of the car; door control means for controlling the opening and closing of the doors on each car; and a controller for providing signals that control the operation of the motion control, the door control means and the indicating means in response to the position signals and car calls, characterized in that:

said controller comprises signal processing means providing signals:

for dividing the floors in the building into a plurality of sectors, less than or equal to the plurality of cars, each sector comprising one or more contiguous floors, the sectors being contiguous with each other;

for assigning a sector exclusively to one of the cars during a cycle of a cyclical assignment sequence that assigns a sector exclusively to one car during one cycle according to a preset sector order and a preset car order as a car approaches a particular position relative to the main floor for receiving passengers at the main floors;



for allowing a car to move away from the main floor in response to car calls only if the car calls are to floors in the sector assigned to the car;

for indicating on the indicating means the floors in a sector assigned to a car; and

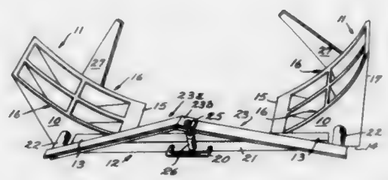
for assigning a different sector to said one car if car calls meeting preset criteria are not made to floors in the sector after the sector is assigned to the car.

4,804,070

LOCKABLE VEHICLE WHEEL CHOCK DEVICE

Gerard M. Bohler, R.D. #2, Box 528, Pine Grove, Pa. 17963

Filed Jul. 29, 1988, Ser. No. 226,119
Int. Cl.⁴ B60T *3/00*
U.S. Cl. 188—32 **8 Claims**



1. A vehicle wheel locking chock comprising a pair of wedge shaped chocks each having a bottom surface adapted to rest on the ground and from a pointed forward end of which a vertically oblique wedge surface adapted to contact the perimeter of a vehicle tire extends rearwardly between chock side surfaces to an upper portion of the rear end surface of the chock, spacing bar means affixed to each said chock for interconnecting said pair of chocks with said chock bottom surfaces in a substantially coplanar relationship and the respective oblique wedge surfaces of said pair of chocks in a facing relationship spaced apart at a distance such that the space between said respective chock wedge surfaces defines a region to be occupied by a lower portion of a vehicle tire, an elongated support rod extending transversely of each chock between said side surfaces, first and second elongated arms rigidly affixed to opposite ends of each said support rod exteriorly of a chock side surface to extend outwardly and transversely of the longitudinal axis of said rod, and means rotatably supporting each said rod for rotation about its longitudinal axis between an open position in which said first and second arms extend outside the face of said space between said chock oblique wedge surfaces defining said tire region and a closed position in which said first and second arms extend across the face of said space between said chock oblique wedge surfaces defining said tire region.

4,804,071

CARBON BRAKE DISC GROOVES PREVENTING CYCLOIDAL VIBRATION

Max L. Schultz, Niles, Mich., and Raymond J. Black, South Bend, Ind., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Apr. 15, 1988, Ser. No. 181,781
Int. Cl.⁴ F16D *55/36, 13/00, 65/10*
U.S. Cl. 188—71.5 **4 Claims**



1. In a multi-disc brake having rotor discs and stator discs positioned between an axle and a wheel rotatably supported on the axle, the stator discs connected operatively at radially inner peripheries to the axle and the rotor discs interleaved between the stator discs and connected operatively at radially outer peripheries to the wheel, means carried by the brake for compressing the interleaved discs, certain ones of the stator discs having adjacent the inner periphery thereof an annular stator groove disposed in each radial surface of the respective stator disc, each of the annular stator grooves commencing substantially contiguous with an adjacent radially inner axial edge of an adjacent rotor disc and extending radially inwardly a predetermined distance within the respective radial surface of the stator disc, and each of said rotor discs having adjacent the outer periphery thereof an annular rotor groove disposed in each radial surface of the respective rotor disc, each of the annular rotor grooves commencing substantially contiguous with an adjacent radially outer axial edge of an adjacent stator disc and extending radially outwardly a predetermined distance within the respective radial surface of the rotor disc, the annular rotor and stator grooves within the discs effecting the minimization of unstable rotor cycloidal motion.

4,804,072

DRUM BRAKE WITH AUTOMATIC ADJUSTMENT LOCKED AT HIGH TEMPERATURE

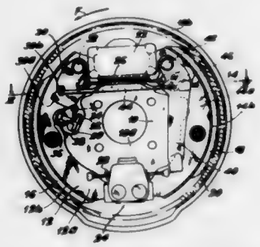
Eric Michoux, Villiers-sur Marne, and Michel Desree, Aulnay-sous-Bois, both of France, assignors to Bendix France, Drancy, France

Filed Feb. 8, 1988, Ser. No. 153,169
Claims priority, application France, Feb. 12, 1987, 87 01758
Int. Cl.⁴ F16D *51/52, 65/54, 65/64, 51/20*
U.S. Cl. 188—79.52 **2 Claims**

1. A drum brake with automatic adjustment, comprising a support plate on which is slidably mounted first and second brake shoes having friction elements capable of being brought into fricitonal engagement against a rotating drum by means of a brake motor interposed between two adjacent ends of the shoes, an adjusting lever one end of which is articulated on the end of the first brake shoe, a spacer interposed between the shoes and near the brake motor, first elastic means stressing the ends of the shoes toward the spacer so as to bring the adjusting lever against the spacer when the brake motor is not actuated in order to define a spacing distance at rest between the ends of the shoes, and a pawl mounted on the first brake shoe and stressed elastically against a toothed quadrant formed at the other end of the adjusting lever so as to allow the adjusting lever to rotate only in a direction tending to increase the spacing distance at rest, the spacer and adjusting lever interacting

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with one another via a connection defining a functional play when the brake motor is not actuted, the connection capable of controlling the rotation of the adjusting lever in said direction when the motor is actuated, characterized in that a blocking member carried by a temperature-sensitive member immobilizes the pawl against the toothed quadrant when the temperature is higher than a given temperature threshold, the temperature-sensitive member comprising a bimetallic strip connected with the first brake shoe at a first end and carrying the blocking



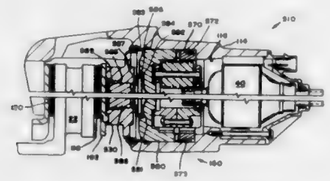
member at a second end, the blocking member comprising a fork with two prongs straddling a projecting part of the pawl, the prongs defining therebetween a clearance having two zones of different width, a first zone of the clearance having a width slightly greater than a width of the projecting part and being aligned with the projecting part when the temperature is higher than the threshold, and the second zone fo the clearance having a width much greater than the width of the projecting part and being aligned with the projecting part when the temperature is below the threahold.

4,804,073

ELECTRICALLY OPERATED DISC BRAKE WITH BACK-OFF PROTECTOR

Alistair G. Taig, Edwardsburg, Mich.; Robert W. Jackson, South Bend, and Richard N. DeHays, Mishawaka, both of Ind., assignors to Allied-Signal Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 946,400, Dec. 23, 1986. This application Apr. 19, 1988, Ser. No. 183,576
Int. Cl.⁴ F16D *55/16*
U.S. Cl. 188—72.1 7 Claims



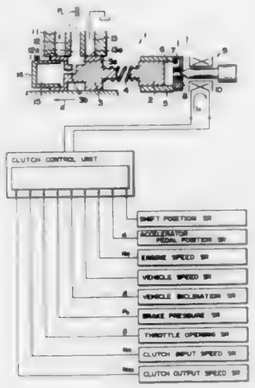
1. A disc brake that may be operated by motor means, comprising a caliper having a bore with a nut disposed at an end thereof, the caliper and nut actuatable to displace a pair of friction elements into engagement with a rotor, a planetary gear assembly disposed within said bore and comprising a sun gear, planetary gears, and a pair of ring gears, and motor means coupled with said sun gear which drives the planetary gears, one ring gear frictionally engaging the bore of said caliper and the other ring gear rotatable by said planetary gears, the other ring gear engaging nonrotatably screw means which is connected with said nut, operation of said motor means causing rotation of said other ring gear and displacement of said nut into engagement with one of said friction elements so that the caliper, by reaction, displaces the other friction element into engagement with said rotor, the one ring gear having resilient means disposed thereat between the one ring gear and the bore of the caliper, the resilient means effecting in one direction of rotation of the other ring gear a low frictional engagement between said one ring gear and bore and in another direction of rotation of said other ring gear a high frictional engagement between said one ring gear and bore, whereby rotation of said other ring gear in the one direction of rotation may cause the one ring gear to rotate relative to said housing.

4,804,074

AUTOMATIC CLUTCH CONTROL APPARATUS

Yasuo Kori, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 26, 1987, Ser. No. 19,192
Claims priority, application Japan, Feb. 27, 1986, 61-40163
Int. Cl.⁴ B60K *41/28*
U.S. Cl. 192—0.044 15 Claims



1. A control apparatus for an automatic clutch for use in an automotive vehicle, said control apparatus comprising:
- a pressure regulating valve having a valve spool for selectively connecting clutch actuating pressure to line pressure and a drain, and
- control means for controlling said pressure regulating valve and including:
- means for providing signals indicative of vehicle inclination, braking torque and engine drive torque when the clutch is off,
- means operative under a condition where the engine drive torque is greater than the sum of the braking torque and a directionally adverse torque, which is due to vehicle inclination, attempting to move the vehicle in an adverse direction, for displacing the valve spool of said pressure regulating valve in a direction which will increase the clutch actuating pressure when the braking torque is smaller than the directionally adverse torque, and in a direction which will decrease the clutch actuating pressure when the braking torque is greater than said directionally adverse torque.

4,804,075

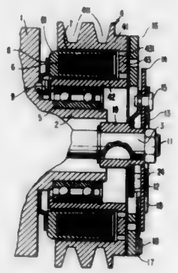
ELECTROMAGNETIC CLUTCH

Takatoshi Koitabashi, Annaka, Japan, assignor to Sanden Corporation, Isesaki, Japan

Filed Jun. 30, 1987, Ser. No. 67,880
Claims priority, application Japan, Jul. 10, 1986, 61-160507
Int. Cl.⁴ F16D *27/10, 3/12, 3/68*
U.S. Cl. 192—84 C 4 Claims

1. In an electromagnetic clutch including a first rotatable member having an axial end plate of magnetic material, a

second rotatable member connected to a drive shaft, an annular armature plate of magnetic material disposed to face said axial end plate of said first rotatable member with an axial gap therebetween, said annular armature plate being capable of limited axial movement, and electromagnetic means associated with said axial end plate for attracting said armature plate to said axial end plate of said first rotatable member, the improvement comprising a radial flange formed on said second rotatable member and provided with a plurality of pairs of first



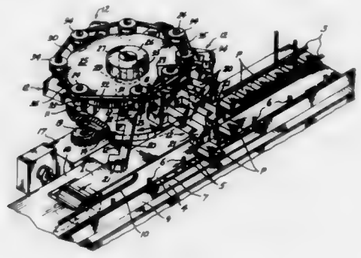
projecting portions on an axial end surface thereof, a damper plate disposed adjacent said armature plate and connected with said armature plate through a plurality of leaf springs, said damper plate having a plurality of pairs of second projecting portions each pair of which face and interfit a pair of said first projecting portions on said radial flange and an elastic member positioned between each pair of interfitting pairs of said first and second projecting portions to absorb torsional and vibrational forces upon activation of said electromagnetic clutch.

4,804,076

PIECE-SPACING TRANSFER MECHANISM

Vincent C. Pace, Redmond, Wash., assignor to Formost Packaging Machines, Inc., Woodinville, Wash.

Filed May 14, 1987, Ser. No. 51,106
Int. Cl.⁴ B65G *37/00*
U.S. Cl. 198—475.1 9 Claims



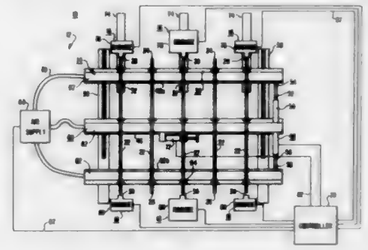
1. In piece-spacing transfer mechanism including a supply conveyor for supplying pieces in substantially abutting relationship, a discharge conveyor parallel to the supply conveyor and moving in the same direction for transporting in spaced apart relationship pieces received from the supply conveyor, a power-driven rotary disk mounted adjacent to the supply conveyor and at the side of the supply conveyor opposite the discharge conveyor, a circular row of pushers carried by the rotary disk, pivots spaced equidistantly radially from the pivot axis of the disk and pivotally mounting the pushers on the disk and means for swinging the pushers relative to the disk to enable the pushers to engage successive pieces on the supply conveyor and push them onto the discharge conveyor in a direction perpendicular to the directions of movement of the conveyors, the improvement comprising the pushers being bell cranks having thrust arms for engagement with the pieces to be transferred from the supply conveyor to the discharge conveyor and side control arms, a stationary cam superposed with respect to the carrier disk, and cam followers carried by said side control arms of said bell cranks and engageable with the periphery of said cam, the major portion of the periphery of said cam being of circular arcuate shape concentric with the axis of rotation of the carrier disk and a portion of the periphery of said cam adjacent to the conveyors being somewhat flattened to effect swinging of said bell cranks relative to said carrier disk as they approach the conveyors to direct the thrust arms of said bell cranks into attitudes generally perpendicular to the directions of movement of the conveyors for pushing pieces from the supply conveyor onto the discharge conveyor transversely of the direction of movement of the conveyors.

4,804,077

TUBE END PROCESSING SYSTEM

Clarence D. John, Jr., Penn Hills Twp., Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 29, 1987, Ser. No. 55,561
Int. Cl.⁴ B65G *47/00*
U.S. Cl. 198—339.1 11 Claims



7. A conveyor system comprising:
- a first stationary support rail;
- a second stationary support rail disposed apart from and substantially parallel to said first stationary support rail;
- a plurality of walking beams slidably disposed on and generally perpendicular to said support rails with each having an inflatable bladder mounted on the top thereof for lifting, supporting and moving objects along the length of said walking beams; and
- drive means connected to said walking beams for selectively and independently sliding said walking beams relative to each other on said rails.

4,804,078

SORTING DEVICE FOR CONVEYOR BELT SYSTEMS

Mario Scata' , Teramo, Italy, assignor to Meccanizzazione Postale E Automazione SpA (MPA), Teramo, Italy

PCT No. PCT/EP86/00310, § 371 Date Feb. 2, 1987, § 102(e) Date Feb. 2, 1987, PCT Pub. No. WO86/07338, PCT Pub. Date Dec. 18, 1986
PCT Filed May 20, 1986, Ser. No. 13,985
Claims priority, application Italy, Jun. 13, 1985, 22178/85[U]
Int. Cl.⁴ B65G *47/00*
U.S. Cl. 198—346.2 7 Claims

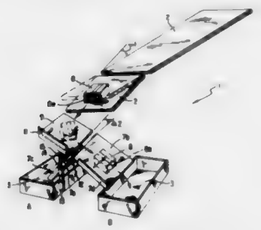
1. A sorting device for use with a conveyor belt which transports objects to a delivery end at which the sorting device is located, the device comprising:
- (a) means forming first and second guide surfaces arranged at the delivery end of the conveyor belt, said guide surfaces extending transversely to the direction in which the

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objects are conveyed and being inclined downwardly towards opposite sides of the conveying direction;

(b) a generally flat guide element having opposite first and second faces; and

(c) means for moving said guide element between first and second operative positions, said guide element, when it is in its first position, having its first face inclined downwardly toward one of said sides and being generally in alignment with said first guide surface; said guide element,



when it is in its second position, having its second face inclined downwardly toward the other of said sides and being generally in alignment with said second guide surface; said guide element, in each of its operative positions, being located to receive objects as they leave the delivery end of the conveyor belt, in consequence of which objects may be routed via the respective guide surfaces to the opposite sides of the conveying direction depending on which operative position said guide element occupies.

4,804,079

APPARATUS FOR TRANSPORTING GROUPS OF ROD-SHAPED ARTICLES OF THE TOBACCO PROCESSING INDUSTRY

Gerhard Hensgen, Hamburg, and Siegfried Schlisio, Geesthacht; both of Fed. Rep. of Germany, assignors to Körber AG, Hamburg, Fed. Rep. of Germany

Filed Oct. 20, 1987, Ser. No. 111,402

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1986, 3637005

Int. Cl.⁴ B65G *47/68*

U.S. Cl. 198—450 **17 Claims**



1. Apparatus for transporting rod-shaped articles of the tobacco processing industry, comprising means for supplying a first and a second file of rod-shaped articles, the articles of each file being coaxial with one another and the articles of said files being disposed at a predetermined distance from each other; first conveyor means having means for simultaneously removing articles from each of said files and for transporting the articles along a first path, said removing means having first and second receptacles disposed at said predetermined distance from each other and each of said removing means having a plurality of receptacles each arranged to receive an article, said first conveyor means further comprising means for orbiting said removing means in a predetermined plane and said first and second files being disposed in a second plane which makes with said predetermined plane an acute angle and is inclined with reference to the predetermined plane about an axis which is parallel to said files; and second conveyor means having means for simultaneously accepting a plurality of articles from said removing means for transport along a second path, the articles in one of said paths being transported axially and the articles in the other of said paths being transported substantially transversely of their respective axes.

4,804,080

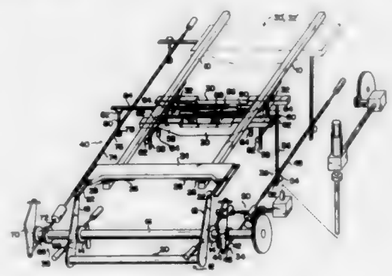
WORK INDEXING MECHANISM WITH A HEIGHT ADJUSTMENT FOR A PAIR OF TRANSFER BARS

Kiyokazu Baba, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 415,820, Sep. 8, 1982, abandoned. This application May 6, 1985, Ser. No. 731,620

Int. Cl.⁴ B65G *25/04*

U.S. Cl. 198—621 **4 Claims**



1. An apparatus wherein a pair of transfer bars, extending horizontally in parallel spaced relation to each other, are reciprocated longitudinally and moved up and down and toward and away from each other for transporting work through a succession of processing stations, a mechanism for imparting the up-and-down motion to the pair of transfer bars, comprising:

(a) lift carrier means for carrying the transfer bars to as to allow their longitudinal reciprocation and movement toward and away from each other;

(b) a lift cam mechanism;

(c) a rack-and-pinion linkage between the lift cam mechanism and the lift carrier means for moving the latter, and therefore the transfer bars, up and down in response to the operation of the lift cam mechanism;

(d) a cylinder actuated height adjustment mechanism providing a variable length of connection between the lift cam mechanism and the rack-and-pinion linkage for adjustably varying the upper and lower limits between which the transfer bars are moved up and down and wherein the apparatus further includes means for yieldably urging the transfer bars upwardly, and wherein the cylinder actuated height adjustment mechanism includes:

(i) a first link operatively connected at one end to the lift cam mechanism thereby to be reciprocated longitudinally,

(ii) an abutment housing rotatably engaged with another end of the first link and constrained to joint reciprocation therewith, the abutment housing generally extending away from the first link in co-linear relation thereto;

(iii) a hollow, multiple abutment member fixedly mounted in the abutment housing and providing a plurality of abutments in various angular positions about the axis of

rotation of the abutment housing relative to the first link and at various distances from the first link;

(iv) a second link slidably extending through the multiple abutment member for both relative rotation and lonitudinal displacement and coupled at one end to the rack-and-pinion linkage, the second link being longitudinally biased away from the first link by the yieldably urging means;

(v) hook means on another end of the second link for selective engagement with the abutments of the multiple abutment member depending upon the angular position of the latter relative to the second link; and

(vi) drive means acting on the abutment housing to vary the angular position of the multiple abutment member relative to the second link and said hook.

4,804,081

APPARATUS FOR A SLIPLESS CONVEYANCE OF DISCRETE ARTICLES

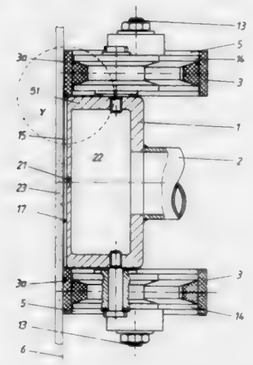
Karl Lenhardt, Neuhausen-Hamberg, Fed. Rep. of Germany, assignor to Lenhardt Maschinenbau GmbH, Neuhausen-Hamberg, Fed. Rep. of Germany

Filed Oct. 31, 1986, Ser. No. 925,615

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1985, 3539876

Int. Cl.⁴ B65G *17/46, 47/91*

U.S. Cl. 198—689.1 **34 Claims**



1. In apparatus for a slipless conveyance of discrete articles, particularly of glass plates in a predetermined direction of travel, comprising

an elongate carrier, which extends in said direction of travel and has a forward side and is provided on said forward side with a vacuum channel, which is forwardly open and has at least one suction port,

a vacuum source communicating with said suction port,

two parallel endless belts, which extend on opposite sides of said vacuum channel in said direction of travel and comprise each a working course, which has a forward surface, said forward surfaces extending substantially in a common plane of travel and being adapted to contact one of said discrete articles so as to receive all the suction force exerted on the discrete articles, and which working courses are so arranged with respect to the vacuum channel that they form sealing elements to laterally seal the vacuum channel where it is covered by the discrete articles, and

drive means operable to move both said belts in said direction of travel at the same velocity, and a plurality of backing rollers are provided, which are in contact with said working course of each of said belts on the rear thereof.

4,804,082

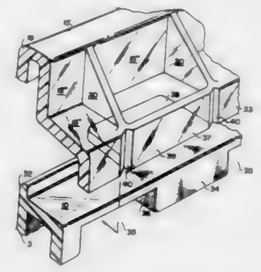
SECURITY BOX HAVING SLIDING CLOSURE

Eric D. Stein, Cincinnati, Ohio, assignor to Buckhorn, Inc., Milford, Ohio

Filed Apr. 8, 1987, Ser. No. 35,994

Int. Cl.⁴ A45C *13/10, 13/18*

U.S. Cl. 206—1.5 **13 Claims**



1. In a security storage box for papers of a similar size, such as checks, having:

a one-piece molded synthetic resin open-topped container having opposed generally parallel side walls, opposed generally parallel end walls, and a rectangular bottom wall;

the upper edge portions of said side and end walls including integrally formed outwardly extending horizontal flanges connected together around subsantially the entire upper periphery of said container to constitute container side and end flanges, said container side flanges having a plurality of through container side apertures;

a lid separate from said container and integrally molded from synthetic resin in one piece, said lid being of a size and a rectangular shape to close the open top of said container, said lid having a peripheral lid flange overlying said container flanges, said lid integrally being formed with a plurality of lid side hooks depending in one piece in alignment with and to extend through said through container side apertures;

said lid hooks and through container side apertures being of a size and shape so that in a disengaged position, said lid may be translated vertically downward to a closed position on said container with said lid side hooks extending completely through said container apertures and thereafter translated horizontally parallel to said side walls to a locked position to engage said lid side hooks beneath said container side flanges;

said lid integrally being formed with end lid hooks extending in one piece from each end and extending beneath said container end flanges when said lid is translated horizontally from said closed position to said locked position;

at least one pair of aligned through security apertures, respectively extending vertically through the container flange on one end wall and an adjacent portion of said lid flange for constituting lock means to receive a security tie and secure said lid and container against horizontal translation from said locked position to said closed position; and

the improvement comprising at least one end lid hook extending beneath one of said container end flanges along one of said end walls having means for breaking said end lid hook off of said lid and providing a tampering indicator if said lid and said container are forced apart by a prying force exerted between said lid and said container along said one end wall without moving said lid as a whole in translational movement from said locked position to said closed position, said breaking means further remaining integral with said lid end when said lid is moved as a

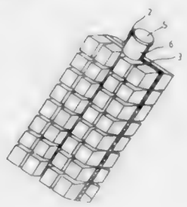
whole in translational movement from said locked position to said closed position.

4,804,083

COMBINATION WATER/ICE CUBE BOTTLE

Philip A. Weeks, 84 Ellice Street, Wellington, New Zealand

Filed Jan. 9, 1987, Ser. No. 59,967
Int. Cl.[4] B65D *17/28, 49/12*
U.S. Cl. 206—216 **3 Claims**



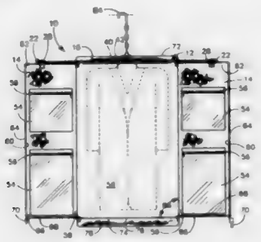
1. A package comprising a container having a body of self-supporting plastic material defining an internal reservoir, means in the reservoir for molding water into a plurality of separable ice chunks, water in a liquid or solid state at least partially filling the reservoir, means on the body for destructively opening the reservoir to allow extraction of ice chunks therefrom, means providing a resealable tamper proof closure for the reservoir, and the body having a base means for stably supporting the container with the opening located above the reservoir wherein the means providing the opening includes a sealed closure with a tear strip for irreversibly releasing the closure and wherein the tear strip extends at least partially around the body of the container to form said means for destructively opening the reservoir.

4,804,084

GARMENT BAG TRANSFORMABLE INTO A VALET

Mark J. Markovich, Iowa Falls, Iowa, assignor to Welsh Sporting Goods Corp., Iowa Falls, Iowa

Filed Oct. 26, 1987, Ser. No. 112,612
Int. Cl.[4] A45C *5/06, 13/34*
U.S. Cl. 206—283 **15 Claims**



10. An improved garment bag having a top gusset and two vertically-split closure panels, each being pivotally attached to an opposing side gusset of said garment bag, the improvement comprising:

a rigid housing;

a means to attach said housing to said top gusset;

means including at least two rigid arm members slideably extendable outwardly from and slideably retractable inwardly into said housing, each of said arm members having an end portion; and

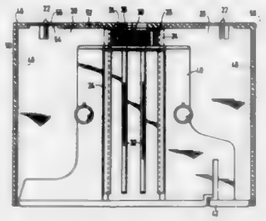
a means for releasable attachment of each of said end portions of said arm members to each of said closure panels, whereupon opening said garment bag, each of said two rigid arm members is slideably extended outwardly from said housing and transversly beyond said side gusset and is releaseably attached to each of said closure panels to retain said closure panels in an open, upright configuration and, whereupon closing said garment bag, each of said two arm members is detached from each of said closure panels and is slideably retracted inwardly into said housing whereby both of said end portions are disposed between said side gussets for stowing said housing and said two arm members within said garment bag.

4,804,085

DEVICE FOR STORING FLAT RECORDING MEDIA

Peter Ackeret, Kusnacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Chur, Switzerland

Continuation of Ser. No. 852,458, Apr. 1, 1986, abandoned. This application Sep. 3, 1987, Ser. No. 92,434
Int. Cl.[4] B65D *85/57, 85/672*
U.S. Cl. 206—309 **32 Claims**



1. A device for storing flat recording media comprising:

a housing having a top wall, side walls, a rear wall and an open front;

at least one plate member disposed in said housing opposite said top wall, said plate member cooperating with said housing walls to define at least one compartment in said housing, said plate member including guide rails positioned in said compartment;

a slider member in each said compartment, each said slider member having a bottom which defines a recording media support surface, said slider members cooperating with plate member guide rails whereby said slider members are moveable through said housing open front between an inserted portion where a recording media supported on said support surface is located in a said compartment and an ejected position in which recording media can easily be removed from the slider member;

a spring in each said compartment for biasing the slider member in the compartment toward its ejected position, each said spring assuming an extended configuration when its associated slider member is in the inserted position, a tensioned, bias-producing portion of each said spring being positioned between a said slider bottom and a said plate member when in said extended configuration, said spring members pulling said slider members from the inserted toward the ejected position of the slider members; and

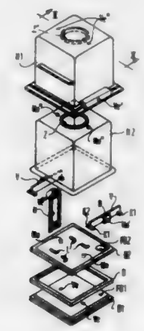
manually releasable locking means for holding each slider member in its inserted position against the bias of an associated said spring.

4,804,086

TRANSPORT CONTAINER WITH AN INTERCHANGEABLE INSIDE CONTAINER

Peter Grobrock, Hochenkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 16, 1987, Ser. No. 133,810
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1986, 3644034
Int. Cl.[4] B65D *85/00*
U.S. Cl. 206—328 **11 Claims**



1. A transport container for transporting and storing semiconductor wafers in a semiconductor wafer cassette, comprising:

an outside hood;

an outside bottom plate;

an inside hood;

an inside bottom plate that forms a closed inside container with said inside hood;

first and second closing levers for non-positive closing of said outside hood with said outside bottom plate;

a sealing element for air-tight closure of said transport container; and

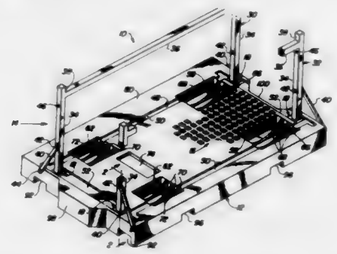
an interchangeable semiconductor wafer holder secured to said inside hood and hingedly moveable relative to said transporting container.

4,804,087

SHIPPING STAND FOR LAWN AND GARDEN TRACTORS

Timothy M. Smith, Davenport, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jan. 21, 1988, Ser. No. 146,502
Int. Cl.[4] B65D *21/02, 85/68*
U.S. Cl. 206—335 **25 Claims**



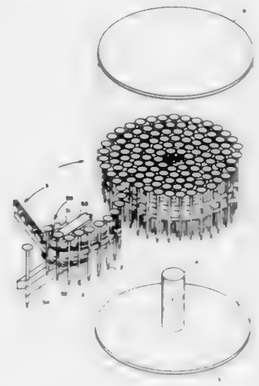
1. A stackable, knockdown shipping stand for a multi-wheeled motor vehicle, comprising: a pallet forming a generally horizontal base of the stand and being generally rectangular in plan view so as to define four corners and having upper and lower surfaces; upper and lower, vertically aligned stake pockets being located adjacent each corner; a stacking framework including four vertical posts, each having a lower end releasably received in a respective one of the upper stake pockets and having an upper end adapted for reception in a respective one of lower stake pockets of a pallet like said pallet; brace means releasably attached between each post and the pallet; nesting groove means provided in the upper surface of the pallet for receiving the framework in a knocked-down condition; wheel engaging means located on the upper surface of the pallet adapted for engaging each of the wheels of a motor vehicle to be loaded on the pallet so as to stabilize the vehicle for shipping.

4,804,088

ASSEMBLY OF COLLATED NAILS FOR AUTOMATIC NAILERS

Donald K. MacDonald, 1180 Kilkare Rd., Sanol, Calif. 94586

Filed Mar. 11, 1988, Ser. No. 166,667
Int. Cl.[4] F16B *15/08*
U.S. Cl. 206—346 **10 Claims**



1. An assembly of collated nails comprising:

a plurality of nails;

an elongated supporting means; and

a flexible, nonhardening adhesive material which is supported by said supporting means and in which said nails are partially embedded for holding said nails on said supporting means until a predetermined force applied to said nails removes said nails from said adhesive material.

4,804,089

WRAP-AROUND ARTICLE CARRIER WITH END FOLD-IN PANEL

Jerry F. Wilson, West Monroe, La., assignor to Manville Corporation, Denver, Colo.

Filed Dec. 7, 1987, Ser. No. 130,031
Int. Cl.[4] B65D *65/12, 75/14*
U.S. Cl. 206—435 **9 Claims**

1. In a paperboard wrap-around article carrier including a top panel having side edges and end edges, side panels having upper edges and end edges, the upper edges of the side panels being connected to the side edges of the top panel by fold lines, and a bottom panel connecting the side panels, the improvement comprising:

end panels connected by fold lines to the end edges of the top panel, each end panel having an unconnected bottom

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edge and unconnected side edge portions adjacent the unconnected bottom edge;

gusset panels connecting the end panels to the side panels;

each gusset panel being connected by a first fold line to a portion of the associated side panel near the fold line connecting the side panel to the top panel;

each gusset panel being connected by a second fold line to a portion of the associated end panel near the fold line connecting the end panel to the top panel;

the second fold lines terminating in lowermost ends spaced a substantial distance from the bottom edge of the associated end panel; and

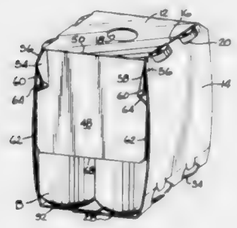
each gusset panel further having a lower edge extending outwardly from the lowermost end of the associated second fold line to the adjacent end edge of the associated side panel;

the second fold lines connecting the gusset panels to an end panel being spaced apart a distance less than the distance between the unconnected side edge portions of the end panel.

5. A paperboard production blank for forming a wrap-around article carrier, comprising:

a top panel section having end edges and side edges;

side panel sections connected by fold lines to the side edges of the top panel section and to bottom panel sections, the side panel sections having end edges;



the distance between the end edges of the top panel section being less than the distance between the end edges of the side panel sections;

end panels connected by fold lines to the end edges of the top panel section, the end panels having an unconnected bottom edge and unconnected side edge portions adjacent the unconnected bottom edge;

gusset panels connecting the end panels to the side panel sections;

each gusset panel being connected by a first fold line to the adjacent side panel section;

each gusset panel being connected by a second fold line to the adjacent end panel, the second fold lines extending substantially parallel to the side edges of the end panels;

each first fold line forming an acute angle with the adjacent second fold line;

the second fold lines terminating at a point located a substantial distance from the bottom edge of the end panels; and

each gusset panel further having an edge extending from the termination point of the associated second fold line to the adjacent end edge of the associated side panel;

the distance between the second fold lines connecting the gusset panels to an end panel being less than the distance between the unconnected side edge portions of the end panel.

4,804,090

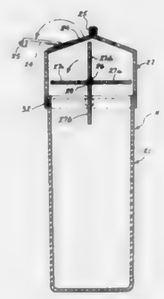
SHARPS DISPOSAL SYSTEM

Ronald A. Schuh, 3618 N. 97th Pl., Milwaukee, and Ralph A. Felton, 8710 N. Kildeer, Brown Deer, both of Wis. 53222

Filed Aug. 28, 1987, Ser. No. 90,332

Int. Cl.[4] B65F *1/16*

U.S. Cl. 206—366 12 Claims



1. A disposal container comprising:

a generally closed hollow container adapted to receive and retain articles;

an access opening formed in said container for receiving articles therein;

means interacting with said container and with said access opening for controlling access to said container through said opening;

said access control means comprising a plurality of members defining articles receiving surfaces adapted to be sequentially positioned to receive articles through said opening and restricting access to the inside of said container.

4,804,091

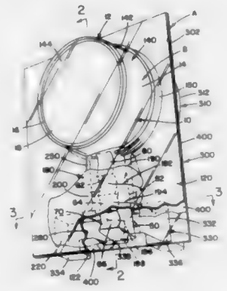
PACKAGING FOR HAND-HELD PRODUCT

William J. Segal, Torrance, Calif., assignor to Mr. Gasket Company, Cleveland, Ohio

Filed Mar. 31, 1988, Ser. No. 176,215

Int. Cl.[4] B65D *73/00*

U.S. Cl. 206—457 13 Claims



1. A self-sustaining package for encapsulating and displaying a hand-held consumer product, said product including an upper housing containing a manually manipulative implement with a front portion facing in a forward direction and a rearwardly facing back portion and a rigid, downwardly depending, generally elongated handle fixed to said upper housing and extending in a direction generally orthogonal with respect to said forward direction, said product having a vertical plane

extending in the orthogonal direction of said handle and generally between said front and back portions, said front portion extending from said plane having a maximum peripheral shape in the direction parallel to said plane and a protruding profile extending a given distance outwardly from said plane, and said handle having a girth portion spaced below said housing and having an hand grip for receiving encircling fingers with a portion of said girth portion protruding in a forward direction from said plane, said package comprising: a clear, rigid, plastic front display sheet with a generally flat interface surface lying in said plane of said product, a first forwardly protruding cavity permanently formed in said display sheet with an outer peripheral shape generally matching, but larger than, said maximum peripheral shape of said extending front portion and a profile matching, but outwardly of, said protruding profile, and a second forwardly protruding cavity permanently formed into a selected shape in said display sheet with a form generally matching, but larger than, said protruding portion of said girth portion, said selected shape of said second cavity including a set of undulating ribs extending transversely across said girth portion as simulated fingers gripping said girth portion and a transversely extending hollow portion formed into a simulated hand and part of a simulated wrist extending transversely from said girth portion, and a back cover sheet joined with said display sheet to encapsulate said product.

4,804,092

NESTABLE CONTAINER

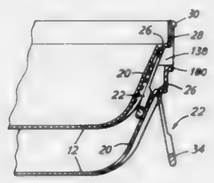
Wilfred L. Jones, Hereford, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Apr. 10, 1984, Ser. No. 598,594

Claims priority, application United Kingdom, Apr. 22, 1983, 8311027

Int. Cl.[4] B65D *21/02, 21/04, 25/28*

U.S. Cl. 206—579 7 Claims



1. A nestable unitary molded plastics container comprising: a base portion; a side wall portion extending upwardly from the perimeter of the base portion; and a carrying handle portion connected to said wall portion by a resilient hinge permitting said handle portion to be displaceable between a carrying configuration in which said handle extends outwardly away from said wall portion, and a nesting configuration in which said handle portion lies adjacent to the exterior of said wall portion so that the container is nestable within a like container with said handle portion of the inner container extending within the outer container.

4,804,093

METHOD AND APPARATUS FOR MECHANICALLY CLASSIFYING ROLLING BODIES

Kenneth M. Durow, Normoss, England, assignor to United Kingdom Atomic Energy Authority, London, England

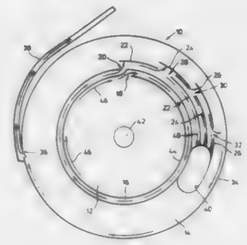
Filed Feb. 10, 1986, Ser. No. 827,886

Claims priority, application United Kingdom, Feb. 21, 1985, 8504451

Int. Cl.[4] B07C *9/00*

U.S. Cl. 209—691 16 Claims

1. A method of classifying bodies of cylindrical shape, each having a well-defined axis about which it can roll, so as to distinguish between those with asymmetrical defects from those without such defects, said defects being such that the tendency of the bodies to roll is reduced, said method being characterised by locating the bodies on a support surface, oscillating said surface to cause the bodies to move incrementally in the direction of the axes about which they are capable of rolling and guiding the bodies onto a separating zone of said



surface which is inclined at a shallow angle and slopes generally transversely to the direction of incremental motion of said bodies whereby those bodies without significant asymmetrical defects are caused to roll down the inclined separating zone whilst those with such defects traverse the inclined separating zone without rolling to be separated from those which roll down said separating zone.

4,804,094

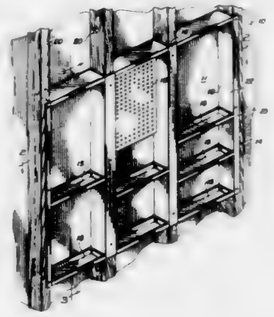
OPEN WALL STORAGE ASSEMBLY

William D. Eittreim, P.O. Box 659, Sun Valley, Id. 83353

Filed Nov. 13, 1987, Ser. No. 120,627

Int. Cl.[4] A47F *5/08*

U.S. Cl. 211—88 7 Claims



1. Storage apparatus for placement in an opening in a wall containing a number of uniformly spaced vertical wall support members which comprises:

(a) a large area panel having opposing vertical edges, said panel being dimensioned for placement in the wall opening and including at least one vertical receiving member for engagement with a vertical wall support member;

(b) vertical end members orthogonally affixed to said opposing edges of said panel and horizontally spaced in accordance with the spacing of the vertical support members;

(c) flange members orthogonally affixed to said vertical end members and extending outwardly therefrom parallel to said large area panel, the placement of said panel in the wall opening resulting in said end and flange members contacting adjacent surfaces of said support members for attachment thereto; and

(d) a plurality of transverse members dimensioned to fit

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between adjacent support members for attachment to said panel for imparting structural support thereto.

4,804,095

CUTOFF DEVICE FOR CRANE SYSTEMS

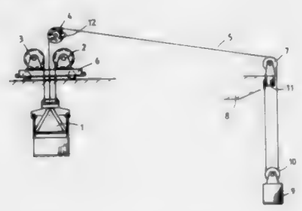
Wolfgang Rohr, and Jochen Bohr, both of Speyer, Fed. Rep. of Germany, assignors to Rohr GmbH, Speyer, Fed. Rep. of Germany

Continuation of Ser. No. 916,170, Oct. 7, 1986, abandoned. This application May 17, 1988, Ser. No. 198,703

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1985, 3536472

Int. Cl.[4] B66C *13/08*

U.S. Cl. 212—152 **5 Claims**



1. In an underwater dredging operation in which a garb bucket is raised and lowered by a hoist system including a lift cable attached to the grab bucket and a driven hoist gear for the cable, a method of turning off the hoist gear when the bucket reaches bottom, comprising the steps of:

connecting an additional cable to the bucket and guiding the additional cable over two pulleys;

suspending a weight on said additional cable to maintain tension on the additional cable whereby the additional cable turns the two pulleys as long as the bucket is descending;

providing means for monitoring continuous rotation of one of said two pulleys during a descent of the grab bucket, as long as said one pulley continues to be rotated by said additional cable under tension; and turning off the hoist gear when monitoring that said one pulley is no longer rotating as a result of the event of the bucket hitting bottom, in which event said additional cable goes slack and no longer turns said one pulley.

4,804,096

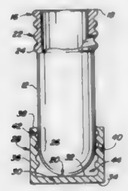
TAMPER RESISTANT CONTAINER

Claude J. Harding, 3520 E. Cannon Dr., Phoenix, Ariz. 85028

Filed Apr. 22, 1988, Ser. No. 184,978

Int. Cl.[4] B65D *51/24*

U.S. Cl. 215—228 **14 Claims**



1. A tamper resistant container comprising:

a. container having a hollow body with a continuous thin wall surface symmetrical with respect to a longitudinal axis extending through the center of an open mouth located at a first end of said body with a second end defined by the intersection of the longitudinal axis with the surface of said body, said mouth including an exterior surface having a threaded cap engagement surface, the surface of said body further including a load transfer surface located in proximity to the second end of said body and extending symmetrically with respect to the longitudinal axis of said container around the surface of said container, said container being positionable in a normal position or in an inverted position; and

b. a removable cap having a cylindrical disc section with substantially flat, unobstructed parallel first and second surfaces, a center, and a wall extending outward from the first surface of said disc section and including an end and a substantially cylindrical threaded surface for securing said cap to the cap engagement surface of said mouth, the wall of said cap further including a body support surface for engaging the load transfer surface of said body when said container is in the inverted position and maintaining said container in the inverted position with the cap removed from the mouth of said body and for transferring the weight of said container from the mouth through said cap to an underlying support surface when said container is in the normal position, wherein the mouth of said container may be secured to and supported by said cap when said container is in the normal position and wherein the body support surface of said cap contacts the load transfer surface of said container when said container is in the inverted position to transfer the weight of said container through said cap to said underlying support surface.

4,804,097

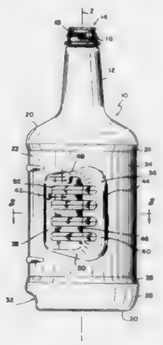
BOTTLE WITH NON-EVERTING HAND GRIP

Alfred C. Alberghini, Dunwoody, and Stephen R. Lynn, Douglasville, both of Ga., assignors to Sewell Plastics, Inc., Atlanta, Ga.

Filed Aug. 19, 1987, Ser. No. 87,042

Int. Cl.[4] B65D *1/02, 23/00, 23/10*

U.S. Cl. 215—100 A **12 Claims**



1. A thin-walled container composed of a strain-hardened polymer, comprising a neck portion defining an opening, a bottom portion, and a body portion intermediate the neck and bottom portions, the body portion including a generally cylindrical side wall of diameter D and an opposed pair of indentations to permit the container to be grasped between a thumb and fingers of one hand, the indentations each comprising a first vertical surface and a second vertical surface, the surfaces having outside vertical edges which are continuously joined to the cylindrical side wall, the first and second surfaces of each indentation having a common edge continuously joining the two surfaces, the second surface being inclined with respect to the first surface at an obtuse angle, and a plurality of vertically spaced-apart horizontal ribs extending continuously over at least a major portion of the horizontal width of both the first and second surfaces and the common edge, the outermost surfaces of the ribs extending parallel to the first and second surfaces and including a demarcation coincident with the common edge for inhibiting the everting of the indentations.

4,804,098

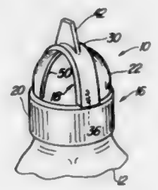
DISPENSING CLOSURE

Gary V. Montgomery, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Mar. 3, 1988, Ser. No. 164,848

Int. Cl.[4] B65D *41/04*

U.S. Cl. 215—238 **7 Claims**



1. A dispensing closure comprising, in combination:

a base cap having an annular skirt portion with means for attachment to the neck of a container and a rounded top portion extending upwardly from said skirt with a centrally located dispensing orifice therein;

a U-shaped sealing yoke having inwardly directed hinge pins at the free end of its legs engaging upwardly extending slots in the top portion of said base cap;

said yoke having a handle portion extending upwardly from said legs at the bight of said yoke and plug extending downwardly in the direction of said legs from the bight portion of said yoke for extending into and sealingly engaging said dispensing orifice;

said slots being formed with cam surfaces which diverge outwardly toward the top of said rounded top so that said handle can be manipulated to move said hinge pins in said slots a sufficient distance for said plug to be released by moving out of and clear of said dispensing orifice, and as said hinge pins are moved against said cam surfaces a self-returning force is generated;

whereby said yoke may be swung downwardly over said top portion of said base into a dispensing position and said plug will ride against said rounded portion as the yoke is swung downwardly into a dispensing position and will ride against said rounded portion when the yoke is swung in a closing direction until said plug is in line with said orifice and said plug is drawn therein by said self-returning force.

4,804,099

BOTTLE CLOSURE SYSTEM

Chang C. Chuan, No. 32, Ching An Hsing Tswen, Ta Pwu Rd. Chi An Village, Jwei Fang Town, Taiwan

Filed Oct. 28, 1987, Ser. No. 113,483

Int. Cl.[4] B65D *39/00*

U.S. Cl. 215—279 **1 Claim**

1. A bottle closure system including a bottle cap and a bottle having a neck portion, comprising:

a bottle cap head which may be formed into a variety of external contours;

a bottle cap body formed integrally with said bottle cap head, said bottle cap body having a hollow interior and a notch formed in an outer sidewall of said bottle cap body, said notch passing throughout a circumference of said sidewall; and,

a flexible spring member extending through an opening formed in said bottle neck portion for (1) insert into and out of a groove formed within an interior wall of said bottle neck portion, and, (2) insert into and out of said notch formed in said cap body when said cap body is inserted into said bottle neck portion.



4,804,100

CONTAINER ADAPTED FOR USE IN CENTRIFUGE

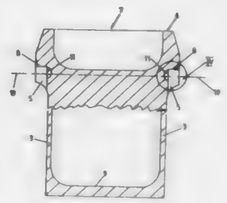
Dieter Müller, Bodenhausen; Christian Hirsch, Osterode, and Peter Pantucek, Darmstadt, all of Fed. Rep. of Germany, assignors to Heraeus Separationstechnik GmbH, Osterode am Harz, Fed. Rep. of Germany

Filed Aug. 18, 1986, Ser. No. 897,307

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1985, 3539916

Int. Cl.[4] B04B *5/00*

U.S. Cl. 220—1 R **6 Claims**



1. A centrifuge bowl which comprises a bowl having a closed bottom and an open top, the exterior of said surface of said bowl having two two-sided grooves positioned opposite each other and adapted to receive rotor bearing pins, each of said grooves having a closed end and an open end, each of said grooves having a cup-shaped indentation in it's bottom surface, adjacent said closed end, said grooves being bound a curved surface having a peak area at the closed end of said groove adjacent the open top of said bowl, said peak area of said curved surface positioned adjacent to said cup shaped indentation, and said peak area further comprising at least one slot extending from said exterior surface of said bowl to and merging with said cup-shaped indentation.

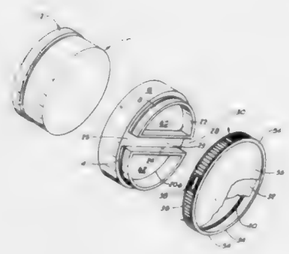
VOL 1099 ISS 2 FE 14 1989 UMI

4,804,101

CONTAINER ASSEMBLY INCLUDING LOWER COMPARTMENT COMPRISING CHORDAL PARTITIONS

Bruce A. Heath, Hennessey, Okla., assignor to IAT Corporation, Hennessey, Okla.

Filed Mar. 2, 1988, Ser. No. 162,960
Int. Cl.[4] B65D *69/00*
U.S. Cl. 220—20 13 Claims



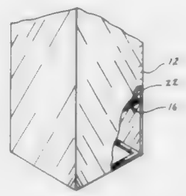
1. A container assembly comprising:
a cylindrical primary container having an open top;
a closure cap removably retained on the primary container for closing the open top thereof;
a cylindrical base and dispenser subassembly for removably engaging said cylindrical primary container, and for selectively dispensing elongated articles, said cylindrical base and dispenser subassembly comprising;
an annular peripheral first flange dimensioned to receive and extend around said cylindrical primary container;
an annular peripheral second flange coaxially aligned with said annular peripheral first flange;
a transverse divider plate partition disposed between said first and second annular peripheral flanges and having a circular outer peripheral edge portion joined to said first and second annular peripheral flanges, said transverse divider plate partition extending normal to the axis of said primary container; and
a pair of substantially parallel chordal partitions secured to, and extending normal to, said transverse divider plate partition and located within said second annular peripheral flange, said chordal partitions defining therebetween an article-containing space within which elongated objects can be contained, said second annular peripheral flange having a gap therein aligned and communicating with the space between said chordal partitions; and
a second closure cap rotatably and removably mounted on said annular peripheral second flange for rotation thereabout, said second closure cap including:
an outer flange frictionally engaging said second flange, said outer flange defining a dispensing window positioned for alignment with said gap in said second flange, and with said space positioned between said chordal partitions, as said second cap is rotated; and
an outer bottom plate extending substantially parallel to said transverse divider plate partition and having a circular outer periphery secured to said outer flange, said outer bottom plate extending across, and in close proximity to, said chordal partitions to cooperate with said chordal partitions in defining said article-containing space and closing one side thereof.

4,804,102

BUTTER CONTAINER

Cynthia Morris, 5557 Foland Rd., Paradise, Calif. 95969

Filed Nov. 19, 1987, Ser. No. 122,389
Int. Cl.[4] B65D *83/00*
U.S. Cl. 220—93 1 Claim



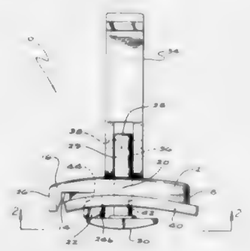
1. A new and improved butter container comprising:
housing means including planar side walls for holding a portion of butter;
slidably movable floor means positionable in one end of said housing means, said floor means being slidably movable within an interior portio of said housing means to effect an ejectment of said portion of butter therefrom; and
cap means selectively sealingly positionable over a remaining end of said housing means, and
wherein said housing means is formed from a clear plastic-like rigid material to thus facilitate a viewing of said portion of said butter contained therein, and
further including measurement gradients positioned along an exterior surface of said housing means, and
wherein said floor means including a peripheral rubber edge to effect a slidably movable seal between said interior portion of said housing means and said floor means, and
wherein said floor means further includes a finger engaging extension to facilitate a movement of said floor means by a user,
and wherein said cap means is slidably movable along an exterior surface of said housing means when positioned thereover to form an air tight compartment within said housing means in cooperation with said floor means.

4,804,103

CAN SEALER

Elisabeth Goldberg, Munich, Fed. Rep. of Germany, assignor to D.S.R. Products, Woodland Hills, Calif.

Filed Apr. 13, 1988, Ser. No. 181,195
Int. Cl.[4] B65D *45/00*
U.S. Cl. 220—251 4 Claims



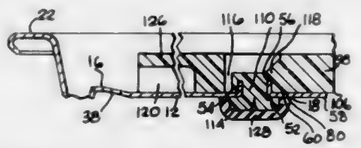
1. A can sealer apparatus for sealing an opening in a generally flat can lid, comprising:
a plate member having a top side and bottom side, a skirt of a size sufficient to encompass the opening of the can lid protruding from the bottom side of the plate member and adapted to generally conform to the top surface of the can lid, the plate member having a surface defining a central opening in the plate member, and a post member protruding from the bottom surface of the plate member, the post member having at least one bottom bevelled edge;
b an elastomeric sealing member of a size sufficient to cover the opening in the can lid, and extending beyond the skirt of the plate member, the sealing member having a top side and a bottom side, the surface of the sealing member defining a central aperture adapted to be aligned with said plate member central aperture, and a secondary aperture adapted to receive the post member; and
(c) handle means for urging the plate member and sealing member against the top surface of the can lid, said handle means including a stem adapted to extend through the central aperture of the plate member and the central aperture of the sealing member, a crosspiece member on one end of the stem adapted to ride over the bevelled edge of the post member in a first position, an adapted to engage the undersurface of the can lid in a second position, and the other end of the stem including means for moving the crosspiece between the crosspiece first and second positions, the means for moving having a first position in which the crosspiece may move freely to ride over the post member, and a second position urging the crosspiece member toward the plate member and sealing member, whereby the plate member and sealing member can be securely clamped to the can lid to seal the opening.

4,804,104

SYSTEM FOR FORMING AN OPENING IN A CONTAINER END MEMBER

Bruce A. Moen, Golden, Colo., assignor to Adolph Coors Company, Golden, Colo.

Continuation-in-part of Ser. No. 45,369, May 1, 1987, Pat. No. 4,733,793. This application Mar. 15, 1988, Ser. No. 168,428
Int. Cl.[4] B65D *17/34*
U.S. Cl. 220—269 16 Claims



1. A container end member or the like for sealed association with a container member to provide a sealed container and which is provided with a system for forming an opening therein comprising:
a one piece metallic end member having a cylindrical peripheral rim wall portion and a central axis;
an annular outer rim portion on said metallic end member for sealed association with the container member;
a central end wall portion integrally connected to said rim portion and extending generally transversely to said central axis and having an outer surface and an inner surface;
a severable tab portion in and integrally connected to said central end wall portion;
a hinge portion integral with said central end wall portion and having spaced apart ends;
severable score line groove means having ends adjacent to said spaced apart ends of said hinge portion and defining said severable tab portion so that said severable tab portion may be severed from said central wall portion in response to applied axially inwardly directed forces and form an outlet opening in said central end wall portion;
retaining means comprising said hinge portion for retaining said severed tab portion attached to said central end wall portion;
force applying means for applying said axially inwardly directed forces on said severable tab portion;
said force applying means comprising:
an integral plastic member formed from a relatively rigid plastic material;
an attachment means portion integral with said plastic member for securing said plastic member to said central end wall portion;
said plastic member having an elongated body portion having an abutment end portion at one end thereof and a handle portion at the other end thereof; and
a pivot means portion integral with said attachment means portion and said elongated body portion for pivotally mounting said elongated body portion on said central end wall portion so that when an axially outwardly directed opening force is applied to said handle portion, said elongated body portion will pivot about said pivot means portion so that said abutment end portion will apply said inwardly directed force to said severable tab portion to sever said severable tab portion along said severable score line groove means and form said outlet opening in said central end wall portion.

4,804,105

METHOD FOR FABRICATING BURR-FREE PULL TABS AND ARTICLES

Edgar H. Zysset, St. Cloud, and Raymond A. Atkinson, Orlando, both of Fla., assignors to Citrus Central, Inc., Orlando, Fla.

Filed Apr. 11, 1988, Ser. No. 179,998
Int. Cl.[4] B65D *17/34*
U.S. Cl. 220—273 9 Claims



9. A pull tab for containers which has been severed from a metal sheet, comprising:
a flat metal panel having a curled peripheral portion and an uncurled peripheral portion;
a protruding nose along said uncurled peripheral portion and adapted for facilitating the opening of the container to which said pull tab is attached; and
inwardly-extending radii along said uncurled periphery portion on either side of said protruding nose, said radii avoiding metal burrs which might otherwise extend outwardly from said uncurled periphery portion.

4,804,106

MEASURES TO CONTROL OPENING OF FULL-PANEL SAFETY-EDGE, CONVENIENCE-FEATURE END CLOSURES

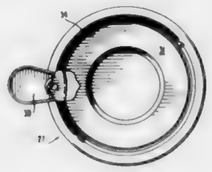
William T. Saunders, Weirton, W. Va., assignor to Weirton Steel Corporation, Weirton, W. Va.

Continuation-in-part of PCT US87/03418, Dec. 23, 1987, published as WO88/05407, which is a continuation-in-part of PCT US87/02649, Sep. 29, 1987, published as WO88/05406, which is a continuation-in-part of PCT US87/00102, published Jan. 23, 1987, published as WO88/05405
This application Jan. 22, 1988, Ser. No. 147,267
Int. Cl.[4] B65D *17/34*
U.S. Cl. 220—273 7 Claims

1. Full-open, safety-edge, disc-removal, convenience-feature sheet metal end-closure structure, comprising
a generally-planar, circular-periphery end wall panel circumscribed by unitary chime seam meal for attaching

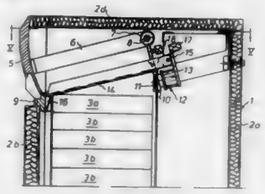
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such end wall closure structure to a container having a generally cylindrical-configuration side wall which is substantially symmetrical with the central longitudinal axis for such cylindrical configuration,
such central longitudinal axis intersecting the end closure structure at its center when such end closure structure is attached to such container,
such end wall panel being recessed axially in relation to such chime seam metal toward the interior for such a container,
a cylindrical-configuration chuck wall which is substantially equidistant radially from such panel center and extending in an axial direction from such chime seam metal toward such axially-recessed end wall panel,
a peripheral scoreline located contiguous to the periphery of such end wall panel,
such peripheral scoreline being spaced radially inwardly from such chuck wall toward such panel center,
such peripheral scoreline defining a removable disc to provide an opening in such end closure structure which facilitates full removal of container contents,
a multi-layer fold of such sheet located on the interior surface of such end wall panel in relation to such a container and circumscribing such removable disc contiguous to such peripheral scoreline so as to be in position to shield raw edge residual metal of such scoreline upon rupture thereof,
an elongated, longitudinally-rigid opener secured by a unitary rivet to such removable disc with the longitudinal axis of such elongated opener being oriented diametrically of such end wall panel,



such elongated opener having a working end and a handle end at its longitudinally opposite ends, with such working end being disposed contiguously to a portion of such peripheral scoreline for purposes of initiating rupture thereof,
back scoreline means positioned in such removable disc, such back scoreline means including
a central portion partially circumscribing such rivet and located generally radially inwardly of such rivet toward such panel center,
a leg extending from such central portion as it partially circumscribes such rivet, with one such leg on each side of such rivet having a major directional component which is effectively radial toward such adjacent portion of such peripheral scoreline to be initially ruptured by such working end of such opener,
such legs terminating prior to contact with such peripheral scoreline at a location for each leg which is contiguous to such multi-layer fold of sheet metal circumscribing such removable disc,
such central portion of the back scoreline means being ruptured by Class II lever action upon initial movement, about such unitary rivet as a fulcrum, of the handle end of the opener,
such handle end moving in a direction away from the end wall panel in an arcuate path extending externally of such container, with continuous movement of such handle end of the tab opener in such arcuate path causing rupture along such back scoreline legs which would tend to cause movement of such opener in a radial direction toward such chuck wall and movement of the effective fulcrum axis for purposes of lever-action application of force by such opener, and
barrier means located contiguous to such peripheral scoreline and radially interior of such chuck wall,
such barrier means being disposed to act along the exterior surface of such end wall panel to control radially-directed movement of such opener so as to establish a radial location for directing movement of such working end toward such recessed end wall panel to initiate rupture of such peripheral scoreline.

4,804,107
DEVICE IN A VENDING MACHINE
Henry Bergstedth, Aukargatan 20, Lessebo, Sweden S-360 50
Filed Mar. 4, 1988, Ser. No. 164,199
Int. Cl.[4] G07F *11/14*
U.S. Cl. 221—12 2 Claims

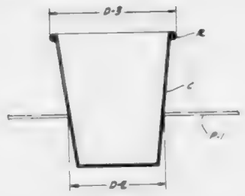


1. A device in a vending machine in which articles are fed stepwise to a position of delivery opposite a delivery opening in the machine to be dispensed therefrom one by one, said device having a cover which is pivotal between a closed position in which it covers said delivery opening, and an open position in which it exposes the delivery opening to permit dispensing an article fed to the position of delivery, locking means adapted to lock the cover in the closed position, and a pusher which is adapted when the cover pivots from the closed position to the open position, to push the article fed to the position of delivery, at least a certain distance out of the delivery opening, said pusher comprising an arm fixed to the pivotal cover for movement together with the cover, said locking means comprising an electromagnet having an armature fixed to the cover and movable together with the cover, and a coil fixedly mounted on the machine, a release means being adapted to suspend the locking action of the locking means when an article has been fed to the position of delivery, and said release means comprising a limit witch which is adapted, when an article has been fed to the position of delivery, to be actuated in order to interrupt current supply to the electromagnet.

4,804,108
IRIS MECHANISM
Leonard A. Ficken, St. Louis County, Mo., assignor to Unidynamics Corporation, New York, N.Y.
Filed Jan. 3, 1987, Ser. No. 57,919
Int. Cl.[4] B65G *59/06*
U.S. Cl. 221—223 20 Claims

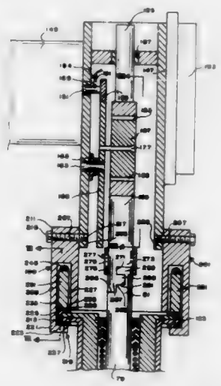
1. An iris mechanism for preventing unauthorized removal of containers from apparatus for dispensing containers, such as cups, the apparatus including means for separating and releasing a single container from a stack of containers, the iris mechanism having a plurality of horizontally disposed blades with arcuate edges defining a central opening surrounded by the blades through which a released container must pass and having means for changing the size of the opening between a closed position wherein the opening is smaller than the largest diameter of a container to be dispensed by the apparatus and an open position wherein the opening is at least as large as the largest diameter of a container to be dispensed said blades

forming a substantially encompassing horizontal wall about a lower portion of the container when in the closed position so



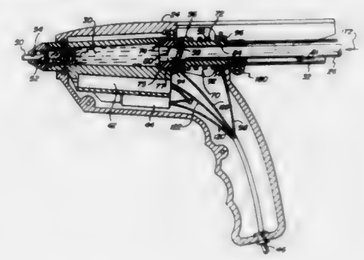
as to block access to an upper portion of a container from below.

4,804,109
RETURNABLE CONTAINER SYSTEM
John A. Vanderjagt, 1395 Glen Oaks Dr., Memphis, Tenn. 38117
Filed Dec. 14, 1987, Ser. No. 132,176
Int. Cl.[4] B65D *88/54*
U.S. Cl. 222—38 11 Claims



1. A dual use returnable container system for optional uses in first and second conditions, said system comprising:
(a) a container having an interior for holding chemicals and the like, said container including a wall defining said interior;
(b) unbroken sealing means for sealing said container against access to the interior of said container unless said sealing means is broken;
(c) dispensing means for dispensing chemicals and the like from the interior of said container, said dispensing means including:
(i) housing means including an outlet means, said housing means having an interior passageway for chemicals and the like to flow from said interior of said container through said outlet means for the dispensing thereof:
(ii) one way valve means disposed in said housing means for permitting flow of chemicals and the like from said interior of said container into said passageway but preventing flow from said passageway into said interior of said container;
(iii) drivable pump means disposed in said housing means for pumping, when driven, chemicals and the like from said interior of said container, through said passageway and said outlet means, said pump means including a reciprocatable piston and a piston rod attached to said piston and extending upwardly through the upper end of said housing with the upper end of said piston rod being on the exterior of said container; and
(d) an assembly unit including pump driving means for reciprocatably driving said drivable pump means when operably connected to said piston rod, and said unit including counter means operably connected to said pump driving means for indicating measured amounts of chemicals and the like dispensed from said container:
(e) means on the outside of said container for attaching said assembly unit to said dispensing means from the outside of said container without breaking said sealing means and without disassembling any parts of said assembly unit to place said system in said first condition in which said assembly unit is utilized to cause dispensing and measuring of the chemicals and the like from said container and for detaching said assembly unit from said dispensing means from the outside of said container without breaking said sealing means and without disassembling any parts of said assembly unit to place said system in a second condition in which an operator is free to use his own pumping and measuring system with said sealed container.

4,804,110
APPARATUS, METHOD AND ARTICLE FOR APPLYING A MELTED ADHESIVE
Charles R. Sperry, 113 Clinton St., Springfield, Vt. 05156, and Paul J. Bladyka, Chester, Vt., assignors to Charles R. Sperry, Springfield, Vt.
Filed Jan. 8, 1986, Ser. No. 817,067
Int. Cl.[4] B67D *5/62*
U.S. Cl. 222—56 32 Claims



1. An apparatus for dispensing a hot melt such as a molten adhesive obtained from a solid form such as a rod stored on a spool, comprising:
manually held dispenser means having an outlet for dispensing melted adhesive and having an inlet to receive the rod, said dispenser means having heating means to heat the rod entered into the dispenser through the inlet and having means for normally closing the outlet and enable a pressurization of molten adhesive inside the dispenser means;
flexible conduit means extending from the vicinity of the spool to the inlet of the dispenser; and
drive means in the vicinity of the spool for pushing the rod through the conduit means into the inlet of the dispenser means;
sealing means at inlet and through and in contact with which the rod is pushed into the dispenser means for preventing the escape of molten adhesive from inside the dispenser means;
cooling means, located in heat exchange relationship with the vicinity of the sealing means, to remove heat from the sealing means so as to maintain the temperature of the rod, at the sealing means below the softening temperature of the rod and to retain the shape of the rod and its sealing

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contact with the seal with a sufficiently short length of solidified adhesive plug between the sealing means and the inside of the dispenser means so that the drive means can push the rod through the conduit means into the dispenser means.

4,804,111

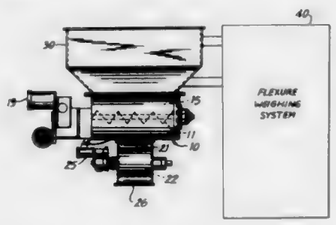
MECHANISM FOR METERING SOLID MATERIALS WHICH FLOW IN A MANNER SIMILAR TO LIQUIDS

Ronald J. Ricciardi, Woodcliff Lake, and Mark Bober, Oakland, both of N.J., assignors to Acrison, Inc., Moonachie, N.J.

Filed Feb. 20, 1987, Ser. No. 17,268

Int. Cl.⁴ G01F *11/20*; G01G *13/00*

U.S. Cl. 222—77 **11 Claims**



1. A feeding system having a metering mechanism including a bin discharger for feeding highly aerated or fluidized solid material in a controlled manner from a storage device in combination with a means connected to the feeding system for weighing at least the bin discharger and the solid material in the bin discharger, the metering mechanism comprising the combination of:

the bin discharger having an inlet for receiving material from the storage device, at least two augers mounted substantially parallel with each other, and an outlet;

means for rotating the augers;

a rotary feeder having a housing comprising circular end walls and a hollow intermediate segment having a circular cross-section; an inlet for receiving material from the bin discharger outlet, a rotatable central hub within the intermediate segment of the housing, an outlet, and a plurality of evenly spaced vanes extending radially from the hub into proximity with the inner surface of the intermediate segment of the housing and longitudinally along the hub into proximity with both end walls of the housing, so that each adjacent pair of rotary vanes defines, together with the end walls and intermediate segment of the housing, a pocket; and

means for rotating the central hub, whereby each pocket receives material from the bin discharger outlet through the rotary feeder inlet as the vanes rotate and the pocket comes into mating relation with the rotary feeder inlet and whereby each pocket carries the material into mating relation with the rotary feeder outlet.

4,804,112

CARBONATING APPARATUS

Edward L. Jenns, Gwent, United Kingdom, assignor to Cadbury Schweppes, Plc, Birmingham, United Kingdom

Filed May 5, 1987, Ser. No. 46,122

Claims priority, application United Kingdom, May 9, 1986, 8611389

Int. Cl.⁴ B67D *5/56*

U.S. Cl. 222—129.1 **14 Claims**

1. Apparatus for absorbing gas in liquid, comprising:

(a) an absorption tank;

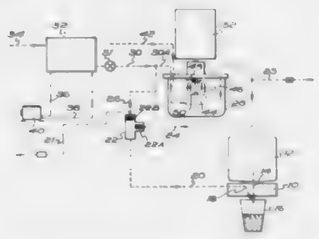
(b) means for introducing the liquid into the tank in the form of jets or streams;

(c) means for introducing the gas into the tank;

(d) driven mechanical means in the tank located so that when driven such means interferes with the liquid jets or streams to break up the jets or streams into atomized particle or droplet clouds which contact the gas in the tank;

(e) outlet means enabling the removal of said liquid from said tank; and

(f) a refrigeration unit connected to the means for supplying the liquid so that liquid supplied to the tank passes first



through the refrigeration unit and then through the said means for supplying the liquid, said refrigeration unit comprising refrigeration coils for refrigerant, a container containing said coils, inlet means for introducing the liquid into the container, and outlet means connected to said means for supplying liquid, the said refrigeration coils being of tubing comprising an inner layer through which the refrigerant passes and an outer layer arranged so that any refrigerant escaping from the inner layer can escape inside the outer layer without contacting the liquid in the container.

4,804,113

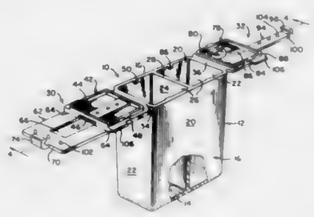
SALT AND PEPPER SHAKER

Richard J. Ciaccio, Wrentham, Mass., assignor to Dart Industries Inc., Deerfield, Ill.

Filed Jun. 26, 1987, Ser. No. 67,585

Int. Cl.⁴ A47G *19/24*

U.S. Cl. 222—142.1 **19 Claims**



1. A dispensing receptacle for storing and selectively dispensing diverse flowable materials, said receptacle comprising wall means defining plural adjacent chambers, each chamber having a top opening, a plurality of closure assemblies, each closure assembly including a shaker top selectively received within and sealing the top opening of one of said chambers, each closure assembly further including a closure lid and a hinged joinder between the closure lid and the shaker top of the closure assembly, each closure lid being selectively received in overlying relation to an opening-received shaker top of another closure assembly to define a dispensing assembly therewith, each said shaker top including hole means therethrough, each closure lid closing the hole means of the shaker top overlaid thereby, in each dispensing assembly the closure lid being pivotally movable between a closed position closing the hole means of the associated shaker to an open position allowing flow through these hole means.

4,804,114

SYRINGE FOR DOSED FILLING OF BOTTLES AND THE LIKE

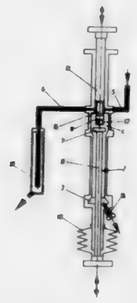
Napoleone Rizzardi, Milano, and Giuseppe Ripamonti, Busnago, both of Italy, assignors to Capsulit, S. P. A., Milan, Italy

Filed Jul. 8, 1987, Ser. No. 73,694

Claims priority, application Italy, Oct. 1, 1986, 23258/86[U]

Int. Cl.⁴ B67D *1/08*

U.S. Cl. 222—148 **7 Claims**



1. A syringe for dosed filling of a container, comprising:

a body defining a chamber (2) with an inner wall;

valve means for selectively communicating said chamber (2) with an inlet conduit (5) and an outlet conduit (6), said valve means including a valve head (11) with a passage (12) therein;

a double-acting piston slideably received in said chamber (2), said piston having a piston head (7) and a piston rod (8) extending from said piston head (7); and

means for facilitating a pressurized fluid flowing from said inlet conduit (5) to impinge upon and sweep over said inner wall of said chamber (2), said valve head (11), said piston head (7) and a portion of said piston rod (8) extending in said chamber (2), said facilitating means including a widening (4) of said chamber (2) formed to simultaneously accomodate both of said piston head (7) and said valve head (11) therein and thereby assist in facilitating a cleaning and sterilizing of the syringe by the pressurized fluid, both said piston head (7) and said valve head (11) being movable towards and away from each other to move respectively into and out of said widening (4).

4,804,115

PUMP CHAMBER DISPENSER

Martin F. Ball, Grove, United Kingdom, assignor to Metal Box p.l.c., Reading, United Kingdom

Filed Apr. 29, 1988, Ser. No. 188,298

Claims priority, application United Kingdom, Apr. 29, 1987, 8710192

Int. Cl.⁴ G01F *11/00*

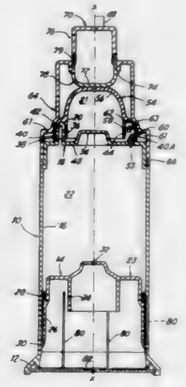
U.S. Cl. 222—209 **20 Claims**

1. A pump chamber dispenser for a viscous or pastry product formed form two or more components comprising:

a reservoir for the product;

a pump member defining a variable volume pump chamber, wherein said pump member is operably connected to said reservoir to withdraw product from said reservoir into the pump chamber and subsequently to expel product from the pump chamber;

a plurality of inlet and outlet valves associated with the pump chamber for controlling flow of product into and out of the pump chamber by opening and closing inlet and exit ports, respectively, wherein, for each component in said reservoir, at least one inlet valve and at least one output valve are positioned with respect to said reservoir to permit each component, when stored in said reservoir separately but in mutual contact along at least one interface parallel to the direction product is withdrawn from



said reservoir, to pass separately through at least one inlet port and to be separately withdrawn from the pump chamber through at least one exit port; and

duct means positioned to receive each component separately from the exit ports of the pump chamber and configured to recombine the separate components as a multicomponent product or dispensing.

4,804,116

VALVE FOR DISPENSING FLUID FROM A CONTAINER

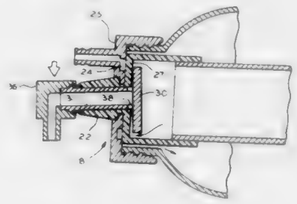
Martin F. Ball, Wantage, United Kingdom, assignor to Metal Box Public Limited Company, United Kingdom

Filed Aug. 31, 1987, Ser. No. 91,385

Claims priority, application United Kingdom, Sep. 11, 1986, 8621937

Int. Cl.⁴ B67D *1/04*

U.S. Cl. 222—402.16 **6 Claims**



1. A valve for dispensing pressurized fluid from a container, said valve comprising a closure member adapted for attachment to the container, said closure member defining an aperture therein, a hollow grommet of flexible material having a flange to the inner side of the closure member and a tubular outlet portion extending through the aperture in the closure member, an annular passageway being defined between an outer side of the flange of the grommet and the adjacent portion of the closure member, the annular passageway communicating with an inlet on said closure member, and a valve rod having at one end a flange engaged with the inner side of the

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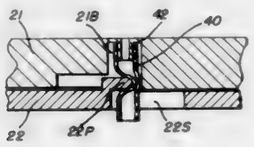
flange of the grommet and a hollow stem portion extending through the grommet to protrude therefrom, the valve being so arranged that, upon tilting of the valve rod relative to the closure member, the flange of the valve rod parts from the inner side of the flange of the grommet to uncover a radial hole in the stem portion, whereby communication is provided between the inner side of the valve and the outlet portion, and whereby contact between the other side of the flange of the grommet and adjacent portion of the closure member is released so that communication may be provided between the inlet and the inner side of the valve.

4,804,117

DISPOSABLE SYRUP PACKAGE HAVING INTEGRAL DISPOSABLE VALVE ASSEMBLY

Arthur G. Rudick, Marietta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Oct. 14, 1986, Ser. No. 918,564
Int. Cl.⁴ B65D *37/00*
U.S. Cl. 222—214 2 Claims



1. Apparatus for dispensing liquid through a discharge wall of a container comprising:
(a) conduit means including a resilient tube in an opening in the discharge wall of the container, said conduit means having an open position for accommodating the flow of liquid from the container and a closed position for blocking the flow of liquid from said container; and
(b) plate means contiguous to said discharge wall, said plate means being independently rotatable on its own axis of rotation in a plane parallel to a plane defined by said discharge wall, said plate means including integral cam means offset from the axis of rotation of said plate means for engaging said conduit means in a direction radial to the longitudinal axis of said conduit means and moving said conduit means to one of said open or closed positions in response to independent rotation of the plate means, said integral cam means normally pinching said conduit means in a direction radial to the longitudinal axis of said conduit means to achieve said closed position and moving away from said tube in the radial direction to achieve said open position in response to the independent rotation of said plate means.

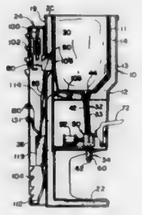
2. Apparatus for dispensing liquid through a discharge wall of a container comprising:
(a) conduit means disposed in an opening in the discharge wall of the container, said conduit means having an open position for accommodating the continuous flow of liquid from the container and a closed position for blocking the continuous flow of liquid from said container, said conduit means being formed in a plug disposed in said opening, said plug being movable in said opening into fluid communication with the liquid in said container to achieve said open position, said plug having a frusto-conical shaped sealing portion and an elongated stem portion slidably mounted within said end wall, said conduit means including a first passage extending transversely through said frusto-conical portion and a second passage extending longitudinally through said stem portion into fluid communication with said first passage;
(b) spring means for normally biasing said plug to close said conduit means by sealing said first passage within said opening; and
(c) plate means contiguous to said discharge wall, said plate means being independently rotatable on its own axis of rotation in a plane parallel to a plane defined by said discharge wall, said plate means including integral cam means offset from the axis of rotation of said plate means for engaging said conduit means in a direction parallel to the longitudinal axis of said conduit means and moving said conduit means to one of said open or closed positions in response to independent rotation of the plate means.

4,804,118

FOOD DISPENSER WITH TIMER CONTROL

Joseph F. Mullen, Norristown, and Stephen J. Sanderson, Royersford, both of Pa., assignors to Portion Control Systems, Inc., Philadelphia, Pa.

Filed Nov. 12, 1986, Ser. No. 930,410
Int. Cl.⁴ G04C *23/00*
U.S. Cl. 222—641 28 Claims



1. A food dispenser comprising:
(a) a frame;
(b) a vessel supported relative to the frame for containing food;
(c) a delivery conduit supported relative to the frame communicating with the vessel for delivering a flow of food from the vessel;
(d) valve means supported relative to the frame cooperating with the delivery conduit for regulating the flow of food through the delivery conduit;
(e) a primary actuator displaceable from a first position to a second position for actuating the valve means to enable a flow of food through the delivery conduit;
(f) power input means for providing a supply of electrical power; and
(g) valve control circuitry connected with the power input means and the valve means responsive to displacement of the primary actuator to its second position for opening the valve means to enable a flow of food through the delivery conduit during the period of time that the primary actuator is in said second position up to a selected time limit, the valve control circuitry having primary actuator timer circuitry for determining the selected time limit, said time circuitry being resettable by a reset signal,
(h) displacement of the primary actuator to its first position providing a reset signal in said circuitry.

4,804,119

LIQUID DISPENSER

Donald T. Goodall, 30 Beach Street, Blakehurst, New South Wales, 2220, Australia

Continuation of Ser. No. 805,556, Dec. 6, 1985, abandoned. This application Mar. 13, 1987, Ser. No. 24,870
Int. Cl.⁴ B65D *23/10*
U.S. Cl. 222—468 5 Claims

1. A container having pouring means for dispensing liquid, said means including:
a neck portion of diminishing cross-sectional area leading to a peripheral channel of increasing cross-sectional area,
said peripheral channel leading to an outlet having a greater cross-sectional area than the cross-sectional area of said neck portion said outlet being axially aligned with the neck but sufficiently larger in diameter so that, in a pouring operation liquid flowing from said container separates from an upper portion of said outlet,
an air duct adjacent the upper portion of said outlet communicating with the upper portion of said container interior



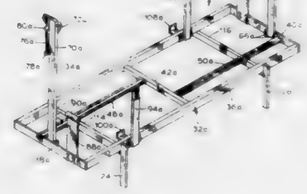
and of sufficient cross-sectional area throughout its length to maintain the interior of the container at substantially atmospheric pressure to maximize the rate of gulp-free dispensing of the liquid,
said neck portion restricting liquid flow into the peripheral channel to maintain unimpeded air flow through said duct.

4,804,120

BICYCLE CARRIER

Kenneth L. Kraklio, Oxford, Iowa, assignor to K-Rak Products, Inc., Oxford, Iowa

Filed Sep. 18, 1987, Ser. No. 98,307
Int. Cl.⁴ B60R *9/00*
U.S. Cl. 224—42.03 B 11 Claims



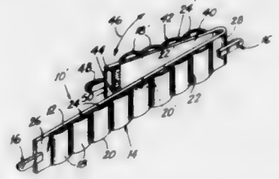
1. A carrier mountable at the rear end of a vehicle for transporting a first bicycle having a rear wheel, a front wheel fork, and a front wheel detachably mounted on said fork, comprising:
(a) an elongated frame;
(b) means for mounting said frame on the vehicle extended transversely thereof in a substantially horizontal plane;
(c) said frame having channel means adjacent one end thereof and extended longitudinally thereof for receiving and supporting the rear wheel;
(d) a fork stanchion adjacent the other end of said frame for supporting said front wheel fork in a fixed position; and
(e) means on said frame yieldably engageable with an upper rear portion of the rear wheel for urging the bicycle toward said fork stanchion to retain the rear wheel in said rear wheel supporting means.

4,804,121

GOLF BAG BELT ORGANIZER

Boyd R. Stanton, and George Spector, both of 233 Broadway, Rm 3615, New York, N.Y. 10007

Filed Oct. 29, 1984, Ser. No. 665,703
Int. Cl.⁴ B63C *11/30*
U.S. Cl. 224—191 3 Claims



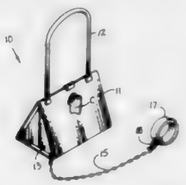
1. A golf belt for containing and carrying various articles which comprises:
(a) an inner elongated panel;
(b) an outer elongated panel affixed to said inner elongated panel in such a way as to form a plurality of pockets having open tops that can receive said various articles therein;
(c) means adapted for securing ends of said inner elongated panel in position for use on the waist of the user and on a golf bag perimeter; and
(d) a foldable extension having additional pockets with means for mounting said extension folded against said inner panel with said additional pockets parallel to and inward of said outer pockets.

4,804,122

THEFT PROTECTION PURSE

Renior L. Knox, 3008 John, Corpus Christi, Tex. 78407

Filed Nov. 23, 1987, Ser. No. 123,770
Int. Cl.⁴ A45C *1/02, 1/04, 13/20*
U.S. Cl. 224—220 3 Claims



1. A theft prevention purse apparatus comprising a first purse including a storage compartment, a handle, and first and second side walls, and first and second end walls, and
a separate recessed second compartment formed within one of said end walls including covering flap means configured and arranged in the same plane as one of said end walls, said covering flap means including releasably securing means to associate said flap means with said first purse, and
a second purse dimensionally smaller than said first purse proportioned to fit within said recessed second compartment, and
a tether line securable to said second purse at one end and to a ring means at the other end, said ring means proportioned for fitting about selective portions of an individual's anatomy, and
wherein said releasably securing means of said flap means includes hook and loop fastening means to secure said flap means to said first purse, and
wherein a stationary fixed hook is positioned within said

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second compartment for selective attachment of said tether line, and

wherein said tether line is securable to said ring means by means of a releasable spring fastener means for removing said spring fastener means from said ring means for attachment to said hook.

4,804,123

UPRIGHT CANOE CARRIER

Timothy S. French, 6818-108 Winding Cedar Trail, Charlotte, N.C. 28212

Filed Feb. 6, 1986, Ser. No. 826,811
Int. Cl.⁴ A45F *3/00*
U.S. Cl. 224—266 **1 Claim**



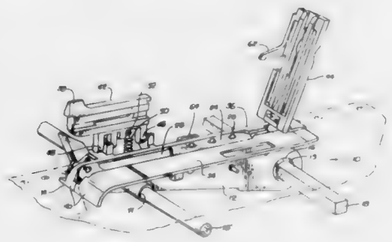
1. A device for the portage of a canoe where the canoe will remain in an upright position, comprising a pair of yoke-like members attachable to opposite ends of said canoe, each yoke-like member comprising five rods attached to each other, the rods include two parallel shoulder engaging rods, a cross rod, an elongated connecting rod, and a canoe cross rod, where the canoe cross rod has a center hole for acceptance of one end of the elongated connecting rod, the cross rod has a center hole which accepts the other end of the elongated connecting rod, the cross rod further having, on the opposite side of its perimeter from the center hole; end holes, one proximate each end which each accept an end of each respective shoulder engaging rods, connecting pins are provided at each point of intersection and attachment of the rods to maintain these rods together; whereby in use, the yoke-like members are connected to the canoe by a rope attached to the canoe, so that canoe cross rod is secured across an end of said canoe and when the shoulder engaging rods are rested on the shoulders of the persons carrying the device, the canoe remains stable and upright so that it is possible to carry cargo in said canoe.

4,804,124

SEMI-AUTOMATIC LOADING PAPER FEED TRACTOR

Gregory Hirth, San Jose, Calif., and Terry L. Branson, Plano, Tex., assignors to Dataproducts Corp., Woodland Hills, Calif.

Filed May 15, 1986, Ser. No. 863,704
Int. Cl.⁴ B65H *20/20*
U.S. Cl. 226—74 **5 Claims**



1. A tractor for advancing a sheet material in a substantially planar path, comprising:

a belt having a first span arranged adjacent and substantially parallel to said substantially planar path of said sheet material;

a plurality of sheet engagement means disposed on said belt for engaging said sheet material with said first span of said belt; and

a plurality of displaceable retaining means each of said displaceable retaining means being arranged along said first span, each of said displaceable retaining means being operable for partially covering said first span, each of said retaining means being further operable for maintaining said sheet material substantially parallel with said first span of said belt, each of said retaining means being displaceable, independently with respect to the other retaining means, to expose less than all of said sheet engagement means.

4,804,125

DEVICE FOR FLOATABLY GUIDING WEBS OF MATERIAL BY MEANS OF A GASEOUS OR LIQUID MEDIUM

Hilmar Vits, Hüchelrath 16, D-5653 Leichlingen, Fed. Rep. of Germany

Filed Mar. 6, 1987, Ser. No. 22,941
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1986, 3607370
Int. Cl.⁴ B65H *20/14*; F26B *13/20*
U.S. Cl. 226—97 **10 Claims**



1. A device for floatably guiding webs of material, comprising an elongate flow member, disposed at right angles to the moving direction of the web and having a surface convexly curved on the web side, and nozzles which are disposed in rows on longitudinal edges of the flow member and via which a gaseous or liquid medium can be introduced in jets between the flow member and the web of material, the nozzles associated with one longitudinal edge of the flow member being offset, by about half the pitch in the direction of the longitudinal axis of the flow member in relation to the nozzles associated with the other longitudinal edge, characterized in that the nozzles are constructed as free jet nozzles which are disposed at a distance from the flow member and are so directed at an acute angle to the web shallowly into the gap between the web and the surface of the flow members that the adjacent edge regions of the diverging flow jets escaping from opposite nozzles flow past one another substantially without mutual impedance in the absence of a web of material an impinge on one another more and more as the distance of the web of material from the surface of the flow member decreases.

4,804,126

YARN CONVEYING APPARATUS

Karl Bauer, Remscheid, Fed. Rep. of Germany, assignor to Barmag AG, Remscheid, Fed. Rep. of Germany

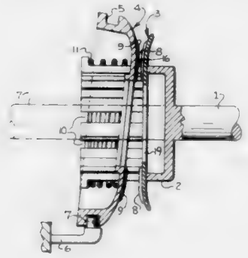
Filed Dec. 12, 1986, Ser. No. 941,051
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1985, 3544336; Feb. 6, 1986, 3603588
Int. Cl.⁴ B65H *51/00*; B66D *1/30*
U.S. Cl. 226—182 **15 Claims**

1. A yarn conveying apparatus comprising a pair of yarn conveying discs, with each disc including a yarn engaging front surface,

means mounting said discs for rotation about respective non parallel and intersecting axes and in respective rotational directions such that portions of the respective yarn engaging front surfaces are disposed in a closely adjacent opposing face-to-face relationship and define a yarn advancing zone therebetween, and such that the respective yarn engaging front surfaces run in substantially the same direction through said yarn advancing zone,

means disposed adjacent the radial peripheries of said discs for rotatably interconnecting said discs, and including yarn guide surface means fixed to one of said discs and concentric to the axis of said one disc for supporting the yarn in a radially inward direction and at a fixed radial location as the yarn advances through said yarn advancing zone, and

means resiliently biasing said discs toward each other at said yarn advancing zone, an so that upon rotation of said discs, the discs are adapted to engage and advance a yarn which is guided through said advancing zone without substantial slippage.

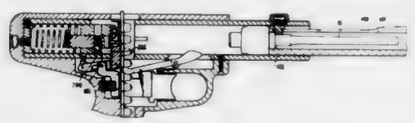


4,804,127

FASTENER DRIVING GUN

John W. Kirkman, Greenwood, Ind., assignor to Master Machine Corporation, Indianapolis, Ind.

Filed Sep. 21, 1987, Ser. No. 98,930
Int. Cl.⁴ B25C *1/14*
U.S. Cl. 227—10 **16 Claims**



1. In a fastener driving tool having a housing, a barrel, a fastener driving piston, a cartridge magazine, a firing pin, a firing pin control sear, and sear release means, the improvement comprising: a trigger and linkage in said sear release means and operable upon movement of said trigger in one direction to move the sear in one direction to release the firing pin, said trigger and linkage being operable upon movement of said trigger in a direction opposite said one direction to positively remove said sear release means from said sear.

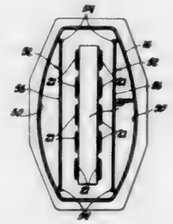
4,804,128

VACUUM BRAZING OF ALUMINUM ALLOY WORKPIECES

Craig E. Brittin, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 4, 1986, Ser. No. 937,888
Int. Cl.⁴ B23K *31/02, 1/04*
U.S. Cl. 228—217 **2 Claims**

2. In the method of vacuum brazing magnesium containing aluminum alloy workpieces in a multi-chamber braze furnace in which the chambers are isolatable from each other and wherein loads of such workpieces are continuously and successively transported from a preheat chamber to a furnace brazing chamber in which the assembly is heated to a brazing temperature at a suitable low pressure level such that magnesium vapor is generated and brazing is accomplished, and then to an exit chamber which initially is evacuated to a low pressure level at which magnesium vapor continues to evolve from the hot workpieces and heat from the workpieces is radiated toward cooler furnace walls and which chamber is then isolated from the braze chamber, backfilled with air and opened to the environment for removal of the workpiece during which time moisture enters the chamber and is absorbed on the chamber wall, the improvement in said method comprising



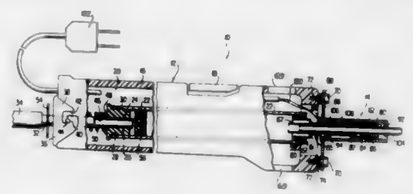
interposing a solid heat barrier between the hot brazed assembly and the relatively cool, moisture-laden furnace wall surfaces of the exit chamber, the barrier temporarily absorbing heat radiated from the hot workpieces to retard heating of the furnace walls and evolution of moisture vapor until after the exit chamber is isolated from the braze chamber, thus preventing sharp pressure increase in the brazing chamber due to reaction of the magnesium vapor and moisture.

4,804,129

IN-LINE SOLDER EXTRACTOR AND HEATER ASSEMBLY FOR USE THEREWITH

Robert G. Brown, Annapolis, and William J. Siegel, Silver Spring, both of Md., assignors to Pace Incorporated, Laurel, Md.

Continuation of Ser. No. 742,701, Jun. 7, 1985, abandoned. This application Feb. 2, 1987, Ser. No. 11,349
Int. Cl.⁴ B23K *3/04*
U.S. Cl. 228—20 **5 Claims**



1. An in-line solder extractor comprising

a tubular heating assembly including a heat source;

a tubular tip disposed at least partially within the tubular heating assembly;

a hollow handle having a forward portion and a rearward portion, said heater asembly being mounted forward of the handle;

a solder collection chamber at least partially disposed within said handle, said chamber having a forward end disposed adjacent the heater assembly and a rearward end disposed toward the rearward portion of the handle;

forward and rearward seals for respectively sealing the forward and rearward ends of the solder collection cham-

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ber, said chamber being adapted to be connected to a vacuum source at its rearward portion and to said heater assembly at its forward portion to facilitate the application of a vacuum to said tip through the tubular heating assembly, and the solder collection chamber to thus effect the withdrawal of the molten solder through the tip and heater assembly into the solder collection chamber;

said heater assembly including

a tubular sleeve;

a tubular solder transfer member mounted within said tubular sleeve, said solder transfer member having a forward portion and a rearward end extending into said solder collection chamber;

a heating element at least partially disposed within said tubular sleeve for heating said tubular tip and said tubular solder transfer member; and

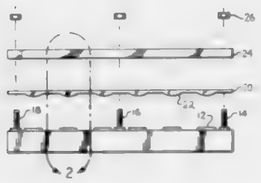
a hollow cylindrical, seal mounting member coaxially mounted substantially at said rearward end of said tubular solder transfer member, said seal mounting member having an open end facing forwardly toward the forward portion of the solder transfer member, said seal mounting member mounting the forward seal of the solder collection chamber and spacing the seal from the solder transfer member so that the rearward end of the solder transfer member may be raised to a predetermined temperature by said heat element to lessen the possibility of the solder clogging said rearward end while, at the same time, said seal is exposed to a temperature less than the last-mentioned temperature to thus promote the longevity thereof.

4,804,130

CHIP CARRIER SEALING AND BONDING FIXTURE

Jaime T. F. Kwan, Irvine, and Richard A. Robinson, Garden Grove, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 18, 1987, Ser. No. 63,473
Int. Cl.⁴ B23K *1/00*
U.S. Cl. 228—6.2 **3 Claims**



1. Apparatus for assembling chip carrier packages and lids, comprising:

(a) a base configured to support a plurality of chip carrier lids in an inverted position each having a chip carrier package mounted thereon;

(b) a tensioning plate having a plurality of protrusions disposed to be mounted on the base such that each protrusion applies pressure to each of the plurality of chip carrier packages and lids forcing them together; and

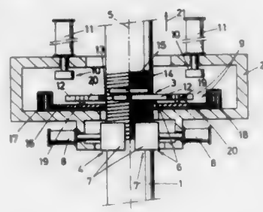
(c) a cover plate disposed to be mounted on the tensioning plate having apertures therein concentrically positioned with respect to each protrusion on the tensioning plate land adjustable fastening means for connecting the cover plate to the base such that the tensioning plate is forced into controlled contact with the plurality of chip carrier packages and lids.

4,804,131

PROCESS OF USE OF AN ELECTROACOUSTICAL VIBRATOR DEVICE AND PLANT FOR CARRYING OUT THIS PROCESS

Eric D. Cordemans de Meulenaer, Wezembeek-Oppem, and Baudouin O. Hannecart, La Roche en Ardenne, both of Belgium, assignors to Undatim Ultrasonics, Brussels, Belgium

Filed Nov. 13, 1987, Ser. No. 120,535
Claims priority, application Belgium, Nov. 18, 1986, 0/217426
Int. Cl.⁴ B23K *20/10*
U.S. Cl. 228—110 **11 Claims**



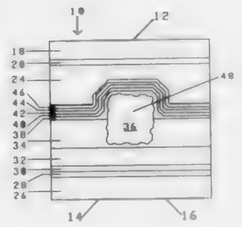
1. A process for using an electroacoustical vibrator device arranged on a support and intended to be used in particular in machining and welding of elements, characterized in that comprising modifying during use of the electroacoustical vibrator device the position of the latter with respect to its support in order that the fixing area of this device on said support substantially coincides with a vibration node.

4,804,132

METHOD FOR COLD BONDING

Louis DiFrancesco, 31032 Hershey Way, Hayward, Calif. 94549

Filed Aug. 28, 1987, Ser. No. 90,608
Int. Cl.⁴ B23K *21/00*
U.S. Cl. 228—115 **18 Claims**



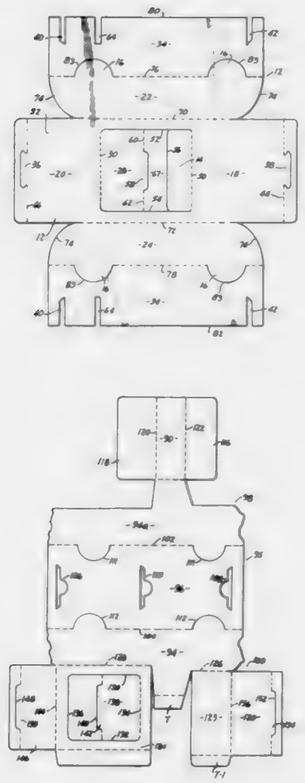
1. A method for bonding two surfaces together without applying heat, the bond being formed via a metal matrix that is created when the two surfaces, having been prepared so that both surfaces have an outermost layer of aluminum, are brought into contact with each other in a manner so as to displace any aluminum oxide present, thus providing the contact of two virgin (non-oxidized) aluminum surfaces, wherein one of the surfaces to be bonded is prepared so that, at desired bonding points, aluminum coated particles protrude from the surface, providing discrete contact points with the other surface.

4,804,133

ADVERTISING DEVICE

Jerrilyn C. Kiyokane, Long Beach, Calif., assignor to Namkung Promotions, Inc., Costa Mesa, Calif.

Filed Aug. 17, 1987, Ser. No. 85,703
Int. Cl.⁴ B65D *5/42*
U.S. Cl. 229—8 **5 Claims**



1. An advertising device for use by fast food take-out restaurants and the like as a foldable food tray, the tray, when fully folded, taking the shape and design of a toy vehicle having a top, a bottom, and spaced apart sides, and comprising a single generally planar sheet of relatively stiff foldable material having first and second sides, said first side having indicia printed thereon simulating a windshield and wheels, said sheet including:

(a) an elongated central portion simulating the top of the toy vehicle, said central portion having:

(i) at least two longitudinally spaced, tranversely extending fold lines;

(ii) at least two transversely spaced, longitudinally extending cuts extending between said fold lines; and

(iii) a transverse cut disposed intermediate said transverse fold lines and extending between said transversely spaced, longitudinally extending cuts;

(b) first and second side portions disposed adjacent said central portion, said first and second side portions being divided respectively from said central portion by first and second longitudinally extending fold lines, each said first and second side portions having a longitudinally extending bottom edge-defining fold line disposed intermediate one of said first and second longitudinally extending fold lines and a longitudinally extending free edge, portions of said first and second side portions intermediate said longitudinally extending edges and said bottom edge-defining fold lines simulating the bottom of the toy automobile, and said portions intermediate said bottom edge-defining fold lines and said first and second longitudinally extending fold lines simulating the sides of the toy automobile;

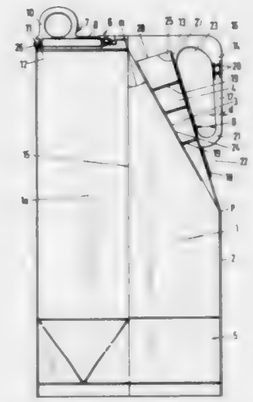
(c) means for securing said central portion to said bottom forming portions to hold the device in an erected shape.

4,804,134

FLUID CONTAINER WITH HANDLE

Wilhelm Reil, Beuxheim, Fed. Rep. of Germany, assignor to Tetra Pak Finance & Trading S.A., Pully, Fed. Rep. of Germany

Filed Aug. 20, 1987, Ser. No. 87,659
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1986, 3628478
Int. Cl.⁴ B65O *5/46*
U.S. Cl. 229—52 A **8 Claims**



1. A container, which comprises a container body having a top edge at a first end of said body, a container bottom at a second end of said body opposite the first end providing a quadrangular shape to said container body in the region of said second end, a triangular shaped container top having a substantially planar and substantially horizontal surface with outlet means at the first end of said body engaged with said top edge of said body providing a triangular shape to said body at said first end and a taper of a side of the container body beginning from said triangular shaped container top extending outwardly to the quadrangular shaped region of said second end, and a base strip and container handle means affixed to said base strip on the tapered side of the container body for reinforcing the container body in the region of said base strip.

4,804,135

CONTINUOUS STRIP ENVELOPES

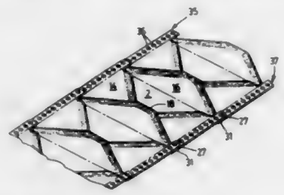
Gaetan Bourbeau, 18 Lady Sarah Cres., Scarborough, Ontario, Canada

Filed Mar. 4, 1988, Ser. No. 163,979
Claims priority, application Canada, Mar. 6, 1987, 531446
Int. Cl.⁴ B65D *27/10*
U.S. Cl. 229—69 **3 Claims**

1. A single continuous paper strip having side edges, said strip having disposed serially along its length alternate greater and lesser rectangular areas divided by common transverse folding lines and having associated side edge portions, each

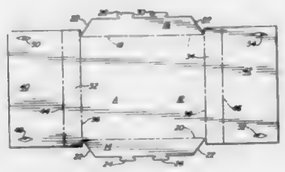
VOL 1099 ISS 2 FE 14 1989 UMI

said lesser rectangular area being of a size suitable to form the front panel of an envelope, each said greater rectangular area comprising a first panel adapted to form the back panel of an envelope and a second panel adapted to form the flap panel of an envelope, said first and second panels being divided by a second folding line perforated along its length and by cuts extending from the ends of said second folding line toward the corners of said greater rectangular area, said lesser rectangular area being adapted to be folded in a first direction along said



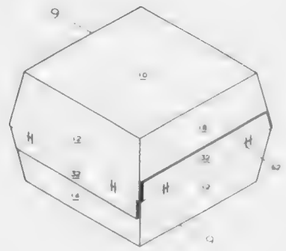
first folding line and to be secured to said first panel along their respective overlapping edges, said secured lesser rectangular area and first panel being adapted to be folded in an opposite direction along said second folding line to form a series of envelopes connected along their sides to said associated side edge portions and to each other along said second folding lines, said associated side edge portions of adjacent envelopes being adapted to be secured to one another at their ends to form continuous side edge strips.

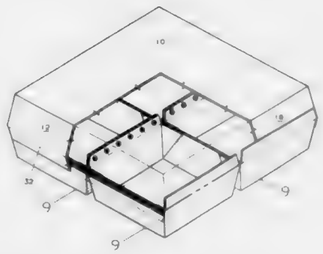
4,804,136
CONTAINER
William E. Hall, Palatine, Ill., assignor to Grafcor Packaging Inc., Elk Grove Village, Ill.
Filed Oct. 7, 1987, Ser. No. 106,513
Int. Cl.[4] B65D *5/20*
U.S. Cl. 229—112 **6 Claims**



1. A corrugated cardboard box comprising:
a bottom;
a two part top overlying the bottom and spaced therefrom, each part being rectangular and substantially adjacent to one another along an edge, each part being substantially equal in size and shape;
a pair of parallel walls, each having one edge foldably attached to an opposite side of the bottom and adapted to be folded upwardly so as to be generally perpendicular to the bottom;
a pair of opposite wall sections each attached to an opposite side of said bottom and to a part of said top;
upstanding locking tabs integral with each of said parallel walls, said parallel walls having portions free of locking tabs;
slot means in each part of said top, so as to each register with one of said tabs when the top parts overlie the bottom to hold the top parts in interlocking slotted relationship with said parallel walls, said portions of said parallel walls free of tabs supporting said top parts in spaced relationship to said bottom;
each slot means being elongated and diamond shaped and each locking tab having an extended portion.

4,804,137
FOOD CONTAINER
Colin F. Harby, 609 S. Belnord Ave., Baltimore, Md. 21224
Filed Dec. 11, 1987, Ser. No. 131,737
Int. Cl.[4] B65D *5/20, 21/04*
U.S. Cl. 229—114 **6 Claims**



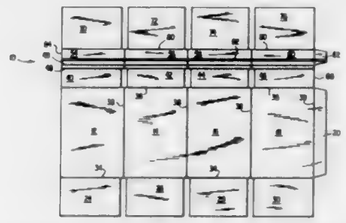


1. A container for packaging and heating food comprising:
a. a bottom tray and a separately formed cover, each of said bottom tray and cover including: 1. a base portion, 2. walls attached to said base portion and forming a containment area therebetween, means attaching said walls to each other, 3. a bonding panel secured by a foldline to an edge of each of one pair of said walls and having a releasable adhesive thereon for securing the bottom tray and cover together and for repeated opening and closing of said container.
b. at least one of said bonding panels having an unbonded area forming a vent to release preasure from the interior to the exterior of said container, said at least one bonding panel further including cuts forming a bending area adjacent said foldline in said at least one bonding panel and in line with said unbonded area, said bending area allowing release of excessive pressure in said container.

4,804,138
REINFORCED FLANGE TOP LIFTING CARTON
William W. McFarland, Cordova, Tenn., assignor to International Paper Company, Purchase, N.Y.
Filed Apr. 29, 1988, Ser. No. 188,516
Int. Cl.[4] B65D *5/46*
U.S. Cl. 229—171 **11 Claims**

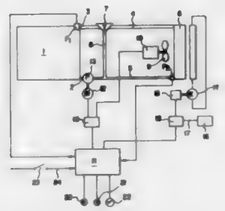
1. A tube type top lifting carton formed from a unitary blank of paperboard, said carton having a plurality of sidewalls each having an upper edge, the upper edge of each sidewall carrying an integral flap foldably secured thereto, each flap having a first flange panel of uniform width and folded substantially 180 degrees from the upper edge of the respective sidewall and lying substantially parallel to an outer surface of its respective side wall, to thereby define a lift truck blade receiving recess, each first flange panel foldably secured to a second flange

panel of uniform width secured to a lower edge of said first flange panel and lying on a radially outermost surface of said first flange panel, each flap having a top closure forming panel foldably secured to said second flange panel, said top forming panels being horizontally disposed to form a top closure for said carton and being folded substantially 90 degrees from an upper edge of said second flange panel, one end of one of said flange panels integrally carrying a tongue which extends from said one flange panel end to a zone between the first and second flange panels of a next adjacent sidewall, whereby said tongue is sandwiched by portions of said first and second



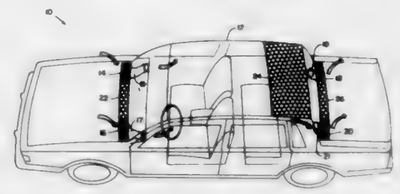
flange panels of said next adjacent sidewall, a flexible reinforcing strip extending from a free end of said tongue, said reinforcing strip positioned between said first and second flange panels, ends of said reinforcing strip being overlapped and separated by the thickness of said tongue to thereby form a substantially continuous reinforcing member of greater than 360 degrees annular extent, lower edges of said sidewalls carrying means for forming a bottom, whereby outward bowing of said first and second flange panels is lessened when fingers of a fork lift truck are inserted between any sidewalls and its respective first flange panel for lifting the carton when the carton is filled.

4,804,139
COOLING SYSTEM FOR A WATER-COOLED VEHICLE ENGINE
Axel Bier, Gundelsheim, Fed. Rep. of Germany, assignor to Audi AG, Fed. Rep. of Germany
Filed Nov. 9, 1987, Ser. No. 118,401
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1986, 3638131
Int. Cl.[4] F01P *5/14*
U.S. Cl. 236—35 **11 Claims**



1. A cooling system for a water-cooled vehicle engine, including a liquid coolant radiator, an electrically driven fan for impelling cooling air across the radiator, a first heat sensor on or adjustment the engine block, and arranged to trigger certain functions or alarms when a selected water outlet temperature is reached or exceeded, a second heat sensor at or adjacent the outlet from the radiator, and arranged to switch on the fan motor when a selected radiator outlet temperature is reached or exceeded, and an electronic control unit, in which values dependent on selected temperatures of the two heat sensors are stored, and the said functions are executed when the selected temperature(s) is (are) reached, the control unit being arranged to receive the sensed temperature values from both heat sensors, and in the event of failure of one sensor, to take over the function of this sensor by creating a temperature equivalent value by adding to or substracting from the temperature determined by the other sensor the difference in temperature between the two sensors established at running temperature, so as to execute the relevant function(s) when the defined temperature(s) of the failed sensor has (have) been reached or exceeded.

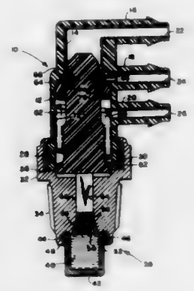
4,804,140
SOLAR POWERED VENTILATING SYSTEM FOR VEHICLES
Ricky L. Cantrell, 2807 Barrett Rd., Gainesville, Ga. 30501
Filed Dec. 24, 1987, Ser. No. 137,588
Int. Cl.[4] F24F *7/06, 13/12*
U.S. Cl. 236—49 **1 Claim**



1. A solar powered ventilating system for a vehicle, comprising:
a pair of spaced air intake vents disposed adjacent a front portion of said vehicle;
a pair of spaced air exhaust vents disposed adjacent a rear portion of said vehicle;
each of said vents formed as a thin plate provided with a series of spaced apertures;
a pair of connected slide plates slidably disposed beneath said air intake and said air exhaust vents, each pair of said slide plates having a series of spaced apertures for registry with said vent plate apertures;
a rod connecting each pair of said slide plates together and to an electrical solenoid actuator for moving said slide plates into and out of registry with said vent plates;
an air duct communicating with each of said vents;
an electrical air blower fan received in each of said air ducts;
a first solar panel on an exterior surface of said vehicle, between said air intake vents;
a second solar panel on an exterior surface of said vehicle, between said air exhaust vents;
a third solar panel on an exterior roof surface of said vehicle;
a first switch connected to be closed when an ignition switch of said vehicle is turned off;
a thermostatic switch which is closed when the temperature in the interior of said vehicle rises above a predetermined level;
said air blower fans, said solar panels, and said solenoid actuators connected in parallel;
and
said first switch and said thermostatic switch connected in series whereby, when said vehicle ignition switch is turned off and the temperature in said vehicle interior exceeds said predetermined level, said intake and exhaust vents will be opened, and air will be drawn through said vehicle interior by said air blower fans.

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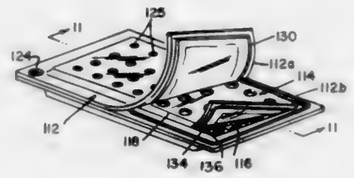
4,804,141
THERMALLY RESPONSIVE VALVE
Daniel C. Stahly, Elmhurst, Ill., assignor to Eaton Corporation, Cleveland, Ohio
Filed Sep. 3, 1985, Ser. No. 772,578
Int. Cl.[4] G05D *23/12*
U.S. Cl. 236—100 **3 Claims**



1. A thermally responsive vacuum valve comprising:
(a) housing means defining a valving chamber having a plurality of fluid ports therein, said housing means defining an annular first valve seat closely adjacent one of said fluid ports;
(b) an annular insert member disposed in said housing means and having formed therein an annular second valve seat positioned in said chamber closely adjacent said one port and oppositely disposed thereabout with respect to said first valve seat;
(c) a moveable valve member disposed in said chamber and having a sealing ring therein disposed for movement between said first and second valve seats;
(d) said housing means defining an annular shoulder for registration of said insert member;
(e) annular rib means formed integrally with one of said insert and said shoulder;
(f) a spring having one reaction end thereof registering against said annular insert, said spring operative to effect sufficient material deformation as between said shoulder and said rib to effect a fluid pressure seal about said insert, said spring having the opposite reactive end thereof registering against said moveable valve member, whereby a common spring force is operative against said annular insert and said valve member;
(g) thermally responsive means operative to effect movement of said valve member between said first and second valve seats.

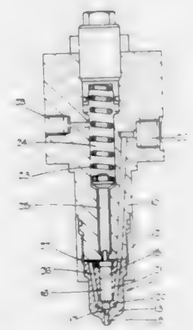
4,804,142
PEST REPELLENT ARTICLES
Thomas J. Riley, 195 Kingsbury Ave., Bradford, Mass. 01835
Continuation-in-part of Ser. No. 787,614, Oct. 15, 1985, abandoned. This application May 21, 1987, Ser. No. 52,781
Int. Cl.[4] A61L *9/04*
U.S. Cl. 239—56 **4 Claims**

1. A pest repellent article for dispensing a volatile pest repellent composition comprising:
an outer envelope member having first and second side members formed of a flexible material impervious to said volatile repellent composition;
said first and second side members of said outer envelope having corresponding peripheral edges;
means for releasably sealing the peripheral edges of said outer envelope member comprising:
a rib means disposed about the peripheral edge of one of said side members; and
a slot means disposed about the peripheral edge of the other side member;
said rib means and said slot means forming a releasable pressure-sensitive frictional seal impervious to said volatile repellent composition;
an inner removable, flexible container member having first and second side members formed of a flexible material;
said first and second side members of said inner container member having corresponding peripheral edges;
means for releasably sealing the peripheral edges of said first side member to said second side member of said inner container to form a releasable seal;
a pest repellent composition carrier disposed within said inner container member;



said repellent composition carrier being saturated with a volatile pest repellent composition;
a pluralijty of apertures disposed in the first and second side members of said inner container member communicating with said pest repellent composition carrier; and
indicia means disposed upon the outer surface of said first and second side members of said outer envelope;
said indicia means being in register with adjacent apertures disposed in the first and second sides of said inner container member whereby a puncture of the area of said first and second sides of said outer envelope defined by said indicia meaans exposes the adjacent aperture carried by said inner container member to thereby expose said volatile pest repellent composition to the environment.

4,804,143
FUEL INJECTION NOZZLE UNIT
Gerald S. Thomas, Gloucester, England, assignor to Lucas Industries Public Limited Company, Birmingham, England
Filed Mar. 7, 1985, Ser. No. 709,303
Claims priority, application United Kingdom, Apr. 5, 1984, 8408752
Int. Cl.[4] B05B *9/00*; **F02M** *55/00*
U.S. Cl. 239—126 **9 Claims**

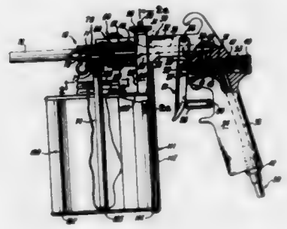


1. A fuel injection nozzle unit for supplying fuel to a compression engine comprising:

a main body;
a nozzle body connected to said main body;
a bore defined in the nozzle body;
a chamber located at one end of said bore and which is adapted to contain fuel therein;
an outlet orifice in said nozzle body extending from said chamber;
a seating defined on said nozzle body in said chamber adjacent to said outlet orifice;
a valve member slidably positioned in said bore and shaped at one end thereof for co-operation with said seating, said valve member being adapted to be moved by pressure exerted thereon by fuel in said chamber;
a resilient means located in said main body and biasing the valve member one end into contact with said seating;
a fuel inlet in said main body and adapted to be in fluid communication with said bore and in fluid communication with said chamber;
a surface defined on said valve member against which the pressure of fuel supplied to said inlet can act in opposition to the force exerted by said resilient means;
a fuel outlet in said main body;
a fuel circulation flow path means extending through said main and nozzle bodies, said flow path means extending between said fuel inlet and said fuel outlet and being adapted so that fuel supplied to said fuel inlet can flow therethrough at least when the valve member one end is in contact with said seating, said flow path means including a fuel inlet passage fluidly connected to said fuel inlet and extending through said main body and through said nozzle body and which is fluidly connected to said chamber, and a further fuel passage in said nozzle body which is fluidly connected to said chamber and which is dead-ended by said main body, a spring chamber defined in said main body and which is fluidly connected to said fuel outlet, a flow port fluidly connecting said spring chamber to said nozzle body bore, and a restricted orifice passage means in said nozzle body fluidly connecting said further fuel passage to said nozzle body bore; and
said valve member including a portion thereof which is located between said restricted orifice passage means and said flow port and which is movable with said valve member to be moved from a flow port opening position when said valve member one end is engaged against said bore seating so that fluid is permitted to flow through said flow path means from said fuel inlet to said fuel outlet to a flow port closing position when said valve member one end has moved away from said bore seating a predetermined distance so that when the valve member is moved said predetermined distance away from said seating, flow of fuel through said flow path means is prevented.

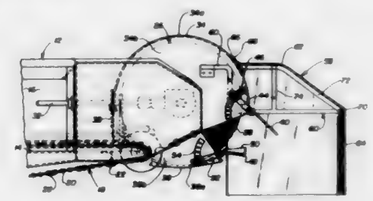
4,804,144
APPARATUS FOR DISPENSING VISCOUS MATERIALS
Stephen A. Denman, Centerville, Ohio, assignor to Tekex Company, Dayton, Ohio
Filed Sep. 21, 1981, Ser. No. 303,777
Int. Cl.[4] B05B *7/30*
U.S. Cl. 239—346 **8 Claims**

1. Apparatus capable of use to effectively dispense viscous material in a spray form comprising a plurality of tubular elements the interior wall surface of each of which defines a bore open to each of its opposite ends, one of said elements providing an eductor tube and another a nozzle tube, said elements being constructed of disposable non-metallic material and being configured to have a direct axial application and telescopic interfit of one thereof to another to provide a unitized tubular structure wherein said nozzle and said eductor tubes are in a substantially coaxial relation, an opening being defined in one of said tubular elements adapting said tubular structure for the coupling thereto of a syphon tube, or its equivalent, which may be applied to place material to be dispensed in open communication with the bore of said eductor tube, said nozzle tube being adapted to be applied to the discharge end of a device capable of delivering therethrough a pressured flow of gaseous fluid, the bore of said nozzle being formed to receive and produce therein a substantially uniform flow of such gaseous fluid and to provide a high velocity discharge thereof to and through said eductor tube to draw thereto the material to be dispensed and carry it therewith through the bore of said eductor tube, said eductor tube being configured to provide that the material drawn thereto is influenced thereby to uniformly disseminate in the gaseous fluid and in the discharge thereof be uniformly dispersed in a manner to facilitate a controlled deposit thereof on a surface, as and when required said tubular elements including a third tube which bridges said eductor and nozzle tubes, said opening being a substantial radial opening in the wall of said third tube, a further small bore syphon or like tube applied within and in telescopically coupled relation to said tubular structure to have



one end thereof positioned in means forming a radial extension of said opening and to extend therefrom for the placement of the bore thereof in open communication with materials to be dispensed, in which the opposite end of the syphon or like tube is immersed, and said further small bore tube having a portion thereof extended to project within the bore of said eductor tube at the end thereof which constitutes its inlet end, said portion of said small bore tube positioning in a substantially concentric spaced relation to the inner wall surface of said eductor tube and providing thereby that the gaseous fluid discharged from said nozzle tube is directed to move in a high velocity flow in surrounding relation to that portion of said further small bore tube within said eductor tube to induce the flow therethrough and therefrom of the material with which it has been placed in communication, the construction and arrangement providing for a dissemination of such material in the flow of the gaseous fluid discharged from said eductor tube.

4,804,145
COMPOST SPREADER
Shaun A. Seymour; John B. Crego, both of New Holland, and James T. Clevenger, Jr., Lancaster, all of Pa., assignors to New Holland, Inc., New Holland, Pa.
Filed May 22, 1987, Ser. No. 53,460
Int. Cl.[4] A01C *3/06*
U.S. Cl. 239—666 **5 Claims**



1. A spreader adapted for spreading compost compriaing:
a container for holding compost, said container having a

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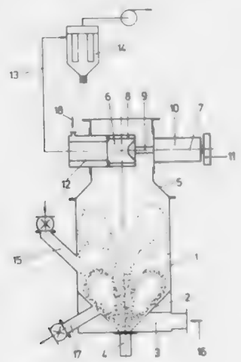
floor with a front end and a rear end, sidewalls, and a front wall adjacent the front end of said floor;
an apron conveyor disposed in said container for moving compost rearwardly in said container, said apron conveyor having an upper run movable along said floor from the front end to the rear end thereof;
a brush rotatably mounted between the sidewalls of said container adjacent the rear end of said floor for discharging compost from said container;
a shroud disposed over said brush;
gate means disposed forwardly of said brush for controlling the amount of compost moved toward said brush by the upper run of said apron conveyor;
means for directing compost discharged by said brush toward the ground, said directing means including a drape mounted on said shroud extending around the discharge side of said brush and an impact plate adjustably mounted on said shroud underneath said drape rearwardly of said brush, said impact plate extending substantially the full length of said brush; and
a pan disposed under said brush, said directing means further including a baffle assembly adjustably mounted on said pan and positioned below said impact plate, said baffle assembly being adjustable upwardly and downwardly with respect to said impact plate, said baffle assembly including a plurality of directional vanes which are angularly adjustable to evenly disperse the compost discharged by said brush.

4,804,146

METHOD FOR THE CONTINUOUS PRODUCTION OF GRANULATES FROM A SOLID IN A FLUIDIZED BED OF MATERIAL

Roland Nied, Boastettten, and Herbert Hackl, Augsburg, both of Fed. Rep. of Germany, assignors to Alpine Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Dec. 1, 1986, Ser. No. 936,198
Int. Cl.[4] B01J *8/24*
U.S. Cl. 241—5 8 Claims



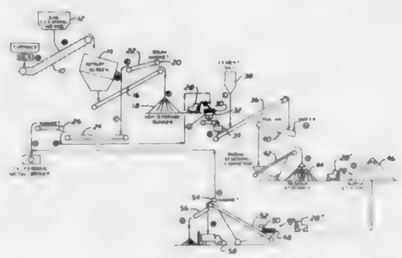
1. A method of continuously producing granulates from a solid, comprising the steps of:
disposing a quantity of a pregranulated solid material in a vessel having a spray nozzle in its lower portion, and having a centrifugal separator disposed in a upper portion thereof,
fluidizing the pregranulated solid material by injecting a drying gas into the vessel, and
spraying a mixture of water and the solid to be granulated into the vessel through the spray nozzle,
wherein the rate of injection of the drying gas and the rate of spraying are such that a first portion of the solid is dried and forms a relatively coarse seed for formation of a granulate, and is precipitated downwardly and further coated by said sprayed mixture thus forming a granulate, a second portion of the solid is dried, forming a relatively fine powder too fine to serve as a seed for the granulate, and is removed by said centrifugal separator, and a third portion of the solid, having been granulated, is removed from the vessel.

4,804,147

PROCESS FOR MANUFACTURING AGGREGATE FROM ASH RESIDUE

William F. Hooper, Brandon, Fla., assignor to Waste Management Energy Systems, Inc., Tampa, Fla.

Filed Dec. 28, 1987, Ser. No. 138,304
Int. Cl.[4] B02C *19/12*
U.S. Cl. 241—24 24 Claims



1. A process for manufacturing aggregate from ash residue, comprising the steps of:
(a) comminuting the ash residue to create an average particle size and a particle size distribution approximating that which is desired for the final aggregate;
(b) adding a heavy metal immobilizing agent and a volumetric stabilizing agent to the ash residue;
(c) adding sufficient water for effectively mixing and reacting said heavy metal immobilizing agent and said volumetric stabilizing agent with the ash residue;
(d) mixing said heavy metal immobilizing agent, said volumetric stabilizing agent and said water with the ash residue;
(e) retaining the resulting mixture of said heavy metal immobilizing agent, said volumetric stabilizing agent, said water and the ash residue for sufficient time to allow the immobilizing and stabilizing reactions to occur and weak agglomerations to form; and
(f) breaking up said weak agglomerations into individual particles before a solid mass is formed.

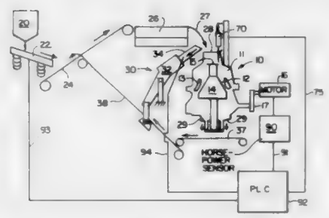
4,804,148

CRUSHER CONTROL SYSTEM

Johnny E. Etheridge, 1744 Old Powhatan Estates Dr., Powhatan, Va. 23139

Filed Feb. 19, 1988, Ser. No. 157,982
Int. Cl.[4] B02C *25/00*
U.S. Cl. 241—35 3 Claims

1. A control system for a rock crusher operating in a rock crushing plant, comprising:
the plant having a feeder, and first conveyor means for conveying rock from the feeder to a mouth of a crusher;
the crusher having a motor for driving the crusher;
a horsepower sensor for sensing the horsepower output of the motor driving the crusher;
a programmable logic controller having means for controlling the output of the feeder;
a level sensor mounted in the crusher for sensing the level of rock within a crusher bowl of the crusher;
second conveyor means for receiving rock discharged from the crusher and for returning the discharged rock to the first conveyor means; a bypass chute means component located between said first conveyor means and the mouth of the crusher for diverting a selectable portion of the flow of rock intended to be delivered to the mouth of the crusher from said first conveyor means and for delivering said diverted rock onto said second conveyor means;
said programmable logic controller further having means for controlling the amount of rock diverted from the flow of



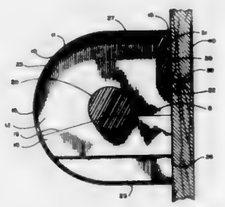
rock intended to be delivered leaving said first conveyor means and intending to be delivered into the mouth of the crusher; and
said programmable logic controller having means for receiving the sensed horsepower signal and level signal from the horsepower sensor and the level control device respectively, and commanding the feeder and bypass chute component respectively to correspondingly increase or decrease the feed rate of rock entering the mouth of the crusher.

4,804,149

TOILET PAPER DISPENSER

James Murphy, 5080 San Anselmo St., Las Vegas, Nev. 89120

Filed Aug. 13, 1987, Ser. No. 84,846
Int. Cl.[4] B65H *19/00*
U.S. Cl. 242—55.53 6 Claims



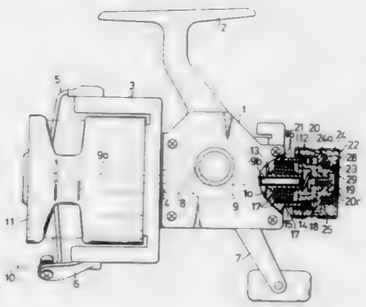
1. Apparatus for dispensing a cylindrical roll of paper having an axial opening therethrough comprising:
a housing having first and second flat opposing side walls and a curved front wall, said side walls and front wall forming an interior chamber adapted to enclose said roll of paper,
said housing having a rear opening for insertion of the roll of paper and an aperture in the front wall through which the paper is threaded for dispensing,
first and second spaced parallel track means, interior of the chamber, said track means sloping downwardly toward a front portion of the chamber and having a substantially horizontal rear portion, and a straight, downwardly sloping forward portion at a angle of from about 5° to about 30° from horizontal,
a spool adapted to journal through the axial opening in the roll of paper, said spool having cylindrical roller means extending axially from end portions thereof, said roller means adapted to engage the track means,
and mounting means for mounting the housing on a vertical surface.

4,804,150

APPARATUS FOR MEASURING THE DRAG-FORCE OF A FISHING REEL

Shinji Takeuchi, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Jul. 29, 1987, Ser. No. 79,262
Claims priority, application Japan, Jul. 30, 1986, 61-179035; Aug. 1, 1986, 61-181459; Nov. 7, 1986, 61-265274; Mar. 3, 1987, 62-48364; Mar. 3, 1987, 62-48366; Mar. 3, 1987, 62-48367
Int. Cl.[4] A01K *89/02*; B60T *13/04*; F16D *55/02*
U.S. Cl. 242—84.5 A 8 Claims



1. In a fishing reel having a reel body, a spool rotatably carried on said reel body, a fishing line wound about said spool, and a drag device operatively engaged to said spool, an apparatus for measuring and adjusting the actual drag force of said spool comprising an adjusting knob rotatably supported on said reel body, means engaging said knob to said drag device whereby through rotation of said knob said drag device will impart to said spool an undetermined drag force, a lug carried on said knob for relative rotation with respect thereto, means interengaging said knob and lug for development of a torque upon relative rotation of said lug corresponding to the drag force actually imparted whereby said knob and lug are jointly rotatable when said torque is exceeded, scalar means corresponding to the angle of relative rotation of said knob and lug, and means for displaying the scalar value representing the actual drag force.

4,804,151

METHOD AND MEANS FOR CONTROLLING THE AUTOMATIC WINDING OF YARN ON A TAKE-UP PACKAGE OF A TEXTILE WINDING MACHINE

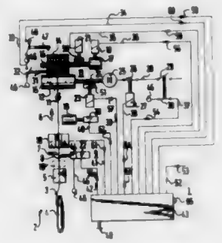
Gregor Kathke, Viersen, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Fed. Rep. of Germany

Filed Dec. 23, 1987, Ser. No. 137,398
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1986, 3644433
Int. Cl.[4] B65H *54/22*
U.S. Cl. 242—35.6 R 9 Claims

1. A method of controlling the automatic winding of yarn on a take-up package of a textile winding machine of the type having a yarn severing device, a yarn presence monitoring device, a yarn joining device, a yarn take-up package driving device, and a yarn accumulation sensing device, said method comprising actuating said yarn severing device to sever the yarn being wound at each interruption of winding independent of the cause of interruption, sensing the quality of winding at each interruption, comparing the characteristics of the supply

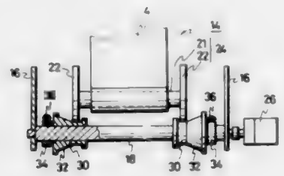
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yarn and the take-up yarn at each interruption, and preventing automatic winding restart if at least one of said quality sensing



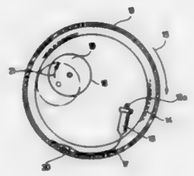
senses a winding quality less than a predetermined quality or the characteristics of the yarn being compared are dissimilar.

4,804,152
WEB WINDING APPARATUS
Yoshihiro Masuda, Otsu, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan
Filed May 21, 1987, Ser. No. 53,340
Claims priority, application Japan, May 26, 1986, 61-79248[U]
Int. Cl.[4] B65H *18/08*
U.S. Cl. 242—67.1 R 7 Claims



1. A web winding apparatus, which comprises:
a reel including a winding shaft and flanges fixed to the winding shaft;
a pair of rollers for driving the reel under frictional drive imparted thereto through the flanges;
at least one of the driving rollers having collars at opposite ends through which the driving roller imparts frictional drive to the reel;
wherein each collar is provided with a tapered portion whose diameter becomes smaller in the direction of the reel and wherein the maximum diameter portion of each collar is spaced apart from the associated flange when said reel is substantially centered on the collars; and
wherein each collar includes a generally constant diameter portion disposed adjacent each tapered portion such that the generally constant diameter portions are located between the tapered portions.

4,804,153
METHOD AND APPARATUS FOR WITHDRAWING LONG-SIZED OBJECTS
Masaobu Nishio; Kazuo Sawada; Kazuhisa Yamauchi, and Saburo Yoshimura, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
PCT No. PCT/JP86/00318, § 371 Date Feb. 17, 1987, § 102(e) Date Feb. 17, 1987, PCT Pub. No. WO87/00155, PCT Pub. Date Jan. 15, 1987
PCT Filed Jun. 24, 1986, Ser. No. 31,560
Claims priority, application Japan, Jun. 26, 1985, 60-139718
Int. Cl.[4] B21C *47/02*; B22D *11/00*
U.S. Cl. 242—78.1 14 Claims

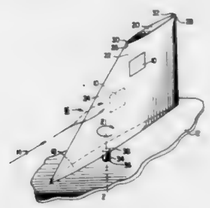


8. An apparatus for continuously withdrawing an elongated product out of a melt, comprising a cooling drum rotatably mounted for maintaining a layer of cooling liquid on an inner peripheral surface of said drum when said drum is rotating about a drum axis, a winding reel having an outer peripheral winding surface, said winding reel being mounted inside said cooling drum on a reel axis extending in parallel to and off-center relative to said cooling drum axis for rotation in the same direction as said cooling drum, a magnetically effective holder element capable of being magnetically attracted to said winding surface of said winding reel, said magnetically effective holder element being initially retained on said inner peripheral surface of said cooling drum by centrifugal force when said cooling drum is rotating, nozzle means located inside said cooling drum for directing a stream of said melt into said layer of cooling liquid for solidifying said stream by quenching to form said elongated product, whereby a leading end of said elongated product is positioned on said magnetically effective holder element for transporting said leading end onto said winding surface of said winding reel, and magnetic means on or in said winding surface of said winding reel for attracting said magnetically effective holder element with said magnetically effective holder element passes by sufficiently close to said winding reel for transferring said magnetically effective holder element and said leading end onto said winding surface against said centrifugal force, said magnetic means securing said magnetically effective holder element and thereby also said leading end to said winding surface for a continuous withdrawing operation as long as said cooling drum and said winding reel are rotating.

4,804,154
PASSIVE AERODYNAMIC LOAD MITIGATION SYSTEM
James M. Davis, Caddo Mills, Tex., assignor to E-Systems, Inc., Dallas, Tex.
Continuation of Ser. No. 910,085, Sep. 22, 1986, abandoned. This application Feb. 29, 1988, Ser. No. 165,381
Int. Cl.[4] B64C *1/36*
U.S. Cl. 244—1 R 9 Claims

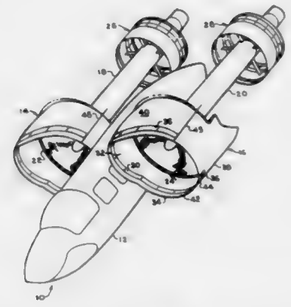
1. A passive aerodynamic structure for supporting electromagnetic transducers on an external surface of an aircraft while mitigating aerodynamic impact and structural load on said aircraft comprising:
an aerodynamically configured housing for supporting the electromagnetic transducers in an airstream and having a base portion, a top portion and first and second symmetrical sidewall portions,
means for preventing flutter of said housing comprising:

a. a tubular tip pod extending horizontally from said housing,
b. ballast weights geometrically located on the tip pod such that dynamic inertial nodal balancing occurs, and
c. means for attaching said housing to said aircraft in an unrestrained rotational relationship, and



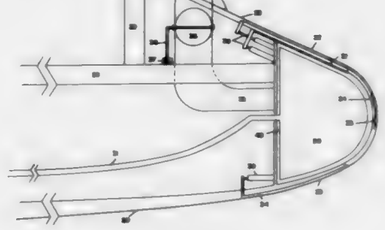
means for providing static aeroelastic stability of said housing comprising a pivot mechanism on said housing for attaching said housing to said aircraft in the unrestrained rotational relationship, said pivot mechanism being located with respect to said housing such that the aerodynamic center of the housing always lies on a chord downstream of said pivot mechanism.

4,804,155
VTOL AIRCRAFT
William P. Strumbos, 85 Middleville Rd., Northport, N.Y. 11768
Continuation of Ser. No. 600,032, Apr. 12, 1984, abandoned. This application Mar. 2, 1987, Ser. No. 20,352
Int. Cl.[4] B64C *3/10, 29/00*
U.S. Cl. 244—12.6 19 Claims



1. In a VTOL aircraft having a longitudinally extending load-carrying fuselage with alighting means, said fuselage having a nose and an after end and having controls for the operation of said aircraft, the improvement comprising; arcuate airfoil surfaces fixedly attached to said fuselage, annular empennage means including fixed airfoil surfaces at said after end of said fuselage, the chords of said airfoil surfaces being substantially parallel to said longitudinal axis of said aircraft, said longitudinal axis and said fixed airfoil surface chords normally being maintained in a substantially horizontal orientation during substantially all phases of VTOL flight and during transition to conventional flight, a power plant driving propulsion means for generating a high-velocity slipstream essentially rearwardly and substantially parallel to said longitudinal axis, said propulsion means having the capability for imparting forward motion to said aircraft, said slipstream passing over said airfoil surfaces to generate lift forces by top surface blowing, said slipstream producing a flow over said empennage airfoil surfaces to generate lift forces thereby, first control means on said arcuate airfoil surfaces for operating on the flow to selectively control the pressure thereover to direct selectively the flow induced radial lift forces generated thereby, second control means on said empennage airfoil surfaces for operating on the flow to selectively control the pressure thereover to direct selectively the flow induced radial lift forces generated thereby, and flow vectoring means in said empennage means for individually and collectively reacting and vectoring selectively the thrust forces generated by said flow; whereby, for conventional flight, said propulsion means propels said aircraft such that the forward velocity thereof produces a flow over said airfoil surfaces that contributes lift for flight and said first control means on said arcuate airfoil surfaces and second control means on said annular empennage airfoil surfaces vector said lift radially to provide directional control and, whereby, for VTOL flight, said propulsion means produces a high-velocity flow over said arcuate airfoil surfaces to generate lift for flight by top surface blowing and said flow vectoring means in said annular empennage blocks the flow therethrough to react and vector the slipstream from said propulsion means radially to provide directional control in coordination with said first control means and to react selectively said thrust produced by said propulsion means to regulate horizontal travel of said aircraft such that controlled vertical flight results.

4,804,156
CIRCULAR AIRCRAFT
Rodney D. Harmon, 4288 Burnett Rd., Lincoln, Calif. 95648
Filed Jul. 28, 1987, Ser. No. 78,905
Int. Cl.[4] B64C *39/06*
U.S. Cl. 244—23 C 1 Claim



1. A circular aircraft comprising:
a. An outer and inner frame work designed to form a circumference of convexo-convex shape, a frame work to provide a power impeller housing around the circumference, a central frame work to provide, in the central region of the circumference, a canopied control, passenger and cargo section; a further frame work and bracket assembly to provide for any necessary appendage to the aircraft;
b. External control flaps, screened top air intake ports, screened bottom and side exhaust ports provided with strategically placed slide plates and operated from a central control center, providing a dual control system for the total control of movement of the aircraft;
c. An airduct system for control of counter rotation extending from the power impeller housing and exhausting to the atmosphere through a controlled damper;
d. A power impeller designed to provide vertical lift and horizontal thrust housed in the outer circumference of the aircraft;
e. A power source consisting of one or more battery bank(s), a voltage convertor, a variable speed control, an electric motor, a gear differential, a generator and back-up generator and a battery charger, connecting to the power impel-

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ler by connecting arms from a geared driveline extending from the gear differential;

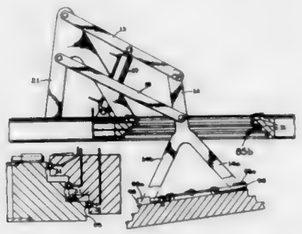
f. An alternate power supply to the power impeller consisting of a internal combustion engine.

4,804,157

FUEL DUMPING VALVE FOR AIRCRAFT

Ralph P. Muscatell, 2007 NE. 20th Ave., Fort Lauderdale, Fla. 33305

Continuation-in-part of Ser. No. 635,802, Sep. 30, 1984, Pat. No. 4,624,426. This application Sep. 15, 1986, Ser. No. 907,111
The portion of the term of this patent subsequent to Nov. 25, 2003, has been disclaimed.
Int. Cl.[4] B64D *37/26*
U.S. Cl. 244—135 R **24 Claims**



14. Fuel dumping valve for the fast evacuation of a fuel tank disposed at the underside of the fuel tank of an aircraft comprising:

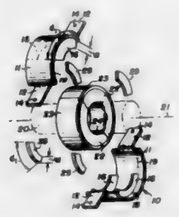
a valve head having an open and a closed position, and an upper and a lower surface, said open position being outside the fuel tank in a downward and forward tilting position to facilitate removal of he outrushing fuel.

4,804,158

INSULATED PIPE ANCHOR APPARATUS

Seymour Collins, and William F. McClellan, both of Vacaville, Calif., assignors to Pipe Shields, Inc., Vacaville, Calif.

Continuation-in-part of Ser. No. 875,285, Jun. 17, 1986, abandoned. This application Jul. 24, 1987, Ser. No. 77,581
Int. Cl.[4] F16L *3/16*
U.S. Cl. 248—74.4 **26 Claims**



24. An insulating pipe anchoring apparatus comprising:

a frame comprising two semicylindrical frame pieces having clamp means for accepting fasteners at each end whereby, when the two pieces are fastened together a hollow cylinder is formed;

an internal insulating structural insert comprising a plurality of pieces which fit snugly within said hollow cylinder and for fitting snugly and concentrically around a pipe to be anchored, the insert being of a thermally insulating and strong compression resistant material;

a first plurality of thrust plates, each of the first plates being attached near an edge of the frame and parallel to the open face of the cylinder formed when said two frame pieces are fastened together, with a radial space intermediate any two of the first thrust plates situated adjacent to each other on the same cylinder face and each of the first plurality of thrust plates abutting an axial end of at least one of the structural inserts;

a second plurality of thrust plates, each of the second plates being attached to the pipe to be anchored, parallel to the open faces of the cylindrical external frame and fitting into said radial spaces intermediate to the first plates and each of the second plurality of thrust plates abutting an axial end of at least one of the structural inserts;

a third plurality of thrust plates, each of the third plates being attached to the frame, parallel to said pipe and between two thrust plates of the first plurality and having a gap between the third thrust plates and said pipe;

a fourth thrust plate attached to said pipe parallel to the pipe and between two thrust plates of the first plurality and having gaps between fourth thrust plates and both the frame and thrust plates of the first plurality such that if the pipe rotates, at least one piece of the internal insulating structural insert is compressed between the fourth thrust plate and at least one of the third plurality of thrust plates;

a packing material in gaps between thrust plates of the third plurality and four type;

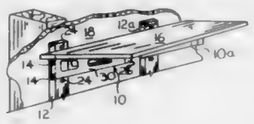
whereby compression of the structural insert provides positive restraing against rotational, latereal, axial or vertical movement of said pipe relative to the external frame.

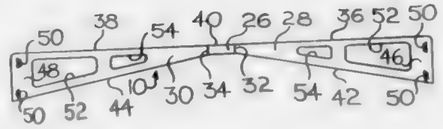
4,804,159

SHELF BRACKET

André A. Martel, 84, des Pionniers, Vaudreuil, Québec, Canada J7V 5V5

Filed Feb. 1, 1988, Ser. No. 150,748
Int. Cl.[4] A47G *29/02*
U.S. Cl. 248—248 **6 Claims**





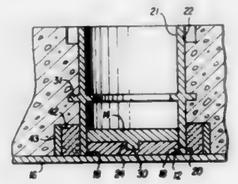
1. A shelf bracket adapted to be mounted on an upstanding exposed stud, the said bracket comprising, a substantially rectangular front flange having two opposed parallel sides, and two laterally spaced flanges having a generally triangular shape, said triangular shape being truncated at its apex to form a flat side across its apex, said flat sides co-extending with each of said parallel sides and foldingly connected thereto along said parallel sides, said spaced flanges being angularly movable relative to each other of the front flange and of the two spaced flanges having a collinear top edge defining a single plane, the height of said spaced flanges corresponding substantially to said parallel sides the end of the spaced flanges remote from the front panel being adapted to be fastened to the sides of an upstanding exposed stud whereby said spaced flanges are adapted to be angularly displaced from each other about said opposed parallel sides of the front flange.

4,804,160

AUTOMATICALLY-RELEASABLE PIPE-ATTACHMENT DEVICE

Gerold J. Harbeke, 2807 S. Military Trail, West Palm Beach, Fla. 33415

Continuation-in-part of Ser. No. 92,337, Sep. 1, 1987. This application Nov. 3, 1987, Ser. No. 116,175
Int. Cl.[4] E04G *15/06*
U.S. Cl. 249—207 **7 Claims**



1. Pipe-attachment apparatus for attaching an elongated pipe to a concrete form wall, with an axis of said pipe extending laterally away from said form wall said apparatus including:

a first attachment means for being attached to said concrete from wall, said first attachment means helping to support said pipe on said concrete form wall;

a second attachment means separate from said first attachment means and said pipe, said second attachment means defining a radially outwardly directed surface for tightly contacting a radially inwardly directed, internal surface of said pipe to have frictional engagement therewith, thereby helping to support said pipe on said concrete form wall, said second attachment means contacting only said radially inwardly directed internal surface of said pipe;

one of said first or second attachment means including an axially extending protrusion having a length of less than approximately 1 inch and the other including an axially extending cavity for slidably receiving said protrusion, said protrusion defining a radially outwardly directed protrusion surface means and said cavity being defined by a radially inwardly directed cavity surface means, said protrusion and cavity surface means being of approximately the same size for fitting tightly together but allowing sliding axial movement between them without damaging either member, means for attaching said first attachment means to said concrete form wall to permit said sliding axial movement, said protrusion and cavity surface means thereby aiding in supporting said pipe on said concrete form wall during a pouring of concrete, but after the concrete is cured allowing the form wall to be removed in an axial direction with said first and second attachment means easily sliding away from one another leaving the first attachment means on the concrete-form wall and the second attachment means on said pipe.

4,804,161

HANGING DEVICE FOR PICTURE FRAMES OR LIKE OBJECTS, AND METHOD

William H. Wallo, Clearwater, Fla., assignor to W. H. Wallo & Associates, Inc., Clearwater, Fla.

Continuation-in-part of Ser. No. 522,018, Aug. 11, 1983, abandoned. This application Sep. 26, 1984, Ser. No. 654,536
Int. Cl.[4] A47G *1/02*
U.S. Cl. 248—544 **23 Claims**

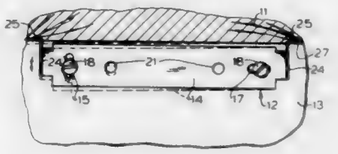
1. A hanging device for picture frames or like objects, comprising:

an elongate horizontally positionable one piece sheet metal stamping base bar of substantial width having front and back faces and means for attaching the bar to a vertical supporting surface such as a wall and with said back face directed toward said supporting surface;

and upwardly projecting means at opposite end portions of said bar;

said upwardly projecting means being adapted to engage a downwardly facing surface of the top molding of a frame, or other hanging means on a picture or other object to be hung, for thereby supporting the same in a stable, non-skewing hanging position;

said means for attaching the base bar comprising a horizontally elongate fastener hole in one end portion of the bar for a first fastener and a vertically elongate fastener hole in the opposite end portion of the bar for a second fastener, so that accurate horizontal adjustment can be attained by horizontally adjusting the bar along said first fastener, and then attaining accurate vertical adjustment by fulcruming the bar about said first fastener and along said second fastener, and adapted for finally fixedly securing the bar in adjusted position by means of said fasteners.

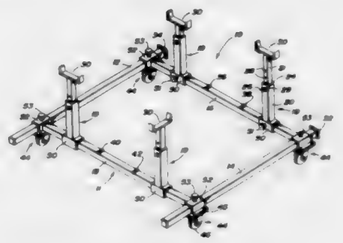


4,804,162

ADJUSTABLE ENGINE SUPPORT

Joseph M. Rice, 115 E. Fairview St., Bethlehem, Pa. 18018, assignor to Joseph M. Rice, Bethlehem, Pa.

Filed Jun. 29, 1987, Ser. No. 67,550
Int. Cl.[4] F16M *1/00*
U.S. Cl. 248—671 **13 Claims**



1. An adjustable, portable engine support for engines of front wheel drive vehicles and the like, comprising:

(a) a generally rectangular base including two generally parallel end bars and two generally parallel side bars;

(b) at least three support legs, each leg having sliding means for mounting one end of said leg to one of said side bars and extending generally upwardly;

(c) vertically adjustable and independently movable bracket mounted on each of said support legs; and,

(d) an engine support cradle freely rotatably mounted on each of said vertically adjustable brackets,

whereby said engine support may be multiply configured by independently positioning said engine support cradles both horizontally and vertically to accomodate a plurality of vehicles and engines.

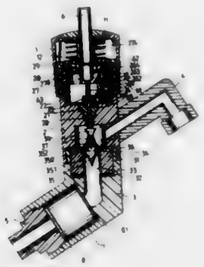
VOL 1099 ISS 2 FE 14 1989 UMI

4,804,163

KEY BUTTON TYPE OF WATER TAP

Shun-Ching Yang, 202-20, Hou-Pi Tsun, Jen Te Hsiang, Tainan Hsien, Taiwan

Filed May 10, 1988, Ser. No. 192,747
Int. Cl.[4] F16K *31/44, 31/53*
U.S. Cl. 251—74 4 Claims



1. A key button water tap comprising:

a middle cylindrical body having an upper and a lower space respectively at its upper and lower ends, a ladder-shaped groove at its central part for receiving a laddershaped ring, a middle seat sleeved into the upper space, a convex cylinder positioned at a central part of the middle seat, and a positioning body at a right edge of the convex cylinder holding a latch by a mandrel passing through the latch into grooves in the positioning body, the latch extending upward to a top seat positioned on the middle seat, a recoil body being provided at the interior of the top seat, four twosectioned bolt cylinders passing through the top seat, and a top cap being sleeved with the top seat and positioned at the upper end of the middle cylindrical body;

an upper cap being received on the upper end of the middle cylindrical body, a compression spring being interposed between the upper cap and the top seat for forcing them apart, screws passing through the two-sectioned bolt sleeves and fixing the upper cap to the recoil body of the middle cylindrical body, so that downward movement of the upper cap will cause the recoil body to move downward and permit recoil thereof by action of the compression spring;

a key button being located between the upper cap and the middle cylindrical body, the key button having a rod extending from the bottom thereof through a spring and then through the ladder-shaped cushion ring and into the lower space of the middle cylindrical body, a cushion ring being placed at a bottom plane of the top seat for preventing the key button from moving out of the top seat, a convex key is provided on a left side of the key button, the convex key exactly fitting within a opening groove located within the recoil body, a gang gear being provided at a right edge of the key button, the gang gear having engaging portions of an upward slanted shaped for engaging a latch edge of the latch and holding the key button temporarily in place;

a water outlet pipe being connected at a right edge of the middle cylindrical body for guiding water flow;

a curved cylinder being screwed onto the lower end of the middle cylindrical body, the curved cylinder having an upper and a lower space;

a valve gate mechanism being provided within the upper space of the curved cylinder, the valve gate mechanism having a positioning cylinder with a circular aperture within its interior, a valve gate comparatively smaller in dimension than the circular aperture being provided at a top end of the circular aperture for enabling an upper part of a circular awl sharp body with a cushion ring thereon to be pushed against the valve gate, a lower part of the awl sharp body being located within the circular aperture of the positioning cylinder, and an awl cap being screwed onto the upper end of the valve gate for restraining the awl-shaped spring, the upper part of the valve gate having an awl-shaped design narrowing in an upward direction with several deep grooves on its surface;

a water pressure reducing mechanism being provided at the lower space of the curved cylinder, the water pressure reducing mechanism having a cylindrical seat and an upper and a lower space respectively above and below the cylindrical seat, the cylindrical seat having a groove at its central position, a cross-character shaped ring being provided at an upper end of the circular groove, a straight rod extending out from a central position of a cross-character base seat through a spring and then through the cross-character shaped ring and projecting into the upper space of the cylindrical body, a horizontal aperture being provided at an end of the straight rod for accepting a circular pin for holding the cross-character base seat in position, a bottom end of the cross-character base seat having a shape of a circular disk and having a cushion ring being sleeved thereon, a buffer cushion ring and a coupling cushion ring being respectively provided at the upper and lower direction of the water pressure reducing mechanism for enabling the curved cylinder to operate by spiral motion conducted by the cylindrical body and to press tightly against the water pressure reducing mechanism;

wherein a supply of water is obtained by pressing the key button causing one of the engaging portions of the gang gear to engage the latch edge of the latch within the middle cylindrical body and causing the rod of the middle cylindrical body and the circular awl sharp body attached thereto to move downward together with the key button for opening the valve gate and releasing water from the water outlet pipe, the gang gear and the latch are arranged so that a deeper downward pressing movement of the key buttom causes a higher engaging portion of the gang gear to engage the latch edge thereby further opening the valve gate and increasing a quantity of water passing through the valve, and

wherein closing of the valve gate is obtained by slightly pressing the upper cap thereby causing the recoil body to move downward and the latch to pivot to its right disengaging the latch edge from the engaging portion of the gang gear, so that the key button will move upward and close the valve gate.

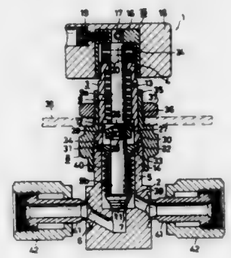
4,804,164

FLOW CONTROL DEVICE

Masahiko Nakazawa, Tokyo; Kazuo Tsukada, Hasuda, and Kazunori Suzuki, Urawa, all of Japan, assignors to Fujikin International, Inc., Osaka, Japan

Continuation of Ser. No. 39,333, Apr. 17, 1987, abandoned. This application Jul. 8, 1988, Ser. No. 217,097
Claims priority, application Japan, Apr. 18, 1986, 61-90629
Int. Cl.[4] F16K *41/10*
U.S. Cl. 251—335.3 2 Claims

1. A flow control device comprising a case having a disk seat and a tubular portion, a closure mounted to said tubular portion of said case, said closure having a top wall, a spindle including an upper spindle member and a lower spindle member, means connecting said upper and lower spindle members for axial movement together while permitting said lower spindle member to rotate relative to said upper spindle member, a disk at the lower end of said lower spindle member and adapted to engage said disk seat, an annular spring support attached to a lower end of said upper spindle member, an aperture through the top wall of said closure, said upper spindle member having an upper end projecting through said aperture, a short cylindrical housing having an upper end wall and fitted over said upper end of said upper spindle member by means of an aperture through said upper end wall, a bore extending through said upper end wall of said housing and said upper end of said upper spindle member, means extending through said bore and securing said housing to said upper spindle member, a handle having a central bore adapted to fit over said housing, axially aligned bores in said housing and said handle, a bolt seated in said bore through said handle and securing said handle to said housing, at least one spindle lifting and lowering ball bearing mounted to said upper end portion of said spindle, said lifting and lowering ball bearing being located internally of said short cylindrical housing and resting for rolling movement on an upper surface of the top wall of said closure, said upper surface of the top wall of said closure having formed therein a lower recessed portion to partially receive said ball bearing, an upper recessed portion to partially receive said ball bearing, and a slanting guide surface between the two recessed portions, a coil spring for biasing the spindle downward to bring the disk into pressing contact with the disk seat, said coil spring being provided around upper spindle



member internally of said closure and interposed between said annular spring support and said top wall of said closure, an annular stepped portion formed internally of the upper end of said tubular portion of said case, a ring fitted to said annular stepped portion, an annular projection adjacent to the lower end of said lower spindle member, a bellows type sealing tube provided internally of said case, said bellows type sealing tube being welded at one end to said annular projection adjacent the lower end of the lower spindle member and at the other end to said ring to thereby seal said lower spindle member, said lifting and lowering ball bearing being movable on the upper surface of the top wall of said closure by rotation of said handle to partially fit said ball bearing into said lower recessed portion and thereby permit said coil spring to hold said disk in pressing contact with said disk seat or to partially fit into said upper recessed portion to compress said coil spring and thereby hold said disk away from said disk seat.

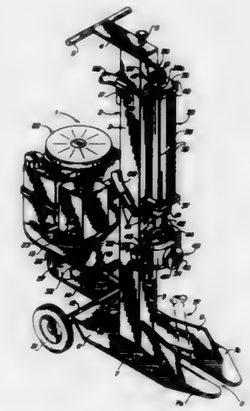
4,804,165

STAKE PULLING APPARATUS

Archie A. Pippin, Rt. 2, Box 211, and Wilton S. Perryman, Jr., Rt. 2, Box 157, both of Minden, La. 71055

Filed Sep. 18, 1987, Ser. No. 98,304
Int. Cl.[4] E21B *19/00*
U.S. Cl. 254—30 4 Claims

1. A stake pulling apparatus for removing a stake from the ground, comprising a base plate adapted for engaging the ground and located in close proximity to the stake; an upward-standing frame carried by said base plate and a hydraulic fluid reservoir provided in said frame for containing a supply of hydraulic fluid; a hydraulic fluid pump mounted on said frame, said hydraulic fluid pump provided in fluid communication with the hydraulic fluid in said hydraulic fluid reservoir; a hydraulic control valve mounted on said frame and a control lever pivotally carried by said hydraulic control valve for controlling the flow of hydraulic fluid from said hydraulic fluid reservoir; a hydraulic cylinder characterized by a pressure cylinder pivotally carried by said frame and a downwardly-extending piston adapted for reciprocating travel in said preasure cylinder, said piston and said pressure cylinder provided in fluid communication with said control valve; a clamp carried by the downwardly-extending end of said piston, a clamp slot provided in said clamp; a chain mount block disposed in said clamp slot; and a clamp pin projecting through said clamp and said chain mount block, whereby said chain mount block is pivotally mounted in said clamp slot; a chain having one end attached to said chain mount block, said chain



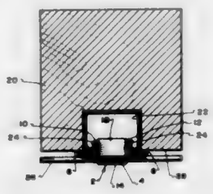
adapted for wrapping around the stake and removably securing said piston to the stake; and a gasoline engine having an engine shaft adapted for coupling to said hydraulic fluid pump in driving relationship for operating said hydraulic fluid pump, reciprocating said piston in said hydraulic cylinder and removing the stake responsive to manipulation of said hydraulic control valve.

4,804,166

ATTACHING CLIP

Gilbert Makus, P.O. Box 171, Basilton, Calif. 93427

Filed Jul. 1, 1987, Ser. No. 68,425
Int. Cl.[4] E04H *17/02*; F16L *3/12*
U.S. Cl. 256—48 7 Claims



1. A clip for attaching a desired element to a fence post formed with a vertical recess therein, said attaching clip comprising:

(a) a front base portion being reversely folded upon itself at its opposite lateral edges, said front base portion before installation of said clip to the post having a generally arcuate configuration and after installation of said clip to the post being capable of being deformably flattened toward the post from said arcuate to a generally planar configuration for locking said clip to the post;

(b) a pair of side anchor portions each merging from one of said reversely folded opposite lateral edges of said front base portion and projecting generally rearwardly therefrom and in laterally spaced relation from one another, said side anchor portions being in an unlocking relation when said front base portion is in its arcute configuration

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for permitting insertion of said anchor portions into the post recess, said side anchor portions capable of being rotated rearwardly and outwardly away from one another to a locking relation upon flattening of said front base portion from its generally arcuate to planar configuration; and

(c) a securing portion attached to and projecting from one of a bottom or top edge of said front base portion for receiving an element to be secured to the post and for capturing the element once said clip has been installed to the post and said front base portion deformably flattened from its generaly arcuate to planar configuration.

4,804,167

APPARATUS FOR MAKING NOBLE METAL/NON-NOBLE METAL COMPOSITE POWDER

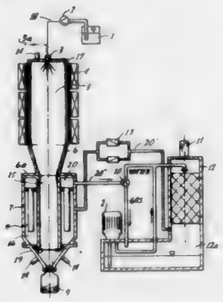
Wulf Kock, Markdorf, and Michael Laboureur, Constance, both of Fed. Rep. of Germany, assignors to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jun. 26, 1987, Ser. No. 67,470

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1986, 3622123

Int. Cl.[4] **C22C** *1/04*

U.S. Cl. 266—200 **13 Claims**



1. Apparatus for providing composite powder particles comprising:

a heated reaction chamber with nozzle means for atomizing a liquid and spraying droplets into the chamber for gas producing reaction and droplet descent;

a hot gas filter with central descent tube, return flow path, filter elements and flow deflection means as well as a collection chamber at the bottom of the filter, the central descent tube being connected to the bottom of the reaction chamber;

a scrubber having an inlet plenum connected (a) to the flow discharge means and (b) to the return flow path via pressure responsive means for limiting the gas pressure in said filter and said reactor chamber using said plenum for equalization.

4,804,168

APPARATUS FOR TREATING MOLTEN METAL

Ryotatsu Otsuka; Shigemi Tanimoto, and Kazuo Toyoda, all of Sakai, Japan, assignors to Showa Aluminum Corporation, Osaka, Japan

Filed Mar. 4, 1987, Ser. No. 21,887

Claims priority, application Japan, Mar. 5, 1986, 61-49146

Int. Cl.[4] **C21C** *7/072*

U.S. Cl. 266—235 **9 Claims**

1. An apparatus for treating a molten metal by releasing a treating gas into the molten metal in the form of finely divided bubbles and dispersing the bubbles throughout the entire body of molten metal to remove dissolved harmful elements and nonmetallic inclusions from the molten metal, the apparatus comprising:

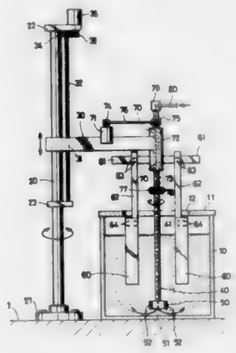
a treating container having an opening at its upper end for containing the molten metal,

suspending means disposed above the treating container and movable upward and downward and in a horizontal plane,

a vertical tube provided for the suspending means,

a vertical rotary shaft inserted through the vertical tube and having a treating gas channel internally extending therethrough longitudinally,

a bubble releasing-dispersing rotor provided at the lower end of the rotary shaft and having in its bottom surface a



treating gas outlet in communication with the gas channel of the rotary shaft, the rotary being movable into and out of the container through the opening,

a horizontal suspending bar fixed to the vertical tube,

at least one baffle for preventing eddying and waving suspended from the suspending bar, movable toward and away from the vertical rotary shaft along the suspending bar, and also movable into and out of the treating container through the opening, and

a fixing means for adjustably and removably fixing said baffle to the suspending bar.

4,804,169

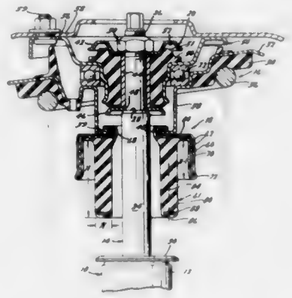
COMPOSITE JOUNCE BUMPER FOR VEHICLE SUSPENSION STRUT

Morris Hassan, Trenton, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Apr. 11, 1988, Ser. No. 179,736

Int. Cl.[4] **F16F** *13/00*

U.S. Cl. 267—220 **5 Claims**



1. A composite jounce bumper for a vehicle suspension strut comprising a shock absorber having an outer casing and a piston rod extending out of its upper end, means connecting said casing to the vehicle unsprung mass, an upper mount connecting the upper end of said piston rod to the vehicle sprung mass, said upper mount including a transverse plate portion having a central aperture therein receiving said piston rod therethrough in a spaced concentric manner, and means connecting the upper end of said piston rod to said sprung mass, said composite jounce bumper comprising:

a rigid inverted cup-shaped shell insert embedded within a body of molded flexible elastomeric material such that said shell insert is provided at its inner and outer surfaces with a layer of said elastomeric body;

said cup-shaped shell insert having a transverse upper closed end portion and an annular outer side wall portion concentric with said piston rod;

said shell insert upper closed end portion formed with an upwardly extending neck portion of an external size and shape to closely fit within said upper mount aperture,

said neck portion defining an internal piston rod passage which terminates in a plurality of attaching tongues extending vertically upwardly through said mount aperture with said tongues adapted upon insertion through said mount aperture to be bent upon a transverse line outwardly to overlie said mount thereby retaining said shell neck portion within said mount aperture;

said elastomeric body further defining a cylindrical shaped annular hollow sleeve portion extending axially downwardly from said insert closed end portion inner body layer, said sleeve portion concentrically encircling the piston rod and radially spaced intermediate said insert annular side wall portion and said piston rod;

said sleeve portion having retaining ring means embedded therein adjacent its lower end;

said hollow sleeve portion defining a predetermined height such that its lower end face is positioned a determined axial distance above the casing upper end with said strut in its neutral vehicle height position;

whereby upon said sleeve portion lower end face being initially impacted the resulting impact is substantially absorbed by the column effect of said sleeve portion assisted by said embedded control ring means providing a high initial spring rate and thus high early damping of the shock jounce loads with minimal axial compression travel of the piston rod; and

whereby upon said sleeve portion being further compressed the resultant stress causes an intermediate portion of said sleeve to buckle outwardly, and wherein such outward movement is restricted in a controlled manner by said insert shell annular outer side wall thereby achieving a substantially uniform spring rate adjacent the end of said piston rod compression travel.

4,804,170

COUNTERBALANCE ASSEMBLY FOR ROTATABLE ROBOTIC ARM AND THE LIKE

Frederick C. Young, Maineville, and Walter Binder, Cincinnati, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Feb. 11, 1987, Ser. No. 13,408

Int. Cl.[4] **F16F** *1/38, 1/48;* **B25J** *19/00*

U.S. Cl. 267—279 **2 Claims**

1. A counterbalance assembly in combination with a rotatable arm and the like in a robotic manipulator, wherein such arm is rotated about a rotation axis by a torque producing device, said assembly comprising a torsional spring means for providing an effective counterbalancing force at said rotation axis, said torsional spring means comprising:

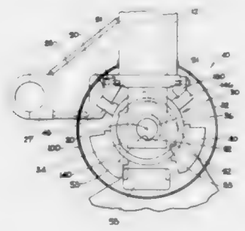
(a) a resilient member, said resilient member providing resistance to torsional shearing force imposed thereon;

(b) an inner housing, said inner housing being attached to said rotation axis for rotation therewith;

(c) a substantially hollow outer housing, wherein said resilient member is immovably attached to the outer surface of said inner housing and the inner surface of said outer housing so that said torsional shearing force is imposed on said resilient member in response to rotation of said inner housing relative said outer housing, whereby resistance of said resilient member to said torsional shearing force establishes an effective counterbalancing force which reduces the load bearing on the torque producing device at the rotation axis; and

(d) means for limiting rotational movement of said outer housing about said rotational axis, wherein said limiting means comprises:

(1) a chock attached to said outer housing for limiting rotational movement of said outer housing in a particular direction, whereby said outer housing is held station-



ary by engagement of said chock with an immovable portion of said robotic manipulator, and torsional shearing force is imposed on said resilient member by rotation of said inner housing relative said outer housing; and

(2) a stop attached to the outer surface of said outer housing at a point substantially opposite said chock, wherein said stop rests against a back stop block on the lower portion of the rotatable robotic arm such that it imparts a slight, predetermined torsional shearing force on said resilient member when said rotatable robotic arm is in a substantially vertical or unrotated position.

4,804,171

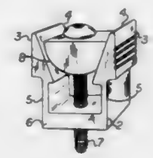
WORKPIECE HOLDING DEVICE

Stanley W. Dornfeld, 7414 Trade St., #"A", San Diego, Calif. 92121

Filed Nov. 6, 1987, Ser. No. 117,742

Int. Cl.[4] **B25B** *1/00*

U.S. Cl. 269—138 **8 Claims**



1. A workpiece holding device for retaining a first workpiece having a plurality of surfaces, said workpiece retained on a machine tool or assembly bed during operations on a first working surface by said device restraining motion of a second clamping surface orthogonal to said first working surface, which comprises;

a first generally rigid clamping head having a first clamping face, capable of being proximal to a clamping surface of said first workpiece, said first clamping head also having a first wedge ramp surface distal from said first clamping face;

a first flexible shaft attached at one end to said first clamping head, said first shaft shaped and having properties to allow

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deflection and rotation of said first clamping face towards said clamping surface in a direction generally perpendicular to said proximal clamping surface of said first workpiece;

a device support structure attached to the other end of said first flexible shaft;

a wedge having a surface shaped and dimensioned to deflect said first clamping face into said workpiece clamping surface when said wedge is translated along an axis generally parallel to said device clamping surface, wherein said wedge and clamping head do not intersect a plane generally defined by the proximate edges of said working surface;

means for removably attaching said support structure to said bed; and

means for translating said wedge.

4,804,172

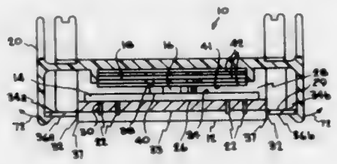
FIXTURE FOR MOUNTING A HEAT SINK

Paul J. Sokolovsky, Sunnyvale, and Chuck Anderson, Santa Clara, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 24, 1987, Ser. No. 124,729

Int. Cl.[4] B25B *1/00*; F28F *7/00*

U.S. Cl. 269—254 R 19 Claims



12. A fixture for mounting and aligning a heat sink to a PGA chip package disposed in a Murphy-type carrier, said fixture comprising:

plate member means (51) being formed of four sides, a top surface, and a bottom surface; retaining means being formed on the bottom surface of said plate member means for receiving the heat sink therein;

end member means pivotally connected on opposite sides of two of said four sides of said plate member means and including hooked portion for releasably engaging a bottom surface of said carrier; and

said end member means further including actuating means for moving outwardly said hooked portions away from the center of said plate member means so as to permit the mounting or removal of the fixture to the carrier.

4,804,173

METHOD AND APPARATUS FOR MOVING INDIVIDUAL SHEETS FROM A STACK OF SHEETS

Kenneth J. Pol, Saginaw; James F. Foster, Lansing; Jack D. Gyger, Charlotte, and Lawrence P. Hyland, Portland, all of Mich., assignors to Roberts Corporation, Lansing, Mich.

Filed Jun. 3, 1985, Ser. No. 740,938

Int. Cl.[4] B65H *3/08, 7/02*

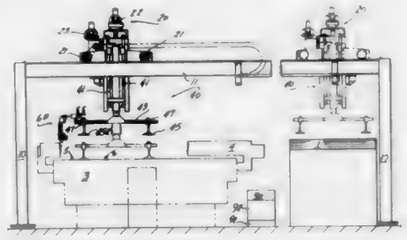
U.S. Cl. 271—11 32 Claims

23. An apparatus for locating sheets (1), characterized by:

a plurality of means (45) releasably attachable to a sheet (1) of material and including a plurality of pneumatically operated suction cups;

means (43) supporting said plurality of attachable means (45) in a plane; and

means (50) for moving one (45*a*) of said attachable means (45) in first and second horizontal directions relative to said means (43) supporting said plurality of attachable means (45) in a plane and for moving said one attachable



means (45*a*) in a vertical direction relative to said supporting means (43) and to the other attachable means (45).

4,804,174

APPARATUS FOR COLLECTING SHEETS OF DIFFERENT LENGTHS

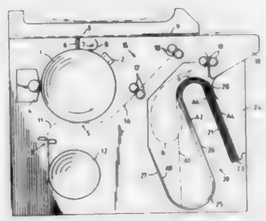
Gerhardus E. R. ter Horst, Venlo, Netherlands, assignor to OCE-Nederland B.V., Venlo, Netherlands

Filed May 28, 1987, Ser. No. 55,639

Claims priority, application Netherlands, Jun. 5, 1986, 8601449

Int. Cl.[4] B65H *31/00*

U.S. Cl. 271—207 8 Claims



1. Apparatus for collecting sheets of different lengths comprising a sheet collecting tray having an outermost first collecting part directly accessible for sheet removal with a sheet registration end and a conveyor means for feeding said sheets into said first collecting part up to said registration end, said collecting tray including a second innermost collecting part which adjoins the first collecting part at the level of said conveyor means and guide means guiding the trailing part of a sheet having a length greater than the first collecting part into said second collecting part.

4,804,175

APPARATUS FOR TEMPORARY STORAGE OF FLAT ARTICLES

Domiaique Grandjean, Frahier, France, assignor to Bull, S.A., Paris, France

Filed Jul. 2, 1987, Ser. No. 69,104

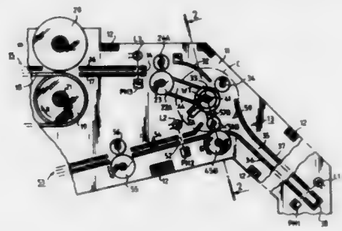
Claims priority, application France, Jul. 3, 1986, 86 09665

Int. Cl.[4] B65H *5/06*

U.S. Cl. 271—225 10 Claims

1. Apparatus for temporary storage of flat articles, such as sheets, having storage pocket (35) positioned in a fixed location and facing an exit (16) of a first article-feed track (15) and the entrance (52) of a second article-feed track (53), an adhesion-drive (45A, 45B) contiguous with the pocket and arranged to contact an article stored in the pocket, and applicator means (51A, 51B) comprising at least one roller (51B) loosely

mounted on one end of an arm (57B) capable of pivoting about a shaft (41) disposed parallel to the front and rear edges (BV1, BR1) of articles fed along the first and second feed tracks (15 and 53) and being arranged to place this article in contact with the adhesion drive, said drive adhesion being contructed and arranged so that, upon command, it causes the article to be removed from the pocket and engaged in the second track, said applicator means being arranged so that, in the absence of an article in said pocket, it occupies a position of repose in which it is in contact with the adhesion drive, but without impeding the introduction into said pocket of articles fed via the first track, and so that as soon as a single article has been introduced completely into the pocket it momentarily moves away from the position of repose and later returns to said position to thereby allow the article to contact the adhesion drive while preventing another article subsequently arriving at a later time in the pocket from coming into contact with the adhesion drive as long as the article that is in contact with the adhesion drive has not been removed from the pocket, said shaft (41) being integrally connected to the arm (57B) of the applicator means



and coupled mechanically to a motor shaft (27) in continuous rotation, via an electrically controlled one-stop clutch (WT), said shaft (41) being further connected to a permanent brake (6) arranged so as to prevent said shaft (41) from being driven in rotation when said shaft is uncoupled from the motor shaft (27), and said arm (57B) is arranged to execute one rotation about the shaft (41) upon the application of an electrical pulse to the one-stop clutch (WT) and further including a first detection means (PH1, AD1) disposed in the storage pocket (35) and arranged to furnish an electrical pulse each time an article fed via the first track (15), when the pocket is empty, is introduced into said pocket, second detection means (PH2, AD2) disposed at the entrance (52) of the second track and arranged to furnish an electrical pulse each time an article that has exited completely from said pocket is engaged in a second track, and switching circuit means (I1, C1, C3, U1) operatively connected to allow said pulses to be applied to the one-stop clutch (WT) solely in the case where said pocket contains only a single article which is not in contact with the adhesion drive (45A, 45B).

4,804,176

MULTIPURPOSE STRUCTURE

Rowland H. Goble, P.O. Box 423, Lake Mary, Fla. 32746

Filed Feb. 27, 1984, Ser. No. 583,651

Int. Cl.[4] A63B *17/00*

U.S. Cl. 272—54 11 Claims

1. A multipurpose structure comprising in combination:

a frame having a plurality of pivoting arms attached thereto and having means for attaching a chain to one end portion thereof for supporting a board for use as a bench or other support;

a roof supported on said frame;

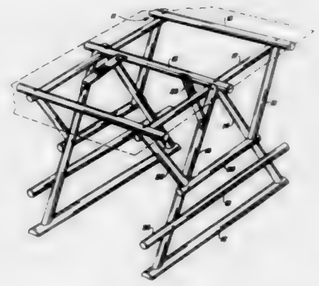
a swing movably supported to the frame in one position;

support means for supporting said swing in a raised second position to said frame;

a table and bench means for forming a table and bench of components stored in said structure and attached to said frame under said swing when said swing is in a raised second position;

means for storing said table and bench components on said structure when said swing is in said one position;

means for attaching a steel pipe across said frame and having at least one see-saw board adapted to be attached to said



steel pipe for use as a see-saw when said table and branch means components are in storage in said multipurpose structure and said swing is in its raised second position; and

a sun deck formed on said roof and having a protective railing therearound, and a ladder member to provide access thereto.

4,804,177

AQUATIC EXERCISE DEVICE

Betty Jo Rosson, Rte. 5, Lake Castas, Canton, Ill. 61520

Filed May 6, 1988, Ser. No. 190,813

Int. Cl.[4] A63B *31/00*; B63C *9/08*

U.S. Cl. 272—71 2 Claims



1. An aquatic exercise device comprising;

a pair of buoyant elongated cylindrical flotation members individually providing an interconnecting end having a transverse slot therethrough, and an opposite outer distal end;

a flexible body engaging and supporting tether strap having a mid-portion and opposite looped handle ends individually extended through said slots in their respectively associated interconnecting ends of the flotation members;

a continuous ring strap mounted on said mid-portion of the tether strap;

and a belt extendable through said ring strap for releasably fastening about the waist of a user to provide a releasable buoyant support to a user during aquatic exercise activity.

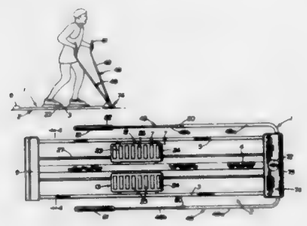
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4,804,178

CROSS-COUNTRY SKI EXERCISE DEVICE

Adolf H. Friedebach, Cleveland, Ohio, assignor to Fitness Quest, Inc., Canton, Ohio

Filed Nov. 19, 1987, Ser. No. 122,459
Int. Cl.⁴ A63B *69/18, 21/00*
U.S. Cl. 272—97 **12 Claims**



8. An exercise device including:
(a) a base frame having front and rear ends and at least three spaced, parallel elongated rails extending longitudinally between said ends;
(b) a pair of footplates, each movably mounted on a certain pair of the rails for reciprocating movement along said rail pairs;
(c) belt means extending along the rails and connected to each of the footplates for moving the footplates in unison in opposite directions along the rails;
(d) a pair of levers pivotally mounted on the base frame adjacent the front end thereof, each of the levers having an extended end extending toward each other generally along the front end of said base frame;
(e) plate means located adjacent the front end of the base frame and operatively engageable with the extended ends of the levers for providing frictional resistance to the pivotal movement of the levers; and
(f) adjustment means for selectively clamping the plate means against the extended ends of the levers for equally adjusting the gross resistance to the pivotal movement of both of the levers and for independently adjusting the resistance to the movement of a respective one of the levers.

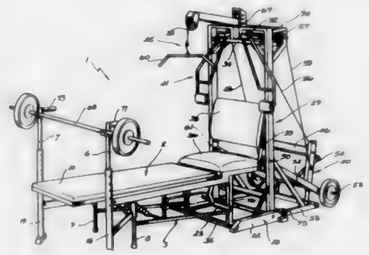
4,804,179

MULTI FUNCTION FOLDABLE EXERCISE MACHINE

Robert J. Murphy, 18 Kidd Close, Bidwell, N.S.W. 2770, Australia, and

PCT No. PCT/AU85/00273, § 371 Date Sep. 4, 1986, § 102(e) Date Sep. 4, 1986, PCT Pub. No. WO86/02848, PCT Pub. Date May 22, 1986
PCT Filed Nov. 8, 1985, Ser. No. 916,511
Claims priority, application Australia, Nov. 9, 1984, PG8053
Int. Cl.⁴ A63B *23/00*
U.S. Cl. 272—117 **38 Claims**

1. An improved multifunction, foldable and compact exercise machine comprising:
an integral substantially upright floor supported mainframe having at least an overhead member;
a bench adapted to support a body, and being pivotally attached at one end to said mainframe and having additional support means;
at least one exercise station attached to said overhead member of said mainframe;
said exercise station or stations being interconnected with a leg machine having a weight carriage and which is pivotally connected to said mainframe;
wherein, when said station or stations are operated during an exercise, the said leg machine acts as a counterweight by virtue of the said interconnection thereby providing free weight, dragless muscle resistance for an exerciser as the station or stations moves the leg machine, thus providing proper variation of resistance to the muscle in all positions of movement, such that the weight carriage of the leg machine is substantially vertically displaced;
said mainframe comprises at least two upright vertical members interconnected by said overhead member which is substantially horizontal; said mainframe being supported by a base means connected to said vertical members;
said bench is elongated and is disposed between and connected at one end to said upright vertical members;
said additional bench support means is comprised of a framework structure having at least one ground engaging leg at the unpivoted end of the bench;
said mainframe has pivotally attached to it at least two substantially upright and height and width adjustable barbell weight support posts;
said barbell weight support posts are adapted with a cradle to support a barbell;



said bench comprises two seat portions mounted on the framework, the first of said portions being pivotally connected at the end of the bench connected to the mainframe, the second of said portions being an adjustable incline portion pivotally connected to the said framework structure and supported by means of a telescopic strut connecting said incline portion to said framework;
said telescopic strut is adjustable by means of a detachable pin aligning in holes in the members of the telescopic strut;
said mainframe has attached to it at least one exercise station above the said bench;
said exercise station or stations are attached to the upper portion of the said mainframe;
said exercise station is a preacher bench or lat machine or a pec deck; and
said preacher bench is pivotally connected to the vertical upright members and rotatably connected to a horizontal member spanning between the said vertical members.

4,804,180

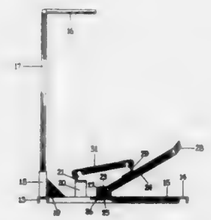
KTB EXERCISER

Ruben D. Salaz, P.O. Box 10515, Alameda, N. Mex. 87184-0515

Filed Jun. 22, 1987, Ser. No. 64,656
Int. Cl.⁴ A63B *21/04*
U.S. Cl. 272—136 **1 Claim**

1. A portable therapeutic exercise device for exercising the knees, thighs, and buttocks of a user comprising:
(a) a base having a parallel front and rear connected at their midpoints by a transverse member;
(b) a handle bar mounted at the front of said base by a telescoping support;
(c) a pedal arm pivotally mounted to said base at one end and including a foot pedal at its other end so that said pedal is approximate the rear of the base;
(d) a first length of angle iron with at least five holes mounted on said pedal arm;
(e) a second length of angle iron with at least five holes

mounted on said base at a position closer to the front of said base than said pivotal mount of said pedal arm; and



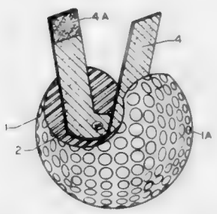
(f) a spring connected between one of said holes in said first length to one of said holes in said second length wherein the spring may be connected between a varying pattern of holes in order to vary the resistance of the device.

4,804,181

SEMI-SPHERICAL GOLF CLUB GRIP STRUCTURE

Craig L. Foster, 1813 Mark St., N.E., Olympia, Wash. 98506

Filed Sep. 17, 1987, Ser. No. 97,697
Int. Cl.⁴ A63B *53/14*
U.S. Cl. 273—81 D **1 Claim**



1. An improved golf club training structure, comprising a semi-spherical golf club grip knob for attachment to a golf club shaft, said knob having symmetrically placed circular identification known as dimples, thereover, as a means to transmit to a golfer, the sensation of holding a golf ball in the hand while executing a golf stroke and means connected to said knob for attaching said knob to a golf club shaft.

4,804,182

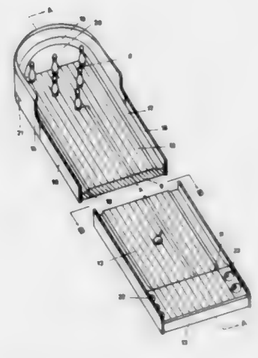
SPINNING BALL BOWLING

Ernst S. Egger, 762 Turner Rd., Kelowna, B.C., Canada V1W 2K8

Filed Sep. 9, 1986, Ser. No. 906,266
Int. Cl.⁴ A63D *1/00, 3/00*
U.S. Cl. 273—37 **12 Claims**

1. Apparatus for playing a game comprising in combination:
a playing area bounded by walls to define a longitudinal playing surface or alley having at one end a target area and at the opposite end a launching area to launch spinnable members;
a plurality of target members positioned in the target area in a free standing array on said playing surface;
a spinnable member comprising an essentially spherical body having an axis of rotation and having a longitudinal member aligned with said axis of rotation extending from said essentially spherical body whereby the longitudinal member is used to impart spin to said spinnable member such that said spinnable member is launched from said launching area and travels along said playing surface to said target area in order that said spinnable member may strike one or more of said target members.





4,804,183

DOUBLE FACED SPORTS RACQUET

Brian A. Dorsa, Buellton, Calif., and Robert H. Redkey, 1630 Maple, Solvang, Calif. 93463, assignors to Robert H. Redkey, Solvang, Calif.

Continuation of Ser. No. 24,612, Mar. 11, 1987. This application Mar. 23, 1988, Ser. No. 172,090
Int. Cl.⁴ A63B *51/06, 49/08*
U.S. Cl. 273—73 C **4 Claims**



4. A sports racquet for use by a user in hitting a ball or like object comprising:
a racquet face member;
first means for interlacing a first set of strings across said racquet face at a first tension setting;
second means for interlacing a second set of strings across

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said racquet face at a second tension setting, at least one of said first and second means comprising a loadable cassette means for inserting and removing at least one of said first and second sets of strings into and out of said racquet face;

a neck attached to said racquet face member, extending therefrom and formed into a unitary end member;

a handle including an inflatable bladder means for adjusting the feel of said handle, for receiving said unitary end member and for attaching said handle to said unitary end member when inflated such that said handle may be removed and replaced by inflation and deflation of said bladder means; and

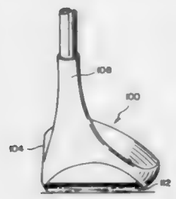
first and second cover materials on said handle, positioned such that said first cover material indicates to the user of said racquet that said first set of strings is in position to hit and such that said second cover material indicates that said second set of strings is in position to hit.

4,804,184

METHOD OF FITTING GOLF CLUB TO GOLFER

Ralph D. Maltby, Heath, Ohio, assignor to Ralph Maltby Enterprises, Inc., Newark, Ohio

Filed Sep. 28, 1987, Ser. No. 102,061
Int. Cl.[4] A63B *53/00, 53/06*
U.S. Cl. 273—77 R **3 Claims**



1. A method of fitting a golf club to a golfer comprising:

making a wood type golf head entirely from nonwood material, said head including a bulbous body defining a face for striking a golf ball, a hosel for receiving a shaft, and a sole,

providing said sole with at least one runner extending generally perpendicular to said face across said body and defining a sole line for said head, and

removing material from said at least one runner to adjust the face angle, lie and/or loft of said head to fit a golf club incorporating said head to an individual golfer.

4,804,185

GAMES PLAYING APPARATUS

John B. Noble, deceased, late of Nottingham, England; by John A. Pearce, executor, and by John J. V. Gossage, executor, both of 1 Talbot St., Nottingham, England

Filed Sep. 1, 1987, Ser. No. 91,712
Int. Cl.[4] A63F *9/20*
U.S. Cl. 273—85 CP **1 Claim**

1. Games playing apparatus enabling a dominoes game to be played between a player and the apparatus, the apparatus comprising:

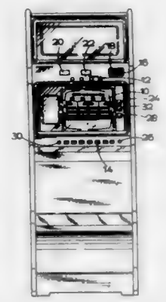
(a) means recording a register of notional pairs of hands of dominoes, the two hands of each pair being for allocation to the player and the apparatus for a game to be played;

(b) first selecting means operative automatically to select pairs of hands from said register to present to said player a choice of game to be played, the player so being informed what hand the apparatus will play for whichever hand the player selects from said choice;

(c) player-operated second selecting means operable to select one game from said choice presented, so determining the hand allotted to be played by said player and the hand allotted to be played by the apparatus;

(d) player-operated third selecting means operable in the player's turn to select from his allotted hand a dominoe to be played next;

(e) fourth selecting means operative automatically in the apparatus' turn to select from the apparatus' allotted hand a dominoe to be played next; and



(f) display means operative to display representations of the dominoes face-up to the player to show:

(i) said choice of games selected by said first selecting means,

(ii) said hands allotted respectively to said player and the apparatus by operation of said second selecting means, and

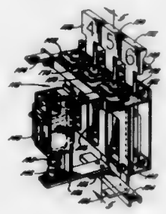
(iii) the state of play as play proceeds.

4,804,186

PINBALL DROP TARGET ASSEMBLY

Robert L. Moravec, Schaumburg, Ill., assignor to Premier Technology, Inc., Bensenville, Ill.

Filed Dec. 2, 1987, Ser. No. 127,660
Int. Cl.[4] A63D *3/02*
U.S. Cl. 273—127 R **19 Claims**



1. A drop target assembly for a pinball type amusement machine, comprising:

a frame,

a single target member mounted on said frame,

means for moving said target member from a lowered position to an elevated position,

means for releaseably latching said target member in said elevated position, and

a target stop member mounted on said frame for movement by said moving means, said target stop member mounted for movement along a longitudinal axis of said target member to engage and move said target member into said elevated position.

4,804,187

GAME ASSEMBLY BASED ON THE PHI FACTOR

John O. Cramer, 140 Prospect St., Providence, R.I. 02906

Filed Sep. 24, 1987, Ser. No. 100,540
Int. Cl.[4] A63F *9/12*
U.S. Cl. 273—157 R **18 Claims**



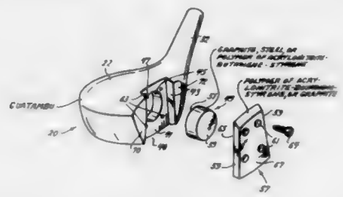
1. A game comprising three sets of similar pieces having respectively differingly described surfaces combinable to form a predetermined six-sided array, said sides forming a continuous three-dimensional surface composed of said differingly designated surfaces, each said piece having at least a differingly designated surface to be exposed in said array and a dimension of magnitude related to a corresponding dimension of all other pieces in accordance with the ϕ series, wherein said array includes no exposed differingly designated surface of any piece of a given set of pieces in edge-to-edge contiguity with the exposed differingly designated surface of another piece of said given set of pieces.

4,804,188

GOLD CLUB HEAD

John B. McKee, P.O. Box 98, Friar's Point, Miss. 38631, and L. C. White, 256 Bermuda Dr., Greenville, Miss. 38701

Filed Jan. 5, 1987, Ser. No. 58,819
Int. Cl.[4] A63B *53/04*
U.S. Cl. 273—167 R **13 Claims**



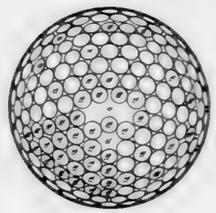
1. A golf club head of the type known as a "wood", for playing the game of golf, comprising: the club head having a toe and a heel end, a hosel, an area for receiving a sole, and a backwardly slanted front face having an area for receiving a striking surface, the club head comprising Balfourodendron Riedelianum wood, also known as Guatambu wood and as Pau Marfim wood.

4,804,189

MULTIPLE DIMPLE GOLF BALL

William Gobush, No. Dartmouth, Mass., assignor to Acushnet Company, New Bedford, Mass.

Continuation-in-part of Ser. No. 18,840, Feb. 24, 1987, abandoned, which is a continuation of Ser. No. 544,780, Oct. 24, 1983, abandoned. This application Apr. 27, 1987, Ser. No. 43,218
Int. Cl.[4] A63B *37/14*
U.S. Cl. 273—232 **8 Claims**



1. A golf ball having 384 dimples, said 384 dimples being divided into only two sets of dimples comprising a first set of dimples wherein each dimple has a nominal dimple diameter of 0.140 inches and a second set of dimples wherein each dimple has a nominal dimple diameter of 0.160 inches.

4,804,190

OUTER SPACE TRAVELLING BOARD GAME

Elsa O. Hofmann, P.O. Box 456, Montclair, N.J. 07042

Filed Jan. 15, 1987, Ser. No. 61,828
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—250 **1 Claim**



1. A board game comprising: a playing board having a playing path thereon, said path having a plurality of globe shaped spaces, said globe shaped spaces comprising a first group of globe shaped spaces each being distinguished by one of a plurality of different colors, and a second group of globe shaped spaces each being distinguished by one of a plurality of pictures, a colored globe corresponding to said first group of globe shaped spaces and a picture corresponding to said second group of globe shaped spaces,

a plurality of playing pieces, movement of said playing pieces along said path being determined by said playing cards which are drawn by chance,

a plurality of scorecards used for keeping track of the num-

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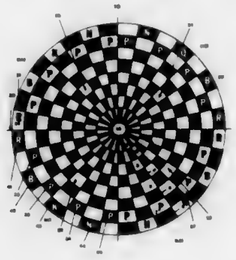
ber of pictured globe shaped spaces a playing piece has landed on.

4,804,191

METHOD OF PLAYING QUAD-RADIAL CHESS

Steven E. Tankersley, 212 Hoeppner La. NE., Cullman, Ala. 35055

Filed Jul. 13, 1987, Ser. No. 73,057
Int. Cl.[4] A63F 3/02
U.S. Cl. 273—261 **7 Claims**



1. A method of playing a board game comprising of:

providing a flat, two dimensional circular game board surface, said game board surface being subdivided into four equally sized quadrants, a first quadrant, a second quadrant, a third quadrant, and a fourth quadrant, wherein each quadrant defines a chess board surface, each of said chess board surfaces being subdivided into eight discrete spaces of two alternating colors on a side providing eight ranks and files, such that said circular game board surface defines eight concentric rings of spaces,

providing a plurality of chess pieces being divided into distinguishable first and second groups, one group for each player, each group having eight royal chess pieces and eight pawns,

placing four royal chess pieces and four pawns of said first group in every second space of the two outermost concentric rings in said first quadrant,

placing the other four royal pieces and the other four pawns of said first group in every second space of the two outermost concentric rings in said second quadrant,

placing four royal chess pieces and four pawns of said second group in every second space of the two outermost concentric rings in said third quadrant,

placing the other four royal chess pieces and the other four pawns of said second group in every second space of the two outermost rings in said fourth quadrant,

placing, in all four quadrants, the rooks on the farmost outside file and rank, at the ninety degree and two hundred and seventy degree sides of the four quadrants to form a rail-fence pattern of chess pieces around the board, and moving said chess pieces on the spaces within said quadrants.

4,804,192

MOVABLE TARGET FOR A THROWING GAME

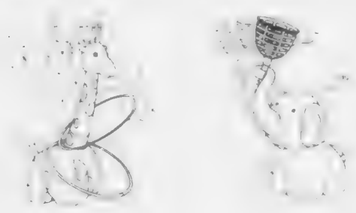
Hajime Matsumoto, and Toshio Suzuki, both of Tokyo, Japan, assignors to Toybox Corporation, Tokyo, Japan

Filed May 10, 1988, Ser. No. 192,125
Claims priority, application Japan, Jun. 10, 1987, 62-89406
Int. Cl.[4] A63B 67/06
U.S. Cl. 273—336 **13 Claims**

1. A target for a throwing game, said target intended to receive an object thrown, comprising:

(a) a target body;

(b) a target member operatively and movably connected to the target body; and



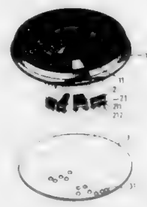
(c) means including a cam for repeatedly rotatably moving the target member relative to the target body, stopping the rotation and oscillating the target member relative to the target body.

4,804,193

CIRCUITRY FOR ELECTRONIC SCORING DARTBOARD

Jui S. Lin, and Daniel Lin, both of Taipei, Taiwan, assignors to An Wei Enterprise Co., Ltd and Cortina International Corp., both of Taipei, Taiwan

Filed Sep. 21, 1987, Ser. No. 98,975
Int. Cl.[4] F41J 5/04
U.S. Cl. 273—376 **1 Claim**



1. An electronic dartboard structure which includes a circuit board having a surface provided with a plurality of contact points, a dart-engaging target assembly mounted on the circuit board, said assembly including a plurality of scoring blocks, each block having at least one rearwardly protruding stem with a back end provided with a conductor point and a buffer ring on the back end of the stem, the buffer ring having an inner end secured to the stem surrounding the conductor point, the buffer ring further having an outer end resting on the circuit board surrounding one of said contact points, the buffer ring spacing the conductor point from the contact point and being deformable to allow engagement of the conductor point with the contact point when the scoring block is impacted by a dart.

4,804,194

MECHANICAL SEAL LUBRICATION IMPROVEMENT

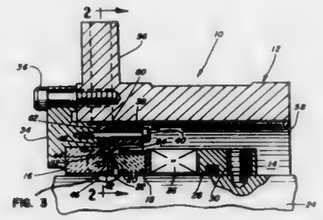
Larry A. Hufford, Vista, Calif.; Robert S. Wentworth, deceased, late of Murrieta, Calif., and by Benning Wentworth, executor, St. Charles, Ill., assignors to BWI/IP International, Inc., Long Beach, Calif.

Filed Oct. 15, 1987, Ser. No. 108,965
Int. Cl.[4] F16J 15/38, 15/48
U.S. Cl. 277—3 **9 Claims**

1. A mechanical seal assembly for machinery having a housing in which fluid is to be retained, and a shaft extending through at least a portion of the housing, which seal assembly comprises:

a first non-rotatable seal ring positioned abutting the housing and surrounding the shaft, said first seal ring having a sealing face;

a second rotatable seal ring positioned surrounding the shaft and connected thereto for rotation therewith, said second rotatable seal ring having a sealing face positioned opposite the sealing face of said first seal ring and to allow a fluid film between the sealing faces when the machinery is



operated; said film extending from a first location adjacent the shaft to a second location spaced radially outwardly from the shaft; and

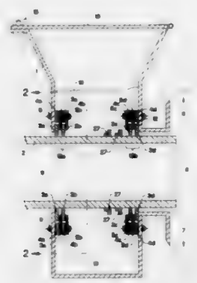
means including a baffle for admitting fluid under pressure from a source outside of the housing to said second location to minimize film loss problems which may occur near the second location when the fluid pressure in said housing is too low.

4,804,195

HIGH TEMPERATURE SEALING DEVICE

Thomas H. Parker, Rd #2, Marathon, N.Y. 13803

Filed Dec. 29, 1986, Ser. No. 947,377
Int. Cl.[4] F16J 15/447
U.S. Cl. 277—12 **13 Claims**



1. A seal for providing a gas-tight joint between a cylindrical rotating member and a stationary member, comprising:

a. hopper means for containing fluent material fixed to the stationary member, having four sides and a bottom, and having two holes aligned in opposite sides, each hole being greater in diameter than the outside diameter of the rotating member, whereby the rotating member may pass through the holes;

b. at least one labyrinth seal, concentrically located on the rotating shaft at at least one of the holes in the sides of the hopper, each labyrinth seal comprising:

1. a plurality of rotating rings slidingly fit on the rotating member, each having an inside diameter slightly greater than the outside diameter of the rotating member, and a given thickness;

2. a plurality of spacer rings located concentrically to the rotating rings, one per rotating ring, each having an inside diameter greater than the outside diameter of its associated rotating ring, defining a space therebetween, a thickness slightly greater than that of the associated rotating ring, and an outside diameter giving sufficient ring width to allow fastening of the spacer rings to the hopper wall with a fastener means;

3. a plurality of stationary rings, of equal number to the rotating rings, each having an inside diameter greater than the outside diameter of the rotating member, defining a space therebetween, and an outside diameter at least equal to that of the spacer rings;

4. fastener means for attaching the spacer rings and stationary rings to the side of the hopper, whereby the spacer rings and stationary rings are rigidly attached to the side of the hopper, concentric with the rotating member;

5. the rings being arranged such that the rotation rings with concentric spacer rings alternate with stationary rings, beginning with a spacer ring and rotating ring at the hopper side, and alternating along the rotating member, ending with a stationary ring at the opposite end of the seal from the hopper side;

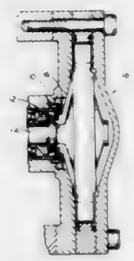
c. the hopper being filled to a level above the labyrinth seal with a fluent particulate material sufficiently fine to fill the spaces between the rotating member and the stationary rings, and between the rotating rings and the spacer rings.

4,804,196

SEALING ASSEMBLY FOR A DEVICE HAVING A ROTATABLE SHAFT

John Readmon, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 12, 1985, Ser. No. 797,401
Int. Cl.[4] F16J 15/34
U.S. Cl. 277—75 **13 Claims**



1. A sealing assembly for a device having a rotatable shaft, comprising:

rotatable seal means formed of a rigid material and being adapted to be mounted on said rotatable shaft for rotational movement therewith; and

a face seal adapted to cooperate with said rotatable seal means in sealing relation including an annular sealing ring, a static seal-carrying member and elastomeric seal means;

said annular sealing ring being formed of a rigid material and having a sealing surface adapted to be disposed in a plane substantially transverse to said rotatable shaft, said annular sealing ring having a portion extending radially outwardly of said elastomeric seal means in axially spaced relation to said static seal-carrying member, said sealing surface including said radially extending portion, said radially extending portion defining a surface facing axially in a direction opposite said sealing surface;

said static seal-carrying member being formed of a rigid material and being axially spaced from said radially extending portion of said annular sealing ring at a location axially remote from said axially oppositely facing surface thereof;

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said device being exposed to low pressure on the side of said annular sealing ring adjacent said rotatable shaft and being exposed to high pressure on the side of said annular sealing ring opposite said rotatable shaft;

said elastomeric seal means being disposed between said annular sealing ring and said static seal-carrying member in integrally associated relation, said elastomeric seal means being bonded to both said static seal-carrying member and said annular sealing ring, said elastomeric seal means accommodating limited relative axial movement between said annular sealing ring and said static seal-carrying member in the direction of said rotatable shaft, said elastomeric seal means being deformable when said annular sealing ring is subjected to relative movement toward said static seal-carrying member to provide an oppositely directed continuous biasing force acting against said annular sealing ring for sealed engagement of said sealing surface with said rotatable seal means;

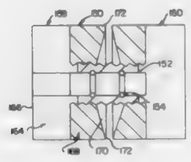
said high pressure acting against said axially oppositely facing surface of said annular sealing ring to cooperate with said elastomeric seal means for sealed engagement of said sealing surface with said rotatable seal means.

4,804,197

CLAMP DEVICE WITH RADIALLY SPLIT HEAD

Vladimir Drbal, 400 Davey Glen Rd. #4810, Belmont, Calif. 94002

Filed Nov. 3, 1987, Ser. No. 116,021
Int. Cl.[4] B23B *31/20*
U.S. Cl. 279—41 R **4 Claims**



1. A device for clamping a pair of workpiece together comprising

a threaded, hollow shaft adapted to receive end portions of the two workpiece therein, and

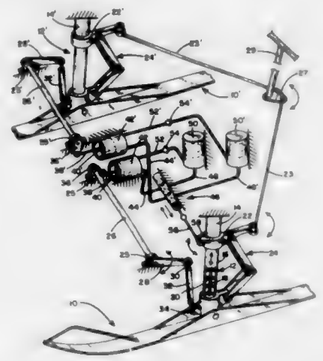
a pair of fastener heads, each composed of an exterior portion having an exterior surface and defining slots extending axially from said exterior surface, said slots forming segments in said head, and a threaded interior portion threadedly engaged with said shaft and terminating at an interior surface, said head defining an axial passageway which forms an axial extension of the hollow region of the shaft, the interior surfaces of said heads having mutually confronting camming surfaces which are designed to act upon one another, as the heads are moved on the shaft toward a position of contact between the two camming surfaces, to force the segments in each head radially inwardly, thereby reducing the cross section of the associated passageway, adjacent the exterior surface of the each head, and causing clamping of a workpiece received in the passageway defined by each head.

4,804,198

VEHICLE WITH STEERING-CONTROLLED TORSION BAR STABILIZER

Tetsuo Imai, Iwata, Japan; Gregory J. Marier, Brooklyn Park, and Wayne L. Warnke, Wayzata, both of Minn., assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation-in-part of Ser. No. 722,950, Apr. 15, 1985, abandoned. This application Dec. 24, 1986, Ser. No. 945,967
Int. Cl.[4] B62B *17/04*
U.S. Cl. 280—21.1 **2 Claims**



1. An anti-sway apparatus for a recreational vehicle of the type having a pair of steerable members controlled by steering means and coupled through independent spring supported suspension devices to a frame of said vehicle for reciprocating motion therebetween, comprising:

(a) first and second torsion spring elements supported from said frame;

(b) first and second actuatable means coupled to said first and second torsion spring elements for effectively selectively coupling said first and second torsion spring elements in parallel with the springs of said spring supported suspension devices, each of said first and second actuatable means including

(i) a hydraulic cylinder and piston provided with an incompressible fluid, each said cylinder and piston coupled between an associated one of said first and second torsion spring elements and said frame;

(ii) an air cushion member comprising a generally closed cylinder containing a movable piston separating said incompressible fluid from a compressible fluid and including an inlet and an outlet; and

(iii) control valve means disposed in a fluid passing or fluid blocking relationship between said hydraulic cylinder and said inlet of said air cushion member, said valve means being joined to said steering means to be shifted between said fluid passing and fluid blocking relationship in response to operation of said steering means; and

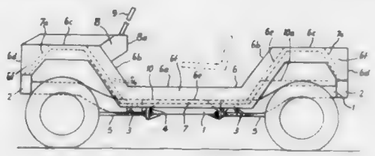
(c) each of said first and second actuatable means further including one-way valve means disposed in fluid circuit between said outlet of said air cushion member and said cylinder of said hydraulic cylinder for providing unidirectional flow of said incompressible fluid from said air cushion member to said cylinder when the flow of said incompressible fluid is otherwise blocked by said valve means whereby the particular one of said hydraulic cylinders being actuated depends upon the direction which said vehicle is steered, said one-way valve means allowing the coupling of said first and second torsion spring elements between said frame and said pair of steerable members only if said independent suspension device is being compressed during said reciprocating motion.

4,804,199

CROSS-COUNTRY VEHICLE

Didier Picard, 24 rue Montpensier, 75 001 Paris, France

Continuation of Ser. No. 75,422, Jul. 20, 1987, abandoned. This application Nov. 20, 1987, Ser. No. 124,379
Claims priority, application France, Jun. 18, 1987, 87 08532
Int. Cl.[4] B62D *31/00*
U.S. Cl. 280—33.998 **17 Claims**



1. A cross-country vehicle comprising one axle at a front portion and one axle at a rear portion, wheels carried by the axles, and a body or shell carried by the axles, said body or shell being arranged in a substantially symmetrical manner in the direction of the length of the vehicle, wherein said body or shell comprises two self-supporting integral longitudinal elements disposed laterally and defining cavities for the wheels on the respective side of the vehicle, wherein said longitudinal elements have a lowered central part for the passage of front and rear passengers, two upwardly inclined parts extending from opposite ends of said lowered part, and two planar parts surmounting the wheels of the vehicle and extending substantially horizontally from said upwardly inclined parts, said vehicle including a central raised hood between said planar parts at the front portion of said vehicle and a raised member extending between the top portion of the inclined parts at the front portion of the vehicle, wherein said planar parts define a receiving surface for supporting the corresponding wheel of another identical vehicle which another vehicle is received by superposition and fastened to the vehicle.

4,804,200

SLIDING DEVICE, PARTICULARLY ALPINE SKI

Walter Kuchler, Langernstr. 51, D-4712 Werne, Fed. Rep. of Germany

PCT No. PCT/DE86/00049, § 371 Date Nov. 28, 1986, § 102(e) Date Nov. 28, 1986, PCT Pub. No. WO86/04824, PCT Pub. Date Aug. 28, 1986
PCT Filed Feb. 13, 1986, Ser. No. 2,690
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1985, 3505255; Mar. 23, 1985, 3510717; Sep. 17, 1985, 3533043; Sep. 23, 1985, 3533904
Int. Cl.[4] A63C *5/07*
U.S. Cl. 280—602 **8 Claims**



1. A snow ski, comprising:

a longitudinally extending runner having a gliding surface formed on an underside thereof and an upper surface extending from a front end to a rear end of said runner;

an elongated member spaced above said runner only over a portion of the length thereof intermediate said ends and corresponding to a skiboot-supporting region of the ski, said member being parallel to said runner in said region; and

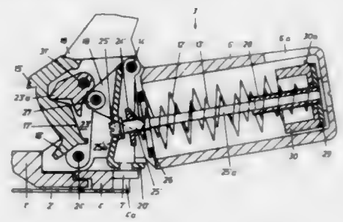
a pair of rigid longitudinally spaced spacers affixed to said member and said runner and holding said member above said upper surface at opposite ends of said member, said spacers having substantially trapezoidal shapes with inclined flanks extending from respective end edges of said member to said upper surface, said end edges of said member being beveled to lie flush with said flanks, said member and said spacers defining on said runner a torsionally stiff flexure-resistant torsion box which is laterally open but is closed at its top by said member and at its ends by said spacers, said runner having flexible portions extending beyond said torsion box.

4,804,201

SAFETY SKI BINDING

Karl Stritzl, and Henry Freisinger, both of Vienna, Austria, assignors to TMC Corporation, Baar, Switzerland

Division of Ser. No. 914,875, Oct. 3, 1986. This application Jan. 20, 1988, Ser. No. 209,701
Claims priority, application Austria, Oct. 3, 1985, 2855/85
Int. Cl.[4] A63C *9/08*
U.S. Cl. 280—618 **8 Claims**



1. In a safety ski binding comprising a sole plate pivotally supported on a ski-fixed pivot pin for movement in a horizontal plane, said pivot pin preventing said sole plate from lifting off from front end and the ski, said sole plate having a front jaw at its a heel holder provided with a housing at its rear end, said heel holder having a sole holder pivotally supported on said housing about a transversely extending axle against the force of a first pressure spring, said housing having a control with a roller thereon, said control lever being loaded by a second pressure spring, with which roller is associated a cam surface arranged on a ski-fixed member, said first and second pressure springs being nested coaxially into one another in said housing, the improvement comprising wherein an outer one of aid pressure springs for controlling elevational release rests on a pressure ring provided on an intermediate member, which intermediate member has a nose means thereon engaged with a single locking lever.

4,804,202

NON-SOLE DEPENDENT SKI BINDING

Josef Svoboda, Schwechat, and Radko Pavlovec, Vienna, both of Austria, assignors to TMC Corporation, Switzerland

PCT No. PCT/EP87/00082, § 371 Date Dec. 1, 1987, § 102(e) Date Dec. 1, 1987, PCT Pub. No. WO87/04941, PCT Pub. Date Aug. 27, 1987
PCT Filed Feb. 14, 1987, Ser. No. 138,382
Claims priority, application Austria, Feb. 17, 1986, 406/86
Int. Cl.[4] A63C *9/08*
U.S. Cl. 280—618 **6 Claims**

1. A safety ski binding comprising:

an elongated base plate adapted to be fixedly mounted to a ski and having a longitudinal axis;

support means pivotally mounted on said base plate, said support means including a support plate having a heel section and a rear section substantially adjacent said heel section, said heel section including first pivot means connecting said base plate and said support plate, said first pivot means being aligned along said longitudinal axis for pivoting said support plate about a vertical axis, said rear

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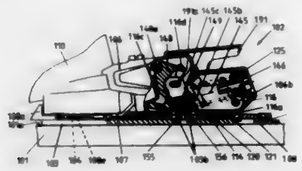
section including means for limiting pivotal movement of said support plate, said means including a guide hole;

sole clamping means secured to said support plate for securing the sole of the ski boot to said support plate, said sole clamping means being displaceably positioned relative to said heel section and including a tread spur extending therefrom, said tread spur being disposed in a first position along said sole support plate;

control means for controlling displacement of said sole clamping means relative to said heel section, said control means including:

a bearing block having a base member and a front sidewall extending from said base member, said base member being mounted on said support plate;

first transverse pivot means spaced from said front sidewall along said bearing block for pivotally supporting said sole



clamping means, said first transverse pivot means being aligned to lift said tread spur out of said first position;

a locking lever pivotally mounted on said sole clamping means;

spring means mounted on said first transverse pivot means and including a spring fork and a locking spring mounted on said spring fork for urging said locking lever into engagement with said front sidewall; and

cam means operatively connecting said base plate and said spring fork for controlling pivoting of said sole clamping means about said first transverse pivot means, said cam means including a control member depending from said spring fork and having a camming surface, said cam means also including roller means mounted on said base plate and extending through said guide hole for engagement along said camming surface.

4,804,203

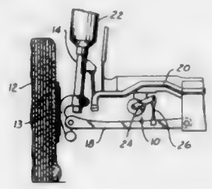
CONTROL SYSTEM AND METHOD FOR OPERATING ADJUSTABLE VEHICULAR SUSPENSION UNIT OVER UNDULATING ROAD SURFACES

John A. Glab, Taylor; Raymond P. Nicosia, Troy, and W. Trent Yopp, Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 27, 1987, Ser. No. 126,068

Int. Cl.⁴ B60G *17/06*

U.S. Cl. 280—707 **15 Claims**



1. A system for controlling an adjustable suspension unit of a motor vehicle comprising:

sensor means for determining the vertical motion of a road wheel and tire assembly operatively associated with said suspension unit, with respect to the chassis of said vehicle and for producing a first set of signals corresponding to the position of said road wheel and tire assembly with respect to the chassis of said motor vehicle;

processor means operatively associated with said sensor means for determining the need for adjusting said adjustable suspension unit, comprising:

(i) means for receiving said first set of position signals and for calculating the vertical velocity of said road wheel with respect to said chassis based upon said position signals;

(ii) means for comparing the magnitude of said calculated velocity of said road wheel with a set of threshold velocity values;

(iii) means for producing a control signal but only in the event that said calculated velocity lies between two of said threshold values; and

adjustment means operatively connected with said processor means and responsive to said control signal for adjusting said adjustable suspension unit.

4,804,204

REMOTE OPERATED HITCH APPARATUS

Johnny C. Elkins, Rte. 5, Box 5124-C, San Angelo, Tex. 76904

Filed Jan. 22, 1988, Ser. No. 147,196

Int. Cl.⁴ B60D *1/06*

U.S. Cl. 280—512 **18 Claims**

1. A trailer hitch of the type having a main body, a ball receiving socket at one end of the main body and the other end of the main body being attachable to the end of a tongue, for example; a pivotal member, hinge means at the ball receiving socket end by which said main body and said pivotal member form hinged sections; said socket is formed jointly in said hinged sections; a collar reciprocatingly received about said main body and positioned to releasably receive the free marginal end of said pivotal member therein to thereby releasably latch the hinged sections together so that a ball can be captured therein; the improvement comprising:

a remote actuator by which the hinged sections are forced together to enable the collar to be moved into the latched position; said actuator includes a control lever, means pivotally mounting said control lever for movement respective to said main body; actuator means connected to be moved in response to movement of said control lever, said actuator means being positioned for engaging and retracting said pivotal member into aligned position to enable said collar to be received about the marginal free end thereof; whereby, said hitch can be positioned in aligned relationship respective to a ball therefor, the collar moved into a retracted position, the pivotal member engaged by the actuator means and thereby moved into a retracted position, whereupon the collar is released and captures the marginal end of the pivotal member with the hinged sections being retracted about a ball.

4,804,205

VEHICLE SUSPENSION ASSEMBLY

Francis E. Parsons, 21 Britannia Street, Geelong West, Victoria, Australia

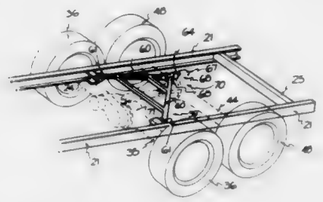
PCT No. PCT/AU86/00317, § 371 Date Jun. 22, 1987, § 102(e) Date Jun. 22, 1987, PCT Pub. No. WO87/02628, PCT Pub. Date May 7, 1987

PCT Filed Oct. 22, 1986, Ser. No. 84,796

Claims priority, application Australia, Oct. 22, 1985, PH03027

Int. Cl.⁴ B60G *11/02*

U.S. Cl. 280—718 **13 Claims**



1. A vehicle suspension assembly comprising:

a chassis,

said chassis having a longitudinal chassis axis and defining a longitudinal chassis direction

an axle assembly disposed transversely to said longitudinal chassis direction,

a pair of wheels rotatably supported on said axle assembly,

a pair of laterally-spaced suspension leaf springs each connected at each end thereof to said chassis and disposed generally parallel to said longitudinal chassis direction,

a first connector means for connecting said axle assembly to each said suspension leaf spring intermediate the ends of said leaf springs and permitting pivotal movement between said axle assembly and each said suspension leaf spring about respective axes parallel to said longitudinal chassis direction,

a stabilizer member interconnected between said axle assembly and said chassis,

a second connector means for connecting said stabilizer member to said axle assembly and to said chassis at longitudinally-spaced locations and permitting pivotal movement relative to each about respective transverse axes parallel to said axle assembly,

said second connector means permitting pivotal movement between said stabilizer member and at least one said axle assembly and said chassis about an axis parallel to said longitudinal chassis axis, and

said second connector means permitting linear movement between said stabilizer member and at least one axle assembly and said chassis in said longitudinal chassis direction.

4,804,206

SWIVEL CONSTRUCTION AND METHOD OF MAKING THE SAME

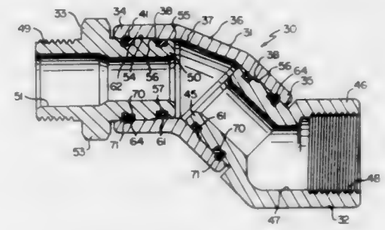
Chester W. Wood, Milford, Ohio, and Frank G. Lamping, Bellevue, Ky., assignors to Dover Corporation, New York, N.Y.

Filed Oct. 13, 1987, Ser. No. 107,975

Int. Cl.⁴ F16L *27/08, 35/00*

U.S. Cl. 285—13 **18 Claims**

1. In a swivel construction comprising a body member and an adaptor member, each said member having opposed ends and having a passage passing through said ends thereof, one end of said body member and one end of said adaptor member being disposed in telescoped relation, said construction having retaining means disposed between said telescoped ends and tending to hold said members in said telescoped relation while permitting swivel movement therebetween, said construction having seal means disposed between said telescoped ends and tending to seal said telescoped ends together while permitting swivel movement therebetween, the improvement wherein said construction has bearing means disposed between said telescoped ends and intermediate said retaining means and said seal means and wherein said construction has means for causing said seal means to leak a certain amount after said retaining means has worn away said bearing means a certain amount but is still maintaining said one ends in said telescoped relation thereof, one of said members having an annular groove therein,



said bearing means comprising an annular part disposed in said groove, said bearing means having said annular part thereof provided with a split therein that permits said annular part to be deformed for insertion into said annular groove and then return to its original shape in said annular groove, said split of said annular part of said bearing means providing a gap in said bearing means that permits said bearing means to swell in said annular groove due to climatic conditions and/or contact with chemicals without causing any adverse binding between said body member and said adaptor member during swivel movement therebetween.

4,804,207

CONNECTOR PIPE SEGMENT

Rütger Berchem, Gelsenkirchen, and Georg Prokscha, Recklinghausen, both of Fed. Rep. of Germany, assignors to Metallformgebung Berchem und Schuberg Gesellschaft für Metallformgebung M.B.H., both of Gelsenkirchen, Fed. Rep. of Germany

Filed Jan. 20, 1988, Ser. No. 145,832

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1987, 3702062

Int. Cl.⁴ F16L *55/18*

U.S. Cl. 285—16 **4 Claims**



1. In a connector pipe segment for conductor pipes or conduits for gaseous as well as fluid flow media comprising a pressure-tight outer shell, at least two connector pieces, a plurality of end face sealing surfaces and a wear-resistant sleeve, said wear-resistant sleeve being inserted in said outer shell, the improvement wherein said sealing surfaces are located only on said outer shell and said wear-resistant sleeve is inserted with radial play and with axial play free of force in said outer shell so that a gap is formed between said outer shell and said wear-resistant sleeve, said gap being connected with the open cross section of said wear-resistant sleeve and admitting said flow media, said outer shell being a pressure-tight metal connector body which is provided on an inner surface with a corrosion resistant layer.

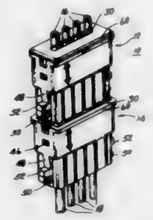
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4,804,208

MANIFOLD COUPLING ASSEMBLY

John F. Dye, Elgin, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Aug. 11, 1986, Ser. No. 895,554
Int. Cl.[4] F16L *35/00*
U.S. Cl. 285—26 2 Claims



1. A manifold coupling for the oriented interconnection of a plurality of fluid conduits, comprising:

a pair of manifold halves, each halve including an upper housing and a lower housing;

an arrangement of sidewalls and end walls defining each of said housings;

a bulkhead disposed between each of said housings, with a conduit means disposed through said bulkhead;

a locking arrangement disposed on the end walls, so as to lock each halve to the other, regardless of which is utilized as a receiving halve;

each of said housings having a keying arrangement to permit proper orientation only, of one halve when it is mated with the other halve;

a particular number of keys are disposed on one side of said sidewalls of said housing in the coupling, and a same particular number of keyways are disposed in the contiguous side of said sidewalls of the other housing in the coupling; and

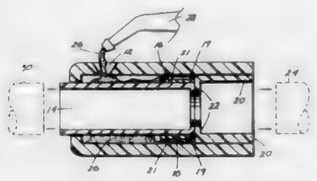
only said sidewalls having straight reinforcing means extending along their peripheral edges to prevent yielding thereof and improper interconnection therebetween.

4,804,209

PLUMMER'S UNION

Kevin H. Fischer, 180 Valley Ridge Dr., Paradise, Calif. 95969

Filed Oct. 20, 1987, Ser. No. 110,519
Int. Cl.[4] F16L *13/10*
U.S. Cl. 285—31 6 Claims



1. An adjustable union coupler for repairing and connecting PVC pipe ends comprising:

an elongated substantially tubular housing having longitudinal passageway therethrough for a tubular interior telescoping sleeve movably fitted therein;

said tubular housing internally lipped at one end thereof and fixable internally at the opposite end with a slip-reducing bushing;

said tubular telescoping sleeve affixed on the outer surface at one end with a restricting lip ring;

said restricting lip ring having a gluing groove circumvolved outwardly edgewise on the surface thereof and two longitudinal glue inlet groves on opposite sides in said outer surface of said lip ring commencing at said circumvolved gluing groove as inward lateral extensions thereof;

said tubular telescoping sleeve and said slip-reducing bushing both affixed with a pipe stop lip at adjacent interior positions;

said tubular housing apertured at said lipped end thereof for glue application therethrough onto said interior telescoping sleeve for glue attachment of said housing lip to said restricting lip ring and extrusion through said glue inlet grooves to said circumvolved gluing groove for permanent attachment of said interior lip ring to the internal surface of said housing;

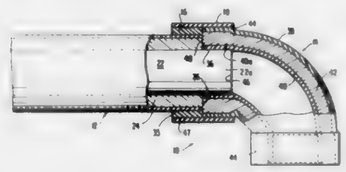
said adjustable union coupler, the assemblage thereof, attachable at said slip-reducing bushing end to one end of a PVC pipe by adhesive means, and at said tubular telescoping sleeve end to one end of a second PVC pipe by longitudinal telescoping of said telescoping sleeve from said tubular housing and attachment thereof to said second end of PVC pipe with an external coupler by adhesive means.

4,804,210

DOUBLE SEALED, DOUBLE WALL INSULATED SPA PIPE COUPLING

James W. Hancock, R.D. 2, Posey Mill Rd., Cochranville, Pa. 19330

Filed Jun. 15, 1987, Ser. No. 61,375
Int. Cl.[4] F16L *59/14*
U.S. Cl. 285—47 3 Claims



1. A double sealed, double wall insulated spa pipe coupling comprising:

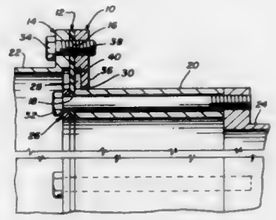
two axially connected coupling components including a first component consisting of a double wall insulated spa pipe, said double insulated spa pipe comprising a plastic inner pipe, a plastic outer pipe concentric about said inner pipe, said outer pipe having an inner diameter considerably greater than the outer diameter of said inner pipe and being spaced radially therefrom, foam insulation filling the space between said inner and outer pipes, said outer pipe and said foam insulation being severed at one end of said spa pipe over a short length thereof to expose the bare outer periphery of said inner pipe at said one end over said short length, said coupling second component consisting of a plastic inner pipe and a plastic outer pipe, said second component inner and outer pipes being concentric, said second component outer pipe being of a diameter considerably larger than the outer diameter of said second component inner pipe, foam insulation filling the space between said second component inner and outer pipes and said second component being sized similar to that said first component, said second component including at at least one end thereof, a radially enlarged section formed over a short length thereof generally equal to the length of said severed one end of said first component, and including internally in said second component inner pipe, an internal radial shoulder and a radially enlarged hub, said coupling further including, an annular cylindrical collar, said collar being of a length equal to the length of said hub, having an outer diameter equal to the outer diameter of said hub, and an inner diameter generally equal to the outer diameter of said first component outer pipe, said annular cylindrical collar being adhesively fixed to the end of said outer pipe, with an edge thereof flush to the severed end of said first component outer pipe, said first component inner pipe being adhesively joined about its outer periphery to the inner periphery of said inner pipe of said second component with said one end of said bared inner pipe of said first component in near abutment with said radial shoulder and, said spa pipe coupling further comprising an annular cylindrical coupler having an axial length equal to the combined axial length of said collar and said hub, having an inner diameter slightly larger than the outer diameter of said collar and said hub and being adhesively bonded on the inner periphery thereof, concentrically about said collar and said hub to form an outer seal therebetween complementing the inner seal formed between the adhesive coated, exposed inner pipe of said first component and said radially enlarged inner pipe of said second component, at said hub.

4,804,211

SEAL ASSEMBLY

Donald J. Larson, Hinsdale, and Norman L. Moore, Allegany, both of N.Y., assignors to Dresser-Rand Company, Corning, N.Y.

Continuation of Ser. No. 904,525, Sep. 5, 1986, abandoned. This application Nov. 20, 1987, Ser. No. 124,340
Int. Cl.[4] F16D *3/84;* F16L *27/10*
U.S. Cl. 285—225 2 Claims



1. A flexible seal assembly for joining a first and second housing that cover a driving and a driven shaft connected therebetween, comprising:

an annular coupling guard adapter having an inside and an outside diameter and being rigidly mounted to the first housing;

an annular coupling guard having an inside diameter greater than the outside diameter of said annular coupling guard adapter and an outside diameter, said annular coupling guard being rigidly mounted to the second housing;

a rigid membrane guard disposed adjacent said annular coupling guard adapter and including first and second parallel surfaces spaced apart by a first cylindrical portion and a second cylindrical portion, said first cylindrical portion and said second cylindrical portion being spaced apart by a third surface located between and parallel to said first and second surfaces;

said first surface of said rigid membrane guard defining an annular ring having an inner and outer diameter, corresponding to the inner and outer diameter of said annular coupling guard for attachment to said annular coupling guard;

said second surface of said rigid membrane guard defining an annular ring having an inner and outer diameter, said outer diameter corresponding to the outer diameter of said annular coupling guard and said inner diameter corresponding to the diameter of said second cylindrical surface and being greater than the outer diameter of said annular coupling guard adapter and being radially spaced apart from said annular coupling guard adapter to thereby define a first radial gap between said rigid membrane guard and said annular coupling guard adapter to allow radial movement between the first and second housings;

said first cylindrical portion of said rigid membrane guard being perpendicularly disposed to said first and said third surfaces and having a diameter corresponding to the inner diameter of said annular coupling guard and located between the second cylindrical portion and said first surface, the diameter of said first cylindrical portion being greater than the diameter of said second cylindrical portion to thereby define a second radial gap therebetween, said second radial gap being of greater cross-sectional area than said first radial gap; and

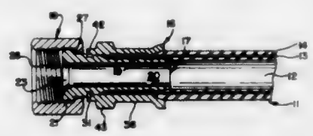
an annular flexible membrane disposed between said first surface of said rigid membrane guard and said annular coupling guard, said second radial gap being located on a first side of said membrane and being adjacent said first radial gap, said annular flexible membrane having an inner and outer diameter, said inner diameter corresponding to the inner diameter of said annular coupling guard adapter and said outer diameter corresponding to the outer diameter of said annular coupling guard, such that said annular flexible membrane passes between said second radial gap and a corresponding gap on a second side of said membrane adjacent to the annular coupling guard and provides a leakproof seal between the coupling guard and the coupling guard adapter, and a portion of said annular gap being maintained between said annular flexible membrane and said second surface of said rigid membrane guard thereby allowing said annular flexible membrane to deflect due to relative lateral movement between the first and second housings.

4,804,212

CRIMPED HOSE FITTING

Gerrard N. Vyse, Bedford, Tex., assignor to Stratoflex, Inc., Fort Worth, Tex.

Continuation of Ser. No. 927,677, Nov. 6, 1986, abandoned. This application Jun. 10, 1988, Ser. No. 205,537
Int. Cl.[4] F16L *33/20*
U.S. Cl. 285—256 4 Claims



1. A crimped fitting for attachment between an end portion of a hose and a fluid conduit part, said fitting comprising a tubular socket, a tubular nipple having first and second ends, said first end including an insert portion which is adapted to be inserted into said end portion of said hose, said second end extending out of said socket and including attachment means for making a sealed fluid connection with the conduit part, said nipple further comprising an intermediate portion between said first and second ends and having an annular groove formed in the outer periphery thereof, said nipple being free of wrench flats, said tubular socket being positioned concentrically around said insert and intermediate portions, said socket including a crimped first portion around said insert portion of said nipple, a crimped second portion including a flange extending into said groove of said nipple, and a crimped third portion between said first and second portions, said third portion including an outer surface having a plurality of angularly spaced crimped flat portions forming wrench flats and an inner

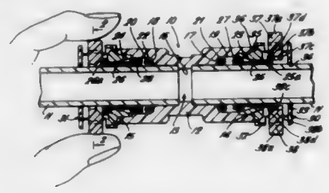
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surface in tight engagement with said intermediate portion of said nipple.

4,804,213
TUBE COUPLINGS

John D. Guest, "Iona" Cannon Hill Way, Bray, Maidenhead, Berkshire, United Kingdom

Filed Jul. 30, 1987, Ser. No. 79,358
Claims priority, application European Pat. Off., Jul. 30, 1986, 86305812.2
Int. Cl.[4] F16L *37/08*
U.S. Cl. 285—308 **14 Claims**



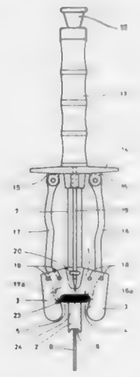
1. A tube coupling comprising a body having a throughway open at one end to receive a tube, a sleeve mounted in the throughway at said one end and projecting from the open end of the throughway, and through which a tube may extend into the throughway, tube gripping means in the throughway for receiving and engaging a tube to hold the tube in the throughway, said sleeve being arranged to release the gripping means from a tube by axially depressing the projecting end of the sleeve into the throughway to allow a tube to be withdrawn from the body, and an end cap detachably mounted on the body to cover said open end of the throughway, the end cap having an aperture through which a tube can extend into the throughway and having radially directed manually operable means acting on the projecting end of the sleeve to depress the sleeve axially into the throughway and thereby release the tube gripping means to allow the tube to be withdrawn.

4,804,214
CARPET-KNOTTING APPARATUS

Hubert Jeandupeux, Les Périades, CH-1884 Villars-sur-Ollon, Switzerland

Filed May 13, 1987, Ser. No. 50,439
Claims priority, application Switzerland, May 16, 1986, 02007/86
Int. Cl.[4] D03H *3/00*; **B65H** *69/04*
U.S. Cl. 289—17 **8 Claims**

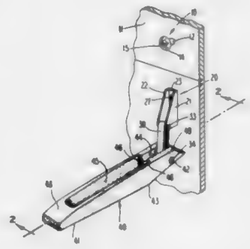
1. Apparatus to tie Smyrna stitches called Ghiordes knots on a canvas, comprising, on the one hand, a head which presents a nose and two cheeks delimitating two lodgings between them and said nose, the back part of the head being arranged to receive the mid portion of a pile thread of predetermined length, while the portions of that thread, adjacent to that mid portion, are imprisoned in said lodgings so that the ends of that thread extend in front of the head in approximately parallel directions, that head being solid with a guiding rod and its nose carrying a rigid buckle intended to pass between two threads of the canvas in the course of a first movement of engagement of the apparatus, and, on the other hand, a unit movable along said rod, between a position of rest and an engaged position, that unit carrying two hooks which are located in different planes, parallel to each other and move in those planes, when said unit moves from its position of rest to its engaged position and vice versa, which are guided by said head and which, in the course of a supplementary movement of engagement, leave their position of rest, cross the canvas by passing through openings of the latter, located on either side of the two said threads between which the buckle of the apparatus has been engaged, and finally cross each other in said buckle, when they reach the engaged position, those hooks being intended, in the course of their displacement, for seizing the portions of the pile thread imprisoned in said lodgings and, while sliding along said thread toward its ends, for causing the ends to pass through said openings of the canvas in order to finally deposit them in said buckle, which, in the course of the disengagement of the apparatus, pull those ends of the pile thread between the two said threads of the canvas, characterized in that the parts (16*a*, 17*a*) of the hooks (**16**, **17**), which seize the portions of the pile thread (**23**) imprisoned in said lodgings (**4**, **5**), are not at the same distance from those portions of the pile thread, so as to seize them one after the other, during the supplementary movement of engagement of the apparatus, to cause the ends of that thread (**23**) to successively pass through the canvas and to engage them one after the other into said buckle (**8**), when coming near their engaged position.



4,804,215
FLEXIBLE DRAW LATCH

Robert H. Bisbing, Springfield, Pa., assignor to Southco, Inc., Concordville, Pa.

Continuation of Ser. No. 928,415, Nov. 7, 1986, abandoned. This application May 31, 1988, Ser. No. 204,932
Int. Cl.[4] E05C *5/02*
U.S. Cl. 292—113 **16 Claims**

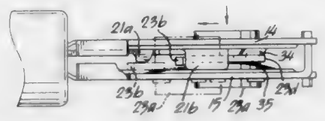


1. A draw latch for use in securing two closure members together, comprising:
(a) a keeper adapted to be affixed to a first closure member;
(b) a mounting bracket adapted to be affixed to a second closure member;
(c) a lever pivotally connected to said mounting bracket;
(d) a locking member pivotally connected to said lever, said locking member having a nose section generally opposite said pivot connection with said lever, said nose section being adapted to detachably receive said keeper therein;
(e) said locking member having an upper wall and a pair of opposing side walls depending from said upper wall, said locking member being of such size and shape so as to envelop and conceal the keeper, the mounting bracket and the lever when the latch is in a closed, latched position;
(f) wherein said locking member is made of an elastomeric material which is flexible and resilient relative to the keeper, the mounting bracket and the lever;
(g) wherein the relative flexibility and resiliency of the locking member permits misaligned latching engagement of the locking member when the keeper and the mounting bracket are misaligned; and
(h) wherein said pivot connections between the lever and the mounting bracket and the lever and the locking member are located at opposite ends of said lever, whereby upon movement of said locking member to said closed position, said locking member is stretched to an elongate condition and then contracts when said locking member is in a fully closed position.

4,804,216
CONVERTIBLE BACKSET LATCH MECHANISM

Robert A. Marotto, Auburn, Ala., assignor to Dexter Lock Company, Auburn, Ala.

Filed Feb. 1, 1988, Ser. No. 150,869
Int. Cl.[4] E05C *1/16*
U.S. Cl. 292—337 **3 Claims**

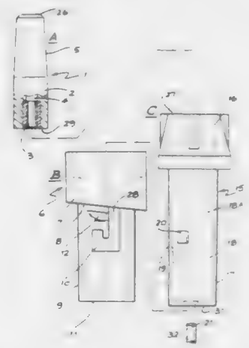


1. In an adjustable backset latch mechanism having a stationary housing, a bolt movable to a closed position in the housing, a translatable bolt retractor connected to the bolt for moving the bolt to an open position and a transverse spindle insertable through the housing rotatable to translate the bolt retractor, the improvement comprising
(a) a housing section having parallel spaced-apart plate walls and a retractor housed between the walls with such retractor having upper and lower forward lips and upper and lower rearward lips;
(b) a swivel unit turnable by such spindle and mounted for sliding movement in the housing section between a forward position and a rearward position, such swivel unit in turn comprising
(i) slide means for sliding engagement with a plate wall of the housing section;
(ii) means for securing the slide means to the plate wall in a forward position and means for securing it in a rearward position;
(iii) a swivel plate projection means normally positioned between the housing section plate walls such swivel plate means mounted on the swivel unit for engagement with the bolt retractor when the spindle is turned; and
(c) distortable sprinq means urging the swivel unit to its normal-at rest position between the plate walls with such spring means capable of being distorted to move the swivel unit laterally toward a plate wall to permit translation of the swivel unit past upper and lower forward retractor lips
whereby upon restoration of such spring means to normalcy the swivel unit is placed in a operable forward backset position.

4,804,217
ANTI-THEFT LOCKING DEVICE

Joseph A. Cox, 41 Orlando Road, New South Wales, Australia 2299

PCT No. PCT/AU86/00179, § 371 Date Apr. 15, 1987, § 102(e) Date Apr. 15, 1987, PCT Pub. No. WO86/07621, PCT Pub. Date Dec. 31, 1986
PCT Filed Jun. 23, 1986, Ser. No. 49,695
Claims priority, application Australia, Jun. 23, 1985, PH1137
Int. Cl.[4] E05C *21/02*
U.S. Cl. 292—347 **10 Claims**



1. A security device for fitting to a door frame or sill and which is operable between a locked and unlocked position so that the door can be locked and unlocked characterized in that the device comprises:
a first sleeve member fixedly and non-rotatably attached to said door frame or sill;
a second sleeve member which fits concentrically and rotatably within said first sleeve member;
a spindle member which fits concentrically and rotatably within said first and said second sleeve members and which is operably connected with a locking component on or within said door;
bias means located within said first sleeve for braising the second sleeve member upwardly;
rotationally engageable engaging means between the first and second sleeve members;
wherein when said device is to be set in said locked position, said second sleeve is pushed downwardly and rotatably within said first sleeve against said bias means such that said second sleeve releasably engages said first sleeve via said engaging means and said spindle is pushed downwardly so that said locking component locks said door; and
wherein when said device is to be set in said unlocked position, said second sleeve member is pushed first downwardly, thence rotated such that said engaging means disengages from said first sleeve member, said bias means forcing said second sleeve member in an upward direction such that it engages said spindle to force said spindle upwards, thereby causing said locking component to be placed in an unlocked mode.

4,804,218
SCUBA TANK HARNESS

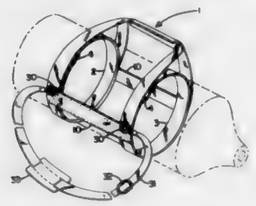
Dan J. Hilliard, 14015 Chestnut Dr., Apartment F, Eden Prairie, Minn. 55344

Filed Jun. 19, 1987, Ser. No. 63,812
Int. Cl.[4] B65D *63/18*
U.S. Cl. 294—31.2 **8 Claims**

1. A unitary harness for carrying an elongated tank comprising:

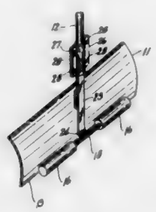
VOL 1099 ISS 2 FEB 14 1989 UMI

(a) first and second flexible straps, each having a first end and a second end;
(b) means for adjusting the effective length of said flexible straps;
(c) first and second buckle means for securing the first and second ends of each of said flexible straps together when said straps are wrapped around said tank;
(d) a pair of semi-rigid support straps, each having one end thereof secured to said first flexible strap and the second end thereof secured to said second flexible strap interme-



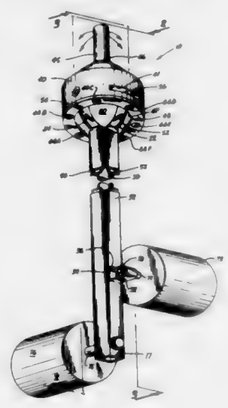
diate the first end and the second end of said flexible straps so that said pair of semi-rigid support straps and said first and second flexible straps form a web;
(e) handle means for carrying said harness, said handle means including a pair of handle members, each handle member having opposite ends secured to said first and second flexible straps so that said handle means and said web will support said tank even if said first and second buckle means should fail causing said first and second ends of said flexible straps not to be secured together.

4,804,219
SNOW SHOVEL
Clara Berg, 4940 N. Wildwood Ave., Whitefish Bay, Wis. 53217
Filed Feb. 29, 1988, Ser. No. 162,182
Int. Cl.[4] E01H *5/02*
U.S. Cl. 294—54.5 **3 Claims**



1. A snow shovel having an elongate handle and a blade mounted at one end of the handle and having a lower edge, a roller assembly mounted on the handle behind the blade and adjacent its lower edge, mounting means for releasably securing the roller assembly to the handle, said mounting means including a member for supporting the roller assembly and an adjustable clamp engagable with the handle for securing said member to said handle and for steplessly adjustably positioning the roller assembly in fixed longitudinal and rotational positions relative to the lower edge of the blade so that the roller assembly may be steplessly adjusted longitudinally and rotationally relative to the handle whereby different fixed vertical and rotational angles of the blade may be achieved relative to the surface being cleaned when the roller assembly and the lower edge of the blade are in engagement with said surface.

4,804,220
WRIST TENDON ACTUATOR
Mark E. Rosheim, 1565 St. Paul Ave., St. Paul, Minn. 55116
Continuation-in-part of Ser. No. 820,677, Jan. 21, 1986, abandoned. This application Feb. 20, 1987, Ser. No. 16,943
Int. Cl.[4] B25J *15/10, 17/02;* **G05G** *1/00*
U.S. Cl. 294—111 **70 Claims**

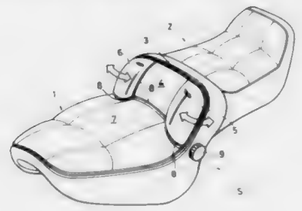


1. A mechanical joint comprising:
a spherical member having a first and a second groove in its outer surface, each groove extending circumferentially around the spherical member and the grooves disposed approximately 90° from each other;
housing means having a concave spherical socket for receiving the spherical member, a pair of slots located proximate an equatorial plane of the spherical member, each slot being disposed diametrically opposite the other slot;
frame means fixedly secured to the spherical member at an intersection of the first and second grooves located exteriorly of the housing means;
first ribbon means being slidable within the first groove and looped around a first pulley within the frame means, each end of the ribbon means attached to a pin inserted into a slot of the housing means;
second ribbon means being slidable within the second groove and looped around a second pulley within the frame means, each end of the ribbon means attached to a fastener means having a pair of pins, the pins pivotally mounted to the housing means located proximately at the equatorial plane of the spherical member and disposed at the approximate midpoints between the slots of the housing means;
output means connected to the housing means opposite the socket; and
first and second drive means for effecting selective movement of the first and second ribbon means.

4,804,221
VARIABLE SEAT FOR MOTORCYCLES
Terunari Saiki, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 015,171, Feb. 17, 1987. This application May 4, 1988, Ser. No. 189,992
Claims priority, application Japan, Feb. 17, 1986, 61-32113
Int. Cl.[4] B62J *1/00*
U.S. Cl. 297—195 **8 Claims**

1. An arrangement for adjustably supporting the waist of a motorcycle operator, comprising:
(A) an elongated double seat structure extending along a longitudinal direction from a front saddle seat for a motor-

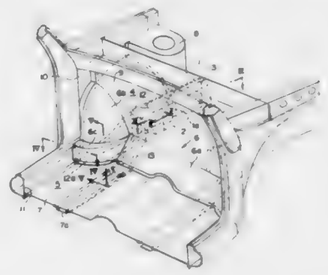
cycle operator to a rear saddle seat for a motorcycle passenger,
(i) said front saddle seat having a seating portion on which the operator sits astride with legs on opposite sides of the seating portion, a rear portion against which only the back of the waist of the operator is supported, and a pair of side waist bolster portions against which only opposite sides of the waist of the operator are supported at opposite sides of the seating portion, said bolster portions being spaced apart in a direction transverse to the longitudinal direction by a transverse distance,
(ii) said rear saddle seat being connected to the front saddle seat and having a seating section on which the passenger sits astride with legs on opposite sides of the seating section, said seat section having a transverse width less than said transverse distance between the bolster portions;
(B) an elongated seat frame extending longitudinally from a front support portion on which the front saddle seat is supported at a predetermined elevation, to a rear support portion on which the rear saddle seat is supported at an elevation above said predetermined elevation; and



(C) means for adjusting said transverse direction between the bolster portions, including
(i) a pair of rigid members, each located within a respective bolster portion, said rigid members being mounted on the seat frame for simultaneous movement toward each other to a first waist-supporting condition in which said transverse distance is decreased, and for simultaneous movement away from each other to a second waist-supporting condition in which said transverse distance is increased,
(ii) a manually-operated element mounted on the double seat structure between the front and rear saddle seats at substantially the same horizontal level of the front seat surface and below the horizontal level of the rear seat surface, and
(iii) a transmission mounted within the seat structure, and operatively connected between the element and the rigid members, for enabling the rigid members and the bolster portions to be moved between said waist-supporting conditions.

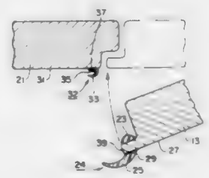
4,804,222
FRONT STRUCTURE OF VEHICLE BODY
Noritaka Sakiyama, and Osamu Matsuura, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Oct. 28, 1986, Ser. No. 924,212
Claims priority, application Japan, Oct. 31, 1985, 60-245215; Oct. 31, 1985, 60-245216; Oct. 31, 1985, 60-245217
Int. Cl.[4] B62D *23/00*
U.S. Cl. 296—203 **8 Claims**

1. A front structure of a vehicle body comprising a front frame which extends in the longitudinal direction of the vehicle body and is formed of an outer frame and an inner frame connected together to form a closed cross section, a dashboard lower panel disposed near a rear edge of the front frame and extending vertically, a front floor extending rearward from a lower edge of the dashboard lower panel, a side sill disposed on one side of the front floor, a floor frame disposed on an inner side of the side sill, an outer rear frame member connecting to a rear end portion of the joint frame to the side sill, and a front frame member connecting the rear end portion of the front frame to a front end portion of the floor frame; said inner frame of the front frame being channel-shaped in cross-section and said outer frame of the front frame having a bent portion



which extends across the front frame to the inner frame at a portion of said front frame near a rear side of a suspension tower; said bent portion of the outer frame being connected to an inner peripheral surface of the inner frame; said outer rear frame member being connected to an outer side of said outer frame of said front frame to extend rearward from a portion of the outer frame on a front side of the bent portion to cover the bent portion.

4,804,223
MOTOR VEHICLE WITH FINGER GUARD
James S. Iati, 1361 Norton St., Rochester, N.Y. 14621
Filed May 21, 1987, Ser. No. 52,407
Int. Cl.[4] B60J *5/00*
U.S. Cl. 296—152 **5 Claims**



1. A finger guard in combination with a motor vehicle, said vehicle comprising a vehicle body having an outer body surface and a door opening therein defined by a body edge of the surrounding vehicle body, a door having an outer door surface, a proximal door edge and a distal door edge opposite said proximal door edge, said door being mounted in said door opening, said door being hinged along said proximal door edge to open outwardly and to fit closely in said door opening with a space between said body edge and said distal door edge, said finger gaurd including a door element in the form of a first flexible and yielding strip adhesively attached to said outer door surface along the distal edge of said door, said door element extending in cantilever fashion and overlapping the outer body surface adjacent to said door opening and the space therebetween, said door element having a transverse dimension substantially perpendicular to the longitudinal dimension of said distal edge of said door and longitudinal door-element edges substantially parallel to said longitudinal dimension of said distal edge of said door, said door element being substantially crescent-shaped in its transverse dimension curving out-

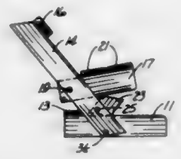
wardly from said outer surface of said door and then inwardly towards said outer body surface adjacent to said door opening.

4,804,224

RECLINING BENCH

Wayne C. Stapf, 159 W. Sumner Ave., Martinsville, Ind. 46151

Filed Jan. 27, 1988, Ser. No. 212,015
Int. Cl.[4] A47C *1/00*
U.S. Cl. 297—355 1 Claim



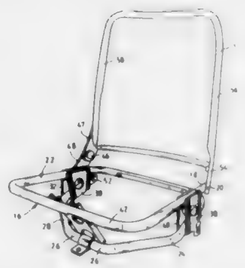
1. A reclining bench comprising:
a first elongated platform member having a top, a bottom, two sides, a front end and a rear end;
a second elongated platform member having a top, a bottom, two sides, a front end and a rear end;
a stop brace extending from the top rear end of said first elongated platform member to the top rear end of said second elongated platform member and being rigidly connected to said first and second elongated platform members;
a first elongated upright member pivotally attached at the bottom thereof to an intermediate portion of said first elongated platform member along a first horizontal axis, said first elongated upright member being pivotal between a first position in abutment with said stop brace and a second position forward of said stop brace;
a second elongated upright member pivotally attached at the bottom thereof to an intermediate portion of said second elongated platform member along said first horizontal axis, said second elongated upright member being pivotal between a first position in abutment with said stop brace and a second position forward of said stop brace;
a back support attached at one end to a top portion of said first elongated upright member and attached at the other end to a top portion of said second elongated upright member;
seat means attached to an intermediate portion of said first and second elongated upright members for permitting people to sit thereon and lean back into abutment with the back support, said seat means including a first elongated cantelever member rigidly attached at one end thereof to said first elongated upright member and being disposed directly above said first elongated platform member and a second elongated cantelever member rigidly attached at one end thereof to said second elongated upright member and being disposed directly above said second elongated platform member;
a first cam member having a flat top edge and a flat bottom edge, said first cam member being pivotally attached to portion of said first elongated upright member between at a second horizontal axis disposed between said stop brace and the top of said first elongated platform member, said first cam member being movable between a first position wherein a rear top corner of said first cam member is in contact with the bottom of said first elongated cantelever member and the front bottom of said first cam member is in contact with the top of said first elongated platform member when said first elongated upright member is in the first position thereof, and a second position wherein said first cam member has the flat top thereof in abutment with the bottom of said first elongated cantelever member and the flat bottom thereof is in contact with the flat top of the first elongated platform member when the first elongated upright member is in the second position thereof; and
a second cam member having a flat top edge and a flat bottom edge, said second cam member being pivotally attached to portion of said second elongated upright member at said second horizontal axis, said second cam member being movable between a first position wherein a rear top corner of said second cam member is in contact with the bottom of said second elongated cantelever member and the front bottom of said second cam member is in contact with the top of said second elongated platform member when said second elongated upright member is in the first position thereof, and a second position wherein said second cam member has the flat top thereof in abutment with the bottom of second elongated cantelever member and the flat bottom thereof is in contact with the flat top of the second elongated platform member when the second elongated upright member is in the second position thereof, whereby the seat means and back support are adjustable between a reclined first position and a more upright second position.

4,804,225

BASE STRUCTURE IN PARTICULAR FOR A SEAT HAVING AN ADJUSTABLE BACKREST

Francois Fourrey, Montbeliard, and Serge Deley, Selomcourt, both of France, assignors to Cycles Peugeot, France

Filed Nov. 10, 1986, Ser. No. 928,483
Claims priority, application France, Aug. 14, 1986, 86 11757
Int. Cl.[4] A47C *31/00*
U.S. Cl. 297—452 6 Claims



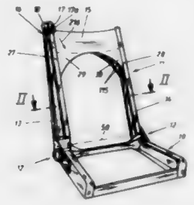
1. A seat base structure in combination with an inclinable backrest and having a first lateral side and a second lateral side laterally spaced from and opposite said first lateral side, and means for adjusting the inclination of the backrest relative to the seat base structure, said seat base structure comprising a substantially helically coiled element which has an upper coil portion for receiving a seat and terminates in a first end of said element on said first lateral side of said base structure, and a lower coil portion terminating in a second end of said element which is an opposite end of said element relative to said first end and is located on said second lateral side of said seat base structure, and an intermediate coil portion interconnecting said upper coil portion and said lower coil portion, said lower coil portion being provided for fixing to a support and being vertically spaced from said upper coil portion, said backrest having a first lower end portion which is freely pivotally mounted on said upper coil portion adjacent to said first end of said element and a second lower end portion which is pivotally mounted on said upper coil portion of said element in the vicinity of said second end of said element on said second lateral side of said seat base structure, said means for adjusting the inclination of the backrest consisting of a single adjusting device combined with said pivotal mounting of the second lower end portion of the backrest on said second lateral side of said seat base structure, and reinforcing means rigidly interconnecting said upper coil portion and said lower coil portion on said first and second lateral sides of said seat base structure.

4,804,226

DEFORMATION-RESISTANT FRAME FOR SEATS OF MOTOR VEHICLES

Gerhard Schmale, Hückeswagen, Fed. Rep. of Germany, assignor to Keiper Recaro GmbH. & Co., Remscheid, Fed. Rep. of Germany

Filed Jul. 17, 1987, Ser. No. 74,919
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1986, 3624295
Int. Cl.[4] B60R *21/00*
U.S. Cl. 297—216 15 Claims



1. A seat for use with a safety belt, particularly in motor vehicles, comprising a frame including a base and a back rest, said back rest including two spaced-apart lateral frame members having first portions adjacent and second portions remote from the base, and said back rest further including a connector between said lateral frame members; and means for coupling the belt to said frame, including a first coupling element provided on one of said frame members and spaced apart from said base and a second coupling element in the region of said base and remote from the first portion of said one frame member so that, when the belt is in use and extends between said coupling elements, it applies to said one frame member a deforming force acting in the direction in which the belt extends between said coupling elements without the application of such deforming force to the other of said frame members, said one frame member having a non-circular cross-sectional outline with an axis of maximum resistance to said deforming force, said one frame member being disposed in a plane which is inclined with reference to a plane halving said seat and extending between said frame members, the belt between said coupling elements being disposed in or close to the plane of said one frame member.

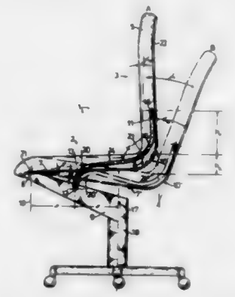
4,804,227

POINT-SYNCHRONIZED ADJUSTMENT DEVICE FOR OFFICE CHAIRS

Eckhard Hansen, St. Margrethen, Switzerland, assignor to Ahrend-Cirkel B.V., Zwanenburg, Netherlands

Filed Dec. 14, 1987, Ser. No. 132,314
Int. Cl.[4] A47C *3/00*
U.S. Cl. 297—301 5 Claims

1. A reclining chair comprising
a seat (2) comprised of a rigid supporting shell (7), a back rest (3) freely displaceable in orientation in relation to said seat (2), a rigid seat support means (18,9) including means defining at a forward end of the seat a stationary pivot axis (8) where said rigid supporting shell (7) is attached to said rigid seat support means (18,9) and about which pivot axis said seat can pivot rearwardly into a reclining position, at least one back stay bar (11), one end (12) of said stay bar being fixed to said seat support means (18,9) at pivot axis (12) positioned rearwardly of pivot axis (8), and an opposing end (16) of said back stay bar being connected to said back rest (3), said back stay bar passing through said supporting shell (7), and
said seat shell (7) including a slide bearing means (20), a portion of said back stay (11) being slidably supported on



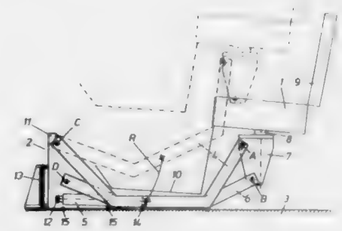
said slide bearing means (20), said slide bearing means providing positive guidance between the seat shell and the backstay such that when said seat shell reclines over an angle β the back rest reclines over an angle α which is substantially greater than angle β.

4,804,228

CHAIR FOR SERVICE TO CUSTOMER

Osmo Norvaste, Lasnkatu 28, SF-33500 Tampere, Finland

PCT No. PCT/FI87/00018, § 371 Date Oct. 1, 1987, § 102(e) Date Oct. 1, 1987, PCT Pub. No. WO87/04604, PCT Pub. Date Aug. 13, 1987
PCT Filed Jan. 30, 1987, Ser. No. 104,900
Claims priority, application Finland, Feb. 3, 1986, 860475
Int. Cl.[4] A47C *1/06*
U.S. Cl. 297—347 7 Claims



1. A chair for rendering service to a customer comprising:
a seat structure;
a base member affixed to a stationary support, such as a floor, for supporting said seat structure, said base member being positioned in front of said seat structure seen in the horizontal direction;
adjustment means inter-connected between said base and said seat structure for adjusting the vertical distance between said seat structure and said base member;
said adjustment means including an arm mechanism having upwardly open stretched U-form and being pivotable in a vertical plane about a point of connection of said arm mechanism to said base member; and
a footrest member connected to said seat structure, wherein said upwardly open arm mechanism is adapted for receiving said footrest member at least in the lowermost position of the chair.

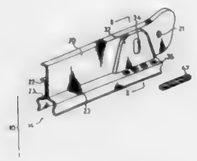
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4,804,229

SEAT SLIDE DEVICE

Takaichi Nishino, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1987, Ser. No. 61,534
Int. Cl.⁴ A62B *35/60*
U.S. Cl. 297—471 **8 Claims**



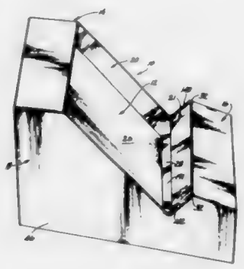
1. A seat slide device comprising:
a lower rail to be fixed to a floor of an automobile;
an upper rail to be fixed to a bottom portion of a seat, said upper rail being slidably assembled with said lower rail;
an anchor plate slidably coupled to said upper rail which is vertically movable relative thereof, said anchor plate being connected to one end of a seat belt;
means acting on said anchor plate for biasing said anchor plate in a downward direction;
said anchor plate being provided with a plurality of upwardly directed hooked members which are arranged in an equidistant manner; and
said lower rail being so formed that it encloses said upper rail and that its upper ends are each formed with an inverted U-shaped flange, and further having a plurality of engagement holes formed in said inverted U-shaped flange,
whereby, when a pulling force is applied via said seat belt, said anchor plate is moved upwardly against a biasing force of said biasing means, with said hook members being engaged into said engagement holes.

4,804,230

INFANT CARRIER

Donald Friedman, 4448 Via Esperanza, Santa Barbara, Calif. 93110

Continuation-in-part of Ser. No. 702,953, Feb. 19, 1985. This application Jun. 2, 1987, Ser. No. 57,901
Int. Cl.⁴ A47C *7/02*
U.S. Cl. 297—457 **9 Claims**



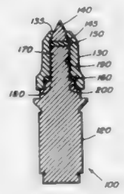
1. An infant carrier for use in vehicles comprising:
(a) a hollow shell adapted for placement on a seat of a vehicle, the shell having seatbelt catch means for engaging a seatbelt of the vehicle and anchoring the carrier with the seatbelt to the vehicle, the shell having walls that provide a barrier to keep an infant in the carrier during normal use of the carrier;
(b) a bed inside the shell, the bed having a back for directly underlying and supporting an infant's head and back, the back having a top and a base, the bed being supported by the shell in a normal use position of the carrier with the bed back in an inclined position relative to the horizontal so that the bed back can underlie and directly support an infant's back and head with the head located towards the top of the back;
(c) orientation and energy absorption means between the bed and the shell that permits the rotation of an infant from the inclined position to a position towards the vertical, the rotation being in response to inertia of an infant acting on the bed during rapid deceleration from a collision or panic stop, the orientation and energy absorption means absorbing and dissipating kinetic energy of an infant during such rapid deceleration by permanent deformation, such means including the bed back where it directly underlies and supports the back and head of an infant.

4,804,231

POINT ATTACK MINE AND ROAD MILLING TOOL WITH REPLACEABLE CUTTER TIP

Sergej-Tomislav Buljan, Acton, and Vinod K. Sarin, Lexington, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 24, 1985, Ser. No. 747,604
Int. Cl.⁴ E21C *35/18*
U.S. Cl. 299—91 **1 Claim**



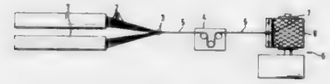
1. A point attack mine and road milling tool cutter bit holder comprising a flange member, a shank member, and a replaceable cutter tip; said shank member having a male threaded first shank portion and a male threaded second shank portion; said male threaded first shank portion having a first diameter and said male threaded second shank portion having a second diameter; said first diameter being less than said second diameter; said flange member having a length, a first end portion, and an axial passageway traversing said length of said flange member; said axial passageway having a tapered first portion, a female threaded second portion, and a female threaded third portion, said tapered first portion diverging toward said first end portion of said flange member; said cutter tip being positioned inside said tapered first portion of said axial passageway of said flange member extending partially beyond said first end portion of said flange member; said replaceable cutter tip being contiguous with said tapered first portion of said axial passageway of said flange member; said male threaded first shank portion of said shank member being contiguous and coacting with said female threaded second flange portion of said axial passageway of said flange member and said male threaded second shank portion of said shank member being contiguous with said female threaded third flange portion of said axial passageway of said flange member; said tapered replaceable cutter tip being held in position by a coacting of said shank member and said flange member; said male threaded second shank portion having a larger cross sectional area than said male threaded first shank portion providing more strength to said cutter bit holder to resist shear forces during operation.

4,804,232

PROCESS AND APPARATUS FOR PRODUCING BRISTLE TUFT MATERIAL AND SINGLE BRISTLES FROM SYNTHETIC RESIN

Georg Weihrauch, Waldmichelbach, Fed. Rep. of Germany, assignor to Pedex & Co. GmbH, Fed. Rep. of Germany

Filed Feb. 8, 1983, Ser. No. 464,857
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1982, 3205641
Int. Cl.⁴ A46D *1/00*
U.S. Cl. 300—21 **8 Claims**



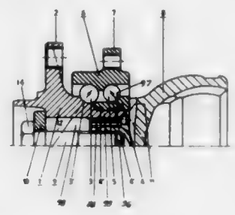
1. A process for producing a brush having at least one tuft of bristles fixed into a head thereof comprising the steps of producing endless monofilaments from a synthetic material having a low creep resistance, forming said monofilaments into a tow or sliver having a number of monofilaments, the number of monofilaments in such tow being equal to at least part of the number of bristles desired in such tuft of bristles in the brush, twisting said tow, cross winding said tow after twisting to minimize bending and permanent curl of the monofilaments and produce a cross wound tow package, and furthermore using said cross wound tow in brush making operations for producing said brush having at least said one bristle tuft fixed therein with the bristles cut to a desired length.

4,804,233

DOUBLE-ROW ANTI-FRICTION BEARING, PARTICULARY FOR WHEELS OF AUTOMOTIVE VEHICLES

Heiarich Hofmann, Schweinfurt, and Manfred Troster, Bad Kissingen, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Oct. 8, 1986, Ser. No. 916,519
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1985, 3536796
Int. Cl.⁴ B60B *27/02*
U.S. Cl. 301—124 R **8 Claims**



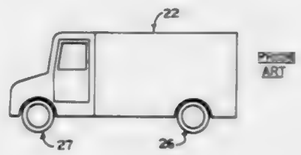
1. An anti-friction bearing including:
outer ring means, inner ring means, axially spaced first and second sets of rolling elements interposed between said inner and outer ring means, a hub having an axial projection supporting said inner ring means and having an axial passage, a bolt entered into said passage through one end thereof, and a closure member at the other end of said passage in operative engagement with said bolt;
said first and second sets of rolling elements being rotatably supported, respectively, on first and second separable sections of said inner ring means;
said inner ring means including a removable ring section constituting said first section;
said projection having a free end, said removable ring section having an axial bore into which the projection extends to mount said removable ring section on said projection at said free end, said closure member operatively engaging said removable ring section at one end thereof that is closer to said free end than is the other end of said removable ring section;
said second set of rolling elements being comprised of balls as rolling elements;
said other end of said removable ring section being located between first and second planes that are perpendicular to the rotational axis of said bearing;
said balls having their centers disposed in said first plane;
said balls having their outer surfaces in contact with said second plane;
said second plane being interposed between the other end of the removable ring section and the other end of said passage.

4,804,234

TRACTOR-TRAILER BRAKE CONTROL SYSTEM

Thomas A. Gee, Allen Park, and Mark W. Sullivan, Pontiac, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 27, 1987, Ser. No. 43,010
Int. Cl.⁴ B60T *8/30, 8/00*
U.S. Cl. 303—7 **17 Claims**



1. A brake control system for a tractor-trailer brake system on a tractor-trailer vehicle having a tractor sub-vehicle equipped with an independently controllable tractor sub-vehicle brake system, a fifth wheel connection for engaging a king pin carried on a trailer sub-vehicle and a master control for controlling an independently controllable trailer sub-vehicle brake system, said control system characterized by:
first sensing means for providing an input signal indicative of the value of the ratio of the horizontal force to the vertical force at the fifth wheel/king pin connection,
second sensing means for providing an input signal indicative of the acceleration of the vehicle;
third sensing means for providing an input signal indicative of the level of braking effort demand by the operator;
a control unit having means for receiving said input signals and for processing said signals in accordance with predetermined logic rules to issue command output signals and actuators responsive to said command output signals for modulating a controlled parameter at each sub-vehicle brake system related to the brake force at the sub-vehicle brake system;
said logic rules comprising rules by which said demand input signal is compared to a first reference value and to a second reference value equal to or greater than said first reference value, and
rules by which if said demand signal is less than said first reference signal each of the sub-vehicle brake systems is caused to exert a brake force dependent upon the value of the demand input signal and independent of load, and
rules by which if said demand signal is equal to or greater than said second reference value, each of the sub-vehicle brake system is caused to exert a brake force directly related to the value of the demand input signal and to the load at the sub-vehicle brake system by modulation of said brake forces to minimize the value of the expression;

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E=a function of $(H_F - V_F * a)$

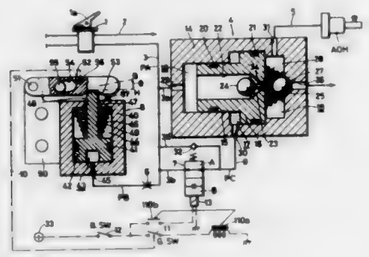
where:
E=error;
H_F=horizontal force at fifth wheel/king pin connection;
V_F=load on fifth wheel; and,
a=acceleration of vehicle.

4,804,235

AIR PRESSURE BRAKE SYSTEM FOR A VEHICLE

Yoshihiro Matsumura, Kanagawa, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Feb. 25, 1987, Ser. No. 18,608
Claims priority, application Japan, Feb. 28, 1986, 61-044775
Int. Cl.⁴ B60T *13/26*
U.S. Cl. 303—9.68 **7 Claims**



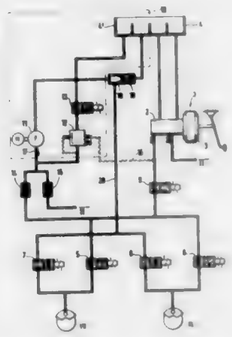
1. An air pressure brake system for a vehicle comprising:
(A) brake valve means for supplying pressurized air in accordance with the braking intensity applied by the vehicle driver;
(B) brake actuating means for receiving pressurized air from said brake valve means;
(C) control valve means arranged between said brake valve means and brake actuating means;
(D) deceleration detecting means for detecting occurrence of reference decelerations that are variable in accordance with braking intensity; said deceleration detecting means comprising a movable member arranged on a slant, angle changing means for changing the angle of said slant in accordance with braking intensity; and reference deceleration occurrence detecting means for detecting that said movable member has moved upwardly on said slant by the occurring reference deceleration of the vehicle due to its inertia and providing a detecting signal;
(E) electro-magnetic valve means operable in response to said detecting signal of said deceleration detecting means;
(F) said control means including a movable body which has a first pressure receiving surface for receiving the pressurized air from said brake valve means at its one end side, a second pressure receiving surface for receiving the pressurized air through said electro-magnetic valve means from said brake valve means, and a third pressure receiving surface for receiving the pressurized air to be supplied to said brake actuating means, said control valve means including control chamber means for receiving pressurized air acting on said second pressure receiving surface of said movable body; and
(G) said movable body being operable to open and close said control valve means by the differential forces applied to said movable body in opposite directions, whereby a pressure reducing control is effected for said brake actuating means in accordance with the pressure of the pressurized air locked in said control chamber means and acting on said second pressure receiving surface of said movable body.

4,804,236

HYDRAULIC BRAKE SYSTEM WITH ANTI-SKID CONTROL AND/OR TRACTION SLIP CONTROL

Jochen Burgdorf, Offenbach-Rumpenheim; Hans-Dieter Reisartz, Frankfurt am Main; Lutz Weise, Mainz, and Hans-Albert Beller, Erbach, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 10, 1987, Ser. No. 83,616
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1986, 3627809
Int. Cl.⁴ B60T *8/40, 8/88;* **F16D** *31/02*
U.S. Cl. 303—116 **10 Claims**



1. A hydraulic brake system with anti-skid control and/or with traction slip control, said brake system having a braking pressure generator and pressure for tapping pressure medium from the wheel brakes of the controlled vehicle wheels in a braking pressure reduction phase during slip control, an auxiliary pressure supply system connected to the pressure compensation reservoir, said auxiliary supply system being switched on during traction slip or anti-skid control for supplying pressure medium into the wheel brakes of the controlled vehicle wheels, a pressure compensation chamber and a non-return valve located in a pressure medium path connecting said pressure compensation reservoir to said auxiliary supply system, said non-return valve located between said pressure compensation chamber and said pressure compensation reservoir and opening toward the pressure compensation chamber, said pressure compensation chamber communicating with said braking pressure control valve means so that in case of braking pressure reduction, the pressure medium flowing off the wheel brakes is introduced into the pressure compensation chamber, the auxiliary pressure supply system including at least one hydraulic pump having a suction of which is connected to the pressure compensation chamber.

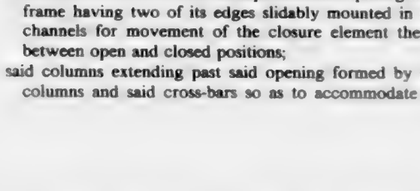
4,804,237

TRACTOR-TRAILER BRAKE CONTROL SYSTEM

Thomas A. Gee, Allen Park, and Mark W. Sullivan, Pontiac, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 43,010, Apr. 27, 1987. This application Aug. 17, 1987, Ser. No. 86,334
Int. Cl.⁴ B60T *8/18, 7/20;* **B62D** *53/06*
U.S. Cl. 303—7 **1 Claim**

1. A control system for a tractor-trailer brake system on a tractor-trailer vehicle having an independently controllable tractor sub-vehicle brake system, a fifth wheel connection on the tractor for engaging a king pin carried by a trailer sub-vehicle and means for controlling an independently controllable trailer sub-vehicle brake system, said control system characterized by:
first sensing means mounted on said tractor for providing input signals indicative of the value of the horizontal force and of the value of the vertical force at the fifth wheel/king pin connection,
second sensing means mounted on said tractor for providing an input signal indicative of the acceleration of the vehicle;
third sensing means mounted on said tractor for providing an input signal indicative of the level of braking effort demand by the operator; and
a control unit having means for receiving said input signals and for processing said signals in accordance with predetermined logic rules to issue command output signals and actuators responsive to said command output signals for modulating a controlled parameter at each sub-vehicle brake system related to the brake force at the sub-vehicle brake system; said logic rules comprising;



rules by which the trailer mass is estimated on the basis of sensed values of horizontal force at the fifth wheel/king pin connection during nonbraking vehicle acceleration;
rules by which an input signal indicative of application force applied to each trailer brake is sensed and and compared to predetermined brake performance reference parameters to estimate an average characteristic for the trailer brakes on a trailer;
rules by which said demand input signal is compared to a first reference value and if said demand signal is less than said first reference signal, said trailer brakes and said tractor brakes are caused to be applied such that the average value at the trailer brakes of a selected parameter indicative of brake wear is related to the average value of said parameter at the tractor brakes in a predetermined manner.

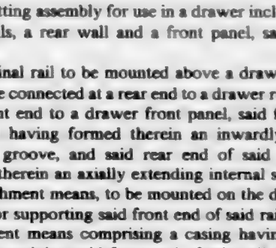
4,804,238

TORSION SPRING POWERED DOOR

Albert Bischof, Norwood Park Township, and Norbert A. Rumpa, Jr., Arlington Heights, both of Ill., assignors to American Telephone and Telegraph Company - AT&T Teletype, Skokie, Ill.

Filed Jan. 28, 1987, Ser. No. 7,846
Int. Cl.⁴ A47B *95/00*
U.S. Cl. 312—138 R **7 Claims**

1. An access door assembly for mounting in a cabinet, the cabinet having a substantially rectangular opening, said assembly comprising:
a frame having a pair of spaced columns defining opposed longitudinally extending channels;
a pair of parallel cross-bars connecting said channels, said channels and cross-bars defining an opening which substantially matches shape and size of the opening in the cabinet;
a closure element of a size and shape to fit said opening in the frame having two of its edges slidably mounted in said channels for movement of the closure element therein between open and closed positions;
said columns extending past said opening formed by said columns and said cross-bars so as to accommodate the closure element when said element is in said open position; and



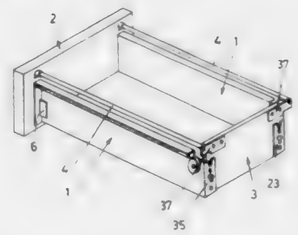
a spring means connecting said element to said frame being operable against said element to keep it in an open or closed position.

4,804,239

RAIL FITTING ASSEMBLY FOR USE IN A DRAWER

Erich Röck; Josef Brunner, both of Höchst, and Helmut Hollenstein, Lustenau, all of Austria, assignors to Julius Blum Gesellschaft M.B.H., Höchst, Austria

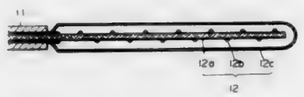
Filed May 5, 1987, Ser. No. 46,174
Claims priority, application Austria, May 14, 1986, 1280/86
Int. Cl.⁴ A47B *48/00*
U.S. Cl. 312—265 **13 Claims**



1. A rail fitting assembly for use in a drawer including opposite side walls, a rear wall and a front panel, said assembly comprising:
a longitudinal rail to be mounted above a drawer side wall and to be connected at a rear end to a drawer rear wall and at a front end to a drawer front panel, said front end of said rail having formed therein an inwardly extending annular groove, and said rear end of said rail having formed therein an axially extending internal socket;
front attachment means, to be mounted on the drawer front panel, for supporting said front end of said rail, said front attachment means comprising a casing having a hollow interior receiving said front end of said rail and retainer means within said hollow interior and fitting into said annular groove for retaining said front end of said rail; and
rear attachment means, to be connected to the drawer rear wall, for extending into and supporting said socket of said rear end of said rail.

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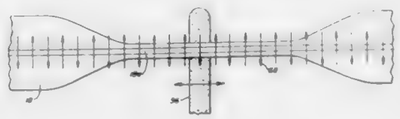
4,804,240
LIGHT RAY RADIATION DEVICE FOR USE IN MEDICAL TREATMENT
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan
Filed Oct. 9, 1987, Ser. No. 107,698
Claims priority, application Japan, Dec. 22, 1986, 61-306072
Int. Cl.[4] A61N *5/06;* **G02B** *6/00*
U.S. Cl. 350—96.10 **3 Claims**

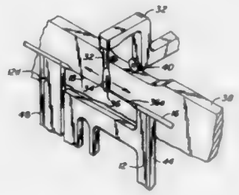


1. A solar light ray radiation device for use in medical treatment comprising an optical conductor cable for conducting light rays corresponding to the visible light ray component of solar rays, said cable having a light-emitting end, an elongated light radiator means detachably connected to said cable at said light emitting end, said light radiator means comprising an optical conductor joined to said light emitting end of said cable, a layer of adhesive uniformly bonded to the outer circumferential portion of said optical conductor, said adhesive having a refractive index equal to or larger than that of said optical conductor, a transparent cover means extending about said optical conductor, said optical conductor being completely enclosed within said transparent cover means, said transparent cover means being spaced from said optical conductor, a disposable resilient cover member disposed about and tightly fitted onto said cover means, said disposable cover member being made of a transparent material, said disposable cover member being elongated and having one longitudinal end which is closed and the other longitudinal end which is open to receive said cover means, said other longitudinal end having a radial extending flange portion extending radially outwardly from said other longitudinal end, said disposable cover member being disposed over said cover means during use of said light radiation device in a body cavity and being removeable from said cover means and disposed of upon completion of said use, whereupon another like cover member can be employed for subsequent use of the light radiation device.

4,804,241
OPTICAL FIBER HOLDER
Jack E. Goodman, Germantown, Md., assignor to Chevron Research Company, San Francisco, Calif.
Continuation of Ser. No. 938,936, Dec. 8, 1986, abandoned, which is a continuation of Ser. No. 546,619, Oct. 28, 1983, abandoned. This application Feb. 3, 1988, Ser. No. 153,545
Int. Cl.[4] G02B *6/34, 5/18, 5/14*
U.S. Cl. 350—96.19 **2 Claims**

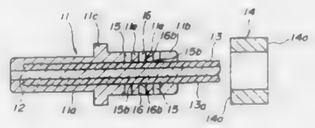
1. A method of processing an optical fiber to form optical gratings on the fiber comprising:
(a) mounting the fiber to a substantially unitary holder, said holder comprising a base member, a lever arm portion, and an adjusting means, said lever arm portion and said adjusting means operably connected and mounted to said base portion;





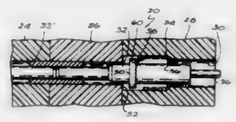
(b) adjusting a tension of said fiber with said adjusting means while maintaining the fiber in a fixed plane; and
(c) forming optical gratings on the fiber.

4,804,242
CONNECTOR FOR OPTICAL FIBER
Kazuo Hasegawa, and Yoshinori Miyahara, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan
Filed Mar. 20, 1986, Ser. No. 841,810
Claims priority, application Japan, Mar. 20, 1985, 60-40101
Int. Cl.[4] G02B *5/14*
U.S. Cl. 350—96.20 **5 Claims**



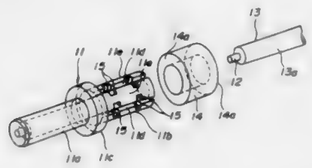
1. A connector for an optical fiber cable having an optical fiber in a cable covering, said connector including a holding member comprising:
a front tube for holding an end of the optical fiber;
a rear tube for holding the optical fiber cable which is integrally provided with said front tube and which has an inner surface in contact with the cable covering of the optical fiber;
at least one slit formed along said rear tube extending in an axial direction of the optical fiber;
at least one notch intersecting said at least one slit in a circumferential direction of the optical fiber, said notch defining corner portions in the circumferential direction on the inner surface of said rear tube intersecting said slit; and
a fixed member attached on an outer surface of said rear tube for applying pressure on said rear tube in a radially inward direction thereof to press said corner portions of said notch against the cable covering of the optical fiber in the circumferential direction in order to prevent axial displacement of the optical fiber cable from said connector.

4,804,243
CONTACT RETENTION ARRANGEMENT
Leslie M. Borsuk, Los Alamitos; Blake F. Woith, Tustin, and Patrick G. Corrales, Whittier, all of Calif., assignors to ITT Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 093,265, Sep. 4, 1987, abandoned. This application Jan. 11, 1988, Ser. No. 142,367
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 **14 Claims**



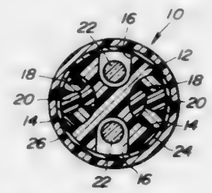
10. A connector member comprising:
a connector body having at least one contact passage therethrough having a front and a rear;
a contact element mounted in said passage and capable of limited rearward movement therein when engaged by a mating contact element in another connector member;
a homogenous, one-piece contact retention clip associated with said contact element and the wall of said passage releasably retaining said ferrule in said passage;
said contact retention clip comprising a generally circular body and at least one radially resilient contact retention finger; and
said circular body embodying integral spring means providing a resilient force opposing rearward movement of said contact element in said passage, whereby said spring means will maintain the mating contact elements in the connector members biased toward each other.

4,804,244
CONNECTOR FOR OPTICAL FIBER
Kazuo Hasegawa, and Yoshinori Miyahara, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan
Filed Mar. 20, 1986, Ser. No. 841,877
Claims priority, application Japan, Mar. 20, 1985, 60-40102
Int. Cl.[4] G02B *5/14*
U.S. Cl. 350—96.20 **4 Claims**



1. A connector for an optical fiber cable having an optical fiber in a cable covering, said connector including a holding member comprising:
a front cylindrical part for holding an end of the optical fiber;
a rear cylindrical part for holding the optical fiber cable which is integrally provided with said front cylindrical part and which has a length between its opposite ends provided with an outer surface of a first diameter and an inner surface in contact with the cable covering of the optical fiber;
at least one slit formed along said rear cylindrical part extending in an axial direction of the optical fiber;
a plurality of notches in said rear cylindrical part intersecting said at least one slit in a circumferential direction of the optical fiber, said notches extending radially to the outer surface of said rear cylindrical part at an intermediate portion of the length thereof; and
a fixed member having an inner surface with a diameter less than said first diameter of said outer surface of said rear cylindrical part, which is pressed on to said outer surface at said intermediate portion where said recesses are located for applying pressure by said lesser diameter to press said rear cylindrical part in a radially inward direction thereof to securely hold the optical fiber cable from axial displacement, wherein the outer surface of said rear cylindrical part beyond said fixed member becomes projected radially outward relative to said inner surface of said fixed member to securely hold said fixed member thereon, and said fixed member can be removed by axially pulling said fixed member over the outer surface of said rear cylindrical part.

4,804,245
OPTICAL FIBER CABLE
Hiroichi Katayose; Hiroshi Yokosaka, both of Chiba, and Katsuyuki Seto, Sakura, all of Japan, assignors to Fujikura Ltd., Tokyo, Japan
Filed Feb. 26, 1986, Ser. No. 834,079
Claims priority, application Japan, Mar. 4, 1985, 60-30535[U]
Int. Cl.[4] G02B *6/44*
U.S. Cl. 350—96.23 **5 Claims**



1. An optical fiber cable comprising:
(a) an elongated flexible body having at least one wider groove and one narrower groove both defined by groove walls formed in a circumferential surface of the flexible body and extending spirally and longitudinally along said body;
(b) optical fiber means loosely received in said at least one narrower groove;
(c) at least one elongated flexible tension member received in said at least one wider groove in close adherence to said groove walls, said tension member comprising at least one elongated element made of aramid fibers; and
(d) an elongated central tension core provided in the elongated flexible body and extending along an axis thereof and made of aramid fiber-reinforced plastic material,

4,804,246

LIGHT-TRANSMITTING FIBER OF GLASS CORE AND CLAD OF CURED COPOLYMER OF FLUOROOLEFIN AND ALKYL ETHER

Shigeyoshi Kobayashi, Kawasaki; Seiji Munekata, Tokyo; Masao Unoki, Yokohama, and Toshio Iwamoto, Tokyo, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Mar. 31, 1987, Ser. No. 32,468
Claims priority, application Japan, Apr. 3, 1986, 61-75620
Int. Cl.[4] G02B 6/16
U.S. Cl. 350—96.34 9 Claims

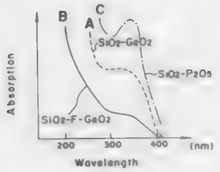
1. A plastic-clad light-transmitting fiber consisting essentially of a core of quartz glass or optical glass and a clad of plastic material, characterized in that said clad of plastic material is a cured product obtained by curing a solvent-soluble copolymer of a fluoroolefin with an alkyl vinyl ether having curable sites and containing at least 10% by weight of fluorine based on the fluoroolefin units.

4,804,247

QUARTZ GLASS OPTICAL FIBER

Michihisa Kyoto; Shuzo Suzuki; Minoru Watanabe, all of Yokohama, and Motohiro Nakahara, Mito, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippon Telegraph & Telephone Corporation, Tokyo, both of, Japan

Filed Apr. 4, 1985, Ser. No. 719,952
Claims priority, application Japan, Apr. 12, 1984, 59-71730
Int. Cl.[4] G02B 6/02, 6/16, 6/10; C03C 25/02
U.S. Cl. 350—96.34 6 Claims



1. A quartz optical fiber comprising a core having a higher refractive index and made of pure quartz containing fluorine and phosphorus pentoxide and a cladding having a lower refractive index, a weight ratio of fluorine and phosphorus pentoxide in the core being larger than 1 (one).

4,804,248

DATA RATE LIMITER FOR OPTICAL TRANSMISSION SYSTEM

Venkata A. Bhagavatula, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 22, 1986, Ser. No. 945,021
Int. Cl.[4] G02B 6/26
U.S. Cl. 350—96.15 37 Claims



10. An optical fiber mode converter comprising first and second adjacent sections of optical fiber connected at a junction, the longitudinal axes of said sections being angularly and laterally offset at said junction.

4,804,249

OPTICAL FILTER FOR INCOHERENT IMAGING SYSTEMS

George O. Reynolds, Waban, and Peter F. Mueller, Concord, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 24, 1986, Ser. No. 946,248
Int. Cl.[4] G02B 3/10, 5/18, 27/00
U.S. Cl. 350—437 5 Claims



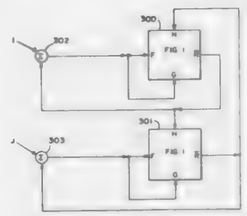
1. An optical filter for increasing the depth-of-focus of an imaging lens operating in an incoherent imaging system while maintaining energy thru-put, said optical filter comprising a transparent support having on one surface thereof an array of discrete transparent steps of substantially equal cross-sectional area, each step having a thickness that differs from all other steps by at least the coherence length of the radiation transmitted through the imaging lens.

4,804,250

OPTICAL PROCESSOR FOR AN ADAPTIVE PATTERN CLASSIFIER

John L. Johnson, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 12, 1987, Ser. No. 60,872
Int. Cl.[4] G06G 9/00; G02B 27/46
U.S. Cl. 330—162.12 11 Claims



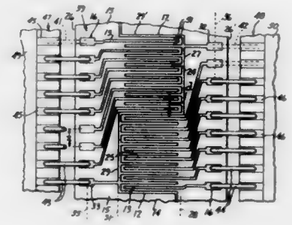
1. A system comprising first and second optical processors each comprising a liquid crystal light valve having a read side and a write side, a first image input, first and second plane polarizers, first means for transmitting said first image input through said first polarizer to the read side in focus for reflection from said read side through said second polarizer, a second image input, second means for transmitting said second image input to the write side out of focus, and a transparency means having a third image input thereon, said transparency means being located between said second means and said write side for convolving said second image with said third image, detecting means having an input and an output, said input of the detecting means receiving the

4,804,251

ELECTRODE STRUCTURES AND ELECTROOPTIC LIGHT GATE SYSTEMS

John H. Jacobs, Altadena, Calif., assignor to Imo DeLaval Inc., Lawrenceville, N.J.

Continuation of Ser. No. 34,871, Apr. 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 776,157, Mar. 10, 1977, abandoned. This application Jul. 13, 1981, Ser. No. 282,554
Int. Cl.[4] G02F 1/133
U.S. Cl. 350—392 53 Claims



1. In a method of increasing feasible electrode density in electrode structures having spaced parallel electrodes on a substrate having spaced parallel edges, the improvement comprising in combination the steps of:

subdividing said spaced parallel electrodes into first and second electrode arrays alternating with each other along an elongate region of said substrate between said spaced parallel edges;

allocating to each of said electrode arrays a plurality of said electrodes;

providing on one side of said elongate region of the substrate first individual terminals for the electrodes in each first electrode array;

spacing any first individual terminal of any one of the electrodes in any of said first electrode arrays from the first individual terminal of any other electrode in the particular first electrode array by a center-to-center distance greater than the center-to-center spacing between said one electrode and said other electrode, while arranging said first individual terminals side by side along one of said parallel edges to provide each first individual terminal with an individual connecting lead path being free of any other terminal and intersecting a plane extending at right angles to said substrate through said one of said parallel edges for connection of a lead to the particular first terminal;

providing on the other side of the elongate region of the substrate second individual terminals for the electrodes in each second electrode array; and

spacing any second individual terminal of any one of the electrodes in any one of said second electrode arrays from the second individual terminal of any other electrode in the particular second electrode array by a center-to-center distance greater than the center-to-center spacing between the latter one electrode and the latter other electrode, while arranging said second individual terminals side by side along the other of said parallel edges to provide each second individual terminal with an individual connecting lead path being free of any other terminal and intersecting a plane extending at right angles to said substrate through the other of said parallel edges for connection of a lead to the particular second individual terminal.

4,804,252

HOUSING FOR A FIBER OPTIC COMPONENT

Mark H. Betzler, McDaniel, Md., and Steven E. Swanson, Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 11, 1988, Ser. No. 141,816
Int. Cl.[4] G02B 6/44
U.S. Cl. 350—96.23 5 Claims



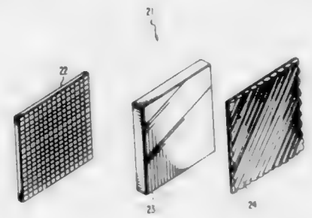
1. A strain-relief, fiber optic component housing assembly comprising: an elongated, substantially tubular body having a longitudinal axis, said body having a first internal portion for mounting said component; a component mounted in said first portion; a second internal portion having an inner circumferential wall provided with a plurality of inwardly projecting, radially spaced ribs having a given longitudinal extent measured along said longitudinal axis; an optical fiber cable having a core comprising at least one optical fiber, a fibrous material surrounding said core and an insulating material surrounding said fibrous material positioned in said body in substantial alignment with said longitudinal axis; said optical fiber being operatively disposed within said component; and a strain-relief subassembly mounted within said second internal portion, said subassembly comprising: a first tubular member having an inside diameter substantially matching the outside diameter of said insulating material and fitted thereover, the outside diameter of said first tubular member having a roughened surface; a given length of said fibrous material extending beyond said insulating material, said given length of fibrous material being folded back to engage said roughened surface; a second tubular member having an inside diameter formed to slide over said fibrous material and said first tubular member; holding means co-acting between said second tubular member, said fibrous material and said first tubular member to form said members into said subassembly; and engaging means formed on said second tubular member for engagement with said ribs.

4,804,253

LENTICULAR FILTER FOR DISPLAY DEVICES

Wilber C. Stewart, East Windsor, N.J., assignor to General Electric Company, Fairfield, Conn.

Continuation-in-part of Ser. No. 863,374, May 15, 1986, abandoned. This application Apr. 6, 1988, Ser. No. 180,647
Int. Cl.[4] G02F 1/13; H04N 9/22; G03B 21/60
U.S. Cl. 350—330 4 Claims



1. A lenticular filter for filtering both horizontal lines having a periodicity of P_r and vertical lines having a periodicity of P_s in a display device having a viewing surface, said lenticular filter comprising:

a plurality of juxtaposed cylindrical lenticulations having a semicircular cross section, and a diameter substantially less than said periodicities, angularly disposed at an angle θ with respect to said horizontal and vertical lines and extending completely across said viewing surface; where:

$\tan \theta = P_x/P_y$,

and said lenticulations have a periodicity

$p = P_y \sin\theta/(n+\frac{1}{2})$ where:

p = the periodicity fo said lenticulations,

P_y = periodicity of said vertical lines,

n = an integer.

4,804,254

ARRANGEMENT IN A DISPLAY OR INSTRUMENT BOARD

Werner Doll, Tamm, Fed. Rep. of Germany; Thor G. Kamfjord, and Jan E. Marthinsen, both of Sandefjord, Norway, assignors to Autodisplay A/S, Sandefjord, Norway

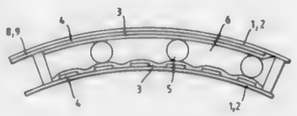
PCT No. PCT/NO87/00010, § 371 Date Sep. 28, 1987, § 102(e) Date Sep. 28, 1987, PCT Pub. No. WO87/04556, PCT Pub. Date Jul. 30, 1987

PCT Filed Jan. 27, 1987, Ser. No. 104,866

Claims priority, application Norway, Jan. 27, 1986, 860274

Int. Cl.⁴ G02F *1/13*

U.S. Cl. 350—344 **1 Claim**



1. A liquid crystal display panel comprising:

curved sheet-like flexible front and rear panel members;

a liquid crystal medium contained in a cell gap "d" between the front and rear panel members, the liquid crystal medium exhibiting anisotropy "Δn" of the index of optical refraction thereof which varies inversely with varying temperature; and

a spacer medium provided between the front and rear panel members for maintaining the cell gap "d" therebetween uniformly equidistant, the spacer medium comprising a plurality of resilient monodisperse plastic spheres, said monodisperse plastic spheres being adhered to said front and rear panel members for establishing a fixed rigid interrelated connection therebetween by a curable adhesive-like coating provided on respective surfaces of said monodisperse plastic spheres, said monodisperse plastic spheres being reversibly deformable and having a coefficient of expansion adapted to compensate for variation in temperature of the liquid crystal medium such that the product of the quantities "d" and "Δn" (i.e., "d.Δn") is maintained constant over a temperature range of −40° C. to +90° C., whereby the cell gap "d" is made variable with temperature while being maintained uniformly equidistant over said temperature range to thereby compensate for temperature-dependent variation in the index of refraction of the liquid crystal medium, for enhancing the optical contrast ration of the liquid crystal display over said temperature range.

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ACRYLIC POLYMERS EXHIBITING CHIRAL AND NONLINEAR OPTICAL PROPERTIES

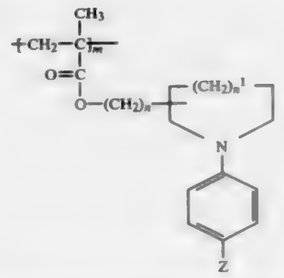
Eui W. Choe, Randolph, N.J., assignor to Hoechst Celanese Corp., Somerville, N.J.

Division of Ser. No. 915,181, Oct. 3, 1986, Pat. No. 4,755,574. This application Oct. 5, 1987, Ser. No. 104,081

Int. Cl.⁴ G02F *1/01*

U.S. Cl. 350—354 **1 Claim**

1. A light switch or light modulator device with a polymeric nonlinear optical component comprising a transparent solid medium of a polymer which is characterized by at least about 20 weight percent of the total polymer weight of a recurring monomeric unit corresponding to the formula:



where R is a substituent selected from hydrogen and C_1–C_4 alkyl groups; m is an integer of at least 3; n is an integer of about 1–24; n^1 is 0 or 1; Z is $—NO_2$, —CN or $—CF_3$; and wherein the pendant ester group exhibits chiral optical properties and nonlinear optical response.

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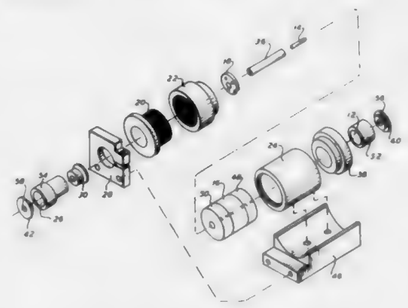
FARADAY ROTATORS USING A MOVABLE OPTICAL ELEMENT

Donald K. Wilson, 102 Hillside Ave., Caldwell, N.J. 07006

Filed Jan. 11, 1988, Ser. No. 142,700

Int. Cl.⁴ G02F *1/09*

U.S. Cl. 350—376 **10 Claims**



1. A Faraday rotator comprising:

an optical element in which is rotated a plane of polarization of polarized light about an optical axis of said optical element, said optical element being made of an optically transmitting material;

an immobile means for generating a magnetic field along the optical axis of said optical element, thereby rotating a plane of polarization of polarized light about the optical axis of said optical element; and

means for moving said optical element such that said optical element is capable of having at least a portion of said optical element being enclosed over by or withdrawn from said immobile means for generating a magnetic field about the optical element.

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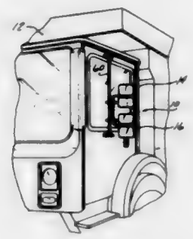
VIBRATION DAMPED MIRROR APPARATUS FOR A VEHICLE

William B. Schmidt, 21000 Woodruff, Rockwood, Mich. 48173, and Frank D. Hutchinson, 28000 Beel Rd., New Boston, Mich. 48164

Filed Aug. 10, 1987, Ser. No. 83,281

Int. Cl.⁴ G02B *7/18*; B60R *1/06, 1/08*

U.S. Cl. 350—626 **8 Claims**



1. A dual mirror assembly for a vehicle comprising:

a pair of vertically spaced apart mirrors, each having at least one visual reflective surface;

means for damping vibrations transmitted to the mirrors upon movement of the vehicle, said means comprising: (1) a first bar having an elongated post with first and second ends having first and second spaced apart legs, respectively, extending from the first and second ends, the legs being perpendicular to the post; the first bar having a, generally, U-shaped configuration; the mirrors being attached to the bar by attachment means; and

means for connecting the vibration damping means to the vehicle, comprising:

a second substantially vertically extending bar having an upper end and lower end wherein both the upper and lower end are fixedly secured to the side of the vehicle;

and a clamping means to connect the vibration damping means to the second vertically extending bar.

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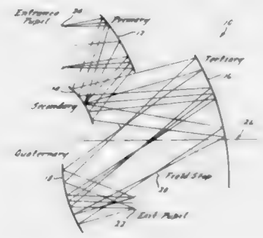
FOUR MIRROR AFOCAL WIDE FIELD OF VIEW OPTICAL SYSTEM

Reynold S. Kebo, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 5, 1986, Ser. No. 859,297

Int. Cl.⁴ G02B *17/06, 23/06*

U.S. Cl. 350—505 **30 Claims**



1. An afocal optical system comprising:

a primary mirror defining an optical axis, said primary mirror having a non-spherical reflective surface;

a secondary mirror having a non-spherical reflective surface which is tilted and decentered with respect to said optical axis;

a tertiary mirror having a non-spherical reflective surface which is tilted and decentered with respect to said optical axis;

a quaternary mirror having a non-spherical reflective surface which is tilted and decentered with respect to said optical axis;

said primary, secondary, tertiary, and quaternary mirrors having surfaces shaped to create a focus at infinity and reflect through an exit pupil, said exit pupil providing the system with a field area of view greater than a 5 degree circle;

said system being off axis in aperture and field to produce said positions of said reflective surface of said primary mirror and said exit pupil.

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LIGHT TRANSMITTING FIBER

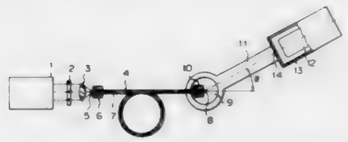
Isao Sasaki, Hiroshima; Kozi Nishida, Otake; Masaru Morimoto, Otake; Hisao Azuni, Otake, and Hideaki Makino, Otake, all of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed Apr. 22, 1986, Ser. No. 854,615

Claims priority, application Japan, Apr. 25, 1985, 60-87428

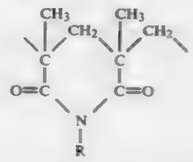
Int. Cl.⁴ D02G *3/00*; B29D *11/00*

U.S. Cl. 350—96.34 **6 Claims**



1. A light transmitting fiber comprising a transparent inorganic substance selected from the group consisting of quartz and multi-component optical glass or a transparent organic polymeric material as a core component and a methacrylate polymer as a cladding component, said methacrylate polymer being a methacrylimide-containing fluoroalkylmethacrylate polymer comprising:

(A) 2–98% by weight of methacrylimide units having the following formula (I):



(I)

wherein r represents a hydrogen atom or an aliphatic, aromatic or alicyclic hydrocarbon group having 1–20 carbon atoms;

(B) 98–2% by weight of structural units derived from a fluoroalkylmethacrylate monomer; and

(C) 0–50% by weight of structural units derived from at least one monomer selected from the group consisting of acrylic acid, methacrylic acid, an acrylic acid ester, a methacrylic acid ester, and styrene.

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TEMPLE FOR EYEGLASSES

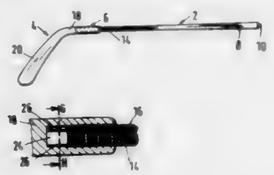
Wilhelm Anger, Martin-Sauretta, Switzerland, assignor to Eye-metrics - Systems AG, Postfach, Switzerland

Filed Oct. 31, 1986, Ser. No. 925,678

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1986, 3604358

Int. Cl.[4] G02C *5/20*

U.S. Cl. 351—118 **10 Claims**



1. A temple for eyeglasses comprising an essentially straight shaft having means at one end thereof for connection to a cheekpiece or a hinge of the eyeglasses, and a temple end piece at the other end of said shaft, said end piece including an essentially straight first segment which forms an extension of the shaft, and a second segment extending downwardly from the first segment at an angle of less than 180, said shaft and said end piece being connected together by a telescoping connection, said connection comprising at least one longitudinally extending rib on one of the telescoping parts to be connected, and a plurality of circumferential webs and grooves on the other of said parts to be connected, said rib protruding radially between said shaft and said end piece and deforming said webs in said telescoping connection as said telescoping parts are longitudinally moved together after having been positioned such that the temple end piece lies in a selected plane containing said shaft whereby said shaft and said end piece are interconnected by said rib and said webs to prevent relative rotation therebetween.

4,804,261

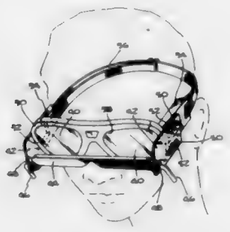
ANTI-CLAUSTROPHOBIC GLASSES

David G. Kirschen, 1622 N. Mountain View Pl., Fullerton, Calif. 92631

Filed Mar. 27, 1987, Ser. No. 30,587

Int. Cl.[4] G02C *7/14*

U.S. Cl. 351—158 **11 Claims**



1. For use in the environment of an MRI scanner by a plurality of patients subject to claustrophobic type fears, the combination of:

(a) non magnetic lens holding means adapted to be worn by a patient;

(b) a set of pairs of lenses sized to easily press fit in and out of said lens holding means, each of said pairs of lenses having different optical correction so that a pair of lenses can be selected which approximate the correction required by each patient wearing said lens holding means;

(c) bracket means attached to said lens holding mean for mounting a mirror in the patient's direct line of sight; and

(d) mirror means rotationally mounted in said bracket means for redirecting the patient's vision in a direction that is substantially unobstructed by the scanner to a remote, preselected target, said mirror means including handle means extending through said bracket means for rotationally adjusting said mirror means to redirect the patient's sight path, said handle means being mounted in elastomeric grommet means in said bracket means so that an adjustment, once made, is frictionally held in place,

whereby the elements of the combination are made of materials that do not affect the MRI scan but allow a patient whose direct vision is obscured by the scanner to view a scene other than the scanner.

4,804,262

AUTOMATIC PERIMETER

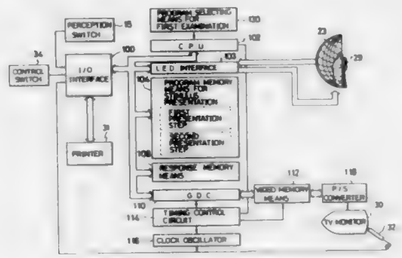
Kobayashi Katsuhiko, Itabashi; Shioiri Takashi, Wako, and Tago Hideo, Matsudo, all of Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1985, Ser. No. 718,896

Claims priority, application Japan, Apr. 3, 1984, 59-66034; May 15, 1984, 59-96988

Int. Cl.[4] A61B *3/02*

U.S. Cl. 351—226 **6 Claims**



1. An automatic perimeter for examining a patient's eyes, comprising:

stimulus presentation means for presentation of first and second groups of different stimuli onto a stimulus presentation field, the stimuli of the first group contributing more to the examination of vision field than the stimuli of the second group;

presentation condition memory means for memorizing a presentation program for presenting on said field during a first examination period more stimuli of the first group than of the second group and for presenting on said field during a second examination period more stimuli of the second group than of the first group;

stimulus presentation control means for controlling said stimulus presentation means under said presentation program;

response means for inputting perception signals initiated by a patient in response to said stimuli;

response memory means for memorizing said perception signals together with their presentation condition; and

output means for producing an output based on the data memorized in said response memory means during and after execution of said program,

said stimulus presentation control means being responsive to memorizations by said response memory means of sufficient data for examination of the field of vision of the patient's eye to interrupt the stimulus presentation program before it is completed.

4,804,263

PROCESS FOR MEASURING FLOW VECTORS IN GAS CURRENTS

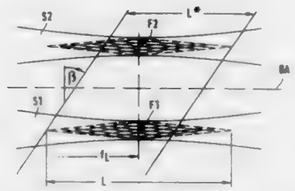
Richard Schodl, Troisdorf-Eschmar, Fed. Rep. of Germany, assignor to Deutsche Forschungs -und Versuchsanstalt fur Luft -und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Oct. 15, 1987, Ser. No. 109,275

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1987, 3712153

Int. Cl.[4] G01P *3/36*

U.S. Cl. 356—28 **22 Claims**



1. A process for measuring the flow vectors in gas currents containing optically detectable particles, comprising the steps of:

focusing, with a focusing means, two spacially separated light beams onto two focusing points located at mutually different distances from the focusing means;

measuring, with a measuring means, the frequencies at which particles successively traverse said focusing points during a first measurement with the distance of the focusing point of one beam from the focusing means being smaller, and during a second measurement being larger than the distance of the other focusing point from the focusing means;

determining the difference between the measuring results of said first and second measurements; and

determining the direction of the flow vector with respect to the plane normal to the optical axis of the focusing means using said difference.

4,804,264

ARRANGEMENT FOR TIME-RESOLVED OPTICAL BACKSCATTER MEASUREMENT AT OPTICAL WAVEGUIDES

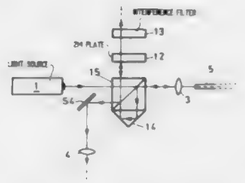
Rolf Kirchhofer, Mellingen, and Hanspeter Schad, Rieden, both of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Jul. 20, 1987, Ser. No. 75,821

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1986, 3627198

Int. Cl.[4] G01J *5/08*; G01N *21/65*

U.S. Cl. 356—44 **7 Claims**



1. An apparatus for time-resolved optical backscatter measurement (OTDR=Optical Time Domain Reflectometry) at optical waveguides, in particular for space-resolved temperature measurement, comprising:

a light source, which emits light of a specified wavelength;

an optical waveguide;

first means for coupling the light from the light source into the optical waveguide;

second means for coupling backscattered light, which includes components originating from a Rayleigh scattering and a Raman scattering, out of the optical waveguide;

third means for measuring the backscattered Raman component coupled out of the optical waveguide; and

a filter device disposed between the second and third means, said filter device selectively attenuating the backscattered light component originating from the Rayleigh scattering;

wherein the filter device comprises a polarizing beam splitter, behind which a quarter-wave plate and an interference filter are disposed in succession in the transmission direction, both of which are tuned to the wavelength of the light emitted by the light source, and wherein at an output of the filter device radiation which is reflected by the interference filter and is reflected out to the side by the polarizing beam splitter is taken off;

wherein the first and second means comprise a common polarizing beam splitter, which is disposed between the light source and the optical waveguide in the transmission direction, and a first optical focusing system disposed between the common polarizing beam splitter and the optical waveguide;

the common polarizing beam splitter of the first and second means and the polarizing beam splitter of the filter device combined into a single polarizing beam splitter;

a deflecting prism disposed at said single polarizing beam splitter, on the side of the emerging backscattered light, said deflecting prism deflecting the backscattered light emerging from said single beam splitter back into the beam splitter; and

the quarter-wave plate and the interference filter of the filter device disposed on the side of said single polarizing beam splitter opposite the deflecting prism.

4,804,265

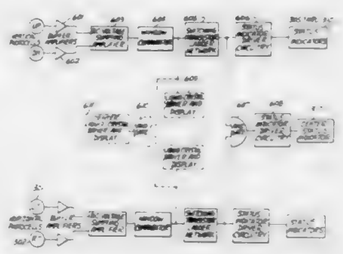
AIRCRAFT LANDING LIGHT ALIGNMENT SYSTEM

David E. Baukol, Auburn; Dennis L. Bod, Federal Way, and Robert F. Mittelstadt, Auburn, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 261,077, May 6, 1981, abandoned. This application Apr. 1, 1982, Ser. No. 364,343

Int. Cl.[4] G01B *11/26, 5/24*

U.S. Cl. 356—152 **3 Claims**



1. A signal processing circuit comprising in combination:

a pair of photocells, and status indicator driver circuitry for controlling status indicators;

a d.c. voltage summing amplifier;

a pair of buffer amplifiers coupled between said pair of photocells and said d.c. voltage summing amplifier; and,

a window amplifier circuit and switching transistor ladder network coupled in series circuit between said d.c. voltage summing amplifier and said status indicator driver circuitry.

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4,804,266

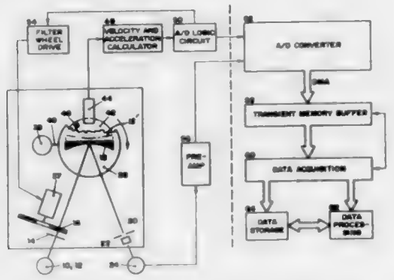
CONTINUOUSLY ROTATING GRATING RAPID-SCAN SPECTROPHOTOMETER

Yoav Barshad, Rehovot, Israel, assignor to Barspec Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 759,291, Jul. 26, 1985, Pat. No. 4,732,476. This application Jan. 29, 1987, Ser. No. 8,544

Int. Cl.⁴ G01J *3/18, 3/42*

U.S. Cl. 356—308 **25 Claims**



7. A spectrophotometer incorporating a monochromator comprising:

a source of polychromatic radiation and means to direct the radiation to an optical grating,

an optical grating located in the path of said radiaiton, said grating being mounted to a shaft for rotation, whereby the grating is rotated about its optical axis,

a turntable of relatively high mass mounted on the shaft for rotation with the shaft,

a motor and a motor control to set the motor speed for continuously rotating the shaft and grating at an approximately constant uninterrupted angular velocity,

an exit slit positioned to intercept radiation reflected from said optical grating,

a shaft encoder assembly mounted on and adjacent said shaft to deliver information representing specific angular positions of the shaft,

an electronic logic circuit delivering pulses in response to information received from said shaft encoder assemlby whenever a specific wavelength is to appear at the exit slit,

wherein said logic circuit defines the position at which said specific wavelength appears at the exit slit by sensing the angular velocity and acceleration of the grating, and

wherein said shaft encoder assembly produces index pulses and said logic circuit delivers a pulse whenever a specific wavelength appears at the exit slit by interpolating the time interval between two successive index pulses delivered by the shaft encoder assembly, and

additionally comprising a sample cell through which the monochromatic radiation delivered by the monochromator passes and a detector intercepting the radiation creating an electrical signal representing the intensity of the radiation passing through said sample cell.

4,804,267

SYSTEM FOR MICROSCOPICALLY ANALYZING FLUIDS

Walter Greenfield, Scarsdale, N.Y., assignor to Scientific Imaging Instruments, Inc., Fairfield, Conn.

Filed Jul. 10, 1986, Ser. No. 883,365

Int. Cl.⁴ G01N *21/05, 21/84*

U.S. Cl. 356—335 **4 Claims**

1. Apparatus for microscopically analyzing fluids, comprising:

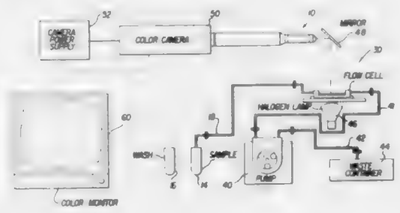
sample container means for receiving and retaining a sample of fluid for analysis;

video imaging means for electronically generating and displaying an image of a portion of said sample at a selected level of magnification, including video camera means for acquiring a visual image and generating electronic signals responsive to said at least one level of magnification, illuminating means for directing a beam of light through said sample toward said camera means, and monitor means operatively communicating with said camera for displaying said image;

flow-through cell means, including

display chamber means for disposing said portion of said sample in the path of said light beam;

upper and lower retaining members, generally flat in form, the upper member having fluid flow passages formed therein;



a central member, generally flat in form, having a peripheral area defining said display chamber, said chamber being in registration with said fluid flow passages;

said members being secured to one another to form an integral, laminated structure; and

a body, having a flat central well carrying said laminated structure, and having a viewing aperture formed therein, said aperture underlying at least a portion of said display chamber;

a wash fluid reservoir for retaining a supply of wash fluid; and

pump means in fluid communication with said flowthough cell means and in selective fluid communication with one of said sample container means or said wash fluid reservoir, for delivering to said flow-through cell means a quantity of said sample or said wash fluid.

4,804,268

METHOD OF MEASURING THE INTERACTION BETWEEN WALLS AND FLUID

Helmut M. Mohnsen, Ismaning; Benno Reuter, Oberschleisheim, and Wulfram Schauerte, Grafrath/Wiedenroth, all of Fed. Rep. of Germany, assignors to Gesellschaft für Strahlen- und Umweltforschung mbH, Neuherberg, Fed. Rep. of Germany

Filed Dec. 5, 1986, Ser. No. 938,719

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1985, 3543108

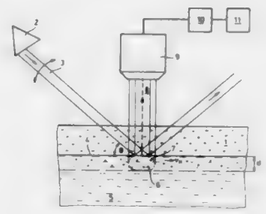
Int. Cl.⁴ G01N *13/00, 11/04, 21/41, 21/47*

U.S. Cl. 356—338 **6 Claims**

1. In a method of measuring the interaction of a fluid having a shear stress value with a wall bounding the fluid which method includes placing tracer particles in the fluid, illuminating the particles, and measuring the movement of the particles by means of scattered light, the improvement wherein:

said step illuminating comprises illuminating a region of the fluid adjacent the wall at a distance of less than 1 micron from the wall with a light beam directed towards the interface of the fluid and the wall so that the light beam is completely reflected;

said step of measuring comprises recording the scattered light images resulting from the motion of the tracer particles in the region and evaluating the motion of the fluid adjacent the wall; and



the method further comprising the step of calculating the viscosity of a slipping layer of the fluid located next to the interface with the said of the shear stress value.

4,804,269

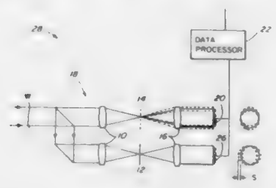
ITERATIVE WAVEFRONT MEASURING DEVICE

Paul B. Elterman, Cambridge, Mass., assignor to Litton Systems, Inc., Lexington, Mass.

Filed Aug. 11, 1987, Ser. No. 84,299

Int. Cl.⁴ G01J *1/20;* **G01B** *9/02*

U.S. Cl. 356—353 **34 Claims**



1. An optical wavefront measuring device comprising:

a plurality of photodetectors positioned in a spatial array for sensing light waves of various phases, each photodetector generating a signal indicative of slope of the phase of the light wave at a respective point on the wave thereby forming a first matrix of phase slope signal points with a measurable distance between points;

processor means responsive to the generated phase slope signals for

(i) providing a second matrix of phase difference points by multiplying the phase slope at each point on the first matrix and the distance between respective points, each rectangular path of m adjacent phase difference points by n adjacent phase difference points defining a cell of the second matrix, each cell having sides defined by phase difference vectors between each of the m or n points along respective sides, each vector having a magnitude equal to the phase difference between respective points on the second matrix in which the vector lies;

(ii) iteratively adding to each phase difference between two adjacent points on a cell path of the second matrix, a fraction of the vector sum of the phase difference vectors about the cell which is defined in part by the two points, for each cell defined in part by the two points, the adding producing a third matrix of points in which the vector sums are substantially reduced compared to the respective original vector sums of the second matrix,

(iii) determining phase of the light wave at various points by summing the phase differences between respective points along any arbitrary path in the third matrix.

4,804,270

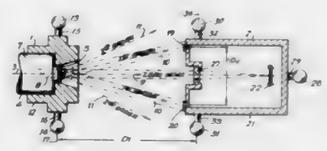
MULTI-AXIS ALIGNMENT APPARATUS

John M. Miller, Huntington Station; Richard O. Barton, Levittown, and Michael T. Bergin, Bayside, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Sep. 23, 1987, Ser. No. 100,258

Int. Cl.⁴ G01B *9/02*

U.S. Cl. 356—355 **12 Claims**



1. Apparatus for measuring the displacement of a member relative to a reference plane, said apparatus comprising

transmitting means having a ground barrel, a light diffraction grating having a ruled surface, a source of coherent light for providing a reference energy beam substantially coaxially centered within said ground barrel and substantially coaxially passing through said grating whereby said grating passes a zero order part of said beam through undeviated and diffracts a multiplicity of beams of first, second, third, and higher order, at constant angles with said zero order part, said angles varying with the frequency of the ruled surface of said grating, and sleeve means movably mounting said ground barrel and said light diffraction grating substantially coaxially to provide a roll zero reference, said zero order part of said beam providing the zero reference for pitch and yaw and said first order beams providing zero reference for roll; and

receiving means located at a predetermined distance from said transmitting means, the lines of said ruled surface of said grating having a frequency matching said predetermined distance, said receiving means having container means movably mounted to provide a roll zero reference, pitch and yaw displacement indicating means in said container means, and roll indicating means in said container means.

4,804,271

PROCESS FOR THE IMPROVEMENT OF SELECTIVITY OF SPECTROMETRIC MEASUREMENTS AND AN APPARATUS FOR THE PERFORMANCE OF THE PROCESS

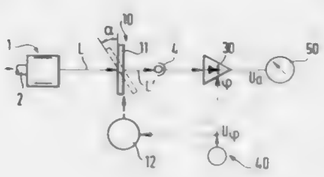
Karl Cammann, Analiesstrasse 89, 8000 München 40, Fed. Rep. of Germany

PCT No. PCT/EP86/00395, § 371 Date Feb. 27, 1987, § 102(e) Date Feb. 27, 1987, PCT Pub. No. WO87/00273, PCT Pub. Date Jan. 15, 1987

PCT Filed Jul. 4, 1986, Ser. No. 26,548

Int. Cl.⁴ G01J *3/433*

U.S. Cl. 356—416 **10 Claims**



1. A method for improving the selectivity of spectrometric measurements of a spectral source to be analyzed, said spectro-

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metric measurements taken over a spectral region of interest, said process comprising the steps of:

passing an emission said spectral source through a spectral filter, such that said spectral filter transmits a spectral band of said spectral source therethrough;

transmitting said spectral band from said spectral filter to a detector, said detector generating an output signal in response thereto;

changing the spectral band transmitted through said spectral filter such that said spectral band is tuned to a phase reference signal;

transmitting said phase reference signal to a lock-in amplifier, such that the phase reference signal is the lock-in signal of said lock-in amplifier;

transmitting said detector output signal to said lock-in amplifier, said lock-in amplifier generating an output signal in response thereto;

monitoring said lock-in amplifier output; and

periodically varying said phase reference signal across said spectral region of interest.

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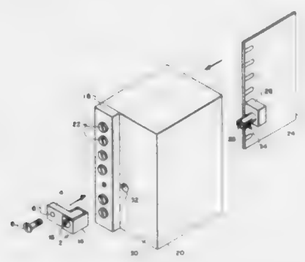
COLD JUNCTION COMPENSATION APPARATUS

Robert Schmitz, Rosemont, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 12,474, Feb. 9, 1987, abandoned. This application Apr. 13, 1988, Ser. No. 183,431

Int. Cl.[4] G01K *7/12*

U.S. Cl. 374—181 3 Claims



1. An apparatus comprising

a block of thermally conductive material having a mounting flange radially extending from said block with a mounting hole extending through said flange,

a sensor locating hole extending through said block and displaced from said mounting flange,

a temperature sensor located in said locating hole and arranged in a heat transfer relationship to sense a temperature of said block,

a terminal strip having at least one threaded hole therein,

a mounting screw extending through said mounting hole into said threaded hole to capture said flange against said strip with said block adjacent to said strip,

a first mounting means including a mounting wall for supporting said terminal strip and a sensor aligning hole in said wall adjacent to said strip and axially aligned with said sensor locating hole and

a second mounting means carried by said first mounting means for concurrently supporting said sensor in said aligning hole and said locating hole to enable said sensor to sense the temperature of said block.

4,804,273

METHOD AND APPARATUS FOR PARTICULATE MATTER DETECTION

Giuseppe Tondello, Via Palermo, 39, Padova, and Maurizio Vincenzi, Via Rovereto, 38, Castelfranco Veneto, Treviso, both of Italy

Continuation of Ser. No. 60,033, Jun. 9, 1987, abandoned. This application Feb. 29, 1988, Ser. No. 162,180

Int. Cl.[4] G01N *21/90*

U.S. Cl. 356—427 15 Claims



1. An apparatus for detecting particulate matter suspended in a liquid, which liquid is contained in a flask, comprising:

a unit for rotation of the flask about an axis of rotation, comprising cooperating chuck and mandrel members for grasping the flask and a motor mechanically connected to the mandrel member for providing and stopping rotation of the flask about said axis, said mandrel having a plurality of holes therethrough;

a laser beam source;

a fiber optic bundle positioned to transmit laser light from the source to the holes in the mandrel, such that a plurality of columns of laser light are transmitted through the flask and generally parallel to said axis;

a photomultiplier positioned with respect to the flask for detection of laser light diffused generally radially away from said axis by particulate matter passing through the columns of laser light and for generating an electrical signal reflective of the light detected; and

indication means, connected to receive the electrical signal from the photomultiplier, for indicating when particulate matter has been detected.

4,804,274

METHOD AND APPARATUS FOR DETERMINING PHASE TRANSITION TEMPERATURE USING LASER ATTENUATION

Gary J. Green, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1986, Ser. No. 947,927

Int. Cl.[4] G01N *25/04, 25/12*

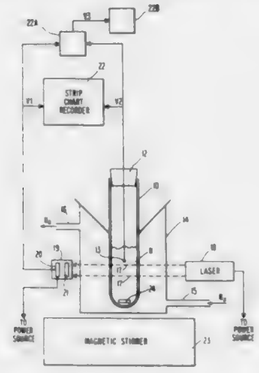
U.S. Cl. 374—17 24 Claims

1. An apparatus operable in a plurality of ambient lighting conditions for determining the phase transition temperature of a liquid hydrocarbon fuel sample, said apparatus comprising:

(a) a container for holding the sample and for providing an optical pathway therethrough;

(b) a light source for projecting a highly parallel beam of monochromatic light along said optical pathway, said light having a wavelength in the visible spectrum;

(c) means for detecting the intensity of said light exiting said optical pathway, including a detecting cell and means for allowing the passage of substantially only that light having a wavelength substantially equal to the wavelength of light from said light source; and



(d) means for measuring the temperature of said sample as said sample passes through said transition temperature.

4,804,275

INDICATOR DEVICE FOR INDICATING THE TIME INTEGRAL OF A MONITORED PARAMETER

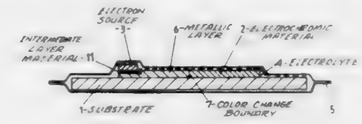
Karam S. Kang, London; Stephen Munn, Oxfordshire; Judith Robinson, Basingstoke, and Esmonn F. Maher, Henley-on-Thames, all of England, assignors to Johnson Matthey Public Limited Company, London, England

Filed Aug. 29, 1986, Ser. No. 901,645

Claims priority, application United Kingdom, Aug. 29, 1985, 8521488

Int. Cl.[4] G01K *11/12;* **G02F** *1/23*

U.S. Cl. 374—162 23 Claims



1. An indicator device for indicating a time integral of a monitored parameter, comprising:

a substrate;

a layer of electrochromic material carried on said substrate;

a single electrode;

an electrolyte for contacting at least: (a) the layer of electrochromic material and (b) the electrode;

means for activating said device by selectively contacting said electrolyte to said electrode and said layer to cause electrons to pass from the electrode to the layer of electrochromic material by a localized area of communication therebetween causing an electromagnetic absorption characteristic, and hence color, of the electrochromic material to change so that a color change boundary advances across the layer of electrochromic material away from said area of communication,

said electrochromic material, electrode and electrolyte being chosen and arranged such that the rate of advancement of the color change boundary is substantially determined by a supply of electrons from the electrode to an unchanged electrochromic material at the color change boundary, said supply of electrons being responsive to changes in the monitored parameter, whereby the position of the color change boundary provides a visual indication of the time integral of the monitored parameter since activation of the device.

4,804,276

CAGE FOR A ROLLING BEARING

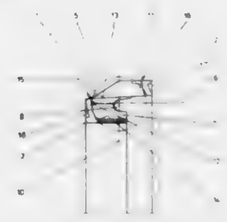
Armin Olschewski, Schweinfurt; Rainer Schürger, Schwanfeld; Robert Stolz; Günter Neder, both of Schweinfurt; Walter Treibel, Salz, and Heinrich Kunkel, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 17, 1988, Ser. No. 156,712

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1987, 3706013

Int. Cl.[4] F16C *33/38*

U.S. Cl. 384—526 4 Claims



1. In a cage for a rolling bearing comprised of first and second side rings connected together by a plurality of webs, wherein one of said side rings is outwardly of the pitch circle and the other of the side rings is inwardly of the pitch circle, and the improvement wherein circumferentially elastic projections are provided extending axially from one of the side rings toward the other of the side rings, radially of said webs, and recesses defined by the projections and webs are provided in the regions of the smallest distances between the balls.

4,804,277

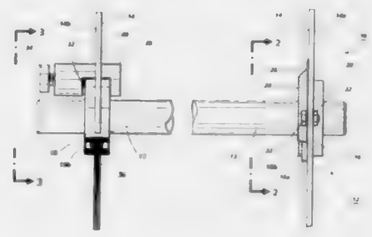
BEARING MOUNTING SYSTEM

Steve S. Counoupas, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1987, Ser. No. 134,669

Int. Cl.[4] F16C *43/04, 23/06*

U.S. Cl. 384—537 9 Claims



1. A bearing mounting system for mounting and retaining a rotatable shaft in a machine frame between first and second rotatable bearings respectively mounted to first and second spaced frame members of said machine frame, utilizing commercially available bearings, with respective inner and outer races, andd with said shaft mounted to said inner races, comprising:

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first mounting means for rigidly mounting a first bearing outer race to one said frame member,

said first mounting means preventing both rotational and axial movement of said first bearing outer race relative to said first frame member, and

second mounting mans for mounting a second bearing outer race to a second frame member,

said second mounting means providing for axial movement of said second bearing outer race relative to said second frame member but preventing rotation of said second bearing outer race relative to said second frame member,

said second mounting means including a round aperture in said second frame member through which said second bearing outer race is axially mounted and axially moveable, and a notch aperture in said second frame member adjacent to said round aperture, and outer race clamping means removably clamped to said second bearing outer race and moveable therewith,

said outer race clamping means of said second mounting means being axially mounted within and axially moveable within said notch aperture in said second frame member, said notch aperture and said clamping means both extending outside of the radius of said second bearing outer race and said cylindrical aperture in said second frame member, said clamping means and said notch aperture being of substantially the same circumferential dimensions so as to prevent any substantial rotational movement of said clamping means or said second bearing outer race relative to said second frame member,

wherein said outer race clamping means of said second mounting means is partially notched to fit over a minor portion of said second bearing outer race, and contains retention means to rigidly but removably grip said second bearing outer race within said notch.

4,804,278

KEY INPUT APPARATUS PROVIDED WITH A KEY INPUT BUFFER

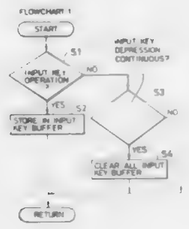
Hidemi Gotou, Kawasaki, and Shinichi Kimura, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 748,317, Jun. 24, 1985, abandoned. This application Jun. 26, 1987, Ser. No. 67,393

Claims priority, application Japan, Jul. 3, 1984, 59-138262

Int. Cl.[4] B41J *29/38*

U.S. Cl. 400—54 **16 Claims**



1. An input apparatus comprising:

input means for inputting information codes;

buffer means for storing a plurality of information codes input from said input means; and

control means for sequentially executing processing in accordance with each of the stored information codes in said buffer means and, in response to the termination of a continuous input of information codes from said input means after a predetermined period, for detecting that all of the unexecuted information codes stored in said buffer means are the same, and for immediately clearing the unexecuted information codes stored in said buffer means upon such detection, such that sequential processing of the stored unexecuted information codes is inhibited.

4,804,279

REAL-TIME WORD TYPEWRITER

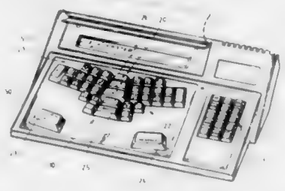
Nicolaas M. Berkelmans, Apeldoorn; Marius Den Outer, deceased, late of Hulshorst, and by Annie Den Outer, legal representative, Dieren, all of Netherlands, assignors to Special Systems Industry B.V., Rijswijk, Netherlands

Continuation-in-part of Ser. No. 657,775, Oct. 4, 1984, abandoned, which is a continuation-in-part of Ser. No. 348,008, filed as PCT NL81/00018 on Jun. 15, 1981, published as WO81/03641 on Dec. 24, 1981, abandoned. This application Dec. 19, 1985, Ser. No. 811,656

Claims priority, application Netherlands, Jun. 13, 1980, 8003451; PCT Int'l Appl., Jun. 15, 1981, PCT/NL81/00018

Int. Cl.[4] B41J *3/26*

U.S. Cl. 400—94 **22 Claims**



1. A word typewriter for the display of written information comprising a keyboard, the keyboard being provided with letter keys, the letter keys including a first centrally positioned group of letter keys for vowels, and on either side of said group in mirror positions a second and third group of letter keys for a limited number of consonants, the number of consonants represented by the second and third group of letter keys being less than the number of consonants appearing in a standard written format of the information to be processed, the keyboard being further provided with a row of letter keys below said groups conveniently operable by a typist's thumbs, the decoding of the letter keys being such that by simultaneous operation of more than one key, letters omitted from the keyboard are formed by the typewriter and provided in an order corresponding to a standard form of a word, the letter keys also being operable for the formation of signs or digits, a further row of two sign keys below said row of letter keys operable by the thumbs and between which a shift key is provided to selectively form letters and signs or digits, the letter keys being coupled to an electronic decoding and processing unit, the electronic decoding and processing unit being operable to decode signals from simultaneously operated keys and to subsequently supply signals representing a set of letters which are placed in an order corresponding to a standard form of a word, the combination of two simultaneously operated letter keys which may be associated with a letter omitted from the keyboard being processed into the standard display form of the letter omitted from the keyboard, the electronic decoding and processing unit serving as a means to process the simultaneous operation of keys in accordance with programmed priority rules and to produce a realtime output of signals representative of the standard form of a word, wherein the simultaneously operated letter keys which combine to form letters omitted from the keyboard are selected so that the combination of letters on those letter keys suggest in form or phonetic sound the missing letter so formed.

4,804,280

PRINTER INCLUDING APPARATUS FOR CONTROLLING UNDERSCORE POSITION RELATIVE TO CHARACTERS

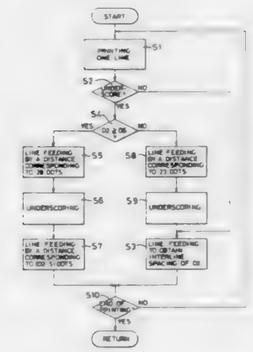
Yuji Kurokawa, Nagoya; Masataka Yoshikawa, Gifu; Takao Kato, Toyota; Hiroyuki Kikukawa, and Yukiyoshi Muto, both of Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 4, 1987, Ser. No. 45,088

Claims priority, application Japan, May 12, 1986, 61-108134

Int. Cl.[4] B41J *29/26*

U.S. Cl. 400—17 **6 Claims**



1. A printer for printing on a recording medium, comprising:

printing means for printing lines of characters on the recording medium in a printing direction;

drive means for effecting a relative movement between the recording medium and said printing means, in a direction perpendicular to said printing direction;

first memory means for storing character data representative of said lines of characters to be printed on the recording medium;

second memory means for storing line-space data representative of an interline spacing between said lines; and

control means connected to said printing means, said drive means, and said first and second memory means, for controlling said printing means to print said lines of characters according to said character data stored in said first memory means, and controlling said printing means and said drive means according to said line-space data stored in said second memory means, to print an underscore below at least one of said characters such that a distance between said underscore and said at least one character is varied depending upon said interline spacing represented by said line-space data.

4,804,281

PRINTING APPARATUS WITH A TYPE-WHEEL

Kiyoshi Yamakawa, Miyamachi, and Satoshi Yoshimoto, Komaki, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jan. 5, 1988, Ser. No. 141,590

Claims priority, application Japan, Jan. 7, 1987, 62-2076

Int. Cl.[4] B41J *1/22*

U.S. Cl. 400—144.2 **9 Claims**

1. In a printing apparatus with a type-wheel having a frame, a carriage movable within a movement range including a printable range, a first stepping motor for driving said carriage, rotary means rotatably mounted on said carriage for mounting said type-wheel rotatably, a second stepping motor for driving said rotary means, and connecting means for operatively connecting said type-wheel with said rotary means when a reference position of said type-wheel aligns with a reference position of said rotary means, said printing apparatus comprising:

carriage detecting means installed in a first allowable range which is within said movement range, set between a side wall of said frame and said printable range;

carriage original position setting means for controlling the driving of said first stepping motor according to an output of said carriage detecting means to set original positions of said carriage and said first stepping motor relative to each other;

reference position aligning means which operates after original position setting by said carriage original position setting means for controlling the driving of said first stepping motor and said second stepping motor so that said carriage moves from the original position of said carriage set by said carriage original position setting means to a predetermined position outside said first allowable range and said rotary means rotates said reference positions of said type-wheel and said rotary means into alignment with each other;



a stopper means installed in a second allowable range overlapping partly with said first allowable range for restraining rotation of said rotary means; and

wheel original position setting means which operates after alignment of said reference positions by said reference position aligning means for controlling the driving of said first stepping motor and said second stepping motor so that said carriage moves from said predetermined position to a position where rotation of said rotary means is restrained by said stopper means and said second stepping motor is put in a step-out state to set original positions of said type-wheel and said second stepping motor.

4,804,282

CHARACTER SELECTING MECHANISM

Fumihisa Hori, Takizawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Aug. 26, 1987, Ser. No. 89,671

Claims priority, application Japan, Oct. 3, 1986, 61-152359[U]

Int. Cl.[4] B41J *7/48*

U.S. Cl. 400—163.1 **2 Claims**



1. In a printing apparatus having a plurality of type wheels arranged rotatably in parallel on a drive shaft, each type wheel

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having a plurality of type characters spaced circumferentially thereon and being selectively rotatable through a rotation angle and stoppable so as to bring a selected type character to a predetermined printing position for a printing operation, type wheel clutch means for engaging the type wheels with the drive shaft for driving the type wheels in rotation, and a character selecting mechanism for each respective one of the type wheels which is operable to selectively engage the respective type wheel to stop its rotation when a selected type character on the type wheel is rotated to the printing position, and to disengage from the type wheel after the printing operation when the type wheel is to be reset with the other type wheels by rotation to a reset position,

the improvement wherein said character selecting mechanism for each respective one of said type wheels comprises:

a selector ratchet connected with the respective type wheel and having a plurality of notches spaced circumferentially thereon corresponding to the type characters of the type wheel;

a rotatable selector plate positioned adjacent the respective type wheel and having a releasing finger, a driving tongue, a rotation-preventing edge, and a selector finger integrally formed thereon, said selector plate being rotatable from an initial position wherein its selector finger is positioned away from said selector ratchet of the type wheel to a selection position wherein its selector finger is engaged in a notch of said selector ratchet corresponding to a selected type character;

an electromagnetic clutch which is selectively actuatable to engage said driving tongue of said selector plate to rotate said selector plate and said selector finger from the initial position to the selection position to engage in the notch of said selector ratchet and stop the type wheel with the selected type character at the printing position;

a rotatable reset cam positioned adjacent said releasing finger of said selector plate having a first cam surface engageable with said releasing finger when said selector plate is in the selection position and said selector finger is engaged in the selected notch for rotating said selector plate and said selector finger form the selection position to an intermediate position away from the notches of said selector ratchet in order to allow the type wheel to be rotated to the reset position, a second cam surface which is abuttable against said rotation-preventing edge of said selector plate in conjunction with engagement of said first cam surface with said releasing finger to supportively hold said selector plate and said selector finger in the intermediate position, said second cam surface terminating at a predetermined angular position of said reset cam, which corresponds to completion of the resetting of the type wheel to the reset position, for releasing said rotation-preventing edge and allowing said selector plate and said selector finger to be further rotated back to the initial position;

a reset projection provided at one angular position on the respective type wheel which is engageable with said selector finger held at the intermediate position in order to stop the rotation of the type wheel and holding it in the reset position, said selector finger being disengaged from said reset projection when said rotation-preventing edge of said selector plate has been released from said second cam surface to allow rotation of said selector plate back to the initial position.

4,804,283

RIBBON FEED DEVICE INCLUDING TENSIONING CONTROL MEANS

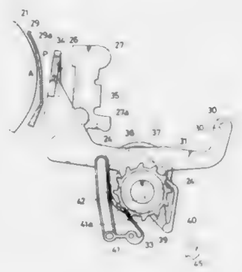
Minoru Imai, Ohhito, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1987, Ser. No. 115,051

Claims priority, application Japan, Nov. 5, 1986, 61-170082[U]

Int. Cl.⁴ B41J *33/52*

U.S. Cl. 400—234 **3 Claims**



1. A printer comprising:

(a) a platen having an axis and a peripheral surface;

(b) a carrier mounted for reciprocal movement in a direction parallel to the axis of said platen;

(c) a ribbon frame mounted on said carrier for pivotal motion about an axis parallel to the axis of said platen back and forth between a first position and a second position;

(d) a ribbon feed mechanism mounted on said ribbon frame;

(e) a ribbon take-up mechanism mounted on said ribbon frame, said ribbon take-up mechanism comprising:

(i) a ribbon take-up shaft mounted for rotation on said ribbon frame;

(ii) a ratchet wheel fixedly mounted on said ribbon take-up shaft for integral rotation with said ribbon take-up shaft; and

(iii) an engaging member mounted on said carrier in position to resiliently engage said ratchet wheel and to rotate said ratchet wheel and said ribbon take-up shaft when said ribbon frame is pivoted from its second position to its first position;

(f) a plurality of guides mounted on said ribbon frame in position to guide a ribbon in a feeding route from said ribbon feed mechanism to said ribbon take-up mechanism, the feeding route including a first portion in which the ribbon is parallel to and closely spaced from the peripheral surface of said platen when said ribbon frame is in its first position, a second portion leading from said ribbon feed mechanism to the first portion, and a third portion leading from the first portion to said ribbon take-up mechanism;

(g) a printing mechanism positioned to strike the ribbon at a segment of the first portion of the feeding route when said ribbon frame is in its first position, thereby forcing the segment of the first portion of the ribbon towards said platen, drawing a length of the ribbon out of said ribbon feed mechanism, and causing a slack in the ribbon; and

(h) a pressing member mounted on said carrier in position to press against the ribbon in one of the second and third portions of the feeding route as said ribbon frame pivots from its first position to its second position so as to take-up the slack in the ribbon caused by said printing mechanism while said ribbon frame was in its first position, said pressing member being integral with said engaging member.

4,804,284

RELOCATING CONTROL SYSTEM FOR A PRINTING APPARATUS

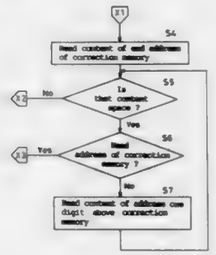
Hiroshi Hattori, Nagoya, and Satoshi Shibata, Aichi, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 18, 1987, Ser. No. 27,355

Claims priority, application Japan, Mar. 19, 1986, 61-63207

Int. Cl.⁴ B41J *21/16*

U.S. Cl. 400—279 **12 Claims**



1. A relocating control system for a printing apparatus having a printing mechanism for printing characters corresponding to inputted data from inputting means; a memory having a memory area between a first address and a second address for storing plural character code data of printed characters in sequence from the first address corresponding to respective print positions; and a present position memory for storing a present position of a print head of the printing mechanism; said relocating control system comprising:

searching means, responsive to a relocation command signal from said inputting means, for determining in sequence from said second address toward said first address whether each of said code data stored in said memory is said character code data or said non-print code data, and for determining that na address storing a first determined character code data is a final address; and

controlling means for relocating said print head of said printing mechanism to a print position corresponding to an address which is closer to said second address than said final address is, based on a determination of said searching means and said present position stored in said present position memory.

4,804,285

PRINTHEAD TRANSPORT APPARATUS

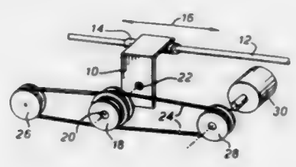
Robert G. Bradford, Bonnybridge, Scotland, assignor to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 24, 1986, Ser. No. 911,149

Claims priority, application United Kingdom, Nov. 30, 1985, 8529522

Int. Cl.⁴ B41J *25/28, 19/14*

U.S. Cl. 400—320 **14 Claims**



1. A printer carriage transport apparatus wherein a carriage is constrained to move in a predetermined path, said apparatus comprising:

a flexible, endless common band having a first portion and a second portion;

motive means comprising a single differential wheel means rotatable mounted on said carriage, said motive means being coupled to said first and second portions of band, said motive means for moving said first portion of band in a first direction along said path and for imparting relative movement between said first portion of band and said carriage in a first directional sense along said path;

said motive means further for moving said second portion of band simultaneously with said first portion of band and by the same distance in a second direction along said path and opposed to said first direction, said motive means for imparting relative movement between said second portion of band and said carriage in a second directional sense opposed to said first directional sense along said path;

whereby said carriage is displaced in said path by the difference between said relative movement in said first directional sense and said relative movement in said second directional sense;

said differential wheel means including a differential wheel having a portion of a first diameter engaging said first portion of band and a portion of a second diameter engaging said second portion of band;

said first portion of band passing at least once around said portion of said differential wheel of said first diameter and said second portion of band passing at least once around said portion of said differential wheel of said second diameter;

disengage means for disengaging said first portion of band from imparting said relative movement between said first portion of band and said carriage, whereby rapid transport of said carriage in said path by said relative movement between said carriage and said second portion of band may be achieved

4,804,286

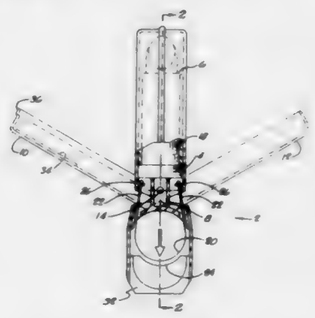
ONE-HAND OPERABLE COSMETIC CONTAINER

Frank A. Jarrett, P.O. Box 7624, South Lake Tahoe, Calif. 95731, and Maria Frimmel, 111 Barrington Walk, Los Angeles, Calif. 90049

Filed Jan. 16, 1987, Ser. No. 5,555

Int. Cl.⁴ A45D *40/06*; **B41J** *11/20*

U.S. Cl. 401—59 **8 Claims**



1. A one-hand operable facial product container comprising:

a can having a first end portion adapted to support a product and a second end portion;

a pair of cases pivotally mounted by pin means on said can, said cases being pivotable between an open position wherein said first end of said can is exposed to a closed position wherein said cases enclose said first end of said can;

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means for pivoting said cases between said open and closed positions; and

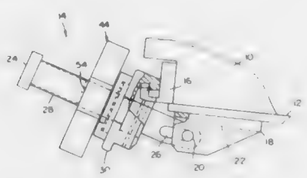
means for resiliently biasing said cases into said closed position, said biasing means providing continuous positive biasing force on said cases toward said closed position, whereby when said means for pivoting said cases are operated to open said cases, said biasing means continue to urge said cases toward said closed position.

4,804,287

APPARATUS FOR INSERTING, SECURING AND EXTRACTING RECEPTACLES, SUCH AS EQUIPMENT CASES

Calvin W. Purdy, Wayne, N.J., assignor to ITT Avionics, Nutley, N.J.

Filed Feb. 2, 1987, Ser. No. 10,024
Int. Cl.[4] B25G *3/00*
U.S. Cl. 403—16 **13 Claims**



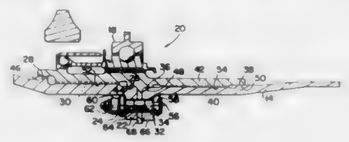
1. Apparatus by which a portable receptacle can be inserted onto, secured to and extracted from a stationary support, said apparatus comprising securing means for releasably securing a portable receptacle to a stationary support, said securing means including a first securing member attached to the receptacle and a second securing member attached to the support; mounting means for mounting said second securing member such that said second securing member is movable along said mounting means in a first direction toward said first securing member and in a second direction opposite to said first direction and such that said second securing member is movable between a first position in which said second securing member engages said first securing member and a second position in which said second securing member disengages said first securing member; said first securing member is positioned above the support and includes a hook and said second securing member includes engaging means for releasably engaging said hook when said second securing member is in said second position; and moving means movable along said mounting means in said first direction for moving said second securing member in said first direction to a location in which said second securing member is engageable with said first securing member; and said second securing member is rotatably mounted on said mounting means such that said second securing member can be rotated between said first and second positions said engaging means includes a first semi-circular groove provided in said second securing member, said first groove being sized and shaped so as to releasably capture said hook of said first securing member, and a first opening provided on one side of said second securing member, said first opening communicating with said first groove and being sized and shaped so as to permit said hook of said first securing member to pass into and out of said first groove; whereby said first and second securing members can cooperate with each other to insert the receptacle onto the support and/or to secure the receptacle to the support, and for moving said second securing member along said mounting means in said second direction, whereby said second securing member, when it is engaged with said first securing member, cooperates with said first securing member to at least partially extract the receptacle from the support.

4,804,288

COUPLING ATTACHMENT

Richard J. Tiernan, Jr., Hobe Sound, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 15, 1987, Ser. No. 133,474
Int. Cl.[4] F16D *1/00*
U.S. Cl. 403—24 **3 Claims**



1. An apparatus for joining rotating shafts of two components of a gas turbine engine comprising:

a first hollow shaft;

a second hollow shaft axially aligned with said first shaft;

a first inwardly extending flange at the end of said first shaft;

a circumferential outwardly facing first shaft bearing surface adjacent to said end of said first shaft;

a circumferential outwardly facing second shaft bearing surface on said first shaft axially spaced from said first shaft bearing surface;

a first shaft spline on said first shaft between said first and second shaft bearing surfaces;

a second inwardly extending flange at the end of said second shaft;

a circumferential outwardly facing third bearing surface adjacent to said end of said second shaft;

a circumferential outwardly facing fourth shaft bearing surface axially space from said third bearing surface;

a second spline on said second shaft between said third and fourth shaft bearing surfaces;

a cylindrical coupling surrounding said ends of said first and second shafts;

a circumferential inwardly facing first coupling bearing surface on said coupling in interference fit with said first shaft bearing surface;

a circumferential inwardly facing second coupling surface on said coupling in interference fit with said second shaft bearing surface;

a third circumferential inwardly facing coupling surface on said coupling in interference fit with said third shaft bearing surface;

a fourth circumferential inwardly facing coupling surface on said coupling in interference fit with said fourth shaft bearing surface;

an internal first coupling spline engaged with said first shaft spline;

an internal second coupling spline engaged with said second shaft spline;

an inwardly extending coupling flange on said coupling and in abutting contact between said first and second flanges;

a plurality of aligned bolt holes through said first flange, second flange and coupling flange; and

a plurality of bolts within said bolt holes and having clearance exceeding the circumferential clearance between said engaged splines.

4,804,289

CONNECTOR FOR REFUSE CONTAINER AND COMPACTOR

James A. Blough, Hesston, Kans., assignor to H.E.P. Environmental Services, Inc., Dallas, Tex.

Filed Feb. 17, 1987, Ser. No. 15,149
Int. Cl.[4] F16B *21/09*; B30B *15/04*
U.S. Cl. 403—24 **4 Claims**

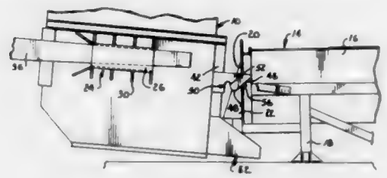
1. Apparatus for releasably interconnecting a movable refuse container with a stationary refuse compactor, said apparatus comprising:

a pair of rigid pins rigidly secured to the compactor, the pins extending generally horizontally outwardly from respective opposite sides of the compactor; and

an elongated, rigid arm for each pin respectively, each arm being rigidly secured to the container and projecting outwardly therefrom in disposition in engage its corresponding compactor pin when the container is moved into refuse loading position adjacent the compactor,

each arm having a cam surface sloping downwardly and toward said container on its leading edge disposed to engage its corresponding pin to elevate the container to an elevated position upon movement of the container toward the compactor,

each arm being provided with a vertically extending, downwardly opening notch spaced inboard of the arm from said cam surface, each notch being defined by a pair of edges spaced apart longitudinally of the corresponding arm, the edge of each notch most remote from the container being inclined downwardly and outwardly at an angle from the container the notch being disposed to receive the corresponding compactor pin therein to permit lowering of the container by gravity from the elevated position and into said refuse loading position, the notches being disposed relative to their respective pins whereby said downwardly and outwardly inclined notch edges slide on their corresponding pins during such lowering to pull the container into tight engagement against the compactor, the pins disposed in the arms notches locking the container to the compactor to prevent movement of the container by horizontal forces generated during the transfer of refuse from the compactor to the container.

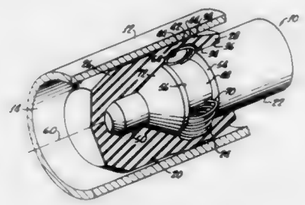


4,804,290

LATCHING AND SEALING DEVICE

Peter J. Balsells, 17592 Sherbrook Dr., Tustin, Calif. 92680, assignor to Peter J. Balsells and Joan C. Balsells, both of Santa Ana, Calif.

Filed Aug. 22, 1986, Ser. No. 899,165
Int. Cl.[4] F16B *21/18*; F16J *15/24*
U.S. Cl. 403—326 **18 Claims**



1. A latching and sealing device comprising:

a cylindrical seal member comprising a body portion and lip-and-latch means flexibly depending from said body portion and adapted, for both sealably engaging a surrounding surface and latching to a cylindrical core, said lip-and-latch means including groove means formed on an inside surface of said lip-and-latch means for supporting a spring therein;

a cylindrical core including means defining a circumferential groove therein for supporting a spring; and,

spring means disposed between the lip-and-latch means and the cylindrical core, and within the lip-and-latch means groove and circumferential groove, for radially forcing the lip-and-latch means into engagement with a surrounding surface and acting in cooperation with the lip-and-latch means groove and circumferential groove to axially lock the cylindrical seal member to the cylindrical core.

4,804,291

DOUBLE GIMBAL CAMLOCK INSTALLATION ASSEMBLY

James W. Everett, New Stanton, Pa., assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 16, 1987, Ser. No. 26,363
Int. Cl.[4] B25G *3/00*
U.S. Cl. 403—287 **27 Claims**



1. A double gimbal camlock installation assembly comprising:

(a) a camlock mechanism for gripping the inside surface of a vertical tubular member;

(b) a double gimbal connected to the camlock mechanism for vertically aligning the camlock mechanism with said tubular member; and

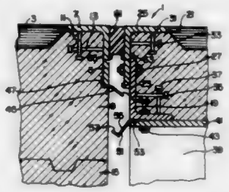
(c) a frame connected to the double gimbal for supporting the double gimbal and for urging the camlock mechanism beneath said tubular member.

4,804,292

EXPANSION JOINT ASSEMBLY AND METHOD

Rocco A. DeLuca, 105 Toledo Ave., Pawtucket, R.I. 02860

Filed Mar. 24, 1988, Ser. No. 173,240
Int. Cl.[4] E01C *11/00*
U.S. Cl. 404—69 **17 Claims**



1. An expansion joint assembly for roadways, bridgeways or parking garages comprising:

(a) a first road section terminating with a vertical face having a metal armor upper section and a concrete lower section;

(b) a second road section contiguous to said first road section and having a vertical face which is directly opposite the

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vertical face of said first road section, said second road section vertical face also having a metal armor upper section and having a lower section;

(c) a water deflector plate connected to the vertical face of either said first road section or said sec d road section, said deflector plate having a connecting surface which is an .ored to said vertical face and having a deflecting surface which tapers outwardly an downwardly from said vertical face with contacting the other vertical face of said first and second road section:

(d) a water collector plate connected to the vertical face of the other of said first and second road sec&ions, said water collector plate having a connecting surface which is anchored to said vertical face and having an inner collecting surface and an outer collecting surface, the inner collecting surface running from said connecting surface outwardly and downwardly to said outer collecting surface, said outer collecting surface running from said inner collecting surface outwardly and upwardly and terminating below said deflector plate and under it without contacting said deflector plate or the vertical face to which it is connected;

(e) anchoring means connecting said deflector plate to said vertical face; and,

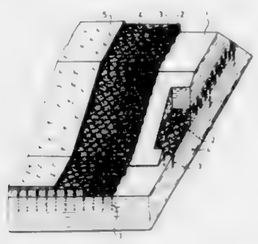
(f) anchoring means connecting said collecting plate to said vertical face.

4,804,293

FLEXIBLE LAYER STRUCTURE FOR PROTECTING EARTHWORKS, BED WALLS AND FOR DELIMITING EMBEDDING LAYERS

László Várkonyi, and Gyula Váci, both of Miskolc, Hungary, assignors to Comporgan Rendszerhaz K.V., Budapest, Hungary

Filed Jan. 27, 1987, Ser. No. 6,967
Claims priority, application Hungary, Jan. 28, 1986, 388/86
Int. Cl.[4] E02B *3/04*
U.S. Cl. 405—15 4 Claims



1. A flexible layer structure for protecting earthworks and the like, which comprises

(a) a spatial net comprising a plurality of elongated strips of material joined in spaced-apart, limited areas,

(b) said spatial net being stretched out in width to form a honeycomb-like structure, with said elongated strips standing on edge,

(c) said spatial net being laid out over a surface to be protected with the adjacent strips defining upwardly opening pockets,

(d) a plurality of stake-like mechanical fasteners driven into said surface to be protected and projecting upward therefrom into certain of said pockets,

(e) said pockets being filled with material to form a surface crust,

(f) said spatial net being glued onto an underlying carpet-like layer made of geotextile,

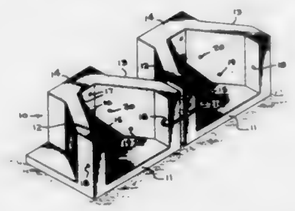
(g) the surface of the carpet facing the soil being covered with a foil, thus forming a waterproof protective crust.

4,804,294

METHOD AND MEANS FOR IMPROVED EROSION CONTROL

Ted F. Barthel, 5588 Davis Blvd., Mentor-on-the-Lake, Ohio 44060

Continuation-in-part of Ser. No. 870,155, Jun. 3, 1986. This application Jun. 4, 1987, Ser. No. 58,172
Int. Cl.[4] E02B *3/06*
U.S. Cl. 405—30 16 Claims



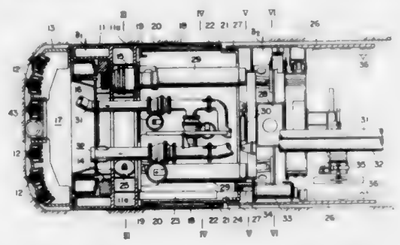
1. An erosion control module for dissipating wave energy and retaining beaches along the shoreline of a body of water comprising a base for contacting the floor of the body of water to distribute the weight of the erosion control module and produce low bearing pressures on the floor of the body of water, a pair of side walls extending upwardly from said base with said side walls converging toward the rear of said base and with said base extending between said side walls, a rear wall upwardly extending from the rear of said base and extending between said side walls to provide extended life to said module and direct water entering the module in an upward direction, and a means for forming a sand ledge in front of said module thereby creating an erosion control module which is stable and effective.

4,804,295

SHIELDED TUNNEL EXCAVATOR

Yasunori Kondo, Kakogawa, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Nov. 10, 1987, Ser. No. 119,071
Claims priority, application Japan, Nov. 13, 1986, 61-270293
Int. Cl.[4] E21D *9/06*
U.S. Cl. 405—141 10 Claims



1. A shielded tunnel excavator comprising:

(a) a substantially tubular shield comprising:

(1) a head section having a front end and a rear end;

(2) an inner section telescopically nested in the head section and rigidly constrained to axial displacement relative to the same; and

(3) a tail section coupled to the inner section for both bending and rolling movements relative to the same;

(b) front anchor means for anchoring the head section of the shield to a tunnel surface;

(c) rear anchor means for anchoring the tail section of the shield to the tunnel surface;

(d) rotary cutting means rotatably mounted to the front end of the head section of the shield;

(e) drive means within the shield for imparting rotation to the rotary cutting means;

(f) propelling means connected between the head section and tail section of the shield for advancing the shield; and

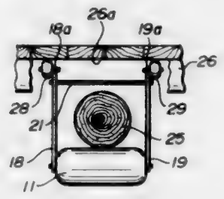
(g) a pair of antirolling jacks connected between the inner section and tail section of the shield so as to extend substantially tangentially of the shield.

4,804,296

FLOTABLE AND ADJUSTABLE MARINE FENDER DEVICE

John R. Smith, 30 E. Grove Ave., Woodbridge, N.J. 07095

Filed Jun. 17, 1987, Ser. No. 62,970
Int. Cl.[4] E02B *3/22*
U.S. Cl. 405—212 10 Claims



1. A flotable and adjustable marine fender device comprising:

a cylindrically shaped flotable marine fender;

a pair of legs each of which is secured to opposite sides of said flotable marine fender and disposed substantially parallel to and opposite each other;

a transverse connecting arm removably interconnecting said legs to each other intermediate their ends, said flotable marine fender, said legs and said transverse connecting arm together forming a rectangularly shaped assemblage enabling said marine fender device to encircle and maintain a substantially fixed position with respect to a piling to which said marine fender device is movably secured permitting said marine fender device to freely rise and fall with flooding and ebbing tides such that said flotable marine fender is capable of receiving the hull or side of a boat.

4,804,297

METHOD OF UNDERWATER CASTING

Richard H. Reifsnyder, Ardmore; Robert W. Spencer, Wallingford, both of Pa., and Robert A. Brennan, Trenton, N.J., assignors to PQ Corporation, Valley Forge, Pa.

Filed Oct. 8, 1987, Ser. No. 105,855
Int. Cl.[4] E02D *15/06*
U.S. Cl. 405—222 7 Claims

1. A method of formless casting of a cementitious mixture in a body of water, comprising:

a. adding an alkali metal silicate solution to said body of water so that dilute silicate solution is formed in at least a portion of said body of water;

b. placing an aqueous slurry of a cementitious mixture in that portion of said body of water that consists of said dilute silicate solution; and

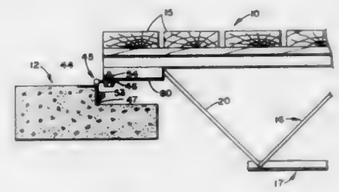
c. allowing the cementitious mixture to set thereby providing the desired underwater structure; said alkali metal silicate having 1.6 to 4.0 moles of SiO_2 for each mole of M_2O, wherein M is sodium, potassium or mixtures thereof, and sufficient silicate being added to the body of water so that the cementitious mixture is self-supporting upon pouring, said cementitious mixture containing Portland cement.

4,804,298

ANCHOR AND HINGE ARRANGEMENT FOR DOCKS

Charles L. Nasby, Jr., Minneapolis, Minn., assignor to Span-Dock, Inc., Minneapolis, Minn.

Filed Mar. 23, 1987, Ser. No. 29,338
Int. Cl.[4] E02B *3/20*
U.S. Cl. 405—218 13 Claims



1. An anchor and hinge arrangement for a dock structure, comprising:

(a) a concrete anchoring pad positioned upon a shoreline adjacent said dock, said anchoring pad including a steel angle partially embedded therewithin in an upper portion of said anchoring pad; and

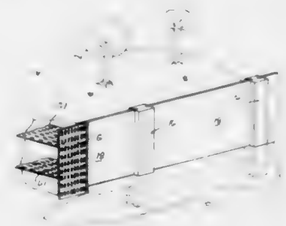
(b) a steel hinge including a vertical and horizontal leaf interconnected by pivotable means therebetween, said vertical leaf being operatively connected to said steel angle in said anchoring pad, and said horizontal leaf being operatively connected to a reinforcement structure of said dock, whereby said dock is securely positioned in a body of water.

4,804,299

RETAINING WALL SYSTEM

Gary L. Forte, Northville, Mich.; Richard L. Brown, Birmingham, Ala.; Wayne Miller, Gibraltar, Mich.; George L. Morris, III, and Michael D. Prior, both of Birmingham, Ala., assignors to United International, Inc., Birmingham, Ala.

Filed Jul. 9, 1986, Ser. No. 883,776
Int. Cl.[4] E02D *29/02*
U.S. Cl. 405—285 15 Claims



1. An earth retaining wall system comprising a plurality of modular pre-cast flat, rigid face panels of a polymeric cementitious material, modular panel edge receiving means for fixably locating and sealing vertical joints of horizontally adjacent panels relative to each other to define a continuous earth retaining wall, each of said panels having a first lattice-like grid of a polymeric material pre-cast therein to define a panel reinforcing grid, and second lattice-like grids of polymeric material fixedly securable to said face panels and extending generally horizontally from said panels beneath the surface of earth retained at one side of said wall to anchor said wall thereto.

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4,804,300

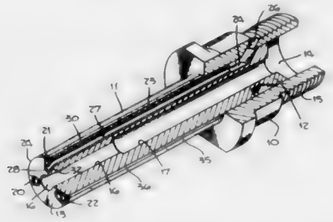
GUN DRILL COOLANT BUSHING AND METHOD OF MAKING SAME

Gary Tsui, Rosemead, and Thomas Heimbigner, Bellflower, both of Calif., assignors to CBC Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 725,102, Apr. 19, 1985, abandoned, Ser. No. 895,477, Aug. 11, 1986, Pat. No. 4,770,570, and Ser. No. 928,201, Dec. 12, 1986, abandoned. This application Jan. 27, 1987, Ser. No. 6,878

Int. Cl.⁴ B23B *51/06, 41/02*

U.S. Cl. 408—56 6 Claims



1. A coolant handling device for a tool for directing a flow of coolant through the device toward a working portion of the tool, said device being in the nature of a coolant directing assembly comprising a shank having an axial bore for reception of the tool and an exposed peripheral surface, said shank having opposite first and second ends between which said bore extends providing through communication between said ends and coolant directing passage means of fixed length extending between said ends, said coolant passage means comprising a longitudinally disposed recess extending from the exposed peripheral surface radially inwardly for a portion of the wall thickness of said shank, a mass of material lodged in said recess and having its outer surface exposed and means forming a passageway through said mass of material beneath the outer surface for conducting coolant between said ends at a location spaced radially outwardly from the axial bore of the shank.

4,804,301

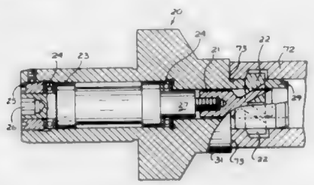
CENTRAL DRAWBAR COUPLING ACTUATING MECHANISM

Carl E. Hunt, Davisburg, Mich., assignor to GTE Valenite Corporation, Troy, Mich.

Filed Feb. 24, 1988, Ser. No. 135,853

Int. Cl.⁴ B23C *1/00*

U.S. Cl. 409—233 23 Claims



1. Flexible tooling system for mounting separable tools having respective inter-engaging male and female connection elements, the male element having a shoulder surface axially engaged by the female element, axial loading connection means comprising central axial reciprocable drawbar means extending within said male element, laterally reciprocable wedge ended means engaging transverse reaction passage means in said male element, inter-engaging ramp means between said drawbar and wedge means for positively reversably converting axial reciprocation of said drawbar means to lateral reciprocation of said wedge means, and matching wedge angle recess means within said female element engaged upon lateral outward extension of said wedge ended means to produce axial loading of said shoulder surface as a function of the combination of axial drawbar force, ramp angle, and wedge angle.

4,804,302

DEFORMABLE LOADING PLATFORM

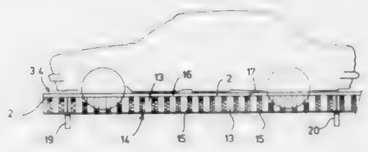
Jean-Luc Andre, Dangolsheim, France, assignor to Societe Lohr, Hangenbieten, France

Filed Apr. 13, 1987, Ser. No. 37,551

Claims priority, application France, Apr. 14, 1986, 86 05419

Int. Cl.⁴ B60P *3/07*

U.S. Cl. 410—19 14 Claims



1. Deformable loading platform for vehicle carriers, characterized by a sequence of crosspieces movable in a vertical direction between a lower position and an upper position;

means for guiding the crosspieces over their whole vertical movement between the lower and upper positions;

means for jointly moving all the crosspieces vertically downwardly to allow driving a vehicle carrier onto the platform with all the crosspieces having simultaneously moved vertically downwardly;

means for lifting the crosspieces vertically upwardly and individually independently of one another, and located under the crosspieces, so that with the vehicle carrier on the platform the lifting means bias the respective crosspieces individually vertically upwardly toward abutment against the vehicle carrier, while with no vehicle carrier on the platform the lifting means bias all the crosspieces vertically upwardly to the upper position.

4,804,303

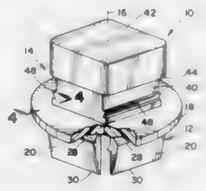
ATTACHMENT BLOCK ASSEMBLY

Robert J. Statkus, Leicester, Mass., assignor to TRW, Inc., Cleveland, Ohio

Filed May 8, 1987, Ser. No. 47,314

Int. Cl.⁴ F16B *13/04*

U.S. Cl. 411—41 7 Claims



1. An attachment block structure for connection through a preformed non-circular opening in a first workpiece to provide a fastener receiving surface to permit attachment of a second workpiece to the first workpiece, said attachment block structure comprising:

a first member having a central axis and a plurality of resilient legs depending from a radially extending flange, said legs having outwardly facing surfaces spaced to generally correspond to the inner periphery of said preformed non-circular opening to prevent rotation of said member in said opening and carrying latch means for retaining said first member in said preformed opening, said flange having a radial extent greater than said preformed opening to define a limit for movement of said first member into said preformed opening, a central passageway extending axially through said flange with the interior surfaces of said legs being aligned with the walls of said passageway to form a continuation thereof;

a second member having a solid elongated body with a central axis and having a flat outer end surface of substantial size adapted to define a relatively large fastener receiving surface capable of receiving a screw type fastener in any location on said outlet end surface, said elongated body further having exterior lateral surfaces sized to be closely received in the passageway of said first member to prevent radially inward deflection of said legs when said second member is inserted in said passageway, a shoulder extending radially outwardly adjacent an end of said second member to engage said flange on said first member and limit movement of said elongated body into said passageway; and,

cooperating surface means on the exterior of said elongated body and the interior of said resilient legs to prevent rotation or axial withdrawal of said second member relative to said first member after insertion therein to a point to produce engagement between said shoulder and said first member.

4,804,304

ROBOT WRIST

Leif Tellden, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Jun. 10, 1987, Ser. No. 60,309

Claims priority, application Sweden, Jun. 12, 1986, 8602625

Int. Cl.⁴ B66C *1/10*

U.S. Cl. 414—735 11 Claims



1. A robot wrist which is attachable to a free end of a robot arm so as to be aligned with a longitudinal axis D of said robot arm, said robot wrist comprising

a first wrist part comprising a first housing part, a first bevel gear wheel journalled in said first housing part, a first shaft pin attached to said first bevel gear wheel to rotate around an axis G which is perpendicular to said longitudinal axis D when said robot wrist part is attached to said robot arm, a first intermediate wheel which is in engagement with said first shaft pin, and a first motor attached to said first housing part for rotating said first bevel gear wheel,

a second wrist part comprising a second housing part, a second bevel gear wheel journalled in said second housing part, a second shaft pin attached to said second bevel gear wheel to rotate around an axis H which is perpendicular to said longitudinal axis D when said robot wrist is attached to said robot arm, a second intermediate wheel which is in engagement with said second shaft pin, and a second motor attached to said second housing part for rotating said second bevel gear wheel, said second wrist part being identical to said first wrist part except for manufacturing tolerances, and

a tilt mounted between said first and second wrist parts so as to be rotatable about an axis E which is perpendicular to said longitudinal axis D when said robot wrist is attached to said robot arm, said tilt including a tool attachment journalled therein, a first gear rim for engagement with said first intermediate wheel in said first wrist part for rotating said tilt about said axis E and a second gear rim for engagement with said second intermediate wheel in said second wrist part for rotating said tool attachment.

4,804,305

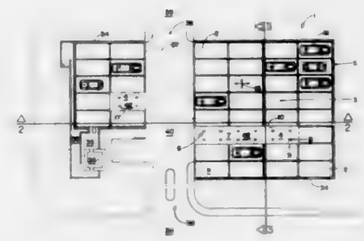
MOVABLE PLATFORM SYSTEM

Robert Lapotaire, 118 Fairway Dr., Covington, La. 70433

Filed Sep. 25, 1987, Ser. No. 101,290

Int. Cl.⁴ E04H *6/06*

U.S. Cl. 414—233 19 Claims



1. A movable platform system, comprising:

a. a basin, defined by a bottom and a sidewall, said basin containing a liquid;

b. a plurality of support means, extending upward from said bottom, and including a first plurality of support means aligned in rows in one direction and a second plurality of support means aligned in rows perpendicular to said one direction;

c. a plurality of platforms each having a top surface and an underside, said platforms being floatable in said liquid, each said platform having a plurality of guide means attached to said underside, for guiding movement of said platforms in said basin, at least one said guide means being aligned perpendicular to another, wherein a plurality of said support means extend into said guide means; and

d. a plurality of bearing means, attached to said support means, for supporting said underside of said platforms and allowing said platforms to move parallel to said bottom along some of said rows of said support means.

4,804,306

MACHINE FOR TRANSPOSING OF ARTICLES, PARTICULARLY FOR UNLOADING OF PALLETS CARRYING CONTAINERS

Lothar Schulte, Dortmund, Fed. Rep. of Germany, assignor to H&K Verpackungstechnik GmbH, Dortmund, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 892,581, Aug. 1, 1986, abandoned. This application Apr. 22, 1988, Ser. No. 185,376

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1985, 3527746

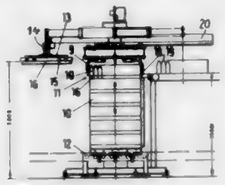
Int. Cl.⁴ B65G *59/02*

U.S. Cl. 414—120 3 Claims

1. Machine for the movement of containers from an unloading station to a depositing station spaced horizontally from the unloading station with the unloading station arranged to receive a pallet containing containers stacked in layers one above the other with a stabilization bottom located between each layer, comprising a transposing device (3) for moving the container layers from the unloading station to the depositing station; said transposing device includes a horizontally arranged parallel crank linkage (4, 5) comprising an elongated first crank rod (4) and an elongated second crank rod (5) disposed parallel to said first crank rod (4) and means for pivotally displacing said first and second crank rods as a unit between a first position and a second position, each said first and second

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crank rod has a first end connected to said pivot means and a second end, the second end of said first and second crank rods move along an arcuate path when displaced by said pivot means between the first and second positions, a gripper device (9) secured to the second end of said first crank rod (4) and arranged to grip a layer of containers, an extraction device (13) secured to the second end of said second crank rod (5), sliding means (22) connecting said gripper device (9) on the second



end of said first rod for moving said gripper device along a straight path from the first position above the unloading station to the second position above the depositing station while the extraction device (13) on the second end of said second crank rod (5) is movable along an arcuate path from the first position located on the opposite side of the unloading station from said depositing station and the second position located above the unloading station, and said gripping device (9) and said extraction device (13) being vertically displaceable.

4,804,307

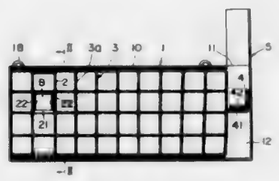
MODULAR STOREHOUSE

Kenro Motoda, Tokyo, Japan, assignor to Motoda Electronics Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 512,881, Jul. 11, 1983, abandoned. This application Jan. 7, 1987, Ser. No. 4,742

Int. Cl.[4] B65G *1/04*

U.S. Cl. 414—282 4 Claims



1. A fully automatic storehouse comprising:

a self-contained sealed storeroom of transportable size adapted to be buried underground and containing a plurality of modular racks for storing articles therein, the racks being arrayed to form a pair of vertical rectangular storage matrices which extend horizontally in spaced parallel relationship so as to define a parallel space extending therebetween, said storage matrices being horizontally and vertically coterminous;

a traveling crane in said space horizontally movable therein between and parallel to said storage matrices, said crane having a vertically movable base adapted to convey storage articles to and from any vertical level of said storage matrices, said crane further having a clamp member for transferring storage articles between said base and said racks;

a lift adjoining said storage matrices at one of the pairs of coterminous horizontal ends thereof and vertically extending from the interior of said storeroom to a location exterior to and substantially vertically elevated with respect to said storeroom, said lift having a vertically movable base therein adapted to convey storage articles between such exterior location and said storeroom;

an operating station at said exterior location for controlling operation of said crane and said lift so that solely be means of such operation storage articles can be conveyed to and from any selected rack in said matrices and to and from said storeroom and said exterior location; and

said storeroom is assembled from a plurality of adjoining boxes, said boxes are each formed in a transportable size and each box having openings at opposite ends with coupling flanges formed around the peripheries of the respective openings;

said boxes being coupled to form one storeroom by being coupled to each other with each box having a female flange around one periphery and having a male flange around the other periphery, and with the male flange of one box coupled to the female flange of an adjoining box with a securing means for coupling said male flange to said female flange;

whereby said storeroom may be buried underground and the operating station located above ground, communication therebetween being effected by said lift.

4,804,308

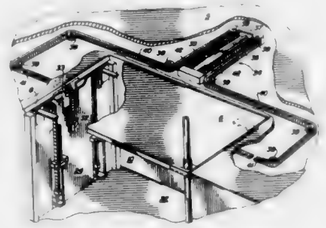
WHEELCHAIR LIFT

Peter Hamblin, and George Schwarz, both of Winnipeg, Canada, assignors to Motor Coach Industries, Winnipeg, Canada

Filed Jan. 20, 1987, Ser. No. 5,055

Int. Cl.[4] B60P *1/44*

U.S. Cl. 414—540 10 Claims



3. A wheelchair lift for a vehicle having an entrance and a floor with a cut-out adjacent said entrance of sufficient dimensions to allow the passage of a wheelchair comprising:

a. a platform having a top and a bottom surface and having left and right edges adapted to fit within the cut-out in the floor of said vehicle for traversing between said floor and ground level;

b. a pulley having its axis of rotation disposed parallel to said platform, the axis of rotation of said pulley being adapted to traverse between the floor of said vehicle and the midpoint between said floor and ground level;

c. a cable of predetermined length passing over said pulley and attached at one end to a fixed point at or below the midpoint between the floor of said vehicle and ground level, and attached at its other end to said platform;

d. means for lowering and raising said pulley at its rotational axis to cause said platform to traverse between the floor of said vehicle and ground level;

e. a ramp lying in a plane having a top side and a bottom side and having an inner edge and an outer edge, hingedly attached along its inner edge to the edge of said platform facing the entrance of said vehicle, adapted to be lowered to ground level or sidewalk level while said platform is being lowered and adapted to be raised substantially to a vertical position while said platform is being raised;

f. a ramp tip having a top side and a bottom side, hingedly attached to the outer edge of said ramp, said tip having means for gradually extending said tip into the plane of said ramp while said ramp is being lowered and means for gradually folding the bottom side of said tip towards the bottom side of said ramp while said ramp is being raised; and

g. means for lowering said ramp from its raised position towards ground level or sidewalk level while said platform is being lowered, and means for raising said ramp from ground level or sidewalk level to its raised position while said platform is being raised.

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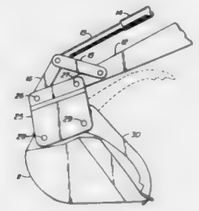
GRIPPING DEVICE FOR BOOM-MOUNTED WORK TOOL

Joel V. Risch, 3275 Lucia Ave., Eureka, Calif. 95501

Filed Oct. 1, 1987, Ser. No. 103,999

Int. Cl.[4] E02F *3/413*

U.S. Cl. 414—704 13 Claims



1. A grip attachment for a tool pivotally mounted to a boom through a first disengageable pivot connection and pivotable with respect thereto by a first extendable arm to which said tool is mounted through a second disengageable pivot connection, said grip attachment comprising:

a support member which is pivotally mountable to said boom and said first extendable arm at said first and second disengageable pivot connections, respectively, in place of and interchangeably with said tool;

means for mounting said tool to said support member;

a gripping member pivotally mounted to said support member; and

a second extendable arm mounted to said support member and said gripping member to control the position of said gripping member relative to said support member.

4,804,310

CLEARANCE CONTROL APPARATUS FOR A BLADED FLUID FLOW MACHINE

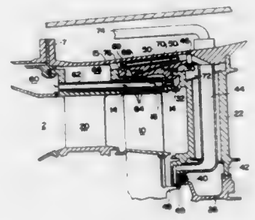
John R. D. Fuller, and John K. A. Bell, both of Bristol, England, assignors to ROLLS-ROYCE plc, England

Filed Dec. 1, 1976, Ser. No. 745,929

Claims priority, application United Kingdom, Dec. 2, 1975, 49322/75

Int. Cl.[4] F01D *11/08*

U.S. Cl. 415—115 8 Claims



1. A bladed fluid flow machine including a non-rotating structure and a bladed rotor having a circumferential array of blades around the periphery thereof and spaced radially at their tips from the non-rotating structure to define a clearance therebetween, and wherein there is provided clearance control mechanism comprising, a casing element forming part of the non-rotating structure and comprising a shroud from which the tips of the blades are spaced to define the clearance, first passages in the casing element for receiving a relatively high temperature, high pressure fluid, second passages in the casing element for receiving a relatively lower temperature and lower pressure fluid, means for supplying the two fluids of differing temperatures and pressures respectively to said first and second passages, said first and second passages communicating with a common plenum chamber, and control means comprising ducting communicating between said common plenum chamber and a restriction which varies in size in proportion to the clearance to be controlled, the pressures of the two fluids being relatively adjusted so that as the size of the restriction varies the amount of relatively higher or lower temperature fluids flowing in the respective passages varies to control the temperature of said casing element to maintain the size of the clearance in a pre-determined range.

4,804,311

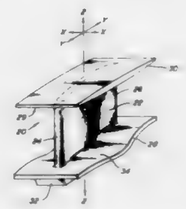
TRANSVERSE DIRECTIONAL SOLIDIFICATION OF METAL SINGLE CRYSTAL ARTICLES

Neal P. Anderson, Broad Brook; Anthony F. Giamei, Middletown, and Richard W. Salkeld, South Windsor, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 14, 1981, Ser. No. 330,911

Int. Cl.[4] F01D *1/02;* **B22D** *15/00*

U.S. Cl. 415—191 9 Claims



1. A single crystal article having orthogonal x, y and z axes and having a body lying along the z axis and a flange lying at an angle thereto, the flange and the body having abutting surfaces intersecting with an angle A between 70°–120°; the flange containing a point located a perpendicular distance L from the nearest z axis surface of the body, the distance L in centimeters being greater than

$$L - (\max) = \frac{5.4}{2(180° - A)}$$

wherein A is in degrees; the article made by directional solidification using a seed, wherein a solidification front initiated at the second is caused to form the part by moving through the article transverse to the z axis.

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4,804,312

FLOW GUIDE FOR SHIP PROPELLERS

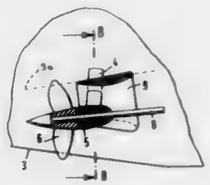
Herbert Schoeckluth, No. 6, An Adamskäuschen, 5100 Aachen, Fed. Rep. of Germany

Filed Oct. 2, 1987, Ser. No. 103,784

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1986, 3633689

Int. Cl.[4] B63H *5/16*

U.S. Cl. 415—182 2 Claims



1. A ship construction including guide means for propellers, including twin propellers, said ship construction comprising a hull; a rotatably driven shaft extending rearwardly from said hull; a propeller mounted on the rear end of said shaft; a propeller bracket for supporting said shaft adjacent said propeller, said propeller bracket comprising a propeller bracket nut rotatably supporting said shaft adjacent said propeller and at least two spaced arms projecting substantially radially from said propeller bracket nut, the ends of said arms opposite said propeller bracket nut being mounted on said hull; said guide means comprising a guide member having a sectioned and arcuate configuration and extending at least between said arms of said propeller bracket, said arcuate guide member being arranged transversely to the direction of flow upstream of said propeller and having a lower convex flow guide surface facing said propeller shaft and propeller bracket nut and having a straight mean camber line descending rearwardly towards said propeller shaft, the distance between said mean camber line and said propeller shaft being between 70% and 130% of the radius of said propeller, an end of said arcuate guide member adjacent said hull extending downwardly to a point approximately in a horizontal plane with said propeller shaft and having a leg of said guide member extending substantially horizontally between said end of said guide member and said propeller bracket nut.

4,804,313

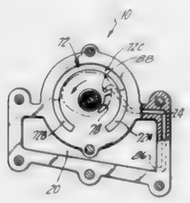
SIDE CHANNEL SELF PRIMING FUEL PUMP HAVING RESERVOIR

Pius J. Nasvytis, Avon, Conn., assignor to Colt Industries Inc, New York, N.Y.

Filed Mar. 24, 1987, Ser. No. 29,517

Int. Cl.[4] F04D *5/00*

U.S. Cl. 415—53 T 4 Claims



1. An improved side channel pump of the type comprising: a pump housing having an inlet and an outlet and a pumping cavity therein; the pumping cavity having a wall with an inlet port in the suction area of the wall and a discharge port in the discharge area of the wall and a circumferential side channel, the inlet being fluidly connected to the inlet port for supplying fluid thereto and the discharge port being fluidly connected to the outlet for supplying fluid thereto; and an impeller mounted in the housing for rotation in the pumping cavity, wherein the improvement comprises:

a reservoir for containing a supply of liquid;

a bypass suction duct for carrying liquid from the reservoir to the pumping cavity;

a suction duct inlet port in the reservoir for conducting liquid in the reservoir to the bypass suction duct;

a secondary inlet port in the pumping cavity wall in the suction area thereof for conducting liquid in the bypass suction duct to the pumping cavity; and

means to conduct liquid in the discharge area of the pumping cavity wall to the reservoir.

4,804,314

MAGNETOSTRICTIVE HYDRAULIC INJECTOR

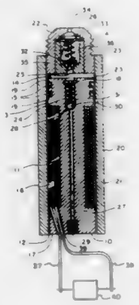
Robert F. Cusack, Grosse Pointe, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 758,991, Jul. 25, 1985, abandoned, and a continuation-in-part of Ser. No. 759,395, Jul. 26, 1985, abandoned. This application Sep. 8, 1986, Ser. No. 904,447

The portion of the term of this patent subsequent to Feb. 23, 2005, has been disclaimed.

Int. Cl.[4] F04B *17/00, 35/00*

U.S. Cl. 417—322 5 Claims



1. A fluid injector pump assembly comprising: a cylinder having a first and a second end, said cylinder formed of a negative magnetostrictive material, an elongate piston of a length shorter than said cylinder and having a first and second end, said piston formed of a positive magnetostrictive material, said first end of said piston secured to said first end of said-cylinder, said piston including an inlet passage with head valve means,

a cylinder head secured to said cylinder second end and having an injection port including valve means,

and a means to interruptedly apply a magnetic field to said assembly,

said piston operated responsive to said magnetic field to expand and expel any fluid located between said piston and head via said injection port past said head valve.

4,804,315

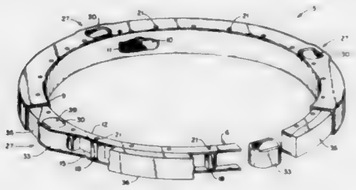
COMPOSITE HELICOPTER SWASHPLATE

Donald L. Ferris, Newtown, Conn.; Francis E. Byrnes, White Plains, N.Y., and Lawrence N. Varholak, Jr., Southbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 30, 1987, Ser. No. 80,369

Int. Cl.[4] B64C *27/74*

U.S. Cl. 416—114 1 Claim



1. A composite swashplate ring for a helicopter comprising:

(a) a triaxial braided tubular ring having inside, outside, upper and lower surfaces;

(b) said tubular ring containing a composite circumferential spacer ring;

(c) said triaxial braided tubular ring having substantially circumferential fibers interwoven with angled fibers oriented at a predetermined angle to said circumferential fibers;

(d) said spacer ring including an upper ring plate adjacent said upper tubular ring surface and a lower ring plate adjacent said lower tubular surface;

(e) said ring plates connected by a plurality of first tubular support members;

(f) said upper and lower plates having first openings in alignment with said first tubular support members to form a channel therethrough;

(g) a plurality of second vertical support members spaced substantially symmetrical about said ring plates and disposed between said plates; and

(h) said upper and lower ring plates having a plurality of sections extending radially outward from the ring plates, said sections having lug openings in alignment with said second tubular support members to form a channel therethrough for accepting servo or control rod lugs.

4,804,316

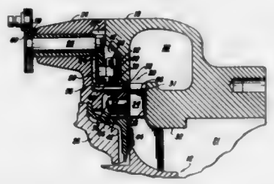
SUSPENSION FOR THE PIVOTING VANE ACTUATION MECHANISM OF A VARIABLE NOZZLE TURBOCHARGER

Jean-Luc Fleury, Manhattan Beach, Calif., assignor to Allied-Signal Inc., Morristown, N.J.

Continuation of Ser. No. 807,915, Dec. 11, 1985, abandoned. This application Oct. 27, 1987, Ser. No. 114,163

Int. Cl.[4] F02B *37/12;* F01D *17/12*

U.S. Cl. 417—407 19 Claims



1. A turbocharger comprising:

an exhaust gas driven turbine rotatably mounted to a shaft having a compressor impeller thereon;

a compressor housing enclosing said compressor impeller;

a center housing including bearing means for rotatably supporting the shaft;

a turbine housing forming a volute therein for directing exhaust gas from an engine through an annular passage to said turbine and including a turbine side wall which defines one boundary of said annular passage;

a flange member mounted between said center housing and said turbine housing;

a nozzle ring defining one boundary of said annular passage;

a plurality of vanes pivotably mounted to said nozzle ring;

means for maintaining said nozzle ring a desired distance from said turbine side wall during turbocharger operation;

a vane pin associated with each pivotable vane rotatably mounted through said nozzle ring;

a vane ram rigidly attached to the vane pin such that the nozzle ring is located between the vane and the vane arm;

an annular unison ring having a plurality of slots for receiving the vane arms therein;

at least three dowels extending from within a bore in said flange member to within a bore in said nozzle ring;

a roller rotatably mounted to each dowel, said rollers engaging the inner periphery of said unison ring; and

a linkage means responsive to an actuator means, for rotating the unison ring.

4,804,317

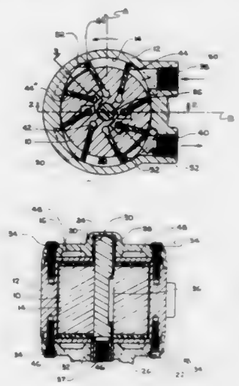
ROTARY VANE PUMP WITH FLOATING ROTOR SIDE PLATES

Steven T. Smart, and Charles D. McComas, both of Hutchinson, Kans., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 13, 1987, Ser. No. 25,364

Int. Cl.[4] F04C *18/344, 25/00, 29/00*

U.S. Cl. 418—110 8 Claims



1. A rotary vane pump comprising:

a body having an ellipsoidal cavity with intake and discharge ports therein;

a pair of stationary wear plates mounted on the sides of said cavity;

a metallic rotor member rotatably mounted and positioned within the cavity having a plurality of radial slots, a plurality of carbon composite vanes positioned in said slots which are urged outwardly by centrifugal force into engagement with said cavity to define variable volume pumping chambers for drawing fluids into the pump through the intake port and discharging them through the discharge port;

floating rotor side plates made of a carbon composite positioned on opposite sides of the rotor between the two wear plates in sliding relation therewith, the side plates

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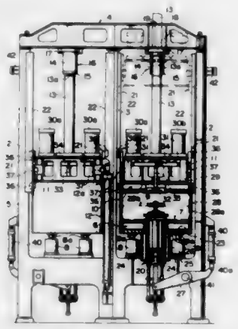
having a congruent pattern of radial slots with those in the rotor, the vanes having sufficient width to extend into the slots of both side plates to drive the side plates with the rotor.

4,804,318

VERTICALLY OPENING AND CLOSING TYPE TIRE VULCANIZER

Yasuhiko Fujieda, and Katsumi Ichikawa, both of Akashi, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jan. 13, 1987, Ser. No. 2,989
Claims priority, application Japan, Jan. 16, 1986, 61-7360
Int. Cl.[4] B29C *35/00*
U.S. Cl. 425—34.1 **5 Claims**



1. A vertically opening and closing type tire vulcanizer having a plurality of vulcanizing molds opposing each other, said vulcanizer comprising:

a common vulcanizer frame;

a horizontally extending top frame connected to a top portion of said common vulcanizer frame;

a lower mold installed on the base frame side and an upper mold installed on the side frame side of said frame so as to be vertically movable and open-and closable with respect to said lower mold wherein upper molds for each die pair of said split molds are disposed to be individually movable up and down through respective exclusive-use elevating cylinders mounted on said base frame;

a clamping mechanism for the upper and lower molds in each of split molds, said clamping mechanism being supported on a clamping force generating cylinder with a bottom surface of each lower mold being installed on said base frame;

a clamping rod having an upper end stood upright in a center portion of an elevating top slide of each upper mold;

a movable clamping plate arranged on said top frame and at an upper portion of each clamping rod for restraining an upper end portion of said clamping rod; and

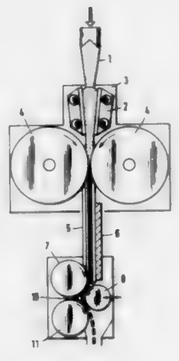
an adjustable clamping rod extension member for engaging said movable clamping plate.

4,804,319

PROCESS FOR COMPACTING IRON PARTICLES AND SUBSEQUENT BREAKING APART OF THE COMPACTED IRON BAND

Klaus Langner, Meerbusch-Osterrath, Fed. Rep. of Germany, assignor to Korf Engineering GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 924,016, Oct. 28, 1986, abandoned, which is a division of Ser. No. 833,042, Feb. 26, 1986, abandoned. This application Mar. 31, 1988, Ser. No. 175,628
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1985, 3509616
Int. Cl.[4] B22F *3/18*
U.S. Cl. 425—79 **8 Claims**



1. An apparatus for passivating and compacting of hot iron particles comprising:

a hopper for supplying metallized particulate;

band forming means for forming said metallized particulate into an elongate band product having a longitudinal axis;

said band forming means including a homogenizing and precompressing means located adjacent to said hopper and including

first means for applying a varying force to the metallized particulate flowing out of said hopper which force is in a direction transverse to the direction of product flow and which varies to a maximum force, and

roller mean for compacting the metallized particulate after it has left said first means into the elongate band, said roller means including two rollers which are located on opposite sides of the product flow direction and which rotate in opposite directions;

density varying means for varying the density of the elongate band and for defining a plurality of areas in said band, said areas extending transversely of the band longitudinal axis and being spaced apart from each other along the band longitudinal axis, said areas having a density which is reduced from the density of adjacent areas with the areas of reduced density forming desired breaking points of the elongate band, said density varying means including means for moving said first means towards said roller means at a time when the maximum force is applied to the metallized particulate at a speed that is unequal to the circumferential speed of said rollers; and

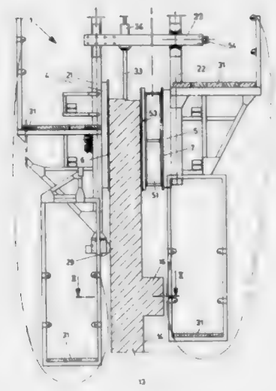
separating means located adjacent to said roller means and including at least three rotary rollers for bending the elongate band and breaking apart the elongate band at said desired breaking points.

4,804,320

SLIDING SHUTTERING DEVICE

Arnold Sommer, Kaarst, Fed. Rep. of Germany, and Richard Lienbacher, Golling, Austria, assignors to Gleitbau Gesellschaft Mit Beschränkter Haftung, Salzburg, Austria

Filed Dec. 12, 1986, Ser. No. 941,082
Int. Cl.[4] E04G *11/22*
U.S. Cl. 425—65 **11 Claims**



1. Sliding shuttering device for producing a reinforced concrete structure wall of annular horizontal cross section with integrally formed block brackets projecting from the structure wall, said sliding shuttering device comprising associated inner and outer piles adapted to extend substantially in a projection direction of the structure wall, an inner and an outer sliding shuttering arranged on the respective piles, pile cross members articulated to and connecting respective ones of said inner and outer piles, and a lifting device for continuously lifting said sliding shuttering device together with said piles, pile cross members, and said inner and outer sliding shuttering, wherein said sliding shuttering includes at least one integrated shuttering form means having a transverse cross-section substantially complementary to a transverse cross-section of a block bracket to be formed on the wall for forming said block bracket, the integrated shuttering form means having an open side channel facing the structure wall, a wall-side covering means received in said channel for covering said open side channel of the integrated shuttering form means in sliding regions wherein the structure wall is to be formed without a block bracket, said covering means being attachable in substantially aligned manner to the sliding shuttering adjacent the integrated shuttering form means in said sliding regions, and being detachable from the sliding shuttering for remaining stationary when the shuttering attains a level corresponding to an underside of said block bracket, a bottom shuttering means for fixing with respect to the structure wall when the shuttering attains the underside level of the block bracket to provide a lower surface to the shuttering form means for forming the underside of the block bracket, and wherein after said sliding shuttering has reached a top level of said block bracket, said covering means may again be attached to said sliding shuttering for covering said open side channel of said integrated shuttering form means.

4,804,321

SPREADER TOOL FOR CEMENTITIOUS MIX

Armando Riesgo, 11510 SW. 34th La., Miami, Fla. 33165

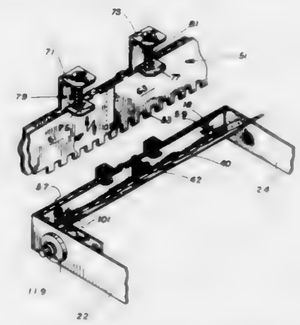
Filed Apr. 18, 1988, Ser. No. 182,855
Int. Cl.[4] B28B *19/00*
U.S. Cl. 425—87 **8 Claims**

1. A spreader tool for use in spreading a bed of predetermined thickness of cementitious mix on a floor surface prior to laying tiles,

said tool comprising:

an open topped and an open bottomed frame including a front wall, a rear wall and a pair of generally parallel opposing side walls, said walls each having a top, bottom, and inside and outside surfaces, the bottoms of said frame side and rear walls being generally coplanar and the bottom of said front wall being spaced above the bottoms of said side and rear walls a distance substantially equal to the thickness of the bed to be spread, said walls defining a cavity to receive a charge of said mix for movement of the charge within the walls over a floor surface,

handle connector means on said frame, and a handle extending upwardly away from said frame,



a rearwardly inclined septum extending upwardly within the frame and spanning the side walls, said septum having a top edge and a bottom edge, said septum bottom edge being parallel to the front wall and spaced above the coplanar side and rear wall bottoms defining a discharge mouth for material in the frame between the septum and side and rear frame walls for discharge as the spreader tool is moved over a floor surface, said septum bottom edge being closely adjacent said frame front wall a height substantially equal to the bed being spread,

rake means being resiliently carried on the frame between the front wall and septum and including a plurality of rake teeth each having a distal end and extending below said bottom edge of said front wall toward said coplanar side and rear wall bottoms to extend into a bed being laid to provide grooves therein.

4,804,322

DEEP-DRAWING MACHINE FOR MAKING THERMOPLASTIC CONTAINERS

Alfons Turtschan, Schwaebisch-Hall, Fed. Rep. of Germany, assignor to Benz & Hilgers GmbH, Duesseldorf, Fed. Rep. of Germany

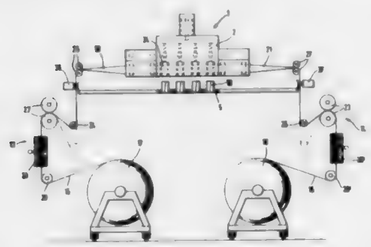
Filed Sep. 9, 1987, Ser. No. 94,948
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1986, 3636767
Int. Cl.[4] B29C *51/08, 51/16*
U.S. Cl. 425—117 **9 Claims**

1. In a deep-drawing machine for manufacturing containers out of thermoplastic foil material having banderole dispensing means which include cutting means for producing banderole strips, labels or the like and inserting same into reciprocally movably mounted hollow molds of a molding arrangement whose reciprocal movement is substantially perpendicular to the plane of said thermoplastic foil material, an improvement comprising,

said banderole dispensing means and cutting means being separately arranged from said molding arrangement; and

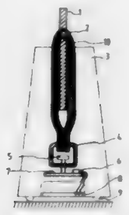
VOL 1099 ISS 2 FE 14 1989 UMI

transfer means being operatively mounted in said deep-drawing machine between said molding arrangement, on the one hand, and said banderole dispensing means and said cutting means, on the other hand;



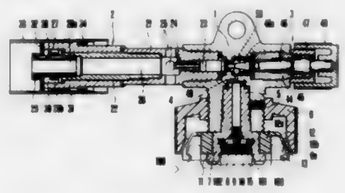
said transfer means include a dish which is rotatably mounted in said deep-drawing machine, the axis of rotation of said rotatable dish is substantially parallel to the longitudinal axes of the hollow molds of said molding arrangement.

4,804,323
MUSIC CANDLE
Kyung-Hee Kim, 10-tong, 3-ban, 41-4, Songpa-dong, Kangdong-ku, Seoul, Rep. of Korea
Filed Nov. 18, 1986, Ser. No. 932,168
Claims priority, application Rep. of Korea, Nov. 18, 1985, 85-15119
Int. Cl.[4] F23D *3/02;* **G10H** *1/18, 1/32*
U.S. Cl. 431—253 **9 Claims**



1. A musical candle comprising:
electronic circuit means housed within a candle for playing music upon activation by lighting a wick of said candle;
an optical fiber strand of synthetic resin being disposed in said candle adjacent an exposed end of said wick and being folded upon itself to block exterior light from entering said fiber
reflector means provided at a distal end of said optical fiber for concentrating light from said strand onto light sensor means in said electronic circuit means, whereby heat from lighting said wick melts said folded optical fiber to permit light from said lighted wick of said candle to activate said electronic circuit means to play music.

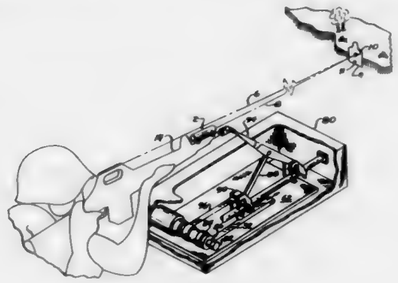
4,804,324
BURNER DEVICE
Sadao Yoshinaga, Ichikawa, Japan, assignor to Prince Industrial Development Co., Ltd., Tokyo, Japan
Filed Aug. 8, 1986, Ser. No. 894,797
Claims priority, application Japan, Aug. 12, 1985, 60-123630[U]
Int. Cl.[4] F23Q *7/10*
U.S. Cl. 431—255 **5 Claims**



1. A burner device comprising:
a burner body including a nozzle device at the front, a valve device at the rear thereof and a cylindrical connecting portion integrally formed at the lower side thereof;
a connecting member installed in said connecting portion to form a lower portion protruding from said connecting portion as an intake opening;
an injection stem inserted in said intake opening to protrude downwardly therefrom;
a cap-shaped holder having a ringlike portion capable of resiliently decreasing in diameter inserted around said lower portion and provided with a protrusion for latching with a fuel tank; and
a rotatable cap-shaped clamping member threaded to the outer periphery of said cylindrical connecting portion wherein said rotatable cap-shaped clamping member is located at the outer side of said cap-shaped holder, wherein
said rotatable cap-shaped clamping member interacts with said cap-shaped holder such that, when said rotatable cap-shaped clamping member is rotated toward the fuel tank, said rotatable cap-shaped clamping member urges said protrusion of said cap-shaped member into a corresponding recess in the fuel tank upon which the burner is to be mounted.

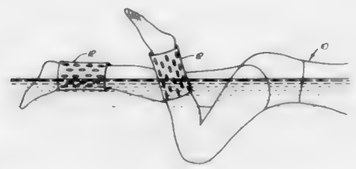
4. A burner device comprising:
a burner body having a cylindrical connecting portion at the lower side thereof, a nozzle device threaded into the front portion of said burner body, a valve device threaded into the rear portion of said burner body and a piezoelectric ignition device provided at the side of said burner body;
said nozzle device including a nozzle tube having a flow passage formed therethrough and forming a burner at the exit end of said nozzle tube,
said burner including
a pipe-shaped nozzle head which forms separately a main passage and a sub-passage from said flow passage of said nozzle tube,
an insulating cylinder mounted on said nozzle tube which serves as an electrode stand which surrounds said sub-passage, and
a discharge electrode at the side of said insulating cylinder connected with a lead wire of said piezoelectric ignition device; and wherein
said valve device includes
a cylinder threaded into the rear portion of said burner body,
a needle valve inserted into said cylinder,
a stopper member integral with said needle valve and threaded onto the rear portion of said cylinder, and
a valve operating device covering said stopper member, the inner end of said cylinder forming a valve seat into which the end of said needle valve is inserted.

4,804,325
WEAPON TRAINING SIMULATOR SYSTEM
Samuel P. Willits, Barrington; Thomas E. Kleeman, W. Dundee, and Steven F. Willits, Barrington, all of Ill., assignors to Spartanics, Ltd., Rolling Meadows, Ill.
Filed May 15, 1986, Ser. No. 863,465
Int. Cl.[4] G09B *9/00*
U.S. Cl. 434—22 **39 Claims**



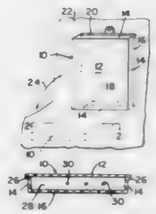
1. A weapon training simulator system for hand held weapons comprising
means for displaying one or more targets and generating digital output data indicative of target characteristics,
a weapon aimable at said displayed targets, said weapon including firing sensor means,
a weapon aim sensor system movable with said weapon having output signals indicative of the alignment of said weapon relative to said displayed target,
aim data converter means to convert said weapon aim sensor system output signals to digital x-y coordinate data,
computer means connected and responsive to the outputs of said firing sensor means and said aim data converter means and said target characteristics output signals to combine and store said outputs as digital data, and
display means connected to said computer means for generating a display of said digital information.

4,804,326
SWIMMING INSTRUCTION AND TRAINING AID
Paul R. Lennon, 2734 Auburn St., Los Angeles, Calif. 90039
Filed Jan. 15, 1987, Ser. No. 3,477
Int. Cl.[4] A63B *69/12*
U.S. Cl. 434—254 **5 Claims**



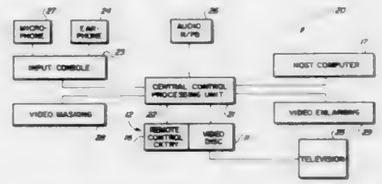
1. A swimming instruction and training aid, comprising:
a compact, lightweight flotation device for fitting over the ankle of a swimmer, having an axial length exceeding its diameter and being formed from a substantial thickness of cellular synthetic rubber material formed into a hollow, approximately cylindrical sleeve, and a covering of hard-wearing fabric adhered to the inner and outer surfaces of the sleeve, having a plurality of elongated slits formed through the walls of the sleeve, the slits being parallel to the longitudinal axis of the sleeve and in a configuration in which the slit positions are staggered in position from one row to the next to increase its stretchability and facilitate its fitting and removal over the foot, wherein the multiple perforations are separate and not connected with each other, to maintain the structural integrity of the material while still facilitating longitudinal and circumferential stretching, and whereby the device provides sufficient buoyancy to lift the swimmer's legs to a near-horizontal position without effort by the swimmer.

4,804,327
MAGNETIC TRACING APPARATUS
Sidney H. Miller, 850 E. Louther St., Carlisle, Pa. 17013
Filed Feb. 2, 1988, Ser. No. 151,543
Int. Cl.[4] G09B *19/00*
U.S. Cl. 434—409 **45 Claims**



1. A tracing apparatus comprising in combination, an enclosure of geometric configuration and having at least one transparent surface area, said enclosure containing pulverulent nonmagnetic particles disposed to adhere to the inner surface of said area admixed with magnetically attractive fragments, a permanent magnetic tracing device slidably movable over the outer surface of said area of said enclosure and attracting certain of said magnetically attractive particles toward said device as it is moved over said area and cause the magnetically attractive particles attracted thereto to move along the inner surface of said enclosure and remove from said inner surface a pattern of said nonmagnetic particles to form a design image where the attracted particles removed the nonmagnetic particles from the inner surface of said surface area, and means supporting said enclosure for rotation about an axis when it is desired to remove said pattern from the inner surface of said enclosure and re-establish a substantially uniform layer over the inner surface of said enclosure a continuous layer of said mixture of nonmagnetic and magnetically attracted particles and fragments.

4,804,328
INTERACTIVE AUDIO-VISUAL TEACHING METHOD AND DEVICE
Kent P. Barrabee, 650 Windward Cir., Tucson, Ariz. 85704
Filed Jun. 26, 1986, Ser. No. 878,636
Int. Cl.[4] G09B *5/06*
U.S. Cl. 434—308 **43 Claims**



1. A method for teaching a student through the student

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controlled interaction of the student and an information storage and retrieval device, comprising the steps of:

a. providing a storage device having stored therein at least one of video, audio, and digital information;
b. providing the storage device with a user-interactive playback system for student user-determining the exact sequence and display of information output by the playback system;
c. providing a control computer for
(i) controlling all phases of operation of the storage device,
(ii) processing externally and internally stored command functions, and
(iii) processing control and status signals internally generated within the storage device's user-interactive playback system;
d. loading student controlled, student user interactive programs into said computer from at least one of
(i) programs stored in the storage device,
(ii) manual actuation of a remote control unit coupled to said playback system, and
(iii) programs stored in a host computer coupled to said playback system;
e. providing a video display device for selectively displaying video information stored in the storage device;
f. providing an audio reproduction device for selectively reproducing the audio information stored in the storage device;
g. selectively displaying and reproducing information, stored in said storage device, in a student determined skill-level-ordered sequence of lessons;
h. displaying and reproducing information, stored in said storage device, in student selected skill-level-ordered segments of a selected one of said lesson sequences;
i. interacting with said displayed and reproduced information in at least one of the following ways under student control:
(i) advancing from a first segment of a selected lesson sequence to a second segment,
(ii) selectedly repeating a segment,
(iii) selectedly retreating from an instant segment to an earlier segment,
(iv) controlling the speed at which information is presented within a given segment,
(v) controlling the speed at which a given sequence of segments is presented,
(vi) controlling the amount of stored information within given segments and sequences to be displayed and reproduced at any instant; and
(vii) selectedly grouping segments which may then be presented in a continuous manner.

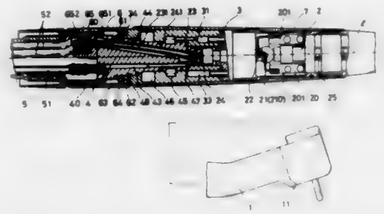
4,804,329

CONNECTING DEVICE FOR AN ILLUMINANT HANDPIECE

Shozo Nakayama, Muko, and Shinichiro Madenokoji, Yahata, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed May 14, 1987, Ser. No. 50,538
Claims priority, application Japan, May 16, 1986, 61-74476[U]
Int. Cl.⁴ H01R *39/02*
U.S. Cl. 439—20 **4 Claims**

1. A connecting device for an illuminated handpiece comprising a head section provided at the front end of said handpiece, a grip section extended to said head section, an illumination lamp built in said grip section to irradiate light from said head section via an irradiation section, passages built in said grip section to flow working media such as water and air, and a connecting block which includes electric power supply terminals, and passages for working media, and is connected to the rear end of said grip section, characterized in that said connecting device is adapted such that at least one of two electrical connections of electric power receiving terminals of said illumination lamp and of said electric power supply terminals is performed by fitting at a position close to the axis of said grip section almost symmetrically about said axis, and an other of the two electrical connections of the electric power receiving terminals and of the electric power supply terminals is performed by abutting coaxially about said axis so as to permit a mutual rotation of said electric power receiving terminals and said electric power supply terminals around said axis while maintaining both of said electrical connections.

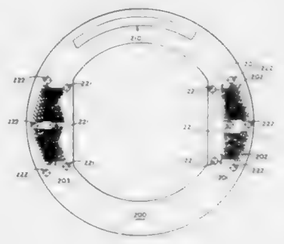


4,804,330

HERMETIC, VACUUM AND PRESSURE TIGHT ELECTRICAL FEEDTHRU

Maciej J. Makowski, Santa Ynez, and Frank M. Boyd, Saugus, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 14, 1987, Ser. No. 49,380
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 439—76 **7 Claims**



1. An electrical feedthru for use with a vessel which has walls that maintain a pressure differential in its interior with respect to its ambient environment, said electrical feedthru demountably connecting an interior set of electrical cables to an exterior set of electrical cables while maintaining said pressure differential by avoiding leakage, said electrical feedthru comprising:

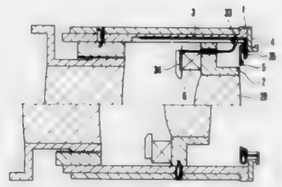
a ceramic circuit ring which circumscribes the walls of said vessel, and which has an inner circumference which extends into the interor of said vessel, and an outer circumference which is exterior to said vessel;
a first set of electrical contacts which are distributed about the inner circumference of said ceramic circuit ring, said first set of electrical contacts demountably connecting with said interior set of electrical cables;
a second set of electrical contacts which are distributed about the outer circumference of said ceramic circuit ring, said second set of electrical contacts demountably connecting with said exterior set of electrical cables;
a plurality of filaments which are fixed on said ceramic circuit ring, each of said plurality of filaments electrically connecting one of said first set of electrical contacts with one of said second set of electrical contacts; and
a means for hermetically sealing said ceramic circuit ring to the walls of said vessel.

4,804,331

DEVICE FOR INSTALLING PRINTED CIRCUIT BOARD

Masaharu Eguchi; Yutaka Fujiwara; Haruhiko Yamanouchi, and Jun Terashima, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1987, Ser. No. 134,976
Claims priority, application Japan, Dec. 27, 1986, 61-200442[U], Dec. 27, 1986, 61-200443[U]
Int. Cl.⁴ H01R *9/07*
U.S. Cl. 439—162 **9 Claims**



1. A device for electrically connecting first and second members movable relative to each other, comprising a flexible printed circuit board located between said first and second relatively movable members,

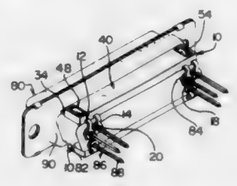
said flexible printed circuit board having a first side piece and a second side piece divided by a cutout made in said flexible printed circuit board,
one of said first and second side pieces being bent about 180° in the direction of the relative movement of the first and second members to form a turned "U" shaped portion,
said first side piece having its free end portion fixed to said first member and said second side piece having its free end portion fixed to said second member, so as to absorb displacement of said printed circuit board resulting from the relative movement of said first and second members by movement of said "U" shaped portion.

4,804,332

FILTERED ELECTRICAL DEVICE AND METHOD FOR MAKING SAME

Douglas J. Pirc, Etters, Pa., assignor to Amp Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 98,725, Sep. 15, 1987, abandoned, which is a continuation of Ser. No. 946,476, Dec. 24, 1986, abandoned. This application Jul. 25, 1988, Ser. No. 225,652
Int. Cl.⁴ H01R *13/66*
U.S. Cl. 439—620 **26 Claims**



1. An electrical component for being secured to an electrical article and electrically engageable to circuit paths thereof, for filtering said circuit paths comprising:

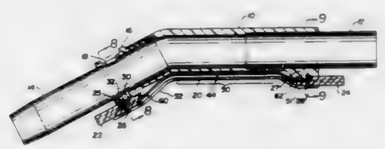
a plurality of contact members having first and second contact portions, said first contact portions being engageable with corresponding contact sections of said circuit paths of said article;
housing means to which said contact members are secured, said housing means including a plurality of filter receiving apertures along a face thereof, said second contact portions being exposed along a bottom surface of respective said apertures;
third contact portions paired with said second contact portions and spaced therefrom, said third contact portions being exposed along respective said bottom aperture surfaces;
bus means secured to said housing means and extending from said third contact portions, said bus means being adapted to be engaged by grounding means;
a plurality of filter members disposed in respective apertures and electrically joined to respective pairs of said second and third contact portions, and
connecting means for electrically connecting said first contact portions to terminal members of said electrical article;
whereby when said first contact portions are engaged with respective terminal members of said electrical article and said bus means is engaged to said grounding means, said filter means provides filtering protection for said electrical article.

4,804,333

ELECTRIFIED VACUUM CLEANER HOSE ADAPTER

Joseph Genoa, Freeport; Harold Kaskel, Long Beach, both of N.Y., and Carl Nelson, Wyckoff, N.J., assignors to Atlantic Vacuum Parts Corp., Long Beach, N.Y.

Continuation of Ser. No. 675,949, Nov. 28, 1984, Pat. No. 4,652,063. This application Mar. 20, 1987, Ser. No. 28,714
The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.
Int. Cl.⁴ H01R *4/64*
U.S. Cl. 439—191 **16 Claims**



1. An electrified vacuum cleaner hose adapter for interconnecting an electrified vacuum cleaner hose with an electrified wand or accessory, comprising:

a generally tubular main handle member (10) comprising a first generally tubular portion integral with a second generally tubular portion, said first and second tubular portions having respective longitudinal axes which are at an angle with each other;
a tubular inlet member (12) at one end portion of said first tubular portion and which is receivable in an opening of an electrified vacuum cleaner hose;
a tubular outlet member (14) at one end portion of said second tubular portion and which is receivable in an opening of an electrified vacuum cleaner wand or accessory;
first electrical connector means (24) connected to the one end portion of said first tubular portion adjacent said inlet member (12) and having electrical contacts for matingly and electrically connecting with an electrical connector of said electrified vacuum cleaner hose;
second electrical connector means (22) connected to the one end portion of said second tubular portion adjacent said outlet member (14) and having electrical contacts for matingly and electrically connecting with an electrical connector of said electrified wand or accessory;
a pair of electrical conductors extending between and electrically connecting said first and second electrical connector means;
an elongated projecting member (20) fixedly coupled to said main handle member and having a protruding portion protruding from a lower side of said main handle member

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over at least a substantial portion of the length of said main handle member and extending between said first and second electrical connector means and defining a covered passage between said first and second electrical connector means, said electrical conductors extending within said covered passage so as not to be exposed to the outside of said covered passage, said protruding portion of said projecting member (20) at least partly defining said covered passage and also defining a manually grippable, slip resistant portion (50) over a predetermined portion of the length of said protruding portion, said slip resistant portion (50) extending substantially along said first tubular portion for engagement with a user's hand when a user's hand is gripped around said first tubular portion of said adapter;

said projecting member (20) having connector receiving and engaging means at each opposite end thereof, for receiving and engaging said first and second electrical connector means, respectively, and in cooperation with said main handle member, for fixedly maintaining said first and second electrical connector means in a fixed position; and

elongated connecting means (26,28) at each opposite end of said projecting member and passing through said projecting member, through a respective one of said electrical connector means and at least partially through said main handle member to fix said projecting member and said electrical connector means relative to said main handle member;

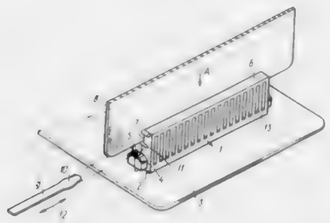
said elongated projecting member (20) being thereby fixedly coupled to said main handle member such that it is immovable relative to said main handle to positively prevent said elongated projecting member (20) and said electrical connector means from moving circumferentially around said main handle member during use, thereby maintaining structural integrity, grippability and safety during use.

4,804,334

ZERO INSERTION FORCE ELECTRICAL CONNECTOR

Boris V. Alexeenko, Poselok Balabino, ulitsa Shkolnaya, 90, Zaporozhskaya Oblast, and Gennady V. Nikolaenko, Prospekt Lenina, 38, kv. 42, Zaporozhie, both of U.S.S.R.

Filed Jul. 13, 1987, Ser. No. 72,341
Claims priority, application U.S.S.R., Jul. 14, 1986, 4091261
Int. Cl.[4] H01R *9/09*
U.S. Cl. 439—260 2 Claims



1. A zero insertion force electrical connector comprising:

an insulator housing having a top wall, a lower wall and side walls;

a longitudinal slot in said top wall of said housing for receiving a member being switched, said side walls of said housing having recesses;

elastic contacts placed in said recesses and having inner end faces, said housing having a longitudinal passageway;

a key ensuring opening of said elastic contacts during its movement in said longitudinal passageway in one direction and closure of said elastic contacts during its movement in the opposite direction, said key being in the form of a rod, said rod having one at least one ellipsoidal projection provided on at least one end portion of said rod which has opposing lateral curved edges symmetrical with respect to the longitudinal axis of said rod and cooperating with said inner end faces of said elastic contacts when said key is moved;

a wall of each of said recesses facing towards said end portion of said rod when said key is moved in said direction in which opening of said elastic contacts is provided; and

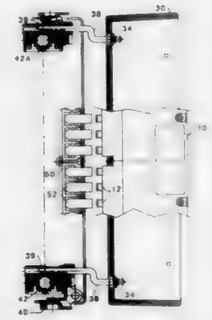
projections provided on said wall of each of said recesses and disposed on both sides of said longitudinal slot of said top wall of said housing; an outer periphery of said projections being embraced by said inner end faces of said elastic contacts when they are open.

4,804,335

MASS INTERCONNECT SYSTEM

Roy E. Pennington, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 29, 1987, Ser. No. 44,084
Int. Cl.[4] H01R *9/09*
U.S. Cl. 439—64 17 Claims



1. An interconnect system for connecting and disconnecting a bank of electrical connectors to and from the electrical leads of a printed circuit card supported in a mainframe card cage of the type including an opening on one face thereof, wherein said electrical leads are accessible at said opening, said interconnect system comprising:

(a) a frame assembly attached to and supported by said mainframe card cage at said opening;

(b) a plurality of retractable support members carried by said frame assembly;

(c) arm means carried by said frame assembly, said arm means being pivotable between first and second positions, said arm means being adapted to move said support members outwardly from said frame assembly when said arm means is in said first position, and said arm means being adapted to move said support members inwardly toward said frame assembly when said arm means is in said second position; and

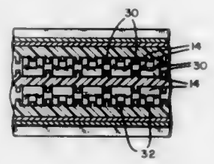
(d) module means for carrying said bank of electrical connectors, wherein said module means is adapted to be attached to said retractable support members in a manner such that said electrical connectors are aligned with and couple to said electrical leads when said arm means is moved from said first position to said second position.

4,804,336

DOUBLE FIFTY PLUG-SOCKET CONNECTOR

Michael A. Miller, Burnsville, and Robert A. Lidholm, Robbinsdale, both of Minn., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Oct. 9, 1987, Ser. No. 107,233
Int. Cl.[4] H01R *27/00*
U.S. Cl. 439—218 12 Claims



1. A male plug connector of the miniature type, particularly adapted to mate with a female socket connector of the miniature type for use with printed circuit boards and the like, said male plug connector comprising: a plurality of plug-type contact elements in the form of electrically conductive sheet metal; an insulative support member rigidly supporting said contact elements in two groups, said support member forming an elongated relatively narrow support strip in which an intermediate portion of each contact element is rigidly embedded so that a terminal portion of each contact element is disposed at one side of said support strip and a contact portion of each contact element is disposed at an opposite side of said support strip, said support member further having a plug portion extending from said opposite side of said support strip, said plug portion aligning the contact portions of the contact elements of each of said groups; first spacer means extending from said plug portion for separating the contact portions of each group into pairs; and second spacer means extending from said plug portion for separating the contact portions of each of said pairs, said second spacer means extending from said plug portion by a distance less than said first spacer means; said male plug connector being adapted to mate with a female socket connector having the same number of contact elements as said male plug connector by establishing electrical connection between respective ones of the contact elements of the male plug connector and respective ones of the contact elements of the female socket connector, and being adapted to mate with a female socket connector having one-half the number of contact elements as said male plug connector by establishing electrical connection between respective pairs of the contact elements of the male plug connector and respective ones of the contact elements of the female socket connector.

4,804,337

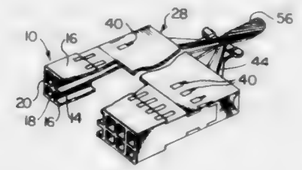
ELECTRICAL CONNECTORS

Leslie Sebastien, Cote St. Luc; Andre Jelwan, and Gaetan Dube, both of Montreal, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 23, 1987, Ser. No. 112,321
Int. Cl.[4] H01R *13/58*
U.S. Cl. 439—449 19 Claims

1. An integral one-piece cover of insulating material for covering open sides of open-sided parts of two banks of passageways on opposite sides of an electrical connector housing, the open sides facing in opposite directions from one bank to the other, the cover comprising two generally planar cover portions for closing the open sides of the open-sided parts of the passageways, the cover portions hingedly movable towards and away from one another along a hinged edge of each cover portion with each cover portion extending from its hinged edge to a free edge, the hinging movement being into and out of positions in which the cover portions face one another, and in which:

each cover portion is resiliently flexible, is formed along its free edge with spaced apart projections for engagement with closed-sided parts of the passageways of the housing, and between its edges is formed with apertures spaced apart in a direction parallel to its edges for receiving



extensions of passageway defining walls of the housing; and

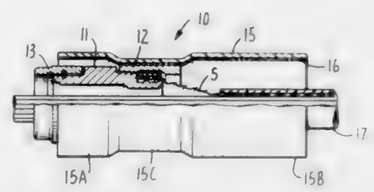
with the cover portions facing one another, the cover provides an opening for passage of a cable between the cover portions.

4,804,338

BACKSHELL ASSEMBLY AND METHOD

Gary L. Dibble, Canoga Park; James H. Reynolds, and Susan L. Stene, both of Santa Clara, all of Calif., assignors to Sigmaform Corporation, Santa Clara, Calif.

Filed Mar. 20, 1987, Ser. No. 28,491
Int. Cl.[4] H01R *13/648*
U.S. Cl. 439—583 16 Claims



1. A backshell assembly for connecting an electrical cable to other electrical devices comprising, in combination:

a hollow cylindrical body member having a first end for attachment to the other electrical device and a second end;

a hollow cylindrical nut having an outside surface, a first end for attachment to said second end of said body member and a second end; and

a hollow cylindrical, heat shrinkable tube surrounding said nut and extending axially beyond both said first and said second ends of said nut, the interior surface of said tube being bonded to said outside surface of said nut before the nut is assembled to said body member and before the axial extensions are shrunk onto the body member and the electrical cable

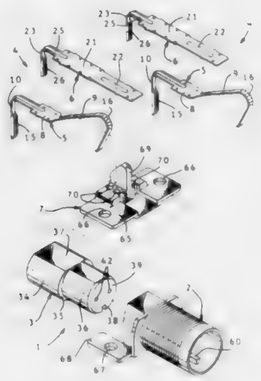
whereby said body member and said nut can be attached together and to the cable and the other device and the extensions of said tube shrunk down onto said body member and the cable.

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4,804,339
CONNECTOR WITH COMPRESSIBLE INSULATIVE BODY

Thomas S. Cohen, Wormleysburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 25, 1987, Ser. No. 101,046
Int. Cl.[4] H01R *13/40*
U.S. Cl. 439—588 **17 Claims**



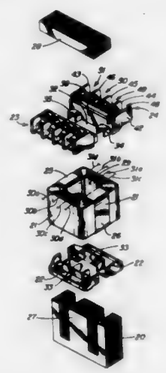
1. An electrical connector assembly comprising;
a rigid shell encircling an insulative body,
a passage extending along the insulative body,
conductive electrical contacts extending along the passage,
electrical contact portions and electrical terminals on corresponding electrical contacts,
cavities in an end portion of the insulative body extending axially of the body and communicating with the passage,
bases of the contacts in the end portion of the insulative body extending axially along corresponding cavities,
the end portion of the insulative body is compressed by the encircling shell,
the cavities are closed by compression of the end portion of the insulative body against the bases of the contacts to resist withdrawal of the bases from the cavities,
at least one of said contact portions is resilient and is in compression against an interior wall of the forward portion of the insulative body, the resilient portion is constructed for movement in the passage toward and away from another of the contact portions, and the resilient portion is constructed for said movement by deflection while in compression against the interior wall,
and an opening in the insulative body for receiving an electrical contact of a complementary connector for deflecting the resilient portion away from said another of the contact portions.

4,804,340
PLASTIC MOLDED TERMINAL BLOCK ASSEMBLY FOR A TRANSFORMER

William H. Hamer, Guelph, and Harry H. Barber, Elora, both of Canada, assignors to Hammond Manufacturing Company Limited, Canada

Filed Sep. 8, 1986, Ser. No. 904,624
Int. Cl.[4] H01R *9/24*
U.S. Cl. 439—709 **24 Claims**

1. A terminal block for use in a transformer including a coil and a core extending through the coil, said block being molded from a plastic material and comprising a row of terminal receiving bays at a normally upper surface thereof, said block being provided with a normally downwardly dependent skirt portion integral with the block and protruding from a normally lower surface of the block, said skirt portion having a generally U-shaped configuration complementary with a gap between the coil and the core of an associated transformer, whereby,

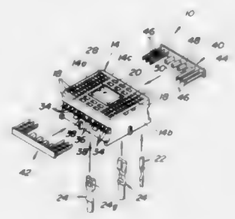


with the block being applied, the skirt portion can be inserted into the gap to provide a required creepage distance between the coil and the core.

4,804,341
ELECTRICAL CONNECTOR

Shinichi Kato, Fujisawa, and Shigemitsu Inaba, Gotemba, both of Japan, assignors to Nissan Motor Co., Ltd. and Yazaki Corporation, both of, Japan

Filed Feb. 10, 1987, Ser. No. 14,373
Claims priority, application Japan, Feb. 14, 1986, 61-29074
Int. Cl.[4] H01R *13/436*
U.S. Cl. 439—733 **6 Claims**



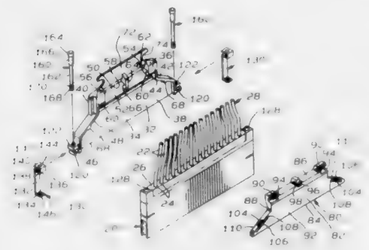
1. A connector part for a multi-way electrical connector comprising:
a connector housing having at least two kinds of substantially parallel terminal passages, said terminal passages being arranged in a plurality of generally parallel rows such that substantially each row includes the same kind of terminal passages;
at least two kinds of terminals received in the corresponding two kinds of terminal passages, respectively, and each terminal having an electrical contact portion, a connecting portion for connection with a conductive lead and a transition portion between said electrical contact portion and said conductive lead connecting portion;
each of said terminal passages having an intermediate portion between the opposite ends thereof for receiving said transition portion of said terminal;
said terminals being respectively formed with windows and said terminal passages being provided with latching arms engaged in said windows to latch said terminals when said terminals are inserted into position;
said at least two kinds of terminals being arranged so that the

electrical contact portion of substantially each terminal of one kind and the electrical contact portion of substantially each terminal of the other kind, when extended in their respective width directions by imaginary planes respectively coplanar with said electrical contact portions, intersect at substantially right angles to each other;
said housing being formed with a plurality of retainer passages extending at substantially right angles to said terminal passages, said retainer passages being arranged in generally parallel rows and in such a manner that each retainer passage passes through the intermediate portions of said terminal passages of each row; and
a retainer having a plurality of retainer pins inserted into said retainer passages and engaged with said transition portions of said terminals in such a manner as to prevent movement of said terminals in a rearward, withdrawal direction.

4,804,342
CABLE STRAIN RELIEF FOR MODULAR CONNECTOR

William J. Rudy, Jr., Annville; Howard R. Shaffer, Millersburg, and Daniel E. Stahl, Dauphin, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 24, 1987, Ser. No. 42,203
Int. Cl.[4] H01R *13/58*
U.S. Cl. 439—467 **18 Claims**

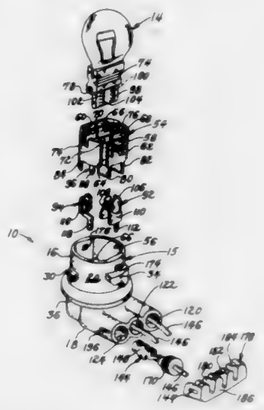


1. A cable strain relief assembly for an electrical connector having extending therefrom a plurality of electrical conductor cables terminated to terminals of the connector, for relieving strain on the terminations transmitted by the array of conductor cables, comprising:
first cover means joined to a connector and extending rearwardly from a cable face of said connector at least along a first major side of an array of conductor cables extending rearwardly from said connector cable face, said first cover means including a forward end at said cable face, a rearward end and lateral sides, and further including a cable side and an outer surface opposed therefrom; and
second cover means to be disposed along a second major side of said cable array opposed from said one major side and having a forward end, a rearward end, lateral sides, a cable side and an outer surface opposed therefrom;
said first cover means including a pivot means along said cable side proximate said rearwardly end thereof, and said second cover means including hook means proximate said rearward end thereof associated with and pivotable around said pivot means in bearing engagement therewith during securing of said second cover means to said first cover means, said second cover means including a clamping surface portion on said cable side adapted to be cammed into engagement with said cable array disposed between said first and second cover means upon securing thereof together, whereby said cable array is clamped by said clamping surface portion against cable-engaging portions of said first cover cable side substantially opposed therefrom when said second cover means is pivoted from a first orientation not engaged with said cable array to a second orientation clampingly engaging said cable array.

4,804,343
LAMP SOCKET ASSEMBLY

Patrick J. Reedy, Youngstown, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 11, 1988, Ser. No. 179,772
Int. Cl.[4] H01R *19/00*
U.S. Cl. 439—854 **9 Claims**



1. A lamp socket assembly including a plastic socket body having a tubular portion for receiving a socket insert along a first axis and having a connector portion for receiving a plurality of female wire terminals along a second axis which is substantially perpendicular to the first axis, said socket insert having a front end provided with a feed terminal and a ground terminal for electrical engagement with the contacts of a lamp bulb, each of said terminals having an integral blade member projecting outwardly from the rear end of said socket insert along axes substantially parallel to the longitudinal center axis of said socket insert, and said connector portion having spaced cavities formed therein for receiving said wire terminals along axes parallel to said second axis and for positioning said wire terminals in the socket body so when said socket insert is axially inserted into said tubular portion along said first axis, said blade member of each of said feed terminal and said ground contact mate with said wire terminals for providing electrical current to said lamp bulb.

4,804,344
CABLE CONNECTOR AND CRIMPING TOOL THEREFOR

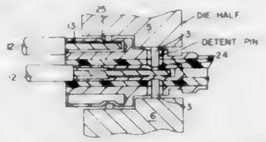
Victor L. Salvador, Mamaroneck, and John A. Triunfo, Yonkers, both of N.Y., assignors to Kings Electronics Co., Inc., Tuckahoe, N.Y.

Filed Jul. 16, 1987, Ser. No. 74,135
Int. Cl.[4] H01R *4/10*
U.S. Cl. 439—877 **4 Claims**

1. A cable connector comprising an outer body, a center contact, and an insulator between said contact and said body, said contact adapted to receive a center wire, at least two off-center holes in said outer body extending substantially parallel to said center contact and located adjacent an external

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surface of said outer body, said off-center holes adapted to receive an outer wire, said center contact and said external



surface adapted to be crimped by a center crimp pin and an outer crimp pin, respectively, both carried by a crimping tool.

4,804,345

EQUIPMENT FOR TOWLESS SKIING ON WATER SURFACE

Jong S. Lee, #1-38, Choong-ku, Apt. D-408, Daejeon, Choongnam, Rep. of Korea

Filed Mar. 12, 1987, Ser. No. 25,261

Claims priority, application Rep. of Korea, Mar. 17, 1986, 3184[U]; Sep. 15, 1986, 14296[U]; Nov. 29, 1986, 16897; Nov. 29, 1986, 16898

Int. Cl.[4] A63C *15/03*

U.S. Cl. 440—21 **20 Claims**



1. Equipment for towless skiing on water surface, said equipment including a pair of propulsion sticks, each stick comprising:

a rod;

a hand grip located at a first end of said rod; and

a water-buoyant member located at a second end of said rod, said buoyant member defining a truncated conical part attached to said rod, a conical part, and a cylindrical part between said conical part and said truncated conical part, said conical part protruding from said cylindrical part.

4,804,346

OPEN MOUTH BLOWING BUBBLE TOY

Lin M. Sheng, No. 195, Chieng-Kou Rd., Hsintien Shih, Taipei Hsien, Taiwan

Filed Nov. 4, 1987, Ser. No. 116,688

Int. Cl.[4] A63H *33/28*

U.S. Cl. 446—17 **2 Claims**

1. a bubble toy comprising:

a body having a head and mouth, said mouth comprising a lower jaw integral with said body, and an upper portion including an upper jaw,

said upper jaw having a depending flange disposed within said mouth so that when said upper jaw is closed against said lower jaw said depending flange will extend into said lower jaw, and said lower jaw defining a hollow reservoir;

said upper jaw and pivotally mounted head having a depending flapper member integral therewith and disposed distally to said depending flange, within said body;

a cylinder and a piston slidably mounted therein;

a blow pipe extending through said body into one end of said cylinder and an exit port in said cylinder disposed adjacent an end opposite said blow pipe;

a rod mounted on said piston and extending through the end of said cylinder opposite said blow pipe, the end of said rod engaging said depending flapper member;

a nozzle extending from a port in the rear of said movable head member toward said mouth;

said body defining an air channel placing the interior of said cylinder in communication with the nozzle port in said head only when said mouth is open whereby when air is admitted to the cylinder said piston will be driven backwardly and said rod will cause pivotal movement of said



head by displacing said flapper member to open said mouth whereupon air from said cylinder will travel through said air channel and through said nozzle exiting the open mouth of the device thereby when bubble blowing liquid is in said reservoir, a film will be formed across said mouth which will produce bubbles when said mouth is open.

4,804,347

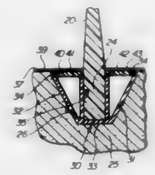
SURFBOARD FIN MOUNT

Melvin C. Ross, 34822 Camino Capistrano, Capistrano Beach, Calif. 92624

Filed Jan. 28, 1987, Ser. No. 7,955

Int. Cl.[4] A63C *15/05*

U.S. Cl. 441—79 **10 Claims**



1. For use in permanently securing a surfboard fin having a base portion to a surfboard wherein the surfboard defines a bottom surface and an elongated recess having a side surface and a top surface at the desired location of the surfboard fin, a surfboard fin socket comprising:

an elongated housing defining an upper surface, a side surface joined thereto, said upper and said surfaces being configured to be received within the elongated recess of the surfboard;

an outwardly extending flange forming a portion of a lower surface of said housing; and

an elongated internal cavity within said housing extending above said flange and configured to receive the base portion of the surfboard fin in an adhesive bonding attachment.

4,804,348

ANIMATED TOY PUPPET THEATER

Francesco Bondi', Vicolo Razionale 7/A, 90133 Palermo, Italy

Filed Aug. 5, 1987, Ser. No. 81,520

Int. Cl.[4] A63J *19/00*; **A63H** *11/00*

U.S. Cl. 446—83 **19 Claims**

1. Animated toy puppet theater comprising,

at least one box-like frame,

at least one top surface defined by said box-like frame,

at least one hole formed in said top surface,

at least one rear panel defined by said box-like frame and

being arranged substantially perpendicular to said top surface,

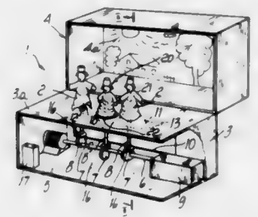
at least one puppet having at least one head, and at least one hollow body, said hollow body being made of flexible material and connected to said head and to said top surface of said box- like frame.

at least one rod connected to said head,

at least one lower portion defined by said rod and extending through said hole into said box-like frame below said top surface,

at least one motor connected to said box-like frame and adapted for generating motion,

transmission means adapted for transmitting said motion



generated by said motor for automatically causing movement of said rod with respect to said top surface of said box-like frame,

means for permitting manual movement of said rod with respect to said top surface of said box-like frame,

guide means adapted for guiding said movement of said rod with respect to said top surface of said box-like frame,

at least one cover pivotally connected to said box-like frame and being adapted for defining at least one open position,

at least one internal surface defined by said cover and being adapted to lie substantially perpendicular to said top surface in said open position of said cover, and,

at least one background panel defined by said internal surface.

4,804,349

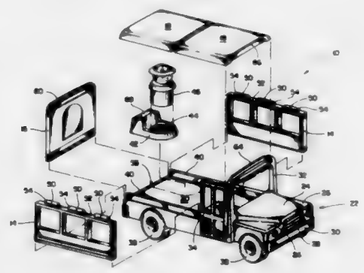
RECONFIGURABLE TOY

Dominick Loscalzo, Whitestone; Bruce M. Scott, Fort Salonga, both of N.Y.; Lawrence O. Freese, Providence, and Augusto A. Picozza, Johnston, both of R.I., assignors to Dart Industries, Inc., Deerfield, Ill.

Filed Jul. 31, 1987, Ser. No. 80,043

Int. Cl.[4] A63H *17/00, 3/52*

U.S. Cl. 446—93 **4 Claims**



1. A reconfigurable toy comprising:

a frame member having a plurality of rotatable wheels supported thereon simulating the chassis and running gear of a vehicle;

a pair of side walls and a rear wall supported around the periphery of said frame member defining therebetween an interior bounded space;

a roof member supported on said side walls;

a plurality of seat members positionable on said frame member within said interior space;

a plurality of figurines positionable on said seat members;

said side walls each having a recess along a lower edge thereof and said frame member having a pair of upstanding wall segments receivable within said recesses to support said side walls on said frame member in an upright disposition; and

said lower edges of said side walls and an edge portion of said roof member being flat for permitting said side walls and roof member to be free standing in an upright disposition when placed upon a surface member;

wherein said side walls and roof member are removable from said frame member and are positionable on a surface member to form simulated walls of a room enclosure.

4,804,350

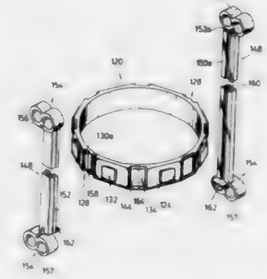
POLYGONAL RING-LIKE TOY BUILDING BLOCK HAVING MEANS FOR INTERCONNECTING PLURAL BLOCKS TOGETHER IN DIFFERING ORIENTATIONS, AND ELONGATE STACKING MEMBERS FOR STACKING PLURAL BLOCKS FOR STORAGE

Chen-Tsung Chen, No. 15 Alley 2, Fengyuan, Taichung, Taiwan

Filed Aug. 20, 1987, Ser. No. 87,363

Int. Cl.[4] A63H *33/06, 33/08*

U.S. Cl. 446—127 **11 Claims**



1. A toy building block comprising:

a short hollow cylindrical ring-like block element having a circular inner peripheral wall, an outer peripheral wall having a regular polygonal perimeter, and top and bottom surface joining said inner and outer peripheral walls, said outer peripheral wall having a plurality of straight side faces;

a plurality of connector elements each singularly provided on one of plural first selected side faces of said outer peripheral wall, each of said connector elements including a vertical square dovetail projection having a square front face projected radially outwardly from and joined to said one side face by side walls on top, right, bottom and left sides of said front face, said side wall all mutually converging radially inwardly from said front face to said first side face; and

a plurality of socket elements each singularly provided in one of plural second selected side faces of said outer peripheral wall, each of said socket elements including a square dovetail socket recessed into said one side face and opening upwardly through said top surface and radially inwardly through said one side face, said socket having a square vertical back face recessed from said one side face, said back face being bounded on its right, bottom and left sides by side wall which all mutually converge radially

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outwardly from said back face to said second side face, the size and configuration of each said connector element and socket element being complementary for permitting said connector elements to be inserted and accommodated snugly in said socket elements for connecting like ones of said building blocks together in horizontal as well as intersecting relative orientation with each other and with the respective sides faces thereof in abutting relation at points of connection therebetween, each said socket element being provided with a transverse protruding retainer means provided on said back face to each said socket element for providing a snap fit with connector elements of like blocks inserted in said socket elements, and

a pair of vertical dovetail chutes each formed in one of a pair of third side faces of said outer peripheral wall, each said chute having a recessed vertical inner wall extending between said top and bottom surfaces of said block element, and having side walls mutually diverging radially outwardly from said recessed vertical inner wall to said third side face, and further having a vertically extending rib formed centrally on said vertical inner wall and protruding radially outwardly therefrom,

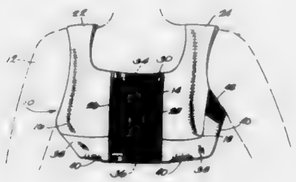
and wherein said outer peripheral wall has sixteen side faces, said third side faces being diametrally opposite one another and bounded on each side by one of said first side faces, each of said second side faces being bounded on each side by one of said first side faces.

4,804,351

SURGICAL BRASSIERE

Nancy M. Raml, 21405 Sierra Dr., and Connie J. Janiszewski, 21415 Sierra Dr., both of Waukesha, Wis. 53186

Filed Nov. 16, 1987, Ser. No. 120,862
Int. Cl.[4] A41C *3/02*
U.S. Cl. 450—58 **12 Claims**



1. A brassiere adapted to encircle the torso of a wearer so as to support the wearer's breasts, said brassiere including a ventilated panel located so as to overlie the area of the wearer's sternum when said brassiere is worn by the wearer, and said ventilated panel can be opened so as to gain access to the area of the wearer's sternum.

12. A brassiere for providing support to a wearer's breasts following cardio-thoracic surgery so as to avoid stress in the area of an incision formed substantially along a line extending from the suprasternal notch to the zyphoid process, said brassiere comprising:

a flexible backstrap assembly adapted to extend across the back of the wearer at substantially the level of the wearer's breasts;

a first shoulder strap coupled to said flexible backstrap assembly and adapted to extend over one shoulder of the wearer toward the adjacent one of the wearer's breasts;

a second shoulder strap coupled to said flexible backstrap assembly and adapted to extend over the wearer's other shoulder toward the wearer's other breast;

a first bust support cup coupled to one end of said flexible backstrap assembly and to one end of said first shoulder strap and dimensioned to overlie the adjacent one of the wearer's breasts except in the area of the incision;

a second bust support cup coupled to the other end of said flexible backstrap assembly and to one end of said second shoulder strap and dimensioned to overlie the other one of the wearer's breasts except in the area of the incision;

first and second inside straps adapted to extend between said first and second bust support cups across the incision, said first and second inside straps being dimensioned and located to form an open area bounded by said first and second inside straps and said first and second bust support cups over the incision when said brassiere is being worn by the wearer;

a ventilated panel dimensioned to overlie said open area; and

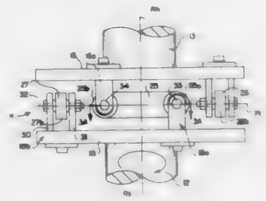
means for removably securing said ventilated panel over said open area so as to selectively provide access to the incision when desired without requiring removal of said brassiere and so as to provide protection to the incision when said access is not desired while maintaining ventilation of the incision.

4,804,352

LINK-TYPE ROTARY COUPLING

Warren E. Schmidt, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Jan. 30, 1987, Ser. No. 9,312
Int. Cl.[4] B64C *27/35;* **F16D** *3/28, 3/30*
U.S. Cl. 464—17 **32 Claims**



1. In a link coupling for transmitting torque between rotatable drive and driven members while accommodating angular misalignment between their rotational axes, said link coupling including a plurality of links and attachment means for interconnecting the links to the drive and driven members so that the links can move independently as they advance tangentially about said axes, the improvement wherein each link comprises:

axially stiff body means for accepting both tensile and compressive loads applied tangentially between said drive and driven members,

first laminated elastomeric bearing means cooperable with one of said attachment means for connecting a first end of said body means to said drive member to permit the body means to pivot about a first axis while undergoing elastic compression during application of tension to said body means,

second laminated elastomeric bearing means cooperable with another of said attachment means for connecting a second end of said body means to said driven member to permit pivotal movement of the body means about a second axis parallel to said first-mentioned axis,

said first and second laminated elastomeric bearing means also permitting pivotal movement of the body means about a third axis extending lengthwise of the body means between said first and second axes,

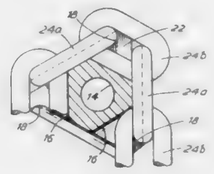
said laminated elastomeric bearing means cooperable with said attachment means for enabling said laminated elastomeric bearing means to undergo elastic shearing during said pivotal motion about said axes and to undergo elastic compression when said body means is subjected to tension while rotating about misaligned axes, whereby the link motion necessary to effect a substantially constant velocity connection between misaligned rotatable drive and driven members can be accommodated.

4,804,353

SPROCKET WHEEL

George B. Wenman, Johannesburg, South Africa, assignor to Georich Services (Proprietary) Limited, Johannesburg, South Africa

Filed May 21, 1987, Ser. No. 53,111
Claims priority, application South Africa, May 22, 1986, 86/3816
Int. Cl.[4] F16H *7/06*
U.S. Cl. 474—152 **3 Claims**



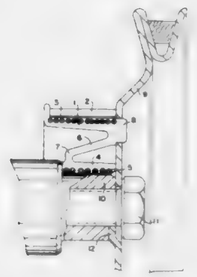
1. A sprocket wheel comprising pockets around its periphery, each said pocket having two ends, one of which ends is formed by an end wall defined by an upstanding tooth, said pockets being separated from one another by said teeth each tooth having a groove therethrough in a plane substantially normal to the axis of the wheel, wherein the other end of each pocket is open so that each said pocket is able to receive therein links of different lengths.

4,804,354

DRIVING WHEEL WITH A BELT PULLEY

Stig Hallerbäck, Vastra Frolunda, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

Filed Oct. 27, 1987, Ser. No. 113,560
Claims priority, application Sweden, Oct. 27, 1986, 8604570
Int. Cl.[4] F16H *55/36*
U.S. Cl. 474—902 **4 Claims**



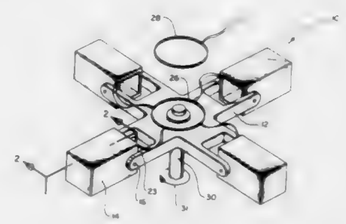
1. A driving wheel with a belt pulley for car engines or the like, incorporating a gear wheel with axial, ledge-shaped teeth, intended to cooperate with the cogs of a cogged belt and a pulley attached to one side of the gear wheel and arrested thereto, characterized by having the gear wheel molded from a plastic or similar material having a coefficient of thermal expansion higher than that of steel and having a helix of steel or another material with a coefficient of thermal expansion similar to or identical with that of steel embedded in a gear rim of said gear wheel radially inside the teeth, said helix having such strength and dimension that it determines the thermal expansion properties of the gear rim.

4,804,355

APPARATUS AND METHOD FOR ULTRASOUND ENHANCEMENT OF SEDIMENTATION DURING CENTRIFUGATION

Owen D. Brimhall, West Valley City; Thomas J. McLaughlin, and Stephen C. Peterson, both of Salt Lake City, all of Utah, assignors to Utah Bioresearch, Inc., Salt Lake City, Utah

Filed Nov. 17, 1987, Ser. No. 121,905
Int. Cl.[4] B04B *5/02*
U.S. Cl. 494—20 **8 Claims**



1. An apparatus for enhanced separation through centrifugation comprising:

vessel means for containing a fluid, said fluid having particulates therein;

rotation means for rotating said vessel about an axis, said vessel being spaced from said axis, said rotation imposing a centrifugal force upon said particulates in said fluid; and

agglomeration means for agglomerating said particulates comprising ultrasound means for imposing an ultrasound force upon said fluid undergoing said centrifugal force to create at least one standing wave in said fluid while imposing said centrifugal force upon said fluid, said standing wave being created generally orthogonal to said centrifugal force, said agglomeration means providing enhanced separation of said particulates during said centrifugation.

4,804,356

APPARATUS FOR PROCESSING BAGLIKE CONTAINER BLANKS

Kiyomi Yoshida; Fumiyaki Iwano, and Kojiro Hayashi, all of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Tokushima, Japan

Filed Mar. 18, 1988, Ser. No. 170,199
Claims priority, application Japan, Mar. 20, 1987, 62-67581
Int. Cl.[4] B31B *1/64*
U.S. Cl. 493—206 **4 Claims**

1. An apparatus for processing baglike container blanks each having a thermoplastic synthetic resin layer on each of its opposite surfaces by folding a pair of triangular ears flat while projecting the ears sidewise from the portion of each blank to be made into the bottom of a finished rectangular parallelepipided container having first and second pairs of opposed side walls, and press-bonding the projected triangular ears to outer surface portions of the first opposed sidewalls of the container after folding the ears over the outer surface portions, the apparatus comprising:

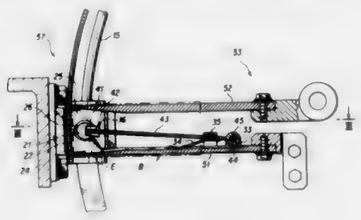
an apparatus frame having a plurality of stations arranged along a circumference at equal spacings, one of the stations being a press bonding station,

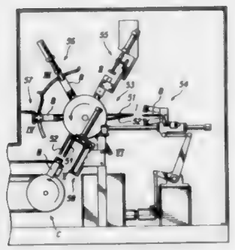
a horizontal rotary drum intermittently drivingly movable and having stationary forming plates and movable forming plates, the stationary forming plates being arranged radially at equal spacings and identical in number to the number of the stations, the movable forming plates being opposed to the respective stationary forming plates in pairs each stoppable at each of the stations while traveling from station to station, the stationary and movable forming plates having a width equal to the spacing between the

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inner surfaces of the second opposed side walls of the container, each of the movable forming plates being pivotally movable to a position where the opposed plates in each pair are closed to a wedgelike form with their forward ends in contact with each other and to a position where the opposed forming plates are open and parallel to each other with their surfaces spaced apart by a distance equal to the spacing between the inner surfaces of the first opposed side walls of the container, and

a press bonding device disposed at the press bonding station for press-bonding the folded triangular ears to said outer surface portions of the first opposed side walls of the container, the press bonding device comprising a pair of





press members and a support member, the press members being opposed to each other and arranged at opposite sides of the path of travel of the forming plates so as to be opposed to the respective triangular ears of the blank as fitted around the pair of forming plates at rest at the press bonding station, the press members being horizontally movable toward and away from each other with the blank positioned therebetween, the support member being positioned between the pair of forming plates as opened when seen sidewise so as to be pressed on by each of the press members with one of said first opposed side wall portions and one of said triangular ears interposed between one of said press members and one side of said support member when the press members are moved toward each other.

4,804,357

MINERALS SEPARATOR

Richard H. Mozley, Falmouth, England, assignor to National Research Development Corporation, London, England

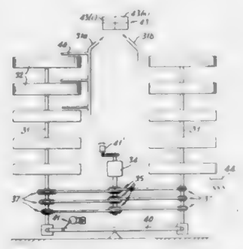
Filed May 20, 1987, Ser. No. 51,649

Claims priority, application United Kingdom, May 22, 1986, 8612497

Int. Cl.[4] B04B *11/00, 5/32*

U.S. Cl. 494—23 **6 Claims**

1. A minerals separator comprising a body having a surface having the form of the inside of a spiralinder, which may be tapered, arranged when rotating about a vertical axis to have a force acting axially along it, means for rotating the body about the axis of the spiralinder to apply a centrifugal force exceeding g to said surface, means for applying perturbations to the body, means for batchwise applying a slurry and means for batchwise applying washing liquid to a spiral line on the inside



of the spiralinder, and means for collecting separately fractions of different mobilities axially along the spiralinder.

4,804,358

CORONARY PERFUSION PUMP

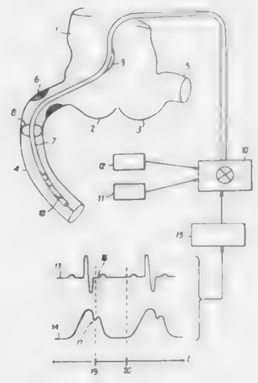
Gilles Karcher, Nancy; Max Amor, Vandoeuvre; Roger Niddam, Le Rancy, and Jean-Pierre Villemot, Nancy, all of France, assignors to Medicorp Research Laboratories Corporation, Boca Raton, Fla.

Filed Feb. 20, 1986, Ser. No. 831,352

Claims priority, application France, Feb. 20, 1985, 85 02429

Int. Cl.[4] A61M *1/03*

U.S. Cl. 600—17 **11 Claims**



6. Coronary perfusion pump apparatus for improvement of coronary blood circulation comprising:

a catheter adapted for insertion into a coronary artery having a plurality of perforations extending through the wall of said catheter near a downstream end thereof;

inflatable balloon means coupled along said catheter upstream of said perforations for fixing said catheter within a coronary artery in the vicinity of a constriction by inflating said balloon;

pumping means coupled to said catheter for injecting blood through said catheter in a pulsed fashion during a diastolic phase of a cardiac cycle when arterial resistance is at a minimum;

a pressure sensor disposed along said catheter upstream of said balloon means;

synchronizing means for controlling blood injection through said perforations in said catheter by said pumping means in accordance with pressure signals provided by said pressure sensor so as to inject blood into said artery at an ischemic zone downstream of said balloon means and at a predetermined time in the cardiac cycle.

4,804,359

CARDIOVASCULAR CANNULA AND OBTURATOR

Ronald P. Grunwald, Valleyford, Wash., and Robert J. Todd, Salt Lake City, Utah, assignors to Research Medical, Inc., Salt Lake City, Utah

Filed Oct. 23, 1987, Ser. No. 112,723

Int. Cl.[4] A61M *5/00, 25/00*

U.S. Cl. 604—4 **22 Claims**



1. An improved venous drainage cannula assembly for insertion into the superior and inferior vena cavae through a single incision in the right atrium of the heart, comprising:

a tubular cannula member having a hollow tubular body with an interior central lumen defined by an interior wall surface, and a bifurcated tube end forming resilient tubular branches extending from a crotch section of the tubular body, each branch including a branch lumen opening into the central lumen;

wherein the resilient branches are normally oriented in diverging relaxed positions with respect to the tubular body to form a "T" configuration with the hollow tubular body;

an elongated obturator rod axially receivable within the cannula member;

a hub along the length of the obturator rod positioned thereon to be slidably received within the central lumen;

wherein the hub includes an annular wiping edge for slidably engaging the interior wall surface of the central lumen to prevent blood reflux through the control lumen upon insertion of the cannula branches into the atrium;

a pair of obturator legs projecting from the hub opposite the oburator rod for axially engaging the branches within the branch lumen, to selectively constrict the cannula branches together to facilitate insertion thereof through a single incision and for axial withdrawal relative to the cannula member to facilitate separation of the branches into their normal relaxed diverging positions, with one of the branches being received within the superior vena cava and the remaining branch being received in the inferior vena cava; and

means on the obturator for minimizing frictional resistance to axial movement of the obturator rod and legs upon insertion of the obturator legs into the cannula branches and withdrawal of the obturator from the cannula.

4,804,360

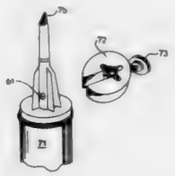
INTRAVENOUS LINE VALVE

Dean L. Kamen, 44 Gage Rd., Bedford, N.H. 03102

Division of Ser. No. 836,023, Mar. 4, 1986. This application Mar. 4, 1987, Ser. No. 21,808

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—250 **7 Claims**



1. An intravenous line valving system, comprising:

a drip chamber;

spike means for connecting the drip chamber to a fluid source, the spike means disposed at one end of the drip chamber, the spike means including

a tip,

an exterior,

an intravenous fluid path from the tip of the spike means into the drip chamber,

an interior surface, that surrounds the intravenous fluid path, and

an aperture through the exterior of the spike means permitting communication with the intravenous fluid path;

a flexible tube mounted onto the interior surface of the spike means proximate to the aperture, the flexible tube disposed so as to prevent intravenous fluid from flowing out of the aperture; and

squeezing means, removably attached about the spike means proximate to the aperture, operable through the aperture, for squeezing the flexible tube against the interior surface of the spike means so as to regulate the flow of intravenous fluid through the intravenous fluid path.

4,804,361

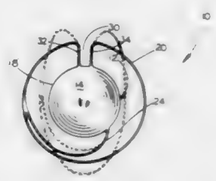
FLEXIBLE ONE-PIECE POSTERIOR CHAMBER LENS

Aziz Y. Anis, 7531 N. Hampton, Lincoln, Nebr. 68506

Continuation-in-part of Ser. No. 201,388, May 17, 1988, which is a continuation of Ser. No. 624,232, Jun. 25, 1984, abandoned. This application May 1, 1987, Ser. No. 44,753

Int. Cl.[4] A61F *2/16*

U.S. Cl. 623—6 **3 Claims**



1. A one-piece intraocular lens implant, comprising:

a flexible, substantially ring-shaped position fixation member,

a disc-shaped lens body having a diameter less than said position fixation member and being positioned within said position fixation member,

and flexible connection means connecting said lens body with said position fixation member,

said flexible connection means including a pair of elongated members extending generally oppositely from said lens body, at least one of said elongated members having a

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substantial portion of its length substantially concentrically disposed alongside said position fixation member.

4,804,362

EAR CLEANING STICK PROVIDED WITH EAR CLEANING PORTIONS INCLUDING A DOUBLE STOP ABUTMENT

Lotti Enzo, Via Ostiglia, 8, 46100 Mantova, Italy

Filed Dec. 28, 1987, Ser. No. 138,293
Claims priority, application Italy, Sep. 25, 1987, 22434/87[U]
Int. Cl.[4] A01M *35/00*
U.S. Cl. 604—1 **1 Claim**



1. An ear cleaning stick comprising, at one or both ends thereof, a shaped single compacted cotton flock including, from the outside toward the inside thereof, an essentially cylindrical rounded-point portion and two projecting disc-like portions of different diameters, wherein the edges of said two projecting disc-like portions have a convex cross-section and wherein the first of said two projecting disc-like portions is formed with a width adapted to define a a stop abutment for preventing said cylindrical rounded-point from being excessively introduced into the ear duct of a child, whereas the second of said projecting disc-like portions has a diameter designed for preventing said cylindrical rounded-point cleaning portion from being excessively introduced into the ear duct of an adult person.

4,804,363

APPARATUS AND METHOD FOR STORING AND PROCESSING BLOOD

Cesare R. Valeri, Marblehead, Mass., assignor to Autologous Blood Corporation, Miami, Fla.

Filed Jul. 16, 1986, Ser. No. 886,196
Int. Cl.[4] A61M *37/00*
U.S. Cl. 604—6 **14 Claims**

1. A method of processing blood utilizing a sterile closed assembly including a primary bag having an anticoagulant therein, and a sterilely closed tube harness including a first tube connected to the primary bag, a secondary tube connected to the first tube and first and second sealed ports connected to the first tube, comprising the steps of:

(a) collecting blood from a donor in said primary bag and mixing in said primary bag said blood and said anticoagulant;

(b) separating said blood in said primary bag into a plurality of blood components;

(c) retaining in said primary bag a unit of one of said components while removing through said first tube to said secondary tube the remainder of said components;

(cc) sealing off and removing said secondary tube from said first tube;

(d) sterilely connected to said first port a supply of cryoprotective solution;

(e) feeding said solution into said primary bag through said first port and said first tube and mixing said solution with said unit in said primary bag;

(ee) sealing off and removing said first port from said first tube;

(f) freezing the mixture of said unit and said solution in said primary bag;

(g) subsequently thawing said mixture in said primary bag;

(h) sterilely connecting said second port to a blood processor and a supply of wash solution;

(i) flowing said mixture through said second port to said processor and combining said wash solution with said mixture in said processor;

(j) separating said wash solution and said cryoprotective solution from said unit, flowing said unit into said primary bag through said first tube and said second port; and

(k) removing said primary bag from said blood processor.

4,804,364

APPARATUS FOR THE CURETTAGE OR EXERESIS OF BIOLOGICAL TISSUES BY MEANS OF AN INSTRUMENT VIBRATING AT ULTRASOUND FREQUENCIES

Francis Dieras, Bordeaux; Alain Soulie, Cestas; Jean-Louis Larrieu, Lanton, and Bernard Escanecrabe, Villenave D'Ornon, all of France, assignors to SATELEC, Merignac, France

PCT No. PCT/FR86/00256, § 371 Date May 18, 1987, § 102(e) Date May 18, 1987, PCT Pub. No. WO87/00422, PCT Pub. Date Jan. 29, 1987
PCT Filed Jul. 21, 1986, Ser. No. 40,996
Claims priority, application France, Jul. 19, 1985, 85 11106
Int. Cl.[4] A61M *1/00*; **A61B** *17/20*
U.S. Cl. 604—22 **11 Claims**



1. Ultrasound apparatus for the curettage or exeresis of biological tissues by irrigation of a liquid subjected to cavitation and by suction of the disaggregated tissue, comprising:

a hand-piece containing a transducer which is mechanically coupled to a sonotrode;

a suction conduit within said hand-piece having a front end and a rear end and extending therebetween in a longitudinal direction in said hand-piece;

a suction connector at the rear end of said hand-piece and connected to the rear end of said suction conduit;

a suction sonotrode in said hand-piece connected to the front end of said suction conduit; and

means traversing longitudinally right through said hand-piece and said sonotrode for allowing the transmission therethrough of at least one of a beam of hot light for illumination and/or of a cutting laser beam, for treatment or haemostatis.

2. An ultrasound apparatus for the curettage or exeresis of biological tissues by irrigation of a liquid subjected to cavitation and by suction of the disaggregated tissue, comprising:

a hand-piece containing an ultrasonic transducer;

two coaxial vibrating sonotrodes mechanically coupled to said transducer, said sonotrodes having front ends located in planes transverse to said hand-piece, and rear ends connected respectively to a suction connector and to an irrigation conduit means including a pair of conduits extending longitudinally in a space provided between the transducer and a wall of said handpiece.

4,804,365

VASCULAR CANNULAE FOR TRANSFEMORAL CARDIOPULMONARY BYPASS AND METHOD OF USE

Ken Litzie, Irvine, Calif., and Craig P. Roberts, Dallas, Tex., assignors to C. R. Bard, Murray Hill, N.J.

Filed Feb. 13, 1987, Ser. No. 14,926
Int. Cl.[4] A61M *5/00, 1/03*
U.S. Cl. 604—4 **12 Claims**



1. A cardiopulmonary bypass system for rapid, closed-chest, cardiopulmonary cannulation during a cardiopulmonary bypass procedure, comprising:

a first smooth, elongated, flexible, open-ended, thin-walled conduit having proximal and distal ends, a perforated portion adjacent said distal end, and having an outer diameter sufficiently small to permit said conduit to be inserted through a puncture in a femoral vein and advanced through said vein, and an inner diameter selected such that the hemodynamic flow of blood through the first conduit during use is approximately 2.2 lit./min./m^2 of body surface area;

first flexible introducer means for inserting and guiding said first conduit through said puncture and coaxially through said vein, and for obturating said conduit during insertion thereof;

first connector means joined to said first conduit adjacent said proximal end for connecting said proximal end of said conduit to an extracorporeal cardiopulmonary bypass system;

a second smooth, elongated, flexible, open-ended, thin-walled conduit having proximal and distal ends, a perforated portion adjacent said distal end, and an outer diameter sufficiently small to permit said second conduit to be inserted through a puncture in a femoral artery and advanced through said artery, and an inner diameter selected such that the hemodynamic flow of blood through the second conduit during use is approximately 2.2 lit./min./m^2 of body surface area;

second flexible introducer means for inserting and guiding said second conduit through said puncture and coaxially through said artery, and for obturating said conduit during insertion thereof; and

second connector means joined to said second conduit adjacent said proximal end for connecting said proximal end of said second conduit to an extracorporeal cardiopulmonary bypass system.

4,804,366

CARTRIDGE AND ADAPTER FOR INTRODUCING A BENEFICIAL AGENT INTO AN INTRAVENOUS DELIVERY SYSTEM

Brian D. Zdeb, Round Lake Park, and Steven C. Jepson, Palatine, both of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Oct. 29, 1987, Ser. No. 114,817
Int. Cl.[4] A61M *37/00*
U.S. Cl. 604—85 **32 Claims**

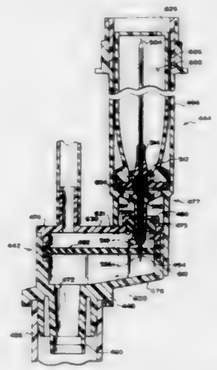
1. An adapter for placing an intravenous delivery system including a fluid source, a fluid conduit and a receptacle in the fluid conduit, in fluid communication with a chamber having a beneficial agent therein, said adapter defining flow path means between the receptacle and the chamber and comprising:

(a) a rigid cannula having an inlet and an outlet;

(b) a shell spaced from said cannula intermediate of said cannula inlet and said cannula outlet, with said cannula and said shell defining a channel therebetween, about the exterior of said cannula, said channel including a channel inlet short of said cannula outlet and a channel outlet short of said cannula inlet;

(c) cannula holder means secured to said cannula;

(d) extension means extending between said cannula holder and said shell and securing said cannula relative to said shell, there being an open flow path through said channel, including said channel inlet and said channel outlet;



(e) wherein said channel inlet and said cannula outlet are both adaptable to pierce a single opening in a first injection site, associated with the receptacle of the delivery system; and

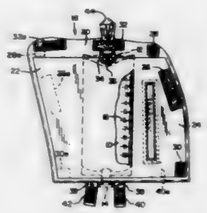
(f) wherein said channel outlet and said cannula inlet are both adaptable to pierce a single opening in a second injection site, associated with the chamber.

4,804,367

SUSPENDABLE, THERMALLY INSULATING JACKET FOR I.V. FLUID BAGS

Robert K. Smith, Rte. 2, Box 147, Astoria, Oreg. 97103, and Alan C. Pochert, 3926 N.E. 32nd Ave., Portland, Oreg. 97212

Filed Apr. 6, 1987, Ser. No. 34,635
Int. Cl.[4] A61F *7/12*
U.S. Cl. 604—113 **2 Claims**



1. In combination, an I.V. fluid bag having a discharge outlet in its lower end and a thermally insulating jacket therefor, the jacket comprising:

(a) a sheet of thermally insulating material dimensioned to wrap around the bag with the ends of the sheet overlapped,

(b) burr-type fastening means positioned on the jacket for releasably fastening together the overlapped ends of the sheet in the wrapped-around, bag-enclosing condition of the sheet,

(c) bag support mean on the jacket for supporting the bag in the bag-enclosing condition of the sheet,

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(d) jacket support means on the jacket for supporting the jacket on an I.V. pole or other support, and

(e) burr-type fastening means positioned at the bottom of the jacket in spaced apart relation for releasably closing the bottom of the jacket to form a gravitational support for the I.V. fluid bag while at the same time providing an opening dimensioned to accommodate the discharge outlet thereof.

4,804,368

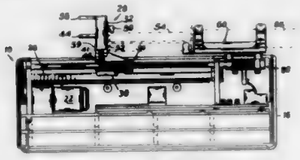
BATTERY OPERATED MINIATURE SYRINGE INFUSION PUMP AND IMPROVED HALFNUT THEREFOR

James G. Skakoon, Melrose, and Philip S. Sleeman, Allston, both of Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 938,550, Dec. 5, 1986, abandoned. This application Aug. 24, 1987, Ser. No. 88,806

Int. Cl.⁴ A61M *5/20*

U.S. Cl. 604—155 **9 Claims**



1. A syringe infusion pump comprising:

a support;

a syringe holder on the support;

drive means on the support for driving the syringe plunger into the syringe barrel, said drive means includes a rotatably driven leadscrew on the support having a center line;

an antisiphon and drive decoupling means on the support movable between a first position at which it is decoupled with the drive means and disengaged with the plunger of the syringe and a second position at which it is coupled with the drive means and engaged with the plunger of the syringe to prevent escape of the plunger and consequent siphoning action by the syringe, and the antisiphoning and drive decoupling means including a pusher block movable longitudinally on the support, a drive means engaging surface means on the block for meshing with the leadscrew, the drive means engaging surface means including a halfnut, the pusher block including floating means for permitting the drive engaging surface means to float freely to find the center line of the line leadscrew, the drive means engaging surface means including contacting points between the halfnut and pusher block spaced apart around the leadscrew substantially at the center line of the leadscrew with the contact points of the halfnut substantially near the center line normal to both the separation direction and the axis of the leadscrew thereby greatly reducing force mechanisms that attempt to separate the leadscrew and halfnut.

4,804,369

REMOVABLE HEAD FOR CONNECTION TO A PERCUTANEOUS PASSAGE

Didier M. Lapeyre, Pacy sur Eure, and Jean P. Sionina, Le Vesinet, both of France, assignors to Biomasys Sarl, Precy-sous-Thil, France

Filed May 1, 1986, Ser. No. 858,933

Claims priority, application France, May 3, 1985, 85 06738

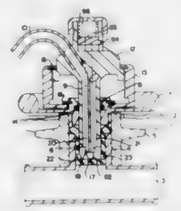
Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—175 **19 Claims**

1. A removable connection head for connection to an immovable percutaneous passage device giving access to the blood circuit of a living organism or to any zone of the organism this percutaneous passage comprising an access well formed by a cylindrical hollow body having a valve at one end closest to the patient and a threaded portion at the other end furthest from the patient, which connection head further comprises:

means for fixing said head to the immovable device, these means being formed by a base whose central part, is formed as an extra thickness, which base is screwable on the hollow body and has an internal, hollow tubular guide cylinder coaxial with the hollow body,

means for the exchange of fluids with the blood circuit, formed by: a tubular body fitting snugly into the guide cylinder, said tubular body having through the whole of its length at least two channels opening into the access



well, which places the channels independently in communication with the blood circuit, and a connecting piece integral with the tubular body providing the connection between each of the channels and an external connection tube,

means for actuating the head formed by an actuator which communicates to the tubular body, through the connecting piece, at least a longitudinal translational movement,

means for operating the valve, said means positioned at the end of the tubular body close to the valve and being capable of providing interruption of a communication between the channels when the tubular body is in contact with the valve and, when this valve is open and is in communication with the blood circuit.

4,804,370

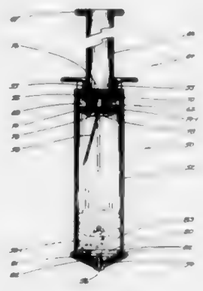
DISEASE CONTROL SYRINGE HAVING A RETRACTABLE NEEDLE

Terry M. Haber, El Toro; William H. Smedley, Lake Elsinore, and Clark B. Foster, El Toro, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Continuation of Ser. No. 51,392, Mar. 2, 1988, Pat. No. 4,770,655, which is a continuation-in-part of Ser. No. 25,419, Mar. 13, 1987. This application Jun. 6, 1988, Ser. No. 202,676

Int. Cl.⁴ A61M *5/32*

U.S. Cl. 604—195 **15 Claims**



1. A syringe comprising a hollow cylinder having a substantially closed distal end and an open proximal end and a retractable needle communicating with the interior of said cylinder and positioned to extend outwardly through the distal end of cylinder via a distal hole so that an injection can be administered, said syringe also comprising:

means movable through said cylinder for engaging said needle at the distal end of said cylinder and for retracting said needle from said distal hole and moving said needle towards the proximal end of said cylinder such that said needle is canted relative to the longitudinal axis of said cylinder, the canted alignment of said needle preventing the return of said needle to said distal hole in the event that said needle is moved back towards the distal end of said cylinder.

4,804,371

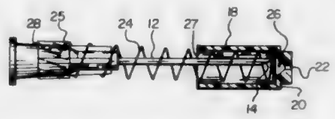
POST-INJECTION NEEDLE SHEATH

Vincent L. Vaillancourt, 14 Bunyan Dr., Livingston, N.J. 07039

Division of Ser. No. 46,569, May 6, 1987, Pat. No. 4,725,267. This application Nov. 12, 1987, Ser. No. 119,543

Int. Cl.⁴ A61M *5/32*

U.S. Cl. 604—198 **17 Claims**



1. A post-injection needle sheath for enclosing the sharpened end of a needle as used with a syringe, the needle in the originally presented condition having a sheath portion in a compact condition, with a substantial portion of the needle exposed for insertion into a patient, this sheath after needle use and withdrawal of the needle from the patient manipulated so that said sheath is advanced and a cap portion is moved to enclose the sharpened end of the needle, this post-injection needle sheath including

an injection needle including a securing hub, a shank and a sharpened distal end, this hub adapted for removably mounting on a closed end portion of a syringe;

a cap portion having a forward end wall provided with a formed through aperture sized to slide on and along the shank of said needle and means for removably mounting a needle shield thereon to provide protection of an exposed portion of said needle prior to insertion and other use;

a compression member adapted to be compressed so as to provide a force to urge said cap portion forwardly;

means for limiting the forward movement of the cap portion as and when the sharpened end of the needle is within the cap portion so as to enclose said sharpened end to prevent accidental pricking; and

means for retaining said sheath in the needle-exposed condition until the attendant withdraws the needle from the patient and desired to enclose the sharpened end of the needle.

4,804,372

PROTECTIVE SHEATH FOR HYPODERMIC NEEDLE

Joseph P. Laico, 62 S. Mtn. Rd., New City, N.Y. 10956, and Joseph L. Molino, 2 Aura Dr., Valley Cottage, N.Y. 10989

Filed Sep. 8, 1987, Ser. No. 93,750

Int. Cl.⁴ A61M *5/32*

U.S. Cl. 604—198 **20 Claims**

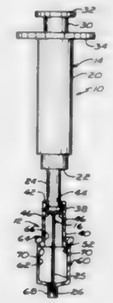
1. A hypodermic syringe assembly comprising:

hypodermic needle means comprising a base and a connecting needle terminating in a sharpened point axially spaced from said base and forming an axial passage therethrough, said base having an axially extending portion and a retainer means transversely extending therefrom;

syringe body means for forming a container in fluid communication with said passage and comprising mounting means for mounting said base;

protective shield means mounted to said base for protectively shielding said needle point in an extended axial position and axially displaced from said needle point in a retracted axial position to permit exposure of said needle point, said shield means comprising first and second telescopic concentric shields generally coaxial with said needle;

said first shield having a transversely extending lock ring



and defining a generally cylindrical surface slidably engageable against said retainer means and a first locking means engageable with said retainer means to lock said first shield in an extended axial position wherein said shield encloses a portion of said needle; and

said second shield defining a generally cylindrical surface slidably engageable against said lock ring and comprising a second locking means engageable with said lock ring for locking said second shield in a fixed extended axial position wherein said second shield encloses said sharpened needle point.

4,804,373

STRUCTURE TO INTRODUCE IRRIGATION LIQUID THROUGH A STOMA OF AN OSTOMY PATIENT

Ingrid B. Bloxom, Jr., P.O. Box 357, Wicomico, Va. 23184

Continuation of Ser. No. 935,779, Nov. 28, 1986, abandoned. This application Jun. 2, 1988, Ser. No. 205,621

Int. Cl.⁴ A61M *31/00*

U.S. Cl. 604—277 **1 Claim**



1. A device for introducing irrigating liquid into an intestine through a stoma at which time the intestine may be prolapsed, said device comprising in combination, a stoma cone, an irrigating liquid conduit having both a distal and a proximal end means for connection to a irrigation liquid supply; a liquid supply; a monitoring device means located up stream of said

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cone to sense peristaltic action in the intestine; said cone having.

an axially symmetrical cone-shaped exterior body having (a) a smooth exterior surface, (b) a smoothly rounded apex, (c) a base, and (d) a longitudinal extending said axis axial primary passageway through said cone-shaped body,

said rounded apex being sized to insert into the mouth of a stoma with the smooth exterior surface in sealing engagement with the stoma mouth,

said axial passageway being enlarged through a longitudinal portion extending from the base toward the apex, said axial portion being sized and configured to snugly receive said distal end of the liquid conduit in fluid communication with the primary passageway at a zone between the apex and the base, and

said passageway being of reduced cross-sectional area between the zone and the apex, and

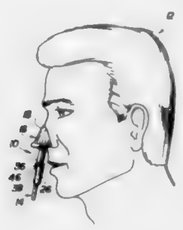
a plurality of at least three equianuglary spaced, equisized, secondary passageways extending axially and inwardly from the said cone exterior surface at a common axial location proximate the rounded apex and in fluid communication with the primary passageway between the apex and said zone, said cone shaped body, source of irrigating fluid, said conduit and said monitoring device in serial fluid communicated with one another through one of said secondary passageways to the intestine even if the intestine is in a prolapsed condition so that liquid can flow from said liquid supply through said monitoring device and sense any resulting peristaltic action.

4,804,374

ANCHOR DEVICE FOR GASTROINTESTINAL TUBE

Richard J. Laskody, 8808 NW. 3rd Pl., Coral Springs, Fla. 33065

Filed Dec. 16, 1987, Ser. No. 133,846
Int. Cl.[4] A61M *25/00*
U.S. Cl. 604—180 9 Claims



1. An anchoring assembly for securing a gastrointestinal tube in operative position to a patient, said assembly comprising:

(a) a mounting member structured to at least partially enclose and removably engage an outer skin surface of the nose and including a major portion thereof formed of a flexible, air permeable material and configured to allow passage of the tube into either nostril of the nose,

(b) securement means removable connected to the tube at a location spaced from the nose for securing the tube in a preferred, spaced position from the nose of the patient,

(c) said securement means comprising an elongated sleeve having a hollow interior portion and open opposite ends communicating therewith and a channel extending along the length of the sleeve and having a transverse dimension less than the transverse dimension of the tube and being structured to allow adjustable placement of the tube within said hollow interior portion,

(d) a connecting means attached in interconnecting relation between said mounting member and said sleeve for connecting the tube to the mounting member in a preferred, adjustable, spaced apart operative location relative to the nose,

(e) said connecting means comprising a connecting element having an elongated configuration and formed of an elastic material and being connected at opposite ends thereof to said sleeve and said mounting member, said sleeve being adjustably mounted and positionable on the tube, said connecting element, due to its elasticity, being movable with said sleeve and the tube relative to the mounting member,

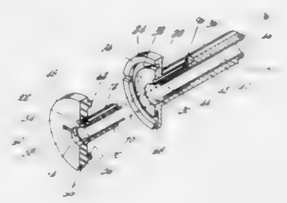
(f) an elongated malleable material reinforcement strip disposable substantially transversely to the length of the nose and selectively conformable into a configuration corresponding to the outer surface of the nose, said reinforcement strip secured to said mounting member and disposed to facilitate conformance of said mounting member to the surface of the nose, and the tube being both displaceable and retained relative to the nose of the patient and selectively adjustable relative thereto by manual manipulation of the sleeve relative to the tube by medical personnel.

4,804,375

ILEOSTOMY VALVE HAVING A ROTATABLE SHUT OFF

William G. Robertson, Santa Barbara, Calif., assignor to Santa Barbara Medical Foundation Clinic, Santa Barbara, Calif.

Filed May 6, 1987, Ser. No. 47,193
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—323 17 Claims



1. An ileostomy valve comprising

an attachment plate having first and second opposed parallel surfaces and including means defining a central opening passing therethrough, said first surface including means defining a first coacting means which is adapted to cooperate with a second coacting means to form a coacting surface having at least 360 degree of rotation, said second opposed surface being relatively smooth to enable the same to be urged against the body of a user;

a support housing having an elongated central member having a predetermined axial length and which communicates with said attachment plate, said support housing having an aperture extending axially therethrough forming a passageway which terminates in a first opening which communicates with said opening in said attachment plate and a second opening which terminates at the remote end of the elongated second member;

a cover plate having a first and second opposed surface and means defining a central drainage opening therethrough, said first surface including means defining a second coacting means adapted to be coact with the said first coacting means, said cover plate being positioned with its second surface contiguous the first surface of said attachment plate positioning said second coacting means to coact with said first coacting means formed on said first surface of said attachment plate; and

an elongated flexible tubing member having a first and second end with said first end being operatively attached to said first surface of said cover plate and with said elongated flexible tubing member extending through said drainage opening in said covering plate, through said opening in said attachment plate, through the passageway in said elongated central member to the second opening in passageway of said elongated central member wherein the second end of the passageway of said elongated flexible tubing member is operatively affixed thereto defining an unobstructed drainage passageway extending from the second end of the passsageway of said elongated central member to the first surface of said cover plate;

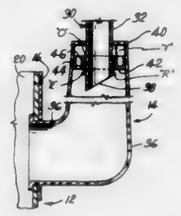
said cover plate, when rotated in a selected direction at least 360 degrees relative to said attachment plate being operative to coact said first coacting means with said second coacting means to twist said elongated tubing flexible member to obstruct and close the same to define an obstructed drainage passageway which can be selectively opened by rotating said cover plate relative to said attachment plate the same number of degree of rotatation as that used to twist said elongated flexible tubing member and in a direction opposite to said selected direction.

4,804,376

ANNULAR REFLUX INDICATOR FOR A URINE COLLECTION BAG

Terry Layton, Arlington Heights, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Nov. 30, 1987, Ser. No. 126,334
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—318 6 Claims



1. A reflux indicating device for a urine collection bag which receives urine from a patient, comprising:

a container having a drainage tube conduit having a proximal end means for securing to patient and a distal end means for securing to said container: said container having a connector comprising a receiving means with distal and proximal end means; said distal end means of said connector in fluid communication with said distal end of said drainage tube; said connector of a generally cylindrical shape having inner and outer wall surfaces; said distal end of said conduit passing through a distally sealed end portion of said receiving means; a reflex indicator means secured to the inner cylindrical wall surface of said connector and spaced from said drainage tube conduit such that upon tipping on to one of the container walls reflux of urine is trapped by said indicator means, said indicator means further comprising a circumferentially disposed channel shaped member means to trap urine upon said tipping.

4,804,377

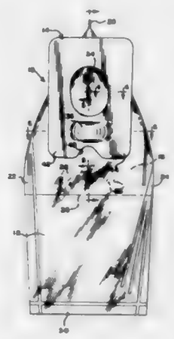
URINE COLLECTOR

Paul H. Hanifl, Barrington, and John J. Newton, Jr., Palatine, both of Ill., assignors to Sage Products, Inc., Cary, Ill.

Filed Aug. 5, 1987, Ser. No. 82,084
Int. Cl.[4] A61F *5/44*
U.S. Cl. 604—352 11 Claims

1. In a urine collector having a collection bag with a urine inlet and an adhesively-faced attachment member joined to the bag at the urine inlet, the improvement comprising.

a. the attachment member comprising a flexible, preformed material having a central opening aligned with said inlet, said attachment member having a substantially planar attachment surface and said collection bag being secured to said attachment member at said opening, and



b. a barrier formed in the attachment member, said barrier being positioned adjacent said opening and including a raised bulge extending above said attachment surface and shaped to span the perineum of an infant.

4,804,378

ABSORBENT ARTICLE

Daisuke Shiba; Akira Sakurai, and Iwao Miyashita, all of Utsunomiya, Japan, assignors to KAO Corporation, Tokyo, Japan

Filed Apr. 24, 1987, Ser. No. 42,216
Claims priority, application Japan, May 7, 1986, 61-104015
Int. Cl.[4] A61F *13/16*; B32B *27/00*
U.S. Cl. 604—367 6 Claims



1. An absorbent article which comprises as the surface material a nonwoven fabric comprising

(1) a surface layer comprising 60 to 100 percent by weight of first fibers having a hydrophilic surface portion and a hydrophobic inside portion and from 40 to zero percent by weight of the second fibers being hydrophilic at least on the surface thereof and

(2) at least one back layer comprising from zero to 50 percent by weight of said first fibers and from 100 to 50 percent by weight of said second fibers,

said second fibers having a larger surface hydrophilic property than said first fibers after having been wetted.

4,804,379

ABSORBENT PAD WITH MOISTURE BARRIER STRIPS

Michael R. Toth, Andover, Mass., and Mary E. Buckley, Wheeling, Ill., assignors to The Kendall Company, Boston, Mass.

Filed Jun. 9, 1987, Ser. No. 60,125
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—378 23 Claims

1. A disposable absorbent pad assembly comprising:

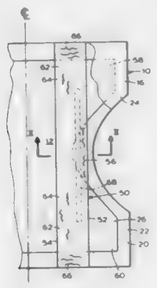
a backing sheet of fluid impervious material;

a top sheet of fluid pervious material;

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an absorbent pad disposed between the backing sheet and top sheet; and

an elongated strip of fluid impervious material having a side



portion secured to the backing sheet in the crotch area of the pad assembly, and an opposed side portion overlying the pad in the crotch area in order to prevent leakage from the pad in the crotch area of the pad assembly.

4,804,380

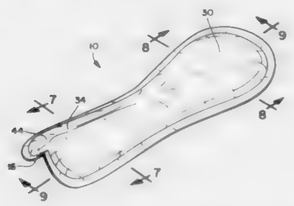
ANATOMICALLY SHAPED, SELF-ALIGNING, SANITARY PROTECTION DEVICE

Frederich O. Lassen; Anna M. Cesco-Cancian, and Dawn M. Huffman, all of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 6, 1987, Ser. No. 82,883

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—385.1 **21 Claims**



1. A pad for absorption of human exudate comprising an impermeable outer cover, a liquid permeable bodyside web and an absorbent therebetween, said pad comprising a flattened front portion for positioning exterior of the clitoris and pubic mons and a rearward portion having an upraised peak for positioning in alignment with the creases of the perineum, buttocks and rearward portion of the pudendal cleft wherein the rearward portion of said pad is folded generally at its longitudinal center to form said peak and has a length greater than about 7 inches.

4,804,381

ARTIFICIAL VESSEL

Marko Turina, Zurich, and Peter Bittmann, Herrliberg, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 19, 1987, Ser. No. 52,243

Claims priority, application Switzerland, Jun. 2, 1986, 2219/86

Int. Cl.[4] A61F *2/06*

U.S. Cl. 623—1 **18 Claims**



1. An artificial vessel comprising

a porous membrane of bio-inert synthetic material having completely open micropores;

a permeable aqueous gel filling said micropores; and

a closed monolayer of endothelial cells on an internal surface of said membrane.

4,804,382

ARTIFICIAL VESSEL

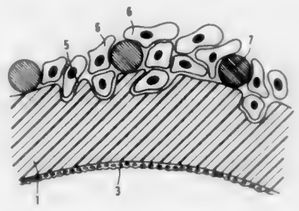
Marko Turina, Zurich, and Peter Bittmann, Herrliberg, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 19, 1987, Ser. No. 51,659

Claims priority, application Switzerland, Jun. 2, 1986, 2220/86

Int. Cl.[4] A61F *2/06*

U.S. Cl. 623—1 **11 Claims**



1. An artificial vessel comprising

a tubular membrane of at least semi-permeable bio-inert synthetic material;

a monolayer of endothelial cells on an internal surface of said membrane for contact with a blood stream; and

a layer of smooth elastic fiber-generating muscle cells on an outer surface of said membrane.

4,804,383

TEMPORARY PROSTHESIS FOR TENDONS AND LIGAMENTS, AND A METHOD OF FITTING SAME

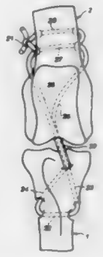
Pierre Rey, 18 rue Aristide Briand, 77400 Lagny; Jacqueline Leandri, 50 avenue de Clichy, 75018 Paris, and Philippe Dahhan, 72 rue Ampère, 75017 Paris, all of France

Filed May 1, 1986, Ser. No. 857,871

Int. Cl.[4] A61F *2/08*

U.S. Cl. 623—13 **13 Claims**

1. A prosthesis for humans or animals for replacing a deficient original ligament or tendon, the prosthesis comprising at least one strand of degreased poly(metaphenylene isophthalamide) fibers said at least one strand being externally exposed and devoid of external protection and thus adapted to come into direct contact with live tissues when the prosthesis is implanted, whereby reactions of surrounding tissues induce



growth of fibrous new-formed tissue to replace and eliminate at least in part the poly(metaphenylene isophthalamide) fibers.

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4,804,384

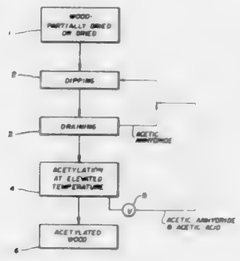
ACETYLATION OF LIGNOCELLULOSIC MATERIALS

Roger M. Rowell, Madison, Wis.; Rune Simonson, and Anne-Marie Tillman, both of Gothenburg, Sweden, assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 8, 1987, Ser. No. 36,050

Int. Cl.[4] D06M *1/14, 13/20;* **B05D** *1/18, 7/00*

U.S. Cl. 8—121 **18 Claims**



1. A method for catalyst-free acetylation of lignocellulosic material, comprising the steps of:

contacting lignocellulosic material in the form of veneer, chips, flakes, fibers or particles with a liquid reactant consisting essentially of acetic anhydride and from about 10 percent to about 55 percent by volume acetic acid;

heating the reactant-contacted lignocellulosic material at a temperature of up to 120° C. for a time sufficient to acetylate said material, the time of heating being from 1 to 5 hours; and,

removing from the resulting acetylated lignocellulosic material unreacted acetic anhydride and acetic acid.

4,804,385

PROCESS FOR DYEING KERATINOUS FIBRES WITH 5,6-DIHYDROXY-INDOLE COMBINED WITH AN IODIDE AND DYEING COMPOSITION EMPLOYED

Jean F. Grollier, Paris, and Didier Garoche, Levallois-Perret, both of France, assignors to L'Oreal, Paris, France

Filed Jan. 20, 1987, Ser. No. 4,496

Claims priority, application Luxembourg, Jan. 20, 1986, 86256

Int. Cl.[4] A61K *7/13*

U.S. Cl. 8—423 **30 Claims**

1. A plural stage process for dyeing keratinous fibers comprising applying to said keratinous fibers in an amount effective to dye said keratinous fibers a composition (A) comprising, in a medium suitable for dyeing keratinous fibers, 5,6-dihydroxyindole present in an amount ranging from 0.01 to 5 weight percent and iodide ions present in an amount ranging from 0.007 to 4 weight percent expressed as I^- ions relative to the total weight of said composition (A), the application of said composition (A) being preceded or followed by the application of composition (B) comprising, in a medium suitable for dyeing keratinous fibers, hydrogen peroxide at a concentration ranging from 1 to 40 volumes at a pH ranging from 2 to 7.

4,804,386

CHROMIUM COMPLEX DYE FOR POLYAMIDES OR LEATHER

Klaus Grychtol, Bad Duerkheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

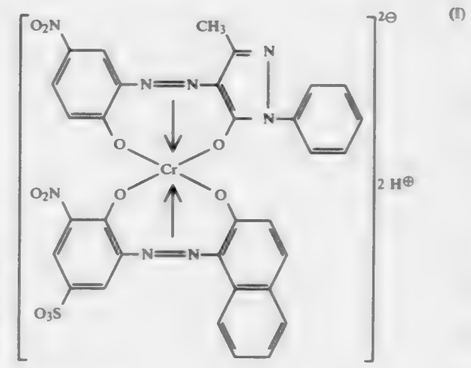
Filed Feb. 2, 1988, Ser. No. 151,610

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1987, 3705646

Int. Cl.[4] D06P *3/32;* **C09B** *45/16*

U.S. Cl. 8—437 **9 Claims**

1. The chromium complex dye of the formula I



and salts thereof.

4,804,387

LIQUID BLACK DYE MIXTURE

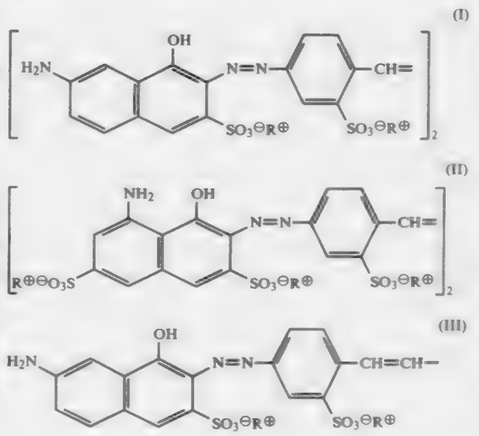
Hans-Juergen Degen, Lorach; Rudolf Bermes, Ludwigshafen, and Sigberg Pfohl, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 27, 1987, Ser. No. 126,259

Int. Cl.[4] C09B *67/22, 69/04, 35/21, 56/04*

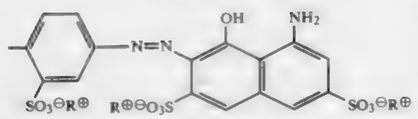
U.S. Cl. 8—641 **4 Claims**

1. An aqueous dye mixture for black shades, containing as dyes essentially (A) at least one dye selected from those dyes which have the C.I. number 19,140, 40,000 or 47,035, in the form of the alkanolammonium salt, and also (B) at least one dye selected from the dyes of the formula I, II or III



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where the cations R^+ are identical or different and each independently of the others is an alkanolammonium cation, a substituted or unsubstituted ammonium cation, and the relative proportions of the individual dyes (A) to (B) in the dye mixture are such as to produce a black shade.

4,804,388

COMBUSTION CONTROL BY ADDITION OF MANGANESE AND MAGNESIUM IN SPECIFIC AMOUNTS

Ira Kukin, 45 Edgemont Rd., West Orange, N.J. 07052

Filed Oct. 2, 1987, Ser. No. 103,891
Int. Cl.[4] C10L *9/10, 10/04*
U.S. Cl. 44—51 **4 Claims**

1. In the operation of a fuel burning system having a fuel burning furnace and means for conveying the products of combustion from the furnace to exhaust, and in which the fuel is burned in the presence of an additive comprising a combination of magnesium and manganese, the improvement which comprises the magnesium and manganese being present in proportions by weight between 2.7:1 and 7.5:1 and the amount of manganese does not exceed 0.4 pounds per 8,000 pounds of fuel oil or its equivalent.

4,804,389

FUEL PRODUCTS

Thomas E. Johnston, Mentor, and Dorer, Jr. Casper J., Lyndhurst, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 903,936, Sep. 4, 1986, abandoned, and a continuation-in-part of Ser. No. 766,615, Aug. 16, 1985, Pat. No. 4,659,338. This application Dec. 1, 1987, Ser. No. 95,484
Int. Cl.[4] C10L *1/18, 1/22*
U.S. Cl. 44—70 **21 Claims**

1. A fuel composition comprising gasoline and at least one hydrocarbon-soluble or dispersible polybasic carboxylate salt of an alkali or alkaline earth metal and mixtures thereof.

17. The process of reducing valve seat recession in an engine without substantially increasing the octane requirement by introducing to the combustion chamber of the engine a product comprising:

(A) a polybasic carboxylate salt;

(B) a dispersant; and

(C) gasoline the amount of the polybasic carboxylate salt being sufficient to reduce the valve seat recession.

4,804,390

PROCESS FOR REMOVING MINERAL IMPURITIES FROM COALS AND OIL SHALES

Robert Lloyd, 7 Karalee Road, Galston, New South Wales, and Maxwell J. Turner, 138A Kangaroo Point Road, Sylvania, New South Wales, both of Australia

Filed Jul. 30, 1984, Ser. No. 635,506
Claims priority, application Australia, Jul. 29, 1983, PH0574
Int. Cl.[4] C10L *5/00*
U.S. Cl. 44—621 **3 Claims**

1. A process for removing mineral impurities from coal or oil shales, comprising the steps of:

crushing said coal or shale;

leaching the crushed coal or shales with HF solution;

separating the leaching solution of HF containing dissolved mineral salts and fluorosilicic acid from the coal or shales and washing the coal or shale with water;

leaching the washed coal or shale with HCl solution;

separating the leaching solution of HCl containing dissolved mineral salts insoluble in HF solution from the leached coal or shale and washing said leached coal or shale with water;

heating the coal or shale at a proper temperature sufficient to remove residual impurities including HF, HCl, and SiF_4;

adding alumina clay to the leaching HF solution containing dissolved mineral salts to cause the reaction of said alumina with H_2SiF_6 contained in said leaching HF solution to produce AlF_3 and SiO_2;

crystallizing and depositing the AlF_3; and

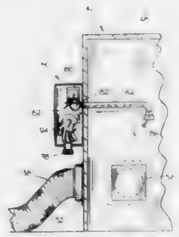
heating the crystallized AlF_3 to produce Al_2O_3 and HF.

4,804,391

MEANS FOR SAMPLING THE EXHAUST AIR OF AN AIR FILTRATION UNIT

Steven C. Griffis, 2929 Avenue D, Council Bluffs, Iowa 51501

Filed Apr. 11, 1988, Ser. No. 179,864
Int. Cl.[4] B01D *35/02*
U.S. Cl. 55—270 **11 Claims**



1. In combination,

an enclosed space in which an asbestos abatement action is being conducted,

at least one air filtration unit in said enclosed space and having an air intake and an air exhaust,

said air intake of said air filtration unit being in operative communication with said enclosed space,

a first air conduit having intake and discharge ends,

said intake end of said first air conduit being in operative communication with said air exhaust of said air filtration unit,

said discharge end of said first air conduit being in operative communication with an area outside of said enclosed space,

an air sampling means in operative communication with the exhaust air of said air filtration unit,

an isolation chamber means positioned remotely of said air sampling means,

a second air conduit means having an intake end in communication with the interior of said isolation chamber and a discharge end in communication with the air intake of said air filtration unit whereby said air filtration unit will draw air from the interior of said isolation chamber into said second air conduit and thence into said air filtration unit,

an electrically operated air pump means positioned in said isolation chamber and having an intake end and a discharge end,

an air hose means extending from said intake end of said air pump means to said air sampling means whereby a portion of said exhaust air will be drawn into said air sampling means,

a pair of gloves mounted on said isolation chamber in a sealed fashion and extending thereinto with the interiors of said gloves being accessible from the exterior of said isolation chamber whereby an operator may insert his hands into the gloves so that the operator may grasp said air hose means to pull said hose means and said air sampling means into said isolation chamber to permit the removal of said air sampling means from said air hose means,

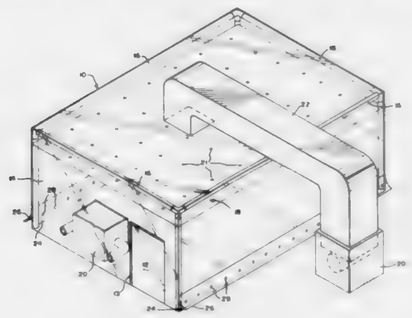
and a selectively closable access port provided on said isolation chamber for permitting the removal of said air sampling means from the interior of said isolation chamber after said air sampling means has been removed from said air hose means.

4,804,392

CLEAN AIR FACILITY

Charles W. Spengler, 3310 Deforest Ave., Cincinnati, Ohio 45209

Filed Sep. 17, 1987, Ser. No. 97,887
Int. Cl.[4] B01D *46/10*
U.S. Cl. 55—356 **18 Claims**



1. A portable clean air facility which includes:

a support frame;

said support frame including front and rear end vertically directed spaced uprights and horizontally directed spaced upper cross pieces that separate said front end from said rear end;

an enclosure including an upper panel, a front end panel, a rear end panel and opposite side panels each formed by clear vinyl sheeting adapted to be secured to each other in an air tight manner by use of compatible fastening means and secured to said support frame;

at least one door formed of a vinyl sheet secured to an opening in one of said panels by use of Velcro applied to edges of said opening and said vinyl sheet;

said enclosure includes a tee-shaped footer for securing said enclosure to a supporting floor and for admitting or exhausting air from said enclosure; and

means for directing clean air into or out of said enclosure.

4,804,393

METHODS FOR PRODUCING OPTICAL FIBER PREFORM AND OPTICAL FIBER

Koji Yano; Minoru Watanabe; Michihisa Kyoto, and Masao Hoshikawa, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

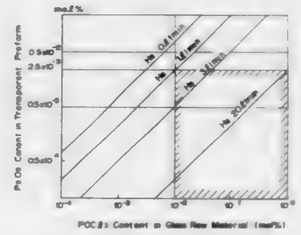
Continuation of Ser. No. 788,695, Oct. 21, 1985, abandoned, which is a continuation of Ser. No. 643,383, Aug. 23, 1984, abandoned. This application Sep. 11, 1987, Ser. No. 97,320
Claims priority, application Japan, Aug. 25, 1983, 58-154209
Int. Cl.[4] C03B *37/018*
U.S. Cl. 65—3.12 **8 Claims**

1. A method for producing an optical fiber preform comprising the steps of

(a) jetting a glass raw material mixture containing a silica forming compound and a germania forming compound and at least one phosphorous compound in an amount of from 0.01% to 1.0% by mole, based upon the total moles of said raw material mixture, and a fuel gas through a flame-forming burner;

(b) hydrolyzing the raw materials in the flame of the burner to form fine doped-silica glass particles;

(c) depositing the fine glass particles to form a porous glass preform; and then



(d) sintering the porous glass preform at about 1600° C. in a stream of an inert gas having a flow rate of from 1 to 20 l/min until the glass preform is made transparent and controlling the sintering step to remove phosphorus from the preform to produce a transparent doped-silica optical fiber preform having a P_2O_5 content of less than 3.0×10^{-3}% by mole.

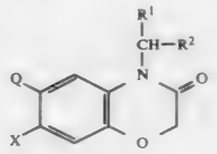
4,804,394

BENZOXAZINES AND USE AS HERBICIDES

Toyohiko Kume; Toshio Goto; Atsumi Kamochi; Naoko Yamaguchi; Akihiko Yanagi, all of Tokyo; Hidenori Hayakawa, Kanagawa; Shigeki Yagi, and Hiroshi Miyauchi, both of Tokyo, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed Aug. 24, 1987, Ser. No. 88,921
Claims priority, application Japan, Sep. 9, 1986, 61-210725; Feb. 10, 1987, 62-27194
Int. Cl.[4] A01N *43/84;* **C07D** *487/04*
U.S. Cl. 71—92 **10 Claims**

1. A benzoxazine of the formula



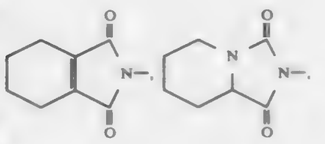
in which

X is hydrogen or halogen,

R^1 is hydrogen or C_1–C_2 alkyl,

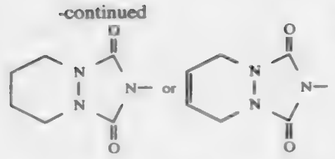
R^2 is cyano, trimethylsilyl, trimethylsilylmethoxycarbonyl or cyclopropyl, and

Q is



VOL 1099 ISS 2 FE 14 1989 UMI

-continued



9. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound according to claim 1.

4,804,395

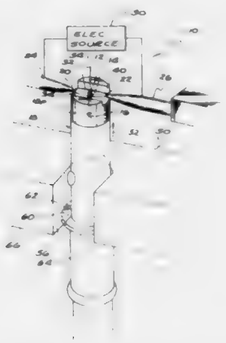
ELECTRODE ARRANGEMENT FOR LENSING METHOD

Kenneth M. Clark, Irvine, and Bruce Coutts, Costa Mesa, both of Calif., assignors to ITT Corporation, New York, N.Y.

Filed Jan. 13, 1987, Ser. No. 2,883

Int. Cl.[4] C02B *37/075;* **G02B** *6/00;* **C03B** *23/09*

U.S. Cl. 65—2 **1 Claim**



1. A method for forming a lens at the end of an optical fiber comprising:

positioning an optical fiber between the tips of a pair of electrodes, and establishing an electric arc which includes a visible arc portion between the electrode tips, at an arc current and duration which melts the fiber to form it into a lens of greater diameter than the fiber;

said step of positioning including projecting said fiber through a longitudinal hole in an elongated contact, wherein the longitudinal hole extends along the length of the contact, until the tip of the fiber has passed at least partially through a cross-aperture in the contact which extends between opposite sides of the contact and largely perpendicular to said longitudinal hole;

said step of positioning including positioning the tips of said electrodes so they lie within opposite sides of said cross-aperture, with the spacing between the electrode tips being less than the width of said contact along said cross-aperture but at least about eight times the fiber diameter.

4,804,396

METHOD FOR MANUFACTURING HERMETIC TERMINAL ASSEMBLIES

Benjamin Bowsky, Warren County, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 10, 1985, Ser. No. 732,704

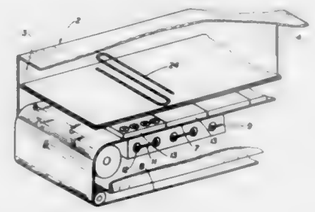
Int. Cl.[4] C08C *29/00*

U.S. Cl. 65—59.27 **9 Claims**

1. A method of forming glass to metal hermetic seals in a terminal assembly of a housing part having a terminal pin receiving aperture extending therein comprising:

inserting a terminal pin surrounded by a glass sleeve into the aperture of said housing part; inserting said housing part with the pin and glass sleeve, supportedly disposed in the aperture thereof into a generally confined heating zone with the longitudinal axes of said pin and glass sleeve supported in the aperture of the housing part in a substantially vertical position; and applying an upwardly directed glass flowing heating gradient to said housing part from a location below said housing part in the aperture of which said pin and glass sleeve are supportedly disposed while said part is disposed in said generally confined heating zone so that a major portion of the heat flows upwardly, the heat being sufficient to melt the glass sleeve in an upwardly direction from bottom to top to firmly fuse the terminal pin in said housing part aperture with minimal voids.

9. A method of forming glass to metal hermetic seals in terminal assemblies of metallic battery housing covers, each having at least one terminal pin receiving aperture extending therethrough comprising: inserting a terminal pin surrounded



by a glass sleeve into each of said pin receiving apertures of said battery covers; mounting said battery covers with the pins and sleeves assembled therein unto recessed heat conductive support fixtures with the longitudinal axes of the pins and glass sleeves supportedly positioned in a substantially vertical position on said fixtures; mounting said support fixtures with the assembled battery covers thereon in contiguous relation on the upper flight of a heat conductive metallic endless conveyor controlled to move through a heating zone at a preselected speed to maintain said glass sleeves in said heating zone for a preselected residence time; applying an upwardly directed glass flowing heating gradient to said battery housing covers in the approximate range of 1500° F. to 1900° F., the major portion of said glass melting heating gradient being transmitted conductively to the lower portion of said metallic covers through said upper flight of said metallic endless conveyor and said contiguous support fixtures and the minor portion of said heating gradient being transmitted radiantly to the upper portion of said metallic covers through a heat reflective and heat absorptive surface in said heating zone so as to flow the vertically disposed glass sleeves in said battery covers in an upwardly direction from bottom to top to firmly fuse the terminal pins in said battery covers with minimal voids.

4,804,397

PARTIAL PRESS IN GRAVITY BENDING FURNACE AND METHOD OF USE

Joseph D. Stas, Gibsonia; Robert G. Frank, Murrysville, and James H. Schwartz, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 16, 1987, Ser. No. 133,963

Int. Cl.[4] C03B *23/025*

U.S. Cl. 65—107 **20 Claims**

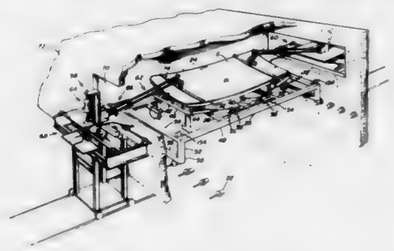
1. In an apparatus for shaping a glass sheet to a desired contour wherein the apparatus includes means to heat said glass sheet to be shaped to a heat deformation temperature and a shaping rail within said heating means to support a glass sheet

to be shaped wherein said glass sheet is heated while supported on said rail such that the peripheral edge of said glass sheet conforms to the shape of said shaping rail, the improvement comprising:

shaping means having a glass sheet engaging surface corresponding to the desired curvature of selected portions of said shaped glass sheet located within said shaping rail; and

means to bias said shaping means into contact with said selected portions of said glass sheet while said glass sheet is supported on said shaping rail.

16. In a method of shaping a glass sheet to a desired curvature including the steps of supporting said glass sheet on a shaping rail of a bending mold, conveying said shaping rail through a heating lehr, and heating said supported glass sheet



within said lehr to its deformation temperature wherein said glass sheet sags by gravity and the perimeter of said glass sheet substantially conforms to the shape of said shaping rail positioned inboard of the perimeter of said glass sheet, the improvement comprising:

contacting selected surface portions of said shaped glass sheet located within said shaping rail with a shaping means having a sheet engaging surface with the desired shape of said glass sheet at said selected surface portions; and

biasing said shaping means against said selected surface portions to conform said surface portions of said shaped glass sheet to said sheet engaging surface of said shaping means while continuing to support said glass sheet on said shaping rail.

4,804,398

1-ARYL-4-CYANO-5-HALOGENOPYRAZOLES, COMPOSITION CONTAINING THEM, AND METHOD OF USING THEM AS SELECTIVE HERBICIDES

Reinhold Gehring, Wuppertal; Uta Jessen-Korte, Düsseldorf; Otto Schallner, Monheim; Jörg Stetter, Wuppertal; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

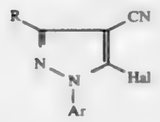
Continuation-in-part of Ser. No. 866,050, May 22, 1986, Pat. No. 4,747,867. This application Jun. 3, 1987, Ser. No. 57,471

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1985, 3520329

Int. Cl.[4] A01N *43/56;* **C07D** *231/16*

U.S. Cl. 71—92 **7 Claims**

1. A 1-aryl-4-cyano-5-halogenopyrazole of the formula



in which

R is hydrogen or alkyl having 1 to 4 carbon atoms,

Ar is phenyl which is substituted at least once by halogen and at least once by halogenoalkyl which has up to 4 carbon atoms and up to 9 halogen atoms, and

Hal is fluorine, chlorine, bromine or iodine.

6. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound according to claim 1.

4,804,399

LIQUID PESTICIDAL COMPOSITIONS IN THE FORM OF SUSPENSION CONCENTRATES

Konrad Albrecht, Kelkheim, and Gerhard Frisch, Wehrheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 14, 1986, Ser. No. 818,891

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1982, 3240862

Int. Cl.[4] A01N *25/30*

U.S. Cl. 71—93 **11 Claims**

1. A method for suspending a solid pesticide in water to form a concentrated aqueous suspension, said solid pesticide being selected from the group consisting of the herbicides diuron, chlorotoluron, simazine, or atrazine, the fungicides carbendazime, maneb, mancozeb, or fentin hydroxide, the insecticide endosulfan, and mixtures of said pesticides, which method comprises dispersing 15 to 50 percent, by weight of said suspension, of said solid pesticide or pesticides in water in the presence of 0.5 to 30 percent, by weight of said suspension, of an alkali metal salt of a sulfosuccinic acid semi-ester prepared by reaction of a polyglycol ether of a condensation product of a (C_8–C_{12})-alkylphenol and formaldehyde with maleic anhydride and an alkali metal sulfite, and in the presence of 0.5 to 4 percent, by weight of said suspension, of a mixture of equal parts of an alkali metal salt of a ligninsulfonic acid and a swelling alkaline earth metal silicate.

4,804,400

N-PHENYL-MALEIMIDES AND HERBICIDAL AND PLANT GROWTH REGULATING METHODS OF USE THEREOF

Hans Moser, Magden, Switzerland; Georg Pissiotas, Lörrach, Fed. Rep. of Germany; Hans-Georg Brunner, Lausen, Switzerland; Beat Böhner, Binningen, Switzerland, and Marcus Baumann, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

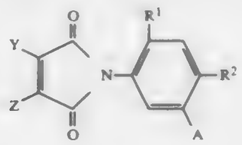
Filed Sep. 3, 1987, Ser. No. 92,793

Claims priority, application Switzerland, Sep. 12, 1986, 3664/86; Apr. 28, 1987, 1616/87

Int. Cl.[4] C07D *207/448, 207/452;* **A01N** *37/24*

U.S. Cl. 71—95 **18 Claims**

1. N-phenylmaleic acid imides of the formula I



(I)

in which

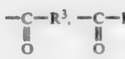
R^1 represents hydrogen or fluorine,

R^2 represents halogen,

Y represents C_1–C_8-alkyl,

Z represents hydrogen or C_1–C_8-alkyl, and

A represents hydrogen or a group



wherein

R^3 represents hydrogen, C_1–C_4-alkyl or C_1–C_4-haloalkyl,

R^7 represents hydroxy, C_1–C_8-alkoxy, C_2–C_8alkoxyalkoxy, C_2–C_8-alkylthioalkoxy, C_3–C_8-alkenyloxy, C_2–C_8-haloalkenyloxy, C_3–C_8-alkynyloxy, C_3–C_7-cycloalkoxy, C_1–C_8-alkythio, C_3–C_8-alkenylthio, or C_1–C_4-alkylthio substituted by C_1–C_8-alkoxycarbonyl, C_2–C_8-alkynyloxycarbonyl, C_1–C_8-alkylthiocarbonyl, C_3–C_8-alkenylthiocarbonyl or by C_3–C_8-alkynylthiocarbonyl; or C_1–C_4-alkoxy substituted by C_1–C_8-alkoxycarbonyl, C_2–C_8-alkoxyalkoxycarbonyl, C_3–C_8-alkenyloxycarbonyl, C_3–C_8-alkynloxycarbonyl, C_1–C_8alkylthiocarbonyl, C_3–C_8-alkenylthiocarbonyl, C_3–C_8-alkynyltiocarbonyl,

R^8 represents C_1–C_8-alkyl, C_2–C_8-alkoxyalkyl, C_2–C_8-alkylthioalkyl, C_2–C_8-haloalkyl, C_3–C_8-alkenyl, C_3–C_8-haloalkenyl, C_3–C_8-alkynyl, C_3–C_7-cycloalkyl, C_1–C_8-alkylcarbonyl, allylcarbonyl, phenyl, halophenyl, C_1–C_4-alkylphenyl, C_1–C_4-alkoxyphenyl, C_1–C_4-haloalkylphenyl, C_1–C_4-haloalkoxyphenyl, nitrophenyl, cyanophenyl, C_1–C_8-alkoxycarbonyl, C_2–C_8-alkoxyalkoxycarbonyl, C_3–C_8-akoxycarbonyl, C_2–C_8-alkoxyalkoxycarbonyl, C_3–C_8-alkenyloxycarbonyl, C_3–C_8-alkynyloxycarbonyl, C_1–C_8-alkyl-thiocarbonyl, C_3–C_8-alkenylthiocarbonyl or C_3–C_8alkynylthiocarbonyl.

16. A method for inhibiting the growth of useful plants, which comprises treating the plants with an effective amount of an ingredient according to claim 1 or of a composition containing such an active ingredient.

17. A method of controlling weeds, which comprises treating the weeds or their environment with an effective amount of a compound according to claim 1 or of a composition containing such a compound.

4,804,401

METHOD OF PRODUCING A PHOSPHORUS FERTILIZER SOIL CONDITIONER

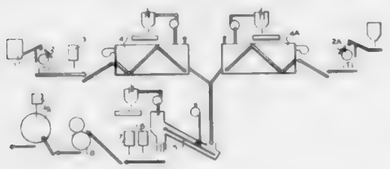
Arvo Wahlberg, deceased, late of Espoo, and by Anna-Maija Wahlberg, legal representative, Miniatentie 4-C-16, 02360 Espoo, both of Finland

Continuation-in-part of Ser. No. 853,354, Apr. 17, 1986, Pat. No. 4,710,219. This application Oct. 17, 1986, Ser. No. 921,503

The portion of the term of this patent subsequent to Dec. 1, 2004, has been disclaimed.

Int. Cl.[4] C05F *13/00*; C05B *17/00*

U.S. Cl. 71—11 **14 Claims**



1. A process for producing a combined phosphate fertilizer and soil conditioner without employing a mineral acid, which consists essentially of the steps of:

(a) providing a comminuted, moist, acidic waste material having a pH less than 6, a water content of at least 40%, and lower calcium and phosphorous contents than the calcium and phosphorous contents of phosphate rock;

(b) heating the comminuted, moist, acidic, organic waste material provided in step (a) to a temperature of 40° C. to 120° C.;

(c) comminuting phosphate rock to a particle size of 0.02 to 3 mm;

(d) heating the phosphate rock comminuted in step (c) to a temperature of 50° C. to 800° C.;

(e) inducing collision between the comminuted phosphate rock heated during step (d) and the comminuted, moist, acidic, organic waste material heated during step (b) at a temperature of substantially 40° C. to 120° C., and mixing said organic waste material with said phosphate rock to effect a reaction therebetween; and

(f) removing from step (e) a combined phosphate fertilizer and soil conditioner whose soluble phosphate content in water or citric acid has been increased by the reaction over the soluble phosphate content of the phosphate rock used in step (c).

4,804,402

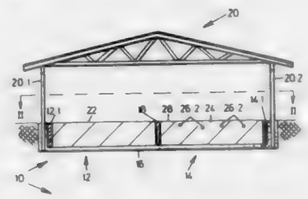
PREPARATION OF NATURAL FERTILIZING MATERIAL

Arthur P. Joubert, P O Box 3, Koeleshof, 7605, South Africa

Continuation of Ser. No. 821,492, Jan. 22, 1986, abandoned, which is a continuation of Ser. No. 315,576, Oct. 27, 1981, abandoned. This application Apr. 16, 1987, Ser. No. 40,763

Int. Cl.[4] C05F *7/00, 3/00*

U.S. Cl. 71—12 **6 Claims**



1. A method of preparing natural fertiliser material from waste sewage sludge consisting essentially of the steps of preparing said sewage sludge having a moisture content of less than about 35 percent by weight into a bed of depth less than about 2 meters, and contacting the sewage sludge with at least 50 grams per cubic meter of sewage sludge of a sterilising fluid comprising methyl bromide vapor for a period of between 36 and 72 hours, said step of contacting the sewage sludge comprising arranging an impervious cover in a sealed fashion above the sludge bed, drawing off and heating methyl bromide from a pressurised container so as to completely vaporise it, distributing the methyl bromide in vaporous form and introducing the vapor to the top surface of the bed under the cover without increasing the pressure under said cover to any substantial extent, permitting said vapor to disperse over the the surface of the sewage sludge, and to permeate said bed of sewage sludge downwardly under the influence of the force of gravity, thereby effectively sterilising said sludge and making it fit for use as a natural fertilising material in agricultural and horticultural applications.

4,804,403

ATTRITION-RESISTANT, CONTROLLED RELEASE FERTILIZERS

William P. Moore, Hopewell, Va., assignor to Melamine Chemicals, Inc., Donaldsonville, La.

Continuation-in-part of Ser. No. 897,160, Aug. 18, 1986, Pat. No. 4,711,659. This application Aug. 6, 1987, Ser. No. 82,236

The portion of the term of this patent subsequent to Dec. 8, 2004, has been disclaimed.

Int. Cl.[4] C05C *9/00, 13/00*

U.S. Cl. 71—28 **7 Claims**

1. An attrition-resistant, controlled release fertilizer composition comprising the reacted moieties of Component A which is a water-soluble central mass of plant food compound in particulate form containing reactive functional groups amounting to at least 10%; Component B which is a monomer-type component having reactive functionality; and Component C which is present as a water-insoluble polymeric sealing layer; said Components A, B and C being selected in order that the reactive functionality of Component B will react with the reactive functionality of each of Components A and C, and with the ratios of said Components A, B and C being selected whereby Component B is present in an amount sufficient to provide reaction sites for reaction with substantially all of the reactive functionality at the surface of said particles of Component A and to react with the reactive functionality on Component C, thereby forming particles of Component A having a sealing layer of Component C thereon and with Components A and C being chemically linked together through Component B.

4,804,404

2 AND/OR 3-TRIFLUOROMETHYL-SUBSTITUTED QUINOLINE 8-CARBOXYLIC ACID DERIVATIVES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Helmut Hagen, Frankenthal; Ulrich Eichenauer, Frankfurt; Rolf-Dieter Kohler, Edingen-Neckarhausen; Peter Plath, Frankenthal; Thomas Liese-Sauer, Weinheim; Karl Eicken, Wachenheim; Bruno Wuerzer, Otterstadt, and Norbert Meyer, Ladenburg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

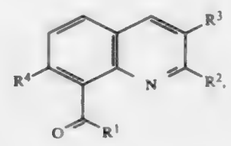
Filed Jun. 15, 1987, Ser. No. 62,070

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1986, 3620064

Int. Cl.[4] A01N *43/42*; C07D *215/48*

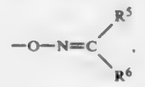
U.S. Cl. 71—94 **8 Claims**

1. A fluoroalkyl-substituted quinoline derivative of the formula



(I)

where R^1 is chlorine, fluorine, hydroxyl, $O^{\oplus}Met^{\ominus}$, C_1–C_4-alkoxy or a radical of the formula



R^2 and R^3 independently of one another are each hydrogen, C_1–C_3-alkyl or CF_3, R^4 is fluorine, chlorine or bromine, $Met^{\ominus}$ is an alkali metal ion and R^5 and R^6 independently of one another are each C_1–C_3-alkyl, with the proviso that one or both of the radicals R^2 and R^3 are CF_3.

4. A process for controlling the growth of unwanted plants, wherein the unwanted plants or the area to be kept free from unwanted plant growth are treated with a herbicidally effective amount of a fluoroalkyl-substituted quinoline derivative of the formula I as set forth in claim 1.

4,804,405

ELECTIVE HERBICIDE COMPOSITIONS HAVING A PROLONGED ACTION CONTAINING α-CHLOROACETAMIDE DERIVATIVES AS ACTIVE INGREDIENT

Ferenc Bajusz; Károly Balogh; Tibor Bódi, all of Miskolc; Barna Bordás, Budapest; Zsolt Dombay, Miskolc; Gyöngyvér Fodor née Balogh, Miskolc; Erzsébet Grega née Tóth, Miskolc; Pál Grihovszki, Miskolc; Erno Lorik, Miskolc; György Matolcsy, Budapest; Judit Mátyás née Dávid, Sajóbábony; Erzsébet Mile, Miskolc; József Nagy, Miskolc; Csaba Pavliscsák, Sajóbábony; Gyula Tarpai, Miskolc; András Tóth, Miskolc; István Tóth, Miskolc; Mária Tóth née Takács, Miskolc, and Márton Tünke, Budapest, all of Hungary, assignors to Északmagyarországi Vegyimuvek, Sajóbábony, Hungary

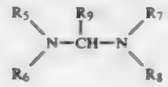
Filed Oct. 16, 1985, Ser. No. 787,912

Claims priority, application Hungary, Oct. 16, 1984, 3856/84

Int. Cl.[4] A01N *25/22*

U.S. Cl. 71—118 **10 Claims**

1. A herbicidal composition exhibiting prolonged effect comprising, as the herbicidally active ingredient, 2,6-diethyl-N-methoxy-methyl-α-chloroacetanilide, N-isopropyl-α-chloroacetanilide or 2-methyl-6-ethyl-N-ethoxy-methyl-α-chloroacetanilide, and an effective herbicidal effect prolonging amount of an animal derivative of the formula (III)



(III)

wherein

R_5, R_6, R_7 and R_8 independently are hydrogen, C_1–C_6 alkyl, C_3–C_7 cycloalkyl, C_2–C_5 alkenyl or C_2–C_5 alkenyl substituted by C_1–C_4 alkyl; and

R_9, is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkyl substituted by halogen, or phenyl.

4,804,406

α-NAPHTHYLALKYLAMINES

Joachim Weissmüller, Wuppertal; Wilhelm Brandes, Leichlingen; Gerd Hänssler, and Paul Reinecke, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

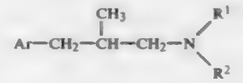
Division of Ser. No. 718,128, Apr. 1, 1985. This application Sep. 3, 1987, Ser. No. 92,824

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1984, 3413897

Int. Cl.[4] A01N *33/02*

U.S. Cl. 71—121 **9 Claims**

1. A β-naphthylalkylamine of the formula



in which

Ar represents β-naphthyl which is optionally mono-, di- or tri-substituted by identical or different substituents from the group comprising halogen and alkyl and

R^1 and R^2, which can be identical or different, represent in each case straight-chain or branched alkyl or alkenyl with in each case up to 6 carbon atoms,

or a plant-tolerated acid addition salt thereof.

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4,804,407

METHOD FOR RECOVERING COBALT FROM HEXAMMINE COBALTIC (111) SOLUTIONS

Richard A. Scheithauer; Clarence D. Vanderpool, and Michael J. Miller, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 13, 1988, Ser. No. 194,647
Int. Cl.[4] B22F *9/24*
U.S. Cl. 75—0.5 AA **1 Claim**

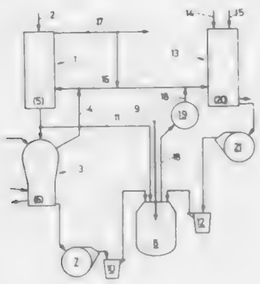
1. A method for recovering cobalt, said method comprising:
(a) adding ammonia to a cobalt chloride solution to a pH of from about 8.8 to about 9.6 with oxidation to form hexammine cobalt (III) chloride;
(b) adding to the resulting solution of hexammine cobalt (III) chloride, sodium chloride in an amount sufficient to result in the precipitation of at least about 98% by weight of the cobalt as hexammine cobalt (III) chloride at a temperature of no greater than about 40° C.;
(c) separating the precipitate of hexammine cobalt (III) chloride from the resulting mother liquor which contains the balance of the cobalt;
(d) adding to said mother liquor aluminum powder in an amount sufficient to result in the precipitation of said balance of cobalt as cobalt metal; and
(e) separating said cobalt metal from the resulting spent liquor.

4,804,408

A MILL ARRANGEMENT AND A PROCESS OF OPERATING THE SAME USING OFF GASES TO REFINE PIG IRON

Othmar Pühringer; Felix Wallner; Horst Wiesinger, all of Linz; Ernst Eichberger, Pichl/Weis; Wilhelm Schiffer, Traun, and Walter Rockenschaub, Linz, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Aug. 4, 1987, Ser. No. 81,648
Claims priority, application European Pat. Off., Aug. 12, 1986, 86 890 229.7
Int. Cl.[4] C21B *13/14*
U.S. Cl. 75—38 **2 Claims**



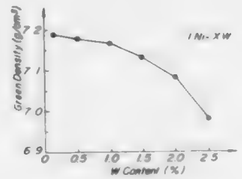
1. A mill arrangement for producing steel from ore and other solids iron carriers, which mill arrangement comprises in combination
a direct reduction plant for producing sponge iron and having a discharge side,
a meltdown gasifier,
at least one steel converter,
a cupola,
sponge iron transporting means provided on said discharge side of said direct reduction plant to connect said direct reduction plant to said meltdown gasifier and said at least one converter,
liquid blown metal transporting means provided to connect said cupola with said at least one converter,
molten pig iron transporting means to connect said meltdown gasifier with said at least one converter,
a temporary vessel for receiving pig iron from said meltdown gasifier,
a temporary vessel for receiving blown metal from said cupola, and
offgas ducts connected to each of said direct reduction plant, of said meltdown gasifier, and of said at least one steel converter,
said ducts intercommunicating and being connected to said cupola.

4,804,409

ALLOY STEEL POWDER FOR POWDER METALLURGY

Masaki Kawano; Kuniaki Ogura; Teruyoshi Abe, and Shigeaki Takajo, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

PCT No. PCT/JP87/00501, § 371 Date Sep. 11, 1987, § 102(e) Date Sep. 11, 1987, PCT Pub. No. WO88/00505, PCT Pub. Date Jan. 28, 1988
PCT Filed Jul. 11, 1987, Ser. No. 117,151
Claims priority, application Japan, Jul. 11, 1986, 162098
Int. Cl.[4] C22C *38/08*
U.S. Cl. 75—246 **8 Claims**



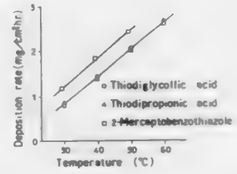
1. An alloy steel powder for powder metallurgy, consisting of
W: 0.2~2.0 wt % and
Ni: 0.8~3.0 wt %
and the balance being substantially Fe except for impurities.

4,804,410

PALLADIUM-BASE ELECTROLESS PLATING SOLUTION

Masaki Haga; Kiyotaka Tsuji, both of Kobe; Hidemi Nawafune, Takatsuki; Shozo Mizumoto, Kobe, and Ei Uchida, Amagasaki, all of Japan, assignors to Ishihara Chemical Co., Ltd., Kobe, Japan

PCT No. PCT/JP87/00113, § 371 Date Oct. 21, 1987, § 102(e) Date Oct. 21, 1987, PCT Pub. No. WO87/05338, PCT Pub. Date Sep. 11, 1987
PCT Filed Feb. 21, 1987, Ser. No. 128,111
Claims priority, application Japan, Mar. 4, 1986, 61-46727; Aug. 21, 1986, 61-196282
Int. Cl.[4] C09D *5/38, 5/00*; B22F *7/00*
U.S. Cl. 106—1.15 **14 Claims**



8. A palladium-based electroless plating solution consisting essentially of an aqueous solution of effective components,

wherein said effective components consist essentially of the following components in the following concentrations:
(a) 0.0001 to 0.5 mole/l of a palladium compound,
(b) 0.001 to 1 mole/l of a nickel compound,
(c) 0.001 to 8 moles/l of at least one compound selected from the group consisting of ammonia and amine compounds,
(d) 1 to 500 mg/l of an organic compound containing bivalent sulfur, and
(e) 0.005 to 1 mole/l of at least one compound selected from the group consisting of hypophosphorous acid compounds and boron hydride compounds.

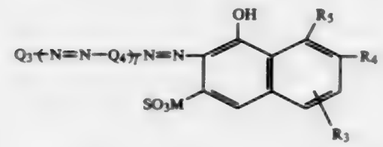
4,804,411

RECORDING LIQUID

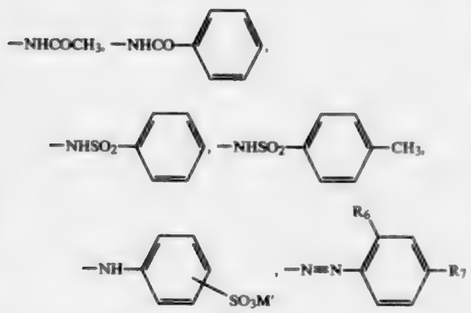
Tsuyoshi Eida, Yokohama; Yuko Suga, Tokyo, and Katsuhiro Shirota, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1987, Ser. No. 14,783
Claims priority, application Japan, Feb. 17, 1986, 61-30896; Feb. 17, 1986, 61-30899; Apr. 18, 1986, 61-88170; Apr. 18, 1986, 61-88171
Int. Cl.[4] C09D *11/00*
U.S. Cl. 106—22 **11 Claims**

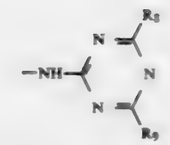
1. A recording liquid comprising:
an aqueous liquid containing 0.1 to 20% weight of a recording agent having a molecular structure containing three structural units linked together through one or two linking groups, said structural units being represented by the formula


(B)

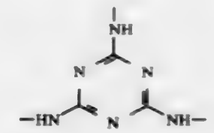
wherein Q_3 and Q_4 independently represent a benzene ring or a naphthalene ring which may have a substituent, R_3 represents hydrogen or a sulfonic group, R_4 and R_5 are independently selected from the group consisting of hydrogen, amino



wherein (R_6 and R_7 independently represent hydrogen, amino, monoethanolamino, acylamino, alkyl, or a sulfonic group),



wherein (R_8 and R_9 independently represent hydroxyl, amino, monoethanolamino or diethanolamino), and l represents 0 or 1; said linking group being represented by the formula
(Y): —$(CH_2)_q$—, —NHCONH—, —NHCO—, —O—, —SO_2—, —NHCO$(CH_2)_r$CONH—, —NH—,



(wherein q and r are integers from 1–6)
wherein, the sulfonic group and a carboxylic group in said structural units form a salt with a base selected from the group consisting of alkali metals, ammonia and organic amines.

4,804,412

DENTURE ADHESIVE

Noboru Komiyama, Tokyo; Masayuki Oguma, Chiba, and Noriko Miyamoto, Ichikawa, all of Japan, assignors to Lion Corporation, Japan

Filed Apr. 28, 1987, Ser. No. 43,535
Claims priority, application Japan, May 13, 1986, 61-109028
Int. Cl.[4] A61C *13/23*; A61K *6/00*; C09J *3/14, 3/26*
U.S. Cl. 106—35 **2 Claims**

1. A denture adhesive composition consisting essentially of:
a low softening-point resin selected from the group consisting of polyvinyl acetate resins, chicles and mixtures thereof; and
at least one compound containing one or more polypropylene groups of the formula —CH_2—$CHCH_3$—O— where n is an integer of 2–120 and having a molecular weight of about 120–7000, said one or more groups accounting for at least 60% of the molecular weight of said compound,
said at least one compound being selected from the group consisting of:
(1) homopolymers of propylene oxide,
(2) copolymers of propylene oxide and ethylene oxide and
(3) products obtained by addition polymerizing propylene oxide or propylene oxide and ethylene oxide with
(a) a monovalent alcohol selected from methanol, ethanol, n-propanol, isopropanol, n-butanol, isobutanol, sec-butanol, tert-butanol, pentanol, pentanol-1, pentanol-2, pentanol-3, 2-methylbutanol-1, 2-methylbutanol-2, 2-methylbutanol-3, 2-methylbutanol-4, dimethylpropanol, hexanol-1, hexanol-2, heptanol-1, heptanol-2, octanol-1, octanol-2, 4-ethylhexanol-4, 2-ethylhexanol-1, nonanol-1, nonanol-2, nonanol-3, decanol-1, decanol-2, allyl alcohol, crotyl alcohol, 2-butenol-1, 2-pentenol-1, 3-hexenol-1, and 2-heptenol-1,
(b) a polyvalent alcohol selected from ethylene glycol, propylene glycol, butylene glycol, glycerine, pentaerythritol, xylitol, sorbitol, mannitol, maltitol, glucose and lactose,
(c) a monobasic carboxylic acid selected from formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caprocic acid, enanic acid, caprylic acid, pelargonic acid,

capric acid, crotonic acid, isocrotonic acid, 2-hexenoic acid, 4-decenoic acid and 9-decenoic acid, or

(d) a polybasic carboxylic acid selected from oxalic acid, malonic acid, succinic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid, sebacic acid and 1,9-nonamethylene carboxylic acid,

the content of said at least one compound in said composition being 0.1 to 30% by weight.

4,804,413

SHOE POLISH COMPOSITION

Peter P. Lee, 2267 Clementina Dr., Hacienda Heights, Calif. 91745

Continuation-in-part of Ser. No. 747,910, Jun. 24, 1985, abandoned. This application Jan. 23, 1987, Ser. No. 6,709

Int. Cl.⁴ C09G *1/08*

U.S. Cl. 106—8 **9 Claims**

1. An improved non-caking shoe polish composition consisting essentially of in addition to a base mixture consisting of paraffin wax and turpentine oil in an amount less than about 80% by weight of the total composition:

refined petroleum jelly in an amount from about 10% to about 90 weight percent, and

silicone oil in an amount from about 1.0 to about 15 weight percent.

4,804,414

STARCH-BASED ADHESIVE FORMULATION

Patrick D. Gleason, St. Paul, Minn., assignor to H. B. Fuller Company, St. Paul, Minn.

Filed Dec. 7, 1987, Ser. No. 129,176

Int. Cl.⁴ C08L *3/00*

U.S. Cl. 106—212 **33 Claims**

1. An aqueous starch-based adhesive composition which comprises:

(a) a major proportion of water;

(b) an effective amount of starch to form an adhesive bond; and

(c) an effective amount of a solubilized neutralization product of an alkali metal base and a wood or hydrocarbon rosin composition, having an acid number greater than about 140, to form an adhesive bond.

4,804,415

PROCESS FOR PRODUCING AZO PIGMENT

Ryuzo Ueno; Shigeru Ito, both of Nishinomiya; Shin Fujimoto, Itami, and Mayumi Iwao, Minoo, all of Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan

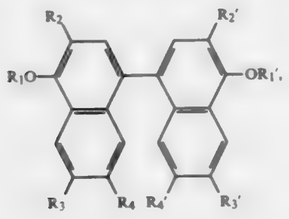
Filed Jul. 31, 1987, Ser. No. 80,307

Claims priority, application Japan, Aug. 4, 1986, 61-181844

Int. Cl.⁴ C09B *29/01, 29/15*

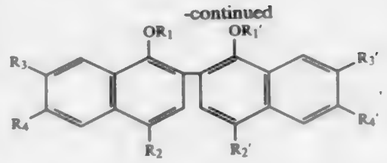
U.S. Cl. 106—496 **13 Claims**

1. A process for producing a toned azo pigment, which comprises coupling an aromatic diazonium compound with 3-hydroxy-2-naphthoic acid and at least one binaphthol selected from the group consisting of compounds represented by the formulae

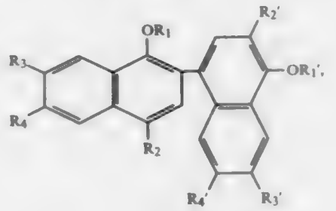


(II)

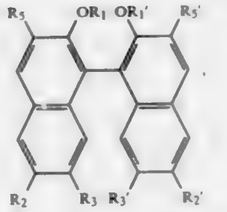
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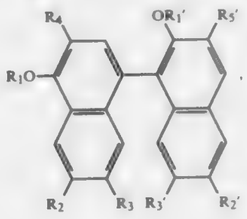
(III)



(IV)

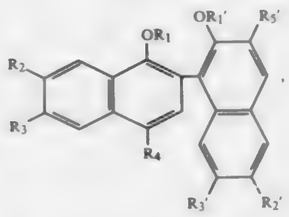


(V)



(VI)

and



(VII)

wherein

R_1 and R_1', independently, represent a hydrogen atom or an alkyl group of not more than 5 carbon atoms,

R_2, R_2', R_3, R_3', R_4 and R_4', independently, represent a hydrogen atom, an alkyl group of not more than 5 carbon atoms, a halogen atom, a carboxyl group, an alkoxycarbonyl group, a nitro group or a sulfone group, and

R_5 and R_5', independently, represent a hydrogen atom, an alkyl group of not more than 5 carbon atoms, a halogen atom, an alkoxycarbonyl group, a nitro group or a sulfone group; and

optionally, laking the resulting pigment.

4,804,416

ORGANOPHILIC COMPOSITIONS

Walter B. Jepson, and Howard Goodman, both of St. Austell, United Kingdom, assignors to ECC International Limited, Great Britain

Division of Ser. No. 940,988, Dec. 12, 1986, Pat. No. 4,743,306. This application Dec. 30, 1987, Ser. No. 139,439

Claims priority, application United Kingdom, Dec. 19, 1985, 8531254

Int. Cl.⁴ C09C *1/02*

U.S. Cl. 106—468 **9 Claims**

1. A process for preparing an organophilic composition which process comprises preparing an aqueous suspension comprising a mixture of smectite clay and finely divided silica, mixing with the aqueous suspension a quaternary ammonium compound which has at least one alkyl radical having from 10 to 24 carbon atoms and which is capable of rendering the smectite clay organophilic, either in the molten state or in the form of an emulsion in water, and subjecting the resultant mixture to high shear mixing for a time sufficient to dissipate in the mixture at least 100 kJ of energy per kg of dry solids in the mixture, said finely divided silica being used in an amount sufficient to provide at least 5% by weight of the final mixture of smectite clay, finely divided silica, and quaternary ammonium compound.

4,804,417

PROCESS FOR PRODUCING DIOXAZINE VIOLET PIGMENT

Taira Fujita; Yoshiaki Hayashi, and Hiroshi Okayasu, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 1, 1987, Ser. No. 127,768

Claims priority, application Japan, Dec. 11, 1986, 61-296038

Int. Cl.⁴ C08K *5/34*

U.S. Cl. 106—498 **9 Claims**

1. A process for producing dioxazine violet pigment which comprises treating a crude dioxazine violet with sulfuric acid until it is completely converted to the sulfate and then hydrolyzing the sulfate to finer particles thereof and then treating an aqueous suspension of the resulting particles with both an alcohol and an inorganic salt.

4,804,418

PROCESS AND OUTFIT FOR THE EXTRACTION OF SUGAR FROM SUGAR CANE

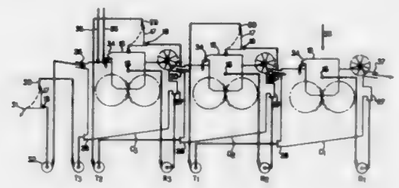
Alain Gautier, Arras, France, assignor to Magnin S. A., B. P., La Fere, France

Filed Sep. 19, 1986, Ser. No. 909,747

Claims priority, application France, Sep. 19, 1985, 85 13843

Int. Cl.⁴ C13C *3/00*

U.S. Cl. 127—2 **8 Claims**



1. An apparatus for extraction of cane sugar juice by water from prepared sugar canes by treating magma to produce concentrated juice and bagasse, said apparatus comprising:

plural extraction cells;

each extraction cell including:

a tank,

a pair of fluted rollers completely immersed in magma in said tank,

rotation means for rotating said pair of rollers,

a feeding hopper positioned directly above and partially surrounding said pair of rollers including a nip portion thereof;

connecting means for connecting said cells in series, from a first cell to a last cell, with respect to flow of juice;

said connecting means comprises downwardly sloping overflow chutes extending from an upstream tank to an adjacent downstream tank such that the circulation of the juice is carried out by overflow from the upstream to the downstream tank;

water supply means for supplying water to said first cell;

countercurrent flow means for connecting said cells, from said last cell to said first cell, for countercurrent flow of bagasse;

sugar cane supply means for supplying prepared sugar canes to said last cell;

a recirculation pump means for circulating magma from the tank to the feeding hopper above said tank so that said sugar cane passes through the same pair of rollers in each of said extraction cells several times while being immersed;

bagasse removal means for removing bagasse from said first cell; and

juice removal means for removing concentrated juice from said last cell.

4,804,419

CONTINUOUSLY OPERABLE SUGAR CENTRIFUGE

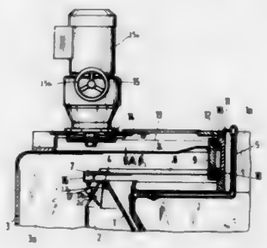
Helmut Schaper, Braunschweig, and Heinrich Kurland, Erkerode-Lucklum, both of Fed. Rep. of Germany, assignors to Braunschweigische Maschinenbauanstalt AG, Braunschweig, Fed. Rep. of Germany

Filed Oct. 5, 1987, Ser. No. 105,394

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1986, 3633890

Int. Cl.⁴ C13F *1/06, 1/10*

U.S. Cl. 127—19 **21 Claims**



1. A continuously operable sugar centrifuge, comprising an upwardly opening centrifugal drum having a sugar discharge flange forming an upper edge, housing means surrounding said centrifugal drum and forming a sugar collecting chamber, a plurality of flexible sugar deflecting members, rotatable ring means for carrying said flexible sugar deflecting members, mounting means for rotatably mounting said rotatable ring means in said housing means in such a position that said flexible sugar deflecting members are located to intercept sugar crystals moving over said sugar discharge flange, drive means operatively connected to said ring means for rotating said ring means, a mashing liquid supply ring conduit having a plurality of liquid discharge openings, means for mounting said mashing liquid supply ring conduit in a stationary position relative to said flexible sugar deflecting members so that mashing liquid discharged from said liquid discharge openings of said mashing liquid supply ring conduit comes into contact with said flexible

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sugar deflecting members for forming a mashing liquid film on said flexible sugar deflecting members, whereby the movement of said sugar crystals that have passed over said sugar discharge flange and which impinge on said mashing liquid film is gently dampened by said mashing liquid film which simultaneously causes a mashing of said sugar crystals, and wherein said means for mounting said mashing liquid supply ring conduit mount said mashing liquid supply ring conduit below said rotatable ring means, said discharge openings of said mashing liquid supply ring conduit being directed upwardly toward said flexible sugar deflecting members for directly impinging on said flexible surgar deflecting members.

4. The centrifuge of claim 1, wherein said flexible sugar deflecting members are thin plane sheet metal members secured to said rotatable ring means at uniform spacings between neighboring sheet metal members.

4,804,420

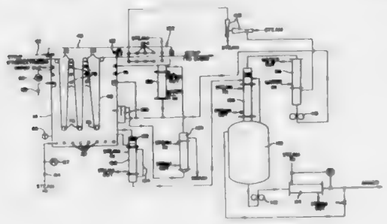
METHOD FOR DEGREASING A CONTINUOUS SHEET OF THIN MATERIAL

Peter E. Johnson, and James Young, both of Corvallis, Oreg., assignors to Estek Manufacturing, Inc., Lebanon, Oreg.

Division of Ser. No. 700,525, Feb. 11, 1985, Pat. No. 4,648,417. This application Mar. 10, 1987, Ser. No. 24,359

Int. Cl.[4] B08B *7/02*

U.S. Cl. 134—15 **5 Claims**



1. A method for degreasing a continuous sheet of thin material comprising:

(a) providing a degreasing tank having liquid solvent located in a liquid zone defined in the lower portion thereof;

(b) heating said solvent in said liquid zone to vaporize a portion thereof and provide a cleaning zone above said liquid zone which contains saturated vaporous solvent;

(c) condensing said solvent with a cooling device in a condensing zone defined in said tank above said cleaning zone; and

(d) passing the sheet through said tank in a manner such that the sheet repeatedly passes first through said condensing zone and then through said cleaning zone.

4,804,421

METHOD AND APPARATUS FOR REMOVING AGED WAX AND FUR ON VEHICLE

Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Aichi, Japan

Filed Feb. 23, 1988, Ser. No. 159,083

Claims priority, application Japan, Feb. 27, 1987, 44428/87

Int. Cl.[4] B08B *7/04*

U.S. Cl. 134—18 **3 Claims**

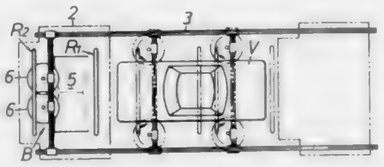
1. A method for removing an aged wax and fur on a vehicle by a washing machine including a gate-type frame which is reciprocally travellable astride the vehicle in longitudinal directions of the vehicle and which is provided with a rotary brush arrangement, a dryer, a clear water sprayer, a neutralizer-containing rinse water sprayer and an aged-wax/fur removing material spreader, comprising the steps of:

brushing the vehicle by said rotary brush arrangement during a first advancing movement of the gate-type frame;

spreading an aged-wax/fur removing material onto the vehicle by said aged-wax/fur removing material spreader, while at the same time brushing the vehicle by said rotary brush arrangement during a first returning movement and second advancing movement of the gate-type frame;

brushing the vehicle by said rotary brush arrangement during a second returning movement of the gate-type frame;

putting the gate-type frame out of operation for a given



period of time to perform a readjustment of the brushing during said period of out-of-operation;

spraying a neutralizer-containing rinse water onto the vehicle by said neutralizer-containing rinse water sprayer, while brushing the vehicle by said rotary brush arrangement, and then spraying clear water onto the vehicle by said clear water sprayer, during a subsequent third advancing movement of the gate-type frame; and

spraying clear water onto the vehicle by said clear water sprayer and then drying the vehicle by said dryer during a third returning movement of the gate-type frame.

4,804,422

METHOD OF PURIFYING QUARTZ SAND

Emmanuel Papanikolau, and Leonard T. M. Ebben, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 23, 1986, Ser. No. 877,601

Claims priority, application Netherlands, Feb. 6, 1986, 8600283

Int. Cl.[4] B08B *3/00*

U.S. Cl. 134—28 **4 Claims**

1. A method of purifying quartz sand comprising the steps of first, removing various free impurities from quartz sand, thereafter, washing said quartz sand with a solution of at least 15% by weight of HF in water until at least 40% by weight of said quartz sand is dissolved, and then, washing the remaining quartz sand with a solution containing at least 20% by weight of HC1 in water at a temperature from 50° to 95° C. for at least 30 minutes.

4,804,423

AL ALLOYS HAVING HIGH PROPORTIONS OF LI AND SI AND A PROCESS FOR PRODUCTION THEREOF

Bruno Dubost, St. Egreve, France, assignor to Cegedur Societe de Transformation de l'Aluminium Pechiney, Paris, France

Filed Jun. 27, 1986, Ser. No. 879,347

Claims priority, application France, Jun. 28, 1985, 85 10375

Int. Cl.[4] C22C *21/00*

U.S. Cl. 148—437 **19 Claims**

1. Al-base alloy of limited δ-Al Li precipitation obtained by melting and rapidly solidifying a composition consisting essentially of, by weigtht:

(a) from 3.6 to 8% Li;

(b) $5\% < Si < 14\%$;

(c) from 0 to 1% of each of the optional elements selected from the group consisting of: Fe, Co, Ni, Cr, Mn, Zr, V, Ti, Nb, Mo, O_2 and Sc;

(d) from 0 to 2% of each of optional elements selected from the group consisting of Cu, Mg, and Zn;

(e) the total amount of said optional elements being less than 5%; and

(f) the balance Al and impurities, each of said impurities ≦0.05%, and the total impurities ≦0.15%.

4,804,424

NITRATE ESTER-MISCIBLE POLYETHER POLYMERS

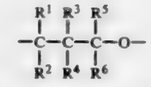
Jerald C. Hinshaw, Logan, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.

Division of Ser. No. 925,657, Oct. 19, 1986, abandoned. This application Jun. 3, 1988, Ser. No. 205,022

Int. Cl.[4] C06B *45/10*

U.S. Cl. 149—19.6 **8 Claims**

1. A propellant composition comprising between about 70 and about 85% solids, including fuel material particulates and oxidizer particulates, balance substantially a nitroester plasticizer and a binder, said binder comprising (1) a polyether having a functionality of about 2 or greater and having between about 20 and 100 molar percent mer units of the formula:



wherein at least four of R^1–R^6 are —H; one or two of R^1–R^6 is $-(CH_2)_n-CN$, wherein n is at least 1, and any remaining one of R^1–R^6 is an alkyl group, balance mer units being residues of compounds selected from the group consisting of ethylene oxide, other oxetanes, tetrahydrofuran, substituted tetrahydrofuran, and mixtures thereof.

4,804,425

PROCESS AND LAMINATOR FOR THE CONTINUOUS PRODUCTION OF LAMINATES OF FOAM WITH FACINGS

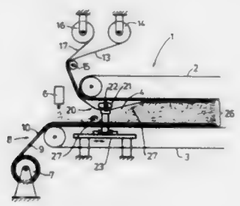
Erwin Hoffmann, Leverkusen; Hans-Dieter Pfeil, Wuppertal; Werner Dietrich, Odenthal, and Rolf Bock, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 57,133

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1986, 3620317

Int. Cl.[4] B32B *31/16*

U.S. Cl. 156—73.6 **13 Claims**



1. A process for the continuous production of foam laminated with facings comprising introducing an upper facing, a lower facing and a meshwork web into the foaming space of a laminator and spreading a fluid reaction mixture out on the lower facing before its introduction into the foaming space, said reaction mixture penetrating the web of meshwork while it foams up during its travel through the foaming space and becoming bonded to the facings, said meshwork web characterized in that it has adjacent nodes spaced apart by 3 to 15 mm and both the maximum height and the maximum width of the connecting strands of the . meshwork measure from 0.1 to 2.5 mm, and wherein said meshwork web is introduced into the apparatus at a distance of 0 to 15 mm from the upper facing.

4,804,426

CYLINDRICAL TIRE FORMING MEMBER MANUFACTURING METHOD AND APPARATUS

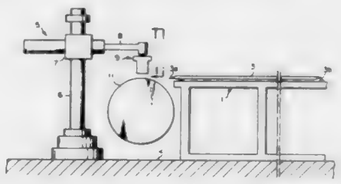
Kouji Okuyama; Makoto Yamamoto; Hidetoshi Kimura, and Taizo Ito, all of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 035,535, Apr. 7, 1987, Pat. No. 4,747,904. This application Mar. 14, 1988, Ser. No. 168,048

Claims priority, application Japan, Apr. 7, 1986, 61-79863

Int. Cl.[4] B29D *9/00, 30/16, 30/20*

U.S. Cl. 156—128.1 **3 Claims**



1. A method for building a cylindrical tire forming member, comprising the steps of:

conveying a front end portion of a belt-shaped material to a building drum;

pressing said conveyed front end portion against said drum;

holding sides of said belt-shaped material during said conveying and pressing steps;

rotating said drum after said belt-shaped material has been pressed against said drum to thereby wind said belt-shaped material on said drum;

pressing a widthwise center portion of a rear end portion of said belt-shaped material against said drum after said drum has been rotated;

longitudinally elongating side portions of said pressed rear end portion of said belt-shaped material;

pressing said elongated side portions against said drum; and butt joining said front and rear end portions.

4,804,427

COMPOSITES VIA IN-SITU POLYMERIZATION OF COMPOSITE MATRICES USING A POLYMERIZATION INITIATOR BOUND TO A FIBER COATING

Charles W. Paul, Madison, and Joseph E. Mackey, East Hanover, both of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Nov. 5, 1986, Ser. No. 927,201

Int. Cl.[4] D04H *3/08;* **B05D** *3/04*

U.S. Cl. 156—181 **27 Claims**

1. A process for manufacture of composites comprising continuous reinforcing fibers dispersed in a continuous polymer phase, said process comprising the steps of:

(a) impregnating one or more bundles of continuous reinforcing fibers with a curable resin which bonds to a surface of said fibers during curing of said resin, and with an initiator, said initiator selected from the group consisting of bi-functional initiators which contain one or more functional groups for promoting the curing of said resin and which contain one or more functional groups for initiating polymerization of monomer of a polymer, said initiator bonding to said resin during the curing thereof, and said initiator bonding to said polymer during the polymerization of said monomer forming residues which bond said resin to said polymer, and

(b) partially, incompletely or completely curing said resin to form bundles of continuous reinforcing fibers impregnated

with said partially, incompletely or completely cured resin bonded to the surface of said fibers; and

(c) impregnating said bundles of continuous reinforcing fibers impregnated with said partially, incompletely or completely cured resin with monomer of said polymer, coating said partially, incompletely or completely cured resin; and

(d) forming two or more of said bundles formed in step (c) into a composite employing a procedure selected from the group consisting of:

(i) further curing said resin, if necessary, to form completely cured resin, and polymerizing said monomer impregnating said bundles to form a polymer and cured resin impregnated bundles of fibers,

aligning two or more of said polymer and cured resin impregnated bundles into a desired shape, and molding said aligned bundles into a composite comprising fibers coated with said cured resin dispersed in a continuous phase of said polymer, said resin being bonded to said fiber and said polymer being bonded to said resin by residues of said initiator; and

(ii) aligning two or more of said monomer and partially, incompletely or completely cured resin impregnated bundles of fibers into a desired shape, and

further curing said resin, if necessary, to form cured resin and polymerizing said monomer impregnating said bundles to form a composite comprising fibers coated with said cured resin dispersed in a continuous phase of said polymer, said resin being bonded to said fiber and said polymer being bonded to said resin by residues of said initiator.

4,804,428

METHOD AND DEVICE FOR THE DIVISION OF METAL COATED LAMINATE WEBS INTO INDIVIDUAL PANELS

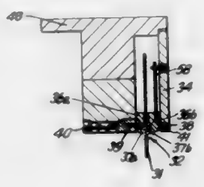
Kurt Held, Alte Strasse 1, D-7218 Trossingen-Schura, Fed. Rep. of Germany

Filed Sep. 2, 1987, Ser. No. 92,232

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1986, 3630269

Int. Cl.[4] B26D *1/22*

U.S. Cl. 156—267 **19 Claims**



1. A process for subdividing a continuous web into panels having a desired size, the web having a material core made of plural resin impregnated web layers with a metal foil lying on at least one surface of the core, comprising: drawing the web and metal foil layers from rollers; bringing the web and metal foil layers together to form a web; extruding the web under pressure and heat to form a compact laminate web; feeding the laminate web continuously in a feed direction; storing the desired size for the panels in a computer; using the computer to control a saw having a saw blade to cut the laminate web into panels at cut edges in the laminate web; the saw blade having teeth and being rotated to cut through the laminate web from a first surface to a second surface thereof, to form a severed edge in the web; slidably contacting opposite sides of the saw blade with a pair of cutter plates, the cutter plates contacting the saw blade with slight pressure and without play, in the area of the teeth of the saw blade and on the side of the web carrying the second surface of the web, the second surface of the web having the metal foil layer thereon, so as to support the saw blade; the cutter plates each having a narrow edge extending parallel to the severed edge of the web; and slidably contacting the second surface of the web with the narow edges as the teeth of the blade emerge from the second surface of the web to produce a severed edge in the web which is free of burrs.

4,804,429

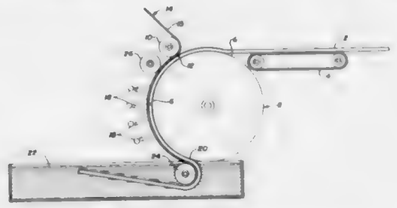
METHOD OF FORMING A FLOOR TILE ON A DRUM

F. Joseph Appleyard, East Petersburg; William L. Mason, Willow Street, and John H. Young, Lancaster, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Dec. 11, 1987, Ser. No. 131,582

Int. Cl.[4] B32B *31/00*

U.S. Cl. 156—209 **6 Claims**



1. A method of making a sheet material comprising:

(a) placing a vinyl mixture sheet on a first conveyor at a temperature of 300° F., to 340° F.,

(b) transferring the sheet from the first conveyor to the surface of the upper portion of a large drum, one surface of said sheet engaging said drum surface and said drum surface being maintained at a temperature of 180° F., plus or minus 30° F., for good adherence of the sheet to the drum surface;

(c) shortly after the sheet is positioned on the drum surface, engaging indirectly the second surface of said sheet with a least one roll;

(d) said one roll and said drum forming a nip therebetween, said sheet at this point at least adhering well to the drum surface and passing through said nip, a rigid vinyl film also passing through the nip with said sheet, and said film and sheet being laminated together with the heat of the sheet raising the temperature of the vinyl film above the glass transition temperature of the film and embossing the film/-sheet composite with a pattern;

(e) then moving the film/sheet composite down the downward moving surface of the drum and spraying cooling water primarily on the rigid vinyl film now fastened to the sheet carried on the drum to cool the vinyl film side of the composite to a temperature that is below the glass transition temperature of the vinyl film, without substantially cooling the drum surface, and

(f) near the bottom of the large drum, removing the film/-sheet composite from the drum where adherance of the sheet to the drum surface has diminshed to permit easy release of the sheet from the drum surface.

4,804,430

METALLIZATION OF SUPPORT MEMBERS

Richard G. Miekka, Sudbury; Roswell E. Hubbard, Wayland; John F. McDermott, Framingham, all of Mass., and Philip J. Clough, Gorham, Me., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed May 21, 1984, Ser. No. 612,167

Int. Cl.[4] B29C *65/44*; B32B *31/16*

U.S. Cl. 156—233 **16 Claims**

1. The method of metallizing a support member which comprises:

(a) forming a heated composite of a support member to be metallized and a metallized sheet, with a thermoplastic layer therebetween, said metallized sheet having a metal layer to be transferred and a carrier sheet;

(b) heating the composite sufficiently to soften the thermoplastic and then immediately pressing and cooling the composite from both sides by calendering the composite between chilled calender rolls; and

(c) thereafter separating the carrier from the metallized sheet.

4,804,431

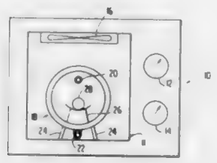
MICROWAVE PLASMA ETCHING MACHINE AND METHOD OF ETCHING

Aaron Ribner, 1327 Aaron Rd., North Brunswick, N.J. 08902

Filed Nov. 3, 1987, Ser. No. 116,036

Int. Cl.[4] C23F *1/02*

U.S. Cl. 156—345 **11 Claims**



1. A plasma etching machine, comprising:

a microwave oven having a magnetron, a power-transformer and a wall;

a vacuum chamber positioned inside said microwave oven, said vacuum chamber having means for receiving a substrate to be plasma etched;

means for admitting a gas inside of said vacuum chamber, said admitting means extending through said wall of said microwave oven to inside said vacuum chamber; and

means for evacuating reaction byproducts from inside said vacuum chamber, said evacuating means extending from inside said vacuum chamber through said wall of said microwave oven;

wherein a gas is admitted into said vacuum chamber, microwaves produced by said microwave oven ignite said gas in said vacuum chamber into a plasma, said vacuum chamber further containing a substrate, said plasma reacting with organic contaminants on said substrate inside said vacuum chamber to create reaction byproducts, said reaction byproducts being evacuated from inside said vacuum chamber by said evacuating means.

4,804,432

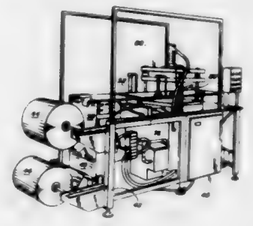
MANUFACTURE OF GLOVES AND THE LIKE

Eras J. P. Jurrias, Barrington, Ill.; Geri A. Rass, and Travis A. Rass, both of Laguna Hills, Calif., assignors to Bodiguard Technologies, Inc., Buffalo Grove, Ill.

Division of Ser. No. 813,970, Dec. 27, 1985, Pat. No. 4,643,791, which is a continuation-in-part of Ser. No. 768,013, Aug. 24, 1985, abandoned. This application Feb. 17, 1987, Ser. No. 16,034

Int. Cl.[4] B32B *31/18*

U.S. Cl. 156—350 **11 Claims**



1. Apparatus for manufacturing gloves, which comprises:

process line means, and means for passing a pair of thermoplastic sheets along said process line in adjacent, facing relation; means for pushing a portion of one of said sheets outwardly to form an outwardly projecting loop defining adjacent sides and an outer end; first die means for forming a thumb-shaped thermobonded line between adjacent sides of said loop; second die means, positioned along said process line downstream of the first die means, for forming a thermobonded line of the shape of fingers and hand between said thermoplastic sheets, in registry with said thumbshaped line, while retaining an open wrist portion; and cutting means positioned on said process line downstream from the second die means for cutting away the resultant glove from the remainder of the thermoplastic sheets at said wrist portion.

4,804,433

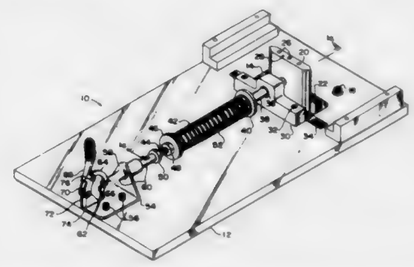
SYSTEM FOR CURING ADHESIVE IN THE MANUFACTURE OF TRANSDUCERS

Lawrence J. Smith, Darien, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Division of Ser. No. 787,346, Oct. 15, 1985, Pat. No. 4,705,587. This application Jul. 31, 1987, Ser. No. 80,361

Int. Cl.[4] B32B *31/00*; B30B *5/02*; G05G *15/00*

U.S. Cl. 156—359 **3 Claims**



1. A system for curing the adhesive bonding members of a transducer, comprising:

a. a base;

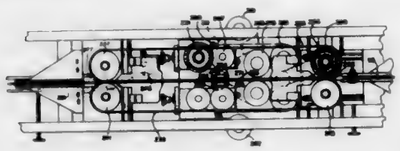
b. a fixture fixed to and supported by the base;

c. electrical heating means received within said fixture;

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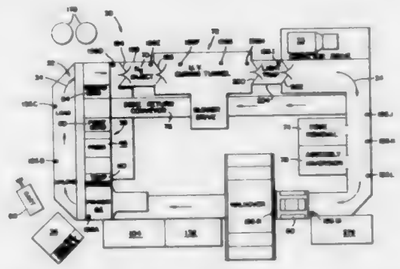
d. movable contact means supported by said base;
e. means for moving said contact means toward and away from said fixture;
f. means for locking said contact means at a predetermined distance from said fixture;
g. means for measuring the temperature of said fixture; and
h. means for controlling the heat supplied to the fixture after a predetermined temperature is attained by applying no power when the fixture is at the predetermined temperature and supplying full power when the temperature of the fixture decreases to a second predetermined temperature.

4,804,434
VERTICAL PWB SUPPLY SYSTEM
Hasso R. von Kraewel, Mauldin, S.C., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Dec. 4, 1985, Ser. No. 805,121
Int. Cl.[4] B65C 9/40
U.S. Cl. 156—364 **15 Claims**



1. Masking tape applicator means for applying masking tape to planar items being processed comprising in combination: first and second belt means; first and second belt driving means respectively coupled to said first and second belt means and disposed to drive said first and second belts along a transport path wherest said belts form a first nip and come in close proximity to move said items therebetween with at least said first belt driving means being formed to be speed adjustable, the belts forming a second nip, the portions of said belts coming in close proximity extending along said transport path from said first nip to said second nip; means for orienting said planar items in a vertical plane parallel to said transport path for introduction of said items into said transport path at said first nip, said means for orienting including means for supporting lower edge portions of said planar items to register said planar items vertically with respect to said belts whereby said items can be introduced into said first nip to assume a predefined vertical orientation during movement along said transport path; masking tape supply means disposed in close proximity to said belt means; first roller series means disposed to direct masking tape from said masking tape supply means to an application position along said transport path; third driving means formed to be speed adjustable and coupled to said first roller series means to drive at least a portion of said first roller series means; first and second signal generating means coupled respectively to said first and third driving means whereby said first belt driving means and said third driving means can be synchronized by monitoring signals generated by said first and second signal generating means; and masking tape applicator means wherein there is further included an item pusher means which is formed to push an item into said first nip in response to a predetermined relationship between signals generated by said first and second signal generating means; wherein said first roller series includes a die cutting cylinder and an anvil roller whereby patterns are cut from said masking tape as said masking tape is directed through said first roller series.

4,804,435
BONDING APPARATUS WITH ELECTROMAGNETIC WAVE GENERATOR
William A. Gelman, Hadley, Mass.; Edwin R. Holtz, Enfield, Conn.; Dennis J. Argenzi, Deep River, Conn.; Robert L. Smigel, Higganum, Conn., and Dan W. Wiley, Bristol, Conn., assignors to Loctite Corporation, Newington, Conn.
Division of Ser. No. 745,656, Jun. 17, 1985, Pat. No. 4,661,190.
This application Mar. 4, 1987, Ser. No. 21,445
Int. Cl.[4] B32B 31/28
U.S. Cl. 156—379.6 **19 Claims**

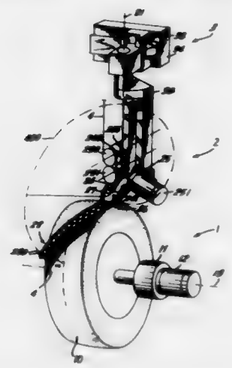


1. Apparatus for bonding a core member to a housing member wherein the core member has upper and lower surfaces and an outer peripheral surface extending between the upper and lower surfaces thereof and wherein the housing member has upper and lower surfaces and an inner peripheral surface extending between the upper and lower surfaces thereof defining a opening extending therethrough, the opening being spaced from the outer peripheral surface of the core member to thereby define an annular cavity therebetween having first and second spaced terminal regions, said apparatus comprising:
first dispensing means for applying a first continuous bead of viscous sealant to the inner and outer peripheral surfaces at a first terminal region of the cavity;
operative means for subjecting the first bead of sealant to a nitrogen atmosphere;
electromagnetic wave generation means for curing the first bead of sealant;
second dispensing means for substantially filling the cavity with anaerobic bonding material;
said first dispensing means being operable to apply to a second continuous bead of viscous sealant to the inner and outer peripheral surfaces at the second terminal region of the cavity spaced from the first terminal region and contiguous with an exposed surface of the anaerobic bonding material to thereby isolate the anaerobic bonding material within the cavity;
said operative means being operable to subject the second bead of sealant to a nitrogen atmosphere; and
said electromagnetic wave generation means being operable for curing the second bead of sealant.

4,804,436
MACHINE FOR THE MANUFACTURE OF A TIRE REINFORCEMENT
Claude Debroche, Cebazat, and Daniel Laurent, Meylan, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Jun. 1, 1987, Ser. No. 57,250
Claims priority, application France, Jun. 2, 1986, 86 08011
Int. Cl.[4] B29D 30/08, 30/00
U.S. Cl. 156—441 **10 Claims**

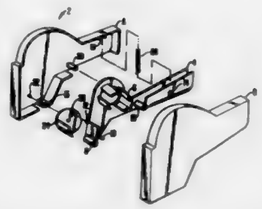
1. A machine for the production of a tire reinforcement, the reinforcement comprising adjacent, substantially parallel cords, characterized by the fact that the machine comprises laying members comprising:

means imposing a linear speed of laying on the reinforcement cord;
a rotary conduit fastened on a shaft constituting an axis of rotation of the conduit, in such a manner that a radially outer extremity of the conduit is directed substantially in a plane perpendicular to the axis of rotation of the conduit,



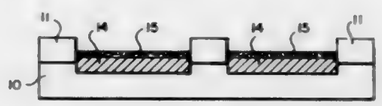
the conduit receiving the reinforcement cord at a base of the conduit which is located approximately on the axis of rotation and projecting the cord in a path along said perpendicular plane through the radially outer extremity into its place to form a reiuforcement of adjacent, substantially parallel cords; and
means for cutting the cord.

4,804,437
TAPE DISPENSER
Santoso Tirtoprodjo, 633 Dory Ln., Redwood City, Calif. 94065, and Ming H. Leong, 16435 Mount Way, Los Gatos, Calif. 95030
Filed Sep. 10, 1987, Ser. No. 95,289
Int. Cl.[4] B32B 31/04, 35/00
U.S. Cl. 156—577 **3 Claims**



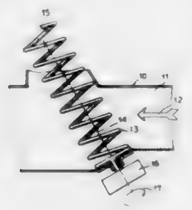
1. An improved tape dispenser of the type having a case surrounding a roll of tape to be dispensed, the case having a top and a bottom and including a bottom opening through which the tape is dispensed onto a surface and a trigger opening through which a pivotably mounted trigger assembly protrudes, a contact roller connected to the trigger assembly for dispensing the tape through the bottom opening when the trigger assembly is moved relative to the case, means for controlling the travel of the trigger assembly, and case-shielded means, coupled to the trigger assembly, for cutting the tape, the improvement comprising:
the trigger opening being formed in the bottom of the case;
the trigger assembly pivotably attached to the case at a pivot point substantially in the center of the trigger assembly, said trigger assembly including a downwardly protruding trigger portion extending through the trigger opening;
the bottom of the case and the trigger opening being spaced apart from the surface and defining an open area sufficient to admit a user's fingers between said trigger portion and the surface, with the top of the case against a user's palm;
whereby force is applied to the trigger mechanism from below and to the case from above by a user's hand to dispense tape through the bottom opening without requiring the case bottom to be in contact with the surface being taped.

4,804,438
METHOD OF PROVIDING A PATTERN OF CONDUCTIVE PLATINUM SILICIDE
Howard E. Rhodes, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 8, 1988, Ser. No. 153,373
Int. Cl.[4] B44C 1/22; C03C 15/00, 25/06; C23F 1/00
U.S. Cl. 156—653 **4 Claims**



1. A method of providing a pattern of conductive platinum silicide on a silicon substrate having selective oxide regions comprising in the following order the steps of:
(a) depositing a layer of platinum in an atmosphere having a vacuum of 10^{-8} Torr or less on a silicon substrate;
(b) annealing for the first time, the substrate at a temperature of between about 250°–800° C. in an atmosphere of 10^{-8} Torr or less to form a platinum silicide in regions in which the deposited platinum directly contacts silicon;
(c) annealing for the second time, the substrate in an atmosphere having oxygen to form a protective oxide layer over the silicide; and
(d) selectively removing the unreacted platinum deposited on the oxide regions by an aqua regia wet etch.

4,804,439
MEANS AND METHOD FOR REMOVAL OF STRINGS FROM WASTE PAPER
Borje Fredriksson, Sundsvall, Sweden, assignor to Beloit Corporation, Beloit, Wis.
Filed Feb. 11, 1988, Ser. No. 155,176
Int. Cl.[4] D21B 1/32
U.S. Cl. 162—55 **19 Claims**



1. An apparatus for removing stringy contaminants from a pulp in a wastepaper recovery system, comprising in combination:
a vessel defining a chamber for containing wastepaper blended with water to form a liquid waste stock;
an elongate helical rod located in the chamber to be sub-

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merged beneath the stock, and having an end disposed externally of said chamber, said rod formed in a helix about a central axis with the helix having a diameter measured laterally of the axis;

means causing a relative rotational movement between the stock and the helical rod so that long slender contaminants will be captured and climb the rod for collection and removal from the stock; and said rod end disposed externally of said chamber being structured for removal of said captured contaminants from said chamber.

14. The method for removing stringy contaminants from a pulp in a wastepaper recovery system, comprising the steps:

providing a pulping vat having a chamber in which wastepaper is blended with water to form a liquid waste stock;

positioning an elongate helical rod in the chamber to be submerged beneath the stock, said rod formed in a helix about a central axis; with the helix having a diameter measured laterally of the axis;

generating a relative rotational movement between the stock and the helical rod whereby long slender stringy contaminants are captured and climb the rod for collection and removal from the stock; and removing said captured contaminants from said stock.

4,804,440

MULTISTAGE BRIGHTENING OF HIGH YIELD AND ULTRA HIGH-YIELD WOOD PULPS

Norman Liebergott, Laval, and Cyril Heitner, Pierrefonds, both of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

Continuation of Ser. No. 804,200, Dec. 3, 1985. This application Mar. 15, 1988, Ser. No. 168,219

Claims priority, application Canada, Dec. 21, 1984, 470961

Int. Cl.[4] D21C *9/10, 9/16*

U.S. Cl. 162—70 **8 Claims**

1. A process suitable for bleaching high-yield and ultra-high yield pulps comprising the steps of:

(a) treating the pulp with a peroxygen compound at a charge of between 0.5 to 3% by weight based on oven-dried pulp at a temperature of between 60° C. to 100° C. for a period of from 4 minutes to 120 minutes at a pulp consistency of between 6% and 25% and a reaction terminating pH of from 7.5 to 9.5;

(b) then pressing the peroxygen treated pulp to produce a pulp of desired consistency and expressed liquid pressate or washing the peroxygen treated pulp to produce a washed pulp;

(c) treating the pressed or washed pulp with a reducing agent selected from the group of sodium bisulphite, magnesium bisulphite, sodium borohydride, thiourea dioxide, ammonium borohydride, hydrazine, and mixtures of sodium hydroxide and sodium borohydride at a charge of about 0.1 to about 3.0% by weight in the presence of a chelating agent at a reaction temperature of between 60° C. to 100° C. for a time of between 4 to 120 minutes at a pulp consistency of from 3% to 25% and a reaction terminating pH of between 3.5 to 10.5;

(d) then pressing or washing said reduced pulp to a desired consistency;

(e) then treating said pressed or washed pulp from (d) with a peroxygen compound at a charge of between 0.01% to 2.0% by weight at a temperature of between 60° C. to 100° C. for a time period of between 4 minutes to 240 minutes at a pulp consistency of between 6% to 25% and a reaction terminating pH of between 7.5 to 9.5; and

(f) further pressing or washing the pulp resulting from treating step (e).

4,804,441

PAPER MACHINE HEADBOX AND APPROACH FLOW SYSTEM

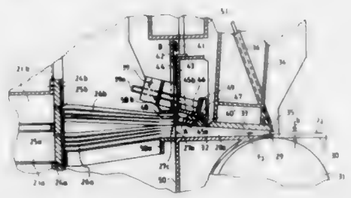
Markku Lyytinen, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Sep. 18, 1987, Ser. No. 98,538

Claims priority, application Finland, Sep. 19, 1986, 863805

Int. Cl.[4] D21F *1/02*

U.S. Cl. 162—212 **11 Claims**



1. In a method for controlling pulp flow to a headbox of a paper machine and approach pipe system thereof, wherein pulp suspension is fed through the approach pipe system of the headbox to a distribution header part from which the pulp suspension flow is conducted through a turbulence generator section and then to a lip section having an aperture through which the pulp suspension is discharged onto a forming wire or into a throat between a pair of forming wires, said method comprising the steps of

dividing the pulp suspension flow into at least two substantially parallel flowpaths in at least part of the approach pipe system, the distribution header part, and the turbulence generator section,

causing the divided pulp suspension flow to flow along these respective flowpaths substantially parallel to one another when the headbox has been set for a higher flow rate range, and

completely closing off at least one of the flowpaths after the turbulence generator section, when the headbox has been set to operate in a lower flow rate range,

wherein the pulp suspension flow is divided by the step of dividing the approach pipe system into at least two branches after a feed pump of the headbox,

and comprising the additional step of

uniting the branches only at a beginning of the lip section of the headbox.

7. An arrangement in a paper machine headbox comprising a pulp suspension feed pump, an approach pipe system communicating with the feed pump, an attenuation system for attenuating pressure variations of the pulp suspension,

and said arrangement further comprising

a distribution header part,

a turbulence generator section connected to said distribution header part,

a lip section which begins after and is connected to said turbulence generator section and which terminates in a lip aperture through which a pulp suspension jet can be directed onto a forming wire or into a throat defined by a pair of forming wires,

wherein the approach pipe system comprises at least two substantially parallel, pulp supply passages uniting in superimposed arrangement at the beginning of the lip section, and additionally comprising

means for opening and closing at least one of said passages, with said headbox being set for operation at a lower flow rate range when said at least one passage is closed,

wherein said passages terminate in said turbulence generator section in respective honeycomb arrays,

said honeycomb arrays including an upper honeycomb array and a lower honeycomb array, with said lower honeycomb array comprising a shoulder formed at an upper side thereof,

wherein said lip section comprises an upper lip beam having a lower wall,

and said opening/closing means further comprise a slide arrangement, comprising

a pivot situated on said lower wall of said upper lip beam,

a slide situated upon said pivot, and

an angular beam engaged with said slide and movable between an upper position in which all passages of said turbulence generator section are open, and

a lower position in which a vertical part of said angular beam closes the end of the upper honeycomb array, and the angular beam rests against said shoulder.

4,804,442

ULTRAPURE HYDRAZINE PRODUCTION

James G. Rigsby, Lake Charles, La., assignor to Olin Corporation, Cheshire, Conn.

Filed Jul. 31, 1986, Ser. No. 891,097

Int. Cl.[4] B01D *3/10, 3/34*

U.S. Cl. 203—12 **7 Claims**

1. A process for producing ultrapure hydrazine from an aqueous solution of hydrazine which comprises:

(a) dehydrating the aqueous solution of hydrazine by contact with an essentially carbon-free dehydrating agent to produce a concentrated aqueous hydrazine solution having a N_2H_4 concentration of at least 70 percent by weight,

(b) distilling the concentrated hydrazine solution in a fractional distillation means at a pressure of less than about 20 millimeters of Hg to produce an ultra high purity hydrazine having a N_2H_4 concentration of at least 99.5 percent by weight and less than about 5 parts per million of volatile carbonaceous materials.

4,804,443

METHOD AND APPARATUS FOR THE DETERMINATION OF ELECTROCHEMICALLY ACTIVE COMPONENTS IN A PROCESS STREAM

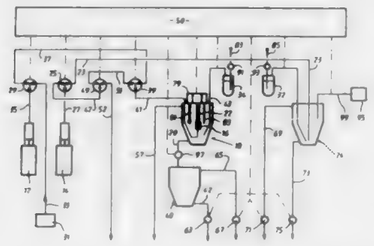
Oliver M. G. Newman, Moonah; Alan M. Bond, Toorak, and Robert W. Knight, Geelong, all of Australia, assignors to Electrolytic Zinc Company of Australia Limited, Melbourne, Australia

Filed Jul. 22, 1987, Ser. No. 76,485

Claims priority, application Australia, Apr. 13, 1987, PI1386

Int. Cl.[4] G01N *27/42*

U.S. Cl. 204—1 T **14 Claims**



1. A method for the determination of electrochemically active components in a process stream comprising the steps of immersing a working electrode in a supporting electrolyte, injecting a flow of a sample solution of the stream containing an electrochemically active component onto said working electrode so that the electrode is now surrounded with the sample solution to deposit said component onto the working electrode, said supporting electrolyte being less dense than said sample solution, stopping the flow of injected sample solution so that the sample solution sinks away from the working electrode to leave the working electrode having the component deposited thereon again immersed in the supporting electrolyte to thereby effect a matrix exchange, stripping the deposited component from the working electrode into the supporting electrolyte and determining the presence of the component in the supporting electrolyte.

14. An apparatus for the determination of impurities in an electrolyte containing a much higher concentration of another electrochemically active species comprising a measurement cell for holding a supporting electrolyte, means for forming a mercury electrode to be immersed in said supporting electrolyte, means for injecting a flow of a sample of the electrolyte containing said impurities onto said mercury electrode, said means for injecting the flow of sample electrolyte including a flow nozzle arranged adjacent to said mercury electrode when said mercury electrode is formed, said flow nozzle injecting the sample electrolyte towards the mercury electrode so that the sample electrolyte displaces said supporting electrolyte surrounding the mercury electrode so that the mercury electrode is surrounded by the sample electrolyte whilst both said sample electrolyte and said mercury electrode are within the supporting electrolyte, means for energizing said mercury electrode to cause said impurities to be deposited thereon, means for stopping the injection of the sample electrolyte from the flow nozzle so that the sample electrolyte moves away from said mercury electrode to leave the mercury electrode surrounded by the supporting electrolyte to thereby effect a matrix exchange, means for again energizing said mercury electrode so as to strip deposited impurities from the mercury electrode into the supporting electrolyte using variable time domain transient electrochemical stripping voltammetry and microprocessor control means for automating in sequence the injecting means. the stopping means and the energizing means.

4,804,444

METHOD OF PRODUCING A BOTH-SIDE ELECTROGALVANIZED STEEL STRIP IN A CHLORIDE BATH

Akira Matsuda, and Hajime Kimura, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Hyogo, Japan

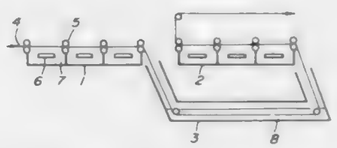
PCT No. PCT/JP83/00147, § 371 Date Jul. 20, 1984, § 102(e) Date Jul. 20, 1984

Continuation of Ser. No 637,218, filed as PCT JP83/00147 on May 18, 1983, published as WO84/04548 on Nov. 22, 1984, abandoned.

Filed Sep. 30, 1984

Int. Cl.[4] C25D *7/06*

U.S. Cl. 204—28 **1 Claim**



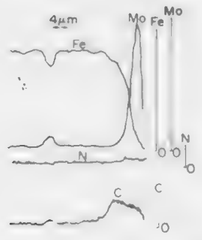
1. In a method of producing a both-side electrolytically zinc plated steel strip utilizing a chloride plating bath, the method including the steps of electrolytically plating one side of the steel strip in a first plating cell, wetting the thus one-side plated steel strip in a wetting tank, and then electrolytically plating the other non-plated side of the steel strip in a second plating cell, the improvement which comprises wetting the one-side plated steel strip in a chloride wetting solution having a concentration of zinc in a range of 0.1 to 50 g/l, so as to produce the both-side electro-galvanized steel strip having improved zinc coating coverage, glossiness and corrosion resistance and utilizes a chloride bath in the first and second plating cells which comprises 150–300 g/l of zinc chloride.

4,804,445

METHOD FOR THE SURFACE TREATMENT OF AN IRON OR IRON ALLOY ARTICLE

Yukio Ohta; Shigeo Moriyama; Akira Sato; Toru Arai; Hironori Fujita, and Yoshihiko Sugimoto, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Nov. 20, 1987, Ser. No. 123,269
Claims priority, application Japan, Dec. 17, 1986, 61-300667
Int. Cl.[4] C23C 8/32
U.S. Cl. 204—39 14 Claims



1. A method for forming a surface layer composed of a carbonitride of molybdenum on the surface of an iron or iron alloy article, comprising

preparing a material containing molybdenum and a treating agent comprising at least one of cyanides and cyanates of alkali metals and alkaline earth metals, and

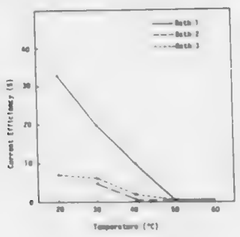
heating said article in the presence of said material and said treating agent at a temperature not more than 650° C., thereby diffusing molybdenum, nitrogen and carbon into the surface of said article.

4,804,446

ELECTRODEPOSITION OF CHROMIUM FROM A TRIVALENT ELECTROLYTE

David S. Lashmore, Frederick, Md.; Ilan Weisshaus, Kiryat Bialik, Israel, and Eok NamGoong, Changwon, Rep. of Korea, assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Sep. 19, 1986, Ser. No. 909,433
Int. Cl.[4] C25D 3/04
U.S. Cl. 204—51 24 Claims



1. (Amended) An aqueous chromium electroplating bath, comprising *a plating material source consisting essentially of* $CrCl_3$-$6H_2O$; sodium citrate; *glycolic acid*; borate; at least one member selected from the group consisting of an alkali halide and ammonium halide; a wetting agent; and a buffer.

4,804,447

METHOD OF PRODUCING NF_3

Peter Sartori, Duisburg, Fed. Rep. of Germany, assignor to Kali-Chemie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jun. 28, 1988, Ser. No. 212,665
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1987, 3722163
Int. Cl.[4] C25G 1/00
U.S. Cl. 204—63 19 Claims

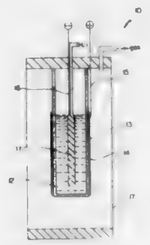
1. A method of producing NF_3 comprising the steps of subjecting an electrolyte mixture which contains at least one salt of ammonia with hydrofluoric acid and at least one salt of hydrazine with hydrofluoric acid to fused salt electrolysis, and collecting the resulting NF_3-containing gas.

4,804,448

APPARATUS FOR SIMULTANEOUS GENERATION OF ALKALI METAL SPECIES AND OXYGEN GAS

Anthony F. Sammells, and Krystyna W. Semkow, both of Naperville, Ill., assignors to Eltron Research, Inc., Aurora, Ill.

Filed Jun. 24, 1987, Ser. No. 65,962
Int. Cl.[4] C25C 3/02, 3/18, 7/00
U.S. Cl. 204—243 R 18 Claims



1. A high temperature electrolytic cell for electrochemical separation of alkali oxides to produce liquid alkali metal species comprising lithium and oxygen gas, said electrolytic cell comprising: a cathode; an alkali ion comprising lithium ion conducting molten salt electrolyte contacting said cathode; an oxygen vacancy conducting solid electrolyte contacting on one side said molten salt electrolyte; and an oxygen evolving anode contacting an opposite side of said oxygen vacancy conducting solid electrolyte.

4,804,449

ELECTROLYTIC CELL

Charles T. Sweeney, 10526 Gulfdale, San Antonio, Tex. 78216

Continuation-in-part of Ser. No. 832,987, Feb. 25, 1986, abandoned. This application Aug. 27, 1987, Ser. No. 90,404
Int. Cl.[4] C25B 9/00, 11/03, 13/08
U.S. Cl. 204—256 14 Claims

1. A chlorine, chlorine dioxide, oxygen species generator comprising;

a hollow container having a wall dividing the same into a first and second compartment,

said wall having an opening therein closed by a woven non-ionic modacrylic fiber diaphragm with a porosity sufficiently small to substantially prevent back migration of sodium ions during operation of the generator,

an anode positioned in said first compartment,

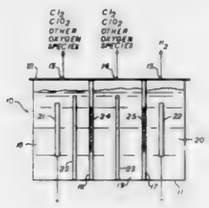
a cathode positioned in said second compartment,

a bipolar electrode positioned in one of said compartments having a configuration permitting flow of electrolyte around said electrode,

openings for introduction of electrolyte into said container,

openings for discharge of electrolytic reaction products from each of said compartments, and

said generator being adapted when filled with sodium chloride solution in said anode compartment and water or



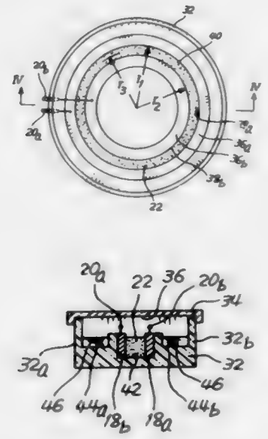
sodium hydroxide solution in said cathode compartment and energized to produce a chloride species from said anode compartment and hydrogen from said cathode compartment.

4,804,450

APPARATUS FOR FUSING CELLS

Takanori Mochizuki; Kenzo Teda, both of Kyoto; Mamoru Koga, Otsu; Yoshiyuki Togawa, Osaka; Shinitiro Takayama, Kyoto, and Katsuyuki Imai, Otsu, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Dec. 10, 1986, Ser. No. 940,119
Claims priority, application Japan, Dec. 11, 1985, 60-191185[U]; Dec. 13, 1985, 60-191936; Dec. 13, 1985, 60-280566
Int. Cl.[4] C12N 15/00, 13/00
U.S. Cl. 204—299 R 13 Claims



1. An apparatus for fusing cells comprising:

a fusion chamber including a pair of electrodes having opposite surfaces spaced a predetermined distance apart from each other to define a space therebetween in which a cell suspension is locateable, said opposite surfaces having a height which is sufficient, in view of sizes of cells in said cell suspension, to prevent any possible nonuniform electric field adjacent edges of said electrodes from adversely affecting a process of cell fusion;

means for producing an alternating current voltage;

means for producing a direct current voltage;

means for effecting selective application of said AC and DC voltage to said electrodes;

a removable lid for airtightly closing said fusion chamber; and

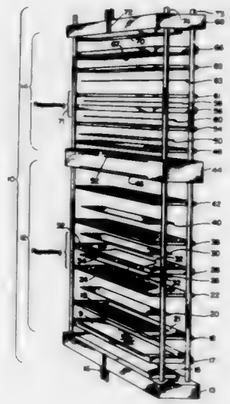
a cavity for containing said pair of electrodes and said cell suspension therebetween, and at least one additional cavity for containing a different fluid.

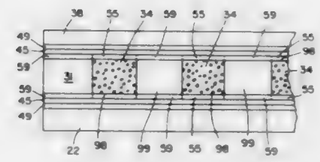
4,804,451

DEPLETION COMPARTMENT FOR DEIONIZATION APPARATUS AND METHOD

Keith A. Palmer, Lexington, Mass., assignor to Millipore Corporation, Bedford, Mass.

Continuation of Ser. No. 914,091, Oct. 1, 1986, abandoned. This application Nov. 25, 1987, Ser. No. 125,520
Int. Cl.[4] B01D 13/02
U.S. Cl. 204—301 15 Claims





1. In a deionization apparatus adapted to remove ions from a liquid having

a cathode compartment at a first end of said apparatus,

an anode compartment at an end of said apparatus opposite said first end,

a plurality of alternating ion depletion compartments and ion concentration compartments positioned between said anode compartments,

each of said ion depletion compartments having a thickness defined by an anion permeable membrane and a cation permeable membrane,

each of said membranes comprising a substrate coated by mechanical adhesion on both surfaces of said substrate with an anion permeable resin or a cation permeable resin,

means for passing a first liquid to be purified through said ion depletion compartments,

means for passing a second liquid for accepting ions from said first liquid, through said concentration compartments,

means for applying an electrical voltage between an anode in

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said anode compartment and a cathode in said cathode compartment and

means for recovering purified liquid from said depletion compartment,

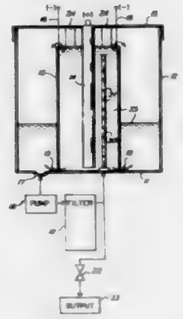
the improvement which comprises said ion depletion compartments having a spacer element having a first surface adhered directly to the substrate of the anion permeable membrane and a second surface adhered directly to the substrate of the cation permeable membrane thereby to seal a space between said membranes to prevent liquid in said concentration compartments from entering said dilution compartments, said anion permeable membrane being coated over an entire first anion surface with said anion permeable resin and being partially coated with said anion permeable resin over a second anion surface to leave said substrate partially exposed on said second anion surface thereby to permit direct adherence of the substrate in said anion permeable membrane to said spacer element, said cation permeable membrane being coated over an entire first cation surface with said cation permeable resin and being partially coated with said cation permeable resin over a second cation surface to leave said substrate partially exposed on said second cation surface thereby to permit direct adherence of the substrate in said cation permeable membrane to said spacer element.

4,804,452

ELECTROLYTIC PROCESSOR

Curtis O. Rhodes, Portageville, N.Y., assignor to CPAC, Inc., Leicester, N.Y.

Filed Jun. 14, 1988, Ser. No. 204,307
Int. Cl.[4] C25B *15/08, 9/00*; C25C *7/00*
U.S. Cl. 204—238 **20 Claims**



1. An electrolytic processor comprising:

a. a tank capable of holding varying volumes of liquid for processing;

b. a cathode standing on a bottom of said tank and extending above said tank bottom to an electrolytic processing level;

c. said cathode being able to retain liquid up to said electrolytic processing level, and liquid within said cathode being able to flow slowly from the bottom of said cathode into the bottom of said tank;

d. an anode arranged within said cathode and extending below said electrolytic processing level and into proximity with said tank bottom;

e. a pump arranged for circulating liquid from a tank drain outside said cathode to a region inside said cathode; and

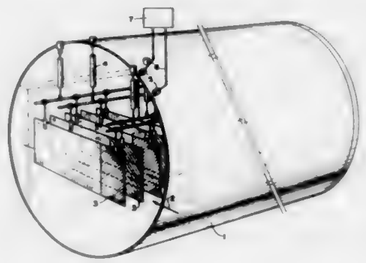
f. the liquid flow rate into said cathode from said pump exceeding the liquid outflow rate from the bottom of said cathode into the bottom of said tank so that said pump fills said cathode up to said electrolytic processing level, independently of the level of liquid in said tank outside said cathode.

4,804,453

RESOLUTION OF EMULSIONS WITH MULTIPLE ELECTRIC FIELDS

Kerry L. Sublette, Tulsa, and Floyd L. Prestridge, Sapulpa, both of Okla., assignors to National Tank Company, Tulsa, Okla.

Filed Jun. 7, 1982, Ser. No. 385,349
Int. Cl.[4] C10G *33/02*; B01D *17/06*
U.S. Cl. 204—302 **1 Claim**



1. An electrical system in which to generate electric fields in which the more polar liquids of a mixture coalesce, including,

a source of electrical energy,

a vessel elongated in a horizontal direction,

means for conducting an emulsion of relatively polar liquid dispersed as droplets throughout a continuous phase of relatively non-polar liquid into a first end of the vessel,

an insulating bushing in the wall of the vessel through which a conductor from the source of electrical energy is conducted to the interior of the vessel,

insulator structures arranged within the vessel to vertically suspend electrodes within the vessel,

at least one pair of plate electrodes in vertical parallel planes to form a passageway through which the emulsion flows horizontally and each electrode varying in conductivity in a horizontal direction,

means for connecting the source of electrical energy to the electrodes to generate an electric field in their passageway which degrades in the direction of fluid flow in their passageway,

means for collecting and withdrawing the coalesced polar liquid from the vessel,

and means for separately withdrawing the remaining non-polar liquid from the vessel.

4,804,454

OXYGEN CONCENTRATION SENSING APPARATUS

Masahiko Asakura; Yasunari Seki; Takanori Shibue, and Minoru Maruya, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1987, Ser. No. 28,138
Claims priority, application Japan, Mar. 19, 1986, 61-63203
Int. Cl.[4] G01N *27/58*
U.S. Cl. 204—406 **4 Claims**

1. An oxygen concentration sensing apparatus comprising:

oxygen sensing means, responsive to oxygen in a gas under measurement, for producing an output signal having a magnitude proportional to the concentration of oxygen in the gas under measurement when contacted by a stream of the gas, said oxygen sensing means having,

a sensor cell element made of a first active plate of an oxygen ion conductive solid electrolyte and a first pair of electrodes sandwiching said first active plate,

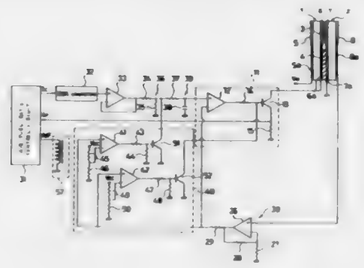
an oxygen pump element made of a second active plate of an oxygen-ion conductive solid electrolyte and a second pair of electrodes sandwiching said second active plate, said first and second active plates defining a restricted

region into which said gas under measurement is introduced;

command generating means for generating a voltage value command representing a voltage to be generated across said first pair of electrodes of said sensor cell element;

delay means for gradually supplying said voltage value command supplied by said command generating means;

current supply means, responsive to said gradually supplied voltage value command received from said delay means, for supplying a pump current across said second pair of electrodes of said oxygen pump element so that a voltage generated across said electrodes of said sensor cell element equals said voltage represented by said voltage value command, said current supply means further developing a current value of said pump current supplied to said oxy-



gen pump element as said output signal indicating the measured oxygen concentration; and

limit means for stopping the supply of an excess current to said electrodes of said oxygen pump element by said current supply means, said limit means including,

first switch means for stopping the supply of said voltage value command from said command generating means to said delay means when said voltage generated across said electrodes of said sensor cell element exceeds a first predetermined voltage, and

second switch means for immediately reducing said pump current across said electrodes of said oxygen pump element when said voltage generated across said electrodes of said sensor cell element exceeds a second predetermined voltage which is higher than said first predetermined voltage.

4,804,455

ELECTROCHEMICAL TESTING SYSTEM

Wayne R. Matson, Ayer, Mass., assignor to ESA, Inc., Bedford, Mass.

Continuation of Ser. No. 797,614, Nov. 13, 1985, abandoned. This application Aug. 19, 1987, Ser. No. 87,166
Int. Cl.[4] G01N *27/26, 27/30, 31/08*
U.S. Cl. 204—411 **16 Claims**



FIG. 1A

1. An electrochemical sensor electrode comprising a porous fritted carbonaceous material, said material comprising a frit of individual carbonaceous particles, a primary porosity between said individual carbonaceous particles and a secondary porosity within said individual particles, said secondary porosity comprising pores in the range of 10^{-6} to 10^{-7} cm, said secondary porosity being coated at least in part by an organic film material containing a separate non-electroactive material capable of changing the energy required for charge transfer adjacent the electrode surface.

4,804,456

METHOD FOR CONTROLLING FOULING DEPOSIT FORMATION IN PETROLEUM HYDROCARBONS OR PETROCHEMICALS

David R. Forester, Spring, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 944,153, Dec. 18, 1986, abandoned. This application Jan. 21, 1988, Ser. No. 146,630
The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.
Int. Cl.[4] C10G *9/16*
U.S. Cl. 208—48 AA **12 Claims**

1. A method for controlling the formation of fouling deposits in a hydrocarbon medium during processing thereof at elevated temperatures of from about 100° F.–1500° F., comprising dispersing within said hydrocarbon medium an antifouling amount of an antifoulant compound formed from reaction of a polyalkenylthiophosphonic acid compound and an amine.

4,804,457

PROCESS FOR REMOVAL OF POLYNUCLEAR AROMATICS FROM A HYDROCARBON IN AN ENDOTHERMIC REFORMER REACTION SYSTEM

Danny Y. Ngan, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 22, 1987, Ser. No. 76,507
Int. Cl.[4] C10G *35/04, 35/06*
U.S. Cl. 208—64 **20 Claims**



1. A process for reforming a hydrocarbon in a multi-stage endothermic reforming series of catalytic reforming reactors where said hydrocarbon is passed through said series of catalytic reforming reactors to form a reformate and where said hydrocarbon is heated prior to entry to the next catalytic reforming reactor in said series, which process comprises contact of said hydrocarbon intermediate from said series of catalytic reforming reactors containing reforming catalyst with a polynuclear aromatic adsorbent to adsorb at least a portion of said polynuclear aromatic content from said hydrocarbon prior to entry to each of the next catalytic reforming reactor in said series and recovering a reformate from the last catalytic reforming reactor in said series, said recovered reformate having a reduced content of polynuclear aromatics.

4,804,458

PROCESS FOR COLLECTING VAPOR IN EBULLATED BED REACTORS

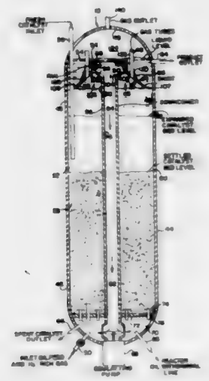
Robert D. Buttke, Lisle, and John R. Frey, Aurora, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Aug. 28, 1987, Ser. No. 87,394
Int. Cl.[4] C10G *23/06*
U.S. Cl. 208—143 **4 Claims**

1. A hydrotreating process, comprising the steps of:

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feeding a hydrotreating catalyst into an ebullated bed reactor;
partially filling said ebullated bed reactor to a level with a feed comprising oil and hydrogen-rich gases;
catching vapor comprising hydrogen and hydrocarbon gases in said feed, said vapor being caught with an annular pocket positioned between a stationary pan and a skirt extending downwardly and outwardly from said pair in a reaction zone of said ebullated bed reactor at a location below said level and directly passing said vapor generally upwardly through at least one bleed line extending gener-



ally upwardly from said pocket to space above said level of said feed;
passing said vapor generally upwardly through said space above said bleed line;
discharging said vapor through a gas outlet above said space;
directing reactor oil comprising said feed generally downwardly through said stationary pan and said downcomer in said ebullated bed reactor; and
mixing said oil and said vapor together in the presence of said catalyst to produce upgraded oil.

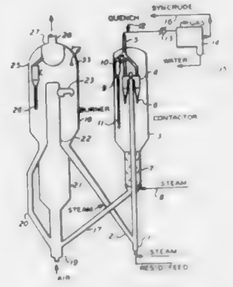
4,804,459

PROCESS FOR UPGRADING TAR SAND BITUMEN

David B. Bartholic, Watchung, and William J. Reagan, Englishtown, both of N.J., assignors to Engelhard Corporation, Menlo Park, N.J.

Continuation of Ser. No. 719,939, Apr. 4, 1985, abandoned. This application Jun. 25, 1987, Ser. No. 67,433
Int. Cl.[4] C10G *29/04*
U.S. Cl. 208—253 **9 Claims**

1. A process for upgrading a charge of a tar sand bitumen concentrate containing metal impurities, colloidal calcium-contsining clay and water which comprises contacting said charge in a riser contacting zone in the presence of a low boiling organic solvent with hot fluidizable attrition-resistant substantially catalytically-inert microspheres which are 20 to 150 microns in diameter and are composed of previously calcined kaolin clay, said contact taking place at high temperature and short contact time which permits vaporization of the high hydrogen containing components of said bitumen, said period of time being less than that which induces substantial thermal cracking of said charge, at the end of said time separating said vaporized product from said microspheres of calcined kaolin clay, said mircrospheres of calcined kaolin clay now bearing a deposit of combustible solid, metal impurities and adherent particles of colloidal calcium-containing clay originally contained in said bitumen concentrate, immediately reducing the temperature of said vaporized product to minimize thermal cracking and recovering said product for further refining to produce one or more premium products, regenerating said microspheres of calcined kaolin clay with deposit of metal impurities, combustibles and colloidal calcium-containing clay by passing said microspheres to a regeneration zone using air jets at 125–400 feet per second to oxidize the combustible portions of the deposit, to heat said microspheres of calcined kaolin clay, and to subject said microspheres with said deposit to sufficient mechanical action to selectively attrite deposited



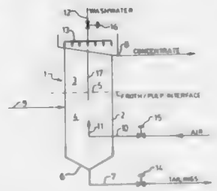
colloidal calcium-bearing clay from said attrition-resistant microspheres of calcined kaolin clay without breaking up the microspheres of calcined kaolin clay, removing attrited colloidal calcium-bearing clay from said regeneration zone and recirculating the heated microspheres of calcined kaolin clay depleted at least in part of deposited colloidal calcium-bearing clay to contact with incoming bitumen charge in said contacting zone.

4,804,460

COLUMN FLOTATION

Michael H. Moys, Johannesburg, South Africa, and James A. Finch, Montreal, Canada, assignors to Royal Inst. for Advancement of Learn., A.K.A. (McGill Univ.), Montreal, Canada

Filed Mar. 1, 1988, Ser. No. 162,457
Claims priority, application Canada, Jan. 8, 1988, 556151
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—164 **27 Claims**



1. A process for the froth flotation of ores in a column cell comprising an upper cleaning zone containing a froth layer and a lower collection zone containing an aqueous pulp of said ore having a pulp temperature, said froth layer and said pulp having a froth/pulp interface therebetween, wherein said process comprises feeding an aqueous pulp of ground ore having a feed temperature into the collection zone below said interface, washing said froth layer in the cleaning zone by adding a flow of washwater having a washwater temperature to remove gangue entrained in said froth layer and to obtain a concentrate having a concentrate temperature, recovering said concentrate from the top of said cleaning zone and discharging a flow of tailings from the bottom of said collection zone, said concentrate temperature being different from said pulp temperature,

the process further comprises measuring said concentrate temperature; measuring the temperature at a number of points in said froth layer, said interface and said pulp; said number of points being sufficient to allow the formation of a profile of measured temperatures; forming a measured profile of said measured temperatures; establishing a target profile; comparing said measured profile with said target profile; and adjusting said process if said measured profile deviates from said target profile to return said measured profile substantially to said target profile.

4,804,461

PROCESS FOR RECOVERING BARITE FROM DRILLING MUDS

Gerhard Heinrich, 2605 Woodchester Drive 26, Mississuga, Ontario, Canada L5K 2E3

Filed Oct. 22, 1987, Ser. No. 131,381
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—166 **20 Claims**

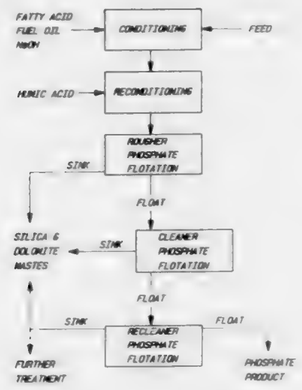
1. A froth flotation process to recover barite from drilling muds, which are normally not amenable to barite flotation and differ from barite ores by contents of antifoaming reagents and other additives, by direct flotation without prior dewatering and washing of the drilling muds, said process comprising:
(a) subjecting drilling mud containing barite in the form of a feed pulp to froth flotation in the presence of an alkylphosphate collecting and frothing reagent in an amount effective to concentrate said barite in the froth; and
(b) recovering barite from the froth.

4,804,462

BENEFICIATING DOLOMITIC PHOSPHATE ORES WITH HUMIC ACID

Zheng-xing Gu, and Shaung-shii Hsieh, both of Florence, Ala., assignors to Lian-yun-gang Chemical Mines Research and Design Institute, Lianyungang, China and The Tennessee Valley Authority, Muscle Shoals, Ala.

Filed Apr. 18, 1988, Ser. No. 184,223
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—167 **8 Claims**



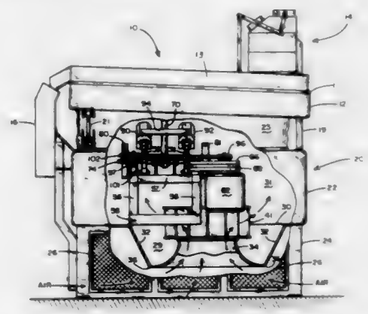
1. An ore beneficiation process which comprises the steps of:
(a) subjecting, within a pH ranging from about 8.0 to about 11, a phosphate ore containing phosphate values and dolomitic and silica impurities to a conditioning step in the presence of from about 0.3 kg to about 2 kg of fatty acid and in amounts ranging upwards to about 4 kg of fuel oil, said weight of acid and oil based on each ton of said phosphate ore;
(b) subjecting said conditioned flotation feed from step (a) supra, to a reconditioning step in the presence of from about 0.05 kg to about 0.5 kg of humic acid, said weight of humic acid or salt thereof based on the amount of active contents in the humic acid or salt thereof to each ton of said phosphate ore to form a rougher phosphate flotation feed;
(c) subjecting said reconditioned feed from step (b) supra, to a rougher phosphate flotation and;
(1) collecting substantially the phosphate values therein as rougher phosphate concentrate from the float; and
(2) rejecting substantial amounts of silica and domomite impurities in the sink; and
(d) subjecting said phosphate rougher concentrate collected in step (c)(1) supra, to at least one cleaner flotation step and;
(1) rejecting residual silica and dolomite in the sink thereof; and
(2) recovering in the float therefrom a phosphate product.

4,804,463

GRAVITY SEPARATOR

Irvine F. Forsberg, Thief River Falls, Minn., assignor to Forsbergs, Inc., Thief River Falls, Minn.

Continuation of Ser. No. 837,408, Mar. 7, 1986, abandoned. This application Nov. 20, 1987, Ser. No. 124,384
Int. Cl.[4] B03B *4/00, 5/24*
U.S. Cl. 209—466 **3 Claims**



1. A gravity separator for classifying particulate matter as to weight, comprising:
an inclined deck over which such material passes for classification,
a housing underlying the deck and having means confining air flow upwardly through the deck, the housing also having means supporting the deck thereon and the housing having a partition traversing the housing intermediate its height, the partition having an air directing means at its center and the housing having a vent through the exterior thereof below the partition, the air directing means being a venturi,
a drive means for oscillating the deck including an eccentric shaft rotating about a horizontal axis,
a fan attached to the air directing means for providing air flow through the deck, and the fan having a shaft oriented transversely to the eccentric shaft,
a drive motor rotatively coupled to the fan and the eccentric shaft for providing rotational driving thereof.

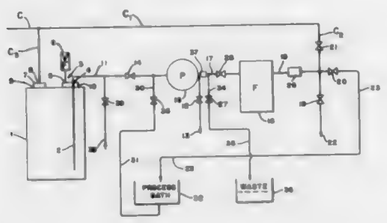
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4,804,464

SYSTEM FOR IN SITU UPGRADING OF THE PURITY OF A LIQUID AND FLUSHING A FILTRATION SYSTEM

William R. Schevey, Berlin Township, Wayne County, Pa., assignor to HMC Patents Patents Holding Co., Inc., Hampton, N.H.

Filed Apr. 26, 1985, Ser. No. 727,941
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—96.1 5 Claims



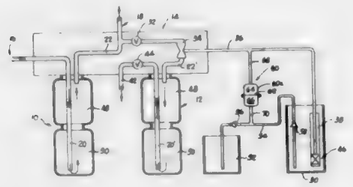
1. A system for upgrading the purity of a liquid chemical used in semiconductor components manufacture and for flushing impurities from a filter for the chemical and delivering the purified liquid to an operating use, comprising a container for the liquid chemical, a means to withdraw the liquid from the container, a sensor to automaticaly indicate the level of purity of the liquid chemical to be withdrawn, a liquid filter through which the liquid from said container is passed until a predetermined level of purity, as determined by particulate content, is attained, valve means to recirculate the liquid withdrawn from said container through said liquid filter for further purification in the event that the requisite purity is not attained, and means to deliver the purified liquid, which has attained the required purity level to the operating use.

4,804,465

WATER TREATMENT APPARATUS

Keith E. Brown, Solon, Ohio, assignor to Kinetico, Inc., Newbury, Ohio

Division of Ser. No. 646,953, Sep. 4, 1984, Pat. No. 4,693,814. This application Jun. 24, 1987, Ser. No. 65,923
Int. Cl.[4] B01J *49/00*
U.S. Cl. 210—136 3 Claims



1. For a water softening apparatus having an ion exchange bed, a reservoir of brine solution for regenerating the bed and an aspirator for drawing solution from said reservoir and delivering it to the bed during a regeneration cycle, a metering apparatus for adding a supplemental regenerant fluid to the solution reservoir to produce a composite regeneration solution, comprising:

(a) a housing and an expansible member in said housing dividing said housing into two expansible, non-communicating chambers, one of said chambers communicating with said aspirator such that when said aspirator becomes effective, said one expansible chamber contracts;

(b) said other expansible chamber communicating with a vessel containing supplemental regenerant fluid and operative to expand as said one chamber contracts to thereby draw a quantity of said supplemental regenerant fluid from said vessel;

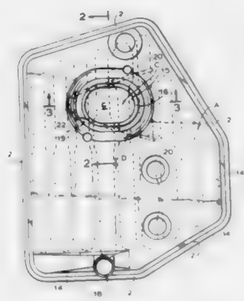
(c) means for pressurizing a conduit communicating with said aspirator at the conclusion of said regeneration cycle such that said one chamber is caused to expand thereby expelling said supplemental regenerant fluid from said other chamber and into a conduit communicating with said solution reservoir.

4,804,466

FLUID FILTER WITH INTERNAL SPACER

Richard D. Cooper, Williston Park, and Ojars W. Pincers, New York, both of N.Y., assignors to Allomatic Industries, Inc., New York, N.Y.

Filed Aug. 8, 1985, Ser. No. 763,563
Int. Cl.[4] B01D *35/02*
U.S. Cl. 210—168 14 Claims



1. In a fluid filter assembly comprising upper and lower walls sealingly connected to one another to define a chamber, said walls having spaced fluid inlet and outlet openings, and a filter sheet received inside the chamber and comprising upper and lower layers defining therebetween a fluid receiving space in fluid communication with said inlet opening, said outlet opening being located outside said space, and means sealingly connecting said upper filter sheet layer to one of said assembly walls around said fluid inlet, the improvement which comprises spacer means at least partially surrounding said inlet opening, interposed between said upper and lower filter sheets, engaging said sheets at points close to said inlet opening, and effective to maintain said filter sheets spaced from one another close to said inlet opening by an appreciable distance.

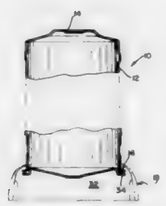
4,804,467

WATER FILTER ASSEMBLY

Gus Losos, Palos Hills, Ill., assignor to Hurley Chicago Co., Inc., Alsip, Ill.

Filed Sep. 3, 1987, Ser. No. 92,726
Int. Cl.[4] B01D *27/02*
U.S. Cl. 210—232 7 Claims

1. A water filter including a canister portion for holding filter elements and granular activated carbon said canister portion including tap connection means, an external base element, an internal base element, means for sealing the internal base element with the canister, supply line connecting means,



and lock means for receiving a key and for locking said inner base element to prevent removal thereof without said key

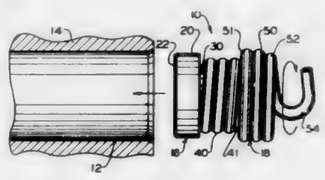
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4,804,468

SELF-RETAINING SMOOTH BORE INSERT

Leighton Lee, II, Guilford, and Robert J. Kolp, Ivoryton, both of Conn., assignors to The Lee Company, Westbrook, Conn.

Filed Mar. 14, 1988, Ser. No. 167,977
Int. Cl.[4] B01D *35/00*
U.S. Cl. 210—232 16 Claims



1. A miniature, self-retaining, fluid system component insert adapted to be installed in a smooth bore of predetermined diameter comprising:

a fluid system component having a mounting surface; and retainer means for retaining said component in the smooth bore sufficient to provide self-retaining against a force having a magnitude at least equal to the weight of the insert, said retainer means comprising:

a first helical coil spring coiled around said mounting surface and being retained thereon, and

a second helical coil spring having a leading end and an axially spaced trailing end, said second coil spring connecting said first coil spring at said leading end and in a relaxed state having an outside diameter greater than said predetermined bore diameter to provide frictional resistance between the second coil spring and the bore to frictionally lock the insert within the bore, said second coil spring at the trailing end thereof being adapted for rotational engagement in one angular direction to contract the second coil spring as a result of frictional engagement between portions of the second coil spring and the smooth bore.

4,804,469

FLEXIBLE JACKET MEMBRANE PROCESSING APPARATUS

James W. Walsh, 3823 Beech Ave., Baltimore, Md. 21211

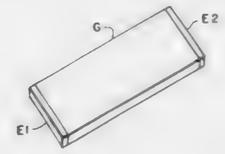
Continuation of Ser. No. 694,773, Jan. 25, 1985, abandoned. This application Dec. 15, 1986, Ser. No. 942,054
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—232 53 Claims

1. A support-media processing apparatus comprising:

support-media means for supporting molecules and molecule fragments thereon, said support-media means being subjected to a fluid treatment, said support-media means comprising sheet-like elements, and;

a jacket fabricated from a flexible, fluid-impermeable material to define a container having first and second opposed walls and a sealable opening;

support-media engaging means for engaging opposite surfaces of said sheet-like support-media, said support-media engaging means having first and second edges, and having surface characteristics that define multiple fluid pathways in combination with opposite surfaces of the sheet-like support-media means, said support-media engaging means and the support-media means positioned within said jacket;



first and second fluid distribution channel means located along said first and second edges of said support-media engaging means respectively, and defining said first and second fluid distribution channels between the edges of said support-media engaging means and said jacket; and

port means in communication with said first distribution channel means for introducing a fluid thereinto and in communication with said second distribution channel means for removing a fluid therefrom;

said multiple fluid pathways conducting fluid uniformly in the same direction across the opposite surfaces of said support-media means from said first to said second distribution channel means.

4,804,470

PAINT STRAINER

Carlos P. Calvillo, and Rick L. Lykins, both of 2352 Harbor Blvd., Apt. 203, Costa Mesa, Calif. 92626

Filed Oct. 8, 1986, Ser. No. 916,601
Int. Cl.[4] B01D *23/28*
U.S. Cl. 210—232 10 Claims



1. For use in straining a liquid paint and depositing the same within a reservoir container, an improved paint strainer comprising:

an upwardly extending continuous closed wall support defining a plurality of facets formed into a closed faceted wall having upper and lower edges and defining an upper opening and a lower opening and a passage therebetween;

means for removeably attaching said wall support to said reservoir container at said lower opening including a

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recessed groove defined in said lower edge of said closed wall support; and

a strainer bag formed of a mesh material and defining a tapered cross-section and a closed end and an open end, said open end of said strainer bag extending the breadth of and being secured to said upper opening of said wall support in a removeable attachment and said closed and extending downwardly within said passage,

said facets being connected in a hinged manner such that said wall support may be folded between a closed position in which said facets are collapsed upon each other and said passage is reduced and an open position in which the cross-section of said passage is maximum.

4,804,471

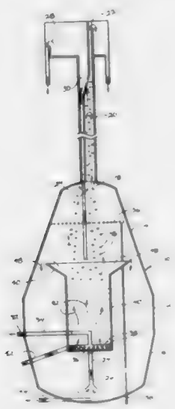
OIL-WATER SEPARATOR

Milisav Velisavljevic, P.O. Box 984, Waukegan, Ill. 60079

Filed Jul. 15, 1987, Ser. No. 73,565

Int. Cl.⁴ B01D *17/022*

U.S. Cl. 210—265 **5 Claims**



1. A separator for continuously separating a mixture of immiscible liquids of differing densities into its constituents comprising:

a vessel;

a first upper outlet for the lower density constituent;

a second upper outlet for the higher density constituent;

coalescing means located in said vessel for coalescing droplets of the lower density constituent, said coalescing means including a bed of relatively fine particulate open to said vessel at its upper end and defined by an upwardly open container with said particulate being sand within said container, the upper end of said container being provided with a flared, peripheral collar for capturing sand rising above said container and falling back toward the same;

an inlet in said vessel for said mixture located below said outlets and opening to said bed near its lowermost end;

means above said inlet establishing fluid communication between said vessel and said first outlet; and

means including a conduit opening below said inlet establishing fluid communication between said vessel and said second outlet.

4,804,472

POLYKETONE MEMBRANES

Dale L. Handlin, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 30, 1987, Ser. No. 139,487

Int. Cl.⁴ B01D *13/00, 13/04*

U.S. Cl. 210—500.27 **18 Claims**

1. A microporous non-continuous separation membrane having cell sizes in the range of 0.1 to 10 microns, prepared by:

mixing at least one linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon wherein said at least one linear alternating polymer of carbon monoxide is of the formula



wherein B is the moiety of an ethylenically unsaturated α-olefin of at least 3 carbon atoms polymerized through the ethylenic unsaturation, and the ratio of y:x is no more than about 0.5, in a solvent forming a solution;

casting said solution on a substrate; and

removing at least a portion of said solvent.

8. A method for making a microporous non-continuous separation membrane having cell sizes in the range of 0.1 to 10 microns comprising the steps of:

mixing at least one linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon wherein said at least one linear alternating polymer of carbon monoxide is of the formula



wherein B is the moiety of an ethylenically unsaturated α-olefin of at least 3 carbon atoms polymerized through the ethylenic unsaturation, and the ratio of y:x is no more than about 0.5, in a solvent forming a solution;

casting said solution on a substrate; and

removing at least a portion of said solvent therein forming a microporous non-continuous separation membrane.

4,804,473

REMOVAL OF WATER-IMMISCIBLE SOLVENTS FROM OFFGASES CONTAINING SAME

Uwe Brand, Lampertheim, Fed. Rep. of Germany; Emile De-Decker, Hoboken, Belgium; Ernst Deuker, Gruenstadt; Hugo Fuchs, Ludwigshafen, both of Fed. Rep. of Germany; Klaus Kartte, Beindersheim; Gerald Neubauer, Weinheim, both of Fed. Rep. of Germany, and Jozef Oostvogels, Schoten, Belgium, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 22, 1987, Ser. No. 136,418

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1987, 3700247

Int. Cl.⁴ B01D *11/04*

U.S. Cl. 210—634 **4 Claims**

1. A process for removing benzene or toluene from an off-gass obtained in the extraction of caprolactam from crude lactam, which comprises washing the off-gass with an aqueous solution of crude lactam to remove the benzene or toluene by dissolution, and then recycling the resulting benzene or toluene laden crude lactam solution to the extraction.

4,804,474

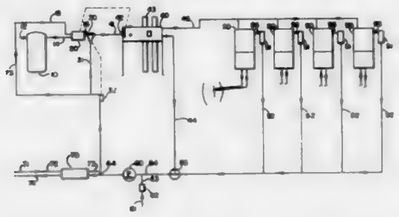
ENERGY EFFICIENT DIALYSIS SYSTEM

Robert Blum, 364 Maple Ave., Harleysville, Pa. 19438

Filed Dec. 10, 1987, Ser. No. 131,016

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—641 **17 Claims**



10. A method of conserving energy in a dialysis system having fluid inlet means for causing a flow of washing fluid, a reverse osmosis machine receiving said flow of washing fluid and having a membrane operable at a first given temperature to filter said washing fluid and discharge impurities therefrom in a discharge stream, at least one kidney machine receiving the filtered washing fluid from said reverse osmosis machine and having a membrane operable to remove contaminants from a body fluid by entraining said contaminants in said flow of washing fluid at a second given temperature, heating means adjacent the entry of said kidney machine to change the temperature of said filtered washing fluid from said first given temperature to said second given temperature, and means to control the temperature of the washing fluid entering the reverse osmosis machine at said first given temperature; the steps comprising providing heat exchange means, directing the discharge streams from said reverse osmosis machine and said kidney machine into said heat exchange means, introducing fresh washing fluid through said heat exchanger to recover heat energy from said discharge streams to preheat the washing fluid, and introducing said preheated washing fluid into said fluid inlet means to obtain washing fluid at said first given temperature for being received into said reverse osmosis machine.

4,804,475

METALLIZED MEMBRANE SYSTEMS

Kirkor Sirinyan, Bergisch Gladbach; Karlheinz Hildenbrand, Krefeld; Ulrich von Gizycki; Rudolf Merten, both of Leverkusen; Hermann Perrey, Krefeld, and Gerhard D. Wolf, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 7, 1987, Ser. No. 47,241

Claims priority, application Fed. Rep. of Germany, May 10, 1986, 3615831

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—651 **10 Claims**

1. Metallized membrane systems having a permeable metallic coating of 0.1–10 μm, obtained by currentless wet-chemical metallization of organic polymer membranes after activation with organometallic complex compounds of Ag, Au, Pt and/or Pd whose organic part, in addition to the group necessary for the metal bond, has at least one further functional group.

4,804,476

PROCESS FOR CONTROLLING CALCIUM OXALATE SCALE OVER A WIDE PH RANGE

Gloria D. Sinkovitz, Bridgeville, and Kevin J. Hipolit, Carnegie, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Oct. 23, 1987, Ser. No. 111,948

Int. Cl.⁴ C02F *5/14*

U.S. Cl. 210—697 **2 Claims**

1. In a method of inhibiting the precipitation and deposition of calcium oxalate scale in an aqueous system comprising adding to said system an effective amount of (a) sodium hexametaphosphate and b) a homopolymer of acrylic acid or salt thereof a weight average molecular weight of from about 7,000 to about 9,000.

4,804,477

APPARATUS AND METHOD FOR PROCESSING OIL WELL BRINE

Thomas F. Allen, and David G. Austin, both of Columbus, Ohio, assignors to Thomas F. Allen et al., Columbus, Ohio

Filed Mar. 10, 1986, Ser. No. 838,179

Int. Cl.⁴ B01D *1/14*

U.S. Cl. 210—737 **15 Claims**



1. An oil well brine processing apparatus which comprises:

a housing;

a liquid brine inlet in said housing;

a main chamber in said housing for receiving brine from said inlet;

heating means in said main chamber for evaporating water from said brine to cause precipitable salts to precipitate out of solution;

level setting means for maintaining said liquid brine at a set level in said main chamber wherein said level is set to ensure that a portion of said heating means is covered by said brine and to provide an air space in said housing above said main chamber;

said level setting means including a level sensing means for sensing a present liquid level located in said main chamber and a shut off means for interrupting the flow of brine from said inlet to said main chamber wherein said shut off means is operatively connected to said level sensing means to interrupt said brine flow when said liquid level reaches said present level;

preheating means positioned in said main chamber above said brine and connected to said inlet for preheating incoming liquid brine before it enters said main chamber;

said preheating means including an outlet for discharging preheated liquid brine into said main chamber;

wherein said main chamber heating means includes means for exhausting ambient air heated by said main chamber heating means into said main chamber above said main chamber heating means but below said preheating means such that said heated ambient air contacts said water vapor from said heated brine to increase the temperature of the gasses in the main chamber applied to said preheating means;

housing exhaust means for exhausting water vapor and heated ambient air from said housing subsequent to flowing over said preheating means; and

a housing outlet port for withdrawing brine and precipitates from said housing.

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4,804,478

METHOD AND AN ARRANGEMENT FOR THE TREATMENT AND DISINFECTION OF SWIMMING AND BATHING RESERVOIR WATER USING CHLORINE AND OZONE

Shlomo Tasair, Lichtensteinstrasse 3, 6000 Frankfurt am Main 1, Fed. Rep. of Germany

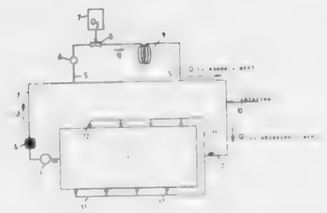
PCT No. PCT/DE87/00050, § 371 Date Oct. 14, 1987, § 102(e) Date Oct. 14, 1987, PCT Pub. No. WO87/05004, PCT Pub. Date Aug. 27, 1987

PCT Filed Feb. 13, 1987, Ser. No. 124,851

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1986, 3605249

Int. Cl.⁴ C02F *1/78*

U.S. Cl. 210—752 **25 Claims**



1. A method of treatment and disinfection of swimming and bathing reservoir water, comprising the steps of withdrawing reservoir water as natural water so as to form a main stream of the natural water; filtering the main stream of the natural water by at least one filtering unit; branching from the main stream of the natural water a partial stream of the natural water via a bypass, introducing an ozone air into the partial stream of the natural water; uniting the ozone-air containing partial stream of the natural water with the main stream of the natural water so as to form a united stream of the natural water; chlorinating the united stream of the natural water; and returning the ozonized and chlorinated united stream of the natural water as a pure water into a reservoir, said branching and introducing including per 100 m^3/h of the natural water branching from the main stream a partial stream of the natural water of up to 5 m^3/h and adding to the same an ozone-air stream of 1.2 g/h ozone in approximately 700 l/h atmospheric air; whirling the ozone-containing partial stream in the bypass to an intimate froth or aerosol-like mixing condition, said uniting includes blasting the whirled ozone-containing water into the main stream of the natural water at a confluence of the bypass, said returning including returning the ozonized and chlorinated united stream of the natural water without aerating through a closed conduit system into the reservoir together with an air quantity originated from an ozonizer which produces the ozone air.

4,804,479

PROCESS FOR DETOXIFYING A BOTTOMS DRAW-OFF FROM A HIGH TEMPERATURE CHLORINATION REACTOR

Wolfgang W. Schneider, Broadview Heights, Ohio, and William A. Wagner, Houston, Tex., assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 23, 1988, Ser. No. 171,995

Int. Cl.⁴ C02F *1/74*

U.S. Cl. 210—754 **4 Claims**

1. A continuous process for detoxifying a waste chlorocarbon stream to be contacted with an oxidation catalyst adversely sensitive to the presence of iron, comprising,

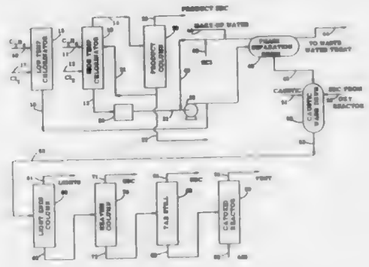
(a) contacting ethylene with chlorine in predominantly liquid 1,2-dichloroethane in the presence of sufficient iron-containing chlorination catalyst to provide from 2000 ppm to 4000 ppm of iron, as elemental Fe, at a temperature in the range from 90° C. to 120° C. and superatmospheric pressure below 25 psig in a chlorination reactor,

(b) withdrawing a bottoms draw-off from said chlorination reactor, said bottoms draw-off containing said concentration of Fe and consisting essentially of at least 60% by weight of 1,2-dichloroethane, at least 15% by weight of liquid chlorocarbon highboils, including a semi-solid tar, having a higher boiling point than 1,2-dichloroethane,

(c) mixing each volume of said bottoms draw-off with at least fifty volumes of dilute aqueous hydrochloric acid having a concentration in the range from 2% to 4% by weight, so as to form a mixed two-phase unfiltrable stream of an aqueous acid phase containing ferric chloride, and an organic phase containing said highboils,

(d) flowing said unfiltrable two-phase stream, without separating any solids therein, into a quiescent zone to provide a residence time of less than 0.5 hr, within which time aqueous acid and organic phases are separated in the upper and lower portions of said quiescent zone,

(e) withdrawing a separated waste organic stream from the



lower portion of said quiescent zone, said separated waste organic stream containing less than 5 ppm Fe,

(f) contacting said separated waste organic stream with sufficient alkali to provide an alkaline separated waste organic stream in which said ferric chloride is converted to ferric hydroxide,

(g) directly flowing said alkaline separated waste organic stream, without separating any solids therein, into a concentration zone for recovery of said 1,2-dichloroethane,

(h) removing substantially pure 1,2-dichloroethane from the overhead of said concentration zone, and a heavies concentrate from the bottoms of said concentration zone,

(i) flowing said heavies concentrate, without separating any solids therein, to an oxidation zone containing a fluid bed of gamma alumina catalyst, said oxidation zone being maintained at a temperature and pressure sufficient to oxidize said alkaline separated waste organic stream and convert it mainly to hydrochloric acid, carbon dioxide, carbon monoxide and water, and,

(j) operating said oxidation zone continuously with essentially no loss of catalytic activity.

4,804,480

DESTRUCTION OF NITROPHENOLS

Madhusudan D. Jayswaal, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 29, 1986, Ser. No. 947,320

Int. Cl.⁴ C02F *1/72*

U.S. Cl. 210—759 **14 Claims**

1. A process for sufficiently destroying trinitrophenols or their salts in an aqueous waste by breaking the ring structure to reduce the color of the aqueous waste to an acceptable level comprising the following steps:

a. controlling the pH of said waste at between 1 and 4,

b. adding

sufficient iron salt to provie from 0.002 to 0.7 moles of iron ion per mole of trinitrophenol in said waste,

c. maintaining the temperature of said waste at greater than 65° C., and

d. adding at least 2 moles of hydrogen peroxide per mole of trinitrophenol in said waste after the addition of the iron salt to reduce the color of said waste to an acceptable level.

4,804,481

HELICAL SPRING APPARATUS AND PROCESS FOR DETACHING FILTER CAKE

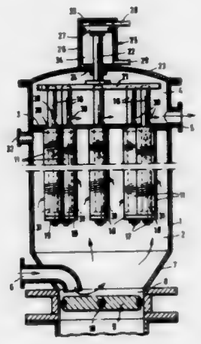
Rüdiger Lennartz, Pulheim, Fed. Rep. of Germany, assignor to Boll & Kirch Filterbau GmbH, Kerpen, Fed. Rep. of Germany

Filed Sep. 8, 1987, Ser. No. 93,977

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1986, 3631399

Int. Cl.⁴ B01D *29/38*

U.S. Cl. 210—791 **32 Claims**



1. A process for detaching the filter cake from a filter element designed in the manner of a helical spring, between the screw turns of which the filter gaps are located, including the steps of periodically stretching and shortening said filter element in the axial direction in rapid sequence at a frequency of 2–20 Hz.

4,804,482

COMPOSITION FOR EXTINGUISHING FIRES AND FIRE RETARDANT COATING

Harald W. Schuler, Box 79, S8500 Mallsjo, Sweden

Filed Nov. 6, 1987, Ser. No. 117,494

Int. Cl.⁴ A62D *1/00*; C09K *21/00*; C09D *5/16, 5/18*

U.S. Cl. 252—7 **3 Claims**

1. A composition for extinguishing fires and impregnating organic material against combustion, which consists essentially of:

an aqueous solution of 300–350 g/l citric acid and an equimolar amount of a sodium and potassium compound in a ratio of 0.6–1.0:100 (Na:K), said aqueous solution having a pH of 7.0–8.00.

4,804,483

CATIONIC SOIL RELEASE POLYMERS

Anthony J. O'Lenick, Jr., Lilburn, and Joseph J. Fanelli, Alpharetta, both of Ga., assignors to GAF Corporation, Wayne, N.J.

Continuation of Ser. No. 54,028, May 26, 1987, Pat. No. 4,736,787. This application Jan. 13, 1988, Ser. No. 144,482

Int. Cl.⁴ D06M *13/46*

U.S. Cl. 252—8.8 **15 Claims**

1. A compound which is the poly quaternary salt of a reaction product of an alkylene oxide and an aromatic polycarboxylic acid wherein the reaction product contains a terminal ester group of a halogenated monocarboxylic acid.

4,804,484

ANTIFLOC ADDITIVES FOR SODIUM BROMIDE COMPOSITIONS

Ahmad Dadgar, Lafayette, Ind., assignor to Great Lakes Chemical Corporation, West Lafayette, Ind.

Filed Jul. 9, 1987, Ser. No. 71,507

Int. Cl.⁴ E21B *43/00*; C01D *3/10*

U.S. Cl. 252—8.551 **9 Claims**

1. Sodium bromide compositions comprising an amount effective to inhibit flock formation of an additive composition comprising about 0.1–1.0 parts by weight of an alkali metal or ammonium tartrate and, optionally, about 0.0–2 parts by weight of one or more of the mono- di- and tri-amides of nitrilotriacetic acid, all per 100 parts by weight sodium bromide composition.

4,804,485

POLYALKYLENEOXYAMINE CATALYSTS FOR DIALKYL DISULFIDES AND/OR POLYSULFIDES USED IN DISSOLVING SULFUR

Glenn T. Carroll, Jeffersonville; Michael J. Lindstrom, Downingtown, and William J. Tuszynski, Spinnerstown, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed May 8, 1987, Ser. No. 47,956

Int. Cl.⁴ E21B *37/00*; B08B *9/02*

U.S. Cl. 252—8.552 **24 Claims**

1. A composition comprising a major proportion of a sulfide compound of the following formula:

$$R^1SS_aSR^2$$

where R^1 and R^2 are independently alkyl, alkaryl, alkoxyalkyl or hydroxyalkyl radicals wherein the alkyl moieties have from 1 to 24 carbon atoms, a is the average number of internal sulfur atoms in said sulfide and ranges from 0 to 3, and, in an amount sufficient to improve the activity of said sulfide for sulfur uptake, at least one polyalkyleneoxyamine or polyalkleneoxypolyamine containing a primary or secondary amine functionality and wherein the alkylene radical is a substituted or unsubstituted radical having from 2 to 4 carbon atoms exclusive of a substituent group.

4,804,486

NAIL POLISH REMOVER

Betty L. Day, Grayslake, Ill., assignor to Royal Care Beauty Products International, Inc., Chicago, Ill.

Filed Mar. 17, 1988, Ser. No. 169,493

Int. Cl.⁴ A61K *7/04*; B08B *7/00*; C23D *17/00*; C11D *7/50*

U.S. Cl. 252—153 **14 Claims**

1. A cream-like nail polish remover composition consisting of:

a solvent in an amount effective to remove nail polish from a nail;

a gelling agent in an amount effective to provide a cream-like consistency;

a neutralizing system in an amount effective to cooperate with said gelling agent to render the composition essentially cream-like with a viscosity greater than about 800 centistokes and being a mixture of N,N,N',N'-tetrakis (2-hydroxy propyl) ethlene diamine and z-ethyl-N-(2-ethyl hexyl)-1-hexamine in the amount of between 1.8 and 4.4. weight percent;

an antibacterial agent in an amount effective to inhibit bacterial growth; and

water in an amount effective to balance the other ingredients and minimize the requirements for said other ingredients and permit the fuactioning thereof.

4,804,487

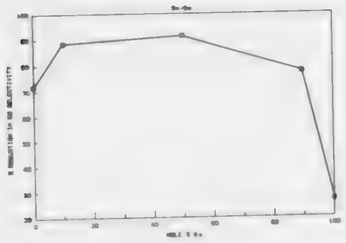
ANTIFOULANTS FOR THERMAL CRACKING PROCESSES

Larry E. Reed, and Randall A. Porter, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 849,637, Apr. 9, 1986, Pat. No. 4,666,583. This application Feb. 17, 1987, Ser. No. 15,186

Int. Cl.⁴ C09K *15/32;* **C10G** *9/16*

U.S. Cl. 252—400.1 **5 Claims**



1. An antifoulant solution, useful in preventing the formation of carbon on the metals of thermal cracking process equipment, which comprises a solvent and a composition selected from the group consisting of a composition consisting of about 10 to about 90 mole percent of an organic gallium compound and about 90 to about 10 mole percent of an organic tin compound, wherein the concentration of said composition in said solution is at least 0.1 molar.

4,804,488

BLASTING BODIES ADAPTED FOR CLEANING UTENSILS IN DISH-WASHING MACHINES

Arne Alvemarker, Malaregarden 3,, S-24021 Löddeköpinge, Sweden

PCT No. PCT/SE85/00135, § 371 Date Nov. 26, 1985, § 102(e) Date Nov. 26, 1985, PCT Pub. No. WO85/04318, PCT Pub. Date Oct. 10, 1985

PCT Filed Mar. 27, 1985, Ser. No. 817,940

Claims priority, application Sweden, Mar. 27, 1984, 8401695

Int. Cl.⁴ C11D *3/37, 7/20, 17/00*

U.S. Cl. 252—544 **8 Claims**

1. Blasting bodies, for use in dish-washing machines in admixture with dishwashing water, said blasting bodies comprising: about 60% by weight mineral filler selected from the group consisting of silicate, sulphate and carbonate; and a plastic selected from the group consisting of polyamide and polyethylene; the mineral filler being in the form of particles and the plastic constituting a binder for the particles of mineral filler; said bodies having a specific gravity of at least 2.0.

4,804,489

LOW MOLECULAR WEIGHT VISCOSITY MODIFYING COMPOSITIONS

Jeffrey F. Munson, Highland Heights; Syed Q. A. Rizvi, Painesville, and Stephen A. Di Biase, Euclid, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Oct. 29, 1987, Ser. No. 114,902

Int. Cl.⁴ C01M *137/06*

U.S. Cl. 252—32.7 E **25 Claims**

1. A lubricating composition which comprises:

(A) a base fluid; and

(B) from 2% up to 15% of a sulfur and phosphorus containing non-polymeric viscosity modifying composition of the general formula

$$[(RA)_a(RB)_bPD_cE_d]_e[M']_g \quad (I)$$

wherein R may be the same or different and are hydrocarbyl selected from the group consisting of C_1–C_{30} aliphatic hydrocarbons or mixtures thereof; wherein A, B, C, D and E may be the same or different and are oxygen or sulfur, with the proviso the at least one must be sulfur; wherein P is phosphorus; wherein a, b, c and d can be zero or 1, with the proviso that a+b must be 1 or 2, c+d must be 1 or 2, and a+b+c+d must be 3, wherein e is the combining factor of a phosphorus derived moiety, wherein M is a carbonated overbased metal containing composition having a valency f where f represents the total number of metal equivalents present per equivalent of organic acid residue less one (1) equivalent; wherein g is the combining factor for the metal-containing composition with the proviso that the product of f and g are greater than or equal to the product of e and the sum of c and d.

4,804,490

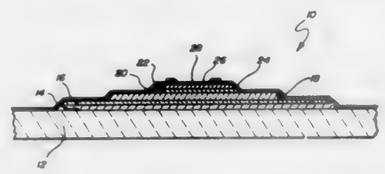
METHOD OF FABRICATING STABILIZED THRESHOLD SWITCHING MATERIAL

Roger W. Pryor, Bloomfield Hills; Patrick J. Klersy, Livonia; Jerry A. Ploutkowski, Berkley, and Napoleon P. Formigoni, Birmingham, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Oct. 13, 1987, Ser. No. 107,318

Int. Cl.⁴ H01L *29/12, 45/00;* **C23C** *14/00*

U.S. Cl. 252—62.3 BT **10 Claims**



1. A method of stabilizing the threshold switching characteristics of a thin film chalcogenide glass material, said method comprising the steps of:

(a) providing a thin film chalcogenide glass material possessing threshold switching characteristics;

(b) subjecting said chalcogenide glass material to a hydrogenated atmosphere for stabilizing the threshold switching characteristics thereof; and

(c) controlling the temperature, pressure and energy levels during which the hydrogenation occurs so as to provide first, second and third independent controls upon the rate at which said stabilization process proceeds.

4,804,491

AQUEOUS BASED ACIDIC HARD SURFACE CLEANER

Clement K. Choy, Walnut Creek, Calif., and Ellen E. Valichovic, Greenwood Lake, N.Y., assignors to The Clorox Company, Oakland, Calif.

Filed Nov. 3, 1986, Ser. No. 926,448

Int. Cl.⁴ C11D *3/39*

U.S. Cl. 252—94 **3 Claims**

1. A liquid hard surface cleaner comprising:

a single-phase, substantially phase stable aqueous solution, said aqueous solution having linear alkyl aryl sulfonic acid and potassium peroxymonosulfate dissolved therein, said potassium peroxymonosulfate having a determinable chemical stability, said linear alkyl aryl sulfonic acid in an amount not greater than about 10 wt. % and with a weight ratio with respect to said potassium peroxymonosulfate of from about 1:0.05 to about 0.05:1, the aqueous solution having a pH of about 1 to about 1.5, said amount of linear alkyl aryl sulfonic acid being effective to increase the chemical stability of said potassium peroxymonosulfate with respect to the determinable chemical stability thereof.

4,804,492

LIQUID SANITIZING AND CLEANING COMPOSITIONS WITH DIMINISHED SKIN IRRITANCY

Ernest Bernardacci, Rutherford, N.J., assignor to Sterling Drug Inc., New York, N.Y.

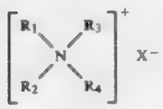
Continuation of Ser. No. 928,211, Nov. 7, 1986, abandoned. This application Dec. 16, 1987, Ser. No. 133,770

Int. Cl.⁴ C11D *1/62, 1/835, 3/48*

U.S. Cl. 252—106 **15 Claims**

1. A liquid sanitizing and cleaning composition comprising:

(A) from 1 to 10 weight percent of a quaternary ammonium benzoate of the formula:



I

where

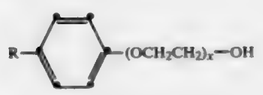
R_1 and R_2 are lower-alkyl groups containing from 1 to 3 carbon atoms;

R_3 is C_8–C_{16} alkyl;

R_4 is C_8–C_{16} alkyl or benzyl; and

X^- is the benzoate anion;

(B) from 10 to 20 weight percent of a nonionic surfactant selected from the group consisting of an alkylphenolethoxylate of the formula:



II

where

R is C_8–C_9 alkyl, and

x is an integer from 7 to 13, and a straight-chain alkylethoxylate or secondary alkylethoxylate of the formula:

$$H-(OCH_2CH_2)_nOR_5 \quad (III)$$

where

R_5 is C_{14}–C_{15} alkyl and

n is an integer from 7 to 13;

(C) water; and

(D) from 0 to about 7 weight percent of an alkali metal benzoate.

4,804,493

STABILIZED AZEOTROPE OR AZEOTROPE-LIKE COMPOSITION OF 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE AND TRANS-1,2-DICHLOROETHYLENE

Robert A. Gorski, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 24, 1988, Ser. No. 198,015

Int. Cl.⁴ C11D *7/30, 7/50*

U.S. Cl. 252—172 **16 Claims**

1. A stabilized azeotrope composition comprising from about 54 to about 64 percent by weight of 1,1,2-trichloro-1,2,2-trifluoroethane and from about 36 to about 46 percent by weight of trans-1,2-dichloroethylene and effective stabilizing amounts of a lower alkoxyphenol, 1,2-butylene oxide and at least one of nitromethane and 1,2-propylene oxide.

4,804,494

WOOD PRESERVATIVE COMPOSITIONS AND A PROCESS FOR THEIR PRODUCTION

Ian K. Egerton, Runcorn, and Andrew D. J. Broome, Warrington, both of United Kingdom, assignors to Laporte Industries Limited, London, England

Filed Apr. 23, 1987, Ser. No. 41,720

Claims priority, application United Kingdom, May 7, 1986, 8611094

Int. Cl.⁴ C01G *37/14, 28/02;* **C09K** *15/00;* **A01N** *59/22*

U.S. Cl. 252—397 **9 Claims**

1. A process for the production of copper arsenate suitable for conversion into a copper/chrome/arsenic wood preservative composition, which comprises; forming an aqueous reaction mixture consisting essentially of copper metal, a 5-valent arsenic compound in stoichiometric excess, relative to the copper, and an oxidizing agent consisting essentially of hydrogen peroxide in a stoichiometric excess of at least 20% for the reaction

$$3Cu+2H_3AsO_4+3H_2O_2=Cu_3(AsO_4)_2+6H_2O;$$

maintaining the reaction mixture at a temperature of from 35° C. to below reflux temperature and in agitation until the copper has been consumed; and recovering a copper arsenate product.

4,804,495

REDUCED VISCOSITY HEAVY HYDROCARBON COMPOSITION IN FORM OF MULTIPLE EMULSION AND ITS PRODUCTION

Dominique Bouchez, Oullins; Gilbert Cassanuta, Toulouse; Pascale Fournier, Blagnac, and Christian Bernascoui, Charly par Vernaison, all of France, assignors to Societe Anonyme Elf France, France

Filed Oct. 28, 1986, Ser. No. 923,968

Claims priority, application France, Oct. 29, 1985, 85 16021

Int. Cl.⁴ B01J *13/00;* **C10L** *1/32*

U.S. Cl. 252—312 **20 Claims**

1. Composition comprising at least 66.2% heavy hydrocarbons and water having a viscosity much lower than that of the hydrocarbons, said hydrocarbons being too viscous to be capable of manipulation of ambient temperature, characterized by comprising a multiple emulsion the internal phase of which is constituted by a primary emulsion of water in the hydrocarbons and the external phase by water containing at least one surfactant, in which the primary emulsion is dispersed, thus forming a secondary emulsion, the droplets of the primary emulsion in the secondary emulsion being 2 to 50 times larger than the droplets of water in the primary emulsion.

15. Process for putting heavy hydrocarbons into a form having considerably reduced viscosity by dispersion in water, said hydrocarbons constituting at least 66.2 w % of the product and being too viscous to be capable of manipulation of ambient temperature, characterized in that a primary emulsion is first prepared having 3 to 10% of water in the hydrocarbons and this primary emulsion is then dispersed in the amount of 33 to 82% in water containing sufficient surfactant agent to form a secondary emulsion.

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4,804,496
RAPIDLY DISPERSIBLE COMPOSITIONS OF ANTIMONY PENTOXIDE

Richard E. Lowery, Tulsa; Denton C. Fentress, Pawhuska, and Don W. Godbehere, Ochelata, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 16, 1987, Ser. No. 26,234
Int. Cl.[4] B01F 3/12; B01J 13/00; C01G 30/00; F26B 3/12
U.S. Cl. 252—363.5 6 Claims

1. In a process for producing a powdered antimony pentoxide composition by spray drying a sol containing 25 to 40 weight percent of antimony pentoxide; the improvement which comprises spray drying the antimony sol at an inlet temperature range of from 180° F. to 210° F.

4,804,497
FINE FABRIC DETERGENT COMPOSITION

Allen D. Urfer, and Gail M. Howell, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

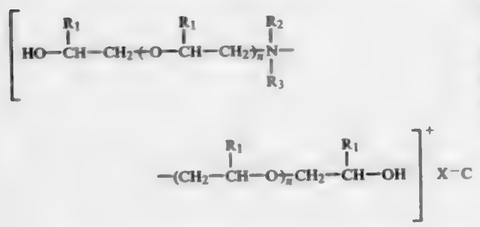
Filed Sep. 26, 1985, Ser. No. 781,276
Int. Cl.[4] D06M 13/34
U.S. Cl. 252—8.8 10 Claims

1. A substantially builder-free fine fabric laundry detergent composition which comprises, on a total composition weight basis:

a. a total of from about 10 to about 70 weight percent of a surfactant component which surfactant component consists of a combination of a glycoside surfactant and an antistatic quaternary ammonium surfactant, the weight ratio of the glycoside surfactant to the quaternary ammonium surfactant being from about 1:3 to about 10:1, said glycoside surfactant corresponding to the formula:

$$RO-(R^1O)_y(Z)_x \qquad A$$

wherein R is a monovalent organic radical containing from about 6 to about 30 carbon atoms; O is an oxygen atom; R^1 is a divalent hydrocarbon radical containing from 2 to about 4 carbon atoms; y is a number having an average value of from 0 to about 12; Z represents a moiety derived from a reducing saccharide containing 5 or 6 carbon atoms; and x is a number having an average value of from 1 to about 10 and said quaternary ammonium surfactant corresponding to the formula:



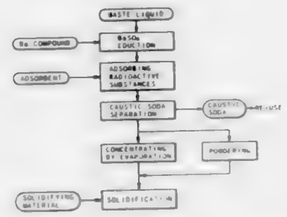
wherein R_1 is hydrogen or methyl; R_2 is methyl or ethyl; R_3 is a monovalent organic radical of from about 8 to about 18 carbon atoms; n is a number having an average value of from 0 to about 50; and X is a neutralizing anion; and

b. from about 30 to about 90 weight percent water.

4,804,498
PROCESS FOR TREATING RADIOACTIVE WASTE LIQUID

Hiroko Mizuno; Makoto Kikuchi; Shin Tanata; Tatsuo Izumida, all of Hitachi, and Tsutomu Baba, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1986, Ser. No. 938,798
Claims priority, application Japan, Dec. 9, 1985, 60-276575
Int. Cl.[4] G21F 9/16, 9/08
U.S. Cl. 252—628 12 Claims



1. A process for treating radioactive waste liquid comprising:

a first step of converting a soluble component comprising sodium sulfate or sodium borate contained in the radioactive waste liquid into an insoluble substance by adding a soluble barium compound when the soluble component comprises sodium sulfate or a soluble calcium compound when the soluble component comprises sodium borate and precipitating the insoluble substance;

a second step of adding an adsorbent for absorbing radioactive substances, said adsorbent being selected from the group consisting of a titanium compound, a zirconium compound and a metal ferrocyanide;

a third step of separating caustic soda formed in the precipitate;

a fourth step of solidifying a slurry containing the precipitate with a hydraulic solidifying material; and

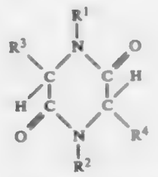
a fifth step of removing said separate caustic soda for reuse of said separated caustic soda.

4,804,499
PROCESS FOR THE PREPARATION OF N-SUBSTITUTED AMINOMETHYLPHOSPHONIC ACIDS

William H. Miller, Glendale; David B. Reitz, and Mitchell J. Palwer, both of St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

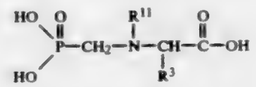
Filed Sep. 23, 1985, Ser. No. 778,958
Int. Cl.[4] C07F 9/38
U.S. Cl. 260—502.5 F 8 Claims

1. A process for the preparation of an N-substituted aminomethylphosphonic acid comprising reacting a 2,5-diketopiperazine compound with phosphorous acid and formaldehyde in an acidic medium, said diketopiperazine compound represented by the formula:

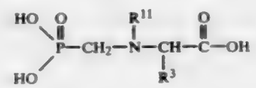


wherein R^1, R^2, R^3, and R^4 are independently selected from

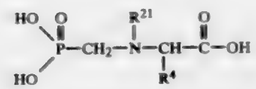
the group consisting of hydrogen, alkyl, aryl, arylalkyl, and carboxylalkyl, the product represented by the formula:



provided that R^3 and R^4 are identical, and either R^1 and R^2 are identical, both R^1 and R^2 are hydrolyzable under the reaction conditions, or one of R^1 and R^2 is hydrogen and the other is hydrolyzable under the reaction conditions, the product otherwise comprising a mixture comprising



and



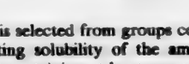
R^{11} being selected from the group consisting of hydrogen and phosphonomethyl when R^1 is either hydrogen or a group hydrolyzable under the reaction conditions, R^{11} otherwise being identical to R^1, R^{21} being selected from the group consisting of hydrogen and phosphonomethyl when R^2 is either hydrogen or a group hydrolyzable under the reaction conditions, R^{21} being otherwise identical to R^2.

4,804,500
AMINE DEALKYLATION PROCESS

William H. Miller, Glendale, and Terry M. Balthazor, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 725,856, Apr. 22, 1985, abandoned. This application Mar. 19, 1986, Ser. No. 841,149
Int. Cl.[4] C07F 9/38; C07C 101/06, 101.12
U.S. Cl. 260—502.5 E 9 Claims

1. A dealkylation process for the production of primary and secondary amines which comprises reacting, in the absence of zinc oxide or cadmium oxide, at a temperature of from 250° C. to 400° C., an amine having the formula:



wherein R^1 is selected from groups containing an acidic function promoting solubility of the amine in aqueous alkaline solution and containing at least one acidic —OH group; R^2 is hydrogen, methyl, benzyl, R^1 or R^3, provided that if either of R^1 and R^2 is $—CH_2COOH$ the other may not be $—CH_2PO_3H_2$; and R^3 is selected from groups having the formula:



wherein R^4 and R^5 are each individually hydrogen, C_1–C_6 alkyl, aryl or substituted aryl, R^6 and R^7 are independently selected from R^4, R^5, C_1–C_6 alkoxy, aryloxy, halogen, C_1–C_6 thioalkyl, $—NHR^8$, NR^8_2 (where R^8 is a C_1–C_6 alkyl group) or, where R^6 is H, R^7 can be a group with the formula: $—N(CH_2COOH)_2$; or R^3 and R^2 together with the nitrogen can form a heterocylic group;
with an aqueous alkali in at least the stoichiometric amount of alkali needed to neutralize the acidic —OH groups, so as to produce a compound in which the group R^3 has been replaced by hydrogen.

4,804,501
PROCESS FOR PREPARATION OF ANTHRAQUINONES AND FLUORENONES

David E. James, Batavia, and Neal R. Nowicki, St. Charles, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 134,839, Dec. 14, 1987. This application Apr. 25, 1988, Ser. No. 185,432
Int. Cl.[4] C07C 50/18, 45/00; C07B 33/00
U.S. Cl. 260—369 8 Claims

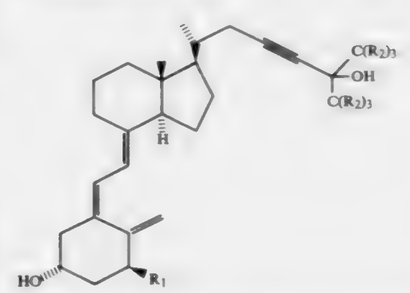
1. A process for producing cyclized aromatic compounds comprising anthraquinones and fluorenones and carboxy derivatives of said aromatic compounds which process comprises liquid-phase air oxidation of a feedstock selected from the group consisting of 2-methyldiphenylmethane, 2-methylbiphenyl and derivatives of said 2-methyldiphenylmethane and said 2-methylbiphenyl to said anthraquinones and fluorenones in a mother liquor comprising an acetic acid medium wherein weight ratio of said feedstock to acetic acid is in the range of from about 1:1 to about 1:20, in the presence of a zirconium-cobalt-manganese-bromine catalyst wherein the mole ratio of zirconium to cobalt is about 0.005:1.0 to about 0.20:1.0; the mole ratio of cobalt to manganese is from about 1.0:0.1 to about 1.0:10.0, and mole ratio of bromine of total metals of said catalyst is from about 0.2:1.0 to about 20.0:1.0, the process comprising oxidation of said feedstock at a temperature within the range of from about 75° C. to about 250° C. at a pressure from about 1 to about 100 atmospheres.

4,804,502
VITAMIN D COMPOUNDS

Enrico G. Baggiolini, North Caldwell; John J. Partridge, Upper Montclair; Shiou-Jan Shiuey, Nutley; Gary A. Truitt, Bloomfield, and Milan R. Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 20, 1988, Ser. No. 145,867
Int. Cl.[4] C07J 9/00
U.S. Cl. 260—397.2 15 Claims

1. A compound of the formula



wherein R_1 is hydrogen or hydroxy and R_2 is hydrogen or fluorine.

4,804,503

COUNTER-FLOW SQUARE TYPE COOLING TOWER

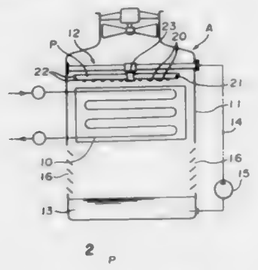
Jujiro Komiya, Fujisawa, Japan, assignor to Shinwa Sangyo Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1988, Ser. No. 163,704

Claims priority, application Japan, Feb. 18, 1987, 62-022560[U]

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—153 **3 Claims**



1. A counter-flow square type cooling tower with a sprinkler placed inside thereof, which comprises:

an upright cooling tower casing having a rectangular casing body in transverse cross-section, which is provided with a fan at its open top and louvers at its lower side portions,

a closed type heat exchanger or a filling for heat exchanging supported in said casing body,

a cooling water circulating means including a pump which supplys water from the lower part of said casing body to the upper part; and

a sprinkler rotatably held by a vertical hollow shaft in said casing body so as to be connected to said cooling water circulating means and adapted to spray the cooling water downwardly, said sprinkler comprising a plurality of horizontally extending sprinkler pipes, each having a plurality of spraying openings in the axial direction of the pipe to direct the cooling water downwardly and at least one spraying opening at the free end of said spraying pipe to direct the cooling water outwardly.

4,804,504

PRODUCTION OF FOAMED POLYMER STRUCTURES

Raymond Lee, Elk Grove Village, Ill.; Carroll W. Lanier, Baker, and H. Eugene Bruenmeister, Baton Rouge, both of La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 20, 1988, Ser. No. 208,757

Int. Cl.⁴ B29C *35/00*

U.S. Cl. 264—26 **24 Claims**

1. In a method of producing a foamed polymer structure in which a body of polyimide precursor is exposed to microwave radiation of intensity sufficient to cause the development of a foamed polymer structure through the generation and evolution of gaseous material within the body of the precursor, the improvement which comprises maintaining the body of polyimide precursor and of the foam structure as it is developing therefrom under a substantially vapor-impermeable microwave-compatible shroud that does not substantially restrict or impede development of the foam structure.

4,804,505

METHOD OF OPERATING A SCREW EXTRUDER AND SCREW EXTRUDERS FOR CARRYING OUT SAID METHODS

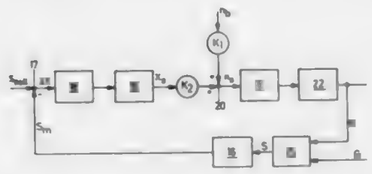
Wilfried Venzke, Mögligen, Fed. Rep. of Germany, assignor to Werner & Pfleiderer GmbH, Fed. Rep. of Germany

Filed May 28, 1987, Ser. No. 52,683

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1986, 3623679

Int. Cl.⁴ B29C *47/92*

U.S. Cl. 264—40.1 **2 Claims**



1. A method of operating a screw extruder having a drive motor in which the speed of rotation of the drive motor is controlled, comprising the steps of measuring the driving power of the drive motor, determining the amount of product supplied per unit of time (throughput), feeding a signal corresponding to the quotient of driving power and throughput as an actual value of the specific energy input to an input of a control device, and controlling the speed of rotation of the drive motor in such a manner to maintain the specific energy input constant.

4,804,506

METHOD FOR MANUFACTURING MULTIHARDNESS FOAMED ARTICLES

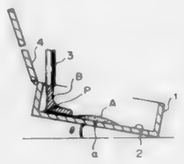
Tsuneyuki Okamoto, Okayama; Yasuyuki Toda, Kurashiki; Mitsuo Katayama, Okayama, and Yasumasa Senoh, Kurashiki, all of Japan, assignors to Nanbu Press Works Co., Ltd.,, Kurashik, Japan

Filed Jun. 29, 1987, Ser. No. 68,144

Claims priority, application Japan, Jul. 4, 1986, 61-155983

Int. Cl.⁴ B29C *67/22*

U.S. Cl. 264—45.1 **14 Claims**



1. A method for manufacturing a multihardness foamed article comprising the steps of:

providing a closable mold having its bottom surface inclined with respect to the horizontal plane,

pouring a first liquid formulation onto a point on a higher portion of said inclined bottom surface of the mold through an inlet means,

pouring, immediately after pouring of said first formulation and before substantial foaming of said first formulation takes place, a second liquid formulation having substantially the same density, onto substantially the same point and through the same inlet means as the first liquid formulation, while allowing said first formulation to flow and spread in all directions over the entire bottom surface of the mold as a continuous first layer sticking at its undersurface to said bottom surface,

allowing said second liquid formulation to form a second layer overlying said first layer and flowing and spreading over said first layer in substantially the same directions as the first layer such that the second layer will not commingle with said first layer, and

closing said mold and allowing these two layers to foam and cure substantially concurrently in the closed mold to form a multihardness foamed article having a surface portion of a certain hardness resulted from said first formulation and another portion of another hardness resulted from said second formulation, these two portions being combined together integrally along a clear and distinct common boundary defined therebetween.

4,804,507

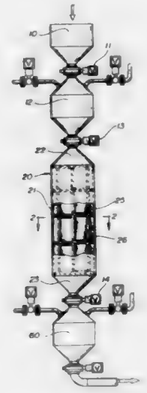
PROCESS AND APPARATUS FOR PRODUCING GAS PRESSURIZED FOAM PARTICLES

Louis C. Rubens, and Stephen P. Chum, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 25, 1988, Ser. No. 185,639

Int. Cl.⁴ B29C *67/22*

U.S. Cl. 264—50 **18 Claims**



1. A process for producing gas pressurized closed-cell foam particles suitable for secondary foaming to a lower density foam, comprising the steps of:

(a) charging closed cell foam particles to a first stage compression tank wherein the foam particles are subjected to a pressure of from about 10 psig to about 150 psig to compress said foam particles to about 30%–40% of their original volume at atmospheric pressure;

(b) transferring the pressurized foam particles to a main gas pressurization tank maintained under a pressure of from about 40 psig to about 100 psig and a temperature of from about 30° C. to about 90° C., said gas pressurization tank having multi-level shelves through which individual charges of compressed foam particles sequentially pass, each shelf holding a separate charge of foam particles from the first stage compression tank and further wherein each shelf has a plurality of compartments to prevent bridging and immobilization of the foam particles; and

(c) passing the foam particles from one shelf to the next in a first-in-first-out sequence, during which said foam particles partially recover their volume without exceeding the free volume in each of said plurality of compartments;

(d) discharging the foam particles from the last shelf level of the main gas pressurization tank, said foam particles having an internal pressure greater than atmospheric pressure and suitable for secondary foaming.

4,804,508

PROCESS FOR SPINNING POLYAMIDE AT HIGH SPEED

Jean-Pierre Double, Francheville, and Cecile Leclaux, Lyons, both of France, assignors to Rhone-Poulenc Fibres, Lyons, France

Continuation of Ser. No. 794,607, Nov. 6, 1985, abandoned, which is a continuation of Ser. No. 580,264, Feb. 15, 1984, abandoned. This application Jul. 20, 1987, Ser. No. 75,271

Claims priority, application France, Feb. 16, 1983, 83 02627

Int. Cl.⁴ D01D *5/088, 5/12;* D01F *6/60*

U.S. Cl. 264—103 **3 Claims**

2. A process for spinning, at high speed, filaments based on polyhexamethylene adipamide with direct take-up of the filaments on a winder at high speed, wherein the filaments are:

cooled at the exit of a die by means of a gaseous fluid blown transversely across the filaments, said fluid having a moisture content of approximately 75%,

brought together and oiled simultaneously at a convergence point situated at a distance of between 55 and 70 cm from the die,

deposited on a winding bobbin and wound at a speed equal to or greater than 5,000 m/min at a maximum tension of 0.21 cN/dtex, wherein the maximum distance between the die and the point of deposition of the filaments on the winding bobbin being between 130 and 200 cm.

4,804,509

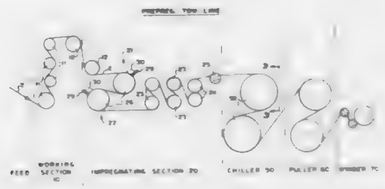
HOT-MELT PREPREG TOW PROCESS

Richard G. Angell, Jr.; Michael J. Michno, Jr., both of Bridgewater; John M. Konrad, and Kenneth E. Hobbs, both of Middlesex, all of N.J., assignors to Amoco Corporation, Chicago, Ill.

Filed Dec. 17, 1986, Ser. No. 943,250

Int. Cl.⁴ B29B *7/12;* B29C *35/16*

U.S. Cl. 264—136 **5 Claims**



1. A process for preparing prepreg comprising the steps of:

(a) conveying and moving lengthwise a continuous fiber strand;

(b) engaging and working said strand with a plurality of roll means, spreading the fibers thereof transversely to form a band;

(c) conveying said band continuously through rolling die means and coating the opposing faces of said band with molten, flowable solvent-free resin;

(d) engaging the resin-coated band with a plurality of roll means while maintaining said resin in a molten state, thereby kneading the moving band and dispersing the molten resin between the fibers of the band, forming a resin-impregnated band;

(e) conveying the resin-impregnated band continuously through the nip opening of a pair of counter-rotating compression roll means while maintaining the resin in a molten state, compressing said band and reducing the thickness thereof to form a resin-impregnated tape; and

(f) engaging the resin-impregnated tape with chill roll means, thereby chilling said tape and forming a dimensionally-stable prepreg.

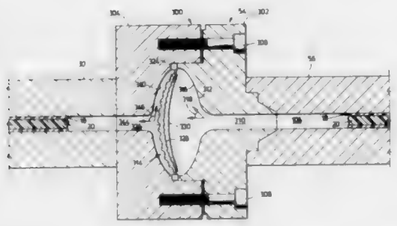
VOL 1099 ISS 2 FE 14 1989 UMI

4,804,510

FILTERING SYSTEM FOR USE IN COEXTRUSION APPARATUS AND METHOD OF USE

Robert A. Laecke; Gordon E. Gould, both of Newark, and Paul M. Curtis, Columbus, all of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 30, 1987, Ser. No. 67,848
Int. Cl.⁴ B29C *47/04, 47/56, 47/68;* **D01D** *1/10*
U.S. Cl. 264—169 **15 Claims**



9. An extrusion apparatus for coextruding a multilayer film from a plurality of feed stock materials comprising:

core extruder for extruding a core extrudate of core material,

a preencapsulation means disposed adjacent the outlet of said core extruder,

a transfer tube disposed downstream of said preencapsulation means.

a preencapsular extruder for extruding a preencapsular extrudate of preencapsulate material,

a preencapsular extrudate transfer means for transferring said preencapsular extrudate to said

said preencapsulation means including joining means for joining said preencapsular extrudate and said core extrudate in a surrounding relation for travel through said transfer tube so as to form a preencapsulated core extrudate,

a filter located at the downstream end of said transfer tube for filtering impurities from said preencapsulated core extrudate, said filter being configured to permit said preencapsulated core extrudate to flow through and emerge from said filter with said preencapsular material and said core material remaining in a coaxial, substantially unmixed relation.

13. In a process for coextruding a multilayer film having a thermally degradable core material, a method for reducing carbonization of said thermally degradable core material comprising:

extruding a core extrudate of thermally degradable core material with a core extruder,

providing a preencapsulation means adjacent the outlet of said core extruder and a transfer tube downstream of said preencapsulation means,

extruding a preencapsular extrudate of preencapsular material and directing said preencapsular extrudate to said preencapsulation means,

joining together said core extrudate and said preencapsular extrudate in said preencapsulation means in a coaxial relation wherein said preencapsular extrudate is disposed radially outwardly of said core extrudate to preencapsulate said core extrudate,

directing said preencapsulated core extrudate through said transfer tube to a feed block and coextrusion die for coextrusion as a part of said multilayer film, and

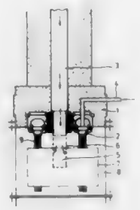
filtering said preencapsulated core extrudate prior to directing it to said feed block and coextrusion die by passing it through a filter located at the downstream end of said transfer tube, said filter being configured to permit said preencapsulated core extrudate to flow through and emerge from said filter with said preencapsular material and said core material remaining in a substantially unmixed, coaxial relation.

4,804,511

PROCESS FOR DRY SPINNING YARNS OF IMPROVED UNIFORMITY AND REDUCED ADHESION

Christian Pieper; Hans K. Burghartz, both of Neuss; Rolf-Burkhard Hirsch, Dormagen, and Norbert Rink, Rötheabach/St. Wolfgang, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 744,345, Jun. 13, 1985, abandoned. This application Dec. 2, 1987, Ser. No. 129,325
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1984, 3424343
Int. Cl.⁴ D01D *5/04*
U.S. Cl. 264—206 **6 Claims**



1. In a process for dry spinning yarns, in which a polymer solution containing a solvent is forced into a spinning shaft charged with hot spinning gas through bores of an annular spinning nozzle to produce spinning yarns and the solvent is then evaporated from the yarns, the temperature of the shaft wall and of the spinning gas being higher than that of the spinning solution, the improvement comprising introducing the spinning gas by a cylindrical gas distributor disposed concentrically within the annular spinning nozzle and extending 50 to 200 mm below the nozzle and having a gas permeable axial surface along the length thereof and a gas impermeable radial surface at the bottom thereof to blow the yarns with the spinning gas at a velocity and flowing only radially from the inside to the outside in an upper part of said shaft, said velocity of the radial flow of gas directly below the spinning nozzle and within a spacing of 10 mm from the nozzle, increasing from 0 to at least 0.2 to 1 m/s transverse to the running direction of the yarns to thereby produce yarns of improved uniformity and reduced adhesion.

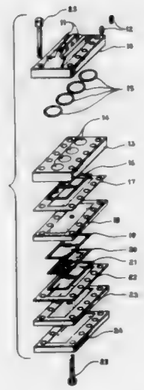
4,804,512

PROCESS FOR OBTAINING SPHERULITE REDUCTION IN POLYAMIDES

William T. Windley, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 860,250, May 6, 1986, abandoned. This application Mar. 21, 1988, Ser. No. 171,173
Int. Cl.⁴ D01D *1/02, 5/40*
U.S. Cl. 264—211 **1 Claim**

1. In a process for making a polyhexamethylene adipamide fiber having less than 6% nylon 6 by forming a nylon 66 molten polymer, and spinning the polymer through a spinning pack containing a pack filter to produce a fiber, the improvement comprising reducing spherulites to a spherulite rating of 1 in the fiber, without forming cells in said fiber, by injecting a fluorocarbon blowing agent into the molten polymer in advance of the filter pack while maintaining a low shear throughout the process, the fluorocarbon blowing agent being selected



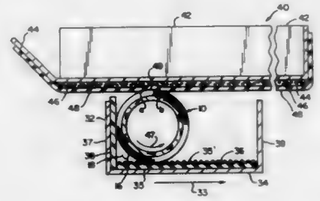
from the group consisting of dichlorotetrafluoroethane, monochloropentafluoroethane and dichlorodifluoromethane.

4,804,513

METHOD FOR PRODUCING A ROLLED TAB FOR A ROLL OF PLASTIC FILM

Terry B. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 8, 1988, Ser. No. 153,115
Int. Cl.⁴ B29C *53/02*
U.S. Cl. 264—500 **7 Claims**



1. A method for forming a rolled tab in the tail end portion of a roll of plastic film wound on a core, the tail end portion initially extending circumferentially around the surface of the roll to which the tail end portion adheres and terminating at a tail edge, the method comprising the steps of:

propelling the roll along a resilient tractional surface to rotate the roll in the same direction that the tail end portion initially extends along the surface of the roll;

pressing the roll between the resilient tractional surface and a diametrically opposed moving contact position with a force of sufficient magnitude to compress the resilient tractional surface to form an arc of contact of sufficient length with the roll to maintain traction therebetween; and,

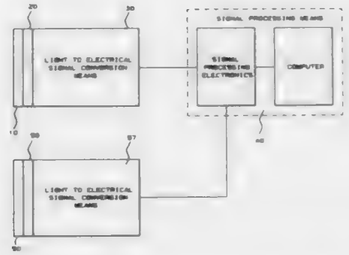
rubbing the rotating surface of the roll at the moving contact position while maintaining the traction between the roll and the resilient tractional surface to separate the tail end portion from the surface of the roll and roll the tail edge back on the tail end portion upon successive revolutions of the roll to form a rolled tab containing the tail edge.

4,804,514

METHOD AND APPARATUS FOR NEUTRON DOSIMETRY

John Bartko, Monroeville; Stanwood L. Anderson, Plum Boro.; Thomas V. Congedo, Edgewood, and Francis H. Ruddy, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 9, 1986, Ser. No. 939,834
Int. Cl.⁴ G21C *17/00;* **G01T** *3/00*
U.S. Cl. 376—154 **19 Claims**



19. A nuclear reactor having a pressure vessel, and a core within said pressure vessel for generating a flux of neutrons and comprising:

(a) means disposed within said pressure vessel and exposed to the flux of neutrons from said core for generating fission fragments at a rate proportional to an intensity of said flux;

(b) light signal generating means exposed to a known fraction of said fission fragments for generating light signals in response to said known fraction, said light generating means having a thickness approximately on the order of a maximum penetration range of said fission fragments in said light generating means;

(c) means, optically coupled to said light signal generating means, for generating electrical signals in response to said light signals; and

(d) means, electrically coupled to said electrical signal generating means, for processing said electrical signals to determine intensity.

4,804,515

DISTRIBUTED MICROPROCESSOR BASED SENSOR SIGNAL PROCESSING SYSTEM FOR A COMPLEX PROCESS

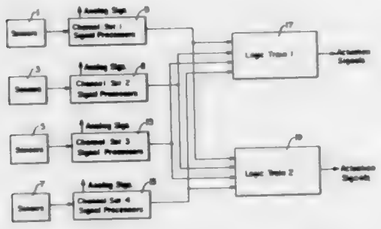
Albert W. Crew, Pittsburgh; James A. Neuner, Richland Township; Gilbert W. Remley, Blawnox; Robert E. Hager, Penn Hills; George M. Chambers, North Huntingdon; Eric A. Delava, Monroeville; Susan A. Wilbur, Wilkins Township; Thomas J. Kenny, Pittsburgh, and James F. Sutherland, Plum Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 31, 1984, Ser. No. 666,696
Int. Cl.⁴ G21C *7/36*
U.S. Cl. 376—216 **18 Claims**

1. Apparatus for processing a plurality of signals produced by sensors monitoring selected parameters in a complex process for use by a process protection system, said apparatus comprising a plurality of independent, digital signal processors smaller in number than said plurality of sensor signals for generating digital protection system actuation signals for said protection system in response to predetermined combinations of values of said sensor signals indicative of predetermined conditions within said complex process, with at least some of said signal processors generating at least two such actuation signals and wherein for at least a given one of said predetermined conditions, a first of said independent signal processors generates a primary actuation signal for said given condition

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from a first combination of values of a first set of sensor signals and a second of said independent signal processors generates a secondary actuation signal for the given condition from a second combination of values of a second set of sensor signals,



whereby although at least two protection system actuation signals are generated by at least some of said independent signal processors, the primary and secondary actuation signals indicative of a given predetermined process condition are generated in separate independent signal processors.

4,804,516

FUEL ASSEMBLY HAVING ANTI-CORROSION GRIDS

Joël Thomazet, Pusignan, and André Kolmayer, Lyon, both of France, assignors to Framatome, Velizy, France and Compagnie Generale Des Matieres Nucleaires, Villacoublay, France

Filed May 20, 1987, Ser. No. 52,627

Claims priority, application France, May 20, 1986, 86 07133

Int. Cl.⁴ G21C *3/34*

U.S. Cl. 376—439 **4 Claims**



1. In a nuclear reactor having a vessel for containment of a moderating and cooling pressurized water, a core in said vessel, arranged to be upwardly traversed by said water and comprising a plurality of mutually adjacent upstanding nuclear fuel assemblies,

a nuclear fuel assembly comprising:

a bundle of fuel elements comprising a plurality of fuel elements, each having a zirconium base tubular sheath having an upper end portion and a lower end portion and containing nuclear fuel material,

a rigid structure for maintaining and supporting said bundle of fuel elements in parallel relationship, said rigid structure having an upper end piece and a lower end piece connected together by tie rods and a plurality of grids, spaced apart along the tie rods, said plurality of grids comprising :

an upper set of grids consisting of upper grids located in an upper part of the assembly, regularly spaced apart from each other at a first predetermined distance and having first flow mixing means for mixing water streams traversing said upper grids,

a lower set of grids consisting of lower grids located in a lower part of the assembly, regularly spaced apart from each other at a second predetermined distance larger than the first predetermined distance and having second flow mixing means constructed and arranged for a less efficient mixing of the water stream than the first flow mixing means of the upper grids,

whereby the upper grids construction and arrangement limit corrosion of the zirconium base tubular sheaths in their upper end portion and reduce the temperature gradient between the upper end portion and the lower end portion of said sheaths due to the increased heat exchange provided by said upper grids between the upper end portion of the sheaths of the fuel elements and the water.

4,804,517

GOLD COLORED PALLADIUM - INDIUM ALLOYS

Stephen P. Schaffer, Hamburg, and Clyde E. Ingersoll, Tonawanda, both of N.Y., assignors to Williams Dental Company, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 837,043, Mar. 6, 1986, abandoned. This application Apr. 22, 1987, Ser. No. 41,221

Int. Cl.⁴ C22C *30/02, 30/00*

U.S. Cl. 420—587 **13 Claims**

1. A yellow dental alloy comprising a intermetallic mixture of Pd and In as about 15 wt% to 85 wt% of the dental alloy and from about 15 wt% to 85 wt% of an alloying metal constituent including silver as at least 15 wt% of the dental alloy and being selected from the group consisting of silver, gold, copper and mixture thereof, the maximum content in the dental alloy of silver being 50 wt% of gold being 20 wt%, of copper being 45 wt%, there being at least 9% Pd and 5% In in said yellow dental alloy and the ratio by weight of palladium to indium being between about 0.9–4.0.

4,804,518

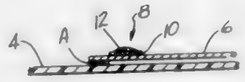
DEVICE FOR OCCULT BLOOD TESTING

Robert A. Levine, 31 Pilgrim La., Guilford, Conn. 06437, and Stephen C. Wardlaw, 128 Sunset Hill Dr., Branford, Conn. 06405

Filed Feb. 25, 1985, Ser. No. 704,962

Int. Cl.⁴ G01N *21/78, 33/72*

U.S. Cl. 422—56 **7 Claims**





1. A device for testing stool samples for occult blood, said device comprising:

(a) a stool receptor sheet, said receptor sheet being impregnated with guaiac;

(b) a performance/control monitor on said device, said monitor including a dry button of a water-soluble hematin material positioned so as to be operable, when wetted with a developer reagent, to react with the guaiac in said receptor sheet to indicate the activity level of the guaiac and the developer reagent; and

(c) means preventing said hematin material from reacting with the guaiac in said receptor sheet prior to being wetted with the developer reagent.

7. A device for testing stool samples for occult blood, said device comprising:

(a) an air impermeable pliant basal sheet;

(b) a stool receptor sheet mounted on said basal sheet and at least partly spaced therefrom, said stool receptor sheet being impregnated with guaiac; and

(c) a dry button of a water-soluble hematin material disposed in said space between said basal sheet and said receptor sheet and secured to said basal sheet in dry form prior to mounting said receptor sheet on said basal sheet and in a manner such that said hematin material is not in chemically reactive contact with the guaiac in said receptor sheet until a developer reagent wets both the receptor sheet and the dry button, said material being operable, when wetted with the developer reagent, to react with the guaiac in said receptor sheet to provide an indication of the activity level of the guaiac and the developer reagent.

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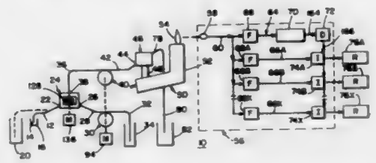
SAMPLE ANALYSIS APPARATUS

Mario A. Sainz, Londonderry, N.H.; Richard C. Anderson, Jr., Boston, Mass.; Richard J. Belmore, East Bridgewater, Mass., and Stanley B. Smith, Jr., Westford, Mass., assignors to Thermo Jarrell Ash Corporation, Waltham, Mass.

Filed Mar. 6, 1987, Ser. No. 22,769

Int. Cl.⁴ G01N *21/73;* **G01J** *3/42*

U.S. Cl. 422—81 **28 Claims**



1. A sample processing system for use with an analysis apparatus comprising

structure defining a mixing chamber,

mechanical mixing structure in said mixing chamber,

means to drive said mechanical mixing structure,

said mixing chamber having first and second inlets and an outlet, a sample conduit connected to said first inlet, a diluent conduit connected to said second inlet, a first positive displacement pump coupled to said diluent conduit for flowing diluent through said diluent conduit to said mixing chamber, a mixture conduit connected to said outlet,

a second positive displacement pump coupled to said mixture conduit for flowing liquid from said mixing chamber through said mixture conduit, pump operating means adapted to drive said first and second positive displacement pumps concurrently for flowing liquid from said mixing chamber through said mixture conduit at a rate greater than the flow of diluent to said mixing chamber to create an aspiration force at said first inlet so as to aspirate a liquid through said first inlet into said mixing chamber for mixing with diluent and flow of the resulting diluted liquid from said mixing chamber through said mixture conduit, and

bubble removal apparatus connected to said mixture conduit including a main flow passage and a branch passage extending downwardly from said main flow passage,

said branch passage being adapted to be connected to flow a minor portion of the diluted liquid in said main flow passage in substantially bubble-free condition to analysis apparatus.

4,804,520

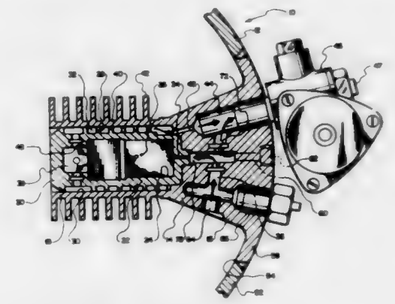
WARM GAS ACCUMULATOR

William J. Richtemeyer, Woodland Hills, and Donald S. Jenkins, Tarzana, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 3, 1983, Ser. No. 548,526

Int. Cl.⁴ B01J *8/02*

U.S. Cl. 422—112 **12 Claims**



1. An accumulator system, comprising:

a tank shell for containing a supply of working fluid, said working fluid being exothermally reactive in the presence of a catalyst;

a housing, sealably connected with and extending into said tank shell, including:

(a) a discharge port oriented within said housing for discharging a flow of said working fluid through said housing; and

(b) means for diverting at least a portion of said discharging working fluid into a first diverted and a second portion;

a heat exchanger internal said tank shell and connected with said housing wherein said heat exchanger includes:

(a) a catalytic bed within said heat exchanger for receiving and heating said first diverted portion of said working fluid;

(b) a holder for securely containing said catalytic bed within said heat exchanger; and

(c) means for transferring a portion of the heat generated in said first diverted portion of said working fluid to the remainder of said contained working fluid; and

means within said housing for recombining said first diverted portion and said second portion of said working fluid for controlling the output temperature of said discharging working fluid;

whereby, raising the output temperature of the discharging flow and heating the remainder of said working fluid increases the volumetric flow rate of the accumulator and minimizes the amount of residual gas within the tank shell.

4,804,521

PROCESS FOR REMOVING SULFUR FROM SULFUR-CONTAINING GASES

Gary T. Rochelle, Austin, Tex., and Wojciech Jozwiex, Chapel Hill, N.C., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Nov. 7, 1986, Ser. No. 928,337

Int. Cl.⁴ C01B *17/00;* **B01J** *8/00*

U.S. Cl. 423—242 **24 Claims**

1. A process for reducing the level of sulfur, the sulfur being generally in the form of sulfur dioxide in a sulfur dioxide-containing gas, comprising the steps of:

(a) preparing an aqueous slurry comprising a calcium alkali together with a calcium-reactive silica or alumina which are present in amounts sufficient to allow for the forma-

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tion of a sulfur dioxide-absorbing component which includes a calcium silicate or calcium aluminate;
(b) heating the slurry to a temperature between about 40° and about 200° C. to facilitate in the formation of the sulfur dioxide-absorbing component;
(c) atomizing the slurry into a stream of the sulfur dioxide-containing gas;
(d) drying the resulting atomized droplets so as to form a gas/solid suspension having a gaseous component and a solid component which includes the sulfur dioxide-absorbing component;
(e) retaining the gaseous and solid components in contact in a manner sufficient to allow for the absorption of sulfur dioxide by the absorbing component; and
(f) separating the absorbing component in the form of spent solids from the gas.

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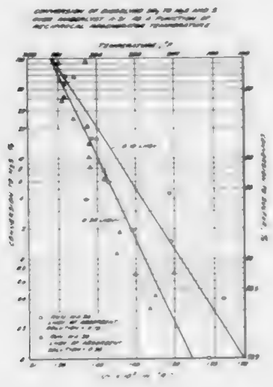
PROCESS FOR REMOVING SO_x AND NO_x COMPOUNDS FROM GAS STREAMS

Robert H. Hass, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 151,783, May 21, 1980, Pat. No. 4,372,932, which is a continuation-in-part of Ser. No. 907,189, May 18, 1978, Pat. No. 4,222,991. This application Aug. 9, 1982, Ser. No. 406,252

Int. Cl.⁴ B01D *53/34*

U.S. Cl. 423—235 **52 Claims**



1. A process for removing SO_x compounds from a feed gas stream and producing a purified gas stream of reduced SO_x content, which process comprises:
(1) contacting a feed gas stream containing SO_x compounds, a substantial proportion of which consists of SO_2, with an absorbent comprising an aqueous liquid solution containing a water-soluble formate compound under conditions such that at least some of said SO_x compounds are absorbed into said absorbent, thereby producing a purified gas stream of reduced SO_x content;
(2) withdrawing from step (1) a liquid stream of spent absorbent containing said absorbed SO_x compounds;
(3) regenerating said spent absorbent back to a form active for absorbing SO_x compounds by contacting, in the presence of added formate ion, said spent absorbent with a water-insoluble, solid substance containing a tertiary amine functional group under conditions including an elevated temperature above about 270° F. such that at least 50 percent of said absorbed SO_x compounds are converted to H_2S;
(4) separating the products of step (3) into a liquid stream containing a regenerated absorbent and a product gas stream containing H_2S;
(5) recycling at least some of said liquid stream containing regenerated absorbent obtained in step (4) to step (1); and
(6) recovering said purified gas stream of reduced SO_x content from step (1) and said product gas stream containing H_2S from step (4).

4,804,523

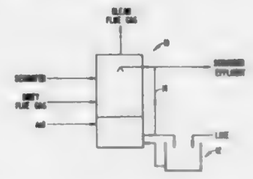
USE OF SEAWATER IN FLUE GAS DESULFURIZATION

Jack Z. Abrams, San Rafael; August D. Benz, Hillsborough, both of Calif.; Leon Awerbuch, Chevy Chase, Md.; Stanley J. Zaczek, San Francisco, Calif., and John Haidinger, Taipei, Taiwan, assignors to Bechtel Group, Incorporated, San Francisco, Calif.

Filed Jun. 17, 1987, Ser. No. 65,035

Int. Cl.⁴ C01B *17/00*

U.S. Cl. 423—242 **16 Claims**



1. A method for absorbing sulfur dioxide from a sulfur dioxide-containing gas, said method comprising:
passing the sulfur dioxide-containing gas through a contact vessel;
recirculating an aqueous absorbent through the contact vessel, said absorbent including magnesium hydroxide derived from the reaction of hydrated lime with soluble magnesium from seawater, whereby the net reaction of magnesium hydroxide and sulfur dioxide produces magnesium sulfite;
oxidizing the magnesium sulfite without separation from the magnesium hydroxide to produce magnesium sulfate;
reacting the magnesium sulfate in said recirculating absorbent with additional hydrated lime to produce gypsum and magnesium hydroxide;
bleeding a portion of the recirculating absorbent to remove gypsum, whereby magnesium is also lost; and
combining a sufficient amount of seawater with the recirculating absorbent to balance the lost magnesium.

4,804,524

PROCESS FOR THE PREPARATION OF BORIC ACID FROM COLEMANITE AND/OR HOWLITE MINERALS

Jose Polendo-Loredo, Monterrey, Mexico, assignor to Materias Primas Magdalena, S.A. De C.V., Monterrey, Mexico

Continuation-in-part of Ser. No. 8,527, Jan. 29, 1987, abandoned. This application Mar. 16, 1988, Ser. No. 170,056

Claims priority, application Mexico, Jan. 29, 1986, 1388

Int. Cl.⁴ C01B *35/10*

U.S. Cl. 423—283 **7 Claims**

1. A process for the preparation of boric acid from colemanite minerals, howlite minerals, or mixtures thereof, comprising: (a) treating the mineral with sulfuric acid and water in order to dissolve boron which forms a solution in a suspension with insoluble solids; (b) separating the solution from the insoluble solids of the suspension; (c) reacting the separated solution with hydrogen sulfide in order to precipitate arsenic impurities; (d) separating the precipitated impurities from the solution of step (c); (e) reacting the solution remaining after the separation of the precipitated impurities, with ammonia, in order to precipitate aluminum and iron impurities; (f) separating the precipitated aluminum and iron impurities from the solution of step (e); (g) reacting the solution of step (f) which comprises ammonium perborate with sulfuric acid at a temperature of about 70° C. to about 98° C. to transform the ammonium perborate to boric acid; (h) cooling the reaction product in order to precipitate boric acid magma, and (i) separating the boric acid from the cooled reaction product of step (h).

4,804,525

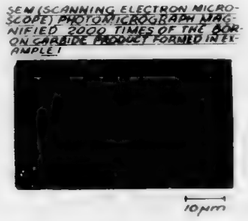
PRODUCING BORON CARBIDE

William Rafaniello, and William G. Moore, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 851,858, Apr. 14, 1986, abandoned. This application Jul. 14, 1987, Ser. No. 73,035

Int. Cl.⁴ C01B *51/56*

U.S. Cl. 423—291 **30 Claims**



1. A method of producing boron carbide comprising passing a particulate reactive mixture of a boric oxide source and a carbon source through a hot zone such that substantially all of the particles of the reactive mixture are separately and individually heated at a heating rate of at least about 70° C./second to a sufficient temperature and for a sufficient length of time to form boron carbide crystals of which at least about 25 percent by weight are of submicron size.

4,804,526

PROCESS FOR PURIFYING PHOSPHORIC ACID FOR ELECTRICAL SEMICONDUCTOR USE

Richard E. Hall, Trenton, N.J.; Peter H. Zeh, Fremont, and Frederic B. Jueneman, Newark, both of Calif., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 13, 1987, Ser. No. 107,329

Int. Cl.⁴ C01B *25/16*

U.S. Cl. 423—321 R **11 Claims**

1. A process for treating phosphoric acid of about 75% to about 85% concentration as weight percent H_3PO_4 containing heavy metals and antimony to make it acceptable for electrical semiconductor use comprising:
(a) adding to said phosphoric acid a reagent which may be either hydrogen peroxide or hydrogen sulfide, the hydrogen peroxide, when added, being added in amounts sufficient to oxidize residual antimony dissolved in the acid, while the hydrogen sulfide, when added, being added in amounts sufficient to precipitate residual heavy metals in the acid,
(b) separating any precipitate resulting from step (a), from the treated acid at a temperature of at least 60° C.,
(c) removing excess unreacted reagent, either hydrogen peroxide or hydrogen sulfide, from the acid,
(d) adding to the resulting phosphoric acid of step (c) the remaining alternate reagent, either hydrogen peroxide or hyrogen sulfide, not employed in step (a); the hydrogen peroxide, when added, being added in amounts sufficient to oxidize residual antimony dissolved in the acid, while the hydrogen sulfide, when added, being added in amounts sufficient to precipitate residual heavy metals in the acid,
(e) separating any precipitate resulting from step (d), from the treated acid at a temperature of at least 60° C.,
(f) removing excess unreacted reagent, either hydrogen peroxide or hydrogen sulfide from the acid, and
(g) recovering a phosphoric acid whose heavy metals, antimony, and insolubles content are sufficiently low to be acceptable for electrical semiconductor use.

4,804,527

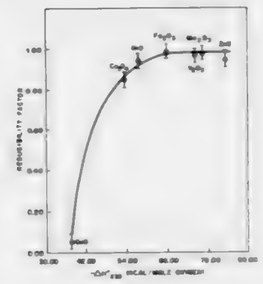
METHOD AND COMPOSITION FOR SAFELY DECOMPOSING HYDRAZINE

Bruce J. Tatarchuk, Auburn, Ala., and Ruth H. Raythatha, Tenaille, Ga., assignors to E.C.C. America Inc., Atlanta, Ga.

Filed Jun. 17, 1986, Ser. No. 875,274

Int. Cl.⁴ C01B *21/00*

U.S. Cl. 423—351 **10 Claims**



9. The method for safely decomposing hydrazine which comprises contacting the hydrazine with a composition comprising cupric oxide supported on a porous material, the values for cupric oxide loading, pore volume and dilution of the hydrazine being selected such that the temperature reached upon contacting is below the flash point of the hydrazine.

4,804,528

STRIPPING AND RECOVERY OF DICHROMATE IN ELECTROLYTIC CHLORATE SYSTEMS

Ian H. Warren, Richmond, Canada, assignor to C-I-L Inc., North York, Canada

Filed Jan. 12, 1988, Ser. No. 142,958

Int. Cl.⁴ C01G *37/00*

U.S. Cl. 423—607 **5 Claims**

1. A process for the removal of dichromate from a solution containing chlorate, hypochlorite and dichromate ions by the reduction of the hexavalent chromium of said dichromate to mixed di- and trivalent chromium in the form of a hydroxide precipitate which process comprises effecting said reduction in two stages comprising
(a) adding ammonia to said solution and treating said solution at a pH greater than 8.5 at a temperature of greater than 60° C. with said ammonia to effect production of said hydroxide precipitate; said ammonia and said hypochlorite being present in sufficiently excessive amounts to permit the production of said hydroxide precipitate; and
(b) adjusting the pH of the resultant solution to below 8.5 at a temperature of greater than 40° C. to effect substantially complete precipitation of said di- and trivalent chromium hydroxide.

4,804,529

USE OF SPECIFIC RELAXATION AGENTS FOR ORGANS OR PATHOLOGIES FOR MODIFYING THE CONTRASTS IN MEDICAL IMAGING BY NUCLEAR MAGNETIC RESONANCE

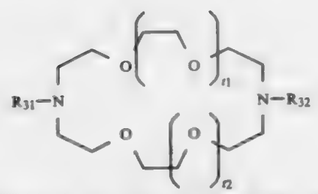
André Bardy, Meranjis; Marie-Louise Conti, Versailles; Jacques Courtieu, Boulogne; Evelyne Mathieu, Gabriel, and Joelle Grayb, Madame, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 10, 1984, Ser. No. 640,160
Claims priority, application France, Aug. 12, 1983, 83 13281
Int. Cl.[4] A61K *49/00*
U.S. Cl. 424—9 8 Claims

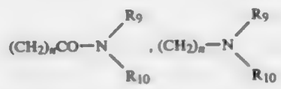
1. A diagnostic process consisting of examining certain organs by nuclear magnetic resonance, which comprises: (a) introducing into the organism of a patient to be examined a contrast-modifying, non-toxic dosage amount of a relaxation agent consisting of a complex of a paramagnetic element selected from the group consisting of lanthanides and transition metals having atomic numbers 21 to 29, 42 and 44, and a biologically active ligand or a ligand coupled to a biologically active molecule specific of an organ or a pathology, and said liquid being selected from the group consisting of:

macrocyclic diaza compounds of formula:

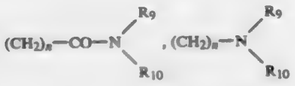
(IX)



in which t_1 and t_2, which can be the same or different, are numbers between 0 and 2 and in which the groups R_{31} and R_{32}, which can be the same or different, represent a hydrogen atom, $(CH_2)_n$—$COOR_8$, with R_8 representing a hydrogen atom or a physiologically acceptable metal, $(CH_2)_n$SH, $(CH_2)_n$OH,



with R_9 and R_{10}, which can be the same or different, representing a hydrogen atom or a C_1 to C_4 alkyl radical and n being an integer between 1 and 4, or in which R_{31} and R_{32} can together form the radical —CH_2—CH_2—O—(CH_2—CH_2—O)t_3—CH_2—CH_2—with t_3 number between 0 and 2, the different carbon atoms of the diaza compound also being substitutable by one or more radicals chosen from among $(CH_2)_n$-$COOR_8$, $(CH_2)_n$-SH, $(CH_2)_n$OH,



with R_9 and R_{10}, which can be the same or different, representing a hydrogen atom or a C_1 to C_4 alkyl radical and n being a number between and 1 and 4; and

(b) producing an image of the organ or organs to be examined by nuclear magnetic resonance.

4,804,530

ANAEROBE-SELECTIVE ANTIBACTERIAL COMPOSITIONS AND METHODS

Padmini Sampathkumar, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 17, 1987, Ser. No. 75,235
Int. Cl.[4] A61K *7/20*
U.S. Cl. 424—53 9 Claims

1. A method for treating or preventing anaerobic bacterial infections in humans or lower animals, which method comprises topically contacting the anaerobe-containing tissue of the human or lower animal with a safe and effective amount of an anaerobe-selective antibacterial agent selected from substituted and unsubstituted 1,12-dodecanedioic peroxy acids, and their pharmaceutically-acceptable salts and esters.

4,804,531

COSMETIC SCREENING COMPOSITION CONTAINING A UV SCREEN IN COMBINATION WITH A POLYMER OBTAINED BY BLOCK POLYMERIZATION IN EMULSION AND ITS USE FOR THE PROTECTION OF THE HUMAN EPIDERMIS AGAINST ULTRAVIOLET RADIATIONS

Jean F. Grollier, Paris, France, assignor to L'Oreal, Paris, France

Filed Jan. 24, 1986, Ser. No. 821,978
Claims priority, application Luxembourg, Jan. 28, 1985, 85746
Int. Cl.[4] A61K *7/40, 7/42, 7/44, 9/12*
U.S. Cl. 424—47 15 Claims

1. A cosmetic UV-radiation screening composition comprising, in combination, in a cosmetically acceptable medium (1) an aqueous dispersion of particles of a water-insoluble acrylic heteropolymer so as to increase the protection index of a UV-radiation screening agent said comprising (a) an ionic polymer forming a core, said ionic polymer containing ionizable acid groups which make the core capable of being swollen by at least partial neutralization with a volatile base selected from the group consisting of ammonia and a lower aliphatic amine and (b) a polymer forming a sheath at least partially encapsulating said core, said sheath being permeable to said volatile base and having a glass transition temperature below 50° C., and said particles being film-forming and being obtained by block polymerization in emulsion and (2) at least one oil-soluble or water-soluble UV-radiation screening agent.

4,804,532

FACIAL COSMETIC POWDER CONTAINING CRYSTALLINE SILICA AND COLORS

Francis Busch, Jr., Southbury, Conn., assignor to Laura Lupton Inc., Rowayton, Conn.

Filed Sep. 9, 1986, Ser. No. 905,630
Int. Cl.[4] A61K *7/035, 7/021*
U.S. Cl. 424—69 6 Claims

1. A facial cosmetic powder which when applied to the face of a user completely hides facial wrinkles, lines and pores without caking or appearing chalky, said powder comprising:

a coloring phase containing crystalline silica and coloring material, said silica having a plate-like structure and an average particle size falling within the range of 7.3 to 12.9 microns; and

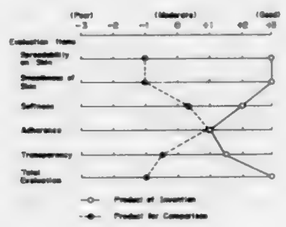
a diluent phase containing talc and a binding agent, the coloring and diluent phases being thoroughly blended, the silica content falling within the range of 1–3 parts by weight of the powder.

4,804,533

METAL SALTS OF MONOALKYL PHOSPHATES, PREPARATION THEREOF, AND COSMETIC COMPOSITIONS COMPRISING SAME

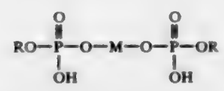
Takashi Imamura; Norio Nishigawa, both of Wakayama; Toshihiro Kuroishi, Sennan; Junichi Fukazawa, Chiba, and Haruya Kato, Funabashi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Division of Ser. No. 736,845, May 22, 1985, abandoned. This application Apr. 30, 1987, Ser. No. 44,198
Claims priority, application Japan, May 25, 1984, 59-106136; May 25, 1984, 59-106137; Apr. 5, 1985, 60-72317
Int. Cl.[4] A61K *7/035*
U.S. Cl. 424—69 7 Claims



1. A cosmetic composition comprising cosmetic powder and a metal salt of a monoalkyl phosphate of the general formula (I)

(I)



in which each R represents a saturated or unsaturated, linear or branched hydrocarbon group having from 8 to 32 carbon atoms, and M represents an alkaline earth metal or divalent transition metal, said compositions having a suitable degree of spreadability, moistness, smoothness, adherence and covering properties.

4,804,534

ANTIBIOTIC A 42867 AND THE ADDITION SALTS THEREOF

Ernesto Riva, Milan; Enrico Selva, Gropello Cairoli; Maurizio Denaro, Milan; Giovanni Cassani, Pavia, and Francesco Parenti, Lainate, all of Italy, assignors to Gruppo Lepetit S.p.A., Gerenzano, Italy

Filed Jul. 28, 1987, Ser. No. 78,501
Claims priority, application United Kingdom, Jul. 29, 1986, 8618445
Int. Cl.[4] A61K *35/74;* C12P *1/06*
U.S. Cl. 424—118 8 Claims

1. Antibiotic A 42867 or a salt thereof, having in the non-salt form, the following characteristics:

Physico-chemical characteristics of antibiotic A 42867:

(A) ultraviolet absorption spectrum, which is shown in FIG. 1 of the accompanying drawings, and exhibits the following absorption maxima:

	λ max (nm)
(a) 0.1 N HCl	282
(b) Water	282
(c) phosphate buffer pH 7.4	282
(d) phosphate buffer pH 9	282 305 (shoulder)
(e) phosphate buffer 0.1 KOH	305

-continued

	λ max (nm)
	265 (shoulder)

(B) infrared absorption spectrum which is shown in FIG. 2 of the accompanying drawings and exhibits the following absorption maxima (cm^{-1}): 370014 3100, 3000–2800 (nujol); 1650; 1580; 1460 (nujol) 1375 (nujol); 1300; 1235; 1210; 1160; 1130; 1060; 1025; 1000; 970; 840; 790–700; 720 (nujol)

(C) ^{1}H-NMR spectrum which is shown in FIG. 3 and exhibits the following groups of signals (in ppm) at 270 MHz recorded in DMSO d_6 (hexadeuterodimethylsulfoxide) using TMS as the internal standard (0.00 ppm), (δ=ppm): 0.90, d [$(CH_3)_2$—(CH)]; 1.02, d [CH_3—(CH)]; 1.23, d [CH_3—(CH)]; 1.52, s



1.77, m [$CH(CH_3)_2$-]; 2.38, s (N—CH_3); 3.0–6.35, s and m (aromatic, sugar and peptidic CH's); 6.27–9.29 (aromatic CH's, peptidic NH's and phenolic OH's)

d=doublet

s=singlet

m=multiplet

(D) retention-time (R_t) of 0.537 relative to Vancomycin.HCl (Vancocin, Eli Lilly, R_t = 16.36 min) when analyzed by reverse phase HPLC under the following conditions:

column: Ultrasphere ODS (5 μm) Altex (Beckman) 4.6 mm (i.d.)×250 mm

pre-column: Brownlee Labs RP 18 (5 μm)

eluent: Water:acetonitrile:2-ethanolanine:trifluoroacetic acid 9:1:0.01:0.01 (v/v)

flow rate: 1.6 ml/min

U.V. detector: 254 nm

internal standard: Vancomycin.HCl (R_t=16.36 min) (Vancocin, Eli Lilly)

(E) retention-time (R_t) of 0.665 relative to Vancomycin.HCl (Vancocin, Eli Lilly, R_t9.96 min) when analyzed by reverse phase HPLC under the following conditions:

column: Ultrasphere ODS (5 μm) Altex (Beckman) 4.6 mm (i.d.)×250 mm

pre-column: Brownlee Labs RP 18 (5 μm)

eluent A:	CH_3CN	2%	adjusted at
	(2.5 g/l) $NaH_2PO_4.H_2O$	98%	pH 6.0
eluent B:	CH_3CN	70%	adjusted at
	(2.5 g/l) $NaH_2PO_4.H_2O$	30%	pH 6.0

elution: linear gradient from 5% to 60% of eluent B in eluent A, in 40 min

flow rate: 1.6 ml/min

U.V. detector: 254 nm

internal standard: Vancomycin.HCl (R_t9.96 min) (Vancocin, Eli Lilly)

(F) elemental analysis, after the sample has been previously dried at about 140° C. under inert atmosphere which indicates the following approximate percentage composition (average): carbon 53.3%; hydrogen 5.9%; nitrogen 7.85%; chlorine (total) 4.41%; chlorine (ionic) 2.22%. Inorganic residue at 900° C. in the air: 0.875%.

(G) acid-base titration profile in water upon titration with 0.05N aqueous KOH of a sample previously added with excess of aqueous HCl which shows pKa values at 3.2, 7.1 and 8.3.

VOL 1099 ISS 2 FEB 14 1989 UMI

(H) R_f value of 0.56 in the following chromatographic system:

(Aqueous sodium chloride 87.5 g/l:NaH_2PO_4 0.5 g/l)	70%	adjusted to pH 6
CH_3CN	30%	

using reverse-phase silanized silica gel plates (RA-18 F_{254})

Visualization:

U.V. light at 254 nm

Yellow color with Pauly Reagent, i.e. diazotized sulfanilic acid (J. Chromatog. 20, 171 (1965), Z. Physiol. Chem. 292, 99, (1953))

Bioautography using *B. subtilis* ATCC 6633 on minimal Davis medium.

(I) MW of about 1559 desumed from a FAB-MS spectrum showing the M+H⊕ peak at 1560.

4,804,535

STABILIZATION OF MULTIVITAMIN/TRACE ELEMENTS FORMULATIONS

Morris Kenselman, Belmar, N.J.; Abdur R. Purkaystha, Bronx, N.Y., and James Cahill, Richboro, Pa., assignors to Rorer Pharmaceutical Corporation, Fort Washington, Pa.

Continuation-in-part of Ser. No. 866,842, May 27, 1986, Pat. No. 4,740,373. This application Feb. 8, 1988, Ser. No. 153,182

Int. Cl.⁴ A61K *33/34, 31/07, 31/195, 31/44*

U.S. Cl. 424—141 **6 Claims**

1. A stable aqueous multivitamin/trace elements preparation for parenteral administration comprising per milliliter of aqueous solution at least two vitamins selected from the group consisting of:

230–10,000 IU	Vitamin A,
0.05–45.0 mg	Vitamin B_1,
0.07–10.0 mg	Vitamin B_2,
0.04–12.0 mg	Vitamin B_6,
4–1,000 mg	Vitamin C,
44–1,000 IU	Vitamin D,
0.66–10 IU	Vitamin E,
0.25–100 mg	Niacinamide,
0.3–25 mg	Pantothenic Acid,
0.04–1.0 mg	Vitamin K,
10–100 mcg	Biotin,
5–800 mcg	Folic Acid and
0.04–10 mcg	Vitamin B_{12};

20 mcg–2.8 mg of the trace element Copper; at least one trace element selected from the group consisting of:

100 mcg–10 mg	Zinc
2 mcg–2.5 mg	Manganese and
0.14 mcg–20 mcg	Chromium;

and about 0.5 to 5.0% w/v of a stabilizer selected from the group consisting of:

acrylic acid and a water soluble salt thereof.

4,804,536

DIETARY FIBRES OF SEAWEED HAVING ION-EXCHANGE ABILITY

Keishi Fukuda, Mihara, Japan, assignor to Shinitsu Kagaku Kabushiki Kaisha, Hiroshima, Japan

Filed Jun. 3, 1986, Ser. No. 869,906

Claims priority, application Japan, Jun. 13, 1985, 60-129028; Jun. 31, 1986, 61-21055

The portion of the term of this patent subsequent to May 12, 2004, has been disclaimed.

Int. Cl.⁴ A61K *35/78*

U.S. Cl. 424—195.1 **10 Claims**

1. A dietary food product prepared from seaweeds by a process which comprises

treating seaweeds with an acid for removing sodium ion therefrom,

neutralizing the thus treated material to a pH of from 6 to 7 with a solution containing an ion selected from the group consisting of potassium, calcium, magnesium and iron, and forming the resultant product into a solid form.

4,804,537

SPERM SELECTION PROCESS USING A SALT OF HYALURONIC ACID

Per O. Bergman, Göteborg; Yvonne M. Steen, Västra Frölunda, and Björn G. Ingelman, Uppsala, all of Sweden, assignors to Pharmacia AB, Uppsala, Sweden

PCT No. PCT/SE86/00484, § 371 Date May 22, 1987, § 102(e) Date May 22, 1987, PCT Pub. No. WO87/02382, PCT Pub. Date Apr. 23, 1987

PCT Filed Oct. 17, 1986, Ser. No. 60,360

Claims priority, application Sweden, Oct. 18, 1985, 8504872-6

Int. Cl.⁴ A61K *35/48*

U.S. Cl. 424—105 **3 Claims**

1. In a process for separating motile sperm cells in vitro from an aqueous sperm-containing sample that involves contacting said sample with a layer of an aqueous artificial penetration medium for sperm cells, whereby motile sperm cells are caused to migrate from said sperm-containing sample into said layer, the improvement comprising that a water-soluble physiologically acceptable salt of hyaluronic acid has been incorporated in said penetration medium.

4,804,538

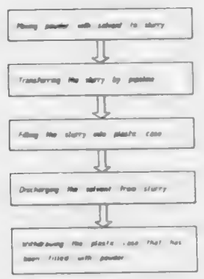
METHOD FOR PRODUCING POWDER CAKE COSMETICS

Mei L. Chen, Taipei, Taiwan, assignor to Misasa Inc., New York, N.Y.

Filed Apr. 3, 1987, Ser. No. 33,714

Int. Cl.⁴ A61K *6/00*; B29C *39/12*

U.S. Cl. 424—401 **5 Claims**



1. A method for producing powder cake cosmetics comprising the steps of:

(a) mixing at least a mixture of powder materials, coloring materials and binders with at least a solvent, to form a slurry;

(b) delivering said slurry through a pipeline to a predetermined position;

(c) filling the slurry into a cavity of a plastic case, each cavity being provided with an opening at a lower face thereof which connects said pipeline at said predetermined position;

(d) discharging the solvent from said slurry at a reduced pressure; and

(e) withdrawing the plastic case that has been filled with powder cosmetics.

4,804,539

OPHTHALMIC LIPOSOMES

Lake S. S. Guo, Lafayette; Carl T. Redemann, Walnut Creek, and Ramachandran Radhakrishnan, Palo Alto, all of Calif., assignors to Liposome Technology, Inc., Menlo Park, Calif.

Filed Jul. 28, 1986, Ser. No. 890,817

Int. Cl.⁴ A61K *37/22, 9/66*; B01J *13/02*

U.S. Cl. 424—450 **13 Claims**

1. A liposome composition designed for enhanced binding to ocular tissue, comprising liposomes, each having an outer lipid layer containing:

(a) between about 40–80 mole percent of neutral vesicle forming lipid components selected from the group consisting of (a) neutral phospholipids and between 20–50 mole percent cholesterol and (b) neutral phospholipids with predominantly saturated acyl chains, and

(b) between about 20–60 mole percent of positively-charged vesicle-forming lipid component(s) having (i) 2 aliphatic chains carried on a 3–4 carbon backbone, (ii) a polar atom attached to the backbone at a carbon atom which does not carry an aliphatic chain, (iii) an amine linked to the polar atom through a spacer at least 3 atoms long, and (iv) a net positive charge.

4,804,540

PROCESS FOR PREPARING THE COMBINATION PRODUCTS OF TRIAMTERENE AND HYDROCHLOROTHIAZIDE

Frederic J. Nugent, Sherwood Park, and John K. C. Yen, Oakville, both of Canada, assignors to G. D. Searle & Co., Chicago, Ill.

Filed Dec. 16, 1987, Ser. No. 133,708

Int. Cl.⁴ A61K *9/52*

U.S. Cl. 424—457 **14 Claims**

1. A process for producing a pharmaceutically active composition having combined diuretic, antihypokalemic and antihypertensive activity comprising the steps of

(a) blending finely divided particles of a triamterene-active pteridine ingredient, a finely-divided hydrochlorothiazide-active benzothiadiazide and pharmaceutically acceptable inert ingredients to form a homogeneous mixture;

(b) adding to said homogeneous mixture a granulation liquid which is prepared by dispersing/dissolving a suitable binder and an acid component in a solvent to form a wet mass;

(c) milling of said mass to form granules; and

(d) blending the resulting granules with additional pharmaceutically acceptable inert ingredients wherein the weight ratio of said triamterene active ingredient to said hydrochlorothiazide active ingredient in the resulting composition is sufficient to control the hypokalemic effect induced by hydrochlorothiazide.

4,804,541

TRANSDERMAL ADMINISTRATION USING BENZYL ALCOHOL

Larry D. Nichols, Arlington, Mass., assignor to Moleculon, Inc., Cambridge, Mass.

Filed Aug. 11, 1987, Ser. No. 84,390

Int. Cl.⁴ A61L *15/03*; A61F *13/00*; A61K *9/70*

U.S. Cl. 424—449 **16 Claims**

1. A composition adapted to be maintained in contact with skin of a human to provide systemic administration of a medicament which consists essentially of at least 50% by weight of benzyl alcohol containing dissolved therein at least 1% by weight, based on said alcohol, of said medicament.

4,804,542

GELATIN CAPSULES AND METHOD OF PREPARING SAME

Gerhard Fischer, Eberbach/Baden; Benedikt Schneider, Backnang, and Helmut John, Stuttgart, all of Fed. Rep. of Germany, assignors to R. P. Scherer GmbH, Fed. Rep. of Germany

Filed Apr. 9, 1987, Ser. No. 36,311

Int. Cl.⁴ A61K *9/64*

U.S. Cl. 424—456 **10 Claims**

1. A gelatin capsule comprising

a capsule sheath and

a capsule filling, wherein

said sheath contains a gelatin and at least 1% by weight of an agent selected from the group consisting of starches, starch derivatives, celluloses, cellulose derivatives, milk powder, nonhygroscopic mono-, di- and oligosaccharides, magnesium trisilicate and silicon dioxide, which agent is capable of absorbing water in an amount of at least 10% by weight of its own weight without undergoing a change in its external appearance, and

said filling contains at least one water-miscible, water-soluble, water-sensitive or hydrophilic, readily volatile material.

4,804,543

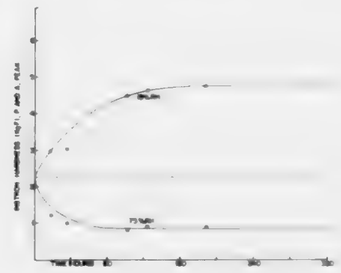
NOVEL HYDROPHILIC PLASTICIZING SYSTEM AND CHEWING GUM CONTAINING SAME

Zdravko Dokuzovic, Mississauga; Zoltan Bodor, Pickering; Ramola Lewis, Toronto, and Costantios Kostantelos, Markham, all of Canada, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 14, 1987, Ser. No. 73,048

Int. Cl.⁴ A23G *3/30*

U.S. Cl. 426—3 **20 Claims**



1. A flexible chewing gum composition having a firm texture which comprises: a chewing gum base, sweetening agent and a premixed hydrophilic plasticizing system comprising about 20% to about 70% sorbitol, about 3 to about 50% glycerin, about 2 to about 25% gelatin and about 6 to about 25% water, all percents being by weight of the final system and, wherein

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the gelatin is dissolved in a solution of the sorbitol, glycerin and water prior to its addition to the chewing gum composition and the final chewing gum exhibits a balanced effect by reducing sensitivity to moisture pick-up while assuring an acceptable firm texture to the product.

4,804,544

CHEWING GUM WITH BISCUIT-LIKE TEXTURE

Felix Christen, Zurich, and Fritz Kracher, Gautershausen, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Filed Jul. 15, 1986, Ser. No. 886,451

Claims priority, application Switzerland, Jul. 24, 1985, 3205/85; May 26, 1986, 2112/86

Int. Cl.⁴ A23G *3/30*

U.S. Cl. 426—5 **15 Claims**

1. A baked chewing gum product comprising a gum base, a sweetener and having a water content which is about one percent or less, said product having a porous, crumbly, breakable biscuit-like texture, an aerated appearance and a vast number of minute cavities in the interior, said chewing gum having been rapidly baked at a temperature of from 80° C. to 180° C. for a period of time sufficient to reduce the water content of said gum product to about one percent or less.

4,804,545

PRODUCTION OF BETA-GLUCAN, BRAN, PROTEIN, OIL AND MALTOSE SYRUP FROM WAXY BARLEY

Kenneth J. Goering, and Robert F. Eslick, both of Bozeman, Mont., assignors to Barco, Inc., Bozeman, Mont.

Continuation of Ser. No. 914,877, Oct. 3, 1986, abandoned, which is a continuation of Ser. No. 639,345, Aug. 10, 1984, abandoned. This application Jan. 28, 1988, Ser. No. 150,434

Int. Cl.⁴ A23L *1/10*; **A23J** *1/12*; **C12P** *19/22, 19/14*

U.S. Cl. 426—28 **17 Claims**

1. A method for the production and recovery of beta-glucan solids, bran residue, a protein concentrate, barley oil and maltose syrup from waxy barley which comprises the steps of:

(1) reducing the particle size of the waxy barley to form a meal, heating the meal at a temperature of about 90°–115° C. for a sufficient period to effect inactivation of natural enzymes in the meal to form an enzyme-inactivated meal, extracting beta-glucan solids from the enzyme-inactivated meal by mixing the meal solely with water at a temperature of about 40°–60° C., to produce a water extract and barley solids, and recovering the beta-glucan solids from the water extract;

(2) recovering the barley solids, mixing with water, and adding an amylolytic enzyme and a beta-glucanase enzyme, heating at a temperature of about 70°–75° C. for a sufficient period to effect starch conversion;

(3) cooling the mixture to about 50°–60° C. and adding an enzyme which has at least alpha-amylase activity and maintaining the mixture at this temperature to complete starch conversion and form a starch mixture;

(4) separating rough solids from this starch mixture and recovering a bran residue rough solids;

(5) subjecting the remaining starch mixture to additional separation to separate solids from the liquid, extracting the solids with an alcohol to recover a protein concentrate and an extracted barley oil;

(6) recovering the barley oil and protein concentrate; and

(7) recovering maltose syrup from the liquid of step (5).

4,804,546

STABLE FAT SUSPENSION FEED SUPPLEMENT

J. Wallace Sawhill, Canoga Park, Calif., assignor to Pacific Kenyon Corp., Long Beach, Calif.

Filed Nov. 9, 1987, Ser. No. 117,849

Int. Cl.⁴ A23K *1/22*

U.S. Cl. 426—69 **8 Claims**

1. A method of preparing stable, thixotropic suspensions of fat suitable for use as feed supplements for domestic animals which consists essentially of:

(a) mixing ammonium phosphate with an aqueous sugar solution having a concentration of at least 60° Brix, with the amount of ammonium phosphate being from 0.5 to 12.5 weight percent of the final supplement and sufficient to form a liquid gel with the sugar solution;

(b) adding water to the liquid gel in an amount from 20 to 50 weight percent of the final supplement to form a diluted gel; and

(c) warming an animal-edible fat to above its melting temperature and mixing said fat into said diluted liquid gel at a concentration 12 to 35 weight percent of the final supplement, with said mixing of fat being performed in the absence of fat emulsifiers to produce an emulsifier-free feed supplement.

4,804,547

ANIMAL FEED SUPPLEMENT FORMULATION

Jeffrey J. Vanderbilt; Garrett C. Lace, and Albert C. Ruggles, all of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 830,791, Feb. 19, 1986, abandoned. This application Dec. 22, 1987, Ser. No. 136,304

Int. Cl.⁴ A23K *1/175*

U.S. Cl. 426—74 **12 Claims**

1. An animal nutritional supplement formulation in particulate form consisting essentially of

(a) a mixture of calcium salts of (1) isobutyric acid and (2) at least one acid selected from isovaleric, valeric, and 2-methylbutyric, and

(b) from 5 to 15% of an additive comprising from 60 to 100% by weight coconut oil having an iodine value of greater than 5 and 40-0% by weight tallow, the weight of said additive being based on the combined weight of calcium salts and additive; wherein said formulation is easily pelletizable and is resistant to dusting and caking.

4,804,548

NOVEL SWEETENER DELIVERY SYSTEMS

Shri C. Sharma, Mendham; Robert E. Yang, Morris Plains, and James J. Shaw, Morristown, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 658,101, Oct. 5, 1984, Pat. No. 4,752,485. This application Oct. 22, 1987, Ser. No. 112,656

The portion of the term of this patent subsequent to Jun. 21, 2005, has been disclaimed.

Int. Cl.⁴ A23L *1/226, 1/236*

U.S. Cl. 426—96 **6 Claims**

1. A composite sweetener and flavoring delivery system having a substantialy hydrophobic exterior comprising

(A) an agglomerated mixture of a core material selected from the group consisting of sweeteners, flavoring agents and mixtures thereof and a matrix wherein the matrix comprises:

(i) about 0.5% to about 20% fat soluble lecithin;

(ii) about 61% to about 90% of an edible material having a melting point in the range of about 25° C. to about 100° C. selected from the group consisting of (a) a fatty acid having an iodine value of about 1 to about 10; (b) natural waxes; (c) synthetic waxes; (d) and mixtures thereof;

(iii) about 0.5% to about 20% of a glyceride; said composite having a melting point in the range of about 20° C. to about 90° C.

4,804,549

PARTICULATE DOG FOOD PALATABILITY ENHANCER AND PROCESS

Joseph P. Howley, Flemmoor; William T. Keehn, Dunforth; Joanna B. Ford, Homewood, and Mary J. Neeb, Kankakee, all of Ill., assignors to Gaines Pet Foods Corp., Chicago, Ill.

Continuation of Ser. No. 664,628, Oct. 25, 1984, abandoned. This application May 22, 1986, Ser. No. 868,170

Int. Cl.⁴ A23K *1/00*

U.S. Cl. 426—98 **37 Claims**

1. A method of enhancing the palatability of a nutritionally balanced dog food with high levels of fats including high free fatty acid fats and which is resistant to package staining comprising:

blending a high free fatty acid fat, an encapsulating binder comprising a protein or a carbohydrate, and water to from an emulsion;

drying said emulsion to produce a palatability enhancer in flowable, particulate form;

providing pieces of dog food having exterior surfaces; and

mixing said palatability enhancer in flowable, particulate, form with said pieces of dog food.

4,804,550

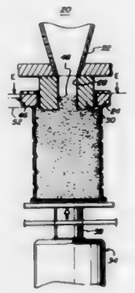
METHOD FOR PACKAGING GROUND COFFEE

Robert F. Burdsley, Harrington Park, and Eugene E. Corrigan, Edison, both of N.J., assignors to Tetley Inc., Palisades Park, N.J.

Filed Dec. 10, 1986, Ser. No. 939,957

Int. Cl.⁴ B65B *1/22, 1/24*

U.S. Cl. 426—397 **33 Claims**



1. A method for placing a predetermined amount by weight of ground coffee into an open-ended container that is sized to hold such amount for subsequent vacuum packing, comprising the steps of:

supplying prior to said vacuum packing, along a feed path, the open end of the container with said predetermined amount by weight of ground coffee whose density may be at any value within a predetermined density range and storing part of said predetermined amount of ground coffee outside the container in a column that rests upon the ground coffee inside the container;

compressing the ground coffee that is in the column to a predetermined head level in the container; and

during this compressing step, expanding the volume of the container to accommodate a wide range of different ground coffee densities.

4,804,551

MANUFACTURE OF MEAT-BASED PRODUCTS

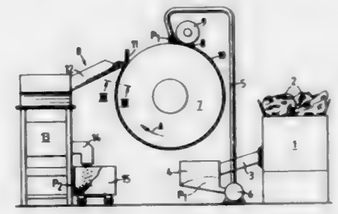
Bernard T. Matthews, Norwich; David J. Jell, Holt; Habeeb M. Ziauddin, and David N. Wilson, both of Norwich, all of England, assignors to Bernard Matthews PLC, England

Filed May 4, 1987, Ser. No. 45,517

Claims priority, application United Kingdom, Jun. 6, 1986, 8613794

Int. Cl.⁴ A23L *1/317, 4/06*

U.S. Cl. 426—518 **5 Claims**



1. A process for the production of an evenly cooled comminuted mass of granular meat ready for forming which comprises the steps of discharging as a thin layer a primary comminute of meat grains onto a moving refrigerated surface, thereby freezing said layer into a coherent strip comprising meat grains each having a similar calorific value, removing said strip from said surface and converting said strip by a secondary comminution operation with a reduction of grain size into an evenly cooled mass of granular meat.

4,804,552

CARBONATED LIQUID DAIRY PRODUCT AND METHOD OF PRODUCTION THEREOF

Salah H. Ahmed, Elk Grove Village; John D. Kadlec, North Aurora, and Anthony J. Lukosa, Downers Grove, all of Ill., assignors to Dairy Research, Inc., Rosemont, Ill.

Filed Sep. 8, 1987, Ser. No. 94,304

Int. Cl.⁴ A23C *9/14, 9/156*; **A23G** *9/12*

U.S. Cl. 426—580 **20 Claims**



1. A method of carbonating a liquid dairy product to a high level of carbonization, while not destabilizing the liquid dairy product, comprising:

(1) heating the liquid dairy product within a temperature/-time range of at least 160° F. for a time not in excess of 30 minutes to 200° F. for a time not in excess of 5 seconds, whereby the indigenous dairy product protein and ash therein are at least partially denatured to form a buffer thereof;

(2) cooling the denatured liquid dairy product to a temperature of less than about 50° F.;

(3) subjecting the cooled liquid dairy product to pressurized carbon dioxide at sufficient pressures and for a sufficient

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time such that the taste and mouth feel of the carbonated dairy product is no longer that of the uncarbonated dairy product, provided that at least 1.5 volumes of carbon dioxide are dissolved in the dairy product; and

(4) packaging the so carbonated dairy product in closed containers capable of retaining the said degree of carbonation;

and wherein the amount and extent of the heat denatured indigenous protein and ash in the dairy product is sufficient that the carbonated dairy product is buffered to a pH of at least 4.0 and up to 5.7 and the carbonated dairy product is highly carbonated but not destabilized.

4,804,553

ALKALI METAL ACID PYROPHOSPHATE LEAVENING ACID COMPOSITIONS AND METHODS FOR PRODUCING THE SAME

Robert H. Tieckelmann, 2 Charles Pl., Ossining, N.Y. 10562

Filed Sep. 19, 1986, Ser. No. 909,156
Int. Cl.[4] A21D *10/04*
U.S. Cl. 426—551 22 Claims

1. A method for preparing alkali metal acid pyrophosphate having a reduced rate of reaction comprising:

a. co-milling alkali metal acid pyrophosphate with an alkaline earth metal oxide, hydroxide or mixtures thereof; and

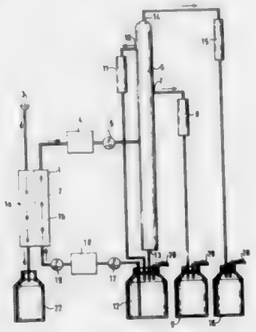
b. heat treating the co-milled product at a temperature and for a time sufficient to reduce the rate of reaction of said alkali metal acid pyrophosphate.

4,804,554

PROCESS FOR THE PRODUCTION OF FERMENTED DRINKS WITH REDUCED ALCOHOL CONTENT

Norbert Barth, Bergweg 20, 6228 Eltville 3, Fed. Rep. of Germany

Filed Dec. 30, 1986, Ser. No. 947,634
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1986, 3600352
Int. Cl.[4] C12H *1/04*; C12F *3/04*
U.S. Cl. 426—592 9 Claims



1. A process for the production of a drink from a mother liquor containing alcohol and flavor and aroma substances having a lower boiling point or greater vapor pressure than said alcohol, and said drink having an alcohol content less than that of said mother liquor; comprising the steps of:

dividing said mother liquor into a separated portion and a remainder;

preparing an intended dialysate from said separated portion of said mother liquor, by (a) removing said flavor and aroma substances and removing said alcohol from said separated portion by fractional vacuum distillation, yielding a residual liquid; and (b) thereafter adding back said removed flavor and aroma substances to said residual liquid, to yield said intended dialysate; and

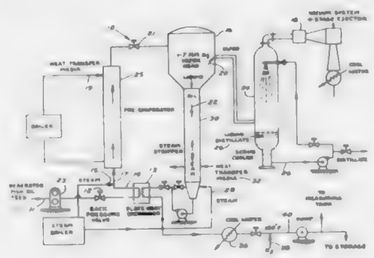
employing said dialysate to remove said alcohol from said remainder of said mother liquor by passing said intended dialysate and said remainder of said mother liquor along opposite sides of an alcohol-permeable dialysis membrane, whereby said alcohol is extracted from said remainder of said mother liquor without extracting said flavor and aroma substances from said remainder of said mother liquor, thereby yielding said drink.

4,804,555

PHYSICAL PROCESS FOR SIMULTANEOUS DEODORIZATION AND CHOLESTEROL REDUCTION OF FATS AND OILS

Steven S. Marschner, Minneapolis, and Jeffrey B. Fine, St. Louis Park, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 921,184, Oct. 21, 1986, abandoned. This application Mar. 2, 1987, Ser. No. 20,613
Int. Cl.[4] A23D *5/00*; C11B *3/14*
U.S. Cl. 426—601 19 Claims



1. A method for deodorizing and reducing cholesterol of fats and oils comprising the steps of:

A. providing a feed stream of refined or reverted, deaerated oil having less than about 0.1% by volume of dissolved oxygen, said oil having a native cholesterol and odoriferous material level;

B. introducing and intimately mixing a first steam feed under vacuum into and with the deaerated oil to form a steam and heated oil mixture;

C. heating the mixture to a temperature of about 400° to 550° F.;

D. flash vaporizing the mixture to vaporize the steam and at least a portion of the cholesterol and odoriferous materials to realize a par-treated oil liquid phase and loaded vaporous steam phase and wherein the temperature is maintained at about 400° 500° F.;

E. thin-film steam stripping the par-treated oil in a stripper having an evaporative surface at a pressure of about 1 to 7 mmHg. with a countercurrent steam feed to strip a portion of the cholesterol and odoriferous material from said par-treated oil to provide a clean oil having a cholesterol content less than its native level and a loaded steam feed containing said stripped cholesterol and odoriferous material;

F. removing the loaded vaporous steam phase and the loaded steam feed;

G. cooling the clean oil under vacuum to a temperature of less than about 100° F.; and

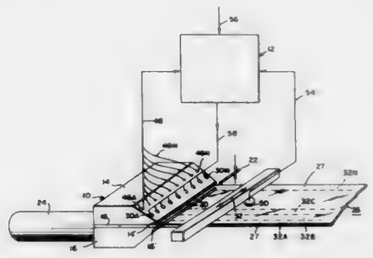
H. anaerobically storing the clean oil.

4,804,556

EDGE THICKNESS CONTROL SYSTEM

Kenneth W. Leffew, Kennett Square, Pa., and Joseph D. Trescacosta, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 30, 1984, Ser. No. 646,172
Int. Cl.[4] B05C *5/02*
U.S. Cl. 427—9 1 Claim



1. A method for controlling an extrusion coating apparatus having an extrusion slot arranged to extrude a film subdivisible into a predetermined number of transversely contiguous lanes, a first one of the lanes being disposed within a predetermined range of contiguity to a lateral edge of the film while a second one of the lanes is transversely interior therefrom, the extrusion apparatus having a first and a second heat responsive element responsive to the flow of electric current to expand to an extent corresponding to the magnitude of the current to modify the thickness of the slot respectively associated with the first and second lanes, comprising the steps of

(a) monitoring the thickness of the extrudate in the second lane; and

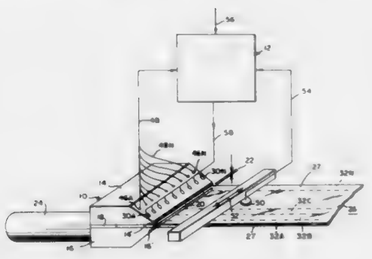
(b) generating a temperature set point for both the first and second heat responsive elements in accordance with the monitored thickness of the extrudate in the second lane, the temperature set point for the first heat responsive element being functionally related to the set point for the second heat responsive element.

4,804,557

THICKNESS CONTROL SYSTEM HAVING A DUTY CYCLE CONTROLLER

John D. Anthony, Jr., Wilmington, Del., and Kenneth W. Leffew, Kennett Square, Pa., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Aug. 30, 1984, Ser. No. 646,174
Int. Cl.[4] B05C *5/02*
U.S. Cl. 427—9 7 Claims



1. An extrusion costing apparatus comprising:

a first and second die member, one of which has a flexible lip thereon, the dies, when mounted in spaced-apart confronting relationship, cooperate to define an elongated extrusion slot having a slot thickness dimension;

a heat responsive expansion element mounted in the one of the dies in an operative relationship with the flexible lip thereon, the element being responsive to the flow of an electric current to expand to an extent corresponding to the magnitude of the current to commensurately modify the thickness dimension of the slot;

a temperature control network for maintaining the temperature of the heat responsive element within a predetermined range of a predetermined temperature set point corresponding to a predetermined slot thickness dimension by controlling the proportion of a predetermined time period during which current is permitted to flow through the heat responsive element;

a gauge for monitoring the thickness of an extrudate emanating from the extrusion slot and for generating a signal representative thereof;

means responsive to the signal representative of the thickness of the extrudate for generating the temperature set point; and,

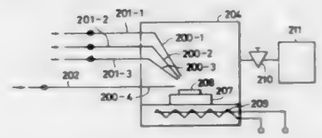
means associated with the temperature control network for generating after each time period a historical trend of the value of the proportion.

4,804,558

PROCESS FOR PRODUCING ELECTROLUMINESCENT DEVICES

Keishi Saitoh, Nabari; Masaaki Hirooka, Toride; Junichi Hanna, and Isamu Shimizu, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1986, Ser. No. 942,793
Claims priority, application Japan, Dec. 18, 1985, 60-285281
Int. Cl.[4] B05D *5/06, 5/12*; C23C *16/30*
U.S. Cl. 427—66 6 Claims



1. A process for producing an electroluminescent film on a substrate having a surface electrode in a film forming space comprising:

introducing into said film forming space gaseous compounds (A), (B), and (C) and a gaseous halogenic oxidizing agent capable of a chmeical reaction with at least one of said gaseous compounds (A), (B), and (C), whereby said electroluminescent film is formed on said surface electrode of said substrate, wherein said gaseous compound (A) is selected from the group consisting of $ZnMe_2$, $ZnEt_2$ and ZnX_2, said gaseous compound (B) is selected from Me_2S, Me_2Se, Et_2S and Et_2Se, said gaseous compound (C) is selected from the group consisting of

Me_3Mn, Me_3Pr, Me_3Sm, Me_3Eu, Me_3Tb, Me_3Dy, Me_3Ho, Me_3Er, Me_3Tm, Me_3Md, Et_3Mn, Et_3Pr, Et_3Sm, Et_3Eu, Et_3Tb, Et_3Dy, Et_3Ho, Et_3Er, Et_3Tm, Et_3Nd, PrX_3, SmX_3, EuX_3, TbX_3, DyX_3, HoX_3, ErX_3, TmX_3, and NdX_3,

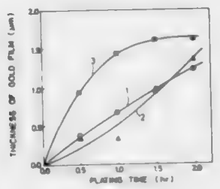
wherein Me, Et and X represent methyl group, ethyl group and halogen respectively, said gaseous halogenic oxidizing agent is selected from the group consisting of F_2, Cl_2, Br_2, and I_2.

4,804,559

ELECTROLESS GOLD PLATING SOLUTION

Jiro Ushio, Yokohama; Osamu Miyazawa, Yokosuka; Hitoshi Yokono, Fujisawa, and Akira Tomizawa, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 918,498, Oct. 14, 1986, abandoned. This application Aug. 31, 1987, Ser. No. 91,457
Claims priority, application Japan, Oct. 14, 1985, 60-226738; Apr. 18, 1986, 61-88269
Int. Cl.[4] C23C 3/02
U.S. Cl. 427—96 13 Claims



1. A process for electroless gold plating a workpiece, comprising the steps of:

contacting said workpiece with an electroless gold plating solution, the electroless gold plating solution comprising water, a thiosulfato gold (I) complex in an amount of 0.001 to 0.2 mol/l, a thiosulfate in an amount of 0.001 to 0.5 mol/l, thiourea, a pH regulator and a stabilizer; and

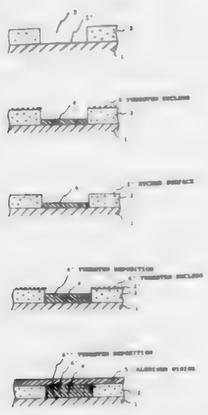
depositing gold from said electroless gold plating solution on said workpiece by electroless deposition.

4,804,560

METHOD OF SELECTIVELY DEPOSITING TUNGSTEN UPON A SEMICONDUCTOR SUBSTRATE

Yoshimi Shioya, Kawasu; Yasushi Oyama, Kodaira; Norihisa Tsuzuki, Higashimurayama; Masuro Maeda, Tama; Masaaki Ichikawa, Hiratsuka; Fumitake Mieno; Shin-ichi Inoue, both of Kawasaki; Yasuo Uo-ochi, Tokyo; Akira Tabuchi; Atsuhiro Tsukune, both of Kawasaki; Takuya Watanabe, Sagamihara, and Takayuki Ohba, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 17, 1987, Ser. No. 26,900
Claims priority, application Japan, Mar. 17, 1986, 61-58753
Int. Cl.[4] B05D 5/12; C23C 16/00
U.S. Cl. 427—125 2 Claims



1. A method of selectively depositing tungsten upon a semiconductor substrate, comprising the steps of:

forming a patterned mask of PSG or SiO_2 on the substrate;

depositing tungsten upon a part of the semiconductor substrate which is not covered by said patterned mask and coincidentally depositing tungsten nucleuses on said mask by CVD processing in a CVD apparatus using a gaseous atmosphere containing WF_6 and H_2;

removing said tungsten coincidentally deposited upon a surface of the patterned mask by heating the mask in said apparatus in an atmosphere containing H_2 and residual WF_6 remaining from said CVD processing to thereby etch the mask; and

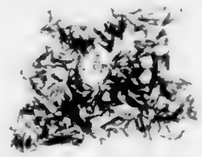
depositing tungsten upon said tungsten deposited previously upon said semiconductor substrate.

4,804,561

PROCESS FOR PRODUCING FERROMAGNETIC METAL FINE PARTICLES

Satoshi Tasioka, and Yasuyuki Nishimoto, Minamata, Yasuto Adachi, Minamata, all of Japan, assignors to Chisso Corporation, Japan

Filed Oct. 9, 1987, Ser. No. 106,278
Claims priority, application Japan, Oct. 25, 1986, 61-253989
Int. Cl.[4] B05D 5/12, 7/00; B22F 3/00; C04B 35/64
U.S. Cl. 427—130 7 Claims



1. A process for producing ferromagnetic metal fine particles which comprises:

an adhering step of adhering an effective amount of a compound of at least one metal selected from the group consisting of Ni, Ca, Mn, Co, Mg, Ti, Cu, Sn, Bi and Cr, onto the surface of iron α-oxyhydroxide particles in water;

effective amounts of a depositing step of depositing a silicon compound and an aluminum compound onto the resulting particles in alkaline water;

a step of filtering off and drying the resulting iron α-oxyhydroxide particles;

a step of calcining the resulting particles in a non-reducing gas atmosphere, and then reducing the calcined particles on heating.

4,804,562

METHOD FOR REPAIRING CERAMIC CASTING CORES

T. Arnold Ferguson, Manchester, and Linda L. Seaver, Bristol, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 21, 1987, Ser. No. 99,273
Int. Cl.[4] B32B 35/00
U.S. Cl. 427—140 8 Claims

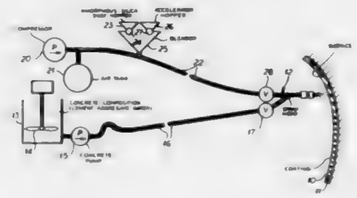
1. A method for repairing a defect in a green ceramic casting core containing ceramic particles and a thermoplastic binder, comprising the steps of: softening the binder in the area of the defect; applying ceramic particles to the defect while the binder is soft; hardening the binder; and heating the core to volatilize the binder and to sinter the ceramic particles to each other.

4,804,563

METHOD AND APPARATUS FOR THE SPRAY PLACING OF CONCRETE LAYERS

Bernd Hillemeier, Wiesbaden; Günter Brockmann, Bad Homburg, and Richard Pohl, Mörfelden-Walldorf, all of Fed. Rep. of Germany, assignors to Hochtief Aktiengesellschaft Vorm. Gebr. Helfmann, Essen, Fed. Rep. of Germany

Filed Feb. 12, 1987, Ser. No. 14,009
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1986, 3604486
Int. Cl.[4] B05D 1/12
U.S. Cl. 427—397.7 9 Claims



1. A method of applying spray concrete to a surface to be concreted, comprising the steps of:

(a) forming a pumpable and sprayable settable concrete composition consisting at least of a hydraulic cement, an aggregate and water;

(b) entraining said composition in a stream of driving air at a driving pressure to form a spray of said composition and cause particles of said spray to deposit on said surface to be conceted and set as a layer of concrete thereon; and

(c) admixing with said air before it entrains said composition a quantity of silica dust having an inner surface area of substantially 200 to 700 m^2/g and sufficient to interact with said composition upon contact therewith and spontaneously raises the temperature thereof by substantially 5 to 10 degrees Kelvin and thereby accelerate the setting of said concrete on said surface.

4,804,564

PLASTIC BAGS OF BLENDS OF LINEAR ETHYLENE POLYMERS AND AROMATIC POLYMERS

David V. Dobreski, and Bruce E. Nattinger, both of Fairport, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 771,965, Sep. 3, 1985, abandoned, which is a continuation-in-part of Ser. No. 685,583, Dec. 24, 1984, Pat. No. 4,579,912, which is a continuation-in-part of Ser. No. 553,981, Nov. 21, 1983, abandoned, and a continuation-in-part of Ser. No. 676,979, Nov. 30, 1984, abandoned. This application Aug. 13, 1987, Ser. No. 86,221
The portion of the term of this patent subsequent to Apr. 1, 2003, has been disclaimed.
Int. Cl.[4] C08J 5/18; C08K 3/36; C08L 23/18; B65D 30/02
U.S. Cl. 428—35.5 13 Claims

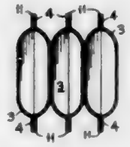
1. A thermoplastic bag made from a film containing inorganic antiblock agent and, as the sole polymeric constituents, a linear homopolymer of ethylene or a linear copolymer of ethylene and a higher olefin having at least 4 carbon atoms, and 0.1 to about 10 weight percent of a thermoplastic polymer of an aromatic hydrocarbon selected from the group consisting of polystyrene and poly(para-methylstyrene) in an amount sufficient to equal or improve the antiblock chracteristics which are obtained by using a larger amount of said inorganic antiblock agent in the absence of said thermoplastic polymer of an aromatic hydrocarbon.

4,804,565

PADS FOR ABSORBING PRESSURE SHOCKS AND METHOD OF MANUFACTURE THEREOF

Wlodzimierz Rast, Mount Osmond, Australia, assignor to W. Rast Pty. Ltd., South Australia, Australia

PCT No. PCT/AU85/00250, § 371 Date Jun. 16, 1986, § 102(e) Date Jun. 16, 1986, PCT Pub. No. WO86/02424, PCT Pub. Date Apr. 24, 1986
PCT Filed Oct. 15, 1985, Ser. No. 885,573
Claims priority, application Australia, Oct. 16, 1984, PG7662
Int. Cl.[4] B32B 23/02
U.S. Cl. 428—35.3 15 Claims



1. A pad for absorbing pressure shocks comprising: a pair of laminates sealed together to define therebetween a cavity to contain a gas under pressure, each laminate comprising a strength member impervious to gas and being in the nature of a foil, and a thermoplastic film bonded to each side of the strength member, the thermoplastic films extending beyond the edge of the strength member and being heat sealed together marginally beyond the edge of the strength member to thereby totally enclose the strength member.

4,804,566

MULTILAYER POLYESTER STRUCTURES AND CONTAINERS THEREOF

William C. Paul, Mt. Vernon, and Kirk L. Knabel, Evansville, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Jan. 25, 1986, Ser. No. 878,230
Int. Cl.[4] B65D 1/00; B32B 27/08, 27/36
U.S. Cl. 428—35 10 Claims

1. A multilayer structure which consisting essentially of a layer comprising a branched polybutylene terephthalate free of polyolefin adjacent to a layer comprising an aromatic polyester selected from the group consisting of aromatic polycarbonate, copolyestercarbonate, polyarylate, or mixtures thereof.

4. The structure of claim 1 wherein the layer of aromatic polyester is adjacent to a second layer consisting essentially of branched polybutylene terephthalate free of polyolefin.

5. A multilayer structure which comprises a layer consisting essentially branched a polybutylene terephthalate free of polyolefin adjacent to a layer comprising an aromatic polyester selected from the group consisting of copolyestercarbonate and polyarylate.

4,804,567

AUTOMOTIVE FLOOR COVERING HAVING PAD ATTACHMENT MEANS

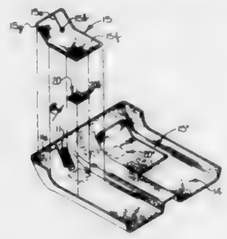
Harold Reuben, Akron, Ohio, assignor to Akro Corporation, Canton, Ohio

Continuation-in-part of Ser. No. 99,069, Sep. 21, 1987, Pat. No. 4,748,063. This application May 26, 1988, Ser. No. 198,990
Int. Cl.[4] B32B 3/06; B60J 9/00
U.S. Cl. 428—40 10 Claims

1. A floor covering for an automobile comprising an automobile carpet of a predetermined size and configuration, at least one carpet pad overlying a predetermined area of said carpet, and carpet pad attaching means removably connected to the face of said carpet in at least one localized area of the carpet and comprising a flexible base having opposing faces

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thereon, a unitary group of upstanding integrally formed spaced apart projections extending upwardly from one face of said base and being unitized by said base to provide a unitary group of upstanding projections, a pressure sensitive adhesive layer on the opposite face of said base for removably connecting to the face of the carpet and for permitting ready removal of said carpet pad attaching means from said carpet, said carpet pad having a plurality of downwardly extending integrally



formed spaced apart projections connected thereto and depending from the backside thereof and adapted to penetrate into said underlying carpet for preventing shifting of the pad, some of said projections depending from said pad being in intermeshing relationship with said unitary group of upstanding projections and serving to ensure maintenance of the carpet pad in its desired placed relationship overlying the automobile carpet.

4,804,568

ELECTROMAGNETIC SHIELDING MATERIAL

Toshiyuki Ohnawa, Tokyo, Japan; Yoshino Katsumi, 166-3 Oba-Cho, Kishiwadashi, Osaka-Fu 596, Japan, and Keiichi Kaneton, Osaka, Japan, assignors to Ricoh Company, Ltd., Tokyo and Katsumi Yoshino, Osaka, both of, Japan

Continuation-in-part of Ser. No. 783,180, Oct. 2, 1985, abandoned. This application Apr. 30, 1987, Ser. No. 44,224

Claims priority, application Japan, Oct. 3, 1984, 59-207650; Feb. 22, 1985, 60-032854; Mar. 26, 1985, 60-061262

Int. Cl.[4] B32B *7/12*; **C07D** *207/323*

U.S. Cl. 428—40 **10 Claims**



1. An electromagnetic shielding material comprising an electromagnetic shielding layer which comprises a pyrrole polymer complex comprising (i) repeated pyrrole or pyrrole derivative monomer units which constitute the main chain of the polymer complex and (ii) aromatic anions bonded to the main chain, wherein the ratio of monomer units to anion units is about 3:1 and the dopant amount is between 27% and 40%.

4,804,569

UNIT TILE

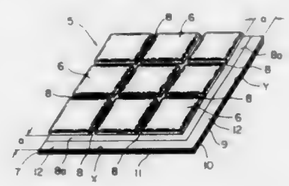
Tomoharu Arisawa, Tokyo, Japan, assignor to Yugen Kaisha Arisawa and Kabushiki Kaisha Towo Japan, both of Tokyo, Japan

Filed May 19, 1987, Ser. No. 51,294

Int. Cl.[4] B32B *3/14*; **B44C** *1/28*

U.S. Cl. 428—47 **12 Claims**

1. A unit tile for decoration and protection of interior walls which comprises a substrate formed of a sheet member of a synthetic resin having a suitable rigidity, an adhesive layer coated on an entire rear side of the sheet member and a release paper attached to a surface of the adhesive layer to protect the adhesive layer; and a plurality of tile members each made of a synthetic resin and having a desired thickness and flexibility;



said tile members being adhesively attached on a surface of the substrate, leaving spaces between the respective tile members.

4,804,570

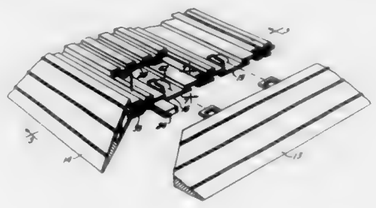
ROLL-UP MATTING AND METHOD OF ASSEMBLY

Michael A. Bedics, Poughquag, N.Y., assignor to Pawling Corporation, Pawling, N.Y.

Filed Jun. 3, 1987, Ser. No. 57,628

Int. Cl.[4] E04C *1/30*; **B32B** *3/06*

U.S. Cl. 428—53 **7 Claims**



1. In an articulated mat assembly having a plurality of elongated rigid structural elements extending from side to side of the assembly and hingedly connected to each other along their edges,

(a) a tread strip slideably insertable endwise into each structural element to provide a tread surface along the top of said mat assembly,

(b) one or more pad strips slideably insertable endwise into each structural element to form a pad surface along the bottom of said mat assembly, and

(c) means to retain said slideably insertable strips in assembled position comprising elongated, resilient edge strips secured to the opposite end edges of said structural elements, defining the opposite side edges of said mat structure,

(d) resilient connecting tab means, integral with said edge strips, joining said edge strips to said structural elements and accommodating downward displacement of said edge strips, when unsupported by a floor or the like, to permit slideable insertion and removal of said tread strips into and out of said structural elements.

4,804,571

REUSABLE THERMAL PROTECTION MEMBER FOR AN OBJECT SUBJECT TO GREAT HEATING

Jacques Jouffross, Montgiscard, France, assignor to Centre National D'Etudes Spatiales, Paris, France

Filed Aug. 8, 1986, Ser. No. 894,771

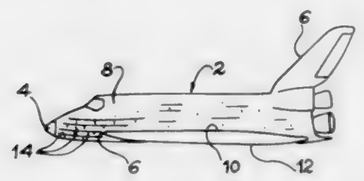
Claims priority, application France, Aug. 12, 1985, 85 12281

Int. Cl.[4] B64G *1/58*

U.S. Cl. 428—77 **24 Claims**

1. A reusable lightweight thermal protection member for protecting an area of an object to great heating, said member

having a plurality of sheetlike, refractory shields having relatively large surface areas, means for fixing said refractory shields to the object, an insulating layer placed between the refractory shields and the object, and means for fixing the insulating layer to the object, wherein the refractory shields



each comprise at least one thin film of refractory material having an adequate flexibility to adapt to the shape of the object in the area to be protected in at least one direction, said resultant thermal protection member having a surface mass not greater than 6 Kg/m^2.

4,804,572

WALL COVERING WITH FLUOROCARBON STAIN RESISTANT TOP COATING

Steven I. Bodnegi, Plattsburgh, N.Y., assignor to Imperial Wallcoverings, Inc., Beachwood, Ohio

Filed Dec. 1, 1987, Ser. No. 127,221

Int. Cl.[4] B32B *3/00, 27/00, 27/06*; **E04C** *1/00*

U.S. Cl. 428—195 **10 Claims**



1. A stain resistant wall covering comprising

a reinforcing backing layer,

a surfacing layer formed of a polymer coating overlying a front surface of said backing layer,

a layer of printing applied to said surfacing layer in selected areas and imparting a desired decorative pattern to the wall covering, and

a stain resistant transparent top coating overlying said layer of printing and imparting stain resistant properties to the wall covering, said top coating comprising at least one polymer derived from vinyl monomers and from about 0.1 to 4 percent by weight of a perfluoroalkyl polymer, and a flattening pigment for imparting a non-glossy matte finish to the top coating.

4,804,573

PACKAGING MATERIALS

Brian A. McCarthy, 50 Kinvara Road, Navan Road, Dublin 7, and John P. McKeon, Mount Pleasant, Church Road, Greystones, Co Wicklow, both of Ireland

Filed May 4, 1987, Ser. No. 45,818

Claims priority, application Ireland, May 5, 1986, 1188/86; Belgium, Sep. 23, 1986, 217200

Int. Cl.[4] B05D *1/36*; **B32B** *27/08*; **C09J** *7/02*

U.S. Cl. 428—201 **10 Claims**

1. A packaging material comprising a sheet material having a front face and a rear face and being adapted to be sealed rear-face-to-rear-face by application of pressure to selected areas, said sheet material having on said selected areas of the rear face a water-based cold seal adhesive applied thereto without a primer coat, said cold seal adhesive having cohesive properties, and on the front face a water-based or water-borne overprint varnish.

2. A packaging material according to claim 1, wherein the front face also has printing applied thereto, under the overprint varnish.

4,804,574

LAMINATED PRINTED COIL STRUCTURE

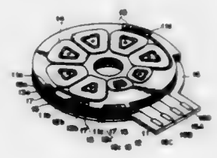
Kenji Ooawa, Kanagawa; Shiyoaichi Maramoto, Tokyo; Yoshio Watanabe, Tokyo; Takanori Kawahara, Tokyo, and Takaaki Koizumi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 12, 1987, Ser. No. 14,267

Claims priority, application Japan, Feb. 12, 1986, 61-29681

Int. Cl.[4] B32B *3/00*; **H02K** *11/00, 1/00, 1/22*

U.S. Cl. 428—209 **1 Claim**



1. A laminated printed coil structure, comprising:

a wiring board h aving an insulating substrate;

lead terminals and connecting pad portions connected to said lead terminals and formed on one surface of said insulating substrate, said connecting pad portions having rough surfaces;

a plurality of printed coil elements each having an insulating layer and coil patterns on said insulating layer, said plurality of printed coil elements being stacked one on another;

first and second true terminals electrically connected to said coil patterns;

dummy terminals electrically isolated from said true terminals and said coil patterns;

said first and second true terminal and said dummy terminals being formed on both sides of each of said printed coil elements;

said coil patterns and said true terminal and said dummy terminals being electrically connected between both sides of said insulating layer by conductive through-holes at each of said true terminals and said dummy terminals;

each of said true terminals and said dummy terminals having a rough surface, said true terminals and said dummy terminals of respective ones of said printed coil elements beig aligned when said printed coil elements are stacked one on another;

a conductive substance interposed between said connecting pad portions and said true terminals and between said connecting pad portions and said dummy terminals and between said true terminals and said dummy terminals of said stacked printed coil elements; and

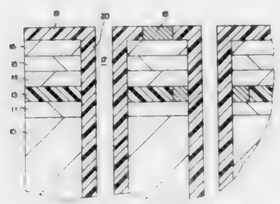
intermediate adhesive layers interposed between said coil patterns of adjacent ones of said stacked printed coil elements and between said coil patterns and said insulating substrate of said wiring board.

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4,804,575
MULTILAYER PRINTED WIRING BOARDS

Thomas S. Kohm, Huntington, N.Y., assignor to Kollmorgen Corporation, Simsbury, Conn.

Filed Jan. 14, 1987, Ser. No. 280
Int. Cl.[4] B32B 3/00, 15/08; H05K 1/00; C08F 8/00
U.S. Cl. 428—209 9 Claims

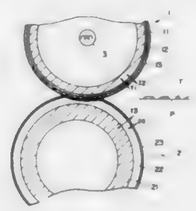


1. An additive multilayer printed wiring board comprising:
a first layer comprised of an organic insulating base material having a copper conductive pattern adhered thereon;
a second layer covering at least a portion of the conductive pattern and the insulating base material.
the second layer comprised of a thermoset primer coating comprised of
the product of reacting between 20 to 60% by weight of a poly(vinyl-acetal) resin with 80-40% by weight phenolic resin in the presence of an acidic catalyst; and
a coupling agent having at least two amino substituted aromatic groups covalently bonded to a titanium or zirconium central atom via an oxygen containing linkage, said coupling agent coupling to the metal surface and firmly bonded to the phenolic resin, said coupling agent being present in the primer coating in an amount between about 0.3 and about 2% by weight of the total resin content of the primer coating;
a third layer comprised of an organic dielectric insulating material covering at least part of the second layer;
a fourth layer comprised of thermoset bonding composition covering at least part of the third layer and cured thereon, said bonding composition comprised of
a phenolic resin, said resin being substantially free of methyl ether groups, having an average of between four and ten phenolic rings per molecule and at least two methylol functional groups:
at least one heat resistant polymer having an aromatic or cyclic backbone and a functional group capable of crosslinking with phenolic methylol groups without evolving water, said heat resistant polymer being present in an amount sufficient to react with substantially all the methylol groups of the phenolic resin, said polymer with aromatic or cyclic backbone being capable of improving the electrical or heat resistant properties of said bonding composition; and
an elastomer selected from the group consisting of neoprene, nitrile rubber, a rubber capable of crosslinking by a reaction involving a double bond, nitrile rubber and chlorosulfonated polyethylene, and polyvinyl butyral, said elastomer being 30 to 60% of the combined weight of the phenolic and heat resistant resin and elastomer; and
a fifth layer comprised of an additional copper conductive pattern plated on the fourth layer.

4,804,576
ELASTIC ROTATABLE MEMBER

Tsukasa Kuge, Tokyo; Masahiro Goto, Kawasaki, and Isamu Sakane, Ohtsu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Kabushiki Kaisha I.S.T., Ohtsu, both of, Japan

Filed Feb. 21, 1986, Ser. No. 831,729
Claims priority, application Japan, Feb. 28, 1985, 60-39063; Apr. 12, 1985, 60-78646; Apr. 12, 1985, 60-78647; Oct. 12, 1985, 60-229020
The portion of the term of this patent subsequent to Feb. 21, 1986, has been disclaimed.
Int. Cl.[4] B32B 7/00, 15/04, 27/08
U.S. Cl. 428—216 15 Claims



1. An elastic rotatable member comprising:
a core member;
an elastic layer outside said core member and having a roughened surface; and
a sintered resin layer coating the roughened surface of said elastic layer;
wherein a thickness td (micron) of said resin layer measured by physical contact therewith after it is peeled off said elastic layer, and a thickness of said resin layer tw (micron) determined by conversion of weight of said resin layer, satisfy a relationship of

$$0.5 \leqq (td - tw) \leqq 5,$$

and wherein said thickness tw and a thickness tm (microns) of the resin layer determined as $|d - d_2|/2$, where d_1 is an outer diameter of the elastic rotatable member having said resin layer measured without contact thereto, and d_2 is an outer diameter thereof after said resin layer is peeled off measured without contact, satisfy the relationship of

$$tw > tm.$$

4,804,577
MELT BLOWN NONWOVEN WEB FROM FIBER COMPRISING AN ELASTOMER

Donald R. Hazelton, Chatham, N.J., and William J. Hodgson, Jr., Baytown, Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

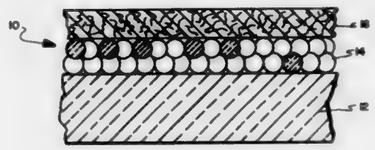
Filed Jan. 27, 1987, Ser. No. 6,867
Int. Cl.[4] B29D 28/00; C08L 9/00
U.S. Cl. 428—224 8 Claims

1. A soft, elastic, melt blown non-woven web comprising random, discontinuous fibers having a diameter within the range of 0.5 to 5 microns and being bound together by entanglement, said fibers being composed of a polymer blend of
(a) from 15 wt% to 50 wt% of an elastomeric copolymer of an isoolefin and a conjugated diolefin and
(b) from 85 wt% to 50 wt% of a thermoplastic olefin polymer resin, wherein said polymer blend has been thermally or oxidatively degraded to reduce substantially the intrinsic viscosity of the polymer blend.

4,804,578
INSULATED ROOF BOARD

Anthony J. Crookston, Akron, Ohio, assignor to Old Reliable Wholesale, Inc., Barberton, Ohio

Filed Jul. 27, 1988, Ser. No. 224,732
Int. Cl.[4] B32B 3/26, 5/16
U.S. Cl. 428—304.4 16 Claims



1. An insulated roof board comprising:
(a) a base layer of rigid coherent insulating material,
(b) a coherent solid insulating intermediate layer having void space therein to permit venting of water vapor; and
(c) a relatively hard, dense top layer.

4,804,579
THERMOINSULATING MOLDINGS CONTAINING A POROUS, INORGANIC THERMOINSULATING MATERIAL AND HAVING AN ORGANOPOLYSILOXANE COATING THEREON

Dieter Gerhardinger, Burghausen; Johannes Reinacher, Kemptten; Günter Stohr, Durach, and Karl-Heinrich Wegehaupt, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 29, 1988, Ser. No. 161,699
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1987, 3709864
Int. Cl.[4] B32B 3/26
U.S. Cl. 428—304.4 1 Claim

1. A thermoinsulating molding comprised of porous, inorganic thermoinsulating materials and having an organopolysiloxane coating thereon, in which the thermoinsulating molding is coated with a crosslinked elastomeric composition containing diorganopolysiloxanes, and rod-shaped styrene-(meth)acrylate copolymers which are obtained from the free radical copolymerization of styrene and (meth)acrylates in the presence of the diorganopolysiloxanes.

4,804,580
CATALYTIC REFORMER HOUSING INSULATION AND METHOD OF MAKING SAME

James D. Singelyn, Newington, Conn., assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed Jul. 7, 1988, Ser. No. 215,975
Int. Cl.[4] B32B 5/16; B05D 7/22
U.S. Cl. 428—312.2 6 Claims

1. A cold face insulation layer for the inside surface of a pressurized vessel, which vessel operates at high temperatures and contains moist gases, which insulation will prevent moisture from condensing on interior surfaces of the vessel, said insulation, when cured, comprising a mixture of about 20% to about 40% by weight of glass or ceramic microspheres with the balance being an inorganic cement.

2. The insulation layer of claim 1 having an exposed surface thereof which is sealed with a coating of potassium silicate.

4,804,581
CHIP RESISTANT COATINGS

Denise M. Geary, Munhall; Paul H. Pettit, Jr., Allison Park, both of Pa., and Susan K. Vicha, Lakewood, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 14, 1987, Ser. No. 49,368
Int. Cl.[4] B32B 15/08, 27/38
U.S. Cl. 428—332 16 Claims

1. A coated article having a chip resistant composite coating, the article comprising:
a metal substrate; and
a composite coating comprising (i) an electrodeposited primer layer as a first coating layer disposed upon the metal substrate and (ii) an elastomer-modified epoxy-containing coating layer including a coreacted mixture of (a) an elastomer-modified epoxy derived from a polyepoxide resin and from aobut 5 to 35 perecent by weight of a functionally-terminated diene-containing polymer based on total weight of polyepoxide resin and diene-containing polymer, the functionality being reactive with epoxy and selected from the group consisting of carboxyl, phenol, hydroxyl, epoxy, amino and mercpatan, and (b) a carboxyl-functional material having carboxyl functionality of at least 2.0 and selected from the group consisting of a carboxyl-functional polyester resin, a carboxyl-functional acrylic polymer, a dicarboxylic acid, a polycarboxylic acid, or mixtures thereof, having a different composition than the first coating layer, disposed upon the first coating layer.

2. The coated article of claim 1 wherein the elastomer-modified epoxy containing coating layer is from about 2 mils to 15 mils thick.

4,804,582
STATIC DISSIPATIVE THERMOPLASTIC LAMINATE FILM

Stephen A. Noding, Brusly; Sanford A. Siegel, and Donald W. Pennington, both of Baton Rouge, all of La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 1, 1987, Ser. No. 56,037
Int. Cl.[4] B32B 9/00, 27/08
U.S. Cl. 428—332 17 Claims

1. A thermoplastic laminate film produced by a process which comprises,
(a) providing first and second thermoplastic films, said films comprising,
(i) a polymer, selected from the group consisting of poly(-vinyl chloride), chlorinated polyethylene, poly(vinylidene chloride) and a copolymer of vinyl chloride and vinylidene chloride,
(ii) cations selected from the group consisting of alkali metal ions, alkaline earth metal ions and mixtures thereof,
(iii) a plasticizer which is compatible with said polymer and which is capable of forming a complex with cation,
(b) coating a surface of said first thermoplastic film with an electronically conductive carbon material;
(c) overlaying the coated surface of said first thermoplastic film with said second thermoplastic film; and
(d) pressing said first and second thermoplastic films together to form said laminate film.

4,804,583
COMPOSITION OF MATTER THAT IS HARD AND TOUGH

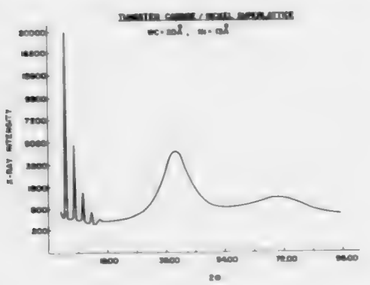
Theordore D. Moustakas, Annandale, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed May 26, 1987, Ser. No. 54,384
Int. Cl.[4] B32B 15/04
U.S. Cl. 428—469 11 Claims

1. A composition structure comprising a plurality of thin alterna ting layers of a first hard material with a Wicker's

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number larger than 2000 kg/mm² and a second tough metallic material that wets with said hard material, wherein said hard material is selected from the group consisting of a carbide,



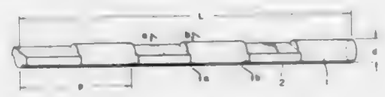
nitride or diamond, wherein said tough material is a transition metal and each of said layers have a thickness between 5A and 1000A.

4,804,584
LAMINATES
Kunihiko Nakashima; Hiroshi Sugiura; Tatsuya Murachi, and Masakazu Nakano, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan
Filed Jan. 16, 1987, Ser. No. 3,990
Claims priority, application Japan, May 19, 1986, 61-113878
Int. Cl.⁴ B32B *27/00*
U.S. Cl. 428—424.2 **10 Claims**

1. A laminate comprising:
(A) a polyolefin polymer,
(B) a polar polymer and
(C) an adhesive disposed between both of said polymers for bonding them, in which said adhesive is composed of (a) an adhesive consisting essentially of a mixture of chlorinated polyolefin at 5–60% of chlorination degree and at least one of polyisocyanate and halogen compound coated on the side of said polyolefin polymer and (b) an adhesive composed of polyurethane or a mixture of polyurethane and polyisocyanate coated on the side of the polar polymer.

10. A laminate comprising:
(a) a polyolefin polymer,
(b) a polar polymer and
(c) an adhesive disposed between both of said polymers for bonding them, in which said adhesive is composed of (a) an adhesive consisting essentially of a mixture of chlorinated polyolefin at 5–60% of chlorination degree and at least one of polyisocyanate and halogen compound coated on the side of said polyolefin polymer and (b) an adhesive compound of polyurethane or a mixture of polyurethane and polyisocyanate coated on the side of the polar polymer said mixture of chlorinated polyolefin at 5–60% of chlorination degree and at least one of polyisocyanate and said halogen compound is further blended with a polymer obtained by the polymerization of a low molecular weight polyol and diisocyanate or polyfunctional isocyanate at a ratio of less than 50 parts by weight based on 100 parts by weight of the chlorinated polyolefin.

4,804,585
CONCRETE REINFORCING STEEL FIBERS AND A METHOD OF MANUFACTURING THE SAME
Yoshio Tani; Susumu Takata, and Kenso Kamei, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Sep. 26, 1986, Ser. No. 911,877
Int. Cl.⁴ E04C *5/03*; C04B *1⁴/48*
U.S. Cl. 428—574 **7 Claims**



1. A concrete reinforcing steel fiber having excellent tensile strength, T, and adhesion to concrete, which comprises alternately arranged basic portions, each basic portion providing a pressure bearing area and each section-shaped portion providing three pressure bearing projection areas, each of said portions satisfying the inequality:

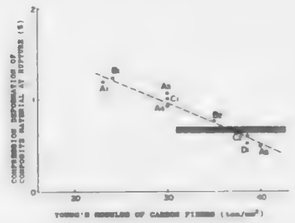
$$0.2A \leq b \leq 0.5A$$

wherein b is the cross-sectional area of the three pressure bearing projection areas of each section-shaped portions; and A is the cross-sectional area of a basic portion in mm², and further wherein said steel fiber has an aspect ratio in the range of 60–100, and has a total cross-sectional area, B, defined by the relationship:

$$B=b\times L/P$$

wherein L is the steel fiber length and P is the pitch of the section-shaped portions.

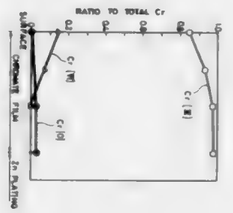
4,804,586
COMPOSITE MATERIAL INCLUDING MATRIX METAL AND CLOSED LOOP CONFIGURATION REINFORCING FIBER COMPONENT MADE OF CARBON FIBERS WITH MODERATE YOUNG'S MODULUS, AND METHOD FOR MAKING THE SAME
Atuo Tanaka; Tadashi Dohmomoto, and Yoshiaki Kajikawa, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Apr. 15, 1987, Ser. No. 38,833
Claims priority, application Japan, Apr. 16, 1986, 61-087659
Int. Cl.⁴ C22C *1/09*
U.S. Cl. 428—611 **4 Claims**



1. A composite material comprising a mass of matrix metal, which composite material is of annular configuration having an outer surface, and a mass of carbon fibers each disposed circumferentially in a closed loop configuration through and embedded within said mass of matrix metal at said outer surface by a process which includes said mass of matrix metal being heated at least to its melting point; said carbon fibers,

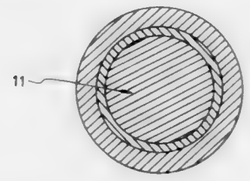
before being thus embedded in said mass of matrix metal, having a Young's modulus which is between about 23,000 kg/mm² and about 35,000 kg/mm².

4,804,587
CHROMATE-TREATED ZINC-PLATED STEEL STRIP AND METHOD FOR MAKING
Yuko Takeuchi; Yuki Nakahara; Hajime Kimura, and Shinobu Okano, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan
Filed Feb. 26, 1987, Ser. No. 20,015
Claims priority, application Japan, May 21, 1986, 61-116642
Int. Cl.⁴ B32B *15/04*
U.S. Cl. 428—623 **4 Claims**



3. A chromate-treated zinc-plated steel strip comprising
a steel substrate,
a zinc base plating on at least one surface of the substrate,
a metallic chromium layer on the zinc base plating,
a chromium oxide layer on the metallic chromium layer, consisting essentially of the oxide of trivalent chromium, and
an outermost surface layer on the chromium oxide layer, consisting essentially of silicon dioxide, aluminum oxide, and oxides of a major proportion of trivalent chromium and a proportion of hexavalent chromium and hydrates thereof which is effective to exert a self-healing effect on said layers.

4,804,588
MULTI-LAYER ALLOY STEEL WEAR STRUCTURE AND PROCESS FOR MAKING SAME
Grant J. Murphy, Jr., and Howard S. Turnipseed, both of Birmingham, Ala., assignors to Tricon Metals & Services, Inc., Birmingham, Ala.
Filed Nov. 10, 1987, Ser. No. 119,147
Int. Cl.⁴ B32B *15/18*
U.S. Cl. 428—683 **12 Claims**

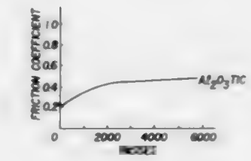


1. An alloy steel structure for use as a wear pin or part of a shaft having three layers, each layer having distinct composition when compared to any other layer comprising:
(a) a core resistant to failure caused by impact, fatigue, tensile, or compression stresses;
(b) an outer layer resistant to galling, wherein said outer layer is a steel alloy comprising 0.30 to 1.00 weight percent carbon, 4.00 to 8.00 weight percent chromium, 1.00 to 2.00 weight percent molybdenum, and 1.00 to 2.00 weight percent tungsten, the balance being iron; and
(c) an intermediate layer providing a shock absorbing and crack arrest zone between said core and said outer layer.

4,804,589
SILICON CARBIDE SINTERED MEMBERS
Minoru Matsui, Nagoya, and Tomonori Takahashi, Chita, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Continuation of Ser. No. 905,142, Sep. 9, 1986, abandoned. This application Oct. 29, 1987, Ser. No. 113,351
Claims priority, application Japan, Sep. 26, 1985, 60-213494
Int. Cl.⁴ B32B *9/04, 13/16*
U.S. Cl. 428—698 **14 Claims**

1. A silicon carbide sintered member, consisting essentially of:
a silicon carbide sintered body; and
a heat insulating layer formed on a surface of said silicon carbide sintered body, said layer consisting essentially of zirconia and having a thickness of not greater than 100 microns;
wherein said heat insulating layer reduces the thermal conductivity of said silicon carbide sintered member.

4,804,590
ABRASION RESISTANT MAGNETIC RECORDING MEMBER
Kyuzo Nakamura; Yoshifumi Ota, both of Yachimata; Taiki Yamada, Narita; Michio Ishikawa, and Noriaki Tani, both of Yachimata, all of Japan, assignors to Nihon Shinku Gijutsu Kabushiki Kaisha, Kanagawa, Japan
Filed Nov. 25, 1986, Ser. No. 934,594
Claims priority, application Japan, Feb. 6, 1986, 61-22979; May 26, 1986, 61-119108
Int. Cl.⁴ G11B *5/72*
U.S. Cl. 428—408 **8 Claims**



1. An abrasion resistant magnetic recording member comprising a carbonaceous surfacial protective film formed on a surface of a magnetic film formed on a surface of a nonmagnetic substrate, wherein the carbonaceous surfacial protective film has a lower layer of comparatively hard carbonaceous film and an upper layer of comparatively soft and lubricative carbonaceous film, said protective film either being formed through an intermediate layer on the surface of the magnetic film or being formed, by a method other than arc deposition, directly on the surface of the magnetic film, wherein the lower layer contains 5 at.% or less of hydrogen, fluorine, or a combination of hydrogen and fluorine, and wherein the upper layer contains 6 at.% or more of hydrogen, fluorine, or a combination of hydrogen and fluorine.

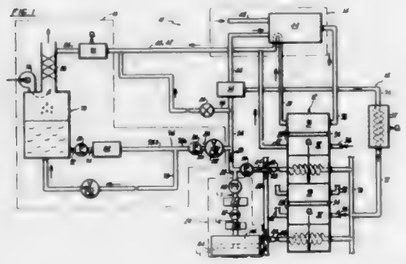
VOL 1099 ISS 2 FE 14 1989 UMI

4,804,591

FUEL CELL POWERPLANT EMPLOYING AN AQUEOUS SOLUTION

Albert P. Grasso, Vernon; Wolfgang M. Vogel, and William A. Taylor, both of Glastonbury, all of Conn., assignors to International Fuel Cells, South Windsor, Conn.

Filed Jan. 18, 1985, Ser. No. 746,167
Int. Cl.[4] H01M 8/00
U.S. Cl. 429—12 8 Claims



1. A fuel cell powerplant having a fuel cell stack, a flow path for an aqueous solution, a conduit for the aqueous solution through which the flow path extends, and a component for transferring heat to the aqueous solution, the aqueous solution including water and iron based compounds which deposit on the interior of the conduit, the water being capable of reacting with its environment to form iron based compounds, wherein the improvement comprises:

an aqueous solution consisting essentially of water having a pH of about 5.5 to 8.5, having an electrical conductivity which is less than or equal to one micromho per centimeter, having a solids content which is less than one part per million (1 ppm), the solids content including an amount of iron based compounds other than ferric hydrous oxide and the water further including ferric hydrous oxide of a character and of an amount that retards the deposition of said iron based compounds on the interior of the conduit; and,

a supply conduit in flow communication with a component of the fuel cell powerplant for receiving water from said component; and,

means for disposing additional ferric hydrous oxide in the aqueous solution of a character that retards the deposition of said iron based compounds on the interior of the conduit which includes means for forming the additional ferric hydrous oxide by the controlled corrosion of iron or an iron based compound, the means being disposed within the powerplant and receiving water from the supply conduit in flow communication with a component of the fuel cell powerplant and being in communication with a portion of the conduit for the aqueous solution.

4,804,592

COMPOSITE ELECTRODE FOR USE IN ELECTROCHEMICAL CELLS

Nicholas E. Vanderborgh; James R. Huff, both of Los Alamos, N. Mex., and Johns Leddy, Flushing, N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

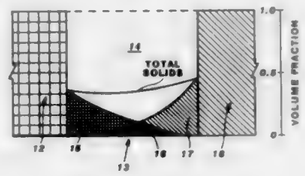
Filed Oct. 16, 1987, Ser. No. 109,133
Int. Cl.[4] H01M 8/10, 4/86
U.S. Cl. 429—33 43 Claims

10. An electrochemical cell comprising:

current collector means for conducting electrons generated by electrochemical reactions of fuel within said electrochemical cell;

ion conductor means for selectively conducting preselected ions liberated by said electrical reactions; and

a composite electrode positioned between said collector means and said ion conductor means, said composite elec-



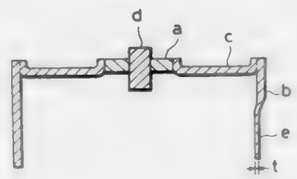
trode having varying ion and electron transport rates therethrough and having an electrocatalyst positioned within a zone in the section of said electrode wherein said rates are substantially equal.

4,804,593

ENCLOSED CELL HAVING SAFETY VALVE MECHANISM AND FABRICATING METHOD OF THE SAME

Mitsunori Hara; Nobuhiro Nagao; Tooru Amazutsumi, and Kanji Urushihara, all of Hyogo, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed May 19, 1987, Ser. No. 51,348
Claims priority, application Japan, May 20, 1986, 61-115053; Sep. 18, 1986, 61-142910[U]; Mar. 5, 1987, 62-32456[U]
Int. Cl.[4] H01M 2/08; H07M 2/02
U.S. Cl. 429—174 12 Claims



1. An enclosed cell having a safety valve mechanism, comprising:

an outer can having an opening at one end thereof and acting as a first polar terminal,

a generating element disposed in said outer can and including an electrode assembly and an electrolyte,

a metal lid fused to a peripheral edge of the opening of said outer can containing said generating element, said metal lid defining a through bore centrally thereof and at least one cutout continuous with said through bore,

a second polar terminal including a planar portion and a pin component extending from a center of an undersurface of said planar portion, said pin component extending into said through bore without contacting said through bore, and

a resin packing having polar groups and being placed between said metal lid and said second polar terminal for sealing a cell interior gastight,

wherein said packing defines seals by thermal fusion thereof to said metal lid and to a peripheral face of said pin component, said packing being deformable and/or breakable to release a gas when an internal pressure of the cell increases to excess.

4,804,594

PREDOPED CONDUCTIVE POLYMERS AS BATTERY ELECTRODE MATERIALS

Taiguang R. Jow, Morris, and Lawrence W. Shacklette, Essex, both of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Oct. 13, 1987, Ser. No. 107,312
The portion of the term of this patent subsequent to May 26, 2004, has been disclaimed.
Int. Cl.[4] H01M 10/40, 4/60
U.S. Cl. 429—194 19 Claims

1. An improved battery of the type which comprises: an anode comprising one or more conjugated backbone polymers and one or more electroactive materials selected from the group consisting of metals which alloy with alkali metals and alkali metal cation inserting materias; an electrolyte comprising an organic solvent and an alkali-metal salt; and a cathode; said alkali-metal cations from said electrolyte being inserted into said anode as a metal alloy or as an inserted ion in said alkali metal cation inserting material during the charging of said battery, said improvement comprises an anode in which said conjugated backbone polymers contained in said anode have been predoped with one or m ore alkali metal cations to the reduced state prior to incorporation of said anode into said battery.

4,804,595

NON-AQUEOUS ELECTROLYTES FOR LITHIUM BATTERIES

Vincent W. Bakos, and David J. Steklenski, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 15, 1988, Ser. No. 144,158
Int. Cl.[4] H01M 6/14
U.S. Cl. 429—194 15 Claims

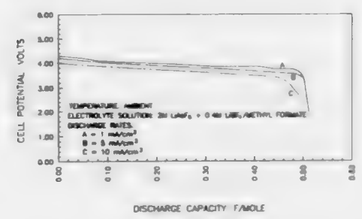
1. An electrochemical cell comprising a lithium anode, a cathode and an electrolyte (a) having a conductivity, and reciprocal ohms per cm, of at least 3.5 in (b) comprising a lithium salt, propylene carbonate and 1,2-dimethoxypropane.

4,804,596

ELECTRODE MATERIAL/ELECTROLYTE SYSTEM FOR NON-AQUEOUS CELLS

Walter B. Ebner, Warminster, Pa., and Hsin-Ping W. Lin, Cherry Hill, N.J., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 21, 1988, Ser. No. 146,536
Int. Cl.[4] H01M 6/14
U.S. Cl. 429—194 14 Claims



1. An active metal non-aqueous electrochemical cell comprising:

a lithium anode;

an organic ester-based organic electrolyte solution and

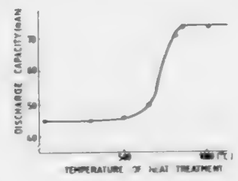
a cathode active material comprising Li_xCoO_2 where $0<x<1.0$.

4,804,597

ORGANIC ELECTROLYTE CELL

Kensuke Takura, and Hideo Sakamoto, both of Sendai, Japan, assignors to Seiko Electronic Components Ltd., Miyagi, Japan

Filed Nov. 13, 1987, Ser. No. 120,619
Claims priority, application Japan, Nov. 13, 1986, 61-270766; May 15, 1987, 62-118267; Aug. 11, 1987, 62-200298; Sep. 18, 1987, 62-234041
Int. Cl.[4] H01M 6/14, 4/58
U.S. Cl. 429—197 25 Claims



1. An organic electrolyte cell comprising:

a negative electrode;

a positive electrode including a main active material composed of bismuth trioxide Bi_2O_3 heat-treated at a temperature above 800° C.; and

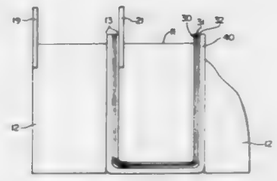
an organic electrolyte comprising an organic solvent and a salt dissolved in the organic solvent.

4,804,598

SEPARATOR SYSTEMS FOR SILVER-IRON BATTERIES

John F. Jackovitz, Monroeville Boro; Hilary Moyes, Penn Hills Township, Allegheny County, and Edward S. Buzzelli, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 14, 1987, Ser. No. 133,589
Int. Cl.[4] H01M 2/16
U.S. Cl. 429—254 14 Claims



1. A silver-iron battery comprising a case and a cover within which are disposed at least one silver electrode, at least one iron electrode, a separator system between the electrodes, alkaline electrolyte, and means and for making electrical connections to the respective electrodes, the improvement characterized in that the separator system comprises:

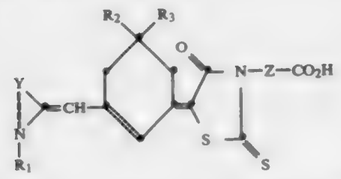
(a) a layer of low density polyethylene film, having a density of from about 0.91 g./cm^3 to about 0.92 g./cm. ^{3}, graft co-polymerized with an acrylic material, disposed next to the silver electrodes, and

(b) a layer of high density polyethylene film, having a density of from about 0.95 g./cm^3 to about 0.96 g./cm^3, graft co-polymerized with an acrylic material, disposed next to the iron electrodes.

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4,804,599
OPTICAL SENSITIZING DYES
Geoffrey E. Ficken, Wilmslow, England, assignor to Ciba-Geigy AG, Basle, Sweden
Continuation of Ser. No. 53,511, May 15, 1987, abandoned, which is a continuation of Ser. No. 881,151, Jul. 2, 1986, abandoned, which is a continuation of Ser. No. 762,982, Aug. 6, 1985, abandoned. This application May 24, 1988, Ser. No. 203,524
Claims priority, application United Kingdom, Aug. 9, 1984, 8420201
Int. Cl.[4] G03C 1/10
U.S. Cl. 430—2 13 Claims

1. A Lippmann silver halide emulsion consisting essentially of optically sensitized silver halide grains in a dispersing medium, wherein the average grain size is from 0.02 to 0.2 μm and wherein the silver halide grains have been optically sensitized with a dye of the general formula



wherein Y completes a benzothiazole or benzoselenazole nucleus, the benzene ring of which is optionally substituted, R_1 is an alkyl group having 1 to 4 carbon atoms, R_2 and R_3 are independently from each other hydrogen, an alkyl group having from 1 to 4 carbon atoms or phenyl and Z is an alkylene chain $—(CH_2)_n$ where n is 1 to 4, the alkylene chain being optionally substituted.

4,804,600
LITHOGRAPHIC MASK STRUCTURE AND PROCESS FOR PREPARING THE SAME
Hideo Kato; Hirofumi Shibatya, both of Yokohama, and Keiko Matsuda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 749,293, Jun. 27, 1985, abandoned. This application Feb. 1, 1988, Ser. No. 150,494
Claims priority, application Japan, Jul. 6, 1984, 59-138878; Mar. 29, 1985, 60-65469
Int. Cl.[4] G05F 9/00; G21K 5/00
U.S. Cl. 430—5 9 Claims



1. A lithographic mask structure comprising:
a mask support film; and
a substrate including a central flat top surface and an outer peripheral bonding surface, said peripheral bonding surface being inclined so that a thickness of the substrate decreases in a radial direction and having an annular groove therein, said mask support film being disposed on said substrate so as to cover said flat top surface, and an outer peripheral portion of said mask support film being adhesively bonded to said inclined peripheral bonding surface of said substrate, wherein
said annular groove prevents adhesive disposed on the said peripheral bonding surface from reaching an interface between said flat top surface and said mask support film.

4,804,601
ELECTROPHOTOGRAPHIC AND ELECTROGRAPHIC IMAGING PROCESSES
P. Keith Watson; Henry R. Till, both of Rochester, N.Y., and Melvin D. Croucher, Oakville, Canada, assignors to Xerox Corporation, Stamford, Conn.
Filed Jun. 29, 1987, Ser. No. 67,506
Int. Cl.[4] G03G 17/04
U.S. Cl. 430—32 25 Claims

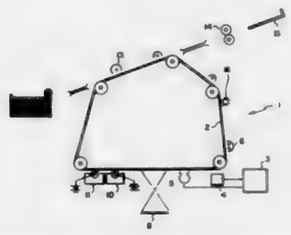
1. An imaging process which comprises the formation of an image on an imaging member; subsequently developing the aforementioned image with an electrophoretic liquid developer composition comprised of an insulating suspending fluid with a resistivity of from about 10^{12} ohm-cm to about 10^{16} ohm-cm, pigment particles, a stabilizer component, and a charge control additive; and wherein the resulting ink has a resistivity of from about 10^9 to about 10^{12} ohm-cm; applying the ink composition from an applicator roll, which roll transports the ink to the imaging member surface; and wherein the ink is selectively attracted to the charged areas of the imaging member.

4,804,602
METHOD AND APPARATUS UTILIZING CORONA ERASE FOR IMPROVING A MULTI-COLOR ELECTROPHOTOGRAPHIC IMAGE
Albert V. Buettner, Rochester, and Carl E. Cowan, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 839,009, Mar. 12, 1986, abandoned. This application Apr. 8, 1987, Ser. No. 36,200
Int. Cl.[4] G03G 13/01, 13/22, 15/01, 15/22
U.S. Cl. 430—42 24 Claims



1. In a method for producing a multi-stage electrophotographic image comprising the steps of providing an electrophotographic medium having a relatively non-conductive overcoat upon which the image is formed on a carrier platen at a first position, translating the platen and medium together over a predetermined path, charging the medium at a second position to a first voltage v_o, subsequently exposing the medium to a first light-borne image at a third position to discharge the exposed portion of said medium to a second voltage v_w, providing a first toning element arranged to engage the medium at a fourth position and selectively toning portions of the image-bearing medium to produce a first visible image, and returning the platen and medium to the first position to repeat the charging and exposing steps to expose the medium to a second light-borne image and to tone said second image with a second toning element to produce a second visible image, the improvement comprising the steps of reverse charging the medium with a voltage having a polarity opposite to $(v_o—v_w)$, and neutralizing trapped charges in the medium by recombination of the trapped charges with mobile charges of a polarity opposite to that of the trapped charges, and performing said reverse charging of the medium and said charge neutralization after said first toning and prior to the second charging to substantially neutralize said trapped charges in said medium.

4,804,603
ELECTROPHOTOGRAPHIC METHOD AND APPARATUS
Christopher B. Liston, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 21, 1987, Ser. No. 99,043
Int. Cl.[4] G03G 13/01, 13/052, 13/22
U.S. Cl. 430—45 7 Claims

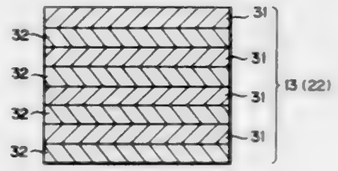


1. An electrophotographic method of producing a toner image made up of at least two toners of different characteristics, said method comprising the steps of:
(1) applying charges of first and second potential to an electrophotosensitive member, which charges of the first potential are located generally in first portions to be toned with toner having a first characteristic and which charges of a second potential are located in second portions to be toned by toner of a second charcteristic;
(2) imagewise exposing said charged electrophotosensitive member to a radiation image, to form an electrostatic image in both said first and second portion;
(3) applying toner of a first characteristic to said member under such conditions that the portion of said image defined by the charges of the first potential are developed; and
(4) applying toner of a second characteristic to said member under such conditions that the portion of said image defined by the charges of the second potential are developed.
4. The method according to claim 1 in which steps (3) and (4) include the application of toners of different color.

4,804,604
LIGHT RECEIVING MEMBER FOR USE IN ELECTROPHOTOGRAPHY
Shigeru Shirai; Keishi Saito; Takayoshi Arai; Minoru Kato, and Yasushi Fujioka, all of Shiga, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 18, 1987, Ser. No. 15,924
Claims priority, application Japan, Feb. 20, 1986, 61-35456
Int. Cl.[4] G03G 5/085
U.S. Cl. 430—57 36 Claims

1. A light receiving member for use in electrophotography comprising (a) a substrate for electropotography and (b) a light receiving layer; said light receiving layer comprising (i) a charge injection inhibition layer from 0.01 to 10 μm in thickness, (ii) a photoconductive layer from 1 to 100 μm in thickness and (iii) a surface layer from 0.003 to 30 μm in thickness in this order from the side of said substrate; said charge injection inhibition layer coprising a polycrystalline material containing silicon atoms as the main constituent and a conductivity controlling element selected from the gorup consisting of Grooup III or Group V elements in a uniform or nonuniform distribution state in the thickness direction and from 1 to 40 atomic percent of at least one of hydrogen or halogen atoms; said photoconductive layer comprising an amorphous semiconductor material containing silicon atoms as the main constituent and from 1 to 40 atomic percent of at least one kind selected from the group consisting of hydrogen atoms and halogen atoms; and said surface layer comprising an amorphous material of the formula: $A—(Si_xC_{1-x})_yH_{1-y}$ wherein x is 0.1 to 0.99999 and y is 0.6 to 0.999.

4,804,605
ELECTROPHOTOGRAPHIC SUPERLATTICE PHOTORECEPTOR
Shuji Yoshizawa, Tokyo, and Tatsuya Ikezue, Machida, both of Japan, assignors to Kabushiki Kaisha Toshiba, Japan
Filed Jul. 30, 1987, Ser. No. 79,467
Claims priority, application Japan, Aug. 11, 1986, 61-188319; Aug. 11, 1986, 61-188320; Sep. 29, 1986, 61-227997
Int. Cl.[4] G03G 5/082, 5/14
U.S. Cl. 430—57 24 Claims



1. An electrophotographic photoreceptor comprising:
a conductive substrate; and
a photoconductive layer, disposed on said substrate, for generating photocarriers upon irradiation with light, said photoconductive layer including silicon and having a superlattice portion of alternately stacked first semiconductor layers comprised of amorphous silicon containing hydrogen and second semiconductor layers comprised of microcrystalline silicon containing hydrogen and carbon, each of said first and second semiconductor layers having a thickness of between about 3 and 500 Å.

4,804,606
ELECTROPHOTOGRAPHIC SENSITIZED BODY HAVING A DIFFUSION BLOCKING LAYER
Toshiyuki Ohno, Hitachi; Kunihiro Tanahashi, Mito, and Mitsuo Chigasaki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 2, 1987, Ser. No. 92,304
Claims priority, application Japan, Sep. 3, 1986, 61-205974
Int. Cl.[4] G03G 5/14
U.S. Cl. 430—57 23 Claims

1. An electrophotographic sensitized body which has a photoconductive layer which comprises hydrogenated amorphous silicon on a metallic conductive substrate; characterized by being provided between said substrate and said photoconductive layer with a diffusion blocking layer which has a function to block the diffusion of atoms from said substrate into said photoconductive layer and specific resistance under 10^{-1} Ωcm.

4,804,607
ELECTROPHOTOSENSITIVE MEMBER HAVING AN OVERCOAT LAYER AND A PROCESS FOR PREPARING THE SAME
Fumitoshi Atsumi, Shizuoka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Sep. 28, 1987, Ser. No. 101,485
Claims priority, application Japan, Oct. 4, 1986, 61-236666
Int. Cl.[4] G03G 5/14
U.S. Cl. 430—67 8 Claims

1. In an electrophotosensitive member which comprises;
an electrically conductive substrate,
a photosensitive layer formed on said substrate,

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and an overcoat layer formed on said photosensitive layer, the improvement wherein said overcoat layer has a rough surface having convexities and concavities with a maximum depth difference of about 0.05 to about 1.5 μm in an amount of about 500 to about 3000 per 1 cm in linear distance.

4,804,608

AMORPHOUS SILICON PHOTORECEPTOR FOR ELECTROPHOTOGRAPHY

Yoshihisa Tawada, Kobe, Japan, assignor to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan

Continuation of Ser. No. 873,868, Jun. 11, 1986, abandoned, which is a continuation of Ser. No. 639,402, Aug. 10, 1984, abandoned. This application Nov. 22, 1987, Ser. No. 129,346

Claims priority, application Japan, Aug. 16, 1983, 58-150882

Int. Cl.⁴ G03G *5/082*

U.S. Cl. 430—85 **7 Claims**

1. A photoreceptor for electrophotography which consists essentially of an electroconductive substrate and a photoconductive layer provided thereon, said photoconductive layer consisting essentially of a thin film of amorphous silicon alloy containing at least one of hydrogen and fluorine and having the formula: a-$Si_{1-m}X_m$:y wherein X is C, N or O, Y is at least one of H and F and m is a number greater than or equal to zero and less than one, m being gradually decreased from the top surface of the photoconductive layer to the middle part of the photoconductive layer and gradually increased from the middle part of the photoconductive layer to the interface of the photoconductive layer with the electroconductive substrate in the direction of thickness.

4,804,609

DEVELOPING AGENT FOR ELECTROPHOTOGRAPHY WITH SILICA AND MAGNETITE ADDITIVES

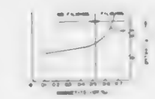
Yoshiaki Imanaka, and Hideaki Taniguchi, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

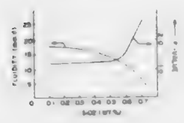
Filed Apr. 29, 1987, Ser. No. 43,699

Claims priority, application Japan, May 1, 1986, 61-101429

Int. Cl.⁴ G03G *9/14, /9/08*

U.S. Cl. 430—106.6 **3 Claims**





1. In a developing agent for electrophotographic copier comprising toner, the improvement wherein said developing agent includes SiO_2 and magnetite externally added to said toner, the amount of SiO_2 in said developing agent is 0.05–0.50 wt % with respect to said toner, the amount of said magnetite in said developing agent is 0.05–0.50 wt % with respect to said toner, and the total amount of SiO_2 and magnetite in said developing agent is at least 0.3 wt % up to about 1.0 wt % with respect to said toner wherein said magnetite is of average particle diameter of about 0.50.

4,804,610

PROCESS FOR PRODUCING TONER BY SUSPENSION POLYMERIZATION METHOD

Hiromi Mori, Yokohama; Satoshi Matsunaga, Tokyo; Kunko Kobayashi, Koganei; Yoshihiko Hyosu, Machida, and Eiichi Imai, Narashino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1987, Ser. No. 48,928

Claims priority, application Japan, May 15, 1986, 61-109509

Int. Cl.⁴ G03G *9/08*

U.S. Cl. 430—137 **17 Claims**

1. A process for preparing a toner obtained by a suspension polymerization method, comprising:

stirring a mixture containing at least a polymerizable monomer containing 5 to 500 ppm of a polymerization inhibitor dissolved in the polymerizable monomer and a colorant;

preparing a polymerizable monomer composition by adding a polymerization initiator to said mixture;

stirring the prepared polymerizable monomer composition; and

carrying out suspension polymerization of the polymerizable monomer composition dispersed in an aqueous medium.

4,804,611

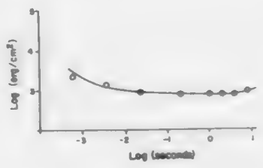
METHOD FOR REDUCING SHORT TIME-SCALE RECIPROCITY FAILURE EFFECTS OF A MICROENCAPSULATED ACRYLATE SYSTEM

Timothy R. Gels, Centerville, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 24, 1987, Ser. No. 65,972

Int. Cl.⁴ G03C *1/72*

U.S. Cl. 430—138 **18 Claims**



1. A method for reducing short time-scale reciprocity failure effects of a photosensitive imaging sheet, wherein:

said photosensitive imaging sheet comprises a substrate having a layer of microcapsules coated on one surface thereof, said microcapsules having an outer phase transmissive to exposure light containing an internal phase of an acrylate monomer, photoinitiator, and color former;

said imaging sheet obeying reciprocity within a range of exposure times t having a lower limit of about 10^{-2} seconds, such that the required exposure energy for a given exposure density is a constant value E_c such that $tI=E_c$, and wherein said imaging sheet exhibits short time-scale reciprocity failure below said range such that $tI>E_c$ whereby greater energy E' is required to expose said image sheet at exposure times below said range than within said range;

the method comprising the steps of:

image-wise exposing a portion of said microcapsules of said imaging sheet for a time period t_1 to exposure light of an intensity I;

following exposure, providing a recovery period of a time t_{r1} for said exposed microcapsules;

image-wise exposing a portion of said microcapsules of said imaging sheet for a time period t_2 to exposure light of an intensity I;

following exposure, providing a recovery period of a time t_{r2} for said exposed microcapsules; and

repeating said exposure and recovery steps n times to form a latent image;

said time periods t_1, t_2, . . . t_n being selected such that $E'>(t_1+t_2+\ldots+t_n)I\geq E_c$, and such that $(t_1+t_2+\ldots+t_n)$ is less than about 10^{-2} seconds.

4,804,612

HIGHLY HEAT-RESISTANT POSITIVE-WORKING O-QUINONE DIAZIDE CONTAINING PHOTORESIST COMPOSITION WITH NOVOLAC RESIN MADE FROM PHENOL WITH ETHYLENIC UNSATURATION

Shingo Asami, Fujisawa; Hidekatsu Kohara, Chigasaki; Hatsuyuki Tanaka, Samukawa, and Toshimasa Nakayama, Hiratsuka, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

Filed Jun. 16, 1987, Ser. No. 62,954

Claims priority, application Japan, Jul. 18, 1986, 61-167896

Int. Cl.⁴ G03C *1/60, 1/495*

U.S. Cl. 430—192 **9 Claims**

1. A positive-working photoresist composition which comprises:

(A) 100 parts by weight of a phenol novolac resin which is a co-condensation product of formaldehyde and a reaction mixture of two phenolic compounds comprising:

(a) at least 50% by weight of a first phenolic compound selected from the group consisting of phenol, o-cresol, m-cresol, p-cresol and resorcinol, and

(b) up to 50% by weight of a second phenolic compound which is a phenol substituted with an ethylenically unsaturated substitutent selected from the group consisting of allyloxy, allyloxymethyl, allyl dimethyl silyl, 2-(allyl dimethyl silyl) ethoxy cinnamoyl, acryloyl and methacryloyl groups; and

(B) as the photosensitive compound, from 20 to 60 parts by weight of an ester of naphthoquinone diazide sulfonic acid.

4,804,613

OPTICAL RECORDING MEDIUM AND OPTICAL RECORDING PROCESS USING SUCH MEDIUM

Hiroshi Matsuda, Yokohama; Masahiro Haruta, Funabashi; Hirohide Munakata, Yokohama; Yoshinori Tomita, Yokohama, and Takashi Hamamoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 659,701, Oct. 11, 1984, abandoned. This application Jan. 9, 1987, Ser. No. 62,330

Claims priority, application Japan, Oct. 14, 1983, 58-190932; Oct. 14, 1983, 58-190933; Oct. 14, 1983, 58-190934

Int. Cl.⁴ G03C *1/68*

U.S. Cl. 430—270 **5 Claims**

1. Optical recording medium comprising a recording layer containing a photopolymerizable monomer having a hydrophilic moiety and a hydrophobic moiety on a substrate, said monomer having the formula:

$$R_1CH{=}CH{-}R_2CH{=}CH{-}R_1$$

wherein R_1 and R_2 are each a hydrophilic moiety or a hydrophobic moiety provided that when both R_1 and R_2 have hydrophilic or hydrophobic groups, at least one of R_1 and R_2 has both a hydrophobic group and a hydrophilic group, wherein said recording layer is a monomolecular or a built-up monomolecular Langmuir-Blodgett film wherein said recording layer records information upon polymerization and erases information upon thermal depolymerization.

4,804,614

PHOTORESIST PROCESS OF FABRICATING MICROELECTRONIC CIRCUITS USING WATER PROCESSABLE DIAZONIUM COMPOUND CONTAINING CONTRAST ENHANCEMENT LAYER

Linda F. Hale, Beverly Hills, Calif., assignor to The Aerospace Corporation, El Segundo, Calif.

Division of Ser. No. 656,637, Oct. 1, 1984, abandoned. This application Oct. 21, 1986, Ser. No. 920,911

Int. Cl.⁴ 430 *311, 312, 5, 142, 326, 329*

U.S. Cl. 430—311 **1 Claim**

1. A photolithographic process for fabricating microelectronic circuits on a substrate comprising:

a. applying on the substrate a layer of positive photoresist, said photoresist being developable in an aqueous solution after exposure to predetermined wavelengths;

b. applying directly on the photoresist a contrast enhancement layer consisting of a water soluble binder and a water soluble diazonium compound bleachable at the predetermined wavelengths;

c. exposing the contrast enhancement layer to an image formed by light at the predetermined wavelengths, thereby bleaching the contrast enhancement layer and exposing the photoresist and rendering the photoresist developable;

d. immersing the coated substrate in an aqueous solution of photoresist developer, thereby dissolving the contrast enhancement layer with photoresist developer and developing the photoresist, resulting in the complete removal of the contrast enhancement layer and the development of the photoresist.

4,804,615

METHOD FOR MANUFACTURE OF PRINTED CIRCUIT BOARDS

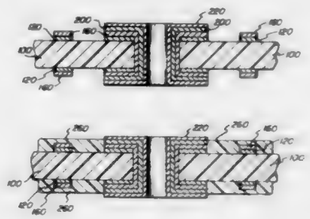
Gary B. Larson, Cheshire; Stanley J. Ruszczyk, Naugatuck, and Steven A. Castaldi, Waterbury, all of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Continuation of Ser. No. 763,812, Aug. 8, 1985, abandoned. This application Sep. 3, 1986, Ser. No. 903,837

The portion of the term of this patent subsequent to Apr. 5, 2005, has been disclaimed.

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—314 **12 Claims**



1. A method for manufacturing printed circuit boards containing conductive through-holes, conductive pads and conductive traces forming a circuit pattern on said board, and wherein said pads and through-holes are provided with a solder coating and said traces, either as bare copper or bare copper coated with a non-reflowable metal, are provided with a solder mask, said method consisting of:

(a) providing a non-conductive substrate material (1) having through-holes therein, the exposed surfaces of said through-holes consisting of a tin-lead plating over a previously-applied copper surface; (2) having pads surrounding the surface openings of said through-holes, the exposed surfaces of said pads consisting of a tin-lead plating over a previously-applied copper plating; (3) and having remaining areas on its surface consisting of copper coating;

(b) arranging on at least some of said remaining areas consisting of copper coating but not on said through-hole and pad areas, an etch-resistant resinous material in the pattern of desired traces;
(c) etching exposed copper coating from said substrate surfaces;
(d) removing said etch-resistant resinous material so as to expose the pattern of desired bare copper traces; and
(e) thereafter processing said circuit board by applying to at least said bare copper traces, but not to through-hole or pad surfaces, a coating of non-reflowable metal and thereafter applying solder mask over at least said non-reflowable metal, but not to through-hole or pad surfaces, so as to provide a circuit board having pads and through-holes provided with a solder coating and at least traces protected by a solder mask.

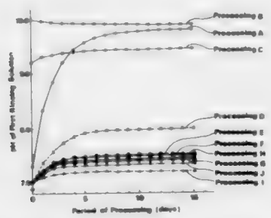
2. The method according to claim 1, wherein said etch-resistant resinous material in the pattern of desired traces is formed by application and light exposure of a liquid photosensitive material in the pattern of said desired traces, followed by removal of undeveloped resist material.

4,804,616

METHOD FOR PROCESSING SILVER HALIDE COLOR REVERSAL PHOTOGRAPHIC MATERIAL

Shinji Ueda, and Junya Nakajima, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 19, 1987, Ser. No. 122,703
Claims priority, application Japan, Nov. 19, 1986, 61-276231
Int. Cl.[4] G03C 5/50, 5/24, 7/00
U.S. Cl. 430—379 17 Claims



1. A method for continuously processing a silver halide color reversal photographic material, which comprises subsequent to black and white development rinsing said silver halide color reversal photographic material which has been subjected to imagewise exposure, reversing said material, subjecting said material to color development, desilvering said material and then treating said material with at least one step selected from the group consisting of water washing, stabilizing and combinations thereof, wherein the replenishing amount per unit area of the photographic material in a rinsing bath is 3 to 50 times as much as the amount of processing solution carried over by the photographic material from the preceding bath in terms of volume ratio, said volume ratio being the ratio by volume of the volumetric replenishing amount for the rinsing bath: volumetric amount carried over from the preceding bath, and the pH of the rinsing bath is 9.5 or below.

4,804,617

PROCESSING METHOD FOR SILVER HALIDE COLOR PHOTOSENSITIVE MATERIALS WITH A DESILVERIZATION STEP INCLUDING BOTH A BLEACHING BATH AND A BLEACH FIXING BATH

Toshihiro Nishikawa, and Akira Abe, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 870,832, Jun. 3, 1986, abandoned. This application Jul. 10, 1987, Ser. No. 72,155
Claims priority, application Japan, Jun. 7, 1985, 60-123949
Int. Cl.[4] G03C 7/00, 5/44, 7/32, 7/42
U.S. Cl. 430—393 18 Claims

1. A processing method for silver halide color photosensitive materials comprising the steps of:
color developing an exposed silver halide color photosensitive material containing 5-pyrazolone-type or pyrazoloazole-type 2-equivalent magenta coupler and silver halide in an amount of 2 to 12 g as Ag per m^2 of the photosensitive material, said silver halide containing silver iodide; and
desilvering said photosensitive material by a desilverizing step using bleaching bath containing ferric complex salt aminopolycarboxylate, and thereafter using a bleaching-and-fixing bath containing ferric complex salt aminopolycarboxylate.

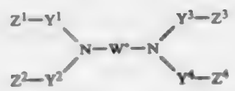
4,804,618

METHOD OF TREATING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL WITH AT LEAST ONE FERRIC COMPLEX SALT OF AN ORGANIC CHELATING COMPOUND

Shinji Ueda, and Kiyoshi Morimoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 15, 1987, Ser. No. 108,609
Claims priority, application Japan, Oct. 15, 1986, 61-243253
Int. Cl.[4] G03C 7/00, 5/38, 5/44, 5/24
U.S. Cl. 430—393 11 Claims

1. A method for treating a silver halide color photographic material comprising color developing an exposed silver halide color photographic material and treating it with a treating solution having bleaching power containing at least one ferric complex salt of an organic chelating compound represented by the formula (x-1):



(X-1)

where W° represents a group of the formula (x-2):

$$-W^1-S-W^2-S)_n W^1- \quad (X\text{-}2)$$

wherein W^1 and W^2 each independently represents a substituted or unsubstituted alkylene group; and n represents 0, 1 or 2; Y^1, Y^2, Y^3 and Y^4 and each independently represents a methylene group or an ethylene group; and Z^1, Z^2, Z^3 and Z^4 each independently representing a carboxyl group, a phosphono group, a sulfo group, or a hydroxyl group.

4,804,619

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yoshitaka Yamada, and Masao Iwamura, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 23, 1987, Ser. No. 112,896
Claims priority, application Japan, Nov. 15, 1986, 61-272629
Int. Cl.[4] G03C 1/08, 1/46, 5/54
U.S. Cl. 430—505 23 Claims

1. A silver halide color photographic material comprising a support having thereon photographic component layers comprising at least two silver halide emulsion layers, adjacent to each other, each of said emulsion layers having the same color sensitivity and different speeds, wherein the highest speed layer among said emulsion layers contains a DIR compound capable of releasing either a diffusible development inhibitor having a diffusibility of 0.40 or more, or a diffusible compound having a diffusibility of 0.40 or more and is capable of releasing a development inhibitor.
the total thickness of said silver halide emulsion layer being within the range of from 1.5 μm to 5 μm.

4,804,620

PHOTOGRAPHIC MATERIAL CONTAINING A NOVEL POLYMERIC DYE-FORMING COUPLER

Ping-Wah Tang; Philip T. S. Lau; Stanley W. Cowan, all of Rochester; Harold I. Machonkin, Webster, and Tien-Teh Chen, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 15, 1987, Ser. No. 97,229
Int. Cl.[4] G03C 7/32, 7/34, 7/36, 7/38
U.S. Cl. 430—548 8 Claims

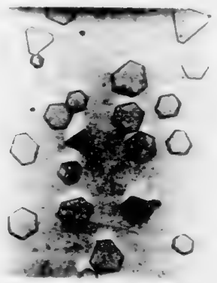
1. A photographic element comprising
a support,
a silver halide emulsion layer, and
a polymeric dye-forming coupler comprising
an acrylate polymeric backbone,
a coupler moiety and
a linking group joining the polymeric backbone and the coupler moiety
wherein the linking group contains an alkylene-O-alkylene moiety directly attached to an oxygen atom of the acrylate polymeric backbone and each alkylene group contains from 2 to 4 carbon atoms.

4,804,621

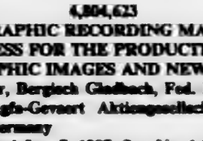
PROCESS FOR THE PREPARATION OF TABULAR SILVER CHLORIDE EMULSIONS USING A GRAIN GROWTH MODIFIER

Thomas P. Tufano, and Dominic M. Chen, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 27, 1987, Ser. No. 42,714
Int. Cl.[4] G03C 1/02, 1/76
U.S. Cl. 430—567 23 Claims



1. A process for preparing a radiation-sensitive photographic emulsion wherein aqueous silver and chloride-containing halide salt solutions are brought into contact in the presence of a dispersing medium to form silver halide grains wherein at least 50% of the total projected area of the total grain population precipitated are tabular silver halide grains having a thickness of less than 0.5 μm, an average grain volume of greater than 0.001 μm^3 and an aspect ratio of at least 2:1, and wherein the halide content of the silver halide emulsion is at least 50 mole percent chloride, based on the total moles of silver present, the improvement wherein the tabular grains are formed without the use of a synthetic peptizer at a pCl in the range of 0 to 3 and a pH in the range of 2.5 to 9 in the presence of a gelatin-containing dispersing medium and a crystal habit modifying amount of an organic nitrogen-containing heterocyclic compound of the following formula:



wherein Z is C or N; R_1, R_2 and R_3, which may be the same or different, are H or alkyl or 1 to 5 carbon atoms; when Z is C, R_2 and R_3 when taken together can be $—CR_4=CR_5—$ or $—CR_4=N—$, wherein R_4 and R_5, which may be the same or different are H or alkyl of 1 to 5 carbon atoms, with the proviso that when R_2 and R_3 taken together is said $—CR_4=N—$, $—CR_4=$ must be joined to Z; and salts thereof.

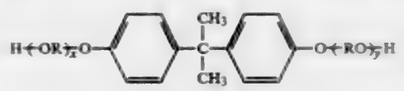
4,804,622

TONER COMPOSITION FOR ELECTROPHOTOGRAPHY

Shingo Tanaka; Hideyo Nishikawa, and Kuniyasu Kawabe, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Feb. 19, 1987, Ser. No. 16,387
Claims priority, application Japan, Feb. 21, 1986, 61-36939
Int. Cl.[4] G03G 9/08
U.S. Cl. 430—109 6 Claims

1. A toner composition which comprises a coloring material and a binder resin, said binder resin being a polyester having been obtained by co-condensation of
(a) a diol component represented by the formula below:



where R denotes an ethylene group or propylene group, x and y each are integers greater than 1, and the average value of x+y is 2 to 7;
(b) a dibasic carboxylic acid, an acid anhydride thereof, or a lower alkyl ester thereof; and
(c) a tribasic or polybasic carboxylic acid, an acid anhydride thereof, a lower alkyl ester thereof or a trihydroxylic or polyhydroxylic alcohol, said polyester having a ratio of OHV to AV in the range of 1.2 or greater in which OHV is a hydroxyl value and AV is an acid value; and wherein said binder resin has a softening point of 106° C. to 160° C. and glass transition point of 50° C. to 80° C.

4,804,623

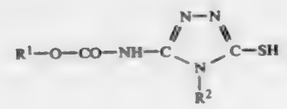
PHOTOGRAPHIC RECORDING MATERIAL, A PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES AND NEW TRIAZOLES

Hans Öhlschläger, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 7, 1987, Ser. No. 1,200
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1986, 3601227
Int. Cl.[4] G03C 1/34
U.S. Cl. 430—611 4 Claims

1. Photographic recording material containing at least one light-sensitive silver halide emulsion layer, optionally also other layers and an antifoggant, characterized in that the anti-

foggant contained therein is a compound corresponding to the following formula I



wherein

R^1 denotes ethyl, isopropyl, cyclohexyl or allyl or an ethyl or butyl group which is substituted with at least one Cl atom and

R^2 denotes methyl, ethyl or methoxymethyl.

4,804,624

PASSIVE AGGLUTINATION ASSAY FOR PSEUDORABIES ANTIBODY

Preston H. Dorsett, Memphis, Tenn., assignor to The University of Tennessee Research Corporation, Knoxville, Tenn.

Continuation-in-part of Ser. No. 380,537, May 21, 1982, Pat. No. 4,590,156. This application Oct. 22, 1984, Ser. No. 663,853

The portion of the term of this patent subsequent to Sep. 22, 2004, has been disclaimed.

Int. Cl.[4] G01N *33/569, 33/546;* C12Q *1/70*

U.S. Cl. 435—5 19 Claims

1. A latex composition consisting essentially of discrete latex particles having attached thereon disrupted and solubilized pseudorabies virus providing antigens which are selectively immunoreactive with pseudorabies virus antibody.

4,804,625

ASSAY PROCEDURES

Larry E. Morrison, Lisle; Garfield P. Royer, Warrenville, both of Ill., and Michael J. Heller, Poway, Calif., assignors to Amoco Corporation, Chicago, Ill.

Filed Sep. 27, 1984, Ser. No. 656,011

Int. Cl.[4] G01N *33/535, 33/543, 33/536*

U.S. Cl. 435—7 10 Claims

1. A method for determining the presence of an analyte in a sample comprising contacting a sample with a reagent adapted to form a substrate phase and a product phase with said sample, said reagent including an enzyme-substrate pair, including an enzyme and a substrate, and labeled material, capable of assuming a bound position with said analyte, said labeled material having a label moiety capable of participating in reactions related to the presence of said analyte which reactions require said substrate present in said substrate phase and produce a reaction product, said label moiety is a member of said enzyme-substrate pair, said enzyme catalyzing a reaction with said substrate which produces said reaction product, said enzyme-substrate pair is selected from the group of enzyme-substrate pairs consisting of alkaline phosphatase and the substrate p-phenylazophenyl phosphate, and the enzyme collagenase and the substrate collagen/blue dextran, said reaction product capable of partitioning into said product phase distinct from said substrate phase wherein said substrate phase is a solid or a liquid, and said product phase is a liquid; and monitoring said product phase for the presence of said reaction product.

4,804,626

IMMUNOMETRIC ASSAY FOR THE DETECTION OF HUMAN CHORIONIC GONADOTROPIN

Dominique Bellet, Paris, France; Jack R. Wands, Wabun, and Mehmet Ozturk, Boston, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed Oct. 22, 1986, Ser. No. 921,508

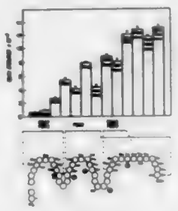
Int. Cl.[4] G01N *33/577*

U.S. Cl. 435—7 29 Claims

1. A method for the determination of human chorionic gonadotropin in a sample, which comprises:

(a) contacting said sample with a first capture monoclonal antibody and a second capture monoclonal antibody which are bound on a carrier, wherein said first and second capture monoclonal antibodies are epitopically specific and non cross-reactive for distinct epitopes of the carboxy terminus region of the beta-subunit of human chorionic gonadotropin;

(b) incubating the components of step (a) for a period of time and under conditions sufficient to form an immune complex between said human chorionic gonadotropin, said



first capture monoclonal antibody, said second capture monoclonal antibody and said carrier,

(c) adding to said complex of step (b) a detectably labeled indicator monoclonal antibody, wherein said indicator monoclonal antibody is epitopically specific for the alpha-subunit of human chorionic gonadotropin; and

(d) determining the detectably labeled indicator monoclonal antibody in said carrier or in liquid phase, which is indicative of the amount of human chorionic gonadotropin in said sample.

4,804,627

METHOD FOR CLONING LYMPHOBLASTOID CELLS

Ulrich Hämmerling, and Slawomir Kosinski, both of New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed May 9, 1985, Ser. No. 732,370

Int. Cl.[4] C12M *3/00;* C12N *5/00*

U.S. Cl. 435—240.21 9 Claims

1. A method of increasing cloning frequency of human lymphocyte or lymphoblastoid cells which have been transformed with Epstein Barr virus comprising growing said transformed cells in a semi-solid agarose medium wherein a lower and an upper layer of agarose are used, said lower layer comprising fibroblasts suspended in the agarose layer and said upper layer comprising irradiated fibroblasts and the transformed cells suspended in the agarose layer wherein the upper agarose layer is added after the lower layer has gelled.

4,804,628

HOLLOW FIBER CELL CULTURE DEVICE AND METHOD OF OPERATION

Ray F. Cracauer, Minneapolis; Robert D. Walker, Ham Lake, and Michael L. Gruenberg, Coon Rapids, all of Minn., assignors to Endotronics, Inc., Coon Rapids, Minn.

Continuation of Ser. No. 658,549, Oct. 9, 1984, abandoned. This application Aug. 19, 1987, Ser. No. 88,463

Int. Cl.[4] C12N *5/00;* C12M *3/00, 1/14;* C02F *1/44*

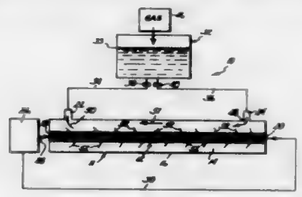
U.S. Cl. 435—240.242 21 Claims

1. An improved cell culture device for in vitro cell growth, the device including a shell having first and second ends, first and second ports, and a plurality of capillaries extending between the first and second ends within the shell with at least some of said capillaries having selectively permeable walls, and cell culturing space being defined between the shell and the capillaries with the first and second ports in fluid communication therewith, a first supply of medium being delivered into

the capillaries at a first selected pressure, the improvement comprising:

a medium expansion chamber fluidly connected to the first and second ports and containing a second supply of medium at a second pressure;

valving means for selectively restricting flow of the second supply of medium through the first and second ports into the culturing space, wherein the valving means operates such that flow of the second supply of medium is altered through the first and second ports to effect medium circu-



lation within cell culturing space and enhance diffusion of waste products out of the culturing space and diffusion of medium components into the culturing space while retaining cells and desired cell products;

pressurizing means for keeping the second pressure in the chamber approximately constant and maintaining the second pressure independently of the first pressure; and

means for selectively raising and lowering the first pressure in the capillaries with respect to the second pressure in the chamber effecting circulation within the cell culturing space.

4,804,629

DETOXIFICATION OF CHLORINATED AROMATIC COMPOUNDS BY ORGANISM NRRL B-18087

Dipak Roy, Baton Rouge, La., assignor to Louisiana State University, Baton Rouge, La.

Filed Aug. 4, 1986, Ser. No. 892,253

Int. Cl.[4] C12N *1/20;* C12R *1/38;* C02F *3/00*

U.S. Cl. 435—253.3 3 Claims

1. A biologically pure culture of the microorganism *Pseudomonas pseudoalcaligenes* strain NRRL B-18087 and mutations thereof.

4,804,630

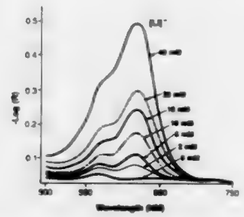
KIT AND METHOD FOR DETECTING LITHIUM IONS

Hiranmoy R. Bhattacharjee, Randolph, N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Mar. 13, 1987, Ser. No. 25,542

Int. Cl.[4] G01N *21/78, 33/20, 33/52*

U.S. Cl. 436—74 13 Claims



1. An analytical kit for selectively determining the lithium content of a sample comprising:

(a) lithium selective color indicator comprising a leuco precursor of an arylmethane dye dispersed in a matrix, with all or a portion of said indicator being capable of reacting with lithium to develop a color when contacted with a sample containing lithium, and

(b) means for measuring any color development of all or a portion of said indicator after it has been contacted with a sample and indicating the lithium content of such a sample based on any such color development.

5. A method for selectively detecting the presence lithium in a sample comprising the steps of:

(a) contacting all or a portion of a leuco precursor of an arylmethane dye with a sample to develop a color when the sample contains lithium, and

(b) monitoring any development of color as an indication of the presence of lithium in the sample.

4,804,631

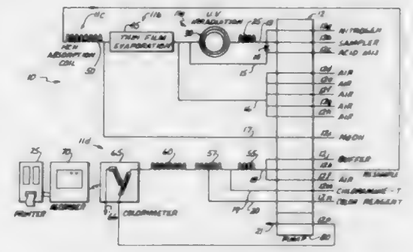
METHOD AND APPARATUS FOR MEASURING CYANIDE

Cecil Lae-Hing, Chicago, and Nabih P. Kelada, Glen Ellyn, both of Ill., assignors to The Metropolitan Sanitary District of Greater Chicago, Chicago, Ill.

Filed May 2, 1986, Ser. No. 859,049

Int. Cl.[4] G01N *21/75*

U.S. Cl. 436—109 11 Claims



1. In a system for measuring cyanide as well as thiocynates in a sample, the combination comprising:

photo illumination means for producing the entire spectrum of ultraviolet radiation to dissociate cyanides contained in an alkaline sample;

low pass ultraviolet filter means interposed between the photo illumination means and the sample to be tested, to prevent substantially the dissociation of thiocyanates in the sample, and for passing only lower frequency ultraviolet radiation of wavelengths between about 290 millimicrons and about 400 millimicrons to produce an irradiated sample in which substantially all other cyanides have been dissociated;

thin-film distillation means for separating cyanide from the irradiated sample to produce recovered cyanide for measurement purposes;

measuring means for receiving the recovered cyanide and for generating a recordable signal indicative of recovered cyanide quantity.

7. A method of measuring cyanides in a sample, comprising:

using photoillumination components for producing ultraviolet radiation to dissociate cyanides contained in an alkaline sample;

interposing a filter between the photoillumination means and an alkaline sample to be tested for passing lower frequency ultraviolet radiation to produce an irradiated sample in which cyanides have been dissociated, while blocking high frequency ultraviolet radiation to inhibit thiocyanate dissociation;

separating cyanide from the irradiated sample to produce recovered cyanide for measurement purposes; and

measuring the recovered cyanide to generate a recordable signal indicative of recovered cyanide quantity.

4,804,632

METHOD FOR DETECTING COMBUSTIBLE GASES AND DEVICE THEREFOR

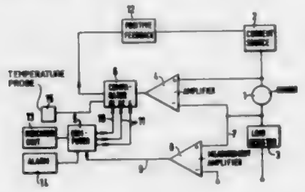
Hansjochen Schuck, Stockstadt, Fed. Rep. of Germany; Peter J. Iredale, Seghill, and Alan Johnson, Sunderland, both of Great Britain, assignors to Dräger Werk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Jan. 21, 1987, Ser. No. 6,695

Claims priority, application United Kingdom, Jan. 21, 1986, 8601388

Int. Cl.⁴ G01N 27/16, 27/18

U.S. Cl. 436—143 **10 Claims**



1. Method for detecting the concentration of combustible gas contained in an air mixture with aid of a measuring device equipped with an indicating unit, the measuring device operating according to both the heat-tone process and the heat-conductivity process and to give an indication pursuant to the heat-tone process only beneath a predetermined reference value for the measuring signal, the method comprising the steps of:

at the start of measurement, holding a single individual sensor constant in said measuring device at a first temperature T_1 adequate for a heat-conductivity measurement, said sensor being catalytically active at a second temperature T_2 greater than said first temperature T_1 which enables a heat-tone measurement to be made;

obtaining a first signal from said sensor indicative of the concentration of combustible gas in said air mixture;

comparing the measuring signal emitted by said sensor with a first reference value R_1 corresponding to the presence of a predetermined concentration of the combustible gas;

increasing the temperature of the sensor to said second temperature T_2 only when said measuring signal indicates that combustible gas is present and at a concentration below said predetermined concentration corresponding to said reference value R_1 and holding the temperature of the sensor constant at said second temperature T_2 to obtain a second measuring signal indicative of the concentration of combustible gas in said air mixture, said sensor now operating as a heat-tone sensor;

comparing said second measuring signal emitted by said sensor with a load-limit value G corresponding to a concentration of the combustible gas higher than said value R_1; and,

reducing the temperature of said sensor to said first temperature T_1 and holding the same constant as soon as said second measuring signal exceeds said load-limit value G to thereby again place said sensor in the heat-conductivity mode and obtain a further measuring signal indicative of the gas concentration of the combustible gas for concentrations thereof greater than that corresponding to said load-limit value G.

9. A measuring device for detecting the concentration of combustible gas contained in an air mixture, the measuring device comprising:

single sensor means operable in both a heat-conductivity mode at a first temperature T_1 and a heat-tone mode at a second temperature T_2 greater than said first temperature T_1 and having a changeable sensor resistance;

a controllable current source connected to said sensor for controlling current supplied to the latter;

computer means connected to said sensor means for receiving an output signal thereof;

measuring means for measuring said sensor resistance and for providing a measurement signal indicative of said sensor resistance and of the concentration of combustible gas in said air mixture;

said computer means including a comparator for receiving said measurement signal for making a first comparison thereof with a first reference value R_1 corresponding to the presence of a first predetermined concentration of the combustible gas and for making a second comparison of said measuring signal with a second reference value R_2 corresponding to a second predetermined concentration of the combustible gas which lies beneath said first predetermined concentration of the gas corresponding to said first reference value R_1 and for issuing a first control signal to said current source only when said measuring signal indicates that combustible gas is present and at a concentration which is below said predetermined concentration corresponding to said reference value R_1 and which also exceeds said reference value R_2;

said current source being adapted to respond to said first control signal for providing an increased supply current to increase the temperature of the sensor to said second temperature T_2 to cause said sensor to operate as a heat-tone sensor;

said comparator also receiving said measurement signal for making a further comparison thereof to a load-limit value G corresponding to a concentration of the combustible gas higher than said value R_1 and for issuing a second control signal to said current source; and,

said current source also being adapted to respond to said second control signal for providing a reduced supply current to reduce the temperature of the sensor to said first temperature T_1 to cause said sensor to operate as a heat-conductivity sensor.

4,804,633

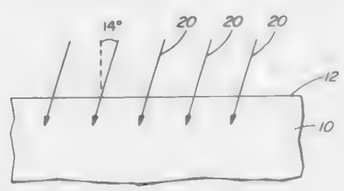
SILICON-ON-INSULATOR SUBSTRATES ANNEALED IN POLYSILICON TUBE

Thomas W. Macelwee, Ottawa, and Iain D. Calder, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 18, 1988, Ser. No. 157,022

Int. Cl.⁴ H01L 21/425; F27D 7/06; C21D 9/00

U.S. Cl. 437—24 **10 Claims**



1. A method for making a silicon-on-insulator substrate comprising:

implanting oxygen ions into a bare silicon substrate while heating the substrate to form a layer of silicon dioxide buried in the silicon substrate;

placing the implanted substrate within a polysilicon tube; and

maintaining the tube and the substrate at a temperature exceeding 1300 degrees Celsius to anneal the substrate.

4,804,634

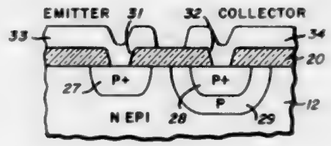
INTEGRATED CIRCUIT LATERAL TRANSISTOR STRUCTURE

Surinder Krishna, Fremont, and Arvolak R. Ranade, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 564,778, Dec. 27, 1983, abandoned, which is a continuation of Ser. No. 257,290, Apr. 24, 1981, abandoned. This application Dec. 14, 1987, Ser. No. 132,689

Int. Cl.⁴ H01L 21/20

U.S. Cl. 437—32 **5 Claims**



1. In the process of fabricating a lateral transistor in a monolithic semiconductor integrated circuit that ordinarily includes vertically arrayed NPN transistors including the steps of:

depositing a first P type dopant material where NPN transistor bases are desired and simultaneously depositing said material in those regions where lateral transistor emitters and collector are desired; and

diffusing said first P type dopant into said semiconductor to establish associated regions of P type semiconductor material;

the improvement comprising:

in said depositing step, depositing a second P type dopant material into those regions where lateral transistor collectors are to be created, said second P type dopant being selected to have a higher diffusivity in said silicon during said diffusing step than said first P type dopant whereby after said diffusing step said lateral transistor collectors extend further into said semiconductor than said emitters.

4,804,635

METHOD OF MANUFACTURE OF GALLUIM ARSENIDE FIELD EFFECT TRANSISTORS

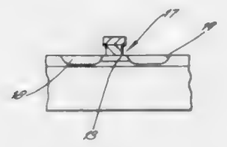
John M. Young, Essex, England, assignor to ITT Gallium Arsenide Technology Center, A Division of ITT Corporation, Roanoke, Va.

Filed Mar. 11, 1985, Ser. No. 710,058

Claims priority, application United Kingdom, Mar. 15, 1984, 8406722

Int. Cl.⁴ H01L 21/306, 21/24, 21/265

U.S. Cl. 437—41 **1 Claim**



1. A process for fabricating a field effect transistor including:

providing a semiconductor substrate having a layer of silicon deposited on one major surface thereof;

selectively depositing a metal on said surface to define a transistor gate area;

implanting drain and source regions using the metal as a mask to define the gate/drain and gate/source spacing;

removing the exposed silicon and undercutting the metal; and

heating the assembly whereby the implanted regions are annealed and activated and whereby simultaneously the metal diffuses into the remaining silicon to form a metal silicide gate.

4,804,636

PROCESS FOR MAKING INTEGRATED CIRCUITS HAVING TITANIUM NITRIDE TRIPLE INTERCONNECT

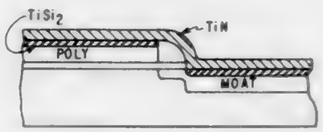
Robert Groover, III, Dallas; Roger A. Haken, Richardson, and Thomas C. Holloway, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 729,318, May 1, 1985. This application Mar. 7, 1986, Ser. No. 837,443

Int. Cl.⁴ H01L 21/283

U.S. Cl. 437—52 **56 Claims**





1. A process for fabricating integrated circuits, comprising the steps of:

(a) providing a substrate;

(b) providing device isolation areas in a predetermined pattern to define moat regions in predetermined locations along said substrate;

(c) forming a first patterned thin film conductor layer having a portion overlying a device isolation area;

(d) fabricating insulated gate field effect transistors in predetermined locations in said moat regions, said transistors comprising gates formed by a second patterned thin film conductor layer which comprises a large fraction of silicon and overlying said moat regions and comprising source and drain regions formed adjacent the location where said second conductor layer extends over said moat regions, said second conductor layer isolated from said first conductor layer at locations where said second conductor layer overlies said first conductor layer;

(e) depositing a metal consisting substantially of titanium over exposed portions of said substrate, of said first conductor layer and of said second conductor layer;

(f) heating said substrate and said titanium metal in a nitrogen-bearing atmosphere, so that said titanium metal reacts with exposed silicon portions of said substrate, of said first conductor layer, and of said second conductor layer to form titanium silicides, and so that other portions of said titanium metal react with said nitrogen atmosphere to form a layer having a large fraction of titanium nitride at the surface thereof; and

(g) removing selected portions of said titanium nitride layer to provide a first local interconnection between said sub-

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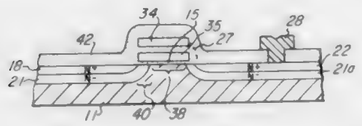
strate and said first conductor layer, a second local interconnection between said substrate and said second conductor layer, and a third local interconnection between said first conductor layer and said second conductor layer by the remaining portions of said titanium nitride layer.

4,804,637

EEPROM MEMORY CELL AND DRIVING CIRCUITRY

Michael C. Smayling, Missouri City, and Sebastiano D'Arrigo, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 780,851, Sep. 27, 1985, abandoned. This application Jun. 18, 1987, Ser. No. 64,416
Int. Cl.[4] H01L *21/265, 21/70*
U.S. Cl. 437—52 **10 Claims**



1. A method of making an electrically erasable programmable memory cell having a floating gate with a heavily doped source/drain region laterally spaced therefrom on one side thereof and having a source/drain region with a lightly doped reach-through region on the other side thereof, comprising:
(a) applying a floating gate layer to a face of a semiconductor body insulated from the face by a gate insulator;
(b) introducing a first impurity of one conductivity type onto said face on either side of said floating gate but spaced from an edge of said floating gate on one side thereof by a gap to create a heavily doped source/drain region;
(c) implanting a second impurity of said one-conductivity type into said face on either side of said floating gate but spaced from an edge of said floating gate on one side thereof by a gap;
(d) diffusing the first and second impurities to create a lightly-doped reach-through region extending to the face of the semiconductor underneath the floating gate on said other side thereof; and
(e) applying a control gate layer to a face of the semiconductor body insulated from the floating gate by a layer of interlevel oxide.

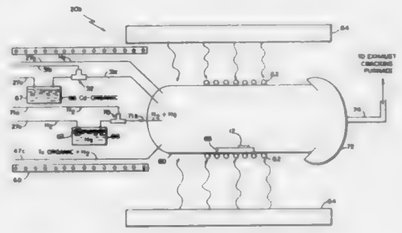
4,804,638

METALORGANIC CHEMICAL VAPOR DEPOSITION GROWTH OF GROUP II-IV SEMICONDUCTOR MATERIALS HAVING IMPROVED COMPOSITIONAL UNIFORMITY

William E. Hoke, Wayland, and Lindley T. Specht, Waltham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 943,238, Dec. 18, 1986, abandoned. This application Mar. 28, 1988, Ser. No. 175,637
Int. Cl.[4] H01L *21/20*
U.S. Cl. 437—81 **59 Claims**

1. A method of providing a layer comprising a Group II-VI semiconductor material over a substrate, comprises the step of:
directing a flow comprising a Group II metalorganic and a Group VI organic towards the substrate with both of said Group II and Group VI organics each having at least one large bulky organic group which sterically repulses the large bulky organic group of the other one of the Group II and Group VI organics;



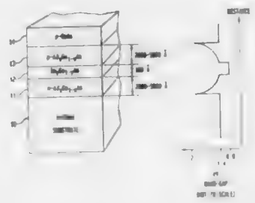
depositing from said directed flow said Group II-VI semiconductor material over the substrate.

4,804,639

METHOD OF MAKING A DH LASER WITH STRAINED LAYERS BY MBE

Eli Yablonovitch, Scotch Plains Township, Union County, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Continuation of Ser. No. 853,613, Apr. 18, 1986, abandoned. This application Nov. 4, 1987, Ser. No. 117,289
Int. Cl.[4] H01L *21/306*
U.S. Cl. 437—129 **8 Claims**



1. A method of making a semiconductor laser comprising the steps of:
providing a gallium arsenide substrate of a first conductivity type;
depositing a first layer of semiconductor material having the composition $Al_xGa_{1-x}As$ and of said first conductivity type on said substrate, where the Al fraction in said first layer at a first surface of said first layer adjacent to said substrate is approximately between 10% and 50% and grades to approximately 0% at a second opposed surface of said first layer;
depositing on the second surface of said first layer a second layer of semiconductor material for quantum confinement having the composition $In_yGa_{1-y}As$, where the In concentration in said second layer is approximately 50%, the lattice constant of said second layer being sufficiently greater than that of said first layer to establish in said second layer sufficient negative strain with respect to adjoining layers to counteract quantum confinement in said second layer such that the threshold current density of said laser is decreased;
depositing a third layer of semiconductor material having the composition $Al_xGa_{1-x}As$ and of a second conductivity type on said second layer, where the Al fraction in said third layer at a first surface of said third layer adjacent to said second layer is approximately 0% and grades to approximately between 10% and 50% at a second opposed surface of said third layer; and

depositing a fourth layer of material comprising gallium arsenide and of said second conductivity type on the second surface of said third layer.

4,804,640

METHOD OF FORMING SILICON AND ALUMINUM CONTAINING DIELECTRIC FILM AND SEMICONDUCTOR DEVICE INCLUDING SAID FILM

Grzegorz Kaganowicz, Belle Mead, N.J.; John W. Robinson, Levittown, Pa., and Alfred C. Ipri, Princeton, N.J., assignors to General Electric Company, Fairfield, Conn.

Division of Ser. No. 769,975, Aug. 27, 1985. This application Oct. 5, 1987, Ser. No. 104,451
Int. Cl.[4] H01L *21/473*
U.S. Cl. 437—236 **6 Claims**

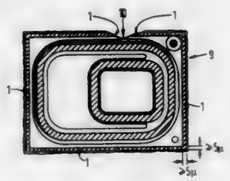
1. A process of forming a dielectric film on a silicon body comprising:
(a) oxidizing the surface of the silicon body in an oxygen-containing plasma to form a first region of said film comprising silicon oxide;
(b) sputtering aluminum in said plasma to form a second region comprising a mixture of silicon and aluminum oxides over said first region; and,
(c) forming a third region of substantially aluminum oxide over said second region by reactive sputtering of aluminum in said plasma.

4,804,641

METHOD FOR LIMITING CHIPPAGE WHEN SAWING A SEMICONDUCTOR WAFER

Manfred Arlt, Regensburg, and Joachim Duthe, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 11, 1986, Ser. No. 905,663
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1985, 3534894
Int. Cl.[4] H01L *21/302*
U.S. Cl. 437—227 **7 Claims**



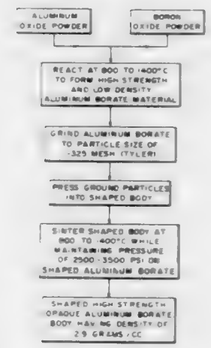
1. A method for preparing a semiconductor wafer for sawing to limit chippage upon sawing it into individual pieces which comprises:
applying a dielectric layer in limited portions of said wafer in the form of a border spaced from margins of those portions which are to form individual parts, and spaced from the sawing line to be employed,
said dielectric layer being applied under conditions such that said border is under compressive stress and exerts a tensile stress on the semiconductor surface said border providing a symmetrical tensile stress distribution for limiting the chippage of the semiconductor material during sawing.

4,804,642

ALUMINUM BORATE BASED CERAMIC COMPOSITE

Siba P. Ray, Plum Boro, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 604,913, Apr. 27, 1984, abandoned. This application Nov. 28, 1986, Ser. No. 935,793
Int. Cl.[4] C04B *35/10, 35/56, 35/58*
U.S. Cl. 501—87 **11 Claims**



1. A shaped high strength sintered aluminum borate composite ceramic product consisting essentially of a mixture of:
(a) $Al_xB_yO_z$ wherein x is in the range of 16 to 22, y is in the range of 2 to 5, and z is in the range of 30 to 36; and
(b) a metal compound selected from the class consisting of a metal carbide and a metal nitride;
and formed by particularizing said mixture to a particulate having an average particle size of −325 mesh (Tyler); pressing said particulate into a shaped product; and sintering said shaped product into a shaped high strength sintered aluminum borate composite ceramic product.

4,804,643

ZIRCONIA CERAMIC ARTICLE TOUGHENED WITH SIC WHISKERS

Kenneth Chyung, Painted Post; Kishor P. Gadkaree, Big Flats; Thomas D. Ketcham, both of Big Flats, and Raja R. Wusirika, Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 875,955, Jun. 19, 1986, abandoned. This application Apr. 24, 1987, Ser. No. 42,055
Int. Cl.[4] C04B *35/48, 35/56*
U.S. Cl. 501—104 **5 Claims**



1. A ceramic composite characterized by improved fracture toughness comprising a matrix phase consisting essentially of tetragonal ZrO_2 and a ZrO_2 stabilizer selected from the group consisting of MgO, CaO, Y_2O_3, and oxides of rare earth elements from the group: La, Ce Nd, Sm, Gd, Dy, Er and Yb and a whisker reinforcement phase constituting 5–20 volume percent of the composite and consisting of silicon carbide whiskers, the whiskers having a monocrystalline structure, a diame-

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ter in the range of 0.5–3 μm, a length in the range of 10–30 μm, and an aspect ratio not exceeding about 20, the composite exhibiting a fracture toughness (K_{IC}) at 25° C. at least 1.25 times the fracture toughness of the matrix phase when free of said whisker reinforcement phase.

4,804,644

CERAMIC MATERIAL

Michael R. Aaroon, London; James M. Lawson, South Harrow, and Shaun Slaser, Harrow on the Hill, all of United Kingdom, assignors to Cookson Group plc, London, United Kingdom

Filed May 26, 1987, Ser. No. 54,327

Claims priority, application United Kingdom, May 28, 1986, 8612938; Oct. 22, 1986, 8625342

Int. Cl.⁴ C04B *35/58*

U.S. Cl. 501—98 **5 Claims**

1. A ceramic material which consists essentially of zirconia and O'-sialon, the zirconia being present in an amount of from 5 to 95 volume percent based on the total weight of the composition.

4,804,645

CERAMIC MATERIAL BASED ON ALUMINA AND REFRACTORY HARD CONSTITUENTS

Claes T. Ekstrom, Stockholm, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Mar. 27, 1987, Ser. No. 30,582

Int. Cl.⁴ C04B *35/10, 35/12, 35/48*

U.S. Cl. 501—105 **9 Claims**

1. A sintered body of a ceramic composite material comprising alumina, an amount sufficient to improve the fracture toughness of particles and/or whiskers or fibers of refractory hard constituents of one or more metals of the elements Group IVB, VB or VIB of the periodic system, said refractory hard constituent particle having a grain size less than 10 μm, said refractory hard constituent whisker or fiber having a diameter less than 5 μm and a length/diameter ratio of greater than 10, from 2–16 weight % of ZrO_2, HfO_2 and/or partially stabilized ZrO_2 with more than 70% of said ZrO_2, HfO_2 and/or partially stabilized ZrO_2 present in the tetragonal crystal modification, chromium present in amounts corresponding to a total of from 1–20 weight % as Cr_2O_3, and said sintered body having a relative density greater than 98%.

4,804,646

LIGHT WEIGHT SHAPED OPAQUE ALUMINUM BORATE PRODUCT AND METHOD OF MAKING SAME

Siba P. Ray, Plum Boro, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

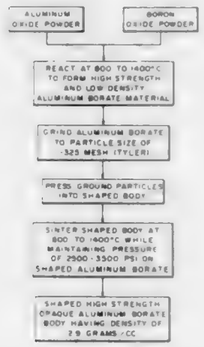
Continuation-in-part of Ser. No. 604,913, Apr. 27, 1984, abandoned. This application Nov. 28, 1986, Ser. No. 935,792

Int. Cl.⁴ C04B *35/48, 35/10*

U.S. Cl. 501—105 **20 Claims**

1. A shaped opaque high strength low density aluminum borate product produced by forming a powder mixture of aluminum oxide powder and boron oxide powder, said powder having a particle size of −325 mesh (Tyler); reacting said powder mixture for a period of from 5 minutes to 48 hours at a temperature of from about 800° to about 1400° C. to form aluminum borate grinding said aluminum borate reaction product to a particulate having an average particle size of −325 mesh (Tyler); pressing said particulate into a shaped object: and sintering said shaped object for a period of from 5 minutes to 2 hours at a temperature of from 800° to 1400° C. while maintaining said shaped object under a pressure of from about 2500 to 3500 psi to form said shaped aluminum borate product.

5. A shaped high strength sintered aluminum borate ceramic product consisting essentially of 70 to 95 vol. % of $Al_xB_yO_z$ wherein x is in the range of 16 to 22, y is in the range of 2 to 5, and z is in the range of 30 to 36, and from 5 to 30 vol. % of a material added prior to a sintered step to provide enhanced toughness to said sintered ceramic product and selected from the class consisting of ZrO_2—Y_2O_3 and HfO_2—Y_2O_3; said shaped high stength sintered aluminum borate ceramic product produced by forming an initial aluminum borate material from an aluminum compound and a boron compound, wherein at least one of said compounds contains oxygen; particularizing



said aluminum borate material to a particulate having an average particle size of −325 mesh (Tyler); pressing said particulate into a shaped product; and sintering said shaped product into a shaped high strength sintered aluminum borate ceramic product.

4,804,647

DEWAXING CATALYSTS AND PROCESSES EMPLOYING TITANOALUMINOSILICATE MOLECULAR SIEVES

Regis J. Pellet, Croton-On-Hudson; Frank P. Gortsema, Pleasantville; Gary N. Long, Putnam Valley, and Jule A. Rabo, Armonk, all of N.Y., assignors to UOP, Des Plains, Ill.

Division of Ser. No. 805,714, Dec. 6, 1985, Pat. No. 4,686,029. This application May 6, 1987, Ser. No. 46,384

Int. Cl.⁴ B01J *29/06, 29/02*

U.S. Cl. 502—66 **9 Claims**

1. A catalyst comprising: an effective amount of at least one TASO characterized in its calcined form by an adsorption of isobutane of at least 2 percent by weight at a pressure of 500 torr and a temperature of 20° C. and is further characterized in its calcined form by an adsorption of triethylamine of less than 5 percent by weight at a pressure of 2.6 torr and a temperature of 22° C.; and an effective amount of at least one metal selected from the group consisting of nickel, cobalt, tungsten, molybdenum, platinum, palladium, chromium, rhodium, ruthenium and titanium, and at least one zeolitic aluminosilicate selected from the group consisting of Y zeolite, ultra-stable Y-type zeolite, LZ-210, LZ-10, and mixtures thereof.

4,804,648

CRYSTALLINE OLEFIN POLYMERIZATION CATALYST COMPONENT

Robert C. Job, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 875,843, Jun. 18, 1986, Pat. No. 4,710,482. This application Nov. 24, 1987, Ser. No. 124,715

The portion of the term of this patent subsequent to Dec. 1, 2004, has been disclaimed.

Int. Cl.⁴ C08F *4/64*

U.S. Cl. 502—119 **33 Claims**

1. A crystalline magnesium halide/titanium halide catalyst component useful for the polymerization of olefins which has been obtained by the process comprising contacting a crystalline alkoxy magnesium compound with a halide of tetravalent titanium and contacting the resulting halogenated product

with a tetravalent titanium halide, wherein the alkoxy magnesium compound is selected from the group consisting of compounds with the following formula: $[Mg_4(OR)_6(R'OH)_{10}]X$ where X is a counter ion or ions having a total charge of −2 and where R and R', which may be the same or different, are selected from alkyl groups of 1 to 4 carbon atoms.

4,804,649

ALKALINE OXALATE PRECIPITATION PROCESS FOR PORMING METAL OXIDE CERAMIC SUPERCONDUCTORS

Fawzy G. Sherif, Stony Point, N.Y., assignor to Akzo America Inc., New York, N.Y.

Filed Oct. 16, 1987, Ser. No. 109,338

Int. Cl.⁴ C01F *11/04, 17/00;* **C01G** *3/02;* **H01L** *39/12*

U.S. Cl. 505—1 **6 Claims**

1. A process for forming a metal oxide superconductor composition of the $YBa_2Cu_3O_y$ type, with y ranging from about 6.4 to about 7.1, which comprises:

(a) forming an aqueous solution comprising soluble salts of the Y, Ba and Cu metal moieties desired in the final superconductor composition;

(b) adding an oxalate precipitation reagent to the aqueous solution under basic pH conditions ranging from about 11 to above about 13 to achieve coprecipitation of the metals only partially in the form of the oxalate salts thereof; and

(c) firing the precipitated metal composition, after removal from the solution, to form the metal oxide superconductor composition.

4. A precipitate composition useful in forming a yttrium, barium, copper superconductor of the formula $YBa_2Cu_3O_y$, with y ranging from about 6.4 to about 7.1 which composition is formed by the addition of an alkaline solution of an oxalate to an aqueous solution of soluble salts of yttrium, barium and copper at a pH of at least about 11 to achieve coprecipitation of yttrium, barium and copper metals only partially in the form of the oxalate salts thereof, which precipitate composition comprises the hydroxide of yttrium, the oxide of copper and the oxalate of barium.

4,804,650

ANALOGS OF ATRIAL NATRIURETIC PEPTIDES

John A. Lewicki, San Jose; Robert M. Scarborough, Jr., Hayward, and Loria K. Johnson, Pleasanton, all of Calif., assignors to Biotechnology Research Associates, J.V., Mountain View, Calif.

Continuation of Ser. No. 921,360, Oct. 28, 1986, abandoned. This application Mar. 16, 1988, Ser. No. 168,661

Int. Cl.⁴ A61K *37/02;* **C07K** *7/06*

U.S. Cl. 514—15 **5 Claims**

1. A peptide having natriuretic, diuretic, and/or vasodilator activity in mammals which has the formula

$$Y_1Y_2\text{-R-I-D-R-I-}Z_2$$

or

$$Y_1\text{-}Y_2\text{-R-M-D-R-I-}Z_2,$$

wherein Y_1 is a hydrophobic group selected from the group consisting of phenyalanine, acetyl phenlalanine, desaminophenylalanine, fluorenyl, methyloxycarbonyl, benzyloxycarbonyl, diphenylpropionyl, triphenylpropionyl, 3-indolepropionyl, 4-indolebutyryl, 1-adamantylacetyl, 1-naphthylacetyl, 2-naphthylacetyl, 1-naphthyloxyacetyl, 2-naphthyloxyacetyl, CBZ, FMOC, 4-biphenylacetyl, and cyclohexylacetyl,

Y_2 is a spacer group which is a peptide of 1–2 amino acid residues selected from the group consisting of G, S, A, Aib, and Sar, or a residue of the formula $—NH(CH_2)_nCO—$ wherein n is 3–6; and

Z_2 is NH_2 or NHR' wherein R' is a straight or branched chain alkyl of 1–6 carbons, or Z_2 is a peptide of 1–3 amino acid residues, said residues selected from the group consisting of G, A, S, Sar, and Aib or the amide or alkylamide form thereof.

4,804,651

METHODS AND COMPOSITIONS FOR THE TREATMENT OF PSORIASIS

Madeleine Duvic, and Gary W. Brewton, both of Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Jun. 9, 1987, Ser. No. 59,907

Int. Cl.⁴ A61K *31/70*

U.S. Cl. 514—50 **21 Claims**

1. A method for the treatment of psoriasis comprising administering to an individual having psoriasis an amount of azidothymidine that is effective to reduce symptoms of inflammation, irritation, or incidence or size of lesions, associated with this disease.

4,804,652

MUCOPOLYSACCHARIDES HAVING BIOLOGICAL PROPERTIES, PREPARATION AND APPLICATION THEREOF AS DRUGS

Jean-Claude Lormeau, Maromme; Maurice Petitou, and Jean Choay, both of Paris, all of France, assignors to Choay S.A., Paris, France

Continuation of Ser. No. 323,567, Nov. 20, 1981, Pat. No. 4,500,519. This application Feb. 19, 1985, Ser. No. 702,509

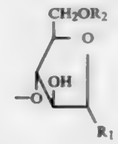
Claims priority, application France, Nov. 20, 1980, 78 31357

The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.

Int. Cl.⁴ A61K *31/725;* **C08B** *37/10*

U.S. Cl. 514—56 **31 Claims**

1. A process for making mucopolysaccharide heparinic fractions which have the L-iduronosyl-2-O-sulfate-(1-alpha-4)-N-sulfo-D-glucosamine-6-O-sulfate disaccharide structural units of heparin with the O-sulfated iduronic components of herparin, which mucopolysaccharide fractions do not differ from heparin with respect to the unsulfated iduronic acid component and are further defined by having a terminal structure as follows



wherein R_1, is selected from the group consisting of aldehyde, alcohol and carboxylic acid and R_2 is selected from the group consisting of hydrogen and —SO_3, said mucopolysaccharides having a high and improved antithrombotic activity as measured by anti-X_a activity determined by the Yin Wessler test (YW) as compared to heparin, and a YW/USP ratio of at least 2, which comprises the step of partially depolymerizing heparinic chains having a molecular weight in the range of about 2,000 to about 50,000 daltons by contacting said herparinic chains with nitrous acid in an aqueous medium at a temperature in the range from about 0° C. to about ambient temperature, and at a pH in the range of about 2 to 3, discontinuing the polymerization when the mucopolysaccharides have reached a molecular weight in the range of about 2,000 to about 8,000 daltons by adjusting the pH to a pH outside the depolymerization range of about 2 to 3 and separating the mucopolysaccharides having said terminal structure and which do not differ from heparin with respect to the amount of the unsulfated iduronic acid component.

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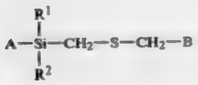
4,804,653

THIOMETHYL-SUBSTITUTED ORGANOSILANE COMPOUNDS AND THEIR USE AS PESTICIDES

Richard J. Strunk, Cheshire, and Richard C. Moore, Wallingford, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

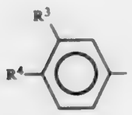
Filed May 2, 1986, Ser. No. 859,158
Int. Cl.[4] A01N *55/00;* **C07F** *7/10*
U.S. Cl. 514—63 **16 Claims**

1. A compound of the formula:



wherein:
R_1 and R_2 may be the same or different, and are lower alkyl;
A is selected from radicals having the structure:

(i)



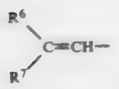
wherein R^3 and R^4 are the same or different and are hydrogen C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, halo, phenyl, phenoxy or C_1–C_4 alkylthio; or
wherein R^3 and R^4 taken together are methylenedioxy;

(ii)



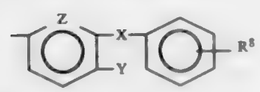
wherein R^5 is hydrogen, chlorine, bromine or C_1–C_4 alkyl; and

(iii)



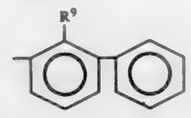
wherein R^6 and R^7 are the same or different and are hydrogen, fluorine, chlorine, bromine or trifluoromethyl; and
B is selected from radicals having the structure:

(i)



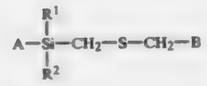
wherein:
X is oxygen, NH, CH_2, carbonyl or sulfur;
Y is hydrogen, fluorine, chlorine or methyl;
Z is CH or nitrogen; and
R^8 is hydrogen, fluorine, chlorine or bromine; and

(ii)



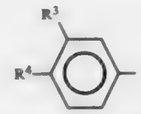
wherein R^9 is hydrogen, fluorine or methyl.

13. A method of controlling insects comprising applying to plants an insecticidally effective amount of a compound of the formula:



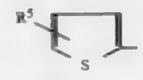
wherein:
R_1 and R_2 may be the same or different, and are lower alkyl;
A is selected from radicals having the structure:

(i)



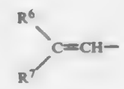
wherein R^3 and R^4 are the same or different and are hydrogen C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, halo, phenyl, phenoxy or C_1–C_4 alkylthio; or
wherein R^3 and R^4 taken together are oxydialkylene;

(ii)



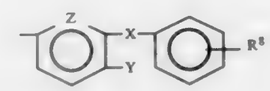
wherein R^5 is hydrogen, chlorine, bromine or C_1–C_4 alkyl; and

(iii)



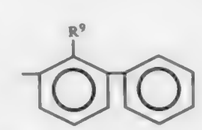
wherein R^6 and R^7 are the same or different and are hydrogen, fluorine, chlorine, bromine or trichloromethyl; and
B is selected from radicals having the structure:

(i)



wherein:
X is oxygen, NH, CH_2, carbonyl or sulfur;
Y is hydrogen, fluorine, chlorine or methyl;
Z is CH or nitrogen; and
R^8 is hydrogen, fluorine, chlorine or bromine; and

(ii)



wherein R^9 is hydrogen, fluorine or methyl.

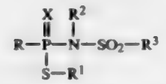
4,804,654

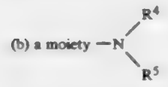
CERTAIN N-(R-SULPONYL) PHOSPHONAMIDOTHIOATES AND DITHIOATES

Mohamed A. H. Fahmy, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 848,596, Apr. 7, 1986, abandoned. This application Mar. 4, 1987, Ser. No. 17,165
Int. Cl.[4] C07F *9/44, 9/65;* **A01N** *57/20, 57/30*
U.S. Cl. 514—90 **3 Claims**

1. A compound of the formula:



wherein X is oxygen or sulfur;
R is alkyl or alkenyl of up to twenty carbon atoms, phenyl or phenalkyl of up to ten carbon atoms;
R^1 is alkyl, or alkenyl of up to six carbon atoms, or phenalkyl of up to ten carbon atoms;
R^2 is alkyl, alkenyl, alkynyl, haloalkyl or alkylthioalkyl of up to ten carbon atoms; napthyl, pyridyl, or thienyl; phenyl, or phenalkyl or phenalkenyl of up to ten carbon atoms, which may be substituted on the ring by from one to three substituents selected from halogen, methyl, methoxy, nitro, amino, mono- and dialkylamino, and mono- and dialkylaminocarbonyl wherein each alkyl moiety contains from one to four carbon atoms;
R^3 is
(a) one of the moieties represented by R^2 or is
(b) a moiety 
wherein R^4 is alkyl of one to four carbon atoms, phenyl, or phenalkyl of up to ten carbon atoms, R^5 is hydrogen or one of the moieties represented by R^4, or R^4 and R^5 together with the interjacent nitrogen atom represent 1-piperidino, 2-(ethoxycarbonyl)-1-piperidino, or 4-morpholino.

2. A method for controlling insects and/or acarids at a locus that comprises subjecting them to an effective dosage of a compound of claim 1.

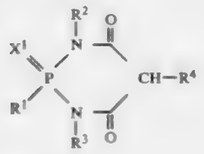
4,804,655

PESTICIDAL CYCLIC MALONYLPHOSPHONIC DIAMIDES

Nikolaus Müller, Monheim; Gerhard Bonse, Cologne; Peter Andrews; Wilhelm Stendel, both of Wuppertal, and Robert Steffens, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 22, 1986, Ser. No. 945,442
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1986, 3600289
Int. Cl.[4] A01N *57/36;* **C07F** *9/22*
U.S. Cl. 514—100 **11 Claims**

1. A cyclic malonylphosphonic diamide of the formula



in which
X^1 represents O or S,
R^1 represents C_{1-3}-alkyl, phenyl, naphthyl, phenyl or naphthyl substituted by alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms, haloalkyl having 1 to 4 carbon atoms and 1 to 5 halogen atoms, haloalkoxy having 1 to 4 carbon atoms and 1 to 5 halogen atoms, haloalkylthio having 1 to 4 carbon atoms and 1 to 5 halogen atoms, hydroxy, halogen, cyano, nitro, amino, monoalkyl- and dialkylamino having 1 to 4 carbon atoms per alkyl group, formyl, carboxyl, alkylcarbonyl having 2–4 carbon atoms, carbalkoxy having 2 to 4 carbon atoms, sulpho(—SO_3H), alkylsulphonyl having 1 to 4 carbon atoms, arylsulphonyl having 6 or 19 aryl carbon atoms, and/or phenyl, naphthyl, phenoxy, naphthoxy, phenylthio or naphthylthio,
R^2 represents hydrogen, C_1 ∝ C_4-alkyl, phenyl or benzyl,
R^3 represents hydrogen, C_1–C_4-alkyl, phenyl or benzyl,
R^4 represents the —COR^7, —CSR^7 —$COOR^7$, —$CSOR^7$, —$CONR^8R^9$ or —$CSNR^8R^9$ radical,
R^7 represents straight-chain, branched or cyclic alkyl having up to 20C atoms, straight-chain, branched or cyclic alkyl having up to 20C atoms and substituted by halogen, C_1–C_4-alkoxy, phenyl, phenyl which is substituted by alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms and 1 to 5 halogen atoms, haloalkoxy having 1 to 4 carbon atoms and 1 to 5 halogen atoms, haloalkylthio having 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkylenedioxy having 1 or 2 carbon atoms, halo-substituted alkylenedioxy having one or 2 carbon atoms and 1 to 4 halogen atoms, hydroxy, halogen, cyano, nitro, amino, monoalkyl- and dialkylamino having 1 to 4 carbon atoms per alkyl group, formyl, carboxyl, alkylcarbonyl having 2–4 carbon atoms, carbalkoxy having 2 to 4 carbon atoms, sulpho(—SO_3H), alkylsulphonyl having 1 to 4 carbon atoms, arylsulphonyl having 6 or 10 aryl carbon atoms, and/or phenyl, naphthyl, phenoxy, naphthoxy, phenylthio or naphthylthio,
R^8 represents hydrogen or C_{1-4}-alkyl, and
R^9 represents hydrogen, C_{1-4}-alkyl, phenyl, phenyl substituted by alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms, haloalkyl having 1 to 4 carbon atoms and 1 to 5 halogen atoms, haloalkoxy having 1 to 4 carbon atoms and 1 to 5 halogen atoms, haloalkylthio having 1 to 4 carbon atoms and 1 to 5 halogen atoms, hydroxy, halogen, cyano, nitro, amino, monoalkyl- and dialkylamino having 1 to 4 carbon atoms per alkyl group, formyl, carboxyl, alkylcarbonyl having 2–4 carbon atoms, carbalkoxy having 2 to 4 carbon atoms, sulpho(—SO_3H), alkylsulphonyl having 1 to 4 carbon atoms, arylsulphonyl having 6 or 10 aryl carbon atoms, and/or phenyl, naphthyl, phenoxy, naphthoxy, phenylthio or naphthylthio, or —COR^6 or —CSR^6,
or a salt thereof.

10. A method of combating pests which comprises applying to such pests or to a pest habitat a pesticidally effective amount of a compound or salt according to claim 1.

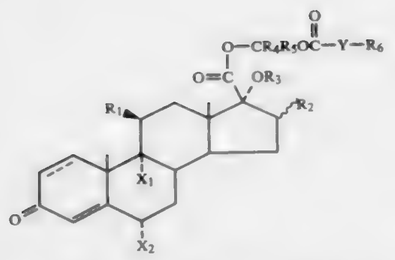
4,804,656

NOVEL ANDROSTANE-17β-CARBOXYLIC ACID ESTERS

Paul H. Andersson, Sodra Sandby; Per T. Andersson, Lund; Bengt I. Axelsson, Genarp; Bror A. Thalen, Bjärred, and Jan W. Trofast, Lund, all of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden

Continuation-in-part of Ser. No. 843,768, Mar. 25, 1986, abandoned. This application Apr. 3, 1986, Ser. No. 847,933
Claims priority, application Sweden, Apr. 4, 1985, 8501692; Jun. 13, 1985, 8502932
Int. Cl.[4] A61K *31/56;* **C07J** *1/00*
U.S. Cl. 514—179 **8 Claims**

1. A compound of the formula



or a stereoisomeric component thereof, in which formula

X_1 represents a hydrogen, chlorine, bromine or fluorine atom;

X_2 represents a hydrogen, chlorine, bromine or fluorine atom;

R_1 represents a β-hydroxy group, a β-chlorine atom or an oxo group;

R_2 represents a hydrogen atom, a methylene group or an α- or β-methyl group;

R_3 represents a hydrogen atom or an acyl group of 1 to 8 carbon atoms;

R_4 represents a hydrogen atom, a (C_1–C_5) alkyl group or a phenyl group;

R_5 represents a hydrogen atom, a (C_1–C_5) alkyl group or a phenyl group;

Y represents either CR_7R_8, O, S or NR_9, where R_7, R_8 and R_9 are selected from hydrogen or from straight or branched hydrocarbon chains having 1–8 carbon atoms or from a phenyl group;

R_6 represents a hydrogen; a methyl group; a phenyl or an alkenyl or cycloalkenyl group optionally substituted by alkyl, nitro, carboxy, alkoxy, halogen, cyano, carbalkoxy and trifluoromethyl group(s); a (C_1–C_5) alkyl group substituted by at least one hydrogen atom; a saturated or unsaturated carbocyclic or heterocyclic (O, S, N) ring system containing 3–10 atoms in the ring system; a C_1 alkyl group substituted by either one or two alicyclic or aromatic 3, 4, 5 or 6-numbered ring system(s) or one, two or three straight or branched alkyl or alkenyl group(s) of 1 through 18 carbon atoms; and

=—represents a single or double bond.

4,804,657

PROCESS FOR PROTECTION OF BRAIN CELLS

Kyuya Kogure, Shakujii, and Mitsuo Masaki, Chiba, both of Japan, assignors to Nippon Chemiphar Co., Ltd., Japan

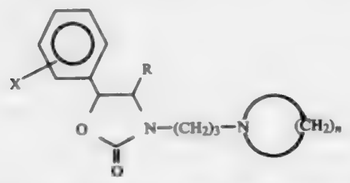
Filed Jun. 18, 1987, Ser. No. 63,379

Claims priority, application Japan, Jun. 18, 1986, 61-141593; Jun. 23, 1987, 62-13876; May 30, 1987, 62-136460

Int. Cl.[4] A61K *31/42, 31/54, 31/445*

U.S. Cl. 514—218 **6 Claims**

1. A process for protecting brain cells from ischemia which comprises parenterally administering into a man suffering from ischemia or being susceptible to ischemia a 1,3-oxazolidin-2-one derivative having the formula:



wherein R is a straight or branched chain alkyl having 3–8 carbon atoms, X is hydrogen, halogen, a lower alkyl or alkoxy, and n is 4, 5 or 6, at a dose of 0.5 to 100 mg per day.

4,804,658

IMIDAZOPYRIDINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

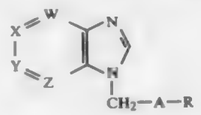
Paul W. Manley, Monks Risborough, and Roderick A. Porter, High Wycombe, both of United Kingdom, assignors to G. D. Searle & Co., Chicago, Ill.

Filed Sep. 15, 1986, Ser. No. 908,126

Int. Cl.[4] A61K *31/44, 31/535;* **C07D** *471/04*

U.S. Cl. 514—234.2 **87 Claims**

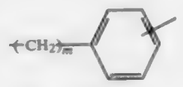
1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof; wherein one of W, X, Y, and Z is —N— and the others of W, X, Y, and Z are each —CH—;

A is

(a) a



group wherein m is 0 or 1, or

(b) a $-(CH_2)_n-(CR^5R^6)_p-$ group wherein n is an integer from 0 to 8, p is an integer from 0 to 2, and R^5 and R^6 are independently hydrogen or C_1–C_4 alkyl; and

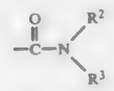
R is

(a) a



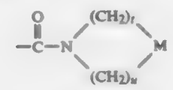
group wherein R^1 is C_1–C_8 alkyl;

(b) a



group wherein R^2 and R^3 are independently hydrogen, C_1–C_8 alkyl, or C_3–C_8 cycloalkyl;

(c) a



group wherein t and u are independently integers from 1 to 3 and M is —O—, —S—, or —CH_2—; or

(d) a



group wherein R^4 is hydrogen, C_1–C_8 alkyl, or C_3–C_8 cycloalkyl.

86. A pharmaceutical composition comprising at least one compound according to claim **1**, together with one or more non-toxic pharmaceutically acceptable carriers.

4,804,659

DECAHYDRONAPHTH-2-YL-ALKYLAMINES

Joachim Weissmüller, Monheim, and Paul Reinecke, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

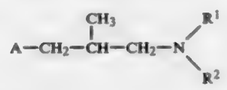
Filed Jul. 8, 1987, Ser. No. 70,854

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1986, 3624648

Int. Cl.[4] C07D *265/30*

U.S. Cl. 514—237.8 **9 Claims**

1. A decahydronaphth-2-yl-alkylamine of the formula



in which

A represents optionally substituted decahydronaphth-2-yl and

R^1 and R^2 are identical of different and represent alkyl or alkenyl, or

R^1 and R^2, together with the nitrogen atom to which they are bound, represent a saturated six-membered heterocycle which may contain 1 or 2 further hetero atoms in the form of nitrogen or oxygen and which is optionally mono- to trisubstituted, identically or differently, by in each case straight-chain or branched alkyl or hydroxyalkyl in each case having 1 to 4 carbon atoms

or a plant-tolerated acid-addition salt thereof.

4,804,660

ERGOT CYCLIC PEPTIDE ALKALOIDS HAVING A VENOTONIZING EFFECT, USEFUL FOR TREATING ORTHOSTATIC HYPOTENSION

Hans Kobel, Basel; Jean-Jacques Sanglier, Oberwil; Hans Tscherter, Allschwil, and Georg Bolliger, Binningen, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

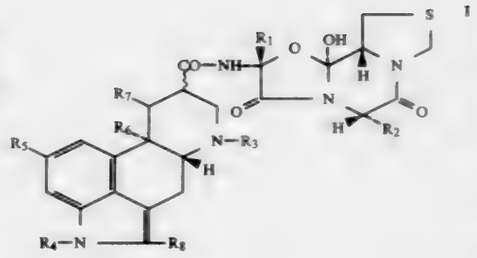
Division of Ser. No. 751,272, Jul. 2, 1985, Pat. No. 4,681,880, which is a division of Ser. No. 404,832, Aug. 3, 1982, Pat. No. 4,542,135. This application May 5, 1987, Ser. No. 47,362

Claims priority, application Switzerland, Aug. 7, 1981, 5104/81

Int. Cl.[4] A61K *31/54, 31/535, 31/48;* **C07D** *513/14*

U.S. Cl. 514—250 **18 Claims**

1. A method of inducing a venotonizing effect in a subject which comprises administering to a subject in need of such treatment a venotonizing effective amount of a compound of formula I,



wherein

R_1 is (C_{1-4})alkyl,

R_2 is (C_{1-6})alkyl or benzyl,

R_3 and R_4 independently are hydrogen or (C_{1-4}) alkyl,

R_5 is hydrogen or bromine,

R_6 and R_7 are each hydrogen, or

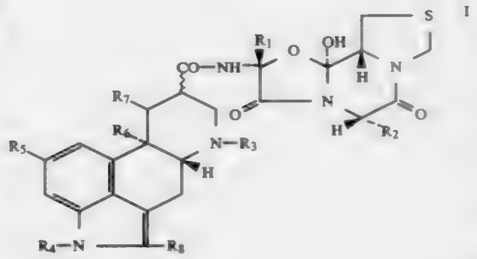
R_6 and R_7 together form a single bond, or

R_6 is methoxy and R_7 is hydrogen, and

R_8 is hydrogen, methyl, or halogen of atomic number from 9 to 35,

with the proviso that when R_5 is bromine, R_7 is hydrogen; in free base form or in pharmaceutically acceptable acid addition salt form.

10. A method of treating orthostatic hypotens in a subject in need of such treatment which comprises administering to the subject and effective amount for the treatment of orthostatic hypotension of a compound of formula I,



wherein

R_1 is (C_{1-4})alkyl,

R_2 is (C_{1-6})alkyl or benzyl,

R_3 and R_4 independently are hydrogen or (C_{1-4})alkyl,

R_5 is hydrogen or bromine,

R_6 and R_7 are each hydrogen, or

R_6 and R_7 together form a single bond, or

R_6 is methoxy and R_7 is hydrogen, and

R_8 is hydrogen, methyl, or halogen of atomic number from 9 to 35,

with the proviso that when R_5 is bromine, R_7 is hydrogen; in free base form or in pharmaceutically acceptable acid addition salt form.

4,804,661

DISUBSTITUTED PIPERAZINES

Pier G. Ferrini, Binningen, and Andreas v. Sprecher, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

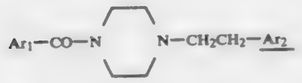
Filed Jun. 9, 1987, Ser. No. 59,898

Claims priority, application Switzerland, Jun. 16, 1986, 2420/86

Int. Cl.[4] A61K *31/495;* **C07D** *295/10*

U.S. Cl. 514—255 **15 Claims**

1. A piperazine compound of the formula



(I)

wherein

Ar_1 is phenyl which is unsubstituted or substituted by one or two substituents selected from C_{1-4} alkoxy, halogen, and trifluoromethyl; and

Ar_2 is phenyl which is monosubstituted by Cl-4 alkoxy or by halogen;

or a pharmaceutically acceptable salt thereof.

15. A method of treating pain in an animal in need thereof comprising administering to said animal a therapeutically effective amount of a compound of claim 1 or a pharmaceutically acceptable salt thereof.

4,804,662

SUBSTITUTED 4-(1H-IMIDAZOL-1-YL)BENZAMIDES AS ANTIARRHYTHMIC AGENTS

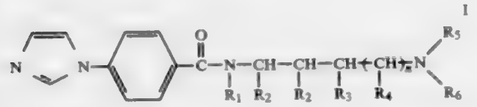
Klaus Nickisch, Berlin, Fed. Rep. of Germany; Randall E. Lis, Stanhope, N.J.; William C. Lumma, Jr., Pennsburg, Pa.; Thomas K. Morgan, Jr., and Ronald A. Wohl, both of Morris Plains, N.J., assignors to Schering A.G., Berlin, Fed. Rep. of Germany

Filed May 5, 1987, Ser. No. 46,222

Int. Cl.[4] A61K *31/495, 31/415;* **C07D** *403/10*

U.S. Cl. 514—252 **14 Claims**

1. A compound of the formula I:



I

wherein:

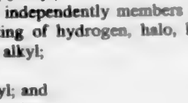
R_1 is hydrogen, lower alkyl, lower alkenyl, lower alkoxy-lower alkyl, phenyl, substituted phenyl, naphthalenyl, substituted naphthalenyl, phenylalkyl, substituted phenylalkyl or collectively with R_5 may produce a piperazine or a hexahydro-1,4-diazepine ring system;

R_2 is hydrogen, lower alkyl, phenyl, substituted phenyl, naphthalenyl, substituted naphthalenyl or collectively with R_3 is a bond or an alkylene chain to form a saturated carbocyclic ring of from 4 to 8 ring carbons or collectively with R_5 is a alkylene chain to form a heterocyclic of from 5 to 8 ring members;

R_3 is hydrogen, lower alkyl, phenyl, substituted phenyl, naphthalenyl, substituted naphthalenyl, or collectively with R_5 is an alkylene chain to form a heterocyclic of from 5 to 8 ring members;

R_4 is hydrogen, methyl or ethyl;

R_5, R_6 are hydrogen, lower alkenyl, C_1–C_8 straight or branched chain alkyl, C_3–C_6 cycloalkyl, cycloalkyl(lower)alkyl, lower alkyl substituted by phenyl which may be substituted by up to 3 substituents selected from hydroxy or methoxy groups, or when taken together form a saturated heterocyclic ring of from 4 to 8 ring members which may be substituted by one or more methyl groups or optionally contain an



where R_7 is a C_1–C_8 straight or branched chain alkyl or phenylalkyl wherein the phenyl group may be optionally substituted by up to three substituents selected from C_1–C_4 alkyl, C_1–C_4 alkoxy, trifluoromethyl, fluorine, chlorine and bromine;

p is the integer 0, 1, or 2;

n is the integer 0 or 1;

and the pharmaceutically acceptable salts thereof; with the provisos that:

(a) only one of R_1, R_2 or R_3 can contain an aromatic substituent;

(b) if one of R_2 or R_3 contains an aromatic substituent then the other plus R_1 and R_4 must be hydrogen;

(c) R_5 and R_6 cannot both be hydrogen;

(d) when any one of R_1, R_5 or R_6 is lower alkenyl, the unsaturation cannot be alpha to the carbon atoms;

and the pharmaceutically acceptable salts thereof.

13. The method of treating arrhythmias in a mammalian subject in need thereof comprising administering to said subject an antiarrhythmically effective dose of a compound according to claim 1.

4,804,663

3-PIPERIDINYL-SUBSTITUTED 1,2-BENZISOXAZOLES AND 1,2-BENZISOTHIAZOLES

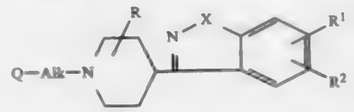
Ludo E. J. Kennis, Turnhout, and Jan Vandenberk, Beerse, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 717,067, Mar. 27, 1985, abandoned. This application Feb. 5, 1986, Ser. No. 826,517

Int. Cl.[4] C07D *471/04, 513/04, 239/96;* **A61K** *31/505*

U.S. Cl. 514—258 **18 Claims**

1. A chemical compound having the formula



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein

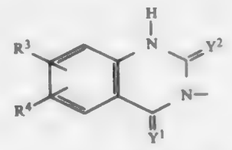
R is hydrogen or C_{1-6} alkyl;

R^1 and R^2 are each independently members selected from the group consisting of hydrogen, halo, hydroxy, C_{1-6} alkyloxy and C_{1-6} alkyl;

X is O or S;

Alk is C_{1-4} alkanediyl; and

Q is a radical of formula

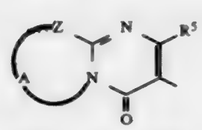


(a)

wherein Y^1 and Y^2 are each independently O or S;

R^3 is a member selected from the group consisting of hydrogen, halo, C_{1-6} alkyl, C_{1-6} alkyloxy, trifluoromethyl, nitro, cyano, hydroxy, (C_{1-10} alkylcarbonyl)oxy, amino, mono- and di(C_{1-6} alkyl)amino, (C_{1-10} alkylcarbonyl)amino, phenylmethoxy and azido;

R^4 is hydrogen or halo; or a radical of formula



(b)

wherein R^5 is hydrogen or C_{1-6} alkyl;

Z is —S—, —CH_2— or —CR^6=CR^7—; said R^6 and R^7 being each independently hydrogen or C_{1-6} alkyl; and

A is a bivalent radical —CH_2—CH_2—, —CH_2—CH_2—CH_2— or —CR^8=CR^9—, said R^8 and R^9 being each independently hydrogen, halo, amino or C_{1-6} alkyl.

4,804,664

METHOD AND PHARMACEUTICAL PREPARATION FOR TREATING CHRONIC OBSTRUCTIVE AIRWAY DISEASE AND CARDIAC DISEASE, AND INTERMEDIATES FOR THE PREPARATION OF THERAPEUTICALLY ACTIVE XANTHINE DERIVATIVES

Per G. Kjellin, Lund, and Carl G. A. Persson, Limhamn, both of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden

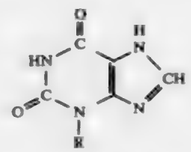
Division of Ser. No. 82,402, Oct. 5, 1979, Pat. No. 4,325,956. This application Jun. 12, 1981, Ser. No. 273,213

Claims priority, application Sweden, Oct. 20, 1978, 7810946

Int. Cl.[4] A61K *31/52*

U.S. Cl. 514—263 **2 Claims**

1. A method for stimulating the heart of a host suffering from cardiac disease characterized in administering to the host suffering therefrom a therapeutically active dose of a compound of the formula



or a therapeutically acceptable salt thereof, wherein R is —$CH_2CH_2CH_3$, —$CH_2CH_2CH_2CH_3$ or —$CH_2CH(CH_3)_2$.

4,804,665

AZASPIRO COMPOUNDS AND THEIR USE

Giichi Goto, Toyono, and Akinobu Nagaoka, Kawanishi, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

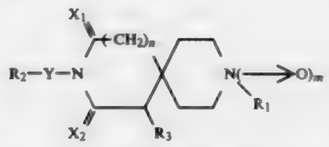
Filed Dec. 24, 1987, Ser. No. 137,713

Claims priority, application Japan, Dec. 27, 1986, 61-313381; Nov. 10, 1987, 62-283396

Int. Cl.[4] C07D *471/10;* **A61K** *31/395*

U.S. Cl. 514—278 **15 Claims**

1. An azaspiro compound of the formula:



wherein R_1 and R_2 independently represent hydrogen, a hydrocarbon residue which may have a substituent, or an acyl group which may have a substituent; R_3 represents hydrogen or a hydrocarbon residue which may have a substituent; each of X_1 and X_2 is oxygen or sulfur; Y represents oxygen, sulfur or a group of the formula —N(R_4)—, wherein R_4 represents hydrogen or a lower alkyl group; m represents 0 or 1; and n represents 0 or 1,

wherein the hydrocarbon residue which may have a substituent represented by R_1, R_2 and R_3 is a straight-chain or branched (C_{1-6}) alkyl, a straight-chain or branched (C_{2-6}) alkenyl, a straight-chain or branched (C_{2-6}) alkynyl, a (C_{3-7}) monocyclic cycloalkyl, bicyclo[3.2.1]oct-2-yl, bicyclo[3.3.1]nonan-2-yl, phenyl or naphthyl;

the acyl group which may have a substituent represented by R_1 and R_2 is a carboxylic acyl, a carbamic acyl, a sulfonic acyl or a substituted oxycarbonyl; and

the hydrocarbon residue and the acyl group may have one to three substituents selected from the group consisting of halogen, nitro, cyano, hydroxy, (C_{1-4})alkoxy, (C_{1-4})alkylthio, amino, mono- or di(C_{1-4}) alkyl-substituted amino, mono- or diaralkyl-substituted amino, mono- or dipyridylcarbonyl-substituted amino, (C_{1-4}) alkoxycarbonyl, hydroxycarbonyl, (C_{1-6})alkylcarbonyl, (C_{3-6})cycloalkylcarbonyl, carbamoyl, mono- or di(C_{1-4})alkyl-substituted carbamoyl, phenyl, phenoxy, benzoyl, phenoxycarbonyl, phenyl(C_{1-4})alkyl-carbamoyl and phenylcarbamoyl, all of the phenyl of which may have one to four substituents selected from among (C_{1-4})alkyl, halogen, hydroxyl, benzyloxy, amino mono- or di-(C_{1-4})alkyl-substituted amino, nitro and (C_{1-4})alkoxycarbonyl,

or a physiologically acceptable salt of said compound.

15. A method of treating and/or preventing dementia, which comprises administering an effective amount of a compound or physiologically acceptable salt thereof as defined in claim 1 to a mammal.

4,804,666

ANTIALLERGIC 6,11-DIHYDRO-11-(4-PIPERIDYLIDENE)-5H-BENZO[5,6-CYCLOHEPTA(1,2-B)PYRIDINES

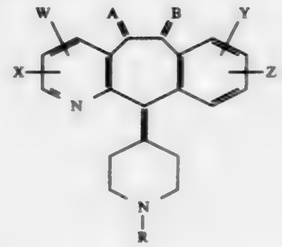
John J. Piwinski, Parsippany; Michael J. Green, Skillman; Ashit K. Ganguly, Upper Montclair; Jesse K. Wong, Union; Bernard Ketcham, Livingston, and Jeffrey Cramer, Westfield, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 765,613, Aug. 14, 1985, abandoned. This application Apr. 28, 1987, Ser. No. 43,609

Int. Cl.[4] A61K *31/445;* **C07D** *401/06*

U.S. Cl. 514—278 **24 Claims**

1. A compound represented by structural formula I:



I

or a pharmaceutically acceptable salt or solvate thereof, wherein:

R represents H or alkyl having 1 to 20 carbon atoms;

one of A and B represents H and OC(O)R^1, =NOR^1 or O—(CH_2)$_n$—O—, and the other represents H_2 or one of the above listed groups;

W, X, Y and Z may be the same or different and each independently represents H, halo, alkyl having 1 to 20 carbon

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atoms, $-CF_3$, $-NO_2$, $-OC(O)R^1$, $-SR^1$, $-OR^1$, $-CO_2-R^1$ or $-N(R^1)_2$;

R^1 is H, alkyl having 1 to 20 carbon atoms, or aryl having 6 to 15 carbon atoms, and in $-N(R^1)_2$, R^1 can be alkanediyl having 1 to 20 carbon atoms; and n is 2, 3 or 4 with the proviso that when A is $=NOR^1$, R^1 is other than H.

23. A method of treating allergy in a mammal comprising administering to said mammal an anti-allergic effective amount of a compound as defined in claim 1.

4,804,667

CIRCULATION-ACTIVE 4-AMINOARYLDIHYDROPYRIDINE LACTONES

Siegfried Goldmann, Wuppertal; Matthias Schramm, Cologne; Rainer Gross, Wuppertal, all of Fed. Rep. of Germany; Günther Thomas, Gargagnate, Italy; Martin Bechem, Wuppertal, and Michael Kayser, Hagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

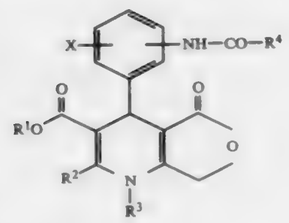
Filed Dec. 22, 1986, Ser. No. 944,605

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1986, 3600596

Int. Cl.[4] C07D *491/04;* A61K *31/44*

U.S. Cl. 514—302 11 Claims

1. A 4-aminoaryldihydropyridine of the formula



in which

R^1 represents hydrogen or alkyl which has up to 15 carbon atoms and is optionally substituted by C_1–C_{10}-alkoxy or C_1–C_{10}-alkylthio,

R^2 represents hydrogen, C_1–C_5-alkyl, —CN, $-NH_2$, —CHO or $-CH_2OH$,

R^3 represents hydrogen or represent straight-chain, branched or cyclic alkyl of up to 6 carbon atoms,

X represents hydrogen or represents halogen,

R^4 represents C_6–C_{14}-aryl which is optionally substituted up to three times, identically or differently, by halogen, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_8-alkylthio, C_1–C_8-halogenalkyl having up to 5 halogen atoms, nitro, cyano or C_1–C_8-alkylsulphonyl, or represents pyridyl, thienyl or furyl, each of which is optionally substituted by C_1–C_6-alkyl, C_1–C_6-alkoxy, halogen, cyano, nitro or di-C_1–C_6-alkylamino, or represents C_7–C_{14}-aralkyl, the aryl radical optionally being substituted by up to three identical or different substituents from the group consisting of halogen, nitro, cyano, C_1–C_4-alkyl or C_1–C_4-alkoxy,

or a physiologically acceptable salt thereof.

4,804,668

THIAZOLE DERIVATIVES AND MEDICAL COMPOSITIONS THEREOF

Muneaki Takase; Kimitomo Yoshioka, both of Tokyo, and Hiroaki Yamazaki, Iberagi, all of Japan, assignors to Zenyaku Kogyo Kabushiki Kaisha, Tokyo, Japan

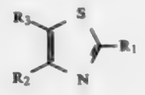
Filed Mar. 27, 1986, Ser. No. 844,615

Claims priority, application Japan, Mar. 27, 1985, 60-62575

Int. Cl.[4] C07D *417/04;* A61K *31/38, 31/425*

U.S. Cl. 514—314 28 Claims

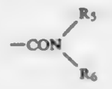
1. A thiazole derivative represented by the following formula I and pharmaceutically acceptable acid addition salt thereof:



(I)

wherein

R_1 represents —$COOR_4$,



°or cyano wherein

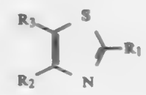
R_4 represents hydrogen or lower alkyl, and

R_5 and R_6 may be same or different and represent hydrogen, lower alkyl, aryl, amino-lower alkyl, N-lower alkylamino-lower alkyl or N,N-di-lower alkylamino-lower alkyl;

R_2 represents hydrogen or lower alkyl; and

R_3 is 4-pyridinyl, 3-methyl-4-pyridinyl, 3-cyano-4-pyridinyl, 4-quinolinyl or 2-thiazolyl.

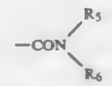
16. A cardiotonic agent comprising a pharmaceutically acceptable excipient and, as an active component thereof, an effective amount of thiazole derivative having the following formula I:



(I)

wherein

R_1 represents —$COOR_4$,



or cyano wherein

R_4 represents hydrogen or lower alkyl, and

R_5 and R_6 may be same or different and represent hydrogen, lower alkyl, aryl, amino-lower alkyl, N-lower alkylamino-lower alkyl or N,N-di-lower alkylamino-lower alkyl;

R_2 represents hydrogen or lower alkyl; and

R_3 is 4-pyridinyl, 3-methyl-4-pyridinyl, 3-cyano-4-pyridinyl, 4-quinolinyl or 2-thiazolyl.

4,804,669

TREATMENT OF PAIN WITH A PIPERIDINE

Jorgen B. Lassen, Glostrup, Denmark, assignor to A/S Ferrosan, Soborg, Denmark

Filed Nov. 9, 1987, Ser. No. 118,399

Claims priority, application United Kingdom, Nov. 11, 1986, 8626936

Int. Cl.[4] A61U *31/44, 31/445*

U.S. Cl. 514—326 7 Claims

1. A method for treating pain in human or non-human animals, which comprises administering a pain relieving effective, non-toxic amount of paroxetine or a pharmaceutically acceptable salt thereof, to a human or non-human animal in need thereof.

4,804,670

SUBSTITUTED HEXATRIENE DERIVATIVES AND THEIR USE IN TREATING ACNE AND PSORIASIS

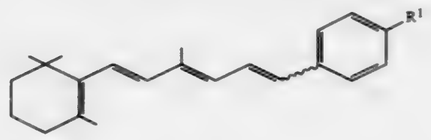
Hans-Heiner Wenst, Dossenheim; Fritz-Frieder Frickel, Heidesheim; Joachim Paust, Neuhofen; Klaus Schmieder, Schortens, and Axel Nuerrenbach, Gruenstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 3, 1985, Ser. No. 771,885

Int. Cl.[4] A61K *31/41, 31/19;* C07D *257/04;* C07C *63/04*

U.S. Cl. 514—381 11 Claims

1. A substituted hexatriene derivative of the formula I



I

wherein

R^1 is tetrazolyl or —COR^5, where

R^5 is —OR^6, where

R^6 is hydrogen or C_{1-6}-alkyl and their physiologically tolerated salts.

8. The method of treating acne which comprises administering either topically or systemically an effective amount of compound of claim 1.

9. The method of treating psoriasis which comprises: administering either topically or systemically an effective amount of a compound of claim 1.

4,804,671

1-(TRIHALOMETHYLSULFENYL)-4-ARYL-1,2,4-TRIAZOLIN-5-ONES AND FUNGICIDES CONTAINING THESE COMPOUNDS

Rentsea Costin, Heidelberg; Sabine Thym, Donnersheim; Eberhard Ammermann, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

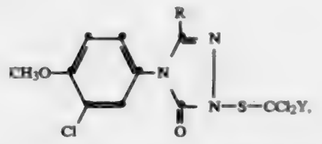
Continuation of Ser. No. 674,484, Nov. 26, 1984, abandoned, which is a continuation of Ser. No. 409,669, Aug. 19, 1982, abandoned. This application Dec. 18, 1986, Ser. No. 941,528

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1981, 3133405

Int. Cl.[4] A01N *43/64, 47/04;* C07D *249/12*

U.S. Cl. 514—384 3 Claims

1. A 1-(trihalomethylsulfenyl)-4-aryl-1,2,4-triazolin-5-one of the formula



I

where R is alkyl of 1 to 6 carbon atoms which is unsubstituted or substituted by methoxy or ethoxy, or is alkenyl of 2 to 6 carbon atoms, or is cycloalkyl of 3 to 7 carbon atoms which is unsubstituted or substituted by methoxy, and Y is chlorine.

4,804,672

2-OXO-IMIDAZOLIDINE DERIVATIVES AS AGENTS FOR TREATMENT OF KIDNEY DISEASES

Isao Yamaguchi, Tokyo; Shinsuke Nishiyama, Osaka, and Masami Kubo, Osaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

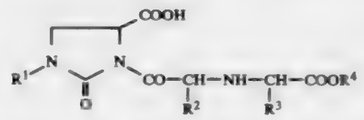
Filed Dec. 10, 1987, Ser. No. 131,355

Claims priority, application Japan, Dec. 12, 1986, 61-297113

Int. Cl.[4] A61K *31/415*

U.S. Cl. 514—392 7 Claims

1. A method for the treatment of kidney diseases in a warm-blooded animal, which comprises administering to said warm-blooded animal a therapeutically effective amount of a 2-oxo-imidazolidine compound of the formula:



(I)

wherein R^1 is a lower alkyl group, R^2 is a lower alkyl group, R^3 is a phenyl-substituted lower alkyl group, and R^4 is hydrogen atom or a lower alkyl group, or a pharmaceutically acceptable salt thereof.

4,804,673

FUNGICIDAL SULPONYL AZOLES

Junichi Saito, Mitaka; Tatsuo Tamura, Hamura; Yoshio Kurahashi; Noboru Matsumoto, both of Hachioji, and Naoko Yamaguchi, Hino, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

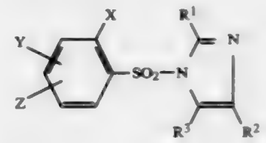
Filed Mar. 12, 1987, Ser. No. 25,298

Claims priority, application Japan, Mar. 20, 1986, 61-60642

Int. Cl.[4] A01N *43/50;* C07D *233/56, 233/68*

U.S. Cl. 514—398 9 Claims

6. A sulfonyl azole of the formula



in which

X represents halogen, alkoxy with 1 to 4 carbon atoms or phenyl,

Y represents hydrogen, alkyl with 1 to 4 carbon atoms, halogen or alkoxy with 1 to 4 carbon atoms,

Z represents hydrogen, alkyl with 1 to 4 carbon atoms, halogen or alkoxy with 1 to 4 carbon atoms, or

Y and Z may together represent a cyclic ring which can contain oxygen atoms,

R^1 represents hydrogen, alkyl with 1 to 4 carbon atoms or phenyl,

R^2 represents hydrogen, alkyl with 1 to 4 carbon atoms, halogen or nitro, and

R^3 represents hydrogen, alkyl with 1 to 4 carbon atoms , halogen or nitro with the proviso that R^1, R^2 and R^3 may all simultaneously be hydrogen only if Y and Z together form a ring.

9. A method of combating fungi which comprises applying to such fungi or to a fungus habitat a fungicidally effective amount of a compound according to claim 6 and a diluent.

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4,804,674

VAGINAL PHARMACEUTICAL COMPOSITION

Peter B. Curtis-Prior, Histon; Stewart T. Leslie, Cambridge, both of United Kingdom; Ronald B. Miller, Basel, Switzerland, and Alison L. Shill, Histon, United Kingdom, assignors to Exrocaltipus, S.A., Luxembourg, Luxembourg

Filed Mar. 19, 1987, Ser. No. 27,886
Claims priority, application United Kingdom, Mar. 26, 1986, 8607570
Int. Cl.[4] A61K *31/195, 31/415*
U.S. Cl. 514—400 6 Claims

1. Method of enhancing sperm motility in the vagina of a human female, which comprises applying into the vagina of the human female a vaginal sperm motility enhancing pharmaceutical composition comprising an effective amount of a sperm motility enhancing agent selected from the group consisting of aspartic acid, glutamic acid, arginine, histidine, asparagine, glutamine and pharmaceuticly acceptable salts thereof, said effective amount being effective only to enhance sperm motility, said sperm motility enhancing agent being distributed in a vaginally acceptable carrier.

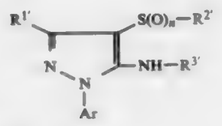
4,804,675

1-ARYL-4-ALKYLTHIOPYRAZOL-5-AMINE DERIVATIVES, COMPOSITION CONTAINING THEM, AND METHOD OF USING THEM TO COMBAT INSECTS, ARACHNIDS, AND NEMATODES

Uta Jessen-Korte, Duesseldorf; Reinhold Gehring, Wuppertal; Otto Schallner, Monheim; Jörg Stetter, Wuppertal; Heinz-Jürgen Wroblowsky, Langenfeld; Benedikt Becker, Mettmann; Bernhard Homeyer, Leverkusen; Wolfgang Behrenz, Overath-Steinenbrück; Wilhelm Stendel, and Peter Andrews, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 30, 1986, Ser. No. 858,475
Claims priority, application Fed. Rep. of Germany, May 17, 1985, 3517843; Jan. 30, 1986, 3602728
Int. Cl.[4] A01N *43/56;* C07D *231/44*
U.S. Cl. 514—407 11 Claims

1. A 5-aminopyrazole of the formula



in which

$R^{1'}$ stands for alkyl (C_1–C_4) or halogenoalkyl (C_1–C_4),

$R^{2'}$ stands for alkyl (C_1–C_8) or halogenoalkyl (C_1–C_8),

$R^{3'}$ stands for hydrogen or alkyl (C_1–C_4), n stands for 0, 1 or 2 and

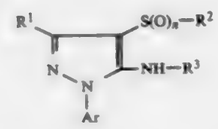
Ar stands for phenyl, 2-pyridyl, 3-pyridyl or 4-pyridyl, said Ar being unsubstituted or monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of cyano, nitro, halogen, straight-chain or branched alkyl with up to 4 carbon atoms, alkoxy with up to 4 carbon atoms and alkoxycarbonyl with up to 4 carbon atoms, straight-chain or branched halogenoalkyl with up to 4 carbon atoms and up to 9 identical or different halogen atoms, and halogenoalkoxy with up to 4 carbon atoms and up to 9 identical or different halogen atoms and a radical $—S(O)_m—R^5$

wherein

R^5 represents amino, straight-chain or branched alkyl with up to 4 carbon atoms, alkylamino with up to 4 carbon atoms, dialkylamino with up to 4 carbon atoms, halogenoalkyl with up to 4 carbon atoms and with up to 9 identical or different halogen atoms, and

m represents the number 0, 1 or 2.

5. A method of combating insects, arachnids and namatodes comprising applying to insects, arachnids and nematodes and/or their environment an effective amount of at least one 5-aminopyrazole of the formula (I)



in which

R^1 represents hydrogen, alkyl with 1 to 4 carbon atoms or halogenoalkyl with 1 to 4 carbon atoms,

R^2 represents alkyl with 1 to 8 carbon atoms, halogenoalkyl with 1 to 8 carbon atoms, unsubstituted or monosubstituted or polysubstituted phenylalkyl, the substituents being identical or different and being halogen, cyano, nitro, straight-chain or branched alkyl, alkoxy, alkythio, alkylsulphonyl, halogenalkyl, halogenoalkylthio, halogenoalkylsulphinyl and halogenoalkylsulphonyl, with in each case 1 to 4 carbon atoms in the alkyl part, or unsubstituted or monosubstituted or polysubstituted phenyl, the substituents being identical or different and being halogen, cyano, nitro, straight-chain or branched alkyl, alkoxy, alkylthio, alkylsulphonyl, halogenalkyl, halogenoalkylthio, halogenoalkylsulphinyl and halogenoalkylsulphonyl, with in each case 1 to 4 carbon atoms in the alkyl part,

R^3 represents hydrogen, alkyl with 1 to 4 carbon atoms or a radical



Ar represents unsubstituted phenyl or phenyl monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of cyano, nitro, halogen, straight-chain C_1 to C_4 alkyl, branched C_1 to C_4 alkyl, C_1 to C_4 alkoxy, C_1 to C_4 alkoxycarbonyl, halogenoalkyl having 1 to 4 carbon atoms, and halogenoalkoxy having 1 to 4 carbon atoms, or unsubstituted pyridyl or pyridyl monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of cyano, nitro, halogen, straight-chain C_1 to C_4 alkyl, branched C_1 to C_4 alkyl, C_1 to C_4 alkoxy, C_1 to C_4 alkoxycarbonyl, halogenoalkyl having 1 to 4 carbon atoms, and halogenoalkoxy having 1 to 4 carbon atoms, and

n represents the number 0, 1 or 2,

wherein

X represents oxygen or sulphur and

R^4 represents hydrogen, alkyl with up to 4 carbon atoms, alkenyl with up to 4 carbon atoms, alkinyl with up to 4 carbon atoms, halogenoalkyl with up to 4 carbon atoms, alkoxyalkyl with up to 4 carbon atoms, unsubstituted cycloalkyl having 3 to 7 carbon atoms or cycloalkyl having 3 to 7 carbon atoms and being monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of halogen, lower alkyl and lower halogenoalkyl, alkoxy with up to 4 carbon atoms, alkylamino with up to 4 carbon atoms, dialkylamino with up to 4 carbon atoms or represents phenyl, phenoxy, phenylthio and phenylamino being unsubstituted or monosubstituted or polysubstituted by identical or different substituents, the substituents on the phenyl ring being halogen, cyano, nitro, straight-chain or branched alkyl, alkoxy, alkylthio, alkylsulphinyl and alkylsulphonyl, with in each case 1 to 4 carbon atoms in the individual alkyl parts.

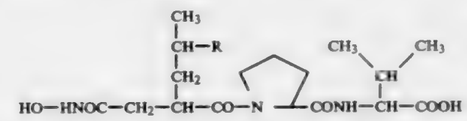
4,804,676

ENKEPHALINASE B INHIBITORS, THEIR PREPARATION, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Yoshinori Inaoka; Shuji Takahashi; Hidetsune Tamaoki, and Ryuzo Enokita, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Oct. 1, 1985, Ser. No. 782,524
Claims priority, application Japan, Oct. 4, 1984, 59-208789
Int. Cl.[4] A61K *31/40;* C07D *207/09*
U.S. Cl. 514—423 4 Claims

4. A pharmaceutical composition for use as an enkephalinase B inhibitor comprising an effective amount for enkephalinase B inhibition of a compound having the formula:



wherein R represents a hydrogen atom or a methyl group, or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable carrier.

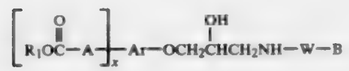
4,804,677

ESTERS OF ARYLOXYPROPANOLAMINE DERIVATIVES

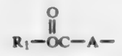
Paul W. Erhardt, Long Valley, N.J., and William L. Matier, Libertyville, Ill., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 923,993, Oct. 28, 1986, Pat. No. 4,692,446, which is a division of Ser. No. 691,787, Jan. 16, 1985, Pat. No. 4,623,652, which is a continuation-in-part of Ser. No. 580,295, Feb. 21, 1984, abandoned, which is a continuation of Ser. No. 320,772, Jan. 12, 1981, abandoned. This application Sep. 8, 1987, Ser. No. 93,669
Int. Cl.[4] C07C *103/22, 103/78;* A61K *31/165*
U.S. Cl. 514—435 20 Claims

1. A compound of the formula



wherein R_1 is lower alkyl, lower cylcoalkyl, aryl, or aralkyl; A is a direct bond, lower alkylene, or lower alkenylene; x is 1 or 2, provided that when x is greater than 1, different occurrences of the



group may be the same or different; Ar is phenyl, naphthyl unsubstituted or substituted with lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, halogen, acetamido, amino, nitro, lower alkylamino, hydroxy, lower hydroxyalkyl, or cyano; W is alkylene containing from 1 to about 10 carbon atoms; B is $—NR_2COR_3$, $—NR_2CONR_3R_4$, wherein R_2 is hydrogen or alkyl of from 1 to about 6 carbon atoms and R_3 may be hydrogen, alkyl of from 1 to about 6 carbon atoms, alkoxy wherein the alkyl group contains from 1 to about 6 carbon atoms, alkoxyalkyl wherein the alkyl groups may be the same or different and each contain from 1 to about 6 carbon atoms, cycloalkyl of from 3 to about 8 carbon atoms, alkenyl of from 2 to about 6 carbon atoms, alkynyl of from 2 to about 6 carbon atoms, cyclopentanyl, or cyclohexanyl, group, or a pharmaceutically acceptable salt thereof.

13. A method for the treatment of cardiac disorders in a mammal comprising administering to such mammal a short-action β-blocking compound of the formula as in claim 1; or a pharmaceutically acceptable salt thereof.

4,804,678

METHOD FOR TREATING ALLERGIC CONDITIONS

Joachim Augstein, and Maqbool Ahmed, both of Loughborough, England, assignors to Fisons plc, Ipswich, England

Continuation of Ser. No. 783,330, Oct. 3, 1985, abandoned, which is a continuation of Ser. No. 456,510, Jan. 7, 1983, abandoned. This application Oct. 5, 1987, Ser. No. 105,506
Claims priority, application United Kingdom, Jan. 22, 1982, 8201883; Jul. 17, 1982, 8220762
Int. Cl.[4] A61K *31/35*
U.S. Cl. 514—456 10 Claims

1. A method of treatment of an allergic condition which comprises administration by inhalation of an aqueous suspension in a free aqueous phase of liposomes containing sodium cromoglycate said suspension comprising an effective amount of sodium cromoglycate partitioned between said free aqueous phase and said liposomes to a patient suffering from said condition.

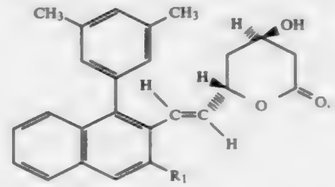
4,804,679

ERYTHRO-(E)-7-(3'-C1-3ALKYL-1'-(3'',5''-DIMETHYLPHENYL)NAPHTH-2'-YL)-3,5-DIHYDROXYHEPT-6-ENOIC ACIDS AND DERIVATIVES THEREOF

Paul L. Anderson, Randolph, N.J., assignor to Sandoz Pharm. Corp., E. Hanover, N.J.

Division of Ser. No. 831,394, Feb. 19, 1986, Pat. No. 4,686,237, which is a continuation of Ser. No. 633,809, Jul. 24, 1984, abandoned. This application Aug. 6, 1987, Ser. No. 82,873
Int. Cl.[4] A61K *31/365;* C07D *309/30*
U.S. Cl. 514—460 5 Claims

1. A compound of the formula



wherein R_1 is C_{1-3}alkyl.

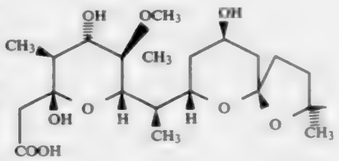
4,804,680

POLYCYCLIC ETHER ANTIBIOTIC

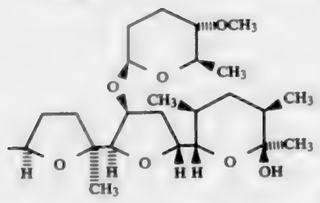
Alexander C. Goudie, Ramsgate, and Nigel D. A. Walshe, Deal, both of United Kingdom, assignors to Pfizer Inc., New York, N.Y.

Filed Jul. 21, 1987, Ser. No. 76,427
Claims priority, application United Kingdom, Aug. 1, 1986, 8618844
Int. Cl.[4] A61K *31/35;* C07D *311/00*
U.S. Cl. 514—460 4 Claims

1. An antibiotic of the formula:



-continued



or a pharmaceutically acceptable cationic salt thereof.

4,804,681

METAL COMPLEXES HAVING AN ANTINEOPLASTIC ACTION AND MEDICAMENTS CONTAINING THESE COMPLEXES

Helmo Keller, Angelweg 28, D-6900 Heidelberg; Bernhard Keppler, Wolfgangstrasse 11, D-6900 Heidelb.-Kirchh; Uwe Krüger, Neuhauser Strasse 11, and Rudolf Linder, Hermann-v.-Vicaristr. 41, both of D-7750 Konstanz, all of Fed. Rep. of Germany

PCT No. PCT/EP81/00155, § 371 Date May 21, 1982, § 102(e) Date May 21, 1982

PCT Filed Oct. 1, 1981, Ser. No. 385,653

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037665; Dec. 19, 1980, 3048109; Apr. 22, 1981, 3115919; Sep. 2, 1981, 3134711

Int. Cl.[4] A61K *31/32, 31/28, 31/74, 31/79*

U.S. Cl. 514—493 **23 Claims**

1. A pharmaceutically-acceptable medicament composition comprising pharmaceutically-acceptable excipient and from 0.1 to 99.5 percent by weight of metal complex of the formula

$$[R^1(CH_2)_mC(O)CR^3C(O)R^2]_{(2+n)}MX_{(2-n)}$$

wherein

M is tin, titanium, zirconium or hafnium;

R^1 is —H or one of the meanings of R^4;

R^2 is methyl or one of the meanings of R^4;

R^3 is —H or chloro;

R^4 is phenyl or substituted phenyl, any substituent of which is a member selected from the group consisting of fluoro, chloro, bromo, nitro, $C_{(1-4)}$-alkyl, $C_{(1-4)}$-alkoxy and trifluoromethyl;

X is —Cl or —Br when X is zirconium or hafnium and is —Cl, —Br or —F when X is tin or titanium;

m is zero or one when R^1 is one of the meanings of R^4 and is one when R^1 is —H; and

n is zero when M is tin or titanium and is zero or one when M is zirconium or hafnium;

the medicament composition being in the form of a tablet, dragee, capsule, suppository, powder, granular material, solution suitable for parenteral administration, emulsion, suspension or syrup.

4,804,682

2-CHLORO-4-((CYANOMETHYL)THIO)PHENYL N-METHYL CARBAMATE FOR TREATING CARCINOMAS

Walter Reifschneider, Walnut Creek, Calif., assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Nov. 14, 1986, Ser. No. 930,838

Int. Cl.[4] A61K *31/275;* **C07C** *121/52*

U.S. Cl. 514—521 **6 Claims**

1. 2-Chloro-4-((cyanomethyl)thio)phenyl N-methyl carbamate.

2. A method for treating patients afflicted with carcinomas which comprises administering thereto an effective therapeutic amount of 2-chloro-4-((cyanomethyl)thio)phenyl N-methyl carbamate.

4,804,683

N-ALKYL NEOTRIDECANAMIDE INSECT REPELLENTS

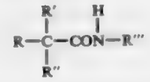
Robert J. Steltenkamp, Somerset, N.J., assignor to Colgate-Palmolive Company, Piscataway, N.J.

Continuation-in-part of Ser. No. 894,985, Aug. 8, 1986. This application Jul. 16, 1987, Ser. No. 71,305

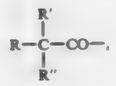
Int. Cl.[4] A01N *37/18*

U.S. Cl. 514—629 **10 Claims**

1. A process for repelling insects from an area, location or item which comprises applying to or near such area, location or item an insect repelling quantity of



(N-alkyl neoalkanamide), wherein the alkyl, R' '', is of 1 to 18 carbon atoms and the Neoalkanoyl moiety



is of 12 to 14 carbon atoms.

4,804,684

SYMMETRICAL O-SUBSTITUTED DIOXIMES OF BENZO-FUSED β-DIKETOCYCLO-ALKYLENES, THE PROCESSES FOR THEIR PREPARATION AND THEIR APPLICATION AS DRUGS

Claude Laruelle, Villeneuve Loubet; Marcel Lepage, Nice, and Bernard Rayssiguier, Cagnes, all of France, assignors to Pharmedics S.A., Carros, France

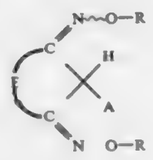
Filed Jan. 20, 1987, Ser. No. 4,576

Claims priority, application France, Jan. 29, 1986, 86 01223

Int. Cl.[4] A61K *31/15*

U.S. Cl. 514—640 **16 Claims**

1. Beta-bis(alkoxyimino)cycloalkene derivative with conjugated double bonds, corresponding to the following general formula:



(I)

in which:

A represents hydrogen, a phenyl group or a phenyl group substituted by:

one or two halogen atoms,

one or two lower alkyl radicals,

one or two alkoxy radicals selected from the group consisting of methoxy, ethoxy, propoxy, isopropoxy, butoxy and tert.-butoxy groups,

one or more substituents selected from the group consisting of nitro, cyano, dimethylamino and diethylamino groups,

several substituents selected form each of the different groups above, or

an o-methylenedioxy or o-ethylenedioxy group;

R represents:

a linear or branched saturated or unsaturated alkyl radical containing from 1 to 16 carbon atoms,

a cycloalkylalkyl or cycloalkyl radical which contains a total of 4 to 16 carbon atoms and whose ring contains from 3 to 8 carbon atoms,

a phenyl or phenylalkyl radical, the alkyl unit containing from 1 to 3 methylene linkages,

a linear or branched alkyl radical containing from 1 to 6 carbon atoms and substituted by $—NR_1R_2$, where R_1 and R_2, which are identical or different, are hydrogen atoms or linear or branched alkyl groups containing from 1 to 4 carbon atoms and optionally substituted by a hydroxyl, methoxy or ethoxy group,

a heterocycle containing from 5 to 7 ring members and 1 or 2 heteroatoms selected from the group consisting of nitrogen, sulfur and oxygen, the said heterocycle being connected by an alkylene linkage containing from 1 to 6 carbon atoms, or

a saturated or unsaturated linear or branched alkyl radical containing from 1 to 16 carbon atoms substituted by:

a group CN or

a group —COOQ, Q being hydrogen, a linear or branched alkyl radical containing from 1 to 6 carbon atoms or a phenylmethyl or phenyl radical, these phenyl rings being optionally substituted by a halogen, a cyano group, a methyl group, a methoxy group or a trifluoromethyl group; and

B is selected from the group consisting of a phenyl group and a biphenyl group, B being conjugated with the imino groups as represented in the following formulas (a) and (b):

(a)



(b)



and their pharmacologically acceptable salts in cases where R contains a salifiable group.

16. Drugs consisting essentially of at least one of the derivatives as claimed in claim 1 and a pharmaceutically acceptable carrier.

4,804,685

BUFFERED GLUTARALDEHYDE STERILIZING AND DISINFECTING COMPOSITIONS

Paul T. Jacobs, Arlington, Tex., assignor to Surgikos, Inc., Arlington, Tex.

Filed Oct. 12, 1984, Ser. No. 660,198

Int. Cl.[4] A01N *35/00*

U.S. Cl. 514—698 **5 Claims**

1. A hard water compatible aqueous sterilizing and disinfecting solution, comprising from 0.05 to 30% by weight of glutaraldehyde and containing a salt of nitrilo tris (ethyl phosphoric acid) as a buffering agent and the ratio of glutaraldehyde to the buffering agent is between 15 to 1 and 1 to 1 and which the salt of nitrilo tris (ethyl phosphoric acid) is the sodium or potassium salt or a mixed sodium and potassium salt.

4,804,686

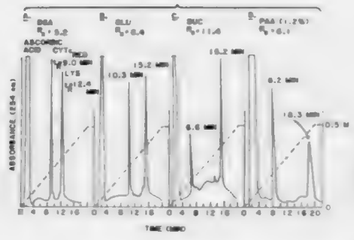
CATION-EXCHANGE SUPPORT MATERIALS AND METHOD

Frederick F. Regnier, West Lafayette, Ind., and William Kopaciewicz, Ipswich, Mass., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed May 13, 1986, Ser. No. 862,749

Int. Cl.[4] C08D *5/20*

U.S. Cl. 521—28 **16 Claims**



1. A process for producing a cation-exchange material comprising the steps of:

(a) providing a support material having a surface with an affinity for an adsorbate;

(b) contacting the surface of said support material with an adsorbate comprising amine groups such that a pellicular coating of said adsorbate is adsorbed to said surface by electrostatic forces; and;

(c) producing a cation-exchange material by reacting amine groups of the adsorbed coating with an amount of a polyacrylic polyanhydride sufficient to crosslink said coating and generate at least one carboxyl group.

4,804,687

FOAMED MICROBEADS AND A PROCESS FOR THEIR PREPARATION

Norbert Weimann; Manfred Dahm; Ulrich Neben, all of Leverkusen, and Walter Schäfer, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 17, 1988, Ser. No. 169,567

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1987, 3710607

Int. Cl.[4] C08J *9/36*

U.S. Cl. 521—53 **4 Claims**

1. A process for the preparation of foamed microbeads in which a NCO-containing polycarbodiimide is dissolved in at least 10 parts by weight of an organic solvent, the solution is emulsified in an aqueous phase, the polymer is crosslinked with a polyamine and the solvent is removed.

4,804,688

OPEN-CELL FOAMED GYPSUM INSULATION

Neiko L. Vassileff, 1440 Midland Ave., Bronxville, N.Y. 10701

Continuation-in-part of Ser. No. 907,000, Sep. 12, 1986, Pat. No. 4,724,242, which is a continuation-in-part of Ser. No. 715,116, Mar. 22, 1985, Pat. No. 4,612,333. This application Sep. 4, 1987, Ser. No. 93,372

The portion of the term of this patent subsequent to Sep. 16, 2003, has been disclaimed.

Int. Cl.[4] C08Q *18/14*

U.S. Cl. 521—64 **21 Claims**

1. A composition for insulation comprising a plaster gypsum aqueous slurry and a polymeric stabilizer having a setting time greater than 30 days.

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4,804,689

PROCESS FOR HOLDING AND FOAMING THERMOPLASTIC POLYPHENYLENE SULPHIDE ARTICLES AND THE RESULTANT PRODUCTS

Paul J. Mayska, and Erhard Trosper, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Jan. 29, 1987, Ser. No. 68,081

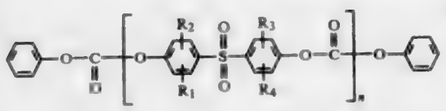
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1986, 3622194

Int. Cl.[4] C08J 9/06; C08G 75/14; B29C 67/22

U.S. Cl. 521—89 **4 Claims**

1. A process for molding a foamed article comprising

(i) mixing at 150°–180° C. a polyphenylene sulphide resin and about 0.1 to 10% of a foaming agent conforming to



(I)

wherein n is 2 to 10 and R_1 to R_4 independently denote hydrogen, chlorine, bromine, C_1–C_{10} alkyl or C_6–H_5, said percent being relative to the weight of said resin and said foaming agent,

(ii) adding about 0.1 to 2%, relative to the weight of said polyphenylene sulphide resin, of at least one basic catalyst,

(iii) heating the resulting mixture at a temperature of 280° to 350° C. for about 3 to 15 minutes to affect a reaction mixture at

(iv) pouring said reaction mixture into a suitable mold for producing a foamed article, said polyphenylene sulphide being characterized in having a weight average molecular weight, measured in N-methyl-caprolactam at 150° C. on the basis of calibration with aromatic polyesters of 5000 to 60,000.

4. The foam article produced by the process of claim 1.

4,804,690

LIGHT CURING COMPOSITIONS FOR DENTAL RESTORATION

Takao Kubota, Kamakura; Tetsuro Sakuma, and Ryoji Nakazato, both of Tokorozawa, all of Japan, assignors to G-C Dental Industrial Corporation, Tokyo, Japan

Filed Sep. 11, 1986, Ser. No. 906,283

Claims priority, application Japan, Sep. 11, 1985, 60-199385

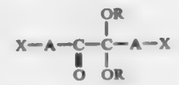
Int. Cl.[4] C08F 2/50, 4/40, 20/34

U.S. Cl. 522—14 **5 Claims**

1. A light curing paste composition for dental restoration consisting essentially of the following five constitutional components:

(a) a polymerizable compound containing at least one ethylenically unsaturated double-bond,

(b) at least one photo-polymerization initiator selected from ketal base compounds expressed in terms of the following general formula:



(I)

wherein

X is H, Cl, an alkyl group having 1 to 5 carbon atoms or an alkoxy group having 1 to 5 carbon atoms,

A is a six-membered aromatic group, and

R is an alkyl group having 1 to 10 carbon atoms, an aralkyl group having 7 to 9 carbon atoms or a $-(C_nH_{2n}O)_mR'$ in which n is an integer of 2 to 5, m is an integer of 1 to 5, and R' is an alkyl group having 1 to 5 carbon atoms, in an amount of 0.01 to 5 weight % relative to polymerizable compound (a),

(c) at least one photo-polymerization initiator selected from anthraquinone, 1-chloro-anthraquinone, 2-chloro-anthraquinone or 1,2-benz-anthraquinone, in an amount of 0.001 to 0.2 weight % relative to polymerizable compound (a),

(d) a reducing agent in an amount of 0.01 to 5 weight % relative to polymerizable compound (a), and

(e) a filler.

4,804,691

METHOD FOR MAKING A BIODEGRADABLE ADHESIVE FOR SOFT LIVING TISSUE

James P. English, Birmingham, Ala.; Gerald W. McNeely, Spartanburg, S.C., and Richard L. Dunn, Birmingham, Ala., assignors to Richards Medical Company, Memphis, Tenn.

Filed Aug. 28, 1987, Ser. No. 90,861

Int. Cl.[4] C08G 18/30

U.S. Cl. 523—118 **21 Claims**

1. A method of producing an adhesive for use in joining soft living tissues comprising the steps of:

preparing a hydroxyl-terminated polyester by reacting a biodegradable monomer with a polyhydroxy polymerization initiator in the presence of a catalyst, wherein said monomer is selected from the group consisting of lactide, glycolide, ϵ-caprolactone and any combination thereof; and

preparing a diisocyanate-terminated prepolymer adhesive by reacting said hydroxyl-terminated polyester with excess aromatic diisocyanate.

4,804,692

GAMMA-RADIATION RESISTANT POLYCARBONATE COMPOSITIONS

Charles E. Lundy; Wlafried G. Paul, and Sivaram Krishnan, all of Pittsburgh, Pa., assignors to Mobay Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 118,663, Nov. 9, 1987, abandoned. This application Apr. 28, 1988, Ser. No. 187,629

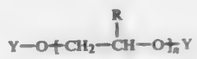
Int. Cl.[4] C08K 5/54

U.S. Cl. 523—137 **4 Claims**

1. A polycarbonate molding composition comprising

(i) an aromatic polycarbonate resin and

(ii) a stabilizing agent selected from the group consisting of



I

and



II

wherein R is a hydrogen or a halogen atom or a C_1–C_{10} alkyl, C_6–C_{10} aryl, C_6–C_{18} arylalkyl or a C_5–C_{10} cycloalkyl radical, Y is a radical conforming to



where R, R' and R'' independently one of the others are selected from the group consisting of C_1–C_{10} alkyl radicals and C_6–C_{12} aryl radicals, m is 1 or 3 to 6 and n is about 20 to 70, said (ii) being present in sufficient amount to enhance the resistance of said resin to the deterioration of its optical properties upon exposure to gamma-radiation.

4,804,693

CRACK RESISTANT COATING FOR MASONRY STRUCTURES

John D. Harvey, Versailles, and Andre V. Gindre, Gif S/Yvette, both of France, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 771,746, Sep. 3, 1985, Pat. No. 4,634,724, which is a division of Ser. No. 645,909, Aug. 31, 1984, Pat. No. 4,562,109. This application Dec. 22, 1986, Ser. No. 944,082

The portion of the term of this patent subsequent to Jan. 6, 2004, has been disclaimed.

Int. Cl.[4] C08K 3/40, 7/20

U.S. Cl. 523—219 **12 Claims**

1. A composition for application to masonry structures as a crack absorbing layer comprising a plurality of solid or cellular beads which are essentially spherical in structure and which have an average diameter ranging from 0.5 mm to about 6 mm, which are homogeneously mixed throughout a resin binder solution which is comprised of a resin binder and a suitable solvent wherein said resin binder solution has a viscosity of from about 0.5 to about 10 poise at 10,000 seconds^{-1} and a Brookfield viscosity of at least 600 poise at 10 rpm.

4,804,694

PROCESS FOR PREPARATION OF HIGH SOLIDS CONCENTRATED LATEX

Carlton G. Force, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Nov. 16, 1987, Ser. No. 121,402

Int. Cl.[4] C08J 3/00

U.S. Cl. 523—335 **10 Claims**

1. In a process for increasing the particle size of synthetic rubber particles in a synthetic rubber latex comprising mixing an inorganic potassium salt with a synthetic rubber latex, the improvement of agglomerating the latex solids to a degree which will permit a solids concentration of greater than about 50% without coagulation of the agglomerated solids by employing an amount of the inorganic potassium salt in which the potassium ion is in a concentration of greater than about 0.5 normal in the latex and employing a synthetic rubber latex having a primary or secondary carboxyl group present in the latex.

4,804,695

METHOD AND COMPOSITION FOR PRODUCING AND INSTALLING CELLULOSIC INSTALLATION

Paul H. Horton, Hollis, Okla., assignor to Western Fibers, Inc., Hollis, Okla.

Filed Sep. 3, 1987, Ser. No. 92,631

Int. Cl.[4] C08L 1/08

U.S. Cl. 524—27 **41 Claims**

1. A method for producing spray cellulosic insulation material, comprising:

moistening processed cellulosic fibers with an expansion agent whereby the fibers become at least partially re-expanded.

4,804,696

FLAME RETARDANT ASPHALT COMPOSITION

Randal J. Jeltz, Algonquin, Ill., and Donald R. Kirk, Pittsburg, Kans., assignors to Tamko Asphalt Products, Inc., Joplin, Mo.

Filed Mar. 25, 1988, Ser. No. 173,437

Int. Cl.[4] C08G 77/04; C08L 95/00

U.S. Cl. 524—68 **2 Claims**

1. A flame retardant composition comprising:

(a) about 45–65% wt asphalt;

(b) about 1–20% wt styrene-butadiene-styrene;

(c) about 15–40% wt flame retardant

(i) about 60–90% wt monoammonium phosphate,

(ii) about 5–30% wt ammonium sulfate;

(iii) about 1–5% wt methyl hydrogen polysiloxane.

4,804,697

THERMOPLASTIC RESIN COMPOSITION HAVING AN IMPROVED CHEMICAL RESISTANCE

Teruo Saito, Kasutsu; Kunioki Asai, Tondabayashi, and Yasuro Suzuki, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 932,206, Nov. 18, 1986. This application Mar. 10, 1988, Ser. No. 166,455

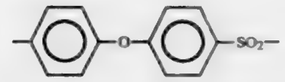
Claims priority, application Japan, Nov. 29, 1985, 60-270431

Int. Cl.[4] C08K 7/14, 7/04, 3/34, 3/20

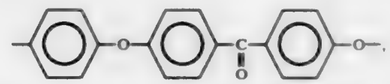
U.S. Cl. 524—80 **8 Claims**

1. A thermoplastic resin composition comprising

(A) 100 parts by weight of a resin blend comprising 60–5% by weight of an aromatic polysulfone having the following repeating unit;



and 40–95% by weight of a polyetherketone having the following repeating unit;



the melt viscosity of said polyetherketone at 400° C. satisfying the following inequality;

$$200 \leqq y \leqq 80x - 700,$$

wherein x represents the percentage by weight of said polyetherketone relative to the total amount of said polyetherketone and aromatic polysulfone and the unit of y is poise, and

(B) 10–200 parts by weight of one or more fillers selected from the group consisting of inorganic fibers having an average length of 5 μm or more, inorganic needle-shaped materials having an average length of 5 μm or more and inorganic tabular, lump, or globular substances having an average diameter of 5 μm or more.

4,804,698

FLAME RETARDANT POLYPROPYLENE BASED FORMULATIONS

Robert A. Schleifstein, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 4, 1988, Ser. No. 177,068

Int. Cl.[4] C08K 5/34, 5/06, 3/16

U.S. Cl. 524—89 **9 Claims**

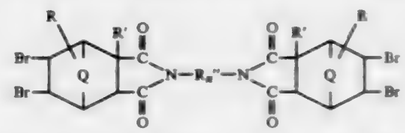
1. A flame retardant polypropylene based formulation comprising:

(a) polypropylene; and

(b) a flame retardant amount of,

(i) decabromodiphenyl oxide, and

(ii) a halogenated bisimide represented by the formula:



wherein Q is methylene or oxygen, R is hydrogen or an alkyl group containing 1–5 carbons, R' is hydrogen or methyl, n = 1 or 0, and R'' is an organic group containing 1–15 carbons.

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4,804,699

MONOMERIC AND OLIGOMERIC GLUTARATE-BASED LIGHT STABILIZERS FOR PLASTICS

Richard V. Nelson, Wilmington, Del., and John F. Stephen, West Chester, Pa., assignors to ICI Americas Inc., Wilmington, Del.

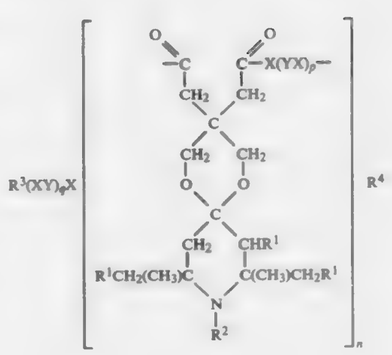
Filed May 15, 1987, Ser. No. 50,077

The portion of the term of this patent subsequent to Aug. 25, 2004, has been disclaimed.

Int. Cl.[4] C07P *401/12*; C07D *401/14*; C08K *5/34*

U.S. Cl. 524—98 **12 Claims**

1. A compound of the formula I:



wherein n has a value of 1 to 15, when n is 1, p and q is 1 or 0: when n is greater than 1, p is 1 while q may be 1 or 0:

R^1 is selected from hydrogen and an alkyl group of 1 to 5 carbon atoms:

R^2 is selected from hydrogen, oxyl, hydroxyl, a straight or branched chain methylene-linked alkyl group from 1 to 18 carbon atoms, an alkanoyl group having 2 to 18 carbon atoms, an alkenyl group of 3 to 4 carbon atoms, an alkenoyl group having 3 to 6 carbon atoms, an alkynyl group having 3 to 6 carbon atoms, a cyanomethyl group, a 2,3-epoxy propyl group, an aralkyl group of 7 to 15 carbon atoms, a group $—CH_2CH(OR^5)—R^6$, and a group of the formula $—(CH_2)_mC(O)—Z$ where m is either 1 or 0 and Z is a group selected from $—OR^7$, $—N(R^8)(R^9)$ and $—A—C(O)—R^{10}$ and when m is 0, Z can be a group $—C(O)—OR''$;

R^3 and R^4 are selected from an llkyl group of 1 to 18 carbon atoms, hydrogen and a group of formula II;

R^5 is selected from hydrogen, an aliphatic group of 1 to 18 carbon atoms such as those of R^2, an araliphatic group such as benzyl and phenethyl, and an aliphatic acyl group of 2 to 18 carbon atoms such as those of R^2;

R^6 is selected from hydrogen, an alkyl group of 1 to 16 carbon atoms and penyl;

R^7 is selected from an alkyl group of 1 to 18 carbon atoms, a cycloalkyl group of 5 to 12 carbon atoms, allyl, benzyl, phenyl, and a group of formula II wherein R^1 and R^2 are as described above;

R^8 and R^9, same or different, are selected from hydrogen, an alkyl group having 1 to 8 carbon atoms, a cycloalkyl group having 5 to 12 carbon atoms such as those of R^7, an aryl group having 6 to 10 carbon atoms, and an aralkyl group having 7 to 15 carbon atoms, R^8 and R^9 may also, together with the nitrogen atom to which they ar attached, form a 5 to 7-membered ring:

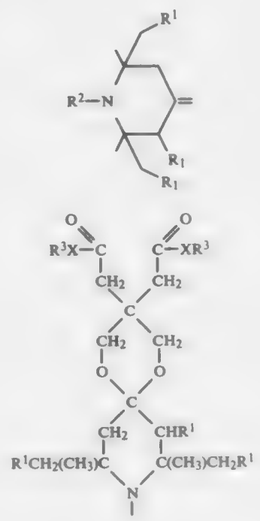
A is selected from an alkylene group of.1 to 12 carbon atoms, phenylene and a group $—NH—R^{12}—NH—$ where R^{12} is selected from an alkylene group of 2 to 18 carbon atoms, a cycloalkylene group of 5 to 18 carbon atoms, an aralkylene group having 7 to 18 carbon atoms, an alkylene group having 6 to 18 carbon atoms;

R^{10} is a group of the formula III;

R^{11} is selected from an alkyl group of 1to 18 carbon atoms, phenyl and benzyl;

X is either —O— or $—NR^{13}—$ where R^{13} is selected from hydrogen or an alkyl group of 1 to 8 carbon atoms; and

Y is selected from a divalent alkylene group having 2 to 20 carbon atoms, either straight-chained or branched, wherein the alkylene may be interrupted by —O—, —S— or $—NR^{13}—$, a cycloalkylene group of 6–12 carbon atoms, a dialkanylcyclohexane, a phenylene group, an aralkylene group having 8 to 19 carbon atoms, and an ethoxy substituted aralkylene group, wherein said formulas are:



4,804,700

RESINOUS COMPOSITIONS

Deborah L. Allen, Pittsfield, Mass., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Jul. 11, 1985, Ser. No. 756,281

Int. Cl.[4] C08L *67/02, 71/04*

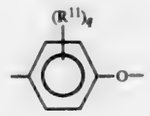
U.S. Cl. 524—166 **14 Claims**

1. A resinous composition comprising, in physical admixture:

(i) at least one copolyester-carbonate resin containing from about 25 to about 90 mole percent ester bonds;

(ii) at least one polyarylate resin derived from at least one dihydric phenol and at least one aromatic dicarboxylic acid; and

(iii) at least one polyphenylene ether resin, said polyphenylene ether containing at least one recurring structural unit represented by the formula



wherein R^{11} is independently selected from monovalent substituents, and q is a positive integer having a value of from 0 to 4 inclusive.

4,804,701

COMPOSITION ON THE BASIS OF FLUORINATED POLYMERS IN AQUEOUS DISPERSION, CONTAINING ALKOXYSILANES, FOR COATING METAL SURFACES

Alberto Fonte, Pavia; Angelo Testorio, Novara, and Daria Lenti, Valenza, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Sep. 15, 1987, Ser. No. 96,449

Claims priority, application Italy, Sep. 16, 1986, 21708 A/86

Int. Cl.[4] C08K *5/24*; C09K *3/00*; C08L *27/18*

U.S. Cl. 524—262 **5 Claims**

1. Composition suitable for forming a highly adherent coating layer on a metal surface, comprising an aqueous dispersion at a pH within the range of from 8 to 10, of a fluorinated polymer, containing an alkoxysilane soluble in the aqueous phase at pH 8–10, magnesium and/or aluminum in the form of cations complexed with a hydroxy- or amino-carboxy acid, the amount of alkoxysilane being within the range of from 0.05 to 0.4 parts by weight per part of fluorinated polymer, and the amount of metal cation being within the range of from 0.001 to 0.005 parts by weight per part of fluorinated polymer.

4,804,702

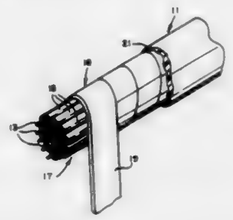
LOW SMOKE AND REDUCED FLAME FLUORINATED POLYMER COMPOSITIONS AND CABLE CONSTRUCTIONS

Edward J. Bartoszek, Jeffersonville, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 2, 1986, Ser. No. 847,351

Int. Cl.[4] C08K *3/22, 3/34*

U.S. Cl. 524—432 **11 Claims**



1. A low smoke and flame retardant composition comprising a vinylidene fluoride polymer having dispersed therein from about 0.2 to about 1.2 percent by weight of said composition of a calcined or hydrated aluminum silicate consisting essentially of $Al_2O_3 \cdot 2SiO_2 \cdot nH_2O$ where n=0 to 2.

4,804,703

MINERAL REINFORCED NYLON COMPOSITIONS FOR BLOWMOLDING

Pallatheri M. Subramanian, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 73,222, Jul. 12, 1987, abandoned. This application Sep. 21, 1987, Ser. No. 98,940

Int. Cl.[4] C08L *33/02, 77/00*

U.S. Cl. 524—444 **4 Claims**

1. A composition consisting essentially of semicrystalline polyamide of number average molecular weight between about 10,000 and 25,000; 15–50 weight percent mineral filler reinforcing agent; 1–25 weight percent of an ionic copolymer of at least one alpha-olefin and at least one alpha, beta-unsaturated carboxylic acid, in which the acid moiety is partially neutralized with metal ions; and 0.1 to 3 weight percent fibrillar non-melt-fabricable fluoropolymer resin, wherein the percents are by weight based on the total weight of the above-listed ingredients.

4,804,704

CROSSLINKED ORGANIC RESINS CONTAINING SiO_2 AND SULPHONIC ACID GROUPS

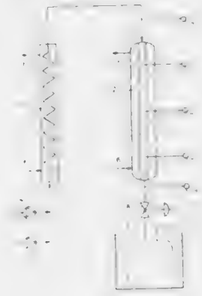
Bernhard Schleppinghoff, Dormagen; Mathias Lax, and Horst Reinhardt, both of Bergheim, all of Fed. Rep. of Germany, assignors to EC Erdölchemie GmbH, Cologne, Fed. Rep. of Germany

Filed Mar. 10, 1987, Ser. No. 24,209

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1986, 3610705

Int. Cl.[4] C08K *3/34, 3/36*

U.S. Cl. 524—549 **9 Claims**



1. A crosslinked organic resin, containing sulphonic acid groups, wherein said resin contains 0.1–10% by weight of SiO_2, relative to the total weight of the SiO_2-containing resin and wherein said resin is prepared by steeping the crosslinked organic resin, in the alkali form, in aqueous alkali metal silicate solution or aqueous alkylammonium silicate solution, and subsequently precipitating the SiO_2 using mineral acid with simultaneous conversion of the resin in to the H^+ form and wherein said resin is based on a sulphonated phenolformaldehyde resin, sulphonated coumarone-indene condensation product or a sulphonated styrene-divinylbenzene resin.

4,804,705

GEL COMPOSITION

Franz Pum, 23417 Covello St., Canoga Park, Calif. 91304, and Robert E. Saute, 10236 Mossy Rock Circle, Los Angeles, Calif. 90024

Continuation-in-part of Ser. No. 869,345, Jun. 2, 1986, abandoned. This application Aug. 28, 1987, Ser. No. 90,107

Int. Cl.[4] C08F *299/00*; C08G *81/02*

U.S. Cl. 525—54.21 **3 Claims**

1. A gel formed with mild agitation by the reaction product

of an aqueous solution consisting of 0.5 to 10.0 weight percent quaternized hydroxyethyl cellulose and 0.1 to 5.0 weight percent of an aqueous solution consisting of polyacrylamidomethylpropane sulfonic acid and sodium polystyrene sulfonate which are combined in a weight ratio ranging from 0.1/1.0 to 2.5/1.0 polyacrylamidomethylpropane sulfonic acid to sodium polystyrene sulfonate.

4,804,706

PROCESS FOR THE PREPARATION OF MALEIMIDE COPOLYMERS AND THERMOPLASTIC RESIN COMPOSITION USING THE SAME

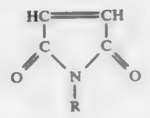
Kazuo Kishida, Hiroshima; Yutaka Toyooka, Ohtake, and Atsushi Kimura, Ohtake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Division of Ser. No. 928,279, filed as PCT JP86/00252 on May 16, 1986, published as WO86/06732 on Nov. 20, 1986, Pat. No. 4,757,109.
This application Mar. 2, 1987, Ser. No. 25,628
Int. Cl.[4] C08L *77/00, 51/00*
U.S. Cl. 525—66 **22 Claims**

1. A resin composition having excellent thermal resistance, resistance to thermal decomposition, and impact resistance, said resin composition being formed by blending

(I) maleimide copolymer prepared by:

(a) emulsion polymerizing 50 to 80% by weight of an aromatic vinyl monomer, 10 to 30% by weight of a vinyl cyanide monomer, and 5 to 40% by weight of a maleimide monomer of the formula (A)



(a)

where R is a hydrogen atom, an alkyl group of 1 to 4 carbon atoms, a cyclohexyl group, an aryl group or a substituted aryl group, provided that the total amount of said monomers is 100% by weight, said process being carried out by changing not less than 30% by weight of the total amount of said aromatic vinyl monomer into the polymerization system before initiation of said polymerization;

(b) adding a mixture composed of 70 to 95% by weight of the total of said vinyl cyanide monomer, the total amount of said maleimide monomer of the formula (A), and the remainder, if any, of said aromatic vinyl monomer to the polymerization system after initiation of said polymerization; and then

(c) adding the remaining 30 to 5% by weight of said vinyl cyanide monomer to the polymerization system; and maintaining the pH of the aqueous phase of the polymerization system in the range of 3 to 9 at the initiation of said polymerization; and using a redox catalyst containing an oil-soluble organic peroxide, with

(II) a rubber-reinforced resin obtained by grafting one or more monomers selected from the group consisting of a vinyl cyanide monomer, an aromatic vinyl monomer and an acrylic monomer onto an elastomer having a glass transition temperature of 0° C. or below, in a weight ratio of (I) to (II) ranging from about 5/95 to 95/5; and blending up to 100 parts of the resulting thermoplastic resin composition with up to 300 parts by weight of a thermoplastic resin that is hard at room temperature.

4,804,707

IMPACT RESISTANT RESIN COMPOSITION

Takashi Okamoto; Kenji Yano; Takashi Maruhasi, and Yasumasa Fukushima, all of Uji, Japan, assignors to Unitika Ltd., Amagasaki-City, Japan

Filed Apr. 24, 1987, Ser. No. 42,275
Claims priority, application Japan, May 24, 1986, 61-119585; May 30, 1986, 61-127063
Int. Cl.[4] C08L *67/02, 77/02, 77/06*
U.S. Cl. 525—66 **9 Claims**

1. A resin composition which comprises a resin blend comprising from 10 to 70% by weight of a polyarylate and from 30 to 90% by weight of a polyamide, and (A) an epoxy group-containing olefin copolymer obtained by copolymerizing at least one unsaturated glycidyl monomer with at least one olefin unsaturated monomer and (B) an acid anhydride-containing olefin copolymer obtained by copolymerizing a polyolefin or an olefin copolymer with an unsaturated dicarboxylic anhydride, incorporated in a total amount of (A) and (B) of from 3 to 30% by weight to said resin blend,

wherein the equivalent ratio of the epoxy group contained in the epoxy group-containing olefin copolymer to the acid anhydride contained in the acid anhydride-containing olefin copolymer is within a range of from 1:9 to 9:1,

and wherein the amount of unsaturated glycidyl monomer in the epoxy group-containing olefin copolymer is from 0.1 to 50 mol %, and the amount of unsaturated dicarboxylic acid anhydride in the acid anhydride-containing olefin copolymer is 0.1 to 50 mol %.

4,804,708

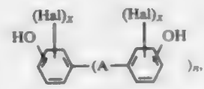
THERMOPLASTIC MOLDING COMPOUNDS BASED ON SPECIAL GRAFT POLYMERS

Dieter Wittmann, Krefeld; Christian Lindner, Cologne, both of Fed. Rep. of Germany; Hans-Jürgen Kress, Pittsburgh, Pa.; Horst Peters, Leverkusen, and Jochen Schoeps, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

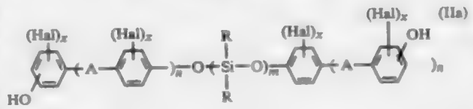
Filed Nov. 27, 1987, Ser. No. 125,886
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1986, 3641990
Int. Cl.[4] C08L *69/00*
U.S. Cl. 525—67 **12 Claims**

1. Thermoplastic molding compounds containing

A. 5 to 98 parts by weight of one or more thermoplastic polycarbonates based on diphenols of the formula (II) and (IIa)



(II)



(IIa)

wherein

A is a single bond, alkylene having 1 to 5 carbon atoms, alkylidene having 2 to 5 carbon atoms, cycloalkildene, S or SO_2,

Hal is chloro or bromo,

X is 0, 1 or 2

m is an integer from 5 to 100,

n is 0 or 1, and

each R is identical or different straight-chain alkyl having 1 to 20 carbon atoms, branched alkyl having 3 to 20 alkyl carbon atoms or aryl having 6 to 20 carbon atoms,

B. from 2 to 70 parts by weight of one or more graft polymers of

B.1 from 10 to 95 parts by weight of a cross-linked, particulate diene rubber or alkyl acrylate rubber graft stock having an average particle diameter (d_{50}-value) of from 0.05 tp 5 μm and a glass transition temperature ≦10° C. and

B.2 from 90 to 5 parts by weight of a graft scion of vinyl monomer polymer, the graft scion having been obtained by graft polymerization of a monomer mixture of

B.2.1 from 50 to 95 parts by weight of styrene, α-methylstyrene, nuclear-substituted styrene, methyl methacrylate or mixtures thereof and

B.2.2 from 50 to 5 parts by weight of (meth) acrylo-nitrile, methyl methacrylate, maleic acid anhydride, N-substituted maleimide or mixtures thereof and, based on 100 parts by weight of the sum of B.2.1 and B.2.2,

B.2.3 from 0 to 40 parts by weight of a primary or secondary aliphatic acrylic acid ester having from 2 to 10 carbon atoms in the alcohol moiety of the molecule, and

B.2.4 from 0 to 10 parts by weight of a tert-butyl ester of acrylic acid or methacrylic acid, in the presence of the graft stock B.1, and

C. from 0 to 80 parts by weight of a thermoplastic copolymer of

C.1 from 50 to 95 parts by weight of styrene, α-methylstyrene, nuclear-substituted styrene, methyl methacrylate or mixtures thereof and

C.2 from 50 to 5 parts by weight of (meth)acrylonitrile, methyl methacrylate, maleic acid anhydride, N-substituted maleimide or mixtures thereof, the sum of parts by weight of A.+B. and optionally C. being in all cases 100 parts by weight, characterized in that B.2 contains at least one of the components B.2.3 or B.2.4.

4,804,709

FLUORINE-CONTAINING COATING AGENTS

Toshio Takago; Yasushi Yamamoto, and Koichi Yamaguchi, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 945,862, Dec. 23, 1986, abandoned. This application Mar. 1, 1988, Ser. No. 162,682
Claims priority, application Japan, Dec. 24, 1985, 60-296444
Int. Cl.[4] C08F *8/00*
U.S. Cl. 525—102 **9 Claims**

1. A fluorine-containing coating agent which can be used to form a fluorocarbon resin coating film on a substrate comprising a polymer which has a fluorine-containing polymer as a main chain and an alkoxysilyl group in the side chain and which is obtained by the reaction of a hydroxyl group of a fluorine-containing polymer having the hydroxyl group in the side chain with an isocyanato group of an alkoxysilane having the isocyanato group, wherein said fluorine-containing polymer having a hydroxyl group in the side chain is a copolymer of a fluoro-olefin and a hydroxyalkyl vinyl ether having a straight or branched alkyl group having 2 to 5 carbon atoms, and said alkoxysilane having an isocyanato group is a compound represented by the following formula:

$$OCN(CH_2)_3SiX_nR_{(3-n)} \quad (I)$$

wherein

R is hydrogen or a monovalent hydrocarbon group having 1 to 10 carbon atoms,

X is an alkoxyl group having 1 to 5 carbon atoms, and

n is an integer of 1 to 3.

4,804,710

EPOXY RESIN COMPOSITION

Yoshihiro Nakata, Takatsuki, and Tadao Kunishige, Kasatsu, both of Japan, assignors to Sumitar Glkon Kabushiki Kaisha, Osaka, Japan

Filed Dec. 30, 1987, Ser. No. 139,810
Int. Cl.[4] C08L *63/00*
U.S. Cl. 525—111 **4 Claims**

1. A two part epoxy resin composition which comprises

(1) a specific modified epoxy resin component comprising

(a) 100 parts by weight of an epoxy resin,

(b) 20 to 200 parts by weight of an epoxy resin modified with a butadiene-acrylonitrile copolymer rubber, and

(c) 20 to 200 parts by weight of a urethane-modified epoxy resin obtained by reacting an isocyanate-terminated urethane prepolymer obtained from a polytetramethylene ether glycol and a diisocyanate with an epoxy resin containing at least one hydroxy group in the molecule, and

(2) a curing agent comprising a polyamide-amine.

4,804,711

MELT BLENDING OF A CARBOXY TERMINATED POLYSTYRENE OLIGOMER WITH AN AROMATIC POLYESTER

Toshio Ishihara, Oyadai, Japan, assignor to General Electric Company, Mt. Vernon, Ind.

Filed Oct. 26, 1987, Ser. No. 113,050
Int. Cl.[4] C08L *69/00*
U.S. Cl. 525—146 **29 Claims**

1. A composition prepared from a process which comprises mixing a melt of an amorphous aromatic polyester with a melt of a carboxy terminated polystyrene oligomer, said oligomer having a number average molecular weight of from about 500 to 10,000.

4,804,712

POLYPHENYLENE ETHER/POLYSTYRENE BLENDS

Thomas D. Traugott; Eugene R. Moore, and Michael T. Malanga, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 23, 1987, Ser. No. 124,540
Int. Cl.[4] C08F *8/00, 71/04*
U.S. Cl. 525—152 **16 Claims**

1. A molding composition comprising:

from 5 to 95% by weight of at least one arylene ether polymeric material;

from 95 to 5% by weight of at least one anionically polymerized vinylidene aromatic compound, said polymerized vinylidene aromatic compound having a weight average molecular weight of at least 5,000 and a molecular weight distribution not greater than 1.8;

from 5 to 45% by weight of at least one elastomeric toughening agent, the amount of said toughening agent being based on the combined weight of said arylene ether polymeric material, said polymerized vinylidene aromatic compound and said elastomeric toughening agent.

4,804,713

PRESSURE SENSITIVE ADHESIVE RESIN COMPOSITION

Sakuro Akiyama, Koganei, Japan, assignor to Central Glass Company, Limited, Ube City, Japan

Filed Oct. 29, 1987, Ser. No. 114,042
Claims priority, application Japan, Nov. 5, 1986, 61-261885
Int. Cl.[4] C08L 27/6
U.S. Cl. 525—185 **4 Claims**

1. A resin composition useful as a pressure sensitive adhesive material, comprising a blend of 2–50 wt % of a first copolymer of 60–97 mol % of vinylidene fluoride and 40–3 mol % of hexafluoroacetone and the balance of a second copolymer of 50–95 mol % of 2-ethylhexyl acrylate, 5–40 mol % of vinyl

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acetate and 0–40 mol % of at least one additional vinylic monomer.

4,804,714

POLYOLEFIN BLENDS

Anthony R. Ofivo, Neshanic Station, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 20, 1987, Ser. No. 123,360
Int. Cl.[4] C08L *23/08, 23/20, 23/16*
U.S. Cl. 525—240 **1 Claim**

1. A polyolefin blend comprising:

(a) a linear low density copolymer of ethylene and at least one alpha-olefin having 3 to 6 carbon atoms produced in the presence of an activated supported catalyst containing chromium and titanium, said copolymer having a density in the range of about 0.916 to about 0.922 gram per cubic centimeter and a melt index in the range of about 0.30 to about 1.2 grams per 10 minutes and being present in an amount of about 68 to about 72 percent by weight; and

(b) a very low density copolymer of ethylene and at least one alpha-olefin have 3 to 8 carbon atoms produced in the presence of an activated supported catalyst containing magnesium, titanium, halogen, and an electron donor, said copolymer having a density in the range of about 0.890 to about 0.910 gram per cubic centimeter and a melt index in the range of about 0.30 to about 8.0 grams per 10 minutes and being present in an amount of about 28 to about 32 percent by weight,

the percent by weight being based on the total weight of components (a) and (b).

4,804,715

CYANOACETIC ESTER SYSTEM

David P. Leonard, Overland Park, Kans.; James H. Truesdale, Kansas City, Mo., and Joseph H. Scherrer, Shawnee Mission, Kans., assignors to Cook Paint and Varnish Company, Kansas City, Mo.

Continuation-in-part of Ser. No. 900,773, Aug. 26, 1986, abandoned, which is a continuation-in-part of Ser. No. 810,568, Dec. 19, 1985, abandoned. This application Jan. 9, 1987, Ser. No. 59,939
Int. Cl.[4] C08F *4/00*
U.S. Cl. 525—245 **16 Claims**

1. A process for preparing a crosslinked polymer comprising reacting a polycyanoacetic functional polymer with a poly α,β-unsaturated ester in the presence of a catalytically effective amount of an organometallic catalyst, said organometallic catalyst being a carboxylate selected from the group consisting of (1) the 2-ethyl hexanoates or octoates of lead, cobalt, manganese, zinc, calcium, iron, zirconium, lanthanum, chromium, potassium or vanadium; (2) the naphthenates of lead, cobalt, manganese, zinc, calcium, iron, potassium or cerium; (3) the tallates of lead, cobalt, manganese, calcium or iron; (4) the neodecanoates of calcium, cobalt, manganese, lead, zinc, zirconium or iron; (5) the isononanoates of calcium, cobalt, lead, manganese, zinc, zirconium or iron; and (6) the heptanoates of calcium, cobalt, lead, manganese, zinc, zirconium or iron; and mixture thereof.

4,804,716

TOUGHENED POLYOXYMETHYLENE COMPOSITIONS

Edmund A. Flexman, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 813,979, Dec. 27, 1985, abandoned, which is a continuation of Ser. No. 570,037, Jan. 16, 1984, abandoned, which is a continuation-in-part of Ser. No. 464,411, Feb. 7, 1983, abandoned. This application Jul. 21, 1987, Ser. No. 76,981
Int. Cl.[4] C08L *59/00*
U.S. Cl. 525—399 **51 Claims**

1. A toughened thermoplastic polyoxymethylene composition consisting essentially of

(a) greater than 15 weight percent and not more than 40 weight percent of at least one thermoplastic polyurethane, which polyurethane has a soft segment glass transition temperature of lower than −15° C., and

(b) at least 60 weight percent and less than 85 weight percent of at least one polyoxymethylene polymer, which polyoxymethylene polymer has a number average molecular weight of from 20,000 to 100,000,

the above-stated percentages being based on the total amount of components (a) and (b) only, the thermoplastic polyurethane being dispersed throughout the polyoxymethylene polymer as a separate phase having an average cross-sectional size in the minimum direction of 0.01–0.9 microns, and the composition having an Izod value of greater than 375 J/m.

4,804,717

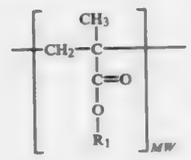
POLYMERIC HINDERED AMINE LIGHT STABILIZERS

Chester E. Ramey, Chagrin Falls; Ronald E. Thompson, Parma, and Charles J. Rostek, Jr., Chagrin Falls, all of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

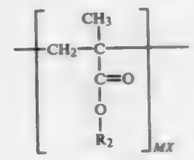
Filed May 28, 1987, Ser. No. 55,180
Int. Cl.[4] C08L *33/12;* **C08F** *8/00, 8/14*
U.S. Cl. 525—375 **5 Claims**

1. A piperidine modified acrylate-methacrylate copolymer consisting of monomer units (I), (II), (III) and IV corresponding to the formula:

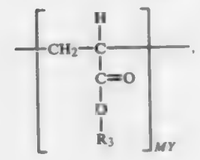
(I)



(II)



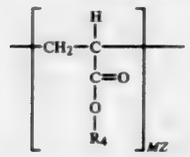
(III)



and

-continued

(IV)



wherein R_1 and R_4 may be the same or different, and each is a lower alkyl radical; R_2 and R_3 may be the same or different, and each is a substituted piperidine radical; M is equal to the total number of monomer units in the polymer chain, and is of a magnitude sufficient to provide a polymer having a molecular weight of at least 500; W is equal to at least 0.5, X is equal to at least 0.1 but not greater than 0.2, Y is equal to at least 0.1, Z is equal to at least 0.05 but not greater than 0.2, and W plus X plus Y plus Z is equal to 1.

4,804,718

CHIP RESISTANT COATING COMPOSITION CONTAINING EPOXY-POLYESTER GRAFT COPOLYMERS

Andrew H. Dervan, Grosse Pointe Farms, and Panagiotis I. Kordomenos, Mt. Clemens, both of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 877,639, Jun. 23, 1986, Pat. No. 4,714,743. This application Sep. 3, 1987, Ser. No. 93,174
Int. Cl.[4] C08G *59/16, 63/08*
U.S. Cl. 525—418 **15 Claims**

1. An organic solvent based, thermosetting coating composition comprising:

(I) hydroxy functional epoxy-polyester graft copolymer having a member average molecular weight ($\bar{M}_n$) of between about 2,000 and about 20,000, said copolymer being the product of polymerization of lactone monomers in the presence of hydroxy functional epoxy ester resin precursor, having reactive hydroxl groups, said lactone monomers are polymerized and reacted with hydroxyl groups of the precursor to form pendent hydroxyl terminated polymer chains, wherein the polymerization reaction mixture comprises between about 10 and about 80 weight percent said hydroxy functional epoxy ester resin precursor and between about 90 and about 20 weight percent lactone monomers, said precursor being the reaction product of:

(i) modified diepoxide being the product of polymerization of lactone monomers in the presence of diepoxide which has been chain extended with diphenol, wherein said lactone monomers, reacted to form said diepoxide, and said diphenol are employed in a molar ratio of at least about 2:1, respectively; and

(ii) hydroxy functional secondary amine in chain termination reaction in about 1:1 equivalent ratio; and

II. Polyfunctional, hydroxy-reactive crosslinking agent.

4,804,719

WATER-DISSIPATABLE POLYESTER AND POLYESTER-AMIDES CONTAINING COPOLYMERIZED COLORANTS

Max A. Weaver, and L. Jane Adams, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 5, 1988, Ser. No. 153,299
Int. Cl.[4] C08G *63/12*
U.S. Cl. 525—420 **15 Claims**

1. Composition of matter comprising water-dispersible polymeric material having linking groups comprising at least 20 mole % carbonyloxy and up to about 80 mole % carbonylamido, said material containing water-solubilizing sulfonate groups and having reacted onto or into the polymer backbone from about 0.01 to about 40 mole % based on the total of all reactant hydroxy, carboxy or amino equivalents, or the condensable derivative equivalents thereof, of colorant comprising one or more heat stable organic compounds initially having at least one condensable group.

4,804,720

POLYAMIDE RESIN COMPOSITION

Mitsuhiko Tamura; Masaaki Miyamoto; Masaya Ueda, all of Kitakyushu, and Eiichi Kamoshida, Fujisawa, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Apr. 6, 1988, Ser. No. 178,224
Claims priority, application Japan, Apr. 8, 1987, 62-86269
Int. Cl.[4] C08L *77/00;* **C08K** *9/04*
U.S. Cl. 525—431 **10 Claims**

1. A polyamide resin composition comprising a polyamide resin, from 0.01 to 1 % by weight of fine silica based on said polyamide resin and from 1 to 99 % by weight of a silane coupling agent based on said fine silica.

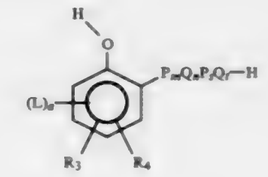
4,804,721

ETHERS OF THE CONDENSATION PRODUCTS OF PHENOLDICYCLOPENTADIENE ADDUCTS WITH ALDEHYDES AND KETONES AS THERMOSETTING RESINS

Joseph J. Zupancic, Bensenville, and Jeffrey P. Conrad, Chicago, both of Ill., assignors to Allied-Signal Inc., Morristown, N.J.

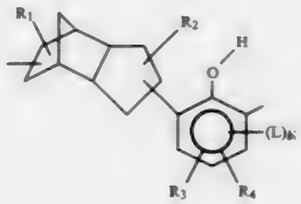
Filed Nov. 30, 1987, Ser. No. 126,378
Int. Cl.[4] C08G *8/36, 8/30, 8/02*
U.S. Cl. 525—502 **27 Claims**

1. A thermosetting resin comprising ethers of the condensation product of at least one aldehyde or ketone with the adduct of a dicyclopentadiene and phenol, said adduct having essentially the formula



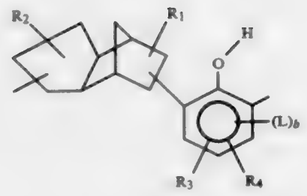
where

P=

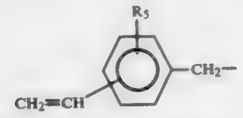


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where
R_1 and R_2 are independently selected from the group consisting of hydrogen or an alkyl moiety containing from 1 to about 10 carbon atoms;
R_3 is selected from the group consisting of alkyl moieties containing from 1 to about 20 carbon atoms and is located at a position meta or para to the position of the oxygen on the aromatic ring;
R_4 is hydrogen or a tertiary butyl moiety;
m, n, s and t each are 0 or an integer and whose sum is z, where z is 1–10;
a is 0, 1, or 2;
b is 0 or 1; and
L is Cl or Br;
where the aldehyde is selected from the group consisting of formaldehyde, saturated aldehydes of formula $C_rH_{2r+1}CHO$, with r being an integer from 1 to about 9, benzaldehydes, ketones of the formula CH_3COZ, where Z is an alkyl group containing 1 to 4 carbons or an aryl group, and dialdehydes of formula $OHC(CH_2)_xCHO$, where x is an integer from 2 to about 8; and where at least 80% of the phenolic hydrogens are replaced by a moiety Y, where Y is selected from the group consisting of hydrogen, the vinylbenzyl moiety,



alkyl moieties containing 1 to 10 carbon atoms, cycloalkyl moieties having 5 to 10 carbon atoms, or benzyl, subject to the constraints (a) at least 50% of all Y's are the vinylbenzyl moiety, (b) the vinyl group is para or meta to the benzylic group, and (c) R_5 is a chemically inert substituent selected from the group consisting of hydrogen, alkyl moieties containing from 1 to about 10 carbon atoms, the halogens, alkoxy moieties containing from 1 to about 10 carbon atoms, and monovalent radicals whose parent is an aromatic hydrocarbon.

4,804,722

RESIN SOLUTIONS FOR CEMENTS AND COATING COMPOSITIONS, PROCESS FOR THEIR PREPARATION AND THEIR USE

Wolfgang Hesse, Taunusstein, and Klaus Rauhut, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst AG, Fed. Rep. of Germany

Continuation of Ser. No. 804,282, Dec. 3, 1985, abandoned. This application Aug. 13, 1987, Ser. No. 85,074

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1984, 3444281

Int. Cl.[4] C08G *65/36, 59/62;* **C08F** *283/10*

U.S. Cl. 525—523 **17 Claims**

1. A resin solution for cements and coating compositions based on a reaction product consisting essentially of epoxy resins with more than one epoxy group on the molecule and having an epoxy equivalent weight of 150 to 2000 and furfuryl alcohol alone or in mixture with other furan derivatives dissolved in reactive diluents, provided that all the epoxy groups of the epoxy resin are reacted with furfuryl alcohol or other furan derivatives.

4,804,723

MISCIBLE BLENDS OF POLY(ARYL ETHER SULFONES)

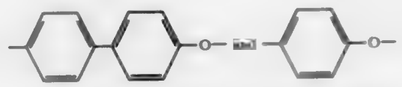
James E. Harris, Piscataway, N.J., and Lloyd M. Robeson, Macungie, Pa., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 887,894, Jul. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 766,692, Aug. 19, 1985, abandoned. This application Sep. 25, 1987, Ser. No. 101,260

Int. Cl.[4] C08F *283/00*

U.S. Cl. 525—535 **15 Claims**

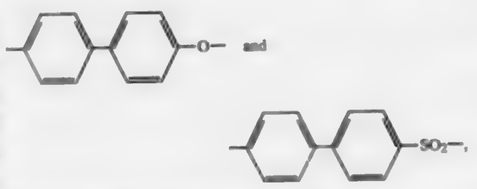
1. A miscible blend of two or more different poly(aryl ether sulfones) consisting essentially of at least one unit selected from the group consisting of:



and at least one unit selected from the group consisting of:



wherein at least one of said poly(aryl ether sulfone) comprises at least one member selected from the group consisting of:

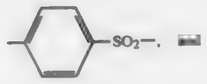


the poly(aryl ether sulfones) being different and each comprises the following radicals:

(I)



(II)



(III)



4,804,724

BLENDS OF A BIPHENYL CONTAINING POLY (ARYL ETHER SULFONE) AND A POLY (ARYL ETHER KETONE)

James E. Harris, Piscataway, and Lloyd M. Robeson, Whitehouse Station, both of N.J., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 876,294, Jun. 18, 1986, Pat. No. 4,713,426, Continuation of Ser. No. 655,580, Sep. 28, 1984, abandoned. This application Dec. 15, 1987, Ser. No. 132,304

The portion of the term of this patent subsequent to Dec. 15, 2004, has been disclaimed.

Int. Cl.[4] C08L *61/00, 81/06*

U.S. Cl. 525—471 **17 Claims**

1. A blend comprising a biphenyl containing poly(aryl ether sulfone) and a poly(aryl ether ketone) wherein said biphenyl containing poly(aryl ether sulfone) comprises from about 25 to 95 weight percent of said poly(aryl ether sulfone) and poly(aryl ether ketone).

4,804,725

REDUCTION OF THE EMISSION OF HYDROCARBONS IN PRESSURE-REDUCTION PROCESSES IN HIGH PRESSURE POLYMERIZATION REACTORS

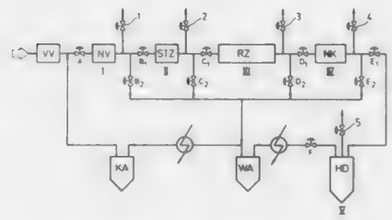
Friedrich Kaase, Wesseling; Franz G. Mietzner, Ludwigshafen; Klaus Pfleger, Wesseling; Siegfried Kurszwe, Wesseling; Klaus Boettcher, Wesseling, and Gerhard Arnold, Wesseling, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 3, 1987, Ser. No. 127,968

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1986, 3641513

Int. Cl.[4] G05B *9/00;* **C08F** *2/34*

U.S. Cl. 526—68 **3 Claims**



1. A process for rapidly reducing the pressure in a continuous high pressure polymerization system, in which ethylene or a mixture of ethylene and compounds which are copolymerizable with ethylene is polymerized under from 500 to 5,000 bar and at 150° to 400° C. and the unconverted amounts of gas are let down to 200–400 bar and then recycled through the high pressure recycle gas system into the polymerization system, to below the particular reaction pressure when predetermined limiting pressure and/or temperature values are exceeded or when other faults occur by opening one or more pressure-relief apparatuses mounted on the high pressure polymerization system and transferring the hot let-down reaction mixture from the polymerization system via one or more let-down lines through one or more separator systems into the atmosphere, wherein the high pressure polymerization system is divided into a plurality of isolated sections at the same time as the let-down process is triggered, and only the section in which the let-down process has been triggered is let down to the atmosphere.

4,804,726

MANUFACTURING METHOD OF POLYOLEFIN

Yozo Kondo, Yokkaichi; Mitsuhiro Mori, Aichi; Morihiko Sato, Yokkaichi; Toshikazu Chikuma, Yokkaichi, and Hitoshi Ito, Yokkaichi, all of Japan, assignors to Ioyo Soda Manufacturing Co., Ltd., Shimanayo, Japan

Continuation of Ser. No. 828,736, Feb. 12, 1986, abandoned, which is a continuation-in-part of Ser. No. 739,058, May 29, 1985, abandoned. This application May 16, 1988, Ser. No. 195,440

Claims priority, application Japan, Jun. 11, 1984, 59-118120

Int. Cl.[4] C08F *4/64, 10/00*

U.S. Cl. 526—124 **11 Claims**

1. A method for preparing an olefin polymer, which comprises polymerizing an olefin at a temperature of from 20° to 110° C. in a continuous or batch system, in the presence of a catalyst system comprising a combination of ingredients (A) and (B), wherein ingredient (A) is a solid catalyst obtained by allowing a homogeneous solution of

(i) at least one of a combination of metallic magnesium and a hydroxylated organic compound, or an oxygen-containing organic compound of magnesium, and

(ii) at least one oxygen-containing organic compound of titanium, to react in succession with:

(iii) at least one first organoaluminum compound having the formula:

R_3^1Al or $R_n^1AlY_{3-n}$

wherein R^1 is a C_{1-20} alkyl group, Y is a C_{1-20} alkoxyl, aryloxy or cycloalkoxyl group or a halogen, and $1 \leqq n < 3$, wherein, when the first organoaluminum compound has the formula $R_n^1AlY_{3-n}$, the atomic ratio of gram atoms of aluminum in said compound multiplied by n, to the gram atoms of titanium in the titanium compounds falls within a range of

$$0.1 \times n/(n-0.5) \leqq (n \times Al)/Ti \leqq 100 \times n/(n-0.5)$$

and wherein, when the first organoaluminum compound has the formula R_3^1Al and the atomic ratio of gram atoms of aluminum in said organoaluminum compound multiplied by 3, to the gram atoms of titanium in the titanium compounds falls within a range of

$$0.12 \leqq (3 \times Al)/Ti \leqq 120;$$

then

(iv) at least one polysiloxane or silane compound, wherein said polysiloxane has the formula:



wherein R^3 and R^4 are the same or different and are C_{1-12} alkyl, C_{1-12} aryl, hydrogen, halogen, C_{1-12} alkoxyl, C_{1-12} allyloxyl, or C_{1-12} fatty acid, with the proviso that R^3 and R^4 cannot both be hydrogen or halogen, and wherein p ranges from about 2 to 10,000; and wherein said silane has the formula:

$$H_qSi_sR_5^5X_t$$

where R_5^5 are groups capable of bonding to silicon which are C_{1-12} alkyl, C_{1-12} aryl, C_{1-12} alkoxyl, C_{1-12} allyloxyl, or C_{1-12} fatty acid; X is halogen; q, s, and t are integers not smaller than 0; and r is a natural number related to q, s and t as $q+s+t=2r+2$, wherein the amount of said polysiloxane or silane compound is selected such that the atomic ratio of gram atoms of magnesium in the magnesium compounds to the gram atoms of silicon in the silicon compounds lies within a range of $1/20 \leqq Mg/Si \leqq 100$; and then

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(v) at least one second aluminum compound having the formula:

$$R_z^6AlX_{3-z}$$

wherein R^6 is a C_{1-20} hydrocarbon, X is a halogen atom and $0 \leqq Z < 3$, wherein the amount of said second aluminum compound is such that the atomic ratio of gram atoms of aluminum in the first organoaluminum compound to the gram atoms of aluminum in the second aluminum compound falls within a range of $1/20 \leqq Al$ (first organoaluminum compound)/Al (second aluminum compound) $\leqq 10$;

and ingredient (B) is an organometallic compound containing a metal from group Ia, IIa, IIb, IIIb or IVb of the Periodic Table.

4,804,727

PROCESS TO PRODUCE NOVEL FLUOROCARBON VINYL ETHERS AND RESULTING POLYMERS

Bobby R. Exnell, Lake Jackson; William P. Carl, Angleton, and William A. Mod, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 801,266, Nov. 25, 1985, abandoned, which is a division of Ser. No. 345,894, Feb. 4, 1982, Pat. No. 4,578,512, which is a continuation of Ser. No. 158,532, Jun. 11, 1980, abandoned. This application May 5, 1987, Ser. No. 46,954

Int. Cl.[4] C08F *16/24*

U.S. Cl. 526—247 29 Claims

1. A polymerization method which comprises reacting, in the presence of an initiator, one or more compounds of the general formula

$$D(CF_2)_a(CFR_f)_bCFR'_f\text{—}O\text{—}\left(\begin{array}{l}CF\text{—}CF_2\text{—}O\\ |\\ CF_2X\end{array}\right)_n\text{—}CF{=}CF_2$$

for a time and at a temperature sufficient to cause polymerization; wherein

n=one to six;

X=Cl, Br or mixtures thereof when n>1;

D is selected from the group consisting of ZSO_2,

$$\begin{array}{ll}C{=}O, & P{=}O,\\ |\ Z & |\ (Z)_2\end{array}$$

or C≡N, where Z is selected from the group consisting of F, Cl, Br, OH, NRR', and OA; where R and R' are independently selected from the group consisting of hydrogen, an alkyl having one or more carbon atoms and an aryl; and A is an alkali metal, a quaternary nitrogen radical, or R;

R_f and R'_f are independently selected from the group consisting of F, Cl, a perfluoroalkyl radical and a chlorofluoro alkyl radical;

a=0 or an integer greater than 0;

b=0 or an integer greater than 0.

4,804,728

PROCESS FOR THE PRODUCTION OF PASTE-FORMING VINYL CHLORIDE POLYMERS

Wolfgang A. Kruse, Marl, and Burkhard Boeke, Haltern, both of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 23, 1986, Ser. No. 888,654

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1985, 3526251

Int. Cl.[4] C08F *2/24*

U.S. Cl. 526—209 20 Claims

1. In a process for the production of an aqueous latex of paste forming homopolymers of vinyl chloride or copolymers of mixtures of vinyl chloride and up to 30% by weight of polymerizable monomers, by discontinuous polymerization in the presence of water, water soluble or monomer-soluble catalyst, anionic emulsifier and auxiliary dispersant, the improvement comprising utilizing as said auxiliary dispersant an alcohol glycol ether of the general formula

$$R\text{—}O(\text{—}CH_2\text{—}CHO\text{—})_n^{R_1}H$$

wherein R is an alkyl moiety of 16–22 carbon atoms or an alkylphenyl moiety of 18–22 carbon atoms, R_1 is hydrogen or an alkyl moiety of 1–2 carbon atoms, and n is a number of 1 to 3.

4,804,729

ELECTRICAL INSULATING MATERIAL AND POWER CABLE COMPRISING A CROSSLINKED LAYER THEREOF

Yuichi Orikasa; Shinji Kojima; Takashi Inoue, all of Kanagawa; Atsushi Sato, Tokyo; Shigenobu Kawakami, Chiba, and Kaoru Yamamoto, Tokyo, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 836,505, Mar. 5, 1986, abandoned. This application Jul. 6, 1987, Ser. No. 69,961

Claims priority, application Japan, Mar. 8, 1985, 60-46060; Oct. 21, 1985, 60-235022

Int. Cl.[4] C08F *2/34, 236/20, 236/22;* H01B *3/44*

U.S. Cl. 526—336 6 Claims

1. An electrical insulating material which comprises an ethylene copolymer prepared by subjecting, to a high-pressure radical polymerization, ethylene or a mixture of ethylene and at most 3 mol% of another unsaturated monomer in the presence of at least one one- to three-ring aromatic compound having at least two carbon-carbon double bonds which are different from each other in reactivity in radical polymerization in one molecule at a polymerization pressure of 500 to 4,000 kg/cm^2 at a polymerization temperature of 50° to 400° C., with said ethylene copolymer containing 0.005 to 1 mol% of a unit derived from said aromatic compound.

4,804,730

PROCESS FOR PRODUCING AN ALIPHATIC POLYESTER BY POLYMERIZING DICARBOXYLIC ACID AND GLYCOL IN THE PRESENCE OF PHOSPHORUS OR SILICON-PHOSPHORUS COMPOUND ACID ACCEPTOR AND HALOGENATED ORGANIC COMPOUND

Naoya Ogata, Tokyo, Japan, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 5, 1987, Ser. No. 11,464

Int. Cl.[4] C08G *63/04, 63/38, 63/34*

U.S. Cl. 528—286 13 Claims

1. A process for the synthesis of an aliphatic polyester comprising polymerizing at least one dicarboxylic acid monomer with at least one aliphatic glycol monomer in the presence of (1) at least one phosphorus containing compound which contains at least one trivalent or pentavalent phosphorus atom which is bonded directly to at least one phenyl group, (2) an acid acceptor, and (3) at least one halogenated organic compound; wherein the phosphorus containing compound, and the halogenated organic compound can be the same or different compounds; or wherein the phosphorus containing compound and the acid acceptor can be the same or different compounds in cases where the phosphorus containing compound contains pendant diphenylphosphine groups.

2. A process for the synthesis of an aliphatic polyester comprising polymerizing at least one dicarboxylic acid monomer with at least one aliphatic glycol monomer in the presence of (1) at least one silicon-phosphorus compound which contains at least one divalent oxygen atom which is bonded directly to a tetravalent silicon atom and a trivalent or pentavalent phosphorus atom; (2) an acid acceptor; and (3) a halogenated organic compound; wherein the silicon-phosphorus compound and the halogenated organic compound can be the same or different compounds.

4,804,731

METHOD FOR CROSSLINKING OF POLYSILASTYRENE

Larry L. Hench, and Bertrand I. Lee, both of Gainesville, Fla., assignors to University of Florida Research Foundation, Inc., Alachua, Fla.

Filed Feb. 25, 1985, Ser. No. 704,939

Int. Cl.[4] C08G *77/38*

U.S. Cl. 528—24 8 Claims

1. A method for crosslinking polysilastyrene comprising mixing polysilastyrene with dicumyl peroxide and heating to produce crosslinking.

4,804,732

POLYSILOXANE GRAFT COPOLYMERS, FLEXIBLE COATING COMPOSITIONS COMPRISING SAME AND BRANCHED POLYSILOXANE MACROMERS FOR PREPARING SAME

Rose A. Ryntz, Clinton Township, Lenawee County, and Kenneth R. Kurple, Ancherville, both of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 18,337, Feb. 24, 1987, Pat. No. 4,754,014, which is a division of Ser. No. 816,485, Jan. 6, 1986, Pat. No. 4,673,718. This application Feb. 2, 1988, Ser. No. 151,540

The portion of the term of this patent subsequent to Jun. 28, 2005, has been disclaimed.

Int. Cl.[4] C08G *77/04*

U.S. Cl. 528—28 14 Claims

1. A solvent based high solids enamel coating composition adapted for application as a flexible coating on metal and plastic substrates, comprising:

(A) hydroxy functional polysiloxane graft copolymer of number average molecular weight about 1,000–4,000, having a hydroxyl number between about 50 and about 150 and about 1–10 urethane linkages per molecule, and being the reaction product of carbon-carbon double bond-reactive monoethylenically unsaturated monomer with carbon-carbon double bond-bearing branched polysiloxane macromer under free radical polymerization reaction conditions, said monomer bearing substantially no functionality which is substantially reactive with hydroxy functionality of said macromer under said reaction conditions, said macromer being the reaction product of glycidyl methacrylate with hydroxy functional oligomeric polysiloxane reactant having a molecular weight between about 1,000–3,000 and a hydroxyl number between about 30–300;

(B) alkylated melamine crosslinking agent, said crosslinking agent being included in an amount sufficient to provide between about 0.5 and about 1.6 hydroxy reactive group per hydroxy group of said polysiloxane graft copolymer.

4,804,733

THERMOSHRINKABLE TUBE MEANS FOR CONTROLLING UNIFORM HEATING THEREOF AND PROCESS FOR FABRICATING SUCH TUBE

Claude Bataille, Nogent-sur-Marne, France, assignor to Trefilable Pirelli, Saint Maurice, France

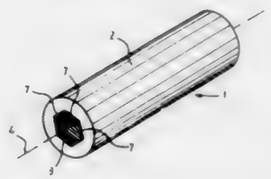
Filed Jul. 6, 1987, Ser. No. 69,646

Claims priority, application France, Jul. 10, 1986, 86 10057

Int. Cl.[4] F16L *11/04;* B29L *41/00*

U.S. Cl. 428—34.9 10 Claims

1. A heat shrinkable plastic sleeve for application to an article to be covered, said sleeve having a longitudinal axis, an outer surface and an inner surface around said axis, said inner surface having a cross-section which is non-circular in a section taken perpendicularly to said axis and having first portions thereof extending longitudinally of said inner surface and which are spaced from each other circumferentially of said axis to provide intermediate second portions, said first portions



being under a stress greater than said intermediate second portions whereby the stress distribution in said inner surface is non-uniform circumferentially of said axis.

4,804,734

POLYURETHANE COMPOSITION CONSISTING ESSENTIALLY OF A POLYETHER DIOL, A POLYETHER TRIOL, GLYCEROL, AND A POLYISOCYANATE

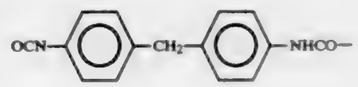
Cang Vu, Gaithersburg, and Richard C. Hartwig, Laurel, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 053,930, May 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 828,914, Mar. 2, 1987, abandoned. This application Sep. 25, 1987, Ser. No. 101,215

Int. Cl.[4] C09K *3/00;* C08G *18/12, 18/66*

U.S. Cl. 528—54 8 Claims

1. The composition consisting essentially of two separate components, A and B; Component A consisting essentially of, in parts by weight, about 175 to 575 of polyether diol based on propylene oxide and containing only secondary hydroxyl groups, average molecular weight about 400 to 4,000; about 100 to 450 of polyether triol based on propylene oxide and containing only secondary hydroxyl groups, average molecular weight about 500 to 3,000; glycerol about 8 to 15; polyurethane catalyst about 1 to 10; and Component B consisting essentially of about 300 to 400 parts by weight of a polyisocyanate material consisting essentially of about 45–50 weight % of diphenylmethane-4,4'-diisocyanate, and balance to make 100% of K—$O(CH_2CH[CH_3]O)_m$—K where K is



and m is about 2–5.

4,804,735

CRYSTALLINE AROMATIC POLYKETONE COPOLYMER PRODUCED FROM 4-MERCAPTOPHENOL, DIHALOTEREPHTALOPHENONE, AND HYDROQUINONE OR DIHYDROXYBENZOPHENONE

Isaburo Fukawa, and Haruyuki Yoneda, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 10, 1987, Ser. No. 24,031

Claims priority, application Japan, Mar. 10, 1986, 61-50305; Sep. 22, 1986, 61-224024

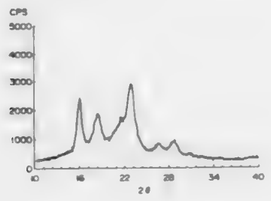
Int. Cl.[4] C08G *75/04, 75/23*

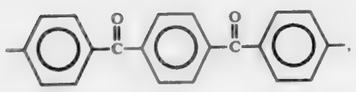
U.S. Cl. 528—125 5 Claims

1. A crystalline aromatic polyketone copolymer which has a

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linear polymer structure comprising structural units (A) represented by the formula (A)





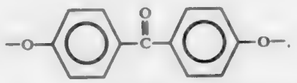
structural units (B) represented by the formula (B)



and structural units (C) represented by the formula (C_1)



or the formula (C_2)



the molar ratio of said units (B) to said units (C) being in the range from 30:70 to 99:1, and the unit (A) and either the unit (B) or the unit (C) being linked alternately, and which has an intrinsic viscosity of not less than 0.40; said intrinsic viscosity is determined by measuring at 25° C. the viscosity of a solution of a concentrated sulfuric acid of a density of 1.84 g/cm^3 containing 0.1 g or 0.5 g of polymer per 100 cm^3 therein, wherein said crystalline aromatic polyketone copolymer is insoluble at room temperature in methylene chloride, chloroform, N,N^1-dimethylformamide, sulfolane, dimethyl sulfoxide, hexamethylphosphorictriamide, hexane or toluene.

4,804,736

POLYETHYLENE-2,6-NAPHTHALATE FILM FOR MAGNETIC RECORDING TAPES

Shigeo Utsumi, Yokohama, Japan, assignor to Diafoil Company, Limited, Tokyo, Japan

Filed Dec. 9, 1986, Ser. No. 939,683

Claims priority, application Japan, Dec. 9, 1985, 60-276646

Int. Cl.^{4} C08G *63/00, 63/22;* B32B *27/06*

U.S. Cl. 528—176 **15 Claims**

1. A polymer film for use as a support for high density magnetic recording tapes which has excellent heat resistance, a Young's modulus of not less than 800 kg/mm^2 in the machine direction and a Young 's modulus of not less than 600 Kg./mm^2 *'in the transverse direction, said film consisting of polyethylene* 2,6-naphthalate.

14. A process for producing a polyethylene-2,6-naphthalate film for high-density magnetic tapes being excellent in heat resistance and having a Young's modulus of not less than 800 kg/mm^2 in the machine directiona nd a Young's modulus of not less than 600 kg/mm^2 in the transverse direction, which comprises the steps of:

melt-extruding polyethylene-2,6-naphthalate of an intrinsic viscosity of not less than 0.40 which contains 0.01 to 1 wt % of inactive fine particles having a primary particle diameter of 0.001 to 10 μm into a film,

stretching the film by 1.1 to 5.0 times in the machine direction at a temperature of 120° to 170° C.,

stretching the film by 2.5 to 5.0 times in the transverse direction at a temperature of 120° to 180° C.,

heatsetting the film at a temperature of 130° to 240° C. while subjecting the film to relaxation in the transverse direction by 1 to 30%,

re-stretching the film in the machine direction at a temperature of 140° to 200° C. by 1.5 to 2.8 times if the film has been stretched in the machine direction by 1.1 to 3.5 times in the previous stage or by 1.05 to 1.35 times if the film has been stretched in the machine direction by 3.5 to 5.0 times in the previous stage,

heatsetting the film at a temperature of 180° to 260° C., and winding the film while loosening the film by 1 to 10% in the machine direction and in the transverse direction.

4,804,737

SILOXANES, THEIR SYNTHESIS AND USE AS DEAERATING AGENTS FOR CURABLE RESINS OF PLASTISOLS

Roland Berger, Bochum; Hans-Ferdi Fink, and Otto Klocker, both of Essen, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

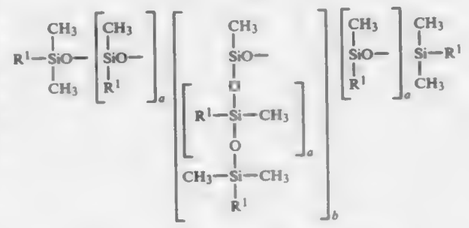
Filed Jul. 14, 1987, Ser. No. 72,880

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1986, 3627782

Int. Cl.^{4} C08G *77/04*

U.S. Cl. 528—26 **5 Claims**

1. Compounds of the general formula

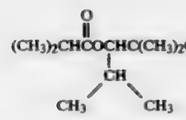


wherein R^1 is selected from the group consisting of (1) methyl,



(2)

and



(3)

the sum of the units a being 0 to 100,
the sum of the units b being 0 to 15,
with the proviso that the ratio of methyl (1) to groups (2) and (3) in R^1 is less than 50:1, and that b≦1 when a=0 and a≧5 when b=0.

4,804,738

CATALYTIC PREPARATION OF CARBON MONOXIDE/ETHYLENE/SECONDARY ETHYLENICALLY UNSATURATED HYDROCARBON TERPOLYMER

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

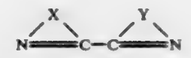
Filed Oct. 13, 1987, Ser. No. 106,822

Claims priority, application Netherlands, Oct. 16, 1986, 8602595

Int. Cl.^{4} C08G *67/02*

U.S. Cl. 528—392 **8 Claims**

1. In the process of producing a linear alternating terpolymer of carbon monoxide, ethylene and a secondary ethylenically unsaturated hydrocarbon under polymerization conditions in the presence of a catalyst formed from a palladium compound, an anion of a non-hydrohalogenic acid having a pKa less than about 4 and a bidentate ligand, the improvement wherein the bidentate ligand is a bidentate ligand of the formula



wherein X and Y independently are bridging groups of from 2 to 10 carbon atoms inclusive and up to 2 carbon atoms, which ligand is selected from 2,2'-bipyridines, 1,10-phenanthrolines, 2,2'-biquinolones, 2-(2-pyridyl)benzimidazoles or 3-(2-pyridyl)-5,6-diphenyl-1,2,4-triazines.

4,804,739

PROCESS FOR PREPARING CARBON MONOXIDE POLYMER WITH QUATERNARY PHOSPHONIUM COMPOUND BIDENTATE LIGAND

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 25, 1987, Ser. No. 66,160

Claims priority, application Netherlands, Jul. 1, 1986, 8601713

Int. Cl.^{4} C08G *67/02*

U.S. Cl. 528—392 **7 Claims**

1. In the process of producing linear alternating polymers of carbon monoxide and at least one olefinically unsaturated hydrocarbon under polymerization conditions in the presence of a catalyst composition formed from palladium compound, an anion of a non-hydrohalogenic acid having a pKa less than about 6 and a bidentate ligand selected from bidentate phosphorus ligand or bidentate nitrogen ligand, the improvement which comprises employing as source of the anion, the quaternary phosphonium compound of the formula

Z_4PA

wherein A is the anion of an oxygen containing acid having a pKa less than about 6 and Z independently is hydrocarbyl group of from 1 to 20 carbon atoms inclusive.

4,804,740

CYANATE ESTER WITH UREA LATENT CURE ACCELERATOR

Hugh C. Gardner, Hillsborough, and Richard H. Newman-Evans, Somerville, both of N.J., assignors to Amoco Corporation, Chicago, Ill.

Filed Jul. 8, 1987, Ser. No. 71,215

Int. Cl.^{4} C08G *83/00*

U.S. Cl. 528—422 **9 Claims**

1. A thermosetting composition comprising a cyanate ester and a urea compound having the structural formula $RR^1NCONR^2R^3$ wherein R and R^2 are independently selected from the group consisting of hydrogen and organo radicals, and R^1 and R^3 are independently selected organo radicals.

4,804,741

GUAYULE RUBBER, RESIN AND BAGASSE RECOVERY AND PURIFICATION PROCESSES

Anthony J. Verbiscar, Sierra Madre, and Thomas F. Banigan, Arcadia, both of Calif., assignors to Arver Bioscience Design, Inc., Sierra Madre, Calif.

Division of Ser. No. 615,837, May 23, 1984, abandoned. This application May 9, 1986, Ser. No. 861,454

Int. Cl.^{4} C08C *2/00*

U.S. Cl. 528—931 **8 Claims**

1. A process for recovering natural rubber from a lipophilic solvent by immersing a heated surface in the solution, whereupon the rubber precipitates and coagulates on the heated surface and can be thereby removed from the solution.

4,804,742

AMIDE ANALOGS OF CALCITONIN

Edward S. Neiss, New Canaan, Conn.; David Stevenson, Scarsdale, N.Y.; Laurence L. Ho, New Rochelle, N.Y.; Robert C. Liu, White Plains, N.Y., and John T. Suh, Greenwich, Conn., assignors to Rorer Pharmaceutical Corporation, Fort Washington, Pa.

Division of Ser. No. 741,936, Jun. 6, 1985. This application Dec. 5, 1986, Ser. No. 938,671

The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.

Int. Cl.^{4} C07C *103/52*

U.S. Cl. 530—307 **2 Claims**

1. N(α)-pivalyl-Cys(1)-N(ε)-pivalyl-Lys(11)-N(ε)-pivalyl-Lys(18) salmon calcitonin.

4,804,743

PROLINE-CONTAINING RENIN INHIBITORS

James S. Kaltenbronn; Elizabeth A. Lunney, both of Ann Arbor, Mich., and Ernest D. Nicolaides, Ramsey, Calif., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 29, 1987, Ser. No. 8,702

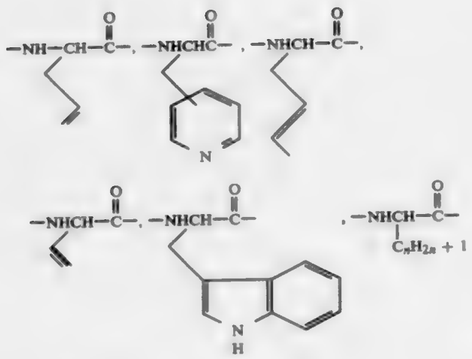
Int. Cl.^{4} C07K *7/06, 5/10;* A61K *37/02*

U.S. Cl. 530—330 **5 Claims**

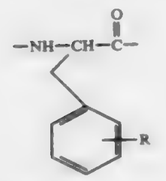
1. A peptide of the formula

ACYL—X—Y—T—U—V—W I

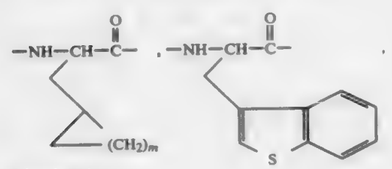
or a pharmaceutically acceptable salt thereof, wherein
ACYL is BOC, IBU, IVA, NVA, Z, or DNMA;
X is absent, PHE, HOMOPHE, NAPHTHYLALA, TRP, CYCLOHEXYLALA, (Me^5)PHE, VAL, ILE or LEU, with the proviso that when X is absent ACYL is DNMA;
Y is CYS, SMeCYS, SOMeCYS, SO_2MeCYS, ASP, ASP-(OCH_3), ASP(OC_2H_5), ASP(OCH_2Ph), ASP(O-t-Bu), ASN, SER, SER(CH_2Ph), SER(CH_3), SER(C_2H_5), LEU, GLY, ILE, VAL, NLE, HIS, PHE, ARG, ARG-(NO_2), ALA, ORN, ORN(Z), ORN(BOC), ORN(PHT), ORN(Ac), LYS, LYS(Z), LYS(BOC), LYS(PHT), LYS-(Ac), GLN, GLU, GLU(OCH_2Ph), GLU(O-t-Bu), GLU-(OCH_3), GLU(OC_2H_5), MET, MET(O), MET($O)_2$,



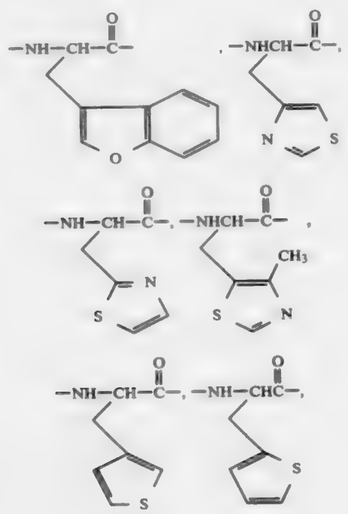
wherein n is an integer of 2, or 4–10,



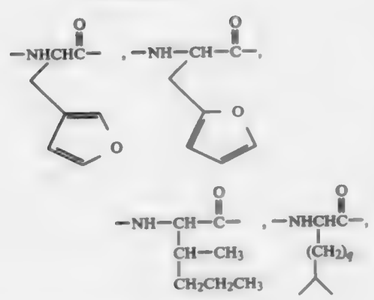
wherein R is alkyl, halogen or alkoxy,



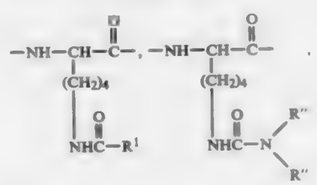
wherein m is an integer of from 1 to 3



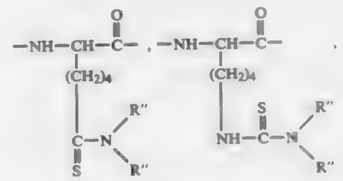
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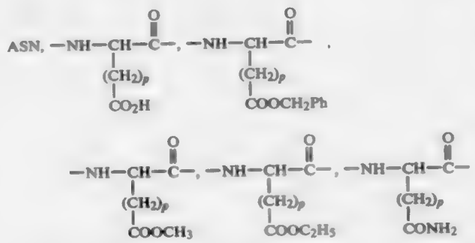
wherein q is an integer of from 2 to 4,



where R^1 is an alkyl group of from 1–4 carbon atoms,



wherein R'' is H or an alkyl of from 1 to 4 carbon atoms;
T is STA, PHSTA, or CYSTA;
U is, GLU, GLU(OCH_2Ph), GLU(OCH_3), GLN, MET, MET(O), SMeCYS, GLU(OC_2H_5), GLU(O-t-Bu), SOMeCYS, ASP, ASP(OCH_2Ph), ASP(OCH_3), ASP(OC_2H_5),

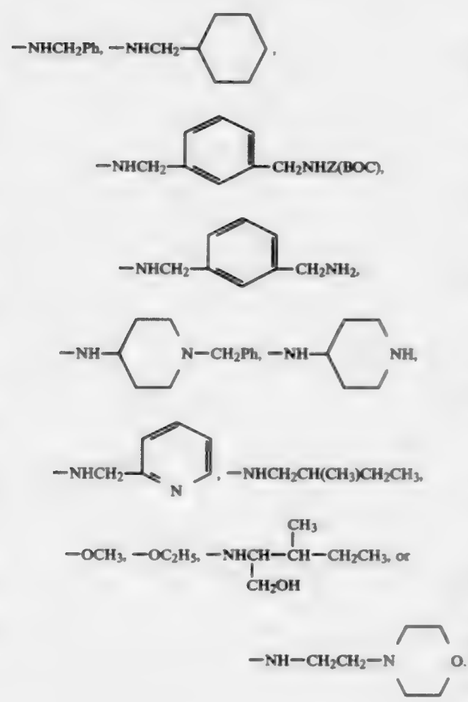


wherein p is the integer 3 or 4;
V is PRO, HYDROXYPRO, piperidine-2-carboxylic acid,



wherein A is an alkyl of from one to four carbon atoms,

aralkyl, or aryl wherein aryl is unsubstituted phenyl or phenyl substituted with a lower alkyl or halogen, and W is



4,804,745

AGENTS FOR THE TREATMENT OF ARTHROSES

Peter Koepff, Heidelberg; Alexander Müller, Eberbach/Baden; Reinhard Schreiber, Eberbach/Baden; Angelika Turowski, Eberbach/Baden, and Klaus Erlenmer, Eberbach/Baden, all of Fed. Rep. of Germany, assignors to Deutsche Gelatine-Fabriken Stoess & Co. GmbH, Fed. Rep. of Germany

Filed Jul. 1, 1987, Ser. No. 68,342
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1986, 3625185
Int. Cl.[4] G01N *33/54*; C08F *220/32*; A61K *39/385*
U.S. Cl. 530—356 10 Claims

1. A composition for the treatment of arthroses comprising a peptide soluble in cold water having an average molecular weight of from about 10,000 to 80,000.

4,804,746

ANTIBODIES TO HUMAN LEUKEMIA VIRUS-RELATED PEPTIDES AND A PROCESS FOR PRODUCTION OF THE ANTIBODIES

Mitsuaki Yoshida; Haruo Sugano, both of Tokyo; Fumio Shimizu, and Koichi Imagawa, both of Tokushima, all of Japan, assignors to Japanese Foundation for Cancer Research and Otsuka Pharmaceutical Co., Ltd., both of, Japan

Division of Ser. No. 535,115, Sep. 23, 1983. This application Mar. 19, 1985, Ser. No. 713,659
Claims priority, application Japan, Jan. 7, 1983, 58-1495; Feb. 23, 1983, 58-30096
Int. Cl.[4] C07K *15/14*; A61K *39/395*
U.S. Cl. 530—387 5 Claims

1. An antibody specific for a human leukemia virus-related peptide obtained by collecting an antibody produced in a mammal by administering to the mammal an antigen prepared by reacting a human leukemia virus-related peptide selected from the group consisting of:

(a) a peptide represented by general formula (1):

H-Tyr-Val-Glu-Pro-Thr-Ala-Pro-Gln-Val-Leu-OH (1)

(b) a peptide represented by general formula (2):

R-Ile-Pro-His-Pro-Lys-Asn-Ser-Ile-Gly-Gly-Glu-Val-OH (2)

wherein R is a hydrogen atom or a group represented by the general formula H-Tyr;

(c) a peptide represented by general formula (3):

R-Thr-Trp-Thr-Pro-Lys-Asp-Lys-Thr-Lys-Val-Leu-OH (3)

wherein R is the same as defined above;

(d) a peptide represented by general formula (4):

H-Val-Val-Gln-Pro-Lys-Lys-Pro-Pro-Pro-Tyr-OH (4)

(e) a peptide represented by general formula (5):

R-Met-Gly-Gln-Ile-Phe-Ser-Arg-Ser-Ala-Ser-Pro-OH (5)

wherein R is the same as defined above; and,

(f) a peptide represented by general formula (6):

H-Tyr-Pro-Glu-Gly-Thr-Pro-Lys-Asp-Pro-Ile-Leu-Arg-Ser-Leu-OH (6)

as a hapten, with a carrier in the presence of a hapten-carrier binding agent.

4,804,744

OSTEOGENIC FACTORS

Arup Sen, Los Angeles, Calif., assignor to International Genetic Engineering, Inc., Santa Monica, Calif.

Continuation of Ser. No. 568,167, Jan. 4, 1984, abandoned. This application Sep. 5, 1986, Ser. No. 904,563
Int. Cl.[4] A61K *35/32*; C07K *13/00*
U.S. Cl. 530—350 8 Claims

1. A method for isolating a preparation of an osteogenic protein which is a member of the P3 family of immunologically related proteins, said preparation characterized by being essentially homogeneous with respect to a molecular weight of from about 22,000 daltons to about 24,000 daltons from demineralized bone tissue comprising:

(a) treating said demineralized bone tissue under aqueous conditions with a solubilizing agent for said osteogenic protein and thereby extracting the osteogenic factor into solution with said solubilizing agent;

(b) subjecting said solution to size fractionation to recover a concentrated pool of proteins of molecular weight between about 12,000 daltons and 40,000 daltons;

(c) subjecting said concentrated pool to a dialysis step comprising either (i) dialysis of said concentrated pool against an aqueous solvent containing trifluoroacetic acid and acetonitrile and removal of the insoluble material to obtain a soluble fraction or (ii) dialysis against deionized water to form an insoluble pellet and solubilization of said pellet with an aqueous solvent comprising trifluoroacetic acid and acetonitrile to obtain a soluble fraction;

(d) subjecting the soluble fraction of step (c) to reverse phase high performance liquid chromatography; and

(e) recovering a preparation of an osteogenic protein.

4,804,747

AZO COMPOUND HAVING ONE OR TWO ALIPHATIC OR CYCLOALIPHATIC GROUPS CONTAINING A TOTAL OF 8 TO 40 CARBON ATOMS THEREIN

Simon Allen, Cheshire; Paul F. Gordon, Rochdale, and Richard A. Hann, Cheshire, all of England, assignors to Imperial Chemical Industries PLC, London, England

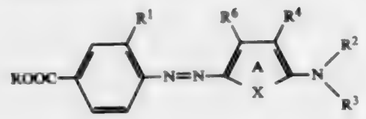
Filed Oct. 16, 1986, Ser. No. 919,640

Claims priority, application United Kingdom, Oct. 18, 1985, 8525745; Jan. 9, 1986, 8613921

Int. Cl.[4] C09B *29/01, 29/06, 29/08, 29/09*

U.S. Cl. 534—573 12 Claims

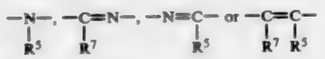
1. A compound of the formula:



wherein

R is selected from H, cadmium, calcium barium, lead, manganese, zinc, magnesium and strontium or a group containing a tetravalent nitrogen atom selected from ammonium, bis(ammonium), guanidinium, biguanidinium, amidinium and a mono- di- or tri-substituted or quaternary ammonium group in which the substituents are selected from C_{1-20}-alkyl, C_{1-4}-alkoxy-C_{1-20}-alkyl, halo-C_{1-20}-alkyl, hydroxy-C_{1-20}-alkyl, phenyl, C_{1-4}-alkyphenyl, C_{1-4}-alkoxyphenyl, halophenyl, hydroxyphenyl, benzyl, C_{1-4}-alkylbenzyl, C_{1-4}-alkoxybenzyl, halobenzyl, hydroxybenzyl, cyclohexyl and C_{1-4}-alkyl-cyclohexyl;

X is S, O,



R^1 is NO_2, CN, or COOY:

Y is selected from H_1, C_{1-4}-alkyl, cadmium, calcium, barium, lead, manganese, zinc, magnesium, and strontium or a group containing a tetravalent nitrogen atom selected from ammonium, bis(ammonium), guanidinium, biguanidinium, amidinium and a mono- di- or tri-substituted or quaternary ammonium group in which the substituents are selected from C_{1-20}-alkyl, C_{1-4}-alkoxy-C_{1-20}-alkyl, halo-C_{1-20}-alkyl, hydroxy-C_{1-20}-alkyl, phenyl, C_{1-4}-alkyphenyl, C_{1-4}-alkoxyphenyl, halophenyl, hydroxyphenyl, benzyl, C_{1-4}-alkylbenzyl, C_{1-4}-alkoxybenzyl, halobenzyl, hydroxybenzyl, cyclohexyl and C_{1-4}-alkyl-cyclohexyl;

R^2 and R^3 are each independently H or non-hydrophilic aliphatic or cycloaliphatic group containing up to 30 carbon atoms selected from alkyl, alkenyl, cycloalkyl, a mixture thereof and alkyl, alkenyl, cycloalkyl or a mixture thereof interrupted by not more than one oxygen or sulphur for every twelve chain carbon atoms;

R^4 and R^5 are each independently H or non-hydrophilic aliphatic or cycloaliphatic group containing up to 30 carbon atoms selected from alkyl, alkenyl, cycloalkyl, a mixture thereof and alkyl, alkenyl, cycloalkyl or a mixture thereof interrupted by not more than one oxygen or sulphur for every twelve chain carbon atoms, each of R^4 and R^5 being attached directly to Ring A or joined thereto by a linking group selected from oxygen, sulphur, nitrogen, —CO—, $—SO_2$, —CO.O— and SO_2.O; and

R^6 and R^7 are each independently H or a non-hydrophilic group containing up to 4 carbon atoms selected from C_{1-4}-alkyl, C_{1-4}-alkoxy, NH_2, and mono- and di-C_{1-4}-alkylamino; or

R^4 and R^6 together with the carbon atoms of Ring A to which they are attached form a benzene, pyrrole, furan, thiazole, isothiazole, thiophene or pyridine ring fused to Ring A and R^5 and R^7 are as hereinbefore defined; or

R^5 and R^7 together with the carbon atoms of Ring A to which they are attached form a benzene, pyrrole, furan, thiazole, isothiazole, thiophene or pyridine ring fused to Ring A and R^4 and R^6 are as hereinbefore defined; or

R^2 and R^4 together with the N atom and the carbon atom of Ring A to which they are attached form a 2-pyrroline, tetrahydropyridine, 4-oxazoline or 4-thiazoline ring fused to Ring A and R^3 and R^5 are as hereinbefore defined;

R^3 and R^5 together with the N atom and the carbon atom of Ring A to which they are attached form a 2-pyrroline, tetrahydropyridine, 4-oxazoline or 4-thiazoline ring fused to Ring A and R^4 and R^6 are as hereinbefore defined; or

provided there are, in total, from 8 to 40 carbon atoms in one or two of the groups independently represented by R^2, R^3, R^4 and R^5.

4,804,748

7-DEAZA-2'-DEOXYGUANOSINE NUCLEOTIDES

Frank Seela, Paderborn, Fed. Rep. of Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Aug. 13, 1986, Ser. No. 896,657

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1985, 3529478

Int. Cl.[4] C07H *19/14;* **C12P** *1/00*

U.S. Cl. 536—28 2 Claims

1. Compound of the formula 7-deaza-2'-deoxyguanosine 5'-triphosphate and alkali earth metal, alkali metal and ammonium salts thereof.

4,804,749

20-O-ACYL-19,20-ENOLMACROLIDE ANTIBIOTIC DERIVATIVES

Tatsuro Fijiwara; Hideyuki Watanabe, both of Shizuoka, and Hideo Sakakibara, Mishima, all of Japan, assignors to Toyo Jozo Co., Ltd., Shizuoka, Japan

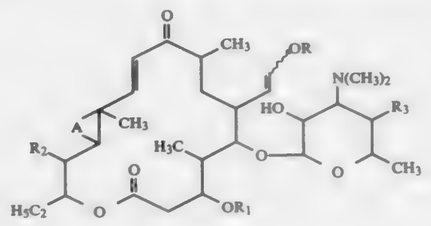
Filed Apr. 9, 1987, Ser. No. 36,456

Claims priority, application Japan, Apr. 15, 1986, 61-86791

Int. Cl.[4] C07H *17/08*

U.S. Cl. 536—7.1 5 Claims

1. A compound represented by the following formula:

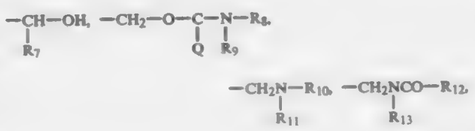


wherein

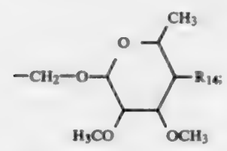
R: lower alkanyoyl or cycloalkyl-lower alkanoyl;

R_1: C_2–C_4 alkanoyl;

R_2: H, methyl, —COOR$_4$, —CONHR$_5$, CH_2X, —CH$_2$—Q—R$_6$,



tetrahydrofuranyloxymethyl, tetrahydropyranyloxymethyl, or



R_3: H or hydroxyl;

A: single bond or O;

R_4: lower alkyl;

R_5: lower alkyl, phenyl or benzyl;

R_6: lower alkyl, lower alkanoyl, lower alkylthio-lower alkyl, di(lower alkyl)amino-lower alkyl, phenyl or



(R_{15}, R_{16}: H, lower alkyl or phenyl; R_{17}: phenyl);

R_7: H, lower alkyl, lower alkenyl or phenyl;

R_8: lower alkyl which may be substituted by lower alkoxycarbonyl group;

R_9: lower alkyl, phenyl, benzyl, thienyl-lower alkyl or 2-amino-4-thiazolyl group in which the amino group may be protected, or R_8 and R_9 being coupled together with the vicinal nitrogen atom to form a 5–8 membered nitrogen-containing mono- and hetero-cyclic ring;

R_{10}: lower alkyl;

R_{11}: lower alkyl, cycloalkyl or benzyl, or R_{10} and R_{11} being coupled together with the vicinal nitrogen atom to form a 5–8 membered nitrogen-containing mono- and hetero-cyclic ring which may contain another nitrogen atom or oxygen atom;

R_{12}: lower alkyl, phenyl or benzyl,

R_{13}: H or lower alkyl;

R_{14}: H, hydroxyl or lower alkyl;

Q: O or S; and

X: halogen atom,

or a salt thereof.

4,804,750

PRODUCTION OF WATER-SOLUBLE CHITIN-OLIGOMERS BY PARTIAL HYDROLYSIS OF CHITIN

Tatsumi Nishimura, Shimizu; Eiichi Eto, Numazu, and Toyofumi Yamada, Fujikawa, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

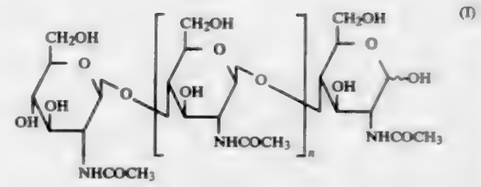
Filed Dec. 11, 1986, Ser. No. 940,358

Claims priority, application Japan, Dec. 11, 1985, 60-278688

Int. Cl.[4] C08B *37/08;* **C08L** *1/00*

U.S. Cl. 536—20 6 Claims

1. A process for the production of tetra-N-acetylchitotetraose, penta-N-acetyl-chitopentaose and hexa-N-acetyl-chitohexaose, these chitin-oligomers being represented by the general formula (I)



(I)

wherein n is 2 for the tetra-N-acetyl-chitotetraose, n is 3 for the penta-N-acetyl-chitopentaose, and n is 4 for the hexa-N-acetyl-chitohexaose, which comprises adding finely ground chitin at once to and intimately mixing said chitin with an amount of a concentrated hydrohalogenic acid containing 1.5 mol to 6 mol of the hydrogen halide per 100 g of the chitin initially charged, while being irradiated with ultrasonic waves and also agitated by means of mechanical stirrer, to form a homogeneous mixture of the fine chitin particles with the concentrated hydrohalogenic acid, and then hydrolyzing the chitin with the concentrated hydrohalogenic acid, while the resulting homogeneous reaction mixture comprising the chitin and the concentrated hydrohalogenic acid is further continuously irradiated with the ultrasonic waves and also agitated by means of the mechanical stirrer.

4,804,751

POLYCYCLIC HYDROCARBON SUCCINIMIDES WITH PSYCHOTROPIC ACTIVITY

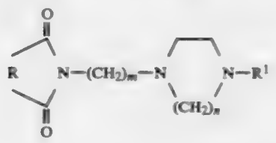
Magid A. Abou-Gharbia, Wilmington, Del., assignor to American Home Products Corporation, New York, N.Y.

Filed Jan. 30, 1987, Ser. No. 68,470

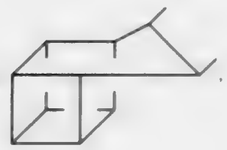
Int. Cl.[4] A61K *31/495;* **C07D** *401/06, 401/14*

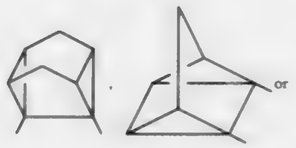
U.S. Cl. 540—575 7 Claims

1. A compound having the formula



wherein R represents







VOL 1099 ISS 2 14 FEB 1989 UMI

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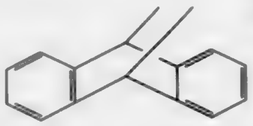


in which Y and Z are both

where X is methylene, ethylene or O and the dotted line represents an optional double bond, or one of Y or Z is



and the other represents $-(CH_2)_o-$ or



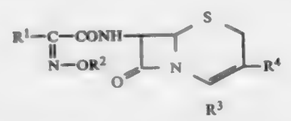
R^1 is unsubstituted or substituted phenyl, 2-pyridinyl, 2-pyrimidinyl, 2-pyrazinyl or 3-pyridazinyl, where the substituents are selected from the group lower alkyl, lower alkoxy, halo, cyano, nitro, hydroxy and trifluoromethyl;
m is 2–4;
n is 1–3;
o is 1–5;
and the pharmaceutically acceptable salts thereof.

4,804,752
SYN-ISOMER OF 3,7-DISUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS AND PROCESSES FOR THE PREPARATION THEREOF

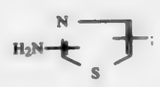
Takao Takaya, Sakai; Takashi Masugi, Toyonaka; Hisashi Takasugi, Osaka, and Hiromu Kochi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 40,976, May 21, 1979, which is a division of Ser. No. 767,700, Feb. 11, 1977, Pat. No. 4,166,115. This application Aug. 22, 1983, Ser. No. 525,499
Claims priority, application United Kingdom, Apr. 12, 1976, 7614916; Jun. 7, 1976, 7623490; Japan, Oct. 19, 1976, 51-125826
The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.
Int. Cl.[4] C07D *501/36*; A61K *31/545*
U.S. Cl. 540—227 **1 Claim**

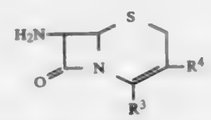
1. A process for preparing syn-isomer of 3,7-disubstituted-3-cephem-4-carboxylic acid compounds of the formula:



and pharmaceutically acceptable salts thereof, wherein
R^1 is a group of the formula:

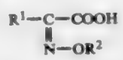


R^2 is lower alkyl;
R^3 is carboxy or protected carboxy; and
R^4 is a heteromonocyclic-thiomethyl group containing 1 to 4 nitrogen atom(s);
which comprises the step of reacting a compound of the formula:



(1)

or its trimethylsilylated compound at the amino group, an acid addition salt, or a salt with base, with a 2-lower alkoxyimino-2-thiazolylacetic acid of the formula:



(2)

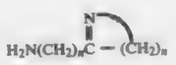
or an acid addition salt or a salt with base in the presence of a Vilsmeier reagent produced by the reaction of phosphorus oxychloride with dimethylformamide, at about neutral pH and at least two molar equivalents of phosphorus oxychloride is used to one molar equivalent each of 2-lower alkoxyimino-2-thiazolylacetic acid and dimethylformamide.

4,804,753
PROCESS FOR THE PREPARATION OF SCHIFF'S BASES

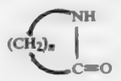
Hans-Helmut Schwarz, Krefeld, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 8, 1986, Ser. No. 817,205
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1985, 3502105
Int. Cl.[4] C07D *225/02, 223/02, 211/70, 207/20*
U.S. Cl. 540—450 **13 Claims**

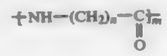
1. In a process for the preparation of Schiff's bases of the formula



wherein
n is 3 to 12,
by reacting cyclic lactams of the formula



wherein
n is 3 to 12,
on their ring-opened polymers of the formula



wherein
n is 3 to 12 and
m is 1 to 100,000,
with an inorganic base at an elevated temperature, wherein the improvement comprises the reaction being carried out in the presence of inert, high-boiling suspending agents selected from the group consisting of high-boiling aliphatic hydrocarbons, high-boiling aromatic hydrocarbons, mixtures of said aliphatic and aromatic hydrocarbons, high-boiling polymeric hydrocarbons and high-boiling mineral oil, wherein the amount of the suspending agent is not less than 25% by weight relative to the mixture of all reaction components, to result in a stirrable reaction mixture.

4,804,754
PREPARATION OF CAPROLACTAM FROM CYCLOHEXANONE OXIME BY BECKMANN REARRANGEMENT

Emile De Decker, Hoboken; Jozef Oostvogels, Schoten; Gerard van Wauwe, Edegem, all of Belgium, and Gerald Neubauer, Weinheim, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 10, 1987, Ser. No. 130,949
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1986, 3642314
Int. Cl.[4] C07D *201/04, 201/16*
U.S. Cl. 540—535 **4 Claims**

1. A process for preparing caprolactam, comprising
(a) a Beckmann rearrangement of cyclohexanone oxime with oleum at from 108° to 118° C. in one or more rearrangement stages, and
(b) maintaining the reaction mixture obtained from the rearrangement stage in a dwelling zone at from 90° to 100° C. for from 10 to 600 minutes.

4,804,755
PROCESS FOR THE PREPARATION OF 6-METHYL-3,4-DIHYDRO-1,2,3-OXATHIAZIN-4-ONE 2,2-DIOXIDE AND FOR THE PURIFICATION THEREOF

Dieter Reuschling, Butzbach; Adolf Linkies, Frankfurt am Main; Walter Reimann, Hofheim am Taunus; Otto E. Schweikert, Kelkheim; Karl E. Mack, Wiesbaden, and Wolfgang Eberts, Hattersheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 29, 1986, Ser. No. 902,427
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1985, 3531358
Int. Cl.[4] C07D *291/06*
U.S. Cl. 544—2 **14 Claims**

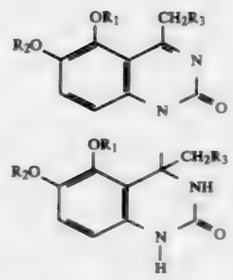
1. A process for purifying an organic phase obtained from the synthesis of the cyclic dioxide 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-one 2,2,-dioxide, said organic phase comprising said dioxide dissolved in a substantially water-immiscible, inert organic solvent, comprising the steps of:
purifying said organic phase by extraction with an aqueous medium, neutralizing the said dioxide with a base which forms non-toxic salts, and isolating said dioxide in the form of the resulting non-toxic salt thereof.

4,804,756
PROCESS FOR PREPARING 5,6-DIALKOXY-4-ALKYL-2(1H)-QUINAZOLINONES

Victor T. Bandurco, Bridgewater; Robert A. Mallory, Somerville, and Jeffery B. Press, Rocky Hill, all of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 628,820, Sep. 26, 1984, Pat. No. 4,751,304. This application Mar. 28, 1988, Ser. No. 173,896
Int. Cl.[4] C07D *401/04*
U.S. Cl. 544—284 **2 Claims**

1. A compound of the formula:



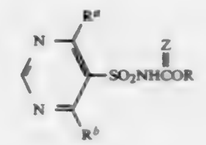
wherein R_1 and R_2 are lower alkyl and R_3 is hydrogen or lower alkyl, and its pharmaceutically acceptable salts.

4,804,757
PYRIMIDINYLSULFONYL CARBAMATES AND THIOCARBAMATES

Beat Bühner, Binningen; Werner Füry, Basel; Rolf Schurter, Binningen, all of Switzerland, and Georg Plasietas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 842,603, Mar. 21, 1986, Pat. No. 4,684,730, which is a division of Ser. No. 496,325, May 19, 1983, Pat. No. 4,612,037. This application May 18, 1987, Ser. No. 50,656
Claims priority, application Switzerland, May 28, 1982, 3314/82
Int. Cl.[4] C07D *239/30, 239/34*
U.S. Cl. 544—319 **2 Claims**

1. A compound of the formula



wherein
R^a is hydrogen, halogen, C_1–C_4alkyl or C_1–C_4alkoxy,
R^b is halogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4alkoxycarbonyl,
C_1–C_4alkylaminocarbonyl, di(C_1–C_4alkyl)aminocarbonyl or trifluoromethyl,
Z is oxygen or sulfur, and
R is C_1–C_4 alkyl, phenyl or benzyl.

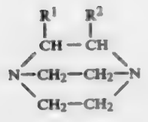
4,804,758
PREPARATION OF 1,4-DIAZABICYCLO[2.2.2]OCTANES

Wolfgang Hoelderich, Frankenthal; Kurt Schneider, Bad Dürkheim, and Walter Best, Weinsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 8, 1987, Ser. No. 105,537
Int. Cl.[4] C07D *487/08*
U.S. Cl. 544—352 **5 Claims**

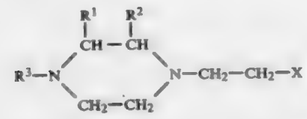
1. A process for the preparation of 1,4-diazabicyclo-[2.2.2]octane of a C-substituted 1,4-diazabicyclo[2.2.2]-octane of the formula (I)

VOL 1099 ISS 2 FEB 14 1989 UMI



(I)

where R^1 and R^2 are each hydrogen or alkyl or alkenyl, each of 1 to 4 carbon atoms, wherein a heterocyclic amine of the formula (II)



(II)

where R^1 and R^2 have the above meanings, R^3 is hydrogen, hydroxyethyl or aminoethyl and X is hydroxyl or amino, is converted in the presence of borosilicate and/or iron silicate zeolites as catalysts.

4,804,759

PYRIMIDINE COMPOUND

Toshihiro Shibata, and Norio Kuroswa, both of Urawa, Japan, assignors to Adeka Argus Chemical Co., Ltd., Tokyo, Japan

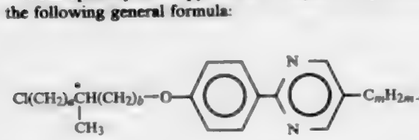
Filed Apr. 22, 1988, Ser. No. 185,097

Claims priority, application Japan, May 27, 1987, 62-130294; Sep. 29, 1987, 62-244781

Int. Cl.⁴ G02F 1/13; C09K 19/34; C07D 239/02

U.S. Cl. 544—335 **12 Claims**

1. An optically active pyrimidine compound represented by the following general formula:



wherein, a is 2 or 3, b is 2 or 3 and a+b=5; m is 4 to 18; and C represents an asymmetric carbon atom.

4,804,760

PROCESS FOR THE PREPARATION OF 4-HYDROXY-QUINOLINE-3-CARBOXYLIC ACIDS

Michael Schriewer, and Klaus Grohe, both of Odenthal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

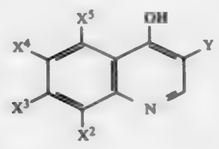
Filed Apr. 28, 1987, Ser. No. 43,663

Claims priority, application Fed. Rep. of Germany, May 10, 1986, 3615767

Int. Cl.⁴ C07D 215/56, 215/36, 215/38, 215/40

U.S. Cl. 546—153 **3 Claims**

1. A process for the preparation of a compound of the formula



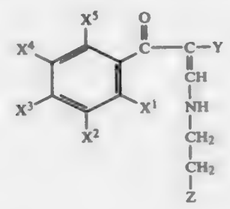
in which

Y is a nitrile group, an ester group $COOR^1$ or an acid amide $CONR^2R^3$,

R^1, R^2 and R^3 each independently is hydrogen or C_1–C_4-alkyl, and R^3 may also be phenyl, and

X^2, X^3, X^4 and X^5 each independently is hydrogen, halogen, nitro, cyano, alkyl having 1—4 carbon atoms, alkoxy having 1–3 carbon atoms, alkylmercapto having 1–3 carbon atoms, alkylsulphonyl having 1–3 carbon atoms, or a phenylsulphonyl group which is optionally substituted in the aryl radical,

comprising reacting an aminoacrylate of the formula



in which

X^1 is halogen,

Z is a nitrile group, an ester group $COOR^4$ or an acid amide group $CONR^5R^6$, and

R^4, R^5 and R^6 each independently is hydrogen or C_1–C_4-alkyl, and R^5 may also be phenyl,

with an acid acceptor selected from the group consisting of potassium tert.-butanolate, 1,4-diazabicyclo[2,2,2]-octane (DABCO), 1,8-diazo-bicyclo[5,4,0]undec-7-ene (DBU), butyl-lithium, phenyl-lithium, phenyl-magnesium bromide, sodium methylate, sodium ethylate, sodium hydroxide, sodium carbonate and potassium carbonate, in an aprotic solvent in the presence of about one equivalent of a base.

4,804,761

PROCESS FOR MAKING 6-ARYL-2-METHYLPYRIDINES

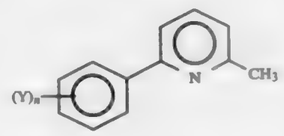
Alan E. Barton, Hatfield, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 856,601, Apr. 25, 1986, abandoned. This application Jul. 1, 1987, Ser. No. 69,809

Int. Cl.⁴ C07D 213/09, 213/14

U.S. Cl. 546—251 **10 Claims**

1. A process for making 6-aryl-2-methylpyridines having the formula



I

where

Y is chloro, bromo, iodo, fluoro, nitro, $(C_1$–$C_4)$alkyl, $(C_1$–C_4-$)$haloalkyl, $(C_1$–$C_4)$alkoxy or $(C_1$–$C_4)$alkylthio, or when two adjacent positions on the phenyl ring are substituted with alkoxy groups, these alkoxy groups may be joined to form a dioxolano or dioxano heterocyclic ring; and n is 0, 1, 2 or 3; which comprises

(a) treating a ketal of 1-hydroxy-1-aryl-5-hexanone with CrO_3 and acid to afford a 1-aryl-1,5-hexanedione; or treating the ketal of 1-hydroxy-1-aryl-5-hexanone with manganese dioxide in a suitable solvent to afford a ketone; and

(b) reacting the 1-aryl-1,5-hexanedione or the ketone from (a) with excess hydroxylamine hydrochloride in a polar solvent at a temperature of from about 50° C. to about 100° C. to afford the 6-aryl-2-methylpyridines of Formula I.

4,804,762

N-CYANOALKYLISONICOTINAMIDE DERIVATIVES

Hiroshi Yoshida, Tokyo; Shizuo Shimano, Ageo; Seiji Mochizuki, Ageo; Kengo Koike, Ageo; Taizo Nakagawa, Omiya, and Kenji Kouishi, Ageo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

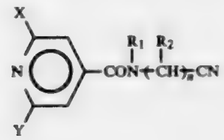
Filed May 4, 1987, Ser. No. 45,544

Claims priority, application Japan, May 13, 1986, 61-107592; Nov. 18, 1986, 61-272829; Nov. 18, 1986, 61-272831

Int. Cl.⁴ C07D 407/12, 409/12; A01N 43/40

U.S. Cl. 514—336 **15 Claims**

11. A method for preventing diseases of agricultural or horticultural plants caused by fungi or bacteria which comprises applying to soil, said plants or locus thereof a fungicidally or bacteriocidally effective amount of the compound of the formula:



(I)

wherein

X is halogen, lower alkoxy or lower alkylthio,

Y is hydrogen or chloro,

R_1 is hydrogen, lower alkyl, cyanomethyl, phenyl or benzyl,

R_2 is hydrogen, C_1~C_7-alkyl, C_3~C_6-cycloalkyl, lower alkoxy, phenyl, phenoxyphenyl, furyl, thienyl or benzyl and n=1 or 2

with a proviso that X and Y are not chloro at the same time.

4,804,763

METHOD FOR PREPARING CHLORINE-CONTAINING DERIVATIVES OF PYRIDINE COMPOUNDS

Jeanes Franklin, Brussels, Belgium, assignor to Reilly Chemicals, S.A., Belgium

Filed Aug. 19, 1985, Ser. No. 767,771

Claims priority, application France, Aug. 20, 1984, 84 13049

Int. Cl.⁴ C07D 213/61; C07C 17/00, 21/18

U.S. Cl. 546—345 **11 Claims**

1. Method for preparing chlorine-containing derivatives of pyridine compounds by a reaction of substitutive chlorination of the corresponding pyridine compounds by means of molecular chlorine in the presence of a chlorine-containing product serving as an initiator forming free radicals, characterized in that the initiator consists of a chlorine-containing product such as decachlorobutane or an octachlorobutene such as octachlorobutene-1, or a mixture containing these two products.

4,804,764

PROCESS FOR PRODUCING 2,3,5,6-TETRACHLOROPYRIDINE

Frank H. Murphy, Alvin, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 909,443, Sep. 19, 1986, Pat. No. 4,703,123. This application May 14, 1987, Ser. No. 49,487

Int. Cl.⁴ C07D 213/12, 213/14

U.S. Cl. 546—345 **7 Claims**

1. A process for preparing 2,3,5,6–tetrachloropyridine, comprising contacting pentachloropyridine in water and in the presence of a quaternary ammonium salt with about 0.7 to about 1.1 gram atoms of zinc per mole pentachloropyridine.

4,804,765

PROCESS FOR SYNTHESIZING N-[(1'-ALLYL-2'PYRROLIDINYL) METHYL]2-METHOXY-4,5-AZIMIDOBENZAMIDE

Jacques Acher, Itteville, and Jean-Claude Monier, Lardy, both of France, assignors to Societe D'Etudes Scientifiques et Industrielles de L'Ile-d-France, Paris, France

Filed Dec. 18, 1985, Ser. No. 810,669

Claims priority, application France, Dec. 18, 1984, 84 19322

Int. Cl.⁴ A61K 31/41; C07D 249/18

U.S. Cl. 548—259 **1 Claim**

1. Process for preparing N-[(1'-allyl-2'-pyrrolidinyl)methyl]-2-methoxy-4,5-azimidobenzamide comprising, in sequence:

(a) reacting methyl-2-methoxy-4-acetylamino 5-nitrobenzoate with sodium hydroxide and then reducing the resulting sodium 2-methoxy-4-amino-5-nitrobenzoate intermediate with hydrazine in the presence of Raney nickel at ambient pressure to form a 2-methoxy-4,5-diaminobenzoic acid intermediate;

(b) reacting the 2-methoxy-4,5-diaminobenzoic acid intermediate with acetic anhydride to form a 2-methoxy-4,5-diacetylaminobenzoic acid intermediate;

(c) reacting the 2-methoxy-4,5-diacetylaminobenzoic acid intermediate with a lower alkyl chloroformate to form a mixed lower alkanoic-benzoic anhydride intermediate of said 2-methoxy-4,5-diacetylaminobenzoic acid intermediate which is then treated with a dihalopentyl amine at ambient temperature to form a N-(2',5'-dihalopentyl)-2-methoxy-4,5-diacetylaminobenzamide intermediate;

(d) reacting the N-(2',5'-dihalopentyl)-2-methoxy-4,5-diacetylaminobenzamide intermediate with allylamine to form a N-[(1'-allyl-2'-pyrrolidinyl)methyl]2-methoxy-4,5-diacetylaminobezamide intermediate; and

(e) reacting the N-[(1'-allyl-2'-pyrrolidinyl)methyl]-2-methoxy-4,5-diacetylaminobenzamide intermediate with sodium nitride at ambient temperature.

4,804,766

PROCESS FOR THE PREPARATION OF THE (−)-ANTIPODE OF (E)-1-CYCLOHEXYL-4,4-DIMETHYL-3-HYDROXY-2-(1,2,4-TRIAZOL-1-YL)-PENT-1-ENE

Udo Kraatz, Leverkusen, and Peter Feyen, Mettmann, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 3, 1986, Ser. No. 835,587

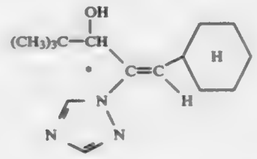
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1985, 3509823

The portion of the term of this patent subsequent to Dec. 6, 2005, has been disclaimed.

Int. Cl.⁴ C07D 249/08

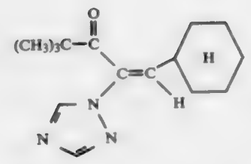
U.S. Cl. 548—262 **4 Claims**

1. A process for the preparation of the (−)-antipode of (E)-1-cyclohexyl-4,4-dimethyl-3-hydroxy-2-(1,2,4-triazol-1-yl)-pent-1-ene of the formula



which comprises reacting the (E)-isomer of 1-cyclohexyl-4,4-dimethyl-2-(1,2,4-triazol-1-yl)-pent-1-en-3-one of the formula

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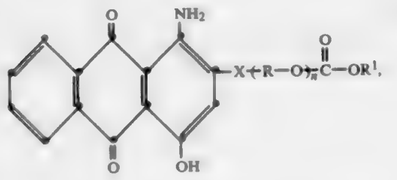
with lithium aluminum hydride in the presence of an inert organic diluent in the presence of the (−)-antipode of N-methyl-ephedrine and in the presence of N-ethyl-aniline at a temperature between −20° C. and 0° C.

4,804,767
PROCESS FOR THE PREPARATION OF DISPERSE DYES

Adolf Kiser, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 29, 1987, Ser. No. 79,053
Claims priority, application Switzerland, Aug. 8, 1986, 3199/86
Int. Cl.⁴ C07C *103/75*; C07D *333/32, 307/02*
U.S. Cl. 549—65 **22 Claims**

1. In a process for the preparation of a disperse dye of formula



(1)

wherein

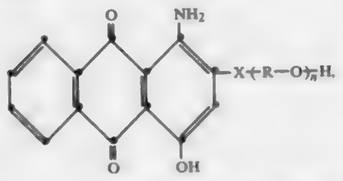
X is —O— or —S—,

R is C_2-C_6alkylene which is unsubstituted or substituted by hydroxy,

R^1 is C_1–C_8-alkyl which is unsubstituted or substituted by halogen, C_1-C_4-alkoxy, phenoxy, phenyl, 2-thienyl, 2-furyl or 2-tetrahydrofuryl, or is C_5 or C_6-cycloalkyl which is unsubstituted or substituted by C_1–C_4-alkyl, or is phenyl which is unsubstituted or substituted by halogen or C_1–C_4-alkyl and

n is an integer from 1 to 3,

by reacting a compound of formula



(2)

wherein X, R and n are as defined above, with a haloformate of formula

(3)

wherein Hal is chlorine or bromine and R^1 has the given meaning, the improvement consisting of carrying out the reaction in an inert organic solvent and in the presence of 1 to 2 moles of a heterocyclic tertiary nitrogen base per mole of compound of formula (2).

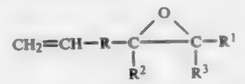
4,804,768
PROCESS FOR PRODUCING EPOXYORGANOALKOXYSILANES

Jennifer M. Quirk, Highland, Md., and Bernard Kanner, West Nyack, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1986, Ser. No. 913,330
Int. Cl.⁴ C07D *303/02*; C07F *7/02*
U.S. Cl. 549—215 **17 Claims**

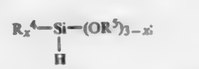
1. A process for producing epoxyorganoalkoxysilanes from reactants which contain nitrogenous impurities which comprises reacting

(a) an ethylenically unsaturated epoxide of the formula:



wherein R can be a single bond, alkylene or oxyalkylene, optionally containing alkyl pendant groups; R^1 can be hydrogen, alkyl or oxyalkyl, straight, branched or cyclic; R^2 and R^3 can individually be hydroqen, alkyl or oxyalkyl, straight, branched or cyclic,or both R^2 and R^3 can be either alkylene or oxyalkylene and combine together to form a 5 to 12 carbon cyclic ring, optionally containing alkyl pendants; and the number f carbon atoms in R, R^1, R^2 and R^3 are such that the total number of carbons in the epoxide is from 4 to 50;

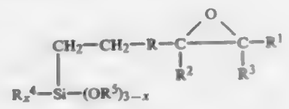
with (b) an alkoxysilane of the formula:



wherein R^4 and R^5 are alkyl groups individually containing from 1 to 1carbon atoms, and x is 0, 1 or 2;

in the presence of a catalytically effective amount of a rhodium catalyst;

wherein at least one of said epoxide and said alkoxysilane contain nitrogenous impurities; to produce an epoxyorganoalkoxysilane of the formula:



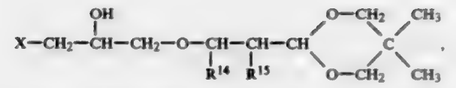
wherein R, R^1, R^2, R^3, R^4, R^5 and x are as defined.

4,804,769
ACETALS USEFUL FOR THE PREPARATION OF POLYSACCHARIDE DERIVATIVES

Daniel B. Solarek, Somerville; Patrick G. Jobe, Westfield; Martin M. Tessler, Edison; Robert L. Billmers, Stockton; Diane J. Lamb, Bound Brook, and John J. Tsai, Belle Mead, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Division of Ser. No. 829,675, Feb. 14, 1986, Pat. No. 4,703,116, which is a continuation-in-part of Ser. No. 758,634, Jul. 24, 1985, Pat. No. 4,675,394, which is a continuation-in-part of Ser. No. 641,820, Aug. 17, 1984, abandoned. This application Apr. 10, 1987, Ser. No. 37,282
Int. Cl.⁴ C07D *319/06*
U.S. Cl. 549—374 **13 Claims**

1. An acetal having the structure



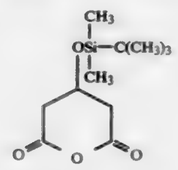
R^{14} and R^{15} are individually hydrogen or a methyl group; and X is a halogen.

4,804,770
PROCESS FOR PREPARING A KETO-PHOSPHONATE INTERMEDIATE USEFUL IN PREPARING HMG-COA REDUCTASE INHIBITORS

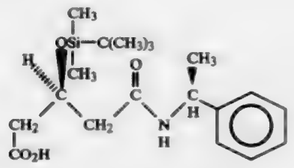
Donald S. Karanewsky, East Windsor, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 29, 1988, Ser. No. 188,564
Int. Cl.⁴ C07F *7/08, 7/18*
U.S. Cl. 556—405 **7 Claims**

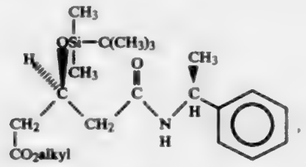
1. A process for preparing a keto-phosphonate which comprises reacting an anhydride of the structure



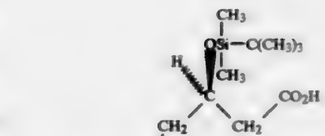
with S-α-methylbenzylamine to form a mixture of amides, separating the amide



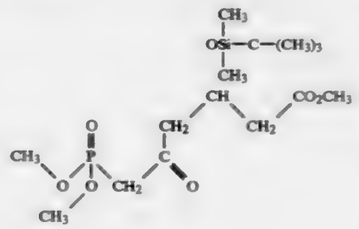
and reacting the said amide with an alkyl halide in the presence of a base to form the corresponding amide ester of the structure



treating the amide ester with dinitrogen tetroxide, heating the resulting N-nitrosoamide and treating the product with hydrogen in the presence of a catalyst to form the acid of the structure



and treating said acid with dimethyl methylphosphonate and n-butyllithium to form the ketophosphonate

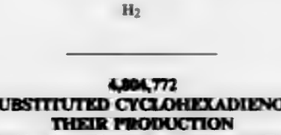


4,804,771
NOVEL N-SILYL SUBSTITUTED 1-SILA-2-AZACYCLOPENTANES

Enrico J. Pepe, Amawalk, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1987, Ser. No. 32,768
Int. Cl.⁴ C07F *7/10*
U.S. Cl. 556—407 **1 Claim**

1. The N-silyl substituted 1-silyl-2-azacyclopentane of the formula



4,804,772
GEM-DISUBSTITUTED CYCLOHEXADIENONES AND THEIR PRODUCTION

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 4, 1988, Ser. No. 177,097
Int. Cl.⁴ C07F *7/18, 7/10*
U.S. Cl. 556—436 **50 Claims**

1. A process which comprises reacting under essentially anhydrous conditions a quinone with a perfluoroalkyltrihydrocarbylsilane in the presence of an active alkali metal salt catalyst devoid of fluorine so that a gem-disubstituted cyclohexadienone is produced.

4,804,773
PRODUCTION OF GEM-DISUBSTITUTED CYCLOHEXADIENONES

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 4, 1988, Ser. No. 177,152
Int. Cl.⁴ C07F *7/18, 7/10*
U.S. Cl. 556—436 **26 Claims**

1. A process which comprises reacting under essentially anhydrous conditions a quinone with a perfluoroalkyltrihydrocarbylsilane in the presence of an active aminopyridine

catalyst so that a gem-disubstituted cyclohexadienone is produced.

4,804,774
PRODUCTION OF GEM-DISUBSTITUTED CYCLOHEXADIENONES
G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 4, 1988, Ser. No. 177,151
Int. Cl.[4] C07F 7/18, 7/10
U.S. Cl. 556—436 29 Claims

1. A process which comprises reacting under essentially anhydrous conditions a quinone with a perfluoroalkyltrihydrocarbylsilane in the presence of an active catalyst of the formula

R_3P

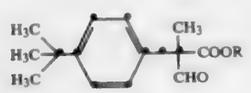
wherein all of the R groups are hydrocarbyloxy groups or dihydrocarbylamino groups so that a gem-disubstituted cyclohexadienone is produced.

4,804,775
PROCESS FOR REDUCING RESIDUAL MONOMERS IN LOW VISCOSITY POLYMER-POLYOLS
Vasanth R. Kamath, and Leonard H. Palys, both of Erie, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed Sep. 9, 1986, Ser. No. 905,412
Int. Cl.[4] C07C 121/54
U.S. Cl. 558—358 16 Claims

1. An improved process of preparing a low-viscosity polymer-polyol by
(a) polymerizing a reaction mixture of 40 to 90 parts of a polyol, 10 to 60 parts of at least one ethylenically unsaturated monomer, and 0.01 to 10 parts of a free radical initiator,
(b) after the reaction has been 80–95% completed, adding a chaser catalyst of a combination of 0.01 to 5.0 parts of a monoperoxycarbonate and 0.01 to 5.0 parts of at least one peroxide selected from a diperoxyketal or a peroxyester, and
(c) heating the reaction mass between about 80° C. and about 180° C. for an additional time period of at least one hour to drive the polymerization reaction to completion.

4,804,776
PROCESS FOR THE MANUFACTURE OF BENZENE DERIVATIVES
Josianne Bandin, Annemasse, France, and Hans U. Gonzenbach, Geneva, Switzerland, assignors to Givaudan Corporation, Clifton, N.J.
PCT No. PCT/CH85/00168, § 371 Date Jul. 24, 1986, § 102(e) Date Jul. 24, 1986, PCT Pub. No. WO86/03486, PCT Pub. Date Jun. 19, 1986
PCT Filed Nov. 27, 1985, Ser. No. 899,227
Claims priority, application Switzerland, Dec. 5, 1984, 05781/84; Nov. 13, 1985, 04866/85
Int. Cl.[4] C07C 69/76
U.S. Cl. 560—51 12 Claims

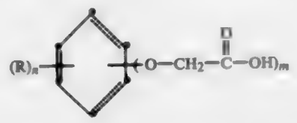
1. A compound of the formula



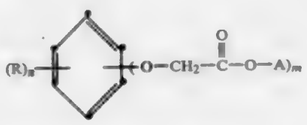
wherein R represents a lower-alkyl group of one to six carbon atoms.

4,804,777
PROCESS FOR THE PREPARATION OF ARYLOXYACETIC ACID
Charles E. Sumner, Jr., Kingsport, and Eric J. Fugate, Jonesborough, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 9, 1987, Ser. No. 106,302
Int. Cl.[4] C07C 51/16
U.S. Cl. 562—421 12 Claims

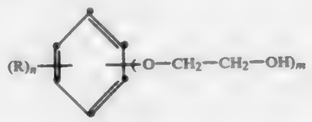
1. A process for preparation of an aryloxyacetic acid corresponding to the structure:



wherein m represents 1 or 2, n represents the numeral which results from the difference between 6 and m and R either individually or independently of one another represents hydrogen, alkyl, cycloalkyl, aryl, aralkyl, alkoxy, cycloalkoxy, aryloxy, halogen, alkylcarbonyl, arylcarbonyl, carboxyl or nitro, or represents a benzene ring fused to the phenyl ring, comprising
(a) preparing an aryloxyacetate corresponding to the structure:



wherein n, m and R are as described above and A is an alkali metal cation by contacting an aryloxyethanol corresponding to the structure:



wherein m, n and R are as described above, with oxygen in an aqueous alkaline reaction medium at a temperature in the range of 0° C. to the boiling point of the reaction medium in the presence of a catalytic amount of a catalyst comprised of palladium, silver and carbon,
(b) separating the aryloxyacetate from the catalyst, and
(c) preparing the aryloxyacetic acid by contacting the separated aryloxyacetate with a mineral acid.

4,804,778
PROCESS FOR PRODUCING METHACRYLIC ACID
Motomu Oh-kita; Kazuhiro Ishii, and Masaaki Kato, all of Hiroshima, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan
Filed Oct. 6, 1987, Ser. No. 105,041
Claims priority, application Japan, Oct. 27, 1986, 61-255402
Int. Cl.[4] C07C 57/055, 51/25, 51/305
U.S. Cl. 562—534 6 Claims

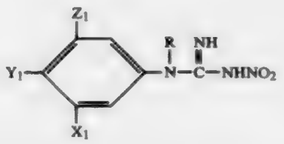
1. A process for producing methacrylic acid by vapor phase catalytic oxidation of methacrolein with molecular oxygen which comprises carrying out the reaction in the presence of a catalyst represented by the formula: $P_aMo_bV_cCu_dZn_eA_fB_gC_hD_iO_j$ wherein P, Mo, V, Cu, Zn and 0 represent phosphorus, molybdenum, vanadium, copper, zinc and oxygen, respectively, A represents at least one element selected from the group consisting of antimony and iron, B represents at least one element selected from the group consisting of silicon, sulfur, selenium, scandium and gallium, C represents at least one element selected from the group consisting of potassium, rubidium, cesium and thallium, D represents at least one element selected from the group consisting of tungsten, magnesium, chromium, manganese, zirconium, tin, tantalum, bismuth, cerium, cadmium and boron, a–j indicate the atomic ratio of the respective elements and b is 12, a is 0.1–3, c is 0.01–3, d is 0.01–3, e is 0.01–3, f is 0.1–5, g is 0.001–5, h is 0.01–3 and i is 0–5 and j indicates the number of oxygen atoms necessary to satisfy the valences of the respective elements.

4,804,779
CHEMICAL DETOXIFICATION OF POLYCHLORINATED BIPHENYLS (PCBS)
Thomas Novinson, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 4, 1985, Ser. No. 794,928
Int. Cl.[4] C07C 51/16
U.S. Cl. 562—542 2 Claims

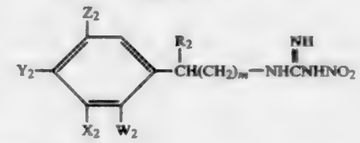
1. A two-step process for chemically detoxifying polychlorinated biphenyl compounds to convert them to biodegradable and substantially harmless substances without the creation of hazardous byproducts or pollutants, comprising:
(a) the first-step of reduction of polychlorinated biphenyl compounds at a temperature range of 25 to 80 degrees C. with a mild reducing agent selected from $NaBH_4$, KBH_4, $LiBH_4$, $Ca(BH_4)_2$, $Sr(BH_4)_2$, and $Mg(BH_4)_2$ that can safely be used in water or water-alcohol systems to yield unsubstituted biphenyl;
(b) the second-step of oxidation of said unsubstituted biphenyl in a water or water-alcohol solution at a temperature range of 25 to 80 degrees C. using an oxidizing agent selected from: sodium or potassium persulfate, sodium or potassium perborate, and any permanganate of an alkali or alkaline earth metal which yields manganese dioxide with the exception of barium and radium permanganates to yield a biodegradable dicarboxylic acid having the formula: $(CH_2)_n(CO_2H)_2$ where n=1 to 10.

4,804,780
SUBSTITUTED NITRO AND CYANOGUANIDINES
Laurine M. Speltz, Princeton; Bryant L. Walworth, Pennington, and Alexander D. Pavlista, Lawrenceville, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 551,611, Nov. 17, 1983, Pat. No. 4,584,092, which is a continuation-in-part of Ser. No. 451,698, Dec. 20, 1982, abandoned. This application Mar. 3, 1986, Ser. No. 835,847
Int. Cl.[4] C07C 129/14
U.S. Cl. 564—104 15 Claims

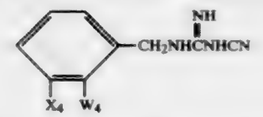
1. Guanidine compounds represented by the following formulae:



wherein
X_1 is $COCH_3$, halogen, CN, CH_2CN, $C(OH)_2CF_3$, $OCHF_2$, OCF_3, CH_3, CF_3, NO_2, OCF_2CHF_2, OCH_3, $N(CH_3)_2$, or CH_2OR_3 where R_3 is H or CH_3;
Y_1 is H, halogen, CH_3;
Z_1 is H, CH_3, halogen, OCH_3 or CF_3;
R is H or CH_3;
with the provisos that when X_1 is CH_3, OCH_3, F, Cl or Br and R is H, then Y_1 and Z_1 cannot both be hydrogen; and when X_1 is Cl and Z_1 and R are each hydrogen, then Y_1 cannot be methyl;
and the salts or tautomers thereof;



wherein
X_2 is H, OH, straight or branched C_1–C_4 alkoxy, halogen, OCF_3, CF_3, straight or branched C_1–C_4 alkyl or Y_2 is H or F;
Z_2 is F, H, CH_3 or OCH_3;
W_2 is or F;
m is an integer of 0, 1, or 2;
R_2 is H, CH_3, C_2H_5 or CF_3;
with the provisos that when m is 0 and R_2 is or CH_3, then W_2, X_2, Y_2 and Z_2 cannot all be hydrogen;
and when m is 1, then R_2, W_2, X_2, Y_2 and Z_2 cannot all be hydrogen; and the salts or tautomers thereof;



wherein
W_4 is H or F and X_4 is straight or branched C_1–C_4 alkoxy, straight or branched C_1–C_4 alkyl or F;
with the provisos that when W_4 is F, X_4 is H;
and the salts or tautomers thereof.

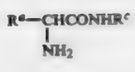
4,804,781
NOVEL THIOETHER AMIDE DIOLS AND POLYURETHANE POLYMERS THEREFROM
Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.
Filed Apr. 16, 1986, Ser. No. 852,588
The portion of the term of this patent subsequent to May 12, 2004, has been disclaimed.
Int. Cl.[4] C07C 148/00, 149/41
U.S. Cl. 564—154 4 Claims

1. A process for preparing thioether amide diols comprising reacting a bicyclic amide acetal with hydrogen sulfide at a temperature in the range of from 20° to 200° C. wherein a mole ratio of bicyclic amide acetal to hydrogen sulfide is in the range of from about 1:1 to about 2:1.

4,804,782
BRANCHED AMIDES OF L-ASPARTYL-D-AMINO ACID DIPEPTIDES
Thomas M. Brennan, and Michael E. Hendrick, both of Groton, Conn., assignors to Pfizer, Inc., New York, N.Y.
Filed Nov. 8, 1985, Ser. No. 796,173
Related U.S. Application Data [60] Division of Ser. No. 496,428, May 20, 1983, which is a division of Ser. No. 201,745, Nov. 5, 1980, Pat. No. 4,411,925, which is a continuation-in-part of Ser. No. 113,000, Jan. 21, 1980, abandoned.
Int. Cl.[4] C07C 103/37, 103/52; A23L 1/236
U.S. Cl. 564—193 3 Claims

1. A D-amino acid amide compound of the formula

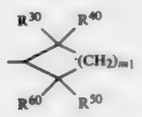
VOL 1099 ISS 2 FE 14 1989 UMI



wherein

R^a is methyl, ethyl, isopropyl or n-propyl and

R^c is a member selected from the group consisting of fenchyl, diisopropylcarbinyl, d-methyl-t-butylcarbinyl, d-ethyl-t-butylcarbinyl, di-t-butylcarbinyl, cyclopropyl-t-butylcarbinyl, cyclopentyl-t-butylcarbinyl, dicyclopropylcarbinyl,



where

m_1 is 1, 2 or 3 and

when

m_1 is 1: R^{30}, R^{40}, R^{50} and R^{60} are each methyl,

when

m_1 is 2: R^{30} is methyl, ethyl or isopropyl and R^{40}, R^{50} and R^{60} are each methyl and are each hydrogen, or R^{30}, and R^{60} are each methyl and R^{40} and R^{50} are each hydrogen, and

when

m_1 is 3:

(a) R^{30} is isopropyl or t-butyl and R^{40}, R^{50} and R^{60} are each hydrogen

(b) R^{30} is ethyl, R^{50} is methyl and R^{40} and R^{60} are each hydrogen, or

(c) R^{30} and R^{40} are each methyl and R^{50} and R^{60} are each hydrogen or methyl.

4,804,783

PROCESS FOR PRODUCING DIPHENYLAMINES OR N,N'-DIPHENYL-PHENYLENEDIAMINES

Teruyuki Nagata; Akihiro Tamaki; Nobuyuki Kajimoto, and Masaru Wada, all of Ohmuta, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

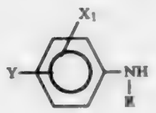
Continuation of Ser. No. 903,427, Sep. 4, 1986, which is a division of Ser. No. 710,662, Mar. 12, 1985, abandoned. This application Jul. 31, 1987, Ser. No. 80,440

Claims priority, application Japan, Mar. 14, 1984, 59-47119; Mar. 27, 1984, 59-57339; Jul. 6, 1984, 59-138894

Int. Cl.[4] C07C *85/06*

U.S. Cl. 564—402 **17 Claims**

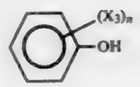
1. Process for producing a diphenylamine which comprises heat-reacting an aniline of the formula:



wherein

R is a member selected from the group consisting of hydrogen and a lower alkyl group, and

X_1 and Y are each a member selected from the group consisting of hydrogen, fluorine, an alkyl group, an alkoxy group, a carboxyl group, a carboxyl ester, a cyano group, a hydroxyl group and a benzyl group, said substituents can be the same or different, with an excess of a phenol of the formula:



wherein

X_3 is a member selected from the group consisting of a lower alkyl group and a lower alkoxy group, and

n is an integer from 0 to 2,

said reaction being carried out in the presence of a catalyst system consisting of (A) a member selected from the group consisting of (1) a hydrogen transfer catalyst and (2) a hydrogen transfer catalyst supported on a carrier, and (B) a catalytic amount of a cyclohexanone corresponding to said phenol of formula (3) and said phenol is used in an excess of 4 to 20 moles per mole of said aniline.

4,804,784

PROCESS FOR PREPARING METHYL- AND ETHYL-SUBSTITUTED PRIMARY ANILINES

Frank J. Weigert, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 559,184, Dec. 7, 1983, abandoned. This application Oct. 1, 1985, Ser. No. 782,573

Int. Cl.[4] C07C *85/24*

U.S. Cl. 564—409 **7 Claims**

1. A process for preparing 2,6-dimethylaniline and p-toluidine or 2,4-dimethylaniline and o-toluidine, by transalkylation of 2,4,6-trimethylaniline and aniline, comprising contacting 2,4,6-trimethylaniline and aniline in the presence of a nonbasic metal oxide catalyst at a temperature from about 250° to 525° C. and a pressure from about 10 kPa to 10 MPA, characterized in that, when the catalyst is a silica-alumina, the process is selective for 2,6-dimethylaniline and p-toluidine and, when the catalyst is supported titania, zirconia, iron oxide, zinc oxide and Group V and Group VI metal oxides, the process is selective for 2,4-dimethylaniline and o-toluidine, with the proviso that where the catalyst is a zeolite it has pore dimensions of at least about 0.52 nm and cages with dimensions greater than 0.75 nm.

4,804,785

ALPHA, BETA-SUBSTITUTED ACROLEINS

Bernd Jaussen; Stefan Karbach; Hans-Gert Recker, and Marco Thyes, all of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 5,691, Jan. 22, 1987, Pat. No. 4,723,042. This application Sep. 16, 1987, Ser. No. 97,113

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1986, 3601927

Int. Cl.[4] C07C *47/55, 47/546*

U.S. Cl. 568—425 **2 Claims**

1. A α,β-substituted acrolein of the formula



where A is phenyl, 4-fluorophenyl, 3-fluorophenyl, 4-chlorophenyl or 3-chlorophenyl and B is 2-chlorophenyl, 3-chlorophenyl, 4-chlorophenyl, 2-fluorophenyl, 3-fluorophenyl, 4-fluorophenyl, 2-fluoro-6-chlorophenyl, 3-trifluoromethylphenyl or 4-trifluoromethylphenyl.

4,804,786

PREPARATION OF 4-MONOACETALS OF 2-METHYLBUT-2-ENE-1,4-DIAL

Rolf Fischer, Heidelberg, and Bernhard Schulz, Schwetzingen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

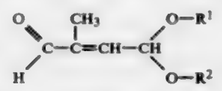
Filed Jan. 16, 1987, Ser. No. 3,796

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1986, 3602253

Int. Cl.[4] C07C *43/30*

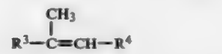
U.S. Cl. 568—591 **5 Claims**

1. A process for the preparation of a 4-monoacetal of (E)-2-methylbut-2-ene-1,4-dial of the formula I



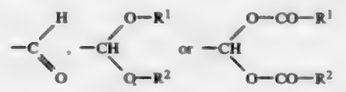
(I)

where R^1 and R^2 are each an aliphatic hydrocarbon radical of 1 to 12 carbon atoms, cycloalkyl of 5 to 7 carbon atoms or benzyl, or R^1 and R^2 together form an ethylene or propylene radical which may furthermore be substituted by alkyl of 1 to 4 carbon atoms, wherein a compound of the formula II

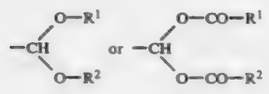


(II)

where either R^3 and R^4 are both one of the groups



where R^1 and R^2 have the above meanings, or R^3 is one of the groups



and R^4 is formyl



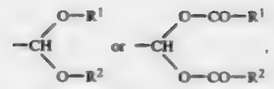
is reacted, at from 20° to 200° C., in the presence of an acidic compound selected from the group consisting of aliphatic carboxylic acids, sulfonic acids, mineral acids and cation exchangers in their acidic form, with a compound of the formula III

$$R^5—OH \qquad (III)$$

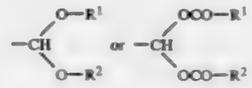
where R^5 is hydrogen, alkyl of 1 to 12 carbon atoms or hydroxyalkyl of 2 to 5 carbon atoms, and, where R^3 and R^4 are each



R^5 is alkyl, and where R^3 and R^4 are each



R^5 is hydrogen, and where R^3 is



and R^4 is



R^5 is hydrogen and/or alkyl.

4,804,787

PROCESSES AND INTERMEDIATES FOR MAKING 16-PHENOXY AND 16-SUBSTITUTED PHENOXY-PROSTATRIENOIC ACID DERIVATIVES

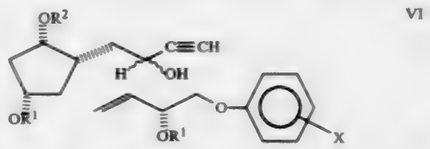
Gary F. Cooper, Menlo Park; Douglas L. Wren, Palo Alto; Albert R. Van Horn, San Jose; Tsung-Tee Li, Los Altos Hills, and Colin C. Beard, Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 564,386, Dec. 22, 1983, Pat. No. 4,600,785. This application Oct. 9, 1985, Ser. No. 785,934

Int. Cl.[4] C07C *41/00*

U.S. Cl. 568—649 **8 Claims**

1. An enantiomer of a compound of the formula



VI

or a racemic mixture thereof wherein R^1 is hydrogen or a base-stabile, acid-labile ether-forming group; R^2 is hydrogen or a base-labile ether-forming group; X is hydrogen, halo, trifluoromethyl, lower alkyl or lower alkoxy, and the wavy lines represent that α or β configuration with the proviso that when one wavy line is the other is β.

4,804,788

PREPARATION PROCESS OF 4,4-DIHYDROXYBIPHENYL

Yutaka Kosai, Iwaki; Tadashi Nakamura, Tokyo; Takayaki Tanosaka, Iwaki; Kazuo Yoshida, Iwaki, and Yoshihisa Machida, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo K.K., Japan

Filed Nov. 4, 1987, Ser. No. 116,733

Claims priority, application Japan, Nov. 7, 1986, 61-263841

Int. Cl.[4] C07C *39/14, 39/15*

U.S. Cl. 568—730 **2 Claims**

1. A process for the preparation of 4,4'-dihydroxybiphenyl, which comprises decomposing 4,4'-di(2-hydroxy-2-propyl)-biphenyl at a reaction temperature in a range of from 20° C. to the boiling point of acetonitrile with 2–3 times (in molar ratio) of hydrogen peroxide and 0.005–5 times (in weight ratio) of an acid catalyst in 2–3 volumes/weights of acetonitrile as a solvent.

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4,804,789

D-MANNITE DERIVATIVES AS STARTING PRODUCTS FOR THE SYNTHESIS OF PHOSPHOLIPIDS

Hansjörg Eibl, Bovenden, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft Zur Förderung der Wissenschaften E.V., Göttingen, Fed. Rep. of Germany

Division of Ser. No. 598,292, filed as PCT DE83/00123 on Jul. 6, 1983, published as WO84/00362 on Feb. 2, 1984, Pat. No. 4,734,225.

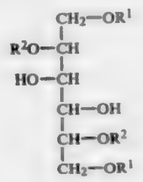
This application Oct. 22, 1987, Ser. No. 112,561

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1982, 3225225; Oct. 27, 1982, 3239858

Int. Cl.⁴ C07C *31/26*

U.S. Cl. 568—853 **7 Claims**

1. D-Mannitol derivatives of the general formula I



wherein R^1 and R^2 are the same or different and when R^1 and R^2 are the same, signify an unsubstituted straight-chained or branched alkyl, alkenyl group with 6 to 24 carbon atoms, and when R^1 and R^2 are different signify a substituted or unsubstituted straight-chained or branched alkyl group with 1 to 24 carbon atoms straight-chained or branched alkenyl group with 3 to 24 carbon atoms, the substituents being phenyl, benzyl or allyl radicals.

4,804,790

PROCESS FOR OBTAINING FATTY ALCOHOLS FROM FREE FATTY ACIDS

Hartwig Schaett, Duesseldorf-Benrath, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 859,850, May 1, 1986, abandoned, which is a continuation of Ser. No. 628,702, Jul. 9, 1984, abandoned. This application Dec. 15, 1987, Ser. No. 133,188

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1983, 3325421

Int. Cl.⁴ C07C *29/136, 31/125*

U.S. Cl. 568—885 **15 Claims**

1. A process for the gas-phase hydrogenation of a free fatty acid to the corresponding fatty alcohol comprising the steps of

(a) reacting said free fatty acid in the vapor phase in the presence of a particulate fixed-bed, zinc-oxide based, acid-sensitive catalyst containing zinc oxide in excess over other materials present and consisting of either (i) zinc oxide, (ii) zinc oxide and copper, (iii) zinc oxide and chromium III oxide, or (iv) zinc oxide, copper, and chromium III oxide, with hydrogen gas in an amount of from about 75 to about 500 times the theoretical quantity required to reduce said free fatty acid to the corresponding alcohol at a temperature in the range of from about 250° to about 350° C. and at a pressure of from about 200 to about 500 bars; and

(b) adjusting as needed within the parameters given in (a) either or both of (i) the temperature and (ii) the ratio of free fatty acid to hydrogen, to suppress formation of soap resulting from corrosion of the catalyst and to suppress formation of paraffins resulting from overreduction of fatty acid.

4,804,791

ALCOHOLS PRODUCTION BY HYDROGENATION OF CARBOXYLIC ACIDS

Melanie Kitson, Staines, and Peter S. Williams, Hull, both of England, assignors to BP Chemicals Limited, London, England

Continuation of Ser. No. 65,677, Jun. 18, 1987, abandoned, which is a continuation of Ser. No. 849,050, Apr. 7, 1986, abandoned. This application Jan. 29, 1988, Ser. No. 150,453

Claims priority, application United Kingdom, Apr. 13, 1985, 8509530

Int. Cl.⁴ C07C *29/136, 31/08, 31/10*

U.S. Cl. 568—885 **12 Claims**

1. A process for the production of either ethanol from acetic acid or propanol from propionic acid which process comprises contacting either acetic acid or propionic acid in the vapour phase with hydrogen at elevated temperature and a pressure in the range from 1 to 150 bar in the presence of a catalyst comprising as essential components (i) a noble metal of Group VIII of the Periodic Table of the Elements, and (ii) rhenium.

4,804,792

NITRATION OF BENZENE OR TOLUENE IN A MOLTEN NITRATE SALT

Robert W. Mason, Lake Charles, and R. K. Steely, Sulphur, both of La., assignors to Olin Corporation, Cheshire, Conn.

Filed Jan. 28, 1988, Ser. No. 149,258

Int. Cl.⁴ C07C *79/10*

U.S. Cl. 568—939 **11 Claims**

1. A method of nitrating an aromatic compound selected from the group consisting of benzene and toluene by a vapor phase reaction of gaseous reactants in contact with a molten nitrate salt selected from the group consisting of the molten nitrate salts of sodium, potassium, lithium, and mixtures thereof, said gaseous reactants being said aromatic compound and concentrated nitric acid, said reaction being carried out at a reaction temperature of between about 150° C. and about 250° C. and a reaction pressure of between about 100 mm of Hg and about one atmosphere, for a reaction time not exceeding one hour, thereby producing nitrobenzene or nitrotoluene.

4,804,793

DRILLING MUD COMPOSITIONS CONTAINING HIGH MOLECULAR WEIGHT POLY (VINYLAMINES)

Ta-Wang Lai, Allentown, and Bheema R. Vijayendran, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 914,046, Oct. 1, 1986. This application Mar. 4, 1988, Ser. No. 164,356

Int. Cl.⁴ C08K *3/10*

U.S. Cl. 574—445 **14 Claims**

1. A drilling mud composition consisting essentially of an aqueous medium containing 0.5 to 5 wt% dispersed clay, 0 to 10 wt% electrolyte and 0.1 to 1 wt% poly(vinylamide) of at least 10^6 average molecular weight and at least 10% hydrolyzed to vinylamine units.

4,804,794

VISCOSITY MODIFIER POLYMERS

Gary Ver Strate, Atlantic Highlands; Ricardo Bloch, Scotch Plains; Mark J. Struglinski, Bridgewater; John E. Johnston, Westfield, and Roger K. West, Montclair, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Jul. 13, 1987, Ser. No. 72,825

Int. Cl.⁴ C10L *1/16*

U.S. Cl. 585—12 **94 Claims**

1. Copolymer of ethylene and at least one other alpha-olefin monomer, said copolymer comprising intramolecularly heterogeneous copolymer chains containing at least one crystallizable segment of the methylene units and at least one low crystallinity ethylene-alpha-olefin copolymer segment, wherein said at least one crystallizable segment comprises at least about 10 weight percent of said copolymer chain and contains an average ethylene content of at least about 57 weight percent, wherein said low crystallinity segment contains an average ethylene content not greater than about 53 weight percent, and wherein said copolymer has a molecular weight distribution characterized by at least one of a ratio of $\overline{M}_w/\overline{M}_n$ of less than 2 and a ratio of $\overline{M}_z/\overline{M}_w$ of less than 1.8, and wherein at least two portions of an individual intramolecularly heterogeneous chain, each portion comprising at least 5 weight percent of said chain, differ in composition from one another by at least 7 weight percent ethylene.

38. In a polymerization process for producing copolymer in the form of copolymer chains, from a reaction mixture comprising catalyst, ethylene and at least one other alpha-olefin, the improvement which comprises:

(a) introducing an initial feed to a polymerization reaction zone in such a manner and under conditions sufficient to initiate propagation of essentially all copolymer chains simultaneously, said initial feed comprising said catalyst, ethylene and at least one other alpha-olefin, said polymerization reaction zone comprising at least one mix-free reactor;

(b) introducing at least one additional monomer feed into said polymerization reaction zone after initiation of said copolymer chains, said additional monomer feed comprising at least one of ethylene and one or more other alpha-olefin; and

(c) conducting the polymerization in said at least one mix-free reactor;

(i) with essentially one active catalyst species;

(ii) using at least one reaction mixture which is essentially transfer agent-free; and



(iii) in such a manner and under conditions sufficient to form intramolecularly heterogeneous copolymer chains containing at least one crystallizable segment of methylene units and at least one low crystallinity ethylene-alpha-olefin copolymer segment, wherein said at least one crystallizable segment comprises at least about 10 weight percent of said copolymer chain and contains an average ethylene content of at least about 57 weight percent and wherein said low crystallinity segment contains an average ethylene content of from about 20 to 53 weight percent, and wherein said copolymer has a molecular weight distribution characterized by at least one of a ratio of $\overline{M}_w/\overline{M}_n$ of less than 2 and a ratio of $\overline{M}_z/\overline{M}_w$ of less than 1.8, and wherein at least two portions of an individual intramolecularly heterogeneous chain, each portion comprising at least 5 weight percent of said chain, differ in composition from one another by at least 7 weight percent ethylene.

63. A lubricating oil composition comprising a major amount of basestock lubricating oil, of lubricating viscosity, containing an effective amount of a viscosity modifier comprising a copolymer of ethylene and at least one other alpha-olefin monomer, wherein said copolymer has a MWD characterized by at least one of a ratio of $\overline{M}_w/\overline{M}_n$ of less than 2 and a ratio of $\overline{M}_z/\overline{M}_w$ of less than 1,8, and wherein said copolymer comprises intramolecularly heterogeneous polymeric chains containing at least one crystallizable segment of methylene units and at least one low crystallinity ethylene-alpha-olefin copolymer segment, wherein said at least one crystallizable segment comprises at least about 10 weight percent of said copolymer chain and contains an average ethylene content of at least about 57 weight percent, and wherein said low crystallinity segment contains an average ethylene content of from about 20 to 53 weight percent, and wherein at least two portions of an individual intramolecularly heterogeneous chain, each portion comprising at least 5 weight percent of said chain, differ in composition from one another by at least 7 weight percent ethylene.

4,804,795

HIGH-DENSITY FUEL OIL

Hitoshi Yasue; Mitsuo Matsuno, and Hiroshi Imai, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Japan

Continuation of Ser. No. 937,225, Dec. 3, 1986, abandoned. This application Feb. 2, 1988, Ser. No. 153,982

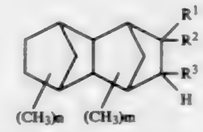
Claims priority, application Japan, Dec. 5, 1985, 60-273976

The portion of the term of this patent subsequent to Aug. 5, 2003, has been disclaimed.

Int. Cl.⁴ C07C *13/28, 2/50*

U.S. Cl. 585—21 **5 Claims**

1. A high-density fuel oil comprising an isomerized product prepared by isomerizing an alicyclic saturated hydrocarbon represented by the following formula in the presence of an acid catalyst:



wherein each of m and n is 0 or 1, and each of R^1 to R^3 is a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, and the number of the total carbons of R^1 to R^3 is within the range of 1 to 3.

4,804,796

CATALYTIC, HOLLOW, REFRACTORY SPHERES, CONVERSIONS WITH THEM

Taylor G. Wang, Glendale; Daniel D. Ellemen, San Marino; Mark C. Lee, La Canada, and James M. Kendall, Jr., Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 841,062, Mar. 18, 1986, Pat. No. 4,701,436, which is a continuation-in-part of Ser. No. 602,901, Apr. 23, 1984, Pat. No. 4,576,926. This application Apr. 8, 1987, Ser. No. 45,650

Int. Cl.⁴ B01J *23/40*

U.S. Cl. 585—269 **19 Claims**



1. A reaction medium media comprising a liquid reactant containing a suspension of hollow, gas impervious catalyst spheres formed of a refractory compound shell having a catalytic active surface and containing a gas at a pressure greater than atmospheric, said spheres having a preselected density in the range of +10 percent of the density of the liquid reaction medium.

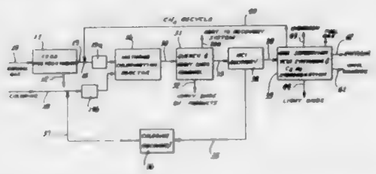
VOL 1099 ISS 2 FEB 14 1989 UMI

4,804,797

PRODUCTION OF COMMODITY CHEMICALS FROM NATURAL GAS BY METHANE CHLORINATION

Ronald G. Minet, South Pasadena, and Stanley C. Che, Los Alamitos, both of Calif., assignors to Gas Research Institute, Chicago, Ill.

Filed Aug. 24, 1987, Ser. No. 88,240
Int. Cl.[4] C07C 2/00
U.S. Cl. 585—500 12 Claims



1. The method for converting methane into at least one higher molecular weight hydrocarbon, which comprises reacting in a reaction zone a mixture of chlorine and a gas comprising methane in a mole ratio of methane to chlorine of about 1.5:1 to 5:1 under conditions to provide a reaction pressure of about 3 atmospheres and a reaction temperature of at least about 1,100° C., and to form as mixed reaction products hydrogen chloride and a hydrocarbon or hydrocarbons selected from the group that includes ethane, ethylene, acetylene, propylene and hydrogen, the methane and chlorine being introduced to said zone as feed, and pre-heating the feed by contact with hot, inert packing material and to a temperature or temperatures between about 900° C. and about 1,200° C., controlling feed pressurization to maintain said reaction preasure and including controlling the feed of methane and chlorine to said zone to achieve an exothermic reaction of the pre-heated methane and chlorine in the reaction zone to produce temperatures therein between 1,100° C. and 1,500° C.

4,804,798

PROCESS FOR THE POLYMERIZATION OF ALPHA-OLEFINS OR OF THEIR MIXTURES WITH MINOR AMOUNTS OF ETHYLENE, BY MEANS OF CATALYSTS COMPRISING SOLID COMPONENTS OR PRECURSORS AND SUCH COMPONENTS, IN THE FORM OF MICROSPHEROIDAL PARTICLES

Enrico Albizzati, Novara, Italy, assignor to Montedison S.p.A., Milan, Italy

Filed Jul. 27, 1987, Ser. No. 78,083
Claims priority, application Italy, Jul. 31, 1986, 21334 A/86; Nov. 27, 1986, 22468 A/86
Int. Cl.[4] C07C 2/22
U.S. Cl. 585—512 8 Claims

1. Process for the polymerization of alpha-olefins of formula:

$$R—CH=CH_2$$

wherein R = alkyl radical of from 1 to 6 C atoms, or of their mixtures with minor amounts of ethylene, carried out in the presence of a catalyst comprising:

(A) a solid component obtained by reacting (a) an emulsion obtained by emulsifying compounds which are liquid under the emulsifying conditions, selected from the class consisting of compounds of magnesium and compounds of a transition metal, alone or in combination with each other, or solutions of compounds selected from compounds of magnesium and compounds of a transition metal, alone or in combination with each other, in a perfluoropolyether oil with which the solvent of said solutions is not miscible, with (b) an agent capable of precipitating such a compound in the form of a solid containing at least one Mg-halogen bond, or a transition metal-halogen bond, or both a Mg-halogen bond and a transition metal-halogen bond,

(B) an aluminum-alkyl compound; and

(C) an electron-donor compound.

4,804,799

DEHYDROGENATION CATALYST

Gregg E. Lewis; Allen R. Smith, and Fred A. Sherrod, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 28, 1987, Ser. No. 90,807
Int. Cl.[4] C07C 5/327; B01J 23/02
U.S. Cl. 585—444 42 Claims

22. In a process for dehydrogenating an alkylaromatic compound to make an alkenyl aromatic compound in which the alkylaromatic compound is heated together with steam in the presence of an alkali-promoted iron catalyst containing cerium, the improvement which comprises employing said catalyst which additionally contains copper as a promoter.

4,804,800

PROCESS FOR SYNTHESIZING A ZEOLITE CATALYST ON A PH CONTROLLED BASIS TO IMPROVE CATALYST LIFE

Arie Bortinger, Ridgewood; Robert A. Maggio, Long Valley, and Wim J. M. Pieters, Morristown, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 685,153, Dec. 21, 1984, abandoned. This application Nov. 16, 1987, Ser. No. 121,017
Int. Cl.[4] C07C 1/00
U.S. Cl. 585—640 10 Claims

1. A process for converting a feed to a mixture rich in olefins which comprises contacting, under conversion conditions at a conversion reaction temperature of from about 250° to about 500° C., said feed comprising one or more monohydric alcohols having from about 1 to about 4 carbon atoms, ethers derived therefrom, or mixtures of said alcohols and ethers, with a crystalline aluminosilicate zeolite, said zeolite being prepared by the process comprising:

(A) admixing to form a reaction mixture in the absence of a buffer:

(a) at least one tetraalkyl ammonium hydroxide in an amount sufficient to impart a pH to the reaction mixture in the initial absence of said acid of (f) of not less than 13, when measured at room temperature;

(b) at least one sodium cation source;

(c) at least one silica source;

(d) at least one alumina source;

(e) water; and

(f) at least one inorganic acid in a manner and under conditions sufficient to (i) impart a SiO_2/Al_2O_3 mole ratio of from about 70 to about 2000 to the crystalline zeolite; (ii) impart a Na_2O/SiO_2 mole ratio to said admixture of at least 0.05 and (iii) adjust, with said acid, the initial pH of the reaction mixture, when measured at room temperature, to be from about 11.3 to about 11.7;

(B) heating the reaction mixture until crystals of said zeolite form;

(C) separating said crystals from the reaction mixture; and

(D) converting the resulting crystals to the hydrogen form by exchange and calcination.

4,804,801

PROCESS FOR CONVERTING C_2 TO C_4 ALIPHATICS TO AROMATICS OVER A METAL-ACTIVATED ZEOLITE

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 905,101, Sep. 8, 1986, abandoned. This application Jun. 7, 1988, Ser. No. 205,564
Int. Cl.[4] C07C 15/393
U.S. Cl. 585—407 15 Claims

1. A process for producing aromatic compounds which

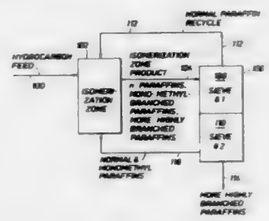
comprises contacting under conversion conditions, a feed containing at least 50 weight percent of C_2 to C_8 aliphatic hydrocarbons with a balanced acid/hydrogenation dual function catalyst comprising as the acid component a crystalline zeolite characterized by a Constraint Index within the approximate range of 1 to 12 and an alpha value no higher than about 100 and as the hydrogenation component an added metal constituent comprising at least 50 weight percent of a component consisting of zinc and a metal from Group IB of the Periodic Table, the weight of added metal in said catalyst being between about 0.5 to about 20 percent based on the total weight of catalyst whereby aliphatic hydrocarbons present in said feed are converted to aromatic compounds, and recovering said aromatic compounds, said zeolite as prepared either having a silica/alumina ratio of at least 220, or a silica/alumina ratio below 220 and being either steamed at a temperature of about 700° to 1300° F. for a period of about 0.5 to 20,000 hours or calcined at a temperature of about 800° to 1000° C. for a period of about 1 to 10 hours, to reduce its alpha value to below 100.

4,804,802

ISOMERIZATION PROCESS WITH RECYCLE OF MONO-METHYL-BRANCHED PARAFFINS AND NORMAL PARAFFINS

Wayne E. Evans, and Stephen C. Stem, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 25, 1988, Ser. No. 147,477
The portion of the term of this patent subsequent to Jan. 5, 2005, has been disclaimed.
Int. Cl.[4] C07C 5/27
U.S. Cl. 585—734 21 Claims



1. An isomerization process to produce an isomerate product stream comprising a gasoline blending component from a hydrocarbon stream comprising C_6 normal paraffin, C_6+ normal paraffins or mixtures thereof, said process comprising the combinative steps of:

(a) passing said paraffin or mixtures of paraffins to an isomerization zone maintained at isomerization conditions and containing an isomerization catalyst to produce an isomerization zone effluent stream comprising di-branched paraffins, mono-methyl-branched paraffins, and unreacted normal paraffins;

(b) passing said isomerization zone effluent stream to a separation zone containing multiple crystalline molecular sieves, each having pore sizes of different dimensions, wherein the first of said sieves has pores of a dimension effective to adsorb normal paraffins while being restrictive to prohibit adsorption of mono-methyl-branched paraffins and di-branched paraffins and wherein the second of said sieves has a pore size intermediate 5.5×5.5 and 4.5×4.5 A and is effective to adsorb normal paraffins and mono-methyl-branched paraffins while restrictive to prohibit adsorption of di-branched paraffins;

(c) contacting said isomerization zone effluent stream with said first sieve in said separation zone to separate said n-paraffins from said moso-methyl-branched paraffins and di-branched paraffins, recovering and recycling at least a portion of said n-paraffins to said isomerization zone and forming a first sieve effluent stream comprising di-branched paraffins and mono-methyl-branched paraffins;

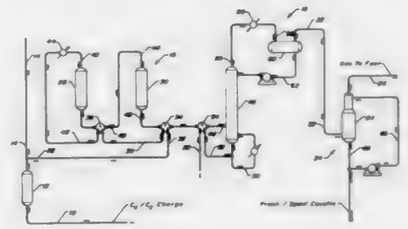
(d) contacting said first sieve separation effluent stream with said second sieve to separate said di-branched paraffins from said moso-methyl-branched paraffins and to form an isomerate product stream comprising said di-branched paraffins as said gasoline blending component and, recovering and recycling at least a portion of said mono-methyl-branched paraffins to said isomerization zone.

4,804,803

ISOMERIZATION WITH ONCE-THROUGH HYDROGEN

Robert J. Schmidt, Rolling Meadows; Lynn H. Rice, Palatine, and Laurence Stine, Western Springs, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 7, 1987, Ser. No. 129,267
Int. Cl.[4] C10G 35/04
U.S. Cl. 585—748 5 Claims



1. A process for the isomerization of a feed stream comprising C_4–C_6 hydrocarbons and having a water concentration of less than 0.1 ppm, said process comprising:

(a) adding hydrogen to said feed stream;

(b) contacting said feed stream and hydrogen mixture in a reaction zone with an isomerization catalyst comprising alumina, having from 0.01 to 25 wt. % platinum and from 2 to 10 wt. % of a chloride component at isomerization conditions including a temperature in a range of from 40°–235° C. (104°–455° F.), a pressure of from 7 bars gauge to 70 bars gauge and a space velocity of from 0.1 to 10^{-1};

(c) maintaining a chloride concentration in the reaction zone of from 30 to 300 ppm;

(d) recovering an effluent stream from said reaction zone;

(e) adjusting the amount of hydrogen added in step (a) so that said effluent stream has a hydrogen to hydrocarbon mol ratio of less than 0.05; and

(f) separating said effluent stream in a stabilizer column into a product stream of C_4–C_6 hydrocarbons and a gas stream which is removed from the process without recycle of hydrogen.

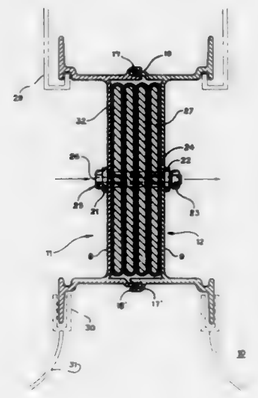
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4,804,804

THERMALLY EFFICIENT POWER BUSWAY HOUSING

David A. Hibbert, South Windsor; Anthony L. Richards, Southington; Dennis C. Zaffeiste, Kensington; Conrad R. Turmelle, Farmington, and Harold F. Larkin, Plainville, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Nov. 19, 1987, Ser. No. 122,863
Int. Cl.[4] H02G 5/06, 5/10
U.S. Cl. 174—16.2 10 Claims



1. A power bus support housing comprising:
a pair of opposing non-ferrous metal apertured side plates, each of said plates having a U-shaped configuration consisting of a pair of top and bottom flanges joined by a plate;
means on one end of each of said flanges for interlocking said side plates together, said interlocking means comprising an angulated projection or an angulated slot;
first rails on an opposite end of one of said flanges, said first rails providing hanger support connection means; and
second rails on an opposite end of another of said flanges, said second rails providing ground stab connection means.

4. A power busway system comprising:
a pair of apertured non-ferrous metal side plates arranged on either side of a plurality of apertured bus conductors;
hollow bolt attachment means extending through said side plates and said bus conductors and holding said side plates and bus conductors in thermal proximity;
insulative means on each of said bus conductors to electrically isolate said bus conductors from each other and from said side plates; and
an insulative sleeve intermediate said attachment means and said bus conductors.

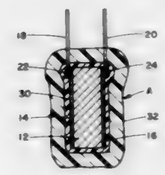
4,804,805

PROTECTED SOLDER CONNECTION AND METHOD

Adamantios Astouras, Fairlawn, and Kenneth C. Day, Mansfield, both of Ohio, assignors to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Dec. 21, 1987, Ser. No. 135,651
Int. Cl.[4] H01C 1/032
U.S. Cl. 174—52.2 19 Claims

1. An electrical device including components connected together by solder having a solder melting temperature range, said device being encapsulated in plastic material including inner and outer layers, said inner layer having an inner layer melting temperature range substantially less than said solder melting temperature range, and said outer layer having an



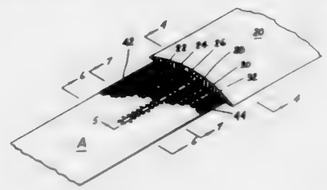
outer layer melting temperature range substantially greater than said inner layer melting temperature range.

4,804,806

WOVEN ELECTRICAL TRANSMISSION CABLE FOR RAPID AIRCRAFT REPAIR AND METHOD

Lawrence W. Orr, Jr., and Ray T. Mottu, both of Simpsonville, S.C., assignors to Woven Electronics Corporation, Greenville, S.C.

Filed Jun. 15, 1987, Ser. No. 61,406
Int. Cl.[4] H01B 7/04
U.S. Cl. 174—117 M 14 Claims



1. A woven electrical transmission cable for the rapid repair of a defective electrical cable inside an aircraft and the like comprising:
a plurality of longitudinal electrical conductors woven in a wrap direction in said cable;
a weft yarn and a plurality of wrap yarns binding said longitudinal electrical conductors in a prescribed weave pattern;
said weave pattern including a number of individual electrical cells with each cell containing a prescribed number of said longitudinal electrical conductors in a manner that said electrical conductors may be readily traced and identified at opposing ends of said cable for accurate termination;
a plurality of longitudinal anchor cords woven in said weave pattern in the warp direction on opposing sides of said cable; and
said longitudinal anchor cords having a larger absorption mass and surface than said warp yarns and said weft yarns for being embedded in a resinous matrix material for bonding said woven cable to the exterior fuselage skin of said aircraft.

8. A method of constructing an electrical transmission cable for the rapid repair of a defective electrical cable in an aircraft and the like comprising:
weaving a plurality of longitudinal electrical conductors extending in a warp direction in said cable with a weft yarn and a plurality of warp yarns in a prescribed weave pattern;
weaving said electrical conductors into individual cells by which said electrical conductors may be readily traced and identified at opposed ends of said cable for accurate termination; and
weaving a plurality of longitudinal anchor cords in the warp

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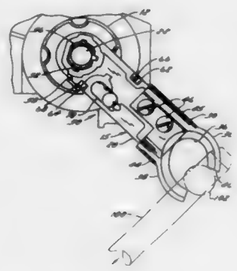
direction on opposing sides of said cable, said anchor cords having a larger absorption mass and surface than said warp and weft yarns for being embedded in a resinous matrix material for bonding said cable to said aircraft.

4,804,807

TWO COMPONENT OPERATING HANDLE FOR A PRIMARY CIRCUIT BREAKER

Todd K. Knapp, Waukesha, and Ronny D. Jorgenson, Hartland, both of Wis., assignors to RTE Corporation, Brookfield, Wis.

Filed Sep. 30, 1987, Ser. No. 103,076
Int. Cl.[4] H01H *00/00*
U.S. Cl. 200—331 **5 Claims**



1. A hook stick operated handle for an electrical switch having an operating shaft, said handle comprising

a rigid portion adapted to be mounted on the operating shaft of the electrical switch,

and a flexible portion including an inner end mounted on and forming an extension of said rigid portion,

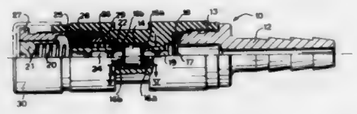
said flexible portion including an outer end with a generally enclosed opening for receiving a hook stick, and a slot in said outer end, so that, when the handle is mounted on the operating shaft, the hook stick can be released from the opening in the outer end of said flexible portion on bending of the extensions and opening of the slot by the pulling of the hook stick through the slot.

4,804,808

PRESSURE SENSING DEVICE FOR TIRES OF MOTOR VEHICLES

Giovanni Dal Cero, Piossasco, Italy, assignor to Greg di S. Gregnati & C. S.a.s., Turin, Italy

Filed Mar. 25, 1987, Ser. No. 30,019
Claims priority, application Italy, Mar. 25, 1986, 53186/86[U]
Int. Cl.[4] H01H *35/24*
U.S. Cl. 200—61.25 **4 Claims**



1. A pressure sensing device for motor vehicle tires comprising:

a hollow body having an internal wall defining a chamber,

first and second spaced apart electrical contact means fixed within said chamber,

a movable contact member movable within said hollow body between said first and second fixed contact means,

first resilient means biasing said movable contact member toward a first travel limit position in which said movable contact member engages said first electrical contact means,

means for adjusting the load of said first resilient means,

a drive piston slidable in said hollow body to push said movable contact member away from said first travel limit position,

a diaphragm having a central part and a peripheral edge located in said chamber,

means sealingly securing said peripheral edge of said diaphragm to said wall of said chamber within said body of said device with said central part in contact with said drive piston,

means for connecting said hollow body to a tire to communicate the interior of a tire with a part of said chamber located on a side of said diaphragm opposite said drive piston,

said second electrical contact means being engaged by said movable contact member when, as a result of the thrust of said drive piston due to air pressure within said tire, said movable contact member reaches a second travel limit position opposite said first travel limit position,

second resilient means biasing said movable contact member away from said second travel limit position and located so as to act only in a final portion of the travel of said movable contact member toward said second travel limit position, and

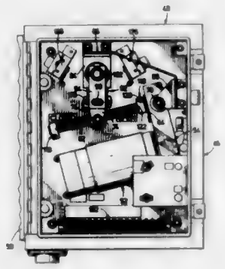
means for independently adjusting the load of said second resilient means relative to the load of said first resilient means.

4,804,809

MOTOR OPERATOR FOR PADMOUNT SWITCHGEAR

Parke Thompson, Jr., St. Louis; Lloyd R. Beard, and Melvin B. Goe, Jr., both of Centralia, all of Mo., assignors to A. B. Chance Company, Centralia, Mo.

Filed Oct. 26, 1987, Ser. No. 112,415
Int. Cl.[4] H01H *3/00*
U.S. Cl. 200—17 R **9 Claims**



1. A motor operator for switchgear, said switchgear including a switch mechanism for opening and closing the switch contacts, and movable linkage means coupled with said mechanism for causing selective shifting movement thereof to effect opening or closing of the switch contacts in response to movement of the linkage means, said motor operator comprising:

an elongated, threaded screw;

a nut threadably mounted on said screw and translatable fore-and-aft along the length thereof;

selectively operable motor means operatively coupled with said screw for axially rotating the latter;

pivot structure mounting said screw and the motor means for pivoting movement thereof as a unit about a common axis while preventing axial movement of the screw with respect to the pivot axis of the structure;

movable output means for operative connection with said linkage means in order to move said linkage means for actuating said mechanism to open or close the switch contacts; and

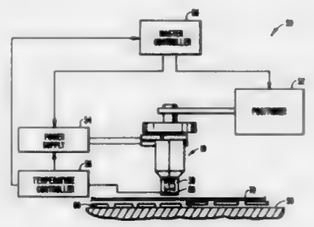
drive coupling means pivotally connected to said nut and drivingly coupled to said output means for, in response to axial rotation of said screw, causing said nut to translate along the screw and to move the output means as the screw and motor means pivot as a unit about said common axis.

4,804,810

APPARATUS AND METHOD FOR TAPE BONDING

Fred Drummond, San Jose, Calif., and James W. Clark, Grants Pass, Oreg., assignors to Fairchild Semiconductor Corporation, Cupertino, Calif.

Continuation of Ser. No. 876,317, Jun. 19, 1986, abandoned.
This application Mar. 14, 1988, Ser. No. 170,564
Int. Cl.[4] B23K *1/12*
U.S. Cl. 219—85 G **12 Claims**



1. A bonding apparatus comprising:

an elongate core composed of an electrically and thermally insulating material;

four electric power buses mounted axially on the core;

means for feeding a positive current to a first diagonally opposed pair of said buses and a negative current to a second diagonally opposed pair of said buses; and

four linear resistance heating elements, wherein each of said elements is coupled to a positive and a negative bus and each of said buses is coupled to two elements, said elements each being characterized by a variable cross-section area with an increased area near the middle and diminished area at each end, such variable cross-section area providing substantially even heating along the entire length of each linear resistance element when current is applied.

4,804,811

MULTI-OPERATOR GRID SYSTEM FOR STUD WELDING

Robert J. Raycher, Vincentown; Ronald A. Cangro, Vineland, both of N.J.; Charles E. Gum, Hatfield, Pa.; Dean P. Macinskas, Souderton, Pa., and Francis J. Williams, Chalfont, Pa., assignors to Erico Fastening Systems, Inc., Morrestown, N.J.

Filed Apr. 3, 1987, Ser. No. 34,782
Int. Cl.[4] B23K *9/20*
U.S. Cl. 219—98 **3 Claims**

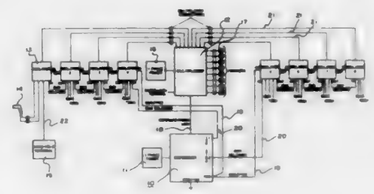
1. A multi-operator grid system permitting operation of plural welding stations powered by a single microprocessor controlled welding power supply comprising:

a stud welding gun including a gun solenoid at each welding station;

a microprocessor controlled terminal at each welding station including a visual display and adapted to transmit, receive and display welding parameter data;

an isolator at each weld station including weld current and gun solenoid control means interconnected to the stud welding gun and the welding power supply; and

a single microprocessor controlled multiplexer interconnected with the welding power supply and each isolator and associated terminal at each welding station and programmed to store and process welding parameter data



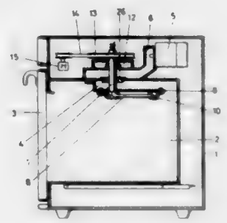
between the welding power supply and terminals and control the weld current and gun solenoid control means of each isolator.

4,804,812

MICROWAVE OVEN WITH COMBINED ROTARY HEATER AND WAVE GUIDE PLATE

Juzo Tanaka, Fujiidera, and Yasuyuki Motozuka, Kashihara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 14, 1987, Ser. No. 108,661
Claims priority, application Japan, Oct. 15, 1986, 61-244536; Jan. 30, 1987, 62-20811
Int. Cl.[4] H05B *6/72*
U.S. Cl. 219—10.55 F **5 Claims**



1. A microwave oven with combined rotary heater and waveguide plate comprising:

a heating chamber provided in a body,

a microwave generator for generating microwave,

a microwave feeding portion provided to said heating chamber,

a wave guide connecting said microwave generator to said microwave feeding portion,

a rotary heater provided in said heating chamber and eccentrically rotated around an axis substantially at center of said microwave feeding portion, and

a wave guide plate fixed to said rotary heater for eccentrically rotated around said axis and having side walls and one opening for radiating microwave generated by said microwave generator.

4,804,813

WELDING DEVICE FOR A CYLINDRICAL TUBE

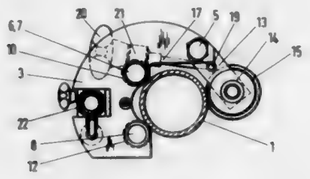
Klaus Tesch, Dorotheenstrasse 123, D-2000 Hamburg 60, Fed. Rep. of Germany

Continuation of Ser. No. 913,654, Sep. 22, 1986, abandoned. This application Mar. 3, 1988, Ser. No. 166,792

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1985, 3543575; PCT Int'l Appl., Jan. 23, 1986, PCT/EP86/00026

Int. Cl.⁴ B23K *9/02*

U.S. Cl. 219—60 A **18 Claims**



1. A device for making a peripheral welding seam on a cylindrical tube having a tube axis comprising:

a frame adapted to surround at least a circumferential portion of a tube;

first roller means in fixed position on the frame for contacting the tube;

second roller means in fixed position on the frame for contacting the tube at a circumferentially spaced distance around the tube from the contact of the first roller means;

third roller means pivotally mounted to the frame for contacting the tube at a circumferential position opposite the contact of the first and second roller means, whereby the frame is supported on the tube only by said first, second and third roller means;

drive means mounted on the frame for rotating the third roller means, whereby the frame in turn rotates about the tube while the tube is in contact with the first, second and third roller means;

welding means carried by the frame, for making a peripheral weld on the tube as the frame is rotated by the drive means;

wherein the pivotal mounting of the third roller means permits displacement of only the third roller means away from the first and second roller means sufficient to create an insertion opening larger than the tube diameter, whereby a tube can be inserted into the frame laterally relative to the tube axis.

4,804,814

ELECTRON DISCHARGE MACHINING TOOL

Tommy J. Southerland, Lafayette, Ga.; Eugene L. Hinds, Hixson, Tenn.; Timothy L. Brown, and Eric A. Kiesche, both of Ringgold, Ga., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 8, 1987, Ser. No. 105,940

Int. Cl.⁴ B23K *9/16*

U.S. Cl. 219—69 V **4 Claims**

1. An electron discharge machining tool combination for removal of an installed nuclear steam generator tube plug of conductive material, comprising:

a conductive wand shaft connected to a source of voltage and movably mounted within, and electrically insulated from, a support means;

an inlet adapter for connection to a source of dielectric fluid mounted on said conductive wand shaft;

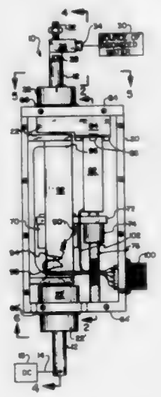
a conductive hollow wand extension in fluid communication with said inlet adapter fixed for movement therewith;

a hollow electrode fixed in fluid communication to the end of said wand extension opposite said inlet adapter;

an insulator secured to said conductive wand shaft for movement therewith;

a drive plate connected to said insulator block;

a driven nut drivingly connected to said drive plate for reciprocation of said conductive wand relative to said support means;



and means for reciprocating said nut including a threaded shaft drivingly engaged to said nut, a drive means for rotating said threaded shaft and a motor for driving said drive means and thereby rotating said threaded shaft;

said means for reciprocating said nut being mounted in said support means.

4,804,815

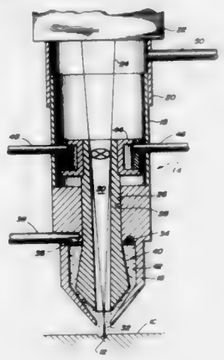
PROCESS FOR WELDING NICKEL-BASED SUPERALLOYS

Mark A. Everett, North Brunswick, N.J., assignor to Quantum Laser Corporation, Edison, N.J.

Filed Jan. 1, 1987, Ser. No. 60,758

Int. Cl.⁴ B23K *26/00*

U.S. Cl. 219—121.6 **20 Claims**



1. A process for preventing crack formation in nickel alloy substrates having a gamma-prime phase, comprising the steps of:

(a) providing a substrate to be treated, said substrate comprising a nickel alloy having a gamma-prime phase;

(b) exposing a portion of said substrate to a high power energy source and causing a molten pool of said alloy to be formed;

(c) dispersing a supply of coating particles within said pool, said particles comprising a nickel alloy; and,

(d) effecting rapid relative motion between said source and said pool so that said pool rapidly solidifies and thereby minimizes formation of gamma-prime therein and adjacent thereto.

4,804,816

METHOD OF MAKING A THIN-FILM MAGNETIC HEAD HAVING A MULTI-LAYERED COIL STRUCTURE

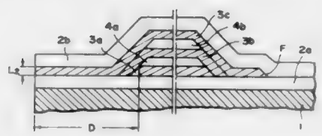
Hidekazu Hata, Tokyo, Japan, assignor to Kabushiki Kaisha Kenwood, Tokyo, Japan

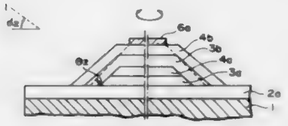
Continuation of Ser. No. 833,425, Feb. 24, 1986, abandoned, which is a continuation of Ser. No. 449,256, Dec. 13, 1982, abandoned. This application Mar. 7, 1988, Ser. No. 165,076

Claims priority, application Japan, Dec. 21, 1981, 56-205263

Int. Cl.⁴ B23K *9/00*; **G11B** *5/127, 5/147*; **H01F** *7/06*

U.S. Cl. 219—121.2 **6 Claims**





1. A method of fabricating a laminated coil for a thin-film magnetic head comprising the steps of:

forming a laminate of a lower magnetic layer, first insulating layer and first conductive layer on a substrate;

forming a first coil patterned mask on said first conductive layer of the laminate;

applying a first ion beam onto a structure formed by the first two steps to simultaneously etch said first insulating layer and said first conductive layer;

successively forming a second insulating layer and a second conductive layer over said etched structure;

forming a second coil patterned mask on said second conductive layer, the second coil patterned mask being aligned with said first coil patterned mask; and

applying a second ion beam onto a structure formed by the above steps to simultaneously etch said second insulating layer and said conductive layer; wherein said first and second ion beams are respectively applied at respective indicent angles of α_1, and α_2, where $\alpha_2 > \alpha_1$.

4,804,817

BEARING CONNECTOR FOR ROTARY TOOL

Mark A. Overbey, East Ridge, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 23, 1987, Ser. No. 28,997

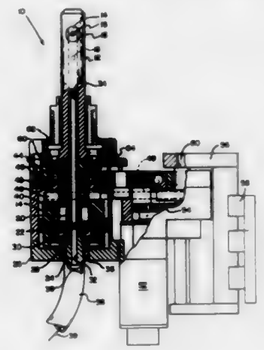
Int. Cl.⁴ B23K *9/24*

U.S. Cl. 219—136 **11 Claims**

1. In a tool having an elongated member with a central longitudinal axis of rotation, at least a part of which elongated member is a rotating electrically conductive welding current carrying member which rotates coaxially about the central longitudinal axis, said tool further characterized by:

a fixed electrically conductive welding current carrying member concentrical with said rotating conductive member about the axis of rotation;

a zone of overlap of said rotating electrically conductive welding current carrying member and said fixed welding current carrying conductive member with one spaced from the other in a radial direction to form a gap;



conductive anti-friction means for orbiting the axis of rotation within said zone of overlap and gap and electrically and rotationally connecting said rotating member and said fixed member, thereby providing the only welding current carrying connection therebetween; and,

the rotating member and the fixed member each having a central fluid passageway in communication with the other.

4,804,818

COATED ELECTRODE FOR ARC WELDING

Leonard M. Andersen, 46 Alexander Ave., Yonkers, N.Y. 10704

Filed Sep. 8, 1986, Ser. No. 904,983

Int. Cl.⁴ B23K *35/24*

U.S. Cl. 219—145.23 **13 Claims**



1. In an arc welding electrode having a conventional hard coating, for use in an arc welding process which includes an arc and a shielding gas envelope, the improvement comprising: a powder coating comprising particles of an arc activated reactive conductive agent applied to said conventional hard coating, the particles of said powder coating being less than 325 mesh and less than 20 microns in diameter, and the quantity of said powder coating applied being sufficient to yield a reactive aluminum gas envelope about the electrode, said aluminum gas being capable of reaction with impurities in weldment, providing heat during arc welding, and being electrically

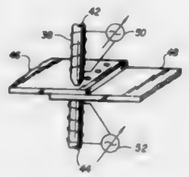
VOL 1099 ISS 2 FE 14 1989 UMI

conductive enough to enhance arc initiation, reinitiation and stability and comprising approximately 25 to 75% by volume of the shielding gas envelope.

4,804,819
STRUCTURE AND METHOD FOR RESISTANCE WELDING WITH AN INDUCTIVELY COUPLED POWER SOURCE

John F. Farrow, Plymouth, Mich., assignor to Medar, Inc., Farmington Hills, Mich.

Filed Dec. 8, 1986, Ser. No. 938,977
Int. Cl.[4] B23K *11/00*
U.S. Cl. 219—91.2 **18 Claims**

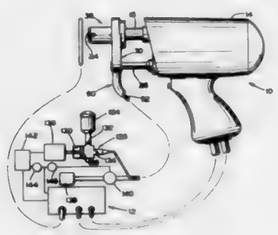


2. The method of resistance welding ferromagnetic members together comprising placing the members in surface to surface contact, heating the members to be welded to their softening temperatures by induced current and magnetic hysteresis loss generated by an alternating current in a coil wrapped around a flux concentrating core which concentrates the magnetic field into the area of the weld and applying deformation pressure to the heated ferromagnetic members to weld the members together.

4,804,820
METHOD AND APPARATUS FOR CONDUCTING DRIPLESS, SMUT-FREE STUD WELDING

Thomas E. Shoup, Amherst, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Sep. 14, 1987, Ser. No. 96,646
Int. Cl.[4] B23K *9/20*
U.S. Cl. 219—98 **22 Claims**

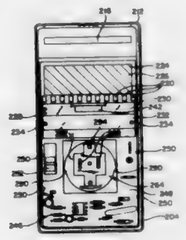


18. In a method of welding a stud to a workpiece surface with the surface of the workpiece around the stud being maintained substantially free of smut, said method comprising holding a stud against the surface, placing an end of a spark shield against the surface around the stud, withdrawing the stud from the surface, establishing a welding arc between the end of the stud and the surface, and moving the stud back toward the surface, the improvement comprising directing an anti-smut liquid toward the surface in a first plurality of separate streams around the location of the weld prior to withdrawing the stud from the surface, directing additional anti-smut liquid to the interior of the spark shield in a second plurality of streams from locations spaced farther from the surface than the locations of the first plurality, and subsequently directing gas toward said end of said spark shield after the stud has been moved back to the surface.

4,804,821
AROMA DIFFUSER ASSEMBLY

Dov Z. Glucksman, Brookline, Mass., assignor to Environmental Fragrance Technologies, Ltd., New York, N.Y.

Continuation-in-part of Ser. No. 878,096, Jun. 24, 1986, Pat. No. 4,731,520. This application Jan. 23, 1987, Ser. No. 65,840
Int. Cl.[4] H05B *3/06*; **A61L** *9/03*
U.S. Cl. 219—271 **36 Claims**

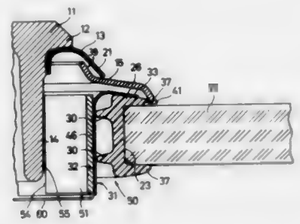


1. An aroma diffuser assembly comprising a housing providing a cavity for receiving aroma producing material, heating means within said housing for effecting the release of an aroma from the aroma producing material, and power supply means for supplying power to said heating means, said power supply means having a first portion for electrical connection to an external power source and a second portion having connecting means for supplying power from said external power source through said housing to an external power consuming apparatus when engaged with said connecting means, said power being supplied to said connecting means independent of the supplying of said power to said heating means.

4,804,822
MOUNTING DEVICE FOR AN ELECTRIC COOKER PLATE

Felix Schreder, Oberderdingen, Fed. Rep. of Germany, assignor to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Filed Sep. 25, 1986, Ser. No. 911,478
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1985, 3528062
Int. Cl.[4] H05B *3/68*
U.S. Cl. 219—458 **8 Claims**



1. A mounting device for mounting an electric cooker plate in an aperture formed in a cooker top plate, the mounting device comprising:

a cooker plate body having a substantially axially oriented rim,

at least one support ring surrounding said cooker plate body

such that when the cooker plate is installed in an aperture of the cooker top plate, an outer edge of the support ring bears upon the cooker top plate,

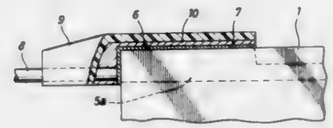
an insert ring below the support ring, spaced from and surrounding the cooker plate rim,

a seal between the insert ring and an edge of the aperture of the cooker top plate, which seal is centered by the insert ring, the insert ring having, on its radial inner surface, projections projecting towards the cooker plate rim for positioning and centering the cooker plate, the projections possessing linear or strip-shaped bearing surfaces arranged axially of the insert ring and of the cooker plate rim, so that they lie along a generatrix of the cooker plate rim, whereby the cooker plate is centered without loading distortion of the insert ring.

4,804,823
CERAMIC HEATER

Norio Okuda, Kokubo; Noriyoshi Nakanishi, Hayato; Masahiro Yamamoto, Kokubo; Shinsuke Takanishi, Kokubo; Kanichiro Miyahara, Kokubo; Hiroaki Sonoda, Kagoshima, and Masanobu Ishida, Kokubo, all of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Jul. 29, 1987, Ser. No. 79,255
Claims priority, application Japan, Jul. 31, 1986, 61-181507; Sep. 25, 1986, 61-227755; Nov. 27, 1986, 61-283390; Nov. 29, 1986, 61-285259; Feb. 27, 1987, 62-46585
Int. Cl.[4] H05B *3/10*
U.S. Cl. 219—553 **16 Claims**



1. A ceramic heater comprising a ceramic substrate, a heat-generating resistor disposed in the interior of the ceramic substrate or on the surface of the ceramic substrate and terminals connected to both ends of the heat-generating resistor, wherein the ceramic substrate consists essentially of a sintered body of a nitride of an element selected from the group consisting of silicon and aluminum and the heat-generating resistor comprises a ceramic layer containing titanium nitride (TiN) or tungsten carbide (WC).

4,804,824
REGISTER DRAWER ASSEMBLY

Shingo Saguchi, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Sep. 18, 1987, Ser. No. 98,232
Claims priority, application Japan, Sep. 26, 1986, 61-147569[U]
Int. Cl.[4] A47B *81/00*
U.S. Cl. 235—7 R **17 Claims**

1. A register drawer assembly comprising:

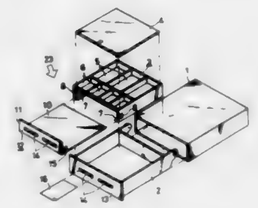
(a) a drawer having an upper surface and a front face inserted drawably in an outer case on which is mounted a register, the upper surface of said drawer being open;

(b) a receptacle case inserted in said drawer, said receptacle case having an upper-lower double structure comprising a money case as an upper stage having an upper surface, the upper surface of said money case being open, and an inner drawer as a lower stage;

(c) at least one first insertion aperture formed in the front face of said drawer in a position communicating with said receptacle case;

(d) downwardly extending guide portions formed on both sides of said money case, said inner drawer being disposed along said downwardly extending guide portions; and

(e) a lock mechanism for locking said inner drawer, said lock

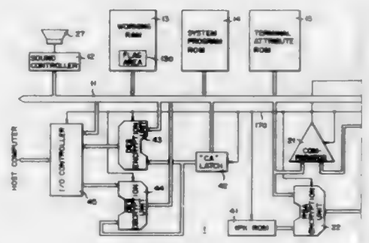


mechanism being composed of engaging holes formed in said money case and engaging pawls integral with said inner drawer for resilient engagement with said engaging holes.

4,804,825
I C CARD SYSTEM

Hiroyasu Bitoh, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jan. 11, 1987, Ser. No. 62,505
Claims priority, application Japan, Jun. 17, 1986, 61-140635; Jun. 17, 1986, 61-92837[U]; Jun. 19, 1986, 61-143720
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—380 **10 Claims**



1. An IC card system comprising:

IC card means containing an IC chip including a memory means having memory areas for storing items of transaction data about transactions made by using the IC card means; and

terminal means coupled by transmission lines to a host computer, for exchanging various items of data with said IC card means when said IC card means is inserted in said terminal means and electrically connected thereto, said memory means further having a status memory area for storing status data showing whether every transaction has been made in an on-line mode or an off-line mode, and said IC card means further including detector means for detecting, from the status data stored in said status memory area, whether or not the data read out from said memory means is on-line transaction data.

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4,804,826

DEVICE FOR PREVENTING UNAUTHORIZED USE OF CREDIT CARDS AND LIKE DATA CARRIERS

Krister Hertzen, Linnégatan 75, Stockholm S-114 60, and Hans Sjöblom, Magnus Stenbockagatan 6, Lund S-222 24, both of Sweden

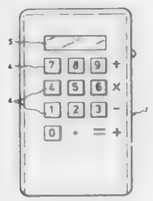
PCT No. PCT/SE86/00530, § 371 Date Sep. 4, 1987, § 102(e) Date Sep. 4, 1987, PCT Pub. No. WO87/03400, PCT Pub. Date Jun. 4, 1987

PCT Filed Nov. 20, 1986, Ser. No. 88,106

Claims priority, application Sweden, Nov. 20, 1985, 8505485

Int. Cl.⁴ G06K *3/00, 5/00*

U.S. Cl. 235—382 **8 Claims**



1. A device for preventing unauthorised use of card- or disc-shaped proofs of legitimacy and/or data carriers, such as ATM cards, credit cards and flexible discs, comprising a cover- or case-shaped device (1) or the like which has at least one pocket or the like adapted to receive at least a portion of at least one card, disc etc., actuators and control means (4) arranged in said pocket, said control means being adapted to control said actuators and preferably being of the code lock type and comprising one or more means which, when actuated in a certain sequence or in a certain combination, are adapted to control said actuators, characterized in that said actuators comprise means (17, 20x, 27) which are activatable when an attempt at gaining access is made without proper actuation of said control means, and which, in the event of such an attempt at unauthorised access, are adapted to permanently damage the card, disc etc. and/or the data carried thereon.

4,804,827

IDENTITY CARD

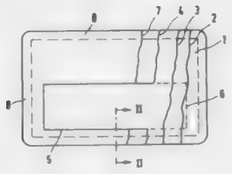
Folker Jung, Wertingen, Fed. Rep. of Germany, assignor to Jung GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 5, 1986, Ser. No. 938,407

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1986, 3605625

Int. Cl.⁴ G06K *19/02;* **B42D** *15/02*

U.S. Cl. 235—488 **16 Claims**



1. An identity card on a paper base having at least one printing area for electrostatically printing particulars of the card, comprised of at least a two-layer paper laminate having a colored adhesive layer jointing the layers of paper, the paper laminate being sealed by calendering to a specific volume $V=d\times1000/f$ of approximately one, in which d is the thickness in mm and f the weight per unit area of the paper laminate in g/m^2, both surfaces of the card being provided with a strongly sized pigment layer which leaves the printing area open, and both surfaces of the card having a reticulated acrylate varnish coating which leaves the printing area open.

4,804,828

CARD-TYPE PROCESSING DEVICE

Yoshisori Oogita, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 14, 1987, Ser. No. 38,206

Claims priority, application Japan, Apr. 16, 1986, 61-56978[U]

Int. Cl.⁴ G06C *5/02*

U.S. Cl. 235—1 D **10 Claims**



1. A card-type processing device comprising a circuit board with electronic circuit elements mounted thereon and a planar housing structure with a central part which is rigid and enclosingly contains said circuit board and a peripheral part which is flexible and surrounds said central part.

4,804,829

DATA HANDLING SYSTEM

Hans Jacobsen, Täby, Sweden, assignor to International Terminal Systems AB, Danderyd, Sweden

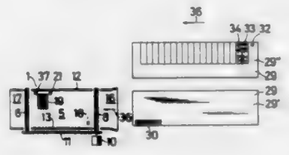
PCT No. PCT/SE86/00388, § 371 Date Apr. 28, 1987, § 102(e) Date Apr. 28, 1987, PCT Pub. No. WO87/01489, PCT Pub. Date Mar. 12, 1987

PCT Filed Aug. 29, 1986, Ser. No. 51,684

Claims priority, application Sweden, Sep. 3, 1985, 8504092

Int. Cl.⁴ G06K *7/10*

U.S. Cl. 235—377 **2 Claims**



1. A data handling terminal comprising: a microcomputer which is intended for connection to a central computer, and a memory, said data handling terminal (1) includes; feed path (5), intended for advancing a so-called time card (29); and along the feed path (5), a printer (19) and a sensor (21), said sensor being arranged to transmit a signal to the microcomputer (2) when a time card (29) occupies a pre-determined position relative to said printer (19); said data handling terminal also comprising a first control circuit (20) arranged to control said printer (19) in response to signals received from said microcomputer (2), and said data handling terminal further comprising an identifying device (22) arranged to read from a code device, a code individual to a respective employee; and wherein said microcomputer (2) is arranged to store in said memory (4), information corresponding to said employee code together with information printed by the printer (19), including the time concerned, the improvement comprising, in said data handling terminal, said sensor (21) which is arranged to transmit a signal when a mark, such as a spot (32–34), included on the time card (29) is detected by said sensor during passage of the time card along said feed path (5); and that said sensor (21) is arranged to transmit said signal to said microcomputer (2), which is thereupon programmed to transmit a signal containing information relating to the time in question to said first control circuit (20), said control circuit (20) being arranged to thereupon actuate said printer (19) so as to print the time concerned on the time card (29) together with a further correlated said mark spot (33;34), of the first mentioned mark spot type, which last mentioned mark spot is used for positioning the time card the next time the card is inserted into the data terminal whereby said last mentioned mark spot is sensed by said sensor (21).

4,804,830

AUTOMATIC TRANSACTION APPARATUS

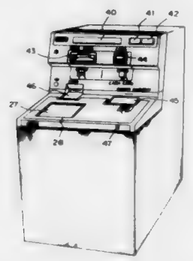
Takao Miyagishima, and Kazuyuki Oohashi, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1986, Ser. No. 881,055

Claims priority, application Japan, Jul. 5, 1985, 60-147783

Int. Cl.⁴ G06F *15/30, 7/08*

U.S. Cl. 235—379 **10 Claims**



1. An automatic transaction apparatus for displaying a user operating procedure to be performed by a user and items to be selected or specified by the user to enable the user to implement transaction processes, and for displaying a picture for an operator to enable the operator to implement the setting and changing of functions when operator operation is requested, the automatic transaction apparatus comprising:

a CRT display provided in a user operating unit;

a transparent tough input unit provided on a screen of said CRT display, for allowing the viewing of said screen of said CRT display therethrough, and for entering an item when said screen is touched at a position on said screen where an indication representing the item is displayed;

an operator operation request notifying means;

an operator operation request detecting means;

a mode switching means for switching an operating mode of the apparatus from a practical operation mode to an operator operation mode upon the detection of an operator operation request by said operator operation request detecting means;

a decision means for determining whether or not there is any trouble in the automatic transaction apparatus in the operator operation mode;

a mode setting means for placing the automatic transaction apparatus in a trouble eliminating mode when trouble is found in the operator operation mode, and for placing the automatic transaction apparatus in a function designating mode when no trouble is found in the operator operation mode;

a storage means for storing display data to be displayed on the screen of said CRT display in both said trouble eliminating mode and said function designating mode;

a display control means for controlling operations for editing display data, holding display data and feeding display data to said CRT display; and

a transfer means for reading display data corresponding to said trouble eliminating mode or said function designating mode or said function designating mode from said storage means and for transferring display data to said CRT display when the automatic transaction apparatus is in said trouble eliminating mode or said function designating mode.

4,804,831

FOCUS DETECTING APPARATUS INDEPENDENT OF OBJECT IMAGE CONTRAST

Takashi Baba; Yukichi Niwa, both of Atsugi; Minoru Yoshii, Tokyo, and Takako Watanabe, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1986, Ser. No. 922,740

Claims priority, application Japan, Oct. 30, 1985, 60-245239; Jul. 9, 1986, 61-161053

Int. Cl.⁴ G02B *7/00*

U.S. Cl. 250—201 **56 Claims**



1. A focus detecting apparatus responsive to incident radiation corresponding to an image, comprising:

(a) converting means for converting said incident radiation into an electrical signal to produce a time series image signal as an output;

(b) detecting means for receiving said image signal and for detecting the width of an edge of said image from said image signal and for generating an output signal indicative of such detected width; and

(c) discrimination means for receiving said detecting means output signal and for discriminating the focus condition of said radiation from said detecting means output signal.

4,804,832

TWO DIRECTIONAL ANGLE OF ARRIVAL SYSTEM

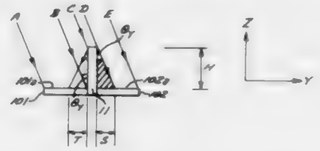
Leland V. Gardner, Buellton, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Dec. 10, 1985, Ser. No. 807,377

The portion of the term of this patent subsequent to Dec. 8, 2004, has been disclaimed.

Int. Cl.⁴ G01J *1/20*

U.S. Cl. 250—203 R **10 Claims**



1. An optical direction of arrival system responsive to incident electromagnetic radiation, comprising:

an even number of detector elements each of which is responsive to a distribution of incident electromagnetic radiation thereupon for providing respective detector outputs, each of said detector elements having an active radiation detecting surface having the shape of a right-angled parallelogram having edges which define a length

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and a width of said active radiation detecting surface, said detector elements being arranged in a predetermined configuration;

reflecting means being operable for selectively reflecting incident electromagnetic radiation to said detector elements so that the detector elements may receive both direct and reflected incident electromagnetic radiation, said reflecting means further being operable for selectively obscuring incident electromagnetic radiation for preventing the reception of the incident electromagnetic radiation by said detector elements, said reflecting means being orthogonally disposed to said detector elements along at least one edge of said detecting elements; and

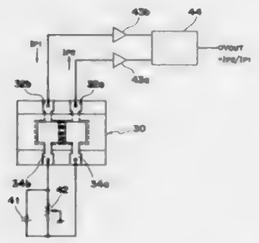
processing means responsive to said detector outputs for determining the direction of arrival of incident optical signals as a function of the distribution of incident electromagnetic radiation on said detector elements.

4,804,833

COLOR SENSING METHOD AND DEVICE THEREFOR

Kan Matsubara, Takatsuki; Shuji Iino, Hirakata, and Hirohisa Kitano, Takatsuki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 5, 1986, Ser. No. 904,189
Claims priority, application Japan, Sep. 6, 1985, 60-198246
Int. Cl.⁴ G01J *3/50*
U.S. Cl. 250—211 J **8 Claims**



1. A method for sensing the color of incident light with a color sensing device, said color sensing device being a photoelectric device comprising a substrate, at least two electrodes being formed on the substrate separately from each other, an amorphous silicon layer containing an impurity so as to act as an n-type or p-type semiconductor formed on said electrodes and at least two transparent electrodes being formed on said amorphous silicon layer separately opposite to the electrodes on the substrate so a to divide the device into at least one pair of elements and including the following steps:

applying electric voltages to said pair of elements, said voltages having polarities different from each other;

measuring each photocurrent of said two elements generated by the incident light;

calculating the ratio of photocurrents measured, and

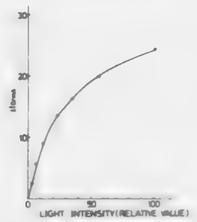
identifying the color of incident light according to the ratio calculated.

4,804,834

PHOTOSENSOR HAVING PHOTOSENSITIVE PART FORMED OF PURPLE MEMBRANE

Tatsuo Katsura; Hidenobu Maeda; Tsukasa Sakai, and Keishiro Tsuda, all of Ibaraki, Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Continuation of Ser. No. 906,439, Sep. 12, 1986, abandoned. This application Mar. 31, 1988, Ser. No. 177,897
Claims priority, application Japan, Sep. 14, 1985, 60-203868
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—211 R **3 Claims**



1. A photosensor comprising:

a photosensitive part including a transparent electrode, purple membrane containing bacteriorhodopsin which is isolated from a highly halophilic bacterium and having an ability to absorb light and generate photoelectromotive force corresponding to the intensity of the absorbed light, said purple membrane being electrodeposited on said transparent electrode to form a purple membrane film, and a second electrode deposited on a surface of said purple membrane film opposite the surface thereof facing said transparent electrode,

means for intermittently projecting light to be measured on said purple membrane film, and

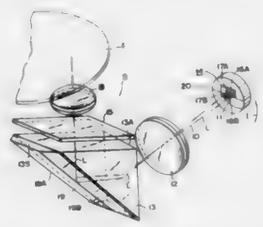
a FET having a source and a gate which are connected respectively to said transparent electrode and said second electrode.

4,804,835

OPTICAL HEAD HAVING GUIDE MEANS WITH FIRST AND SECOND POLARIZING SURFACES

Hideo Ando, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 1, 1986, Ser. No. 936,444
Claims priority, application Japan, Nov. 30, 1985, 60-269614; Dec. 4, 1985, 60-273057; Feb. 26, 1986, 61-40709; Mar. 5, 1986, 61-47702; Apr. 30, 1986, 61-100754; May 14, 1986, 61-109912
Int. Cl.⁴ G11B *5/09*
U.S. Cl. 250—201 **29 Claims**



1. An optical system for retrieving information from an optical memory, comprising:

means for generating a polarized light beam having a first polarization plane;

means for allowing the light beam to pass therethrough and rotating the first polarization plane of the light beam;

means for converging the polarized light beam passing through said rotating means onto the optical memory and transferring the light beam reflected from the optical memory to said rotating means, the polarized and reflected light beam passing through said rotating means so that the first polarization plane of the reflected light beam is also rotated into a second polarization plane perpendicular to the first polarization plane;

means for detecting the polarized light beam having the second polarization plane; and

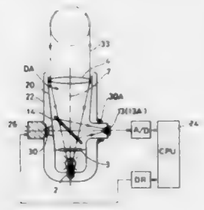
means for guiding the light beams having the first and second polarization planes to said rotating means and said detecting means, respectively, which has first and second surfaces, the first surface allowing one of the light beams to pass therethrough and reflecting the other of the light beams, and the second surface reflecting the other of the light beams to the first surface.

4,804,836

OPTICAL APPARATUS HAVING MOVING MEANS FOR PROTECTING AN OPTICAL ELEMENT FOR USE IN AUTOMOTIVE VEHICLE

Tadashi Iino, Susono, Japan, assignor to Yazaki Corporation, Japan

Filed Jan. 25, 1988, Ser. No. 147,857
Int. Cl.⁴ G09C *3/02*
U.S. Cl. 250—201 **11 Claims**



1. An optical apparatus for an automotive vehicle, comprising:

(a) optical means for transmitting/receiving light outside/inside the vehicle to generate optical images/signals related to the vehicle;

(b) moving means, associated with said optical means, for moving at least an optical path of said optical means from a normal optical position to a protective optical position at which external light is not directly introduced into said optical means;

(c) light detecting means, disposed along an optical path of said optical means, for detecting light introduced into said optical means;

(d) control means, connected to said light detecting means, for generating an actuator signal when said light detecting means detects intense light exceeding a predetermined value; and

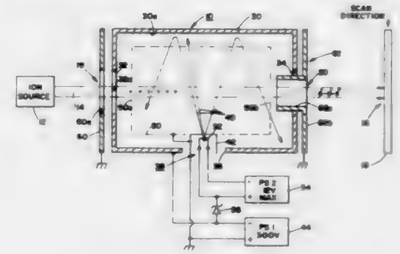
(e) actuator means, responsive to the actuator signal, for actuating said moving means to move the optical path of said optical means from the normal optical position to the protective optical position.

4,804,837

ION IMPLANTATION SURFACE CHARGE CONTROL METHOD AND APPARATUS

Marvin Farley, Ipswich, Mass., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 11, 1988, Ser. No. 142,365
Int. Cl.⁴ H01S *1/00, 9/00*
U.S. Cl. 250—251 **10 Claims**



1. In an ion beam implantation system that includes an ion source for producing a positively charged ion beam and for directing said ion beam along a path to impinge on a workpiece, apparatus for controlling ion beam charging of the workpiece comprising:

(a) source means for directing high energy electrons through a beam neutralizing region that is intersected by said ion beam;

(b) means for providing an ionizable gas in the beam neutralizing region that collide with said high energy electrons to provide low energy secondary electrons that are trapped by the ion beam to reduce the charge of said ion beam;

(c) repeller means for deflecting high energy electrons that pass through said beam neutralizing region back toward said beam neutralizing region; and

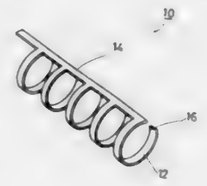
(d) grid means for accelerating electrons deflected from the repeller means back into the beam neutralizing region.

4,804,838

INDUCTIVELY-COUPLED RADIO FREQUENCY PLASMA MASS SPECTROMETER

Kozo Miseki, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Jul. 7, 1987, Ser. No. 70,698
Claims priority, application Japan, Jul. 7, 1986, 61-104100[U]
Int. Cl.⁴ H01J *49/36*
U.S. Cl. 250—288 **5 Claims**



1. An inductively-coupled radio frequency plasma mass spectrometer comprising:

induction coil means for generating a high frequency magnetic field:

plasma torch means for introducing aerosol therein and generating a plasma; and

electrostatic shield means comprised of an open loop structure, interposed between said induction coil means and

VOL 1099 ISS 2 FE 14 1989 UMI

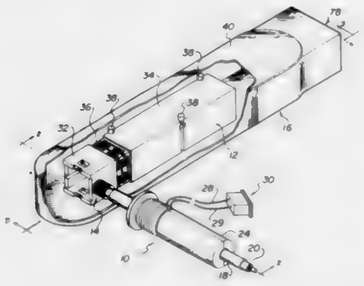
said plasma torch means, for shielding the plasma from the electric field of said induction coil means.

4,804,839

HEATING SYSTEM FOR GC/MS INSTRUMENTS

Carolyn C. Broadbent, Los Altos, and John C. Fjeldsted, Redwood City, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 7, 1987, Ser. No. 70,458
Int. Cl.[4] H01J *49/04*
U.S. Cl. 250—288 **9 Claims**



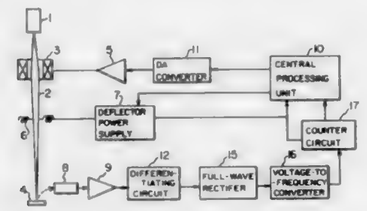
1. In a GC/MS system comprising a gas chromatograph, a mass spectrometer, interface means coupling an output of said gas chromatograph to an input of said mass spectrometer, and heating means for heating said interface means and portions of said mass spectrometer; improved heating means comprising:
radiator means disposed within said mass spectrometer;
thermal coupling means coupling said interface means to said radiator means; and
a heat source means for directly heating said interface means and for indirectly heating said radiator means via thermal conduction from said interface means to said radiator means through said thermal coupling means.

4,804,840

APPARATUS FOR DETECTING FOCUSED CONDITION OF CHARGED PARTICLE BEAM

Noriaki Ichihashi, Tokyo, Japan, assignor to JEOL Ltd., Tokyo, Japan

Filed Nov. 4, 1987, Ser. No. 117,025
Claims priority, application Japan, Nov. 7, 1986, 61-264927
Int. Cl.[4] G01N *23/00*
U.S. Cl. 250—310 **4 Claims**



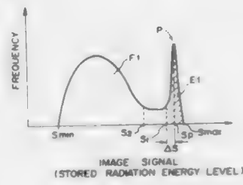
1. An apparatus for detecting the focused condition of a charged particle beam produced from a charged particle beam source and directed to a specimen, said apparatus comprising:
a focusing means for focusing the charged particle beam onto the specimen;
a scanning means for scanning the surface of the specimen with the charged particle beam;
a detector for detecting the signal emanating from the specimen in response to the irradiation of the charged particle beam;
a differentiating circuit for differentiating the output signal from the detector;
a voltage-to-frequency converter means for producing pulses at a frequency corresponding to the intensity of the output signal from the differentiating circuit; and
a counter circuit for counting the number of pulses produced from the voltage-to-frequency converter means.

4,804,841

RADIATION IMAGE READ-OUT METHOD

Nobuyoshi Nakajima; Takehumi Nagata, both of Kanagawa, and Hiroshi Tanaka, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 13, 1986, Ser. No. 873,888
Claims priority, application Japan, Jun. 13, 1985, 60-128915
Int. Cl.[4] G01T *1/105*
U.S. Cl. 250—327.2 **3 Claims**



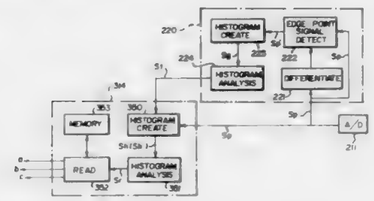
1. A radiation image read-out method in which, prior to final read-out wherein a stimulable phosphor sheet carrying a radiation image of an object stored thereon is exposed to stimulating rays which cause the stimulable phosphor sheet to emit light in proportion to the stored radiation energy, the emitted light is photoelectrically detected to obtain an electric image signal for reproducing a visible image, preliminary read-out for approximately detecting the radiation image stored on the stimulable phosphor sheet is conducted by use of stimulating rays of a level lower than the level of stimulating rays of a level lower than the level of stimulating rays used in the final read-out, read-out conditions in the final read-out and/or image processing conditions are adjusted on the basis of the information obtained by the preliminary read-out, and the final read-out is carried out by use of the adjusted conditions,
wherein the improvement comprises the steps of:
(i) creating a histogram of preliminary read-out image signals obtained by said preliminary read-out,
(ii) determining the presence of a sharp peak region arising in the vicinity of at least one of the maximum signal value and the minimum signal value in said histogram,
(iii) calculating a characteristic value of said preliminary read-out image signals within a region at least outside of the sharp peak region arising in the vicinity of the maximum signal value and/or the minimum signal value in said histogram, and
(iv) adjusting said read-out conditions in the final read-out and/or said image processing conditions on the basis of said characteristic value.

4,804,842

RADIATION IMAGE READ-OUT METHOD AND APPARATUS

Nobuyoshi Nakajima, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 896,146, Aug. 13, 1986. This application Feb. 19, 1987, Ser. No. 16,592
Claims priority, application Japan, Aug. 15, 1985, 60-179867
Int. Cl.[4] G01N *23/04*
U.S. Cl. 250—327.2 **15 Claims**



1. A radiation image read-out method in which, prior to final read-out for exposing a stimulable phosphor sheet exposed to a radiation passing through an object to have a radiation image of the object stored thereon to stimulating rays which cause the stimulable phosphor sheet to emit light in proportions to the stored radiation energy, and photoelectrically detecting the emitted light to obtain an electric image signal for reproducing a visible image, preliminary read-out for approximately detecting the radiation image stored on the stimulable phosphor sheet is conducted by use of stimulating rays of a level lower than the level of stimulating rays used in the final read-out, read-out conditions in the final read-out and/or image processing conditions are adjusted on the basis of the information obtained by the preliminary read-out, and the final read-out is conducted by use of the adjusted conditions, wherein the improvement comprises the steps of:
(i) creating a histogram of frequencies of preliminary read-out image signals obtained by said preliminary read-out versus levels of said preliminary read-out signals,
(ii) detecting prospective edge point signals, which are considered to be signals representing edge portions of an irradiation field on said stimulable phosphor sheet, from said preliminary read-out image signals,
(iii) removing a region of a level lower than the level of a characteristic value representing said prospective edge point signals from said histogram, and
(iv) adjusting said read-out conditions in the final read-out and/or said image processing conditions on the basis of said histogram outside of said lower level region.

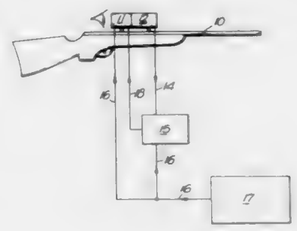
4,804,843

AIMING SYSTEMS

Peter R. Hall, Stevenage, United Kingdom, assignor to British Aerospace Public Limited Co., London, England

Filed May 7, 1986, Ser. No. 860,424
Claims priority, application United Kingdom, May 16, 1985, 8512441
Int. Cl.[4] H01L *31/00*
U.S. Cl. 250—330 **3 Claims**

1. A vision-enhancing sight for use with a firearm, the sight comprising:
a first opto-electrical image sensor for being mounted on said firearm to form a first video signal representative of the scene within a first field of view which contains the aiming direction of the firearm;
a second opto-electrical image sensor for being placed at a fixed position separate from the firearm to form a second video signal representative of the scene within a second field of view which is larger than and which contains said first field of view;
image display means electrically connected to said second image sensor for displaying an image of the scene represented by the second video signal and operable for being mounted on said firearm for the user to view the displayed image;



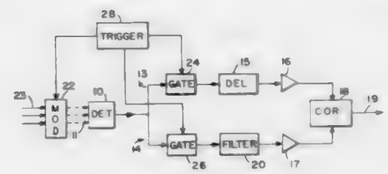
correlating means connected to the first and second image sensors and operable for correlating the first and second video signals to determine the position of the first field of view within the second field of view; and
sight mark generating means connected to the correlating means and the display means and operable in response to the correlating means for causing said displayed image to contain a sight mark indicative of said aiming direction within the second field of view.

4,804,844

METHOD AND APPARATUS FOR ENHANCEMENT OF PRIMARY PYROELECTRIC RESPONSE

John N. Lee, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 3, 1987, Ser. No. 93,324
Int. Cl.[4] G01J *5/10*
U.S. Cl. 250—338.3 **13 Claims**



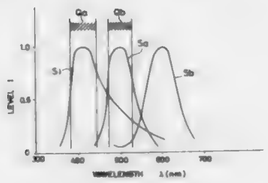
1. A method for enhancement of a temporal resolution of an incident pulse of energy by a pyroelectric energy detector having a weak primary pyroelectric response and a strong subsequent secondary pyroelectric response, comprising the steps of:
sensing an occurrence of the primary response,
sensing an occurrence of the secondary response such that there is indicated the incidence of the pulse of energy on the detector, and
correlating said primary and secondary responses to obtain a replica of the temporal shape of the incident pulse of energy.

4,804,845

LUMINESCENCE DETECTING DEVICES

Kenichi Takeuchi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 30, 1986, Ser. No. 913,333
Claims priority, application Japan, Oct. 1, 1985, 60-218576
Int. Cl.[4] G01N *21/62*
U.S. Cl. 250—367 3 Claims



1. In a beam index cathode ray tube including a photosensitive element comprising a PIN diode which has a peak response at a relatively high wavelength relative to wavelengths of visible light, said photosensitive element further including a luminescence detecting device comprising:

a luminescence sensitive member composed of a transparent material containing at least two types of organic phosphors dispersed therein, the first type of organic phosphor being excitable by incident luminescence of a wavelength substantially lower than said relatively high wavelength entering therein and operative to absorb fluorescence in a first wavelength range which overlaps with the range of wavelengths in said incident luminescence and emit fluorescence in a second wavelength range overlapping with the longer wavelength portion of said incident luminescence, the second type of organic phosphor being excitable by flourescence in a third wavelength range overlapping with at least a part of said second wavelength range and emit fluorescence in a fourth wavelength range overlapping with the longer wavelength portion of said third wavelength range, and

luminescence sensing means comprising said photosensitive element disposed in proximity to said luminescence sensitive member and capable of immediately detecting at least the flourescence in a fourth wavelength range emitted by said luminescence sensitive member to produce an output signal approximating said relatively high wavelength peak response of said photosenstivie element in response to the flourescence detected thereby.

4,804,846

PHOTOIONIZATION DETECTOR FOR GAS CHROMATOGRAPHY

Randall C. Hall, College Station, Tex., assignor to O. I. Corporation, College Station, Tex.

Filed Dec. 4, 1987, Ser. No. 128,644
Int. Cl.[4] H01J *27/24*; G01N *21/00*
U.S. Cl. 250—379 24 Claims

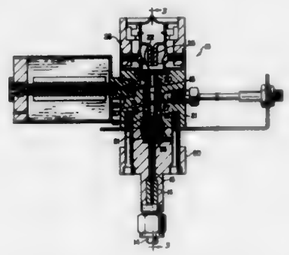
1. In a photoionization detector having an ultra-violet lamp and lamp window, the improvement comprising:

a photoionization chamber;

the chamber having a cylindrical polarizing electrode disposed therein, and a cylindrical collector electrode between the polarizing electrode and the lamp window, the collector electrode co-axial to the polarizing electrode.

10. In a gas chromatography apparatus having a photoionization detector and another detector, the improvement comprising:

a photoionization detector having a lamp window and a photoionization chamber, the chamber having a sweep gas inlet port and a flow of sweep gas;



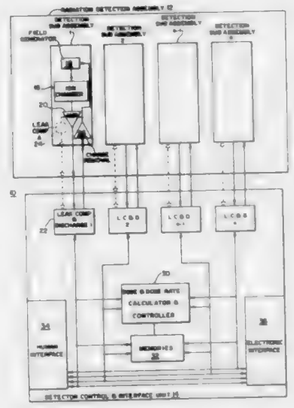
the sweep gas adapted to inhibit contact of a sample analyte with the lamp window.

4,804,847

RADIATION DETECTOR WITH AN IONIZABLE GAS ATOP AN INTEGRATED CIRCUIT

Arthur E. Uber, III, Pittsburgh, Pa., assignor to Medrad, Inc., Pittsburgh, Pa.

Filed Jan. 27, 1987, Ser. No. 7,195
Int. Cl.[4] G01T *1/185*
U.S. Cl. 250—389 16 Claims

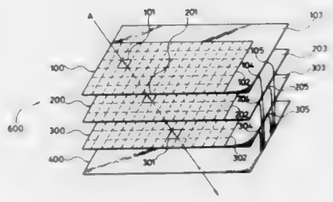


4,804,848

IONIZING RADIATION DETECTOR FOR DETECTING THE DIRECTION AND INTENSITY OF THE RADIATION

Yasutaka Horiba; Masao Nakaya, and Yuto Ikeo, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1987, Ser. No. 28,139
Claims priority, application Japan, Mar. 19, 1986, 61-62036
Int. Cl.[4] G01T *1/22*
U.S. Cl. 250—394 9 Claims



1. A detector for detecting a direction of incidence of ionized radiation comprising:

a laminated structure radiation detector, said laminated structure radiation including a plurality of planar structure detectors, each of said planar structure detectors including,

planar structure detector means for responding to the ionized radiation, said planar structure detector means being a plurality of unit detectors regularly arranged on the planar structure, said unit detectors being responsive to the ionized radiation, and

position detector means for detecting a position of said unit detector which has responded to the ionized radiation and outputting a value representing said position;

said planar structure detectors having a predetermined distance therebetween; and

direction of incidence calculating means, responsive to said laminated structure radiation detector, for obtaining the direction of incidence of the ionized radiation from said value outputted from said position detector means.

4,804,849

METHOD AND APPARATUS FOR DETERMINING CONCENTRATIONS OF CHLOROPHYLL AND THE RATE OF PRIMARY PRODUCTION IN WATER

Charles R. Booth, San Diego, and Dale A. Kiefer, Los Angeles, both of Calif., assignors to Biospherical Instruments Inc., San Diego, Calif.

Filed Jan. 16, 1987, Ser. No. 3,755
Int. Cl.[4] G01N *21/62*
U.S. Cl. 250—459.1 54 Claims

19. The method recited in claim 17, and comprising the further steps of:

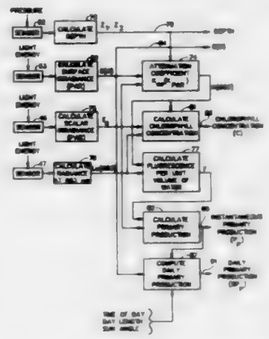
sensing the pressure in the parcel of water;

calculating the depth of the parcel of water;

producing a signal representative of said depth; and

face and means for registering the signal processed by the detector control means.

applying said depth signal to the signal representative of instantaneous rate of primary production to thereby further refine said signal representative of instantaneous rate of primary production.

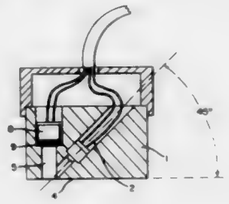


4,804,850

MEASUREMENT OF FLUORESCENCE

Richard J. Norrish, Port Willunga, and Joseph T. Wiskich, Kensington Park, both of Australia, assignors to Lumisis Pty. Limited, Adelaide, Australia

Filed Mar. 13, 1987, Ser. No. 25,733
Claims priority, application Australia, Mar. 14, 1986, PH5040
Int. Cl.[4] F21V *9/16*
U.S. Cl. 250—459.1 12 Claims



1. A method of determining the instantaneous or transient fluorescence of a test sample at a test point, comprising the steps of

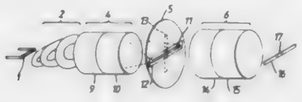
(a) determining the gross reflectance and fluorescence value of a sample at a test point when excited by light from a first light emitting diode at a first known wavelength which causes at least fluorescence in the sample,

(b) determining the reflectance at the test point by irradiating the sample with light from a second light emitting diode at a second wavelength which is known but different from the first wavelength and which does not cause fluorescence in the sample and

(c) subtracting the reflectance from the gross reflectance and fluorescence value to give the fluorescence at the test point,

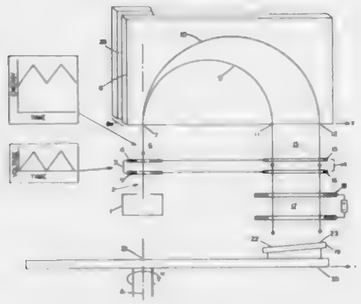
wherein a single detector is used to make the determinations of steps (a) and (b).

4,804,851
CHARGED PARTICLE SOURCES
William C. Nixon, Cambridge, England, assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 745,351, Jun. 14, 1985. This application Aug. 7, 1987, Ser. No. 83,867
Claims priority, application United Kingdom, Jun. 19, 1984, 8415623
Int. Cl.[4] H01J *37/302*
U.S. Cl. 250—492.2 39 Claims



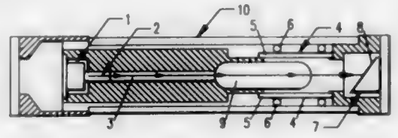
1. A source of charged particles including a line emitter for emitting the charged particles, the line emitter arranged transversely of the direction in which the charged particles are to be emitted; means for focusing the emitted particles into a flat beam which is a line image of the emitter; and beam shaping means including beam blocking means, the beam shaping means responsive to an applied electrical signal to block selectively one or more parts of the line image beam.

4,804,852
TREATING WORK PIECES WITH ELECTRO-MAGNETICALLY SCANNED ION BEAMS
Peter H. Rose, Rockport; Marvin Farley, Ipswich, and Lee Grodzins, Lexington, all of Mass., assignors to Eaton Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 823,616, Jan. 29, 1987, abandoned. This application Mar. 30, 1987, Ser. No. 32,513
Int. Cl.[4] G21K *5/02*
U.S. Cl. 250—492.1 35 Claims



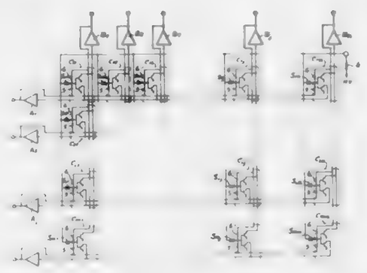
1. In an ion implanter having an ion beam source and a scanning device disposed in a beam line between the source and an implant target, said scanning device serving to cause a spatial distribution across the target of the ions being implanted, said scanning device comprising a beam energy modulator means provided with a source of modulating voltage having a cyclical wave form to modulate the energy of the ions of the beam over time, and an analyzer magnet means disposed after said modulator means in position to act upon the thus modulated ion beam to cause displacement of the beam in a repetitively scanned pattern, the improvement wherein, under conditions of operation in which the intensity of said ion beam is unchanging, said wave form of said modulating voltage is preselected to take into account the non-linear relationship between the deflection of said beam by said magnetic means and the modulation of the energy of said beam, so as to produce a uniform areal distribution of the number of ions implanted into the target.

4,804,853
COMPACT PARTICLE FLUX MONITOR
Peter Borden, Palo Alto; Laszlo Szalai, Mt. View, and Jon Munson, Sunnyvale, all of Calif., assignors to High Yield Technology, Mountain View, Calif.
Filed Apr. 23, 1987, Ser. No. 41,795
Int. Cl.[4] G01H *15/06*
U.S. Cl. 250—574 16 Claims



1. A compact particle flux monitor for detecting particles in a vacuum or low pressure environment comprising:
an enclosure having a longitudinal axis;
a source for providing a high intensity light beam along a longitudinal path having a focal point within said enclosure;
at least one aperture formed in said enclosure for allowing passage of particles into said enclosure so that said particles traverse said light beam, said aperture extending in a direction substantially parallel to said beam path;
photosensor means assembled to said enclosure for sensing light scattered by said particles as they pass through said light beam, said photosensor means extending longitudinally in a direction parallel to said beam path, said photosensor means being positioned so that sensing portions of said photosensor means are located radially relative to said focal point of said beam path.

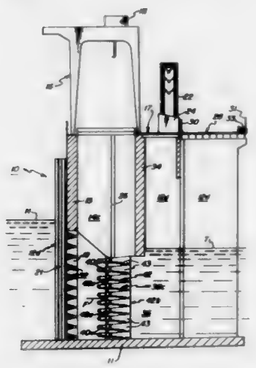
4,804,854
LOW-NOISE ARRAYED SENSOR RADIATION IMAGE DETECTING SYSTEM WHEREIN EACH SENSOR CONNECTS TO A BUFFER CIRCUIT
Susumu Adachi, and Masayuki Kamegawa, both of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan
Filed Feb. 12, 1988, Ser. No. 155,363
Claims priority, application Japan, Feb. 16, 1987, 62-34288; Jul. 15, 1987, 62-177869
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 3 Claims



1. A radiation image detecting system whose radiation image receiving plane consists of a plurality of radiation sensors arrayed so as to form a two-dimensional (m, n) sensor matrix, said radiation image detecting system comprising:

buffer circuits through which radiation signals detected by said radiation sensors are outputted, said buffer circuits being provided in one-to-one correspondence with said radiation sensors;
m row-side amplifiers, each of which amplifies radiation signals detected by the radiation sensors belonging to each of n rows of said (m, n) sensor matrix; and
n column-side amplifiers, each of which amplifies radiation signals detected by the radiation sensors arrayed in each of n columns of said (m, n) sensor matrix.

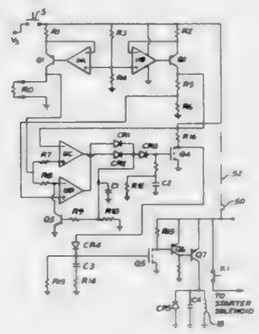
4,804,855
HYDROMOTIVE MACHINE APPARATUS AND METHOD OF CONSTRUCTING THE SAME
Henry K. Obermeyer, 36 Wickhams Fancy, Rivers Edge Rd., Collinsville, Conn. 06022
Continuation-in-part of Ser. No. 14,440, Feb. 13, 1987, Pat. No. 4,755,690. This application Jul. 21, 1987, Ser. No. 76,044
Int. Cl.[4] F03B *13/10*
U.S. Cl. 290—54 49 Claims



1. A hydromotive machine apparatus comprising:
(a) a bulkhead assembly having a distributor section defining an upstream face and a draft section defining a downstream face, said bulkhead assembly being comprised of an array of water tubes having their longitudinal axes in parallel and being connected to each other to provide a truss structure defining a plurality of water flow paths extending from said upstream face to said downstream face; and
(b) a plurality of submersible hydromotive machines, each machine having a runner rotatably mounted thereon and being mounted on the bulkhead assembly in association with one of said water tubes and with its runner disposed within the water flow path of its associated water tube.

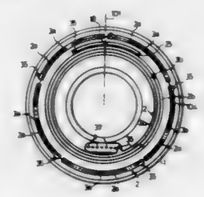
4,804,856
AUTOMOTIVE ANTI-THEFT DEVICE
John-Cyril P. Hanisko, Southfield, and Victor J. Berowski, Dearborn, both of Mich., assignors to Cy Vi Co, Livonia, Mich.
Continuation-in-part of Ser. No. 817,467, Jan. 9, 1986, Pat. No. 4,672,225. This application Jun. 8, 1987, Ser. No. 59,300
Int. Cl.[4] H02J *13/00*; B60R *25/04*
U.S. Cl. 307—10 AT 14 Claims

1. An anti-theft device for a vehicle starter ignition system, comprising:
switch means coupled with said starter ignition system for interrupting the flow of electrical current through said starter ignition system;
a resistive element having a resistive value essentially unique to said vehicle;
means for removably mounting said resistive element on said vehicle to allow the vehicle's operator to remove said resistive element from the vehicle in order to prevent theft of said vehicle; and,
a control circuit coupled with said switch means and said resistive element for sensing the value of said resistive element when the latter is mounted on said vehicle and for controlling said switch means in accordance with the



sensed value of resistance of said resistive element, said control circuit including
(1) means for sensing a voltage across said resistive element,
(2) means responsive to said sensing means for producing a control signal controlling said switch means when the voltage sensed by said sensing means is within a preselected range of values, and
(3) means coupled with said sensing means for establishing a voltage which is within said preselected range of voltage values.

4,804,857
RELAY MECHANISM FOR A STEERING WHEEL
Chikahisa Hayashi; Shuji Imai; Tetsushi Hiramitsu; Atsuo Hirano, and Takanori Kaneko, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan
Filed Nov. 24, 1987, Ser. No. 125,082
Claims priority, application Japan, Nov. 28, 1986, 61-284839; Nov. 29, 1986, 61-285083
Int. Cl.[4] H01H *9/00*
U.S. Cl. 307—10 R 8 Claims



1. A relay mechanism for a steering wheel comprising:
a plurality of slip rings disposed isolated from each other along a circular track, said circular track having a steering shaft as the center thereof;
a common line connecting the respective slip rings and a power source; and
switching means for rendering the common line non-conductive when the steering wheel is turned over more than

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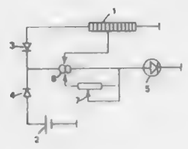
a predetermined angle from a straight travel position of the steering wheel.

4,804,858

POWER SUPPLY CIRCUIT FOR A DIODE ADAPTED TO EMIT LIGHT IN DEPENDENCE OF THE PREVAILING SURROUNDING LIGHT

Richard Jörlöv, Lomma; Lars Nyström, Veberöd, and Sixten Lewenhagt, Malmö, all of Sweden, assignors to Alnpoint AB, Malmo, Sweden

Filed Mar. 29, 1988, Ser. No. 174,780
Claims priority, application Sweden, Apr. 8, 1987, 8701462
Int. Cl.[4] H02J 7/00
U.S. Cl. 307—66 **6 Claims**



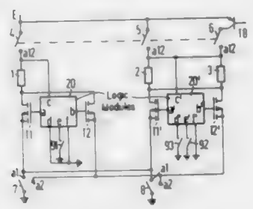
1. A system for variably controlling light emission from a light emitting diode independence upon the prevailing surrounding light, comprising in combination, a light emitting diode that emits light in response to the magnitude of current flow therethrough, a current producing solar cell coupled to pass current flow through the diode independence upon the prevailing surrounding light, a battery coupled to produce current flow through the diode only in lower light conditions when the solar cell does not produce enough current to produce a corresponding magnitude of current flow through the diode to vary the light emitted from the diode in response to the lower levels of the surrounding light, and a current regulator influenced by the solar cell to control the battery current flow through the diode independence upon the surrounding light in the lower levels of the surrounding light.

4,804,859

TRIGGER CIRCUIT FOR A SAFETY SYSTEM

Marten Swart, Obertraubling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 11, 1988, Ser. No. 167,130
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1987, 3709894
Int. Cl.[4] B60R 21/10
U.S. Cl. 307—105 B **3 Claims**



1. In a trigger circuit for a safety system of the type which comprises an energy source for at least one trigger located in a trigger branch, at least one response step switch which is driven to a first switch contact or to a second switch contact dependent on two delay values which are assigned to a first response case and to a second response case, respectively, and at least one selection switch which, dependent on the switch position of a status switch connected thereto, connects the trigger to one of the switch contacts of the response step switch, the improvement wherein:

the selection switch comprises at least one electronic switch connected to the trigger; and

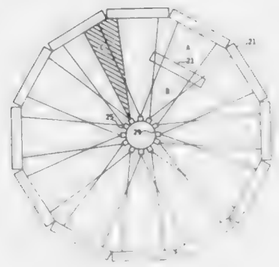
a logic module is connected to the energy source by way of the switch contacts of the response step switch and is operable to drive the selection switch for controlling operation of the trigger.

4,804,860

ROBOT CELL SAFETY SYSTEM

Joseph Ross, Fort Salonga, and Howard Stern, Greenlawn, both of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Division of Ser. No. 729,960, May 2, 1985, Pat. No. 4,652,205.
This application Sep. 29, 1986, Ser. No. 913,014
Int. Cl.[4] H01H 35/00; B25J 19/00
U.S. Cl. 307—117 **6 Claims**



1. An arrangement for detecting the presence of an opaque object within a predetermined area and effecting a power interruption comprising: at least one light source means mounted on a structure; camera means for imaging said light source and converting said image to a video signal; recording means for recording a normal signal pattern of said video signal generated by said camera means; detecting means for detecting when said pattern is indicative of a significant loss of light received from said at least one light source; and control means for interrupting a flow of power upon detecting when said pattern is indicative of a significant loss of light received from said at least one light source.

4,804,861

MULTIFUNCTION ONBOARD INPUT/OUTPUT TERMINATION

Roger L. Hollstein, Phoenix, and Barry Siegwart, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 11, 1988, Ser. No. 154,717
Int. Cl.[4] H03K 19/092, 19/086, 19/003, 3/013
U.S. Cl. 307—455 **6 Claims**

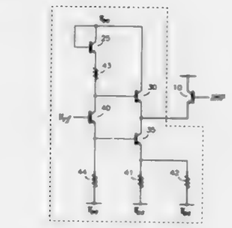
1. An onboard current sourced termination used to terminate a standard ECL output comprising:

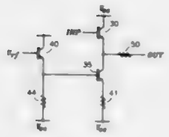
a first transistor having a base, an emitter, and a collector;

a second transistor having a base, an emitter and a collector wherein said collector of said second transistor is coupled to said emitter of said first transistor to form an input node;

a third transistor having a base, an emitter and a collector, said collector of said third transistor coupled to said base of said first transistor and said emitter of said third transistor coupled to said base of said second transistor and said base of said third transistor capable of receiving a reference voltage supply;

a first resistor having first and second ends, said first end of said first resistor coupled to said collector of said first transistor and said second end coupled between said base of said first transistor and said collector of said third transistor; and





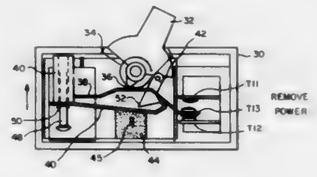
a predefined resistance cell tied to said emitter of said second transistor.

4,804,862

ELECTRO MECHANICAL SWITCH HAVING REMOTELY CONTROLLED OFF POSITION

Gordon Bowman-Jones, Foster City, Calif., and James E. Warthan, Indianapolis, Ind., assignors to Steven F. Lachman, San Mateo, Calif.

Filed Sep. 3, 1986, Ser. No. 903,318
The portion of the term of this patent subsequent to Apr. 14, 2005, has been disclaimed.
Int. Cl.[4] H01H 1/52
U.S. Cl. 307—140 **7 Claims**



1. An electro-mechanical switch comprising

a cantilevered switch arm including a power contact,

first and second switch terminals with said power contact positioned therebetween, said cantilevered switch arm being yieldably biased whereby said power contact engages said first switch terminal,

manually operable lever means for engaging said switch arm and moving said power contact into engagement with said second switch terminal,

a pivotable latch arm for latching said switch arm whereby said power terminal engages said second switch terminal, and

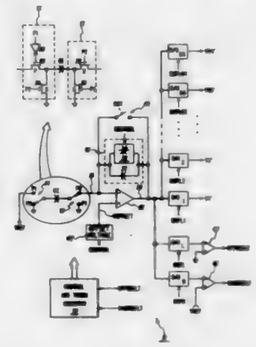
solenoid means actuable in response to removal of power from said power contact for pivoting said latch arm and releasing said switch arm.

4,804,863

METHOD AND CIRCUITRY FOR GENERATING REFERENCE VOLTAGES

David R. Welland, and Donald A. Kerth, both of Austin, Tex., assignors to Crystal Semiconductor Corporation, Austin, Tex.

Filed Nov. 12, 1986, Ser. No. 929,711
Int. Cl.[4] H03K 4/02, 5/159, 5/00
U.S. Cl. 307—227 **7 Claims**



1. Apparatus for generating a stair-step voltage waveform on a signal output terminal, comprising:

a. a first capacitor;

b. a differential amplifier having its output coupled to said signal output terminal;

c. control and timing circuit means for controlling the operation of said apparatus;

d. means coupled to and responsive to outputs of said control and timing circuit means for switching one terminal of said first capacitor between a first reference voltage and a second reference voltage;

e. means coupled to and responsive to outputs of said control and timing circuit means for switching the other terminal of said first capacitor between the inverting input of said differential amplifier and said second reference voltage;

f. means for biasing the noninverting input of said differential amplifier;

g. a second capacitor coupled between the inverting input and the output of said differential amplifier, said second capacitor being adjustable in capacitance value in response to at least one output of said control and timing circuit coupled to said second capacitor; and

h. switching means connected in parallel with said second capacitor and coupled to and responsive to an output of said control and timing circuit means for selectively providing a low impedance between the inverting input and the output of said differential amplifier;

whereby a stair-step voltage waveform may be provided on said signal output terminal.

4,804,864

MULTIPHASE CMOS TOGGLE FLIP-FLOP

John R. Spence, Villa Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 9, 1987, Ser. No. 23,179
Int. Cl.[4] H03K 3/26, 3/284, 19/096
U.S. Cl. 307—279 **6 Claims**

1. A CMOS toggle flip-flop comprising:

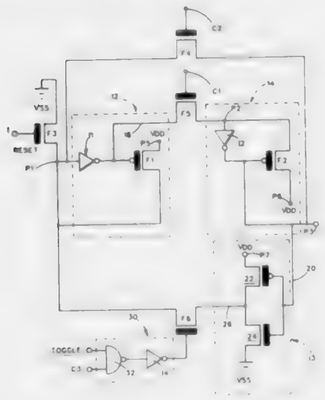
a flip-flop having an input node and an output node; and

a flip-flop feedback line connected between said flip-flop output node and said flip-flop input node; and

a toggle circuit comprising:

an inverter having an input node connected to said flip-flop output node, and having an output node;

a transfer switch connected between said inverter output node and said flip-flop input node; and



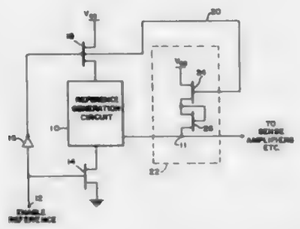
a toggle control responsive to an input toggle signal for closing said transfer switch to connect said inverter output node to said flip-flop input node.

4,804,865

FAST VOLTAGE REFERENCE STABILIZATION CIRCUIT

Jack E. Clark, II, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Mar. 19, 1987, Ser. No. 27,940
Int. Cl.[4] H03K *3/01;* **G05F** *3/16*
U.S. Cl. 307—297 **13 Claims**



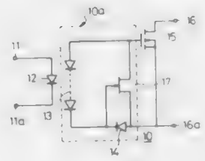
1. A voltage reference stabilization circuit, comprising:
reference voltage generation means for supplying a reference voltage at a reference node;
enable means connected to said reference voltage generation means for enabling and disabling said reference voltage generation means; and
clamping means connected to said reference node and said enable means for clamping said reference node at a clamp voltage approximately equal to said reference voltage when said reference voltage generation means is disabled by said enable means.

4,804,866

SOLID STATE RELAY

Sigeo Akiyama, Neyagawa, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 10, 1987, Ser. No. 26,994
Claims priority, application Japan, Mar. 24, 1986, 61-68112; Jun. 16, 1986, 61-139911
Int. Cl.[4] H03K *17/78*
U.S. Cl. 307—311 **5 Claims**



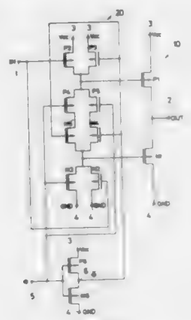
1. A solid state relay comprising a light-emitting element connected to input terminals of said relay for generating a light signal upon presence of an input current at said input terminals, a photovoltaic diode array optically coupled to said light-emitting element for generating a photovoltaic output responsive to said light signal from the light-emitting element, an impedance element connected in series with said photovoltaic diode array, an output MOS FET connected to said photovoltaic diode array and to output terminals of the relay to vary from a first impedance state to a second impedance state upon application of said photovoltaic output across gate and substrate electrode of said MOS FET, and a normally ON driving transistor connected to said MOS FET and having a control electrode connected to a connection point between the photovoltaic diode array and the impedance element, said driving transistor being biased to be in a higher one of said first and second impedance state by a voltage generated across the impedance element in the presence of the photovoltaic output of the photovoltaic diode array.

4,804,867

THREE-STATE COMPLEMENTARY MOS INTEGRATED CIRCUIT

Takesori Okitaka, and Yukio Miyazaki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1987, Ser. No. 119,086
Claims priority, application Japan, Nov. 14, 1986, 61-272602
Int. Cl.[4] H03K *3/295, 3/354, 4/48, 17/16*
U.S. Cl. 307—473 **4 Claims**



1. A three-state complementary MOS integrated circuit comprising
an output circuit comprising a P-channel MOS transistor

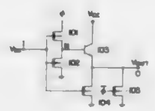
and an N-channel MOS transistor that are connected in series between a power supply and a ground, and
a pre-output stage circuit responsive to a control signal, an inverted control signal and an input signal for driving the output circuit,
wherein the pre-output stage circuit comprises
a first parallel circuit of a P-channel MOS transistor having a gate connected to receive the input signal and a P-channel MOS transistor have a gate connected to receive the inverted control signal,
a second parallel circuit of a first series circuit and a second series circuit, the first series circuit comprising a series connection of a P-channel MOS transistor having a gate connected to receive the control signal and an N-channel MOS transistor having a gate connected to receive the inverted control signal, and the second series circuit comprising a series connection of a P-channel MOS transistor having a gate connected to receive the control signal and an N-channel MOS transistor having a gate connected to receive the inverted control signal, and
a third parallel circuit of an N-channel MOS transistor having a gate connected to receive the control signal and an N-channel MOS transistor having a gate connected to receive the input signal,
wherein the first, second and third parallel circuit are series-connected in the stated order between the power supply and the ground, the junction between the first and second parallel circuits is connected to the gate of the P-channel MOS transistor of the output circuit, and the junction between the second and third parallel circuits is connected to the gate of the N-channel MOS transistor of the output circuit.

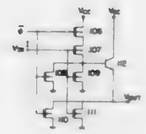
4,804,868

BIMOS LOGICAL CIRCUIT

Masumi Masuda, Kawasaki; Takayuki Kawaguchi, and Yasuhiro Nozawa, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 9, 1987, Ser. No. 106,362
Claims priority, application Japan, Mar. 27, 1987, 62-73462
Int. Cl.[4] H03K *19/01, 19/003, 19/082, 19/094*
U.S. Cl. 307—446 **2 Claims**





1. A BiMOS circuit comprising:
a first transistor comprised of a PMOS transistor;
a second transistor comprised of an NMOS transistor;
a third transistor comprised of a bipolar transistor;
a fourth transistor comprised of an NMOS transistor; and
a fifth transistor comprised of an NMOS transistor;
one end of said first transistor and one end of said second transistor being connected to each other at an intermediate node of said respective one ends of said first and second transistors, the gate of said first transistor and the gate of said second transistor being connected to an input terminal, a first power supply voltage being supplied to the other end of one of said first and second transistors, a control signal being delivered to the other end of the other transistor thereof;
the base of said third transistor being connected to said intermediate node, a second power supply voltage being applied to one of the collector or the emitter of said third transistor, an output terminal being connected to the other thereof;
respective one ends of said fourth and fifth transistors being connected to said output terminal, said first power supply voltage being applied to the respective other ends thereof, the gate of said fourth transistor being connected to said input terminal, a signal complementary to said control signal being delivered to the gate of said fifth transistor.

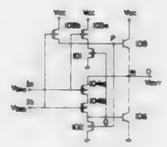
4,804,869

BIMOS LOGICAL CIRCUIT

Masumi Masuda, Kawasaki; Yasunitsu Nozawa, and Takayuki Kawaguchi, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

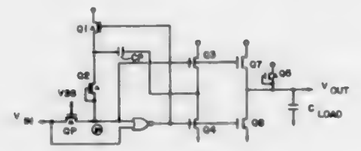
Filed Oct. 9, 1987, Ser. No. 106,429
Claims priority, application Japan, Mar. 27, 1987, 62-73461
Int. Cl.[4] H03K *19/01, 19/003, 19/082, 19/094*
U.S. Cl. 307—446 **4 Claims**





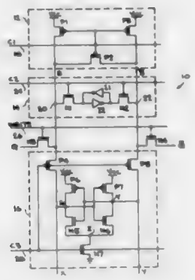
1. A BiMOS logical circuit comprising:
a first power source;
a first MOS transistor, one end of said first MOS transistor being connected to said first power source; of said
a second MOS transistor, one end second MOS transistor being connected to said first power source;
a first bipolar transistor, the base of said first bipolar transistor being connected to the other end said first MOS transistor; and
a second bipolar transistor, the base of said second bipolar transistor being connected to the other end of said second MOS transistor;
a second power source;
said first and second bipolar transistors being connected in series at an intermediate node thereof between said second power source and said first power source;
the gate of said first MOS transistor and said base of said second bipolar transistor being connected;
the gate of said second MOS transistor and said base of said first bipolar transistor being connected;
said BiMOS logical circuit further comprising switching means for selectively establishing either a connection between the other end of said first MOS transistor and said second power source or the connection between the other end of said second MOS transistor and said intermediate node on the basis of an input signal delivered to an input terminal, thereby to output an output signal corresponding to said input signal from an output terminal connected to said intermediate node.

4,804,870
NON-INVERTING, LOW POWER, HIGH SPEED BOOTSTRAPPED BUFFER
Syed T. Mahmud, Los Gatos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.
Continuation of Ser. No. 083,919, Aug. 7, 1987, abandoned, which is a continuation of Ser. No. 750,947, Jul. 1, 1985, abandoned. This application Jan. 26, 1988, Ser. No. 148,185
Int. Cl.[4] H03K *17/06, 19/017*
U.S. Cl. 307—482 5 Claims



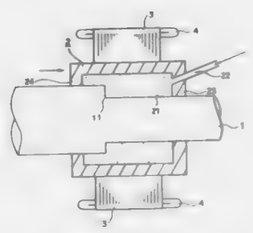
2. In a two-state buffer circuit having an input terminal and an output terminal of the type which comprises: bootstrappng means, which include a capacitor which is precharged when the input terminal is in a first logic state and bootstraps an output of the buffer circuit to an internal node to increase operating speed when the input terminal switches from the first logic state to a second logic state, in combination with a transistor whch is biased to isolate the input terminal from the internal node whenever the input terminal is in the second logic state; the improvement comprising NOR gate means having a first input connected to the input terminal, a second input connected to the internal node, and an output connected to control the state of the output terminal so that the output terminal is statically maintained in the second state when the input terminal is in the second state.

4,804,871
BIT-LINE ISOLATED, CMOS SENSE AMPLIFIER
Donald M. Walters, Jr., Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Jul. 28, 1987, Ser. No. 78,746
Int. Cl.[4] H03K *17/16*
U.S. Cl. 807—530 8 Claims



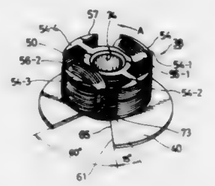
1. A sense amplifier coupled to a pair of bit lines for sensing and amplifying a voltage differential between the pair of bit lines, comprising:
a first N-channel transistor (N5) having a drain electrode connected to a first sense node (X), a gate electrode connected to a second sense node (Y), and a source electrode;
a second N-channel transistor (N6) having a drain electrode connected to the second sense node (Y), a gate electrode connected to the first sense node (X), and a source electrode connected to the source electrode of the first N-channel transistor (N5);
a first P-channel transistor (P6) having a source electrode connected to a supply potential (VCC), a gate electrode connected to the second sense node (Y), and a drain electrode connected to the first sense node (X);
a second P-channel transistor (P7) having a source electrode connected to the supply potential (VCC), a gate electrode connected to the first sense node (X), and a drain electrode connected to the second sense node (Y);
a third N-channel transistor (N7) having a drain electrode connected to the source electrodes of the first and second N-channel transistors (N5, N6) a gate electrode connected to receive a sense signal, and a source electrode connected to a ground potential (VSS);
a third P-channel transistor (P4) having a source electrode connected to a first bit line (B) of the pair of bit lines, a gate electrode connected to receive the sense signal, and a source electrode connected to the first sense node (X);
a fourth P-channel transistor (P5) having a source electrode connected to a second bit line ($\overline{B}$) of the pair of bit lines, a gate electrode connected to receive the sense signal, and a source electrode connected to the second sense node; and
said third and fourth P-channel transistors (P4, P5) being turned off so as to isolate the pair of bit lines (B, $\overline{B}$) from the sense nodes (X, Y) when the sense signal is at a high logic level, thereby eliminating a current spike to the ground potential (VSS).

4,804,872
ROTOR OF A BUILT-IN MOTOR
Kousei Nakamura, Tokyo, and Takashi Yoshida, Kawagoe, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan
PCT No. PCT/JP86/00629, § 371 Date Sep. 30, 1987, § 102(e) Date Sep. 30, 1987, PCT Pub. No. WO87/03749, PCT Pub. Date Jun. 18, 1987
PCT Filed Dec. 11, 1986, Ser. No. 82,387
Claims priority, application Japan, Dec. 12, 1985, 60-190328
Int. Cl.[4] H02K *15/00*
U.S. Cl. 310—42 9 Claims



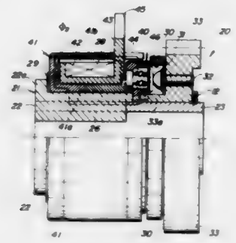
1. A rotor of a built-in motor comprising:
a shaft having a stepped part ;
a sleeve having
a hollow space arranged to surround said shaft at said stepped part, and
a hydraulic pressure supply means for applying hydraulic pressure to said sleeve, reducing friction between said shaft and said sleeve and removing said sleeve from said shaft,
said sleeve being fitted with said shaft having the stepped part; and
a core fitted with said sleeve.

4,804,873
UNIDIRECTIONAL BRUSHLESS MOTOR
Manabu Shiraki, Yamato, and Ousai Miyao, Sagamihara, both of Japan, assignors to Shicoh Engineering Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 921,465, Oct. 22, 1986, abandoned.
This application Aug. 6, 1987, Ser. No. 83,007
Claims priority, application Japan, Nov. 7, 1985, 60-171259[U]
Int. Cl.[4] H02K *21/08, 11/00, 29/08*
U.S. Cl. 310—67 R 7 Claims



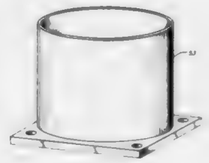
1. A brushless DC motor, comprising:
a stator core having a plurality of radially extending T-shaped stator poles; a plurality of driving coils wound on all or selected ones of said stator poles of said stator core; a field magnet mounted for rotation opposite the circumferential faces of said stator poles with a radial space left between said field magnet and said circumferential faces, said field magnet having a plurality of driving alternate north and south magnetic pole zones; a cogging generating magetic plate mounted at a stator position opposite one face of said field magnet with an axial space left between said cogging generating magnetic plate and said field magnet, said cogging generating magnetic plate defining at least one cutaway portion of an angular width such that said cogging generating magnetic plate generates a cogging torque to move said field magnet by attraction therebetween to a position which is other than any dead point so as to allow said field magnet to start itself; and a single position-detecting element positioned so that a dead point is not detected upon starting of said motor.

4,804,874
ELECTROMAGNETIC CLUTCH
Hiroaki Nakamura, Ise, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan
Filed Jun. 10, 1987, Ser. No. 60,216
Claims priority, application Japan, Jun. 13, 1986, 61-90043[U]
Int. Cl.[4] H02K *49/00*
U.S. Cl. 310—92 6 Claims



1. In an electromagnetic clutch of the type which includes a rotor secured around a rotation shaft, a drive member rotatably mounted around the rotation shaft, an armature mounted through a resilient member to the drive member with a gap to the rotor, a bearing mounted around the rotation shaft, a yoke mounted around the bearing for rotation about the rotation shaft, and the yoke locking mechanism for locking the yoke to a frame so as to prevent the yoke from accompanying the rotation shaft when the rotation shaft is rotated, the yoke having a coil wound therearound, and in which the rotor, the armature and the yoke are arranged to form a magnetic path so that the armature is electromagnetically attracted to the rotor for transmitting torque form the drive member to the rotation shaft when the coil is energized, the improvement wherein the rotation shaft comprises: a first sintered compact magnetic shaft, the first shaft having the bearing fitted therearound; and a second sintered compact magnetic shaft, concentrically connected to the first shaft for transmitting the torque to the first shaft, the second shaft having both the rotor and the drive member placed therearound.

4,804,875
MONOLYTHIC RESONATOR VIBRATING BEAM ACCELEROMETER
William C. Albert, Bounton, N.J., assignor to The Singer Company, Stamford, Conn.
Filed Sep. 16, 1982, Ser. No. 418,930
Int. Cl.[4] H01L *41/00*
U.S. Cl. 310—323 9 Claims



1. A monolithic resonator and flexure structure for a vibrating beam accelerometer comprising:
(a) a planar member of piezoelectric material having a first portion with a first mounting surface, a second portion with a second mounting surface spaced therefrom, and a vibrating beam disposed in an intermediate portion disposed between said first and second portions and respective mounting surfaces;
(b) first and second flexures disposed at the top and bottom of said intermediate portion, coupling said first and second portions with the respective mounting surfaces; and
(c) a first arm rigidly connected to said first portion and coupling said vibrating beam to said first portion with the first mounting surface at the top of said vibrating beam, and a second arm rigidly connected to said second portion and coupling said vibrating beam to said second portion with the second mounting surface at the bottom of said vibrating beam whereby relative movement of said first and second portions with respective mounting surfaces, permissible because of said first and second flexures, will cause said beam to be placed under compression or tension, depending on the relative direction of movement.

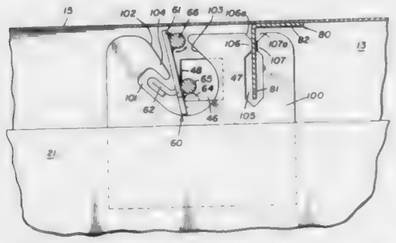
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4,804,876

CABINET WITH LATCH MECHANISM

James W. Lassert, Oswego; Robert A. Stadinski, Big Rock, and Florian A. Walter, Aurora, all of Ill., assignors to Lyon Metal Products, Incorporated, Aurora, Ill.

Filed Apr. 16, 1987, Ser. No. 38,942
Int. Cl.[4] E05C 7/06
U.S. Cl. 312—221 20 Claims



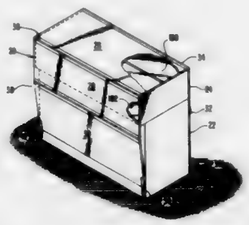
1. A cabinet comprising a top member, a bottom member, a pair of side members, article support means slidably mounted on said side members and being slidable between a fully opened position and a full closed position, an elongated latch bar rotatably mounted to said top and bottom members and being rotatable between latch and unlatch positions, a plate-like member extending rearwardly from said article support means, one portion of said plate being an actuator, said actuator including first means aligned with said latch bar and being constructed and arranged to rotate said latch bar to the latch position thereof as said article support means is being closed, said actuator including second means for rotating said latch bar to the unlatch position thereof as said article support means is being closed, an elongated flange attached to said top member and said bottom member and being substantially parallel to said latch bar and spaced therefrom, another portion of said plate being an alignment means, said alignment means having a notch therein laterally aligned with said flange, said notch having a width greater than the thickness of said flange, said notch being located to receive said flange as said article support means is being closed to properly align said first means of said actuator with said latch bar.

4,804,877

PROTECTIVE COVERS FOR DISPLAY CASES

John W. Harwood, Alexandria, Va., assignor to Harwood Protection Industries Inc., Newington, Va.

Filed Feb. 9, 1987, Ser. No. 12,169
Int. Cl.[4] A47F 3/00
U.S. Cl. 312—114 21 Claims



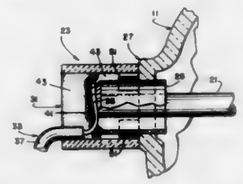
1. A protective cover in combination with an elevated display case, the combination comprising:
an elevated display case having multiple faces including at least one glass face;
a first panel of non-frangible, rigid material and of a size and shape designed to cover said glass face of said elevated display case, said first panel being positioned adjacent said glass face;
at least one other panel of a shape and size designed to cover at least one of said other faces, said other panel being positioned adjacent said one other face; and
a plurality of hinge assemblies, said panels being connected on edge by said hinge assemblies to form a row having first and second ends;
said ends having latching members attached thereto which are compatible with latching assemblies attached to said display case.

4,804,878

ELECTRIC LAMP, BASE FOR USE THEREWITH AND METHOD OF ASSEMBLING SAME

Harold L. Hough, Beverly; George J. English, Reading, and Kirti B. Chakrabarti, Danvers, all of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Feb. 5, 1987, Ser. No. 11,465
Int. Cl.[4] H01J 5/50, 9/00
U.S. Cl. 313—113 32 Claims



1. A base for an electric lamp including a reflector, an electrically conductive ferrule located within a surface of said reflector and an electrically conductive lead-in conductor connected to said ferrule and extending within said reflector, said base comprising:
an electrically insulative cap having an opening therein and located on said reflector substantially about said ferrule;
barrier means located within said cap adjacent said ferrule, said barrier means and the walls of said cap defining an open chamber within said cap substantially about said ferrule, said walls of said insulative cap including at least one aperture therein relative to said open chamber to enable heat generated by said electrically conductive ferrule to pass therethrough;
an electrical conductor extending within said opening of said cap and electrically connected to said ferrule; and
sealing means located within said opening of said cap for providing a seal therefor, said barrier means separating said sealing means from said open chamber about said ferrule.

4,804,879

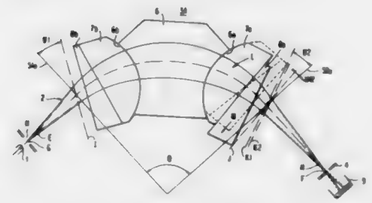
DEFLECTING ELECTROMAGNET APPARATUS WITH MOVEABLE POLE PIECE

Shintaro Fukumoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1987, Ser. No. 51,786
Claims priority, application Japan, May 21, 1986, 61-114806
Int. Cl.[4] H01J 7/24; H05B 31/26
U.S. Cl. 313—361.1 4 Claims

1. A deflecting electromagnet apparatus for deflecting an ion beam (2) generated by an ion source (a) and for focusing the ion beam, the apparatus comprising:
(a) a main pole piece (6) having an input side end surface (6b) at which the ion beam is received and an output side end surface (6a) at which the ion beam is outputted, at least one of said side end surfaces being formed as a curved surface,

(b) at least one bow-shaped pole piece (7a,7b) having a planar surface, and having a curved surface for rotatably contacting said curved surface of said main pole piece to change a border of the magnetic field, and



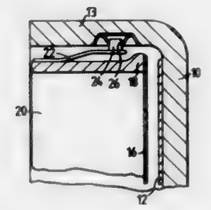
(c) at least one wedge-shaped pole piece (8a,8b) for contacting said planar surface of said bow-shaped pole piece for slidable movement with respect to said bow-shaped pole piece for reducing the change in the border of the magnetic field, said wedge-shaped pole piece being rotatable with said bow-shaped pole piece.

4,804,880

MOUNTING FOR SHADOW MASK IN COLOR CATHODE RAY TUBES

Martin Kavanagh, Wallington, United Kingdom, assignor to Rank Brimar Limited, United Kingdom

Filed Apr. 14, 1987, Ser. No. 38,233
Claims priority, application United Kingdom, Apr. 15, 1986, 8609139
Int. Cl.[4] H01J 29/07
U.S. Cl. 313—404 16 Claims



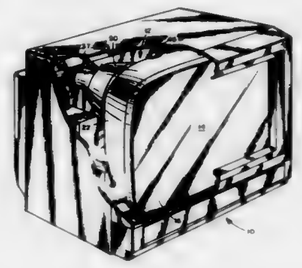
1. A colour cathode ray tube comprising a tube wall, a shadow mask carrying frame and a plurality of mounting means arranged around the frame to mount the frame within the tube wall, each mounting means comprising a spigoted mounting element which is bonded to the tube wall and defines a spigot, and a socketed mounting element connected to the frame and defining a socket, and the two mounting elements together providing a spring-loaded complementary spigot-and-socket connection, the spigoted mounting element comprising a first member bonded to the tube wall of a material compatible with the material of the tube and a second member providing said spigot which is secured to the first member and which is of a material harder than the material of said first member.

4,804,881

CORNER CONNECTORS FOR SHADOW MASK SUPPORT STRUCTURE

Paul Strauss, Chicago, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 23, 1987, Ser. No. 137,492
Int. Cl.[4] H01J 29/07
U.S. Cl. 313—407 22 Claims



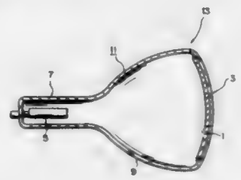
1. A front assembly for a color cathode ray tube including a faceplate having on its inner surface a centrally disposed phosphor screen surrounded by a peripheral area adapted to mate with a funnel, said assembly including a shadow mask support structure for securing a shadow mask in tension on the structure and spacing said shadow mask from said screen said support structure comprising a support assembly including a plurality of elongated members substantially surrounding the centrally disposed phosphor screen and meeting at corner areas of the screen, said elongated members having at least partially open matable end portions, and connector members disposed in said corners and having complementary matable portions matable with said end portions of adjacent ones of said elongated members at said corner areas of said screen, said matable portions of each said corner connector member being configured as plug portions and sized to provide a snug sealing fit with said open end portions of adjacent ones of said elongated members so as to provide fixturing for the securing and sealing processes of said assembly.

4,804,882

CATHODE-RAY TUBE INCLUDING A WHITE PHOSPHOR SCREEN

Takeshi Takahara, Yokosuka; Mitsuhiro Oikawa, Yokohama; Yoshinori Tetsuishi; Kazuaki Higuchi, both of Fukaya, and Masaaki Tamatani, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki and Hokuto Electronics Co., Ltd., Asahikawa, both of, Japan

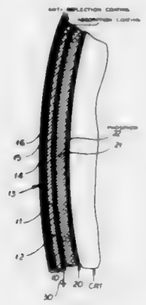
Filed Jul. 2, 1987, Ser. No. 69,444
Claims priority, application Japan, Jul. 4, 1986, 61-156110
Int. Cl.[4] H01J 29/20; C09K 11/477
U.S. Cl. 313—468 2 Claims



1. A cathode-ray tube with a phosphor screen comprising:
5 to 15 wt. % of phosphor A;
5 to 15 wt. % of phosphor B; and

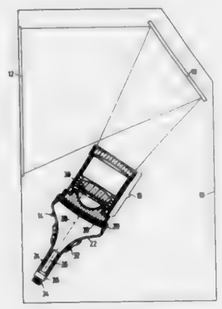
70 to 90 wt. % of phosphor C,
said phosphor A being a bluish white-emitting phosphor $(Y_{1-x-y}Gd_xTby)_2O_2S$ $(0 \leqq X \leqq 0.999999$ and $0.000001 \leqq y \leqq 0.01)$,
said phosphor B being at least one of a blue-emitting silver-activated hexagonal zinc sulfate (ZnS:Ag) phosphor, a blue-emitting silver-activated cubic zinc sulfate phosphor (ZnS:Ag,X) (wherein X is at least one element selected from the group consisting of Ga, In, and Sc), and a blue-emitting silver-activated cubic zinc sulfate-scandium oxide phosphor ($ZnS_{-z}Sc_2O_3$:Ag (wherein $1 \times 10^{-5} \leqq z \leqq 8 \times 10^{-2}$)), and
said phosphor C being a yellow-emitting phosphor ($In_{1-p-q-r}M_pTb_qEu_rBO_3$) (wherein M is at least one element selected from the group consisting of Sc, Lu, Y, Gd, and Ga, and p, q, and r satisfy $0 \leqq p \leqq 0.2$, $0.0005 \leqq q \leqq 0.05$, and $0.001 \leqq r \leqq 0.1$).

4,804,883
FRONT ATTACHMENT FOR CRT. E.G. FOR A MONITOR OR VIDEO TUBE
Dieter Müller, Gelsenkirchen, and Wilhelm Rein, Fürth, both of Fed. Rep. of Germany, assignors to Flachglass Aktiengesellschaft, Furth, Fed. Rep. of Germany
Filed Sep. 1, 1987, Ser. No. 91,887
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1986, 3629996
Int. Cl.[4] H01J *29/86, 29/89*
U.S. Cl. 313—478 10 Claims



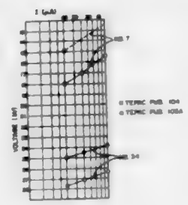
1. A front attachment for a cathode ray tube, comprising:
a single inorganic glass sheet integrally having a rear side adapted to be applied ahead of the face of a cathode ray tube and turned toward the cathode ray tube, and a front side facing away from the cathode ray tube;
an anti-reflection finish on said front side;
an electrically conductive anti-static light absorbent coating on said rear side in the form of a single layer selected from the group which consists of chromium, a chromium/-nickel alloy and a metal silicide of a thickness applied by magnetron cathodic vapor deposition which reduces the light transmissivity by approximately one quarter to four fifths of the transmissivity of a sheet of the glass not provided with said coating; and
means for grounding said light absorbent coating.

4,804,884
DISPLAY TUBE HAVING IMPROVED BRIGHTNESS DISTRIBUTION
Leendert Vriens; Johannes H. M. Spruit, both of Eindhoven, Netherlands, and John A. Clarke, Carshalton, Great Britain, assignors to U.S. Philips Corporation, New York, N.Y.
Filed May 1, 1987, Ser. No. 645,922
Claims priority, application United Kingdom, Dec. 10, 1986, 8629552
Int. Cl.[4] H01J *29/28, 29/89*
U.S. Cl. 313—474 42 Claims



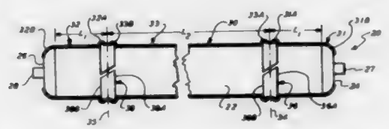
1. A projection television display tube comprising an envelope having an optically transparent substantially rectangular faceplate, the internal surface of the faceplate being convex as viewed from the interior of the envelope, a multilayer interference filter on the internal surface of the faceplate, and a cathodoluminescent screen on the filter, the layers of the filter each having an optical thickness nd at the center of the filter wherein n is the refractive index of the material of the layer and d is the thickness, the optical thickness of the individual layers being between $0.2\lambda_f$ and $0.3\lambda_f$ the average optical thickness being $0.25\lambda_f$, wherein λ_f is equal to $p\lambda$, where λ is the desired central wavelength which is selected from the spectrum emitted by the luminescent material and p is a number between 1.18 and 1.32, and wherein the cut-off angle of the filter is greater at the corners than at the center, the cut-off angle being the minimum angle at which light of a given wavelength is reflected rather than transmitted.

4,804,885
X-RAY ATTENUATING CERAMIC MATERIALS
Ronald O. Petersen, Banks, and James L. McAlpin, Portland, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
Continuation of Ser. No. 395,851, Feb. 4, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 642,019
Int. Cl.[4] H01J *31/00;* H04N *5/65;* G21K *1/00*
U.S. Cl. 313—480 5 Claims



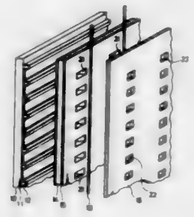
1. In a cathode ray tube comprising a ceramic funnel, a glassplate sealed to the funnel, and an electron gun within the sealed tube, the improvement wherein the funnel is a rigid, nonporous body of ceramic material formed by shaping a uniformly dispersed mixture of oxides to form a greenware body and heating the greenware body to a temperature which is sufficient to cause sintering of the mixture without total melting and loss of shape, the mixture having as an essential component, 1–30 wt. percent of an X-ray attenuating substance selected from the group consisting of $SrZrO_3$, $SrCO_3$, $ZrSiO_4$ and mixtures thereof, wherein the mixture included 10–20 wt. percent $SrZrO_3$.

4,804,886
ELECTRIC LAMP WITH COMPOSITE SAFETY COATING AND PROCESS OF MANUFACTURE
James D. Nolan, 634 Little Silver Point Rd., Little Silver, N.J. 07739, and Rene St. Pierre, Laval, Canada, assignors to James D. Nolan, Little Silver, N.J.
Continuation-in-part of Ser. No. 111, Jan. 2, 1987, abandoned. This application Sep. 24, 1987, Ser. No. 100,427
Int. Cl.[4] H01J *9/24, 61/35*
U.S. Cl. 313—489 25 Claims



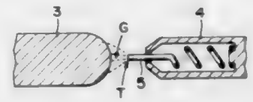
1. Fluorescent lamp with composite safety coating, comprising:
a fluorescent lamp including a glass envelope, a first end cap including a first connecting pin connected to one end of said glass envelope and a second end cap including a second connecting pin connected to the opposite end of said glass envelope, said glass envelope containing energization means for generating light emanating from said lamp and upon energization thereof a first portion of said glass envelope adjacent said first end cap and a second portion of said glass envelope adjacent said second end cap being heated to a first temperature and an intermediate glass portion intermediate said first and second glass portions being heated to a second temperature lower than said first temperature, and
composite safety coating including first and second substantially light transparent coatings and an intermediate substantially light transparent coating intermediate said first and second coatings, said first coating surrounding and secured to said first glass portion and including an outer end portion surrounding and secured to a portion of said first end cap not including said first connecting pin and including an inner end portion, said second coating surrounding and secured to said second glass portion and including an outer end portion surrounding and secured to a portion of said second end cap not including said second connecting pin and including an inner end portion, said intermediate coating surrounding and secured to said intermediate glass portion and including opposed end portions respectively adjacent and interconnected to said inner end portions of said first and second coatings, said first and second coatings non-degradeable to at least said first temperature and said intermediate coating non-degradeable to at least said second temperature, upon said glass envelope being broken into glass shards said composite coating maintaining said glass shards and said end caps in association to prevent broadcasting of said glass shards.

4,804,887
DISPLAY DEVICE WITH VIBRATION-PREVENTING PLATE FOR LINE CATHODES
Hiroshi Miyama, Yokohama; Yoshikuni Kawauchi, Kawasaki; Kaoru Tsuji, Isehara, and Jun Nishida, Tokyo, all of Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan
Filed Nov. 18, 1987, Ser. No. 124,428
Claims priority, application Japan, Nov. 19, 1986, 61-275969; Apr. 17, 1987, 62-95620; Jul. 17, 1987, 62-179477; Jul. 24, 1987, 62-184160
Int. Cl.[4] H01J *63/02, 19/12*
U.S. Cl. 313—495 40 Claims



1. A display device comprising:
(a) line cathodes;
(b) separate first electrodes extending in rear of the line cathodes;
(c) a second electrode extending in front of the line cathodes and having apertures for guiding electron beams from the line cathodes, the apertures of the second electrode corresponding to the separate first electrodes and the line cathodes;
(d) a third electrode deflecting the electron beams;
(e) a screen exposed to the electron beams;
(f) a plate extending along the line cathodes and having apertures corresponding to the separate first electrodes and the line cathodes, the plate having portions between the apertures of the plate, said portions being in contact with the line cathodes; and
(g) a vacuum enclosure containing the above-recited components therein.

4,804,888
LOW STARTING VOLTAGE SHORT-ARC DISCHARGE LAMP
Shoichi Nara, and Yasuo Ouchi, both of Himeji, Japan, assignors to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 22, 1987, Ser. No. 111,272
Int. Cl.[4] H01J *61/54, 61/06*
U.S. Cl. 313—595 7 Claims



1. In a short-arc discharge lamp comprising a combination of electrodes arranged in a fixed and opposing relation in a discharge space surrounded by silica glass, the improvement wherein an expansion and contraction member made of a shape-memory alloy which contracts at high temperatures is fixed on one of the electrodes, a lighting start-up discharge terminal is formed at a free end of the expansion and contraction member, and a free end of the lighting start-up discharge terminal is in contact with the other electrode at room temper-

VOL 1099 ISS 2 FE 14 1989 UMI

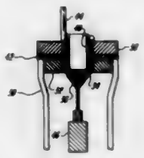
ature but is separated from the other electrode at high temperatures.

4,804,889

ELECTRODE FEEDTHROUGH ASSEMBLY FOR ARC DISCHARGE LAMP

David A. Reid, Annandale, Va.; Roger A. Johnson, Grafton, N.H., and John Gatta, Groveland, Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 18, 1987, Ser. No. 135,406
Int. Cl.[4] H01J 61/36, 9/32
U.S. Cl. 313—624 18 Claims



1. A ceramic arc tube assembly comprising:
a ceramic arc tube having an opening in at least one end;
a ceramic sealing element attached to at least one end of said arc tube and having an opening aligned with the opening in said arc tube;
an electrode feedthrough sealed in the openings in said arc tube and said sealing element, said electrode feedthrough comprising a conductive material closely matched in thermal characteristics to said arc tube; and
a connection wire attached to said electrode feedthrough adjacent to the opening in said sealing element for electrical connection between said electrode feedthrough and a lamp frame, said electrode feedthrough not extending substantially beyond the attachment between said wire and said feedthrough.

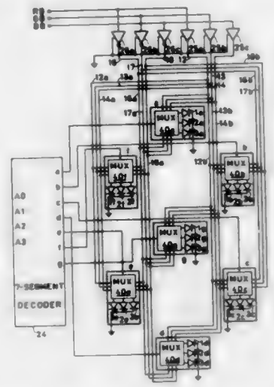
4,804,890

VARIABLE COLOR COMPLEMENTARY DISPLAY DEVICE

Karel Havel, 15 Kensington Road, Apartment #704, Bramalea, On Canada, Canada L6T 3W2

Continuation-in-part of Ser. No. 882,430, Jul. 7, 1986, Pat. No. 4,734,619. This application Oct. 31, 1986, Ser. No. 925,543
Int. Cl.[4] G09G 3/14
U.S. Cl. 315—169.3 6 Claims

1. A variable color display device comprising:
a plurality of variable color display areas arranged in a pattern for selectively exhibiting a plurality of display units in a selected color, each said display area including three light sources for emitting upon activation light signals of respectively different primary colors and means for combining said light signals in each said display area to obtain a composite light signal of a composite color;
a first primary color non-inverting bus;
a second primary color non-inverting bus;
a third primary color non-inverting bus;
a first primary color inverting bus;
a second primary color inverting bus;
a third primary color inverting bus;
means for selectively coupling said light sources in said display areas for emitting light signals of a first primary color to said first primary color non-inverting bus and said first primary color inverting bus;
means for selectively coupling said light sources in said display areas for emitting light signals of a second primary color to said second primary color non-inverting bus and said second primary color inverting bus;
means for selectively coupling said light sources in said display areas for emitting light signals of a third primary color to said third primary color non-inverting bus and said third primary color inverting bus;
display color control means for activating said first, second, and third primary color non-inverting buses in a non-inverting fashion to illuminate all said light sources coupled thereto in a desired color; and



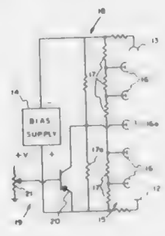
complement color control means for activating said first, second, and third primary color inverting buses in an inverting fashion to illuminate all said light sources coupled thereto in a color substantially complementary to said desired color.

4,804,891

PHOTOMULTIPLIER TUBE WITH GAIN CONTROL

Harold E. Sweeney, Menlo Park, Calif., assignor to GTE Government Systems Corporation, Stamford, Conn.

Filed Oct. 16, 1987, Ser. No. 109,339
Int. Cl.[4] H01J 29/52, 40/14
U.S. Cl. 315—383 9 Claims



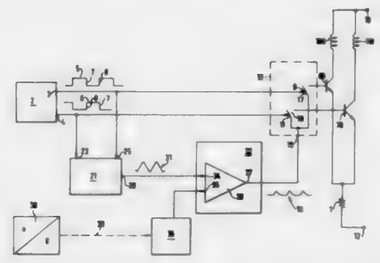
1. In a photomultiplier tube having an anode and a cathode spaced from each other and connected to a power supply, said cathode being responsive to the intensity of ambient light incident thereon to produce a current flow between said cathode and said anode proportional to said intensity, said tube having a first plurality of dynode stages positioned between said anode and said cathode and electrically connected to said power supply, an improved gain control means consisting of:
first interstage resistance means for biasing said first plurality of dynodes with fixed dynode voltages progressively increasing between said cathode and said anode voltages;
a second plurality of dynodes structurally connected interstitially with said first plurality of dynodes;
control means connected in parallel with said first interstage resistance means for biasing said second plurality of dynodes with voltages progressively increasing between said cathode and said anode voltages, said control means adapted to vary the bias voltages of said second plurality of dynodes independently of the bias voltage of said first plurality of dynodes to maximize said photomultiplier tube gain with a minimum variation of bias voltage on said second plurality of dynodes.

4,804,892

COLLECTORLESS DIRECT CURRENT MOTOR, DRIVER CIRCUIT FOR A DRIVE AND METHOD OF OPERATING A COLLECTORLESS DIRECT CURRENT MOTOR

Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

PCT No. PCT/DE86/00421, § 371 Date Jun. 22, 1987, § 102(e) Date Jun. 22, 1987, PCT Pub. No. WO87/02528, PCT Pub. Date Apr. 23, 1987
PCT Filed Oct. 18, 1986, Ser. No. 72,264
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1985, 3537403
Int. Cl.[4] H02P 6/02
U.S. Cl. 318—254 23 Claims



1. Driver circuit for a collectorless direct current motor including a permanent magnet rotor having at least two poles and at least one stator winding, comprising:
a driver circuit end stage connected to the stator winding for temporarily operating as a switch,
a sensor for detecting a position of the rotor, said sensor producing sensor signals which are representative of a commutation phase,
a control siganl, said control signal being supplied to said driver circuit end stage during each said commutation phase, said control signal causing a ramp-shaped current curve to arise as a function of time in the stator winding,
said driver circuit end state having a linkage circuit which is controlled by said control signal and by said sensor signals of said sensor, said linkage circuit producing an end stage control signal whose duration is variable and is less than the duration of a respective one of said sensor signals,
said driver circuit end stage including at least one semiconductor element which operates during said commutation phase for a first period of time as a switch and for a second period of time as an analog amplifier, current in said semiconductor element being relatively constant during said first period of time and changing according to a predetermined ramp function during said second period of time.

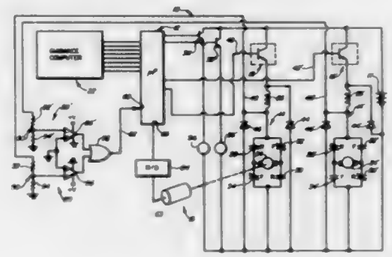
6. A driver circuit as claimed in claim 1, wherein a plurality of semiconductor elements are included in said driver circuit, each one of said plurality of semiconductor elements operating during a different portion of said commutation phase for a respective first period of time as a switch and for a respective second period of time as an analog amplifier, current in each said semiconductor element being relatively constant during said first period of time and changing according to a ramp function during said second period of time.

4,804,893

ELECTRIC BRAKING CONTROL

Grant C. Melocik, Chardon, Ohio, assignor to Caterpillar Industrial Inc., Mentor, Ohio

Filed May 11, 1987, Ser. No. 48,348
Int. Cl.[4] H02P 3/10, 5/17
U.S. Cl. 318—258 1 Claim



1. An apparatus for providing substantially constant deceleration of an electric drive work vehicle, comprising:
a battery;
an electric drive motor having a field and armature winding;
switching means for controllably interconnecting the battery and drive motor windings in response to receiving a control signal;
means for sensing work vehicle speed and delivering a signal correlative to the work vehicle speed;
means for detecting plugging of the drive motor and delivering a signal in response thereto;
means for calculating a desired vehicle stopping distance in response to receiving the plugging signal and delivering a signal having a magnitude responsive to the desired vehicle stopping distance;
means for receiving the work vehicle speed signal and the desired vehicle stopping distance signal, calculating a desired linear deceleration rate responsive to the magnitudes of the received signals, and delivering a signal responsive to the magnitude of the desired linear deceleration rate;
a plurality of look up tables each having a plurality of control signal duty cycle values corresponding to a plurality of vehicle speed values, each of the look up tables corresponding to a preselected unique deceleration rate;
means for accessing the look up table corresponding to the desired linear deceleration rate and retrieving the control signal duty cycle value corresponding to the magnitude of the work vehicle speed signal; and
means for delivering the control signal to the switching means having a duty cycle responsive to the retrieved duty cycle value.

4,804,894

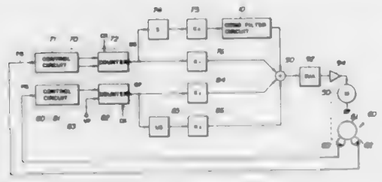
MOTOR ROTATION SERVO CONTROL APPARATUS

Yukihiko Machida, and Tadafusa Tomitaka, both of Tokyo, Japan, assignors to Sony Corporation, Japan

Filed Jan. 3, 1987, Ser. No. 57,781
Claims priority, application Japan, Jun. 10, 1986, 61-134684; Jun. 10, 1986, 61-134685
Int. Cl.[4] H02P 5/06
U.S. Cl. 318—314 10 Claims

1. A apparatus for controlling the rotation of a motor, comprising:
a sensor for sensing the speed and phase of the motor rotation and for generating a motor rotation signal indicative of the sensed speed and phase of the motor rotation;
a signal processor connected to the sensor for processing the

motor rotation signal to provide an error signal indicative of an error between the sensed speed and phase and a desired speed and phase;
means connected to the signal processor for extracting an alternating current component from the error signal;
a comb filter circuit supplied with the alternating current component, for providing a filtered signal by filtering out



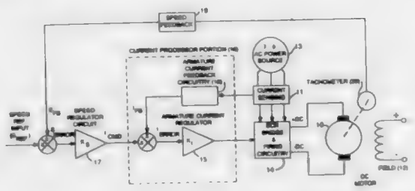
a motor rotation component which is superimposed on the motor rotation signal at a frequency of rotation of the motor and its higher harmonics;
an adder for adding the filtered signal fed from the comb filter circuit and the error signal fed from the signal processor to provide a control signal; and
driving means responsive to the control signal for driving the motor.

4,804,895

CHARGE BALANCING CURRENT SAMPLER FOR A DIGITAL MOTOR CONTROL

John D. Miskin, Milton Keynes, England, assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Aug. 4, 1987, Ser. No. 81,467
Int. Cl.[4] H02P *7/285*
U.S. Cl. 318—345 A **14 Claims**



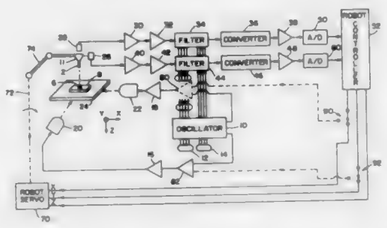
8. A circuit for sensing the actual value of current being supplied to an electrical device, the circuit comprising:
an integrator circuit having input means for receiving a feedback signal that is proportional to the current being supplied to the electrical device, wherein the feedback signal is allowed to vary according to the magnitude of current being supplied to the electrical device, and wherein the integrator circuit also has an output;
means for sensing an analog signal at the output of the integrator circuit and converting it to a first digital current value, wherein the analog output signal and the first digital current value vary according to the magnitude of current being supplied to the electrical device;
means responsive to the conversion of the analog signal to the first digital current value for calculating the average value of the current supplied to the electrical device by dividing the first digital current value by a second digital value for the sampling time period;
means responsive to the first digital current value for controlling the resetting of the integrator circuit by controlling application of a reset signal to the input means of the integrator circuit for a time period necessary to discharge the integrator circuit by an equal amount to which it was charged to generate the analog signal; and
means for operating the means for sensing, the means for calculating and the means for controlling, for successive cycles, thereby sensing a fraction of the analog output signal that is not sensed during a first cycle due to the resolution of the conversion of the analog output signal to the first digital current value.

4,804,896

VIBRATORY INTERFERENCE SENSOR

G. Dudley Shepard, Exeter, N.H.; L. Stuart Smith, Chelmsford, Mass.; Stephen R. Christenson, Nashua, N.H., and Richard Lu, Lowell, Mass., assignors to University of Lowell, Lowell, Mass.

Filed Sep. 30, 1987, Ser. No. 103,113
Int. Cl.[4] G05B *19/42*
U.S. Cl. 318—568 **8 Claims**



1. A method of inserting a part having a cylindrical projection into a hole in another part wherein either the end of the projection or the edge of the hole is chamfered, comprising the steps of:
(a) positioning the projection adjacent the hole in the other part;
(b) vibrating one part in relation to the other part in a plane orthogonal to the direction of insertion of said projection into said hole;
(c) moving one part with respect to the other part in the direction of insertion of the projection until contact is made with an edge of said hole;
(d) sensing the interference resulting from such contact and generating a signal proportional thereto;
(e) in response to said signal, repositioning one part relative to the other in said orthogonal plane in a direction which reduces said interference;
(f) repeating steps (c), (d) and (e) until the projection is completely inserted in the hole.

4,804,897

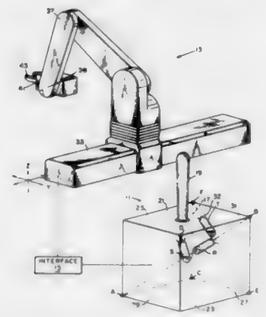
ORIENTATION-DEPENDANT ROBOT CONTROLLER

Gary B. Gordon, Saratoga, and Miles Spellman, Redwood City, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 19, 1987, Ser. No. 87,067
Int. Cl.[4] G05B *19/42*
U.S. Cl. 318—568 **10 Claims**

1. A system for controlling the movement of an object having multiple axes of movement in a predefined space using a drive means for moving said object with respect to said predefined space in response to a drive signal, said drive means having an input means for receiving a drive signal, said system comprising:
a body;
a member mechanically coupled to said body so as to provide at least two axes of displacement relative to it;
transducer means for providing displacement signals representing the displacement of said member relative to said body;
an orientation sensor for providing orientation signals as a function of the orientation of said body with respect to an external frame of reference; and

interface means, coupled to said orientation sensor and said transducer means, for providing a drive signal to said input means in response to said displacement signals and said orientation signals
so that when said body is in a first orientation with respect to said external frame of reference, said object moves in said predefined space as a first function of said displacement signals, said first function being a mapping of member



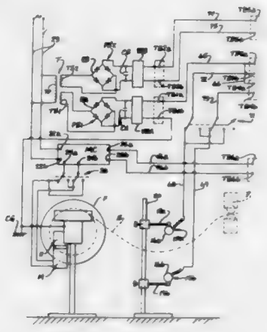
relative displacement into a first set of at least two of said multiple axes, and
so that when said body is in a second orientation with respect to said external frame of reference, said object moves in said predefined space as a second function of said displacement signals, said second function being a mapping of member relative displacement into a second set of at least one of said multiple axes, said second set including at least one of said multiple axes not in said first set.

4,804,898

STOCK FEED APPARATUS

Richard D. Nordlof, Rockford; Gary D. Reding, Roscoe, and Jeffery S. MacDonald, Cherry Valley, all of Ill., assignors to Rapid-Air Corporation, Rockford, Ill.

Filed Feb. 22, 1988, Ser. No. 158,868
Int. Cl.[4] G05B *19/18*
U.S. Cl. 318—569 **19 Claims**



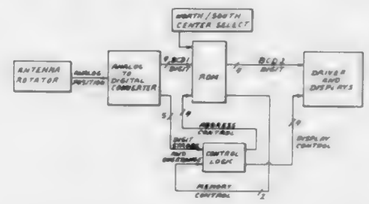
1. In a stock feed apparatus for feeding strip stock to or from a stock processing machine to maintain a loop in the stock including, motor means for driving the stock feed apparatus and motor control means operative to energize the motor means and drive the feed apparatus at a speed correlative with the amplitude of a control voltage applied to the motor control means, input circuit means including loop size sensing means for producing a first digital signal when the loop size exceeds a first limit and for producing a second digital signal when the loop size exceeds a second limit, means for generating and applying a control voltage to the motor control means to control the loop size comprising:
(a) means responsive to said first digital signal for applying control voltage of a first preselected amplitude to the motor control means to drive the feed means at a first speed until the loop moves away from the first limit,
(b) means responsive to said second digital signal for applying control voltage of a second preselected amplitude to the motor control means to drive the feed means at a second speed until the loop moves away from the second limit,
(c) variable voltage means operative when the loop is intermediate said first and second limits for applying a variable control voltage to the motor control means of an amplitude that is variable in a plurality of steps intermediate said first and second preselected amplitudes, said variable voltage means including up/down counter means and analog switch means operative in response to said first digital signal to change the amplitude of the variable control voltage a step toward said first preselected amplitude and operative in response to said second digital signal to change the amplitude of the variable control voltage a step toward the second preselected amplitude.

4,804,899

ANTENNA ROTATOR CONTROLLERS AND CONVERSION SYSTEMS THEREFOR

Gerard A Wurdack, and Frank F. Helton, both of St. Louis, Mo., assignors to Gerard A. Wurdack & Associates, Inc., St. Louis County, Mo.

Filed May 18, 1987, Ser. No. 51,497
Int. Cl.[4] G05B *19/26*
U.S. Cl. 318—600 **23 Claims**



1. A conversion system for a controller for an antenna rotator which includes means for generating an analog signal varying as a function of the angular position of the antenna, the conversion system comprising:
means for converting the analog signal to a corresponding first digital signal representative of the angular position of the antenna relative to a first reference heading of the antenna; and
storage means having a prestored table of digital values of angular positions of the antenna relative to a second reference heading of the antenna and which in response to the first digital signal produces a second digital signal corresponding to one of the prestored digital values, the second digital signal thereby being representative of the angular position of the antenna relative to the second reference heading.

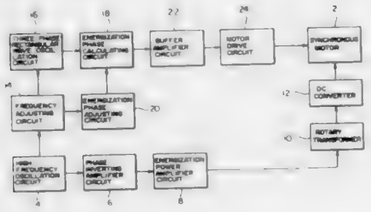
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4,804,900

CONTROL APPARATUS FOR SYNCHRONOUS MOTORS

Katsuji Soeda, Sakagawa, Japan, assignor to Yamamoto Electric Corporation, Fukushima, Japan

Filed May 4, 1988, Ser. No. 188,329
Int. Cl.[4] H02K *19/10*
U.S. Cl. 318—719 9 Claims



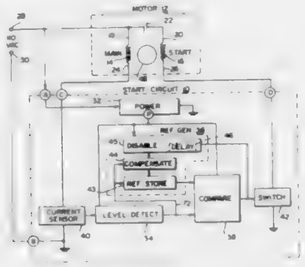
1. A synchronous motor control apparatus comprising:
- a polyphase synchronous motor;
- a frequency adjusting circuit responsive to the closing of a power supply switch to generate a frequency control signal for commanding to linearly increase an oscillation frequency from zero up to a given high frequency;
- a polyphase rectangular wave oscillation circuit whose oscillation frequency for polyphase rectangular waves is controlled in accordance with said frequency control signal;
- an energization phase adjusting circuit for generating a phase control signal in accordance with a signal related to said frequency control signal from said frequency adjusting circuit;
- an energization phase calculating circuit for controlling the phases of the polyphase rectangular oscillation frequency of said polyphase rectangular oscillation circuit in accordance with said phase control signal; and
- a drive circuit for amplifying output polyphase rectangular signals of said energization phase calculating circuit and applying the same to a field winding of said motor.

4,804,901

MOTOR STARTING CIRCUIT

John Pertessis, Brooklyn, N.Y., and Joseph Kauser, Sedonad, Ariz., assignors to Kilo-Watt-Ch-Dog, Inc. and KB Electronics, Inc., both of Brooklyn, N.Y.

Filed Nov. 13, 1987, Ser. No. 120,334
Int. Cl.[4] H02P *1/44*
U.S. Cl. 318—786 7 Claims



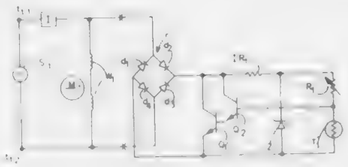
1. A starting circuit for an electric motor having a main winding and a start winding, said starting circuit comprising:
- means for sensing the magnitude of a current flowing in said main winding;
- means coupled to said sensing means for generating a reference level which is proportional to an average value of said main winding circuit, said generating means including reference storage means and compensation means, said reference storage means having a capacitor and a resistor in a charge path for charging said capacitor to a voltage proportional to said average value by a first factor, said compensation means providing an additional resistive charge path for charging said capacitor to a voltage proportional to said average value of main winding current by a second factor larger than said first factor, said first factor being based on a value of main winding current obtained under a locked rotor condition, and said second factor being based on a value of main winding current obtaining during normal rotational speed of a rotor of the motor;
- means for comparing said current magnitude with said reference level;
- power supply means for activating said starting circuit after initial energization of said main winding; and
- switching means driven by said comparing means for terminating a flow of current in said start winding when the magnitude of current in said main winding drops below said reference level, and for initiating a current flow in said start winding when the magnitude of current in said main winding rises above said reference level.

4,804,902

LINEAR, LOW EMI/RFE FAN CONTROL CIRCUIT

Craig P. Maier, Verona, N.J., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 19, 1987, Ser. No. 51,894
Int. Cl.[4] H02P *5/40*
U.S. Cl. 318—798 6 Claims



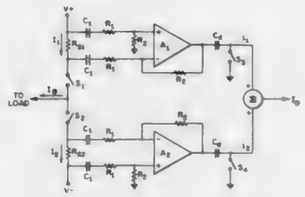
1. A circuit for controlling the speed of an alternating current motor for driving a cooling fan in accordance with the temperature of a given point comprising
- a pair of terminals benzene which an alternating current voltage is to be applied,
- amplifying means having input circuit means and output circuit means,
- means for coupling said output circuit means between said terminals,
- a series circuit comprised of a resistive impedance and a temperature responsive impedance meeting at a junction,
- means coupling a Zener diode in parallel with said series circuit,
- means for coupling said series circuit to said terminals,
- means for coupling said junction to said input circuit means of said amplifier so as to continuously vary the current flowing in said output circuit means by applying thereto a voltage that is continuously in phase with voltage across said output circuit and has an amplitude varying with the temperature of said temperature responsive impedance,
- an alternating current motor having a winding, and means for coupling said winding to the output circuit of said amplifier in such manner that variations in current in said output circuit causes variations in current in said winding.

4,804,903

SYSTEM FOR MEASURING LOAD CURRENT IN AN ELECTRONICALLY CONTROLLED SWITCH

George B. Yundt, Cambridge, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Nov. 3, 1983, Ser. No. 548,404
Int. Cl.[4] G01R *1/02, 1/30*
U.S. Cl. 324—130 19 Claims



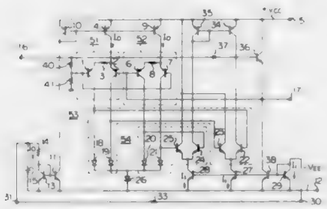
1. A system for measuring current amplitude to a load, comprising
- a current loop delivering direct current to the load,
- an electronically controlled series switch in said loop modulated with a duty cycle substantially less than 100%, capable of an ON state and an OFF state wherein no current flows in said loop,
- sense resistor means in series with said switch in said loop for developing a voltage proportional to current through said switch,
- an amplifier,
- means for ac coupling the voltage developed across said sense resistor means with no dc component to the input of said amplifier, and
- switch means controlled by the natural modulation of said electronically controlled switch for coupling the output of said amplifier to a fixed voltage level corresponding to zero current synchronously with the OFF condition of said electronically controlled switch.

4,804,904

VOLTAGE TO CURRENT CONVERTERS FOR USE IN AN ACTIVE FILTER AND WITH A MOISE REDUCTION CIRCUIT

Masayuki Katakura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 16, 1987, Ser. No. 121,054
Claims priority, application Japan, Nov. 21, 1986, 61-278402
Int. Cl.[4] G05F *3/26*
U.S. Cl. 323—312 7 Claims



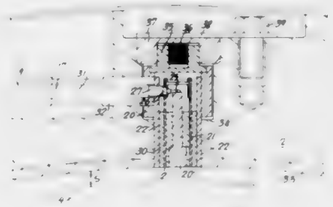
1. A voltage to current converter, comprising:
- a first voltage to current converting circuit responsive to a positive input level and having a first pair of outputs;
- a second voltage to current converting circuit responsive to a negative input level and having a second pair of outputs;
- an input section for said two voltage to current converting circuits;
- a first multiplier including a first pair of diodes, each of which is respectively supplied with one of said first outputs and a first pair of emitter-common differential transistors whose base electrodes are respectively given a potential difference between said first pair of diodes;
- a second multiplier including a second pair of diodes, each of which is respectively supplied with one of said second outputs, and a second pair of emitter-common differential transistors whose base electrodes are respectively given a potential difference between said second pair of diodes; and
- means for detecting output currents of said first and second multipliers.

4,804,905

CAPACITIVE MEASURING SYSTEM FOR MEASURING THE DISTANCE BETWEEN TWO RELATIVELY MOVABLE PARTS

Kurt Ding, Augsburg; Hartwig Knoell, Munich; Josef Wenzl, Herbertshausen, and Hermann Biebl, Karlsfeld, all of Fed. Rep. of Germany, assignors to MTU of Postfach, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 773,261, Sep. 6, 1985. This application Sep. 8, 1986, Ser. No. 905,485
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1984, 3433351
Int. Cl.[4] G01R *27/26;* H01J *5/00*
U.S. Cl. 324—61 P 13 Claims



1. In a capacitive measuring system for measuring the clearance between a movable part and a fixed casing facing the movable part wherein a sensor is secured in said casing and has an active face facing the movable part, said sensor and said movable part constituting a capacitor whose charge is representative of said clearance, a charge amplifier, a triaxial cable connecting the sensor to the amplifier, the triaxial cable having a central conductive core and two surrounding conductors insulated from one another and from said core, and electronic means for producing values of said clearance based on the charge values, the improvement wherein the said sensor comprises a central body of a cylindrical or a disk-like shape with a surface constituting the active face of the sensor, wherein at least a top layer of said surface is platinum, connecting means connecting the central body of the sensor to the core of the triaxial cable such that the triaxial cable extends perpendicular to said sensor, two conductive shields surrounding said central body and connected to respective conductors of said triaxial cable, insulation means of ceramic or glass between the central body and said conductive shields, and means including a threaded connection securing said sensor with axial adjustment in the casing, said means further including a turnable outer nut supported by said casing and a lock nut secured to said sensor, said threaded connection being between said outer nut and lock nut and providing axial adjustment of the sensor in said casing upon turning of said outer nut.

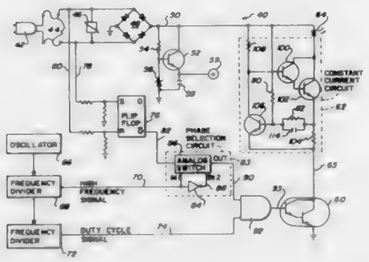
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4,804,906
METHOD AND APPARATUS FOR WELL CASING INSPECTION
Allan Hamberg, Fullerton; Elmer L. Thomas, Orange; Henry T. Carruth, Jr., Anaheim, and Mitchell F. Peterson, Diamond Bar, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Filed Feb. 5, 1987, Ser. No. 11,097
Int. Cl.[4] G01R *27/02*
U.S. Cl. 324—65 R **29 Claims**



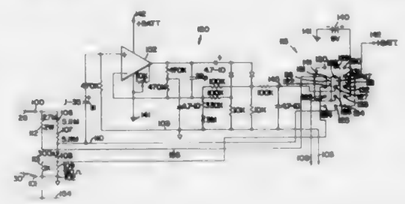
1. Apparatus for determining resistance in a tubular metallic member comprising:
(a) a central body adapted to be inserted in said tubular metallic member;
(b) first and second contacts extending from said central body and adapted to contact the tubular metallic member;
(c) means for generating a current in the tubular metallic member between said first and said second contacts further comprising:
(i) means for supplying a current to said body; and
(ii) capacitance means operably connected to said means for supplying a current, said capacitance means capable of providing current to said tubular metallic member between said first and second contacts said current to said tubular metallic member substantially greater than said current to said body;
(d) means for measuring a potential difference between said first and said second contacts; and
(e) means for calculating resistance based on said current and said potential difference.

4,804,907
CONDUCTOR TRACER WITH IMPROVED CURRENT REGULATING TRANSMITTER
Joseph P. Pecukonis, Littleton, Colo., assignor to Pasar, Inc., Denver, Colo.
Filed Feb. 9, 1987, Ser. No. 12,244
Int. Cl.[4] G01R *31/02*; G05F *3/16*
U.S. Cl. 324—67 **10 Claims**



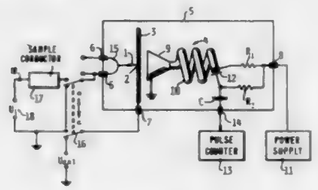
1. In a conductor tracer used to trace and identify an energized conductor, an improved transmitter for connection to the conductor by which to draw pulses of substantially constant current from the conductor to create a current tracing signal, said transmitter comprising:
current regulating means electrically connected to the conductor and operative for regulating the current flowing through the current regulating means to a substantially constant value and for doing so substantially independently of the voltage on the conductor;
switch means electrically connected to and separate from the current regulating means and operative for causing current to flow from the conductor through the current regulating means when said switch means is triggered into a conductive state;
means for triggering said switch means at a predetermined frequency into the conductive state; and
said current regulating means operatively drawing pulses of substantially constant current from the conductor during the times when said switch means is triggered into the conductive state.

4,804,908
DIGITAL METER
Roger E. Mitchell, 3710 Vincent Ave. S., Minneapolis, Minn. 55410
Continuation of Ser. No. 538,108, Oct. 3, 1983, abandoned. This application Sep. 21, 1987, Ser. No. 99,657
Int. Cl.[4] G01R *1/04, 31/36*
U.S. Cl. 324—115 **6 Claims**



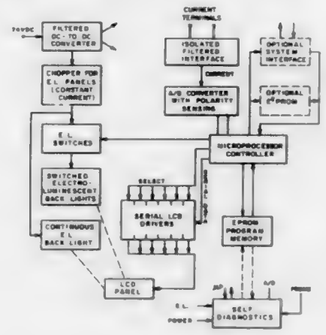
1. A battery operated digital test intrument for measuring AC voltage, for measuring DC voltage and for performing self-test in three different modes, comprising:
(a) first and second electrical probes including leads for probing circuits to be tested;
(b) resistive divider network means electrically connected between said probes for stepping down measured voltages;
(c) an AC rectifier for receiving through an AC coupling capacitor stepped down AC voltages from said probes and for producing a DC rectified voltage proportionate thereto;
(d) a digital numerical display;
(e) an analog to digital converter for receiving a voltage differential and driving said display according to the magnitude of the received differential; and
(f) a slide switch for applying the output of said AC rectifier to said converter in the AC test mode, for applying the output of said resistive divider network to said converter in the DC test mode and for applying a battery supplied voltage bias proportional to said battery voltage between said probes in said self-test mode to cause said converter and LCD to display a battery level indication proportional to said battery voltage when said probes are open circuit indicating battery condition and to cause said converter to drive said LCD top a zero display state when said probes are shortened together indicating good probe continuity.

4,804,909
ATTO-AMPEREMETER
Hans-Werner Fink, Richterswil, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 28, 1988, Ser. No. 174,477
Claims priority, application European Pat. Off., Sep. 11, 1987, 87113324
Int. Cl.[4] G01R *19/18, 1/30*; G01N *27/00*
U.S. Cl. 324—120 **11 Claims**



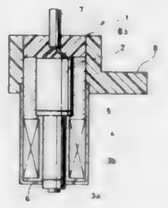
1. Atto-amperemeter comprising means for converting a current of electrons to be measured and flowing through a sample conductor, to free electrons, characterized by a sharply pointed tip (1, 23) facing a particle detector (4, 22), the tip (1, 23) is connected via said sample conductor (17, 20) to a first source of potential (U_1; 18, 28) to cause it to become charged from its originally floating potential to a second potential (U_2) being the difference of said first potential (U_1) minus the voltage drop (ΔU) occurring across the sample conductor (17, 20), said second potential (U_2) determining, together with the emission characteristics of said tip (1, 23), the number of free electrons which are emitted from said tip (1, 23), and which get multiplied by said particle detector (4, 22) to produce pulses of multiple electrons, said pulses being counted by an electronic counter (13, 25) connected to the output of said particle detector (4, 22), the count of said electronic counter (13, 25) being a measure for the current passing through said sample conductor (17, 20).

4,804,910
TRACTION LOAD METER SYSTEM
Jack A. Russell, Libertyville, Ill., assignor to Vapor Corporation, Chicago, Ill.
Filed Feb. 14, 1986, Ser. No. 829,827
Int. Cl.[4] G01R *19/18*; G08B *21/00*; G06F *15/48*
U.S. Cl. 324—120 **11 Claims**



1. In a loadmeter for displaying information concerning the amount of current energizing electric traction motors in a locomotive, said motors having power and braking modes and having a continuous current rating, said loadmeter comprising:
means measuring the amount of traction motor current
a current-to -frequency converter for providing an output signal having a frequency corresponding to the amount of current drawn by aid motors;
electronic logic means for receiving the output signal and responsive thereto, said means providing outputs indicating whether the locomotive is in the power or braking mode, the amount of current drawn, whether such amount is above the continuous rated current for the motors, said electronic logic means also providing the period of time the above-rated power or braking condition has existed; and
display means connected to said logic means said display means to be mounted in the cab of said locomotive for displaying to the engineer the aforementioned outputs of said logic means.

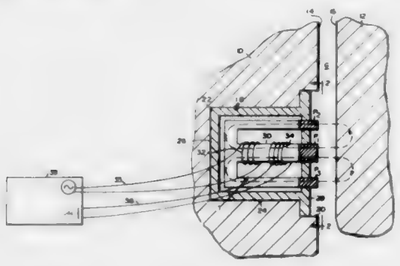
4,804,911
ELECTROMAGNETIC POWER GENERATING TYPE ROTATION SENSOR
Hidetoshi Saito; Masahiro Kume, both of Itami, and Sakae Morita, Tokyo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Sanken Airpax Ltd., Tokyo, both of, Japan
Filed May 29, 1987, Ser. No. 55,717
Claims priority, application Japan, May 30, 1986, 61-126602
Int. Cl.[4] G01P *3/42*
U.S. Cl. 324—167 **5 Claims**



1. An electromagnetic power generating type rotation sensor comprising a housing, a magnetic rotator mounted on an object the rotation of which is to be detected, said magnetic rotator having an irregular surface on at least one of its outer peripheral part and its side part; a magnetic pole means arranged in proximity to said irregular surface of said magnetic rotator for alternately cooperating with projections and recesses of said irregular surface to change the amount of magnetic flux; and a coil (4, 14) for generating an AC output voltage responsive to said change in the amount of magnetic flux of said magnetic pole means for determining the rotational speed of said object from said AC output voltage, said magnetic pole means being divided into an outer magnetic pole piece (3*a*, 13*a*) made of a magnetic yet corrosion resistant material and located in a position close to said irregular surface of said magnetic rotator, and an inner magnetic pole piece (3*b*, 13*b*) made of a magnetic material having a lower corrosion resistance than said outer magnetic pole piece, said inner magnetic pole piece of lower corrosion resistance being located adjacent to said outer magnetic pole piece but inside said housing and inwardly of said outer magnetic pole piece to protect said inner magnetic pole piece from the external environment.

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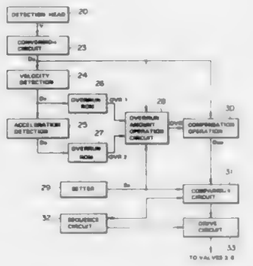
4,804,912
APPARATUS FOR ELECTROMAGNETICALLY MEASURING THE DISTANCE BETWEEN TWO OPPOSING GRINDING SURFACES
Claes G. Lysén, Karlstad, Sweden, assignor to Kamyr AB, Karlstad, Sweden
Filed May 14, 1987, Ser. No. 49,549
Int. Cl.[4] G01B 7/14
U.S. Cl. 324—207 **13 Claims**



1. Apparatus for measuring the distance between opposed first and second grinding surfaces carried by first and second members, respectively, the second surface being formed of a magnetic material, comprising:
- a transducer carried by the first member and having a core surrounded by a first coil, said core having poles terminating substantially flush with the first grinding surface and spaced from the second grinding surface to define a gap therebetween;
- means for supplying electrical current to said first coil to establish a magnetic field through the core, poles, gap and the second surface, the strength of which is a function of the distance between the surfaces; and
- a second coil carried by said core for producing an electrical signal proportional to the strength of the field, said poles and said core being formed of different materials with the poles being formed of magnetic material having substantially the same wear resistance as the material forming the first grinding surface. material forming the first surface.

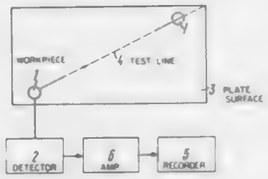
4,804,913
POSITIONING CONTROL SYSTEM FOR A FLUID POWERED CYLINDER
Wataru Shimizu; Yasuhiro Yuasa, and Yuuji Matsuki, all of Tokyo, Japan, assignors to Kabushiki Kaisha SG, Tokyo, Japan
Continuation of Ser. No. 565,279, Dec. 20, 1983, abandoned. This application Oct. 29, 1987, Ser. No. 117,915
Claims priority, application Japan, Dec. 23, 1982, 57-225034
The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.
Int. Cl.[4] G01B 7/14; G01N 27/72; G01R 33/00; G08C 19/16
U.S. Cl. 324—208 **25 Claims**

12. A positioning control device for a fluid powered cylinder comprising:
- position detection means for detecting a linear position of a piston rod in said cylinder;
- velocity detection means for detecting the velocity of movement of said rod;
- setting means for setting a positioning target value;
- determination means for determining an estimated amount of overrun by employing the detected velocity data;
- compensation means for modifying at least one of the value of position data obtained by said position detection means and the positioning target value in accordance with the estimated amount of overrun determined by said determination means;
- comparison means for comparing the position data and the target value after the modification by said compensation means; and



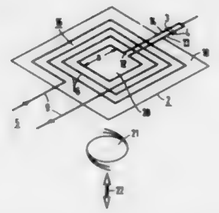
drive control means for controlling the movement of said cylinder in accordance with the result of comparison by said comparison means.

4,804,914
METHOD FOR DETERMINING FORCE CHARACTERISTIC OF A DEVICE FOR MAGNETICALLY HOLDING WORKPIECES
Matus E. Barab-Tarle; Arkady Y. Vernikov; Mikhail P. Rashkovich; Romen D. Soifer; Boris A. Trostanovsky, and Alexandr S. Khinkus, all of Odessa, U.S.S.R., assignors to Odesskoe nkb Spetsialnykh Stankov, Odessa, U.S.S.R.
PCT No. PCT/SU85/00015, § 371 Date Oct. 7, 1986, § 102(e) Date Oct. 7, 1986, PCT Pub. No. WO86/04851, PCT Pub. Date Aug. 28, 1986
PCT Filed Feb. 13, 1985, Ser. No. 931,442
Int. Cl.[4] G01R 33/12; G01L 1/00
U.S. Cl. 324—226 **1 Claim**



1. A method for determining a force characteristic of a device for magnetically holding workpieces placed on a top plate of the device, wherein a source of magnetic field attracts a workpiece to said top plate of the device, comprising the steps of
- connecting the workpiece to a force indicator which indicates a magnetic force of attraction between said workpiece and said top plate of the device,
- permanently energizing the source of magnetic field during a test period to continuously provide said magnetic force of attraction and minimize the duration of said test period,
- aligning the workpiece so that it is placed in parallel with the top plate,
- providing a clearance between said workpiece and said top plate in an amount which depends on sensitivity of the force indicator,
- continually and uniformly moving said workpiece along said top plate along a test line,
- maintaining the amount of the clearance substantially unchanged,
- generated a signal at an output of said force indicator in proportion to the magnetic force of attraction throughout movement of said workpiece along said test line, and
- recording said signal continuously so that variations in the magnetic force of attraction can be determined.

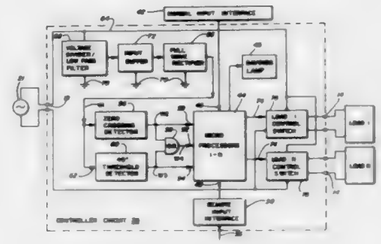
4,804,915
SQUID MAGNETOMETER INCLUDING A FLUX-GATE CHOPPER USING A MECHANICALLY VIBRATING SUPERCONDUCTING MIRROR
Eckhardt Hoenig, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Feb. 2, 1988, Ser. No. 151,432
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1987, 3704834
Int. Cl.[4] G01R 33/35
U.S. Cl. 324—248 **10 Claims**



1. An apparatus for measuring low frequncy magnetic fields with a SQUID magnetometer having a super-conducting flux transformer for coupling measurement signals into a sensor comprising a direct current SQUID, comprising:
- a flux transformer element being associated with at least first and second inductively coupled windings of the superconducting flux transformer, the inductively coupled windings enclosing a common coupling hole;
- a first carrier element for supporting at least one of the inductively coupled windings;
- a second carrier element attached to the first carrier element;
- said second carrier element comprising
  - a super-conducting oscillating mirror having an oscillating diaphragm coated with super-conducting material attached to the second carrier element; and
  - means for changing an effective size of the coupling hole and thereby a mutual inductance of the coupled windings by means of the super-conducting vibrating mirror at a modulation frequency lying in a low-level noise frequency range that is characteristic of the SQUID.

4,804,916
INPUT VOLTAGE COMPENSATED, MICROPROCESSOR CONTROLLED, POWER REGULATOR
Richard W. Frank, Kissimmee, Fla., assignor to Timothy Yablonski, Fort Myers, Fla.
Filed Oct. 28, 1986, Ser. No. 923,919
Int. Cl.[4] G05F 5/02
U.S. Cl. 323—300 **1 Claim**

1. In an A.C. power regulator with a power input terminal for connection to a source of A.C. input power, an electronic triggerable switch interconnecting the source of A.C. power and a power output terminal connectable with a load, and means for triggering said switch into conduction, the improvement comprising:
- means responsive to the A.C. power source voltage at said power input terminal for periodically generating a digital load power pulse having a time duration which varies in proportion to the load power.
- said digital load power pulse generating means including means for generating a pulse during whatever time period that the magnitude of the A.C. power source voltage exceeds a preselected threshold voltage and which substantially varies in direct proportion with the load power, said pulse being generated during whatever time period that the input A.C. power voltage magnitude exceeds a threshold magnitude of approximately one half the nominal maximum magnitude of the input A.C. power voltage occurring approximately between the phase angles of 45 degrees and 135 degrees of positive half waves and between 225 degrees and 315 degrees of negative half waves; and
- means responsive to the time duration of the digital load power pulse for controlling said triggering means to substantially maintain a selected level of load power despite nominal fluctuations in the source of A.C. power voltage,
- said controlling means including a microprocessor for directly converting said digital pulse into a binary representation of the load power.

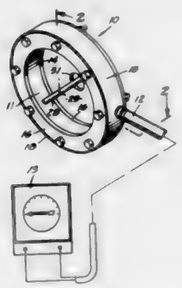


4,804,917
CURRENT DETECTION DEVICE HAVING AN EXTENDED FREQUENCY RANGE OF RESPONSE
John S. Miller, Los Angeles, and Michael E. Van Brunt, Ventura, both of Calif., assignors to G & H Technology, Inc., Santa Monica, Calif.
Division of Ser. No. 885,271, Jul. 14, 1986, Pat. No. 4,719,414. This application Dec. 1, 1987, Ser. No. 127,185
Int. Cl.[4] G01R 21/04, 1/20
U.S. Cl. 324—95 **2 Claims**

1. An device for detecting return current in a terminated conductor at the point of termination, comprising in combination:
- an annular insulative substrate;
- a metal foil on the substrate encircling the substrate central opening;
- a metal plate having a central opening affixed to one side of

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the the substrate covering the substrate central opening, said plate including the point of termination; and



means interconnected with said metal foil for measuring a voltage drop across the foil width.

4,804,918

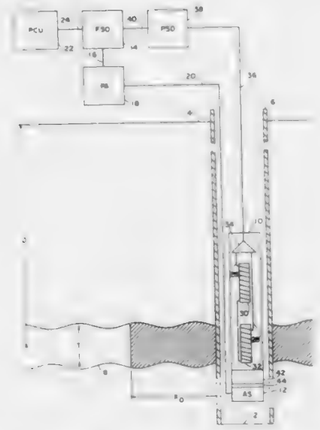
DUAL EXCITATION ACOUSTIC PARAMAGNETIC LOGGING TOOL

William B. Vail, III, Bothell, Wash., assignor to ParaMagnetic Logging, Inc., Woodinville, Wash.

Continuation-in-part of Ser. No. 926,390, Nov. 3, 1986, Pat. No. 4,724,385. This application Feb. 8, 1988, Ser. No. 153,061

Int. Cl.[4] G01R *33/20*

U.S. Cl. 324—303 2 Claims



1. Apparatus for remote detection and volumetric measurement of at least a portion of a petroleum reservoir in a geological formation having a borehole extending into the formation in the vicinity of the petroleum reservoir, comprising

a first means of applying a periodically frequency sweeping acoustic energy field of the adjacent geological formation and

a second means of applying a periodically frequency sweeping acoustic energy field of the adjacent geological formation.

whereby the frequency difference between the frequency of said first means and the frequency of said second means equals the Larmor frequency of any nucleons present for at least a portion of the period of the periodically sweeping acoustic energy field thereby placing a portion of the petroleum reservoir into a state of acoustic nuclear magnetic resonance which therefore causes a change in the paramagnetism of the formation thereby resulting in a change in the earth's magnetic field in the vicinity of said portion of the petroleum reservoir, and whereby the nucleons present include those nucleons which are chemically bound to any oil and water present, and

means for simultaneously measuring the resulting change in the earth's magnetic field in the vicinity of said portion of the formation to provide an indication of the presence or absence of petroleum and other fluids such as water within said portion of the formation.

4,804,919

NUCLEAR MAGNETIC RESONANCE IMAGING METHOD AND APPARATUS FOR REALIZING SAME

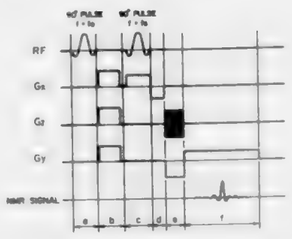
Hiroyuki Takeuchi, and Hidesori Kishino, both of Kashiwa, Japan, assignors to Hitachi Medical Corp., Tokyo, Japan

Filed Oct. 28, 1987, Ser. No. 113,602

Claims priority, application Japan, Oct. 29, 1986, 61-255667

Int. Cl.[4] G01R *33/20*

U.S. Cl. 324—309 5 Claims



1. In an NMR imaging method, whereby a static magnetic field, first gradient magnetic fields G_x, G_y, G_z and a first radio frequency magnetic field are applied to an object body to be examined in order to generate a nuclear magnetic resonance (NMR) signal so that an image representing physical properties of said object body to be examined is obtained by detecting said NMR signal, the improvement wherein before said NMR signal having a component in the direction perpendicular to the direction of said static magnetic field is obtained from a part to be imaged of said object body to be examined by application of said first radio frequency magnetic field and said first gradient magnetic fields, a second radio frequency magnetic field is applied to parts within said optical body other than said part to be imaged in order to excite selectively said parts other than the part to be imaged.

4,804,920

NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY METHOD

Graeme C. McKinnon, Ellerau, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

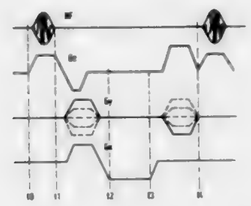
Filed May 27, 1987, Ser. No. 54,478

Claims priority, application Fed. Rep. of Germany, May 31, 1986, 3618432

Int. Cl.[4] G01R *33/20*

U.S. Cl. 324—309 5 Claims

1. A method for nuclear magnetic resonance tomography, comprising the steps of providing, in the presence of a homogeneous stationary magnetic field, a large number of sequences which act upon an examination area, each sequence including the production of a single high-frequency pulse, switching-on at least one magnetic gradient field having a gradient varying in accordance with amplitude or direction from sequence to sequence, recording a nuclear magnetic resonance signal during or after the action of said magnetic gradient field, and after the recording of the nuclear magnetic resonance signal, applying at least one magnetic gradient field having such a direction and amplitude that the time integral across all the magnetic



gradient fields active during one sequence is different from zero and is equal for all sequences.

4,804,921

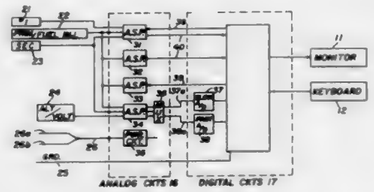
DIGITAL ENGINE ANALYZER

Michael C. Petrow; Leonard J. Wisneski, Jr., both of Kenosha, Wis.; Craig F. Govekar, Gurnee, Ill.; Gary D. Jonker, Kenosha, Wis.; Gordon Lindhard, Racine, Wis.; Dennis W. Weidenbeaner, Union Grove, Wis., and Robert O. Quinn, Wheeling, Ill., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Division of Ser. No. 769,150, Aug. 23, 1985. This application Oct. 9, 1987, Ser. No. 89,360

Int. Cl.[4] G01R *13/42, 13/20, 19/04*

U.S. Cl. 324—394 19 Claims



1. Apparatus for analyzing recurring analog signals each having a portion with a fast rise time, comprising a fast analog to digital converter for relatively rapidly converting analog signals into main digital signals, peak detector means for determining the peak value of the fast rise portion of each analog signal, a slow analog to digital converter for relatively slowly converting the peak values into peak digital signals, storage means for storing the peak digital signals, control means responsive to the occurrence of the fast rise time portion of an analog signal to be displayed to produce an enable signal, gate means having a signal input coupled to said storage means and a control input coupled to said control means, said gate means being responsive to the enable signal to provide the peak digital signal, data means having a first input coupled to said fast analog to digital converter and a second input coupled to said gate means and being operative to create a hybrid digital signal in which the peak of the fast rise time portion of the main digital signal is replaced with the peak digital signal, and a cathode ray tube for displaying a waveform corresponding to the hybrid digital signal.

4,804,922

VOLTAGE SENSOR

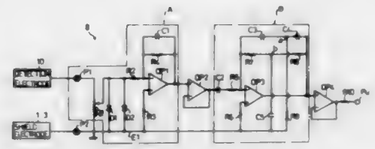
Taro Sometani, Hannanstm; Naotoshi Takaoka, Isuyama; Mitsuo Aida, Komaki; Mitsuharu Kadomi, Konan; Yasuhiro Tanahashi, Gifu, and Katsunori Aoki, Isuyama, all of Japan, assignors to Energy Support Corporation, Isuyama, Japan

Filed Oct. 27, 1986, Ser. No. 923,568

Claims priority, application Japan, Nov. 1, 1985, 60-246763; Nov. 9, 1985, 60-251495; Nov. 9, 1985, 60-251496

Int. Cl.[4] G01R *29/12*

U.S. Cl. 324—457 11 Claims



1. A voltage sensor for sensing an alternating voltage of predetermined frequency, with reference to ground, on an electrically charged object, said sensor being disposed with an insulation space toward the electrically charged object, comprising:

a collection electrode for receiving a displacement current from said object,

an amplifier circuit for receiving said displacement current referenced to ground from said collection electrode via said insulation space and outputting a signal referenced to ground having a waveform similar to that of said displacement current; and

a band pass filter circuit for extracting a signal having said predetermined frequency from the output of said amplifier circuit and outputting a signal having an alternating current waveform similar to the potential of said electrically charged object;

said amplifier circuit comprising an amplifier input circuit with a resistor electrically connected in parallel with said input circuit to receive said displacement current from said collection electrode.

4,804,923

VOLTAGE CONTROL SYSTEM

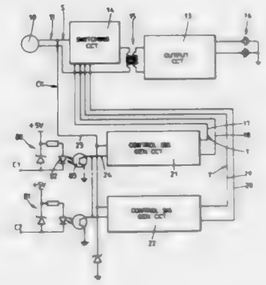
George F. Black, Coventry, England, assignor to Lucas Industries, Birmingham, England

Filed May 18, 1987, Ser. No. 51,724

Claims priority, application United Kingdom, Jun. 6, 1986, 8613737

Int. Cl.[4] H03K *5/04, 5/153;* H02M *1/08*

U.S. Cl. 328—26 7 Claims



1. A system for deriving a substantially constant output

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voltage from an alternating supply of variable frequency and amplitude, comprising a circuit responsive to a detectable point in each cycle of the supply for generating a control signal whose duration depends on the number of said detectable points which occur in a predetermined time, a switching arrangement responsive to said control signal for interrupting said supply for the duration of said control signal and an output circuit for deriving said output voltage from the switched supply.

4,804,924

DIGITAL DOUBLE DEMODULATOR

Francoise Channing, Maisons, and Jean Chatel, Rennes, both of France, assignors to L'Etat Francais Represente Par le Ministre Des Ptt (CNET), Issy-les-Moulineaux and Etablissement Public Telediffusion de France, Paris, both of, France

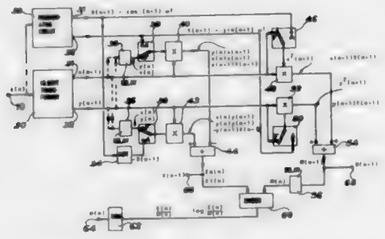
PCT No. PCT/FR87/00061, § 371 Date Oct. 27, 1987, § 102(e) Date Oct. 27, 1987, PCT Pub. No. WO87/05758, PCT Pub. Date Sep. 24, 1987

PCT Filed Mar. 9, 1987, Ser. No. 125,498

Claims priority, application France, Mar. 13, 1986, 86 03582

Int. Cl.[4] H03D *5/00*

U.S. Cl. 329—1 **4 Claims**



1. Double digital demodulator, characterized in that it comprises:

a general input (10) receiving the digital samples s(n) of a modulated signal, in which n is the rank of the sample;

a Hilbert transformer (20) having an input connected to the general input (10) and first and second outputs (21, 22) respectively supplying samples in quadrature x(n+1) and y(n+1);

a carrier regenerated circuit (30) having an input connected to the general input (10) and first and second outputs (31, 32) supplying subcarriers in quadrature X(n+1) and Y(n+1);

a first delay line (35) connected either to the first output (21) of Hilbert transformer (20), or to the second output (22) and supplying a delayed sample x(n) or y(n) of a sampling period;

a second delay line (36) connected either to the second output (22) of the Hilbert transformer (20), or to the first output (21) and supplying a delayed sample y(n) or x(n) of a sampling period;

a first switching device (38) having a first input (A) connected to the second output (32) of the carrier regenerating circuit (30), a second input (F) connected to the first delay line (35) and an output;

a second switching device (39) having a first input (A) connected, via an inverter or NOT circuit (34), to the first output (31) of the carrier regenerating circuit (30, a second input (F) connected to the second delay line (36) and an output (S);

a first multiplier (40) having a first input connected to the output of the first switching device (38) and receiving the sample x(n) or y(n) or the subcarrier Y(n+1) and a second input connected to the first output (21) of the Hilbert transformer (20) and receiving the sample x(n+1), said first multiplier having an output supplying one of the products y(n)x(n+1), x(n)x(n+1), x(n+1)Y(n+1);

a second multiplier (42) having a first input connected to the output of the second switching device (39) and receiving the sample y(n) or x(n) or the subcarrier X(n+1) and a second input connected to the second output (22) of the Hilbert transformer (20) and receiving the sample y(n+1), said second multiplier (42) having an output supplying one of the produces x(n)y(n+1), y(n)y(n+1), −y(n+1)X(n+1);

a first adder (44) having a first input connected to the output of the first multiplier (40) and a second input which can be inverting and connected to the output of the second multiplier (42), said first adder having an output supplying a signal $E_d(n)$ or $E_1(n)$ or V(n+1);

a third switching device (46) having a first input (F) connected to the first output (21) of Hilbert transformer (20) and a second input (A) connected to the first output (31) of the carrier regenerating circuit (30) and an output;

a third multiplier (48) having a first input connected to the first output (21) of the Hilbert transformer (20), a second input connected to the output of the third switching device (46) and an output supplying either $x^2(n+1)$ or x(n+1)X(n+1);

a fourth switching device (50) having a first input (F) connected to a second output (22) of the Hilbert transformer (20), a second input connected to the second output (32) of the carrier regenerating circuit (30) and an output;

a fourth multiplier (52) having a first input connected to the second output (22) of the Hilbert transformer (20), a second input connected to the output of the fourth switching device (50) and an output supplying either y(n+1), or y(n+1)Y(n+1);

a second adder (54) having a first input connected to the output of the third multiplier (48), a second input connected to the output of the fourth multiplier (52) and an output supplying a quantity M(n+1) or U(n+1);

optionally a third delay line (56) for a sampling period connected to the second adder (54) and supplying the signal M(n);

a divider circuit (60) having a first input connected to the output of the first adder (44) and receiving a signal $E_d(n)$ or $E_1(n)$, a second input connected to the third delay line (56) or, if the latter does not exist, to the second adder (54) and receiving the signal M(n) and an output supplying a quotient signal of $E_d(n)$ or $E_1(n)$ by M(n) or the logarithm of this ratio;

a circuit (62) having an input addressed by the signal appearing at the output of the divider circuit (60) and an output;

said demodulator being able to demodulate:

either a signal s(n) modulated in frequency or in phase and in amplitude by a modulating signal m(n), in which case the four switching devices (38, 39, 46, 50) are in the position connecting their output to the first input (F), the modulating signal m(n) then being available on a general output (64) connected to the output of circuit (62), the amplitude being available by its square, at the output (68) of the second adder (54),

or a double modulation amplitude signal U(n), V(n) in quadrature and with suppressed carrier, in which case the four switching devices (38, 39, 46, 50) are in the position connecting their output to the second input (A), the demodulated signals V(n+1) and U(n+1) being available on two general outputs (66, 68) respectively corresponding to the output of the first (44) and the second (54) adders.

4,804,925

DPSK EXCLUSIVE-OR DEMODULATOR

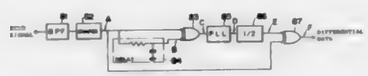
Yoshiki Iwase; Katuso Nakadai, both of Tokyo; Izumi Miyake; Kiyotaka Kaneko, both of Kawasaki, and Kazuya Oda, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1987, Ser. No. 29,231

Claims priority, application Japan, Mar. 26, 1986, 61-65961; Mar. 26, 1986, 61-65962

Int. Cl.[4] H04L *27/22*

U.S. Cl. 329—50 **1 Claim**



1. A DPSK demodulating circuit comprising:

a carrier signal generating circuit for generating a carrier signal for DPSK demodulation, and

an exclusive-OR circuit to which are imputted a signal modulated by data and said carrier signal,

said carrier signal generating circuit including:

an edge sampling circuit for extracting both a leading and trailing edge of the modulated signal;

a converting circuit for converting an output pulse signal from said edge sampling circuit into a rectangular signal having the same period of the output pulse signal and a duty factor of one-half; and

a frequency dividing circuit for doubling the period of an output signal from said converting circuit.

4,804,926

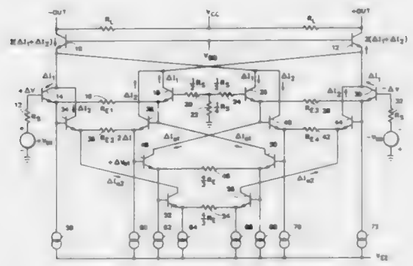
F_T QUADRUPLER AMPLIFIER WITH LINEARITY CORRECTION

James Woo, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 1, 1988, Ser. No. 150,878

Int. Cl.[4] H03F *3/45*

U.S. Cl. 330—149 **10 Claims**



1. An f_T quadrupler amplifier comprising:

a. first and second parallel signal amplifier means for converting a differential voltage into a differential current each having first and second inputs and a pair of outputs, the first input of said first amplifier means and the second input of said second amplifier means forming a differential voltage input, the second input of said first amplifier means and the first input of said second amplifier means being coupled together and to a reference voltage source, the output pair of said first amplifier means being cross coupled to the output pair of said second amplifier means to form a differential current output; and

b. parallel error amplifier means for detecting an error voltage within said first and second parallel signal amplifier means and for providing bias and error cancellation currents thereto.

4,804,927

CURRENT AMPLIFIER CIRCUIT

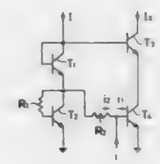
Akira Yamakoshi; Toyohiko Fujita; Kunihiko Tsukakoshi, and Shinji Asaka, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1987, Ser. No. 91,608

Claims priority, application Japan, Sep. 2, 1986, 61-206524

Int. Cl.[4] H03F *3/04*

U.S. Cl. 330—288 **6 Claims**



1. A current amplifier circuit comprising: a first transistor having a collector and a base which are electrically connected, a second transistor connected in series with the first transistor and having a collector and a base which are electrically connected, a third and a fourth transistor connected in series, wherein the collector of the first transistor is connected to a base of the third transistor and the collector of the second transistor is connected to a base of the fourth transistor through a resistor having a resistance R, wherein the first, second, third and fourth transistors have the same polarity, wherein an amplified output signal current $R \cdot i/R_E$ is obtained from a collector of the third transistor when an input signal current i is applied to the base of the fourth transistor, and wherein R_E is emitter resistance of the fourth transistor.

4,804,928

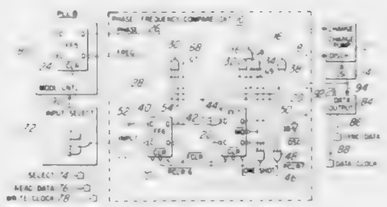
PHASE-FREQUENCY COMPARE CIRCUIT FOR PHASE LOCK LOOP

James E. Chloupek, Plano, Tex., and Richard E. Boucher, Santa Clara, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 12, 1987, Ser. No. 49,063

Int. Cl.[4] H03L *7/00*

U.S. Cl. 331—1 A **14 Claims**



1. A phase/frequency compare circuit for use in a phase locked loop circuit having a charge pump and a voltage controlled oscillator, comprising:

an input flip flop having a clock input coupled to an input signal source and a data input coupled to a high level voltage source;

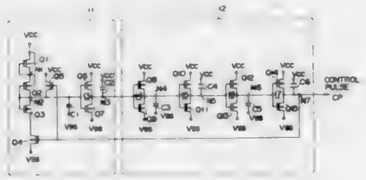
an oscillator flip flop having a clock input coupled to an output of the voltage controlled oscillator;

a frequency/phase selector having complementary frequency and phase outputs for placing said phase/fre-

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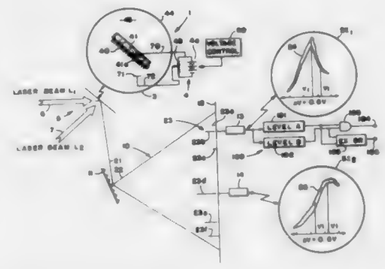
quency compare circuit in a frequency or phase compare mode, respectively;
a switch gate having an output coupled to a data input of said oscillator flip flop, a phase input coupled to an output of said input flip flop and a frequency input coupled to the frequency output of said frequency/phase selector wherein the switch gate output is high when either in the frequency mode or, if in the phase mode, following the arrival of an input signal to said input flip flop;
charge logic gates having inputs coupled to the output of said input flip flop, to the frequency and phase outputs of said selector and to an output of said oscillator flip flop and an output coupled to a charge input of said charge pump operative to apply a charge signal to the charge input in response to an input signal setting said input flip flop when the frequency output of said selector is high and, if the oscillator flip flop is reset, when the phase output of said selector is high;
a discharge gate having an input coupled to an output of said oscillator flip flop and an output coupled to a discharge input of said charge pump for generating a discharge control signal in response to the arrival of an oscillator signal provided, when the phase output of said selector is high, there has been a previous input signal; and
reset circuitry coupled to said input and oscillator flip flops and operative to reset them in response to predetermined conditions of said selector outputs, said input and oscillator flip flop outputs and said oscillator signal level.

4,804,929
CONTROL PULSE GENERATOR
Hideo Kato, Kawasaki; Hiroshi Iwahashi, Yokohama; Masamichi Asano, Tokyo; Akira Narita, Kawasaki, and Shinichi Kikuchi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 28, 1987, Ser. No. 101,667
Claims priority, application Japan, Oct. 9, 1986, 61-240327
Int. Cl.[4] H03B *1/00*
U.S. Cl. 331—57 10 Claims



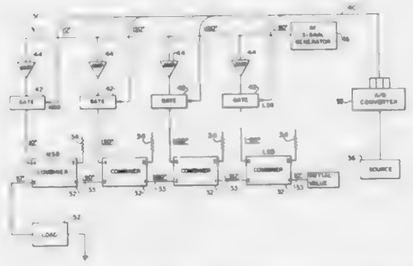
1. A control pulse generator for a semiconductor integrated circuit, comprising:
voltage generating means for generating an output voltage proportional to a power supply voltage which is applied to the semiconductor integrated circuit;
inverting means for generating an inversion signal, said inversion signal having an inverted level when the value of said output voltage reaches a predetermined voltage value; and
pulse signal generating means for delaying the occurrence of said inversion signal by a predetermined delay time, for generating a control pulse having a width corresponding to said predetermined delay time, and for supplying said control pulse to an internal circuit of said semiconductor integrated circuit,
wherein the voltage generating means includes voltage holding means for holding the value of the output voltage from said voltage generating means at a constant level in response to the signal level of said control pulse.

4,804,930
MOLECULAR ELECTRO-OPTICAL TRANSISTOR AND SWITCH
Branimir Simic-Glavaski, Cleveland Hts., Ohio, assignor to H.S.G. Venture, Cleveland, Ohio
Continuation of Ser. No. 535,672, Sep. 26, 1983, abandoned. This application Oct. 1, 1986, Ser. No. 914,121
Int. Cl.[4] H03K *19/14*; G11C *13/00*; H01S *3/00*
U.S. Cl. 332—751 87 Claims



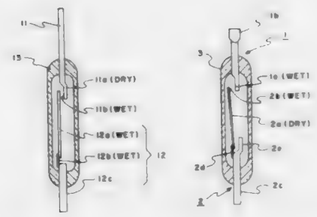
1. A high speed electro-optic device, comprising a substrate including electrical conductor or semi-conductor material, and electro-optic responsive macrocyclic molecules adsorbed on said substrate, said molecules being responsive to at least one of an electrical input or an optical input to effect a high speed output function; said molecules being operative to produce an optical output as a carrier of information, said optical output being resolvable spatially in the frequency domain to read out generated or stored information; and further comprising Raman spectrometer means for spatially resolving such optical output in the frequency domain; and wherein said molecules are responsive to at least one of an electrical input or an optical input to undergo a detectable intra-molecular electron transfer or intra-molecular electron energy change to effect an output function.

4,804,931
DIGITAL AMPLITUDE MODULATOR - TRANSMITTER
Timothy P. Hulick, Schwenksville, Pa., assignor to Acrodyne Industries, Inc., Blue Bell, Pa.
Filed Dec. 11, 1987, Ser. No. 132,207
Int. Cl.[4] H03C *1/00*
U.S. Cl. 332—31 R 15 Claims



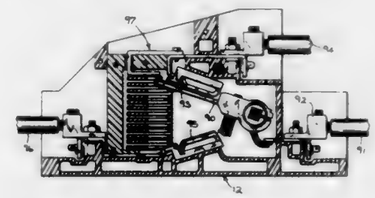
1. An amplitude modulator/transmitter for transmitting an information signal comprising:
a plurality of quadrature hybrid combiners each having a pair of input ports and a single output port, said combiners arranged in cascade;
carrier means for providing a carrier frequency signal to an input port of each of said combiners, the strength of the signal applied to each combiner increasing by a multiple of two from the initial combiner to the last combiner in said cascade arrangement;
information means for controlling the delivery of said carrier frequency signals to each of said combiners in accordance with the predetermined information signal;
terminal output means defined at one of said output ports of the last combiner in said arrangement, said terminal output means providing an output for the summation signal representing the sum of said plurality of carrier frequency signals fed into said combiners; and
transmitting means for receiving said summation signal for transmission to a remote location.

4,804,932
MERCURY WETTED CONTACT SWITCH
Teruhiko Akasama, Tokyo, and Masaharu Enomoto, Hyogo, both of Japan, assignors to NEC Corporation, Japan
Filed Aug. 20, 1987, Ser. No. 87,660
Claims priority, application Japan, Aug. 22, 1986, 61-197601; Aug. 29, 1986, 61-204934
Int. Cl.[4] H01H *1/08, 29/00*
U.S. Cl. 335—58 2 Claims



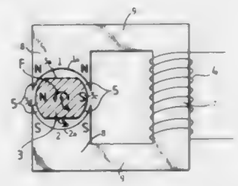
1. A mercury wetted contact switch comprising:
a sealed housing;
mercury sealed inside said housing;
a fixed contact side cylindrical electrode with a hollow area, said fixed contact being hermetically fitted through and sealed to one end of said housing and having a flat magnetic pole section formed at one end of the electrode within said housing, the magnetic pole section and the internal face of the cylindrical electrode being wettable with said mercury, and said mercury being maintained in the hollow area within said cylindrical electrode, at least one hole formed in said flat magnetic pole section reaching into the hollow area to supply the mercury to the surface of said flat magnetic pole secton;
a movable contact side electrode hermetically fitted through and sealed to the other end of said housing;
an armature which is unwettable with said mercury and which is positioned at one end of said movable contact side electrode to swing toward or away from said magnetic pole section; and
a movable contact which is wettable with said mercury and fastened to said armature for coming into contact with or breaking away from said magnetic pole section, the movable contact having a selected one of a conical shape, a semispherical shape, or a prismoidal shape.

4,804,933
AUTOMATIC TRANSFER SWITCH
James A. Becker, Grafton; Lawrence F. Freitag, Bayside, both of Wis., and Frank W. Kassy, Randallstown, Md., assignors to Brown Industrial Gas, Inc., Dallas, Tex.
Filed Apr. 1, 1988, Ser. No. 176,756
Int. Cl.[4] H01H *3/00*
U.S. Cl. 335—186 14 Claims



14. A switch comprising:
a means for alternately connecting an electric load to two sources of electricity;
an over-the-center spring mechanism operatively coupled to said connecting means, said spring mechanism having a first position at which the load is connected to one of the sources and a second position at which the load is connected to the other source; and
means for driving the over-the-center spring mechanism alternatively toward each of the first and second positions, including a solenoid and a manually operable handle assembly.

4,804,934
ADJUSTMENT MEMBER FOR PERFORMING A MECHANICAL ROTATIONAL MOVEMENT
Klaus Finke, Bad Toelz, and Klaus Baumgarten, Egling/Ing, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany
Filed Nov. 24, 1987, Ser. No. 124,861
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1986, 3640188
Int. Cl.[4] H01F *7/08*
U.S. Cl. 335—229 1 Claim



1. An electromagnetic adjustment device for causing limited mechanical rotational movements in either direction out of a zero position, comprising a magnetic core having a first leg and a second leg interconnected for forming a magnetic circuit, and electrical coil on said first core leg for generating a magnetic flux in said magnetic circuit, a substantially circular cut-out in said second leg for forming two poles pieces (1, 2) each having a concave circular pole piece surface (1*a*, 2*a*) facing each other across said cut-out, a permanent magnetic anchor rotatably mounted in said cut-out for forming air gaps between said anchor and said pole piece surfaces, said anchor comprising a rod having two circular surface sections located opposite each other and forming a north pole and a south pole, and two flat surface sections opposite each other, said anchor

having a rotational axis extending in a plane which itself extends at 90° to a longitudinal axis of said electrical coil, a shaft extending coaxially from a least one end of said anchor, said circular surface sections of said anchor and said circular concave pole piece surfaces having such radial dimensions that four equal air gaps (5) are formed when said anchor is in a zero position, and so that the cross-sectional area of said four air gaps remains constant when said anchor is rotated out of said zero position for about 35° in either direction, whereby the specific torque moment of the device remains constant throughout the entire effective range of about 70° of said device.

4,804,935

SENSOR FOR MEASUREMENT BY ELECTRICAL HEATING AND METHOD FOR MANUFACTURE OF THE SAME

Tomoshige Hori, Kitamoto, and Kensuke Itoh, Kodaira, both of Japan, assignors to Snow Brand Milk Products Co., Ltd., Japan

Filed Jan. 21, 1987, Ser. No. 5,663
Claims priority, application Japan, Feb. 27, 1986, 61-42540
Int. Cl.⁴ H01C *3/04*
U.S. Cl. 338—25 **4 Claims**



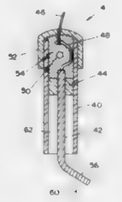
1. A sensor for electrical heating measurement comprising:
a core rod which is partly reduced in diameter to form an annular recess;
an inner electrically insulating layer formed within said annular recess;
a thin metal wire wound about said inner electrically insulating layer;
an outer electrically insulating layer covering the metal wire winding and being flush with the outer circumferential surface of said core rod; and
a metal sleeve being in intimate contact with the outer circumferential surface of said core rod throughout the overall length thereof.

4,804,936

LIQUID SELECTIVE AUTOMATIC BILGE PUMP CONTROL

Ronald G. S. Sale, Sassichton, Canada, assignor to Saler Electronic Systems, Inc., Canada

Division of Ser. No. 817,983, Jan. 13, 1986, abandoned. This application Mar. 25, 1987, Ser. No. 29,785
Int. Cl.⁴ H01C *10/02*
U.S. Cl. 338—80 **8 Claims**



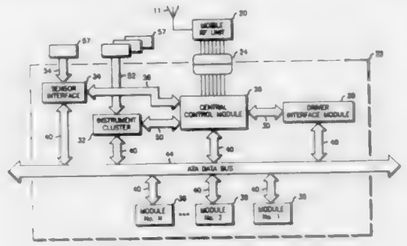
1. A conductivity probe which can distinguish between a first conductive liquid and another liquid of different conductivity within a layer adjacent to the first conductive liquid, comprising:
a hollow body sealed at one end to prevent air from escaping through that end;
an electrode structure suspended within the hollow body, so that it is electrically insulated from the body, and extends out the unsealed end of the body, with a section of the electrode structure which extends outside the body being oriented so that it also extends sideward beyond the projection line of the body;
an electrical conductor attached to the electrode structure and permiting an electrical connection to the electrode structure from outside the body; and
mounting means which permits the conductivity probe to be attached to an external surface so that the unsealed end of the body is oriented below the sealed end.

4,804,937

VEHICLE MONITORING ARRANGEMENT AND SYSTEM

William J. Barbiaux, Schaumburg; Timothy D. McCarthy, Arlington Heights, both of Ill.; Steven D. Bromley, and Gary W. Milliorn, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 26, 1987, Ser. No. 54,471
Int. Cl.⁴ B60Q *1/00*
U.S. Cl. 340—52 F **4 Claims**



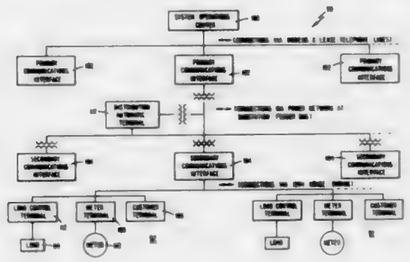
1. A vehicle monitoring arrangement, comprising:
a plurality of communication modules, each being capable of communicating messages associated with performance of the vehicle;
a vehicle sensor for indicating a vehicle condition parameter;
a data bus member for electrically intercoupling said plurality of communication modules and the vehicle sensor, and for receiving said communicated messages therefrom;
a recording module having two data paths for receiving information associated with performance of the vehicle, said two data paths including a first data path coupled to said data bus member for receiving information which as been transmitted over the data bus member by said plurality of communication modules and including a second data path for receiving messages directly from the vehicle sensor; and
remote programming means for communicating with said recording module, and for selectively programming the recording module to receive and monitor indications from the vehicle sensor using one of the two data paths.

4,804,938

DISTRIBUTION ENERGY MANAGEMENT SYSTEM

Donald W. Rouse, Lilburn, Ga.; Lawrence B. Horwitz, Danville, Calif., and E. Thomas Wiggins, Chesterfield, Mo., assignors to Sangamo Weston, Inc., Norcross, Ga.

Filed Oct. 24, 1986, Ser. No. 922,911
Int. Cl.⁴ H04M *11/04*
U.S. Cl. 340—310 A **10 Claims**



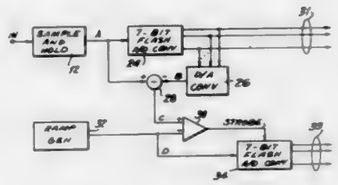
1. In a load management and electrical energy distribution system having a system operations center (SOC) and a plurality of load terminals, a distribution network for establishing bidirectional data communications between the SOC and said load terminals, comprising:
primary communications interface units (PCIs) on a high voltage portion of said distribution system, each having a first programmed computer in communication with said SOC over a first bidirectional communications network; and
secondary communications interface units (SCIs) on a low voltage portion of said distribution system, each having a second programmed computer in communication with one of said (PCIs) over a second bidirectional communications network including electrical utility primary distribution power lines;
said load terminals on said low voltage portion of said distribution system and in communication with said SCIs over a third bidirectional communications network.

4,804,939

COARSE/FINE A-D CONVERTER USING RAMP WAVEFORM TO GENERATE FINE DIGITAL SIGNAL

Brian V. Cake, Monroe, N.Y., and Frederick W. Sippach, Tenafly, N.J., assignors to LeCroy Corporation, Chestnut Ridge, N.Y.

Continuation of Ser. No. 900,994, Aug. 28, 1986, Pat. No. 4,734,677. This application Aug. 25, 1987, Ser. No. 89,471
Int. Cl.⁴ H03M *1/68, 1/36, 1/56*
U.S. Cl. 341—156 **7 Claims**



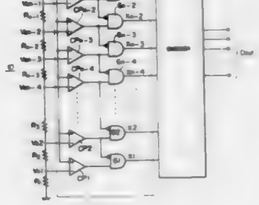
1. In an analog-to-digital converter of the type having a first stage for producing a coarse digital representation of an input analog singal, digital-to-analog converting means for producing a coarse analog signal derived from said coarse digital representation, and means for producing a fine digital representation of the difference between said input analog signal and said coarse analog signal, which means normally includes a summing amplifier for producing said difference, the improvement by which the summing amplifier is obviated comprising a first flash analog-to-digital converter for producing said coarse digital representation; means for generating a ramp waveform signal; a difference circuit for producing a difference signal proportional to said difference between said input analog signal and said coarse analog signal derived from said flash analog-to-digital converter; sensing means for sensing when said ramp waveform signal has changed by an amount substantially equal to said difference signal; and a second flash analog-to-digital converter coupled to said means for generating a ramp waveform signal and responsive to said sensing means for producing a plural bit digital signal corresponding to the sensed change of said ramp waveform signal.

4,804,940

RESISTOR AND ELECTRON DEVICE EMPLOYING THE SAME

Akira Takigawa; Shizuo Kondo; Masumi Kanehara; Toshinori Hirashima; Mikio Haijima; Setsuo Ogura, all of Takasaki; Osamu Takeda, Chita, and Yoshiki Akamatsu, Takasaki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Eng., both of Tokyo, Japan

Filed Mar. 25, 1986, Ser. No. 843,666
Claims priority, application Japan, Mar. 25, 1985, 60-58415; Jun. 14, 1985, 60-128208
Int. Cl.⁴ H03M *1/36, 1/74*
U.S. Cl. 341—133 **16 Claims**



1. An analog-to digital converter comprising:
a plurality of voltage comparators each of which has two input terminals;
first means for applying a common analog input voltage to comparators;
second means for respectively applying reference voltages differing stepwise to the other input terminals of said plurality of voltage comparators for obtaining a digital output from the comparators corresponding to the input voltage to said comparators;
and wherein said second means comprises a ladder resistor formed of a plurality of resistors connected in series, wherein each resistor is a thin film resistor formed zigzag such that its contour essentially consists of a plurality of obtuse angle bending portions defined by respective adjacent turn parts of the resistor, such that two lines colinear with each of two contiguous edges of said thin film resistor define an obtuse angle, and wherein each of said resistors comprises:
a first reversely bent portion which includes a plurality of obtuse angle bending portions defined by respective adjacent turn parts of said first reversely bent portion; and
a second reversely bent portion which joins to a terminal end of said first bent portion and which is formed of a

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plurality of said turn parts of said second reversely bent portion,

wherein said first reversely bent portion is so shaped as to have the plurality of turn parts thereof on one side of a plane bisected with a phantom center line as a boundary, said first reversely bent portion extending from one portion of the phantom center line back to another portion of the phantom center line,

wherein said second reversely bent portion is so shaped as to have the plurality of turn parts thereof on the other side of the plane bisected with the phantom center line as the boundary, said second reversely bent portion extending from one portion of the phantom center line back to another portion of the phantom center line, and

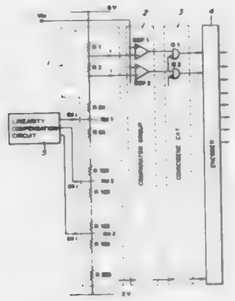
further wherein the number and the angles of the obtuse angle bending portions of said turn parts in said first reversely bent portion are equal to those in said second reversely bent portion, whereby a digital output corresponding to the input voltage is derived from the outputs of said voltage comparators.

4,804,941

CIRCUIT FOR COMPENSATING A LINEARITY OF AN INPUT/OUTPUT CHARACTERISTIC OF A PARALLEL COMPARISON TYPE ANALOG-TO-DIGITAL CONVERTER

Yoji Yoshii, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 8, 1988, Ser. No. 153,356
Claims priority, application Japan, Feb. 12, 1987, 62-030831
Int. Cl.[4] H03M *1/36, 1/06*
U.S. Cl. 341—140 **28 Claims**



1. A circuit for compensating an input/output characteristic linearity of an analog-to-digital converter, comprising:

(a) first means for providing a first current having a magnitude corresponding to a second current which is an amplification of an input current flowing through an input circuit of one of a plurality of comparators in the analog-to-digital converter from a chain of resistors providing each of a plurality of comparison reference voltages for the corresponding one of the comparators;

(b) second means for providing a third current on the basis of the first current, the third current being a multiplication of a second current by a predetermined multiplication factor;

(c) third means for providing a fourth current on the basis of the third current, the fourth current being a multiplication of the third current by an inverse of an amplification factor of the input circuit of the comparator; and

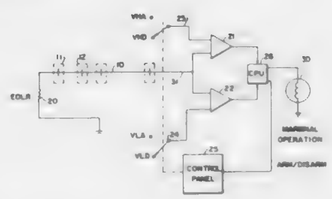
(d) fourth means for providing a fifth current on the basis of the fourth current, the fifth current being a multiplication of the fourth current by a second predetermined multiplication factor and being supplied to the input circuit so as to compensate for a first input current flow totally supplied from a reference voltage supply of the resistor chain to a predetermined group of the input circuits of the comparators via the resistor chain.

4,804,942

VERIFYING AUTOMATIC LINE INTEGRITY DIAGNOSTIC (V.A.L.I.D.) APPARATUS AND METHODS FOR INTRUSION DETECTION SYSTEMS

Raymond Gaudio, Babylon, N.Y., assignor to Napco Security Systems, Inc., Copiague, N.Y.

Filed Nov. 23, 1987, Ser. No. 123,909
Int. Cl.[4] G08B *29/00*
U.S. Cl. 340—514 **10 Claims**



1. A method of operating an end of line resistor loop in an intrusion detection system to provide a first sensitivity during an armed mode and a second sensitivity during a disarmed mode, comprising the steps of:

providing a first voltage window indicative of increased system sensitivity when said intrusion detection system is disarmed,

providing a second voltage window indicative of a decreased system sensitivity when said intrusion detection system is armed,

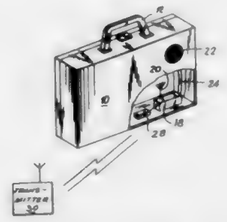
providing an output indication during said disarmed condition indicative of a probable false alarm indication being provided in said armed condition which indication is further reduced due to said decreased sensitivity.

4,804,943

REMOTELY CONTROLLED BRIEFCASE ALARM

Isaac Soleimani, 138-33 Coolidge Ave., Jamaica, N.Y. 11435

Filed Jul. 2, 1987, Ser. No. 69,056
Int. Cl.[4] G08B *1/08, 13/14*
U.S. Cl. 340—539 **7 Claims**



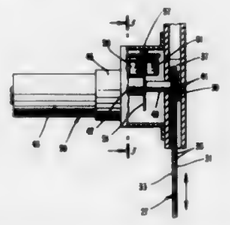
1. A briefcase alarm system including a briefcase having a detachable handle mounted thereon, the handle supporting the briefcase when grasped and lifted, a radio receiver carried by the briefcase, latch means for detachably securing said handle to said briefcase, actuating means operable upon the receipt by said radio receiver of a predetermined radio signal from a radio transmitter remote from the briefcase or upon the absence of the receipt of a predetermined radio signal by said radio receiver to operate said latch means to thereby cause said briefcase, when carried by said handle, to become detached from said handle.

4,804,944

HALL EFFECT LIQUID LEVEL SENSING APPARATUS AND METHOD

James D. Golladay, Montech Systems, Inc., 6595 Odell Pl., Suite C, Boulder, Colo. 80301, and Joseph M. Elder, Jr., 1079 Yale Cir., Boulder, Colo. 80303

Filed Sep. 1, 1987, Ser. No. 91,848
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—624 **21 Claims**



1. An improved level sensing device for mounting in an enclosure, said enclosure having fluid therein, the level of which is to be monitored, said device comprising:

(a) an elongated tube mounted vertically in said enclosur and having a passageway therethrough;

(b) at least one float slidably guided by said tube and having a magnet mounted thereon;

(c) an accumulator mounted on said enclosure and having said tube mounted thereon, said accumulator having an opening in communication with said passageway;

(d) an elongated tape stored in said accumulator and adapted to be reciprocated through said opening and within said tube;

(e) said tape having a first end electrically connected to control means for controlling said device and a second end having connected thereto magnetic sensing means for sensing the magnetic field emanating from said magnet; and

(f) tape sensing means for sensing the vertical position of said magnetic sensing means and communicating first signals indicative of said vertical position to said control means, said control means receiving second signals from said magnetic sensing means indicative of the vertical position of said float and calculating from said first and second signals the level of fluid in said enclosure.

4,804,945

DOOR ALARM WITH INFRARED AND CAPACITIVE SENSORS

Terrance Millet, 26 Hymus Dr., Dollard-des-Ormeaux, Quebec, Canada (H9B 1L4)

Filed Oct. 29, 1987, Ser. No. 114,044
Int. Cl.[4] G08B *13/00, 13/18, 13/26*
U.S. Cl. 340—541 **7 Claims**

1. A door alarm for providing two separate discrete signals indicating approach of an individual to a door and touching of the door knob by the individual, comprising:

a metallic door knob on said door;

a shaft connected to said door knob and a latch mechanism on said door;

insulating means for electrically insulating said door knob and said shaft from said door and said latch mechanism;

a key lock cylinder extending through a front face of said door knob;

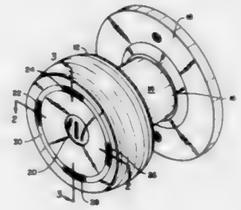
a circular mounting ring on said front face of said door knob surrounding said key lock cylinder;

four infrared sensors spaced circumferentially at ninety degree intervals around said mounting ring;

first control means connected to said infrared sensors;

audible alarm means activated by said control means in response to approach of an individual to said door to provide a first signal;

a capacitive discharge sensor connected to said metallic door knob;



second control means connected to said capacitive discharge sensor; and

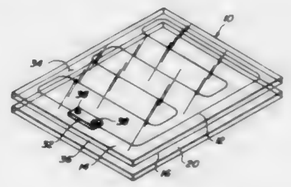
means connected to said second control means for providing a second signal in response to touching of said door knob by an individual.

4,804,946

PRE-WIRED WINDOW PANE

Andrew I. Elkowitz, 28 Lighthouse Rd., Great Neck, N.Y. 11024

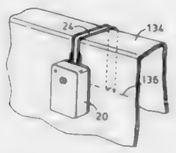
Filed Apr. 3, 1986, Ser. No. 847,663
Int. Cl.[4] G08B *13/02*
U.S. Cl. 340—550 **10 Claims**



1. A pre-wired window, comprising, a transparent window pane of a predetermined size and thickness generally of any configuration; a conductive wire of soft metal disposed on a first surface of said transparent window pane having a diametral size such as not to obstruct vision through said transparent window pane; a termination block mounted on a second surface opposite said first surface and proximate to an edge of said transparent window pane; and means for terminating said wire whereby said wire is affixed to the termination block, and further including a second transparent window pane, essentially the same size and thickness as said transparent window pane, mounted in a frame, said frame being essentially parallelepiped with a first pair of sides of essentially equal length and a second pair of sides of essentially equal length, wherein all four sides are of essentially equal height and depth, each said sides having a pair of slots disposed parallel to each other on the inner surface of said side at a predetermined distance from each other, a first slot of said pair of slots is disposed a predesigned distance from a first edge of said side and a second predetermined distance from a second edge of said side, wherein said second edge is perpendicular to said first edge, wherein said first edge and said second edge are outside surfaces of said side; said slots being disposed in each of four said sides, a glazing material applied to all surfaces of said slots; the resultant assembly forming a high thermal efficiency double pane window.

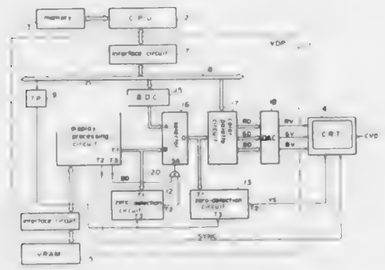
VOL 1099 ISS 2 FE 14 1989 UMI

4,804,947
WATER SENSING APPARATUS
Rimas J. Geleziunas, 3900 Yonge Street, Toronto, Ontario, Canada (M4N 3N6)
Filed May 29, 1987, Ser. No. 55,273
Int. Cl.[4] G08B 21/00
U.S. Cl. 340—620 24 Claims



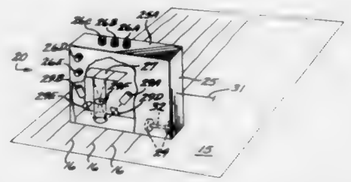
1. A portable, resistive, water sensing apparatus comprising a housing, a circuit for detecting changes in resistance within the housing, an alarm connected to and driven by the circuit, and an elongate sensor, one end of which is secured to the housing and is connected to the circuit, and the other end of which has two exposed contacts, so that the circuit can detect changes in resistance between the exposed contacts to detect the presence of water, which sensor has a rigidity which is sufficient to enable it to maintain a configuration in which it supports the whole weight of the sensor to enable the apparatus to be hung by the sensor and has a flexibility which is sufficient to enable it to be bent manually to a desired configuration.

4,804,948
VIDEO DISPLAY CONTROL SYSTEM
Kazuhiko Nishi; Takatoshi Ishii; Ryoso Yamashita, all of Tokyo; Shigemitsu Yamaoka, and Takatoshi Okumura, both of Hamamatsu, all of Japan, assignors to ASCII Corp., Tokyo and Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, both of, Japan
Continuation of Ser. No. 734,165, May 15, 1985, abandoned.
This application Jul. 27, 1987, Ser. No. 77,984
Claims priority, application Japan, May 18, 1984, 59-100303
Int. Cl.[4] G09G 1/16
U.S. Cl. 340—703 12 Claims



1. A video display control system adapted to be connected to a video display unit, for displaying a video image composed of a plurality of display elements on a screen of the video display unit and receiving a supplemental video signal, said apparatus comprising:
(a) memory means for storing a plurality of color codes and
(b) display control means including:
(i) designating means for designating one of a plurality of display modes which include at least a first display mode which enables display of a specific kind of display attribute and a second display mode;
(ii) reading means for reading said color codes from said memory means;
(iii) first determination means for determining whether each color code read from said memory means coincides with a first predetermined color code;
(iv) storing and selecting means, responsive to said designating means and said first determination means, for storing at least one color code and selecting one of: (a) one of said stored at least one color codes and (b) said color code read from said memory means; and
(v) means responsive to the output of said storing and selecting means and said designating means, for detecting transmission of a predetermined color code from storage in said storing and selecting means and for displaying said supplemental signal in response thereto.

4,804,949
HAND-HELD OPTICAL SCANNER AND COMPUTER MOUSE
James L. Faulkerson, Woodside, Calif., assignor to Everex TI Corporation, Fremont, Calif.
Continuation-in-part of Ser. No. 28,311, Mar. 20, 1987, abandoned. This application May 27, 1987, Ser. No. 55,162
Int. Cl.[4] G09G 1/00
U.S. Cl. 340—710 6 Claims



1. A combined hand-held optical scanner and X-Y movement transducer apparatus, comprising:
(a) a housing suitable for hand-held use by an operator;
(b) means contained within said housing for selectively optically scanning images appearing on a surface and providing electrical image signals representative of said images for image acquisition in response to a first enable signal;
(c) means for selectively sensing the relative motion of said apparatus and providing electrical movement signals indicative of the relative motion of said housing relative to an X-Y coordinate system in response to a second enable signal; and
(d) operator controlled function control means for selectively generating said first or second enable signal for selectively actuating only said optical scanning means or only said motion sensing means to selectively operate said apparatus in a first state wherein said hand-held apparatus is employed only in an optical scanning function or in a second state wherein said hand-held apparatus is employed only in an X-Y motion sensing function.

4,804,950
TABLE DRIVEN MULTICHANNEL DATA ACQUISITION AND DISPLAY FOR SIGNAL MONITORING
James B. Moon, Portland, and Don L. Clark, Hillsboro, both of Oreg., assignors to SpaceLabs, Inc., Bothell, Wash.
Filed Nov. 7, 1985, Ser. No. 796,048
Int. Cl.[4] G09G 1/00
U.S. Cl. 340—715 28 Claims
1. A signal monitoring system including at least one parameter measuring module having a plurality of channels for acquiring respective items of physiological data, and an information processing and display station having a plurality of control keys and a display device for managing the display of said physiological data on said display device, said system comprising:
a data link coupling said at least one parameter measuring module to said information processing and display station; and

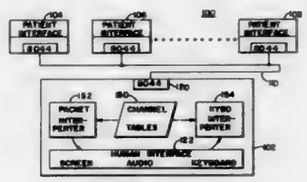
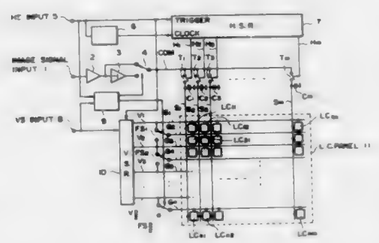


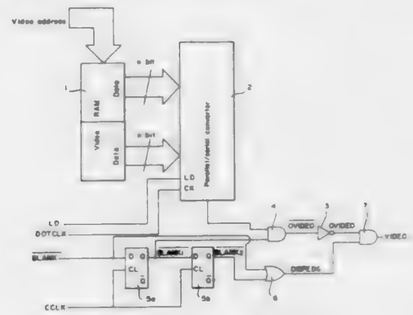
table memory means resident with said at least one module containing a table to be downloaded over said data link to said station for controlling the operation of said station and for defining the number, functionality and visual attributes of said control keys and data associated with each channel of the module to be displayed in said display device, whereby said information processing and display station is capable of displaying the data of each channel independently of the functions associated with the other channels once said table is downloaded to said station.

4,804,951
DISPLAY APPARATUS AND DRIVING METHOD THEREFOR
Shinichi Yamashita, Atsugi; Masahiko Enari, Yokohama; Mitsutoshi Kuno, Nakamachi; Atsushi Mizutome, Hayamamachi, and Hideo Kamo, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 1, 1985, Ser. No. 794,151
Claims priority, application Japan, Nov. 6, 1984, 59-232335
Int. Cl.[4] G09G 3/34, 3/36
U.S. Cl. 340—719 24 Claims



1. An active matrix-type display device, comprising:
a plurality of field effect transistors arranged in a matrix,
a plurality of gate lines, each gate line being connected to one or more of said field effect transistors;
means for combining said plurality of gate lines in a first set of combinations for a vertical scanning period and for changing said first set of combinations to a second set of combinations for another vertical scanning period, each of said first set and second set of combinations containing two or more gate lines;
means for sequentially driving said first set and second set of combinations while vertically scanning the gates lines in a manner such that the gate lines contained in a combination are driven simultaneously with respect to the gate lines scanned in each vertical scanning period.

4,804,952
DISPLAY DEVICE INTERFACE CIRCUIT
Masashi Hara, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 27, 1986, Ser. No. 900,685
Claims priority, application Japan, Aug. 29, 1985, 60-191687
Int. Cl.[4] G09G 1/16
U.S. Cl. 340—730 8 Claims



1. A display interface circuit for modifying a video signal received from a video source and containing predetermined video information to be displayed to enhance a display produced by display means raster scanning said video signal across a display device, by increasing the size of the background displayed thereupon around said predetermined video information, comprising:
means for receiving said video signal from said video source;
means for receiving a blanking signal from said video source for inhibitng said video signal;
first signal skewing means, responsive to a clock pulse generated by said video source and said blanking signal, for delaying said blanking signal to develop a first delayed blanking signal;
second signal skewing means, responsive to said clock pulse and said first delayed blanking signal, for delaying said first delayed blanking signal to develop a second delayed blanking signal;
first logic circuit means, responsive to said first delayed blanking signal, for delaying said video signal by an amount determined by said first delayed blanking signal to produce a background signal;
second logic circuit means for logically summing said first delayed blanking signal and said second delayed blanking signal to produce a background signal;
third logic circuit means for logically ANDing said background signal and said delayed video signal to produce a video output signal; and
said video output signal including said predetermined video information and said background signal, the presence of said background signal in said video output signal enhancing the display of said predetermined video information by increasing the background displayed during each raster scan.

4,804,953
REDUNDANT CONDUCTOR STRUCTURES FOR THIN FILM FET DRIVEN LIQUID CRYSTAL DISPLAYS
Donald E. Castleberry, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 756,648, Jul. 19, 1985, abandoned. This application Sep. 16, 1987, Ser. No. 97,247
Int. Cl.[4] G09G 3/36
U.S. Cl. 340—784 34 Claims
1. A liquid crystal display comprising:
a pair of flat substrates, at least one of which is transparent;

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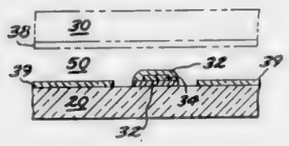
a quantity of liquid crystal material disposed and contained between said substrates;

an array of pixel electrodes disposed on at least one of said substrates;

at least one ground plane electrode disposed on the other one of said substrates, so that liquid crystal material is disposed between said pixel electrodes and any of said ground plane electrodes, with at least one of said ground electrodes and said array of pixel electrodes being transparent;

an array of thin film field effect transistor switch elements associated with said pixel electrodes;

a set of electrically conductive data lines, said data lines having a multilayer structure including an insulative layer,



said multilayer structure extending for at least a portion of the length of said data lines, with at least two of these layers comprising conductive material disposed above and below said insulative layer and in electrical contact along a portion of the length of said data lines; and

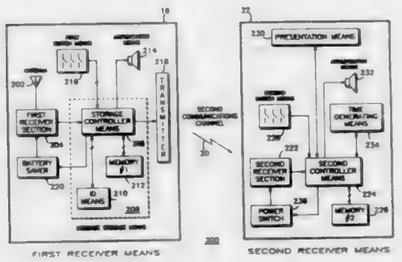
a set of electrically conductive gate lines, said switch elements, said data lines and said gate lines being electrically connected so as to permit voltages appearing on said data lines to be applied to select pixel electrodes in accordance with signals present on said gate lines, said gate lines and said data lines being insulated from one another by means of said insulative layer in said multilayer data lines, said multilayer insulative layer extending across said gate lines so that data line conductors cross said gate lines without traversing substantially vertical step discontinuities.

4,804,954

BATTERY SAVING METHOD FOR PORTABLE COMMUNICATIONS RECEIVERS

Philip P. Macnak, West Palm Beach, and David F. Williard, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1987, Ser. No. 44,911
Int. Cl.⁴ H04Q 7/00; H04B 7/00
U.S. Cl. 340—825.440 **15 Claims**



1. A method for providing an improved battery saving function for a battery powered personal communications receiver, the receiver normally being powered during a first periodically transmitted predetermined time interval for receiving synchronization signals, and during at least one of a plurality of additional predetermined time intervals to which the receiver is assigned following the synchronization signal, for receiving coded message signals, said method comprising the steps of:

generating and transmitting a first coded synchronization signal when coded message signals are to be transmitted in at least one of the plurality of additional time intervals;

generating and transmitting a second coded synchronization signal in place of the first synchronization signal when coded message signals are not to be transmitted in any of the plurality of additional time intervals;

maintaining receiver synchronization with the system when either the first or the second coded synchronization signals are received; and

suspending the supply of power to the receiver immediately following the receipt the second synchronization signal,

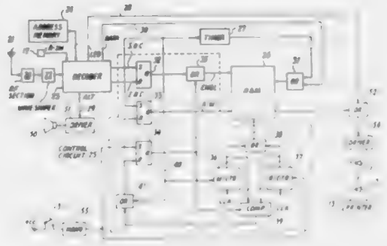
whereby the supply of power to the receiver is suspended during the additional time interval coded message signals are not to be transmitted.

4,804,955

RADIO PAGER HAVING A LIGHT-EMITTING DIODE FOR PROVIDING VISUAL ALARM AND SIGNAL TRANSMISSION

Shigeo Yoshizawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 29, 1987, Ser. No. 8,238
Claims priority, application Japan, Jan. 31, 1986, 61-018224; May 16, 1986, 61-110488
Int. Cl.⁴ H04Q 1/00
U.S. Cl. 340—825.44 **8 Claims**



1. A selective calling radio pager comprising:

means for receiving a code signal transmitted on a radio channel and generating a flashing signal in response to the receipt of said code signal;

a memory;

manual command entry means for generating a command signal;

memory control means for writing the received code signal into said memory and reading the code signal from the memory in response to said command signal;

a light-emitting diode optically coupled to an external device; and

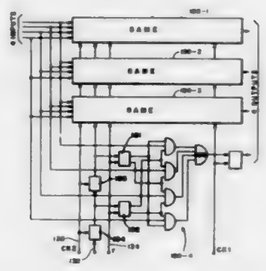
means for coupling said flashing signal to said light-emitting diode in the absence of said command signal, causing said diode to give a visual indication of arrival of a message and coupling said code signal from said memory to said light-emitting diode in the presence of said command signal causing said diode to emit an optical version of said code signal to said external device.

4,804,956

REARRANGEABLE DIGITAL SIGNAL SPACE DIVISION SWITCHING SYSTEM

Frank S. Bezzall, Woodside, Calif., assignor to General Signal Corporation, Stamford, Conn.

Filed Mar. 31, 1986, Ser. No. 846,910
Int. Cl.⁴ H04Q 9/00, 11/04
U.S. Cl. 345—825.790 **22 Claims**



1. A digital signal switching system comprising

a multi-stage space-division switched network having N input terminals and M output terminals, said switched network providing a plurality of internal digital signal transmission paths where each stage includes a certain number of switches for normally switching said digital signals between each input and one or more outputs in each stage, each of said internal signal paths connecting one of said input terminals to any one or more of said output terminals through each stage only through said certain number of switches, and

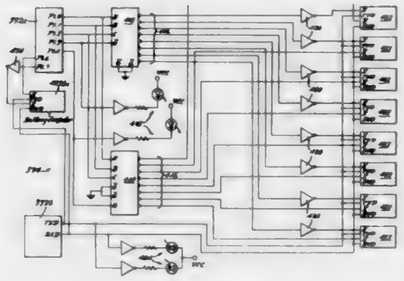
means for simultaneously rearranging in a non-blocking fashion any number of said internal signal paths for each stage of said network where said digital signals are switched only through said certain number of switches without changing their end points and without disturbing the digital signals received at the output terminals of said rearranged paths.

4,804,957

UTILITY METER AND SUBMETERING SYSTEM

Marvin P. Selph, and Derek B. Hughes, both of Albuquerque, N. Mex., assignors to Triad Communications, Inc., Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 802,452, Nov. 27, 1985, abandoned. This application Sep. 17, 1986, Ser. No. 908,249
Int. Cl.⁴ G08C 15/06, 19/20
U.S. Cl. 340—870.03 **10 Claims**



1. A utility metering system for metering a multiplicity of utility users comprising:

a plurality of utility metering devices responsive to the utility consumption of said utility users and providing utility data signals indicative of said consumption;

at least one data collection computer having data input/output means for communicating with said metering devices and for collecting said utility data signals;

a billing computer having means for communicating with said data collection computer and for receiving said collected utility data signals from said data collection computer; and

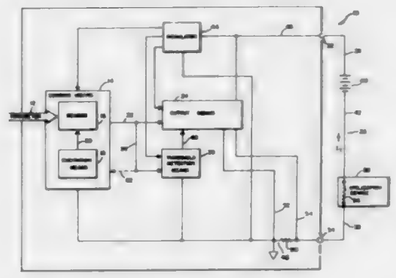
wherein said data input/output means includes a serial data channel for transmitting and receiving data, a serial multiplexing means coupled to said serial data channel, a plurality of transceiver means each for communicating with a different one of said utility metering devices and coupled to said serial data channel, and processor means for controlling said plurality of transceiver means, said processor means being preprogrammed to selectively enable a single transceiver means for transmitting data from said data channel to a utility metering device and said processor means being preprogrammed to selectively enable a plurality of transceiver means for receiving on said data channel data from a plurality of utility metering devices, whereby said data input/output means ensures that only one transceiver means is enabled for transmitting at a time while permitting a plurality of transceiver means to be enabled for receiving at a time.

4,804,958

TWO-WIRE TRANSMITTER WITH THRESHOLD DETECTION CIRCUIT

Randy J. Longsdorf, Chaska, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Oct. 9, 1987, Ser. No. 107,297
Int. Cl.⁴ G08C 9/06, 19/02
U.S. Cl. 340—870.07 **7 Claims**



1. A two-wire current transmitter for providing a transmitter output which is representative of a parameter to be sensed, comprising:

sensing means, having a sensor responsive to the parameter and an excitation means coupled to the sensor for providing an excitation output for exciting the sensor, for providing a sensor output which varies as a function of the excitation output and the parameter to be sensed;

output means coupled to the sensor output for providing the transmitter output as a function of the sensor output to the two-wire circuit; and

threshold detection means coupled to the sensor output, having at least one predetermined threshold value, for providing a detector output to the output means as a function of the sensor output and the threshold value, such that the transmitter output is further representative of an undesired change in the excitation output.

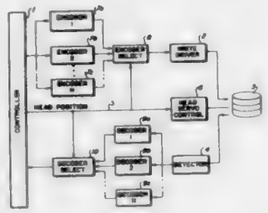
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4,804,959

METHOD AND APPARATUS USING MULTIPLE CODES TO INCREASE STORAGE CAPACITY

Tarek Makansi, Pleasanton; Constantin M. Maios, Los Gatos; Arvind M. Patel, and Steven H. Souther, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1987, Ser. No. 119,010
Int. Cl.[4] H03M 7/00
U.S. Cl. 341—59 **6 Claims**



1. A method for increasing the effective storage capacity of a disk storage device, comprising the steps of:

(a) partitioning recording tracks of the device into a plurality of concentric recording bands, including a first band surrounded by an outer second band;

(b) providing a first encoder for encoding data in one run-length-limited code for recording on said first band:

(c) providing another encoder for encoding data for recording on said second band in another run-length-limited code having a higher code rate;

(d) providing a write driver operative at one clock frequency; and

(e) responsive to the track address designated in a disk write command, selectively connecting one of said encoders to the write driver for recording data at said one frequency on that band which includes said address;

(f) using a detector operative at said one clock frequency and one decoder, decoding data recorded in said first band;

(g) using said detector operative at said one clock frequency and another decoder, decoding data recorded in said second band; and

(h) responsive to the track address in a disk read command, selectively connecting one of the decoders to the detector for reading data at said one frequency on that band which includes the last mentioned address.

4,804,960

SUB-RANGING A/D CONVERTER WITH IMPROVED ERROR CORRECTION

John W. Fernandes, Beverly, Mass.; Gerald A. Miller, Hudson, N.H.; Andrew M. Mallinson, Billerica, and Stephen R. Lewis, Reading, both of Mass., assignors to Analog Deivces, Incorporated, Norwood, Mass.

Filed Oct. 8, 1987, Ser. No. 106,714
Int. Cl.[4] H03M 1/34
U.S. Cl. 341—158 **25 Claims**

1. An A/D converter of the sub-ranging type comprising:

an input circuit to receive an analog input signal to be converted;

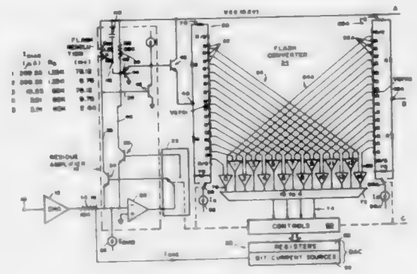
a D/A converter having its output summed with said input signal to produce a residue signal;

a flash converter responsive to said residue signal to produce a corresponding digital signal for controlling said D/A converter;

said D/A converter comprising at least two groups of bit-current-sources of successively descending binary order;

the most significant bit of the second group providing the same current level as the least significant bit of the first group, thereby serving as an overlap bit for the two groups;

control means for operating said A/D converter through at least two sub-ranging cycles wherein said flash converter



sets the bits of said first group in the first cycle, and sets the bits of said second group including said overlap bit in the second cycle; and

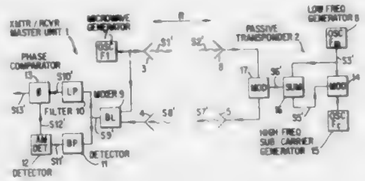
means for developing a composite digital output signal from said first and second group of bits.

4,804,961

METHOD AND APPARATUS FOR MEASURING DISTANCES

Bengt Hane, Solna, Sweden, assignor to Stiftelsen Institutet for Mikrovagsteknik vid Tekniska Hogskolan i Stockholm, Stockholm, Sweden

PCT No. PCT/SE86/00568, § 371 Date Jul. 20, 1987, § 102(e) Date Jul. 20, 1987, PCT Pub. No. WO87/03698, PCT Pub. Date Jun. 18, 1987
PCT Filed Dec. 11, 1986, Ser. No. 88,848
Claims priority, application Sweden, Dec. 12, 1985, 8505888
Int. Cl.[4] G01S 13/80, 13/84
U.S. Cl. 342—125 **15 Claims**



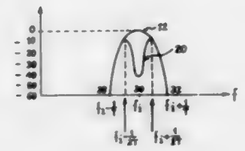
1. A method for measuring the distance between a first object, which incorporates a transmitter-receiver unit, and a second object, which incorporates a transponder, in which the transmitter-receiver unit transmits a signal to the transponder and receives a signal transmitted by the transponder, these signals being signals of microwave frequencies characterized by transmitting a first unmodulated microwave signal (S1';S1) from the transmitter-receiver unit (1;40); receiving said signal (S1';S1) in the transponder (2;18;41); generating in the transponder a second signal (S3';S3) of much lower frequency F_m; modulating said second signal (S3';S3) in the transponder on a signal (S2';S6) having a microwave frequency so that said modulated signal contains the phase of the unmodulated microwave signal received by the transponder; transmitting the modulated signal (S7';S7) from the transponder to the transmitter-receiver unit (1;29;40) in which said signal is received and mixed down with the first signal (S1';S1) and subsequently (a) low-passed filtered, to form a first measuring signal (s10';S10) having the frequency F_m, the phase of which corresponds to the phase difference between the first microwave signal (S1';S1) and the microwave signal received in the transmitter-receiver unit (1;19;40), and (b) demodulated, therewith to obtain a second measuring signal (S12';S12) having the frequency F_m, the phase of which corresponds to the phase of the second signal (S3';S3) generated in the transponder; and by comparing the phases of the measuring signals (S10';S12';S10;S12) in a phase comparison circuit (13;27), forming a phase difference therebetween, said difference between the measuring signals being due to the phase shift of the undemodulated microwave signal transmitted from the transmitter-receiver unit caused by its travel to the transponder and back again, and thereby being proportional to the distance between said two objects.

4,804,962

CLUTTER ELIMINATION RADAR

Jean-Edgar Picquendar, Whitman, Mass., assignor to Diamond Devices, Inc., Wareham, Mass.

Filed Aug. 4, 1983, Ser. No. 520,205
Int. Cl.[4] G01S 7/28; H03H 7/12
U.S. Cl. 342—159 **5 Claims**



1. A clutter elimination radar receiver for processing return echoes from high-frequency radar pulses emitted for time windows having a duration T, such receiver being of the type having an intermediate frequency stage, the receiver further comprising in the intermediate frequency stage, a filter centered on and providing a local response minimum at the intermediate frequency f_i, the filter also providing response maxima on both sides of this minimum at a separation therefrom of the same order of magnitude as 0.2/2T, and transmission minima on both side of those maxima and at a distance from f_i of about 1/T Hz, the filter further comprising (a) a conventional band-pass filter, having a transfer function substantially conforming to the shape of the principal lobe of the function (sin x)/x, with $x=(w-w_i)\pi T$, and where $w=2\pi f$, and (b) and a stop-band filter presenting a substantially flat response except in a rejection band centered on f_i and having a width approximately half that of said principal lobe, the stop-band filter comprising a first stop-band filter and a second stop-band filter, the output of the first stop-band filter being connected to the input of the second stop-band filter, each of said first and second stop-band filters presenting a substantially flat response except in a rejection band centered on a selected rejection frequency, said rejection frequencies being slightly offset from each other to produce a composite rejection band centered on f_i and having a width approximately half that of said principal lobe.

4,804,963

WIDE DYNAMIC RANGE DIGITAL RECEIVER

Robert G. Clapham, Seattle, Wash., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 5, 1987, Ser. No. 307
Int. Cl.[4] G01S 3/74, 7/44
U.S. Cl. 342—195 **2 Claims**

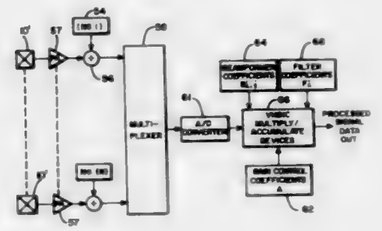
1. A wide dynamic range digital receiver system comprising, in combination:

(a) a plurality of N sensors spatially disbursed relative to an energy source for converting incident energy into electrical signal waveforms;

(b) amplifying and filtering means individually coupled to said plurality of sensors for effectively eliminating spurious signals from a predetermined frequency band;

(c) noise generating means coupled to the output of said amplifying and filtering means for superimposing noise of a predetermined frequency onto the output from said amplifying and filtering means;

(d) analog-to-digital converter means for converting the amplified and filtered output from said amplifying and filtering means for each of said sensors to a digital representation at a sampling rate, $1/\Delta t$ which is high in comparison to the bandwidth of said electrical signals;



(e) digital data processing means coupled to receive the output from said analog-to-digital converter means, beamforming coefficients, Bi, filter coefficients, Fi, and gain control coefficients, A, for repeatedly performing a sum of the products computation in generating the receiver functions of beamforming, filtering, gain control and frequency band translation in accordance with the formulas

$$S_j = \sum_{i=1}^{N} S_i(m, j\Delta t)(B_i)$$

where S_j is the jth output of the beamformer, S_I (m, jΔt) is a sample of said electrical signal at time m, j Δt, and Δt is the time between signal samples form the analog-to-digital converter means, and B_j is a complex weighting factor applied to the ith sensor signal,

$$S_p = \sum_{i=1}^{k} (S_{p-k+j})(F_i)$$

where S_p is the pth output sample of the filter, F_i is the ith complex filter coefficient representing the ith sample of the filter impulse response, S_{p-k+i} is the $(p-k+i)$th sample of the input signal to the filter and k is the number of samples used to indicate the impulse response of the filter

$$S_{i,o}=S_iA$$

where $S_{i,o}$ is the ith output signal sample following gain control and S_i is the ith input signal sample,

$$S_{s,o}=(S_s)(C_{q+s})+(S_s)(S_{q+s})$$

where $S_{s,o}$ is the sample output of the frequency translation, S_s is the sth sample of the input signal (C_{q+s}) and (S_{q+s}) are the $(q+s)^{th}$ samples of the continuous signal Cos f_c and Sin f_c, respectively, and f_c is the center frequency of the filter.

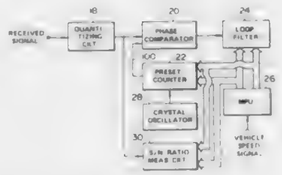
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4,804,964

LORAN-C SIGNAL RECEIVING APPARATUS

Hideo Takai, Yokohama, and Hiroshige Fukuhara, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Aug. 8, 1986, Ser. No. 894,881
Claims priority, application Japan, Aug. 9, 1985, 60-175274; Aug. 9, 1985, 60-175275; Aug. 9, 1985, 60-175276; Aug. 9, 1985, 60-175277
Int. Cl.[4] G01S *1/24*
U.S. Cl. 342—389 **29 Claims**



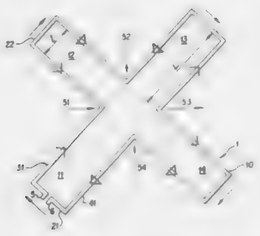
1. An apparatus comprising:
(a) first means for generating and outputting a pulse having a frequency and for tracking a particular cycle of a received carrier wave of a loran signal;
(b) second means for monitoring the frequency of the tracking pulse of the first means and deriving a frequency error thereof with respect to the received carrier wave signal on the basis of the tracking error of the tracking pulse; and
(c) third means for causing a position of the tracking pulse to reach a predetermined point of the carrier wave of the received Loran signal by correcting the frequency of the tracking pulse of the first means on the basis of the frequency error derived by the second means.

4,804,965

FLAT WIDE-BAND ANTENNA

Antoine G. Roederer, Paris, France, assignor to Agence Spatiale Europeenne, Paris, France

Filed Jul. 1, 1986, Ser. No. 880,795
Claims priority, application France, Jul. 9, 1985, 85 10463
Int. Cl.[4] H01Q *1/38, 7/00*
U.S. Cl. 343—700 MS **20 Claims**



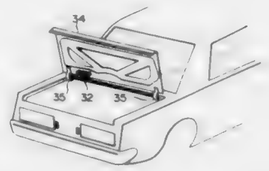
1. An antenna element comprising a conductive plate, and at least one elongate conductive member presenting first and second ends disposed adjacent each other, said elongate member being juxtaposed with said plate with a dielectric layer therebetween, a generator/receiver being connected at a first end thereof to the antenna at said conductive plate and at a second end to one of said first and second ends to form a radiating line asymmetrically fed, and said elongated member forming a loop between said ends, said loop outlining a shape comprising N branches extending outwardly from a common center, N being a number at least as great as three, each branch comprising a first and second lateral element extending outwards from said center and an end element remote from said center connecting said lateral elements, the lengths of said end elements being substantially equal to $\lambda g/N$ and the lengths of said lateral elements being substantially equal to $\lambda g/2$, where λg is the guided wave-length in said radiating line.

4,804,966

AUTOMOBILE ANTENNA SYSTEM

Junzo Ohe, and Hiroshi Kondo, both of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 28, 1985, Ser. No. 792,010
Claims priority, application Japan, Oct. 29, 1984, 59-228783; Oct. 29, 1984, 59-228784
The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.
Int. Cl.[4] H01Q *1/32*
U.S. Cl. 343—712 **5 Claims**



1. An automobile antenna system for detecting surface high-frequency currents, induced by broadcast waves on a vehicle body of an automobile having an engine and concentrated into marginal edges of the vehicle body, said antenna system comprising:
a case made of electrically conductive material and having an opening along one side thereof;
high-frequency pick-up means, having a length and a width, being disposed within said case with the length opposite the opening and being provided for detecting the surface high-frequency currents induced on any one of a marginal edge of the engine hood and a marginal edge of the trunk lid and being located at a position spaced inwardly away from said any one of the marginal edge of the engine hood and the marginal edge of the truck lid within a distance defined by :

$$12\times10^{-3}\,c/f(m)$$

where c is the velocity of light in meters per second and f is a carrier frequency of the radio waves in cycles per second; and
mounting means for mounting said case containing said high-frequency pick-up means with the length of said high-frequency pick-up means being arranged parallel and in close proximity to said any one of the marginal edge of the engine hood and the marginal edge of the trunk lid.

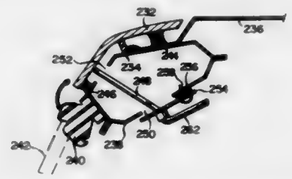
4,804,967

VEHICLE ANTENNA SYSTEM

Junzo Ohe, and Hiroshi Kondo, both of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 29, 1986, Ser. No. 924,555
Claims priority, application Japan, Oct. 29, 1985, 60-243611; Oct. 30, 1985, 60-244717; Oct. 31, 1985, 60-245367
Int. Cl.[4] H01Q *1/32*
U.S. Cl. 343—712 **4 Claims**

1. A vehicle antenna system for detecting high frequency surface currents which are induced on the marginal portion of the vehicle body by broadcast waves and flow concentratedly on the marginal vehicle portion, the marginal portion of the vehicle body including a side molding member extending along the vehicle and insulating means for electrically insulating the side molding member from the vehicle frame, said antenna system comprising:
antenna means disposed in close proximity opposite a marginal end portion of the side molding member, said antenna means comprising a loop antenna and being electrically insulated from the side molding member by application of an insulated coating on said antenna means, said antenna means being provided for detecting signals from the surface currents flowing on the side molding member and for outputting the detected signals to an onboard receiver; and
mounting means for mounting said antenna means through an opening in an inner header panel so that said loop antenna extends to a location near the inner face of the side molding member.

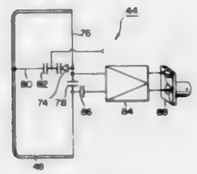


4,804,968

VEHICLE ANTENNA SYSTEM

Junzo Ohe, Toyota, and Hiroshi Kondo, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 6, 1986, Ser. No. 893,874
Claims priority, application Japan, Aug. 9, 1985, 60-175222
Int. Cl.[4] H01Q *1/32*
U.S. Cl. 343—713 **5 Claims**



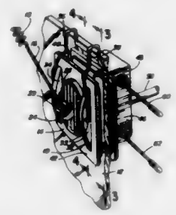
1. A vehicle antenna system for detecting surface high frequency currents, induced by broadcast waves on a vehicle body and concentrated into marginal edges of the vehicle body, said antenna system comprising:
a case made of electrically conductive material and having an opening along one side thereof;
high frequency pickup means being disposed within said case and including a loop antenna having a length and a width, the length of said loop antenna being opposite the opening in said case, said high frequency pickup means further including a varicap diode connected to said loop antenna for changing the opening area of said loop antenna, said high frequency pickup means being provided for detecting the surface high frequency currents induced on a marginal edge portion of the vehicle body; and
mounting means for mounting said case containing said high frequency pickup means with the opening of said case being arranged parallel and in close proximity to the marginal edge portion of the vehicle body.

4,804,969

PORTABLE ANTENNA

Herbert R. Blaese, 3314 Olcott Ave., Chicago, Ill. 60634

Filed Mar. 4, 1988, Ser. No. 164,246
Int. Cl.[4] H01Q *1/32*
U.S. Cl. 343—715 **13 Claims**



1. A portable antenna for mounting on a motor vehicle's side window and enabling easy and rapid mounting and removal, which comprises:
an outer RF transfer member comprising a weather-resistant carrier having a first electrically conductive member on its underside for engagement with the outside of the side window;
a current-fed radiator adapted to be located on the outside of the side window and connected to said first electrically conductive member;
an inner RF transfer member including a housing and having a second electrically conductive member on its underside for engagement with the inside of the side window;
an electrical cable having a main electrical conductor and a ground conductor, said main electrical conductor being in electrical engagement with said second electrically conductive member;
said housing carrying a field-cancelling member operative to cancel the electromagnetic field in the plane of the field-cancelling member and being in electrical engagement with said ground conductor;
means for pivotally connecting said outer RF transfer member with respect to said inner RF transfer member, said pivotally connection means bridging said inner RF transfer member and said outer transfer member so as to overlie the side window when the antenna is mounted thereon.

4,804,970

EQUIPHASE REFRACTIVE ANTENNA LENS

John R. Todd, Palm Bay, Fla., assignor to Harris Corp., Melbourne, Fla.

Filed May 6, 1985, Ser. No. 730,997
Int. Cl.[4] H01Q *15/08, 19/06*
U.S. Cl. 343—753 **10 Claims**

1. A dielectric antenna lens comprising a body of dielectric material having a first surface at least a prescribed portion of which is normal to an axis of the lens and to at least one equiphase plane in which rays of a prescribed wavelength emanating from a focal point located on said axis are of equal phase, and a second surface defined by a series of contoured-surface rings concentric with said axis, the contoured surface of each ring being defined so that any ray at said wavelength emanating from said focal point and impinging upon said first surface so as to be refracted through said body of dielectric material exits said second surface and arrives at said equiphase plane at the same phase, and wherein each of said rings is connected by an annular land region having a prescribed thickness from said first surface, and wherein each of said rings has a first non-refracting surface portion extending from an annular land portion and delimited by the extent to which rays at said wavelength and emanating from said focal point are refracted through said each ring, and a second surface portion extending

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from said first surface portion and contoured therefrom to refract rays emanating from said focal point and refracting



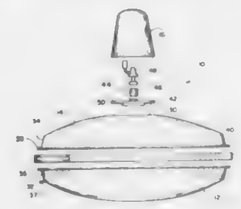
through said each of said rings to said equiphase plane, so as to be at the same phase thereat.

4,804,971
GUY SYSTEM FOR PARABOLIC REFLECTING ANTENNA
Robert W. Bruns, and Douglas Kotval, both of Sunnyvale, Calif., assignors to Chapparral Communications, San Jose, Calif.
Filed Apr. 16, 1986, Ser. No. 852,654
Int. Cl.[4] H01Q *19/12*
U.S. Cl. 343—840 16 Claims



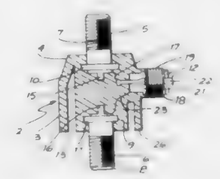
1. An antenna for receiving electromagnetic signals, comprising:
- a signal reflector defined by a predetermined portion of a paraboloid, said reflector having a vertex and being formed with a plurality of apertures spaced radially from said vertex;
- a signal receiver mounted at the focal point of signals reflected by said reflector; and
- a plurality of non-rigid support elements secured to said receiver and respectively passing freely through said apertures in said reflector to respective points of attachment on the side of said reflector opposite said receiver and near said vertex.

4,804,972
MONOCOQUE ANTENNA STRUCTURE
Conrad R. Schudel, 2014 Saliente Way, Carlsbad, Calif. 92008
Filed Feb. 24, 1987, Ser. No. 17,827
Int. Cl.[4] H01Q *19/12*
U.S. Cl. 343—840 39 Claims



1. A monocoque antenna dish and cover each having substantially the same overall configuration which is a surface of revolution;
- said dishes each having a concave center region surrounded by an outwardly extending frusto-conical rim;
- at least the curved surface of said antenna dish being capable of reflecting electromagnetic radiation;
- the curved surface of said cover dish being substantially transparent to selelcted radiation;
- means for securing said two dishes together in a concave face to face relationship to form a symmetrical antenna assembly;
- said cover dish having an opening at substantially the center thereof;
- feed mount means mounted on said cover dish over said opening;
- at least one feedhorn assembly mounted on said feed mount means; along an axis relative to the curved surface of said antenna dish at a location to receive maximum reflected radiation; and
- means for moveably supporting the antenna assembly with said axis at an angle to the surface of the earth.

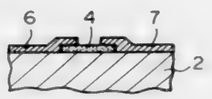
4,804,973
HEAVY DUTY MOUNTING BASE
Gregory Ackman, 17 Sloane St., Marrickville 2204, Australia
Filed Sep. 2, 1986, Ser. No. 902,560
Claims priority, application Australia, Sep. 3, 1985, PH2268
Int. Cl.[4] H01Q *1/12*
U.S. Cl. 343—888 7 Claims



1. An improved heavy duty aerial mounting base comprising:
- a structurally resilient molded electrically insulating housing having at least a portion of a first member, a second member and a third member partially embedded rigidly therein in spaced apart relationship;
- said first member being connected to said third member by means of a first wire embedded in said housing;
- said second member being connected to said third member by means of a second wire embedded in said housing;

- said first member being spatially and electrically separated from said second member;
- each of said first, second and third members having a portion external to said housing which can be adapted to receive a mating member;
- said housing electrically isolating said partially embedded portions and said first and second wires from outside interference;
- said third member being adapted with means to receive a coaxial cable;
- said moulded insulating housing comprising a solid inner core and a weathershielding outer core formed integrally with the inner core;
- the inner and outer cores being concentric with a space formed between said inner and outer cores, the outer-core tapering inwardly and upwardly at one end of the said housing until it meets the inner core.

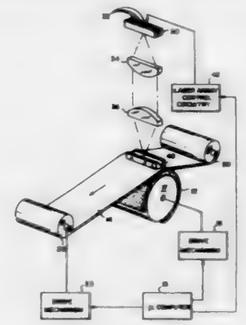
4,804,974
THERMAL RECORDING HEAD
Masao Sagata, Yokohama; Tatsuo Masuki, deceased, late of Yokohama (by Yoshiko Masuki, legal successor); Hirokazu Kosuru; Shoichi Hirazawa, both of Hiratsuka, and Yasuhiro Yano, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 841,267, Mar. 19, 1986, abandoned.
This application Feb. 17, 1987, Ser. No. 16,589
Claims priority, application Japan, Mar. 23, 1985, 60-58847; Mar. 25, 1985, 60-58530; Mar. 25, 1985, 60-58532; Mar. 26, 1985, 60-59392
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 PH 30 Claims



1. A thermal recording head comprising a heating resistor layer and at least a pair of electrodes electrically connected to said heating resistor layer, at least one combination of said heating resistor layer and said at least a pair of electrodes being formed on a substrate, wherein said heating resistor layer essentially consists of an amorphous material containing carbon atoms as a major constituent and halogen atoms, said halogen atoms nonuniformly distributed in the amorphous material.

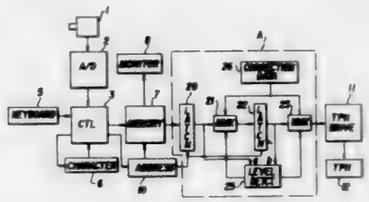
4,804,975
THERMAL DYE TRANSFER APPARATUS USING SEMICONDUCTOR DIODE LASER ARRAYS
Kwok-leung Yip, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 17, 1988, Ser. No. 156,685
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 L 4 Claims

1. In thermal dye transfer apparatus in which dye is transferred by sublimation from a donor to a receiver by heating dye in the donor, the improvement comprising:
- (a) an array of laser diodes in which each laser diode is individually energizable to produce light;
- (b) means for focusing light from each energized laser diode as a spot on a predetermined position on the donor;
- (c) said donor including a heat absorbing layer which absorbs heat from each focused light spot in a sufficient amount to cause dye to sublime and transfer from the donor to the receiver; and
- (d) means for controlling the laser diodes to simultaneously energize diode lasers to produce light and modulate the light from individual diode lasers to provide sufficient energy to such donor to cause different amounts of dye to



transfer to the receiver to form pixels in the receiver with different levels of density.

4,804,976
SYSTEM FOR ENERGIZING THERMAL PRINTER HEATING ELEMENTS
Soichi Ohmori; Wayne F. Nichols, both of Tokyo, and Yoshitaka Ishida, Kanagawa, all of Japan, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 22, 1988, Ser. No. 158,889
Int. Cl.[4] G01D *15/10*; B41J *3/20*
U.S. Cl. 346—76 PH 7 Claims



1. In a thermal printer for printing an output dye image in a receiver including a memory circuit for storing a digital image in the form of a matrix having pixels corresponding to image pixels, a thermal head having a plurality of heating elements which can be selectively energized to produce different amounts of heat above or below a predetermined dye transfer threshold level, and a driving circuit coupled to said memory circuit for driving said thermal head to sequentially print lines of image pixels at a time, the improvement comprising:
- detector means coupled to said memory circuit for detecting the level of pixel data of a line read out sequentially from said memory circuit to determine if there are pixels that are not to be printed in a line in the output image adjacent to one or more consecutive pixels to be printed; and
- correction means coupled to said memory circuit and responsive to said detector means for causing said driving circuit to cause the heating element corresponding to an image pixel to be printed to be energized above the threshold level and to cause heating elements corresponding to such adjacent image pixels not to be printed to be energized below the threshold level.

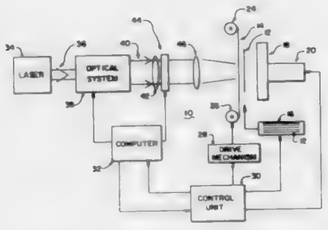
VOL 1099 ISS 2 FE 14 1989 UMI

4,804,977

IMAGE OR PATTERN TRANSFER OPTICAL SYSTEM FOR THERMAL DYE TRANSFER APPARATUS

Michael E. Long, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 14, 1988, Ser. No. 182,278
Int. Cl.[4] G01D *15/10*; **G02F** *1/13*
U.S. Cl. 346—76 L **1 Claim**



1. In a continuous tone thermal dye transfer apparatus in which a web of dye carrying donor is moved along a predetermined path in relation to a receiver sheet and wherein dye from the donor is transferred by sublimation from the donor to the receiver to form dye image in the receiver, an image or pattern transfer system comprising:

(a) a laser which is energizable to produce a beam of light;

(b) means including a collimating lens and a focusing lens for focusing light from the energized laser diode onto a predetermined area on the donor;

(c) a liquid crystal display disposed between the collimating lens and the focusing lens and adapted to produce an image or pattern and arranged so that such beam illuminates the image or pattern as it passes through the display;

(d) said donor including (i) a heat absorbing layer which absorbs heat from each focused light spot, and (ii) a layer having dye embedded in a binder, arranged so that heat absorbed by the heating absorbing layer is transferred to the dye layer in a sufficient amount to cause dye to sublime and transfer from the donor to the receiver to form the image or pattern; and

(e) control means responsive to image signals representing the image or pattern for causing the liquid crystal display to display a desired image or pattern.

4,804,978

EXPOSURE CONTROL SYSTEM FOR FULL FIELD PHOTOLITHOGRAPHY USING PULSED SOURCES

David H. Tracy, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 19, 1988, Ser. No. 157,755
Int. Cl.[4] G01D *9/42, 15/10*
U.S. Cl. 346—108 **19 Claims**

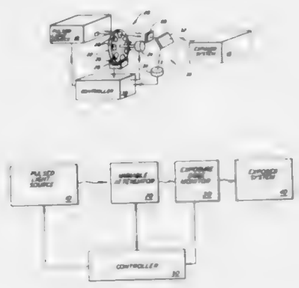
1. An exposure control system comprising:

a pulsed light source;

variable attenuation means, placed between said pulsed light source and the system to be exposed, for variably attenuating the light emitted by said pulsed light source;

exposure dose monitor means, placed between said variable attenuation means and the system to be exposed, for monitoring the exposure dose of the attenuated light pulses; and

control means, associated with said exposure dose monitor means, said variable attenuation means, and said pulsed light source, for controlling the attenuation of the light emitted by said pulsed light source by said variable attenuation means whereby exposure can be accurately controlled with a minimum of light pulses from said pulsed light source.

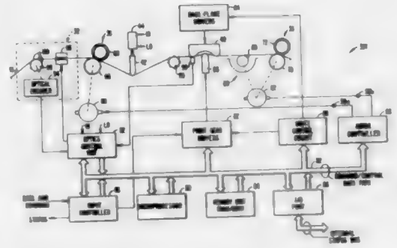


4,804,979

SINGLE-PASS COLOR PLOTTER

Peter Kamas, Sunnyvale; Douglas A. Hardy, Santa Clara, and David M. Emmett, Palo Alto, all of Calif., assignors to Benson, Inc., Palo Alto, Calif.

Continuation of Ser. No. 722,497, Apr. 12, 1985, abandoned.
This application Oct. 6, 1987, Ser. No. 107,844
Int. Cl.[4] G01D *15/00*
U.S. Cl. 346—157 **19 Claims**



1. Transport apparatus for a printer/plotter having plural print heads arranged successively along a transport path for single-pass printing of an image on a print media, said transport apparatus comprising:

a plurality of separately controllable drive means for moving the print media along the transport path while maintaining media tension, a first one of said drive means being positioned at an input location of a first one of said print heads, the remaining ones of said drive means being positioned at an output location of each print head, said first drive means being operable as an entry drive for the first print head, a last one of said drive means being operable as an exit drive for a last one of said print heads, the remaining ones of said drive means simultaneously being operable as an exit drive of an immediately preceding print head and as an entry drive of an immediately succeeding print head;

a plurality of tension monitoring means, each engageable with the print media, for providing a tension signal indicative of the print media tension as the print media moves between said drive means; and

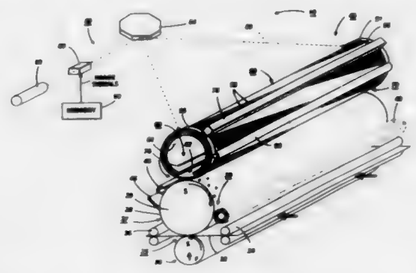
control means, coupled to each said drive means, for providing drive signals in response to receipt of the tension signals to maintain print media tension within a predetermined range between each said drive means.

4,804,980

LASER ADDRESSED IONOGRAPHY

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 9, 1988, Ser. No. 191,510
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—159 **6 Claims**



1. In a digital ionographic printing apparatus having an imaging member with a conductive substrate and electrostatically chargeable outer layer on which latent electrostatic images of copies to be printed are created by ion deposition; a screen with a plurality of openings in preset spaced operating relation with said imaging member, said screen including a base of conductive material having a photoconductive exterior layer thereon; means for charging said screen photoconductive layer to a uniform charge level; drive means for moving said imaging member and said screen in synchronism with one another; and a stationary ion source on the opposite side of said screen from said imaging member, said ion source having an elongated ion discharge slot through which ions pass from said ion source to said imaging member to create latent electrostatic images on said imaging member; the combination of:

(a) a high intensity image writing beam;

(b) means for modulating said writing beam in response to image signals representative of the images to be printed; and

(c) means for scanning said writing beam across said screen to expose said screen and provide a latent electrostatic image of the image represented by said image signals on said screen, subsequent movement of said screen past said slot modulating the flow of ions through said slot in accordance with the latent electrostatic image on said screen to create a like latent electrostatic image on said imaging member.

4,804,981

ASPHERIC LENS FOR POLYGON MIRROR TILT ERROR CORRECTION AND SCAN BOW CORRECTION IN AN ELECTROPHOTOGRAPHIC PRINTER

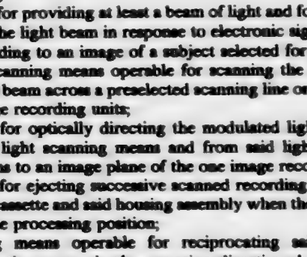
Ravinder Prakash, Concord, N.C., and Larry L. Wolfe, Broomfield, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 18, 1988, Ser. No. 159,019
Int. Cl.[4] G01D *15/00*
U.S. Cl. 346—160 **32 Claims**

1. A tilt and scan bow error correction system for an electrophotographic printer of the type using a mirror to provide beam scanning across a photoconductor surface comprising:

an aspheric lens disposed in the path between said mirror and said photoconductor surface so that said surface is at the conjugate plane to said mirror, said lens having a focal length as a function of scan angle, θ, substantially according to the equation

$$f_\theta=(S/\cos\theta)-S^2/(D\cos\theta)$$



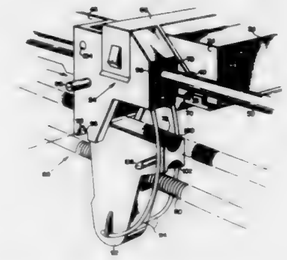
where S is the object distance from said lens the scan origin at said mirror and D is the distance from said photoconductor surface to the scan origin at said mirror.

4,804,982

PRINTER HAVING REVERSIBLE DRIVING MECHANISM

Philip R. Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 29, 1988, Ser. No. 188,265
Int. Cl.[4] G01D *15/00*
U.S. Cl. 346—160 **19 Claims**



1. An electronic image printing apparatus for printing images on respective ones of a plurality of image recording units which are releasably retained in a cassette therefor, said apparatus comprising:

a housing assembly;

means disposed in said housing assembly for mounting the cassette for bidirectional movement in opposing printing and return directions between start and processing positions;

means for providing at least a beam of light and for modulating the light beam in response to electronic signals corresponding to an image of a subject selected for printing;

light scanning means operable for scanning the modulated light beam across a preselected scanning line on one of the image recording units;

means for optically directing the modulated light beam to said light scanning means and from said light scanning means to an image plane of the one image recording unit;

means for ejecting successive scanned recording units from the cassette and said housing assembly when the cassette is in the processing position;

driving means operable for reciprocating said cassette mounting means in the opposing directions between the start and processing positions wherein as said light scan-

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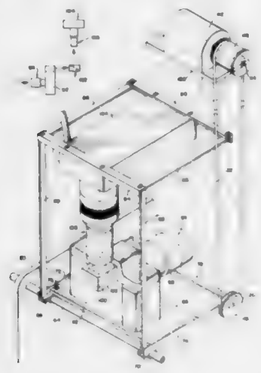
ning means scans the modulated light beam across the scanning line, said driving means advances said cassette mounting means in the printing direction from the start position to the processing position so that a raster scan image of the subject selected for printing is scanned on the one image recording unit by the modulated light beam; said driving means returns said cassette mounting means in the return direction at a different speed than when travelling in the printing direction.

4,804,983

PHOTOGRAPHY BOOTH AND METHOD

Donald O. Thayer, Jr., 153 Lincoln St., Garden City, N.Y. 11530

Filed Nov. 19, 1986, Ser. No. 932,365
Int. Cl.[4] G03B *13/02, 29/00*
U.S. Cl. 354—76 **17 Claims**



1. A self photography system, comprising:
(a) a film camera including an image inlet disposed on a first axis and an image outlet disposed on a second axis parallel to said first axis and further including shutter means for selectively exposing a length of film to a perceived image;
(b) a video camera including a perceived image receiving opening diaposed on a third axis generally transverse to said first and second axes;
(c) means coupling said outlet with said video camera perceived image receiving opening for assuring transmission of the perceived image from said film camera to said video camera;
(d) video display means operably associated with said video camera for displaying the perceived image; and,
(e) film camera operating means operably associated with said shutter means for causing a length of film to be exposed by the perceived image displayed by said video display means.

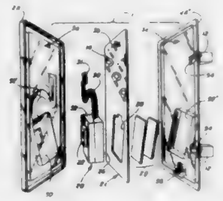
4,804,984

PACKAGED CAMERA ASSEMBLY

William H. Heser, Arlington Heights, and Hari Matsuda, Evanston, both of Ill., assignors to W. Haking Enterprises Limited, Hong Kong

Filed Aug. 20, 1987, Ser. No. 87,340
Int. Cl.[4] G03B *29/00;* **B65D** *73/00*
U.S. Cl. 354—76 **9 Claims**

1. In a packaged camera assembly comprising a camera having a front lens-containing wall and a rear wall, the camera front wall having a length in one direction which is much longer than that in a direction transverse thereto, a rectangular-shaped clam shell container enclosing said camera, said container having a first pair of parallel margins and a second pair of parallel margins at right angles to said first pair of margins, the clam shell container comprising front and rear container sections having main walls in close confronting relation, at least a main wall of said front container section being transparent and having a forwardly projecting pocket of about the same size and shape as the side of said camera containing the front lens-containing wall and into which at least this side of the camera extends, camera information indicia on the front of said main wall of said rear container section at points to one side of said camera and being visible through the transparent main wall of said front container section, and the clam shell container having first support means for supporting the packaged camera assembly upright, the improvement



wherein said clam shell container has an elongated, rectangular shape, wherein said first pair of parallel margins are substantially longer than said second pair of parallel margins, the camera being mounted in said container so that the front wall of the camera is visible from the front of the container and the long dimension of said front camera wall is at an angle of at least about 45 degrees to the shorter second pair of parallel container margins, and support means on said clam shell container for supporting said packaged camera assembly in an upright position so that the longer first pair of margins of said container extend upwardly to present a display occupying a minimum space in a horizontal direction.

4,804,985

POLARITY INSENSITIVE ELECTRONIC FLASH DRIVER CIRCUIT

James A. Reilich, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 25, 1988, Ser. No. 148,246
Int. Cl.[4] G03B *15/03*
U.S. Cl. 354—145.1 **4 Claims**



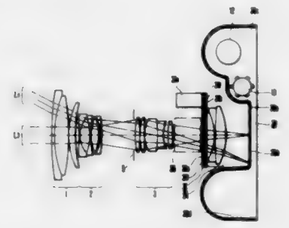
1. In a photographic system including a camera for generating a flash trigger signal, and an electronic flash unit having a trigger circuit actuatable responsive to said flash trigger signal to initiate a flash illumination, a flash driver circuit comprising:
a two conductor, polarity insensitive connector for connection to said flash trigger circuit;
actuatable first conducting means connected between said two conductors for controllably conducting a current in a first polarity;
actuatable second conducting means connected between said two conductors for controllably conducting a current in a second polarity; and
actuating means responsive to said flash trigger signal for simultaneously actuating said first and second conducting means to conduct a current.

4,804,986

CAMERA

Ichiro Ohnuki, Tokyo; Keiji Ikemori, Kanagawa, and Masaharu Eguchi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Dec. 26, 1985, Ser. No. 813,670
Claims priority, application Japan, Dec. 26, 1984, 59-276922; Dec. 26, 1984, 59-276923; May 13, 1985, 60-102397
Int. Cl.[4] G03B *1/24, 9/08, 9/40*
U.S. Cl. 354—212 **2 Claims**



1. A single lens reflex camera comprising:
(a) a camera body having an aperture positioned at an image forming plane;
(b) a photo-taking lens positioned opposite to said camera body aperture and having an optical axis centered on said camera body aperture and normal to said image forming plane;
(c) a sprocket for selectively advancing a photo-taking film along said image forming plane behind said camera body aperture;
(d) a shutter device, built in said camera body, which is arranged to open and close a shutter by allowing leading and trailing shutter curtains to travel, wherein an aperture of said shutter device is spaced away from the position of said camera body aperture in the direction of said photo-taking lens along said optical axis, and said sprocket is positioned next to said camera body aperture within a projected image of said shutter device;
(e) an approximately 45 degree tilted mirror interposed in between said shutter device and said photo-taking lens, said mirror being a half reflection mirror permitting an image of the object to be transmitted therethrough to said camera body aperture;
(f) a view finder optical system to which an image of said object is reflected and guided by said mirror; and
(g) an aperture member formed at said photo-taking lens.

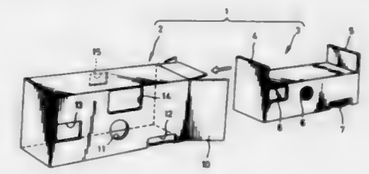
4,804,987

LENS-FITTED PHOTOGRAPHIC FILM PACKAGE

Takaya Arai, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 30, 1987, Ser. No. 103,369
Claims priority, application Japan, Oct. 3, 1986, 61-151547[U]
Int. Cl.[4] G03B *3/02, 17/02*
U.S. Cl. 354—219 **13 Claims**

1. A photographic film package provided with a taking lens incorporating a film contained in a film container light-tightly therein comprising:
an internal film casing formed with a space on the top thereof that is upwardly and forwardly and rearwardly open and is closed by portions of the internal casing on two opposite lateral sides thereof; and
an external film casing formed with an opening in each of front and rear walls thereof, said openings forming a tunnel-like viewfinder whose optical path extends through



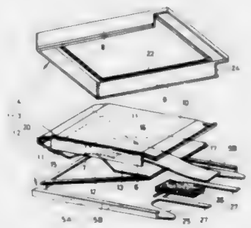
said space when said internal film casing is inserted in said external film casing.

4,804,988

INSTANT FILM PACK

Masafumi Hashimoto, and Minoru Ono, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 13, 1987, Ser. No. 107,584
Claims priority, application Japan, Oct. 13, 1986, 61-155628[U]
Int. Cl.[4] B65D *85/67*
U.S. Cl. 354—276 **8 Claims**



1. An instant film pack for containing and removably holding a plurality of peel-apart type instant film units having a carrier sheet for withdrawing said instant film unit, said instant film pack being adapted to be used with a pack holder having a pair of pressure-applying members and a guide member for directing said film unit toward said pressure-applying members and an edge controlling member for pressing longitudinal edges of said film unit, said film pack comprising:
a parallelepipedal housing having a flat top wall with an exposure aperture formed therein and a front end wall with an exit slot formed therein through which said instant film unit is withdrawn; and
resilient supporting means fixedly attached to a bottom wall of said film pack at said front end and extending in the direction of withdrawal of said instant film unit for supporting said instant film units, said resilient supporting means being so formed as to extend and terminate no farther than a border between said edge controlling member and a front edge of said guide member.

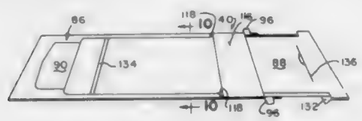
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4,804,989

THIN, LARGE FORMAT FILM HOLDER AND ADAPTER THEREFOR

Shin-ichi Kumanomido, 7360 Pershing Ave., University City (St. Louis), Mo. 63130

Filed Nov. 12, 1987, Ser. No. 119,802
Int. Cl.[4] G03B *17/26*
U.S. Cl. 354—283 23 Claims



1. A pliable film holder for large format photographic film comprising:
- a relatively pliable, flat film retainer for removably holding a sheet of format film, said retainer having a back and a front, said front having an opening therein dimensioned to accept the sheet of large format film and to allow light to pass through the opening to expose the sheet of film when the film holder is used in a camera, said sheet of film being held fixed in place by the film retainer, said back of the film retainer being substantially opaque to prevent light coming from the direction of the back of the film retainer from exposing the film;
- a relatively pliable, sheet-like slide member suitably dimensioned to completely cover the opening in the film retainer when disposed in a first position with respect to the film retainer and for uncovering at least a part of the opening to expose the sheet of film to incident light when disposed in a second position with respect to the film retainer;
- said film retainer and the slide member having cooperating guide means for guiding the slide member as it is moved longitudinally with respect to the film retainer;
- said film retainer including a sheet of relatively pliable material disposed between the back and front of the film retainer and fixed into position with respect thereto, said sheet of pliable material having an opening therein corresponding in position to the opening through the front of the film retainer to permit incident light through the front of the film retainer to pass through the opening in the sheet of pliable material;
- said sheet of pliable material also having a slot therein spaced from the opening in the sheet of pliable material, said slot being dimensioned to allow the sheet of film to be inserted through the slot to a position behind the opening of the sheet of pliable material.

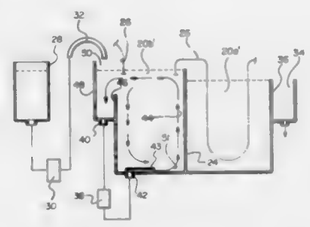
4,804,990

AUTOMATIC LIQUID FEED AND CIRCULATION SYSTEM FOR A PHOTOGRAPHIC FILM PROCESSOR

Thomas C. Jessop, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 8, 1988, Ser. No. 154,118
Int. Cl.[4] G03D *3/02*
U.S. Cl. 354—324 10 Claims

1. A fluid replenishment and recirculation system comprising:
- a. means for containing the fluid, the containing means including a first container section and a second container section which are separated by a submerged wall which has a top edge which is located below a top surface of the fluid;
- b. means for transferring the fluid from the first container section to the second container section;
- c. means for inputting the transferred fluid into the second container section in a manner that the fluid in the second container section is moved in a circulating flow pattern so that an upper portion of the circulating fluid is distributed across the top edge of the submerged wall and into the first container; and



- d. means for adding fluid into the containing means by introducing the fluid into the first container section in a manner that the added fluid is mixed with the fluid present in the first container section before being transferred into the second container section by the transferring means.

4,804,991

AUTO FOCUSING LIGHT DEVICE

Kenji Ishizuki, Tokyo; Nobuyoshi Hagiuda, Kawasaki; Norikazu Yokonuma, and Yoshinari Hamanishi, both of Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 4,482, Jan. 20, 1987, abandoned. This application May 4, 1988, Ser. No. 188,703
Claims priority, application Japan, Jan. 24, 1986, 61-13478; Jan. 29, 1986, 61-17251; Mar. 6, 1986, 61-49296; Mar. 20, 1986, 61-63137; Mar. 25, 1986, 61-66720
Int. Cl.[4] G03B *3/00, 15/05*
U.S. Cl. 354—403 28 Claims



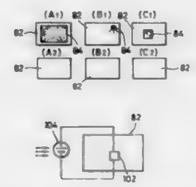
1. An auto focusing light device detachably mounted on a camera which has a plurality of photoelectric conversion elements arranged in a unidimensional direction and detects the focusing condition of a photographic lens in accordance with the output of said plurality of photoelectric conversion elements, said device comprising:
- (a) a plurality of light-emitting elements arranged in a unidimensional direction; and
- (b) an optical projection system for projecting images of said plurality of light-emitting elements on an object in such a manner that the direction of arrangement of said images of said plurality of light-emitting elements is substantially perpendicular to the direction of arrangement of said plurality of photoelectric conversion elements.

4,804,992

PHOTOGRAPHIC FILM PACKAGE

Motonori Moriyama; Ikuo Fujimura; Tsutomu Tanaka, and Takeshi Watanabe, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 29, 1987, Ser. No. 67,282
Claims priority, application Japan, Jun. 30, 1986, 61-100485[U]; Jun. 30, 1986, 61-100486[U]; Oct. 20, 1986, 61-160591[U]
Int. Cl.[4] G03B *17/18*
U.S. Cl. 354—471 8 Claims



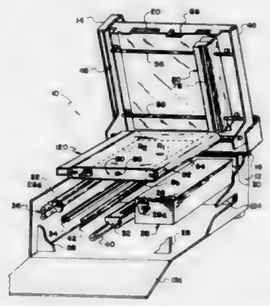
8. A photographic film package of the type having a taking lens, comprising:
- a film casing;
- a film cartridge containing a high speed film therein in said film casing;
- a viewfinder formed in said film casing;
- a liquid crystal plate disposed in said viewfinder which is of reduced light transmittance when said scene brightness is above a predetermined value and is transparent when said scene brightness is below said predetermined value, thereby visibly to indicate scene brightness; and
- a solar cell that drives said liquid crystal plate to reduce its light transmittance.

4,804,993

PHOTOCONDUCTIVE MEMBER MOUNTING MECHANISM FOR AN ELECTROPHOTOGRAPHIC REPRODUCTION APPARATUS

Michael Kenin, Rochester; Kenneth R. Reid, Brockport, and Peter G. Izzo, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 5, 1987, Ser. No. 81,764
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 BE 4 Claims



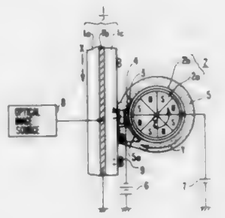
1. An electrostatographic apparatus utilizing a dielectric support member cooperating with electrostatographic process stations for reproducing information, said apparatus comprising:
- a housing having a lower portion containing at least one of the electrostatographic process stations, and an upper portion connected to the lower portion for movement between a closed position and an opened position relative to the lower housing portion, said upper portion including at least a portion of means for producing an electrostatic image on said dielectric support member;
- a dielectric support member supporting assembly mounted on said upper housing portion for movement relative to the upper housing portion;
- means for releasably retaining said dielectric support member supporting assembly to said upper housing portion so that the dielectric support member assumes a first position when the upper housing portion is in said closed position wherein the dielectric support member is in operative relation to said electrostatographic process stations in the lower housing portion, and a second position when the upper housing portion is in said opened position wherein the dielectric member is remote from the electrostatographic process stations in the lower housing portion to enable ready access to such process stations, said assembly being movable relative to the upper housing portion when said retaining means is released so that said assembly assumes a third position intermediate said upper and lower housing portions wherein removal and replacement of said dielectric support member is facilitated;
- first locating means for accurately locating said dielectric support member supporting assembly relative to said upper housing portion when said assembly is retained by said retaining means; and
- second locating means for accurately locating said upper housing portion relative to said lower housing portion when the upper housing portion is in its closed position.

4,804,994

COMPACT ELECTROPHOTOGRAPHIC PRINTING APPARATUS HAVING AN IMPROVED DEVELOPMENT MEANS AND A METHOD FOR OPERATING THE SAME

Sachio Sasaki; Masahiro Wanou, both of Kawasaki; Masatoshi Kimura, and Junzo Nakajima, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 6, 1987, Ser. No. 11,599
Claims priority, application Japan, Feb. 8, 1986, 61-026229
Int. Cl.[4] G03G *15/09*
U.S. Cl. 355—3 DD 19 Claims



1. An electrophotographic image forming device, comprising:
- a photosensitive film moving in a first direction including a charge trapping layer having trapped charges producing a latent image; and
- a developer, adjacent to said photosensitive film and applying a toner to said photosensitive film, said developer including extending means for rotationally extending a contact region between said toner and said photosensitive film, said extending means comprising a toner carrier rotating in a second direction opposite said first direction.

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4,804,995

CHARGED LATENT IMAGE DEVELOPING APPARATUS

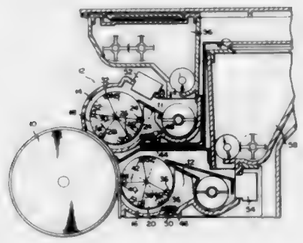
Shigenobu Osawa, Kawasaki; Taiichi Kawaguchi, Yokohama; Makoto Tamura, and Hideyuki Shinohara, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 30, 1986, Ser. No. 890,919

Claims priority, application Japan, Jul. 31, 1985, 60-169245; Jul. 31, 1985, 60-169246; Jul. 31, 1985, 60-169247; Mar. 6, 1986, 61-48928

Int. Cl.⁴ G03G *15/08*

U.S. Cl. 355—3 DD **9 Claims**



1. A developing apparatus for developing a charged latent image formed on an image carrying body with a developer including toners and carriers, comprising:

a casing for holding the developer;

a developer carrying body for carrying the developer supplied from said casing, and conveying the developer from said casing to the image carrying body so as to develop the charged latent image formed on the image carrying body with the developer;

means for controlling the thickness of the developer carried on said developer carrying body to a predetermined value;

means for removing the developer which is carried on said developer carrying body after the end of developing operation, and returning the removed developer into said casing; and

means for removing toner particles attached on said developer carrying body from said developer carrying body, said toner removing means being provided independent of said developer removing means and including an electrode member slightly spaced apart from said developer carrying body, and voltage applying means for alternately applying voltages of opposite polarities to said electrode member so as to attract the toner, directly attached to said developer carrying body, from said developer carrying body to said electrode member, and then to separate the toner, once attracted to said electrode member, from said electrode member, the separated toner returning to said casing.

4,804,996

CHARGED PARTICLE SENSOR HAVING MAGNETIC FIELD CONTROL

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 21, 1984, Ser. No. 622,810

Int. Cl.⁴ G03G *15/09, 21/00*

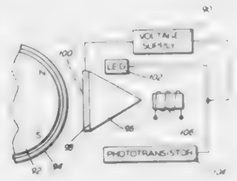
U.S. Cl. 355—3 DD **20 Claims**

1. An apparatus for sensing electrostatically charged particles, including:

a member adapted to attract at least a portion of the charged particles to at least one surface thereof;

means for forming a brush of particles adjacent said member in one mode of operation and forming a cloud of particles adjacent said member in another mode of operation, said forming means including an electromagnet, said electromagnet being energized and de-energized as a function of the mode of operation thereof;

means for transmitting a beam of energy through said member onto the charged particles attracted to the surface thereof with the internal angle of incidence of the beam of



energy being greater than the critical angle of incidence of said member; and

means for detecting the intensity of the beam of energy internally reflected through said member and generating a signal indicative of the quantity of charged particles attracted to the surface of said member.

4,804,997

SPECIFIC CASSETTE SELECTION APPARATUS

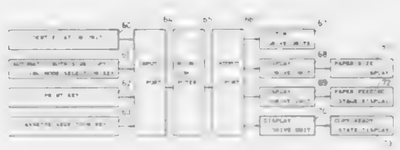
Kazuhiro Mizade, Toyonaka, and Hideyuki Ujihira, Sakai, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

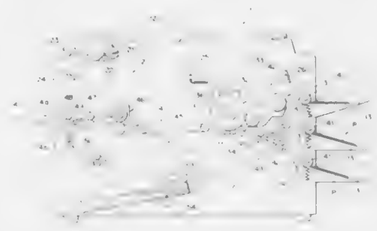
Filed Mar. 20, 1987, Ser. No. 28,649

Claims priority, application Japan, Mar. 27, 1986, 61-69599

Int. Cl.⁴ G03G *15/00, 21/00*

U.S. Cl. 355—14 SH **6 Claims**





1. A specific cassette selection apparatus for a copying machine capable of forming a copied image of an original document on copying paper fed from a paper feeding cassette selected from a plurality of paper feeding cassettes removably mounted on the body of the copying machine, said specific cassette selection apparatus comprising:

identification means for identifying the size of paper contained in each of said paper feeding cassettes and providing paper-size identification signals indicative thereof;

specific copying mode selection means for enabling selection of a copying mode selected from a plurality of copying modes, including an automatic two-sided copying mode, and for providing a copying mode selection signal indicative of the selected copying mode; and

paper feeding cassette selection means, responsive to the paper-size identification signals and the copying mode selection signal, for selecting from among the plurality of paper feeding cassettes on the copying machine a cassette containing copying paper for use in copying in the selected copying mode, said paper feeding cassette selection means selecting only a specific paper feeding cassette containing copying paper of only a specific paper size for use in copying in said automatic two-sided copying mode.

4,804,998

SHEET TRANSPORT CONTROL METHOD FOR COPIER AND OTHERS

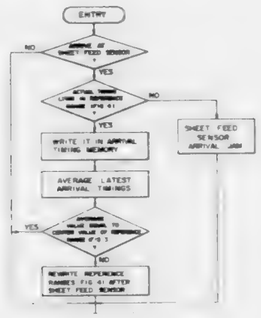
Shozo Miyawaki, Urawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 30, 1987, Ser. No. 102,854

Claims priority, application Japan, Oct. 3, 1986, 61-234545

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—14 SH **4 Claims**



1. A sheet transport control method of an image-forming device which decides whether or not transport of a sheet is normal by comparing with a predetermined reference timing an actual timing of movement of a sheet end past each of a plurality of sensors, said method comprising the steps of:

(a) constantly storing in a memory a plurality of latest timings sensed by one of said sensors;

(b) averaging the lastest timings sensed;

(c) comparing an average timing produced by the step (b) with a reference timing; and

(d) if the average timing has an increment or a decrement relative to the reference timing, feeding back the increment or the decrement to reference timings which are assigned, respectively, to each of the remaining sensors located downstream of said one of said sensors.

4,804,999

MAG BRUSH CLEANER ERASE LIGHT

Karl J. Mueller, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 16, 1987, Ser. No. 109,127

Int. Cl.⁴ G03G *15/08*

U.S. Cl. 355—15 **5 Claims**

1. In a single cycle copying machine comprising:

a source of copy material,

a recording member having a photoconductive surface,

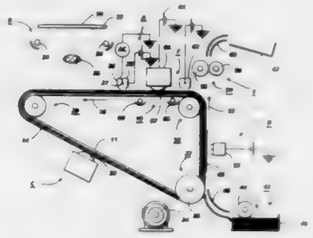
charging means for electrically charging the photoconductive surface of said recording member,

exposure means for selectively discharging said photoconductive surface to provide a charged image of an original thereon,

developing means for applying toner to said member whereby said toner is electrostatically attracted to said charged image,

transfer means for transferring said developed image to said copy material,

means for freeing toner from said recording member to prevent copies made subsequently from other originals from receiving toner remaining on said recording member after said developed image has been transferred to said copy material, said means for freeing making contact with the photoconductive surface,



a first illuminating source positioned adjacent the recording member and operable to illuminate a portion of the photoconductive surface of said recording member prior to said surface making contact with the means for freeing to destroy said charged image and the electrostatic attractive force thereof securing the toner thereto and

a second illuminating source for radiating light onto the photoconductive surface after removal of toner by said means for freeing toner.

4,805,000

EXPOSURE APPARATUS

Kazufumi Ogawa; Masaru Sasago, both of Hirakata; Masayuki Endo, Izumi, and Takeshi Ishihara, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 4,133, Jan. 16, 1987, Pat. No. 4,724,466. This application Oct. 2, 1987, Ser. No. 104,041

Claims priority, application Japan, Jan. 17, 1986, 61-8226; Jan. 17, 1986, 61-8227; Jan. 17, 1986, 61-8228; Mar. 27, 1987, 62-74616

Int. Cl.⁴ G03B *27/42, 27/52, 27/70*

U.S. Cl. 355—43 **5 Claims**



1. An exposure apparatus comprising:

an Excimer laser;

an exposure optical system for applying emitted laser beam from said laser on a semiconductor substrate through a mask;

an alignment optical system for making alignment of said mask and semiconductor substrate including an alignment light source, wavelength of alignment light emitted from said alignment light source being different from that of said laser beam; and

a beam splitter disposed in said exposure optical system through which splitter both said laser beam and said align-

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ment light pass, said beam splitter including two elements which are fixed with each other by use of polyvinyl butylarl which has such a characteristic that both said laser beam and said aligment light pass therethrough.

4,805,001

MAGNIFICATION CONVERTING MECHANISM FOR A VARIABLE MAGNIFICATION COPYING APPARATUS

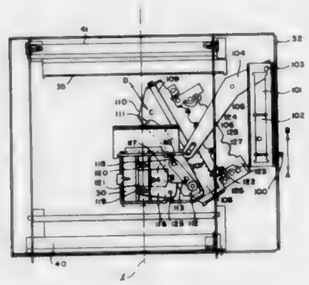
Tatsuaki Hayashi, Nara; Shoichiro Yoshihara, Yamatokoriyama, and Kou-ichi Iwamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 2, 1987, Ser. No. 104,049

Claims priority, application Japan, Oct. 2, 1986, 61-235346; Oct. 3, 1986, 61-236711; Oct. 3, 1986, 61-236712

Int. Cl.[4] G03B 27/36, 27/38

U.S. Cl. 355—58 7 Claims



1. A magnification converting mechanism for a variable magnification copying apparatus which comprises a magnification converting operating mechanism provided on a control panel, an operating force transmission mechanism associated with functioning of said magnification converting operating mechanism, a lens holding member engaged with said operating force transmission mechanism so as to be displaced along a guide member, and a lens assembly held on said lens holding member.

4,805,002

EXPOSURE APPARATUS

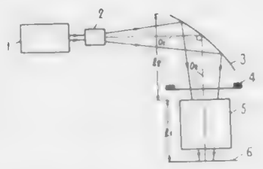
Masaru Sasago, Hirakata; Masayuki Endo, Izumi; Kazufumi Ogawa, Hirakata, and Takeshi Ishihara, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jun. 12, 1987, Ser. No. 61,263

Claims priority, application Japan, Jun. 13, 1986, 61-138556; Jun. 20, 1986, 61-145153

Int. Cl.[4] G03B 27/54, 27/42

U.S. Cl. 355—67 6 Claims



1. An exposure apparatus for exposing a wafer to a pattern of light, said apparatus comprising:

an exposure light source for emitting light, the emitted light traveling along an optical path to the wafer;

a wafer stage for supporting the wafer;

a reticle stage for supporting a reticle in said optical path between said exposure light source and said wafer stage;

a reduction projection lens disposed in said optical path between said exposure light source said wafer stage and through which the light passes before passing to the wafer; and

a concave spherical reflection mirror disposed in said optical path between said reticle stage and said exposure lighrt source for reflecting the light emitted by said light source through both the reticle supported by said reticle stage and said reduction projection lens along said optical path to the wafer supported by said wafer stage,

said reflection mirror having a concave spherical reflection surface at which the light is reflected, said reflection surface comprising a multilayer film including aluminum film and dielective film exhibiting a high degree of reflectivity.

4,805,003

GAAS MESFET

Paige M. Holm, Tempe, and Curtis D. Moyer, Phoenix, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Nov. 10, 1987, Ser. No. 120,569

Int. Cl.[4] H01L 29/205, 29/80

U.S. Cl. 357—22 10 Claims



1. A vertical III–V compound device having IIIV compound semiconductor substrate of a first conductivity; a first layer on the substrate of the first conductivity; a buried layer of a second conductivity having an opening therein and the opening being of the first conductivity; a second layer of the first conductivity covering the buried layer and the opening; and a metal Schottky gate electrode positioned on the second layer over the opening in the buried layer.

4,805,004

SEMICONDUCTOR DEVICE WITH A PLANAR JUNCTION AND SELF-PASSIVATING TERMINATION

Luciano Gandolfi, Corsico, and Salvatore Musumeci, Riposto, both of Italy, assignors to SGS Microelettronica SpA, Agrate Brianza, Italy

Filed Dec. 11, 1986, Ser. No. 941,622

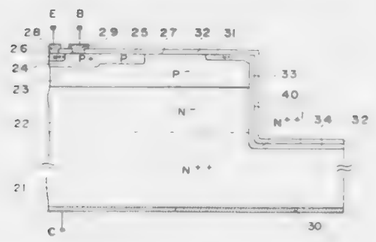
Claims priority, application Italy, Dec. 11, 1985, 6628 A/85

Int. Cl.[4] H01L 29/36, 29/70

U.S. Cl. 357—53 10 Claims

1. A semiconductor device comprising: a substrate of monocrystalline semiconductor material of a first type of conductivity; a semiconductor layer of a second type of conductivity which is opposite to that of said first type of conductivity, located on the substrate in such a way as to form a planar PN junction therewith; a layer of insulating material which at least partially covers a surface of said semiconductor layer opposite said PN junction; a first and a second conducting means for respectively making ohmic contacts with said substrate and said semiconductor layer, wherein said device comprises a first region of said first type of conductivity which delimits an active part of said device and extends from said surface across the entire semiconductor layer and part of said substrate in such a way as to intersect said PN planar junction; and wherein

said device has a second and a third region in said active part which extend on said surface and are parallel to said substrate with a concentration of impurities everywhere larger than that of said semiconductor layer, said second region of said first type of conductivity extending from said first region to an interior of said active part with a concentration of impurities that decreases to an edge remote from said first region with a



first predetermined profile and said third region of said second type of conductivity extending from a P side of said PN junction to said interior of said active part with a concentration of impurities that decreases to said edge with a second predetermined profile; and wherein ohmic contact of said second conducting means with said semiconductor layer is located on a zone of said third region having a higher concentration of impurities.

4,805,005

SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD OF THE SAME

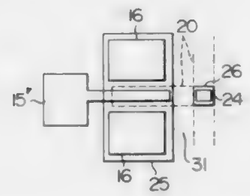
Toshiyuki Usagawa, Kokubunji; Yasuhiro Shiraki, Hino; Yuichi Ono; Susumu Takahashi, both of Tokyo, and Norikazu Hashimoto, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 2, 1985, Ser. No. 783,086

Claims priority, application Japan, Oct. 3, 1984, 59-206220

Int. Cl.[4] H01L 29/80

U.S. Cl. 357—22 11 Claims





1. A semiconductor device comprising:

a plurality of field effect transistors, each field effect transistor including,

an undoped first semiconductor layer,

an n-type second semiconductor layer formed on the first semiconductor layer, the second semiconductor layer being smaller in electron affinity than the first semiconductor layer,

a two-dimensional electron gas on a surface on the second semiconductor layer side of said first semiconductor layer,

a control electrode formed on the second semiconductor layer and controlling a flow of electrons in said two-dimensional electron gas, and

electrodes each electrically connected to a respective side of said two-dimensional electron gas; and

at least one of said field effect transistors having a p-type embedded layer which is selectively provided in opposition to the respective control electrode for said at least one of said field effect transistors, with respect to the first semiconductor layer, so as to control the threshold voltage of said at least on of said field effect transistors, and wherein at least one other of said field effect transistors does not have said p-type embedded layer.

4,805,006

LIGHT RECEIVING ELEMENT

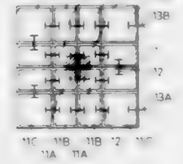
Shuichiroh Yamaguchi; Yukio Ideka; Takeshi Matsumoto, and Tatsuhiko Irie, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 10, 1988, Ser. No. 166,370

Claims priority, application Japan, Mar. 25, 1987, 62-43795[U]

Int. Cl.[4] H01J 40/14; H01L 27/14, 31/00

U.S. Cl. 357—30 4 Claims



1. A light receiving element comprising a plurality of light receiving cells connected in series with one another and arranged to be optically coupled to a light source, wherein said light receiving cells having respectively a surface area varying depending on the intensity of light input from said light source.

4,805,007

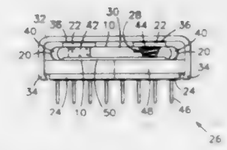
FLIP CHIP MODULE

Jack A. Schroeder, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Mar. 30, 1987, Ser. No. 31,640

Int. Cl.[4] H01L 21/447, 23/12, 23/04

U.S. Cl. 357—74 18 Claims



1. A flip chip module comprising:

a film having solder receptor pads and interconnect lines, said film further, having folding areas;

a plurality of dice bonded to specific ones of said solder receptor pads;

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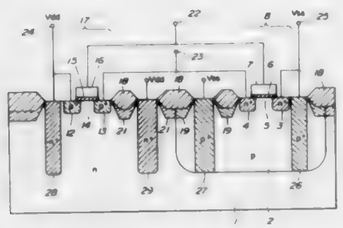
a plurality of pin headers bonded to specific ones of said solder receptor pads;
a heat radiating cover for covering said film including said plurality of dice, said film being folded at said folding areas and disposed within said heat radiating cover; and
compressible means for holding said plurality of dice in contact with said heat radiating cover.

4,805,008

SEMICONDUCTOR DEVICE HAVING MOSFET AND DEEP POLYCRYSTALLINE SILICON REGION

Kenji Yao, and Teruyoshi Mihara, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 22, 1987, Ser. No. 64,852
Claims priority, application Japan, Jun. 23, 1986, 61-144740
Int. Cl.⁴ H01L *27/02, 29/04*
U.S. Cl. 357—42 **19 Claims**



1. A semiconductor device comprising:
a first semiconductor substrate region of a first conductivity type, formed in a substrate body,
a pair of first source and drain regions of a second conductivity type opposite to said first conductivity type, said first source and drain regions being formed in said first substrate region, and separated from each other by a channel portion of said first substrate region to form a first MOSFET,
a first gate electrode formed above said channel portion of said first substrate region, and insulated from said channel portion by a first gate insulating layer, and
a first highly doped polycrystalline silicon region which is the same conductivity type as said first substrate region, and is formed in said first substrate region so that said first polycrystalline silicon region is in contact with said first substrate region, said first polycrystalline silicon region being deeper than said first source and drain regions, and being connected with said first source region to hold said first polycrystalline silicon region equipotential with said source region.

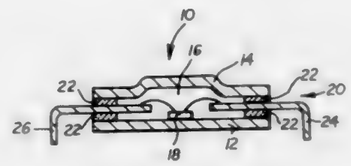
4,805,009

HERMETICALLY SEALED SEMICONDUCTOR PACKAGE

Michael J. Pryor, Woodbridge; Richard A. Eppler, Cheshire; Edward F. Smith, III, Madison, all of Conn., and Sheldon H. Butt, Godfrey, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 11, 1985, Ser. No. 710,777
Int. Cl.⁴ H01L *23/48*
U.S. Cl. 357—70 **59 Claims**

1. A semiconductor package, comprising:
a substrate member of a first alloy;
a cover member of a second alloy;
a clad lead frame comprising a core layer of a third alloy and a first outer layer of a fourth alloy, said clad lead frame being diaposed between said substrate member and said cover member;
said third alloy being a thermally stable, glass sealable alloy which maintains or increases in yield strength at temperatures of less than about 475° C. for the time required to glass seal and has a coefficient of thermal expansion of about 140×10^{-7} to about 180×10^{-7} in/in/°C.;
said fourth alloy being oxidation resistant and decreasing in yield strength at temperatures of less than about 475° C. for the time required to glass seal and having a coefficient of thermal expansion compatible with said third alloy; and
a sealing glass with a melting temperature of less than about 450° C. comprising a glass matrix selected from the group



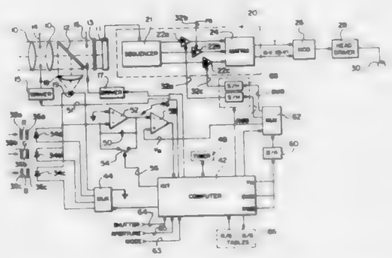
consisting of borate, lead borate, lead-zinc borate, borosilicate, lead borosilicate and lead-zinc borosilicate glasses, said sealing glass having a paritculate additive having a solubility of less than about 10% in said glass matrix mixed into said glass matrix to increase the coefficient of thermal expansion of said sealing glass to from about $140\times10^{-}$to about 180×10^{-7}in/in/° C. so as to be compatible with said first, second, third and fourth alloys, said sealing glass being disposed between said substrate member and said cover member for sealing said package.

4,805,010

STILL VIDEO CAMERA WITH COMMON CIRCUIT FOR COLOR BALANCE AND EXPOSURE CONTROL

Richard A. Shroyer, Rochester, and Thomas C. Nutting, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1987, Ser. No. 56,628
Int. Cl.⁴ H04N *9/73*
U.S. Cl. 358—29 **8 Claims**



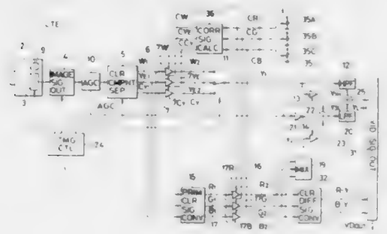
1. A video camera having a color image sensor responsive to image light from an illuminated subject and a signal processing section for processing a color signal generated by the image sensor, said camera comprising:
exposure sensing means for generating an exposure signal corresponding to the brightness level of the image light directed toward the image sensor;
color balance sensing means for generating one or more color balance signals corresponding to the color characteristics of the light illuminating the subject;
means, having an input, for integrating an input signal in relation to time and generating a control signal therefrom;
means for connecting said exposure sensing means and said color balance sensing means to the input of said integrating means;
means for selectively operating said integrating means in relation to either said exposure sensing means or said color balance sensing means so that said control signal predominantly represents either an integrated exposure signal or an integrated color balance signal; and
means responsive to said control signal for controlling either the exposure of image light upon the image sensor or the color balance of the color signal processed by the signal processing section.

4,805,011

LUMINANCE SIGNAL FORMING CIRCUIT FOR COLOR TV CAMERA WHICH COMBINES LUMINANCE SIGNAL DERIVED FROM PRIMARY COLOR SIGNALS WITH LUMINANCE SIGNAL DERIVED FROM COMPLEMENTARY COLOR SIGNALS

Masatoshi Sase, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 23, 1987, Ser. No. 100,223
Claims priority, application Japan, Sep. 27, 1986, 61-229073; Dec. 23, 1986, 61-307168
Int. Cl.⁴ H04N *9/077, 9/64, 9/73*
U.S. Cl. 358—44 **22 Claims**



1. A luminance signal forming circuit in a television camera having complementary color filtering, comprising:
first means for producing a first luminance signal by mixing a plurality of complementary color signals separated from an output of the television camera;
second means for producing a second luminance signal formed by mixing at a predetermined ratio a pluraliyt of primary color signals based on said plurality of complementary color signals; and
signal combining means for combining said first and second luminance signals to produce a composite luminance output signal.

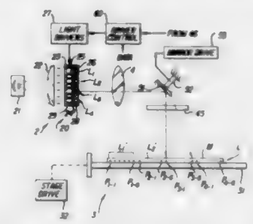
4,805,012

SYSTEM FOR HIGH RESOLUTION EXPOSURE ADDRESS WITH COARSER RESOLUTION EXPOSING ARRAY

John A. Agostinelli, Rochester, and José M. Mir, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 23, 1987, Ser. No. 99,953
Int. Cl.⁴ H04N *1/46*
U.S. Cl. 358—75 **12 Claims**

12. An electronic imaging system for light exposing a linear image zone at relatively high resolution, said system comprising:
(a) a light source array comprising a plurality of selectively activatible pixel exposing elements of width (W) spaced at linear intervals (S);
(b) means for forming an image of said light source array at a linear image zone; and
(c) means for scanning said light source array image linearly along said image zone in a number of equal and successive increments (M) approximately equal to $(S\div W).X$, where



X is an integer representing the number of different colors to be exposed during a line scan.

4,805,013

IMAGE DATA CONVERSION SYSTEM

Katsuhito Dei, Tokyo; Yoshinobu Mita, Kawasaki; Tadashi Yoshida, Ichikawa, and Naoto Kawamura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 770,770, Aug. 29, 1985. This application Apr. 11, 1988, Ser. No. 183,300
Claims priority, application Japan, Sep. 5, 1984, 59-184684; Sep. 5, 1984, 59-184685; Sep. 5, 1984, 59-184686
Int. Cl.⁴ G03F *3/08*
U.S. Cl. 358—80 **15 Claims**



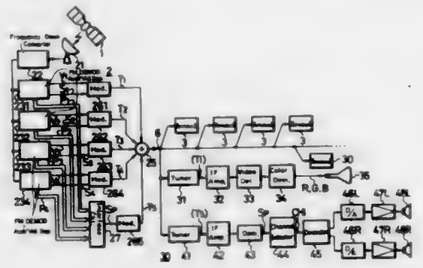
1. An image data conversion system comprising:
image data generating means;
image data converting means for receiving image data generated by said image data generating means and for performing conversion of the received image data; and
means for forming conversion data for said image data converting means,
wherein said conversion data forming means receives predetermined parameters, forms conversion data in accordance with the received predetermined parameters, and writes the conversion data in said image data converting means, said conversion data forming means having a mode for reading out the conversion data written in said image data converting means regardless of the image data.

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4,805,014
SIGNAL TRANSMISSION SYSTEM FOR A CATV SYSTEM

Hiroshi Sahara, and Yoshimi Watanabe, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 667,737, Nov. 2, 1984, abandoned. This application Sep. 14, 1987, Ser. No. 96,773
Claims priority, application Japan, Nov. 7, 1983, 58-206741; Nov. 8, 1983, 58-209488
Int. Cl.[4] H04N 7/10
U.S. Cl. 358—86 **6 Claims**



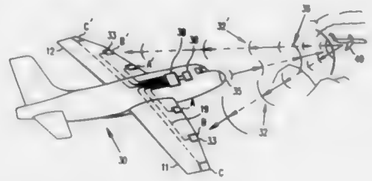
1. A CATV signal transmitting system comprising:
(a) receiving means for receiving a plurality of broadcast satellite channel signals, each channel signal consisting of a base-band video signal modulated on a carrier and a subchannel digitally coded audio signal modulated on a sub-carrier;
(b) means connected to said receiving means for demodulating a plurality of base-band video signals and a plurality of respective sub-channel digitally coded audio signals from said received plurality of channel signals;
(c) first modulating means for modulating said plurality of base-band video signals for transmission in respective CATV channels;
(d) interface means receiving the demodulated sub-channel digitally coded audio signals and arranging said sub-channel digitally coded audio signals so as to be time-division multiplexed into a multiplexed, digitally coded audio signal consisting of a plurality of frames, each frame including at least a portion of each of said demodulated digitally coded audio signals, and an error check code signal;
(e) second modulating means for modulating said time-division multiplexed digitally coded audio signal from said interface means for transmission in a CATV channel other than said respective CATV channels; and
(f) means for combining the output signals of said first and second modulating means and for transmitting the combined signals through a CATV transmission line;
whereby said audio signals as transmitted through said CATV transmission line have a bandwidth and dynamic range that undergo substantially no deterioration.

4,805,015
AIRBORNE STEREOSCOPIC IMAGING SYSTEM

J. William Copeland, 3835 Carlson Ctr., Palo Alto, Calif. 94306

Filed Sep. 4, 1986, Ser. No. 903,615
Int. Cl.[4] H04N 13/00, 17/18
U.S. Cl. 358—88 **4 Claims**

2. An airborne stereoscopic imaging system comprising:
an aircraft having opposed first and second wings;
a first imaging sensor attached to one of said wings in a generally forward-facing field of vision;
a second imaging sensor attached to the other of said wings in a generally forward-facing filed of view; said sensors being spaced from each other along a predetermined baseline distance of from at least one meter to a distance whereat said sensors have sufficient imaging gathering ability to detect energy being reflected from a distant actual object, and each sensor being movable to scan and focus similarly at said actual object positioned at a distance, generally in advance of an intended flight path of said aircraft;
a stereo viewer in said aircraft for displaying actual object images received stereoscopically from said sensors; and

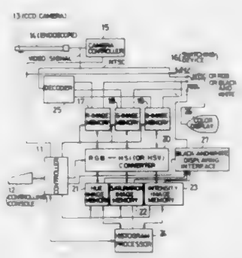


means connected between sensors and said stereo viewer for transmitting said actual object images from said sensors to said stereo viewer, such that the depth perception of a human viewer in said aircraft, viewing a display on said stereo viewer representative of the actual object images received by said stereo viewer, is enhanced; and
including multiple imaging sensors positioned on each wing and means in said aircraft for selecting pairs of said sensors, one from each wing, for operation and transmission of images to said stereo viewer.

4,805,016
ENDOSCOPIC SYSTEM FOR CONVERTING PRIMARY COLOR IMAGES INTO HUE, SATURATION AND INTENSITY IMAGES

Haruo Kato, Kuroiso, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 21, 1987, Ser. No. 87,787
Claims priority, application Japan, Aug. 25, 1986, 61-197293; Apr. 24, 1987, 62-100154
Int. Cl.[4] H04N 7/18
U.S. Cl. 358—98 **10 Claims**

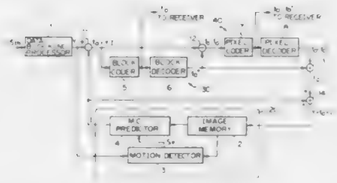


1. An endoscopic system for obtaining a color picture by combining three primary color images with each other, said system comprising:
image converting means for converting said three primary color images into hue, saturation, and intensity images;
means for reproducing said three primary color images from said converted hue, saturation, and intensity images;
histogram processing means for obtaining a histogram based on at least one of said hue, saturation, and intensity images obtained by said image converting means; and then performing at least one of a
means for stretching or shifting said histogram, or both.

4,805,017
SYSTEM FOR CODING AND TRANSMITTING MOTION IMAGE SIGNALS

Masahide Kaneko, Yokohama; Kiichi Matsuda, Kawasaki; Naoki Mukawa, Yokosuka, and Toshio Koga, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo; Fujitsu Limited, Kawasaki; Nippon Telegraph and Telephone Corporation and NEC Corporation, both of Tokyo, all of, Japan

Filed Mar. 4, 1987, Ser. No. 21,909
Claims priority, application Japan, Mar. 4, 1986, 61-47125
Int. Cl.[4] H04N 7/18, 7/12
U.S. Cl. 358—105 **16 Claims**



1. A motion compensation difference coding system for coding a motion difference of input image data, comprising:
compression-coding means for compression-coding the motion difference to produce compression coded data and for decoding the compression coded data to produce decompressed data;
error coding means, operatively connected in series with said compression-coding means to form series-connected means, for coding an error between the motion difference and the decompressed data to produce error coded data and for decoding the error coded data to produce decoded error data, when the error exceeds a predetermined value; and
motion predicting means, operatively connected in parallel with said series-connected means, for producing decoded image data from the decompressed data, the decoded error data and predicted motion data and for calculating the motion difference as a difference between the input image data and the motion predicted data.

4,805,018
VIDEO SIGNAL PROCESSING APPARATUS FOR SEPARATING AN IMAGE OF A MOVING OBJECT FROM VIDEO SIGNALS

Shigeru Nishimura, Tokyo; Toshihisa Kuroda, and Shin-ichiro Aoki, both of Kanagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 9, 1987, Ser. No. 23,663
Claims priority, application Japan, Mar. 7, 1986, 61-51132; Apr. 18, 1986, 61-90432; Apr. 18, 1986, 61-90434; Oct. 2, 1986, 61-234821; Oct. 2, 1986, 61-234822
Int. Cl.[4] H04N 5/232, 7/18
U.S. Cl. 358—105 **12 Claims**

1. A video signal processing apparatus comprising:
an image pickup means for obtaining a video signal of a view which includes a moving target;
a signal generating means for generating field signals in binary form from said video signal;
a memory means for storing field signals of a first field and a second field from said signal generating means, said first and second fields being different from each other;
a means for obtaining a logical sum of said first and second field signals from said memory means; and
a signal extracting means for extracting a signal of said moving target by logically operating a field signal of a third field from said signal generating means and said



logical sum, said third filed being different from said first and second fields.

4,805,019
NON-CONTACT APPARATUS AND METHOD FOR MEASURING THE LENGTH OF ALUMINUM SHEET AND PLATE

William H. Holliday, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sep. 10, 1987, Ser. No. 95,285
Int. Cl.[4] H04N 7/18
U.S. Cl. 358—107 **13 Claims**



1. A non-contact length measuring apparatus for measuring a dimension of an elongate piece of material comprising:
conveying means for positioning an edge of material to be measured within a measuring range of the apparatus;
a plurality of cameras spaced from the conveying means, each camera being rigidly mounted in a fixed position and having a viewing range defining a portion of the measuring range of the apparatus;
calibration means for calibrating the viewing range of each camera so that each viewing range covers a portion of the measuring range that has a known spatial relationship with a fixed point;
display means for displaying any selected camera view which depicts at least a portion of the viewing range;
edge detecting means operably associatable with said display means, said edge detecting means having indicator means for indicating on the display means the position of a displayed edge of a piece of material, and means for calculat-

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ing the exact location of the edge with respect to the fixed point; and

alignment means operable by an operator of the apparatus for aligning said indicator means of said edge detecting means with a displayed edge of a piece of material, the operator using said alignment means to align said indicator means with an edge of the material to be measured, said means for calculating using the position of the indicator means to determine the distance between the displayed edge and the fixed point.

4,805,020

TELEVISION PROGRAM TRANSMISSION VERIFICATION METHOD AND APPARATUS

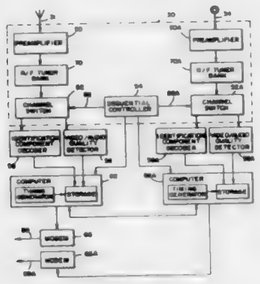
Burton L. Greenberg, 28 E. 10th St., New York, N.Y. 10003

PCT No. PCT/US85/01996, § 371 Date Feb. 3, 1987, § 102(e) Date Feb. 3, 1987, PCT Pub. No. WO86/06239, PCT Pub. Date Oct. 23, 1986

Continuation-in-part of Ser. No. 476,915, Mar. 21, 1983, Pat. No. 4,547,804, and Ser. No. 723,325, Apr. 15, 1985, abandoned. This PCT application Oct. 14, 1985, Ser. No. 10,974

Int. Cl.[4] H04N *7/087, 7/08*

U.S. Cl. 358—147 **11 Claims**



1. In a method for automatically idnetifying and verifying the proper transmission of bought airings of television programs having a composite signal including a video information signal each having a unique identification code recorded in a preselected line of the video information signal which programs are transmitted at various times over a plurality of channels for reception within a geographical area, the improvement comprising the steps of:

(a) receiving the composite signals of said plurality of channels;

(b) periodically scanning said channels at a predetermined repetition rate with each channel being sampled for a preselected time interval in each period to detect the presence of one of said identification codes, said time interval being determined as a function of the number of channels being monitored and the length of said period;

(c) separating each of said identification codes from the composite signals received on said channels;

(d) detecting the color burst and audio quality for the composite signals including an identification code;

(e) generating a time signal and a channel identification signal;

(f) forming and storing verified airings information for each transmission of each of said programs including information specifying the identification code, time, duration, channel, and color burst and audio quality of said program.

4,805,021

CONTROL CIRCUIT FOR CALIBRATING A DELAY LINE

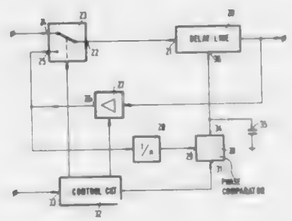
Hartmut Harlos, Norderstedt; Klaus G. H. Juhnke, Rellingen, and Peter Kelting, Elmshorn, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 8, 1986, Ser. No. 939,385

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1985, 3544342

Int. Cl.[4] H04N *5/14*

U.S. Cl. 358—160 **3 Claims**



1. Control circuit for calibrating a delay line for a television receiver, said delay line having series-connected all-pass sections of at least 2nd-order,and gyrators in place of inductors, to which capacitances are connected, said control circuit comprising an input of the delay line connected to a change-over switch which supplies the input in a first position with a television signal and in a second position with a signal derived from the output signal of the delay line, which derived signal has been passed through an amplifier, an oscillator being formed by the delay line and the amplifier which is a part of a phase-lock loop which generates from a comparison made by a phase comparison circuit between a line-frequency signal and the derived signal from the amplifier, a control signal which is stored by a means for storing during the second position of the change-over switch, for the all-pass sections, said control signal controlling the delay time of said delay line, and the second position of the change-over switch occurs during at least one line of the vertical blanking period, wherein the amplifier which inverts the output signal of the delay line, is switched on only during the second position, and because of the switching on, said amplifier starts an oscillator signal at a predetermined phase angle.

4,805,022

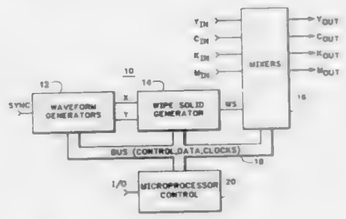
DIGITAL WIPE GENERATOR

John Abt, Nevada City, Calif., assignor to The Grass Valley Group, Inc., Grass Valley, Calif.

Filed Feb. 19, 1988, Ser. No. 158,827

Int. Cl.[4] H04N *5/272*

U.S. Cl. 358—183 **5 Claims**



1. A digital wipe generator comprising:

means for generating from timing signals digital waveforms;

means for performing arithmetical operations on the digital waveforms;

means for generating a desired curve pattern from the digital waveforms;

means for matrixing and combining the digital waveforms with the outputs of the performing means and the desired curve pattern generating means to produce a digital wipe solid waveform representing a desired wipe pattern; and

means for combining the digital wipe solid waveform with external signals to produce a desired wipe transition.

4,805,023

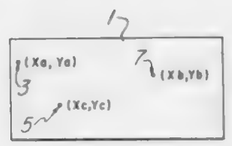
PROGRAMMABLE CCD IMAGER DEFECT COMPENSATOR

Jack M. Younse, and Robert J. Gove, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 787,399, Oct. 15, 1985, abandoned. This application Sep. 8, 1987, Ser. No. 96,797

Int. Cl.[4] H04N *3/15*

U.S. Cl. 358—213.17 **4 Claims**



1. A method of compensating for defects in a selected CCD imager, comprising the steps of:

(a) providing a selected CCD,

(b) determining the address of defects in said selected CCD by:

(c) first uniformly illuminating the CCD with a light source at about 50% full well level, then scanning the entire CCD, and

(d) then determining which pixels of the CCD provide an indication of variance from said about 50% full well level by more than a predetermined amount,

(e) providing a PROM,

(f) permanently storing the addresses of said defects into said PROM,

(g) scanning said selected CCD,

(h) continually determining the address of said scan,

(i) comparing the address of said scan with said address of defects in said PROM, and

(j) providing an inhibit signal responsive to a predetermined relation between the address of defects stored in said PROM and the address of said scan.

4,805,024

STILL IMAGE PICKUP CAMERA USING HIGH SPEED CLEAR PULSES TO DEFINE A STORAGE INTERVAL CORRESPONDING TO A DESIRED SHUTTER SPEED

Masatoshi Suzuki, Shiga; Yoshimasa Fujikawa, and Koichi Fujimoto, both of Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Apr. 27, 1987, Ser. No. 42,818

Claims priority, application Japan, May 1, 1986, 61-101740

Int. Cl.[4] H04N *3/14*

U.S. Cl. 358—213.19 **3 Claims**

1. A still image pickup camera comprising:

a solid state image pickup device having an image pickup area, a temporary storage area, and a horizontal shift register;

clock generating means for outputting within a vertical blanking period a group of first high-speed transfer pulses to transfer storage signal charges of one field in said image pickup area to said temporary storage area, for outputting within one field interval a group of second transfer pulses to transfer the storage signal charged of one field in the temporary storage area by an amount of every horizontal line synchronously with a horizontal sync signal to said horizontal shift register, and for outputting every horizontal scan period a group of third high-speed transfer pulses to transfer the image data of one horizontal line, by an amount of every pixel, which has been transferred to the horizontal shift register;



clear pulse generating means for generating one or more times a group of high-speed clear pulses at a desired timing in an interval between adjacent vertical sync signals; and

means for feeding said group of high-speed clear pulses to both said image pickup area and temporary storage area to clear both these areas.

4,805,025

SIGNAL READ-OUT APPARATUS FOR SOLID-STATE IMAGER

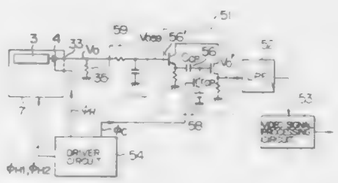
Toshiyuki Akiyama, Tokorozawa; Naoki Ozawa, Kokubunji; Takeshi Ogino, Katsuta, and Kenji Takahashi, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 11, 1987, Ser. No. 13,542

Claims priority, application Japan, Mar. 14, 1986, 61-54721

Int. Cl.[4] H04N *3/14*

U.S. Cl. 358—213.26 **38 Claims**



1. A signal read-out apparatus for a solid-state imager, comprising:

a group of photoelectric conversion elements arrayed in a matrix-like configuration for storing signal charges corresponding to light information;

charge transfer means for reading out each of the photoelectric conversion elements to output sequentially the signal charges in the form of successive pulses at an output;

amplifying means for amplifying the signal charges from said charge transfer means and providing a representative output signal, said amplifying means including at least a capacitor for sequentially storing the signal charges supplied from the charge transfer means, an amplifier for amplifying signal voltages appearing at the capacitor, and reset means for extracting externally the signal charges stored in the capacitor;

driving means for driving the charge transfer means and the reset means with a clock pulse signal having a predetermined frequency of f_c;

a low-pass filter having a frequency band which is less than or equal to 1.5 times said predetermined frequency f_c for receiving the output of the amplifying means; and

clamp means, coupled to said low-pass filter, for eliminating the reset noise produced by said reset means from the

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output signal after having passed through said low-pass filter.

4,805,026

METHOD FOR DRIVING A CCD AREA IMAGE SENSOR IN A NON-INTERLACE SCANNING AND A STRUCTURE OF THE CCD AREA IMAGE SENSOR FOR DRIVING IN THE SAME METHOD

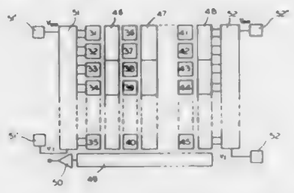
Eiji Oda, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 17, 1987, Ser. No. 14,993

Claims priority, application Japan, Feb. 18, 1986, 61-34395; Apr. 9, 1986, 61-81278

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213.29 **11 Claims**



1. A method for driving a CCD area image sensor including a plurality of photo sensors arranged in a plurality of lines, a plurality of vertical shift registers each disposed along one line of said photo sensors, said vertical shift register having a series of plural number of shift stages, each two of said photo sensors being disposed so as to face one of said shift stages, a horizontal shift register formed to receive charges from said vertical shift registers, an output means for converting charges transferred through said horizontal shift register into electrical signals, and a transferring means for transferring charges accumulated in said photo sensors to said vertical shift registers, the method for driving said CCD area image sensor comprising the steps of:

exposing said photo sensors to an object to be sensed to accumulate charges in said photo sensors;

transferring said charges accumulated in all of said photo sensors to said vertical shift registers;

shifting said transferred charges through said vertical shift registers toward said horizontal shift register, the shift through said vertical shift registers being initiated from charges transferred to said vertical shift register at the shift stage nearest to said horizontal shift register to charges transferred to said vertical shift register at the shift stage farthest from said horizontal shift register in order of distance from said horizontal shift register;

shifting charges shifted to said horizontal shift register therethrough toward said output means; and

converting a quantity of charges shifted to said output means to an electrical signal by said output means.

4,805,027

INTEGRATED BEAM SPLITTER VIDEO CAMERA AND METHOD

Erik Slayter, Santa Barbara, Calif., assignor to Circon Corporation, Santa Barbara, Calif.

Filed Jun. 18, 1987, Ser. No. 64,855

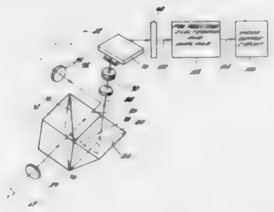
Int. Cl.⁴ A61B *1/04*

U.S. Cl. 358—225 **26 Claims**

1. A beam splitter video camera for processing an optical iamge from a endoscope comprising

a housing including means for defining a central area which extends therethrough, said housing icnluding means for passing an optical iamge to be processed from an endoscope along an predetermined path into the central area of said housing;

differential transmission/reflecting means located along said predetermined path and with in the central area of said housing and, with a minimum absorption loss in the visible spectrum, for transmitting a nominal portion of said optical image along a first optical path and for reflecitng the remaining substantial portion of said optical iamge along a second optical path which includes a portion thereof which is at a selected angle to said first optical path, said differential transmission/reflecting means further including a beam splitter having a beam splitting surface which is coated with a material which, in the visible spectrum, has an absorption loss of about 10% of less;



means positioned within said central area of said housing and along said first optical path to intercept said nominal portion of said optical image for forming a viewable image of said optical image; and

an optical image processing system located within said housing and positioned relative to said second optical path to receive and process said remaining substantial portion of said optical image, said optical processing system including means for producing video signals representing said optical image.

4,805,028

TELEVISION CAMERA FOR ENDOSCOPES PROVIDED WITH AN OPTICAL LOW-PASS FILTER

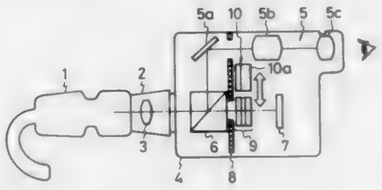
Kimihiko Nishioka, Hachiouji, and Jun Yoshinaga, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 819,611, Jan. 17, 1986, abandoned. This application Oct. 19, 1987, Ser. No. 111,073

Claims priority, application Japan, Jan. 18, 1985, 60-4243[U]

Int. Cl.⁴ H04N *5/30, 5/225*

U.S. Cl. 358—225 **26 Claims**



18. A television camera for endoscopes, comprising:

a camera body

a photographic lens detachably mounted on said camera body;

an image pickup device provided within said camera body for receiving light having passed through said photographic lens; and

a turrent plate mounted within said camera body between said photographic lens and said image pickup device for rotation within a plane normal to an optical axis and provided with a plurality of optical low-pass filters having mutually different spatial frequency responses, respectively and capable of placing either one of said plurality of optical low-pass filters onto the optical path of the light having passed through said photographic lens,

each of said plurality of optical low-pass filters being comprised of a first, a second and a third birefringent plate superimposed one upon another in the direction of the optical axis,

said first, second and third birefringent plates being disposed in such a way that the crystal axes of said second and third birefringent plates located within the planes thereof normal to the optical axis forming substantially 45° and 60° or 120°, respectively, relative to the crystal axis of said first birefringent plate,

said plurality of optical low-pass filter provided onto said optical path being switched to thereby cause moire eliminating effect of a camera to be varied, in which, when said camera body is attached to a non-flexible endoscope for use, an optical low-pass filter with weak moire elimination effect is inserted into said optical path, while, when said camera body is attached to a fiberscope for use, an optical low-pass filter with strong moire elimination effect is inserted into said optical path.

4,805,030

METHOD OF IMAGE SIGNAL ENCODING BY ORTHOGONAL TRANSFORMATION

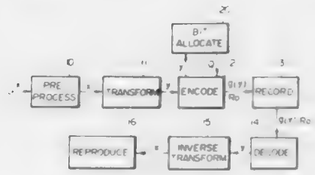
Nobuyuki Tanaka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 27, 1987, Ser. No. 7,218

Claims priority, application Japan, Jan. 27, 1986, 61-15263; Apr. 18, 1986, 61-90535

Int. Cl.⁴ H04N *1/417*

U.S. Cl. 358—260 **20 Claims**



1. A method of image signal encoding by orthogonal transformation, which comprises the steps of:

(i) dividing two-dimensional image signals into blocks and conducting two-dimensional orthogonal transformation on each block of two-dimensional image signals on the basis of a predetermined orthogonal function,

(ii) recognizing a region, where absolute values of almost all of the transformed signals obtained by the orthogonal transformation are smaller than a predetermined value, from a matrix of the transformed signals put side by side in order of sequence of said orthogonal function in longitudinal and transverse directions in the block, and

(iii) sampling only the transformed signals outside of said recognized region, and encoding the sampled transformed signals respectively with an intrinsic code length.

4,805,031

IMAGE PROCESSING METHOD AND APPARATUS USING MOVING ONE-DIMENSIONAL TRANSFORMS

Philip G. Powell, Middlesex, England, assignor to Eastman Kodak Company, Rochester, N.Y.

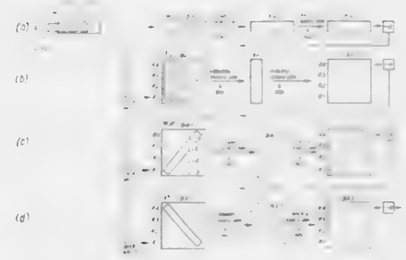
PCT No. PCT/EP87/00292, § 371 Date Jan. 28, 1988, § 102(e) Date Jan. 28, 1988, PCT Pub. No. WO87/07740, PCT Pub. Date Dec. 17, 1987

PCT Filed Jun. 2, 1987, Ser. No. 162,393

Claims priority, application United Kingdom, Jun. 11, 1986, 8614214

Int. Cl.⁴ H04N *1/00, 5/213*

U.S. Cl. 358—284 **6 Claims**



1. A method of processing an image fornoise reduction, comprising the steps of :

a. generating from the image an array of pixel image values representative of the light values of its pixels;

b. grouping the pixel image values into groups corresponding to groups of pixels aligned along a predetermined direction;

c. processing a group of pixel image values using a transform algorithm and a thresholding operationto separate image components from noise components;

d. repeating step c. with each group of pixel image values corresponding to groups of pixels aligned along the predetermined direction, the position of which group is translated by a fixed number of pixels with respect to the preceding group;

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e. accumulating and averaging the image value components from every group contributing to each image element so as to provide an array of processed pixel image values having a partially reduced noise component;

f. repeating steps b. to e. with groups of pixel image values having noise components partially reduced by the former processing steps, these groups of pixel image values corresponding to groups of pixels aligned along a succession of other directions, whereby the noise component of the image is effectively reduced.

4,805,032

TOTAL CONTACT TYPE PHOTOELECTRIC CONVERSION DEVICE AND OPTICAL READER USING THE SAME

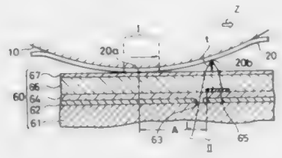
Yoshio Watanabe, Kawasaki; Hiroyuki Horiguchi, and Masanori Itagaki, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 14, 1988, Ser. No. 181,574

Claims priority, application Japan, Apr. 20, 1987, 62-98444; Apr. 20, 1987, 62-98445; Apr. 24, 1987, 62-102566; Apr. 30, 1987, 62-107053

Int. Cl.⁴ H04N *1/12*

U.S. Cl. 358—294 **18 Claims**



1. A total contact type photoelectric conversion device comprising;

a substrate having an optically transparent portion;

a plurality of photoelectric conversion elements formed in a line on the substrate; and

a cover layer covering the plurality of the photoelectric conversion elements and having a roller load region within which the cover layer is to make contact with a sheet partially wrapped around a peripheral surface of a roller for feeding the sheet in a sub-scanning direction;

the plurality of photoelectric conversion elements being aligned in a main scanning direction perpendicular to the sub-scanning direction and being located outside the roller load region, so that incident light passing through the devide is reflected on a position on the sheet outside the roller load region.

4,805,033

METHOD OF FORMING OBLIQUE DOT PATTERN

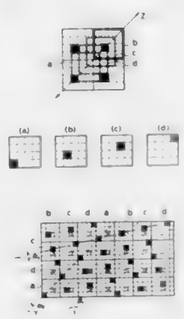
Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1988, Ser. No. 177,266

Claims priority, application Japan, Feb. 18, 1987, 62-33374

Int. Cl.⁴ H04N *1/21, 1/40*

U.S. Cl. 358—298 **6 Claims**



1. A method of forming an oblique dot pattern in an element-density tone production method which uses two types of recording dots comprising a dark value and a light value and a specific matrix structure, whereby pseudo-gradation recording is performed by assigning recording dot positions in a matrix by means of a matrix pattern in accordance with gradation steps of a recording signal, said oblique dot pattern forming method being characterized in that:

a plurality of sets of matrix patterns are provided for the purpose of ensuring that a plurality of different matrix patterns can be selected and assigned to each gradation step;

said plurality of sets of matrix patterns being selected and arranged cyclically in matrix pattern areas which are longitudinally and laterally arranged over a recorded image; and

said matrix patterns being so constituted that recorded aggregated dots are arranged in a predetermined oblique angle with respect to said longitudinal and lateral directions of said recorded image.

4,805,034

COLOR VIDEO SIGNAL TRANSMISSION SYSTEM

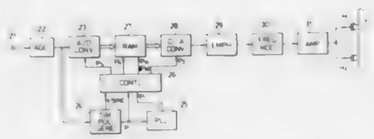
Hiroyuki Kitamura, Hiratsuka, and Yoshihiko Ota, Yokosuka, both of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Dec. 23, 1986, Ser. No. 945,772

Claims priority, application Japan, Dec. 28, 1985, 60-299076; Dec. 28, 1985, 60-299077; Jan. 24, 1986, 61-14304; Jan. 24, 1986, 61-14305

Int. Cl.⁴ H04N *9/79*

U.S. Cl. 358—310 **18 Claims**



1. A color video signal transmission system comprising:

analog-to-digital converting means for sampling an input composite color video signal at a sampling frequency nf_{sc} and for producing first data, where n is a natural number and f_{sc} denotes a chrominance subcarrier frequency of the input composite color video signal, said first data comprising a sequence of digital data;

data rearranging means for rearranging the sequence of the digital data of said first data to form second data including n different data groups, each data group comprising every nth digital datum in the first data, said every nth digital datum having been sampled with a period $1/f_{sc}$ and having the same phase with respect to the chrominance subcarrier of the input composite color video signal within one horizontal scanning period, the n data groups being arranged in series for each horizontal scanning period within said second data; and

digital-to-analog converting means for converting said second data into an analog video signal and for supplying the analog video signal to a transmission medium.

4,805,035

COLOR VIDEO AND AUDIO RECORDING AND/OR REPRODUCING APPARATUS

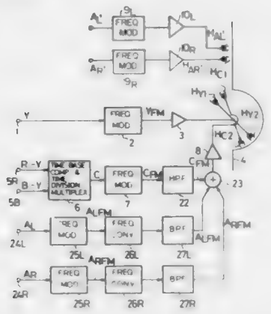
Hiroshi Kawakami, Tokyo, Japan, and Takato Narita, Grenrock, N.J., assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 3, 1987, Ser. No. 34,022

Claims priority, application Japan, Apr. 9, 1986, 61-81617

Int. Cl.⁴ G03B *9/79*

U.S. Cl. 358—310 **11 Claims**



1. In an apparatus for recording, in successive parallel tracks on a record medium, an audio signal and a color video signal comprised of a luminance signal and a chrominance signal constituted by at least two chrominance signal components, and in which said luminance and chrominance signals are recorded in alternate tracks, respectively, with said chrominance signal components being time-base-compressed and time-division-multiplexed so as to be arranged alternately in sequence in the respective tracks; the combination of:

first frequency modulating means for frequency modulating at least one carrier by said audio signal and providing an uninterrupted first frequency modulated output in a predetermined frequency band;

second frequency modulating means for frequency modulating a second carrier by said time-base-compressed and time-division-multiplexed chrominance signal components and providing a second frequency modulated output in a frequency band above said predetermined frequency band;

luminancy signal processing means for processing said luminance signal and providing a processed luminance signal therefrom;

mixing means for frequency multiplexing said first and second frequency modulated outputs;

first recording means receiving said processed luminance signal for recording the latter in the respective ones of said alternate tracks; and

second recording means receiving the frequency multiplexed first and second frequency modulated outputs from said mixing means for recording in the others of said alternate tracks.

4,805,036

SYNCHRONIZATION OF PLURAL VIDEO REPRODUCING SYSTEMS

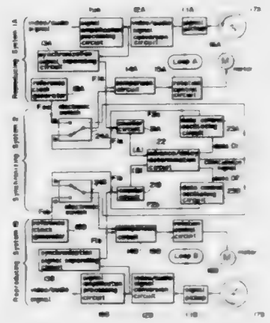
Kazuyuki Kido, and Haruni Horiuchi, both of Kanagawa, Japan, assignors to Group-N Corporation, Kanagawa, Japan

Filed May 19, 1987, Ser. No. 51,337

Claims priority, application Japan, May 19, 1986, 61-114255

Int. Cl.⁴ H04N *5/76*

U.S. Cl. 358—335 **15 Claims**



1. A method of synchronizing reproduction using a plurality of video information reproducing systems, comprising the steps of:

(a) searching and detecting a required video position identifying signal among the various items of video information recorded on each recording medium of said plurality of reproducing systems; as

(b) picking up video signals at the same time performing said detection;

(c) integrating for each of said recording media synchronization pulse signals included in said video signals using said video position identifying signal as a starting point;

(d) determining the advance and delay of video information by comparing the respective integrated values;

(e) controlling the reproducing speeds of said respective recording media on the basis of the result of said determination in such a manner that said integrated values coincide with each other; and

(f) setting the reproducing speeds of said respective recording media in a steady state when said integrated values coincide with each other.

4,805,037

IMAGE RECORDING SYSTEM

Stephen A. Noble, Rochester, and Thomas C. Nutting, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 15, 1987, Ser. No. 109,159

Int. Cl.⁴ H04N *5/76*

U.S. Cl. 358—335 **30 Claims**

1. A system for recording images of a subject in electronic and photosensitive mediums, comprising:

means for capturing a photographic image of said subject on said photosensitive medium;

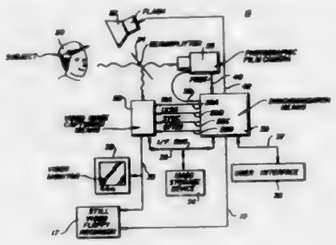
means for recording a full frame video image of said subject in two consecutive fields of video information;

means for illuminating said subject with a flash illumination; and

means connected to said capturing means, said recording means, and said illuminating means for actuating said

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illuminating means and for synchronizing the recording of said full frame video image to the capturing of said photo-



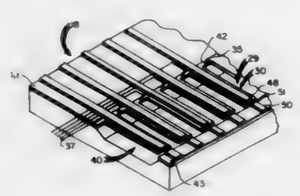
graphic image such that said flash illumination is relatively equally distributed between said two consecutive fields of video information.

4,805,038

IMAGING APPARATUS WHICH INCLUDES A LIGHT-VALVE ARRAY HAVING ELECTROSTATICALLY DEFLECTABLE ELEMENTS

Joel L. Seligson, Misgav, Israel, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 30, 1987, Ser. No. 79,382
Int. Cl.[4] H04N *1/036, 3/02;* **G02B** *6/26, 26/00*
U.S. Cl. 358—296 **15 Claims**



1. Imaging apparatus for exposing a recording medium, said apparatus comprising:

a light source;

a light-valve array for receiving light from said source, said array having a plurality of individually deflectable elements, each of said elements including a transmitter multimode waveguide and an electrode, a plurality of receptor multimode waveguides arranged opposite said transmitter waveguides, each of said elements being deflectable upon application of a threshold voltage to the electrode thereof from a first position in which its transmitter waveguide is axially aligned with a corresponding one of said receptor waveguides for transmitting a light beam therethrough to a second position in which no light beam can be transmitted from its transmitter waveguide to said corresponding receptor waveguide, each of said elements being selectively deflectable in response to an information signal; and

optical means for receiving said light beams from said elements and for imaging said light beams on said recording medium.

6. A light valve comprising:

a body of semiconductive material having an insulating layer thereon, said body having an opening therein which extends through said insulating material to said semiconductor material and defines first and second sections of said body;

an elongated element extending from said first section and projecting over said opening, said element having a bottom layer formed of said insulating material, an electrode on said insulating material, and a transmitter waveguide on said electrode; and

a receptor waveguide on said second section, said receptor waveguide being axially aligned with said transmitter waveguide.

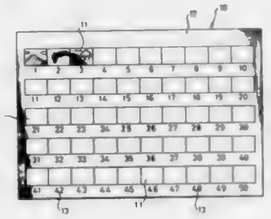
14. A light valve for use in a light-valve array, said light valve comprising an electrostatically deflectable element having a first waveguide and an electrode, and a second waveguide disposed opposite said first waveguide, characterized in that said element includes a layer of material under said first waveguide having a refractive index lower than said first waveguide.

4,805,039

INDEX SHEET, METHOD FOR MAKING SAME, PACKAGE OF SAME WITH IMAGE RECORDING MEDIUM, AND CONTAINER FOR SAME TOGETHER WITH IMAGE RECORDING MEDIUM

Katsumi Otake, and Nobuyuki Iwakuni, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 19, 1985, Ser. No. 799,597
Claims priority, application Japan, Nov. 19, 1984, 59-244124; Jul. 16, 1985, 60-107556[U]
Int. Cl.[4] H04N *5/76*
U.S. Cl. 358—335 **13 Claims**



1. In combination with an image recording medium, an index sheet comprising at least one recording sheet, and a plurality of positive images printed in at least one row on said recording sheet, said positive images being at least a part of a plurality of scenes recorded on said image recording medium, said positive images being arranged in the same order in which the corresponding scenes on said image recording medium are recorded.

4,805,040

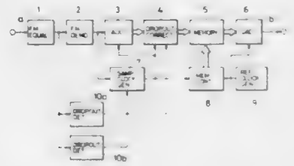
DROP-OUT CORRECTION CIRCUIT IN AN APPARATUS FOR CORRECTING TIME BASE ERROR WITH INHIBITION OF TIME-BASE INFORMATION DURING DROPOUT

Masuo Oku, Kamakura; Yoshimichi Kudo; Isao Saito, both of Yokohama, and Yukio Fukui, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 21, 1987, Ser. No. 76,070
Claims priority, application Japan, Jul. 22, 1986, 61-170898
Int. Cl.[4] H04N *5/94, 5/95*
U.S. Cl. 358—336 **3 Claims**

1. A time base correcting circuit for a video signal reproducing apparatus, comprising means for detecting dropout in a reproduced video signal received from a recording medium and for producing a dropout signal in response thereto; means for detecting a time base fluctuation of said reproduced video signal in accordance with time base information obtained from said reproduced video signal and for producing a time base signal in response to detection of said time base fluctuation; means for correcting a time base fluctuation of said reproduced video signal using said time base signal; and means responsive to said dropout signal for controlling said time base fluctuation detecting means to maintain said time base signal by rendering

said time base fluctuation detecting means non-responsive to said time base information during the detected dropout; further including horizontal blanking signal generating means for generating a horizontal blanking signal; and means for selec-



tively changing a characteristic of said dropout detecting means in response to said horizontal blanking signal representing a horizontal blanking period and obtained from said horizontal blanking signal generating means.

4,805,041

ELECTRON BEAM RECORDER

Shinji Kaneko, and Masahide Mitsuoka, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 22, 1987, Ser. No. 64,554
Claims priority, application Japan, Jul. 10, 1986, 61-160821
Int. Cl.[4] H04N *5/76*
U.S. Cl. 358—347 **4 Claims**

1. An electron beam recorder for forming pictures by exposing a sensitive medium to an electron beam having intensity corresponding to the amplitude level of an input video signal corresponding:

means for supplying said input video signal;

delay means for delaying said input video signal by predetermined periods of time;

mixer means for non-adder-mixing the output signals of said delay means and said input video signal; and

means for supplying the output signal of said mixer means to an electron beam generator, wherein said output signal of said mixer means is said input video signal whose waveform is shaped and exposes the sensitive member such that the picture formed thereon is improved in contrast.

4,805,042

EDITING APPARATUS FOR SEPARATELY RECORDING A PLURALITY OF INFORMATION SIGNALS ALONG WITH RESPECTIVE TIME CODE SIGNALS IN SLANT TRACKS ON A MAGNETIC TAPE

Yutaka Nishikata, Kanagawa, Japan, assignor to Sony Corp., Tokyo, Japan

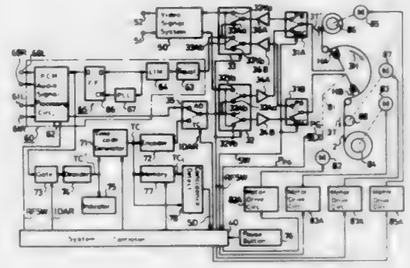
Filed Nov. 9, 1987, Ser. No. 118,318
Claims priority, application Japan, Nov. 13, 1986, 61-270730
Int. Cl.[4] H04N *5/782*
U.S. Cl. 360—14.3 **8 Claims**

1. A recording and reproducing apparatus for recording, in successive slant tracks on a magnetic tape, at least a first information signal and, thereafter, a second information signal along with respective time code signals which are to represent a continuous time code, comprising:

tape drive means for driving the magnetic tape in forward and reverse directions;

rotary magnetic transducer means scanning said successive slant tracks on the magnetic tape when the latter is driven in said forward direction and having recording and reproducing modes for selectively recording and reproducing information signals and respective time code signals in said slant tracks being scanned;

control means operative, after the recording of said first information signal and the respective time code signal on said tape, to cause said tape drive means to drive the tape



in said reverse direction a predetermined distance and then to drive the tape in said forward direction while said transducing means are in said reproducing mode for reproducing said time code signal recorded with said first information signal;

time code generating means for generating a time code signal to be recorded with said second information signal; and

means for synchronizing said time code signal generated by said time code generating means with said time code signal reproduced along with said first information signal by said transducing means while the tape is driven in said forward direction.

4,805,043

MICROGAP RECORDING USING FERRIMAGNETIC MEDIUM FOR MAGNETO-OPTIC PLAYBACK

William D. Doyle, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1987, Ser. No. 138,787
Int. Cl.[4] G11B *5/02*
U.S. Cl. 360—59 **3 Claims**

1. An improved apparatus to record information for playback by magneto-optic means, said improvement comprising:

a. a ferrimagnetic medium disposed for parpendicular recording of information thereon, said medium having a compensation temperature,

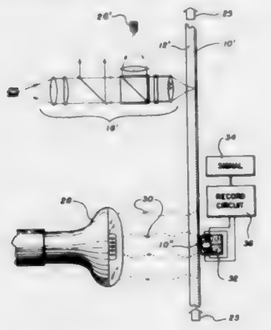
b. means for raising the temperature of a portion of said medium to above said compensation temperature,

c. microgap head means for magnetically recording and re-recording information on said portion of said medium while raised above said compensation temperature without prior unidirectional erasure of said medium,

d. means for providing relative motion beteen said ferrimagnetic medium and saidmicrogap head means and said magneto-optic means, and

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e. means for cooling said portion of said medium to about said compensation temperature, whereby said information



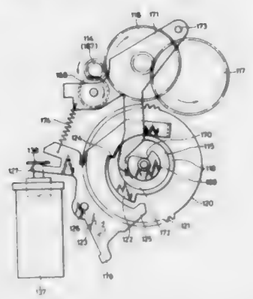
is magnetically replicated in said medium for playback by said magneto-optic means.

4,805,044

IDLER GEAR CUT-OFF MECHANISM FOR A CASSETTE TAPE RECORDER

Akira Otsuki, Iwaki, Japan, assignor to Alpine Electronics, Inc., Japan

Continuation of Ser. No. 688,042, Dec. 31, 1984, abandoned. This application Jul. 20, 1987, Ser. No. 75,226
Claims priority, application Japan, Dec. 28, 1983, 58-199577
Int. Cl.[4] G11B *5/54, 15/00*
U.S. Cl. 360—105 **1 Claim**



1. A cassette tape recorder having a magnetic head and an idler gear cut-off mechanism comprising:

a drive gear (116) connected to a main motor for providing driving power for functions of the cassette tape recorder;

a control rotary member (115) and means including a cam portion (119) on said control rotary member for shifting said magnetic head in the recorder from a non-play position to a play position;

an idler gear (116,117) engaged with said control rotary member for rotating said control rotary member by power transmitted from said drive gear;

a cut-off gear (168) shiftable between a drive position where it is engaged between said drive gear and said idler gear for rotating said control rotary member, and a non-drive position where it does not transmit power from said drive gear to said idler gear, said non-drive position corresponding to a rotation position of said control rotary member wherein said cam portion has shifted the magnetic head to the play position;

a single, integrated cut-off lever (171) having a first free end supporting said cut-off gear for movement between said drive and non-drive positions and an engaging portion (172) at a second free end thereof;

a pivotable first stop lever (123) having a connection portion (127) which is movable by a driving means between a release position and an engaged position, and a stop portion (125) which is shifted between the release position and the engaged position by said connection portion;

driving means (137) connected to said connection portion of said first stop lever which is actuated to move said connection portion; and

said control rotary member having a first cam member (169) at an inner diameter position engageable with said engaging portion of said cut-off lever for shifting said cut-off gear to the non-drive position when said control rotary member is rotated to the rotation position corresponding to shifting of the magnetic head to the play position, and a second cam member (122) at an outer diameter position engageable with said stop portion of said first stop lever at the engaged position and released from said stop portion when said stop portion is shifted to the release position,

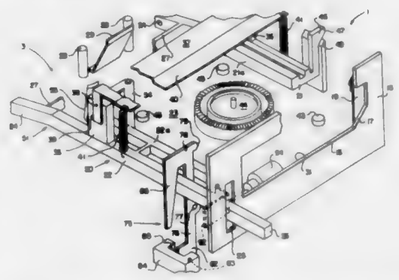
whereby when said main motor is running and said driving means is actuated, said first stop lever is shifted to release said second cam member of said rotary control member, and when said rotary control member is rotated to the rotation position corresponding to shifting of the magnetic head to the play position, the engaging portion of said cut-off lever becomes engaged with the first cam member of said control rotary member to shift it to the non-drive position, and the drive power of said drive gear is cut-off from said idler gear after the magnetic head is displaced to the play position by said magnetic head shifting means.

4,805,045

APPARATUS FOR LOADING AND UNLOADING A TAPE CARTRIDGE

Arnold Schoufeld, Norristown, and Robert L. Lane, Broomall, both of Pa., assignors to Laser Magnetic Storage International Company, Colorado Springs, Colo.

Continuation of Ser. No. 842,449, Mar. 21, 1986, abandoned. This application Mar. 15, 1988, Ser. No. 170,632
Int. Cl.[4] G11B *15/04, 15/08;* G03B *1/04*
U.S. Cl. 360—60 **45 Claims**



1. An apparatus for loading and unloading a tape cartridge in a tape transport, said tape cartridge including a web of tape disposed on a supply reel and having a free end engaged by a leader block, said leader block having an engagement slot opening to a rear edge of said tape cartridge, and said apparatus comprising:

a loading rack for receiving the rear edge of said tape cartridge along a lateral edge of said loading rack, so that said slot is transversely oriented in said loading rack; and

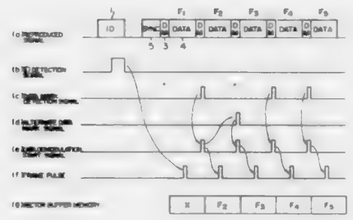
means for engaging the transversely oriented slot of said leader block, for loading and unloading in said tape transport.

4,805,046

INFORMATION RECORDING AND REPRODUCING APPARATUS USING SECTORS DIVIDED INTO A PLURALITY OF FRAMES AND HAVING MEANS FOR PROPER STORAGE OF THE FRAME DATA

Yuzaru Kuroki, Toyonaka; Isao Satoh, Neyagawa; Makoto Ichinose, Sakai; Yoshihisa Fukushima, Osaka, and Yuuji Takagi, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 23, 1986, Ser. No. 922,399
Claims priority, application Japan, Oct. 28, 1985, 50-241057; Jan. 13, 1986, 51-4502
Int. Cl.[4] G11B *5/09*
U.S. Cl. 360—49 **6 Claims**



1. An information recording and reproducing apparatus for recording and reproducing data on and from a recording medium having a sector structure which comprises a plurality of sectors, each having a sector identifier portion including address information and a data field portion divided into a plurality of record units, each record unit including modulated data and an associated data head identification mark, said apparatus comprising:

means for identifying the address information included in the sector identifier of a reproduced signal thereby identifying a target sector from which recorded data are to be reproduced;

means for recording a succesion of plural information record units, each including modulated data and a data head identification mark for identification of the head of the modulated data, on the data field portion of each sector;

means for detecting and identifying the data head identification mark for reproduced record units of a reproduced signal;

means for producing a data demodulation start signal for each detected data head identification mark;

means for detecting a sector identifier and producing a sector identifier detection signal;

means for demodulating the data contained in each of the information record units in response to the data demodulation start signals and storing the demodulated data in a sector buffer memory;

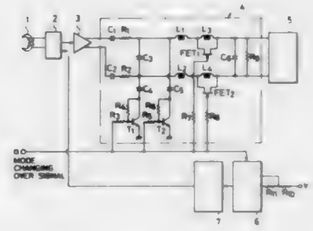
means for producing and counting one pulse for each of the information record units of a reproduced signal and operative according to the pulse counting result, to assign a head address in each of the information record units to be stored in said sector buffer memory, said producing and counting means including means for producing said pulse for each of the information record units on the basis of said sector identifier detection signal until a said data head identification mark is detected to generate said data demodulation start signal, and, once a said data head identification mark is detected, to produce said pulse on the basis of said data demodulation start signal.

4,805,047

READ/WRITE MAGNETIC DISK APPARATUS OPERABLE IN PLURAL DENSITY MODES

Masahiro Nasu, and Kiyoto Abe, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jan. 27, 1986, Ser. No. 879,272
Claims priority, application Japan, Jul. 3, 1985, 60-147477
Int. Cl.[4] G11B *5/09*
U.S. Cl. 360—65 **4 Claims**



1. A read/write circuit for a magnetic recording and reproducing apparatus comprising:

a magnetic head for recording information on a magnetic disk, and for reading information from a magnetic disk which may be recorded thereon in different recording periods;

a filter circuit connected to said magnetic head for receiving input signals read by said magnetic head from a magnetic disk, said circuit having a pair of signal lines receiving the input signals at input ends thereof in parallel from said magnetic head, said signal lines including impedance elements connected in series on each line and between respective junction points across the signal lines, wherein said filter circuit has filter characteristics for filtering input signals of one recording period;

an output read circuit connected to output ends of the two signal lines for outputting data signals filtered in accordance with the filter characteristics of said filter circuit;

mode changing means for changing the filter characteristics of said filter circuit to filter input signals of a different recording period, including means for providing a mode changing signal from an external control device corresponding to selection of input signals of the different recording period, an additional impedance element connected to each of said signal lines of said filter circuit, and a field effect transistor switching element connected to each of said signal lines of said filter circuit, and a field effect transistor switching element connected in parallel with said additional impedance element and controlled by said mode changing signal to selectively switch said additional impedance element into and out of said filter circuit, hence changing the characteristics of said filter circuit, depending upon whether said mode changing signal is applied to its gate,

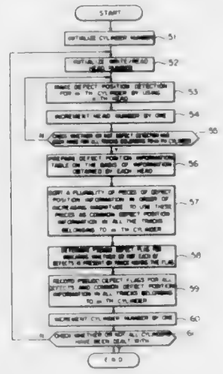
wherein said filter circuit further includes one signal line having a first capacitor and a first inductor in series, the other signal line having a second capacitor and a second inductor in series, and a third capacitor connected between the two signal lines at respective junction points between said first capacitor and first inductor and between said second capacitor and second inductor.

4,805,048

METHOD FOR CONTROLLING TO KEEP OFF DEFECTS ON MAGNETIC DISKS

Hisaharu Takeuchi; Hisashi Takamatsu; Masahiro Nakayama; Yoshiro Shiroyanagi, and Akira Kurano, all of Odawara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 4, 1987, Ser. No. 116,346
Claims priority, application Japan, Nov. 10, 1986, 61-265485
Int. Cl.[4] G11B *5/02, 17/02*
U.S. Cl. 360—69 **1 Claim**



1. A method for controlling to keep off defects usable in a magnetic disk apparatus, in which a plurality of magnetic disks are included and defect position information is recorded in each of tracks on each magnetic disk to keep off a defect in writing records in each track, said method comprising the steps of:

recording the positional information about defects on all the tracks belonging to a cylinder of the magnetic disk apparatus, in each of the tracks; and

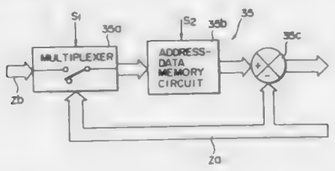
writing records in each of the tracks, while keeping off said defects on the basis of the positional information about said defects.

4,805,049

POSITIONING DEVICE FOR AN AUTOMATIC CHANGING APPARATUS EMPLOYING AND ABSOLUTE ENCODER

Akira Ichijima, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 27, 1987, Ser. No. 43,023
Claims priority, application Japan, Apr. 30, 1986, 61-99956; Apr. 30, 1986, 61-99957
Int. Cl.[4] G11B *19/00*
U.S. Cl. 360—71 **12 Claims**



1. A positioning device for positioning an object being transferred along a predetermined moving coordinate system, comprising:

means for moving the object of transfer;

absolute encoder means having an input shaft rotating interlockingly with the movement of the object of transfer, for detecting the rotational position of the input shaft which corresponds to the coordinate position of the object to deliver a current-position address signal as the detected coordinate position;

means for outputting a designated-position address signal as a target coordinate position to which the object of transfer is moved; and

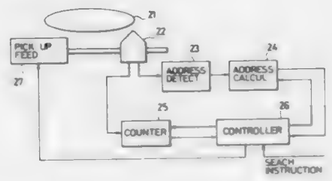
driving means having means for calculating the difference between the designated-position address signal from the output means and the current-position address signal from the absolute encoder, for driving the moving means based on the calculated difference, said driving means including means for substituting the current-position signal from the absolute encoder for the designated-position address signal so that said calculated difference becomes zero when power to the positioning device is turned on.

4,805,050

DISK PLAYER INFORMATION SELECTING APPARATUS

Yoshio Aoyagi; Tsuneo Ishii; Shizuo Kakiuchi, and Naoto Arifuku, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 665,213, Oct. 26, 1984, abandoned.
This application Jun. 18, 1987, Ser. No. 65,172
Claims priority, application Japan, Oct. 27, 1983, 58-201994
Int. Cl.[4] G11B *27/19*
U.S. Cl. 360—72.2 **8 Claims**



1. An information retrieving apparatus for a disk player employing a disk-like recording medium on which program information including address data is recorded in tracks and information reading means is moved obliquely to said tracks to retrieve information starting from a desired position on said recording medium, comprising:

means for calculating, each time said information reading means is stopped after moving obliquely to said tracks, a distance to said desired position, according to the following:

$$\Delta T = (\sqrt{(F_a VP/75\pi) + 625} - \sqrt{(F_c VP/75\pi) + 625})/P$$

wherein F_c is the actual address position, F_a is the target address position, V represents the linear velocity of the disk, P represents the pitch of track, and T is the distance from said actual address position to said target address position; and

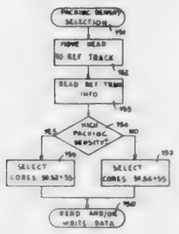
means for displacing said reading head obliquely to said tracks through said distance toward said desired position after each said time and reading head is stopped until said reading head is within a predetermined distance from said desired position.

4,805,051

APPARATUS FOR RECORDING AND REPRODUCING DATA ON A MAGNETIC RECORDING MEDIUM

Giuliano De Marco, and Alessandro Fehl, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 798,623, Nov. 15, 1985, abandoned.
This application Jun. 4, 1988, Ser. No. 142,273
Claims priority, application Italy, Nov. 15, 1984, 68144 A/84
Int. Cl.[4] G11B *21/08, 5/09, 5/265*
U.S. Cl. 360—78.01 **10 Claims**



1. An apparatus for recording and reproducing data with different track densities on a magnetic recording medium, comprising:

a single recording head for recording and reading data on first tracks having a first track density and for recording and reading data on second tracks having a second track density smaller than said first track density;

a head support for movably supporting said single recording head across said tracks;

moving means selectable for moving said head support according to either one of a first spacing mode and a second spacing mode, wherein the first spacing mode provides for positioning the head support through first short steps associated to said first tracks, and wherein the second spacing mode provides for positioning the head support through second steps greater than said first steps and associated to said second tracks, respectively; and the combination comprising:

said single recording head includes a first single recording and reading gap and a second single recording and reading gap, wherein the width of the first gap and the width of the second gap are provided for recording and reading the data of said first tracks and said second tracks, respectively;

switching means for actuating said first single gap to record or read the data of said first tracks concurrently with the selection of said first spacing mode and for actuating the second single gap to record or read the data of said second tracks concurrently with the selection of said second spacing mode, respectively; and

cleaning-up means for cleaning up the data of said first tracks and said second tracks, respectively, said cleaning-up means providing a first pair and a second pair of erasing gaps disposed laterally with respect to said first single and said second single gap, respectively, and wherein said first and said second erasing gaps are actuatable concurrently with a recording status of the apparatus and selection of said first and second single recording and reading gaps; and

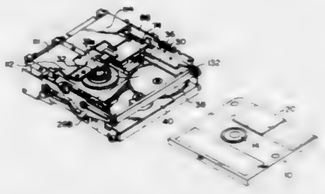
wherein said moving means cause the first single gap and the first pair of erasing gaps to be centered with respect to said first tracks in the first spacing mode and cause the said second single gap and the second pair of erasing gaps to be centered with respect to said second tracks in the second spacing mode, respectively.

4,805,052

APPARATUS FOR POSITIONING A MAGNETIC DISC PACK WITHIN A RECORDING/REPRODUCING DEVICE

Yasunori Nishijima, Tokyo, Japan, assignor to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Apr. 6, 1987, Ser. No. 34,956
Claims priority, application Japan, Apr. 4, 1986, 61-77129
Int. Cl.[4] G11B *17/32, 5/012, 5/016*
U.S. Cl. 360—97.01 **6 Claims**



1. A magnetic disc pack loading/unloading device for use in a magnetic recording/reproducing apparatus in which information can be recorded into and/or reproduced from a magnetic disc rotatably stored within a magnetic disc pack, said disc pack including a window through which a magnetic head is inserted during a recording/reproducing operation, and a hole located in a different part of said magnetic disc pack from said window, said magnetic disc pack loading/unloading device comprising:

a device main body provided with said magnetic head, a head carriage, and a drive source, said drive source including a rotary shaft;

a holder for guiding the center core of said magnetic disc to a position where it can be engaged with said rotary drive shaft;

a regulation plate holder including a regulation plate, said regulation plate being disposed at a position opposed to said magnetic head with said magnetic disc between them during the magnetic recording or reproducing operation of said apparatus; and,

a first regulation plate positioning pin erected on said device main body so as to correspond to the position of said hole formed in said magnetic disc pack when said magnetic disc pack is guided by said holder to a position where said magnetic recording or reproducing operation can be performed, said regulation plate holder having a recess into which said first pin fits when said magnetic disc pack is inserted in said loading/unloading device, said first pin passing through said hold and fitting into said recess to position said regulation plate at a given position.

4,805,053

METHOD AND APPARATUS FOR DETECTING POSITION OF TAPE WHEN RECORDING OR REPRODUCING SIGNALS THEREON

Masaaki Yamanaka, and Fumiyoshi Abe, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 3, 1987, Ser. No. 33,798
Claims priority, application Japan, Apr. 7, 1986, 61-079375
Int. Cl.[4] G11B *27/34, 27/18, 15/18*
U.S. Cl. 360—72.3 **18 Claims**

1. In an apparatus for recording and/or reproducing signals on a tape in a run extending between supply and take-up reels on which the tape is wound; a tape position detecting device comprising:

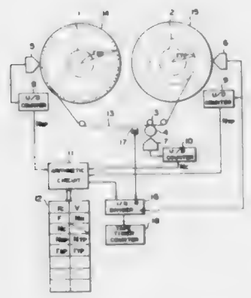
means for determining radii of the outer turns of said tape on said supply and take-up reels with the tape in a reference position;

means for generating signal pulses in correspondence to the

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revolutions of said supply and take-up reels for movement of said tape from said reference position;

means for counting the numbers of said signal pulses generated in correspondence to the revolutions of said supply and take-up reels in response to said movement of the tape



from said reference position to an aribitrary tape position; and

means for calculating at least one of said radii of the outer turns of the tape on said supply and take-up reels for said arbitrary tape position from the following:

$$r_S = \frac{2N_T \cdot N_S \cdot r_{TP} + (N_T^2 - N_S^2)\, r_{SP}}{N_S^2 + N_T^2}$$

$$r_T = \frac{2N_T \cdot N_S \cdot r_{SP} + (N_S^2 - N_T^2)\, r_{TP}}{N_T^2 + N_S^2}$$

in which r_S and r_T are said radii on said supply and take-up reels, respectively, for said arbitrary tape position, r_{SP} and r_{TP} are said radii on said supply and take-up reels, respectively, for said reference tape position, and N_S and N_T are said numbers of the signal pulses counted in correspondence to the revolutions of said supply and take-up reels, respectively, for said movement of the tape from said reference position to said arbitrary tape position.

4,805,054

RECORDING AND/OR REPRODUCING DEVICE FOR THE FLEXIBLE MAGNETIC DISK

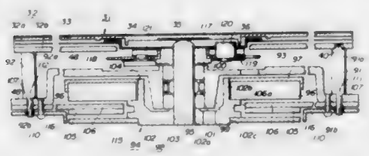
Hidetoshi Kamoto, Kanagawa; Hiroshi Yamamouchi, Tokyo; Shogo Takahashi, Kanagawa; Toru Takamiya, Kanagawa, and Yoshimasa Gonda, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 31, 1985, Ser. No. 815,040

Claims priority, application Japan, Dec. 31, 1984, 59-280119; Jan. 19, 1985, 60-5717[U]

Int. Cl.[4] G11B *5/012*

U.S. Cl. 360—97.01 **3 Claims**



1. A disk drive apparatus for driving a disk enclosed in a disk casaette, said apparatus comprising, in combination;

a chassis,

a recording reproducing head movably attached to said chassis,

a cassette holder arranged on said chassis so as to be movable between a cassette inserting position and a cassette operating position, and

means for rotating said disk when said cassette holder is in the cassette operating position, said rotating means including

a vertical spindle rotatably attached to said chassis by a bearing means,

a chucking means provided on the upper side of said spindle for coupling said disk to said spindle,

a rotor magnet fixed on said spindle for rotating the magnet with said spindle, said rotor magnet being arranged under said chassis,

a circuit base board fixed to said chassis and arranged under said rotor magnet,

a stator coil mounted on said circuit base board facing said rotor magnet, and

a supporting plate made of magnetizable material affixed to said chassis under said rotor magnet, the magnetic force between said rotor magnet and said supporting plate being exerted on said rotor and spindle downwardly to thereby firmly fix the vertical position of said spindle and magnetically shield said stator coil.

4,805,055

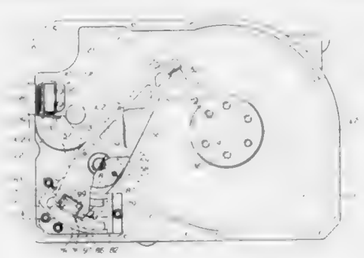
WINCHESTER DISC DRIVE ACTUATOR STRUCTURE

Harold T. Wright, San Carlos, Calif., assignor to Maxtor, San Jose, Calif.

Division of Ser. No. 444,465, Nov. 24, 1986, abandoned. This application Oct. 20, 1986, Ser. No. 893,955

Int. Cl.[4] G11B *5/55*

U.S. Cl. 360—106 **17 Claims**



1. An improved apparatus for positioning read/write heads with respect to rotating disk media in a disk drive comprising:

an arm assembly including head support means for supporting and positioning read/write heads at a first end of said arm assembly, and actuator support means at a second end of said arm assembly;

pivot means having a pivot axis for pivotally supporting said arm assembly with respect to said disks, said head support means extending from a first side of said pivot means and said actuator support means extending from a second side of said pivot means;

positioning motor means disposed adjacent to said second end of second arm assembly including:

first and second stationary magnet means; said first and second magnet means each comprising an elongated permanent magnet means having a longitudinal axis and at least one arcuate face; said arcuate face having a central axis of curvature parallel to said longitudinal axis of said permanent magnet means; said arcuate face of said first magnet means being convex; said arcuate face of said second magnet means being concave; the radius of curvature of said concave face of said second magnet means being greater than the radius of curvature of said convex face of said first magnet means;

means for supporting said first and second magnet means such that said axes of curvature of said arcuate faces of said first and second magnet means coincide with said pivot axis of said arm assembly such that said arcuate faces of said first and second magnet means are spaced apart from each other along a radius centered at said pivot axis; and

an electromagnetic coil having a cross section with a major axis and a minor axis secured to said actuator support means and disposed between said first and second magnet means such that said major axis is parallel to said pivot axis of said arm assembly;

whereby read/write heads are selectably positionable upon the application of selected electromotive force to said coil.

4,805,056

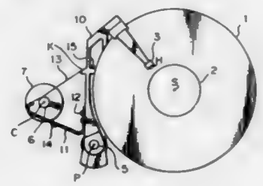
MAGNETIC DISC DRIVE

Seiso Takagi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 892,342, Aug. 1, 1986, abandoned. This application Oct. 7, 1987, Ser. No. 105,868

Int. Cl.[4] G11B *5/54*

U.S. Cl. 360—106 **6 Claims**



1. In a magnetic disc drive for moving a magnetic head to a predetermined position on a magnetic disc which is rotated about a center S thereof comprising an arm for securing said magnetic head thereto and capable of swinging about a center P thereof; a capstan capable of rotating about a center C thereof so as to generate a driving power for said arm; and a flexible member wound on said capstan, both ends of which are respectively coupled to positions spaced apart by a predetermined interval on said arm, for transmitting said driving power to the arm so that it is forced to swing about said center P, said centers S, P and C of the magnetic disc, the arm and the capstan, respectively, are so disposed as to have a relationship of $90° \leqq CPS < 180°$ and, where a position of said magnetic head is defined by H, the magnetic head is positioned to have a relationship of $CP < HP$, whereby said arm for support of the magnetic head can be forced to swing about the center P of the arm and within an area defined by the angle, $\angle CPS$, which is an included angle formed between the lines CP and SP, wherein said arm for supporting the magnetic head swings about the pivot center P of the arm only within the area defined by the angle, $\angle CPS$, wherein said flexible member comprises a belt means, having one and other ends in combination with, a tensed support member having one end secured to the arm and having another end at which one end of the belt means is supported, wherein the other end of the belt means is secured to said arm at a position intermediate the pivot center P and the magnetic head position H said tensed support member being secured to the arm at a position closer to the pivot center P than the position K whereat the other end of the belt means contacts said arm, the distance from the pivot center P to the position K whereat the other end of the belt means contacts said arm being greater than the distance from the pivot center P to the center C.

4,805,057

MAGNETIC HEAD DRIVING APPARATUS

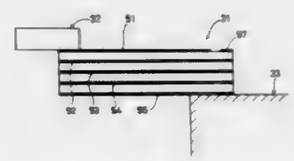
Toshio Ogawa, and Akira Ando, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Apr. 22, 1987, Ser. No. 41,597

Claims priority, application Japan, Apr. 23, 1986, 61-95098

Int. Cl.[4] G11B *5/56, 21/24*

U.S. Cl. 360—109 **11 Claims**



1. A magnetic head driving apparatus comprising:

a monolithic bimorph member having a first end with a magnetic head fixed thereto; and

a support member having a second end of said monolithic bimorph member fixed thereto to support the same,

said monolithic bimorph member comprising a piezoelectric ceramic sintered body which includes a plurality of electrodes stacked alternately with a plurality of ceramic layers, said plurality of electrodes including a first electrode group for connection to a first potential and a second electrode group for connection to a second potential, for driving the monolithic bimorph member,

respective ones of said electrodes, which form each of said electrode groups, being electrically connected with each other by conductive paths which comprise conductive paste material disposed continuously in corresponding adjacent through holes in said electrodes and ceramic layers,

wherein the ones of said through holes which connect said electrodes of at least one of said first electrode group or said second electrode group, are formed spaced away from said first end to which said magnetic head is fixed, and are in the vicinity of said second end of said monolithic bimorph member, which second end is fixed to said support member.

4,805,058

MAGNETIC ERASING HEAD

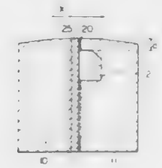
Gichi Takeuchi; Masanobu Sato, and Hidesuke Miyairi, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 664,217, Oct. 24, 1984. This application Mar. 20, 1987, Ser. No. 28,077

Claims priority, application Japan, Oct. 24, 1983, 58-198932

Int. Cl.[4] G11B *5/23, 5/235, 5/147*

U.S. Cl. 360—119 **2 Claims**



1. A magnetic erasing head comprising a pair of magnetic core halves which define an erasing gap therebetween and forming a common surface which faces a travelling magnetic recording medium, said pair of magnetic core halves comprising, a leading side core and a trailing side core with respect to the travelling direction of said magnetic recording medium,

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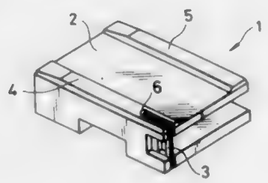
said leading side core formed of a first portion comprising a magnetic ferrite and a second portion comprising a thin film of magnetic alloy which has a saturation magnetic flux density which is higher than the magnetic flux density of said first portion, said second portion located adjacent said erasing gap, said trailing side core formed with a notch which is adjacent to said erasing gap, said erasing gap being formed between a planar surface of said thin film of magnetic alloy and a planar surface of said trailing side core, and a coil wound through said notch being applied with an alternating erasing current for generating erasing magnetic field at said erasing gap, wherein the gap depth is in a direction perpendicular to said common surface of said notch and said trailing side core has a core portion adjacent to said erasing gap which has a thickness in the plane of said common surface and in a direction perpendicular to said gap which is substantially equal to said gap depth.

4,805,059

MAGNETIC HEAD HAVING MNO/NIO-BASED NONMAGNETIC SUBSTRATE

Kazuhiro Tsuchiya; Toshikazu Nishiyama, and Hiroshi Tomishima, all of Saitama, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jul. 21, 1986, Ser. No. 887,184
Claims priority, application Japan, Jul. 22, 1985, 60-161660
Int. Cl.[4] G11B *5/12, 15/60*
U.S. Cl. 360—125 **17 Claims**



1. A magnetic head having a magnetic alloy film superposed on a nonmagnetic substrate, said nonmagnetic substrate comprising 67 to about 89.9 mol % of MnO, 10 to about 32.9 mol % of NiO, and at least about 0.1 mol % but not more than 10 mol % of at least one material selected from the group consisting of CaO, ZrO_2, V_2O_5, Y_2O_3, and CuO and having a rock salt type crystalline structure.

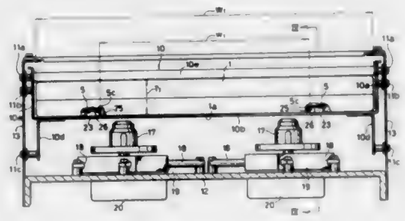
4,805,060

CASSETTE TAPE RECORDING AND/OR REPRODUCING APPARATUS AND CASETTES FOR USE THEREIN

Yuzo Ohtani, and Sachio Ueda, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 031,550, Mar. 30, 1987. This application Apr. 6, 1988, Ser. No. 178,240
Int. Cl.[4] G11B *23/02*
U.S. Cl. 360—132 **4 Claims**

1. A large-sized tape cassette adapted to be selectively loaded, in place of a standard, relatively small-sized tape cassette, into a tape cassette recording and/or reproducing apparatus, said large-sized tape cassette having a width measured in a transverse direction larger than the similarly measured width of said standard, relatively small-sized tape cassette said large-sized tape cassette having a bottom surface with two parallel grooves therein spaced apart in the respective transverse direction and each extending at right angles to said transverse direction, said two spaced apart grooves having a distance between their closest longitudinal margins which is equal to said similarly measured width of the standard, relatively small-sized cassette.

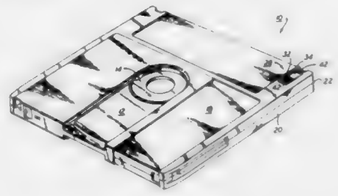


4,805,061

SELF-POSITIONING WRITE PROTECT MECHANISM FOR A CARTRIDGE

Patrick J. Champagne, Cupertino, Calif., and David L. Rowden, Rochester, N.Y., assignors to Verbatim Corp., Sunnyvale, Calif.

Filed Jun. 9, 1987, Ser. No. 60,127
Int. Cl.[4] G11B *23/02, 15/04, 19/04*
U.S. Cl. 360—133 **6 Claims**



1. A self-positioning write protect mechanism for a cartridge comprising opposed top and bottom plates spaced from each other to form a compartment arranged for writing data on, and reading data from, an enclosed information-receptive medium, said write protect mechanism comprising:

(a) symmetrically shaped ramp-like projection means integral with an internal surface of at least one of said plates;

(b) a body member mounted within said compartment for slidable movement along an operative path defined by (1) a first extreme write enabled position in which an associated drive mechanism is permitted to record data on the information-receptive medium, (2) a second extreme write protect position in which such drive mechanism is prevented from recording data on the information-receptive medium, and (3) an intermediate position adjacent the crown of said ramp-like projection means;

(c) a button, coupled to said body member and accessible to a cartridge user through a write control aperture in at least one of said plates, for slideably moving said body member along its operative path (1) in a first direction from its write enabled position past its intermediate position toward its write protect position, and (2) in a second opposing direction from its write protect position past its intermediate position toward its write enabled position; and

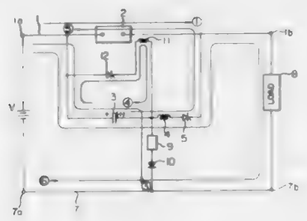
(d) holding means for releasably holding said body member either in its write protect position or in its write enabled position, said holding means comprising finger-like spring means having one end portion integral with said body member and a free end portion engageable with said ramp-like projection means as said body member is moved through its intermediate position, said finger-like spring means and said ramp-like projection means cooperatively producing a toggle-like action as said finger-like spring means moves past the crown of said ramp-like projection means the effect of which toggle-like action is to move said body member forward, either into its write enabled position or into its write protect position, as said spring means moves past the crown of said symmetrically shaped ramp-like projection means.

4,805,062

DC CIRCUIT BREAKER AND METHOD OF COMMUTATION THEREOF

Tatsuji Shirouzu; Masatoshi Moritta, and Satoshi Mizuno, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 14, 1987, Ser. No. 108,009
Claims priority, application Japan, Oct. 15, 1986, 61-242996
Int. Cl.[4] H02H *3/00;* **H01H** *9/30*
U.S. Cl. 361—4 **5 Claims**



1. A DC circuit breaker comprising:

a breaker unit arranged in a main DC line;

a first series circuit including a commutation capacitor, a reactor and first switch means inserted in parallel to the breaker unit;

a charge resistor inserted between the negative bus of the DC line and the commutation capacitor; and

a second series circuit including a magnetic repulsive coil and second switch means arranged in parallel to the commutation capacitor,

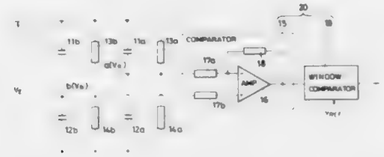
wherein a reverse current is supplied to the DC line by LC resonance thereby to generate a zero current and to extinguish an arc in the breaker unit.

4,805,063

FAULT DETECTOR FOR DETECTING FAULTS IN A DC CAPACITOR CIRCUIT

Michio Katsuka, and Shigenori Higashino, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1987, Ser. No. 40,857
Claims priority, application Japan, Apr. 22, 1986, 61-91191
Int. Cl.[4] H02H *7/16*
U.S. Cl. 361—16 **15 Claims**



1. A fault detector for detecting faults in a DC capacitor circuit comprising a plurality of parallel-connected capacitor circuits each having a group of series-connected DC capacitors for suppressing voltage pulsation and incorporated into the DC unit of an inverter for converting direct current into alternating current, each of said groups of series-connected capacitors having a junction between the capacitors of the group, which comprises:

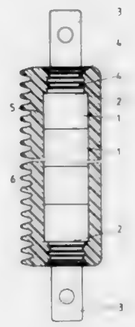
a comparison means connected to a junctions of the series-connected DC capacitors of said plurality of the parrallel-connected capacitor circuits, to compare potentials at the respective junctions of the respective series-connected DC capacitors of the parallel-connected capacitor circuits to detect a difference between said potentials, said comparison means including means for detecting said difference in potential and the magnitude of said difference.

4,805,064

LIGHTNING ARRESTER HAVING A HOUSING WITH A HIGH FILLER CONTENT

Hans-Rudolf Beer, Binz; Helmut Brinch, Schinznach; Tony Kaiser, Bachs; Günther Maier, Wettingen, and Alois Muff, Sarnen, all of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Aug. 20, 1986, Ser. No. 898,339
Claims priority, application Switzerland, Sep. 2, 1985, 3774/85
Int. Cl.[4] H02H *9/04*
U.S. Cl. 361—117 **5 Claims**



1. A lightning arrester comprising two terminal fittings; at least one resistor core contacting the terminal fittings and made of voltage-dependent resistance material; and an electrically insulating housing closely surrounding the resistor core said housing being formed of a set resin matrix into which insulating, inorganic filler is embedded, said housing being in contact with the terminal fittings; and said housing containing more than 80% by weight of said filler.

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PARTICULATE MAGNETIC RECORDING MEDIA HAVING AN AREALLY CONTROLLED RECORDING CHARACTERISTICS

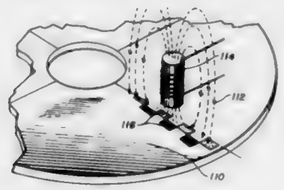
Ramesh Jagannathan, San Diego, and Matthew R. Bye, San Francisco, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1986, Ser. No. 924,529
Int. Cl.[4] G11B *5/82*
U.S. Cl. 360—135 **5 Claims**

1. A magnetic medium comprising acicular magnetic particles of a single type, said particles being bound to a conductive substrate into a single layer in an areal pattern having a first subarea and a second subarea thereof, said first subarea of said pattern having a substantially constant first volumetric packing density of particles, the major axes of said particles comprising said first subarea being distributed at random with respect to

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said conductive surface, and said second subarea having a substantially constant second volumetric packing density of particles, the major axes of said particles comprising said sec-



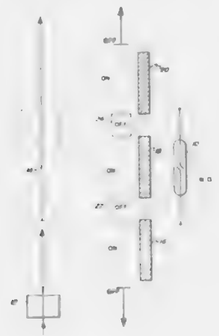
ond subarea being uniformly aligned in a direction perpendicular to said conductive surface, whereby said first volumetric packing density of particles is lesser in magnitude than said second volumetric packing density of particles.

4,805,066

HYBRID FLOAT SWITCH

Robert Mergenthaler, 2945 State Road 84, Fort Lauderdale, Fla. 33312

Filed Sep. 17, 1987, Ser. No. 97,947
Int. Cl.⁴ H01H *35/18*
U.S. Cl. 361—178 **7 Claims**



1. A float switch, comprising:

float support means, said float support means including a top and a bottom and an internal tube, said internal tube being sealed with respect to a liquid encountering said float support means;

float means, said float means slidable positioned about said internal tube, said float means including magnet means, said float means being responsive to the level of said liquid;

circuit board means, said circuit board means being positioned within said internal tube;

a plurality of magnetic reed switches, said reed switches each having a sealed housing and being mounted upon said circuit board means, each said reed switch having two leads, each lead having portions extending and outside said sealed housing, said plurality including a first enable switch, a second pump switch and a third alarm switch, said pump switch and said alarm switch being physically aligned in parallel position above said enable switch, said enable switch and said alarm switch each being modified with one of said two external lead portions being substantially shortened with respect to the other external lead portion thereby modifying the reaction to a magnetic field, said modified reeds eliminating an otherwise conventionally occurring active state;

said magnetic means actuating said enable switch, said pump switch and said alarm switch, respectively, as said float rises in response to said liquid;

said plurality of reed switches providing an off state, a pump active state, and an alarm active state, in sequence; and

circuit means, including pump circuit means and alarm circuit means, responsive to said pump active state and said alarm active state, whereby a float switch is provided utilizing a minimum number of modified reed switches to maximize the number and sequence of active circuit states and to provide a relatively small physical unit.

4,805,067

REMOVAL OF STATIC FROM THE PLATEN OF A COPYING APPARATUS

Kiri B. Amarakoon, Letchworth, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1982, Ser. No. 445,788
Claims priority, application United Kingdom, Dec. 16, 1981, 8137882
Int. Cl.⁴ H05F *3/00*
U.S. Cl. 361—212 **1 Claim**



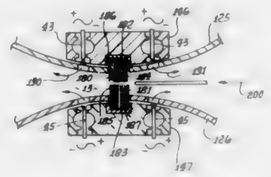
1. A document reproduction apparatus which includes an object surface upon which documents to be reproduced are placed, the object surface comprising a transparent glass platen having a top surface upon which documents to be copied are positioned and a bottom surface, the bottom surface covered by a grounded, transparent, conductive layer having a surface resistivity of less that 10^9 ohm per square, wherein said conductive layer serves to remove electrostatic charge from the top surface caused by movements of documents along said surface.

4,805,068

FILM CLEANER METHOD AND APPARATUS

Newell E. Cumming, and James E. Sidell, both of Encino, Calif., assignors to Cumming Corporation, Chatsworth, Calif.

Continuation-in-part of Ser. No. 14,729, Feb. 13, 1987, Pat. No. 4,750,080. This application Mar. 28, 1988, Ser. No. 173,890
Int. Cl.⁴ H05F *3/06*
U.S. Cl. 361—213 **20 Claims**



1. The method of cleaning film, employing two sets of brushes, that includes:

(a) providing a cleaning zone and passing film laterally through that zone,

(b) providing streams of gas flowing toward opposite sides of the film as it passes in said zone,

(c) supplying ions of opposite polarity to said air streams and in cyclically reversing polarity relation,

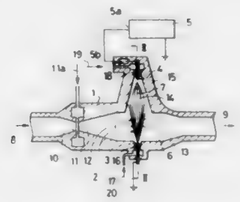
(d) and also brushing the film opposite sides as the film passes through said zone, thereby causing the brushes to center the film as it passes through said zone.

4,805,069

POWDER CHARGING APPARATUS AND ELECTROSTATIC POWDER PAINTING APPARATUS

Hideo Nagasaka, Hitachi; Masahiro Yamamoto, Sakura; Tadao Morita, Chiba; Hiroshi Saitoh, Funabashi, and Tsutomu Itoh, Tokyo, all of Japan, assignors to Onada Cement Co., Ltd., Onada, Japan

Filed Mar. 6, 1987, Ser. No. 22,765
Claims priority, application Japan, Mar. 10, 1986, 61-51663
Int. Cl.⁴ B05B *5/02*
U.S. Cl. 361—226 **39 Claims**



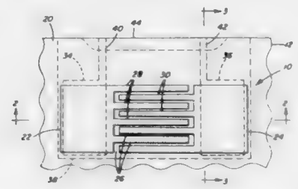
1. A powder charging apparatus comprising an insulative tubular passage for transporting powder carried by gas, a pair of plasma electrodes provided within said tubular passage, means for intermittently applying a D.C. voltage between said pair of electrodes, a space where mainly desired polarity ions drawn from said electrode pair exist, a space where mainly opposite polarity ions exist, and means for feeding well dispersed powder into that portion of the said space where mainly desired polarity ions exist.

4,805,070

CAPACITIVE COUPLED MOISTURE SENSOR

Harry S. Koontz, Penn Hills Township, Allegheny County, and James F. Wilson, Worthington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 22, 1987, Ser. No. 111,323
Int. Cl.⁴ H01G *5/20, 7/00*
U.S. Cl. 361—286 **31 Claims**



1. A sensor for detecting moisture comprising:

a dielectric substrate;

first and second electroconductive members positioned in a fixed, spaced apart relationship relative to each other and adjacent a first major surface of said substrate;

third and fourth electroconductive members positioned in a fixed, space apart relationship relative to each other and adjacent an opposing, second major service of said substrate wherein said first electroconductive member overlays at least a portion of said third electroconductive member and said second electroconductive member overlays at least a portion of said fourth electroconductive member; and

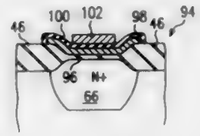
means to provide electrical connection to only said third and fourth electroconductive members.

4,805,071

HIGH VOLTAGE CAPACITOR FOR INTEGRATED CIRCUITS

Louis N. Hutter, Richardson, and John P. Erdeljac, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 30, 1987, Ser. No. 126,442
Int. Cl.⁴ H01G *4/10, 7/00;* **H01L** *27/02*
U.S. Cl. 361—313 **19 Claims**



14. A high voltage capacitor comprising:

a first capacitor plate comprising an N+ region;

a first insulating layer overlying said first capacitor plate;

a middle capacitor plate comprising a first conductive layer overlying said first insulating layer;

a second insulating layer overlying said middle capacitor plate;

a second capacitor plate comprising a second conductive layer overlying said second insulating layer; and

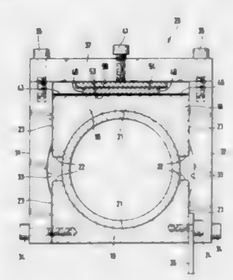
circuitry to connect a voltage across said first and second plates, said middle plate being electrically isolated from said first and second plates and from said circuitry such that said middle plate assumes a voltage intermediate to the voltages at said first and second plates.

4,805,072

DEVICE FOR COUPLING HF ENERGY TO LASERS

Frank Ackermann, Stuttgart; Reinhard Wollermann-Windgasse, Vaihingen-Ent/Riet, and Bernd Faller, Ditzingen, all of Fed. Rep. of Germany, assignors to Trumpf GmbH & Co., Ditzingen, Fed. Rep. of Germany

Filed Nov. 2, 1987, Ser. No. 115,514
Int. Cl.⁴ H01G *4/38;* **F27D** *3/004*
U.S. Cl. 361—328 **16 Claims**



1. A device for capacitive coupling of HF energy to a laser section, comprising

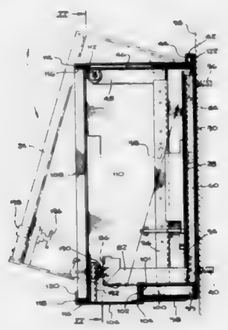
an input line,

a capacitor situated in said input line and having a first capacitor electrode, a second capacitor electrode and a

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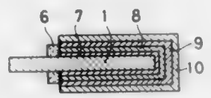
dielectric situated between said first and second capacitor electrodes,
a dielectric laser tube,
a first and a second cooled contact electrode embracing said dielectric laser tube,
an output line connected at least electrically to said second cooled contact electrode,
and the improvement wherein
(a) said first cooled contact electrode has a surface with a partial region that comprises said first capacitor electrode,
(b) a dielectric foil is situated on said partial region and forms said dielectric of said capacitor, and
(c) an electric conducting web is situated on said foil and forms said second capacitor electrode.

4,805,073
CABLE TERMINAL BOX CONSTRUCTION
Sigurd A. Johnson, Mission Viejo; Howard C. Knott, Huntington Beach, and Jerry A. Pederson, Norco, all of Calif., assignors to Plan Hold Corporation, Irvine, Calif.
Filed Feb. 2, 1988, Ser. No. 151,562
Int. Cl.[4] H02B *1/02*
U.S. Cl. 361—246 **13 Claims**



10. A weather-resistant multi-cable terminal box comprising in combination:
back support means adapted to be mounted to a supporting means;
a cover for front, top and sides of said back support means;
hinge means on said cover and back support means at the top thereof including inter-leaved return flanges on said back means and on said cover;
said cover and back means having inter-leaved side wall portions;
and retaining means on said back support means engagable with means on said cover for releasably holding said cover in open positon about said hinge means;
said back support means and cover each include bottom wall portions adapted to overlap each other;
the bottom wall portion of said back support means includes guide means,
and cable pass-through plate means slidably received in said guide means.

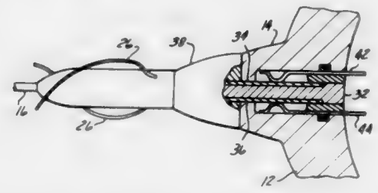
4,805,074
SOLID ELECTROLYTIC CAPACITOR, AND METHOD OF MANUFACTURING SAME
Yoshihiro Harakawa; Koji Izawa; Hidemitsu Takeuchi; Shinji Nakamura, and Sadamu Toita, all of Kawasaki, Japan, assignors to Nitsuko Corporation, Kanagawa, Japan
Filed Sep. 28, 1987, Ser. No. 101,692
Claims priority, application Japan, Mar. 20, 1987, 62-67172; Mar. 27, 1987, 62-73741; Mar. 30, 1987, 62-77112; Apr. 1, 1987, 62-79943
Int. Cl.[4] H01G *9/05;* **B01J** *17/00*
U.S. Cl. 361—525 **37 Claims**



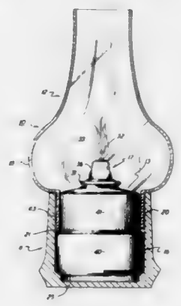
1. A solid electrolytic capacitor characterized by having a capacitor element comprising:
a metal plate capable of having a dielectric oxidation layer formed thereon;
an insulator layer of a desired shape formed on a predetermined portion of said metal plate;
a dielectric oxidation layer formed on a surface of said metal plate at one portion thereof defined by said insulator layer;
a conductive polymer layer formed on said dielectric oxidation layer which is a polymer layer of a heterocyclic compound selected from the group consisting of pyrrole, furan and thiopene formed by electrochemical polymerization in an electrolyte solution containing said heterocyclic compound and supporting electrolyte which either comprises boric acid and any one of the following organic compounds:
(1) an aliphatic or aromatic carboxylic acid, or a salt thereof;
(2) an aliphatic or aromatic compound having two or more carbonyl radicals, or a salt thereof;
(3) an aliphatic or aromatic compound having at least one hydroxyl radical and at least one carboxylic radical, or a salt thereof; and
(4) an aliphatic or aromatic compound having at least one amine radical and at least one carboxylic radical, or a salt thereof; or comprises a boron compound obtained by chemically combining boric acid and any of the compounds (1) to (4);
a conductive layer formed on said polymer layer;
a first terminal attached to another portion of said metal plate defined by said insulator layer; and
a second terminal attached to said conductive layer.

4,805,075
ARTIFICIAL CHRISTMAS TREE
Dolores Damore, Box 5013, Warren, Mich. 48090
Continuation of Ser. No. 488,933, Apr. 27, 1983, abandoned.
This application Jun. 21, 1984, Ser. No. 622,407
Int. Cl.[4] F21P *1/02;* **F21V** *21/00*
U.S. Cl. 362—123 **10 Claims**

1. An artificial Christmas tree comprising:
a hollow tree trunk having a plurality of integral branch studs radially protruding therefrom at a plurality of different locations along the length of said hollow tree trunk, each of said branch studs having a single rectangular aperture passing therethrough, each of said rectangular apertures bounded by a top surface, a bottom surface and a pair of opposing side surfaces substantially parallel to the length of said hollow tree trunk;
a first pair of electrical contact members disposed in each of said branch studs, one of said first pair of electrical contact members provided along each of said opposing side surfaces of said rectangular aperture;
pedestal means for supporting said hollow tree trunk in a vertical position;
a plurality of tree branch members having simulated pine needles, each of said tree branch members having elongated male connector means disposed at one end thereof; each of said elongated male connector means having a solid rectangular portion adapted to be received in one of said rectangular apertures with a snug fit between said top and bottom surfaces to radially support said branch members from said hollow tree trunk and a second pair of electrical contact members disposed on opposing external surfaces of said solid rectangular portion, said second pair of electrical contact members engaging said first pair of electrical contact members when said solid rectangular portion is inserted in said rectangular aperture;
at least one lamp disposed on each of said branch members electrically connected between said second pair of electrical contact members; and
means for providing electrical power to said first pair of electrical contact members.

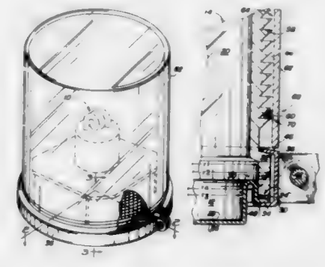


4,805,076
LIQUID CANDLE LAMP WITH DISPOSABLE FUEL CELL
J. Alan Meater, Manlius, N.Y., assignor to Hollowick, Inc., Manlius, N.Y.
Filed Apr. 11, 1988, Ser. No. 179,665
Int. Cl.[4] F21L *19/00*
U.S. Cl. 362—180 **11 Claims**



1. A liquid candle lamp that includes in combination
a base having an opening that passes downwardly through its top surface,
a chimney that is seated upon the base and which has a hollow skirt depending therefrom that is slidably received in said opening, said skirt having a close running fit with the side wall of the opening and which extends partially into the opening to a predetermined depth,
a fuel cell positioned in the base opening that has an expanded lower section that passes beneath the chimney skirt to substantially fill said opening beneath said chimney skirt and an upper section that is situated inside the skirt and which about fills the skirt opening whereby a maximum amount of fuel can be stored within said cell, and
a burner mounted on top of said fuel cell having a wick for bringing fuel from inside the cell to a burning zone inside said chimney.

4,805,077
LIGHTING FIXTURE HAVING A SEALED, WEATHERPROOF SECONDARY COVER
Thomas R. Sikora, Mesa, Ariz., assignor to Tomar Electronics, Inc., Tempe, Ariz.
Filed Dec. 29, 1987, Ser. No. 139,281
Int. Cl.[4] F21V *31/02*
U.S. Cl. 362—267 **23 Claims**



1. A weatherproof cover for a lighting fixture comprising:
a. a light source coupled to a supporting base;
b. a substantially cylindrical, optically transmissive enclosure for said light source having
i. a longitudinal axis;
ii. a closed upper surface;
iii. a body having an exterior surface;
iv. a base dimensioned to interface with said supporting base;
v. a lens formed in the exterior surface of said body and including a plurality of non-linear lens elements;
vi. a sealing section positioned above and in proximity to said base and including a cylindrical grooved having a groove surface defined by an adjacent pair of said non-linear lens elements;
c. compressible sealing means dimensioned to fit into and form a seal with said grooved surface; and
d. a substantially cylindrical, optically transmissive cover for said light source enclosure having an interior surface and being dimensioned to fit coaxially over said enclosure, and defining a chamber between the exterior surface of said enclosure and the interior surface of said cover, said cover including
i. a longitudinal axis coincident with the longitudinal axis of said enclosure; and
ii. a lower section configured to overlie the lower section of said enclosure with an inner surface for engaging said sealing means and for creating a seal between the lower section of said enclosure and the lower section of said cover to prevent the introduction of dirt or moisture into the chamber between said enclosure and said cover.

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4,805,078

SWITCHED POWER SUPPLY FOR GENERATING A PLURALITY OF ISOLATED POWER VOLTAGE FOR A PULSE CONVERTER

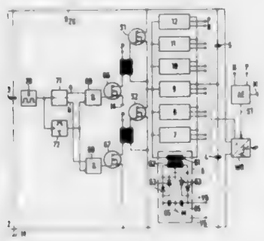
Dieter Muxx, Hochstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 3, 1986, Ser. No. 915,084

Claims priority, application European Pat. Off., Jul. 3, 1986, 86109081.9

Int. Cl.⁴ H02M *3/335*

U.S. Cl. 363—17 **3 Claims**



1. A power supply for generating several isolated power voltages for the control circuit of a transistor pulse converter, compriaing:

a main bridge coupled to power feed lines, comprising two bridge arms comprising together two series connected electronic field effect transistor switches and two bridge arms comprising together two series connected capacitors, the connection points of said electronic switches and of said capacitors being coupled by a diagonal branch;

a plurality of individual converters, each converter including a converter transformer with a primary coil and a single secondary coil, the primary coils being connected in parallel in said diagonal branch; and

control means for alternatively activating said electronic switches, said control means comprising a pulse generator having a clock output, a bistable and a monostable multivibrator, said multivibrators receiving said clock output as input, and having multivibrator outputs; and first and second AND gates for controlling said electronic switches, said AND gates having inputs coupled to said multivibrator outputs.

4,805,079

SWITCHED VOLTAGE CONVERTER

Marinus C. W. Van Baul, Breda, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

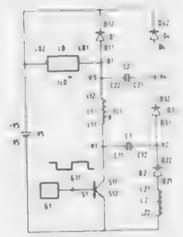
Filed Apr. 21, 1987, Ser. No. 40,951

Claims priority, application Netherlands, May 6, 1986, 8601150

Int. Cl.⁴ H02H *7/122*

U.S. Cl. 363—56 **17 Claims**

1. A switched voltage converter comprising: at least one controlled semiconductor switch and a first coil each having a first and a second connection, the first connections being connected together in a series arrangement with at least the one controlled semiconductor switch and the first coil connected between supply voltage terminals, means connecting a control input of said controlled semiconductor switch to a terminal which supplies a switching signal for turning the semiconductor switch alternately on and off for obtaining a desired voltage at a converter terminal, an inductive load having first and second connections, means coupling the first coil to the first connection of the inductive load and to a first electrode of a first semiconductor switching element having a first and a second electrode, the first connections of the controlled semiconductor switch and the first coil being connected to a first terminal of a first capacitor, means connecting a second terminal of the first capacitor via a series arrangement of a second semiconductor switching element and a second coil to the second connection of the controlled semiconductor switch, the second terminal of the first capacitor being connected to a first electrode of a third semiconductor switching element, the current pass direction of the controlled semiconductor switch, viewed in a given direction of current through the capacitor, being the same as that of the first and the second semiconductor switching element and being opposite to that of the third



semiconductor switching element, and means coupling a second electrode of the third semiconductor switching element via a second capacitor to the second connection of the first coil and to a fourth semiconductor switching element thereby forming a d.c. connection comprising the third and fourth semiconductor switching elements to the second electrode of the first semiconductor switching element, the first and fourth semiconductor switching elements having the same current pass direction with respect to said second electrode of the first semiconductor switching element.

4,805,080

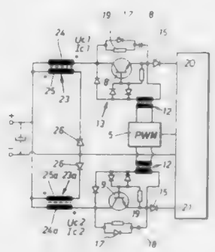
POWER SUPPLY CIRCUIT FOR AN X-RAY TUBE

Tero Nieminen, Helsinki, Finland, assignor to Radiante OY, Helsinki, Finland

Filed Dec. 16, 1987, Ser. No. 133,500

Int. Cl.⁴ H02H *7/122*

U.S. Cl. 363—56 **7 Claims**



1. A power supply circuit for an X-ray tube for converting direct current to high-frequency pulses that are fed into a voltage step-up circuit of said X-ray tube, said power supply circuit comprising:

(a) a direct-current source having a positive and a negative terminal;

(b) a pair of transistors, each having a collector, an emitter and a base;

(c) a pair of transformers, each having a primary and a secondary winding;

(d) the collector of each of said pair of transistors being coupled via said primary winding of one of its said pair of transformers to said positive terminal of said direct-current source, said primary windings functioning as ballasts limiting the current passing through said pair of transistors;

(e) a pair of diodes coupling said secondary windings of each of said pair of transformers in series between said positive and negative terminals of said direct-current source;

(f) a control unit including a pulse-width modulator and a pair of base-control transformers coupling said modulator to their respective one of said pair of transistors, said pulse-width modulator connected to receive a feedback control signal from said voltage step-up circuit of said X-ray tube;

(g) said pair of base-control transformers controlling the collector-emitter circuits of each of their said respective pair of transistors such that said pair of transistors operate in a push-pull configuration.

4,805,081

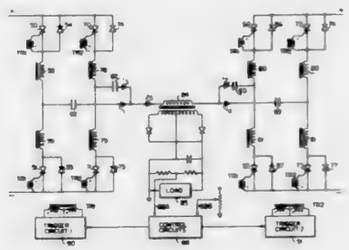
MULTI-MODE CONTROL SYSTEMS FOR HIGH-FREQUENCY RESONANT INVERTERS

Derek Chambers, Bayville, and Andrzej Borthiewicz, Elmhurst, both of N.Y., assignors to Spellman High Voltage Electronics Corp., Plainview, N.Y.

Filed Jan. 29, 1987, Ser. No. 67,378

Int. Cl.⁴ H02P *13/20*

U.S. Cl. 363—96 **26 Claims**



1. An inverter system comprising a DC input power source; two resonating current sources powered by said DC input power source and resonant at the same frequency; means for combining the currents in the two current sources; and control means, responsive to the combined currents varying from a selected value, for adjusting both the frequency of operation of both current sources and their relative phases in directions which tend to cause said combined currents to approach said selected value.

4,805,082

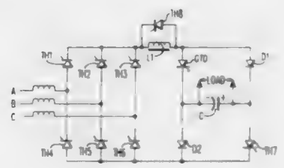
REGENERATIVE TWO-QUADRANT CONVERTER

Theodore M. Heinrich, Murrysville, and Colin D. Schauder, Murrysville Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 14, 1988, Ser. No. 168,062

Int. Cl.⁴ H02M *7/155*

U.S. Cl. 363—129 **4 Claims**



1. In an AC/DC converter system including an AC bridge having a plurality of static-controlled switches controlled sequentially for conduction across DC-link terminals operative as a DC voltage source and connected to a load, with a capacitor across said DC-link terminals and the load, the system operating in one of a forward and a regenerative mode; the combination of

a reactor and a GTO device in series between one terminal of the bridge and a corresponding end of said capacitor;

an auxiliary thyristor connected in series with the other end of said capacitor and the other terminal of the bridge;

a rectifying device connected between said reactor and said other end of said capacitor;

an additional thyristor connected in parallel with said reactor and in opposition to said GTO device, to said rectifying device and to the bridge thyristors of the associated terminal;

said GTO device being controlled for conduction together with the bridge thyristors under conduction in the control sequence thereof so as to form a current path via said reactor, said capacitor, the load, and via said auxiliary thyristor;

said GTO device being controlled in the regenerative mode for interrupting said current path and said additional thyristor being controlled concurrently for conduction to create a freewheeling current path for said reactor upon commutation of successive bridge thyristors for conduction in the sequence thereof, thereby to allow a zero-current condition under regeneration from the load.

4,805,083

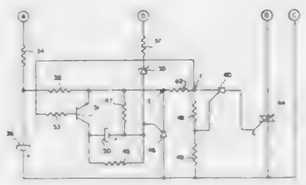
LOW COST AUTOMATIC VOLTAGE DOUBLER SWITCH

John G. Konopka, Barrington, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 213,665, Jun. 30, 1988, abandoned. This application Aug. 30, 1988, Ser. No. 238,436

Int. Cl.⁴ H02M *7/10*

U.S. Cl. 363—143 **8 Claims**



1. An automatic voltage doubler circuit comprising:

rectifying means coupled to an AC line and selectively operable in either a direct mode or in a voltage doubler mode;

triac switch means for changing the operating mode of said rectifying means;

drive means for supplying drive current for driving said triac means into conduction for one polarity of the AC line and for maintaining it in conduction during the opposite polarity of the AC line;

trigger means responsive to the voltage of said AC line reaching a predetermined level for negating the drive current to said triac means to render said triac means nonconductive and for switching said rectifying means to said direct mode; and

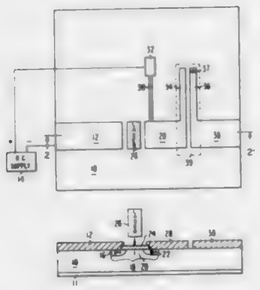
drive delay means for delaying operation of said drive means upon start up to enable said trigger means to sense the voltage on said AC line.

4,805,084

DIRECT DC TO RF CONVERSION BY IMPULSE EXCITATION

Arye Rosen, Camden, N.J., and Chi H. Lee, Potomac, Md., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 25, 1988, Ser. No. 185,561
Int. Cl.[4] H02M 1/00
U.S. Cl. 363—147 18 Claims



1. A device for converting voltage from a DC supply to RF comprising:

a monolithic resonator; and

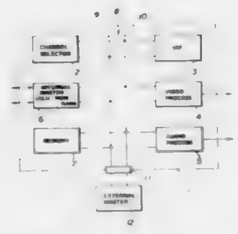
a monolithic lateral PIN diode optical switch means having a pair of opposite conductivity type regions adapted to be coupled to the DC supply, one of said regions coupled to said resonator, and an intrinsic region adapted to receive an optical switching signal.

4,805,085

DIGITAL CONTROL SYSTEM FOR ELECTRONIC APPARATUS

Takao Mogi, and Masayuki Suematsu, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 6, 1988, Ser. No. 203,616
Claims priority, application Japan, Apr. 6, 1985, 60-073217
Int. Cl.[4] G06F 15/46, 11/16, 15/16
U.S. Cl. 364—132 4 Claims



1. A digital control system for use in electronic apparatus, comprising:

master control means arranged within the electronic apparatus containing first operational dat and producing a data signal and a clock signal;

a plurality of operational circuit elements arranged within the electronic apparatus and connected to be controlled by said master control means;

control bus lines comprising a data signal line and a clock signal line interconnecting said master control means and said plurality of operational circuit elements, said control bus lines being in a release state upon occurence of a predetermined relationship between said clock signal and data signal;

said master control means including means for declaring itself master master of said electronic apparatus upon occurence of said predetermined relationship and an inhibit register for inhibiting said master control means from declaring itself the master and placing said master control means in a slave mode upon receipt of a predetermined data word; and

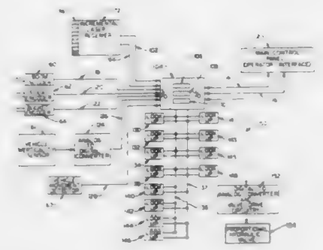
auxiliary master control means arranged external to the electronic apparatus and adapted to be connected to said control bus lines and transmitting second operational data by way of said control bus lines for alternatively controlling said operational circuit elements in place of said master control means and in which said second operational data in said auxiliary master control means includes said predetermined data word for placing said master control means in said slave mode by transmitting said selected data word to said inhibit register in said master control means by way of said control bus lines, and in which said master control means includes means for returning to a master mode a predetermined time after being placed into the slave mode.

4,805,086

APPARATUS AND METHOD FOR CONTROLLING A HYDRAULIC EXCAVATOR

Edward G. Nielsen, and Timothy E. Steenwyk, both of Grand Rapids, Mich., assignors to Laser Alignment, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 42,449, Apr. 24, 1987. This application Oct. 19, 1987, Ser. No. 110,016
Int. Cl.[4] E02F 3/00
U.S. Cl. 364—167.01 18 Claims



1. A system for an excavator for use with a laser emitting a planar laser beam at a predetermined elevation, said excavator having a frame, cutting means, connecting means for connecting said cutting means to said frame and actuation means for moving said cutting means with respect to a point on said frame, said connecting means including a stick member movable with respect to said frame and a bucket movable with respect to said stick member, said system comprising:

laser receiving means on said stick member for producing a signal when contacted by the laser beam;

connecting means angle sensing means on said stick member for sensing the angle between said stick member and an earth reference;

laser receiving means relative position determining means responsive to said connecting means angle sensing means for producing a first representation proportional to the distance between said laser receiving means when contacted by the laser beam and said point;

means for storing said first representation;

cutting means relative position determining means responsive to said connecting means angle sensing means for determining the distance between said cutting means and said point at different positions of said bucket relative to said stick member and producing a second representation proportional to the distance between said cutting means and said point; and

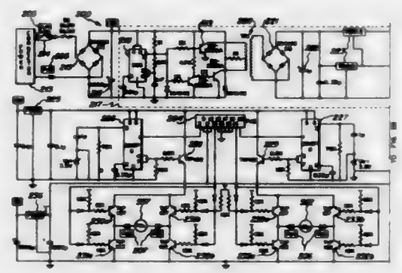
cutting means absolute position determining means for combining said first and second representations to produce a third representation proportional to the distance of said cutting means from the laser plane.

4,805,087

SELECTIVE MICROFICHE DISPLAY EQUIPMENT

Hugh Frankel; Ginette Sauve-Frankel, both of Keene, N.Y., and Christian Aubut, St. Eustache, Canada, assignors to Q & L Corp., Inc., Willsboro, N.Y.

Filed Sep. 28, 1984, Ser. No. 655,591
Int. Cl.[4] G03B 27/47; G06K 7/10; G05D 3/00
U.S. Cl. 364—474.22 12 Claims



1. A control system for controlling movements of a carrier for a microfiche having images arranged in substantially any format to position said microfiche and a selected image at a focal point of an optical system for display by the optical system of said selected image on such microfiche, said focal point is substantially fixed and said carrier is movable to any location with an X-Y coordinate system, and wherein the microfiche bears format data identifying placement of said selected image and including X-motor means for moving the carrier and microfiche in an X direction and Y-motor means for moving the carrier and microfiche in a Y direction, comprising:

memory means for storing digital data representing predetermined patterns of X and Y movements,

address input means for receiving digital, audio, and manual inputs and in response generating digital address data indicative of movements to be performed,

format input means for reading the format data on the microfiche and generating in response digital format data indicative of movements to be performed,

cue input means for receiving digital, audio, and manual cue inputs and in response generating digital cue signals for initiating movements,

processing means for receiving digital signals and data from said memory means, address input means, format input means, and cue input means and generating analog signals to control said X and Y motor means and said optical system.

4,805,088

METHOD AND APPARATUS FOR MICROPROCESSOR CONTROLLED SPRAYER

Hewis W. Cross, and Roger T. Faulk, both of Albany, Ga., assignors to Cross Equipment Company, Inc., Albany, Ga.

Filed Mar. 23, 1987, Ser. No. 29,044
Int. Cl.[4] G06F 15/20; B05B 9/06
U.S. Cl. 364—172 21 Claims

1. A computerized chemical spray system attachable to a mobile unit for applying one or more chemicals at variable concentrations which mixes the chemicals in the spray pump at the time of application, comprising:

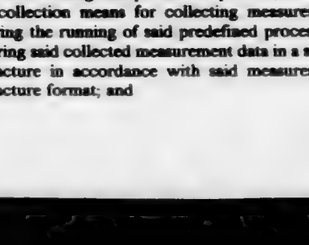
a. a bulk water tank for supplying solvent water;

b. a centrifugal pump connected to said water tank by a water feed line, said centrifugal pump having engine means to pump the liquid to be sprayed at a desired pressure;

c. a spray outflow line connected at one end to said centrifugal pump and at other end to a spray head assembly having a plurality of spray nozzles for applying spray mixture to ground;

d. a chemical storage tank containing chemical to be sprayed;

e. a peristaltic squeeze pump having a chemical feed line connected at one end to said chemical storage tank and at other end to said water feed line;



f. a microprocessor control unit electrically connected to said peristaltic pump, said unit having,

1. a ground speed sensor means for measuring the ground speed of said mobile unit and developing a corresponding electrical ground speed signal,

2. a desired chemical application rate control means for developing an application rate signal corresponding to a desired application rate of chemical per unit area,

3. a programming means responsive to said ground speed signal and to said application rate signal for generating an infusion rate signal, where

4. said rate infusion signal is operatively coupled to said peristaltic pump controlling pump revolutions per minute whereby the rate of infusion of chemical from said chemical tank into said water feed line is automatically adjusted to correspond to selected application rate values.

4,805,089

PROCESS CONTROL INTERFACE SYSTEM FOR MANAGING MEASUREMENT DATA

Leslie A. Lane, Santa Clara; Lynn V. Lybeck, Moss Beach; David S. Perloff, Sunnyvale, and Chester L. Mallery, Campbell, all of Calif., assignors to Prometrix Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 729,153, Apr. 30, 1985, Pat. No. 4,679,137. This application May 16, 1986, Ser. No. 864,024
Int. Cl.[4] H01L 21/66; G06F 15/46, 15/74
U.S. Cl. 364—188 12 Claims

1. In a method of controlling a process using a programmed digital computer, the steps of:

defining a measurement data structure format for storing one or more measurement values measured while running a predefined process;

establishing an operator control program including

means for running said predefined process; and

data collection means for collecting measurement data during the running of said predefined process, and for storing said collected measurement data in a stored data structure in accordance with said measurement data structure format; and

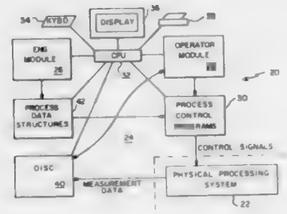
establishing a data analysis program for enabling interactive computer controlled performance of the steps of

displaying a trend chart depicting a sequence of data points, each data point representing at least a portion of the measurement data collected and stored while running said predefined process;

displaying in said trend chart a selectably positionable pointer for pointing at an individual data point; and

selecting and performing a predefined task on the stored measurement data corresponding to the data point being pointed at by said selectably positionable pointer.

3. The method of claim 1, wherein said data analysis program:



enables the displaying of a trend chart in which each of the data points in the trend chart represents the means and standard deviation of the measurement data in a corresponding data structure;

provides means for defining a target value and a range of acceptable mean values for the measurement data being represented by said trend chart; and

superimposes on said data points in said trend chart an indication of said target value and said range of acceptable mean values;

whereby said trend chart provides a visual indication of the difference between the mean values of the collected data represented by said trend chart and said target value, and also provides a visual indication of measurements outside said range of acceptable mean values.

4,805,090

PERIPHERAL-CONTROLLER FOR MULTIPLE DISK DRIVE MODULES HAVING DIFFERENT PROTOCOLS AND OPERATING CONDITIONS

Ronald S. Coogan, Trabuco Canyon, Calif., assignor to UNISYS Corporation, Blue Bell, Pa.

Filed Sep. 27, 1985, Ser. No. 780,864
Int. Cl.[4] G06F *13/10*
U.S. Cl. 364—200 **13 Claims**

1. In a data transfer network wherein a single peripheral-controller manages data transfers between a main host computer which generates I/O data transfer commands for data transfers with a plurality of individual disk drive unit storage modules having different protocols and different operating parameters, the peripheral-controller comprising:

(a) host adapter control means for receving and storing a group of "X" I/O data transfer commands, where "X" represents the number of disk drive modules serviced by said peripheral controller, said host adapter control means including:

(a1) connection means for connecting data transfer channels and control data channels to said host computer;

(a2) a host adapter buffer memory means for storage of said I/O commands and for storage of data words being transferred;

(a3) host adapter sequencer means for executing data word transfers between said host computer and said host adapter buffer memory means;

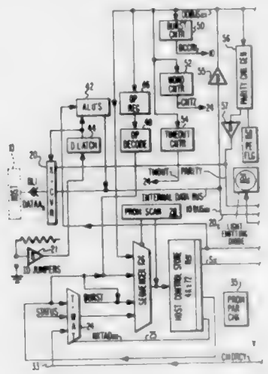
(a4) peripheral sequencer means for synchronizing data word transfers between said host adapter buffer memory means and a formatter control means, said peripheral sequencer means connected to said host adapter sequencer means and to a formatter sequencer means;

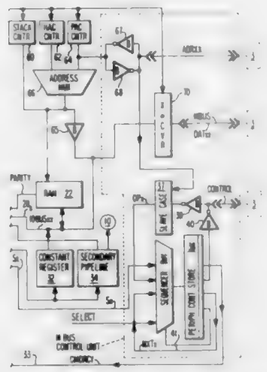
(a5) connection means between said host adapter control means and said formatter control means including a channel for transfer of data words and control data;

(b) said formatter control means for receiving control data and address data from said host adapter control means, to provide selection of a specific cylinder, track and sector on a selected one of said plurality of disk drive modules, said formatter control means including:

(b1) a formatter buffer memory means for storing data words received either from said host computer or from said selected disk drive module;

(b2) said formatter sequencer means, synchronized by said peripheral sequencer means, for executing data word





transfers from said formatter buffer memory means to said host adapter buffer memory means, and for executing data word transfers between said formatter buffer memory means and said selected disk drive module via a disk drive module interface control means;

(b3) means for communicating with a disk drive module interface control means, said communicating means including:

(b3a) Read data means for receiving data words from said selected disk module into a conversion means for data word storage into said formatter buffer memory means;

(b3b) Write data means for receiving data words from said conversion means for transmittal to said disk drive module interface control means;

(b3c) said conversion means for executing serial-to-parallel and parallel-to-serial conversion of data words;

(b3d) register-driver means for transmitting control signals to said disk drive module interface control means;

(b3e) disk drive module select signal means for enabling connection to said selected disk drive module;

(b3f) channel connection means for said formatter control means to said disk drive module interface means and to said disk drive modules for enabling transfer of data words and control words therebetween;

(c) disk drive module interface control means for enabling connection of said selected disk drive module to said formatter control means, said interface control means including:

(c1) select logic means for disabling connection to said selected disk drive module when said select logic means receives more than one disk drive select signal, said logic means including:

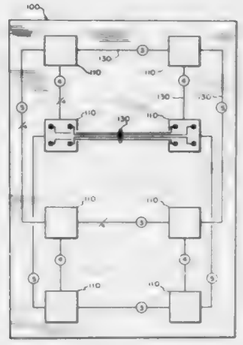
(c1a) means for generating a disk drive select signal in response to instructions in said I/O command stored in said host adapter control means.

4,805,091

METHOD AND APPARATUS FOR INTERCONNECTING PROCESSORS IN A HYPER-DIMENSIONAL ARRAY

Tamiko Thiel, Somerville; Richard Clayton, Stow; Carl Feynman; W. D. Hillis, both of Cambridge, and Brewster Kahle, Boston, all of Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

Filed Jun. 4, 1985, Ser. No. 740,943
Int. Cl.[4] G06F *15/16, 1/00*
U.S. Cl. 364—200 **18 Claims**



17. In a parallel processor having an array of integrated circuits, each being addressed by a multibit binary address and comprising at least one processor and being interconnected to each of its nearest neighbors in a pattern of a Boolean cube of more than three dimensions, apparatus for interconnecting said integrated circuits on a plurality of boards and backplanes comprising:

means for interconnecting on each circuit board the integrated circuits which are nearest neighbors in dimensions one through L;

means for interconnecting on each backplane the integrated circuits which are nearest neighbors in dimensions L+1 through M;

means for interconnecting from one backplane to another the integrated circuits which are nearest neighbors in dimensions M+1 through N; and

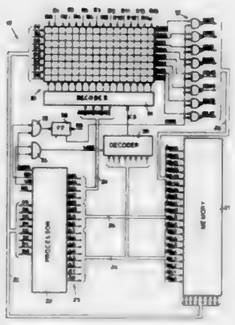
means for adjusting the clock cycle during the routing of messages between processors in accordance with the dimension of the processors between which the message is being routed.

4,805,092

ELECTRONIC CIRCUIT FOR EXTENDING THE ADDRESSING CAPACITY OF A PROCESSOR

Walter Cerutti, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Apr. 30, 1986, Ser. No. 857,340
Claims priority, application Italy, Apr. 30, 1985, 67396 A/85
Int. Cl.[4] G06F *13/00, 12/06*
U.S. Cl. 364—200 **13 Claims**



11. An electronic circuit for connecting a processor to a high capacity memory, wherein said processor is provided to exchange data from and to said processor and to generate processor address codes having a given number of bits;

wherein said main memory comprises a large number of main memory locations addressable by main memory address codes having a number of bits larger than the number of bits of the processor address codes, and wherein each one of the main memory address codes is subdivided into a first portion code and a second portion code, wherein said main memory locations are grouped to define a series of segments, wherein each segment includes a plurality of locations, and wherein each segment is addressable by the second portion code and each location is addressable by the first portion code of said main memory, respectively; said electronic circuit comprising means for causing a first portion of said processor address codes to directly access a location among a plurality of locations of said segments, and segments access means for generating a given one of said second portion code of said main memory address code in response to a second portion of said processor address codes for selective accessing a given segment of said main memory, said main memory comprises a predetermined segment of said segments including a series of locations on which are stored address signals used to define the second portion code of the main memory address codes; said segment access means comprising:

an auxiliary memory including a given number of registers equal to a fraction of said series of segments;

address decoding means responsive to said second portion of said processor address codes for addressing one register of said auxiliary memory and reading-out the content of the one associated register;

writing means including first means for causing said processor to address the predetermined segment of said main memory and one of said locations for reading-out the stored signal in said one of said locations, and second means for loading selectively said one register with data corresponding to the signals stored in said addressed locations; and

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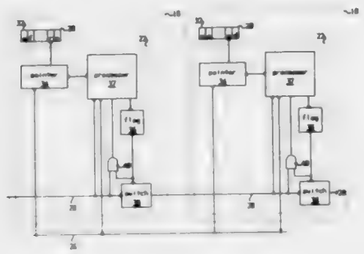
connecting means responsive to the content of said one associated register for generating said second memory portion code and accessing the given segment of said main memory among said fraction of segments of the main memory.

4,805,093

CONTENT ADDRESSABLE MEMORY

Calvin B. Ward, 9580 Crow Canyon Rd., Castro Valley, Calif. 94552

Filed Oct. 14, 1986, Ser. No. 918,766
Int. Cl.[4] G06F *12/00*
U.S. Cl. 364—200 **55 Claims**



1. A content addressable memory for storing a plurality of data words and selectively retrieving specified said data words in response to a specification word comprising a plurality of specification characters, said content addressable being adapted for use in a host data processing system, said content addressable memory comprising:

a plurality of storage sections; and

control bus means for coupling each said storage section to the other said storage sections and to said host data processing system, said control bus means including means for coupling a plurality of control signals to each said storage section and means for coupling a said specification character comprising W binary bits to each said storage section, wherein W is greater than 2 and wherein

each said storage section comprises:

data word storing means for storing a said data word comprising a plurality of characters, each said character comprising W binary bits, the number of said characters being greater than 2, said storing means including means for separately selecting each character in said data word, the character so selected being determined by a first one of said control signals;

flag means for specifying one of two states, active or inactive, for said storage section; and

processing means for causing said flag means to specify one of said two states operative in response to said control signals, said specification character, and said selected character, said processing means including:

means for causing said flag means to specify the active state for said storage section operative in response to a second one of said control signals; and

reset means for causing said flag means to specify the inactive state for said storage section operative in response to a third one of said control signals and a specified relationship between said specification character and said selected character,

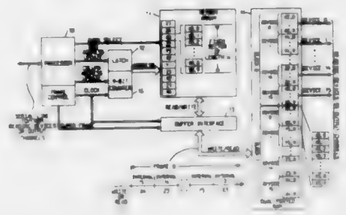
wherein, said bus means further comprises means for determining if any of said flag means specifies the active state, said determining means including means for generating a signal if any of said flag means specifies the active state.

4,805,094

MULTI-CHANNEL MEMORY ACCESS CIRCUIT

Kevin J. Oye, Red Bank, N.J.; Enzo Paterno, Staten Island, N.Y., and Thomas L. Smith, Lincroft, N.J., assignors to American Telephone & Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed Aug. 27, 1986, Ser. No. 901,004
Int. Cl.[4] G06F *12/06*
U.S. Cl. 364—200 **17 Claims**



1. A circuit for retrieving data from a first memory for concurrent delivery to a plurality of output channels, said first memory being divided into addressable sectors each capable of storing m data elements, said circuit comprising

means for defining periodic control intervals, each associated with a respective one of said output channels,

means responsive to requests for data for delivery to a particular output channel for addressing certain of said sectors in said first memory during the control interval associated with said particular output channel,

means operative during each said control interval for retrieving from said first memory a sector of m data elements stored in an individual one of said sectors,

a second memory divided into buffers, each buffer being associated with a particular one of said output channels and with said control interval associated with said particular one of said output channels, each such buffer having storage capability for m data elements,

means operative during each said control interval for transferring the retrieved m data elements from said first memory to said second memory and for storing said transferred data in said buffer associated with said control interval, and

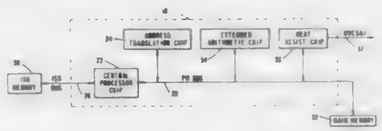
means for sequentially transferring data stored in each said buffer to said associated output channel.

4,805,095

CIRCUIT AND A METHOD FOR THE SELECTION OF ORIGINAL DATA FROM A REGISTER LOG CONTAINING ORIGINAL AND MODIFIED DATA

Rolf D. Armstrong, Escondido; Jon M. Corcoran, Romona, and Victor F. Cole, Santee, all of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 23, 1985, Ser. No. 812,882
Int. Cl.[4] G06F *11/00*
U.S. Cl. 364—200 **9 Claims**



1. A circuit comprising:

a multi-stage instruction pipeline having an execute stage of a current instruction partially overlap an interpret stage of the next instruction;

a plurality of modifiable data registers connected and responsive to said pipeline, each of said data registers being modifiable such that its contents can be restored to an original state;

a plurality of memory locations, each of said memory locations corresponding to a modifiable data register and having two data storage means, a first data storage means for storing the contents of each corresponding data register of each respective memory location in the original state thereof, and a second data storage means for storing the contents of corresponding data register of each respective memory location in a modified state thereof;

a plurality of modified bit register means, one corresponding to each of said memory locations, each of said modified bit register means including means for selectively enabling a modified bit when the contents of the data register of its corresponding memory location in the modified state thereof is stored in one of its corresponding data storage means; and

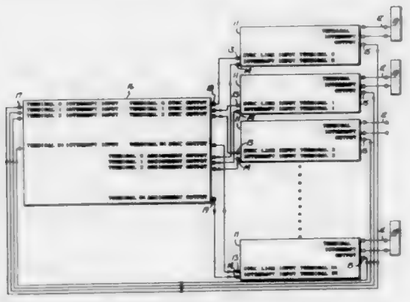
a plurality of valid bit register means, each having an input connected to a corresponding one of said modified bit register means, an output connected to its corresponding memory location, means for containing a valid bit whose condition is indicative of which one of the two data storage means of said corresponding memory location contains the original contents of the corresponding data register, and means for toggling the condition of said valid bit responsive to the enabling of the modified bit of said corresponding modified bit register means during the interpret stage and the execution stage of each multi-stage pipeline system instruction.

4,805,096

INTERRUPT SYSTEM

David C. Crohn, Shoreview, Minn., assignor to ETA Systems, Inc., St. Paul, Minn.

Filed Mar. 6, 1987, Ser. No. 22,435
Int. Cl.[4] G06F *9/48*
U.S. Cl. 364—200 **29 Claims**



1. An interrupt notice system permitting individual ones of a plurality of operating devices provided in a cooperative arrangement thereof, to indicate to others in that arrangement that procedures to interrupt operations of such others are being initiated, said system comprising:

a plurality of signal terminal means to each of which a corresponding one of said operating devices can be electrically connected, and with each of said signal terminal means being capable of receiving signals at a receive input thereof for indicating to any said operating device corresponding thereto that another of said plurality of operating devices, if any, is initiating procedures to interrupt operation of that corresponding said operating device, and each of said signal terminal means being capable of transmitting signals at a transmit output thereof from any said operating device corresponding thereto for being conveyed to others of said plurality of signal terminal means indicating that procedures are being initiated to interrupt operations of each operating device corresponding thereto, if any;

a signal assigner means having a plurality of inputs at each of which one of said plurality of operating device signal terminal means is electrically connected at its said transmit output, and having a plurality of outputs at each of which one of said plurality of operating device signal terminal means is electrically connected at its said receive input, said signal assigner means being capable of providing response signals at successive ones of said signal assigner means outputs, thereby forming a first output sequence of successive output response signals, with there being one of said output response signals provided at each said signal assigner output for each corresponding assignment state taken by said signal assigner means, thereby forming a corresponding first state sequence of successive assignment states, where such a said first output sequence of response signals occurs if signals are present on a selected one of said signal assigner means inputs sufficiently preceding each said assignment state occurring in said first state sequence to permit that corresponding output response signal to occur; and

a synchronization means having a plurality of outputs at each of which one of said plurality of operating device signal terminal means is electrically connected at an indication input thereof, said synchronization means being capable of providing a receive indication to each of said plurality of operating device signal terminal means during a corresponding one of said assignment states taken by said signal assigner means in said first state sequence indicating that each, after receiving its receive indication, is to be ready to receive in a subsequent assignment state an output response signal from its corresponding said signal assigner output which occurs, if it occurs at all, in response to a signal selectively transmitted by a first selected one of said plurality of operating device signal terminal means to its corresponding signal assigner input, and being capable of providing a further transmit indication to each of said plurality of operating device signal terminal means during a corresponding one of said assignment states taken by said signal assigner means in said first state sequence indicating that each, after receiving its transmit indication, can selectively transmit a signal to its corresponding said signal assigner input which will result in said signal assigner means providing signals to a second selected one of said plurality of operating device signal terminal means in a subsequent assignment state.

4,805,097

MEMORY MANAGEMENT UNIT WITH DYNAMIC PAGE ALLOCATION

Frank De Sousa, Tempe, Ariz., assignor to Motorola Computer Systems, Inc., Cupertino, Calif.

Continuation of Ser. No. 637,446, Aug. 3, 1984, abandoned. This application Sep. 10, 1987, Ser. No. 96,287
Int. Cl.[4] G06F *12/10*
U.S. Cl. 364—200 **1 Claim**

1. In a data processing system comprising a memory unit storing instructions and data, a central processing unit coupled to said memory unit and processing successively in time a plurality of tasks using said instructions and data, each task being uniquely identified by a task identity number, and a memory management unit coupled to said memory unit and to said processing unit for translating logical addresses generated by said processing unit relating to said tasks into physical addresses in said memory unit, said memory unit comprising an addressable memory space which is divided into a plurality of pages, the improvement wherein said memory management unit comprises:

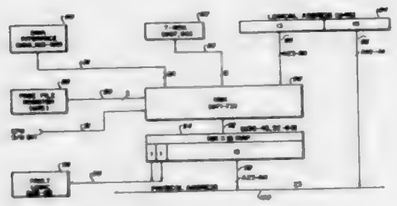
task register means for storing the task identity number of the task currently being processed by said processing unit,

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said task identity number being loaded into said task register means by said processing unit, prior to processing said task, in response to said processing unit executing one of said instructions,

page table means comprising a plurality of entries each storing one of said physical addresses corresponding to at least one logical address generated by said processing unit for each task, said page table means being responsive to said task identity number stored in said task register means and to one of said logical addresses generated by said processing unit for generating the physical address corresponding to said at least one logical address of said task currently being processed by said processing unit,

page register means for storing an indication of the number of said plurality of tasks, said indications of said page register means also identifying the number of pages in said memory unit which are allocated to each task, said allocated number of pages per task being equal to said plurality of pages divided by said plurality of tasks, said page register means being loaded, prior to said processing unit processing the current task, by said processing unit in



response to said processing unit executing a second one of said instructions, and

wherein said page table means is also responsive to said indication of said page register means for generating said physical address, and

wherein said plurality of entries of said page table means comprises a plurality of groups of entries, one group of entries corresponding to each task, wherein each entry of said page table means further comprises a last page indication portion, wherein the last page indication portion of the last entry of the group of entries corresponding to the task currently being processed by said processing unit is set to a predetermined state in response to said processing unit executing a third one of said instructions prior to processing said task, and wherein said memory management unit comprises means connected to the page table means responsive to said predetermined state of said last page indication portion for generating an interrupt to said processing unit when said task currently being processed by said processing unit is utilizing the last page allocated to it.

4,805,098

WRITE BUFFER

Marvin A. Mills, Jr., Sunnyvale, Calif., and Lester M. Crudele, Groton, Mass., assignors to MIPS Computer Systems, Inc., Sunnyvale, Calif.

Filed May 5, 1986, Ser. No. 860,304

Int. Cl.⁴ G06F *13/00, 7/00*

U.S. Cl. 364—900 **9 Claims**

1. Apparatus for buffering write requests to an output device, each write request having associated therewith data and an address, comprising:

a first buffer rank;

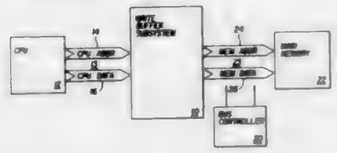
a second buffer rank different from the first buffer rank;

means for writing a first one of the write requests into the first buffer rank;

means for writing a second one of the write requests into the first buffer rank if the first buffer rank is empty;

means for writing the second one of the write requests into the second buffer rank if the first buffer rank is non-empty and the address associated with the first one of the write requests does not match the address associated with the second one of the write requests; and

means for gathering the second one of the write requests with the first one of the write requests in the first buffer



rank if the address associated with the second one of the write requests matches the address associated with the first one of the write requests and the first buffer rank is non-empty, wherein the means for gathering the second one of the write requests with the first one of the write requests in the first buffer rank comprises means for writing into the first buffer rank only those bits of the data associated with the second write request which are intended to be written to the output device.

4,805,099

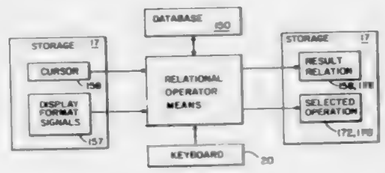
RETRIEVAL OF RELATED RECORDS FROM A RELATIONAL DATABASE

Val J. Huber, Chelmsford, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Continuation of Ser. No. 40,705, Apr. 17, 1987, which is a continuation of Ser. No. 691,036, Jan. 11, 1985, abandoned. This application Mar. 21, 1988, Ser. No. 172,992

Int. Cl.⁴ G06F *15/40*

U.S. Cl. 364—300 **8 Claims**



1. A data processing system having: input means providing input signals; a visual display; storage means providing working storage and database storage; and a processor having means for controlling said visual display, means for reading and writing said storage means, means for responding to said input signals, and access means for retrieving record occurrence signals from said database storage and for storing retrieved record occurrence signals in said working storage,

characterized in having

means in said working storage for providing format signals representative of a predefined display format data structure

means in said database storage for providing description signal representative of a description data structure describing a data dictionary for describing the elements of a relational database, said description data structure being modeled as relations in a relational database, and

interactive and nonprocedural data dictionary defining means for

controlling said display to display elements comprising

representations of record occurrences retrieved from said description data structure signals and representations of selectable operations, in a format derived from said display format data structure signals,

accepting from said input means, input signals representing element enumeration, characters, and operation selection, and

allocating storage within said database storage and placing therein signals representative of a data dictionary data structure responsive to said description data structure and to said input signals,

said data dictionary data structure being modeled as relations in a relational database and being descriptive of a particular other relational database.

4,805,100

LANGUAGE PROCESSING METHOD AND APPARATUS

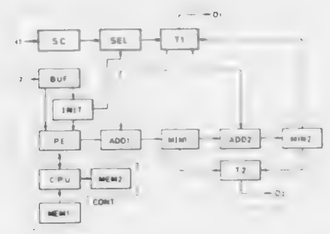
Kazuhiko Ozeki, Yokohama, Japan, assignor to Nippon Hose Kyokai, Tokyo, Japan

Filed Jul. 10, 1987, Ser. No. 72,158

Claims priority, application Japan, Jul. 14, 1986, 61-163788; Nov. 19, 1986, 61-273880

Int. Cl.⁴ G06F *15/38*

U.S. Cl. 364—419 **2 Claims**



1. In a language processing method wherein when phonetic symbol positions are represented by natural numbers from 1 to N, a set of bunsetsu-phrases in each element of which the starting position of the phonetic expression and the ending position thereof are defined at various positions within a range from 1 to N and numerical values each indicating a degree of reliability of each bunsetsu-phrase are given, optimum bunsetsu-phrase sequences are selected, the optimum dependency structure thereon and a degree of acceptability thereof are calculated from all the possible bunsetsu-phrase sequences obtained by arranging the bunsetsu-phrases so as to satisfy the conditions that the starting position of the phonetic expression of the first bunsetsu-phrase is equal to 1 while the ending position of the phonetic expression of the last bunsetsu-phrase is equal to N and that the value obtained by adding 1 to the ending position of the phonetic expression of a bunsetsu-phrase except the last bunsetsu-phrase equals the starting position of the phonetic expression of the succeeding bunsetsu-phrase under the criterion of optimality that the sum of the numerical values representative of the degree of dependency between two bunsetsu-phrases and numerical value representative of the degree of reliability of each bunsetsu-phrase has a minimum or maximum value,

said language processing method comprising the steps of:

preparing a first and a second two-dimensional triangular matrix table each having columns and rows each equal to N;

dividing each square of said first and second tables into sections equal in number to bunsetsu-phrases in each of which the ending position of the phonetic expression is equal to the number of the row and the starting position thereof is not less than the number of the column thereby three-dimensionalizing said first and second tables;

when the q-th bunsetsu-phrase in a set of bunsetsu-phrase in which the starting position of the phonetic expression is not less than a natural number i while the ending position thereof is equal to a natural number j, has the starting position of the phonetic expression equal to i, storing the degree of reliability of said q-th bunsetsu-phrase into the address designated by the i-th row, the j-th column and the q-th section of said first table;

with respect to natural numbers k ranging from i to the number obtained by subtracting 1 from the starting position of phonetic expression of the q-th bunsetsu-phrase in the set of bunsetsu-phrases each element in which has a starting position not less than i and an ending position equal to j, storing calculated values to the address of said first table designated by the i-th row, the k-th column and each section and to the address of said first table designated by the (k+1)-th row, the j-th column and the q-th section;

after said storage, calculating the sum of the value stored in the address of the said first table designated by the i-th row, the k-th column and the p-th section, the value stored in the address of the said first table designated by the (k+1)-th row, the j-th column and the q-th section and the degree of dependency between the p-th bunsetsu-phrase in the set of bunsetsu-phrases each element in which has the starting position not less than i and ending position equal to k and the q-th bunsetsu-phrase in the set of bunsetsu-phrases each element in which has the starting position not less than j and the ending position equal to j;

storing the minimum or maximum value of said sum with respect to said k and said p to the address of said first table designated by the i-th row, the j-th column and the q-th section;

storing the pair of said optimum segmenting point k and said optimum bunsetsu-phrase number p attaining said minimum or maximum value to the address of said second table designated by the i-th row, the j-th column and the q-th section;

filling said first and second table sequentially with the calculated values;

searching for the minimum or maximum value among the values stored in the sections of the address designated by the first row and the N-th column of said first table, thereby obtaining the acceptability of the optimum dependency structure on the optimum bunsetsu-phrase sequence and the number of the last bunsetsu-phrase in said optimum bunsetsu-phrase sequence; and

obtaining all pairs of the optimum segmenting point and the optimum bunsetsu-phrase number required for composing the optimum dependency structure on the optimum bunsetsu-phrase sequence in said second table.

4,805,101

METHOD FOR ADJUSTING THE DAMPING FORCE IN MOTOR VEHICLES IN DEPENDENCE ON OUTPUT SIGNALS OF AN ACCELERATION TRANSMITTER

Christian Dietrich, Wessling; Dieter Hennecke, Reichertshausen; Simon Lösch, Wartenburg, and Dirk Pfeil, Munich, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany

Filed Sep. 25, 1987, Ser. No. 100,894

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1986, 3632919

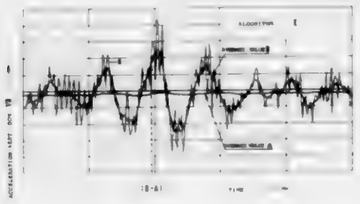
Int. Cl.⁴ B60G *11/26*

U.S. Cl. 364—424.01 **7 Claims**

1. A method for adjusting the damping force of motor vehicles in dependence on output signals of a transmitter arranged at a vehicle body, which are processed and which trigger a signal for changing the damping force when exceeding or dropping below a predetermined threshold value, comprising the steps of subtracting from one another average values formed from the output signals of a transmitter directly picking up the accelerations of the vehicle body, and comparing the numerical difference with a threshold value whereby the aver-

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age values correspond to a first measuring period which is larger, respectively, to a second measuring period which is



smaller than the natural period (reciprocal natural frequency) of the vehicle body.

4,805,102

METHOD FOR CONTROLLING A VEHICLE ATTITUDE

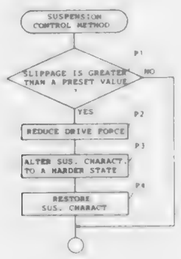
Kiyotaka Ise; Harumasa Minegishi, and Hiroshi Harada, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 29, 1987, Ser. No. 8,326

Claims priority, application Japan, Jan. 30, 1986, 61-18893; Sep. 20, 1986, 61-222317

Int. Cl.⁴ B60G *17/00*

U.S. Cl. 364—424.05 **10 Claims**



1. A method for controlling a suspension characteristic of a vehicle having at least one drive wheel, a braking system and suspensions associated with wheels including said one drive wheel, said method comprising the steps of:

detecting a slippage of said one drive wheel of the vehicle;

determining whether or not the detected slippage is greater than a reference value;

controlling a drive force of the drive wheel by means of said braking system when the slippage is determined to be greater than the reference value; and

altering an original state suspension characteristic of at least said drive wheel to a harder state when the slippage is determined to be greater than the reference value.

4,805,103

ANTI-SKID BRAKE CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE WITH FEATURE OF ASSURING PREVENTION OF WHEEL-LOCKING AT ANY DRIVING CONDITION

Toshiro Matsuda, Sagamihara, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 23, 1986, Ser. No. 945,715

Int. Cl.⁴ B60T *8/34*

U.S. Cl. 364—426.02 **11 Claims**

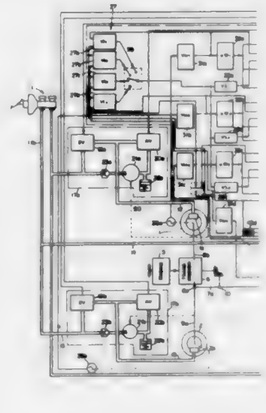
1. An anti-skid brake control system for an automotive vehicle, comprising:

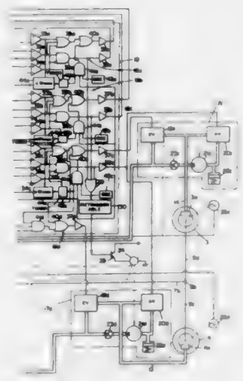
a hydraulic brake circuit including a plurality of wheel cylinders for establishing braking pressure for decelerating vehicular wheels;

first and second anti-skid brake control valves, each associates at least one of first and second wheel cylinders which are associated with first and second wheels for adjusting braking pressure therein, each of said anti-skid brake control valves being operable to increase braking pressure in the associated wheel cylinder in a first mode position, and to decrease the braking pressure in the associated wheel cylinder in a second mode position;

first sensor for monitoring rotation speed of said first wheel for producing a first wheel speed indicative signal;

second sensor for monitoring rotation speed of said second wheel for producing a second wheel speed indicative signal;





first means for monitoring wheel slippage at said first and second wheels based on said first and second wheel speed indicative signals and detecting wheel slippage at one of said first and second wheels when said wheel slippage increases across a given slippage threshold for operating said first and second anti-skid brake control valves in said second mode position; and

second means for detecting said first and second wheel speed indicative signals for operating said first and second anti-skid brake control valves in said first mode position when a predetermined brake

condition is satisfied while said first and second anti-skid brake control valves are in said second mode position, said second means increasing a rate of braking pressure in said first and second wheel cylinders in response to said detection so that the braking pressure in a third wheel cylinder is increased at a greater increasing rate than that in a fourth wheel cylinder.

4,805,104

APPARATUS FOR CONTROLLING HYDRAULIC PRESSURE TO BE APPLIED TO EFFECT BRAKING OF WHEELS

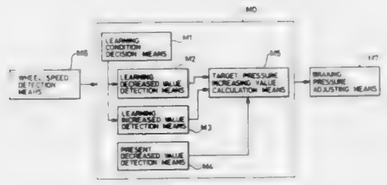
Masashi Kishimoto, Kariya; Ken Asami, and Kazunori Sakai, both of Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 11, 1987, Ser. No. 95,183

Claims priority, application Japan, Sep. 11, 1986, 61-216822; Jul. 7, 1987, 62-168968; Sep. 9, 1987, 62-225497

Int. Cl.⁴ B60T *8/64*

U.S. Cl. 364—426.01 **9 Claims**



1. A wheel slipping control apparatus for controlling a braking hydraulic pressure to be applied to a wheel, comprising:

sensor means for detecting a rotational speed of said wheel;

detection means for detecting the slipping state on the basis of the detected rotational speed of said wheel;

control means for generating a control signal in accordance with the detected slipping state so as to perform a braking pressure control cycle so that the braking hydraulic pressure is set to a pressure decreasing mode and then to a pressure increasing mode; and

pressure adjusting means for controlling the braking hydraulic pressure in accordance with the generated control signal,

wherein said control means including:

means for determining one of the braking pressure control cycles to be performed as a learning control cycle;

means for obtaining a learning pressure-decreased value corresponding to the magnitude of pressure decremented in the learning control cycle;

means for obtaining a learning pressure-increased value corresponding to the magnitude of pressure incremented in the learning control cycle;

means for obtaining a present pressure-decreased value corresponding to the magnitude of pressure decremented in a control cycle after the learning control cycle; and

means for calculating a target pressure-increased value on the basis of the obtained learning pressure-decreased value, learning pressure-increased value and present pressure-decreased value, and for generating a signal indicative of the calculated target pressure-increased value to said pressure adjusting means so that the braking hydraulic pressure is first increased to the vicinity of a wheel locking limit pressure after decreased in the pressure-decreasing mode.

4,805,105

METHOD AND SYSTEM FOR ELECTRICALLY CONTROLLING BRAKING OF A VEHICLE

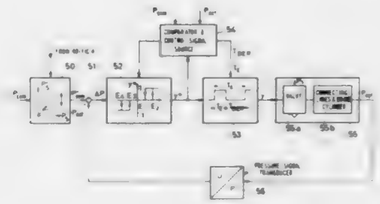
Eberhard Wahn, Hemmingen; Manfred Stahl, Stuttgart; Helmut Domann, Leonberg; Erich Jung, Mühlacker, and Franz Maurer, Kempten, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 4, 1986, Ser. No. 938,824

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1985, 3543145

Int. Cl.⁴ B60T *8/00*

U.S. Cl. 364—424.02 **36 Claims**



34. Braking system for a vehicle, in which the vehicle has

a vehicle brake means, responsive to the pressure of a brake fluid for braking the vehicle;

a brake control means providing an electrical brake command signal representative of a desired value of a parameter of the vehicle;

transducer means providing an actual signal (P_{act}) representative of the actual value of said parameter;

controlled valve means controlling, selectively, admission, drainage or holding of pressurized brake fluid;

a controller receiving said command signal and said actual signal forming an output difference signal dependent on the difference between the command and actual signal, and providing output control signals (y) to control said controlled valve means, said controller having valve control switching thresholds at which the controller changes its output signal,

comprising means for determining if the difference (ΔP) between said command signal and said actual signal representing commanded and actual values exceeds or is below a predetermined threshold level (ΔP_G) representative of a predetermined parameter difference;

and means for controlling said controlled valve means, selectively in dependent on the determined difference (ΔP) with respect to said predetermined threshold level (ΔP_G)

(1) for continued admission or drainage of brake fluid to or from said controlled valve mean if the absolute value of the difference (ΔP) is above said predetermined threshold level (ΔP_G); and

(2) for controlling said controlled valve means for admission, or drainage, respectively, of brake fluid to or from said controlled valve means in pulses, followed by pulse pauses during which brake fluid is not admitted to, or drained from said valve means, if the absolute value of the difference (ΔP) is below said predetermined threshold level (ΔP_G).

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4,805,106

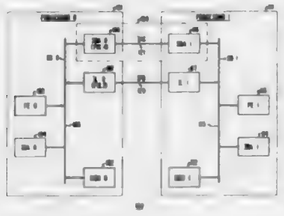
METHOD OF AND ARRANGEMENT FOR ORDERING OF MULTIPROCESSOR OPERATIONS IN A MULTIPROCESSOR SYSTEM WITH REDUNDANT RESOURCES

Randy D. Pfeifer, Warrenville, Ill., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 661,967, Oct. 17, 1984, abandoned. This application Jul. 9, 1987, Ser. No. 73,400

Int. Cl.[4] G06F *11/16, 9/30, 13/16*

U.S. Cl. 364—200 25 Claims



1. An apparatus comprising:

a plurality of copies of a resource, the copies being replicas of each other;

a plurality of asynchronously and simultaneously operative processors, each for performing on the resource operations including a set of predetermined operations, wherein performance of a predetermined operation involves performing of the predetermined operation on a plurality of the copies;

means connecting the processors with the resource for providing each processor access to a plurality of the copies; and

means, coupled to the resource and responsive to performance by a processor on the resource of an operation included in the set, for preventing all other processors from performing an operation included in the set on a given copy until the operation is performed on the given copy, while allowing performance of any operation excluded from the set on any copy.

4,805,107

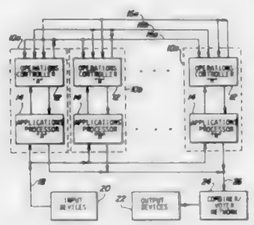
TASK SCHEDULER FOR A FAULT TOLERANT MULTIPLE NODE PROCESSING SYSTEM

Roger M. Kieckhafer, Ellicott City, Md.; Alan M. Finn, Ametos, Conn., and Chris J. Walter, Columbia, Md., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Apr. 15, 1987, Ser. No. 39,190

Int. Cl.[4] G06F *15/16*

U.S. Cl. 364—200 19 Claims



1. In a mutliple node fault tolerant processing system for processing a set of application tasks in which each node has an applications processor for executing a predetermined subset of said set of application tasks and an operations controller for controlling its own node and scheduling the application tasks in said predetermined subset of tasks that are to be executed by the applications processor through an exchange of inter-node messages containing data and operation information with each node in the processing system, the operations controller generating at least two timing period intervals, a fundamental timing period and a master period which is an integer multiple of the fundamental timing period, the master period defining a timing interval during which every task in said predetermined subset of tasks is scheduled for execution by the applications processor at least once, each operations controller having a task scheduler comprising:

a task activity list containing an entry for each application task in said multiple node processing system, each entry containing an execution periodicity and a node allocation for that application task;

a priority scan list containing a selected portion of said application tasks in the task activity list which are available for execution, said selected portion of said application tasks being stored in their preferred order of execution;

a completion status list storing said selected portion of said application tasks stored in said priority scan list;

a selection queue storing for each node said application tasks ready for selection in their preferred order of execution;

a period counter for counting said fundamental timing periods to generate a period count corresponding to a number of fundamental periods which have expired since a beginning of a new master period;

wake-up sequencer means connected to said task activity list, said priority scan list, said completion status list and said period counter for interrogating said task activity list to transfer to said priority scan list and said completion status list all of said application tasks whose periodicity is greater than said period count;

priority scan means connected between said priority scan list and said selection queue for transferring to said selection queue for each node entry three application tasks which are ready for execution by that node, which have a highest priority in said preferred order of execution;

task selector means connected to said selection queue for selecting in said preferred order of execution, said application task currently stored in said selection queue for its own node as a next task scheduled for execution by its own applications processor; and

a task interactive consistency handler connected to said task activity list, said priority scan list, said completion status list and said selection queue for updating the status of each task in said task activity list, said priority scan list, said completion status list and said selection queue which are identified in inter-node messages reporting the completion of a task.

4,805,108

LOW FLIGHT METHOD FOR AUTOMATIC COURSE DETERMINATION

Dieter W. Feuerstein, Munich, and Otto Bernhard, Grafing, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 11, 1987, Ser. No. 13,453

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1986, 36044016

Int. Cl.[4] G06F *15/50*

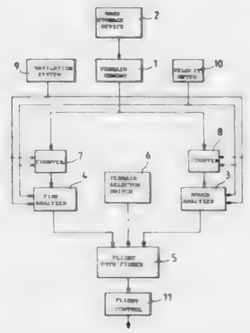
U.S. Cl. 364—433 14 Claims

1. A low flight method for automatic course determination when approaching a given target site, comprising the steps of:

storing digitally, in a terrain memory, terrain points in a grid type distribution and also storing height coordinates associated with the terrain points to form a digital terrain height model;

forming, by means of a rough analyzer, at first time intervals ΔT over the multitude of points of the digital terrain height model, a first fan (F_n) starting from a respective momentary flight position (P_1) and oriented with a center direction (M_F) toward the target site (P_2) and comprising a plurality of adjacent fan segments (S_j), calculating for each fan segment (S_j) a mean value of the height coordinates of the terrain points situated in the fan segment, and determining the fan segment having the smallest mean value;

forming, by means of a fine analyzer, within each of the first time intervals ΔT in multiple spaced succession of comparatively shorter second time intervals Δt over the multitude of points of the digital terrain height model, a second fan (f_m) of smaller radius by comparison with the first fan (F_n) starting from the momentary flight position (P_1, P_2, etc.) and oriented with its center direction (M_{fm}) into the momentary flight direction and comprising a plurality of adjacent smaller fan segments (s_j), and calculating for each



smaller fan segment (s_j) a mean value of the height coordinates of the terrain points situated in the respective smaller fan segments;

determining, by means of a flight path finder, the respective differences of said mean values of the smaller fan segments and comparing the differences in each instance with a predetermined limit value (G);

forming, if none of the respective mean values exceeds the limit value (G), a course correction command for approximating the flight direction which corresponds to the fan segment previously determined in the rough analyzer to have the smallest mean value; and

forming, if at least one of the respective mean values of the smaller fan segments exceeds the limit value (G), a course correction command for the momentary flight course according to the respective smaller fan segment (s_j) the lowest mean value is present in.

4,805,109

NONVOLATILE MEMORY PROTECTION ARRANGEMENT FOR ELECTRONIC POSTAGE METER SYSTEM HAVING PLURAL NONVOLATILE MEMORIES

Paul C. Kroll, New Milford, and Sung S. Chang, Stamford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

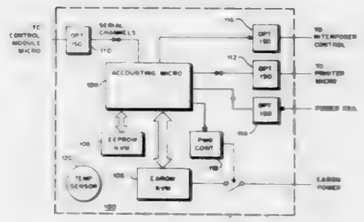
Filed Oct. 16, 1985, Ser. No. 787,877

Int. Cl.[4] G06F *12/00*

U.S. Cl. 364—464.02 10 Claims

1. A system for the nonvolatile storage of data of the type including, a microcomputer means, an MNOS type nonvolatile memory having address lines and data lines and an EEPROM type nonvolatile memory having high order and low order address lines and data lines, the improvement comprising:

coupling the address lines and data lines of the two nonvolatile memories to the microcomputer means such that the MNOS memory data lines correspond to the high order address lines of the EEPROM memory such that the data lines may always be placed at a high value whenever the



EEPROM memory is addressed for the purpose of either writing or reading.

4,805,110

CIRCUIT ELEMENT MOUNTING SYSTEM AND METHOD

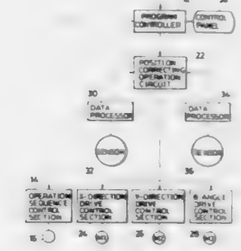
Tetsuo Takahashi, and Shinichi Araya, both of Tokyo, Japan, assignors to TDK Corporation, Japan

Filed Dec. 19, 1986, Ser. No. 944,251

Claims priority, application Japan, Dec. 19, 1985, 60-284325

Int. Cl.[4] G06F *15/46;* **B23P** *19/04*

U.S. Cl. 364—468 11 Claims



1. A circuit element mounting system, comprising;

a mounting device including a mounting head for holding a circuit element thereon and mounting it on a printed circuit board; and

a control system for controlling movement of said mounting head to a predetermined position on the printed circuit board depending upon circuit element mounting data input thereto, to cause said mounting head to mount the circuit element on the printed circuit board;

wherein said mounting head comprises:

means for holding the circuit element on said mounting head, said circuit element holding means disposed to be intermittently rotatable through a first position, a second position and a third position spaced from one another in consecutive order at angular intervals, and adapted to adjust an angle at which the circuit element is to be mounted on the printed circuit board, said circuit element holding means holding the circuit element thereon at said first position and mounting the circuit element on the printed circuit board at said third position;

means for reading position of the circuit element, said circuit element position reading means being fixed at said second position for detecting a circuit element holding state of said circuit element holding means at said second position; and

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substrate position reading means for detecting a circuit element mounting position on the printed circuit board at said third position prior to mounting of the circuit element on the printed circuit board by said circuit element holding means.

4,805,111

SIZE INDEPENDENT MODULAR WEB PROCESSING LINE AND MODULES

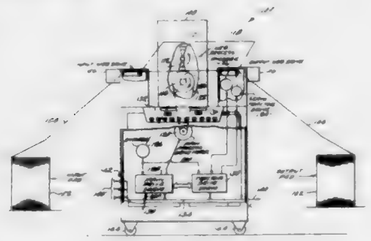
Leonard R. Steidel, Grand Island, N.Y., assignor to Moore Business Forms, Inc., Gleaview, Ill.

Continuation-in-part of Ser. No. 802,346, Nov. 27, 1985, which is a continuation-in-part of Ser. No. 695,963, Jan. 29, 1985, Pat. No. 4,648,540, which is a continuation-in-part of Ser. No. 675,149, Nov. 27, 1984, abandoned. This application Sep. 11, 1986, Ser. No. 906,073

The portion of the term of this patent subsequent to Mar. 10, 2004, has been disclaimed.

Int. Cl.[4] B65H *20/24*; B41F *13/24*

U.S. Cl. 364—469 **2 Claims**



1. For installation in a line of web processing modules all electrically connected together via an intermediate bus, a module for printing upon the web, the printing module comprising a tractor driven by the web, an encoder driven by the tractor to indicate its movement, a servo means coupled to the tractor encoder, a printing mechanism, a motor for driving the printing mechanism, an encoder driven by the printing mechanism, the printing mechanism motor and encoder being coupled to the servo means, the servo means being coupled to the intermodule bus, the servo means being responsive to signals from the intermodule bus and from the encoders, to control the speed of the motor so that the average velocity of the web through the printing module does not exceed the velocity of the web as it issues from the previous module.

4,805,112

OPERATING CONDITION SETTING METHOD FOR INJECTION MOLDING MACHINE

Noriaki Neko, Hino, Japan, assignor to Fanuc Ltd., Kawasaki, Japan

PCT No. PCT/JP85/00650, § 371 Date Jul. 23, 1986, § 102(e) Date Jul. 23, 1986, PCT Pub. No. WO86/03162, PCT Pub. Date Jun. 5, 1986

Continuation of Ser. No. 890,855, Jul. 23, 1986, abandoned. This PCT application Nov. 22, 1985, Ser. No. 193,219

Claims priority, application Japan, Nov. 24, 1984, 59-247013

Int. Cl.[4] B29C *45/76*

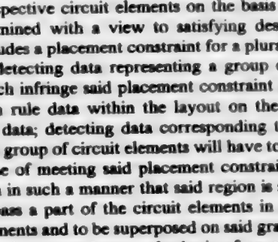
U.S. Cl. 364—476 **2 Claims**

1. A method for setting operating conditions for injection molding conditions of an injection molding machine controlled by a numerical control unit having a memory storing an injection operation control program including injection operations, comprising the steps of:

(a) providing fixed operation sequence macros for the operations in the control program, said macros included in said program;

(b) reserving a portion of the memory for storing macro parameters for each of the macros;

(c) entering macro parameter values for each of the operations;



(d) storing the macro parameter values in the reserved portion of the memory; and

(e) producing numerical control using the macros and macro parameters without altering said program and without producing a new program.

4,805,113

METHOD OF UPDATING LAYOUT OF CIRCUIT ELEMENT

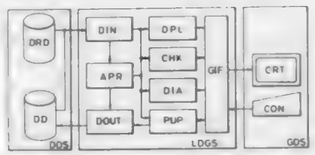
Tatsuki Ishii, Tokyo, and Makiko Iwanabe, Shimizu, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 9, 1986, Ser. No. 849,831

Claims priority, application Japan, Apr. 10, 1985, 60-74219

Int. Cl.[4] G06F *15/46*, *15/62*

U.S. Cl. 364—491 **12 Claims**



1. A method of updating a layout of circuit elements, comprising the steps of: displaying a graph showing a placement state of respective circuit elements on the basis of placement data determined with a view to satisfying design rule data which includes a placement constraint for a plurality of circuit elements; detecting data representing a group of circuit elements which infringe said placement constraint prescribed by said design rule data within the layout on the basis of said placement data; detecting data corresponding to a region to which said group of circuit elements will have to appertain for the purpose of meeting said placement constraint; displaying said region in such a manner that said region is so disposed as to encompass a part of the circuit elements in said group of circuit elements and to be superposed on said graph; and modifying said placement data on the basis of an element layout modifying indication given from an operator who observes said graph displayed and said region displayed in superposition on said graph, and moves the placement of at least one circuit element of the circuit elements in said group of circuit elements into said region.

4,805,114

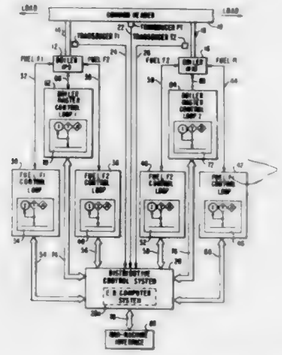
ECONOMICAL DISPATCHING ARRANGEMENT FOR A BOILER SYSTEM HAVING A COGENERATIVE CAPABILITY

Richard E. Putman, Penn Hills Twp., Allegheny Cty., and Thomas Allen, Glenshaw, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 20, 1987, Ser. No. 40,406

Int. Cl.[4] G06F *15/20*, *15/46*

U.S. Cl. 364—494 **14 Claims**



1. An arrangement for economically despatching fuel and load assignments on a multi-boiler cogenerative type steam generating plant, said economical despatching arrangement capable of firing each boiler with at least two fuels and of allocating shares of a total steam load among the boilers, said economical despatching arrangement comprising:

means for determining a present value of the flow of each fuel to each of said boilers and storing each determined value; of

means for determining present values of said shares said total steam load allocated among said boilers which store a respective said determined share associated therewith; for each

means for calculating an optimal next value of said fuel and load assignments as a function of said present fuel flow values and present share values;

said calculating means including a means for estimating a proportionate share value on one of said boilers and a fuel flow value for one of said at least two fuels, said calculating means, by use of said estimating means, calculates said optimal next values for each of said fuel and load assignments using a quantity of variables reduced in number relative to the quantity of said fuel and load assignments; and,

means for implementing at least one of said optimal next values into said multi-boiler cogenerative type steam generating plant in one of an automatic and a manual mode of operation.

4,805,116

INTERPOLATED DISPLAY CHARACTERISTIC VALUE GENERATOR

Bob C. Liang, West Hurley, and Jorge Gonzalez-Lopez, Red Hook, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 23, 1986, Ser. No. 854,965

Int. Cl.[4] G06F *7/66*

U.S. Cl. 364—521 **2 Claims**

2. A computer graphics dislay processing system having a memory, a display processor, and a display means for displaying graphics objects, wherein a graphics object is represented in memory by position data corresponding to the positions, in a two dimensional space represented by a first and a second axis, of pels which together make up the graphics objects, and by parametric values corresponding to a display characteristic provided in association with said position data, including means for providing interpolated display characteristic parametric values for each pel on said raster scan display means associated with a graphics object to be displayed, comprising:

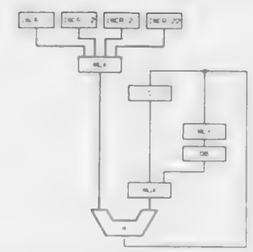
means for providing position data and parametric value data for a plurality of pels representing selected points on said graphics object for interpolation therefrom to generate the parametric value data for the other pels of said graphics object;

means for generating, based on said position data of said plurality of pels representing selected points on said graphics object pel position values for the other pels of said graphics object starting at one of said plurality of pels and moving from one pel to the next in a scanning operation in a first and a second selected scanning direction that are parallel to said first and second axis, respectively;

means for determining integer values approximating the rate of change of parametric values, an initial accumulated error value, error terms, and error correction terms, such that the error in the parametric value is never greater than 0.5 unit, said means for determining including:

means for determining first and second integer values approximating the rate of change of the parametric value in said first and second scanning directions;

means for determining an initial accumulated error value based on said position data and said parametric value data;



means for determining first and second error terms representing the error introduced by using said first and second integer values as approximations of the rate of change of the parametric value in said first and second directions;

means for determining first and second error correction terms representing the error correction accomplished by substituting third and fourth integer values approximating the rate of change of the parametric value in said first and second scanning directions, said first and second integer values representing a first integer bound of the actual rate of change of the parametric value and said third and fourth integer values and representing a second integer bound of the actual rate of change of the parametric value in said first and second scanning directions;

means for generating interpolated parametric value data for each pel generated by such moves, by taking the parametric value data for a previously determined pel, including:

means for adding to said previously determined parametric value when said each pel is reached from said previously determined pel by moving in said first scanning direction:

said first integer value, if said accumulated error value is negative, or said third integer value, otherwise; and

adding to said accumulated error value said first error term if said accumulated error is negative, or said first error correction term, otherwise;

means for adding to said previously determined parametric value when said each pel is reached from said previously determined pel by moving in said second scanning direction:

said second integer value if said accumulated error value is negative, or said fourth integer value, otherwise; and

adding to said accumulated error value said error term if said accumulated error value is negative, or said second error correction term otherwise; and

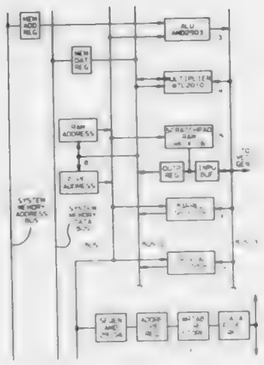
means for adding, when said each pel is located anywhere else, a sum determined by representing the path to said each pel located anywhere else as the combination of a move in first scanning direction and a move in said second scanning direction.

4,805,117

METHOD FOR CONTROLLING CONCATENATION OF TRANSFORMATION MATRICES IN A GRAPHICS DISPLAY SYSTEM

Anthony M. Fiore, Kingston; Bruce C. Hempel, Tivoli; Gregory D. Lalk, and Bob C. Liang, both of West Hurley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 26, 1986, Ser. No. 912,724
Int. Cl.[4] G06K *9/32*
U.S. Cl. 364—518 **18 Claims**



1. A method of transforming a graphics object in a graphics processing system comprising the steps of:

forming at least two matrices for transformation each matrix containing a first set of elements and a second set of elements;

defining a register to contain a shift factor for said first set of elements;

defining a plurality of registers each of which contains a translation shift factor for one of said second set of elements;

forming a product matrix by concatenating two of said at least two matrices, said concatenation comprising the steps of:

calculating a first set of elements for said product matrix by performing matrix multiplication on said first set of elements from a first and second matrices, said first set of elements corresponding to said first set of elements of said at least two matrices;

normalizing said first set of elements of said product matrix and determining a shift factor for said first set of elements; and,

calculating a second set of elements of said product matrix, said second set of elements corresponding to said second set of elements of said at least two matrices and determining a plurality of translation shift factors for said second set of elements; and,

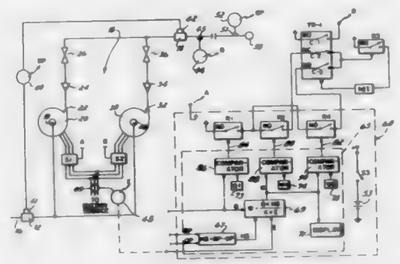
transforming a plurality of points of said graphics object by multiplying the coordinates of each of said plurality of points by said product matrix.

4,805,118

MONITOR AND CONTROL FOR A MULTI-PUMP SYSTEM

James B. Rishel, Cincinnati, Ohio, assignor to Systecon, Inc., Cincinnati, Ohio

Filed Feb. 4, 1987, Ser. No. 10,708
Int. Cl.[4] G01F *1/00*; G05B *11/02*
U.S. Cl. 364—510 **30 Claims**



1. Apparatus to selectively control pumps in a pumping system having a plurality of selectively energizable pumps coupled between inlet an outlet headers of the system, the apparatus comprising:

(a) first means for measuring fluid flow rate Q of the system;

(b) second means for measuring total dynamic head HS between the inlet and outlet headers of the system;

(c) third means adapted to communicate with an energy source for pumps in the system for measuring energy E utilized by the system to drive the pumps;

(d) fourth means communicating with said first, second, and third means for determining wire-to-water efficiency W of the system accoriding to the formula:

$$W=(Q\times HS)/(K\times E)$$

wherein K is a predetermined conversion factor; and

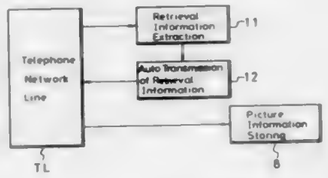
(e) control means responsive to said fourth means for selectively providing enable signals whereby to energize and deenergize selected ones of the pumps.

4,805,119

USER TERMINAL FOR VIDEOTEX

Satoru Maeda, and Shigeru Yatou, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Jun. 26, 1986, Ser. No. 879,004
Claims priority, application Japan, Jun. 27, 1985, 60-140919
Int. Cl.[4] G06F *15/64*; H04M *11/08*
U.S. Cl. 364—518 **5 Claims**



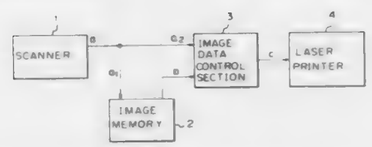
3. A user terminal for use with a videotex system, the user terminal comprising means for requesting from an information center retrieval control information containing picture numbers of certain picture information required for information retrieval operations at the user terminal, analyzing means for analyzing and extracting the picture numbers from the retrieval control information, transmitting means for transmitting the picture numbers to the information center to request the picture information corresponding to the picture numbers, receiving means for receiving and storing the picture information transmitted from the information center; and means for using said storage picture information and said stored reterieval control information at the user terminal in an off-line mode to carry out picture retrieval operations.

4,805,120

TWO-COLOR IMAGE RECORDER

Yukio Sakano, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 19, 1988, Ser. No. 183,084
Claims priority, application Japan, Apr. 23, 1987, 62-100794
Int. Cl.[4] G01D *15/00*
U.S. Cl. 364—519 **8 Claims**



1. An apparatus for recording an image component of a first color and an image component of a second color which are printed on an original document, comprising:

image reading and processing means for sequentially performing a first reading operation for reading the image component of the first color only and a second reading operation for reading both the image of the first color and the image of the second color, and converting said image components individually into bilevel image data;

memory means readable and writable in synchronism with the first and second reading operations of said image reading and processing means for storing the bilevel image data which are produced by said first reading operation of said image reading and processing means; and

data control means for logically processing the bilevel image data produced by the first reading operation of said image reading and processing means, the bilevel image data produced by the second reading operation, and the bilevel image data stored in said memory means to extract and produce bilevel data which are associated with the second color.

4,805,121

VISUAL TRAINING APPARATUS

John S.. Scott, Melbourne, and George R. Legters, Melbourne Beach, both of Fla., assignors to dba Systems, Inc., Melbourne, Fla.

Filed May 30, 1986, Ser. No. 868,061
Int. Cl.[4] G06F *3/153*; H04N *7/18*
U.S. Cl. 364—522 **15 Claims**

11. A training apparatus through the use of which an operator can gain experience in the performance of a predetermined task, the apparatus including a computer generated visual display of a predetermined scene, the image generator comprising;

general purpoee computer means including a central processing unit,

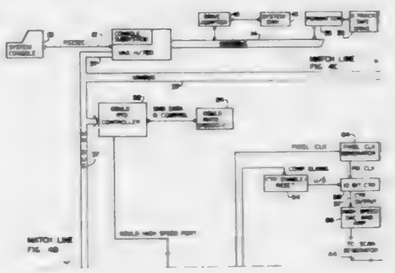
means for receiving three dimensional coordinate location information of points within a region,

means for receiving digitized optical intensity information of points within said region,

means for retrievably storing said coordinateand optical information,

general processor means including means for creating three dimensional electronic representations from said optical and coordinate information,

means for retrievably storing said three dimensional representations, and



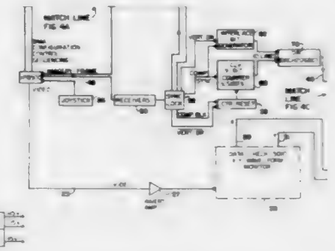


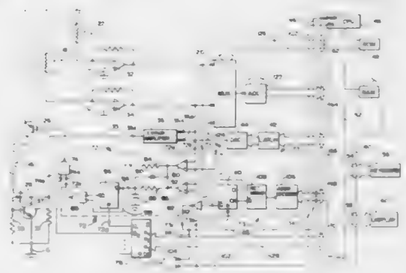
image generation means connected to receive said representations and signals from said general processor means to create and display a series of visual images.

4,805,122

TEMPERATURE CONTROL SYSTEM FOR CUTANEOUS GAS MONITOR

Larry S. McDavid, Anaheim; Michael Pawlowski, Chino; Stuart L. Foster, Fountain Valley, and Gerald T. Stillman, Fullerton, all of Calif., assignors to Sensormedics Corporation, Anaheim, Calif.

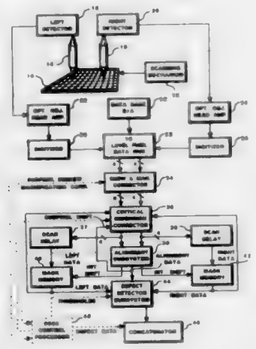
Continuation of Ser. No. 948,441, Dec. 31, 1986, abandoned, which is a continuation of Ser. No. 510,149, Jul. 1, 1983, abandoned. This application Jan. 25, 1988, Ser. No. 148,115
Int. Cl.[4] G06F *15/42*; G01N *27/26*; A61B *5/05*
U.S. Cl. 364—557 **15 Claims**



1. A cutaneous gas monitoring system comprising;

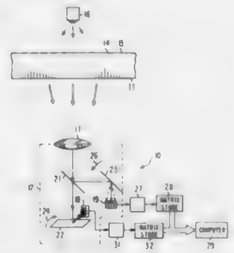
a sensor;
a first sensing means for generating a first output signal indicative of the actual temperature of the sensor;
a heating means for elevating the temperature of the sensor;
a control means for establishing a temperature setpoint signal variable between, at least, a first and a second temperature, and indicative of a desired temperature of the sensor, wherein the temperature setpoint signal is established at the second temperature for a predetermined length of time after the sensor is placed on a patient and the temperature setpoint signal is established at the first temperature after the elapse of the predetermined length of time, wherein the first temperature is lower than the second temperature, and for regulating the heating means in accordance with the difference between the output signal of the sensing means and the temperature setpoint signal;
means connected to the first sensing means which functions to reduce the temperature of the sensor after the first output signal exceeds a predetermined value.

4,805,123
AUTOMATIC PHOTOMASK AND RETICLE INSPECTION METHOD AND APPARATUS INCLUDING IMPROVED DEFECT DETECTOR AND ALIGNMENT SUB-SYSTEMS
Donald F. Specht, Los Altos; Tim S. Wihl, San Jose; Scott A. Young, Scotts Valley; James J. Hagar, Jr., San Jose, and Matthew B. Latzker, Menlo Park, all of Calif., assignors to KLA Instruments Corporation, Santa Clara, Calif.
Filed Jul. 14, 1986, Ser. No. 885,197
Int. Cl.[4] G06K *9/68, 9/38*
U.S. Cl. 364—559 **52 Claims**



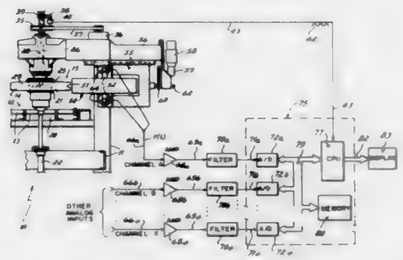
1. A method of detecting defects in objects such as photomasks, reticles, wafers, printed circuit boards, and the like, comprising the steps of:
inspecting a selected surface area of an object and generating a first stream of data having signal values representing the image content of each pixel thereof;
generating a second stream of data having signal values representing the image content of each pixel of said second stream of data;
storing corresponding portions of the first and second streams of data in memory;
detecting with a resolution to a fraction of a pixel any misalignment between the stored portions of said first and second streams of data;
aligning the stored first and second portions of data using subpixel interpolation to correct any detected misalignment therebetween; and
comparing corresponding subportions of the stored and aligned first and second portions of data to detect differences therebetween, and upon detecting a difference, indicating the presence of a defect at a particular pixel location on the inspected object.

4,805,124
SYSTEM AND METHOD FOR MEASURING ELLIPTICAL ELEMENTS
Frank S. Krafka, Mount Joy, Pa., assignor to RCA Licensing Corp., Princeton, N.J.
Filed Jun. 10, 1987, Ser. No. 60,147
Int. Cl.[4] H04N *7/18*
U.S. Cl. 364—560 **8 Claims**



1. A method of measuring orthogonal dimensions of elliptical elements having a first energy transmission capability in a medium having a second energy transmission capability including the steps of:
illuminating said elements and said medium with energy whereby one of said transmission capabilities substantially passes said energy and the other of said transmission capabilities substantially blocks said energy;
arranging at least two multipixel energy detectors at substantially right angles and simultaneously individually scanning a number of scan lines across said energy detectors for a selected number of said elliptical elements in orthogonal directions substantially parallel to said orthogonal dimensions, whereby pixels receiving energy from areas having said first transmission capability charge to a first level and pixels receiving energy from areas having said second transmission capability charge to a second level;
detecting said charge levels from said detectors to produce two analog signals having first and second amplitudes respectively indicative of said first and second charge levels;
converting said analog signals to digital signals having first and second pixel counts whereby a first of said dimensions is represented by said first pixel count and the second of said dimensions is represented by said second pixel count;
storing said first pixel counts for said first dimension in a first matrix wherein said first matrix includes a column of pixel counts for each of said selected elliptical elements and a row of pixel counts for each of said scan lines;
selecting and averaging the n highest pxel counts in each of said columns to obtain an average first direction column pixel count for said elliptical elements in said first direction;
averaging said first direction column pixel counts to obtain an average first direction array pixel count for said first direction;
storing said pixel counts for said second dimension in a second matrix wherein said second matrix includes a column of pixel counts for each of said selected elliptical elements and a row of pixel counts for each of said scan lines;
selecting and averaging the m highest pixel counts in each of said columns to obtain an average second direction column pixel count for said elliptical elements in said second direction;
averaging said second direction column pixel counts to obtain an average second direction array pixel count for said second direction; and
multiplying said average pixel count for said first direction by a first conversion factor to convert said pixel count to a first linear dimension; and multiplying said average pixel count for said second direction by a second conversion factor to convert said pixel count to a second linear dimension.

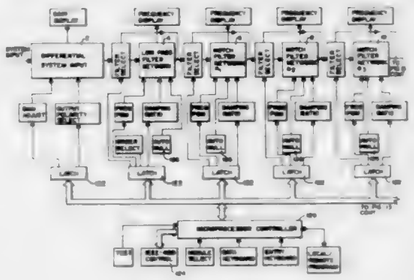
4,805,125
APPARATUS AND METHODS FOR IMPROVING UNIFORMITY MEASUREMENTS
James C. Beebe, Medina, Ohio, assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio
Filed Jan. 12, 1987, Ser. No. 62,153
Int. Cl.[4] G06F *17/02;* **G01M** *17/02*
U.S. Cl. 364—570 **50 Claims**

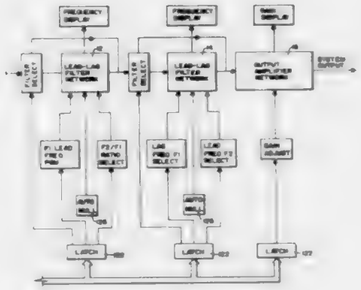


1. In a method for measuring the uniformity of a body, the steps of:
(a) generating an analog waveform whose instantaneous value is related to the uniformity of said body;
(b) sampling said waveform to acquire a series of data samples, each of said samples being correlated with a respective physical location on said body, said series of data samples including at least one data sample indicating the value of said waveform at a given one of said locations at one time and another data sample indicating the value of said waveform at said given one of said locations at another time;
(c) determining the difference between said one data sample and said another data sample; and
(d) calculating a part of said difference for each of said series of data samples according to a predetermined mathematical function, and subtracting from each data sample in said series that part of said difference calculated for said data sample to generate a corrected series of data samples.

4,805,126
ELECTRONIC COMPENSATION NETWORK
James D. Rodenas, P.O. Box 7, Dewitt, N.Y. 13214
Filed Nov. 26, 1985, Ser. No. 801,862
Int. Cl.[4] G06F *11/30;* **H03F** *3/68*
U.S. Cl. 364—571.01 **11 Claims**

1. An electronic compensation network, comprising:
(a) active switched-capacitor filter means;
(b) control means operably associated with said filter means for selectively changing filter parameters and selecting compensator characteristics;
(c) indicator means operably associated with said control means for providing an accurate reading of the filter parameters and compensation characteristics selected so that adjustment of compensator characteristics are simultaneously indicated by said indicator means;
(d) input means operably associated with said filter means for input of a signal;
(e) output means operably associated with said filter means for output of a compensation signal; and,
(f) said active switched-capacitor filter means comprising active low pass filter means operably connected to said input means, an active switched-capacitor notch filter





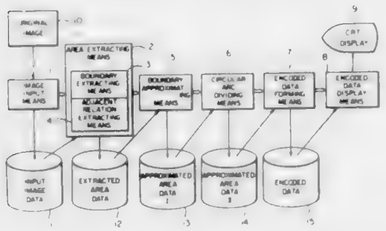
means operably connected to said low pass filter means, an active switched-capacitor lag-lead filter means operably connected to said notch filter means, and an active switched-capacitor lead-lag filter means operably connected to said lag-lead filter means.

4,805,127
IMAGE DESCRIBING APPARATUS
Toshihiko Hata, and Kaoru Horiuchi, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Mar. 11, 1986, Ser. No. 838,592
Claims priority, application Japan, Mar. 12, 1985, 60-47431; Mar. 12, 1985, 60-47432; Mar. 12, 1985, 60-47433; Mar. 12, 1985, 60-47435
Int. Cl.[4] G06F *15/626*
U.S. Cl. 364—521 **19 Claims**

1. An image describing apparatus for describing an image stored in an array of image memory as image data for display, the image being made up of a plurality of areas of different colors and having at least one of polygonal and arcuate boundaries, said apparatus comprising:
extracting means for extracting boundary point rows representing boundaries between areas of different colors from image data stored in an array of image memory;
approximating means for approximating the boundary point rows extracted by the extracting means in terms of at least one of linear primitives and curve primitives;
converting means for converting the at least one of the linear and curve primitives approximated by the approximating means into at least one of polygonal and arcuate graphic commands, respectively, of specified colors and shapes;
identifying means for identifying first graphic commands

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converted by the converting means from first primitives which are overlapped by other graphic commands, for dividing the first primitives into second primitives, and for



converting the second primitives into second graphic commands not so overlapped; and

selecting means for selecting a sequence of graphic commands to encode the image data.

4,805,128

FORMAT CONVERSION SYSTEM

Pete E. Nelson, Plano, and Jitendra K. Ghelani, Dallas, both of Tex., assignors to Geophysical Service Inc., Dallas, Tex.

Filed Nov. 22, 1985, Ser. No. 801,011

Int. Cl.[4] G06F 7/38, 5/00

U.S. Cl. 364—715.03 **18 Claims**

MICROFICHE APPENDIX INCLUDED

(2 Microfiche, 6 Pages)

1. A computer system comprising:

(a) memory means for storing digital data in a fixed point or floating point format:

(b) storage means for storing digital data in a fixed point or floating point format; and

(c) format conversion means interconnecting the memory means and the storage means for converting digital data words from a fixed point format to a floating point format and vice versa, the format conversion means comprising:

(d) complementing means comprising digital processing means for providing the two's complement and digital data word from the memory means or the storage means, detecting whether it is negative, and if so, for providing its complement;

(e) first code establishing means comprising priority encoding means coupled to said complementing means for detecting the most significant one bit and the number of 0's to the left of the one bit in the first fixed point digital data word, and for providing a first code representative of the number of 0's and the position of the most significant one bit;

(f) second code establishing means for receiving the exponent of a first floating point digital data word from the memory means or the storage means for providing a second code representative thereof;

(g) mantissa/fixed point determining means coupled to said complementing means and responsive to the first code for effective moving a radix point to the left in the first fixed point word as determined by the first code to form the mantissa of a second floating point digital data word, and also responsive to the second code for effectively moving a radix point to the right in the first floating point word as determined by the second code to form a second fixed point digital data work; and

(h) exponent determining means comprising means for adding one to the first code and for interpreting the first code and providing the exponent associated with the mantissa of the second floating point digital data word.

4,805,129

TWO-DIMENSIONAL FINITE IMPULSE RESPONSE FILTER ARRANGEMENTS

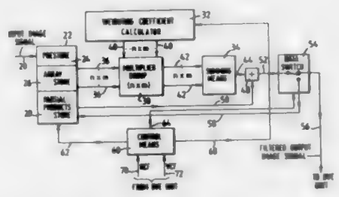
Morgan W. A. David, Farnham, United Kingdom, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 20, 1987, Ser. No. 110,452

Claims priority, application United Kingdom, Nov. 17, 1986, 8627417

Int. Cl.[4] G06K 9/40

U.S. Cl. 364—724.01 **13 Claims**



1. Apparatus for filtering an input signal which represents an image and which comprises a sequence of digital words in a spatial array, the apparatus comprising:

a two-dimensional finite impulse response filter operative during each of a plurality of successive clock periods to effect filtration over a predetermined area of said image;

said filter including:

a store storing weighting coefficient data defining a profile which when rotated about an axis generates a three-dimensional representation of the values of weighting coefficients corresponding to respective positions in said array, to respective ones of said digital words, and to a required two-dimensional response characteristic of said filter;

first calculating means operative in response to each of said digital words to calculate the radius from said axis of the position of the corresponding weighting coefficient in said representation, whereby the value of the respective weighting coefficient corresponding to each of the positions in said array can be derived from said store in dependence on the value of the corresponding radius; and

second calculating means to multiply each of said digital words by the weighting coefficient that corresponds thereto to form resulting products and to sum the resulting products to derive an output filtered digital word.

4,805,130

ARITHMETIC AND LOGIC CIRCUIT STAGE

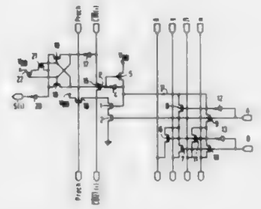
Michel J. Lanfranca; Jean-Michel J. Labrousse, both of Paris, and Christian M. Deneuchatel, Velizy, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 26, 1987, Ser. No. 30,946

Claims priority, application France, Mar. 28, 1986, 86 04506

Int. Cl.[4] G06F 7/50

U.S. Cl. 364—786 **4 Claims**



1. A circuit which forms a stage of a unit which comprises a plurality of such stages in order to perform operations on the basis of input data A and B while taking into account any carry (CIN) from a preceding stage, and for supplying an operation result and a carry ouput (COUT), if any, to be applied to the next stage, said circuit comprising a data preprocessing device which is formed by a network of MOS transistors which supply the logic combinations $P=\alpha A\cdot B+\beta\cdot A\cdot B+\gamma\cdot A\cdot B+\delta\cdot A\cdot B$ on a logic connection ($\overline{P}$), where α, β, γ, δ, are programming parameters, a carry-propagation device which is formed by a MOS transistor inserted between a carry input and a carry output of a chain for propagating the carry from one stage to a next stage, the output of the chain being precharged during a clock period in each stage by an exclusive carry propagation-generation device, which comprises a transistor for discharging the chain, and a device for generating the logic result of the circuit, characterized in that the exclusive carry-propagation-generation device is formed by at least two MOS transistors (1, 2) which are connected in series between the output of the carry-propagation chain and a point carrying a potential at the low logic level, the gates of said two transistors being connected to one of the data inputs and the connection carrying said logic combination ($\overline{P}$), respectively, and an inverter, the gate of the carry-propagation transistor (15) being connected, by said inverter, to said connection carrying the logic combination.

4,805,131

BCD ADDER CIRCUIT

Matthew J. Adiletta, Worcester, and Virginia C. Lamere, Upton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 9, 1987, Ser. No. 72,161

Int. Cl.[4] G06F 7/50

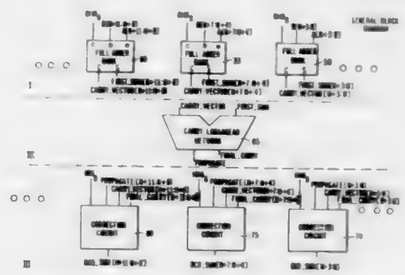
U.S. Cl. 364—783 **9 Claims**

1. A BCD adder circuit for adding a first and a second BCD operand and for producing a BCD sum, comprising:

binary adder means, having inputs connected to receive the first and second operands and a BCD precorrection factor, for producing an intermediate sum vector and an intermediate carry vector;

carry lookahead means, having inputs connected to receive the intermediate sum vector and the intermediate carry vector, for producing a propagate vector and a final carry vector; and

correction means, having inputs connected to receive the intermediate carry vector, the final carry vector, the propagate vector and a BCD correction factor, for producing said BCD sum by conditionally modifying said propagate vector and said final carry vector according to



said BCD correction factor based on said intermediate and final carry vectors.

4,805,132

MACHINE TRANSLATION SYSTEM

Toshio Okamoto, Tokyo, and Kimihito Takeda, Odawara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 19, 1986, Ser. No. 898,017

Claims priority, application Japan, Aug. 22, 1985, 60-184940

Int. Cl.[4] G06F 15/38

U.S. Cl. 364—900 **6 Claims**

1. A machine translation system comprising: input means for inputting at least character string information and control information; original storage means for storing an original sentence consisting of the character string information input by said input means, said original storage means including a new input buffer for temporarily storing a new input; dictionary means for storing linguistical information necessary for translation processing of the original sentence; translation processing means for obtaining a translated sentence consisting of character string information from the original sentence stored in said original storage means with reference to the linguistical information stored in said dictionary means; translation storage means for storing the translated sentence; display means for displaying the original and translated sentences at predetermined display regions, respectively; and edit processing means for performing edit processing for the original and translation displayed on said display means in accordance with information input by said input means,

said edit processing means including:

position detecting means for detecting position information substantially representing an input position of information input by said input means on a display screen of said display means;

region discriminating means for discriminating whether or not the position information corresponds to a predetermined new input region which is within the region of the display screen of said display means where the original

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sentence is to be displayed and which is not used for displaying any character;

storage control means for storing the information input by said input means in the new input buffer of said original storage means when the position information corresponds to the new input region; and

editing means for editing the original sentence or the translated sentence displayed by said display means in the display region designated by the position information, when said position information corresponds to an input region other than the predetermined new input region.

4,805,133

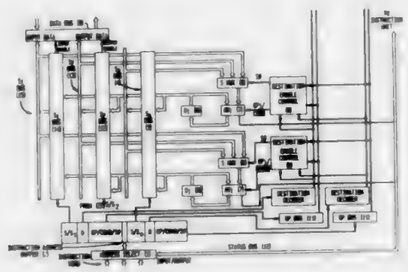
PROCESSOR MEMORY ELEMENT AND A NEW COMPUTER ARCHITECTURE

S. Edmund Greenfield, 183 Main St., Boxford, Mass. 01921

Filed Dec. 20, 1985, Ser. No. 811,708

Int. Cl.[4] G06F *9/00*

U.S. Cl. 364—900 **5 Claims**



1. A computer system for performing arithmetic and logic operations, the system comprising:

a plurality of processor memory elements, each processor memory element comprising addressable combination processor and memory cells, each cell including (1) accumulator means for storing data and (2) arithmetic logic means for performing arithmetic and logic operations on the contents of the accumulator means;

a plurality of parallel source bus means in communication with each cell for providing access to the accumulator means and artihmetic logic means of each cell;

source bus selection means for selecting simultaneously a source cell, a destination cell, and one of the source bus means;

execution means for causing the contents of the accumulator means in the source cell to be placed onto the selected source bus means, and for causing the arithmetic logic means of the destination cell to perform arithmetic and logic operations based on the contents of the selected source bus means and on the data contained in the accumulator of the destination cell;

means for inputing and outputing data into and out of the execution means; and

instruction means for transmitting a series of instructions to the execution means, the instruction means including means for executing branch, indexing, and subroutine instructions, and further comprising means for controlling and sequencing instruction words with multiple subwords.

4,805,134

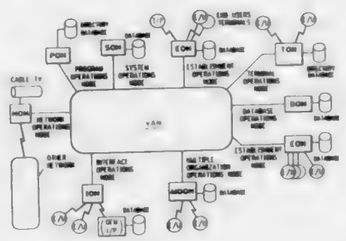
ELECTRONIC SYSTEM FOR ACCESSING GRAPHICAL AND TEXTUAL INFORMATION

Seraphin B. Calo, Peekskill; Krishnamurthi Kannan, Yorktown Heights; Suk S. Soo, Mount Kisco; Thomas G. Burket, Pleasantville, and John W. Wiley, Jr., Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 9, 1986, Ser. No. 817,389

Int. Cl.[4] G06F *13/00*

U.S. Cl. 364—900 **50 Claims**



1. A system for enabling users thereof to electronically access a wide range of information, and including a capability for interuser messaging and executing of transactions, comprising:

a. terminal means for displaying graphical and textual information to a user;

b. a first operational node connected to said terminal means and comprising:

(1) first database means comprising page means for providing graphical and textual information, said page means comprising a plurality of pages, each page comprising a variable length electronic data structure comprising control information and displayable data, said control information comprising at least one exit path for directing the user from one page to another page; and

(2) first application program means for exchanging messages and executing transactions on behalf of said user; and

c. a second operational node comprising second database means and second application program means for respectively providing graphical and textual information, and exchanging messages and executing transaction on behalf of said user; and

d. means for enabling said terminal means to access said graphical and textual information from said first and second database means and to exchange messages and execute transactions with said second operational node, through said first node means.

4,805,135

IMAGE COMMUNICATION APPARATUS HAVING A FUNCTION FOR DIVIDING AND OUTPUTTING AN IMAGE

Hiroshi Ochi; Nobuji Tetsutani, both of Yokosuka; Tetsuji Yamamoto, and Hiroshi Noboru, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Jun. 27, 1985, Ser. No. 749,421

Claims priority, application Japan, Jul. 4, 1984, 59-138367

Int. Cl.[4] H04N *1/04*; G06F *3/09*

U.S. Cl. 364—900 **27 Claims**

1. An image processing apparatus comprising:

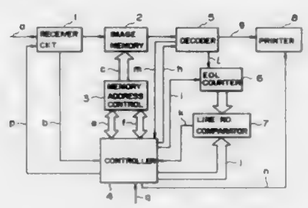
transmitting/receiving means for transmitting and receiving compressed image information;

memory means for storing received compressed image information;

expanding means for expanding the compressed image information stored in said memory means;

image forming means for forming an image on a sheet on the basis of image information expanded by said expanding means;

deciding means for deciding whether or not image information corresponding to a single page is able to be image-formed on a single sheet; and



control means for controlling information output such that, in a case where said deciding means has decided that the image information corresponding to said single page cannot be image-formed on a single sheet, the image information corresponding to the single page is divided and is image-formed on a plurality of sheets.

4,805,136

PROGRAM PROTECTION IN A PROGRAMMABLE ELECTRONIC CALCULATOR

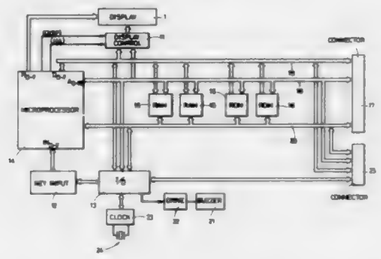
Masaaki Morino, Soraku; Yoshiyuki Fujikawa; Isamu Haneda, both of Nara, and Tetsuo Myoi, Soraku, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 2, 1982, Ser. No. 438,502

Claims priority, application Japan, Nov. 9, 1981, 56-180217

Int. Cl.[4] G06F *12/14*

U.S. Cl. 364—900 **5 Claims**



1. A programmable electronic calculator comprising:

microprocessor means for controlling operation of said calculator in a programming mode, in which mode program instructions are input to said calculator, and in at least one additional operational mode;

storage means operatively associated with said microprocessor means for storing program instructions input during said programming mode;

key input means operatively associated with said microprocessor means and said storage means for inputting and storing program instructions in said storage means in said programming mode;

mode selection means operatively associated with said input means for selectively placing said calculator in said programming mode of operation and said at least one additional operational mode; and

locking means operatively associated with said mode selection means for selectively inhibiting operation of said mode selection means, for preventing said calculator from being placed in said programming mode, and for preventing alteration of program instructions stored in said storage means.

4,805,137

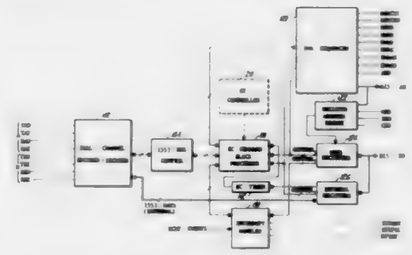
BUS CONTROLLER COMMAND BLOCK PROCESSING SYSTEM

John L. Grant, and Edward Strachar, both of Colorado Springs, Colo., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 8, 1987, Ser. No. 1,299

Int. Cl.[4] G06F *13/00*

U.S. Cl. 364—900 **10 Claims**



1. A circuit for controlling a MIL-STD-1553 bus having at least two remote terminal units connected thereto and executing selected commands from a set of bus commands within a system having a host CPU and host memory and comprising:

a bus interface module means for transferring signals to and from said bus;

a CPU interface module means for passing signals to and from said CPU;

a memory interface module means for passing signals to and from said host memory;

at least one control register means for storing a control word;

at least one command register means for storing a command word;

a coding module means for coding and decoding said signals being transferred on or off said bus;

at least one control sequencer module means for executing a sequence of at least one operation in response to a state signal;

said CPU interface module means, memory interface module means, coding module means and sequencer module means and said control and command register means are formed within a single bus controller integrated circuit;

said memory interface module means contains means for performing a DMA sequence; and

said at least one control sequencer module contains means for executing a series of command sequences in which:

(a) said bus controller integrated circuit accesses a selected command block of said host memory defined by a current block pointer and containing at least one subsequent pointer to at least one other command block area of said host memory, at least one control word containing control information for the execution of a current command sequence by said bus control circuit, at least one command word containing a conventional bus command to be transmitted over said bus, at least one location for storage of status information and at least one data pointer pointing to an area of host memory for the storage of data passing on or off said bus, said memory interface module means utilizing said data pointer for performing a direct memory access operation for passing data between said host memory and said

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bus controller integrated circuit, said control word and said command word being stored in said control register means and said command register means;

(b) said bus control circuit then executes said command sequence under control of path selection means, responsive to said control word and within said sequencer module means and in response to said control word, for the selection of one of at least two electrical paths extending from said bus interface module means through said coding module means to one of said CPU interface module means and said memory interface module means, whereby data, commands, and status information are passed through said bus control circuit to said host CPU or said host memory without intervention by said host CPU for path control and without intermediate storage in bulk memory located in said integrated circuit, and all commands and data required for standard bus operations are stored within said host memory; and

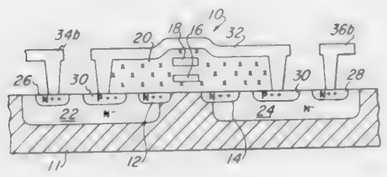
(c) said bus control circuit then stores one of said at least one subsequent pointers as said current pointer, whereby said bus controller circuit executes a predetermined sequence of bus commands without control from said CPU.

4,805,138

AN UNERASABLE EPROM CELL

David McElroy, Houston; Timmie M. Coffman, Sugar Land, and Buster Ashmore, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 23, 1985, Ser. No. 768,787
Int. Cl.⁴ G11C *7/02, 19/00;* **H01L** *25/04*
U.S. Cl. 365—53 **6 Claims**



1. An electrically programmable semiconductor memory cell of a type having a source, a drain, a floating gate, a control gate and gate insulation formed over a face of a semiconductor substrate, comprising:

a ring region of material doped similarly to said substrate enclosing said source, drain, floating gate and control gate and formed at a surface of said substrate;

a drain and source coupling region each doped oppositely to said substrate and contacting respective drain and source regions, extending under said ring and to a surface of said substrate exterior to said ring to respective drain and source contact regions;

a gate coupling region doped oppositely to said substrate extending under said ring region for interconnecting said control gate to a gate contact outside of said ring;

interconnect means for connecting said gate coupling region to said control gate; and

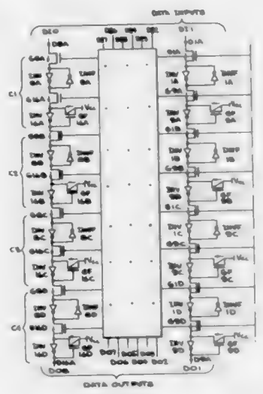
a non-light transmitting electrically conducting shield completely encapsulating said gates and gate insulation above said ring and contacting said ring region around its periphery for shielding said cell against transmission of UV light into an interior thereof.

4,805,139

PROPAGATING FIFO STORAGE DEVICE

David Norris, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 22, 1987, Ser. No. 111,476
Int. Cl.⁴ G11C *7/00, 19/00, 19/28*
U.S. Cl. 365—78 **22 Claims**



1. A propagating first-in, first-out (FIFO) storage device, said storage device being driven by a two-phase non-overlapping clock, said storage device comprising:

a plurality of n-bit storage cells (C1, . . . C4) arranged in a push-down stack, each of said storage cells including first pass gate means, first inverter means, second pass gate means, and second inverter means for storing an n-bit data word and for generating outputs corresponding to said stored n-bit data word;

said first pass gate means having inputs and outputs, said first inverter means having inputs coupled to the corresponding outputs of said first pass gate means and outputs, said second pass gate means having inputs coupled to the corresponding outputs of said first inverter means and outputs, and said second inverter means having inputs coupled to the corresponding outputs of said second pass gate means and outputs for generating the outputs corresponding to said n-bit data word;

data input nodes for coupling data input signals to the inputs of said first pass gate means;

said first pass gate means being responsive to a control signal for loading said data input signal into said first inverter means;

said second pass gate means being responsive to a first phase of said clock for shifting said data into said second inverter means; and

a plurality of tracking bit cell circuits (T1, ...T4) responsive to a load signal and a second phase of said clock for generating said control signals.

4,805,140

CROSS-TIE RANDOM ACCESS MEMORY

Elizabeth H. Grimes, Ellicott City, Md., and Charles W. Baugh, Severna Park, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

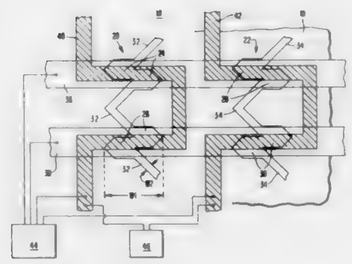
Filed Nov. 21, 1986, Ser. No. 933,709
Int. Cl.⁴ G11C *19/08*
U.S. Cl. 365—87 **3 Claims**

1. A cross-tie random access memory comprising:

a thin film of magneto-resistive material having a thickness no greater than approximately 600 Angstroms and having a plurality of spaced memory locations along the length thereof, each spaced location defining a single memory element;

said spaced memory locations being separated by portions of said material defining connecting portions, said connecting portions having a substantially uniform width W4 not less than 1.5 microns and not greater than 7 microns;

said memory locations each having a polygonal configuration to include two magnetic domains, said two magnetic domains extending laterally from said thin film, each said domain including an apex having an open inner angle, said apex defining the most outward lateral point of said domain, each said domain also including a first side to which said connecting portion adjoins said memory location at opposite ends of said memory location and a second side spaced from and parallel with said first side, said first and second sides of one said domain being spaced opposite said apex of the other domain in said memory location with said second side extending in a direction substantially bisecting the open inner angle, the width W3 from each said apex in each said domain to said first side form which said connecting portion adjoins said domain being between approximately 5 microns and 20 microns, the length



L1 from said first side to said second side in each said domain being between approximately 5 microns and 20 microns;

a plurality of conductor means overlaying said memory elements operative to apply a potential having a selected value and direction to selected memory elements;

write means, including said conductor means for applying to selected memory elements a potential having a first predetermined value and selected polarity for changing the binary state of selected memory locations; and

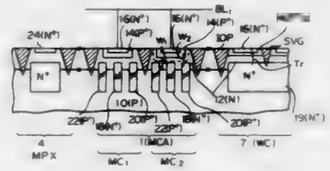
read means, including said conductor means for applying to said memory elements a potential having a second predetermined value insufficient to change the binary state of said memory elements for sensing a first resistance having a value corresponding to said two contiguous magnetic domains in each memory element, at times when the respective memory element is in one binary state, and for sensing a second resistance having a value corresponding to said plurality of Bloch-lines and cross-ties of said two magnetic domains in each memory element at times when the respective memory element is in said other binary state.

4,805,141

BIPOLAR PROM HAVING TRANSISTORS WITH REDUCED BASE WIDTHS

Toshitaka Fukushima, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 686,895, Dec. 7, 1984, Pat. No. 4,654,688.
This application Nov. 12, 1986, Ser. No. 929,433
Claims priority, application Japan, Dec. 29, 1983, 58-247700
Int. Cl.⁴ G11C *17/00;* **H01L** *27/02*
U.S. Cl. 365—96 **6 Claims**



1. A programmable read only memory comprising:

a plurality of word lines;

a plurality of bit lines intersecting said word lines;

memory cells arranged on the intersection portions between said word lines and said bit lines;

each of said memory cells comprising a programmable element and a transistor connected to one end of said programmable element, the other end of said programmable element being connected to one of said bit lines, and said transistor having a base connected to one of said word lines;

each of said memory cells comprising a respective part of a semiconductor substrate having a first conductivity type, a first semiconductor layer provided on said semiconductor substrate and having a second conductivity type opposite to said first conductivity type, a second semiconductor layer provided in said first semiconductor layer and having said first conductivity type, a third semiconductor layer provided in said second semiconductor layer and having said second conductivity type, and a high concentration buried layer of said second conductivity type provided in said first semiconductor layer and contacting said semiconductor substrate, said high concentration buried layer being connected to said word line;

said transistor in each of said memory cells comprising respective parts of said semiconductor substrate, said first semiconductor layer, and said second semiconductor layer;

said programmable element in each of said memory cells comprising respective parts of said second semiconductor layer and said third semiconductor layer; and

each of said memory cells further comprising a high concentration buried region of said first conductivity type provided in said first semiconductor layer, said high concentration buried region contacting said semiconductor substrate and projecting into said first semiconductor layer, whereby the base width of said transistor in each of said memory cells is narrowed.

4,805,142

MULTIPLE ROM DATA STATE, READ/WRITE MEMORY CELL

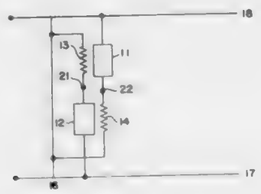
Claude L. Bertin, South Burlington, Vt., and Harish N. Kotecha, Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 1, 1986, Ser. No. 880,967
Int. Cl.⁴ G11C *17/00, 11/00;* **H03K** *3/26*
U.S. Cl. 365—100 **3 Claims**

1. A memory cell for storing a plurality of independent data states, each memory cell comprising:

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first and second branch circuits, each of said branch circuits having a resistive gate device and a resistive gate, one end of said resistive gate in each of said branch circuits coupled to a common cell access node, each of said branch circuits exhibiting an impedance characteristic of a predetermined electrical parameter within said branch circuit as a function of said resistive gate when said branch circuit is in its conductive state, the impedance characteristic of



said first branch circuit being independent of the impedance characteristic of said second branch circuit, each value of the impedance characteristic corresponding to a different data state;

means within each branch circuit for controlling the conduction of current in the other branch circuit; and

means for sensing the impedance characteristic of each of said branch circuits to produce said different data states.

4,805,143

READ-ONLY MEMORY

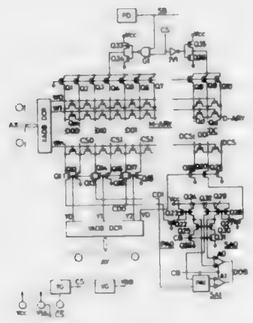
Yoichi Matsumoto, Kodaira; Ryuji Shibata, Higashiyamato; Isamu Kobayashi; Satoshi Meguro, both of Tokyo; Koichi Nagasawa, Kawasaki; Hideo Meguro, Tachikawa; Hisahiro Morinchi, Tanashi; Masahiro Ogata, Akishima; Kikuo Sakai, Fussa, and Toshifumi Takeda, Kodaira, all of Japan, assignors to Hitachi Ltd. and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

Filed Jan. 12, 1987, Ser. No. 2,291

Claims priority, application Japan, Jan. 16, 1986, 61-4912; Apr. 23, 1986, 61-92179; Apr. 23, 1986, 61-92180

Int. Cl.⁴ G11C *17/00*

U.S. Cl. 365—104 **28 Claims**



1. A read-only memory comprising:

a memory array including a plurality of word lines, a plurality of data lines intersecting said word lines, an a plurality of memory cells respectively provided at the intersections between said word lines and said data lines, each of said memory cells including a MOSFET, wherein some of said memory cells include a MOSFET with a threshold voltage which is made different from that of the other memory cells by ion implantation of an impurity carried out through their gate electrodes; and

depletion type MOSFETs connected between said data lines and a power supply potential and having a ground potential applied to their gate electrodes.

4,805,144

SOLID MEMORY MEDIUM AND INFORMATION REPRODUCTION SYSTEM USING THE MEDIUM

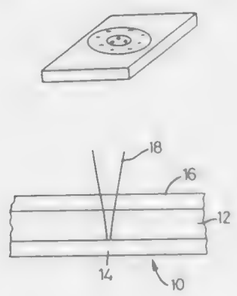
Makoto Suzuki, Nagoya, and Akihiro Suzuki, Nishio, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 6, 1987, Ser. No. 34,050

Claims priority, application Japan, Apr. 10, 1986, 61-82482

Int. Cl.⁴ G11C *13/00*

U.S. Cl. 365—106 **5 Claims**



1. A memory medium comprising:

an information storage layer formed of monocrystalline lithium niobate;

said storage layer being adapted to store information through local residual polarization thereof owing to the pyroelectrical property of said lithium niobate, said local residual polarization being caused by positive and negative electric charges that are locally generated by heat applied to the storage layer, said local residual polarization causing variation in refractive index of said storage layer owing to the electro-optical property of said lithium niobate, said storage layer permitting the information to be read out by utilizing said variation in refractive index thereof, and a conductive layer.

4,805,145

METHOD FOR RECORDING AND REPRODUCING INFORMATION

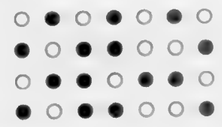
Shizuo Umemura, Ibaragi, Japan, assignor to Research Development Corporation of Japan, Tokyo, Japan

Filed Dec. 8, 1986, Ser. No. 939,311

Claims priority, application Japan, Dec. 13, 1985, 60-278889

Int. Cl.⁴ G11C *13/00*

U.S. Cl. 365—118 **11 Claims**



1. A method for recording and reproducing information comprising the steps of:

regularly arranging fine grains having a size less than 0.1 μm on a substrate, which fine grains may be evaporated by being irradiated with electron beams,

irradiating predetermined locations of said grain coated substrate by an electron beam modulated in response to information to be recorded by said method, by selectively evaporating fine grains at said predetermined locations irradiated by said electron beam; and

irradiating said substrate on which information is recorded with said electron beam to detect the presence or absence of fine grains in order to reproduce the previously recorded information.

4,805,146

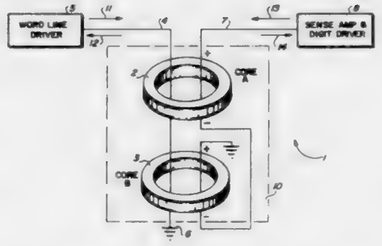
SOFT WRITE APPARATUS AND METHOD FOR NONDESTRUCTIVE READOUT CORE MEMORY

John F. Bruder, Phoenix, and Sam L. Rainwater, Tempe, both of Ariz., assignors to Quadri Corporation, Tempe, Ariz.

Filed Apr. 28, 1986, Ser. No. 856,507

Int. Cl.⁴ G11C *11/06*

U.S. Cl. 365—131 **18 Claims**



1. A method of increasing sense voltages of a first NDRO core memory cell including first and second switchable cores each having first and second stable states, the method comprising the steps of:

(a) forcing a word line current and a digit line current to flow simultaneously in the same direction through the first core and in opposite directions through the second core to set the first core to its first stable state;

(b) forcing a word line current and a digit line current to flow in opposite directions through the first core and in the same direction through the second core to set the second core to its second stable state, the sum of the amplitudes of the word line current and the digit line current in step (b) being substantially less than the amplitude of the sum of the amplitudes of the word line current and the digit line current in step (a), whereby a hysteresis loop of the second core is substantially smaller than a hysteresis loop of the first core; and

(c) forcing a read current having an amplitude small enough to avoid changing the state of the second core to flow through the first and second cores, causing a substantially larger voltage to be induced across the second core than across the first core, and applying the difference between the voltages induced across the first and second core to an input of a sense amplifier.

4,805,147

STACKED STATIC RANDOM ACCESS MEMORY CELL HAVING CAPACITOR

Toshiaki Yamanaka, Houya; Yoshio Sakai, Tsukui; Tetsuya Hayashida; Osamu Minato, both of Nishitama; Katsuhiro Shimohigashi, Musashimurayama, and Toshiaki Masuhara, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

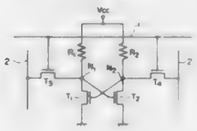
Filed Jun. 9, 1986, Ser. No. 871,994

Claims priority, application Japan, Jun. 10, 1985, 60-124241

Int. Cl.⁴ G11C *7/00, 11/40*

U.S. Cl. 365—154 **20 Claims**

PRIOR ART



1. A memory device comprising:

a semiconductor substrate, first and second field-effect transistors formed on said substrate, and first and second capacitors and first and second resistors formed on said field-effect transistors, wherein:

a source (drain) electrode of said first field-effect transistor is electrically connected to a gate electrode of said second field-effect transistor;

a source (drain) electrode of said second field-effect transistor is electrically connected to a gate electrode of said first field-effect transistor;

an electrode of said first resistor is electrically connected to the source (drain) electrode of said first field-effect transistor, and another electrode of said first resistor is connected to a power supply voltage;

an electrode of said second resistor is electrically connected to the source (drain) electrode of said second field-effect transistor, and another electrode of said second resistor is connected to the power supply voltage;

a first electrode of said first capacitor is connected to the source (drain) electrode of said first field-effect transistor, and a second electrode of said first capacitor is connected to a constant potential;

a first electrode of said second capacitor is connected to the source (drain) electrode of said second field-effect transistor, and a second electrode of said second capacitor is connected to said constant potential;

said first electrode of said first capacitor is a first conductive layer which is different from a layer of the gate electrode of the first field-effect transistor, and said second electrode of said first capacitor is a second conductive layer which is different from a layer of the gate electrode of the first field-effect transistor;

said first electrode of said second capacitor is the first conductive layer which is different from the gate electrode of the second field-effect transistor; and

said second electrode of said second capacitor is the second conductive layer which is different from the gate electrode of the second field-effect transistor,

wherein said first and second capacitors as well as said first and second resistors are formed by being stacked on said first and second field-effect transistors,

wherein each of said first and second capacitors has two polycrystalline silicon layers, and

wherein the source and/or drain regions of said first and second field-effect transistors comprise impurity regions formed in said semiconductor substrate, and a silicide layer of a refractory metal is formed on the surfaces of said impurity regions.

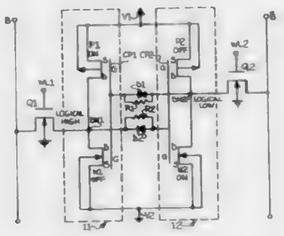
VOL 1099 ISS 2 FE 14 1989 UMI

4,805,148

HIGH IMPENDANCE-COUPLED CMOS SRAM FOR IMPROVED SINGLE EVENT IMMUNITY

Sherra E. Diehl-Nagle, 1004 Demeriess St., Durham, N.C. 27701, and John R. Hauser, 6800 Phillip Ct., Raleigh, N.C. 27607

Filed Nov. 22, 1985, Ser. No. 800,990
Int. Cl.[4] G11C *11/00, 7/00*
U.S. Cl. 365—154 **11 Claims**



1. A static memory cell exhibiting a high level of immunity to ionizing radiation, such as single event upset errors, while minimizing cell time delay, and comprising:

first and second inverter stages, each of said stages including a pair of driving transistors, a conduction path and a control path, each pair of driving transistors defining a common control node along said control path, the conduction path of each of said inverter stages including a data node, and the control node of each inverter stage being electrically connected to the data node of the other inverter stage, and

means for controlling the current flow between each data node and the control node to which it is connected, said means providing low impedance to forward currents traveling from the control node to the data node and high impedance to reverse currents traveling from the data node to the control node, said means providing a high level of immunity to ionizing radiation and minimizing the delay in switching speed due to the high impedance between connected low voltage drains and low voltage gates of the memory cell and due to the low impedance between corresponding components on the high voltage side.

4,805,149

DIGITAL MEMORY WITH RESET/PRESET CAPABILITIES

Aleysius Tam, Sunnyvale; Thomas S. Wong, San Jose, both of Calif.; David Wang, Berkeley, and David Naren, Cupertino, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 28, 1986, Ser. No. 901,914
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—155 **1 Claim**

1. An integrated circuit device for forming a memory cell having two half cells. each of said half cells comprising:

a substrate having a first conductivity type;

a high conductivity layer formed over said substrate and having a second conductivity type:

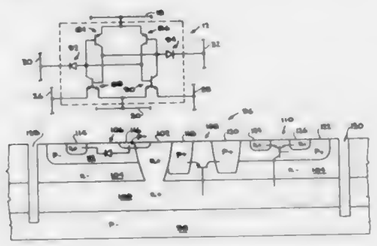
an intermediate layer formed over said high conductivity layer and having said second conductivity type;

said intermediate layer being bifurcated so as to form a first intermediate layer a second intermediate layer, and a riser portion disposed therebetween, said riser portion having said second conductivity type and extending into said high conductivity layer;

a diode well region of said conductivity type being formed into said first intermediate layer;

a cathode region of said second conductivity type and an anode region of said first conductivity type being both formed into said diode well region so as to form a diode, said anode region being in contact with said riser portion;

an emitter region of said first conductivity type and a collector region of said first conductivity type being both formed into said second intermediate layer so as to form a first transistor, said second intermediate layer serving as a base region of said first transistor, said emitter region of said first transistor being in contact with said riser portion;



a transistor well region of said first conductivity type being formed into said second intermediate layer adjacent said collector region of said first transistor; and

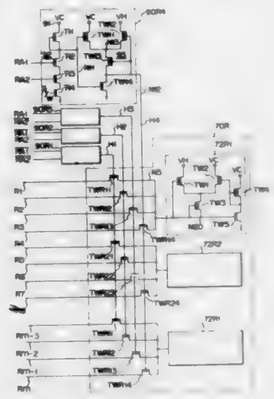
two additional emitter regions of said second conductivity type being both formed into said transistor well region so as to form a second transistor, said transistor well region serving as a base region of said second transistor and said second intermediate layer serving as a collector of said second transistor.

4,805,150

PROGRAMMABLE SEMICONDUCTOR MEMORY DEVICE HAVING GROUPED HIGH VOLTAGE SUPPLY CIRCUITS FOR WRITING DATA

Masami Asano, Tokyo, and Hiroshi Iwahashi, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 24, 1985, Ser. No. 813,237
Claims priority, application Japan, Dec. 25, 1984, 59-278407; Dec. 25, 1984, 59-278408
Int. Cl.[4] G11C *8/00, 7/00*; H03F *3/45*
U.S. Cl. 365—230 **9 Claims**



1. A programmable semiconductor memory device comprising:

a plurality of row lines;

a plurality of column lines crossing said plurality of row lines to define intersections therebetween;

a memory array comprising a plurality of memory cells, said plurality of memory cells being located on said intersections;

a plurality of column select transistors coupled one between each said column line and a node;

a plurality of column select lines each connected to a control electrode of a corresponding one of said column select transistors;

a column decoder for selecting said column select lines;

a row decoder for selecting said row lines;

a plurality of high voltage supply circuits;

a plurality of two terminal switch elements divided into a plurality of groups, with one terminal of each said switch element connected to a corresponding one of said row lines and with the other terminal of each switch element in a group connected to a corresponding one of said high voltage supply circuits; and

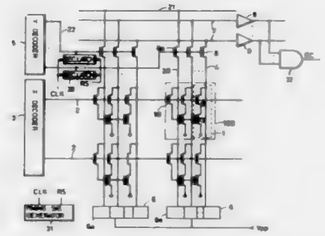
a supplemental decoder for selecting the switch element connected to a row line selected by said row decoder, to turn said selected switch element on so that said selected row line is supplied with a high voltage from the high voltage supply circuit corresponding to the group which includes said selected switch element.

4,805,151

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Yasushi Terado; Takeshi Nakayama; Kazuo Kobayashi, and Kenji Noguchi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1987, Ser. No. 48,571
Claims priority, application Japan, May 13, 1986, 61-111318
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—189 **7 Claims**



1. A nonvolatile semiconductor memory device having a plurality of memory cells each connected to a single row selecting signal line and a single column selecting signal line, said nonvolatile semiconductor memory device storing electrically programmable and erasable information in a nonvolatile manner, comprising:

row selecting means responsive to an externally generated row designating signal for selecting a corresponding row selecting signal line;

column selecting means responsive to an externally generated column designating signal for selecting a corresponding column selecting signal line;

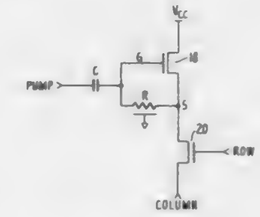
column latch means coupled to said column selecting signal lines and a data output line for temporarily storing column information selected by said column selecting means at the time of a data writing cycle and actuating said selected column in response to said temporarily stored column information to verify that data has been erased from a selected byte, and connecting a memory cell connected to said selected column to the data output line.

4,805,152

REFRESH CELL FOR A RANDOM ACCESS MEMORY

Grigory Kogan, Portland, Oreg., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 3, 1987, Ser. No. 92,419
Int. Cl.[4] G11C *7/00*; H03K *17/687*
U.S. Cl. 365—222 **4 Claims**



1. Apparatus for maintaining the voltage level stored at a preselected storage location of a random access memory, the apparatus comprising

(a) a first field effect transistor (FET) having its drain connected to a supply voltage, its source connected to the drain of a second FET and its gate connected to one side of a capacitor;

(b) a second FET having its drain connected to the source of the first FET, its source connected to a column line of the random access memory and its gate connected to receive a row line signal of the random access memory;

(c) a capacitor having a first side connected to both the gate of the first FET and to one side of a diffused resistive element and a second side connected to receive a pump signal; and

(d) a diffused resistive element having one end connected to the first side of the capacitor and its second end connected to the drain-source interconnection between the first FET and the second FET.

4,805,153

INPUT BUFFER CIRCUIT OF A MOS MEMORY DEVICE

Yuji Kihara, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 16, 1987, Ser. No. 4,152
Claims priority, application Japan, Mar. 5, 1986, 61-49443
Int. Cl.[4] G11C *8/00*
U.S. Cl. 365—230 **25 Claims**



1. An input buffer circuit of a MOS memory device, comprising

an input terminal for receiving an address signal,

complementary output terminals,

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inverter circuit means for propagating said address signal from said input terminal to said complementary output terminals and providing said complementary output terminals with an address signal and an inverted address signal,

a transition detecting circuit for detecting a transition of said address signal as it is propagated through said inverter circuit means, and

an equalizing circuit responsive to the detection of the transition for equalizing the potentials of said complementary output terminals before the transition is propagated to said complementary output terminals.

4,805,154

COMBINATION MIXING AND CONVEYING DEVICE FOR HIGHLY VISCOUS FLUIDS

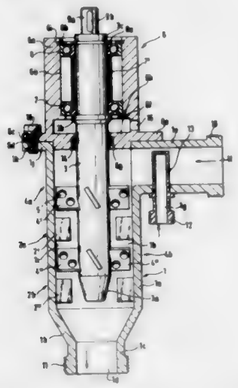
Friedhelm Schneider, Zur Platte, D-5226 Reichshof-Hahn, Fed. Rep. of Germany

Filed Jul. 9, 1987, Ser. No. 71,990

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1986, 3623932

Int. Cl.⁴ B01F *7/18*

U.S. Cl. 366—303 **12 Claims**



1. In a combination mixing and conveying device for highly viscous fluids comprising a hollow cylindrical housing having an inner wall on which are mounted several stationary guide blades forming guide wheels and coaxially to which extends a rotor shaft having rotor blades thereon, said cylindrical housing with said guide blades forming guide wheels on said inner wall defining a stator and said rotor shaft with said rotor blades thereon defining a rotor; an annular space between said inner surface and an exterior surface of said rotor shaft and defining a mixing chamber; means defining a closure member closing off one end of said cylindrical housing, said closure member having an opening therethrough receiving said rotor shaft; said closure member having a slide-ring packing engaging said exterior surface of said rotor shaft for sealing off said mixing chamber; means defining a lateral inlet opening to said mixing chamber for said fluids to be mixed and means defining an outlet opening from said mixing chamber for a mixed mixture, the improvement comprising wherein said parts, hollow cylindrical housing includes lower and upper housing said mixing chamber being provided in said lower part, said rotor blades on said rotor shaft being oriented in a first set of rotor blades at an upper portion of said mixing chamber and a second set of rotor blades at a lower portion of said mixing chamber, said lateral inlet opening into said upper portion of said lower part above said first set of rotor blades, each blade of said first and second sets of rotor blades having means defining at least one hole therethrough, said guide blades being oriented in a first set of stator blades coaxial with and axially spaced from said first set of rotor blades and in a second set of stator blades coaxial with an axially spaced from said second set of rotor blades, said first and second sets of rotor blades being equidistantly spaced from said first and second set of stator blades.

4,805,155

SPEED CONTROL CIRCUIT FOR MECHANICAL SCAN ULTRASONIC IMAGING APPARATUS

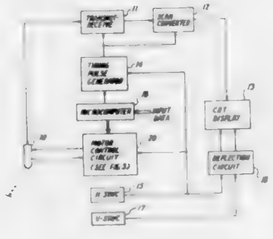
Masaaki Shiraishi, Yokohama; Masaaki Ichiki, and Kazuhiko Shibata, both of Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 15, 1986, Ser. No. 943,143

Claims priority, application Japan, Dec. 16, 1985, 60-283344; Nov. 10, 1986, 61-266897

Int. Cl.⁴ G03B *42/06*

U.S. Cl. 367—7 **8 Claims**



1. An ultrasonic imaging apparatus comprising:

means for selecting one of a plurality of selectable modes of operation;

a probe having a rotatably mounted electroacoustic transducer for transmission of an acoustic beam and reception of acoustic echos, a motor for driving said transducer to cause said beam to be steered in a sector field and an encoder for generating pulses at intervals variable as a function of a speed of rotation of said transducer;

means (15) for generating line sync pulses;

means (11, 14) responsive to said line sync pulses for supplying ultrasonic bursts to said transducer every Kth one of said line sync pulses, where K is an integer, and receiving acoustic echos generated in said sector field;

means (12, 13) responsive to said line sync pluses for providing display of said received echos on a line-by-line raster scan field;

means (25, 30) for scaling a number of said line sync pulses generated during a predetermined period of time by a factor of N/M to produce scaled line sync pulses, so that the number of said scaled line sync pulses generated during said predetermined period of time is equal to the number of pulses generated by said encoder during said predetermined period time, where N and M are integers variable as a function of said selected mode;

phase comparator means (31, 32) for providing phase comparison between the pulses generated by said encoder and the scaled line sync pulses to generate a phase difference signal; and

speed control means (33–37) responsive to said phase difference signal for controlling the speed of said motor.

4,805,156

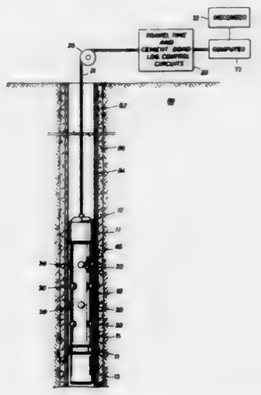
SYSTEM FOR ACOUSTICALLY DETERMINING THE QUALITY OF THE CEMENT BOND IN A CASED BOREHOLE

George Attali, Houston; James R. Birchak, Spring, and Robert A. Lester, Houston, all of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Sep. 22, 1986, Ser. No. 910,076

Int. Cl.⁴ G01V *1/00*

U.S. Cl. 367—35 **45 Claims**



1. An acoustic logging tool useful for determining the quality of a bond between a wall of a borehole penetrating an earth formation and a casing cemented therein in several adjacent sectors around the casing, comprising:

a sonde, including means for securing said sonde to a wireline;

a plurality of pads extendable from said sonde, each said pad having an exterior surface for contacting a casing surrounding said sonde;

a plurality of transducers for transmitting and receiving acoustic pulse signals into said casing, said plurality of transducers disposed in said exterior surfaces of said plurality of pads;

means for selecting a plurality of arrays of transducers, each array comprising four transducers disposed circumferentially on an arc projected through at least four of said pads, two said transducers functioning as transmitters and two functioning as receivers; and

means for determining the bond quality in each said sector between two adjacent transducers in each said array employing the compensated attenuation of the compressional acoustic pulse signals received by said two receivers from said two transmitters.

4,805,157

MULTI-LAYERED POLYMER HYDROPHONE ARRAY

Donald Ricketts, Scituate, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 928,679, Nov. 7, 1986, abandoned, which is a continuation of Ser. No. 557,769, Dec. 2, 1983, abandoned. This application Jan. 12, 1988, Ser. No. 144,659

Int. Cl.⁴ H04R *17/00*

U.S. Cl. 367—119 **18 Claims**

1. A transducer comprising:

a planar support layer having two opposed sides;

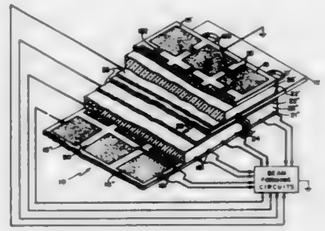
said planar support layer being a stiffening layer providing structural rigidity;

piezoelectric polymer first planar layers each having two opposed sides on each said side of said support layer, each of said first piezoelectric layers being bonded to said opposite sides of said support layer, each of said first layers being polarized in the direction transverse to the plane of each of said first layers to provide an electrical signal primarily produced by straining the plane of each of said first layers as a result of mechanical vibrations of said support layer;

second layers bonded to said first layers, each of said second layers being a damping material;

third planar piezoelectric polymer layers each having two opposed sides;

each of said first and third layers having an electrically



conductive film bonded to each said side of each of said first and third layers;

each of said piezoelectric polymer third layers bonded to a different one of said second layers, each of said third layers being polarized in the direction transverse to the plane of each of said third layers to provide electrical signals primarily responsive to acoustic signal pressure transverse to the plane of each of said third layers; and

said electrically conducting films of each of said first and third layers providing said electrical signals in response to the strain in each of said first and third layers.

4,805,158

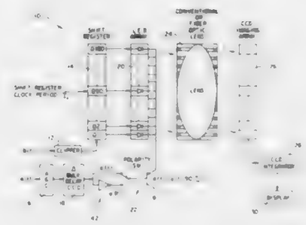
ACOUSTIC SIGNAL OPTICAL CORRELATOR USING A LIGHT EMITTING DIODE ARRAY

Edward J. Fogarty, Richboro, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 1, 1986, Ser. No. 858,156

Int. Cl.⁴ G06G *9/00*

U.S. Cl. 367—125 **5 Claims**



4. An optical correlator according to claim 3 further comprising:

compensating means operatively connected to said integrator and between said modulator means and said delay means for compensating for inherent nonuniformity of said diodes.

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4,805,159

ACQUISTION OF A PROJECTILE TRAJECTORY PAST A MOVING TARGET

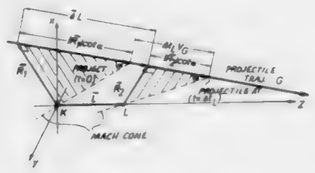
Helmut Negendank, Luebeck, and Reinhard Wedekind, Hamburg, both of Fed. Rep. of Germany, assignors to Rhein-Flugzeugbau GmbH, Moenchengladbach, Fed. Rep. of Germany

Filed Feb. 9, 1987, Ser. No. 12,241

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1986, 3603991; Apr. 12, 1986, 3612352

Int. Cl.[4] G01S *5/18;* **F41J** *5/12*

U.S. Cl. 367—127 **3 Claims**



1. A method of determining passage of a projectile past a training target having a plurality of microphones for the detecting shock waves, further including telemetric facilities for transmitting signals produced by the microphones to ground, comprising:

arranging two of said microphones on a line colinear with a direction of propagation of the training target and at a particular distance from each other;

detecting receiving of a Mach cone shock wave by each of the microphones including determining any transit time difference; and

determining a set of projectile trajectories each having a similar minimum distance from the target, the set being a plurality of generatrices of a surface having rotational symmetry to a connecting line between said two microphones.

4,805,160

DATA TRANSMISSION METHOD FOR OCEAN ACOUSTIC TOMOGRAPHY

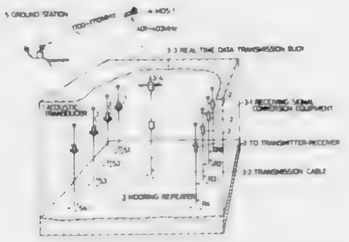
Shin-ichi Ishii; Genzaroh Kai; Toshiaki Hara, all of Yokohama, and Iwao Nakano, Tokyo, all of Japan, assignors to Japan Marine Science & Technology Center, Kanagawa, Japan

Filed Aug. 27, 1987, Ser. No. 89,983

Claims priority, application Japan, Sep. 10, 1986, 61-213293

Int. Cl.[4] G01V *1/00, 1/22;* **H04B** *13/02*

U.S. Cl. 367—134 **7 Claims**



1. An ocean acoustic tomography data transmission system, comprising:

a plurality of acoustic transducers arranged in a first file in the sea;

a plurality of tomography data transmitter-receivers arranged in the sea in a second file spaced from said first file, said receivers receiving acoustic signals from said acoustic transducers and transmitting said signals into tomography data electric signals;

a floating fixed buoy arranged in the sea remote from said second file and supporting thereon a mooring repeater including radio transmission means, a transmission cable suspended from said buoy and connected to said radio transmission means, and receiving signal conversion means provided on said transmission cable and receiving said tomography data electric signals from said transmitter-receivers to transmit them to said radio transmission means;

ocean observation satellite means; and

a ground station, said data signals being transmitted from said transmission means to said ground station by said ocean observation satellite means.

4,805,161

DRIVE ARRANGEMENT FOR AN ELECTRONICALLY CONTROLLED WATCH

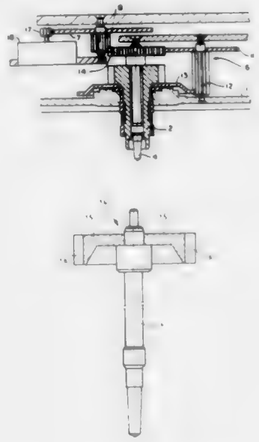
Wolfgang Kröner, Pforzheim, Fed. Rep. of Germany, assignor to Pforzheimer Uhrenwerke Porta GmbH, Pforzheim, Fed. Rep. of Germany

Continuation of Ser. No. 878,345, Jun. 25, 1986. This application Jan. 11, 1988, Ser. No. 142,668

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1985, 3522688

Int. Cl.[4] G04B *19/02*

U.S. Cl. 368—220 **3 Claims**



1. A drive gear arrangement for an electronically controlled watch, especially a wristwatch, comprising a stepping motor having a drive pinion on its rotor shaft, an intermediate gear structure having a gear disc in engagement with said stepping motor pinion and an intermediate gear pinion, a central shaft carrying a center gear structure in engagement with said intermediate gear pinion and a reducing gear structure including a reducing gear disc in engagement with said center gear structure and being integral with a reducing gear pinion which is in engagement with a minute gear disc mounted on a hollow minute gear shaft concentrically receiving said central shaft, said center gear structure being a single gear and said intermediate gear pinion and said reducing gear disc having the same pitch and both said intermediate gear pinion and said reducing gear disc being in engagement with said single center gear.

4,805,162

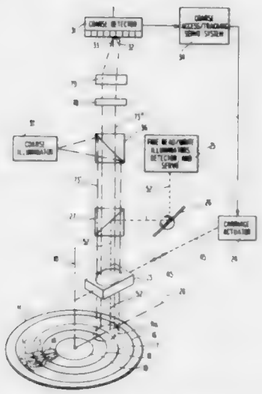
FINE AND COARSE SERVO SYSTEM FOR ACCESS AND TRACKING ON AN OPTICAL DISK

Karl J. Stahl; Albin K. Johnson, both of Boulder; Brad R. Rederson, Broomfield, and Alexander M. Muckle, Boulder, all of Colo., assignors to Storage Technology Partners II, Louisville, Colo.

Continuation of Ser. No. 755,953, Jul. 16, 1985, abandoned, which is a continuation of Ser. No. 438,133, Nov. 1, 1982, abandoned. This application Oct. 8, 1986, Ser. No. 917,259

Int. Cl.[4] G11B *21/10, 17/22*

U.S. Cl. 369—44 **9 Claims**



1. An optical disk storage system for reading data from or writing data to a removable disk surface having a rotational axis and a plurality of data bands, each data band including a plurality of data tracks concentrically spaced about the rotational axis, the system including:

means for rotating the disk surface about the rotational axis;

an optical head positioned adjacent to the disk surface for reading or writing or both;

means for positioning said optical head with respect to the disk surface in a radial direction;

means for projecting a plurality of read/write light beams through said optical head onto the disk surface to a desired one of the data tracks within a desired one of the data bands, said projecting means including means for generating a fine tracking correction signal that is indicative of an off-track condition of said plurality of read/write light beams from said desired track;

a coarse tracking servo system comprising:

a plurality of optically readable servo tracks concentrically spaced about the rotational axis of the disk surface, each said servo track disposed between adjacent pairs of the data bands;

a coarse illuminator for generating a coarse beam that is separable and distinct from said read/write light beams;

means for directing said coarse beam to the disk surface along an optical path through said optical head so that said coarse beam continuously illuminates a portion of the disk surface that spans at least a distance between two servo tracks, thereby always including at least one servo track as well as the desired data tracks accessed by said read/write light beams, within said continuously illuminated portion of the disk surface;

means for directing an image plane of said portion of the disk surface continuously illuminated by said coarse beam onto a detector, said detector including means for generating an error signal representative of a distance that an image of said at least one illuminated servo track within said image plane is from a desired null position on a surface of said detector; and

means for coupling said error signal to said optical head positioning means, said optical head positioning means responding to said error signal so as to move said optical head in a direction that maintains said at least one illuminated servo track image at said desired null position of said detector; and

means for combining said read/write light beams into said optical path as said read/write light beams travel towards the disk surface, and for separating said read/write light beams out of said optical path as said read/write light beams return from the disk surface, said beam combining and separating means effectively decoupling said coarse tracking servo system from said projecting means;

whereby said optical head is maintained in a desired tracking position relative to said at least one illuminated servo track independent of said read/write light beams.

4,805,163

TRACKING CONTROL UNIT IN INFORMATION REPRODUCING APPARATUS

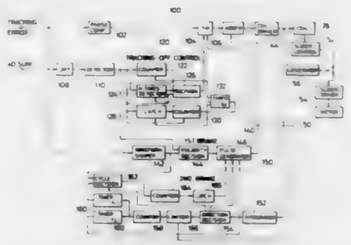
Nobutaka Ohnuki, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 15, 1986, Ser. No. 941,803

Claims priority, application Japan, Dec. 13, 1985, 60-278959; Dec. 13, 1985, 60-278960; Dec. 13, 1985, 60-278958

Int. Cl.[4] G11B *7/095*

U.S. Cl. 369—44 **7 Claims**



1. A tracking control unit in an information reproducing apparatus, comprising: an optical means for reading out information from a rotating recording medium; a means for enabling a light beam of said optical means under control to follow up a track on said recording medium; a means for detecting any deviation of said light beam from said track; and a means for switching off said follow-up control means when the number of times of said tracking deviation has exceeded a predetermined value within a preset time.

4,805,164

DISC INCLINATION DETECTING APPARATUS

Hirohisa Yamaguchi, and Kenichi Seto, both of Tokyo, Japan, assignors to TEAC Corporation, Tokyo, Japan

Filed Sep. 8, 1987, Ser. No. 94,113

Claims priority, application Japan, Sep. 9, 1986, 61-212008

Int. Cl.[4] G11B *3/90, 27/36*

U.S. Cl. 369—58 **9 Claims**

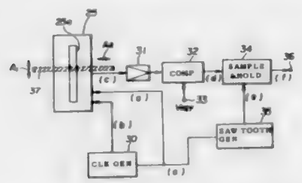
1. A disc inclination detecting apparatus adapted to a recording and/or reproducing apparatus for an information recording disc, said disc inclination detecting apparatus comprising:

light-emitting means for projecting a light beam on said disc;

light-sensitive means for receiving a reflected light beam reflected by said disc and outputting a corresponding electric signal, said light-sensitive means facing said disc and being positioned together with said light-emitting means in a tangential direction of tracks on said disc; and

signal processing means for detecting, on the basis of said

electric signal, a variation of a position of said reflected light beam on said light-sensitive means in a direction



perpendicular to said tangential direction, said variation corresponding to an inclination angle of said disc.

4,805,165

TIME DIVISION MULTIPLEX DATA TRANSMISSION METHOD AND APPARATUS

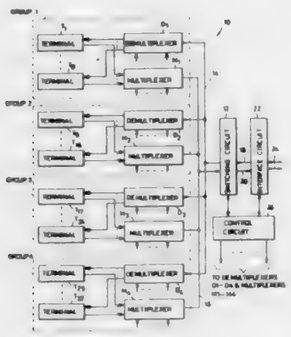
Masataka Kawamura, Tokyo, and Toshimichi Shimatani, Fuchu, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1987, Ser. No. 27,807

Claims priority, application Japan, Mar. 24, 1986, 61-65524

Int. Cl.[4] H04J *3/22, 3/04*

U.S. Cl. 370—94 **11 Claims**



1. A multichannel data transmission method which comprises:

(a) providing a common time-divided highway;

(b) transmitting at least six channels of data in at least three groups over the common time-divided highway in serial format and at a first speed, with the at least six channels of data assigned respectively to a set of a corresponding number of consecutive time slots making up one frame;

(c) sequentially writing the at least three groups of at least six channels of data onto corresponding numbers of groups of memories, respectively, at the first speed;

(d) reading out the data from each group of memories at a second speed lower than the first speed during a time interval from the end of writing of the corresponding group of channels of data of one frame to the beginning of the writing of the same group of channels of data of the next frame; and

(e) transmitting the at least six channels of data, read out from the respective memories as in step (d), over a corresponding number of channel paths, respectively, at the second speed.

4,805,166

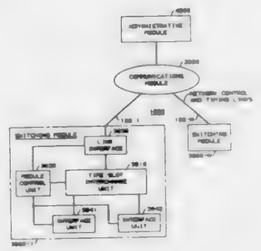
SWITCH PATH RESERVATION ARRANGEMENT

Menachem T. Ardon, Naperville, and John P. Sassano, Wheaton, both of Ill., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 28, 1987, Ser. No. 115,068

Int. Cl.[4] H04Q *11/04*

U.S. Cl. 370—54 **28 Claims**



1. In an arrangement comprising switch means for providing paths among a plurality of call means, a method of processing a call between first and second ones of said call means comprising

(A) in response to a call request for said call, determining whether there is a path of said switch means that is presently idle and reserved for connecting said first and second call means,

(B) upon determining a path in step (A), assigning for said call said path determined in step (A),

(C) upon determining no path in step (A), determining whether there is a path of said switch means that is idle, and that is usable but not reserved for connecting said first and second call means, and

(D) upon determining a path in step (C), assigning for said call said path determined in step (C).

4,805,167

VARIABLE DATA RATE CHANNEL FOR DIGITAL NETWORK

Ian M. Leslie, The Maltheuse, Commerical End, Swaffham Bulbeck, Cambridge; John W. Burren, 18 Norman Avenue, Abingdon Oxon OX14 2HQ; Henry Pitura, 26 Columbia Drive, Leighton Buzzard, Bedfordshire LU7 8YM; David L. Tennenhouse, Darwin College, Silver Street, Cambridge, and Christopher J. Adams, 58 Edingston Road, Oxford, all of United Kingdom

Filed Jul. 29, 1987, Ser. No. 80,504

Claims priority, application United Kingdom, Jul. 29, 1986, 8618424

Int. Cl.[4] H04J *3/16*

U.S. Cl. 370—84 **17 Claims**

1. A method of transmitting high bit-rate signals having a variable bit-rate including the steps of

dividing a digital input signal having a bit-rate higher than a predetermined bit-rate into a sequence of subordinate digital signals having data rates equal to or less than the said predetermined bit-rate,

transmitting the subordinate digital signals using a group of transmission channels with each subordinate signal transmitted by a respective channel, the channels in the group each being capable of handling the said predetermined bit-rate,

receiving the transmitted signals,

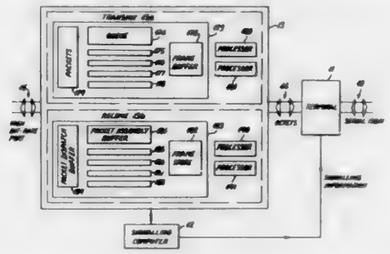
assembling the received subordinate signals to provide an output signal in which the sequence of data bits is the same as that of the input signal,

changing the number of the said transmission channels making up the said group while continuing to transmit subordinate signals along those channels of the said group which are not changed,

wherein a plurality of input signals are transmitted simultaneously, each input signal being transmitted by way of a respective group of the said transmission channels, each of which is duplex, and the method further including

inserting marker signals from time to time in each subordinate signal in each said channel and in any other channels which are required to be added to one of the groups,

the marker signals including first, second and third flag signals depending respectively on whether the channel is transmitting a subordinate signal, whether marker signals have been received in the corresponding channel, and whether a subordinate signal is no longer to be sent by this channel.



4,805,168

LOCAL AREA COMMUNICATION NETWORK

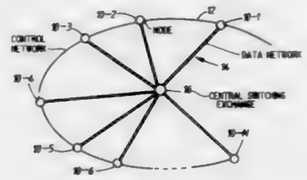
Haruo Kato, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 806,375, Dec. 9, 1985, abandoned. This application Feb. 1, 1988, Ser. No. 150,500

Claims priority, application Japan, Dec. 7, 1984, 59-259633

Int. Cl.[4] H04J *3/02*

U.S. Cl. 370—85 **6 Claims**



1. A local area communication network comprising:

a plurality of input/output data terminal equipment nodes;

a first network means for establishing first communication paths by means of a first communication medium for said nodes, and for transmitting data information between at least one data communication sending node which rearranges the data information into data units for transmission via the first communication medium and at least one receiving node which receives the transmitted data units and reassembles the received data units into the data information; and

a second network means having a topology different from that of said first network means, for establishing second communication paths independently of said first communication paths by means of a second communication medium between said data communication sending and receiving nodes, and for transmitting selectively via said second communication medium one of control information to cause said first network means to be available for data communication and data to be sent between said nodes, said control information including parameters of communication control which determine, at least, data unit addressing functions, type of data unit service, node operation characteristics and error reporting functions; and

means for selecting whether or not to transmit said data via said first network means or via said second network means.

4,805,169

LOCAL AREA NETWORK OPERATING ON THE MULTIPLE BUS SYSTEM

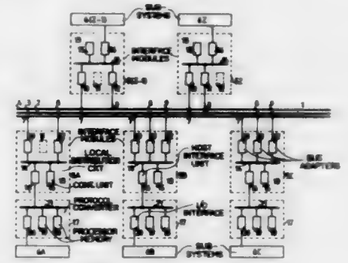
Goosinus Van Amelt, Nijverdal, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Feb. 7, 1986, Ser. No. 827,310

Claims priority, application Netherlands, Mar. 1, 1985, 8500571

Int. Cl.[4] H04J *3/02*

U.S. Cl. 370—85 **2 Claims**



1. A local area network operating on a multiple bus system with a plurality of interface modules connected between said multiple bus system and a plurality of data-processing/generating subsystems, wherein each of said interface modules is provided with buffer memory means, a local distribution circuit, and a host interface unit through which each of said subsystems is connected to one of said interface modules, wherein each interface module includes:

a plurality of independently operating bus adapters, each comprising a transmitting and receiving channel connected to one line of said multiple bus system for receiving and transmitting data signifying the system time applicable to said network, and a multiplexer; said buffer memory means being within the respective bus adapters and connected to the multiplexer therein through an internal bus line, and, being locally controlled;

a local bus interconnecting said local distribution circuit, said host interference unit and said buffer memory means;

means within each bus adapter to detect whether the line of the multiple bus system to which it is connected is free, and to transmit data stored in said buffer memory means to such line of said multiple bus system as soon as such line is free; and

respective auxiliary clock means in the respective bus adapters connected between said internal bus line and said local distribution circuit, each of said auxiliary clock means providing a time count which resets to zero value in response to each transmission of system time data by the associated bus adapter.

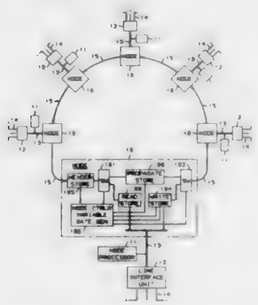
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4,805,170

DATA COMMUNICATION NETWORK

Allen D. Ferguson, Johnstown; Anwar Khurshid, Reynoldsburg, and David M. Rouse, Columbus, all of Ohio, assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 29, 1987, Ser. No. 43,771
Int. Cl.[4] H04J *3/16, 3/17*
U.S. Cl. 370—89 **22 Claims**



1. In a network having nodes interconnected by transmission paths on which a predefined data signal is continuously transmitted to sequentially reach each node, said network comprising

means for controlling node access to the network

CHARACTERIZED IN THAT

said node access controlling means comprises

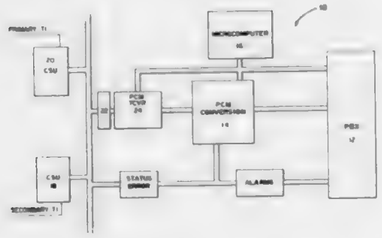
means responsive to receiving the predefined data signal a predetermined number of times at each node for generating node signals each having a length varying in time in accordance with data traffic on the network to control node access to the network such that multiple ones of the nodes may concurrently write data onto the network in proportion to the network data traffic.

4,805,171

UNITARY PCM RATE CONVERTER AND MULTIFRAME BUFFER

LuJack Ewell, Atlanta, Ga., assignor to Solid State Systems, Inc., Kennesaw, Ga.

Filed Jul. 10, 1987, Ser. No. 71,979
Int. Cl.[4] H04J *3/02*
U.S. Cl. 370—110.1 **49 Claims**



1. A communications system, comprising:

a first signaling unit having multiple channels and transmitting outbound data at a preselected data rate;

a signaling link carrying inbound data at a preselected data rate; and

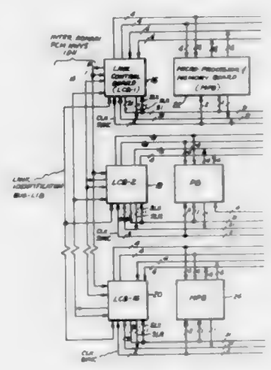
means, containing a single dual port RAM, for interfacing the signaling link and the first signaling unit with the inbound data occupying selected channels of said multiple channels, said dual port RAM having an inbound data memory station and an outbound data memory station wherein said inbound data is controllably looped back out through said dual port RAM to the signaling link and said outbound data is controllably looped back through said dual port RAM out to the signaling unit.

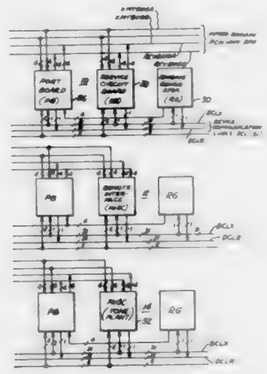
4,805,172

TIME DIVISION MULTIPLEX (TDM) SWITCHING SYSTEM ESPECIALLY FOR PULSE CODE MODULATED (PCM) TELEPHONY SIGNALS

Charles A. Barbe, Rochester, and Bruce G. Littlefield, Honeoye Falls, both of N.Y., assignors to Redcom Laboratories, Inc., Victor, N.Y.

Filed Apr. 10, 1987, Ser. No. 36,934
Int. Cl.[4] H04J *3/12*
U.S. Cl. 370—68.1 **22 Claims**





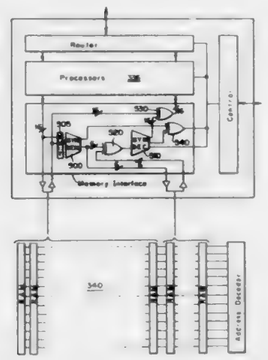
1. A TDM telephone switching system for extending paths between a multiplicity of ports, including ports adapted to be connected to telephone lines or trunks, which are located in a multiplicity of domains, said system comprising: at least one telephony processor having means for generating messages for controlling the establishment of said paths including ringing of lines, collection of digits, identifying called lines, application of tones including dial tones, ringing tones and ring-back tones; means defining a plurality of interdomain highways (IDH) for transmission of digital signals, each of said domains being connected in signal transmitting relationship with a different one of said plurality of said IDH and in signal receiving relationship with all of said plurality of said IDH including the one of said plurality of said IDH to which it is connected in signal transmitting relationship; link control means in each of said domains having time slot interchange means for establishing cyclical series of time slots for digital signals on the one of said plurality of IDH connected in signal receiving relationship therewith; at least one intradomain highway for PCM signals (DPH) also connected to said link control means; said link control means also having means for establishing cyclical series of time slots for said PCM signals on said DPH; a plurality of communications links for data message signals in each of said domains (DCL), said plurality of said DCL being connected to said link control means; said time slot interchange means including means for assigning time slots in each of said series of time slots for said digital signals, for said data message signals and for said PCM signals to interconnect said IDH and said DPH in selected time slots in each series and also to interconnect said IDH and said DCL in other selected time slots in each series; a plurality of devices in each of said domains including circuits for interfacing a different group of said ports with circuits connected to said telephone lines or trunks, each of said devices being connected to a different one of said communications link and to said PCM highway in the domain thereof; said telephony processor being disposed in at least one of said domains and being connected to the one of said communications links in said one domain which is unique thereto; and means in said devices for generating and receiving data message signals of different types depending upon the events occurring at said ports and for generating and receiving PCM signals in selected ones of said time slots on said DPH, said data message signals between said devices and said telephony processor for establishing said paths during selected time slots between said circuits connected to said ports being communicated via said DCL, said link control means in said domains and said IDH.

4,805,173

ERROR CONTROL METHOD AND APPARATUS

W. Daniel Hillis, Cambridge, and Brewster Kahle, Somerville, both of Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 907,671, Sep. 15, 1986. This application Dec. 10, 1986, Ser. No. 939,599
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—38 **8 Claims**



1. Error detection circuitry for use in a parallel processor comprising:

a plurality of processors and at least one read/write memory,

a plurality of inputs equal in number to the number of processors, each input being connected to a different processor,

means for providing signals in parallel from the plurality of processors to said inputs,

means for generating a syndrome from said parallel signals on said inputs, such that the syndrome is generated from signals from more than one processor,

means for storing in parallel in said memory said parallel signals and said syndrome generated therefrom, such that a syndrome generated from signals from more than one processor is associated in said memory with said signals from more than one processor,

means for reading from said memory said parallel signals and the syndrome associated therewith,

means for generating a new syndrome from said parallel signals read from memory, and

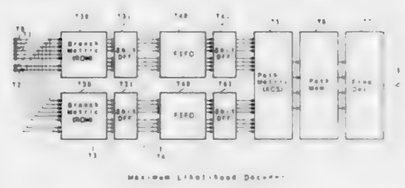
means for comparing the syndrome read from said parallel memory with the new syndrome generated from the parallel signals read from said memory.

4,805,174

ERROR CORRECTING CODER/DECODER

Shuji Kubota, and Shozo Kato, both of Yokohama, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Dec. 29, 1986, Ser. No. 947,328
Claims priority, application Japan, Dec. 25, 1985, 60-296268
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—43 **6 Claims**



1. A maximum likelihood decoder, used as an error correcting decoder provided for reception according to convolutional code and for estimating original data transmitted by calculating the metrics of received coded data, said maximum likelihood decoder comprising:

branch metric calculator means for calculating branch metrics out of received encoded data of n_O bits in the channel signal speed and for obtaining the branch metrics of the number k_O;

speed converter means for converting the output from said branch metric calculator means into the signal speed of the original data; and

estimating means for estimating original data in correspondence to the coding rate of k_O/n_I, k_O, n_O, n_I being natural numbers having the relation $k_O<n_O<N_I$.

4,805,175

ULTRA-COMPACT, HAND-HELD LASER SCANNER

Carl H. Knowles, Moorestown, N.J., assignor to Metrologic Instruments, Inc., Bellmawr, N.J.

Filed Dec. 3, 1987, Ser. No. 128,299
Int. Cl.[4] H01S *3/10*
U.S. Cl. 372—24 **40 Claims**

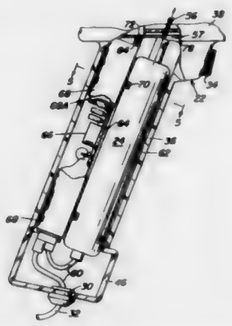
1. A compact laser scanning apparatus comprising:

(a) a self-contained housing including an elongate hollow tubular handle portion configured to be readily held within the hand of a person and a short length hollow body portion projection generally transversely outward from said handle portion and having a distal end, said handle portion having access means to permit access to

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the interior of said hollow handle portion, said body portion having a window at the distal end thereof;

(b) laser beam generating means, associated power supply means, and first means securing said laser beam generating means and said power supply means together to form a replaceable unit, said unit being located within said hollow handle portion, said unit being releasably secured within said hollow handle portion and arranged to be removed as a unit from said hollow handle portion via said



access means, said laser beam generating means producing a laser beam and directing it into said body portion of said housing; and

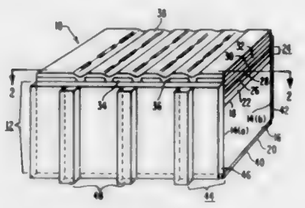
(c) optical means located within said body portion of said housing and supported thereby for directing said laser beam out through said window, whereupon a compact laser scanning apparatus is provided which enables the ready replacement of said unit without subjecting the optical components located within said body portion to injury.

4,805,176

PHASE-LOCKED LASER ARRAY WITH PHASE-SHIFTING SURFACE COATING

Dan Botez, Lumberton Township, Burlington County, and Bruce F. Bogner, Mt. Holly Township, Burlington County, both of N.J., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1983, Ser. No. 563,603
Int. Cl.[4] H01S *3/13*
U.S. Cl. 372—29 **9 Claims**



1. In a phase-locked semiconductor laser array comprising

a semiconductor body having an emitting surface, said body including a cavity region overlying a major surface of a substrate and means for defining a plurality of substantially parallel lasing regions, each of said lasing region spaced from adjacent regions by a distance that causes the radiation modes in adjacent lasing regions to be phase-locked to one another;

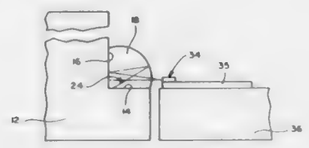
the improvement wherein said array includes on the emitting surface means for shifting the relative phases of the laser beams emitted by the array such that the phases of all the emitted laser beams are substantially the same in a plane beyond the array.

4,805,177

LASER CONSTRUCTION

Danny W. Martin, St. Charles; Rodney J. Osterhage, St. Peters, and Kenneth M. Summa, St. Charles, all of Mo., assignors to Laser Diode Products, Inc., Earth City, Mo.

Filed Apr. 25, 1988, Ser. No. 185,706
Int. Cl.[4] H01S *3/04, 3/045*
U.S. Cl. 372—34 **18 Claims**



1. A laser device comprising

an elongated laser medium of crystal material having a cylindrical shape modified to have a flat face formed on one side thereof,

a highly heat conducting mounting member having a flat surface on a portion thereof, said medium being mounted on the mounting member with the flat face of the medium in face-to-face relation with the flat surface on the mounting member,

a heat sink member having a surface for attaching the mounting member to,

a pump source including an array of laser diodes each having opposite ends and positioned in side-by-side single file relation,

a second highly heat conducting mounting member having a surface on which the array of laser diodes is positioned, said second mounting member being mounted on the heat sink member wherein the array of laser diodes are in substantial alignment with the axis of the medium along the side thereof opposite from the flat face of the medium wherein energy generated in the laser diodes will enter the medium and be projected therethrough, some of the generated energy being absorbed by the medium and some reflecting off the flat face of the medium and the adjacent flat surface on the mounting member to pass back through the medium.

4,805,178

PRESERVATION OF SURFACE FEATURES ON SEMICONDUCTOR SURFACES

Daniel P. Wilt, Scotch Plains, N.J., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 28, 1986, Ser. No. 845,603
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—46 **8 Claims**

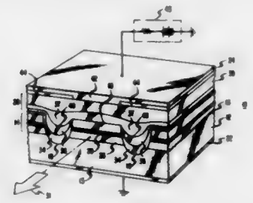
1. A semiconductor laser comprising

a Group III-V compound semiconductor body having a major surface, p1 an optical grating on said major surface,

a protective coating on said grating, said coating including a transition metal,

a Group III-V compound semiconductor heterostructure formed on said coating, said heterostructure having the shape of a mesa and including a Group III-V compound semiconductor active layer,

a current-blocking Group III-V compound semiconductor structure laterally adjacent said mesa and effective to



direct the primary flow of current through said mesa during operation of said laser, and

means forming electrical contact to said laser.

4,805,179

TRANSVERSE JUNCTION STRIPE LASER

Christoph S. Harder, Zurich; Heinz Jaeckel, Kilchberg, and Heinz P. Meier, Thalwil, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 23, 1987, Ser. No. 99,936
Claims priority, application European Pat. Off., Sep. 23, 1986, 86113081.3
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—47 **29 Claims**



1. In a semiconductor laser the structure, comprising in combination:

a substrate including first and second surface sections having different crystallographic orientation,

a semiconductor laser formed on said substrate and including an active layer extending laterally over said first and second surface sections and having a p-n junction therein extending in a direction substantially transverse to the surface of said active layer, radiation being produced by the presence of an electrical current across said transverse p-n junction of a magnitude above a threhold value for lasing,

said active layer being amphoterically doped to produce by crystal plane dependent doping a first n-type region therein where said active layer is adjacent said first surface section of said substrate and a second p-type region where said active layer is adjacent said second surface region of said substrate, and

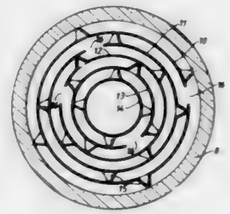
electrical means for producing an electrical current across said transverse p-n junction of a magnitude greater than said threshold value to produce lasing radiation in said active layer.

4,805,180

DISCHARGE TUBE APPARATUS

Arthur Maitland, St. Andrews, Scotland; Hugh Menown, and Christopher V. Neale, both of Chelmsford, United Kingdom, assignors to English Electric Valve Company Limited, Chelmsford, United Kingdom

Filed Jun. 4, 1986, Ser. No. 870,743
Claims priority, application United Kingdom, Jun. 4, 1985, 8514058; Nov. 15, 1985, 8528175
Int. Cl.[4] H01S *3/03*
U.S. Cl. 372—61 **29 Claims**



1. A discharge tube apparatus, comprising:

a hollow structure including a plurality of metal cylinders coaxially disposed about one another, an innermost one of said cylinders having an innermost surface surrounding a hollow cavity, an outermost one of said cylinders having an outermost surface;

means for producing a discharge in said cavity which contacts said innermost surface, said means for producing a discharge including means for increasing the temperature in said cavity; and

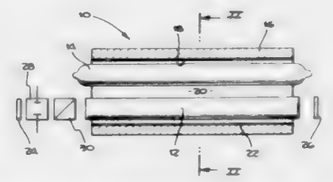
a plurality of mutually spaced apart spacer members having gaps therebetween, disposed between said cylinders so as to space said cylinders apart such that when said means for increasing the temperature has increased the temperature in said cavity, a desired temperature gradient between said innermost surface and said outermost surface is obtained.

4,805,181

HIGH REFLECTANCE LASER RESONATOR CAVITY

James O. Gibson, El Segundo; Victor C. Gearhart, Torrance; Steven E. Birrell, Lancaster, and Gabriele M. Hawrylow, Sebastopol, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

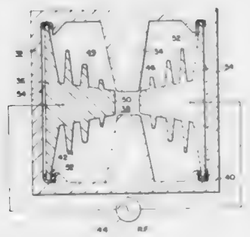
Division of Ser. No. 69,802, Jul. 6, 1987. This application Mar. 21, 1988, Ser. No. 171,096
Int. Cl.[4] H01S *3/93*
U.S. Cl. 372—72 **7 Claims**



1. A method for making an alumina ceramic body for use in a laser to provide a pump cavity wherein laser radiation at a lasing wavelength is produced, said method comprising the step of sintering alumina powder at a temperature of between about 1300°–1425° C. for a sufficient time to form a sintered alumina ceramic body having grain sizes of between about 0.3 to 0.5 microns.

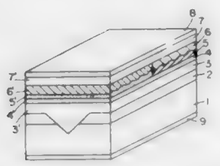
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4,805,182
RF-EXCITED, ALL-METAL GAS LASER
Peter Laakmann, Seattle, Wash., assignor to Synrad, Inc., Bothell, Wash.
Continuation-in-part of Ser. No. 857,354, Apr. 30, 1986. This application Oct. 19, 1987, Ser. No. 110,125
Int. Cl.[4] H01S *3/097*
U.S. Cl. 372—82 **57 Claims**



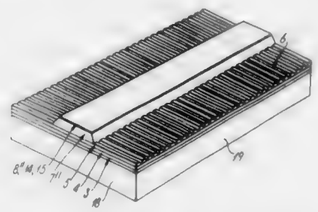
1. An RF-excited gas laser, comprising:
a pair of spaced, parallel metal plates;
a pair of metal spacers separating said plates, said plates and spacers forming an elongated laser bore;
a laser gas medium within said bore; and
a pair of metal discharge electrodes located upon opposing surfaces within said bore and parallel to the longitudinal axis of said bore, said electrodes being excitable by a source of RF-excited voltage, said electrodes being electrically insulated from said opposing surfaces by nonconductive films between said electrodes and said opposing surfaces, respectively.

4,805,183
DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER DEVICE
Hiroaki Kudo, Tenri; Haruhisa Takiguchi; Shinji Kaneiwa, both of Nara, and Toshihiko Yoshida, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 4, 1988, Ser. No. 140,465
Claims priority, application Japan, Jan. 7, 1987, 62-1178
Int. Cl.[4] H01S *3/08*
U.S. Cl. 372—96 **4 Claims**



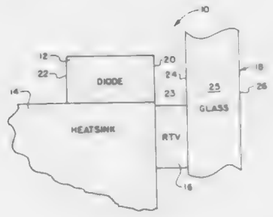
1. In a distributed feedback semiconductor laser device with a resonator for laser oscillating operation comprising an optical guiding area with a periodic corrugation, said optical guiding area comprising at least two regions, a first region I and a second region II, having an interface therebetween, wherein both the periodicity of the corrugation and the depth of each concave portion of the corrugation of the first region I of said optical guiding area are the same as those of the second region II of said optical guiding area, and wherein the thickness of the first region I of said optical guiding area is the same as that of the second region II of said optical guiding area, so that the effective refractive index of the first region I in an oscillation direction becomes the same as that of the second region II in the oscillation direction and the Bragg wavelength is maintained at a fixed level over the entire area from said first region I to said second region II in the said oscillation direction; and there is a difference in their refractive index at an interface between the first and second regions of said optical guiding area, so that an effective optical-phase shift takes place without changing the Bragg wavelength in the oscillation direction.

4,805,184
RIDGE WAVEGUIDE OPTICAL DEVICES
Philip J. Fiddyment; Leslie D. Westbrook, both of Ipswich, and Andrew W. Nelson, Felixstowe, all of England, assignors to British Telecommunications, plc, London, England
Division of Ser. No. 709,196, Mar. 7, 1985, Pat. No. 4,728,628. This application Nov. 4, 1986, Ser. No. 926,720
Claims priority, application United Kingdom, Mar. 12, 1984, 8406432
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—96 **19 Claims**



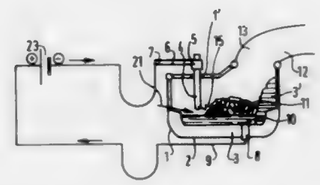
1. A ridge waveguide optical semiconductor device comprising a base semiconductor portion and, thereon, first and second elevated semiconductor portions separated by a channel, wherein the uppermost surface of the first elevated semiconductor portion carries a layer of metal in electrical contact therewith, the uppermost surface of the second elevated semiconductor portion has deposited thereon a layer of dielectric, and the surfaces defining the channel are substantially free of metal and dielectric, said device having a grating disposed therein.

4,805,185
TRIPLE CAVITY LASER
Robert J. Smith, St. Louis County, Mo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 4, 1986, Ser. No. 836,043
Int. Cl.[4] H01S *3/082, 3/08*
U.S. Cl. 372—97 **8 Claims**



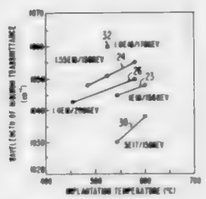
2. A semiconductor laser comprising:
a laser diode having a plurality reflective front diode surface oriented perpendicular to a longitudinal axis of said laser diode wherein an emission of laser light issues from said partially reflective front diode surface; and
an external etalon affixed to said laser diode by resilient material, said external etalon receiving said emission of laser light and comprising:
an external first reflective surface, and
an internal second reflective surface which forms a semiconductor output surface and in combination with said first reflective surface reflects emissions from said partially reflective diode front surface in a manner which increases operating power of discrete single mode emissions and decreases operating power of side mode emissions by imposing two Fabry-Perot cavities external to said laser diode.

4,805,186
PROCESS FOR THE CONTINUOUS MELTING OF SCRAP IN AN ELECTRIC DIRECT-CURRENT FURNACE AND ELECTRIC FURNACE FOR CARRYING OUT THE PROCESS
Robert A. Jaziak, Saint-Genest-Malifaux, and Jean G. Davesé, Marly Le Roi, both of France, assignors to Clecim, Courbevoi, France
Filed Jul. 30, 1987, Ser. No. 79,330
Claims priority, application France, Aug. 1, 1986, 86 11217
Int. Cl.[4] H05B *7/00*
U.S. Cl. 373—79 **14 Claims**



1. A direct current arc furnace for the continuous melting of scrap, comprising
(a) a shaft (1) having a bottom (2) forming a hearth (3) having a refractory lining and closed by means of a vault (1'), said shaft (1) containing a bath of liquid metal (10) formed by melting scrap, said shaft having an axis;
(b) means for continuously feeding said scrap via an orifice (12) in said vault (1'), said orifice (12) being offset on a first side of the axis of said shaft;
(c) a direct current source (23) having a negative pole and a positive pole;
(d) at least one vault electrode (4) connected to said negative pole of said direct current source (23) by means of at least one first conductor (7);
(e) said at least one vault electrode (4) being offset on a second side of the axis of said shaft (1) opposite said first side;
(f) at least one hearth electrode (8) connected to said positive pole of said direct current source (23) by means of at least one second conductor (9);
(g) said at least one hearth electrode (8) being offset on said first side of the axis of said shaft (1);
(h) said at least one second conductor (9) connected to said hearth electrode (8) passing under the bottom (2) of said shaft (1) as near as possible to the latter and being directed towards said second side of the shaft, so as to pass substantially vertically in line with said at least one vault electrode (4);
(i) said scrap being melted by an arc flashing from said vault electrode (4), said arc being deflected by magnetic fields generated by the circulation of current in said at least one second conductor (9) towards a zone of said shaft (1) set apart from said at least one vault electrodes (4) and located substantially below said scrap feed orifice (12).

4,805,187
DETERMINATION OF SUBSTRATE TEMPERATURE USED DURING OXYGEN IMPLANTATION OF SIMOX WAFER
Guenther Harbeke, Affoltern am Albis, Switzerland, and Lubomir L. Jastrzebski, Plainsboro, N.J., assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 15, 1987, Ser. No. 108,656
Int. Cl.[4] G01J *5/00*
U.S. Cl. 374—123 **6 Claims**



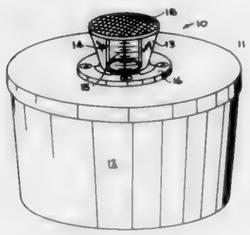
1. In a method for examining a SIMOX wafer to determine the substrate temperature used during oxygen implantation, the steps comprising:
(1) creating a plurality of graphs, each of which represents a relationship between a wavelength of minimum transmittance through a SIMOX wafer and the substrate temperature used during oxygen implantation of said wafer, each of said plurality of graphs, representing said relationship for a different particular dose of oxygen within the range of about 10^{17} oxygen atoms cm^{-2} to about 2×10^{18} oxygen atoms cm^{-2} and a different particular energy level within the range of about 130 Kev to about 220 Kev, wherein, said wavelength of minimum transmittance covers a continuous spectrum of wavelengths spanning the range of from about 1000 cm^{-1} to about 1100 cm^{-1} and the substrate temperature spans a continuous range of temperatures from about 400° C. to about 700° C.; then
(a) transmitting through a portion of said SIMOX wafer, infrared energy having a spectrum of wavelengths spanning the range of from about 1000 cm^{-1} to about 1100 cm^{-1};
(b) determining the wavelength of minimum transmittance of said infrared energy;
(c) determining the dose of oxygen and energy level used during said oxygen implantation of said SIMOX wafer; and
(d) selecting one of said plurality of graphs corresponding to said dose and energy level of step (c) and determining said substrate temperature corresponding to said wavelength of minimum transmittance of step (b) as indicated by said one graph.

4,805,188
TIME-TEMPERATURE INDICATOR
Robert Parker, 411 Rolling La., Alamo, Calif. 94507
Filed Jul. 3, 1985, Ser. No. 751,792
Int. Cl.[4] G01K *11/12*
U.S. Cl. 374—141 **25 Claims**

1. A device having a readout over 360° angle for indicating the temperature of a material within a closed heating vessel, over a period of time, comprising:
a transparent member configured as a hollow cylinder;
a layer of thermochromic material located within and extending entirely around an inner surface of said transparent hollow cylindrical member so as to be visible through said transparent hollow cylinder over a 360° angle;
means for closing an end of said transparent member; and

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means for maintaining at least said layer of thermochromic material in thermal contact with an associated heating



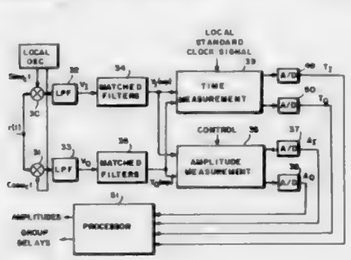
vessel, thereby providing for readout of the temperature over a 360° angle.

4,805,189

SIGNAL PROCESSING SYSTEM

Paul F. Mahoney, Brighton, Mass., assignor to Signatron, Inc., Lexington, Mass.

Filed Feb. 13, 1986, Ser. No. 829,295
Int. Cl.⁴ H04B *3/46, 17/00*
U.S. Cl. 375—10 **18 Claims**



1. A signal processing system for use with a network to measure the amplitude response and the time delay response of the network over its operating bandwidth, said system comprising

means for providing a plurality of subburst signals to said network, each in the form of a suppressed-carrier, amplitude-modulated signal having an in-phase component only, the carrier frequencies of said subburst signals being within the operating bandwidth of said network and one of said subburst signals capable of being used as a reference subburst signal;

means for receiving from said network said subburst signals, said receiving means including

means responsive to each of said received subburst signals for providing complex received subburst signals at the modulation frequency of said suppressed carrier signals each having in-phase and quadrature components thereof;

filter means responsive to the in-phase and quadrature components of said signals for providing in-phase and quadrature filter outputs thereof; and

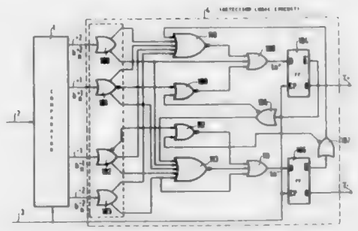
processing means responsive to said filter outputs for determining the estimated amplitude and time delay responses of said system at the carrier frequencies of said subburst signals over the operating bandwidth of said network.

4,805,190

DETECTOR LOGIC CIRCUIT FOR A SYCHRONOUS TRANSMISSION SYSTEM FOR DATA COMPRISING TERNARY SYMBOLS AND CONTROLLED PARTIAL RESPONSE CLASS 1, N=2 TYPE INTERSYMBOL INTERFERENCE

Pierre Jaffré, Lanaloo; Bernard Le Mouel, Gouzuhac; Jean-Francois Robin, Plounevez Moedec, and Pierre Thépaut, Lannion, all of France, assignors to Alcatel Cit, Paris, France

Filed Jul. 28, 1987, Ser. No. 78,625
Claims priority, application France, Jul. 28, 1986, 86 10926
Int. Cl.⁴ H04L *3/00*
U.S. Cl. 375—17 **5 Claims**



1. Detector logic circuit for a synchronous transmission system for data comprising ternary symbols taking zero, positive and negative values (0, ±1) in which controlled partial response class 1, n=2 intersymbol interference produces in response to reception of each ternary symbol a signal on five levels (0, ±1, ±2,) resulting from linear superposition of each ternary symbol and the preceding ternary symbol, said detector logic circuit operating on the basis of threshold overshoot signals delivered by a comparator which defines the level of the signal received relative to four thresholds, positive and negative extreme thresholds, situated between the five possible values of the receive level, delivering the value of the detected ternary symbol Sn in the form of two binary components tn^+ and tn^- of which the positive component tn^+ is at logic 1 only when the detected ternary symbol Sn takes the positive value +1 and the negative component tn^- is at logic 1 only when the detected ternary symbol Sn takes the negative value −1, said detector logic circuit comprising:

a positive binary component store memorizing the positive binary component tn^+-1 of the previously detected ternary signal Sn−1,

a negative binary component store memorizing the negative binary component tn^--1 of the previously detected ternary signal Sn−1,

a first combinational logic device adapted to apply logic 1 either to the input of said positive binary component store when said comparator indicates a positive overshoot of its positive extreme threshold or to the input of said negative binary component store when said comparator indicates a negative overshoot of its negative extreme threshold,

a second combinational logic device connected to the first combinational logic device and adapted to apply logic 1 either to the input of said positive binary component store when said comparator indicates a positive overshoot of its positive intermediate threshold and said positive binary component store holds a logic 0 or to the input of the negative binary component store when said comparator indicates a negative overshoot of its negative intermediate threshold and said negative component store holds a logic 0, and

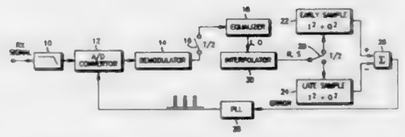
a third combinational logic device connected to the first combinational logic device and adapted to apply to the input of each of said binary component stores the logic level at the output of the other of said binary component stores when said comparator does not indicate any positive overshoot of said positive thresholds or any negative overshoot of said negative thresholds.

4,805,191

MODEM WITH IMPROVED TIMING RECOVERY USING EQUALIZED DATA

Richard A. Burch, Madison; Dennis B. McMahan, and Harry Yedid, both of Huntsville, all of Ala., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 25, 1987, Ser. No. 125,312
Int. Cl.⁴ H04L *7/00;* **H04B** *3/04*
U.S. Cl. 375—11 **10 Claims**



5. A digital data receiver comprising:

means for sampling received data twice per baud;

means for equalizing the data samples for distortion caused by the transmission media, said equalizing means generating equalized data samples in which one of the latter occurs at the center of the baud;

means for deriving interpolated data samples from the equalized data samples, said derived samples being equally spaced in time relative to the center of the baud; and

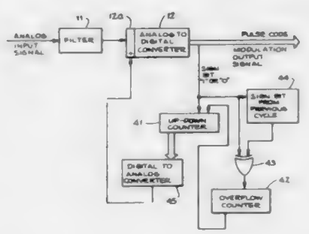
means for time synchronizing the sampling of the received data in response to the derived samples.

4,805,192

METHOD AND APPARATUS FOR PULSE CODE MODULATION COMBINATION CHIP HAVING AN IMPROVED AUTOZERO CIRCUIT

Pierangelo Confalonieri, Cassnica d'Adda, Italy; Daniel Sendorowicz, Berkeley, Calif., and Augusto Tirelli, Roma, Italy, assignors to SGS Microelectronica S.p.A., Agrate, Italy

Filed Dec. 1, 1986, Ser. No. 936,369
Claims priority, application Italy, Dec. 19, 1985, 23295 A/85
Int. Cl.⁴ H04B *14/04;* **H03M** *1/12*
U.S. Cl. 375—25 **4 Claims**



4. Apparatus for providing a pulse code modulated output signal that is an accurate representation of a band pass analog input signal comprising:

(a) an analog-to-digital converter coupled to said band pass analog input signal, said analog-to-digital converter generating consecutive sign output signals comprising constant sign output signals corresponding to the absence of said band pass analog input signal and consecutive and variable sign output signals corresponding to the presence of said band pass analog input signal;

(b) counter means coupled to said analog-to-digital converter for receiving said consecutive sign output signals from said analog-to-digital converter, said consecutive sign output signals being a first input signal into said counter means;

(c) circuit means also coupled to said analog-to-digital converter for receiving, storing, and comparing signs of said consecutive sign output signals from said analog-to-digital converter, said circuit means being designed to generate a second input signal for said counter means, said second input signal for said counter means comprising:

(i) an enabling input signal for said counter means upon said circuit means detecting that said consecutive sign output signals from said analog-to-digital converter have occured constantly without sign change for a set number of periods, and

(ii) a disabling input signal for said counter means upon said circuit means detecting a change in sign of said consecutive sign output signals from said analog-to-digital converter,

said enabling input signal causing said counter means to restart and update contents and said disabling input signal not affecting contents of said counter means,

said enabling input signal continuously updating said contents of said counter means during an initialization phase when said band pass analog input signal is not present and thus causing said counter means to continuously store an analog correction signal representation of an offset voltage; and

(d) digital-to-analog converter means coupled to said counter means for applying said analog correction signal contained in said counter means to said analog-to-digital converter, said applying of said analog correction signal occuring continuously during presence of said band pass analog input signal, said disabling input signal being continuously generated during a normal operation phase when said band pass analog input signal is present, said counter means maintaining contents from said initialization phase during said normal operation phase and thereby providing a modulated pulse code that is an accurate representation of a band pass analog input signal.

4,805,193

PROTECTION OF ENERGY INFORMATION IN SUB-BAND CODING

Michael McLaughlin, Palatine, and Phillip D. Rasky, Glenview, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 4, 1987, Ser. No. 58,201
Int. Cl.⁴ H04B *13/06*
U.S. Cl. 375—27 **23 Claims**

1. A method of improving the quality of sub-band coded speech signals comprising at least the steps of:

sampling the original speech signals;

filtering the sampled speech signals into a plurality of frequency bands covering the desired spectrum;

determining the energy contained in each band with respect to the other bands;

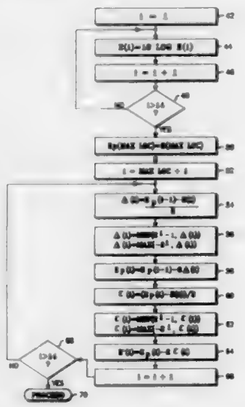
providing a first code for specifying which band contains the maximum energy level;

providing a second code for specifying the energy level of said maximum energy band;

computing two difference codes, a delta code and an epsilon code, for each other band according to a predetermined algorithm for specifying the relative energy level of each said other band, a delta code representing the difference between the energy of a band and the protected energy of an adjacent band, and an epsilon code representing the difference between the energy of a band and the protected

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energy of the same band, and utilizing said delta codes for determining the bit allocation of the sample information; providing protection bits for each said delta code; and



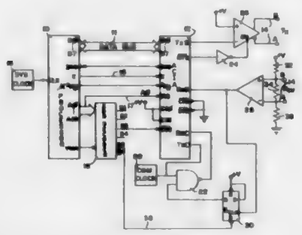
multiplexing said delta codes and said epsilon codes with other information into a frame of a data stream and transmitting said data stream.

4,805,194

SERIAL DATA COMMUNICATION SYSTEM

Jan S. Wesolowski, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Oct. 17, 1985, Ser. No. 788,605
Int. Cl.[4] H03K *9/00*
U.S. Cl. 375—75 **33 Claims**



1. A serial data communication system having an asynchronous communication device clocked by a receive clock signal for receiving a serial data communication consisting of serial data bits and for forming them into digital words of a predetermined number of bits, wherein said serial data communication begins with a break character consisting of a greater number of serial bits than said predetermined number for the digital words, the communication device including a framing error detector which generates a framing error signal whenever a start bit of a digital word is not followed by a stop bit during an interval of time corresponding to the receipt of a digital word, and having a microprocessor for receiving the digital words and status information comprising the error signal from the communication device and for providing control information to the communication device, said data communication system comprising:

means for detecting the presence of the break character in said serial data communication;

means, responsive to the detection of the presence of the break character, for disabling the application of the receive clock signal to said communication device;

means for detecting the termination of the break character in said serial data communication; and

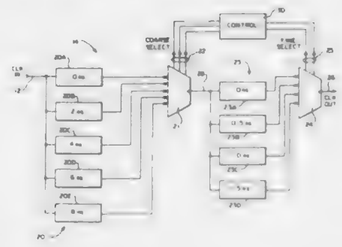
means, responsive to the detection of the termination of the break character, for enabling the application of the receive clock signal to said communication device.

4,805,195

SELECTABLE TIMING DELAY CIRCUIT

Timothy J. Keegan, San Jose, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 618,881, Jun. 8, 1984, abandoned. This application Dec. 10, 1986, Ser. No. 939,277
Int. Cl.[4] H04L *7/02*; **H04J** *3/06*
U.S. Cl. 375—106 **2 Claims**



1. In a system with a plurality of modules, an apparatus for communicating a synchronous clock signal to the plurality of modules, comprising:

(a) clock means for generating a reference clock signal,

(b) a communication link for each said plurality of modules for communicating the reference clock signal to the plurality of modules; and

(c) timing delay means on at least one of said communication links including:

(i) a first plurality of selectable coarse delay path means for receiving the reference clock signal in parallel and independently providing respective clock signals each having a different predetermined delay value with respect to said reference clock signal, each of said coarse delay path means causing an amount of delay that differs from amounts of delay caused by the others of said delay path means by at least a coarse increment of delay;

(ii) a first select means, responsive to a coarse select signal, for selecting one of said first plurality of coarse delay path means to provide a delayed clock signal,

(iii) a second plurality of selectable fine delay path means for receiving the delayed clock signal in parallel and delaying the delayed clock signal by various fine delays where said fine delays are of shorter duration that said coarse delays increment of delay,

(iv) a second selector means, responsive to a fine select signal separate from the coarse select signal, for selecting one of said second plurality of fine delay path means to provide a synchronous clock signal, and

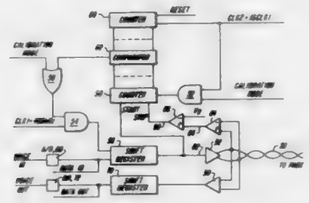
(v) a control means for generating the coarse and fine select signals, the coarse and fine select signals being generated based upon a predetermined algorithm to optimize reliability of the system.

4,805,196

LINE DELAY COMPENSATION FOR DIGITAL TRANSMISSION SYSTEMS UTILIZING LOW POWER LINE DRIVERS

Michael Cooperman, Framingham, and Richard W. Sieber, Attleboro, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 29, 1987, Ser. No. 43,871
Int. Cl.[4] G05B *23/02*
U.S. Cl. 375—107 **13 Claims**



1. In a system including a central subsystem coupled by transmission lines of different lengths to a plurality of remote subsystems and means for transmitting messages from the central subsystem to the remote subsystems, apparatus for synchronizing responses to the messages to compensate for different line delays on the transmission lines comprising:

first means located in each of the remote subsystems for determining an actual line delay associated with the transmission line connected to that remote subsystem and for determining a compensation delay equal to a preprogrammed maximum line delay associated with the longest of the transmission lines less said actual line delay; and

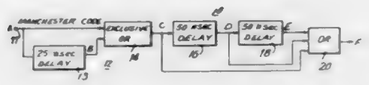
second means located in each of the remote subsystems for delaying the response to the message from the central subsystem by the compensation delay, whereby the response arrives at the central subsystem delayed relative to a reference time by the maximum line delay.

4,805,197

METHOD AND APPARATUS FOR RECOVERING CLOCK INFORMATION FROM A RECEIVED DIGITAL SIGNAL AND FOR SYNCHRONIZING THAT SIGNAL

Lourens Van Der Jagt, Woodbury; Gunther Martin, Ridgefield, both of Conn., and Wolf S. Landmann, Fair Lawn, N.J., assignors to LeCroy Corporation, Chestnut Ridge, N.Y.

Filed Dec. 18, 1986, Ser. No. 944,249
Int. Cl.[4] H04L *7/02, 27/22*
U.S. Cl. 375—110 **42 Claims**



1. A method of recovering clock information from a received digital signal in which binary information is represented by signal level transitions which are present on a periodic basis, such as transitions which occur at mid-locations of bit intervals, said method comprising the steps of

generating a pulse of predetermined width at each signal level transition;

delaying said pulses by a half bit interval to provide first delayed pulses;

delaying the first delayed pulses by a half bit interval to provide second delayed pulses; and

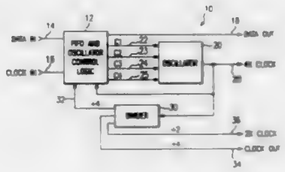
summing the generated and the first and second delayed pulses to recover said clock information.

4,805,198

CLOCK MULTIPLIER/JITTER ATTENUATOR

Kenneth J. Stern; Navdeep S. Sooch, both of Austin, Tex., and Jerrell P. Hein, West Lawn, Pa., assignors to Crystal Semiconductor Corporation, Austin, Tex.

Filed May 19, 1987, Ser. No. 51,905
Int. Cl.[4] H04L *7/00*
U.S. Cl. 375—118 **14 Claims**



1. Apparatus for providing a clock signal which has low jitter and is a multiple frequency of the average frequency of an external clock exhibiting jitter, and which is tolerant to said jitter on said external clock comprising:

(a) an N-bit storage register having N individual storage cells;

(b) data write means coupled to said N-bit storage register for writing external data into said N individual storage cells in sequence at a rate determined by said external clock;

(c) data read means coupled to said N-bit storage register for reading said external data out of said N individual storage cells in sequence at a rate determined by an internal clock;

(d) address sampling means coupled to said data write means and said data read means for determining the relative location of the one of said N individual storage cells being written into by said write circuitry means with respect to the location of the one of said N individual storage cells being read from at the same time, and for applying a signal at an internal node which is indicative of said relative position;

(e) oscillator means coupled to said address sampling means for providing a high frequency clock which has a frequency which is a multiple of the average frequency of said external clock, said oscillator means having a frequency which varies in response to said signal at said internal node;

(f) clock divider means coupled to said oscillator means for dividing said high frequency clock signal by a predetermined amount to thereby provide said internal clock; and

(g) whereby said high frequency clock has less jitter than said external clock exhibiting jitter, said N-bit storage register being able to absorb instantaneous jitter exhibited by said external clock.

4,805,199

PULSE GENERATING CIRCUIT

Kikuo Muramatsu, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

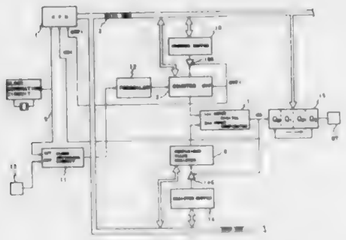
Filed Jan. 13, 1988, Ser. No. 144,893
Claims priority, application Japan, Sep. 14, 1987, 62-230617
Int. Cl.[4] H03K *3/02, 21/36*
U.S. Cl. 377—39 **4 Claims**

1. A pulse generating circuit being provided with a counter which counts clock and is reset when said clock reaches a predetermined counting value, a register which alternately sets therein a first comparison value for defining the timing of the leading edge of an elementary pulse of a pulse signal to be outputted and a second comparison value for defining the timing of the trailing edge of the same, a digital comparator which compares the counting value of said counter with the comparison value of said register so as to output a coincidence signal when both said values are coincident with each other,

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and output level storage means which is previously set therein data signals corresponding to the level of a pulse signal to be outputted and which, when given a coincidence signal of said digital comparator, outputs said set data signals, comprises:

a register buffer which stores therein said second comparison value to be set to said register, and, when given said coincidence signal from said digital comparator, sets said second comparison value at said register; and



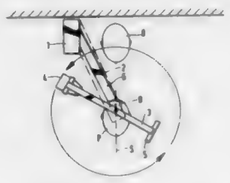
a control circuit which allows said register to store therein the first comparison value, said register buffer to store therein the second comparison value, and said output level storage means to store therein said data signal, with respect to each elementary pulse of the pulse signal to be outputted.

4,805,200

PATIENT SUPPORT SYSTEM IN A NARROW-BEAM TOMOGRAPHIC IMAGING APPARATUS

Jan Gästrin, Espoo, Finland, assignor to Instrumentarium Corp., Finland

Continuation of Ser. No. 688,260, Jan. 2, 1985, Pat. No. 4,675,898. This application Apr. 30, 1987, Ser. No. 51,134
Claims priority, application Finland, Jan. 6, 1984, 840044
The portion of the term of this patent subsequent to Jun. 23, 2004, has been disclaimed.
Int. Cl.[4] A61B *6/14*
U.S. Cl. 378—39 **7 Claims**



1. A patient support system for a narrow beam tomographic X-ray apparatus for obtaining tomographic X-ray images of the jaw area of a patient, said support system comprising:

a substantially vertical support member (1) for mounting the system on the floor or wall of a building;

a first substantially horizontal upper frame member (2) extending from said vertical support member;

a second substantially horizontal lower frame member (6) extending from said vertical support member spacedly below said first frame member;

a bearer bar (3) having a source of X-ray radiation (4) at one end and an imaging medium (5) at the other end, said bearer bar depending from said first frame member and being movably mounted thereon for imaging a predetermined layer of the jaw area of the patient;

a pair of spaced temple braces (8) mounted on one of said horizontal frame members, said temple braces being so mounted on said horizontal frame member that the perpendicular bisecting plane of a line extending between said spaced temple braces avoids intersection with said vertical support member; and

a chin brace (9) mounted on said second frame member to lie generally along said perpendicular bisecting plane of said spaced temple braces;

so that said temple braces and said chin brace orient the head of the patient such that the medial sagittal plane (S) of the patient's head does not intersect said vertical support member during tomographic imaging of the jaw area, said X-ray radiation source and said imaging medim being positionable on opposite sides of the patient's head when the patient's head is received in said braces.

4,805,201

INTRAORAL DENTAL RADIOGRAPHIC FILM PACKET PAD

Vonda Stroag-Grainger, E. 3730 Zeus, Mead, Wash. 99021

Division of Ser. No. 725,765, Apr. 22, 1985, Pat. No. 4,626,216. This application Jul. 7, 1986, Ser. No. 882,308
Int. Cl.[4] A61B *6/14*
U.S. Cl. 378—169 **7 Claims**



1. An intraoral dental radiographic film packet, comprising:

an elongated light-tight envelope enclosing dental radiographic film and having a lingual surface and a labial surface joined together along first and second longitudinal edges and along first and second transverse end edges;

the packet further including a pad member having an elongated leg section extending along and overlapping substantially the full extent of one of the longitudinal edges and a substantially transverse foot section extending along and overlapping substantially the full extent of one of the transverse end edges

the film packet further including means for being engaged by a conventional dental radiographic film holder;

wherein the pad member is formed of a resilient nontoxic material, biocompatible with oral tissue;

an access opening formed in the envelope and a transverse cover flap on the envelope for selectively covering the access opening said cover flap including an edge spaced from the access opening; and

wherein one of the pad sections overlaps the cover flap and is separable along a slit directly over the underlying cover flap edge to facilitate movement of the cover flap to an open position permitting access to the access opening.

4,805,202

PORTABLE FIELD X-RAY DIAGNOSTIC SYSTEM

Joseph S. Deacher, Lyndhurst; Michael S. Kacsala, Maple Heights, and Anthony D. Szpak, Parma, all of Ohio, assignors to Picker International, Inc., Cleveland, Ohio

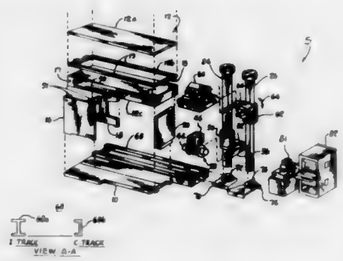
Continuation-in-part of Ser. No. 877,885, Jun. 24, 1986, Pat. No. 4,727,564. This application May 18, 1987, Ser. No. 51,577
Int. Cl.[4] A61B *6/04*
U.S. Cl. 378—209 **23 Claims**

22. A portable X-ray image system comprising:

(a) a base assembly including a plurality of panels and hinges joining said panels together along edges, and compression stops for biasing said hinges to compensate for the weight of payload when mounted on said base assembly, said compression stops being located for interaction with said hinges for biasing said panels to exhibit upward bowing when laid upon a flat surface prior to loading, and to provide resiliency for facilitating said base assembly assuming a substantially flat configuration when a predetermined payload is placed upon said base assembly;

(b) an X-ray member;

(c) apparatus for detachably mounting a table member to said base assembly to hold said table member at a location above said base;



(d) an X-ray source;

(e) means for sensing X-rays to form an image;

(f) means for mounting said X-ray source and said X-ray sensing means on opposite sides relative to said table member and supported by said base assembly;

(g) releasable clamping apparatus associated with said hinges for rendering said joints of said base assembly substantially rigid;

(h) means for adjustably leveling said base assembly, and

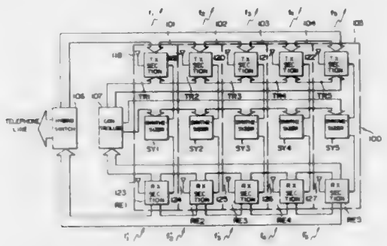
(i) means for indicating the attitude of said base assembly with respect to the horizontal.

4,805,203

CORDLESS TELEPHONE SYSTEM

Toshiaki Oda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 27, 1987, Ser. No. 42,907
Claims priority, application Japan, Apr. 25, 1986, 61-94882
Int. Cl.[4] H04M *11/00*; H04B *1/16*
U.S. Cl. 379—61 **5 Claims**



1. A cordless telephone system comprising:

a base communication unit connected to a plurality of telephone lines and having the same number of radio transceivers as said telephone lines; and

portable communication units equal in number to said telephone lines and each being connected to a respective one of said transceivers of said base communication unit by a cordless communication link;

each of said portable communication units being intermittently rendered operative at a particular timing and at a predetermined period which are designated by a first signal transmitted from said base communication unit, said first signal being produced in said base communication unit based on the number of portable communication units turned ON,

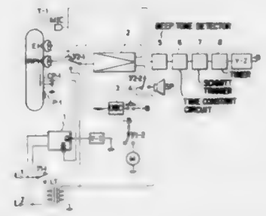
said particular timing and predetermined period being changed in response to a second signal transmitted from said base communication unit, said second signal being produced in said base communication unit based on the number of portable communication units turned ON, and on the number of wireless communication links being used.

4,805,204

AUTOMATIC TELEPHONE APPARATUS AND SET-UP METHOD THEREFOR

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Continuation of Ser. No. 30,272, Mar. 20, 1987, abandoned, which is a continuation of Ser. No. 638,990, Aug. 9, 1984, abandoned. This application Jan. 4, 1988, Ser. No. 140,896
Claims priority, application Japan, Aug. 11, 1983, 58-145747
Int. Cl.[4] H04M *1/65*
U.S. Cl. 379—71 **3 Claims**



1. An automatic telephone answering apparatus having a calling party check function, to automatically drive an outgoing message tape upon reception of an incoming call, to send out an outgoing message onto a telephone line and to be disengaged, comprising:

an outgoing message tape recorded with a first outgoing message at a beginning thereof, a specific signal, a non-recorded portion for a interval and a second outgoing message, the first outgoing message asking a calling party to speak his name, and the second outgoing message representing that a called party cannot answer the caller since the called party is absent;

a microphone for recording outgoing messages on the outgoing message tape;

means for reproducing, amplifying and sending out the first and second outgoing messages and said specific signal onto the telephone line;

variable time duration timer means settable by the called party for generating a signal for the predetermined time interval of the non-recorded portion of said outgoing message tape, said predetermined time interval settable by said timer means being long enough to enable said non-recorded portion of such outgoing message tape to extend to an end thereof;

means for detecting said specific signal to start said timer means;

loudspeaker means for amplifying any signals from the microphone as well as the voice of the calling party during the predetermined time interval corresponding to said nonrecorded portion of said outgoing message tape; and

means responsive to the signal from said timer means for

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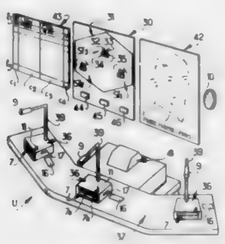
inputting said voice of the calling party and for connecting an output of said microphone, said output including background noise to said loudspeaker means for the predetermined time interval, wherein during initial set-up of the telephone answering apparatus, when background noise of the microphone terminates, a user knows that the predetermined time of said timer has expired, and said second outgoing message should now be recorded by the user.

4,805,205

METHOD AND DEVICE FOR ESTABLISHING BIDIRECTIONAL COMMUNICATIONS BETWEEN PERSONS LOCATED AT DIFFERENT GEOGRAPHICALLY DISTANT STATIONS

Andre Faye, 14-16 Rue du Faubourg, St. Honore, 75008 Paris, France

Continuation of Ser. No. 619,341, Jun. 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 269,898, Jun. 3, 1981, abandoned. This application May 4, 1987, Ser. No. 46,588
Claims priority, application France, Jun. 11, 1980, 80 13003
Int. Cl.⁴ H04M *1/57, 3/56, 11/00;* **H04Q** *3/72*
U.S. Cl. 379—96 **32 Claims**



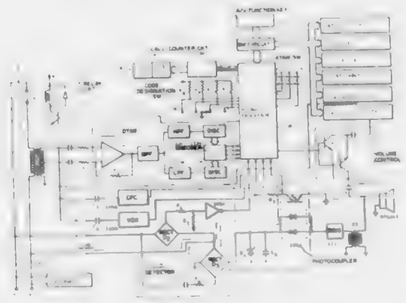
20. Apparatus for establishing bidirectional and particularly conferencing telephone communications for exchanging information in the form of telephone data or messages, said apparatus having a telephone line, a telephone set with a handset, at least one alpha-numeric keyboard, a display unit and a processing circuit including a miroprocessor having a central unit, a first memory unit in which is recorded information identifying a person acceptable to participate in a conference, said memory unit including a repertory, a programmable read only memory comprising at least one recorded program insuring various automatic sequences of telephone call search and launch to a different person, and an interface circuit connected between said microprocessor, said alpha-numeric keyboard and said display unit and a switching circuit connected to said telephone set and to said telephone line, said apparatus further comprising a second memory unit in said first memory unit for registering person identifying information extracted from said repertory, but whose call sequence resulted in a busy line signal, after automatically emitting said identifying information through said telephone line for attempting to contact the person, in order to effect again and automatically, after a specified time delay, at least one attempt to contact that person via said handset.

4,805,206

FUNCTION CONTROLLER SERVING AS AN AUTOMATIC TELEPHONE ANSWERING MACHINE IN AN AUDIO/VIDEO COMPONENT SYSTEM

Jeong Beom-Chae, Seoul, Rep. of Korea, assignor to Sam Sung Electronics Co. Ltd., Suwon, Rep. of Korea

Filed Aug. 25, 1986, Ser. No. 899,814
Claims priority, application Rep. of Korea, Aug. 24, 1985, 10914
Int. Cl.⁴ H04M *1/65, 11/08*
U.S. Cl. 379—77 **5 Claims**



1. A function controller combined with an automatic telephone answering machine, abbreviated ATAM in an audio/video component system, whereby said ATAM comprises means for delivering an announcement message to a caller and means for recording an incoming message from said caller, said controller comprising:

a microprocessor for controlling the audio/video component system;

an audio video function key block including a number of function keys for selecting the operational functions of the audio/video components;

a switching circuit to which the audio/video components are connected;

an ATAM function key block including several function keys for selecting the operation mode when the ATAM is to be operable;

a detector for detecting the ringing signal of at least one telephone;

a relay circuit for activating the telephone line;

a sensor for sensing the state of the telephone line;

a volume control circuit for controlling the volume level of the audio/video component system;

a call counter circuit for counting and displaying the number of ATAM recorded incoming messages;

a code designation switch for designating a secret code when the function of the ATAM is being controlled by using a dual tone multifrequency, abbreviated DTMF, signal;

a DTMF receiver for receiving and encoding the DTMF signal; and

a ringer for converting the ringing signal to a ringing sound.

4,805,207

MESSAGE TAKING AND RETRIEVAL SYSTEM

Anne E. M. McNutt, Methuen, Mass., and Robert M. Schenkein, Derry, N.H., assignors to Wang Laboratories, Inc., Lowell, Mass.

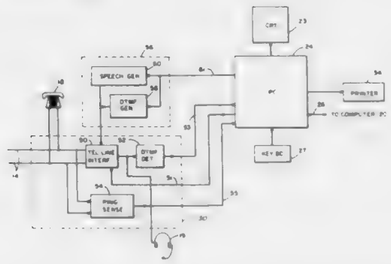
Filed Sep. 9, 1985, Ser. No. 773,759
Int. Cl.⁴ H04M *3/50*
U.S. Cl. 379—89 **15 Claims**

10. A method for enabling a user to retrieve one of a plurality of text-encoded telephone messages stored in a computer with the aid of an operator, comprising

enabling the operator to receive spoken messages via telephone lines and store said spoken messages as said text-encoded messages,

accepting signals sent over a telephone line by a user identifying said one text-encoded message,

decoding the accepted signals to provide corresponding decoded data,



retrieving the identified stored text-encoded message on the basis of said decoded data,

converting the retrieved text-encoded message to speech signals corresponding to the spoken equivalent of text information requested by said text-encoded data, and

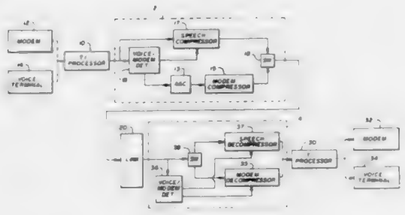
applying the speech signals to the telephone line to enable the user to listen to the identified message.

4,805,208

MODEM COMPRESSION SYSTEM FOR TELEPHONE NETWORK

Nira Schwartz, Doar Yehud, Israel, assignor to Niravoice, Inc., Milpitas, Calif.

Filed Jan. 15, 1988, Ser. No. 144,476
Int. Cl.⁴ H04M *11/06*
U.S. Cl. 379—93 **10 Claims**



1. A telephone communication network including means for alternately routing analog modem and voice-like information through an analog path and a modem path, said network including analog-to-digital converting means for producing digital data samples representing an analog information signal originating at a transmitting end and digital-to-analog converting means for producing an analog representation of said digital data samples at a receiving end, said network further comprising:

A. speech path means (17, 37) for passing data samples representing said voice-like information through said network;

B. modem path means (15, 35) for passing data samples representing said modem information through said network;

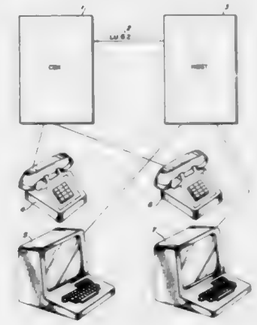
C. detector means (16) responsive to said data samples for alternately routing said modem data and said voice-like data through one of said speech and modem path means.

4,805,209

COORDINATED TRANSFER OF VOICE AND INFORMATION THROUGH A DIGITAL SWITCH

William T. Baker, Jr., Palo Alto; Charles M. Buffum, San Jose; Charles H. Jolissaint, Sunnyvale, and Gregg W. Kerlin, Los Gatos, all of Calif., assignors to International Business Machines, Armonk, N.Y.

Filed Dec. 9, 1987, Ser. No. 131,070
Int. Cl.⁴ H04M *3/58*
U.S. Cl. 379—96 **26 Claims**



1. A method of coordinating the transfer of a phone call and information associated with the phone call in a system having a plurality of phones managed by a digital switch, a plurality of display terminals, a host processor, and memory means for storing programs and data structures, the digital switch including memory means for storing programs and a data structure for uniquely identifying each phone by an extension, control means for attaching said plurality of phones and communication means for communicating with the host processor, the host processor having memory means for storing a communication manager, data structures and applications programs and communication means for communicating with the digital switch and the plurality of display terminals, said method comprising the steps of:

(a) sending the host processor a communication in response to a call transfer, said communication containing a source phone extension and a destination phone extension;

(b) receiving said communication by the communication manager of the host processor;

(c) processing said communication and determining an associated application program and an associated display terminal to link with said destination extension; and

(d) invoking said associated application program to communicate with said associated display terminal to display information associated with said call transfer.

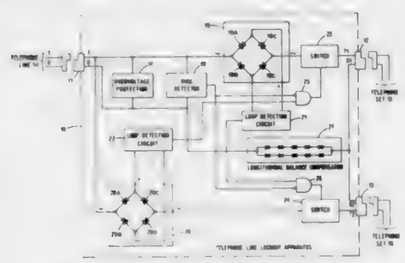
14. Apparatus for coordinating the transfer of a phone call and information associated with the phone call in a system having a plurality of phones managed by a digital switch, a plurality of display terminals, a host processor, and memory means for storing programs and data structures, the digital switch including memory means for storing programs and a data structure for uniquely identifying each phone by an extension, control means for attaching said plurality of phones and communication means for communicating with the host processor, the host processor having memory means for storing a communication manager, data structures and applications programs and communication means for communicating with the digital switch and the plurality of display terminals, comprising:

(a) means for sending the host processor a communication in response to a call transfer, said communication containing a source phone extension and a destination phone extension;

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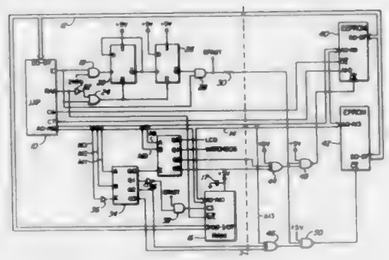
(b) means for receiving said communication by the communication manager of the host processor;
(c) means for processing said communication and determining an associated application program and an associated display terminal to link with said destination extension; and
(d) means for invoking said associated application program to communicate with said associated display terminal to display information associated with said call transfer.

4,805,210
AUTOMATIC TELEPHONE LINE SHARING AND LOCKOUT APPARATUS
Herbert L. Griffith, Jr., 303 Boswell Hill Rd., Endicott, N.Y. 13760
Filed Sep. 10, 1987, Ser. No. 95,028
Int. Cl.[4] H04M *1/70, 1/72*
U.S. Cl. 379—195 **7 Claims**



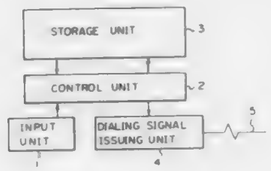
1. Automatic telephone line lockout apparatus for providing exclusive access by ones of a plurality of communication devices to a telephone line, said lockout apparatus comprising:
a first sensing means connected to sense when a first one of said plurality of communication device goes off-hook;
a second sensing means connected to sense when a second one of said plurality of communication devices goes off-hook;
a first switch means for connecting said first communication device to said telephone line, said first switch means being under control of said second sensing means to disconnect said first communication device so it cannot go off-hook and be connected to said telephone line only while said second communication device is off-hook and is connected to said telephone line;
a second switch means for connecting said second communication device to said telephone line, said second switch means being under control of said first sensing means to disconnect said second communication device so it cannot go off-hook and be connected to said telephone line only while said first communication device is off-hook and is connected to said telephone line; and
ring detecting means for sensing the presence of ringing on said telephone line, said first and said second sensing means being responsive to said ring detecting means to not be able to control said first and said second switch means to disconnect said first or said second communication devices from said telephone line only while pulses of ringing voltage are present on said telephone line.

4,805,211
SUBSCRIBER SET PROGRAMMING MODULE
Robert P. Brennan, Pakenham; Joseph Camelon, Richmond, and J. Bernard Trudel, Ottawa, all of Canada, assignors to Trillium Telephone Systems Inc., Ontario, Canada
Filed Nov. 7, 1986, Ser. No. 928,053
Claims priority, application Canada, May 6, 1986, 508496
Int. Cl.[4] H04M *1/27*
U.S. Cl. 379—355 **20 Claims**



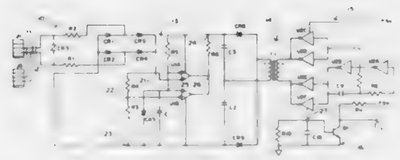
1. For use with a programmable subscriber set having the capability to store a plurality of predetermined data signals designating a corresponding plurality of telephone special features; a subscriber set programming module, comprised of memory means for storing said predetermined data signals and means for loading said data signals into said subscriber set, whereby said subscriber set becomes programmed in accordance with said stored data signals, wherein said memory means is a ROM for storing data signals corresponding to proprietary special feature access codes.

4,805,212
AUTOMATIC TELEPHONE DIALING METHOD AND APPARATUS
Kazuo Hase, and Kazuo Nakano, both of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 759,911, Jul. 29, 1985, Pat. No. 4,741,029, which is a continuation-in-part of Ser. No. 741,737, Jun. 4, 1985, abandoned. This application Jan. 14, 1988, Ser. No. 144,012
Claims priority, application Japan, Jun. 15, 1984, 59-122005
The portion of the term of this patent subsequent to Apr. 26, 2005, has been disclaimed.
Int. Cl.[4] H04M *1/27*
U.S. Cl. 379—359 **1 Claim**



1. An automatic telephone dialing apparatus for delivering dial pulses to a telephone circuit in placing a call while controlling each timing of delivery of the dial pulses and controlling a call origination according to a plurality of stored reference time values, said automatic telephone dialing apparatus comprising:
(a) a storage unit for storing first control data used for controlling each timing of the dial pulses to be delivered to the telephone circuit, and for storing second control data used for comparing with time values of signals from the telephone circuit;
(b) an input unit for specifying an address representing a subscriber to be called, and for entering said first and second control data into said storage unit;
(c) a dialing signal issuing unit for issuing dial pulses to the telephone circuit;
(d) a first control unit for controlling the timing of each delivery of the dial pulses according to said first control data stored in said storage unit;
(e) a comparing means for comparing said second control data stored in said storage unit with time values of signals received from the telephone circuit;
(f) a second control unit for controlling a call origination in accordance with results of respective comparisons by said comparing means.

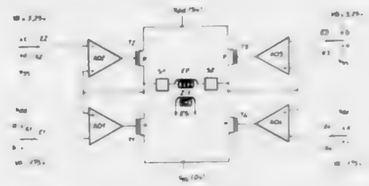
4,805,213
RING DETECTOR
William J. Schlanger, Laguna Beach, Calif., assignor to Unison Technologies, Inc., Mission Viejo, Calif.
Filed Feb. 13, 1987, Ser. No. 14,626
Int. Cl.[4] H04M *3/22*
U.S. Cl. 379—373 **12 Claims**



10. A method of detecting a signal on a pair of conventional telephone lines, comprising:
connecting the pair of telephone lines to a pair of input terminals;
using a circuit connected to the input terminals to draw a different amount of power from a separate power source when a specified signal is present across the input terminals than the circuit draws when the specified signal is not present;
supplying power from the separate power source to a first winding of a transformer having a second winding connected to the circuit to thereby isolate the separate power source from the input terminals; and
generating a control signal by sensing a difference in the amount of power supplied to the first winding with suitable power sensing means so that the power sensing means and the control signal are also isolated from the input terminals;
wherein the step of using a circuit connected to the input terminals to draw a different amount of power includes drawing a different amount of power if a voltage of approximately ninety volts is present across the input terminals to thereby detect a ring signal.

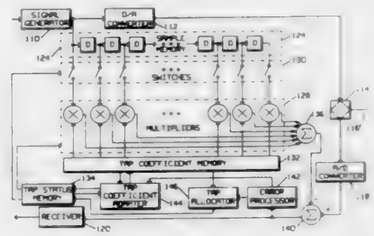
4,805,214
DIGITAL SIGNAL TRANSMITTING CIRCUIT FOR TELEPHONE NETWORK
Thierry Fensch, and Eric Compagne, both of Grenoble, France, assignors to Thomson Semiconducteurs, Paris, France
Filed Nov. 13, 1987, Ser. No. 120,428
Claims priority, application France, Nov. 14, 1986, 86 15864
Int. Cl.[4] H04M *11/06*
U.S. Cl. 379—399 **2 Claims**

1. A circuit for the transmission of digital signals, designed to transmit signals towards a bifilary line, through a transformer having a primary winding, the ends of which are connected to a first output terminal and a second output terminal of the said transmitting circuit, and a secondary winding connected to the line, the said transmitting circuit comprising a first N-channel field-effect transistor which is series-connected with a second P-channel field-effect transistor with their junction point connected to the first output terminal, a third P-channel field-effect transistor which is series-connected with a fourth N-channel field-effect transistor with their junction point connected to the second output terminal, four differential amplifiers, each controlling the gate of one of the transistors, the amplifiers each having an inverting input and a non-inverting input, the non-inverting inputs of the first two amplifiers being connected to the first output terminal and the non-inverting inputs of the other two amplifiers being connected to the second output terminal, the said circuit further comprising a logic circuit to apply pulse signals to the inverting inputs of the amplifiers according to the following principles:



a low reference potential Vss is applied to the second and third amplifiers and a high reference potential Vdd is applied to the first and fourth amplifiers when no pulse signal should be transmitted;
a first intermediate potential is applied to the first amplifier at the same time as a second intermediate potential is applied to the third amplifier, the second amplifier always receiving the low potential Vss and the fourth always receiving the high potential Vdd so as to transmit a pulse signal with a first polarity;
the first intermediate potential is applied to the fourth amplifier at the same time as the second intermediate potential is applied to the second amplifier, the first amplifier receiving the high potential Vdd and the third amplifier receiving the low potential Vss in order to transmit a pulse signal with a second polarity opposite to the first polarity.

4,805,215
ADAPTIVE ECHO CANCELLER WITH SPARSE DYNAMICALLY POSITIONED TAPS
Jerry A. Miller, Sunrise, Fla., assignor to Racal Data Communications Inc., Sunrise, Fla.
Filed Oct. 1, 1986, Ser. No. 913,928
Int. Cl.[4] H04B *3/23*
U.S. Cl. 379—411 **20 Claims**

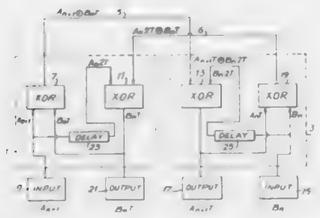


1. An echo canceller for a transmission line, comprising:
shift register means having an input for receiving an input signal from a signal source and having a plurality of out-

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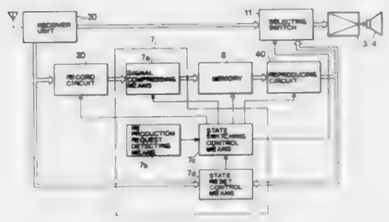
put taps for providing a plurality of equally spaced delayed signals;
tap coefficient storage means for storing a plurality of tap coefficients;
multiplying means for multiplying certain of said delayed signals by certain of said tap coefficients to produce multiplier outputs;
tap allocation means for determining how many and which of said taps are to be turned ON so that its corresponding tap coefficient is multiplied by said multiplying means and for assigning an ON status to said turned ON taps, a STANDBY status to taps which are not turned ON but which are more likely to be needed than others in the event of changes in transmission line characteristics, and an OFF status to any remaining taps;
tap status memory means for storing said ON, OFF or STANDBY status for each of said taps; and
canceling means for canceling echoes by subtracting said multiplier outputs from signals received on said transmission line.

4,805,216
METHOD AND APPARATUS FOR CONTINUOUSLY ACKNOWLEDGED LINK ENCRYPTING
Elliot L. Greenberg, W. New York, N.J., assignor to CompFax Corporation, W. New York, N.J.
Filed Jan. 8, 1987, Ser. No. 1,402
Int. Cl.[4] H04L *9/04*
U.S. Cl. 380—21 **12 Claims**



1. A method of transmitting secure messages between a plurality of locations, comprising the steps of, generating a first sequence of message bits originating in a first location, each bit of which is mixed at said first location with a bit of a second sequence of message bits received from a second location, said mixed first and second bits at said first location establishing a third sequence of bits, said third sequence of bits being transmitted to said second location wherein each bit of said third sequence of bits is mixed with each bit of said second sequence of message bits, whereby said first sequence of message bits is derived at said second location, each bit of said first sequence of message bits being mixed with said second sequence of message bits at said second location, said mixed first and second bits at said second location establishing a fourth sequence of bits, said fourth sequence of bits being transmitted to said first location wherein each bit of said fourth sequence of bits is mixed with each bit of said first sequence of message bits, whereby said second sequence of message bits is derived at said first location, each mixing step occurring on a bit-by-bit basis.

4,805,217
RECEIVING SET WITH PLAYBACK FUNCTION
Yoshiharu Morikiro, and Minoru Nishida, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 25, 1985, Ser. No. 779,831
Claims priority, application Japan, Sep. 26, 1984, 59-202801; Mar. 5, 1985, 60-43316
Int. Cl.[4] G10L *3/02*
U.S. Cl. 381—35 **8 Claims**

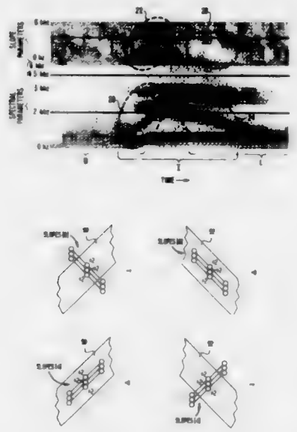


1. A receiving set comprising: a record circuit to convert a received and detected audio signal into a signal suitable for recording; signal compressing means to compress the output signal of the record circuit on a time axis; a memory to store the output signal of the signal compressing means; a reproducing circuit to reproduce the contents of the memory; a switch for selectively providing the received and detected audio signal or the output audio signal of the reproducing circuit; reproduction request detecting means to detect whether or not a reproduction request is given; state switching control means to establish a reception-record state in which the switch is controlled so as to provide the received and detected signal, when the reproduction request is not given, and to establish a reception-record-reproduction state in which the switch is controlled so as to provide the output audio signal of the reproducing circuit and the received and detected audio signal is compressed and stored in the memory during reproducing operation, when the reproduction request is given; and state reset control means to reset the state switching control means in the reception-record state upon the coincidence of the received and detected audio signal and the output audio signal of the reproducing circuit in the reception-record-reproduction state.

4,805,218
METHOD FOR SPEECH ANALYSIS AND SPEECH RECOGNITION
Paul G. Bamberg, Framingham; James K. Baker, West Newton; Laurence Gillick, Newton, and Robert S. Roth, Newtonville, all of Mass., assignors to Dragon Systems, Inc., Newton, Mass.
Filed Apr. 3, 1987, Ser. No. 34,842
Int. Cl.[4] G10L *1/00*
U.S. Cl. 381—43 **18 Claims**

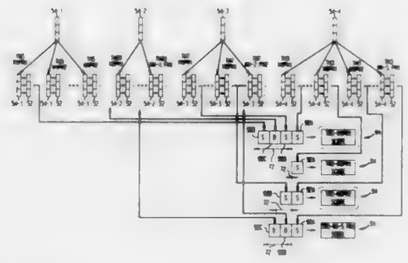
1. A method of speech analysis comprising:
representing a length of speech as a temporal sequence of frames, with each frame representing speech sounds at one of a succession of brief time periods;
analyzing each frame of speech to obtain a plurality of spectral parameters, each of which represents the energy at one of a series of different frequency bands;
finding the difference between the energy of a given spectral parameter of a given frame and the energy, in a nearby frame, of a spectral parameter associated with an energy band which is close to, but different than, the frequency band represented by said given spectral parameter; and
using that difference to calculate a slope parameter which

provides an indication of the extent to which the frequency of the acoustic energy in the part of the spectrum



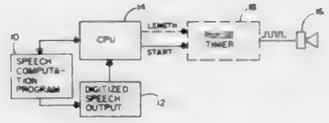
represented by said given spectral parameter is going up or going down.

4,805,219
METHOD FOR SPEECH RECOGNITION
James K. Baker, West Newton, and Laurence Gillick, Newton, both of Mass., assignors to Dragon Systems, Inc., Newton, Mass.
Filed Apr. 3, 1987, Ser. No. 35,628
Int. Cl.[4] G10L *5/00*
U.S. Cl. 381—43 **20 Claims**



1. A method of determining the probability that a given portion of speech to be recognized corresponds to a speech pattern, representing a common sound sequence occurring in one or more words, the method comprising:
time aligning a series of acoustic descriptions representing the speech to be recognized against a time-aligning model comprised of a series of acoustic sub-models;
deriving a time-aligned speech model having a series of acoustic sub-models, each of which is derived from the acoustic speech descriptions time aligned against a corresponding sub-model of the time-aligning model;
providing time-aligned acoustic models of each of a first class of speech patterns, each of which time-aligned pattern models is derived by:
time aligning a series of acoustic descriptions from one or more utterances of that speech pattern against the time-aligning model, and
deriving, for that pattern model, a series of acoustic sub-models, each of which is derived from the acoustic descriptions from those one or more utterances time aligned against a corresponding sub-model of the time-aligning model;
comparing the time-aligned speech model against each of a plurality of the time-aligned pattern models so as to produce a score for each such comparison as a function of how closely each sub-model of the speech model compares to its corresponding sub-model of a given pattern model;
selecting which speech patterns warrant a more computationally intensive comparison against the speech to be recognized in response to the scores produced for the comparisons between the speech model and the pattern models; and
performing that more computationally intensive comparison for the selected speech patterns in order to determine which of the selected speech patterns most probably corresponds to said speech to be recognized.

4,805,220
CONVERSIONLESS DIGITAL SPEECH PRODUCTION
Richard P. Sprague, Westminster, and Kevin R. Kachikian, Fountain Valley, both of Calif., assignors to First Byte, Long Beach, Calif.
Filed Nov. 18, 1986, Ser. No. 932,153
Int. Cl.[4] G10L *7/02*
U.S. Cl. 381—51 **5 Claims**



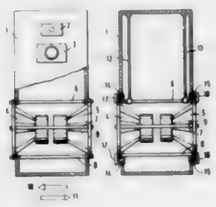
1. Apparatus for producing speech from digitally encoded speech samples without the use of a digital-to-analog converter, comprising:
(a) speech computation means for producing a sequence of digitally encoded samples representing the waveform of speech to be produced;
(b) a computer central processing unit;
(c) a speaker; and
(d) control means for applying to said speaker a square wave signal having a duty cycle controlled by said speech computation means in accordance with the speech to be produced;
(e) said square wave signal having a constant frequency in the ultrasonic range.

4,805,221
CONSTRUCTION OF SOUND CONVERTER IN SOUND GUIDE, ESPECIALLY FOR LOUDSPEAKERS, FOR EXAMPLE SPEAKER BOXES
Jurgen Quass, P.O. Box 2413, Abu Dhabi, United Arab Emirates
Filed Apr. 16, 1985, Ser. No. 723,825
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1984, 3414407
Int. Cl.[4] H04R *1/28, 1/02*
U.S. Cl. 318—90 **12 Claims**

1. A sound converter system comprising:
a sound guide;
sound converter means, mounted within said sound guide, for generating sound and dynamic forces; and
mechanical connection means for connecting said sound converter means to said sound guide, for guiding some of the dynamic forces and for mechanically compensating

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for the guided dynamic forces by providing equal and opposite dynamic counterforces such that the transmis-



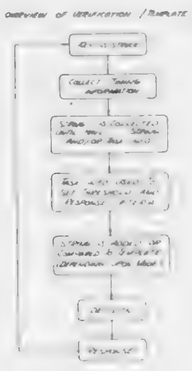
sion of solid-borne sound from the sound converter means to the sound guide is prevented.

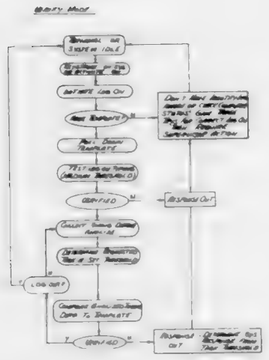
4,805,222

METHOD AND APPARATUS FOR VERIFYING AN INDIVIDUAL'S IDENTITY

James R. Young, Palo Alto, and Robert W. Hammon, San Jose, both of Calif., assignors to International Bioaccess Systems Corporation, New York, N.Y.

Filed Dec. 23, 1985, Ser. No. 813,262
Int. Cl.[4] G06K 9/00
U.S. Cl. 382—2 **3 Claims**





1. In a digital computer system having a keyboard to accept keystrokes for inputting data in the form of alphanumeric characters, a method for verifying that a user of said system, said user claiming to be a particular individual, is said individual, said method comprising the steps of:

generating a template for said individual, said template comprising a first plurality of features based upon a first set of time periods between keystrokes from a first set of keystrokes of said individual and based upon measurements representative of the pressure of said first set of keystrokes, said first set of keystrokes comprising a predetermined set of keystrokes;

storing said template in a storage means;

timing periods between said user's currently inputted keystrokes, said periods between said user's currently inputted keystrokes comprising a second set of time periods, wherein the sequence of keystrokes in said user's currently inputted keystrokes is not the same as the sequence of keystrokes in said first set of keystrokes and wherein said user's currently inputted keystrokes originate from said user;

measuring a representation of the pressure applied to the keys of said keyboard during said user's currently inputted keystrokes;

storing said periods between said user'currently inputted keystrokes in said storage means, wherein said user's currently inputted keystrokes comprise a string of said characters;

determining a plurality of extracted features based upon said second set of time periods and based upon said pressure measured during said user's currently inputted keystrokes, said first plurality of features having the same group of n features as said plurality of extracted features;

comparing said template to said plurality of extracted features, each feature of said first plurality of features being compared to each corresponding feature of said plurality of extracted features, the identity of said individual being verified by the correlation between said template and said plurality of extracted features,

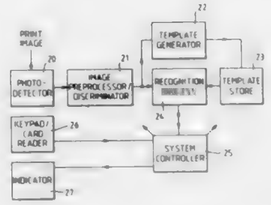
whereby the identity of said user claiming to be said individual may be verified.

4,805,223

SKIN-PATTERN RECOGNITION METHOD AND DEVICE

Peter B. Denyer, Edinburgh, United Kingdom, assignor to The Quantum Fund Limited, Edinburgh, Scotland

PCT No. PCT/GB86/00219, § 371 Date Dec. 18, 1986, § 102(e) Date Dec. 18, 1986, PCT Pub. No. WO86/06527, PCT Pub. Date Nov. 6, 1986
PCT Filed Apr. 21, 1986, Ser. No. 2,402
Claims priority, application United Kingdom, Apr. 22, 1985, 8510174
Int. Cl.[4] G06K 9/00
U.S. Cl. 382—4 **8 Claims**



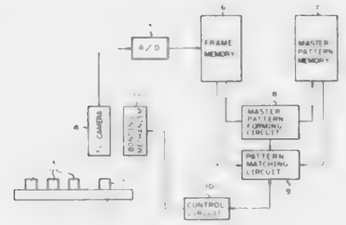
1. A method of authenticating a person by comparing information from a currently taken skin pattern with stored information from previously taken skin pattern, the currently taken skin-pattern being produced on a contact surface, an image of the print of the skin pattern on the contact surface being projected into a photo-detector device, the intensity variations of the image of the skin pattern in at least one region thereof impinging on the photo-detector device being assessed in digital form in a series of binary "1" units and "0" units to create a first digital signal train by setting a threshold intensity and judging image areas of intensity above the threshold as meriting one type of binary unit and other image areas of intensity below the threshold as meriting the other type of binary unit, a second digital signal train being derived from the stored skin pattern information and the first and second signal trains being compared to determine the degree of coincidence therebetween, an assessment of the determined degree being used to decide whether the currently taken and stored skin patterns are sufficiently similar to authenticate the person, the degree of coincidence between the first and second signal trains being assessed by looking for correlation between digital signal trains representative of respective first sub-regions of each of the currently taken and stored skin patterns and between respective second sub-regions of each of the currently taken and stored skin patterns while allowing relative translational and rotational movements between the first and second sub-regions of one of the skin patterns, the threshold used for the first digital signal train being adapted according to an average value of intensity within a sampling region of the skin pattern image used to create the first digital signal train, and the second signal train being derived by considering only determinate samples of the previously taken skin pattern image which can clearly be categorized as a binary "1" or a binary "0" so that in the correlation between the first and second signal trains, all "indeterminate" samples in the second signal train are discounted.

4,805,224

PATTERN MATCHING METHOD AND APPARATUS

Tetsuo Koezuka, Tokyo; Hiroyuki Tsukahara, Atsugi, and Masato Nakashima, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 617,583, Jun. 5, 1984, abandoned. This application Feb. 27, 1987, Ser. No. 20,201
Claims priority, application Japan, Jun. 8, 1983, 58-100962
Int. Cl.[4] G06K 9/62
U.S. Cl. 382—8 **9 Claims**



1. A pattern matching method, comprising the steps of:

(a) sequentially extracting patterns from an image to produce extracted patterns each having an area with an extraction pattern size, comprising the substeps of:

(ai) picking a master sample image for forming a master pattern; and

(aii) sequentially extracting the extracted patterns with the extraction pattern size beginning with an initial pattern in the master sample image;

(b) mutually comparing each of the extracted patterns with all other patterns in the image, comprising the substeps of:

(bi) comparing each of the extracted patterns wtih all other patterns in the master sample image;

(bii) calculating pattern matching degrees between each of the extracted patterns and all the other patterns in the master sample image;

(biii) determining a similar matching degree of each of the extracted patterns, the similar matching degree being a maximum of the pattern matching degrees between each of the extracted patterns and all the other patterns;

(biv) calculating a waveform of the pattern matching degrees;

(bv) differentiating the waveform of the pattern matching degrees to form a second order differential waveform; and

(bvi) measuring an interval length between peaks of the second order differential waveform;

(c) registering one of the extracted patterns having the similar matching degree which is a minimum, as a master pattern, when the interval length is within a predetermined range; and

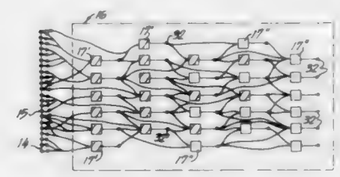
(d) identifying an object pattern by a pattern matching procedure between the image including the object pattern and the master pattern.

4,805,225

PATTERN RECOGNITION METHOD AND APPARATUS

David M. Clark, New Paltz, N.Y., assignor to The Research Foundation of the State University of New York, Albany, N.Y.

Filed Nov. 6, 1986, Ser. No. 927,832
Int. Cl.[4] G06K 9/62; G06F 15/18
U.S. Cl. 382—15 **16 Claims**



1. A method of pattern learning, comprising the steps of:

(a) entering a pattern having a feature to be learned on a primary retina of a pattern recognition apparatus comprising a plurality of basic recognizers, each basic recognizer including a plurality of recognition elements;

(b) for each recognition element of each basic recognizer of said pattern recognition apparatus, if a learning cycle count is less than a learning constant and if the recognition element sees the pattern having the feature to be learned, incrementing by one a count of the number of patterns having the feature to be learned that have been seen by that recognition element;

(c) for each recognition element of each basic recognizer of said pattern recognition apparatus, if said learning cycle count is greater than or equal to said learning constant, reducing said count of the number of patterns having the feature to be learned that have been seen by that recognition element as a factor of the number by a forgetting constant consisting of a positive number less than 1;

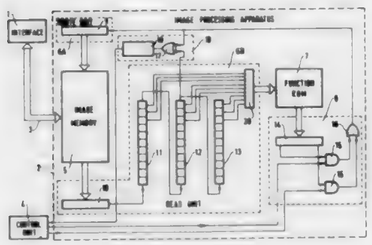
(d) for each recognition element of each basic recognizer of said pattern recognition apparatus, if said learning cycle count is greater than or equal to said learning constant and if the recognition element sees the pattern having the feature to be learned, incrementing by one the count of the number of patterns having the feature to be learned that have been seen by that recognition element;

(e) for each basic recognizer, setting said learning cycle count equal to the lesaor of said learning cycle count plus one or said learning constant; and

(f) for each basic recognizer of said pattern recognition apparatus, calculating an estimate of the average number of recognition elements that have seen a pattern having the feature to be learned.

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4,805,226
IMAGE PROCESSING APPARATUS
Patrick Guelbey, Parmain, France, assignor to Compagnie Generale D'Automatisme CGA-HBS, Paris, France
Filed Feb. 4, 1986, Ser. No. 826,054
Claims priority, application France, Feb. 6, 1985, 85 01642
Int. Cl.[4] G06K 9/40
U.S. Cl. 382—27 5 Claims



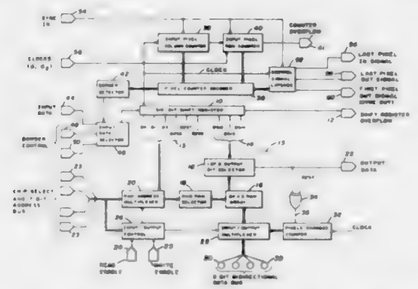
1. Apparatus for processing images which have been sampled on a rectangular grid and which have been binary digitized with one bit per pixel, each pixel being surrounded by eight surrounding pixels and being considered in relation to at least some of the eight surrounding pixels in the rectangular grid, said apparatus comprising:
a control unit;
a random access image memory for storing said pixel bits;
a feedback loop connecting the output of said image memory to the input thereof via at least one feedback assembly comprising shift register units which shift under control of said control unit, a function memory, and a selector;
said shift register units comprising at least one write unit and at least one read unit, said read unit being connected to the output of said image memory and being connected to supply nine bits simultaneously to the input of said function memory, said nine bits corresponding to a pixel under examination and to the eight surrounding pixels;
said nine bits being changed each time said control unit causes said shift register units to shift;
said function memory simulaneously providing a plurality of new value bits for the bit of the pixel under examination, each of said plurality of new value bits being generated on the basis of the nine bits applied to its inputs and in accordance with a respective one of a plurality of predetermined criteria;
said selector having a plurality of inputs connected to respective outputs from said function memory to receive said new value bits, with each of said inputs being individually addressable by said control unit to select one of said new value bits as a selector output independently of the value of the bit representing the pixel under examination; and
said selected one of the new value bits determined by said function memory being written back into said image memory
said selected one of the new value bits determined by said function memory being written back into said image memory via said write unit which is connected to receive said new value bits from the output from said selector.

4,805,227
PARALLEL PIPELINE IMAGE PROCESSOR WITH 2×2 WINDOW ARCHITECTURE
William W. Wehner, Mounds View, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 13, 1987, Ser. No. 85,057
Int. Cl.[4] G06K 9/36
U.S. Cl. 382—41 15 Claims



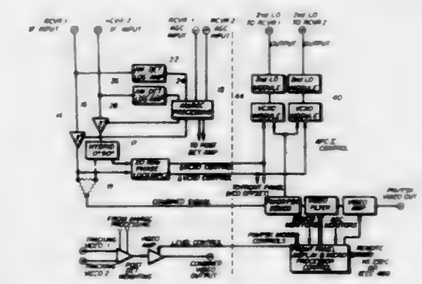
1. An apparatus for image processing an n-column by m-row array of image data values where said data values correspond to an n-column by m-row image sensor array, and said data values are stored in addressable cells of an image data memory, said apparatus comprising:
read out means for reading said image data memory and sequentially outputting a stored one of said data values of said image data memory for successive clock cycles of a first clock signal on a first output signal means in accordance with a selected raster line scan pattern of said image sensor array;
data sequencing means having a first input means for receiving said stored data values on said first output signal means, and having second, third, fourth, and fifth output signal means, said data sequencing means concurrently outputting data values on said second, third, fourth, and fifth output signal means corresponding to four corner data values of a 2×2 window of said image sensor array, said four corner data values sequentially changing for successive clock cycles of said first clock signal in accordance with a sliding window which slides in a raster line scan pattern substantially similar to to said selected raster line scan pattern; and
neighborhood transformation processor means having input means for receiving said four corner data values on said second, third, fourth, and fifth output signal means, and having a sixth output signal means, said processor means capable of performing a selected neighborhood transformation on said four corner data values, and said processor means sequentially outputting the result thereof on said sixth output signal means for successive clock cycles of said first clock signal.

4,805,228
CELLULAR LOGIC PROCESSOR
Robert E. Jenkins, Laurel; D. Gilbert Lee, Jr., Columbia; Robert C. Moore, Laurel, and Kim Strohbehn, Columbia, all of Md., assignors to The Johns Hopkins University, Baltimore, Md.
Filed May 4, 1987, Ser. No. 45,962
Int. Cl.[4] G06K 9/44
U.S. Cl. 382—49 40 Claims



1. A cellular logic operation processor for performing a one-to-one transformation of all data points having various states in a first matrix into a corresponding number of data points that make up a second matrix, said processor comprising:
a plurality of series connected digital storage devices for temporarily storing a neighborhood of data points from the first matrix, wherein said neighborhood comprises a central data point and each data point which surrounds the central data point and wherein said plurality of series connected digital storage devices are arranged in rows such that the total area of the digital storage devices is small, compact and somewhat square in shape creating a four-sided area and wherein the digital storage devices to which a plurality of taps are electrically connected are positioned along the edge of one side of the four-sided, square-shaped area;
shifting means for shifting the data points through the digital storage devices to sequentially access each neighborhood in the first matrix;
a plurality of taps at various points along the digital storage devices wherein each tap is electrically connected to a digital storage device such that the tap electrically indicates the state of the data point temporarily stored therein;
look-up table storage means having stored therein a plurality of transformation values wherein each transformation value is individually addressable by a digital address, said look-up table storage means comprising;:
row storage means having a plurality of rows of memory locations each containing a transformation value,
row selector means which selects in response to a digital address a particular row of said row storage means, and
bit selector means which selects in response to a digital address a memory location from the row selected wherein said memory location contains a particular transformation value;
combining means for combining at least one of the taps to form, with said electrically indicated states, a portion of a digital address for application to the row selector means and said combining means combining the remaining taps to form the remaining portion of the digital address for application to the bit selector means, to access a particular transformation value, wherein said particular transformation value is output by said processor for placement in the second matrix as a transformation of the central data point of the currently accessed neighborhood of the first matrix;
chip select and address bus means for providing to the processor a digital address from a host computer and information from a host computer indicating that said processor is selected from a plurality of processors that are cascaded in a pipeline; and
address multiplexer mens for selectively providing to said row selector means a digital address from a host computer through said chip select and address bus means and a digital address from the combination of said taps through said combining means.

4,805,229
DIVERSITY COMBINER
J. Graham Mobley, Dunwoody, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.
Filed Jan. 9, 1987, Ser. No. 1,886
Int. Cl.[4] H04B 17/02
U.S. Cl. 455—138 14 Claims



1. A diversity combiner, comprising:
(a) a signal weighting section which provides differential and common mode weighting to signals from at least two channels and combines the signals to form a combined signal comprising:
(i) differential mode signal weighting means connected to each channel for receiving intermediate frequency signals from the channels and for adjusting the gain of each channel according to a function of the gains of the other channels; and
(ii) common mode signal weighting means connected to the differential mode signal weighting means for adjusting the gain of each channel to achieve a predetermined combiner output level; and
(b) a phase control section which receives signals for each channel which have been subjected to differential and common mode weighting in the weighting section and provides differential and common mode phase control to the signal comprising:
(i) differential mode phase control means connected to the differential mode signal weighting means and to each channel for adjusting the phase of each channel according to a function of the phases of the other channels; and
(ii) common mode phase control means connected to the common mode signal weighting means and to each channel for adjusting the phase of each channel according to a function of the phase of a reference signal.

4,805,230
TUNING METHOD
Yasushi Tanaka, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 25, 1987, Ser. No. 66,246
Claims priority, application Japan, Jun. 25, 1986, 61-148806
Int. Cl.[4] H04B 11/16, 1/16
U.S. Cl. 455—182 2 Claims

1. A method for selecting one of a plurality of television channels of different frequencies by a channel switch and

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adjusting the frequency of the channel selected by a shift switch, comprising the steps of:

(a) generating and coupling a first signal from the channel switch to a microcomputer in a tuning apparatus employing a frequency synthesizer system having a phase-locked loop circuit means including a programmable frequency divider;

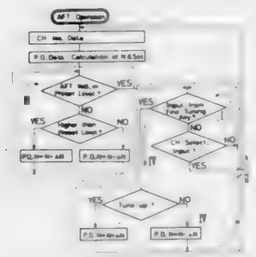
(b) setting-up a division ratio of the programmable frequency divider in response to the first signal by said microcomputer;

(c) generating and coupling a second signal from the shift switch to the microcomputer;

(d) varying the division ratio of the programmable divider in response to the second signal by said microcomputer;

(e) cyclically monitoring the presence or absence of the first and second signal by said microcomputer;

(f) repeating said setting-up step (b) when the first signal is detected as a result of said monitoring step



(g) and repeating said varying step (d) when the second signal is detected as a result of said monitoring step (e); and

wherein said setting-up step (b) further comprises,

a first step of calculating the division ratio in accordance with the first signal,

a second step of programming the calculated division ratio into the programmable frequency divider,

a third step of comparing a voltage corresponding to the frequency of the received channel with a predetermined level,

a fourth step of increasing the division ratio when the compared voltage is higher than the predetermined level, and

a fifth step of decreasing the division ratio when the compared voltage is lower than the predetermined value.

4,805,231

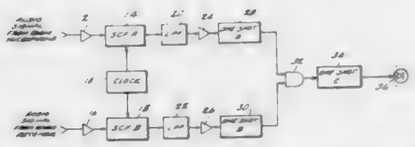
APPARATUS FOR DETECTING AN ELECTRONIC SURVEILLANCE DEVICE

Glenn H. Whidden, 13214 L'Enfant Dr., Fort Washington, Md. 20744

Filed Apr. 1, 1987, Ser. No. 32,609

Int. Cl.[4] H04B *17/00, 11/00*

U.S. Cl. 455—228 **23 Claims**



1. A device for detecting a covert electronic surveillance apparatus of the type which senses information in the audio frequency range and which includes a covert transmittter for generating electromagnetic signals modulated by said information, comprising:

a microphone for receiving audio signals in an area to be searched;

first means for passing signals in a predetermined bandwidth from said microphone;

a radio receiver for receiving and demodulating said electromagnetic signals from said covert electronic surveillance apparatus;

second means for passing signals in said predetermined bandwidth from said receiver; and

means for comparing the outputs of said first and second passing means to detect coincident outputs indicative of the presence of said covert electronic surveillance apparatus.

4,805,232

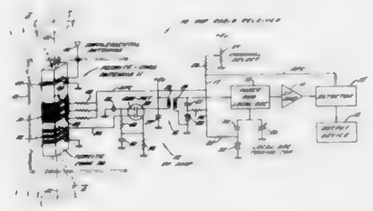
FERRITE-CORE ANTENNA

John Y. Ma, 499 Dundee Ave., Milpitas, Calif. 90535

Filed Jan. 15, 1987, Ser. No. 3,588

Int. Cl.[4] H04B *1/18;* **H01Q** *21/00*

U.S. Cl. 455—291 **20 Claims**



1. A tuned antenna for use in connection with a radio receiver for receiving an electromagnetic signal at a certain frequency, said antenna comprising an elongated ferromagnetic core having a longitudinal axis, a first coil comprising a predetermined number of turns of electrically conductive material disposed around said core, said first coil having a pair of terminals connected to a shunt capacitance, said shunt capacitance resonating with the inductance of said first coil at said frequency, and a second coil of electrically conductive material disposed around said core, wherein said second coil has a plurality of turns in excess of the number of turns of said first coil for connection to an input to said radio receiver.

4,805,233

ANTI-THEFT ARRANGEMENT FOR A SOUND-REPRODUCING APPARATUS INSTALLED INTO A MOUNTING COMPARTMENT OF A MOTOR VEHICLE

Peter Robitschko; Rudi Kneib, and Marko Polic, all of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

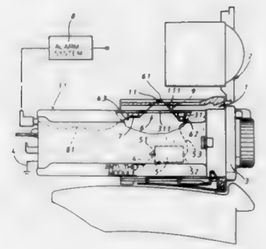
Filed Jun. 10, 1987, Ser. No. 60,315

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1986, 3619523

Int. Cl.[4] B60R *25/00*

U.S. Cl. 455—346 **9 Claims**

1. An anti-theft arrangement for a sound-reproducing apparatus including a housing means installed in a mounting compartment of a motor vehicle, the housing means for the sound-reproducing apparatus being electrically connected with ground, an anti-theft module means integrated into the sound-reproducing apparatus for disabling said sound-reproducing apparatus when activated, said anti-theft module means having a first input connected with ground and a second input operatively connected, in the installed condition of the sound-reproducing apparatus, with the housing means by a contact means of a contact element, and means for operatively connecting said second input of the anti-theft module means with positive potential for the activation of said anti-theft module means during unauthorized removal of the sound-reproducing apparatus and therewith during the ensuing interruption of the ground connection between the contact means and the housing means, the contact element being arranged with its contact means inside of the housing means and including an actuating means, only the actuating means protruding out of the housing



means, the actuating means, in the installed condition of the sound-reproducing apparatus, engaging from behind a shifting means for shifting said actuating means when said housing means moves relative to said mounting compartments, said shifting means being arranged in a gap between the housing means and the mounting compartment and arranged at the mounting compartment, the ground connection of the contact means to the housing means being interrupted during removal of the sound-reproducing apparatus by the actuating means.

4,805,234

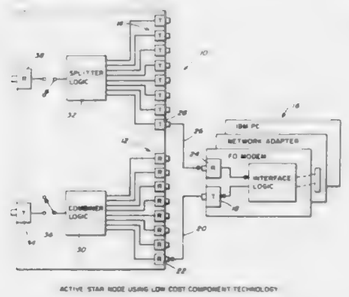
LOW COST FIBER OPTIC NETWORK NODE

Charles R. Husbands, Acton, Mass., assignor to The Mitre Corporation, Bedford, Mass.

Filed Sep. 30, 1986, Ser. No. 913,682

Int. Cl.[4] H04B *9/00*

U.S. Cl. 455—607 **2 Claims**



1. Optical node for interconnecting a plurality of user terminals comprising:

a plurality of optical receivers, each receiver connected by fiber optic means to one of the user terminals and producing an electrical output;

electronic means for combining the electrical output of the plurality of receivers;

a plurality of optical transmitters, each transmitter connected by fiber optic means to one of the user terminals;

electronic means for splitting the electrical output of the receivers for driving each of the transmitters,

an additional receiver and transmitter forming expansion port, and

means for selectively connecting said electronic combining means to either (i) said electronic splitting means for operation of said optical node in a head-end mode, or (ii) to the transmitter of said expansion port and connecting said receiver of said expansion port to said electronic splitting means for operation in a repeater mode.

4,805,235

OPTICAL TRANSMITTER COMPRISING AN OPTICAL FREQUENCY DISCRIMINATOR

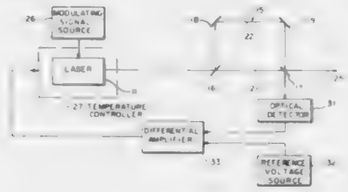
Naoya Henmi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 17, 1987, Ser. No. 15,705

Claims priority, application Japan, Feb. 17, 1986, 61-32284; May 2, 1986, 61-102417

Int. Cl.[4] H04B *9/00*

U.S. Cl. 455—608 **4 Claims**



1. An optical transmitter comprising:

a semiconductor laser responsive to a modulated injection current for generating an optical signal which includes a frequency modulated component;

an optical frequency discriminator responsive to said optical signal for converting said frequency modulated component to an intensity modulated component to produce an output optical beam which consists essentially of said intensity modulated component;

said modulated injection current being representative of mark and space codes, wherein said optical frequency discriminator produces said output optical beam with a high intensity for a predetermined one of said mark and said space codes and with a low intensity for the other of said mark and said space codes;

monitoring means for monitoring said output optical beam to produce an electric signal representative of a ratio of said low intensity to said high intensity; and

a negative feedback circuit responsive to said electric signal for controlling at least one of said semiconductor laser and said optical frequency discriminator to keep said ratio substantially at an optimum value;

wherein said frequency modulated component has a first frequency for said predetermined one of the mark and the space codes and a second frequency for said other of the mark and the space codes, wherein said optical frequency discriminator has a first transmissivity of about 90% for the frequency modulated component of said first frequency and a second transmissivity of substantially zero for the frequency modulated component of said second frequency, said optimum value being for keeping said first and said second transmissivities substantially at about 90% and at zero, and

said optical frequency discriminator producing an additional optical beam with a higher intensity for said predetermined one of the mark and the space codes than for said other of the mark and the space codes, wherein said monitoring means receives said additional optical beam for thereby monitoring said output optical beam to produce said electrical signal.

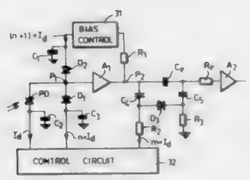
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4,805,236

METHOD AND ARRANGEMENT FOR INCREASING THE DYNAMIC RANGE AT AN INPUT STAGE OF AN OPTICAL RECEIVER

Reino Uusia, Vantaa, Finland, assignor to Oy Nokia Ab, Helsinki, Finland

Filed Dec. 15, 1986, Ser. No. 941,430
Int. Cl.[4] H04B 9/00
U.S. Cl. 455—619 3 Claims



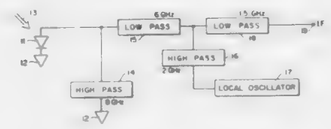
1. An arrangement for increasing the dynamic range at an input stage of an optical receiver, which input stage comprises a photodiode for detecting an optical signal and for generating a signal current proportional to said optical signal and comprising a dc component and an ac component, and an amplifying means an input of which is connected to one terminal of the photodiode, said arrangement comprising at least two forward biased semiconductor diodes connected to the point of connection between the photodiode and the input of the amplifying means in such a manner that the semiconductor diodes are connected in series with respect to the dc component of the signal current and in parallel with respect to the ac component of the signal current, so that a ratio of a value of the dc component of the signal current to a value of the ac component equals the number of said semiconductor diodes.

4,805,237

PARAMETRIC DIODE AMPLIFIER

David K. Donald, Mountain View; Shih-Yuan Wang; Tirumala R. Ranganath, both of Palo Alto; Steven A. Newton, Belmont; William R. Trutna, Atherton; David M. Bloom, Menlo Park, and Frank K. David, Santa Rosa, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 720,821, Apr. 8, 1985, abandoned. This application May 10, 1988, Ser. No. 191,729
Int. Cl.[4] H04B 9/00
U.S. Cl. 455—619 8 Claims



1. A photodetector for amplifying a carrier light signal of peak intensity P and carrier frequency f, said photodetector comprising:

a photodiode having a gap between its conduction and valence bands such that light of frequency f has sufficient energy to produce electron hole pairs, having a density D of photogenerated carriers when exposed to light of carrier frequency f and peak intensity P, and having a density d of nonphotogenerated carriers;

means for exposing a surface of said photodiode with light of carrier frequency f and of peak intensity P sufficiently large that the density D of photogenerated carriers in the region adjacent to said surface of the photodiode is on the order of or greater than the density d of nonphotogenerated carriers so that the curve of current versus voltage for the photodiode with no incident light intensity crosses, at a point O of voltage V_ϕ and current I_ϕ, over the curve of current versus voltage for the photodiode when incident light of intensity P and carrier frequency f is incident on said surface of the photodiode; and,

means for biasing the photodiode with a bias signal that at least part of the time is greater than the voltage V_ϕ of point O.

DESIGN PATENTS

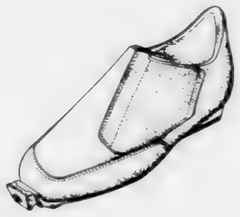
GRANTED FEB. 14, 1989

ERRATA

For CLASS	See PATENT NO.
D17-020	299,834

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299,780
SHOE FOR GROUND SKI
Pierre Copbet, Grenoble, France, assignor to Skis Rossignol Sa Club Rossignol Sa, Voiron, France
Filed Jun. 5, 1986, Ser. No. 871,611
Claims priority, application World Int. Prop. O., Dec. 5, 1985, DM/00 6198
Term of patent 14 years
U.S. Cl. D2—276

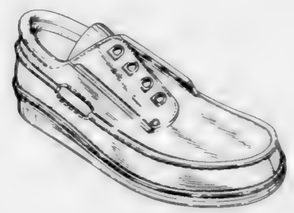


299,781
SHOE
Sophie Ross, 2184 East 66th St., Brooklyn, N.Y. 11234
Filed Jan. 13, 1986, Ser. No. 818,378
Term of patent 14 years
U.S. Cl. D2—284



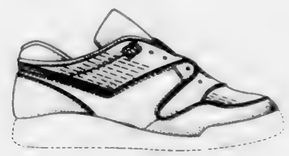


299,782
SHOE
Alfred D. Radford, Langport, England, assignor to Clarks Limited, Street, England
Filed Jul. 7, 1986, Ser. No. 882,832
Claims priority, application United Kingdom, Jan. 22, 1986, 1031750
Term of patent 14 years
U.S. Cl. D2—313





299,783
SHOE UPPER
Paul D. Brown, Hingham, and Juan A. Diaz, Weymouth, both of Mass., assignors to Reebok International Ltd., Canton, Mass.
Filed Jul. 15, 1988, Ser. No. 220,096
Term of patent 14 years
U.S. Cl. D2—314





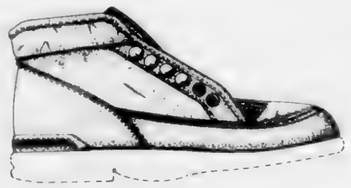
VOL 1099 ISS 2 FE 14 1989 UMI

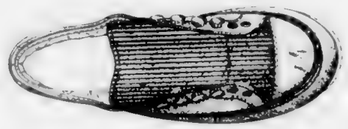
299,784
SHOE UPPER
Paul D. Brown, Hingham, Mass., and Tuan N. Le, New York, N.Y., assignors to Reebok International Ltd., Canton, Mass.
Filed Aug. 2, 1988, Ser. No. 227,323
Term of patent 14 years
U.S. Cl. D2—314





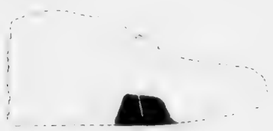
299,786
SHOE UPPER
Joan Swett, Portland, Oreg., assignor to AVIA Group International, Inc., Portland, Oreg.
Filed Aug. 22, 1988, Ser. No. 234,831
Term of patent 14 years
U.S. Cl. D2—314

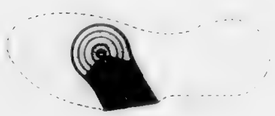




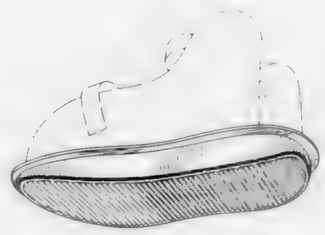


299,785
ELEMENT OF A SHOE SOLE
Juan A. Diaz, Weymouth, Mass., assignor to Reebok International Ltd., Canton, Mass.
Filed Aug. 3, 1988, Ser. No. 227,713
Term of patent 14 years
U.S. Cl. D2—314





299,787
SOLE FOR CAST SHOE
Norman R. Bates, 89 Niagara St., Unit 101, Toronto, Ontario, Canada (M5V 1C3)
Filed Mar. 28, 1986, Ser. No. 847,041
Term of patent 14 years
U.S. Cl. D2—319

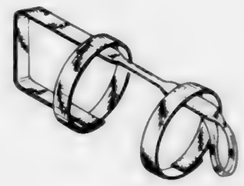


299,788
SHOE SOLE
Brenda Kelley, Beaverton, Oreg., assignor to AVIA Group International, Inc., Portland, Oreg.
Filed Feb. 18, 1988, Ser. No. 157,340
Term of patent 14 years
U.S. Cl. D2—320

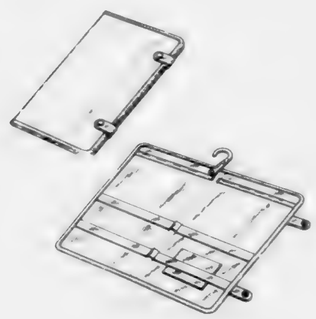




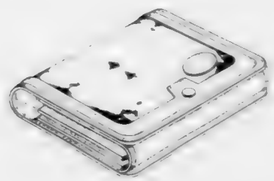
299,790
TANK CARRIER
Stephen M. Paul, 1875 Scott La., St. Paul, Minn. 55118
Filed Jul. 18, 1985, Ser. No. 756,438
The portion of the term of this patent subsequent to Oct. 15, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—36



299,789
NECKTIE CASE
John G. Merz, 32500 Hwy. 101, Gold Beach, Oreg. 97444
Filed Oct. 31, 1985, Ser. No. 793,651
Term of patent 14 years
U.S. Cl. D3—30.1

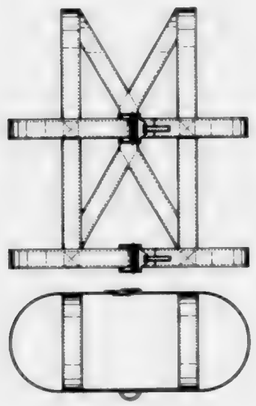


299,791
ORGANIZER
Thomas J. Bishop, Barrington, R.I., assignor to Saab-Scania of America, Inc., Orange, Conn.
Filed Nov. 27, 1985, Ser. No. 806,858
Term of patent 14 years
U.S. Cl. D3—58

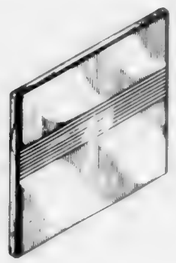


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299,792
GAME UTILITY HARNESS
Ronald H. Winter, Rte. #5, Box 53, Atoka, Okla. 74525
Filed Feb. 18, 1986, Ser. No. 834,048
Term of patent 14 years
U.S. Cl. D3—100



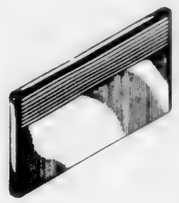
299,794
DIVIDER PANEL FOR AN OPERATOR WORKSTATION OR THE LIKE
Edmond J. Helstab, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed May 8, 1986, Ser. No. 862,428
Term of patent 14 years
U.S. Cl. D6—332



299,793
CAMOUFLAGE FABRIC
Thomas R. Yacovella, Utica, N.Y., assignor to Duxbak, Inc., Latherville, Md.
Filed Jan. 17, 1986, Ser. No. 820,422
Term of patent 14 years
U.S. Cl. D5—62



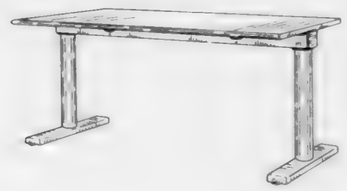
299,795
DIVIDER PANEL FOR AN OPERATOR WORKSTATION OR THE LIKE
Edmond J. Helstab, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed May 8, 1986, Ser. No. 862,429
Term of patent 14 years
U.S. Cl. D6—332

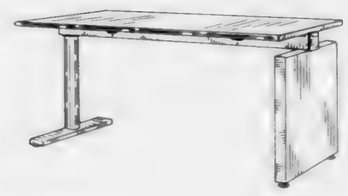


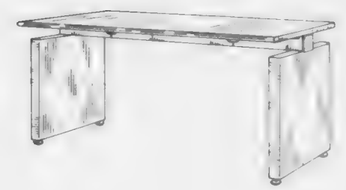
299,796
COMBINED COLLAPSIBLE PICNIC TABLE AND CARRIER FOR A COOLER
Richard White, 222 S. M St., Lake Worth, Fla. 33460
Filed Jul. 24, 1986, Ser. No. 888,988
Term of patent 14 years
U.S. Cl. D6—337



299,798
TABLE OR SIMILAR ARTICLE
Ettore Sottsass, and Michele De Lucchi, both of Milan, Italy, assignors to Olivetti Synthesis, S.p.A., Ivrea, Italy
Filed Mar. 18, 1986, Ser. No. 845,001
Claims priority, application Italy, Sep. 18, 1985, 53806/85[U]
Term of patent 14 years
U.S. Cl. D6—484







299,797
DISPLAY STAND
Herbert Walter, Mullheim/Zanzigen, Fed. Rep. of Germany, assignor to Fehlbaum & Co, Riehen, Switzerland
Filed Jun. 29, 1987, Ser. No. 67,689
Claims priority, application Int'l Pat. Institute, Dec. 29, 1986, DM007981
Term of patent 14 years
U.S. Cl. D6—479



299,799
CHAIR ARM
Wolfgang Muller-Deisig, Natzungen, Fed. Rep. of Germany; David C. Jenkins; Terry D. West, both of Grand Rapids, Mich., and Zooey C. Chu, Holland, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 818,678, Jan. 14, 1986. This application May 15, 1986, Ser. No. 863,675
Term of patent 14 years
U.S. Cl. D6—500



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299,800
PLATE
Eiji Natori, Konosu, Japan, assignor to Chuo Kagaku Kabushiki Kaisha, Saitama, Japan
Filed Jun. 24, 1986, Ser. No. 878,099
Claims priority, application Japan, Dec. 28, 1985, 60-54229
Term of patent 14 years
U.S. Cl. D7—1



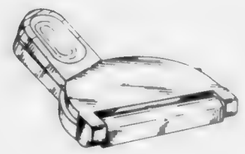
299,801
INSULATED COVERED BOWL
Hugo Bastodos, 6510 Elmquist Ave., Whittier, Calif. 90601
Filed Feb. 24, 1986, Ser. No. 834,872
Term of patent 14 years
U.S. Cl. D7—17



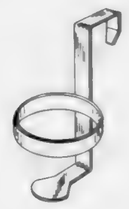
299,802
DONUT ICING DEVICE
William E. Nelson, 3645 Arkansas, St. Louis, Mo. 63118
Filed Mar. 23, 1984, Ser. No. 592,875
Term of patent 14 years
U.S. Cl. D7—43



299,803
LEMON SQUEEZER
Yip C. I. Chow, Wanchai, Hong Kong, assignor to Mike & Kremmel Limited, Kowloon, Hong Kong
Filed Jan. 10, 1986, Ser. No. 818,300
Claims priority, application United Kingdom, Jul. 19, 1985, 1028012; Dec. 9, 1985, 1030990
Term of patent 14 years
U.S. Cl. D7—48



299,804
BEVERAGE CONTAINER HOLDER
Richard F. Normandin, 102 Emmons Blvd., Wyandotte, Mich. 48192
Filed Apr. 14, 1986, Ser. No. 851,671
Term of patent 14 years
U.S. Cl. D7—70



299,805
UTENSIL CADDY
Eldon T. Pifher, 5067 Sheetz Rd., New Washington, Ohio 44854
Filed Jun. 27, 1986, Ser. No. 879,558
Term of patent 14 years
U.S. Cl. D7—73





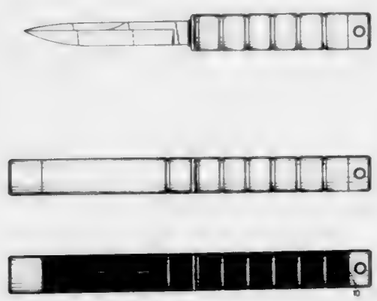
299,806
SALAD SERVER
Furio Minuti, Macerata, Italy, assignor to Fratelli Guzzini S.p.A., Recanati, Italy
Filed Jan. 16, 1986, Ser. No. 819,504
Claims priority, application Italy, Jul. 22, 1985, 22568/85[U]
Term of patent 14 years
U.S. Cl. D7—138



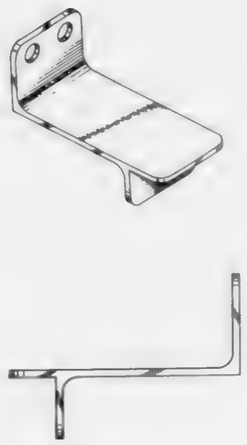


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299,807
COMBINED KNIFE AND SHEATH
Minoru Sawa, Seki, Japan, assignor to Kinryu Cutlery Mfg. Co., Ltd., Seki, Japan
Filed Mar. 25, 1986, Ser. No. 847,050
Term of patent 14 years
U.S. Cl. D7—151



299,809
WORKBENCH SUPPORT HOLDER FOR AUTOMOTIVE ENGINE MEMBERS OR SIMILAR ARTICLE
Manfred R. Hagedorn, 5161 Lolina La., Cypress, Calif. 90630
Filed Jul. 12, 1985, Ser. No. 754,082
Term of patent 14 years
U.S. Cl. D8—373



299,808
ELECTRIC DRILL
Kiyoshi Hoshino, Tokyo, and Shumi Akazawa, Fuchu, both of Japan, assignors to Ryobi Limited, Tokyo, Japan
Division of Ser. No. 750,867, Jul. 1, 1985, Pat. No. Des. 296,413.
This application Feb. 26, 1988, Ser. No. 160,846
Claims priority, application Japan, Jan. 24, 1985, 60-2290; Jan. 24, 1985, 60-2291
Term of patent 14 years
U.S. Cl. D8—68



299,810
AEROSOL CAN
David Trickett, Cottingham, Near Hull, United Kingdom, assignor to Haventrail Limited, South Humberside, United Kingdom
Filed Oct. 29, 1985, Ser. No. 792,463
Claims priority, application United Kingdom, Apr. 29, 1985, 1026477
Term of patent 14 years
U.S. Cl. D9—300



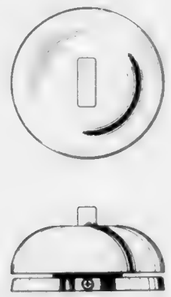
299,811
WATCH CASE WITH BAND
Shigeru Tsuksi, Kanagawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Feb. 13, 1986, Ser. No. 834,015
Claims priority, application Japan, Oct. 15, 1985, 60-43214
Term of patent 14 years
U.S. Cl. D10—32



299,812
ELECTRONIC THERMOMETER
Hiroshi Sakaguchi, and Yoko Ikunawa, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Nov. 19, 1986, Ser. No. 932,909
Claims priority, application Japan, May 20, 1986, 61-19498
Term of patent 14 years
U.S. Cl. D10—57



299,813
COMBINED BELL AND LAMP
Tatsuya Arai, Kitamoto, Japan, assignor to Kobishi Electric Co., Ltd., Japan
Filed Sep. 9, 1985, Ser. No. 773,823
Claims priority, application Japan, Aug. 30, 1985, 60-36765
The portion of the term of this patent subsequent to Jan. 12, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—116



299,814
JEWELRY CHAIN
Kosaburo Nakagawa, Ichikawa, Japan, assignor to Nakagawa Corporation, Tokyo, Japan
Filed Aug. 12, 1985, Ser. No. 764,702
Term of patent 14 years
U.S. Cl. D11—12

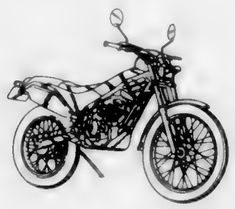


299,815
RING
Jeffrey H. Shapiro, Lawrence, N.Y., assignor to A.B.L. Jewelers, Inc., New York, N.Y.
Filed Mar. 5, 1987, Ser. No. 22,347
Term of patent 14 years
U.S. Cl. D11—35



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299,816
MOTORCYCLE
Takashi Maruyama, and Masahiro Shimoda, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 22, 1986, Ser. No. 857,545
Claims priority, application Japan, Oct. 24, 1985, 60-44755
Term of patent 14 years
U.S. Cl. D12—110



299,818
BICYCLE REAR RACK
James R. Blackburn, Los Gatos, Calif., assignor to Jim Blackburn Designs, Inc., Campbell, Calif.
Filed Jun. 11, 1986, Ser. No. 873,320
Term of patent 14 years
U.S. Cl. D12—158



299,819
GUARD FOR PREVENTING AUTOMOBILE DENTS
Martin A. Katz, and Timothy L. Corsini, both of Los Angeles, Calif., assignors to Kraco Enterprises, Inc., Los Angeles, Calif.
Filed Jun. 30, 1986, Ser. No. 880,485
Term of patent 14 years
U.S. Cl. D12—167



299,817
COLLAPSIBLE VEHICULAR TENT
Herbert A. Wolcott, and Carol A. Feldman, both of 103 N. Bond, Dallas, Tex. 75211
Filed Nov. 28, 1986, Ser. No. 936,021
Term of patent 14 years
U.S. Cl. D12—156



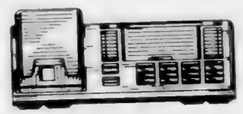
299,820
SAILBOARD BOOM GRIP
Alex Viera, 128 Nevada St., Santa Cruz, Calif. 95060
Filed Jan. 16, 1986, Ser. No. 819,798
Term of patent 14 years
U.S. Cl. D12—317



299,821
POWER AND UTILITY DISTRIBUTION PEDESTAL FOR BOATS AND RECREATIONAL VEHICLES
Robert C. Dively, Williamsburg, Va., assignor to Sea Technology, Ltd., Gloucester, Va.
Filed Nov. 12, 1985, Ser. No. 805,130
Term of patent 14 years
U.S. Cl. D13—31



299,823
KEY TELEPHONE SET
Akiyoshi Hattori, Kawasaki, Japan, assignor to Nitsuko Corporation, Kawasaki, Japan
Filed Jun. 17, 1987, Ser. No. 63,287
Claims priority, application Japan, Dec. 17, 1986, 61-49688
Term of patent 14 years
U.S. Cl. D14—151

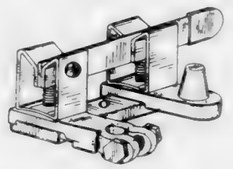




299,824
PORTABLE PROJECTION TELEVISION
Benjamin Butler, Rockville, and LeRoy S. Girson, Clarksburg, both of Md., assignors to Theatervision, Inc., Rockville, Md.
Filed Jan. 3, 1986, Ser. No. 816,112
Term of patent 14 years
U.S. Cl. D14—128



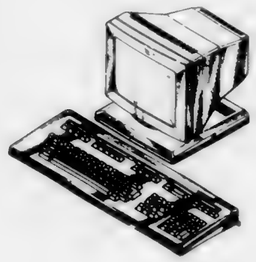
299,822
BATTERY DISCONNECT SWITCH
Wesley H. Constable, Becker; Roger W. Jensen, and Steven E. Wirth, both of Bloomington, all of Minn., assignors to J. F. Wirth and Sons, Inc., Minneapolis, Minn.
Filed Nov. 7, 1985, Ser. No. 803,939
Term of patent 14 years
U.S. Cl. D13—32



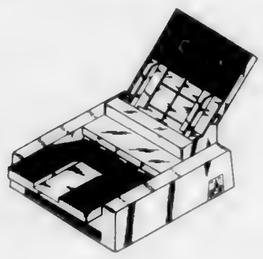


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299,825
VIDEO DISPLAY TERMINAL
Robert G. Dickie, New Market, Canada, assignor to Northern Telecom Technologies Ltd., Markham, Canada
Continuation-in-part of Ser. No. 711,933, Mar. 15, 1985. This application Feb. 18, 1986, Ser. No. 833,774
Term of patent 14 years
U.S. Cl. D14—106



299,826
IMAGE SCANNER
Haruhiko Takahashi, Tokyo, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 22, 1986, Ser. No. 922,989
Claims priority, application Japan, May 2, 1986, 61-16405
Term of patent 14 years
U.S. Cl. D14—107

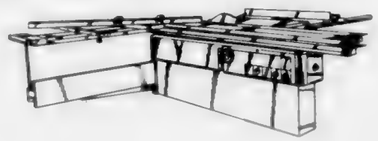


299,827
FUEL DISPENSING PUMP
Timothy K. Crum, Fort Wayne, and L. Robert Overy, Garrett, both of Ind., assignors to Tokheim Corporation, Fort Wayne, Ind.
Filed Oct. 16, 1985, Ser. No. 788,038
Term of patent 14 years
U.S. Cl. D15—9.1



299,828
INCLINED BED TURNING MACHINE
Peter Kroathaler, Österreich, Austria, assignor to Maier & Co., Austria
Filed Jul. 1, 1986, Ser. No. 881,015
Claims priority, application Austria, Feb. 28, 1986, 1763/86
Term of patent 14 years
U.S. Cl. D15—130

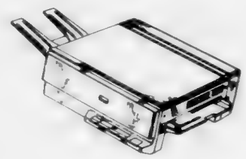
299,829
SLOPING SAWMILL
Giuseppe Gemmani, Rimini, Italy, assignor to SCM S.p.A., Italy
Filed Dec. 16, 1986, Ser. No. 942,590
Claims priority, application Italy, Jul. 4, 1986, 4923/86[U]
Term of patent 14 years
U.S. Cl. D15—133



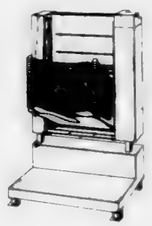
299,830
RESISTOR SORTING MACHINE
Liao Chung-Hui, 16, Lane 627, Chung Hsin Road, Sec. 5, San Chung City, Taipei, Hsien, Taiwan
Filed Jun. 6, 1986, Ser. No. 871,626
Term of patent 14 years
U.S. Cl. D15—147



299,831
ELECTROPHOTOGRAPHIC COPIER
Tomohiko Hirata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 30, 1986, Ser. No. 824,179
Claims priority, application Japan, Aug. 2, 1985, 60-33073
Term of patent 14 years
U.S. Cl. D18—37



299,832
SORTER ATTACHMENT FOR COPYING MACHINE
Kunio Hara, Chiba, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 31, 1986, Ser. No. 847,546
Claims priority, application Japan, Oct. 18, 1985, 60-43538
Term of patent 14 years
U.S. Cl. D18—42



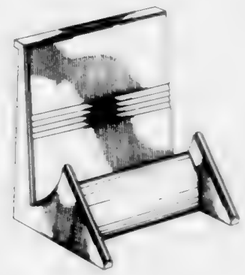
299,833
ORIGINAL FEEDER FOR A COPYING MACHINE
Tomohiko Hirata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 14, 1986, Ser. No. 863,401
Claims priority, application Japan, Nov. 15, 1985, 60-48024
Term of patent 14 years
U.S. Cl. D18—42



299,834
GUITAR BODY
Margo Clark, 12203 Wheeling Ave., Upper Marlboro, Md. 20772
Filed Dec. 20, 1986, Ser. No. 946,296
Term of patent 14 years
U.S. Cl. D17—20

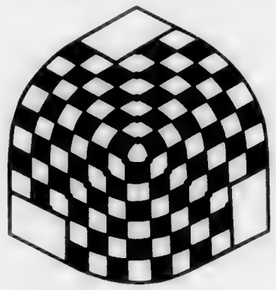


299,835
PAPER RECEIVING TRAY
J. D. Atwell, 144 West Erie, Tempe, Ariz. 85282
Filed Jul. 12, 1985, Ser. No. 754,248
Term of patent 14 years
U.S. Cl. D19—91

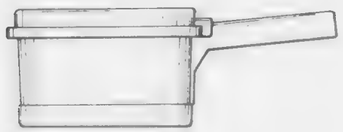


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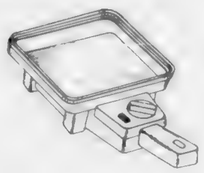
299,836
THREE-WAY CHESS AND CHECKER GAMEBOARD
Steven F. Kropfl, 34 Chestnut St., Murray Hill, N.J. 07974
Filed Jan. 10, 1986, Ser. No. 817,571
Term of patent 14 years
U.S. Cl. D21—24



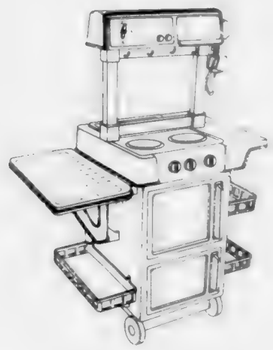
299,837
TOY SAUCEPAN
Craig J. McElhaney, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 15, 1986, Ser. No. 919,486
Term of patent 14 years
U.S. Cl. D21—109



299,838
TOY FRYING PAN
Craig J. McElhaney, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 15, 1986, Ser. No. 919,487
Term of patent 14 years
U.S. Cl. D21—109



299,839
KITCHEN TOY
Augusto Argandona, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 17, 1986, Ser. No. 920,853
Term of patent 14 years
U.S. Cl. D21—122



299,840
DOLL
Michelle Brosan, 447 N. Wellwood Ave., Lindenhurst, N.Y. 11757
Filed Nov. 18, 1985, Ser. No. 805,561
Term of patent 14 years
U.S. Cl. D21—173

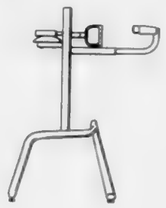


299,841
HAND OPERATED EXERCISE BIKE
Hugo Rubio, 11952 Ragner St., North Hollywood, Calif. 91605
Filed Jul. 3, 1986, Ser. No. 881,723
Term of patent 14 years
U.S. Cl. D21—194

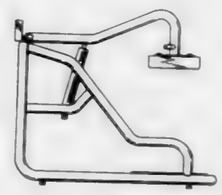




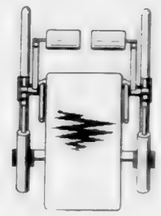
299,842
FOREARM CONDITIONER
Jerry D. Bretham, P.O. Box 599, Belton, Tex. 76513
Filed Nov. 4, 1986, Ser. No. 926,786
Term of patent 14 years
U.S. Cl. D21—195



299,843
JUMP-SQUAT EXERCISER
Jerry D. Bretham, P.O. Box 599, Belton, Tex. 76513
Filed Nov. 4, 1986, Ser. No. 926,788
Term of patent 14 years
U.S. Cl. D21—195



299,844
UNILATERAL HAMSTRING EXERCISER
Jerry D. Bretham, P.O. Box 599, Belton, Tex. 76513
Filed Nov. 4, 1986, Ser. No. 926,789
Term of patent 14 years
U.S. Cl. D21—195

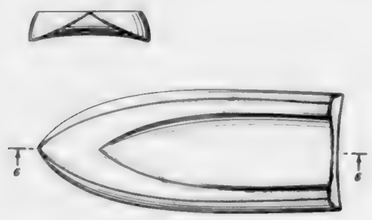


299,845
GAME FOOTBAG
Reed J. Gray, 1118 Lorane Hwy., Eugene, Oreg. 97405
Filed Feb. 13, 1984, Ser. No. 579,345
Term of patent 14 years
U.S. Cl. D21—204

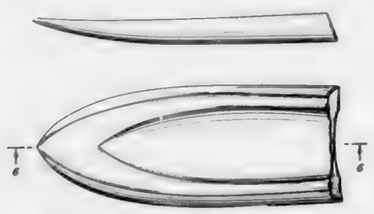


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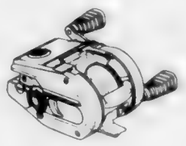
299,846
BODYSURFING BOARD
Dennis A. Shanelec, 1515 State St., Suite #1, Santa Barbara, Calif. 93101
Filed Jan. 22, 1987, Ser. No. 5,970
Term of patent 14 years
U.S. Cl. D21—228



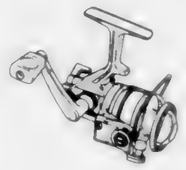
299,847
BODYSURFING BOARD
Dennis A. Shanelec, 1515 State St., Suite #1, Santa Barbara, Calif. 93101
Filed Jan. 22, 1987, Ser. No. 6,027
Term of patent 14 years
U.S. Cl. D21—228



299,848
FISHING REEL
Etsuo Hiraishi, and Terukiss Numata, both of Tokyo, Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Dec. 9, 1986, Ser. No. 939,937
Claims priority, application Japan, Aug. 27, 1986, 61-33780
Term of patent 14 years
U.S. Cl. D22—140



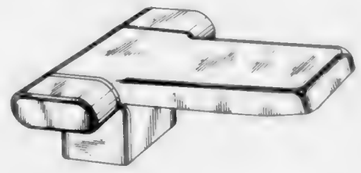
299,849
FISHING REEL
Tetsuyuki Doi, Hiroshima, and Etsuo Hiraishi, Tokyo, both of Japan, assignors to Ryobi Ltd, Hiroshima, Japan
Filed Nov. 19, 1986, Ser. No. 932,994
Claims priority, application Japan, Jun. 18, 1986, 61-23820
Term of patent 14 years
U.S. Cl. D22—141



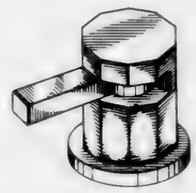
299,850
DUAL SHOWER HEAD UNIT
Steve Feher, 1909 Aleo Pl., Honolulu, Hi. 96822, and Suresh C. Jhaveri, 345 S. Queen, Honolulu, Hi. 96814
Filed May 5, 1986, Ser. No. 859,766
Term of patent 14 years
U.S. Cl. D23—229



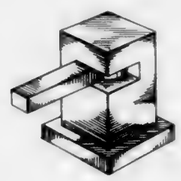
299,851
FAUCET
Manfred Rademscher, Freiligrathstrasse, 4 Düsseldorf, Fed. Rep. of Germany
Filed Dec. 11, 1986, Ser. No. 943,571
Term of patent 14 years
U.S. Cl. D23—241



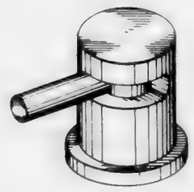
299,852
HANDLE FOR PLUMBING FITTING
Stanley M. Paul, Rye, N.Y., assignor to Paul Associates, Inc., Long Island City, N.Y.
Filed Aug. 13, 1986, Ser. No. 896,745
Term of patent 14 years
U.S. Cl. D23—252



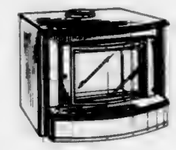
299,853
HANDLE FOR PLUMBING FITTING
Stanley M. Paul, Rye, N.Y., assignor to Paul Associates, Inc., Long Island City, N.Y.
Filed Aug. 13, 1986, Ser. No. 896,746
Term of patent 14 years
U.S. Cl. D23—252



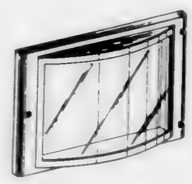
299,854
HANDLE FOR PLUMBING FITTING
Stanley M. Paul, Rye, N.Y., assignor to Paul Associates, Inc., Long Island City, N.Y.
Filed Aug. 13, 1986, Ser. No. 896,747
Term of patent 14 years
U.S. Cl. D23—252



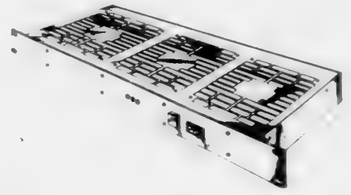
299,855
STOVE
Thomas E. Mowrey, Blissfield, Mich., assignor to Derco, Inc., Blissfield, Mich.
Filed Jan. 1, 1987, Ser. No. 56,535
Term of patent 14 years
U.S. Cl. D23—343



299,856
STOVE DOOR
Thomas E. Mowrey, Blissfield, Mich., assignor to Derco, Inc., Blissfield, Mich.
Filed Jan. 1, 1987, Ser. No. 56,737
Term of patent 14 years
U.S. Cl. D23—347

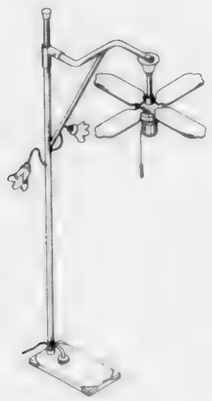


299,857
COOLING FAN ASSEMBLY HOUSING FOR ELECTRICAL EQUIPMENT
Richard J. Marchetti, 2532 Park View Dr., Norristown, Pa. 19403
Filed Apr. 17, 1986, Ser. No. 852,929
Term of patent 14 years
U.S. Cl. D23—370

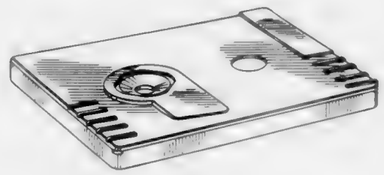


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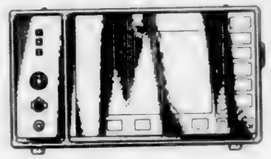
299,858
PORTABLE CEILING FAN
Leslie Davis, 4309 Toliver, Houston, Tex. 77016
Filed Aug. 6, 1987, Ser. No. 82,424
Term of patent 14 years
U.S. Cl. D23—379



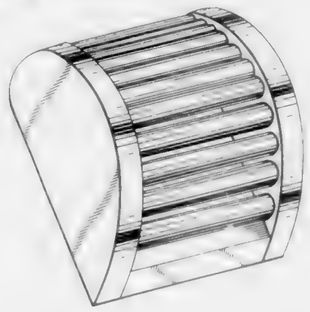
299,860
REACTION UNIT FOR USE IN ANALYZING BIOLOGICAL FLUIDS
Eugene Fan, La Jolla; Fou-Chiu M. Chen, and Siu-Yin Wong, both of San Diego, all of Calif., assignors to Pacific Biotech, Inc., San Diego, Calif.
Filed Sep. 2, 1986, Ser. No. 903,106
Term of patent 14 years
U.S. Cl. D24—17



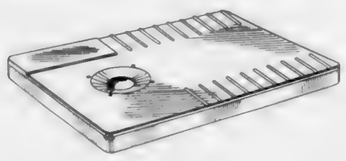
299,861
MEDICAL MONITOR
James Hunsdale, Bothell, and Michael G. Lee, Redmond King, both of Wash., assignors to SpaceLabs, Inc., Bothell, Wash.
Filed Nov. 19, 1986, Ser. No. 932,539
Term of patent 14 years
U.S. Cl. D24—17



299,862
COMBINED HAND AND FOOT MASSAGER
James E. Norrid, 33 Longview Dr., Bryan, Tex. 77802
Filed Feb. 17, 1983, Ser. No. 467,408
The portion of the term of this patent subsequent to Nov. 14, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—36



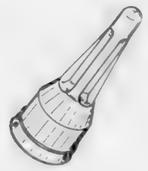
299,859
REACTION UNIT FOR USE IN ANALYZING BIOLOGICAL FLUIDS
Eugene Fan, La Jolla; Fou-Chiu M. Chen, and Siu-Yin Wong, both of San Diego, all of Calif., assignors to Pacific Biotech, Inc., San Diego, Calif.
Filed Sep. 2, 1986, Ser. No. 903,106
Term of patent 14 years
U.S. Cl. D24—17



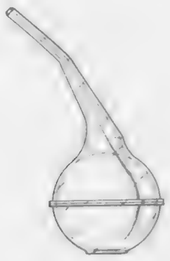
299,863
BODY MASSAGER
Edward D. Noble, Willowdale, and Peter Welch, Toronto, both of Canada, assignors to Wellness Innovations Corp., Markham, Canada
Filed Jun. 25, 1986, Ser. No. 878,531
Claims priority, application Canada, Dec. 31, 1985, 31-12-85-1
Term of patent 14 years
U.S. Cl. D24—41



299,865
APPLICATOR EMBALLAGE FOR AN EXTERNAL CATHETER FOR USE IN MALE URINARY INCONTINENCE EQUIPMENT
Jorgen Kamstrup-Larsen, Allerod, and Michael Morris, Copenhagen, both of Denmark, assignors to Coloplast A/S, Denmark
Filed Mar. 21, 1986, Ser. No. 845,418
Claims priority, application Denmark, Sep. 24, 1985, 817/85
Term of patent 14 years
U.S. Cl. D24—54



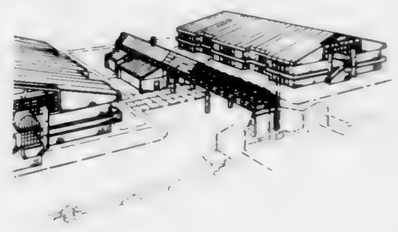
299,866
ORAL PHARYNGIC ASPIRATOR
Lonnie D. Alexander, 11833 Harvester, Moorpark, Calif. 93021
Filed Sep. 9, 1986, Ser. No. 905,994
Term of patent 14 years
U.S. Cl. D24—60



299,864
ELECTRO-THERAPEUTIC APPLICATOR FOR USE WITH AN ELECTRONIC CIRCUIT TO LOCATE AND STIMULATE ACUPUNCTURE POINTS
Ronnie H. Colsen, and Alexandre V. Kairis, both of Tokyo, Japan, assignors to Waco Trading Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 825,919, Feb. 4, 1986, Pat. No. 4,694,840, which is a continuation-in-part of Ser. No. 601,167, Apr. 17, 1984, abandoned. This application Nov. 12, 1986, Ser. No. 930,378
Term of patent 14 years
U.S. Cl. D24—41

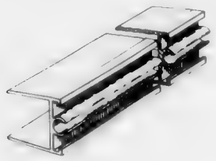


299,867
HOTEL
Jeffrey L. Catherik; Robert R. Chase, and Milosay Cekic, all of Austin, Tex., assignors to AmeriSuites, Inc., Austin, Tex.
Filed Dec. 9, 1985, Ser. No. 806,390
Term of patent 14 years
U.S. Cl. D25—1

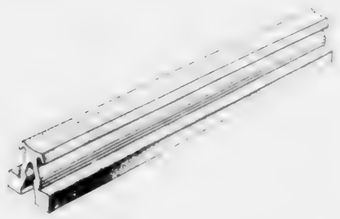


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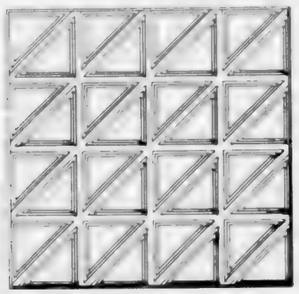
299,868
EXTRUDED MOULDING
Guy Fortier, 100 Chemin des Patriotes, Nord, ST-St-Hilaire, Quebec, Canada (J3H 3H1)
Filed Apr. 23, 1986, Ser. No. 857,455
Term of patent 14 years
U.S. Cl. D25—119



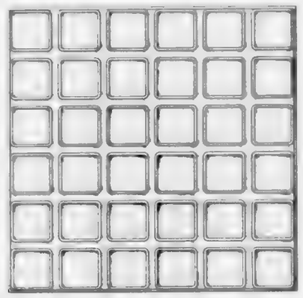
299,869
WINDOW GASKET
Francis W. Green, Niles, Mich., assignor to Shaffner Associates, Inc., South Bend, Ind.
Filed Aug. 21, 1986, Ser. No. 898,420
Term of patent 14 years
U.S. Cl. D25—123



299,870
CEILING TILE
Michael W. Jennings, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Mar. 27, 1986, Ser. No. 846,991
Term of patent 14 years
U.S. Cl. D25—157



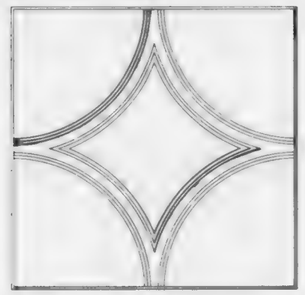
299,871
CEILING TILE
Michael W. Jennings, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Mar. 27, 1986, Ser. No. 846,992
Term of patent 14 years
U.S. Cl. D25—157



299,872
CEILING TILE
Michael W. Jennings, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Mar. 27, 1986, Ser. No. 846,994
Term of patent 14 years
U.S. Cl. D25—157



299,873
CEILING TILE
Michael W. Jennings, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Mar. 27, 1986, Ser. No. 846,995
Term of patent 14 years
U.S. Cl. D25—157



299,874
HAIR DRIER
Masafumi Yanagami; Koji Nishida, and Keiko Matoba, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Apr. 6, 1987, Ser. No. 35,136
Claims priority, application Japan, Oct. 8, 1986, 61-39688
Term of patent 14 years
U.S. Cl. D28—13





299,875
MANICURE STONE
Frank J. Lang, Lemont Rd., Lemont, Ill. 60439
Filed Jun. 30, 1986, Ser. No. 880,619
Term of patent 14 years
U.S. Cl. D28—57



299,876
LIPSTICK
Monika Gebhart, Kurfurstenstrasse 20, D-8000 Munchen 40, Fed. Rep. of Germany
Filed Dec. 16, 1985, Ser. No. 809,932
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1985, 11AR631/85
Term of patent 14 years
U.S. Cl. D28—87



299,877
FALSE FINGER NAIL HOLDER
Alma Riley, 110 West End Ave., New York, N.Y. 10023
Filed Sep. 19, 1986, Ser. No. 909,423
Term of patent 14 years
U.S. Cl. D28—61



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299,878
COMBINED ARTIFICIAL FINGERNAIL TIP SELECTOR GUIDE AND SUPPORT AND DISPLAY
Claire Wieniaw, Wilton, Conn., assignor to Zotos International, Inc., Darien, Conn.
Filed May 12, 1986, Ser. No. 862,550
Term of patent 14 years
U.S. Cl. D28—99



299,879
COMBINED WASTE BIN AND SEAT
Frank C. Pickering, Derwentside, United Kingdom, assignor to Spone-A-Tee Limited, Durham City, England
Filed Feb. 7, 1986, Ser. No. 827,769
Claims priority, application United Kingdom, Aug. 14, 1985, 1028607
Term of patent 14 years
U.S. Cl. D34—1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF FEBRUARY, 1989

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

: *See*—
Murphy, Robert J.; and , 4,804,179, Cl. 272-117.000.

A. B. Chance Company: *See*—
Thompson, Parke, Jr.; Beard, Lloyd R.; and Goe, Melvin B., Jr., 4,804,809, Cl. 200-17.00R.

A. E. Staley Manufacturing Company: *See*—
Urfer, Allen D.; and Howell, Gail M., 4,804,497, Cl. 252-8.800.

A. H. Robins Company, Incorporated: *See*—
Corrigan, Eugene J.; and Atkinson, Earl R., Jr., 4,803,956, Cl. 119-106.000.

A/S Ferrosan: *See*—
Lassen, Jorgen B., 4,804,669, Cl. 514-326.000.

AB Scaniainventor: *See*—
Siwersson, Olle L.; Wall, Arne E.; and Loodberg, Jan A. T., 4,803,932, Cl. 110-260.000.

Abe, Akira: *See*—
Nishikawa, Toshihiro; and Abe, Akira, 4,804,617, Cl. 430-393.000.

Abe, Fumiyoshi: *See*—
Yamanaka, Masaki; and Abe, Fumiyoshi, 4,805,053, Cl. 360-72.300.

Abe, Kiyoto: *See*—
Nasu, Masahiro; and Abe, Kiyoto, 4,805,047, Cl. 360-65.000.

Abe, Teruyoshi: *See*—
Kawano, Masaki; Ogura, Kumiaki; Abe, Teruyoshi; and Takajo, Shigeaki, 4,804,409, Cl. 75-246.000.

Abou-Gharbia, Magid A., to American Home Products Corporation. Polycyclic hydrocarbon succiniimides with psychotropic activity. 4,804,751, Cl. 540-575.000.

Abrams, Jack Z.; Benz, August D.; Awerbuch, Leon; Zaczek, Stanley J.; and Haidinger, John, to Bechtel Group, Incorporated. Use of seawater in flue gas desulfurization. 4,804,523, Cl. 423-242.000.

Abt, John, to Grass Valley Group, Inc., The. Digital wipe generator. 4,805,022, Cl. 358-183.000.

Acher, Jacques; and Monier, Jean-Claude, to Societe D'Etudes Scientifiques et Industrielles de L'Ile-d-France. Process for synthesizing N-[(1'-allyl-2'pyrrolidinyl) methyl]2-methoxy-4,5-azimidobenzamide. 4,804,765, Cl. 548-259.000.

Ackeret, Peter, to IDN Inventions and Development of Novelties AG. Device for storing flat recording media. 4,804,085, Cl. 206-309.000.

Ackerman, Dean C.: *See*—
Sherrick, Ronald E.; Ackerman, Dean C.; Draxton, Dean E.; Matthews, John C.; Smith, Don W.; and Stevens, John G., 4,803,959, Cl. 122-379.000.

Ackermann, Frank; Wollermann-Windgasse, Reinhard; and Faller, Bernd, to Trumpf GmbH & Co. Device for coupling HF energy to lasers. 4,805,072, Cl. 361-328.000.

Ackman, Gregory. Heavy duty mounting base. 4,804,973, Cl. 343-888.000.

Acrison, Inc.: *See*—
Ricciardi, Ronald J.; and Bober, Mark, 4,804,111, Cl. 222-77.000.

Acrodyne Industries, Inc.: *See*—
Hulick, Timothy P., 4,804,931, Cl. 332-31.00R.

Acushnet Company: *See*—
Gobush, William, 4,804,189, Cl. 273-232.000.

Adachi, Susumu; and Kamegawa, Masayuki, to Shimadzu Corporation. Low-noise arrayed sensor radiation image detecting system wherein each sensor connects to a buffer circuit. 4,804,854, Cl. 250-578.000.

Adams, Christopher J.: *See*—
Leslie, Ian M.; Burren, Walter J.; Pitura, Henry; Tennenhouse, David L.; and Adams, Christopher J., 4,805,167, Cl. 370-84.000.

Adams, L. Jane: *See*—
Weaver, Max A.; and Adams, L. Jane, 4,804,719, Cl. 525-420.000.

Adams, Theodore J.; and Crowell, Burton W. Fishing boat back rest and post mount. 4,803,945, Cl. 114-363.000.

Adeka Argus Chemical Co., Ltd.: *See*—
Shibata, Toshihiro; and Kurosawa, Norio, 4,804,759, Cl. 544-335.000.

Adell, Robert, to U.S. Products Development Company. End cap for door edge guard. 4,803,810, Cl. 49-462.000.

Adiletta, Matthew J.; and Lamere, Virginia C., to Digital Equipment Corporation. BCD adder circuit. 4,805,131, Cl. 364-783.000.

Adkins, Robert A.: *See*—
Calfee, Richard V.; Adkins, Robert A.; Alt, Eckhard U.; and Baker, Ross G., Jr., 4,803,987, Cl. 128-419.0PG.

Adolph Coors Company: *See*—
Moen, Bruce A., 4,804,104, Cl. 220-269.000.

Adolph Saurer AG: *See*—
Schreiber, Max; and Kobler, Armin, 4,803,941, Cl. 112-83.000.

Advanced Micro Devices, Inc.: *See*—
Norris, David, 4,805,139, Cl. 365-78.000.
Sokolovsky, Paul J.; and Anderson, Chuck, 4,804,172, Cl. 269-254.00R.
Tam, Aloysius; Wong, Thomas S.; Wang, David; and Naren, David, 4,805 149, Cl. 365-155.000.
Tan, H. Wayne; Tran, Danh C.; and McGreevy, Walter, 4,803,828, Cl. 53-390.000.
Walters, Donald M., Jr., 4,804,871, Cl. 307-530.000.

AE PLC: *See*—
Hepworth, William J.; and Bolton, Albert E., 4,804,033, Cl. 164-97.000.

Aerojet-General Corporation: *See*—
Washburn, William J., 4,803,927, Cl. 102-434.000.

Aerospace Corporation, The: *See*—
Halle, Linda F., 4,804,614, Cl. 430-311.000.

AFG Glass Inc.: *See*—
Metrick, Stanley G., 4,803,820, Cl. 52-397.000.

Agence Spatiale Europeenne: *See*—
Roederer, Antoine G., 4,804,965, Cl. 343-700.0MS.

Agency of Industrial Science & Technology: *See*—
Katsura, Tatsuo; Maeda, Hidestsu; Sakai, Tsukasa; and Tsuda, Keishiro, 4,804,834, Cl. 250-211.00R.

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Kiyokane, Jerrilyn C., to Namkung Promotions, Inc. Advertising device. 4,804,133, Cl. 229-8.000.

Kiyokawa, Shin, to Misato Plaheat Mfg. Ltd. Fish culturing method and sac-fry pond for use in practicing same. 4,803,949, Cl. 119-3.000.

Kjellin, Per G.; and Persson, Carl G. A., to Aktiebolaget Draco. Method and pharmaceutical preparation for treating chronic obstructive airway disease and cardiac disease, and intermediates for the preparation of therapeutically active xanthine derivatives. 4,804,664, Cl. 514-263.000.

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Knapp, Paul A. Brake bleeder valve apparatus having integral check valve and method for bleeding brakes. 4,804,017, Cl. 137-614.160.

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Kobayashi, Shigeyoshi; Munekata, Seiji; Unoki, Masao; and Iwamoto, Toshio, to Asahi Glass Company Ltd. Light-transmitting fiber of glass core and clad of cured copolymer of fluoroolefin and alkyl ether. 4,804,246, Cl. 350-96.340.

Kobel, Hans; Sanglier, Jean-Jacques; Tscherter, Hans; and Bolliger, Georg, to Sandoz Ltd. Ergot cyclic peptide alkaloids having a venotonizing effect, useful for treating orthostatic hypotension. 4,804,660, Cl. 514-250.000.

Kobiki, Yasuhiro: *See*—
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Kobler, Armin: *See*—
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Koch, Rainer, to Lingl GmbH & Co. KG. Method and apparatus for cutting columnar articles. 4,803,905, Cl. 83-13.000.

Kochi, Hiromu: *See*—
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Koeneman, Robert M.; Miller, Benjamin D.; and Jablonski, Thaddeus M., to Remcor Products Company. Control system for icemaker and ice dispenser and method. 4,803,847, Cl. 62-68.000.

Koepff, Peter; Muller, Alexander; Schreiber, Reinhard; Turowski, Angelika; and Braumer, Klaus, to Deutsche Gelatine-Fabriken Stoess & Co. GmbH. Agents for the treatment of arthroses. 4,804,745, Cl. 530-356.000.

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Kogure, Kyuya; and Masaki, Mitsuo, to Nippon Chemiphar Co., Ltd. Process for protection of brain cells. 4,804,657, Cl. 514-218.000.

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Konica Corporation: *See*—
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Kroner, Wolfgang, to Pforzheimer Uhrenwerke Porta GmbH. Drive arrangement for an electronically controlled watch. 4,805,161, Cl. 368-220.000.

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Putrow, Michael C.; Wisneski, Leonard J., Jr.; Govekar, Craig F.; Jonker, Gary D.; Lindhard, Gordon; Weidenbenner, Dennis W.; and Quinn, Robert O., 4,804,921, Cl. 324-394.000.

Quirk, Jennifer M.; and Kanner, Bernard, to Union Carbide Corporation. Process for producing epoxyorganoalkoxysilanes. 4,804,768, Cl. 549-215.000.

R. P. Scherer GmbH: *See*—
Fischer, Gerhard; Schneider, Benedikt; and Jahn, Helmut, 4,804,542, Cl. 424-456.000.

Rabo, Jule A.: *See*—
Pellet, Regis J.; Gortsema, Frank P.; Long, Gary N.; and Rabo, Jule A., 4,804,647, Cl. 502-66.000.

Racal Data Communications Inc.: *See*—
Miller, Jerry A., 4,805,215, Cl. 379-411.000.

Radhakrishnan, Ramachandran: *See*—
Guo, Luke S. S.; Redmann, Carl T.; and Radhakrishnan, Ramachandran, 4,804,539, Cl. 424-450.000.

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Nieminen, Tero, 4,805,080, Cl. 363-56.000.

Rafaniello, William; and Moore, William G., to Dow Chemical Company, The. Producing boron carbide. 4,804,525, Cl. 423-291.000.

Rainwater, Sam L.: *See*—
Bruder, John F.; and Rainwater, Sam L., 4,805,146, Cl. 365-131.000.

Ralph Maltby Enterprises, Inc.: *See*—
Maltby, Ralph D., 4,804,184, Cl. 273-77.00R.

Ramde, Amolak R.: *See*—
Krishna, Surinder; and Ramde, Amolak R., 4,804,634, Cl. 437-32.000.

Ramey, Chester E.; Thompson, Ronald E.; and Rostek, Charles J., Jr., to Ferro Corporation. Polymeric hindered amine light stabilizers. 4,804,717, Cl. 525-375.000.

Raml, Nancy M.; and Janiszewski, Connie J. Surgical brassiere. 4,804,351, Cl. 450-58.000.

Ranganath, Tirumala R.: *See*—
Donald, David K.; Wang, Shih-Yuan; Ranganath, Tirumala R.; Newton, Steven A.; Trutna, William R.; Bloom, David M.; and David, Frank K., 4,805,237, Cl. 455-619.000.

Rank Brimar Limited: *See*—
Kavanagh, Martin, 4,804,880, Cl. 313-404.000.

Rapid-Air Corporation: *See*—
Nordlof, Richard D.; Reding, Gary D.; and MacDonald, Jeffery S., 4,804,898, Cl. 318-569.000.

Rashkovich, Mikhail P.: *See*—
Berab-Tarle, Matus E.; Vernikov, Arkady Y.; Rashkovich, Mikhail P.; Soifer, Romen D.; Trostanovsky, Boris A.; and Khinkus, Alexandr S., 4,804,914, Cl. 324-226.000.

Rasky, Phillip D.: *See*—
McLaughlin, Michael; and Rasky, Phillip D., 4,805,193, Cl. 375-27.000.

Rasnick, Glen L.; and St. Clair, Albert R., to Simmons U.S.A. Corporation. Convertible bed. 4,803,742, Cl. 5-18.00R.

Rast, Wlodzimierz, to W. Rast Pty. Ltd. Pads for absorbing pressure shocks and method of manufacture thereof. 4,804,565, Cl. 428-35.300.

Raudys, Vytas A., to Viskase Corporation. Casing sizing means method and apparatus. 4,803,757, Cl. 17-49.000.

Rauhut, Klaus: *See*—
Hesse, Wolfgang; and Rauhut, Klaus, 4,804,722, Cl. 525-523.000.

Ravishankar, Gurusamrthi, to Intel Corporation. Continuous bulk drain for photoresist. 4,803,946, Cl. 118-52.000.

Ray, Siba P., to Aluminum Company of America. Aluminum borate based ceramic composite. 4,804,642, Cl. 501-87.000.

Ray, Siba P., to Aluminum Company of America. Light weight shaped opaque aluminum borate product and method of making same. 4,804,646, Cl. 501-105.000.

Raycher, Robert J.; Cangro, Ronald A.; Gum, Charles E.; Macinskas, Dean P.; and Williams, Francis J., to Erico Fastening Systems, Inc. Multi-operator grid system for stud welding. 4,804,811, Cl. 219-98.000.

Raynier, Bernard: *See*—
Laruelle, Claude; Lepant, Marcel; and Raynier, Bernard, 4,804,684, Cl. 514-640.000.

Raythatha, Rasik H.: *See*—
Tatarchuk, Bruce J.; and Raythatha, Rasik H., 4,804,527, Cl. 423-351.000.

Raytheon Company: *See*—
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Ricketts, Donald, 4,805,157, Cl. 367-119.000.

RCA Licensing Corp.: *See*—
Krufka, Frank S., 4,805,124, Cl. 364-560.000.

Readman, John, to Sundstrand Corporation. Sealing assembly for a device having a rotatable shaft. 4,804,196, Cl. 277-75.000.

Reagan, William J.: *See*—
Bartholic, David B.; and Reagan, William J., 4,804,459, Cl. 208-253.000.

Recker, Hans-Gert: *See*—
Janssen, Bernd; Karbach, Stefan; Recker, Hans-Gert; and Thyes, Marco, 4,804,785, Cl. 568-425.000.

Reddersen, Brad R.: *See*—
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Redeom Laboratories, Inc.: *See*—
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Reding, Gary D.: *See*—
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Redkey, Robert H.: *See*—
Doran, Brian A.; and Redkey, Robert H., 4,804,183, Cl. 273-73.00C.

Redmann, Carl T.: *See*—
Guo, Luke S. S.; Redmann, Carl T.; and Radhakrishnan, Ramachandran, 4,804,539, Cl. 424-450.000.

Reed, Bradley O., to General Electric Company. Drive system for track-laying vehicles. 4,803,897, Cl. 74-720.500.

Reed, Larry E.; and Porter, Randall A., to Phillips Petroleum Company. Antifoulants for thermal cracking processes. 4,804,487, Cl. 252-400.100.

Reed, Lehman T. Oil and gas well diversionary spool assembly. 4,804,045, Cl. 166-65.100.

Reedy, Patrick J., to General Motors Corporation. Lamp socket assembly. 4,804,343, Cl. 439-854.000.

Regnier, Frederick F.; and Kopaciewicz, William, to Purdue Research Foundation. Cation-exchange support materials and method. 4,804,686, Cl. 521-28.000.

Reid, David A.; Johnson, Roger A.; and Gutta, John, to GTE Products Corporation. Electrode feedthrough assembly for arc discharge lamp. 4,804,889, Cl. 313-624.000.

Reid, Kenneth R.: *See*—
Kenin, Michael; Reid, Kenneth R.; and Izzo, Peter G., 4,804,993, Cl. 355-3.0BE.

Reifschneider, Walter, to Merrell Dow Pharmaceuticals Inc. 2-chloro-4-((cyanomethyl)thio)phenyl N-methyl carbamate for treating carcinomas. 4,804,682, Cl. 514-521.000.

Reifsnyder, Richard H.; Spencer, Robert W.; and Brennan, Robert A., to PQ Corporation. Method of underwater casting. 4,804,297, Cl. 405-222.000.

Reil, Wilhelm, to Tetra Pak Finance & Trading S.A. Fluid container with handle. 4,804,134, Cl. 229-52.00A.

Reilich, James A., to Eastman Kodak Company. Polarity insensitive electronic flash driver circuit. 4,804,985, Cl. 354-145.100.

Reilly, Bruce J., to Reilly, Joyce Lynette. Wheel alignment apparatus. 4,803,785, Cl. 33-288.000.

Reilly Chemicals, S.A.: *See*—
Franklin, James, 4,804,763, Cl. 546-345.000.

Reilly, Joyce Lynette: *See*—
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Reimann, Walter: *See*—
Reuschling, Dieter; Linkies, Adolf; Reimann, Walter; Schweikert, Otto E.; Mack, Karl E.; and Ebertz, Wolfgang, 4,804,755, Cl. 544-2.000.

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Burgdorf, Jochen; Reinartz, Hans-Dieter; Weise, Lutz; and Beller, Hans-Albert, 4,804,236, Cl. 303-116.000.

Reinecke, Paul: *See*—
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Reinecher, Johannes: *See*—
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Reitz, David B.: *See*—
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Remcor Products Company: *See*—
Koeneman, Robert M.; Miller, Benjamin D.; and Jablonski, Thaddeus M., 4,803,847, Cl. 62-68.000.

Remington Products, Inc.: *See*—
Locke, David R.; Mista, Aivars; and McCarthy, Richard M., 4,803,780, Cl. 30-34.100.

Remley, Gilbert W.: *See*—
Crew, Albert W.; Neuner, James A.; Remley, Gilbert W.; Hager, Robert E.; Chambers, George M.; Delava, Eric A.; Wilbur, Susan A.; Kenny, Thomas J.; and Sutherland, James F., 4,804,515, Cl. 376-216.000.

Research Development Corporation of Japan: *See*—
Umemura, Shizuo, 4,805,145, Cl. 365-118.000.

Research Foundation of the State University of New York, The: *See*—
Clark, David M., 4,805,225, Cl. 382-15.000.

Research Medical, Inc.: *See*—
Grunwald, Ronald P.; and Todd, Robert J., 4,804,359, Cl. 604-4.000.

Reuben, Harold, to Akro Corporation. Automotive floor covering having pad attachment means. 4,804,567, Cl. 428-40.000.

Reuschling, Dieter; Linkies, Adolf; Reimann, Walter; Schweikert, Otto E.; Mack, Karl E.; and Ebertz, Wolfgang, to Hoechst Aktiengesellschaft. Process for the preparation of 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-one 2,2-dioxide and for the purification thereof. 4,804,755, Cl. 544-2.000.

Reuter, Benno: *See*—
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Rey, Pierre; Lesandri, Jacqueline; and Dahhan, Philippe. Temporary prosthesis for tendons and ligaments, and a method of fitting same. 4,804,383, Cl. 623-13.000.

Reynolds, George O.; and Mueller, Peter F., to Honeywell Inc. Optical filter for incoherent imaging systems. 4,804,249, Cl. 350-437.000.

Reynolds, James H.: *See*—
Dibble, Gary L.; Reynolds, James H.; and Stene, Susan L., 4,804,338, Cl. 439-583.000.

Reynolds Metals Company: *See*—
Holliday, William H., 4,805,019, Cl. 358-107.000.

Rhein-Flugzeugbau GmbH: *See*—
Negendank, Helmut; and Wedekind, Reinhard, 4,805,159, Cl. 367-127.000.

Rheinmetall GmbH: *See*—
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Kruse, Heinz-Josef; and Karius, Klaus D., 4,803,929, Cl. 102-524.000.

Rhodes, Curtis O., to CPAC, Inc. Electrolytic processor. 4,804,452, Cl. 204-238.000.

Rhodes, Howard E., to Eastman Kodak Company. Method of providing a pattern of conductive platinum silicide. 4,804,438, Cl. 156-653.000.

Rhone-Poulenc Fibres: *See*—
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Ribner, Aaron. Microwave plasma etching machine and method of etching. 4,804,431, Cl. 156-345.000.

Ricciardi, Ronald J.; and Bober, Mark, to Acrison, Inc. Mechanism for metering solid materials which flow in a manner similar to liquids. 4,804,111, Cl. 222-77.000.

Rice, Joseph M., to Rice, Joseph M. Adjustable engine support. 4,804,162, Cl. 248-671.000.

Rice, Lynn H.: *See*—
Schmidt, Robert J.; Rice, Lynn H.; and Stine, Laurence, 4,804,803, Cl. 585-748.000.

Richards, Anthony L.: *See*—
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Richards Medical Company: *See*—
English, James P.; McNeely, Gerald W.; and Dunn, Richard L., 4,804,691, Cl. 523-118.000.

Richtenburg, William J.; and Jenkins, Donald S., to Rockwell International Corporation. Warm gas accumulator. 4,804,520, Cl. 422-112.000.

Ricketts, Donald, to Raytheon Company. Multi-layered polymer hydrophone array. 4,805,157, Cl. 367-119.000.

Ricoh Company, Ltd.: *See*—
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Ohsawa, Toshiyuki; Katsumi, Yoshino; and Kanetou, Keiichi, 4,804,568, Cl. 428-40.000.
Sakano, Yukio, 4,805,120, Cl. 364-519.000.
Watanabe, Yoshio; Horiguchi, Hiroyuki; and Itagaki, Masanori, 4,805,032, Cl. 358-294.000.

Ricugo, Armando. Spreader tool for cementitious mix. 4,804,321, Cl. 425-87.000.

Rigsby, James G., to Olin Corporation. Ultrapure hydrazine production. 4,804,442, Cl. 203-12.000.

Riley, Thomas J. Pest repellent articles. 4,804,142, Cl. 239-56.000.

Rink, Norbert: *See*—
Pieper, Christian; Burghartz, Hans K.; Hirsch, Rolf-Burkhard; and Rink, Norbert, 4,804,511, Cl. 264-206.000.

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Riach, Joel V. Gripping device for boom-mounted work tool. 4,804,309, Cl. 414-704.000.

Riihel, James B., to Systecon, Inc. Monitor and control for a multi-pump system. 4,805,118, Cl. 364-510.000.

Ritter, Gebhard: *See*—
Frigg, Robert; Gisin, Paul; Perren, Stephan M.; Jenny, Urs; and Ritter, Gebhard, 4,803,976, Cl. 128-92.0VD.

Riva, Ernesto; Selva, Enrico; Denaro, Maurizio; Cassani, Giovanni; and Parenti, Francesco, to Gruppo Lepetit S.p.A. Antibiotic A 42867 and the addition salts thereof. 4,804,534, Cl. 424-118.000.

Rizvi, Syed Q. A.: *See*—
Munson, Jeffrey F.; Rizvi, Syed Q. A.; and Di Biase, Stephen A., 4,804,489, Cl. 252-32.70E.

Rizzardi, Napoleone; and Ripamonti, Giuseppe, to Capsulit, S. P. A. Syringe for dosed filling of bottles and the like. 4,804,114, Cl. 222-148.000.

Roberson, Robert F., to Hot Sports, Inc. Method and apparatus for making a boat. 4,803,944, Cl. 114-359.000.

Robert Bosch GmbH: *See*—
Denz, Helmut, 4,803,966, Cl. 123-478.000.
Kuhn, Ulrich; and Stumpf, Sybille, 4,803,875, Cl. 73-204.260.
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Weiss, Eberhard; Stahl, Manfred; Domann, Helmut; Jung, Erich; and Maurer, Franz, 4,805,105, Cl. 364-424.020.

Robert Fritsch S.A.: *See*—
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Roberts Corporation: *See*—
Pol, Kenneth J.; Foster, James F.; Gyger, Jack D.; and Hyland, Lawrence P., 4,804,173, Cl. 271-11.000.

Roberts, Craig P.: *See*—
Litzie, Ken; and Roberts, Craig P., 4,804,365, Cl. 604-4.000.

Roberts, Frank D., to Conrac Corporation. Electromechanical door holder-closer. 4,803,754, Cl. 16-49.000.

Robertson, William G., to Santa Barbara Medical Foundation Clinic. Ileostomy valve having a rotatable shut off. 4,804,375, Cl. 604-323.000.

Robeson, Lloyd M.: *See*—
Harris, James E.; and Robeson, Lloyd M., 4,804,723, Cl. 525-535.000.
Harris, James E.; and Robeson, Lloyd M., 4,804,724, Cl. 525-471.000.

Robin, Jean-Francois: *See*—
Jaffre, Pierre; Le Mouel, Bernard; Robin, Jean-Francois; and Thepaut, Pierre, 4,805,190, Cl. 375-17.000.

Robinson, John W.: *See*—
Kaganowicz, Grzegorz; Robinson, John W.; and Ipri, Alfred C., 4,804,640, Cl. 437-236.000.

Robinson, Judith: *See*—
Kang, Karan S.; Munn, Stephen; Robinson, Judith; and Maher, Eamonn F., 4,804,275, Cl. 374-162.000.

Robinson, Richard A.: *See*—
Kwan, Jaime T. F.; and Robinson, Richard A., 4,804,130, Cl. 228-6.200.

Robitschko, Peter; Kneib, Rudi; and Polic, Marko, to Daimler-Benz Aktiengesellschaft. Anti-theft arrangement for a sound-reproducing apparatus installed into a mounting compartment of a motor vehicle. 4,805,233, Cl. 455-346.000.

Robotic Vision Systems, Inc.: *See*—
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Rochelle, Gary T.; and Jozewicz, Wojciech, to Board of Regents, The University of Texas System. Process for removing sulfur from sulfur-containing gases. 4,804,521, Cl. 423-242.000.

Rock, Erich; and Rupprechter, Helmut, to Julius Blum Gesellschaft M.B.H. Mounting plate for a hinge for mounting a door on furniture frames of varying thickness. 4,803,749, Cl. 16-237.000.

Rock, Erich; Brunner, Josef; and Hollenstein, Helmut, to Julius Blum Gesellschaft M.B.H. Rail fitting assembly for use in a drawer. 4,804,239, Cl. 312-265.000.

Rockenschaub, Walter: *See*—
Puhringer, Othmar; Wallner, Felix; Wiesinger, Horst; Eichberger, Ernst; Schiffer, Wilhelm; and Rockenschaub, Walter, 4,804,408, Cl. 75-38.000.

Rockwell International Corporation: *See*—
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Spence, John R., 4,804,864, Cl. 307-279.000.

Rodems, James D. Electronic compensation network. 4,805,126, Cl. 364-571.010.

Roederer, Antoine G., to Agence Spatiale Europeenne. Flat wide-band antenna. 4,804,965, Cl. 343-700.0MS.

Rohm and Haas Company: *See*—
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Rohr GmbH: *See*—
Rohr, Wolfgang; and Bohr, Jochen, 4,804,095, Cl. 212-152.000.

Rohr, Wolfgang; and Bohr, Jochen, to Rohr GmbH. Cutoff device for crane systems. 4,804,095, Cl. 212-152.000.

ROLLS-ROYCE plc: *See*—
Fuller, John R. D.; and Bell, John K. A., 4,804,310, Cl. 415-115.000.
Simmons, Roy, 4,803,837, Cl. 60-226.300.

Romaine, C. Peter; Nelsen, Charles E.; and Davis, Roxanne, to Plant Genetics, Inc. Synthetic substrate for filamentous fungi. 4,803,800, Cl. 47-1.100.

Rorer Pharmaceutical Corporation: *See*—
Kesselman, Morris; Purkaystha, Abdur R.; and Cahill, James, 4,804,535, Cl. 424-141.000.
Neiss, Edward S.; Stevenson, David; Ho, Laurence L.; Liu, Robert C.; and Suh, John T., 4,804,742, Cl. 530-307.000.

Rose, Peter H.; Farley, Marvin; and Grodzins, Lee, to Eaton Corporation. Treating work pieces with electro-magnetically scanned ion beams. 4,804,852, Cl. 250-492.100.

Rosemount Inc.: *See*—
Longsdorf, Randy J., 4,804,958, Cl. 340-870.070.

Rosen, Arye; and Lee, Chi H., to General Electric Company. Direct DC to RF conversion by impulse excitation. 4,805,084, Cl. 363-147.000.

Rosheim, Mark E. Wrist tendon actuator. 4,804,220, Cl. 294-111.000.

Ross, Joseph; and Stern, Howard, to Robotic Vision Systems, Inc. Robot cell safety system. 4,804,860, Cl. 307-117.000.

Ross, Melvin C. Surfboard fin mount. 4,804,347, Cl. 441-79.000.

Rosson, Betty Jo. Aquatic exercise device. 4,804,177, Cl. 272-71.000.

Rostek, Charles J., Jr.: *See*—
Ramey, Chester E.; Thompson, Ronald E.; and Rostek, Charles J., Jr., 4,804,717, Cl. 525-375.000.

Roth, Robert S.: *See*—
Bamberg, Paul G.; Baker, James K.; Gillick, Laurence; and Roth, Robert S., 4,805,218, Cl. 381-43.000.

Rouse, David M.: *See*—
Fergeson, Allen D.; Khurshid, Anwar; and Rouse, David M., 4,805,170, Cl. 370-89.000.

Rouse, Donald W.; Horwitz, Lawrence B.; and Wiggins, E. Thomas, to Sangamo Weston, Inc. Distribution energy management system. 4,804,938, Cl. 340-310.00A.

Rouse, Michael W.; and Thelen, Robert L., to Waste Recovery, Inc. Tire removal apparatus. 4,804,031, Cl. 157-1.210.

Rowden, David L.: *See*—
Champagne, Patrick J.; and Rowden, David L., 4,805,061, Cl. 360-133.000.

Rowell, Roger M.; Simonson, Rune; and Tillman, Anne-Marie, to United States of America, Agriculture. Acetylation of lignocellulosic materials. 4,804,384, Cl. 8-121.000.

Roy, Dipak, to Louisiana State University. Detoxification of chlorinated aromatic compounds by organism NRRL B-18087. 4,804,629, Cl. 435-253.300.

Royal Care Beauty Products International, Inc.: *See*—
Day, Betty L., 4,804,486, Cl. 252-153.000.

Royal Inst. for Advancement of Learn., A.K.A. (McGill Univ.): *See*—
Moys, Michael H.; and Finch, James A., 4,804,460, Cl. 209-164.000.

Royer, Garfield P.: *See*—
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RTE Corporation: *See*—
Knapp, Todd K.; and Jergenson, Ronny D., 4,804,807, Cl. 200-331.000.

Rubens, Louis C.; and Chuzn, Stephen P., to Dow Chemical Company, The. Process and apparatus for producing gas pressurized foam particles. 4,804,507, Cl. 264-50.000.

Ruddgy, Francis H.: *See*—
Bartko, John; Anderson, Stanwood L.; Congedo, Thomas V.; and Ruddgy, Francis H., 4,804,514, Cl. 376-154.000.

Rudick, Arthur G., to Coca-Cola Company, The. Disposable syrup package having integral disposable valve assembly. 4,804,117, Cl. 222-214.000.

Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., to AMP Incorporated. Cable strain relief for modular connector. 4,804,342, Cl. 439-467.000.

Ruggles, Albert C.: *See*—
Vanderbilt, Jeffrey J.; Luce, Garrett C.; and Ruggles, Albert C., 4,804,547, Cl. 426-74.000.

Rumps, Norbert A., Jr.: *See*—
Bischof, Albert; and Rumps, Norbert A., Jr., 4,804,238, Cl. 312-138.00R.

Runels, Thomas L., to Eaton Corporation. Axle and wheel assembly. 4,804,027, Cl. 152-417.000.

Rupprechter, Helmut: *See*—
Rock, Erich; and Rupprechter, Helmut, 4,803,749, Cl. 16-237.000.

Russ, Geri A.: *See*—
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Russ, Travis A.: *See*—
Jurrius, Eran J. P.; Russ, Geri A.; and Russ, Travis A., 4,804,432, Cl. 156-350.000.

Russell, Jack A., to Vapor Corporation. Traction load meter system. 4,804,910, Cl. 324-120.000.

Russo, Baldassare, III. Apparatus for converting ocean motion to useable energy. 4,803,839, Cl. 60-501.000.

Ruszczyk, Stanley J.: *See*—
Larson, Gary B.; Ruszczyk, Stanley J.; and Castaldi, Steven A., 4,804,615, Cl. 430-314.000.

Ryder, Peter M.; and Spector, George. Windproof umbrella. 4,804,008, Cl. 135-35.00V.

Ryntz, Rose A.; and Kurple, Kenneth R., to Du Pont de Nemours, E. I., and Company. Polysiloxane graft copolymers, flexible coating compositions comprising same and branched polysiloxane macromers for preparing same. 4,804,732, Cl. 528-28.000.

Saeed, Abdul R., to Robert Bosch GmbH. Power-assisted steering gear. 4,804,057, Cl. 180-142.000.

Sagawa, Norifumi: *See*—
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Sage Products, Inc.: *See*—
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Saguchi, Shingo, to Tokyo Electric Co., Ltd. Register drawer assembly. 4,804,824, Cl. 235-7.00R.

Sahara, Hiroshi; and Watanabe, Yoshimi, to Sony Corporation. Signal transmission system for a CATV system. 4,805,014, Cl. 358-86.000.

Saiki, Terunari, to Honda Giken Kogyo Kabushiki Kaisha. Variable seat for motorcycles. 4,804,221, Cl. 297-195.000.

St. Clair, Albert R.: *See*—
Rasnick, Glen L.; and St. Clair, Albert R., 4,803,742, Cl. 5-18.00R.

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Otsuka, Ryotatsu; Tanimoto, Shigemi; and Toyoda, Kazuo, 4,804,168, Cl. 266-235.000.

Toyooka, Yutaka: *See—*
Kishida, Kazuo; Toyooka, Yutaka; and Kimura, Atsushi, 4,804,706, Cl. 525-66.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Hamano, Yukio; Kubo, Seitoku; and Taga, Yutaka, 4,803,901, Cl. 74-867.000.
Ise, Kiyotaka; Minegishi, Harumasa; and Harada, Hiroshi, 4,805,102, Cl. 364-424.050.
Kishimoto, Masashi; Asami, Ken; and Sakai, Kazunori, 4,805,104, Cl. 364-426.010.
Ohe, Junzo; and Kondo, Hiroshi, 4,804,966, Cl. 343-712.000.
Ohe, Junzo; and Kondo, Hiroshi, 4,804,967, Cl. 343-712.000.
Ohe, Junzo; and Konda, Hiroshi, 4,804,968, Cl. 343-713.000.
Tanaka, Atsuo; Dohmoto, Tadashi; and Kajikawa, Yoshiaki, 4,804,586, Cl. 428-611.000.

Trach, Guenter: *See—*
Seibert, Wolfram; Ocvirk, Norbert; Trach, Guenter; Determann, Otto; and Becker, Horst P., 4,803,840, Cl. 60-545.000.

Tracy, David H., to Perkin-Elmer Corporation, The. Exposure control system for full field photolithography using pulsed sources. 4,804,978, Cl. 346-108.000.

Tran, Danh C.: *See—*
Tan, H. Wayne; Tran, Danh C.; and McGreevy, Walter, 4,803,828, Cl. 53-390.000.

Traugott, Thomas D.; Moore, Eugene R.; and Malanga, Michael T., to Dow Chemical Company, The. Polyphenylene ether/polystyrene blends. 4,804,712, Cl. 525-152.000.

Treficable Pirelli: *See—*
Batsille, Claude, 4,804,733, Cl. 428-34.900.

Treibel, Walter: *See—*
Olschewski, Armin; Schurger, Rainer; Stolz, Robert; Neder, Gunter; Treibel, Walter; and Kunkel, Heinrich, 4,804,276, Cl. 384-526.000.

Trentacosta, Joseph D.: *See—*
Leffew, Kenneth W.; and Trentacosta, Joseph D., 4,804,556, Cl. 427-9.000.

Tresper, Erhard: *See—*
Mayska, Paul J.; and Tresper, Erhard, 4,804,689, Cl. 521-89.000.

Triad Communications, Inc.: *See—*
Selph, Marvin P.; and Hughes, Derek B., 4,804,957, Cl. 340-870.030.

Tricon Metals & Services, Inc.: *See—*
Murphy, Grant J., Jr.; and Turnipseed, Howard S., 4,804,588, Cl. 428-683.000.

Trillium Telephone Systems Inc.: *See—*
Brennan, Robert P.; Camelon, Joseph; and Trudel, J. Bernard, 4,805,211, Cl. 379-355.000.

Triunfo, John A.: *See—*
Salvador, Victor L.; and Triunfo, John A., 4,804,344, Cl. 439-877.000.

Trofast, Jan W.: *See—*
Andersson, Paul H.; Andersson, Per T.; Axelsson, Bengt L.; Thalen, Bror A.; and Trofast, Jan W., 4,804,656, Cl. 514-179.000.

Troncoso, Vincent F. Multiple firing gun trigger extension assembly. 4,803,910, Cl. 89-27.300.

Trostanovsky, Boris A.: *See—*
Barab-Tarle, Matus E.; Vernikov, Arkady Y.; Rashkovich, Mikhail P.; Soifer, Romen D.; Trostanovsky, Boris A.; and Khinkus, Alexandr S., 4,804,914, Cl. 324-226.000.

Troster, Manfred: *See—*
Hofmann, Heinrich; and Troster, Manfred, 4,804,233, Cl. 301-124.00R.

Trudel, J. Bernard: *See—*
Brennan, Robert P.; Camelon, Joseph; and Trudel, J. Bernard, 4,805,211, Cl. 379-355.000.

Truesdale, James H.: *See—*
Leonard, David P.; Truesdale, James H.; and Scherrer, Joseph H., 4,804,715, Cl. 525-245.000.

Truitt, Gary A.: *See—*
Baggiolini, Enrico G.; Partridge, John J.; Shiuey, Shian-Jan; Truitt, Gary A.; and Uskokovic, Milan R., 4,804,502, Cl. 260-397.200.

Trumpf GmbH & Co.: *See—*
Ackermann, Frank; Wollermann-Windgasse, Reinhard; and Faller, Bernd, 4,805,072, Cl. 361-328.000.

Trutna, William R.: *See—*
Donald, David K.; Wang, Shih-Yuan; Ranganath, Tirumala R.; Newton, Steven A.; Trutna, William R.; Bloom, David M.; and David, Frank K., 4,805,237, Cl. 455-619.000.

TRW Inc.: *See—*
Shoup, Thomas E., 4,804,820, Cl. 219-98.000.
Statkus, Robert J., 4,804,303, Cl. 411-41.000.

Tsai, John J.: *See—*
Solarek, Daniel B.; Jobe, Patrick G.; Tessler, Martin M.; Billmers, Robert L.; Lamb, Diane J.; and Tsai, John J., 4,804,769, Cl. 549-374.000.

Tscherter, Hans: *See—*
Kobel, Hans; Sanglier, Jean-Jacques; Tscherter, Hans; and Bolliger, Georg, 4,804,660, Cl. 514-250.000.

Tsubota, Toshio: *See—*
Nishizawa, Shunichi; Tsubota, Toshio; and Chikura, Takashi, 4,803,895, Cl. 74-603.000.

Tsuchiya, Kazuhiro; Nishiyama, Toshikazu; and Tomishima, Hiroshi, to Hitachi Metals, Ltd. Magnetic head having MnO/NiO-based nonmagnetic substrate. 4,805,059, Cl. 360-125.000.

Tsuda, Keishiro: *See—*
Katsura, Tatsuo; Maeda, Hideatsu; Sakai, Tsukasa; and Tsuda, Keishiro, 4,804,834, Cl. 250-211.00R.

Tsui, Gary; and Heimbigner, Thomas, to CBC Industries, Inc. Gun drill coolant bushing and method of making same. 4,804,300, Cl. 408-56.000.

Tsuji, Kiyotaka: *See—*
Haga, Masaki; Tsuji, Kiyotaka; Nawafune, Hidemi; Mizumoto, Shozo; and Uchida, Ei, 4,804,410, Cl. 106-1.150.

Tsuji, Yoshihisa: *See—*
Harada, Osamu; Kojima, Akio; Ikeda, Souhei; Watanabe, Yoshihisa; and Tsuji, Yoshihisa, 4,803,871, Cl. 73-104.000.

Tsukada, Kazuo: *See—*
Nakazawa, Masahiko; Tsukada, Kazuo; and Suzuki, Kazunori, 4,804,164, Cl. 251-335.300.

Tsukada, Kouji: *See—*
Nonomura, Yutaka; Tsukada, Kouji; Nishibe, Yuji; and Takeuchi, Masaharu, 4,803,885, Cl. 73-862.360.

Tsukahara, Hiroyuki: *See—*
Koezuka, Tetsuo; Tsukahara, Hiroyuki; and Nakashima, Masato, 4,805,224, Cl. 382-8.000.

Tsukakoshi, Kunihiko: *See—*
Yamakoshi, Akira; Fujita, Toyohiko; Tsukakoshi, Kunihiko; and Anraku, Shinji, 4,804,927, Cl. 330-288.000.

Tsukune, Atsuhiro: *See—*
Shioya, Yoshimi; Oyama, Yasushi; Tsuzuki, Norihisa; Maeda, Mamoru; Ichikawa, Masaaki; Mieno, Fumitake; Inoue, Shin-ichi; Uo-ochi, Yasuo; Tabuchi, Akira; Tsukune, Atsuhiro; Watanabe, Takuya; and Ohba, Takayuki, 4,804,560, Cl. 427-125.000.

Tsuzuki, Norihisa: *See—*
Shioya, Yoshimi; Oyama, Yasushi; Tsuzuki, Norihisa; Maeda, Mamoru; Ichikawa, Masaaki; Mieno, Fumitake; Inoue, Shin-ichi; Uo-ochi, Yasuo; Tabuchi, Akira; Tsukune, Atsuhiro; Watanabe, Takuya; and Ohba, Takayuki, 4,804,560, Cl. 427-125.000.

Tufano, Thomas P.; and Chan, Dominic M., to Du Pont de Nemours, E. I., and Company. Process for the preparation of tabular silver chloride emulsions using a grain growth modifier. 4,804,621, Cl. 430-567.000.

Turina, Marko; and Bittmann, Peter, to Sulzer Brothers Limited. Artificial vessel. 4,804,381, Cl. 623-1.000.

Turina, Marko; and Bittmann, Peter, to Sulzer Brothers Limited. Artificial vessel. 4,804,382, Cl. 623-1.000.

Turmelle, Conrad R.: *See—*
Hibbert, David A.; Richards, Anthony L.; Zuffelato, Dennis C.; Turmelle, Conrad R.; and Larkin, Harold F., 4,804,804, Cl. 174-16.200.

Turner, Maxwell J.: *See—*
Lloyd, Robert; and Turner, Maxwell J., 4,804,390, Cl. 44-621.000.

Turnipseed, Howard S.: *See—*
Murphy, Grant J., Jr.; and Turnipseed, Howard S., 4,804,588, Cl. 428-683.000.

Tarowski, Angelika: *See—*
Koepff, Peter; Muller, Alexander; Schreiber, Reinhard; Turowski, Angelika; and Brauner, Klaus, 4,804,745, Cl. 533-356.000.

Tartschan, Alfons, to Benz & Hilgers GmbH. Deep-drawing machine for making thermoplastic containers. 4,804,322, Cl. 425-117.000.

Tuske, Marton: *See—*
Bajusz, Ferenc; Balogh, Karoly; Bodi, Tibor; Bordas, Barna; Dombay, Zsolt; Fodor nee Balogh, Gyongyver; Grega nee Toth, Erzsebet; Gribovszki, Pal; Lorik, Erno; Matolcsy, Gyorgy; Matyas nee David, Judit; Mile, Erzsebet; Nagy, Jozsef; Pavliscsak, Csaba; Tarpai, Gyula; Toth, Andras; Toth, Istvan; Toth nee Takacs, Maria; and Tuske, Marton, 4,804,405, Cl. 71-118.000.

Tuszynski, William J.: *See—*
Carroll, Glenn T.; Lindstrom, Michael J.; and Tuszynski, William J., 4,804,485, Cl. 252-8.552.

Uber, Arthur E., III, to Medrad, Inc. Radiation detector with an ionizable gas atop an integrated circuit. 4,804,847, Cl. 250-389.000.

Uchida, Ei: *See—*
Haga, Masaki; Tsuji, Kiyotaka; Nawafune, Hidemi; Mizumoto, Shozo; and Uchida, Ei, 4,804,410, Cl. 106-1.150.

Uchihara, Kiyoyuki, to Murata Kikai Kabushiki Kaisha. Pneumatic yarn splicing apparatus. 4,803,833, Cl. 57-22.000.

Udagawa, Tamekazu; and Yamada, Yoshio, to Ishikawa Gasket Co., Ltd. Steel laminate type cylinder head gasket. 4,803,965, Cl. 123-193.0CH.

Ueda, Masaya: *See—*
Tamura, Mitsuhiko; Miyamoto, Masaaki; Ueda, Masaya; and Kamoshida, Eiichi, 4,804,720, Cl. 525-431.000.

Ueda, Sachio: *See—*
Ohtani, Yuzo; and Ueda, Sachio, 4,805,060, Cl. 360-132.000.

Ueda, Shinji; and Nakajima, Junya, to Fuji Photo Film Co., Ltd. Method for processing silver halide color reversal photographic material. 4,804,616, Cl. 430-379.000.

Ueda, Shinji; and Morimoto, Kiyoshi, to Fuji Photo Film Co., Ltd. Method of treating silver halide color photographic material with at least one ferric complex salt of an organic chelating compound. 4,804,618, Cl. 430-393.000.

Ueki, Masao; Hirooka, Masaaki; Hanaa, Junichi; and Shimizu, Isamu, to Canon Kabushiki Kaisha. Apparatus for forming deposited film. 4,803,947, Cl. 418-719.000.

Ueno, Ryuzo; Ito, Shigeru; Fujimoto, Shin; and Iwao, Mayumi, to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo. Process for producing azo pigment. 4,804,415, Cl. 106-496.000.

Ugland Trading Co. A/S: *See—*
Ebeling, Jaakko; Pesonen, Jarmo; and Sandaas, Inge, 4,803,940, Cl. 114-72.000.

Ujihira, Hideyuki: *See—*
Mizade, Kazuhiro; and Ujihira, Hideyuki, 4,804,997, Cl. 355-14.05H.

Umemura, Shinichiro: *See—*
Ikeda, Hiroshi; Umemura, Shinichiro; Ishikawa, Shizuo; Katakura, Kageyoshi; Ichikawa, Noriyoshi; and Mitake, Tsuyoshi, 4,803,993, Cl. 128-660.010.

Umemura, Shizuo, to Research Development Corporation of Japan. Method for recording and reproducing information. 4,805,145, Cl. 365-118.000.

Undatim Ultrasonics: *See—*
Cordemans de Meulenaer, Eric D.; and Hannecart, Baudouin O., 4,804,131, Cl. 228-110.000.

Unidynamics Corporation: *See—*
Ficken, Leonard A., 4,804,108, Cl. 221-223.000.

Union Carbide Corporation: *See—*
Olivo, Anthony R., 4,804,714, Cl. 525-240.000.
Pepe, Enrico J., 4,804,771, Cl. 556-407.000.
Quirk, Jennifer M.; and Kanner, Bernard, 4,804,768, Cl. 549-215.000.

Union Oil Company of California: *See—*
Hass, Robert H., 4,804,522, Cl. 423-235.000.

Uniroyal Chemical Company, Inc.: *See—*
Strunk, Richard J.; and Moore, Richard C., 4,804,653, Cl. 514-63.000.

Unison Technologies, Inc.: *See—*
Schlanger, William J., 4,805,213, Cl. 379-373.000.

Unisys Corporation: *See—*
Bradford, Robert G., 4,804,285, Cl. 400-320.000.
Coogan, Ronald S., 4,805,090, Cl. 364-200.000.

United International, Inc.: *See—*
Forte, Gary L.; Brown, Richard L.; Miller, Wayne; Morris, George L., III; and Prior, Michael D., 4,804,299, Cl. 405-285.000.

United Kingdom Atomic Energy Authority: *See—*
Durow, Kenneth M., 4,804,093, Cl. 209-691.000.

United States of America
Agriculture: *See—*
Rowell, Roger M.; Simonson, Rune; and Tillman, Anne-Marie, 4,804,384, Cl. 8-121.000.
Air Force: *See—*
Makowski, Maciej J.; and Boyd, Frank M., 4,804,330, Cl. 439-76.000.
Smith, Robert J., 4,805,185, Cl. 372-97.000.
Army: *See—*
Johnson, John L., 4,804,250, Cl. 330-162.120.
Lee, John N., 4,804,844, Cl. 250-338.300.
Commerce: *See—*
Lashmore, David S.; Weissman, Ilan; and NamGoong, Eok, 4,804,446, Cl. 204-51.000.
Energy: *See—*
Vanderborgh, Nicholas E.; Huff, James R.; and Leddy, Johna, 4,804,592, Cl. 429-33.000.
Navy: *See—*
Fogarty, Edward J., 4,805,158, Cl. 367-125.000.
Novinson, Thomas, 4,804,779, Cl. 562-542.000.

U.S. Philips Corporation: *See—*
Bonnefous, Odile M. A.; and Pesque, Patrick R., 4,803,990, Cl. 128-661.080.
Harlos, Hartmut; Juhnke, Klaus G. H.; and Kelting, Peter, 4,805,021, Cl. 358-160.000.
Laufranca, Michel J.; Labrousse, Jean-Michel J.; and Deneuchatel, Christian M., 4,805,130, Cl. 364-786.000.
McKinnon, Graeme C., 4,804,920, Cl. 324-309.000.
Papanikolaou, Emmanuel; and Ebben, Leonard T. M., 4,804,422, Cl. 134-28.000.
Van Beal, Marinus C. W., 4,805,079, Cl. 363-56.000.
Vriens, Leendert; Spruit, Johannes H. M.; and Clarke, John A., 4,804,884, Cl. 313-474.000.

U.S. Products Co.: *See—*
Brown, Leland C., Jr.; Jones, Neil A.; and Pindell, Ferris, 4,803,792, Cl. 42-95.000.

U.S. Products Development Company: *See—*
Adell, Robert, 4,803,810, Cl. 49-462.000.

United Technologies Corporation: *See—*
Anderson, Neal P.; Giamei, Anthony F.; and Salkeld, Richard W., 4,804,311, Cl. 415-191.000.
Bachinski, Robert A., 4,803,893, Cl. 74-572.000.
Ferguson, T. Arnold; and Seaver, Linda L., 4,804,562, Cl. 427-140.000.
Ferris, Donald L.; Byrnes, Francis E.; and Varholak, Lawrence N., Jr., 4,804,315, Cl. 416-114.000.
Grant, John L.; and Strachar, Edward, 4,805,137, Cl. 364-900.000.
Hopkins, Steven M.; and Askey, William G., 4,803,880, Cl. 72-354.000.
Hufnagel, Nick L., 4,803,756, Cl. 16-252.000.
Tiernan, Richard J., Jr., 4,804,288, Cl. 403-24.000.

Unitika Ltd.: *See—*
Okamoto, Takashi; Yame, Kenji; Marutani, Takeshi; and Fukushima, Yasumasa, 4,804,707, Cl. 525-66.000.

University of Florida Research Foundation, Inc.: *See—*
Hench, Larry L.; and Lee, Bertrand I., 4,804,731, Cl. 528-24.000.

University of Lowell: *See—*
Lu, Richard; Smith, I. Stuart; Christensen, Stephen R.; and Lu, Richard, 4,804,896, Cl. 318-568.000.

University of Tennessee Research Corporation, The: *See—*
Dorsett, Preston H., 4,804,624, Cl. 435-5.000.

Unoki, Masao: *See—*
Kobayashi, Shigeyoshi; Munekata, Seiji; Unoki, Masao; and Iwamoto, Toshio, 4,804,246, Cl. 350-96.340.

Uo-ochi, Yasuo: *See—*
Shioya, Yoshimi; Oyama, Yasushi; Tsuzuki, Norihisa; Maeda, Mamoru; Ichikawa, Masaaki; Mieno, Fumitake; Inoue, Shin-ichi; Uo-ochi, Yasuo; Tabuchi, Akira; Tsukune, Atsuhiro; Watanabe, Takuya; and Ohba, Takayuki, 4,804,560, Cl. 427-125.000.

UOP: *See—*
Pellet, Regis J.; Gortsema, Frank P.; Long, Gary N.; and Rabo, Jule A., 4,804,647, Cl. 502-66.000.

UOP Inc.: *See—*
Schmidt, Robert J.; Rice, Lynn H.; and Stine, Laurence, 4,804,803, Cl. 585-748.000.

Urala, Reino, to Oy Nokia Ab. Method and arrangement for increasing the dynamic range at an input stage of an optical receiver. 4,805,236, Cl. 455-619.000.

Urfer, Allen D.; and Howell, Gail M., to A. E. Staley Manufacturing Company. Fine fabric detergent composition. 4,804,497, Cl. 252-8.800.

Urushihara, Kanji: *See—*
Hara, Mitsunori; Nagao, Nobahiro; Amazatsumi, Toore; and Urushihara, Kanji, 4,804,593, Cl. 429-174.000.

Usagawa, Toshiyuki; Shiraki, Yasuhiro; Ono, Yuichi; Takahashi, Susumu; and Hashimoto, Norikazu, to Hitachi, Ltd. Semiconductor device and manufacturing method of the same. 4,805,005, Cl. 357-22.000.

Ushio Denki Kabushiki Kaisha: *See—*
Nasu, Shoichi; and Onishi, Yasuo, 4,804,888, Cl. 313-595.000.

Ushio, Jiro; Miyazawa, Osamu; Yokono, Hitoshi; and Tomizawa, Akira, to Hitachi, Ltd. Electroless gold plating solution. 4,804,559, Cl. 427-96.000.

Usinor Aciers: *See—*
Brysbaert, Jean M.; and Vautrain, Alain, 4,803,864, Cl. 72-202.000

Uskokovic, Milan R.: *See—*
Baggiolini, Enrico G.; Partridge, John J.; Shiuey, Shian-Jan; Truitt, Gary A.; and Uskokovic, Milan R., 4,804,502, Cl. 260-397.200.

Utah Bioresearch, Inc.: *See—*
Brimhall, Owen D.; McLaughlin, Thomas J.; and Peterson, Stephen C., 4,804,355, Cl. 494-20.000.

Uto, Shozo: *See—*
Hasegawa, Kaoru; Uto, Shozo; and Hashimoto, Suzushi, 4,804,041, Cl. 165-166.000.

Utsumi, Shigeo, to Diafoil Company, Limited. Polyethylene-2,6-naphthalate film for magnetic recording tapes. 4,804,736, Cl. 528-176.000.

Vaci, Gyula: *See—*
Varkonyi, Laszlo; and Vaci, Gyula, 4,804,293, Cl. 405-15.000.

Vail, William B., III, to ParaMagnetic Logging, Inc. Dual excitation acoustic paramagnetic logging tool. 4,804,918, Cl. 324-303.000.

Vaillancourt, Vincent L. Post-injection needle sheath. 4,804,371, Cl. 604-198.000.

Vaja, Helena: *See*—
Vaja, Lubomir; and Vaja, Helena, 4,803,799, Cl. 43-82.000.

Vaja, Lubomir; and Vaja, Helena, to H.L. International Marketing Corporation. Mouse and rat trap. 4,803,799, Cl. 43-82.000.

Valachovic, Ellen E.: *See*—
Choy, Clement K.; and Valachovic, Ellen E., 4,804,491, Cl. 252-94.000.

Valeri, Cesare R., to Autologous Blood Corporation. Apparatus and method for storing and processing blood. 4,804,363, Cl. 604-6.000.

Valmet Oy: *See*—
Kostamo, Pentti, 4,804,055, Cl. 180-53.300.
Lyytinen, Markku, 4,804,441, Cl. 162-212.000.

Van Asselt, Gosuinus, to Hollandse Signaalapparaten B.V. Local area network operating on the multiple bus system. 4,805,169, Cl. 370-85.000.

Van Brunt, Michael K.: *See*—
Miller, John S.; and Van Brunt, Michael K., 4,804,917, Cl. 324-95.000.

Van Buul, Marinus C. W., to U.S. Philips Corp. Switched voltage converter. 4,805,079, Cl. 363-56.000.

Vandenberk, Jan: *See*—
Kennis, Ludo E. J.; and Vandenberk, Jan, 4,804,663, Cl. 514-258.000.

Vanderbilt, Jeffrey J.; Luce, Garrett C.; and Ruggles, Albert C., to Eastman Kodak Company. Animal feed supplement formulation. 4,804,547, Cl. 426-74.000.

Vanderborgh, Nicholas E.; Huff, James R.; and Leddy, Johna, to United States of America, Energy. Composite electrode for use in electrochemical cells. 4,804,592, Cl. 429-33.000.

Vanderjagt, John A. Returnable container system. 4,804,109, Cl. 222-3l.000.

Van Der Jagt, Loureas; Martin, Gunther; and Landmann, Wolf S., to LeCroy Corporation. Method and apparatus for recovering clock information from a received digital signal and for synchronizing that signal. 4,805,197, Cl. 375-110.000.

Vanderpool, Clarence D.: *See*—
Scheithauer, Richard A.; Vanderpool, Clarence D.; and Miller, Michael J., 4,804,407, Cl. 75-0.5AA.

Van Horn, Albert R.: *See*—
Cooper, Gary F.; Wren, Douglas L.; Van Horn, Albert R.; Li, Tsung-Tee; and Beard, Colin C., 4,804,787, Cl. 568-649.000.

van Wauwe, Gerard: *See*—
De Decker, Emile; Oostvogels, Jozef; van Wauwe, Gerard; and Neubauer, Gerald, 4,804,754, Cl. 540-535.000.

Vapor Corporation: *See*—
Russell, Jack A., 4,804,910, Cl. 324-120.000.

Varga, Andre; Cripps, Harry; and McHugh, Paul. Method for modifying a yarn. 4,803,835, Cl. 57-350.000.

Varholak, Lawrence N., Jr.: *See*—
Ferris, Donald L.; Byrnes, Francis E.; and Varholak, Lawrence N., Jr., 4,804,315, Cl. 416-114.000.

Variety International, Inc.: *See*—
Coultrup, Thomas; and Wessling, James E., 4,804,064, Cl. 182-155.000.

Varkonyi, Laszlo; and Vaci, Gyula, to Comporgan Rendszerhaz K.V. Flexible layer structure for protecting earthworks, bed walls and for delimiting embedding layers. 4,804,293, Cl. 405-15.000.

Vassileff, Neiko I. Open-cell foamed gypsum insulation. 4,804,688, Cl. 521-64.000.

Vaughn, Worsel: *See*—
White, Harold J.; House, Richard M.; and Vaughn, Worsel, 4,803,817, Cl. 52-235.000.

Vautrain, Alain: *See*—
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Veit, Axel: *See*—
Strasser, Wilhelm; and Veit, Axel, 4,803,845, Cl. 62-55.500.

Vekony, Sandor; and Vekonyne, Klara J., to Innofinance Altalanos Innovacios Penzintezet. Rotational working cylinder. 4,803,914, Cl. 92-31.000.

Vekonyne, Klara J.: *See*—
Vekony, Sandor; and Vekonyne, Klara J., 4,803,914, Cl. 92-31.000.

Velisavljevic, Milisav. Oil-water separator. 4,804,471, Cl. 210-265.000.

Venzke, Wilfried, to Werner & Pfleiderer GmbH. Method of operating a screw extruder and screw extruders for carrying out said methods. 4,804,505, Cl. 264-40.100.

Verbatim Corp.: *See*—
Champagne, Patrick J.; and Rowden, David L., 4,805,061, Cl. 360-133.000.

Verbiscar, Anthony J.; and Banigan, Thomas P., to Anver Bioscience Design, Inc. Guayule rubber, resin and bagasse recovery and purification processes. 4,804,741. Cl. 528-931.000.

Vernikov, Arkady Y.: *See*—
Barab-Tarle, Matus E.; Vernikov, Arkady Y.; Rashkovich, Mikhail P.; Soifer, Romen D.; Trostanovsky, Boris A.; and Khinkus, Alexandr S., 4,804,914, Cl. 324-226.000.

Ver Strate, Gary; Bloch, Ricardo; Struglinski, Mark J.; Johnston, John E.; and West, Roger K., to Exxon Chemical Patents Inc. Viscosity modifier polymers. 4,804,794, Cl. 585-12.000.

Verteq, Inc.: *See*—
Bran, Mario E., 4,804,007, Cl. 134-184.000.

Vicha, Susan K.: *See*—
Geary, Denise M.; Pettit, Paul H., Jr.; and Vicha, Susan K., 4,804,581, Cl. 428-332.000.

Victor Company of Japan, Ltd.: *See*—
Kitamura, Hiroyuki; and Ota, Yoshihiko, 4,805,034, Cl. 358-310.000.

Vijayendran, Bheema R.: *See*—
Lai, Ta-Wang; and Vijayendran, Bheema R., 4,804,793, Cl. 574-445.000.

Vikery, Ian M. Anaesthesia mask. 4,803,981, Cl. 128-206.240.

Villemot, Jean-Pierre: *See*—
Karcher, Gilles; Amor, Max; Niddam, Roger; and Villemot, Jean-Pierre, 4,804,358, Cl. 600-17.000.

Vincenzi, Maurizio: *See*—
Tondello, Giuseppe; and Vincenzi, Maurizio, 4,804,273, Cl. 356-427.000.

Vinton, Melvin; and Hawes, Anthony D. McI., to Analytical Instruments Limited. Hermetically sealed package tester. 4,803,868, Cl. 73-49.300.

Viskase Corporation: *See*—
Raudys, Vytas A., 4,803,757, Cl. 17-49.000.

Vits, Hilmar. Device for floatably guiding webs of material by means of a gaseous or liquid medium. 4,804,125, Cl. 226-97.000.

Voest-Alpine Aktiengesellschaft: *See*—
Puhringer, Othmar; Wallner, Felix; Wiesinger, Horst; Eichberger, Ernst; Schiffer, Wilhelm; and Rockenschaub, Walter, 4,804,408, Cl. 75-38.000.

Vogel, Walter; Schmucker, Wolfgang; Leurer, Erwin; and Beel, Francois, to FAG Kugelfischer Georg Schafer (KGaA); and N.V. Van der Eecken & Co. Textile spindle. 4,803,834, Cl. 57-308.000.

Vogel, Wolfgang M.: *See*—
Grasso, Albert P.; Vogel, Wolfgang M.; and Taylor, William A., 4,804,591, Cl. 429-12.000.

von Gizycki, Ulrich: *See*—
Sirinyan, Kirkor; Hildenbrand, Karlheinz; von Gizycki, Ulrich; Merten, Rudolf; Perrey, Hermann; and Wolf, Gerhard D., 4,804,475, Cl. 210-651.000.

von Kraewel, Hasso R., to Digital Equipment Corporation. Vertical PWB supply system. 4,804,434, Cl. 156-364.000.

Von Sloun, Peter H., to Honeywell Inc. Manual activator for reserve batteries. 4,803,924, Cl. 102-293.000.

Vriens, Leendert; Spruit, Johannes H. M.; and Clarke, John A., to U.S. Philips Corporation. Display tube having improved brightness distribution. 4,804,884, Cl. 313-474.000.

VSAR Systems of Atlanta, Inc.: *See*—
Alexander, Walter A., Sr., 4,803,812, Cl. 52-157.000.

Vu, Cung; and Hartwig, Richard C., to W. R. Grace & Co.-Conn. Polyurethane composition consisting essentially of a polyether diol, a polyether triol, glycerol, and a polyisocyanate. 4,804,734, Cl. 528-54.000.

Vyse, Gerrard N., to Stratoflex, Inc. Crimped hose fitting. 4,804,212, Cl. 285-256.000.

W. H. Wallo & Associates, Inc.: *See*—
Wallo, William H., 4,804,161, Cl. 248-544.000.

W. Haking Enterprises Limited: *See*—
Heuer, William H.; and Matsuda, Hari, 4,804,984, Cl. 354-76.000.

W. R. Grace & Co.-Conn.: *See*—
Vu, Cung; and Hartwig, Richard C., 4,804,734, Cl. 528-54.000.

W. Rast Pty. Ltd.: *See*—
Rast, Wlodzimierz, 4,804,565, Cl. 428-35.300.

W. Schlafhorst & Co.: *See*—
Kathke, Gregor, 4,804,151, Cl. 242-35.60R.

Wacker-Chemie GmbH: *See*—
Gerhardinger, Dieter; Reisacher, Johannes; Stohr, Gunter; and Wegehaupt, Karl-Heinrich, 4,804,579, Cl. 428-304.400.

Wada, Kunihiko: *See*—
Kaneta, Hiroshi; Ogawa, Tsutomu; Mori, Haruhisa; and Wada, Kunihiko, 4,803,884, Cl. 73-598.000.

Wada, Masaru: *See*—
Nagata, Teruyuki; Tamaki, Akihiro; Kajimoto, Nobuyuki; and Wada, Masaru, 4,804,783, Cl. 564-402.000.

Wagner, William A.: *See*—
Schneider, Wolfgang W.; and Wagner, William A., 4,804,479, Cl. 210-754.000.

Wahlberg, Anna-Maija, legal representative: *See*—
Wahlberg, Arvo, deceased; and Wahlberg, Anna-Maija, legal representative, 4,804,401, Cl. 71-11.000.

Wahlberg, Arvo, deceased; and by Wahlberg, Anna-Maija, legal representative. Method of producing a phosphorus fertilizer soil conditioner. 4,804,401, Cl. 71-11.000.

Waldron, Fay L. Earring device for suspending a variety of charms or the like. 4,803,852, Cl. 63-13.000.

Walker, Robert D.: *See*—
Cracauer, Ray F.; Walker, Robert D.; and Gruenberg, Micheal L., 4,804,628, Cl. 435-240.242.

Wall, Arne E.: *See*—
Siwersson, Olle L.; Wall, Arne E.; and Loodberg, Jan A. T., 4,803,932, Cl. 110-260.000.

Wallner, Felix: *See*—
Puhringer, Othmar; Wallner, Felix; Wiesinger, Horst; Eichberger, Ernst; Schiffer, Wilhelm; and Rockenschaub, Walter, 4,804,408, Cl. 75-38.000.

Wallo, William H., to W. H. Wallo & Associates, Inc. Hanging device for picture frames or like objects, and method. 4,804,161, Cl. 248-544.000.

Walsh, James W. Flexible jacket membrane processing apparatus. 4,804,469, Cl. 210-232.000.

Walshe, Nigel D. A.: *See*—
Goudie, Alexander C.; and Walshe, Nigel D. A., 4,804,680, Cl. 514-460.000.

Walter, Chris J.: *See*—
Kieckhafer, Roger M.; Finn, Alan M.; and Walter, Chris J., 4,805,107, Cl. 364-200.000.

Walter, Florian A.: *See*—
Lannert, James W.; Studinski, Robert A.; and Walter, Florian A., 4,804,876, Cl. 312-221.000.

Walters, Donald M., Jr., to Advanced Micro Devices, Inc. Bit-line isolated, CMOS sense amplifier. 4,804,871, Cl. 807-530.000.

Waltonen, Edward J.: *See*—
Obrecht, Robert E.; and Waltonen, Edward J., 4,803,767, Cl. 29-243.500.

Walworth, Bryant L.: *See*—
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Wanda, Jack R.: *See*—
Bellet, Dominique; Wanda, Jack R.; and Ozturk, Mehmet, 4,804,626, Cl. 435-7.000.

Wang, David: *See*—
Tam, Aloysius; Wong, Thomas S.; Wang, David; and Naren, David, 4,805,149, Cl. 365-155.000.

Wang Laboratories, Inc.: *See*—
Huber, Val J., 4,805,099, Cl. 364-300.000.
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Wang, Shih-Yuan: *See*—
Donald, David K.; Wang, Shih-Yuan; Ranganath, Tirumala R.; Newton, Steven A.; Trutna, William R.; Bloom, David M.; and David, Frank K., 4,805,237, Cl. 455-619.000.

Wang, Taylor G.; Elleman, Daniel D.; Lee, Mark C.; and Kendall, James M., Jr., to California Institute of Technology. Catalytic, hollow, refractory spheres, conversions with them. 4,804,796, Cl. 585-269.000.

Wanou, Masahiro: *See*—
Sasaki, Sachio; Wanou, Masahiro; Kimura, Masatoshi; and Nakajima, Juuzo, 4,804,994, Cl. 355-3.0DD.

Ward, Calvin B. Content addressable memory. 4,805,093, Cl. 364-200.000.

Wardlaw, Stephen C.: *See*—
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Warner-Lambert Company: *See*—
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Sharma, Shri C.; Yang, Robert K.; and Shaw, James J., 4,804,548, Cl. 426-96.000.

Warner-Lambert Copmany: *See*—
Kaltenbronn, James S.; Lunney, Elizabeth A.; and Nicolaides, Ernest D., 4,804,743, Cl. 530-330.000.

Warnke, Wayne L.: *See*—
Imai, Tetsuo; Marier, Gregory J.; and Warnke, Wayne L., 4,804,198, Cl. 280-21.100.

Warren, Ian H., to C-I-L Inc. Stripping and recovery of dichromate in electrolytic chlorate systems. 4,804,528, Cl. 423-607.000.

Warthan, James E.: *See*—
Bowman-Jones, Gordon; and Warthan, James E., 4,804,862, Cl. 307-140.000.

Washburn, William J., to Aerojet-General Corporation. Ammunition round and method of manufacture thereof. 4,803,927, Cl. 102-434.000.

Waste Management Energy Systems, Inc.: *See*—
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Waste Recovery, Inc.: *See*—
Rouse, Michael W.; and Thelen, Robert L., 4,804,031, Cl. 157-1.210.

Watanabe, Hideyuki: *See*—
Fijiwara, Tatsuro; Watanabe, Hideyuki; and Sakakibara, Hideo, 4,804,749, Cl. 536-7.100.

Watanabe, Minoru: *See*—
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Yano, Koji; Watanabe, Minoru; Kyoto, Michihisa; and Hoshikawa, Masao, 4,804,393, Cl. 65-3.120.

Watanabe, Takako: *See*—
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Watanabe, Takeshi: *See*—
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Watanabe, Takuya: *See*—
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Watanabe, Yoshihisa: *See*—
Harada, Osamu; Kojima, Akio; Ikeda, Souhei; Watanabe, Yoshihisa; and Tsuji, Yoshihisa, 4,803,871, Cl. 73-104.000.

Watanabe, Yoshimi: *See*—
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Watanabe, Yoshio; Horiguchi, Hiroyuki; and Itagaki, Masanori, to Ricoh Company, Ltd. Total contact type photoelectric conversion device and optical reader using the same. 4,805,032, Cl. 358-294.000.

Watanabe, Yoshio: *See*—
Osawa, Kenji; Muramoto, Shiyouichi; Watanabe, Yoshio; Kawahara, Takanori; and Koizumi, Takaaki, 4,804,574, Cl. 428-209.000.

Watson, P. Keith; Till, Henry R.; and Croucher, Melvin D., to Xerox Corporation. Electrophotographic and electrographic imaging processes. 4,804,601, Cl. 430-32.000.

Weathersby, Charles C.; and Martin, Marcus C., Jr., to Allied-Signal Inc. Process for removing yarn or film wrapped around a tube. 4,803,770, Cl. 29-476.400.

Weaver, Max A.; and Adams, L. Jane, to Eastman Kodak Company. Water-dissipatable polyester and polyester-amides containing copolymerized colorants. 4,804,719, Cl. 525-420.000.

Wedekind, Reinhard: *See*—
Negendank, Helmut; and Wedekind, Reinhard, 4,805,159, Cl. 367-127.000.

Weeks, Philip A. Combination water/ice cube bottle. 4,804,083, Cl. 206-216.000.

Wegehaupt, Karl-Heinrich: *See*—
Gerhardinger, Dieter; Reisacher, Johannes; Stohr, Gunter; and Wegehaupt, Karl-Heinrich, 4,804,579, Cl. 428-304.400.

Wehner, William W., to Honeywell Inc. Parallel pipeline image processor with 2×2 window architecture. 4,805,227, Cl. 382-41.000.

Weidenbenner, Dennis W.: *See*—
Putrow, Michael C.; Wisneski, Leonard J., Jr.; Govekar, Craig F.; Jonker, Gary D.; Lindhard, Gordon; Weidenbenner, Dennis W.; and Quinn, Robert O., 4,804,921, Cl. 324-394.000.

Weigert, Frank J., to Du Pont de Nemours, E. I., and Company. Process for preparing methyl- and ethyl-substituted primary amines. 4,804,784, Cl. 564-409.000.

Weihrauch, Georg, to Pedex & Co. GmbH. Process and apparatus for producing bristle tuft material and single bristles from synthetic resin. 4,804,232, Cl. 300-21.000.

Weimann, Norbert; Dahm, Manfred; Nehen, Ulrich; and Schafer, Walter, to Bayer Aktiengesellschaft. Foamed microbeads and a process for their preparation. 4,804,687, Cl. 521-53.000.

Weirton Steel Corporation: *See*—
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Weise, Lutz: *See*—
Burgdorf, Jochen; Reinertz, Hans-Dieter; Weise, Lutz; and Beller, Hans-Albert, 4,804,236, Cl. 303-116.000.

Weiss, Eberhard; Stahl, Manfred; Domann, Helmut; Jung, Erich; and Maurer, Franz, to Robert Bosch GmbH. Method and system for electrically controlling braking of a vehicle. 4,805,105, Cl. 364-424.020.

Weisshaus, Ilan: *See*—
Lashmore, David S.; Weisshaus, Ilan; and NamGoong, Eok, 4,804,446, Cl. 204-51.000.

Weissmuller, Joachim; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, to Bayer Aktiengesellschaft. α-naphthylalkylamines. 4,804,406, Cl. 71-121.000.

Weissmuller, Joachim; and Reinecke, Paul, to Bayer Aktiengesellschaft. Decahydronaphth-2-yl-alkylamines. 4,804,659, Cl. 514-237.800.

Welch, Harland A.; Perales, Lorenzo; and Livingston, Don. Crawling insect-proof pet bowl apparatus and method. 4,803,954, Cl. 119-61.000.

Welland, David R.; and Kerth, Donald A., to Crystal Semiconductor Corporation. Method and circuitry for generating reference voltages. 4,804,863, Cl. 307-227.000.

Welsh Sporting Goods Corp.: *See*—
Markovich, Mark J., 4,804,084, Cl. 206-283.000.

Wenman, George B., to Georich Services (Proprietary) Limited. Sprocket wheel. 4,804,353, Cl. 474-152.000.

Wennemar, James A.: *See*—
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Wentworth, Benning, executor: *See*—
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Wentworth, Robert S., deceased: *See*—
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Wenzl, Josef: *See*—
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Werner, Charles E.: *See*—
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Werner & Pfleiderer GmbH: *See*—
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Wesolowski, Jan S., to Ampex Corporation. Serial data communication system. 4,805,194, Cl. 375-75.000.

Wessling, James E.: *See*—
Coultrup, Thomas; and Wessling, James E., 4,804,064, Cl. 182-155.000.

Wesson, David S.; McMahan, Michael E.; and George, Flint R., to Halliburton Services. Perforating gun firing tool and method of operation. 4,804,044, Cl. 166-297.000.

West, Roger K.: *See*—
Ver Strate, Gary; Bloch, Ricardo; Struglinski, Mark J.; Johnston, John E.; and West, Roger K., 4,804,794, Cl. 585-12.000.

Westbrook, Leslie D.: *See*—
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Western Fibers, Inc.: *See*—
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Westinghouse Electric Corp.: *See*—
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Crew, Albert W.; Neuner, James A.; Remley, Gilbert W.; Hager, Robert E.; Chambers, George M.; Delava, Eric A.; Wilbur, Susan A.; Kenny, Thomas J.; and Sutherland, James F., 4,804,515, Cl. 376-216.000.
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Hargrove, Homer G.; and Silvestri, George J., Jr., 4,803,841, Cl. 60-657.000.
Heinrich, Theodore M.; and Schauder, Colin D., 4,805,082, Cl. 363-129.000.
Jackovitz, John F.; Moyes, Hilary; and Buzzelli, Edward S., 4,804,598, Cl. 429-254.000.
John, Clarence D., Jr., 4,804,077, Cl. 198-339.100.
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WestPoint Pepperell: *See*—
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Westvaco Corporation: *See*—
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Force, Carlton G., 4,804,694, Cl. 523-335.000.

Wheeler, Charles F. Beam chair. 4,803,825, Cl. 52-677.000.

Whidden, Glenn H. Apparatus for detecting an electronic surveillance device. 4,805,231, Cl. 455-228.000.

Whirlpool Corporation: *See*—
Kennedy, William L., 4,803,855, Cl. 68-23.700.

White, Harold J.; House, Richard M.; and Vaughn, Worsel, to Thornhill Glass & Mirror Inc. Glazing assembly and method for glazing a building. 4,803,817, Cl. 52-235.000.

White, L. C.: *See*—
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Wiesinger, Horst: *See*—
Puhringer, Othmar; Wallner, Felix; Wiesinger, Horst; Eichberger, Ernst; Schiffer, Wilhelm; and Rockenschaub, Walter, 4,804,408, Cl. 75-38.000.

Wiggins, E. Thomas: *See*—
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Wihl, Tim S.: *See*—
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Wilbur, Susan A.: *See*—
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Wiley, Dan W.: *See*—
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Wiley, John W., Jr.: *See*—
Calo, Seraphin B.; Kannan, Krishnamurthi; Soo, Suk S.; Burket, Thomas G.; and Wiley, John W., Jr., 4,805,134, Cl. 364-900.000.

Wilkins, Philip S., to Cosworth Research & Development Limited. Method of making metal castings. 4,804,032, Cl. 164-34.000.

Williams Dental Company, Inc.: *See*—
Schaffer, Stephen P.; and Ingersoll, Clyde E., 4,804,517, Cl. 420-587.000.

Williams, Francis J.: *See*—
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Williams, Peter S.: *See*—
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Williard, David F.: *See*—
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Willits, Samuel P.; Kleeman, Thomas E.; and Willits, Steven F., to Spartanics, Ltd. Weapon training simulator system. 4,804,325, Cl. 434-22.000.

Willits, Steven F.: *See*—
Willits, Samuel P.; Kleeman, Thomas E.; and Willits, Steven F., 4,804,325, Cl. 434-22.000.

Wilson, David N.: *See*—
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Wilson, Donald K. Faraday rotators using a movable optical element. 4,804,256, Cl. 350-376.000.

Wilson, Donald W. Fluid line deicer. 4,804,013, Cl. 137-351.000.

Wilson, James F.: *See*—
Koontz, Harry S.; and Wilson, James F., 4,805,070, Cl. 361-286.000.

Wilson, Jerry F., to Manville Corporation. Wrap-around article carrier with end fold-in panel. 4,804,089, Cl. 206-435.000.

Wilt, Daniel P., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Preservation of surface features on semiconductor surfaces. 4,805,178, Cl. 372-46.000.

Windley, William T., to Du Pont de Nemours, E. I., and Company. Process for obtaining spherulite reduction in polyamides. 4,804,512, Cl. 264-211.000.

Wiskich, Joseph T.: *See*—
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Wisneski, Leonard J., Jr.: *See*—
Putrow, Michael C.; Wisneski, Leonard J., Jr.; Govekar, Craig F.; Jonker, Gary D.; Lindhard, Gordon; Weidenbenner, Dennis W.; and Quinn, Robert O., 4,804,921, Cl. 324-394.000.

Wittmann, Dieter; Lindner, Christian; Kress, Hans-Jurgen; Peters, Horst; and Schoepa, Jochen, to Bayer Aktiengesellschaft. Thermoplastic moulding compounds based on special graft polymers. 4,804,708, Cl. 525-67.000.

Wittrisch, Christian: *See*—
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Wohl, Ronald A.: *See*—
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Wolfe, Larry L.: *See*—
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Wollermann-Windgasse, Reinhard: *See*—
Ackermann, Frank; Wollermann-Windgasse, Reinhard; and Faller, Bernd, 4,805,072, Cl. 361-328.000.

Wolter, Eric H.; and Wennemar, James A., to Ideal Industries, Inc. Powered wire stripper. 4,803,903, Cl. 81-9.430.

Wong, Jesse K.: *See*—
Piwinski, John J.; Green, Michael J.; Ganguly, Ashit K.; Wong, Jesse K.; Katchen, Bernard; and Cramer, Jeffrey, 4,804,666, Cl. 514-278.000.

Wong, Thomas S.: *See*—
Tam, Aloysius; Wong, Thomas S.; Wang, David; and Naren, David, 4,805,149, Cl. 365-155.000.

Woo, James, to Tektronix, Inc. FT quadrupler amplifier with linearity correction. 4,804,926, Cl. 330-149.000.

Wood, Chester W.; and Lamping, Frank G., to Dover Corporation. Swivel construction and method of making the same. 4,804,206, Cl. 285-13.000.

World Tech Fibres, Inc.: *See*—
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Woven Electronics Corporation: *See*—
Orr, Lawrence W., Jr.; and Motte, Ray T., 4,804,806, Cl. 174-117.00M.

Wren, Douglas L.: *See*—
Cooper, Gary F.; Wren, Douglas L.; Van Horn, Albert R.; Li, Tsung-Tse; and Beard, Colin C., 4,804,787, Cl. 568-649.000.

Wright, Harold T., to Maxtor. Winchester disc drive actuator structure. 4,805,055, Cl. 360-106.000.

Wroblowsky, Heinz-Jurgen: *See*—
Jensen-Korte, Uta; Gehring, Reinhold; Schallner, Otto; Stetter, Jorg; Wroblowsky, Heinz-Jurgen; Becker, Benedikt; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; and Andrews, Peter, 4,804,675, Cl. 514-407.000.

Wuerzer, Bruno: *See*—
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Wuest, Hans-Heiner; Frickel, Fritz-Frieder; Paust, Joachim; Schmieder, Klaus; and Nuerrenbach, Axel, to BASF Aktiengesellschaft. Substituted hexatriene derivatives and their use in treating acne and psoriasis. 4,804,670, Cl. 514-381.000.

Wurdack, Gerard A; and Helton, Frank F., to Gerard A. Wurdack & Associates, Inc. Antenna rotator controllers and conversion systems therefor. 4,804,899, Cl. 318-600.000.

Wusirika, Raja R.: *See*—
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Xerox Corporation: *See*—
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Yamanaka, Masaaki; and Abe, Fumiyoshi, to Sony Corporation. Method and apparatus for detecting position of tape when recording or reproducing signals thereon. 4,805,053, Cl. 360-72.300.

Yamanaka, Toshiaki; Sakai, Yoshio; Hayashida, Tetsuya; Minato, Osamu; Shimohigashi, Katsuhiro; and Masuhara, Toshiaki, to Hitachi, Ltd. Stacked static random access memory cell having capacitor. 4,805,147, Cl. 365-154.000.

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Zysset, Edgar H.; and Atkinson, Raymond A., to Citrus Central, Inc. Method for fabricating burr-free pull tabs and articles. 4,804,105, Cl. 220-273.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF FEBRUARY, 1989

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Chapman, James H., Jr.: *See*—
Hall, Iris H.; Cocolas, George H.; and Chapman, James H., Jr., Re. 32,868, Cl. 514-421.000.
Chevron Research Company: *See*—
Cruise, Don S., Re. 32,866, Cl. 166-310.000.
Clark, Stephen D.: *See*—
Rutledge, Woodrow T., Jr.; Rutledge, Russell P.; Freeman, Jon B.; and Clark, Stephen D., Re. 32,865, Cl. 403-268.000.
Cocolas, George H.: *See*—
Hall, Iris H.; Cocolas, George H.; and Chapman, James H., Jr., Re. 32,868, Cl. 514-421.000.
Cruise, Don S., to Chevron Research Company. Method and apparatus for distributing fluids within a subterranean wellbore. Re. 32,866, Cl. 166-310.000.
Edwards, William H. Locking nut assembly for a guitar. Re. 32,863, Cl. 84-314.00N.
Ezure, Tadayoshi, to Hosiden Electronics Co. Ltd. Connector with lock mechanism. Re. 32,864, Cl. 439-152.000.
Fiberflex Products Ltd.: *See*—
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Hall, Iris H.; Cocolas, George H.; and Chapman, James H., Jr., to Research Corporation. Antihyperlipidemic compositions. Re. 32,868, Cl. 514-421.000.
Hosiden Electronics Co. Ltd.: *See*—
Ezure, Tadayoshi, Re. 32,864, Cl. 439-152.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Wachi, Masatada, Re. 32,862, Cl. 84-1.210.
Research Corporation: *See*—
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Rutledge, Russell P.: *See*—
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Rutledge, Woodrow T., Jr.; Rutledge, Russell P.; Freeman, Jon B.; and Clark, Stephen D., to Fiberflex Products Ltd. Fiberglass sucker rod construction. Re. 32,865, Cl. 403-268.000.
Wachi, Masatada, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. Re. 32,862, Cl. 84-1.210.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Baab, William E.: *See*—
Hummel, John E.; and Baab, William E., B1 4,526,565, Cl. 493-196.000.
Blackwell, John, to Mobay Chemical Corporation. Green-yellow to orange mandazo paper dyes. B1 4,071,312, 2-14-89, Cl. 534-728.000.
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Fory, Werner; Gass, Karl; and Meyer, Willy, to Ciba-Geigy Corporation. Novel sulfonylureas. B1 4,579,583, 2-14-89, Cl. 71-92.000.
Gass, Karl: *See*—
Fory, Werner; Gass, Karl; and Meyer, Willy, B1 4,579,583, Cl. 71-92.000.
Hummel, John E.; and Baab, William E., to HWM Products Inc. Method of making flat bottom plastic bag. B1 4,526,565, 2-14-89, Cl. 493-196.000.
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18.1 4,803,797
21.2 4,803,794
42.33 4,803,793
43.13 4,803,798
82 4,803,799

CLASS 44
51 4,804,388
70 4,804,389
621 4,804,390

CLASS 45
320 4,803,753

CLASS 47
1.1 4,803,800
1.5 4,803,801
39 4,803,806
41.12 4,803,805
47 4,803,802
59 4,803,803

CLASS 49
26 4,803,807
394 4,803,808
404 4,803,809
462 4,803,810

CLASS 51
7 4,803,811

CLASS 52
157 4,803,812
199 4,803,813
210 4,803,815
219 4,803,816
235 4,803,817
309.1 4,803,819
387 4,803,821
397 4,803,820
506 4,803,822
4,803,823
520 4,803,818
648 4,803,824
677 4,803,825

CLASS 53
167 4,803,827
390 4,803,828
442 4,803,829

CLASS 55
270 4,804,391
356 4,804,392

CLASS 56
16.9 4,803,831
28 4,803,830
341 4,803,832

CLASS 57
22 4,803,833
308 4,803,834
350 4,803,835

CLASS 60
39.464 4,803,836
226.3 4,803,837
288 4,803,838
501 4,803,839
545 4,803,840
657 4,803,841

CLASS 62
55.5 4,803,844
4,803,845
64 4,803,842
68 4,803,847
85 4,803,843
94 4,803,846
98 4,803,850
183 4,803,848
311 4,803,849
374 4,803,851

CLASS 63
13 4,803,852
14.1 4,803,853

CLASS 65
I 4,804,395
3.12 4,804,393
59.27 4,804,396
107 4,804,397

CLASS 68
12 R 4,803,854
23.7 4,803,855

CLASS 70
28 4,803,856
58 4,803,857
231 4,803,858
323 4,803,859
339 4,803,902
446 4,803,860

CLASS 71
11 4,804,401
12 4,804,402
28 4,804,403
92 4,804,394
4,804,398
B1 4,579,583
93 4,804,399
94 4,804,404
95 4,804,400
118 4,804,405
121 4,804,406

CLASS 72
97 4,803,861
199 4,803,862
4,803,863
202 4,803,864
245 4,803,865
248 4,803,877
296 4,803,878
322 4,803,879
354 4,803,880
392 4,803,881

CLASS 73
23 4,803,866
32 A 4,803,867
49.3 4,803,868
53 4,803,869
104 4,803,871
150 R 4,803,872
155 4,803,873
4,803,874
204.26 4,803,875
334 4,803,876
462 4,803,882
517 B 4,803,883
598 4,803,884
861.22 4,803,870
862.36 4,803,885
862.39 4,803,886
4,803,888
863.01 4,803,887

CLASS 74
53 4,803,889
131 4,803,890
409 4,803,891
479 4,803,892
572 4,803,893
594.6 4,803,894
603 4,803,895
606 R 4,803,896
720.5 4,803,897
860 4,803,898
866 4,803,899
4,803,900
867 4,803,901

CLASS 75
0.5 AA 4,804,407
38 4,804,408
246 4,804,409

CLASS 81
9.43 4,803,903
54 4,803,904

CLASS 83
13 4,803,905

CLASS 84
1.21 Re.32,862
293 4,803,906
314 N Re.32,863
422 R 4,803,907
454 4,803,908

CLASS 87
6 4,803,909

CLASS 89
27.3 4,803,910
194 4,803,911

CLASS 91
369.2 4,803,912
371 4,803,913

CLASS 92
31 4,803,914
110 4,803,915

CLASS 99
340 4,803,919
348 4,803,920
352 4,803,916
356 4,803,917
377 4,803,918
483 4,803,921

CLASS 101
41 4,803,922
365 4,803,923

CLASS 102
293 4,803,924
381 4,803,925
430 4,803,926
434 4,803,927
476 4,803,928
524 4,803,929

CLASS 106
1.15 4,804,410
8 4,804,413
22 4,804,411
35 4,804,412
212 4,804,414
468 4,804,416
496 4,804,415
498 4,804,417

CLASS 108
48 4,803,930

CLASS 110
163 4,803,931
260 4,803,932
338 4,803,933

CLASS 112
83 4,803,941
121.14 4,803,934
121.27 4,803,935
254 4,803,936
265.2 4,803,937

CLASS 114
39.1 4,803,938
4,803,939
72 4,803,940
219 4,803,942
263 4,803,943
359 4,803,944
363 4,803,945

CLASS 118
52 4,803,946
725 4,803,948

CLASS 119
3 4,803,949
14.55 4,803,950
19 4,803,951
4,803,952
29 4,803,953
61 4,803,954
71 4,803,955
106 4,803,956

CLASS 122
7 R 4,803,957
21 4,803,958
379 4,803,959

CLASS 123
46 A 4,803,960
52 MC 4,803,962
52 MV 4,803,961
187.5 R 4,803,963
193 CH 4,803,965
197 AC 4,803,964
422 4,803,967
478 4,803,966
533 4,803,968
561 4,803,969

CLASS 124
23 R 4,803,970
41 A 4,803,971

CLASS 126
73 4,803,973
450 4,803,972

CLASS 127
2 4,804,418
19 4,804,419

CLASS 128
66 4,803,974
80 C 4,803,975
92 VD 4,803,976
200.23 4,803,978
201.15 4,803,979
201.23 4,803,980
206.24 4,803,981
310 4,803,982
321 4,803,983
334 R 4,803,984
346 4,803,985
385 4,803,986
419 PG 4,803,987
421 4,803,988
586 4,803,989
634 4,803,992
635 4,803,991
660.01 4,803,993
4,803,993
660.06 4,803,994
661.08 4,803,990
710 4,803,996
723 4,803,997
759 4,803,998
763 4,803,999
774 4,804,000
782 4,804,001
898 4,804,054

CLASS 131
365 4,804,002

CLASS 132
53 4,804,003
218 4,804,004

CLASS 134
15 4,804,420
18 4,804,421
28 4,804,422
57 R 4,804,005
177 4,804,006
184 4,804,007

CLASS 138
35 V 4,804,008

CLASS 127
84 4,804,009
216 4,804,010
270 4,804,011
343 4,804,012
351 4,804,013
501 4,804,014
614.03 4,804,015
614.16 4,804,017
625.23 4,804,016

CLASS 128
93 4,804,018
109 4,804,019
111 4,804,020
171 4,804,021

CLASS 141
65 4,804,023
164 4,804,022
165 4,804,024
340 4,804,026

CLASS 148
437 4,804,423

CLASS 149
19.6 4,804,424

CLASS 152
417 4,804,027
525 4,804,028

CLASS 156
73.6 4,804,425
128.1 4,804,426
181 4,804,427
209 4,804,429
233 4,804,430
267 4,804,428
345 4,804,431
350 4,804,432
359 4,804,433
364 4,804,434
379.6 4,804,435
441 4,804,436
577 4,804,437
653 4,804,438

CLASS 157
1.1 4,804,029
1.17 4,804,030
1.21 4,804,031

CLASS 162
55 4,804,439
70 4,804,440
212 4,804,441

CLASS 164
34 4,804,032
46 4,804,034
97 4,804,033
125 4,804,035
147.1 4,804,036
449 4,804,037

CLASS 165
2 4,804,039
11.2 4,804,038
78 4,804,040
166 4,804,041

CLASS 166
65.1 4,804,045
184 4,804,042
263 4,804,043
297 4,804,044
310 Re.32,866

CLASS 169
90 4,804,046

CLASS 172
91 4,804,047

CLASS 173
47 4,804,048

CLASS 174
16.2 4,804,804
52.2 4,804,805
117 M 4,804,806

CLASS 175
20 4,804,050
26 4,804,051
329 4,804,049

CLASS 177
25.14 4,804,052
211 4,804,053

CLASS 180
53.3 4,804,055
70.1 4,804,056
142 4,804,057
197 4,804,058
4,804,059
233 4,804,060
247 4,804,061

CLASS 181
121 4,804,062

CLASS 182
4,804,063
155 4,804,064

CLASS 184
39 4,804,065

CLASS 187
8.71 4,804,066
8.72 4,804,068
119 4,804,067
125 4,804,069

CLASS 188
32 4,804,070
71.5 4,804,071
72.1 4,804,073
79.52 4,804,072

CLASS 192
0.044 4,804,074
84 C 4,804,075

CLASS 198
339.1 4,804,077
346.2 4,804,078
450 4,804,079
475.1 4,804,076
621 4,804,080
689.1 4,804,081

CLASS 200
17 B 4,804,809
61.25 4,804,808
331 4,804,807

CLASS 203
12 4,804,442

CLASS 204
1 T 4,804,443
28 4,804,444
39 4,804,445
51 4,804,446
63 4,804,447
238 4,804,452
243 R 4,804,448
256 4,804,449
299 R 4,804,450
301 4,804,451
302 4,804,453
406 4,804,454
411 4,804,455

CLASS 206
1.5 4,804,082
216 4,804,083
283 4,804,084
309 4,804,085
328 4,804,086
335 4,804,087
346 4,804,088
366 4,804,090
435 4,804,089
457 4,804,091
579 4,804,092

CLASS 208
48 AA 4,804,456
64 4,804,457
143 4,804,458
253 4,804,459

CLASS 209
164 4,804,460
166 4,804,461
167 4,804,462
466 4,804,463
691 4,804,093

CLASS 210
96.1 4,804,464
136 4,804,465
188 4,804,466
232 4,804,467
4,804,468
4,804,469
4,804,470
265 4,804,471
500.27 4,804,472
634 4,804,473
641 4,804,474
651 4,804,475
697 4,804,476
737 4,804,477
752 4,804,478
754 4,804,479
759 4,804,480
791 4,804,481

CLASS 211
88 4,804,094

CLASS 213
152 4,804,095

CLASS 215
100 A 4,804,097
228 4,804,096
238 4,804,098
279 4,804,099

CLASS 219
10.55 F 4,804,812
60 A 4,804,813
69 V 4,804,814
85 G 4,804,810
91.2 4,804,819
98 4,804,811
4,804,820
121.2 4,804,816
121.6 4,804,815
136 4,804,817
145.23 4,804,818
271 4,804,821
458 4,804,822
553 4,804,823

CLASS 220
1 R 4,804,100
20 4,804,101
93 4,804,102
251 4,804,103
269 4,804,104
273 4,804,105
4,804,106

CLASS 221
12 4,804,107
223 4,804,108

CLASS 222
38 4,804,109
56 4,804,110
77 4,804,111
129.1 4,804,112
142.1 4,804,113
148 4,804,114
209 4,804,115
214 4,804,117
402.16 4,804,116
468 4,804,119
641 4,804,118

CLASS 224
42.03 B 4,804,120
191 4,804,121
202 4,804,025
220 4,804,122
266 4,804,123

CLASS 226
74 4,804,124
97 4,804,125
182 4,804,126

CLASS 227
10 4,804,127

CLASS 228
6.2 4,804,130
20 4,804,129
110 4,804,131
115 4,804,132
217 4,804,128

CLASS 229
8 4,804,133
52 A 4,804,134
69 4,804,135
112 4,804,136
114 4,804,137
171 4,804,138

CLASS 235
1 D 4,804,828
7 R 4,804,824
377 4,804,829
379 4,804,830
380 4,804,825
382 4,804,826
488 4,804,827

CLASS 236
35 4,804,139
49 4,804,140
100 4,804,141

CLASS 239
56 4,804,142
126 4,804,143
346 4,804,144
666 4,804,145

CLASS 241
5 4,804,146
24 4,804,147
35 4,804,148

CLASS 242
35.6 R 4,804,151
55.53 4,804,149
67.1 R 4,804,152
78.1 4,804,153
84.5 A 4,804,150

CLASS 244
1 R 4,804,154
12.6 4,804,155
23 C 4,804,156
135 R 4,804,157

CLASS 248
74.4 4,804,158
248 4,804,159
544 4,804,161
671 4,804,162

CLASS 249
207 4,804,160

CLASS 250
201 4,804,831
4,804,835
4,804,836
203 R 4,804,832
211 J 4,804,833
211 R 4,804,834
251 4,804,837
288 4,804,838
4,804,839
310 4,804,840
327.2 4,804,841
4,804,842
330 4,804,843
338.3 4,804,844
367 4,804,845
379 4,804,846
389 4,804,847
394 4,804,848
459.1 4,804,849
4,804,850
492.1 4,804,852
492.2 4,804,851
574 4,804,853
578 4,804,854

CLASS 251
74 4,804,163
335.3 4,804,164

CLASS 252
7 4,804,482
8.551 4,804,484
8.552 4,804,483
8.8 4,804,483
4,804,497
32.7 E 4,804,489
62.3 BT 4,804,490
94 4,804,491
106 4,804,492
153 4,804,486
172 4,804,493
312 4,804,495
363.5 4,804,496
397 4,804,494
400.1 4,804,487
544 4,804,488
628 4,804,498

CLASS 254
30 4,804,165

CLASS 256
48 4,804,166

CLASS 260
369 4,804,501
397.2 4,804,502
502.5 E 4,804,500
502.5 F 4,804,499

CLASS 261
153 4,804,503

CLASS 264
2. 4,804,504
40.1 4,804,505
45.1 4,804,506
50 4,804,507
103 4,804,508
136 4,804,509
189 4,804,510
206 4,804,511
211 4,804,512
500 4,804,513

CLASS 266
200 4,804,167
235 4,804,168

CLASS 267
220 4,804,169
279 4,804,170

CLASS 269
138 4,804,171
254 R 4,804,172

CLASS 271
11 4,804,173
207 4,804,174
225 4,804,175

CLASS 272
54 4,804,176
71 4,804,177
97 4,804,178
117 4,804,179
136 4,804,180

CLASS 273
37 4,804,182
73 C 4,804,183
77 R 4,804,184
81 D 4,804,181
85 CP 4,804,185
127 R 4,804,186
157 R 4,804,187
167 R 4,804,188
232 4,804,189
250 4,804,190
261 4,804,191
336 4,804,192
376 4,804,193

CLASS 277
3 4,804,194
18 4,804,195
78 4,804,196

CLASS 279
41 R 4,804,197

CLASS 280
21.1 4,804,198
33.998 4,804,199
512 4,804,204
602 4,804,200
618 4,804,201
4,804,202
707 4,804,203
718 4,804,205

CLASS 285
13 4,804,206
16 4,804,207
18 4,804,208
31 4,804,209
47 4,804,210
225 4,804,211
256 4,804,212
308 4,804,213

CLASS 289
17 4,804,214

CLASS 290
54 4,804,855

CLASS 291
113 4,804,215
337 4,804,216
347 4,804,217

CLASS 294
31.2 4,804,218
54.5 4,804,219
111 4,804,220

CLASS 296
152 4,804,223
203 4,804,222

CLASS 297
195 4,804,221
216 4,804,226
301 4,804,227
347 4,804,228
355 4,804,224
452 4,804,225
457 4,804,230
471 4,804,229

CLASS 299
91 4,804,231

CLASS 300
21 4,804,232

CLASS 301
124 R 4,804,233

CLASS 303
7 4,804,234
4,804,237
9.68 4,804,235
116 4,804,236

CLASS 307
10 AT 4,804,856
10 R 4,804,857
86 4,804,858
105 B 4,804,859
117 4,804,860
140 4,804,862
227 4,804,863
279 4,804,864
297 4,804,865
311 4,804,866
446 4,804,868
4,804,869
455 4,804,861
473 4,804,867
482 4,804,870

CLASS 310
42 4,804,872
67 R 4,804,873
92 4,804,874
323 4,804,875

CLASS 312
114 4,804,877
138 R 4,804,238
221 4,804,876
265 4,804,239

CLASS 313
113 4,804,878
361.1 4,804,879
404 4,804,880
407 4,804,881
468 4,804,882
474 4,804,884
478 4,804,883
480 4,804,885
489 4,804,886
495 4,804,887
595 4,804,888
624 4,804,889

CLASS 315
169.3 4,804,890
383 4,804,891

CLASS 318
90 4,805,221
254 4,804,892
258 4,804,893
314 4,804,894
345 A 4,804,895
568 4,804,896
4,804,897
569 4,804,898
600 4,804,899
719 4,804,900
786 4,804,901
798 4,804,902

CLASS 323
300 4,804,916
312 4,804,904

CLASS 324
61 P 4,804,905
65 R 4,804,906
67 4,804,907
95 4,804,917
115 4,804,908
120 4,804,909
4,804,910
130 4,804,903
167 4,804,911
207 4,804,912
208 4,804,913
226 4,804,914
248 4,804,915
303 4,804,918
309 4,804,919
4,804,920
394 4,804,921
457 4,804,922

CLASS 328
26 4,804,923

CLASS 329
1 4,804,924
50 4,804,925

CLASS 330
149 4,804,926
162.12 4,804,250
188 4,804,927

CLASS 331
1 A 4,804,928
57 4,804,929

CLASS 332
31 R 4,804,931
751 4,804,930

CLASS 335
58 4,804,932
186 4,804,933
229 4,804,934

CLASS 338
25 4,804,935
80 4,804,936

CLASS 340
52 F 4,804,937
310 A 4,804,938
514 4,804,942
539 4,804,943
541 4,804,945
550 4,804,946
620 4,804,947
624 4,804,944
703 4,804,948
710 4,804,949
715 4,804,950
719 4,804,951
730 4,804,952
784 4,804,953
825.44 4,804,955
825.440 4,804,954
870.03 4,804,957
870.07 4,804,958

CLASS 341
59 4,804,959
133 4,804,940
140 4,804,941
156 4,804,939
158 4,804,960

CLASS 342
125 4,804,961
159 4,804,962
195 4,804,963
389 4,804,964

CLASS 343
700 MS 4,804,965
712 4,804,966
4,804,967
713 4,804,968
715 4,804,969
753 4,804,970
840 4,804,971
4,804,972
888 4,804,973

CLASS 345
825.790 4,804,956

CLASS 346
76 L 4,804,975
4,804,977
76 PH 4,804,974
4,804,976
108 4,804,978
157 4,804,979
159 4,804,980
160 4,804,981
4,804,982

CLASS 350
96.10 4,804,240
96.15 4,804,248
96.19 4,804,241
96.20 4,804,242
4,804,243
4,804,244
96.23 4,804,245
4,804,252
96.34 4,804,246
4,804,247
4,804,259
330 4,804,253
344 4,804,254
354 4,804,255
376 4,804,256
392 4,804,251
437 4,804,249
505 4,804,258
626 4,804,257

CLASS 351
118 4,804,260
158 4,804,261
226 4,804,262

CLASS 354
78 4,804,983
4,804,984
145.1 4,804,985
212 4,804,986
219 4,804,987
276 4,804,988
283 4,804,989
324 4,804,990
403 4,804,991
471 4,804,992

CLASS 355
3 BE 4,804,993
3 DD 4,804,994
4,804,995
14 SH 4,804,997
4,804,998
15 4,804,999
43 4,805,000
58 4,805,001
87 4,805,002

CLASS 356
28 4,804,263
44 4,804,264
152 4,804,265
308 4,804,266
335 4,804,267
338 4,804,268
353 4,804,269
355 4,804,270
416 4,804,271
427 4,804,273

CLASS 357
22 4,805,003

30 4,805,005
30 4,805,026
42 4,805,008
53 4,805,004
70 4,805,009
74 4,805,007

CLASS 358
29 4,805,010
44 4,805,011
75 4,805,012
80 4,805,013
86 4,805,014
88 4,805,015
98 4,805,016
105 4,805,017
4,805,018
107 4,805,019
147 4,805,020
160 4,805,021
183 4,805,022
213.17 4,805,023
213.19 4,805,024
213.26 4,805,025
213.29 4,805,026
225 4,805,027
4,805 028
260 4,805,030
284 4,805,031
294 4,805,032
296 4,805,038
298 4,805,033
310 4,805,034
4,805,035
335 4,805,036
4,805,037
4,805,039
336 4,805,040
347 4,805,041

CLASS 360
14.3 4,805,042
49 4,805,046
59 4,805,043
60 4,805,045
65 4,805,047
69 4,805,048
71 4,805,049
72.2 4,805,050
72.3 4,805,051
78.01 4,805,051
97.01 4,805,052
4,805,054
4,805,044
105 4,805,055
108 4,805,056
109 4,805,057
119 4,805,058
125 4,805,059
132 4,805,060
133 4,805,061
135 4,805,065

CLASS 361
4 4,805,062
16 4,805,063
117 4,805,064
178 4,805,066
212 4,805,067
213 4,805,068
226 4,805,069
246 4,805,073
286 4,805,070
313 4,805,071
328 4,805,072
525 4,805,074

CLASS 362
123 4,805,075
180 4,805,076
267 4,805,077

CLASS 363
17 4,805,078
56 4,805,079
4,805,080
96 4,805,081
129 4,805,082
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219	4,804,693	431	4,804,720	387	4,804,746	259	4,804,765	409	4,804,784		CLASS 604
335	4,804,694	471	4,804,724		CLASS 534	262	4,804,766		CLASS 568	1	4,804,362
	CLASS 534	502	4,804,721	573	4,804,747		CLASS 549	425	4,804,785	4	4,804,359
27	4,804,695	523	4,804,722	728	D1 4,071,312	65	4,804,767	591	4,804,786		4,804,365
88	4,804,696	535	4,804,723		CLASS 536	215	4,804,768	649	4,804,787	6	4,804,363
90	4,804,697		CLASS 526	7.1	4,804,749	374	4,804,769	730	4,804,788	22	4,804,364
89	4,804,698	88	4,804,725	20	4,804,750		CLASS 556	853	4,804,789	85	4,804,366
98	4,804,699	124	4,804,726	28	4,804,748	405	4,804,770	885	4,804,790	113	4,804,367
166	4,804,700	209	4,804,728		CLASS 540	407	4,804,771		4,804,791	155	4,804,368
262	4,804,701	247	4,804,727	227	4,804,752	436	4,804,772	939	4,804,792	175	4,804,369
432	4,804,702	336	4,804,729	450	4,804,753		4,804,773		CLASS 574	180	4,804,374
444	4,804,703		CLASS 528	535	4,804,754		4,804,774	445	4,804,793	195	4,804,370
549	4,804,704	24	4,804,731	575	4,804,751		CLASS 558		CLASS 585	198	4,804,371
	CLASS 525	26	4,804,737		CLASS 544	358	4,804,775	12	4,804,794	250	4,804,372
54.21	4,804,705	28	4,804,732	2	4,804,755		CLASS 560	21	4,804,795	277	4,804,360
66	4,804,706	54	4,804,734	284	4,804,756	51	4,804,776	269	4,804,796	318	4,804,373
	4,804,707	125	4,804,735	319	4,804,757		CLASS 562	407	4,804,801	323	4,804,376
67	4,804,708	176	4,804,736	335	4,804,759	421	4,804,777	444	4,804,799	352	4,804,375
102	4,804,709	286	4,804,730	352	4,804,758	534	4,804,778	500	4,804,797	387	4,804,377
111	4,804,710	392	4,804,738		CLASS 546	542	4,804,779	512	4,804,798	398	4,804,378
146	4,804,711		4,804,739	153	4,804,760		CLASS 564	640	4,804,800	578	4,804,379
152	4,804,712	422	4,804,740	251	4,804,761	104	4,804,780	734	4,804,802	585.1	4,804,380
185	4,804,713	931	4,804,741	345	4,804,763	154	4,804,781	748	4,804,803		CLASS 623
240	4,804,714		CLASS 530		4,804,764	193	4,804,782		CLASS 600	1	4,804,381
245	4,804,715	307	4,804,742					3	4,803,977		4,804,382
375	4,804,717	330	4,804,743							6	4,804,361
399	4,804,716	350	4,804,744							13	4,804,383
418	4,804,718										CLASS 807
										530	4,804,871

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D2—	276	299,780		479	299,797	D11—	12	299,814	D17—	[illegible]	299,834	D22—	140	299,848
	284	299,781		[illegible]	299,798		35	299,815	D18—	37	299,831		141	299,849
	313	299,782		[illegible]	299,799	D12—	110	299,816		42	299,832	D23—	229	299,850
	314	299,783	D7—	1	299,800		156	299,817			299,833		241	299,851
		299,784		17	299,801		158	299,818	D19—	[illegible]	299,835		252	299,852
		299,785		43	299,802		167	299,819	D21—	24	299,836			299,853
		299,786		[illegible]	299,803		317	299,820		109	299,837			299,854
	319	299,787		[illegible]	299,804	D13—	31	299,821			299,838		343	299,855
	320	299,788		73	299,805		32	299,822		[illegible]	299,839		347	299,856
D3—	30.1	299,789		[illegible]	299,806	D14—	106	299,825		173	299,840		370	299,857
	36	299,790		[illegible]	299,807		107	299,826		194	299,841		379	299,858
	[illegible]	299,791	D8—	[illegible]	299,808		128	299,824		195	299,842	D24—	17	299,859
	[illegible]	299,792		373	299,809		151	299,823			299,843			299,860
D5—	[illegible]	299,793	D9—	300	299,810	D15—	9.1	299,827			299,844			299,861
D6—	332	299,794	D10—	[illegible]	299,811		130	299,828		[illegible]	299,845		36	299,862
		299,795		[illegible]	299,812		133	299,829		228	299,846		41	299,863
	337	299,796		116	299,813		147	299,830			299,847	D34—	1	299,879

		299,864									
	54	299,865									
	[illegible]	299,866									
D25—	1	299,867									
	119	299,868									
	123	299,869									
	157	299,870									
		299,871									
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		299,873									
D28—	13	299,874									
	57	299,875									
	[illegible]	299,877									
	[illegible]	299,876									
	99	299,878									
D34—	1	299,879									

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P.—	6,598	34	6,606	56	6,607		6,609	[illegible]	6,601		6,604
15	6,612	[illegible]	6,597	[illegible]	6,602		6,610				
18	6,599	[illegible]	6,608		6,605		6,611		6,603	70	6,600

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	4,804,216	4,804,132	4,804,862	4,803,977	4,804,176	4,804,471
	4,804,250	4,804,133	4,804,864	4,804,069	4,804,288	4,804,486
	4,804,462	4,804,156	4,804,870	4,804,311	4,804,321	4,804,497
	4,804,527	4,804,158	4,804,891	4,804,313	4,804,374	4,804,501
	4,804,588	4,804,166	4,804,897	4,804,315	4,804,731	4,804,504
	4,804,691	4,804,171	4,804,906	4,804,433	4,804,865	4,804,549
	4,805,191	4,804,172	4,804,917	4,804,468	4,804,916	4,804,552
02 :	4,803,750	4,804,183	4,804,949	4,804,518	4,804,954	4,804,625
04 :	4,803,755	4,804,194	4,804,956	4,804,532	4,804,970	4,804,631
	4,803,784	4,804,197	4,804,959	4,804,562	4,805,066	[illegible]
	4,803,849	4,804,209	4,804,971	4,804,580	4,805,121	4,804,721
	4,803,946	4,804,230	4,804,972	4,804,591	4,805,215	4,804,803
	4,803,952	4,804,243	4,804,979	4,804,615	13 : 4,803,746	4,804,876
	4,804,017	4,804,251	4,805,015	4,804,653	4,803,812	4,804,881
	4,804,042	4,804,258	4,805,022	4,804,742	4,804,097	4,804,898
	4,804,096	4,804,261	4,805,027	4,804,782	4,804,117	4,804,910
	4,804,328	4,804,286	4,805,043	4,804,804	4,804,140	4,804,937
	4,804,861	4,804,290	4,805,055	4,804,855	4,804,483	[illegible]
	4,805,003	4,804,300	4,805,061	4,804,978	4,804,814	[illegible]
	4,805,007	4,804,309	4,805,065	4,805,009	4,804,938	4,805,083
	4,805,077	4,804,316	4,805,068	4,805,109	4,805,088	4,805,106
	4,805,097	4,804,330	4,805,073	4,805,197	4,805,171	4,805,166
	4,805,146	4,804,338	4,805,089	10 : 4,804,480	4,805,229	4,805,193
05 :	4,803,989	4,804,347	4,805,090	4,804,493	15 : 4,803,890	18 : 4,803,744
	4,804,001	4,804,365	4,805,093	4,804,512	16 : 4,804,094	[illegible]
06 :	4,803,769	4,804,370	4,805,095	4,804,557	17 : 4,803,753	4,804,098
	4,803,782	4,804,375	4,805,098	4,804,621	4,803,757	4,804,127
	4,803,796	4,804,395	4,805,122	4,804,654	4,803,779	4,804,224
	4,803,805	4,804,413	4,805,123	4,804,699	4,803,827	[illegible]
	4,803,828	4,804,437	4,805,149	4,804,703	4,803,847	4,804,566
	4,803,842	4,804,470	4,805,181	4,804,716	4,803,869	[illegible]
	4,803,867	4,804,491	4,805,188	4,804,751	4,803,903	19 : 4,803,743
	4,803,881	4,804,520	4,805,194	4,804,784	4,803,964	[illegible]
	4,803,883	4,804,522	4,805,195	11 : Re.32,863	4,803,983	4,803,850
	4,803,906	4,804,523	4,805,209	4,803,740	4,804,003	4,804,030
	4,803,927	4,804,539	4,805,213	4,803,741	4,804,029	4,804,084
	4,803,944	4,804,546	4,805,220	4,803,756	[illegible]	4,804,087
	4,803,953	4,804,614	4,805,222	4,803,759	[illegible]	4,804,120
	4,803,955	4,804,634	4,805,232	4,803,825	4,804,136	4,804,391
	4,803,971	4,804,650	4,805,237	4,803,841	4,804,141	20 : 4,803,921
	4,803,985	4,804,682	08 : 4,803,870	4,803,876	4,804,177	4,804,289
	4,803,991	4,804,705	4,803,908	4,803,880	4,804,186	4,804,317
	4,803,994	4,804,741	4,803,910	4,803,893	4,804,196	4,804,715
	4,804,000	4,804,744	4,803,988	4,803,907	[illegible]	21 : 4,803,859
	4,804,007	4,804,779	4,804,054	4,803,938	4,804,238	22 : Re.32,866
	4,804,010	4,804,787	4,804,104	4,803,945	4,804,325	4,804,018
	4,804,045	4,804,796	4,804,335	4,803,980	4,804,366	4,804,089
	[illegible]	4,804,797	4,804,907	4,804,013	4,804,376	4,804,165
	[illegible]	4,804,810	4,804,944	4,804,105	4,804,377	4,804,305
	4,804,091	4,804,832	4,805,137	4,804,147	4,804,432	[illegible]
	4,804,102	[illegible]	4,805,162	4,804,157	4,804,448	[illegible]
	4,804,124	[illegible]	09 : 4,803,774	4,804,160	4,804,458	4,804,629

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Robert A. Mosbacher, *Secretary*
PATENT AND TRADEMARK OFFICE
Donald J. Quigg, *Commissioner*

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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February 21, 1989

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February 21, 1989 Volume 1099 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Oct. 1, 1988, and was announced in the *Official Gazette* at 1094 O.G. 2 on Sept. 6, 1988.

Domestic PCT fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Danish declaration under PCT Article 64 (1)(a), that Denmark shall not be bound by PCT Chapter II, as from Nov. 1, 1988, was announced at 1095 O.G. 2 on Oct. 4, 1988.

The withdrawal of the Norwegian declaration under PCT Article 64(1)(a), that Norway shall not be bound by PCT Chapter II, as from Jan. 1, 1989, was announced at 1096 O.G. 34 on Nov. 22, 1988.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1160.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Oct. 26, 1988.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on February 18, 1986 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,570,266 through 4,571,740
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 16, 1982 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,315,334 through 4,316,285
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months are set forth in 37 CFR 1.20(e), (f), (h) and (i), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED DECEMBER 4, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,485,491	06/491,076	12/4/84
4,485,496	06/426,765	12/4/84
4,485,503	06/512,197	12/4/84
4,485,512	06/412,846	12/4/84
4,485,514	06/545,344	12/4/84
4,485,516	06/437,223	12/4/84
4,485,522	06/413,494	12/4/84
4,485,526	06/406,299	12/4/84
4,485,528	06/406,782	12/4/84
4,485,530	06/442,164	12/4/84
4,485,543	06/451,462	12/4/84
4,485,546	06/355,748	12/4/84
4,485,547	06/349,259	12/4/84
4,485,555	06/500,279	12/4/84
4,485,559	06/448,977	12/4/84
4,485,561	06/421,986	12/4/84
4,485,578	06/400,344	12/4/84
4,485,581	06/446,206	12/4/84
4,485,583	06/401,618	12/4/84
4,485,587	06/456,584	12/4/84
4,485,591	06/364,532	12/4/84
4,485,599	06/475,581	12/4/84
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4,485,606	06/337,671	12/4/84
4,485,607	06/572,502	12/4/84
4,485,613	06/358,987	12/4/84
4,485,616	06/464,915	12/4/84
4,485,627	06/485,830	12/4/84
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4,485,636	06/550,396	12/4/84
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4,485,646	06/461,176	12/4/84
4,485,647	06/394,544	12/4/84
4,485,651	06/596,066	12/4/84
4,485,653	06/460,468	12/4/84
4,485,654	06/460,497	12/4/84
4,485,659	06/358,257	12/4/84
4,485,661	06/418,801	12/4/84
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4,485,679	06/446,158	12/4/84
4,485,684	06/435,109	12/4/84
4,485,688	06/472,745	12/4/84
4,485,693	06/291,590	12/4/84
4,485,701	06/455,850	12/4/84
4,485,704	06/357,402	12/4/84
4,485,705	06/378,288	12/4/84
4,485,721	06/255,118	12/4/84
4,485,732	06/489,699	12/4/84
4,485,754	06/431,761	12/4/84
4,485,764	06/522,912	12/4/84
4,485,765	06/422,305	12/4/84
4,485,767	06/459,340	12/4/84
4,485,778	06/403,882	12/4/84
4,485,779	06/604,124	12/4/84
4,485,792	06/420,971	12/4/84
4,485,795	06/460,870	12/4/84
4,485,801	06/545,346	12/4/84
4,485,802	06/319,122	12/4/84

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4,485,803	06/434,216	12/4/84
4,485,804	06/408,462	12/4/84
4,485,805	06/411,053	12/4/84
4,485,827	06/425,488	12/4/84
4,485,828	06/492,013	12/4/84
4,485,837	06/411,693	12/4/84
4,485,841	06/498,797	12/4/84
4,485,844	06/371,068	12/4/84
4,485,849	06/388,034	12/4/84
4,485,853	06/582,305	12/4/84
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4,485,866	06/526,780	12/4/84
4,485,877	06/390,750	12/4/84
4,485,887	06/547,125	12/4/84
4,485,888	06/503,069	12/4/84
4,485,904	06/274,404	12/4/84
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4,485,945	06/471,984	12/4/84
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4,485,951	06/368,566	12/4/84
4,485,962	06/431,342	12/4/84
4,485,966	06/468,080	12/4/84
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4,485,974	06/331,017	12/4/84
4,485,975	06/370,410	12/4/84
4,486,004	06/452,336	12/4/84
4,486,005	06/589,860	12/4/84
4,486,012	06/493,350	12/4/84
4,486,016	06/430,209	12/4/84
4,486,017	06/455,056	12/4/84
4,486,019	06/447,236	12/4/84
4,486,021	06/437,941	12/4/84
4,486,022	06/467,733	12/4/84
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4,486,146	06/289,734	12/4/84
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4,486,209	06/390,501	12/4/84
4,486,213	06/427,510	12/4/84
4,486,216	06/510,307	12/4/84
4,486,220	06/486,124	12/4/84
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4,486,289	06/572,037	12/4/84
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4,486,459	06/330,957	12/4/84
4,486,468	06/412,441	12/4/84
4,486,475	06/326,719	12/4/84
4,486,478	06/421,273	12/4/84
4,486,485	06/526,144	12/4/84
4,486,501	06/468,192	12/4/84
4,486,507	06/375,210	12/4/84
4,486,515	06/566,974	12/4/84
4,486,517	06/543,124	12/4/84
4,486,525	06/320,522	12/4/84
4,486,533	06/460,684	12/4/84
4,486,548	06/530,337	12/4/84
4,486,589	06/435,711	12/4/84
4,486,604	06/430,510	12/4/84
4,486,613	06/420,137	12/4/84
4,486,619	06/494,055	12/4/84
4,486,623	06/429,900	12/4/84
4,486,630	06/474,357	12/4/84
4,486,646	06/364,173	12/4/84
4,486,661	06/390,503	12/4/84
4,486,667	06/314,534	12/4/84
4,486,669	06/319,112	12/4/84
4,486,671	06/362,711	12/4/84
4,486,679	06/546,235	12/4/84
4,486,698	06/290,313	12/4/84
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4,486,723	06/456,033	12/4/84
4,486,730	06/431,625	12/4/84
4,486,733	06/428,503	12/4/84
4,486,735	06/401,734	12/4/84
4,486,736	06/444,371	12/4/84
4,486,737	06/463,912	12/4/84
4,486,768	06/526,796	12/4/84
4,486,771	06/475,216	12/4/84
4,486,775	06/313,009	12/4/84
4,486,778	06/377,085	12/4/84
4,486,787	06/407,622	12/4/84
4,486,802	06/451,480	12/4/84
4,486,810	06/530,611	12/4/84
4,486,812	06/470,750	12/4/84
4,486,816	06/443,661	12/4/84
4,486,823	06/434,981	12/4/84
4,486,825	06/305,627	12/4/84
4,486,862	06/409,670	12/4/84
4,486,868	06/305,358	12/4/84
4,486,869	06/347,767	12/4/84

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4,486,870	06/399,862	12/4/84
4,486,879	06/340,391	12/4/84
4,486,889	06/519,096	12/4/84
4,486,894	06/339,512	12/4/84

Notification of Acceptance of Delayed Payment of Maintenance Fee (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below is considered as not having expired but is subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,447,706	06/413,081	5/8/84	8/30/82	1/18/89

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,292,818, Re. S.N. 291,554, Filed Dec. 23, 1988, Cl. 63/28, SETTING AND METHOD FOR MOUNTING PRECIOUS STONES AND THE LIKE THEREIN, Jean Vitau, Owner of Record: *Inventor,* Attorney or Agent: James D. Fornari, Ex. Gp.: 357

4,627,833, Re. S.N. 282,718, Filed Dec. 2, 1988, Cl. 604/34, MICROSURGICAL SYSTEM CASSETTE, Kenneth P. Cook, Owner of Record: *Site Microsurgical System Inc., Horsham, Pa.,* Attorney or Agent: Donald B. Tobin, Ex. Gp.: 336

4,630,417, Re. S.N. 289,615, Filed Dec. 23, 1988, Cl. 52/263, MODULAR COMBINATION FLOOR SUPPORT AND ELECTRICAL ISOLATION SYSTEM FOR USE IN BUILDING STRUCTURES, William R. Collier, Owner of Record: *Interstitial Systems Inc., Terrance, Ill.,* Attorney or Agent: James T. Fitzgibbon, Ex. Gp.: 354

4,632,792, Re. S.N. 282,206, Filed Dec. 9, 1988, Cl. 264/45.2, METHOD OF MANUFACTURING FOAM INSULATED TANK, Keith R. Clark, Owner of Record: *Rhee Manufacturing Co., Montgomery, Ala.,* Attorney or Agent: John J. Torrente, Ex. Gp.: 137

4,638,954, Re. S.N. 276,982, Filed Nov. 28, 1988, Cl. 241/074, APPARATUS FOR THE SEPARATION OF MIXTURES OF MATERIALS OF DIFFERENT CONSISTENCIES SUCH AS MEAT AND BONE, Werner Poss, Owner of Record: *Poss Design Ltd., Ontario, Canada,* Attorney or Agent: Stanley J. Rogers, Ex. Gp.: 326

4,639,314, Re. S.N. 288,616, Filed Dec. 21, 1988, Cl. 210/220, FINE BUBBLE DIFFUSER AND DIFFUSER SYSTEM HAVING FILTERED BLOW-DOWN TUBE, Robert R. Tyer, Owner of Record: *Inventor,* Attorney or Agent: Daniel V. Thompson, Ex. Gp.: 136

4,685,169, Re. S.N. 288,554, Filed Dec. 6, 1988, Cl. 134/57R, VEHICLE WASH AND DRYER, James A. Nelson, Owner of Record: *Ryko Manufacturing Co., Grimes, Iowa,* Attorney or Agent: Bradley J. Hulbert, Ex. Gp.: 242

4,687,118, Re. S.N. 282,301, Filed Dec. 9, 1988, Cl. 220/444, FOAM INSULATED TANK, Keith R. Clark, Owner of Record: *Rhee Manufacturing Co., Montgomery, Ala.,* Attorney or Agent: John J. Torrente, Ex. Gp.: 241

4,751,273, Re. S.N. 286,685, Filed Dec. 19, 1988, Cl. 525/455, VINYL ETHER TERMINATED URETHANE RESINS, Stephen C. Lapin, et al., Owner of Record: *Allied-Signal Inc., Morristown, N.J.,* Attorney or Agent: Harold N. Wells, Ex. Gp.: 151

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue

Erratum

"All reference to Patent No. 4,798,774 to Frank A. Ludwig, et al. of Calif. for 'GAS PERMEABLE ELECTRODE FOR ELECTROCHEMICAL SYSTEM' appearing in the Official Gazette of Jan. 17, 1989 should be deleted since no patent was granted."

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Cajun King, Inc., College Park, Md., Reg. No. 1,355,963, for the mark "CAJUN KING", Canc. No. 17,203.

Andersen Specialty Manufacturing Corp., Chicago, Ill., Reg. No. 539,792, for the mark "GLISS'N", Canc. No. 17,219.

Dynamic Enterprises, Inc., Great Falls, Mont., Reg. No. 910,605, for the mark "GOTCHA", Canc. No. 17,249.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For JEFFREY M. SAMUELS,
Assistant Commissioner
for Trademarks.

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Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Sor, Inc., Auburn, Wash., Reg. No. 1,432,869, for the mark "WALLY WEAR" and design, Canc. No. 16,823.

Telesaver, Inc., Owings Mills, Md., Reg. No. 1,344,118, for the mark "VISTACOM", Canc. No. 17,293.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.

For JEFFREY M. SAMUELS,
Assistant Commissioner
for Trademarks.

Revised Ex Parte Appeal Requirements

New format and content requirements for appeal briefs in ex parte appeals are now in effect for cases where the notice of appeal was filed on or after Sept. 12, 1988. The new requirements were set forth in amended 37 CFR 1.192 which was published in the Official Gazette at 1092 O.G. 26 on July 12, 1988 and reprinted on Jan. 3, 1989 in the *Consolidated Listing of Official Gazette Notices* as item number 162. The changes are also set forth in chapter 1200 of the Manual of Patent Examining Procedure as revised in revision number 9, dated Sept. 1988.

Appellant's brief is required by 37 CFR 1.192(c) to contain, under appropriate headings, (1) the status of all the claims, (2) the status of any amendment filed subsequent to final rejection, (3) a summary of the invention, (4) a concise statement of the issues presented for review, (5) a statement that claims rejected under a rejection do not stand or fall together and the reasons why (if no statements is filed it will be presumed that the rejected claims stand or fall together), (6) the arguments of the appellant with respect to each issue presented for review, and (7) an appendix containing a copy of the claims involved in the appeal. The rule further sets out specific requirements for arguments against rejections based on 35 U.S.C. 102, 103, 112 and other grounds. The examiner's answer to the brief will follow a corresponding format.

Pursuant to 37 CFR 1.192(d), if a brief is filed which does not comply with the new requirements as set forth in paragraph (c) of the rule, the appellant will be notified of the reasons for non-compliance and provided with a period of one month within which to file an amended brief. The one-month period will not be extended. If appellant does not file a brief overcoming the reasons for non-compliance within the one-month period, the appeal will be dismissed.

The new requirements for the appeal brief will aid in the crystallization of the issues involved in the appeal. This will benefit the appellant and the examiner, as well as the Board of Patent Appeals and Interferences, in their consideration.

Jan. 23, 1989.

RENE D. TEGTMEYER,
Assistant Commissioner
for Patents.

PATENT NOTICES

Certificates of Correction for the Week of Feb. 21, 1989

D. 298,111	4,739,985	4,756,870	4,770,794
4,514,801	4,740,396	4,757,132	4,771,298
4,559,348	4,741,151	4,757,868	4,771,387
4,570,444	4,741,833	4,757,993	4,772,063
4,574,249	4,741,941	4,759,755	4,772,615
4,574,928	4,742,003	4,760,464	4,772,634
4,581,888	4,742,063	4,761,156	4,772,887
4,627,233	4,743,127	4,761,526	4,773,049
4,645,551	4,743,300	4,761,610	4,773,125
4,652,984	4,743,581	4,761,654	4,773,335
4,659,731	4,743,935	4,761,897	4,773,355
4,667,341	4,744,300	4,762,125	4,773,427
4,667,944	4,744,375	4,762,583	4,773,438
4,689,167	4,745,041	4,762,591	4,773,644
4,691,319	4,745,100	4,762,650	4,773,836
4,708,787	4,745,699	4,762,822	4,773,857
4,709,492	4,745,708	4,762,903	4,773,970
4,712,643	4,745,806	4,763,595	4,774,200
4,713,285	4,745,958	4,763,714	4,774,461
4,713,458	4,746,019	4,763,894	4,774,472
4,714,254	4,747,451	4,764,753	4,775,197
4,715,100	4,747,842	4,764,972	4,775,286
4,720,245	4,749,337	4,765,394	4,775,382
4,721,878	4,749,403	4,766,131	4,775,418
4,723,258	4,749,648	4,766,517	4,776,116
4,725,813	4,749,813	4,766,546	4,776,226
4,729,774	4,750,231	4,767,381	4,776,286
4,729,805	4,750,525	4,767,402	4,776,681
4,731,010	4,750,991	4,767,839	4,776,743
4,731,736	4,751,375	4,768,168	4,776,854
4,732,238	4,751,559	4,768,246	4,776,982
4,733,052	4,751,660	4,768,373	4,776,994
4,734,359	4,753,525	4,768,392	4,777,093
4,734,740	4,753,527	4,768,510	4,777,166
4,735,948	4,753,912	4,768,521	4,777,319
4,736,839	4,755,320	4,769,046	4,777,525
4,737,386	4,755,568	4,769,182	4,783,617
4,738,181	4,755,974	4,769,571	4,790,908
4,738,490	4,756,351	4,770,315	
4,739,042	4,756,804	4,770,422	
4,739,478	4,756,850	4,770,736	

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SPECIAL BOXES FOR MAIL

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PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF January 14, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-4-87
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	1-21-86
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	1-20-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	7-31-86
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-24-86
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	6-8-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	7-7-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	2-11-87
DESIGN, GROUP 290—K. L. CAGE, Director	1-23-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	1-12-88
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	8-12-87
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	1-20-87
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-22-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-4-88

Expiration of patents: The patents within the range of numbers indicated below expire during January 1989, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

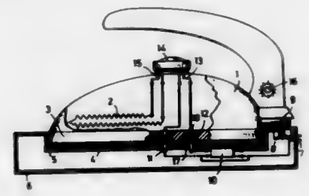
Patents ..... Numbers 3,631,539 to 3,638,238, inclusive
Plant Patents ..... None

REEXAMINATIONS

FEBRUARY 21, 1989

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,768,149 (10146h)
CORDLESS ELECTRIC IRON AND CURRENT-SUPPLYING MEANS THEREFOR
Eugen Haranyi, Berghaim, Fed. Rep. of Germany, assignor to Emmy Helwig, Sindorf, Fed. Rep. of Germany
Reexamination Request No. 90/001,432, Jan. 26, 1988.
Reexamination Certificate for Patent No. 3,768,149, issued Sep. 18, 1973, Ser. No. 162,372, Jul. 14, 1971.
Filed Jan. 26, 1988, Ser. No. 162,372
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1970, 2036268; Feb. 13, 1971, 2106896
Int. Cl.[4] D06F *75/28*
U.S. Cl. 219—247



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 11 is cancelled.

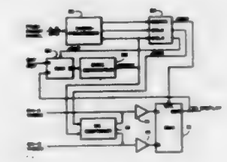
Claims 1, 4 and 12 are determined to be patentable as amended.

Claims 2, 3, 5–10, 13 and 14, dependent on an amended claim, are determined to be patentable.

New claims 15–18 are added and determined to be patentable.

1. A combination of the character indicated, comprising a cordless electric iron member having an electric heating unit and at least one set of first terminals in circuit with said heating unit; a support member for said iron member, said support member having second terminals connectable with a source of electrical energy and engaged by said first terminals to supply energy to said heating unit in at least one predetermined position of rest of said iron member on said support member, said second terminals and the first terminals which engage said second terminals in said predetermined position of said iron member being inaccessible in such predetermined position of said iron member, and a safety device arranged to prevent access to and/or to disconnect said second terminals from the source of electrical energy in response to movement of said iron member away from said predetermined position, said safety device comprising auxiliary terminals provided in said support member and means for establishing an electrical connection between said second terminals and the source of energy in response to establishment of an electrical connection between said auxiliary terminals by a portion of said iron member in said predetermined position of the iron member, *said support member having a support surface and a continuous flange for defining an outer periphery of said support surface, said flange having a shape corresponding to that of an end face of said iron seated on said support surface in said predetermined position, said second terminals comprising at least one positive terminal and one negative terminal mounted in separate openings located at spaced positions on said support surface, and said portion of said iron member being spaced away from said first terminals.*

B1 4,677,481 (10154h)
DUAL DISPLAY MONITOR
Dan H. Nicholas, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Reexamination Request No. 90/001,367, Nov. 2, 1987.
Reexamination Certificate for Patent No. 4,677,481, issued Jun. 30, 1987, Ser. No. 848,101, Mar. 17, 1986.
Int. Cl.[4] H04N *5/00, 13/00*
U.S. Cl. 358—139



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

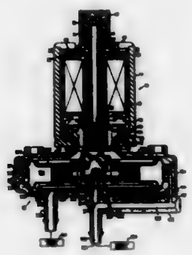
Claim 1 is determined to be patentable as amended.

Claims 2–4, dependent on an amended claim, are determined to be patentable.

1. A dual waveform display device comprising:
means for switching between two channels of **[**synchronized**]** video information in the form of video waveforms, *each channel being synchronized to a sync signal, the switching means* having as inputs the two channels of **[**synchronized**]** video information and as an output one of the two channels of **[**synchronized**]** video information; and
means for controlling the switching means so that the two channels are **[**displayed**]** *automatically switched as a function of the sync signal for display* horizontally side-by-side during a single horizontal sweep across the display device, *the duration of the single horizontal sweep being an integer multiple of the duration of a single line interval of the video information where the integer multiple is a function of the number of channels being displayed.*

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B1 4,715,396 (1016th)
PROPORTIONAL SOLENOID VALVE
Clarence D. Fox, Decatur, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Reexamination Request No. 90/001,466, Feb. 8, 1988.
Reexamination Certificate for Patent No. 4,715,396, issued Dec. 29, 1987, Ser. No. 761,906, Aug. 2, 1985.
Continuation of Ser. No. 645,191, Aug. 29, 1984, Pat. No. 4,534,375, which is a continuation of Ser. No. 349,488, Feb. 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 311,828, Oct. 16, 1963, abandoned.
The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.
Int. Cl.[4] F16K *31/06*; **F15C** *3/00*
U.S. Cl. 137—82



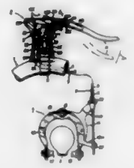
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1-4 are determined to be patentable as amended.

New claims 5–16 are added and determined to be patentable.

1. An electromechanical valve assembly, comprising
an electrical winding;
a magnetic flux circuit defining a flux path comprising a plurality of adjacent magnetic segments, including a generally cylindrical center segment which defines a fluid passage, an outer segment, and an end segment adjacent one end of said fluid passage, at least one of said segments being physically translatable within said valve assembly along said flux path to adjust [the] *a* portion of one of said segments that is in said flux path and the extent of an air gap adjacent the translatable segment;
[a] *an annular* non-magnetic seat member, having a central opening aligned with, and disposed near the other end of, the fluid passage; [and]
a magnetic closure member, positioned adjacent the non-magnetic seat and, with said magnetic segments, completing the flux path such that fluid flow urged by a predetermined pressure difference through the fluid passage and seat member central opening can be modulated by varying the energization level of the electrical winding, *said closure member defining an annular closure surface generally normal to the axis of said fluid passage,* translation of the adjustable segment along said flux path being effective to vary [the] *said* portion of one of said segments in said flux path and the air gap distance and thus vary the reluctance of the *flux circuit, to correspondingly adjust the response of the* valve assembly for a given energization level of the electrical winding [and] *to provide a* given pressure difference; *and,*
means defining a cylindrical chamber adjacent said non-magnetic seat member to receive said magnetic closure member and to constrain the motion thereof substantially parallel to the longitudinal axis of said fluid passage between a position against said annular seat member and a position displaced therefrom.

B1 4,735,106 (1017th)
BRAKE OPERATING DEVICE FOR BICYCLES
Toshiharu Yoshigai, Osaka, Japan, assignor to Yoshigai Kikai Kinzoku Co., Ltd., Osaka, Japan
Reexamination Request No. 90/001,518, May 27, 1988.
Reexamination Certificate for Patent No. 4,735,106, issued Apr. 5, 1988, Ser. No. 18,428, Feb. 25, 1987.
Claims priority, application Japan, Mar. 7, 1986, 61-50954
Int. Cl.[4] B62K *23/06*
U.S. Cl. 74—489



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–7 is confirmed.

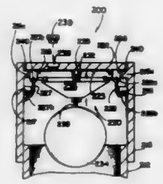
1. A brake operating device for a bicycle comprising a housing mounted on the handlebar of the bicycle and having a bearing portion, an operating lever having a portion of U-shaped cross section and grippably supported by a pivot on the bearing portion, and a coiled return spring having engaging portions extending from the axial opposite ends of its coil portion laterally outward for biasing the operating lever in a returning direction, the device being characterized in that the coil portion of the spring characterized in that the coil portion of the spring is accommodated inside the operating lever between the bearing portion of the housing and the inner surface of the lever and has its axis positioned in parallel with the axis of the pivot, one of the engaging portions being attached to the bearing portion, the other engaging portion extending longitudinally of the operating lever and having a contact means for producing a smooth movement of the spring over the inner surface of the operating lever, said contact means being seated on the forward end of the spring and being in contact with the inner surface of the operating lever, whereby the operating lever is biased in the returning direction.

REISSUES

FEBRUARY 21, 1989

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

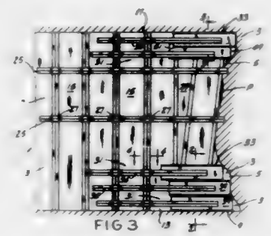
Re. 32,870
SEWER RELIEF VALVE
James M. Houston, Jr., 651 Brighton Dr., Lawrenceville, Ga. 30245, and John W. Baker, 6851 Roswell Rd. NE. G-20, Atlanta, Ga. 30328
Original No. 4,475,571, dated Oct. 9, 1984, Ser. No. 502,187, Jun. 7, 1983. Application for reissue Oct. 9, 1986, Ser. No. 916,990
Int. Cl.[4] F16K *31/18, 33/00*
U.S. Cl. 137—430 **28 Claims**



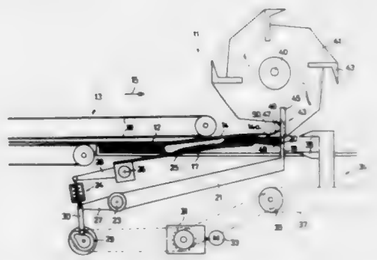
1. A sewer relief valve comprising:
a coupling member adapted to connect to a sewer line and including an upper end defining a material flow opening;
a lid [selectably] connectable to said coupling member to obstruct said material flow opening of said coupling member;
means within said coupling member for locking said lid in obstruction of said material flow opening of said coupling member;
float means comprising a buoyant member pivotally disposed within said coupling; and
means for venting a build-up of air pressure within said coupling member through said upper end while said lid is locked in obstruction of said material flow opening of said coupling member, so that compressed air is vented from within said coupling member to allow a back flow of sewage to rise within said coupling member and displace said float means,
whereby displacement of said float means in response to a back flow of sewage within said coupling member positively unlocks said lid and permits said lid to be opened so as to unblock said material flow opening, thus permitting said back flow of sewage to escape through said material flow opening[, and upon interruption of said back flow of sewage, said lid is permitted to automatically relock to obstruct the material flow opening].

Re. 32,871
MINE STOPPING
William R. Kennedy, and John M. Kennedy, both of P.O. Box 38, Taylorville, Ill. 62568
Original No. 4,547,094, dated Oct. 15, 1985, Ser. No. 574,994, Jan. 30, 1984. Application for reissue Sep. 2, 1987, Ser. No. 92,227
Int. Cl.[4] E21F *1/14*
U.S. Cl. 405—132 **14 Claims**

8. A mine stopping comprising a plurality of elongate extensible panels extending vertically from the floor to the roof of a passageway in a mine, each panel comprising upper and lower panel members each of channel shape in cross section having a web and flanges at opposite sides of the web, one of the members having a sliding fit in the other with the flanges extending toward one face of the stopping, said panels impeding flow of air through the passageway except for a space at a side of the passageway because of irregularity of the side of the passageway, and means for impeding flow of air through said space comprising at least one side extension for the stopping, said side extension comprising a bar and a plate secured to the bar with a portion of the bar projecting from one end of the plate constituting its inner end, said extension being mounted on said one face of the stopping extending generally horizontally with said plate in a generally vertical plane and extending into said space for blocking said space, said projecting portion of the bar lying against flanges of certain of said members, and means for securing said projecting portion of the bar to said flanges.


FIG 3

Re. 32,872
APPARATUS FOR DEPOSITING SHEETS IN A PILE
Hermann Buck, Huelben, Fed. Rep. of Germany, assignor to bielomatik Leuze GmbH & Co., Fed. Rep. of Germany
Original No. 4,569,622, dated Feb. 11, 1986, Ser. No. 495,637, May 18, 1983. Application for reissue Dec. 19, 1986, Ser. No. 945,252
Claims priority, application Fed. Rep. of Germany, Jan. 3, 1982, 3200813
Int. Cl.[4] B65H *31/30*
U.S. Cl. 414—790 **15 Claims**



1. An apparatus for sequentially forming and removing aligned piles of sheets formed from a stream of overlapping sheets transported to the apparatus in a flow direction, the apparatus comprising:
a pile removal device having removal means for removing each completed pile along a removal plane;
support means movable between a raised position over the removal plane for supporting at least a central portion of each forming pile and a lowered position at least as low as the removal plane;
carrier means for carrying the leading edge of each forming pile in a plane over each previously formed pile, during

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substantially all of pile formation, the carrier means having a carrier finger with an inclined surface;

stop [face] means operatively associated with the carrier means, disposed adjacent to the carrier finger and movable toward the carrier finger into a sheet engaging position in which the stop [face] means[, apart from the carrier means, enables] *maintains* aligned formation of the leading edge of each *completed* pile *prior to removal*; and,

the stop [face] means and the carrier means being each movable into the sheet engaging position [in the sheet flow direction] from below and from above, respectively, during continuous sheet flow and being movable out of the sheet engaging position [in the sheet flow direction] one after another prior to removal of each [complete] *completed* pile.

Re. 32,873

APPARATUS FOR GRINDING AND LAPPING ANNULAR SEALING FACES

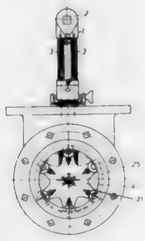
Effenberger Ranko F. F., Zum Wibbelrusch 6, 5160 Duren, Fed. Rep. of Germany

Original No. 4,549,373, dated Oct. 29, 1985, Ser. No. 705,869, Feb. 28, 1985. Continuation of Ser. No. 555,556, Nov. 28, 1983, abandoned. Application for reissue Jan. 29, 1987, Ser. No. 8,597

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1983, 8303975

Int. Cl.[4] B24B *15/02*

U.S. Cl. 51—241 A 16 Claims



6. Apparatus for grinding and lapping annular sealing faces in valves, slides and the like, said apparatus comprising:

a mounting structure securable to a workpiece;

drive mechanism including a rotary drive pin carried by the structure;

a rotatable tool plate carried by the structure;

a series of freely rotatably grinding or lapping heads carried by said tool plate with their axes of rotation parallel to the axis of rotation of the plate, said heads being radially shiftable relative to the plate;

said plate having a bearing hole therein;

a circular bearing plate rotatably mounted in said bearing hole;

a joint interconnecting said drive pin and said bearing plate for rotation of the plate with the pin;

the point of connection between said drive pin and said plate being offset relative to the center of the bearing plate.

Re. 32,874

PLASMA-FREE MEDIUM FOR PLATELET STORAGE

Gail A. Rock, 270 Sandridge Rd., Rockcliffe Park, Canada (K1L 5A2), and George A. Adams, Ottawa, Canada, assignors to Gail A. Rock, Rockcliffe Park, Canada

Original No. 44,474,153, dated May 8, 1984, Ser. No. 449,762, Dec. 14, 1982. Application for reissue May 8, 1986, Ser. No. 860,894

Claims priority, application Canada, Nov. 1, 1982, 414583

Int. Cl.[4] A61K *35/14*

U.S. Cl. 424—101 70 Claims

1. A method for the preparation of [a] *an essentially plasma-free* blood platelet concentrate for administration to animals which comprises

centrifuging plasma to obtain a platelet pellet,

removing the supernatant plasma, and

resuspending the platelet pellet in a medium consisting essentially of: a balanced, physiological compatible, saline solution; an anticoagulant; and one or more additives to enhance stability of the platelets selected from (a) nutrients to improve the storage life of the platelets, (b) reversible inhibitors for platelet activation, (c) substances to raise cyclic adenosine monophosphate levels which have reversible effects on platelets, and (d) buffering agents which are physiologically compatible.

Re. 32,875

PROCESS FOR THE FROTH-FLOTATION OF A PHOSPHATE MINERAL FROM A PHOSPHATE-CARBONATE ORE

Esko T. Kari, Espoo; Jarmo Aaltonen, Siilinjarvi, and Elias U. Suokas, Espoo, all of Finland, assignors to Kemira Oy, Finland

Original No. 4,687,571, dated Aug. 18, 1987, Ser. No. 786,411, Oct. 10, 1985. Application for reissue Feb. 8, 1988, Ser. No. 154,568

Claims priority, application Finland, Oct. 11, 1984, 843991

Int. Cl.[4] B03D *1/06*

U.S. Cl. 209—167 8 Claims



1. A process for the separation of phosphate minerals from a phosphate-carbonate ore comprising froth flotation of the phosphate minerals in the presence of a collector agent and a phenol polymer wherein said phenol polymer improves the selectivity of said process for phosphate minerals.

2. The process of claim 1 wherein said phenol polymer is a phenol-formaldehyde copolymer.

Re. 32,876

DISC CASSETTE (DISC CARTRIDGE)

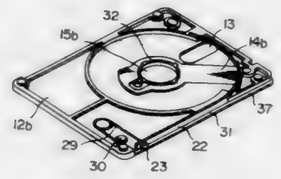
Masaku Wakabayashi; Kikuchiro Misumi, both of Yokohama; Tohru Sampei, Kanagawa, and Kazutoshi Kosno, Yokosuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original No. 4,550,354, dated Oct. 29, 1985, Ser. No. 434,744, Oct. 18, 1982. Application for reissue Oct. 29, 1987, Ser. No. 114,222

Claims priority, application Japan, Oct. 21, 1981, 56-167172

Int. Cl.[4] G11B *23/02*

U.S. Cl. 360—133 10 Claims



7. A disc cartridge including an information recording disc, said disc cartridge comprising:

(a) a housing within which said information recording disc is rotatably arranged, said housing having an opening for driving said information recording disc, and a head window through which information recorded on said information recording disc is read out;

(b) a shutter member mounted to said housing for movement relative thereto, said shutter member having a plate-like portion formed to have an area larger than that of said head window in said housing, said plate-like portion being movable between a first stop position where said plate-like portion covers said head window in said housing and a second stop position where said plate-like portion uncovers said head window in said housing; and

(c) resilient means comprising a torsion spring having a coiled portion and first and second end portions, said first end portion being associated with said housing and said second end portion being associated with said shutter member, said resilient means applying a biasing force to said shutter member to move the same from said second stop position toward said first stop position,

wherein said coiled portion of said torsion spring moves laterally relative to said housing and said second end portion of said torsion spring moves linearly when said plate-like portion of said shutter member moves between said first and second stop positions.

Re. 32,877

STRUCTURE FOR AND METHOD OF REPRODUCTION

Daniel L. Shaw, 20119 Violand, Roseville, Mich. 48066

Original No. 43,039,361, dated Dec. 1, 1981, Ser. No. 972,986, Dec. 26, 1978. Application for reissue Dec. 1, 1983, Ser. No. 557,522

Int. Cl.[4] H04N *1/46*

U.S. Cl. 358—77 27 Claims



9. The method of printing a two dimensional copy from a two dimensional original in a single passage of the original past a light source comprising moving an original with respect to a light source and a plurality of light sensors in a single passage to develop in the plurality of light sensors signals proportional to intelligence on the original which it is desired to copy, moving copy paper in a single passage past printers in synchronization with the movement of the original and causing the printers to print on the copy paper in accordance with the signals generated in the sensors, wherein a single sensor controls a whole number multiple of printers *wherein the whole number is greater than one.*

12. The method as set forth in claim 9 and further including the step of positioning at least one of the sensors and printers obliquely to the direction of travel of the original and copy.

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PLANT PATENTS

GRANTED FEBRUARY 21, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,613
CHRYSANTHEMUM PLANT NAMED BOALDI
William E. Duffett, and Cornelis P. VandenBerg, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Sep. 9, 1987, Ser. No. 94,702
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—77 1 Claim

1. A new and distinct Chrysanthemum plant named Boaldi, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; white ray floret color; diameter across face of capitulum of up to 11 cm at maturity when grown as a pinched disbudded pot mum; uniform eight week photoperiodic flowering response to short days; medium plant height when grown as a pinched pot mum; recommended both as disbudded and spray pot mum; and spreading and prolific branching pattern.

6,614
CHRYSANTHEMUM PLANT NAMED DARK TAN
Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Sep. 9, 1987, Ser. No. 94,718
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct Chrysanthemum plant named Dark Tan, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; greyed-orange ray floret color; diameter across face of capitulum of up to 6.0 cm at maturity when grown as a pinched spray pot mum; uniform eight week photoperiodic flowering response to short days; medium plant height when grown as a pinched pot mum; and semi-spreading branching pattern.

6,615
CHRYSANTHEMUM PLANT NAMED RAYA
William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Sep. 9, 1987, Ser. No. 94,736
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct Chrysanthemum plant named Raya, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; spoon daisy capitulum type; white ray floret color; diameter across face of capitulum of up to 13 cm at maturity when grown as a pinched disbudded pot mum; uniform eight week photoperiodic flowering response to short days; medium plant height when grown as a pinched pot mum; excellent tolerance to high and low temperatures; recommended as disbudded pot mum; and semi-spreading branching pattern.

6,616
***NERIUM OLEANDER* 'HINES HARDY'**
William C. Barr, Rosenberg, Tex., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Jul. 17, 1987, Ser. No. 75,011
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—54 1 Claim

1. A new and distinct variety of *Nerium oleander* L. substantially as shown and described, characterized by:

a. leaves slightly narrower and shorter than those of Nerium "Hardy Red" cultivar;

b. flowers essentially identical in color to Nerium "Hardy Red" cultivar; and

c. having outstanding cold tolerance enabling cultivation in environments having USDA Zone 7 (0°–10° F.) winter conditions.

6,617
ROSE PLANT/VAR.: MORSEGOLD
Ralph S. Moore, Visalia, Calif., assignor to Sequoia Nursery, Visalia, Calif.
Filed Aug. 31, 1987, Ser. No. 91,735
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—8 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by buds and flowers of rich medium yellow coloring, the bud being pointed in the early opening stage, resembling in form Gold Badge (Var: Meigronui) Floribunda—U.S. Plant Pat. No 4,625, with the open flower being fairly double and rounded with about 20–25 petals; and further characterized by a plant of compact, vigorous, well rounded shape, with main stems and shoots of average thorniness, the said plant being easy to propagate from soft wood cuttings and with an abundance of small semi-glossy foliage, the flowers being borne singly or several together in clusters on medium to short length stems.

6,618
ROSE PLANT/VAR.: MORFIRE
Ralph S. Moore, Visalia, Calif., assignor to Sequoia Nursery, Visalia, Calif.
Filed Aug. 31, 1987, Ser. No. 91,736
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers, basically yellow and edged with red, the bud being pointed in the early opening stage, resembling in form Pink Petticoat (Miniature — U.S. Plant Pat. No. 4,636) with the open flower being very full (double) and rounded with many (65 or more) petals; and further characterized by a plant of compact, vigorous, upright shape, with main stems and shoots of average thorniness, the said plant being easy to propagate from soft wood cuttings with an abundance of small semi-glossy foliage, the flowers being borne singly or several together in loose clusters or spray on medium length stems.

6,619
***VRIESIA POELMANII* PLANT NAMED WHITE LINE**
Albert de Roose, Evergem, Belgium, assignor to J. J. Henny Bos, Pijnacker, Netherlands
Filed Sep. 15, 1987, Ser. No. 96,540
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—88 1 Claim

1. The *Vriesia poelmanii* plant named White Line, as illustrated and described.

6,620
CHRYSANTHEMUM PLANT NAMED FROLIC
Grace H. Mack, 108 Wahackme Rd., New Canaan, Conn. 06840, and Cornelis P. VandenBerg, Salinas, Calif., assignors to Grace H. Mack, New Canaan, Conn.
Filed Sep. 16, 1987, Ser. No. 97,585
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—77 1 Claim

1. A new and distinct Chrysanthemum plant named Frolic, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum

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form; decorative capitulum type; white ray floret color; diameter across face of capitulum of up to 5.5 cm at maturity; short plant height with spreading and prolific branching pattern; average natural season flower date of September 1 in Salinas, Calif. and September 26 in Hightstown, N.J.; uniform seven week photoperiodic flowering response to short days in photoperiodic controlled flowering programs; and durable, uniform performance in outside fall flowerings and in spring small pot flowering programs.

6,621

CHRYSANTHEMUM PLANT NAMED TARGET

Grace H. Mack, 108 Wahackme Rd., New Canaan, Conn. 06840, and Cornelis P. VandenBerg, Salinas, Calif., assignors to Grace H. Mack, New Canaan, Conn.

Filed Sep. 16, 1987, Ser. No. 97,586
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—78 1 Claim

1. A new and distinct Chrysanthemum plant named Target, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; yellow ray floret color; diameter across face of capitulum of up to 5.5 cm at maturity; medium plant height with spreading and prolific branching pattern; average natural season flower date of August 26 in Salinas, Calif. and September 22 in Hightstown, N.J; uniform seven week photoperiodic flowering response to short days in photoperiodic controlled flowering programs; and durable, uniform performance in outside fall flowerings and in spring small pot flowering programs.

6,622

ASPARAGUS PLANT NAMED LINDA

J. Howard Ellison, Milltown, and John J. Kinelski, Princeton, both of N.J., assignors to Rutgers University, New Brunswick, N.J.

Filed Jul. 6, 1987, Ser. No. 77,521
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—89 1 Claim

1. A new and distinct variety of asparagus plant as herein shown and described, characterized particularly as to novelty by the unique combination in a female variety, of good tolerance to Fusarium and rust, together with vigorous plant growth and high yields of high quality spears, such characteristics being transmitted to progeny.

6,623

ASPARAGUS PLANT NAMED JERSEY JADE

J. Howard Ellison, Milltown, and John J. Kinelski, Princeton, both of N.J., assignors to Rutgers University, New Brunswick, N.J.

Filed Jul. 6, 1987, Ser. No. 77,522
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—89 1 Claim

1. A new and distinct variety of asparagus plant as herein shown and described, characterized particularly as to novelty by the unique combination of a female variety of substantial chlorophyll content, tolerance to rust (*Puccinia asparagi*), *Fusarium oxysporum* (root rot), and *Fusarium moniliforme* (crown rot), is long lived, producing high yields of good quality spears, retaining the dark green foliage through late summer and fall with a complete absence of yellow pigmentation, and carrying the persistent green marker gene "gg".

6,624

ASPARAGUS PLANT NAMED JERSEY KNIGHT

J. Howard Ellison, Milltown, and John J. Kinelski, Princeton, both of N.J., assignors to Rutgers University, New Brunswick, N.J.

Filed Jul. 6, 1987, Ser. No. 77,523
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—89 1 Claim

1. A new and distinct hybrid of asparagus plant as herein shown and described, characterized as to novelty by the unique combination of a male hybrid which has tolerance to rust (*Puccinia asparagi*), root rot (*Fusarium oxysporum*), and crown rot (*Fusarium moniliforme*), of substantially improved values, with a high yield of high quality spears, the spear tips remaining tight longer than those of standard cultivars and not opening when the spear is long being noticeably unaffected by hot weather, and substantially greater quantities of jumbo and marketable spears produced as compared with other varieties.

6,625

ALSTROEMERIA NAMED STALIBRON

Jacob van Andel, Aalsmeer, Netherlands, assignor to Van Staveren B.V., Aalsmeer, Netherlands

Filed Sep. 4, 1987, Ser. No. 93,876
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 1 Claim

1. The new and distinctive Alstroemeria cultivar and the parts thereof, substantially as herein shown and described, characterized by its very large blossoms having light yellow outer petals of ovate form with inner petals of oblong form with aristate tips and heavily marked with purplish pencil stripes, the upper pair being mainly of a darker yellow coloration than the outer petals.

6,626

DWARF CARNATION PLANT 'REDCLOUD'

Kenneth L. Goldsberry, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.

Filed Jul. 10, 1987, Ser. No. 71,803
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—73 1 Claim

1. A new and distinct cultivar of *Dianthus caryophyllus*, Linn, identified as 85-215-120A and known as Redcloud and substantially as herein described and illustrated.

6,627

AVOCADO TREE CALLED BARR DUKE

Michael D. Coffey, Riverside, and Fred B. Guillemet, Chino, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Sep. 21, 1987, Ser. No. 99,439
Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—44 1 Claim

1. The new and distinct rootstock variety of avocado tree herein described and illustrated and identified by the characteristics enumerated above.

6,628

AVOCADO TREE CALLED THOMAS

Michael D. Coffey, Riverside, and Fred B. Guillemet, Chino, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Sep. 21, 1987, Ser. No. 99,440
Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—44 1 Claim

1. The new and distinct rootstock variety of avocado tree herein described and illustrated and identified by the characteristics enumerated above.

PATENTS

GRANTED FEB. 21, 1989

ERRATA

For CLASS	See PATENT NO.
057-267	4,805,352
072-008	4,805,492
108-007	4,805,538
083-467	4,805,550
138-041	4,805,656
055-016	4,805,732
219-130	4,805,735
194-317	4,805,754
273-164	4,805,922
285-004	4,805,932
285-038	4,805,933
160-084	4,805,955
356-445	4,806,002
065-107	4,806,133
055-223	4,806,148
075-005	4,806,150
420-030	4,806,157
210-108	4,806,217
210-423	4,806,258
210-695	4,806,264
260-408	4,806,280
264-001	4,806,287
422-245	4,806,321
428-631	4,806,334
071-065	4,806,337
425-421	4,806,351
427-004	4,806,357
427-389	4,806,362
428-018	4,806,392
435-014	4,806,415
435-019	4,806,423
435-252	4,806,426
502-060	4,806,427
502-115	4,806,433
514-141	4,806,445
525-263	4,806,447
424-085	4,806,494

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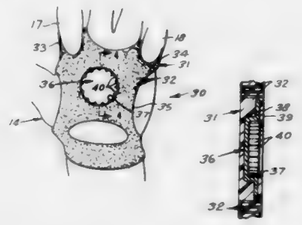
430-309	4,806,506
564-089	4,806,528
536-027	4,806,546
546-044	4,806,556
546-118	4,806,560
549-439	4,806,604
585-440	4,806,624
528-392	4,806,630
430-109	4,806,635
585-511	4,806,647
800-001	4,806,652
800-001	4,806,669
318-138	4,806,717
332-022	4,806,881
341-050	4,806,907
341-022	4,806,908
358-075	4,807,020
371-008	4,807,226
367-093	4,807,255
381-036	4,807,289

PATENTS

GRANTED FEBRUARY 21, 1989

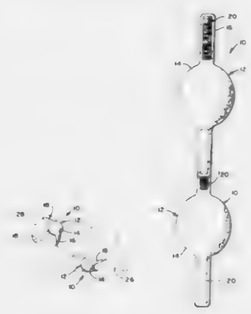
GENERAL AND MECHANICAL

4,805,238
MIXOLOGIST MITT
Cynthia S. Crafts, 340 NW. 42 Ct., #2, Pompano Beach, Fla. 33064
Filed Dec. 21, 1987, Ser. No. 136,777
Int. Cl.[4] A41D *19/00*
U.S. Cl. 2—20 3 Claims



1. A mixologist mitt comprising, a flexible body portion, having a palm portion for engagement with a beverage bottle cap to be twisted off, said palm portion covering the entire palm of the hand, and a female receptacle molded into the center of the palm portion to protect the palm of the hand.

4,805,239
COMBINATION TODDLER KNEE PADS AND/OR EAR MUFFS
Kim D. Clago, 2375 E. 3rd St., Apt. 1-A, Brooklyn, N.Y. 11223
Filed Jan. 21, 1988, Ser. No. 146,491
Int. Cl.[4] A41D *13/06, 21/00*
U.S. Cl. 2—24 2 Claims



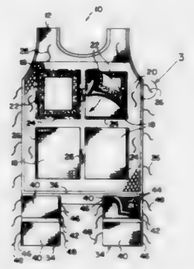
1. A combination toddler knee pad and ear muff article, comprising, an outer pad, a pair of straps secured to said outer pad, with mating loop and hook pile fasteners, for securing said article to a toddler's knee or head, wherein a single loop pile fastener is fixedly secured to one side of one of said straps and a single mating hook pile fastener is fixedly secured to one side of another of said straps, and when pressed together, said loop pile fastener and said hook pile fastener secures said article to said knee, and a pair of said articles are secured together for use as ear muffs, by mating engagement of a loop pile fastener of one of said articles and a hook pile fastener of another said article.

4,805,240
PERSPIRATION RESISTANT GARMENT AND METHOD FOR PREPARING SAME
Thomas T. Sigveland, St. Paul, Minn., assignor to Sunday Enterprises, Inc., St. Paul, Minn.
Filed Nov. 2, 1984, Ser. No. 667,829
Int. Cl.[4] A41D *27/12*; C07F *29/16*
U.S. Cl. 2—54 5 Claims



2. A shirt of perspiration-absorbent fabric made of fibrous threads, the shirt bearing, in underarm areas only, a sufficient quantity of a waterrepellent material to prevent absorption of perspiration into the fibrous threads in that area while permitting the transfer of perspiration therethrough.

4,805,241
THERAPEUTIC GARMENT FOR A CHRONIC CLOTHES RIPPING PATIENT
Lino A. Faccini, 1998 37B Rte. 112, Coram, N.Y. 11727
Filed Nov. 9, 1987, Ser. No. 117,978
Int. Cl.[4] A41D *1/00, 1/04*
U.S. Cl. 2—102 12 Claims



1. A therapeutic garment for a chronic clothes ripping patient which comprises:
(a) a vest to be worn over torso of the patient;
(b) means for removably securing said vest to the torso of the patient from the rear of said vest;
(c) a plurality of vest patches to be carried on front of said vest, each of said vest patches being permanently attached at one edge to the front of said vest forming a hinge so as

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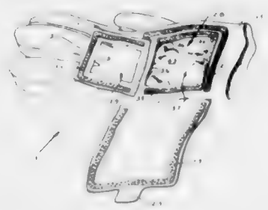
to prevent loss once each of said vest patches is peeled away; and

(d) a plurality of vest puller threads each removably separable and affixed at one end to said vest to prevent detachment therefrom so that each of said vest puller threads can be pulled away by the patient when so desired.

4,805,242
TISSUE PACKET HOLDER

Billie J. Bolton, 5065 Titan Ct., Denver, Colo. 80239

Filed Mar. 7, 1988, Ser. No. 164,842
Int. Cl.[4] A41D *19/00, 13/10*
U.S. Cl. 2—160 9 Claims



1. In combination with an article of clothing, a construction for holding a generally flat and rectangular packet of dispensible tissue paper, including:

(a) packet-receiving means in the outer layer of said garment comprising a cavity bounded by the edges of an opening in said outer layer and an inner layer of material, the edges of said opening adapted to engage the sides of said packet and hold it against lateral movement and said inner layer adapted to support the bottom of said packet against inward movement;

(b) a first, flexible, generally rectangular, packet retaining flap, having one end affixed to said outer layer so as to pivotally mount said first flap adjacent said cavity, and the periphery of the inner surface of said first flap having a strip of Velcro material affixed thereto, and a first complementary strip of Velcro material affixed to said outer layer and bordering said cavity, whereby said first flap is foldable to a closed position in which said first flap Velcro strip releasably engages said first complementary Velcro strip, and said first flap having a tissue-passing aperture therein and an inner surface bordering said aperture which will engage the outer surface of said packet when said first flap is closed so as to retain said packet against outward movement;

(c) generally rectangular, flexible over-flap, pivotally affixed at one of its ends to said outer layer and having a strip of Velcro material affixed along the periphery of its inner surface, and a second complementary strip of Velcro material affixed to said outer layer, whereby said over-flap is foldable to a closed position in which said over-flap Velcro strip releasably engages said second complementary Velcro strip to as to completely cover said first flap.

4,805,243
PADDED PANT CONSTRUCTION FOR ATHLETIC PURPOSES

John C. Gibbons, 530 Kourt Dr., Eugene, Oreg. 97404, and Arlene Haislip, 381 Heritage Oaks, Eugene, Oreg. 97405

Filed May 4, 1987, Ser. No. 45,419
Int. Cl.[4] A41D *1/06, 27/20*
U.S. Cl. 2—228 9 Claims

1. A protective pants garment for athletic use, said garment comprising,

pants structure for wear about the lower torso and having a crotch portion and a seat portion,

pad means comprising multiple pads, and

pad confinement means in place within the crotch portion and seat portion of said pants structure and defining pockets within which said pads are confined, said pad confinement means also defining openings for the insertion and removal of said pads into and out of said pockets, said pad confinement means defined openings are of a size to require folding of the pad associated therewith during pad insertion and removal, said pockets are each of a size to receive pads of different thicknesses.



5. Bicycle shorts comprising in combination,

a pants garment having a crotch portion and a lower seat portion,

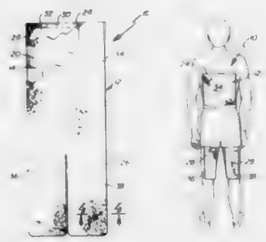
multiple pads including paired rear pads in said lower seat portion of the garment, and

pad retention means in place on said crotch portion and said lower seat portion of said garment and including a main member defining pockets and pocket openings for the reception of said pads.

4,805,244
HEAT SHIELD INSERT

Walter B. Scott, 1809 E. 7th St., Superior, Wis. 54880

Filed Jan. 25, 1988, Ser. No. 147,938
Int. Cl.[4] A41D *27/02*
U.S. Cl. 2—272 19 Claims

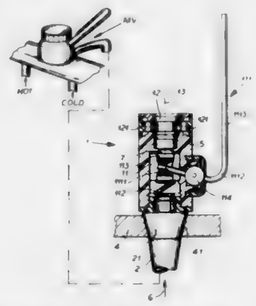


1. Heat shield insert for a person wearing inner clothing and outer garments, with the outer garments including pants legs defining a crotch comprising, in combination: at least a first layer of sealed, multiple air cell material, with the air encapsulated in the air cells of the material acting as insulation in reducing heat transfer and providing a resilient, cushion type support; first and second reflective layers sandwiching the layer of sealed, multiple air cell material, with the first reflective layer intermediate the air cell material and the inner clothing of the person for reflecting the body heat of the person back to the person, with the second reflective layer reflecting cold away from the layer of sealed, multiple air cell material and the person, with the layer of air cell material and the first and second reflective layers forming an insulator; a flexible covering for receiving the insulator, with the insulator and the flexible covering being insertable between the inner clothing and outer garments of the person for reducing the loss of the person's body heat, with the insulator and the flexible covering being flat and having a thinness and flexibility allowing the insulator and the flexible covering to conform to and bend with the body of the person, with the insulator and the flexible covering including a rectangular portion having a lower edge and a size and shape for covering the torso of the person from adjacent the legs to adjacent the shoulder blades, and first and second leg portions extending from and integral with the lower edge of the rectangular portion and having a size and shape for covering the legs of the person from the lower torso to adjacent the knees of the person, with the lower edge of the rectangular portion being supported on the crotch of the outer garment and with the first and second leg portions extending in the pants leg and the rectangular portion extending in the outer garments orientating the insulator and the flexible covering in the outer garments keeping the insulator and the flexible covering from tipping to one side on the crotch of the outer garment.

4,805,245
RINSING AND WASHING FIXTURE

William P. Herring, Bristol, Great Britain, assignor to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed Apr. 11, 1986, Ser. No. 850,795
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1985, 3512964
Int. Cl.[4] E03C *1/04*
U.S. Cl. 4—192 1 Claim



1. A rinsing table water fixture, comprising:

a mixing valve for mixing hot and cold water and provided with means for mixing hot and cold water and for controlling the flow of mixed water;

a flexible hose connected to said mixing valve;

a fitting at an end of said hose remote from said mixing valve, said fitting including:

a valve casing having opposite ends,

means for connecting said casing to said hose at one end of said casing,

a push-on/pull-off quick-connect/quick-release coupling at an opposite end of said casing, and

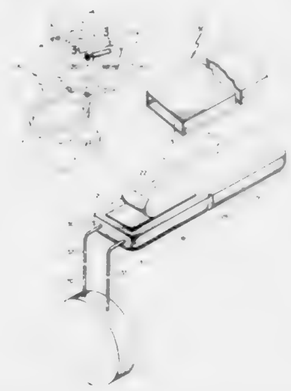
a shut-off valve between said ends of said casing, said shut-off valve including an axially movable valve member, a spring biasing said valve member against a seat in said casing to block water flow therethrough, a generally J-shaped lever having a short arm extending into said casing and a long arm extending alongside said casing generally parallel to an axis thereof and beyond said opposite end, and pivot means articulating said short arm on said casing, said short arm also engaging said valve member; and

a set of hand-manipulatable appliances including at least a spray head, a pot scraper and a bottle brush each having a handle portion parallel to said axis and engageable in said coupling and selectively connectable to said casing, said long arm extending substantially over the lengths of said handle portions, each of said appliances having apertures for discharging water upon depression of said long arm toward a handle of one of said appliances engaging said coupling.

4,805,246
TOILET SEAT HANDLE

Angela De Vargas, and John M. Casement, both of 825 8th Pl., Hermosa Beach, Calif. 90254

Filed Jan. 4, 1988, Ser. No. 140,639
Int. Cl.[4] A47K *13/10*
U.S. Cl. 4—251 5 Claims



1. A toilet seat handle for attachment to the undersurface of a toilet seat comprising:

an elongated member having opposite end portions separated by a midsection;

means for attachably securing a selected end portion of said member to the toilet seat undersurface;

said end portion opposite to said selected end portion cantilevered outwardly to project from the peripheral edge of the seat constituting a handle intended for grasping by the fingers of a user, the upper surface of which includes a display area for mounting a variety of Alpha/numeric indicia or graphic representations;

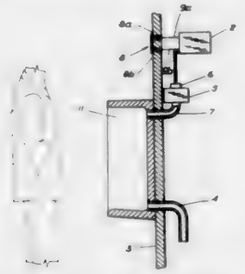
means carried on said member midsection for registering or indexing said member with respect to the toilet seat edge so that said handle extends outwardly laterally from the toilet seat edge;

a deodorant means detachably carried inwardly and downwardly of said toilet bowl seat when said toilet bowl seat is in an in-use position on said attachment selected end portion of said member; and

said registering or indexing means includes pair of notches carried on opposite sides of said member midsection separating said display area from said securement means.

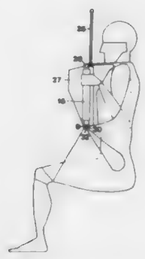
VOL 1099 ISS 3 FEB 21 1989 UMI

4,805,247
APPARATUS FOR PREVENTING UNWANTED OPERATION OF SENSOR ACTIVATED FLUSH VALVES
Martin J. Laverty, Jr., Earlyville, Va., assignor to Coyne & Delany Co., Charlottesville, Va.
Filed Apr. 8, 1987, Ser. No. 35,887
Int. Cl.[4] E03D *13/00, 5/10*
U.S. Cl. 4—304 20 Claims



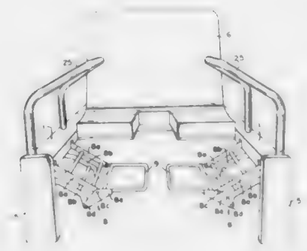
1. An automatic flushing system, comprising:
means for activating a flush valve to flush a sanitary disposal device, said activating means including first and second infrared filters to prevent the system from staying in its armed or working mode and burning itself out; and
an infrared sensor activated circuit for transmitting an infrared signal through said first filter and receiving a reflection of said frared signal through said second filter to activate the flush valve responsive to the reflection of the infrared signal received through said second filter.

4,805,248
INVALID TRANSFER LIFT
Kevin R. Lanan, 3286 Michaud Avenue, Mississauga, Ontario, Canada L4T 1P7
Filed Sep. 23, 1987, Ser. No. 100,195
Int. Cl.[4] A61G *7/08*
U.S. Cl. 5—81 R 4 Claims



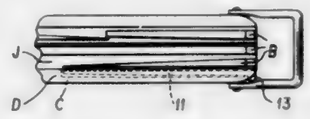
1. A portable patient controllable motorized patient transfer lift for raising and lowering said patient comprising:
(a) a generally rectangular planar frame having connecting means adjacent each of its four corners and disposable, when in operative position, in a substantially vertical plane adjacent and parallel the patients' chest;
(b) motor means mounted on said frame;
(c) winch drum means mounted on said frame;
(d) gear means mounted on said frame and operatively disposed between said motor means and said winch drum means;
(e) means to activate said motor and gear means, mounted on said frame and accessible to said patient;
(f) a suspension harness having six attachment points arranged to be secured to respective ones of said connecting means so as to provide a seat and back support for said patient; and
(g) elongated belt means having one end secured to said winch drum means and the other end thereof adapted for attachment to a lift point located vertically above and spaced from said winch drum so that, upon activation of said motor and gear means, the spacing between said lift point and said winch drum may be selectively varied and thereby raising and lowering said patient between selected positions.

4,805,249
REHABILITATION BED
Pulukadang F. Usman, 21-506 Samon-cho, Shinjuku-ku, Tokyo, and Tadanobu Mutou, Tokyo, both of Japan, assignors to Pulukadang Freddy Usman, Tokyo, Japan
Filed Sep. 11, 1987, Ser. No. 95,303
Claims priority, application Japan, Sep. 19, 1986, 61-221456; Apr. 24, 1987, 62-99909
Int. Cl.[4] A61G *7/02*
U.S. Cl. 5—90 4 Claims



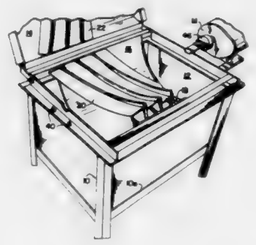
1. A rehabilitation bed having a first frame portion and a second movable frame portion, said second mobile frame portion including left and right movable frame portions; a split mattress having a back and head supporting mattress section supported by said first frame portion and left and right mobile leg supporting mattress sections supported by said left and right movable frame portions, respectively; and means for causing said left and right mobile mattress sections and said left and right movable frame portions to split and move apart from one another towards left and right sides of the bed, respectively, to provide an opening therebetween.

4,805,250
BLADE PICK AND WELL CLEANER
Theodore F. Dugas, Box 6616, Fort Lauderdale, Fla. 33316
Filed Sep. 25, 1987, Ser. No. 101,859
Int. Cl.[4] B26B *11/00*
U.S. Cl. 7—118 19 Claims



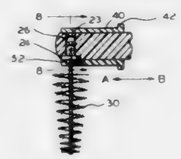
1. A tool for opening all blades and attachments of a pocket knife and cleaning debris out of said knife blade and attachment wells which comprises a parallelpiped metal rod having a shank, a first end of said shank adapted to be received in notches for opening said pocket knife's blades and attachments and a second end of said shank for being received in the wells for the blades and attachments of said pocket knife.

4,805,251
GOLF BALL WASHER
J. Richard Hollrock, Simsbury, Conn., assignor to Hollrock Engineering, Inc., Granby, Conn.
Filed Jan. 2, 1987, Ser. No. 57,322
Int. Cl.[4] A63B *47/04*
U.S. Cl. 15—21 A 19 Claims



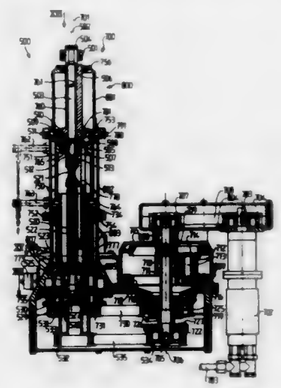
1. A ball washer comprising a tank for washing solution, semi-circular track defining means supported in said tank and including fist and second angularly related arcuate track segments defining a juncture for balls travelling along the track in a given direction, said first track segment providing a component of ball movement in one axial direction and said second track segment providing a component of ball movement in the opposite axial direction, said first and second track segments defining said juncture at adjacent portions thereof and casing an abrupt change in direction of ball movement at said juncture, a generally cylindrical brush, means rotatably supporting said brush in said tank so that the brush periphery moves adjacent said track segments to cause the balls to move in said given direction along aid track, a movable semi-circular cover for said tank, said cover defining at least one upper track segment having one end forming a second juncture with another end of said first track segment when said cover in its closed position, said upper track segment providing a component of ball movement in an axial direction opposite that of said first track segment, and means for receiving balls in said first track segment so that the balls are moved by said rotating brush along said track segments and through said junctures.

4,805,252
TOOTHBRUSH
Emanuel R. Tarrson, and Dane Maric, both of Chicago, Ill., assignors to John O. Butler Company, Chicago, Ill.
Filed Oct. 13, 1987, Ser. No. 108,129
Int. Cl.[4] A46B *3/08, 3/18, 9/04*
U.S. Cl. 15—167.1 11 Claims



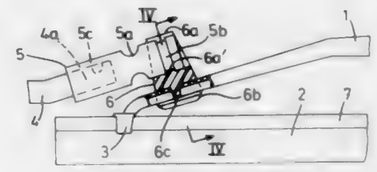
1. A refill and toothbrush comprising a twisted wire brush having a stem with a plastic encasement molded thereon, said plastic encasement including an enlarged collar between an anchor stem and said brush and a capture part beneath the collar, and a toothbrush handle having a hole therein with internal contours which are complementary to at least part of the external contours of said plastic encasement.

4,805,253
DEVICE FOR BRUSHING THREADED BORES
Patrick E. L. Hauser, Yerres, France, assignor to Creation de Mechanismes, d'Automatismes et d'Asservissements, Epinay-sur-Orge, France
Filed Feb. 26, 1988, Ser. No. 161,065
Claims priority, application France, Feb. 26, 1987, 87 02565
Int. Cl.[4] A46B *13/02;* B08B *1/04*
U.S. Cl. 15—246.5 25 Claims



1. Device for brushing threaded bores, comprising a mobile assembly, a brush on said mobile assembly rotatable about a main axis parallel in use to the axis of said threaded bore, main drive means for rotating said brush about said main axis and auxiliary drive means for moving said mobile assembly along a helical path centered in use on said axis of said threaded bore.

4,805,254
CONNECTING DEVICE FOR A WIPER SYSTEM
Christian Beuteen, Gorcy, France, assignor to Champion Spark Plug Europe S.A., Binche, Belgium
Filed Jul. 21, 1987, Ser. No. 76,006
Claims priority, application France, Jul. 23, 1986, 86 10686
Int. Cl.[4] B60S *1/40*
U.S. Cl. 15—250.32 10 Claims



1. A connecting device for a wiper system which comprises a wiper arm of which the front end is articulated to the superstructure (1) of the wiper blade in its medium portion and which comprises a control arm (4) of which the front end (4a) is articulated to said superstructure (1) at its rear end, characterized in that the articulation between the front end of the control arm (4) and the rear end of said superstructure (1) consists of two separate elements (5,6) of which the first one (5)

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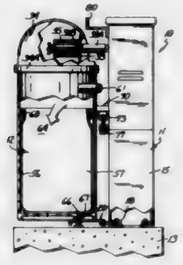
is made of an elastomer material and of which the second one (6) is made of a substantially rigid material,

said first element (5) having spaced ends and an elongate form locally provided with a reduced transverse section (5a);

means for securing one end of the first element to the control arm and the other end of the first element to the second element; and

means for securing the second element to the rear of the superstructure.

4,805,255
COIN-OPERATED VACUUM
Virgil C. Heil, Edina, Minn., assignor to G.H.C., Inc., St. Louis, Mo.
Filed May 26, 1988, Ser. No. 199,209
Int. Cl.[4] A47L 5/38
U.S. Cl. 15—314 7 Claims



1. A vacuum assembly comprising first and second housings;

said first housing comprising a tubular member having first and second vertically stacked sections, the first section of said tubular member being mountable on a support base having anchor bolts which extend into the first section, said second section being separable from the first section to permit placing nuts on the anchor bolts from the top of the first section;

said second section being mountable on said first section and having an open top to permit access to internal fasteners for joining the first and second sections together;

a vacuum motor and pump assembly mounted adjacent a junction between the first and second sections on the interior of the first housing and having a vacuum inlet passing through a wall of the first housing;

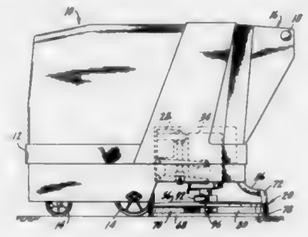
a lockable cover to cover the open top of said second section, whereby the first and second sections form a tower supported on anchor bolts;

means for supporting said second housing relative to the first housing, said second housing comprising an interior chamber having an air outlet leading therefrom, and said hose being connected to said air outlet;

means for connecting an inlet hose to said second housing at a level adjacent the top thereof; and

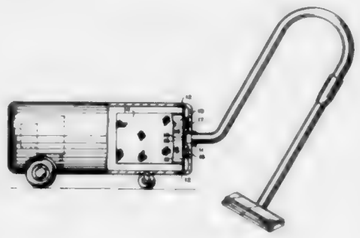
a removable bag support means on the interior of said housing at a level below the inlet whereby air flow established by said vacuum motor and pump assembly causes air to flow in through the inlet of said second housing, and through the outlet to said hose, and heavy debris being deposited in a bag on said bag support means.

4,805,256
SCRUBBER SQUEEGEE PIVOTED CONCENTRIC WITH BRUSH DRIVE
Richard A. Mason, Buffalo, and Philip E. Koenigs, New Hope, both of Minn., assignors to Tennant Company, Minneapolis, Minn.
Filed Oct. 2, 1987, Ser. No. 104,281
Int. Cl.[4] A47L 7/00
U.S. Cl. 15—320 10 Claims



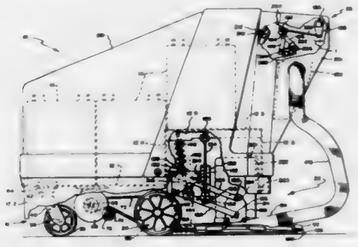
1. In a machine for removing soilage from a surface, a mobile frame and means for propelling it, a tool drive comprising a motor and a motor mount therefor attached to the frame, a disk surface cleaning tool connected to the tool drive disposed for rotation about a generally upright axis, means for raising and lowering the tool between a raised inoperative position for traveling and a lowered operative position for working, a tool housing around the tool which approaches the surface in the working position of the tool and is raised above the surface in the raised traveling position of the tool, a rotatable mounting for the tool housing concentric about the axis of the tool so that the tool housing may be rotated for at least a portion of a revolution about the upright axis independent of the tool and tool drive and the tool housing is free to circumferentially orient itself independently of movement of the mobile frame, an arcuate vacuum chamber disposed around on the order of 180° of the periphery of the tool housing and defining a pick up for dirty scrubbing solution, and friction means engaging the surface causing the tool housing to automatically orient itself in response to movement of the mobile frame because of the force applied to it by the friction means so that the vacuum chamber is always in a trailing position.

4,805,257
DEVICE FOR A VACUUM CLEANER AND A DUST BAG
Erik K. G. Johansson, Sollentuna, and Lennart K. Fahlen, Märsta, both of Sweden, assignors to Aktiebolaget Electrolux, Sweden
Filed Jan. 13, 1988, Ser. No. 143,342
Claims priority, application Sweden, Jan. 27, 1987, 8700312
Int. Cl.[4] A47L 9/14
U.S. Cl. 15—327 R 7 Claims



1. In a vacuum cleaner having a housing, a motor fan assembly in said housing, a chamber having a dust container therein provided with a rigid collar having an opening for the passage of dust-laden air, an inlet sleeve in said housing through which is adapted to pass dust laden air, said inlet sleeve being connected to a nozzle through a hose, opposite walls of said chamber being provided with retaining means for removably holding said rigid collar of said dust container, said retaining means extending substantially perpendicular to the longitudinal axis of said inlet sleeve, the improvement comprising a flexible and inflatable blocking means which is positioned about said inlet sleeve, comprising but spaced laterally therefrom, a channel in said housing open to the atmosphere and communicating with the surface of the blocking means proximate to said channel, and upon operating of said motor-fan said blocking means is expanded axially to abut said collar due to the pressure difference between the atmosphere and the interior of said chamber whereby dust laden air is prevented from flowing about the outside of said dust container.

4,805,258
BATTERY POWERED WALK BEHIND FLOOR BURNISHER
Gerald P. Sitarski, Grand Island, and Barry A. May, North Tonawanda, both of N.Y., assignors to Tennant Trend Inc., Niagara Falls, N.Y.
Filed Sep. 22, 1987, Ser. No. 99,542
Int. Cl.[4] A47H 11/20
U.S. Cl. 15—385 17 Claims



1. A floor burnisher comprising:

a frame;

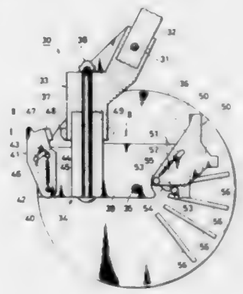
wheel means supporting the frame for movement over a floor;

a burnisher subassembly, said burnishing subassembly including a drive head provided with a pair of laterally spaced apart upwardly extending brackets, each bracket being provided with a pair of vertically spaced apart pivot pin receiving apertures one of said pair of pivot pin receiving apertures being elongated;

linkage means extending between the frame and the burnisher subassembly for supporting the burnisher subassembly upon the frame for movement between either a raised inoperative position or a lowered operative position, the linkage means including two pair of laterally spaced apart parallel links pivotally connected at the forward ends to the frame and pivotally connected at their rear ends to the laterally spaced apart upwardly extending brackets by pivot pins which extend into said apertures;

a burnishing pad carried by the burnishing subassembly; and drive means interconnected with the burnishing pad and capable of rotating the burnishing pad.

4,805,259
CASTER
Kenzou Kasui, Osaka, Japan, assignor to Aprica Kasui Kabushikikaisha, Osaka, Japan
Filed Oct. 16, 1987, Ser. No. 109,933
Claims priority, application Japan, Oct. 17, 1986, 61-160009[U]; Nov. 21, 1986, 61-279827
Int. Cl.[4] B60B 33/00
U.S. Cl. 16—35 R 14 Claims



1. A caster comprising: a fixed bracket fixedly attached to a movable body to be moved on said caster, a rotary yoke supported on said fixed bracket for rotation around a vertical axis, a wheel rotatably supported on said rotary yoke by a horizontal axis at a position horizontally displaced from the axis of rotation of said rotary yoke, said rotary yoke including caster locking means for engaging said fixed bracket to inhibit the rotation of said rotary yoke, brake means for engaging said wheel to inhibit the rotation of said wheel, said brake means including a brake member and a brake rod carried by said brake member, said rotary yoke having a V-shaped guide groove for guiding said brake rod, said brake member having an elongated opening (51), said rotary yoke further having fixed thereon a shaft (52) which extends through said elongated opening in said brake member, and tension spring means for interconnecting said brake rod (53) and said shaft (52).

4,805,260
EXPANDER DEVICE
Arthur C. Tooth, Maidenhead, England, assignor to Flexello Castors & Wheels PLC, United Kingdom
Filed Oct. 2, 1986, Ser. No. 914,362
Claims priority, application United Kingdom, Oct. 3, 1985, 8524619
Int. Cl.[4] B60B 35/00
U.S. Cl. 16—37 11 Claims

1. An expander device for anchoring a castor in a hole by expansion therein, said device comprising:

a radially expansible sleeve formed of a plastics material and having a conical inner surface which extends over at least a major portion of the axial extent of the sleeve;

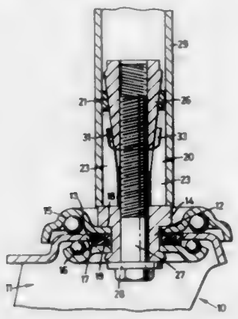
an expander member formed of a plastic material, engageable in the sleeve and having an outer surface at least a major portion of which is conical; the conical surface portions of the sleeve and the expander member being adapted for sliding interengagement over a major portion of the axial extent of the sleeve such that axial movement of one of the expander member and the sleeve relative to the other causes radial expansion of the sleeve;

an elongated externally-threaded member having a multi-start thread engaged in a complementary, axially extending tapped bore in the expander member, the multi-start thread acting to limit the applied torque to avoid over-tightening; and

means for rotating the externally-threaded member relative

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to the expander member so as to move the expander member relative to the sleeve and thereby to expand the sleeve



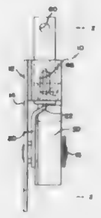
into contact with a surface defining said hole and to anchor it therein.

4,805,261

RESETTABLE FIRE LINK

Shlomo Barchechat, Wilmette, Ill., assignor to Safe-Air of Illinois, Inc., Cicero, Ill.

Filed Oct. 8, 1987, Ser. No. 106,728
Int. Cl.[4] E05F *15/20*
U.S. Cl. 16—48.5 3 Claims



1. A resettable fire link comprising a first member having a support post thereon, a separate latch arm pivoted on said post, a latching element on a free end of said latch arm, a release plate having a slot for receiving said latch element, and a separate bi-metallic coil spring surrounding said post and spaced axially from said latch arm at said post, said spring having one end connected to said post and an opposite end connected to said free end of said latch arm and normally biasing said latch element into said slot while pivoting said latch arm to a released position upon being elevated to a predetermined temperature.

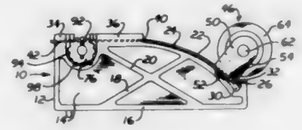
4,805,262

SLIDING PANEL ROLLER ASSEMBLY

Gary J. Marshik, Canton, S. Dak., assignor to JW Window Components, Inc., Tampa, Fla.

Filed Sep. 17, 1987, Ser. No. 97,761
Int. Cl.[4] E05D *15/06*
U.S. Cl. 16—105 11 Claims

1. A roller assembly adapted to be mounted in the frame of a sliding panel comprising a central block having an upper face, said upper face of said block comprising a horizontal portion and a sloping portion connected to said horizontal portion, said sloping portion extending downwardly in a direction away from said horizontal portion, said block further having at least one horizontal slot cut in said horizontal portion below the upper surface of said face, said block having a transverse opening adapted to receive a sprocket wheel, a sprocket wheel mounted for rotation in said transverse opening, and a wheel assembly comprising a wheel having a grooved periph-



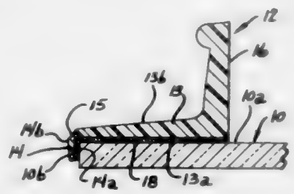
ery, said wheel assembly being mounted on a flat spring, and a portion of said flat spring being received in said horizontal slot in said horizontal portion of said block and directly engaging said sprocket wheel.

4,805,263

FINGER PULL

Thomas D. Kurtz, 510 Island View Rd., Rock Falls, Ill. 61071

Filed Oct. 30, 1984, Ser. No. 666,389
Int. Cl.[4] E05B *1/02*
U.S. Cl. 16—124 5 Claims



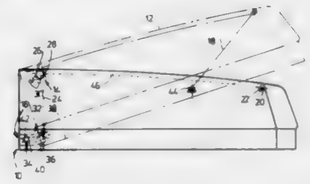
1. A finger pull for attachment to intersecting relatively transverse side and edge faces of a panel or the like comprising, a unitary body of a synthetic resin material of a type that is bendable without breaking in thin sections and generally rigid in thick sections, the body including a main base portion and an auxiliary base portion integrally connected along one edge to one edge of the main base portion by a thin connection portion, the main base portion having a generally flat mounting face at one side and an outer face at a side opposite the mounting face and a handle portion extending laterally from the outer face of the main base portion at the side opposite the mounting face, the auxiliary base portion having a generally flat mounting face disposed coplanar with the mounting face of the main base portion and an outer face at a side opposite its mounting face, a strip of pressure sensitive adhesive having one side adhered to the mounting faces of the main base portion and the auxiliary base portion and a removable cover material covering its other side, the main and auxiliary base portions having sufficiently thick cross sections to be generally rigid and the thin connecting portion being sufficiently thin to bend without breaking and allow the auxiliary base portion to be moved relative to the main base portion to a position in which the mounting face of the auxiliary base portion extends perpendicular to the mounting face of the main base portion whereby, after removal of the cover material, one of the base portions can be secured by the pressure sensitive adhesive on its mounting face to one of two intersecting faces of the panel and the other base portion then moved into a transverse position to be secured by its pressure sensitive adhesive on the mounting face to the other of the two intersecting faces of the panel.

4,805,264

SUSPENSION MECHANISM FOR A HINGED PART

Friedrich Benning, Schwetzingen, and Berthold Grosse-Kleborst, Leese/Maasschendorf, both of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Filed Jun. 26, 1987, Ser. No. 67,831
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1986, 3621915
Int. Cl.[4] E05D *7/10*; E05F *3/02*
U.S. Cl. 16—267 6 Claims



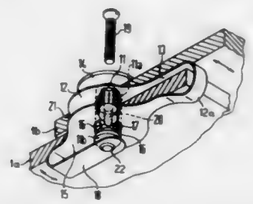
1. A suspension mechanism for removably suspending a hinged part from a frame, comprising:
a transverse axle mounted to the frame;
a bearing mounted to the hinged part, said bearing being pivotal about said axle when mounted thereon and being selectively removable from said axle in a direction radial to said axle; and
stop means permitting rotation of said hinged part about said axle and forcing limited movement thereof radial to said axle over at least part of a path of rotation of said hinged part, thereby holding said bearing on said axle over said part of said path while simultaneously moving said hinged part radially relative to said axle.

4,805,265

HINGE FOR FASTENING SWIVELABLY ARRANGED ELECTROTECHNICAL APPLIANCES

Thomas Ehm, Dortmund, and Peter Seidel, Groebenzell, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 5, 1987, Ser. No. 82,087
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1986, 3632644
Int. Cl.[4] E05D *3/04*
U.S. Cl. 16—340 16 Claims



1. A hinge for fastening swivelably arranged electronic appliances having two planar hinge pin receptacles proceeding parallel to one another and having a bore arranged in each hinge pin receptacle and corresponding to the thickness of a hinge pin, the hinge pin having a region outwardly shaped step-like at one end, the hinge pin being introduced perpendicular to the hinge pin receptacles proceeding parallel to one another, the hinge pin being introduced beginning with the opposite hinge pin end from the region outwardly shaped step-like, comprising:
an ondular washer region of a hinge spring, said ondular washer region proceeding largely parallel to the hinge pin receptacles and equipped with a bore at least having a diameter corresponding to the hinge pin thickness and inserted between the hinge pin receptacles; and
a cooperating hinge spring region attached at the edge of the ondular washer region and bent arcuately back onto itself over an edge of one of the hinge pin receptacles, said hinge spring fashioned such that resilient catch elements, arranged in a hinge pin region of the cooperating hinge spring region, engaged into an annular groove located in the hinge pin.

4,805,266

APPARATUS FOR DETECTING FOREIGN BODIES IN A MASS OF TEXTILE FIBERS

Ferdinand Leifeld, Kempen, and Fritz Hösel, Mönchengladbach, both of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed Jan. 29, 1988, Ser. No. 150,532
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1987, 3703449
Int. Cl.[4] D06H *3/14*; D01G *9/00*; G01N *33/36, 27/82*
U.S. Cl. 19—0.2 16 Claims



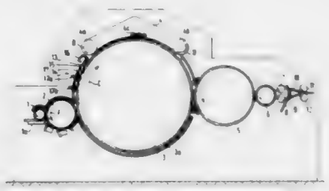
1. An arrangement for ascertaining the presence of foreign bodies in a mass of fiber tufts, comprising
(a) a fiber tuft-supporting surface having a width;
(b) means for providing a loose fiber tuft layer on said surface;
(c) a foreign body detecting apparatus arranged for scanning the fiber tuft layer for foreign bodies; said foreign body detecting apparatus comprising a detector device formed of a plurality of individual sensors arranged side-by-side along said width; and
(d) moving means for effecting relative displacement between said fiber tuft layer and said apparatus in a direction perpendicular to said width.

4,805,267

DEVICE FOR SEPARATING IMPURITIES FROM FIBER MATERIAL DURING ITS TREATMENT BY A CARD

Ferdinand Leifeld, Kempen, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed Dec. 17, 1987, Ser. No. 135,524
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1986, 3644529
Int. Cl.[4] D01G *9/08, 15/00*
U.S. Cl. 19—105 5 Claims



1. A carding machine comprising in combination:
(a) a main cylinder having a direction of rotation;
(b) a licker-in cooperating with the main cylinder;

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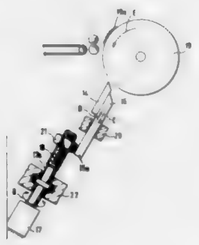
(c) travelling flats cooperating with the main cylinder;
(d) a frontal end roller supporting said travelling flats; said end roller being situated above said licker-in at a distance therefrom as viewed circumferentially along said main cylinder; said distance having a mid-zone and two off-center zones flanking the mid-zone and adjoining the licker-in and the end roller, respectively;
(e) stationary flats supported in said mid-zone and being at a small radial distance from the main cylinder; and
(f) a device for separating impurities from fiber material undergoing treatment by said main cylinder; said device being situated in one of said off-center zones, between said frontal end roller and said stationary flats; said device having
(1) a knife blade supported at a small radial distance from the main cylinder and including a knife edge oriented opposite to said direction of rotation;
(2) a plate supported at a small radial distance from the main cylinder and defining a gap with said knife edge; and
(3) means defining a suction chamber covering said gap.

4,805,268

SEPARATING KNIFE ASSEMBLY FOR A CARDING MACHINE OR THE LIKE

Ferdinand Leifeld, Kempen, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Apr. 22, 1987, Ser. No. 41,296
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1986, 3613476; Jan. 29, 1987, 3702588
Int. Cl.[4] D01G *15/34, 9/20, 15/76*
U.S. Cl. 19—105 **11 Claims**



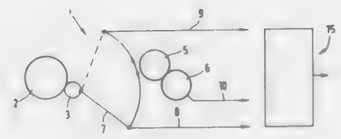
1. In a fiber processing machine including a rotary roller provided with a clothing and having a periphery; and a separating knife cooperating with the roller for separating waste from the fiber material entrained by the roller; said knife having a knife edge situated at an adjustable distance from the periphery of the roller; the improvement comprising
(a) an adjusting device including means for varying a position of said separating knife relative to said roller and means for immobilizing said separating knife in a desired adjusted position;
(b) drive means for operating said adjusting device;
(c) a path sensing means operatively connected to said separating knife for generating signals representing the location of said separating knife; and
(d) a control device connected to said path sensing means for receiving signals from said path sensing means; said control device being connected to said drive means.

4,805,269

APPARATUS FOR PRODUCINHG FIBROUS WEBS OF SUPERPOSED WEB LAYERS

Werner Lessnga, Duelmen, Fed. Rep. of Germany, assignor to Hergeth Hollingsworth GmbH, Duelmen, Fed. Rep. of Germany

Filed Jan. 19, 1988, Ser. No. 145,342
Int. Cl.[4] D04H *1/70*
U.S. Cl. 19—106 R **6 Claims**



1. Apparatus for producing fibrous nonwoven fabrics of at least two superposed fibrous web layers of equal or different structure by using at least two successively arranged cards in a card set, means for discharging the fibrous webs from the card or the like in one direction, the discharged fibrous web layers being fed to a finishing unit such as a calendar and the like, each card being provided with at least one doffing point, wherein the improvement comprises:
a conveying means carried adjacent and following said doffing point which is tiltable upwardly and downwardly at a predetermined angle; and
transport devices mounted above and beneath the cards in communication with said conveying means for transporting said discharged webs.

4,805,270

APPARATUS FOR SECURING SHOE LACES

Richard Kimbrough, New York, N.Y., assignor to Brookside Products Limited, Hong Kong, Hong Kong

Filed Oct. 30, 1987, Ser. No. 114,913
Int. Cl.[4] F16G *11/00*
U.S. Cl. 24—117 **51 Claims**



1. An apparatus for securing a shoe lace having an intermediate portion and end portion on either side thereof, comprising:
first and second jaw members defining a jaw opening therebetween and adapted for mounting on a shoe with the jaw opening facing away from the shoe, means permitting the manual displacement of at least one of the jaw members away from the other at the jaw opening;
biasing means for biasing the first and second member toward each other to close the jaw opening, at least a portion of the outer surface adjacent the jaw opening of at least one of the jaw members being inclined toward the jaw opening to define an entrance to the jaw opening and a camming surface for guiding the intermediate portion of the shoe lace laterally into the jaw opening and for permitting the force of the shoe lace ends being pulled by the user away from the apparatus to displace the at least one displaceable jaw member against the force of the biasing means and,

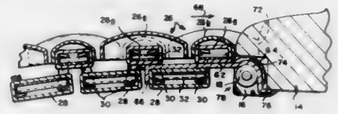
retaining means within the jaw opening for retaining the intermediate portion of the shoe lace therein while permitting release of the intermediate portion of the shoe lace when the at least one jaw is manually displaced to open the jaw opening, the retaining means including the biasing means whereby the shoe lace intermediate portion enters the apparatus and is releasably retained in the apparatus.

4,805,271

EXPANSIBLE WATCH BAND END CONNECTOR

Richard E. Ripley, Attleboro, Mass., assignor to Textron, Inc., Providence, R.I.

Filed Mar. 4, 1988, Ser. No. 164,093
Int. Cl.[4] A44C *5/18*
U.S. Cl. 24—265 WS **6 Claims**



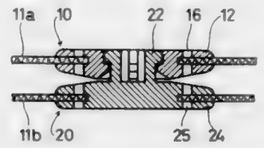
1. An end connector for connecting an end of a watch band to a watch case, the watch case having spaced lugs adapted to accommodate to conventional spring bar or the like removably engaged therebetween, and the watch band being of the expansible type with a row of top links overlying a row of bottom links, and with means for interconnecting the top and bottom links in a manner permitting longitudinal expansion and contraction of the band, said end connector comprising: a generally flat shank having an arcuate hook portion integrally formed at one end and protruding out of the plane of said shank to one side thereof, a tab portion at an opposite end of said shank, said shank being configured and dimensioned for insertion into the end of the watch band between the rows of top and bottom links, said tab portion being bent to protrude out of the plane of the thus inserted shank to the same one side thereof and into an interlocked position between two adjacent links in one of said rows, said hook portion being engaged with the spring bar, the distance between the thus engaged hook portion and the thus bent tab portion being such that the endmost top link of the band is urged against the watch case, and wherein said hook portion is at least partially overlapped by the endmost top link of the band.

4,805,272

FASTENER WITH TAPE

Mitsuhiro Yamaguchi, Hyogo, Japan, assignor to Morito Co., Ltd., Osaka, Japan

Filed Dec. 23, 1986, Ser. No. 945,487
Claims priority, application Japan, Dec. 27, 1985, 60-298577
Int. Cl.[4] A44B *17/00*
U.S. Cl. 24—623 **5 Claims**



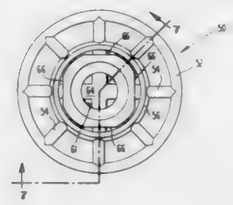
1. A fastener with tape comprising: a male member comprising a mating projection having a bulging head and a seat portion supporting said mating projection, said seat portion having a flat male surface near the base of the mating projection, and a female member comprising: a body having a mating hole in a center thereof, communicating with face and reverse sides, the mating hole having an approximately equal height to the mating projection of the male member and having a reduced diameter intermediate portion with its inner diameter being gradually increased toward the face and reverse sides to provide respective lead-in surfaces for said male member head, a female face surface on the face side around the mating hole, said female face surface being in contact with the flat male surface when the female member is set in engagement with the male member with its face surface side up, the maximum diameter of said female face surface being smaller than the diameter of said flat male surface of the male member, a female reverse surface on its reverse side around the mating hole, said female reverse surface being in contact with the flat male surface when the female member is set in engagement with the male member with its reverse surface side up, the minimum diameter of said female reverse surface being larger than the flat male surface of the male member; whereby the female member face and reverse surfaces are asymmetrical such that the female member can be engaged with the male member from either side of the female member, with a correspondingly different force of engagement which is brought about by the difference of the contact areas of the male member with the female member between when the female member is set in engagement with the male member with its face side up and when the female member is set in engagement with the male member with its reverse side up; and wherein said female member has at least one mold hole across which the tape at least partially extends internally thereof.

4,805,273

SNAP FASTENER FOR MOLDING ON TO FABRIC AND APPARATUS FOR MAKING IT

James E. Burke, Huntington, and Robert J. Zavatkay, Torrington, both of Conn., assignors to Scovill Fasteners Inc., New York, N.Y.

Filed Dec. 2, 1987, Ser. No. 127,958
Int. Cl.[4] A44B *17/00*
U.S. Cl. 24—662 **14 Claims**



1. A molded snap fastener head comprising an annular base flange having a central opening and an upwardly extending ring on the flange about the central opening, a generally annular head top also having a central opening, the top being spaced above and parallel to the flange, radial ribs disposed within the central opening of the flange and extending upward to support the top, the outer ends of the ribs and the adjacent periphery of the top being reduced in dimension in directions radial of the fastener head so as to not interfere with the action of a mating socket.

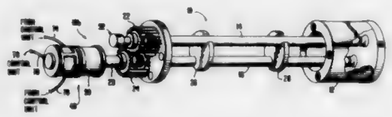
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4,805,274

REMOTE CONTROL FOR ADJUSTABLE-CURVATURE ROLL

James O. Gallant, Dighton, Mass., and Thomas E. Pitts, Warren, R.I., assignors to SW Industries, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 822,490, Jan. 21, 1986, abandoned. This application May 20, 1986, Ser. No. 865,109
The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.
Int. Cl.[4] D06C 3/06
U.S. Cl. 26—104 22 Claims



1. In an adjustable curvature roll including an axle having a hollow cylindrical body, an outer sleeve having an inner circumference greater than the outer circumference of said axle, said sleeve rotatably mounted around said axle, two longitudinally extending rods inserted within said hollow, cylindrical body, a first end of said rods being secured to an end plate at a first end of said axle, the improvement comprising:

a remotelv controllable means for applying a tensile axial force to one rod and a compressive axial force to the other rod, said remotely controllable means comprising two intermeshed, oppositely rotating gears, each of said gears being connected to a second end of said rods being opposite said first end of said rods, each of said gears including means to alter the relative axial position between each gear and its connected rod without rotating said rod so as to increase, decrease, or reverse the force exerted on said rods;

remotely controllable means to rotate one of said gears, the rotation of one of said gears causing the rotation of the other of said gears,

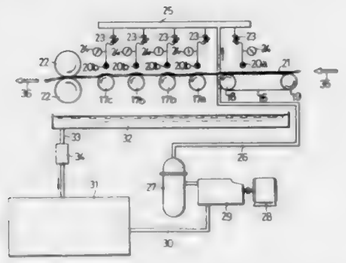
means for remotely controlling said means for rotating one of said gears.

4,805,275

METHOD OF PRODUCING NONWOVEN FABRICS

Migaku Suzuki, and Toshio Kobayashi, both of Kawanoe, Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Continuation of Ser. No. 293,512, Aug. 17, 1981, abandoned.
This application Oct. 3, 1983, Ser. No. 538,471
Claims priority, application Japan, Aug. 20, 1980, 55-114151
Int. Cl.[4] D04H 1/46
U.S. Cl. 28—104 12 Claims



1. In a method of producing nonwoven fabrics wherein a fibrous web is guided onto a water impermeable supporting member and said fibrous web is subjected to water jet streams ejected from nozzles which are arranged at intervals in a manner to face the surface of said fibrous web and to run across the width thereof whereby entangling treatment of individual fibers of said fibrous web is carried out;

the improvement which comprises

employing a fibrous web weighing from 15 to 100 g/m^2 as said fibrous web,

guiding said fibrous web onto a first supporting member consisting of a smooth-surfaced water impermeable endless belt,

carrying out a preliminary entangling treatment with water jet streams ejected from nozzles arranged with respect to said first supporting member,

guiding said fibrous web entangled to a certain degree through said preliminary entangling treatment onto each of second supporting members consisting of a plurality of smooth-surfaced water impermeable rolls disposed at spaced intervals, and

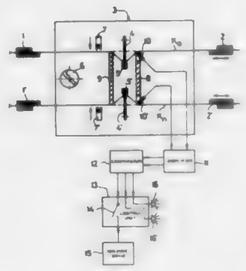
carrying out entangling treatment with water jet streams ejected from nozzles each arranged with respect to each of said second supporting members.

4,805,276

MONITORING DEVICE FOR DOUBLE THREADS IN WARP TYING MACHINES

Martin Plaschy, Hombrechtikon, Switzerland, assignor to Zellweger Uster Ltd., Uster, Switzerland

Filed Jan. 24, 1986, Ser. No. 878,005
Claims priority, application Switzerland, Jan. 26, 1985, 02716/85
Int. Cl.[4] D03J 1/18
U.S. Cl. 28—187 19 Claims



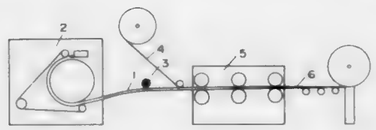
1. In a tying machine for tying individual threads of a first warp sheet to correspondingly positioned individual threads of a second warp sheet, said machine being of the type in which threads from at least an edge portion of a warp sheet are gripped at zones spaced apart from each other in the lengthwise direction of the threads and in which individual threads at the outermost edge of said warp sheet are successively engaged by separating means on successive cycles of machine operation to deflect them one by one out of the plane of such warp sheet, said machine having grippers, means to feed separated threads to the tying machine, guides for the separated threads, there being a separating means, feed means, guide, and gripper for each of the two warp sheets, the improvement which comprises fault detecting means for each warp sheet for sensing a value related to the magnitude of the force exerted by said separating means in each of its thread deflecting operations and for producing an error signal when the sensed value does not correspond to the approximate force required for deflecting a single thread, and when the sensed value corresponds to the approximate force required for deflecting multiple threads, the fault detecting means being positioned in the tying machine relative to the warp sheet such that the force exerted by each outermost thread of the warp sheet is successively sensed.

4,805,277

PROCESS FOR PRODUCING A GRID FOR USE IN LEAD ACID BATTERIES

Hiroshi Yasuda, Shizuoka; Sadao Furuya, Toyohashi; Naoto Hashikawa, Shizuoka; Takashi Yamaguchi, Kosai; Kazuhiro Takahashi, Toyohashi, and Teruaki Ishii, Kosai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 870,781, Jun. 5, 1986, abandoned. This application Dec. 21, 1987, Ser. No. 671,354
Int. Cl.[4] H01M 4/74
U.S. Cl. 29—2 10 Claims



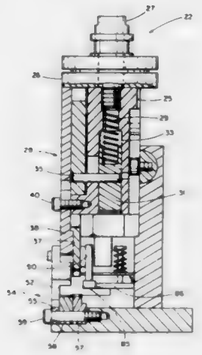
1. A process for producing a grid for use in lead acid batteries which comprises superposing a sheet or a foil of a lead alloy on a sheet bar composed of a lead-calcium alloy containing 0.03 to 0.15% by weight of calcium, 0 to 1.5% by weight of tin and a residual quantity of lead, said sheet or foil of lead alloy having a tin concentration in the range of 1.5 to 30% by weight and a tin concentration which is larger than the tin concentration of said sheet bar, said sheet or foil also having a thickness thinner than that of said sheet bar, and no greater than 0.7 mm followed by integrating both materials by a cold rolling process at a temperature less than or equal to 180° C. to form an elementary sheet having a thickness which is at most 1/5 times the thickness of the sheet bar and the sheet or foil before rolling and then subjecting the elementary sheet to an expanding or punching processing to form a grid.

4,805,278

TERMINAL STRIP APPLICATOR

John Balanda, New Lenox, and Peter Kirsteen, Country Club Hills, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Continuation of Ser. No. 884,163, Jul. 10, 1986, Pat. No. 4,718,160. This application Jan. 7, 1988, Ser. No. 141,759
Int. Cl.[4] H01R 43/055
U.S. Cl. 29—33 M 3 Claims



1. An applicator for sequentially applying terminals to wires where the terminals are provided in insulation form with insulation connecting adjacent terminals, comprising:

a machine body;

opposing aligned upper and lower die sets each including a strip severance die and a crimp die;

means for sequentially advancing a lead terminal of the terminal strip into alignment with the upper and lower die sets; and

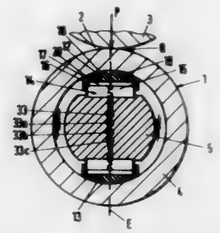
a ram assembly mounted for reciprocation within the machine body, the ram assembly including die set mounting means for interchangeably mounting the strip severance die and crimp die of the upper die set to the ram assembly, the crimp die being mounted to the ram assembly with a limited freedom of movement relative to the ram assembly in the direction of its length and being spring biased to project past the strip severance die, such that as the ram assembly is advanced the crimp die is disposed to resiliently engage and prevent rotation of a terminal before and during severance of the terminal from the terminal strip by the strip severance die and as the ram assembly is retracted the crimp die extends to strip the terminal from the dies.

4,805,279

PRESSURE ROLL FOR USE IN CALENDERS AND THE LIKE

Josef Pav, Krefeld, Fed. Rep. of Germany, assignor to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Sep. 2, 1987, Ser. No. 92,298
Int. Cl.[4] B21B 13/02
U.S. Cl. 29—116.2 16 Claims



1. A roll for use in calenders and in like machines, comprising an elongated carrier; a deformable hollow cylindrical shell surrounding and movable radially of said carrier; and supporting means interposed between said shell and said carrier and comprising a plurality of hydrostatic bearing elements forming a row extending in substantial parallelism with the axis of said shell, each of said elements having a predetermined width and a length less than said width and said supporting means further comprising means for biasing said elements toward said shell, each of said biasing means including a single piston provided on one of the parts including said carrier and the respective bearing element and a complementary cylinder chamber for the piston in the other of said parts, each of said pistons having a predetermined width and a length less than the width, said widths being measured in the circumferential direction and said lengths being measured in the axial direction of said shell.

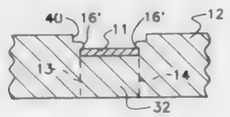
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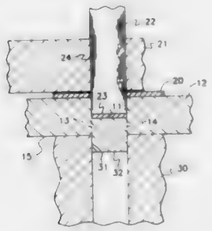
4,805,280

METHOD OF JOINING METALS OF DIFFERENT PHYSICAL PROPERTIES

Jay C. Elsaesser, Hopkins, and Wayne G. Godfrey, New Hope, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 16, 1988, Ser. No. 156,153
Int. Cl.[4] B21D *53/10*; B23P *11/00*
U.S. Cl. 29—149.5 DP **9 Claims**





1. A method of manufacture wherein a first metal is installed into a second metal having different properties than said first metal, including the steps of: placing a first metal adjacent a second metal; punching a portion of said first metal into, but not through, said second metal to form a recess while allowing said second metal to be extruded as a slug into a die generally corresponding in cross-section to a cross-section of a first punch; removing said first punch and said first metal from engagement with said second metal and said die with said portion of said first metal remaining installed in said second metal; placing said second metal including said portion of said first metal on a surface; and forcing a second punch of a larger size than said first punch against said second metal causing said first metal portion and said second metal slug to move back toward a surface of said second metal thereby causing said second metal to flow to lock said portion of said first metal into said second metal.

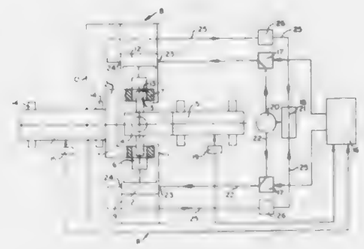
4,805,281

HYDRAULICALLY ACTUATED ASSEMBLY DEVICE

Josef Stark, Hambach; Willi Gossmann, Niederwerrn, and Rupert Warnsback, Grettstadt, all of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 3, 1987, Ser. No. 20,507
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1986, 3607655
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—252 **5 Claims**

1. Apparatus for assembling universal joints consisting of joint fork (2) connected to the shaft (1) of a universal joint cross (3) which is connected to another joint cross (4) and shaft (5) by bearings (6), comprising:
- a frame;
- positioning means (4) attached to the frame for aligning the centers of joint parts (2, 3 and 4);
- hydraulic actuators having a work chamber (12) and cylinder (8) reciprocally mounted therein for pressing said bearings into the fork arms (7);
- a pressure generator (20) with a constant pressure and supply tank (21) with pressure medium (18);
- a main line (22) connecting the actuators to said pressure generator;
- a main valve (17) in said main line for controlling flow of pressure medium (18) to the actuators;
- a measurement system (15, 16 and 19) for controlling said main valve (17) as a function of measurement value;
- means for allowing simultaneous fluid flow into and out of the work chamber to provide a continuous fluid circuit,



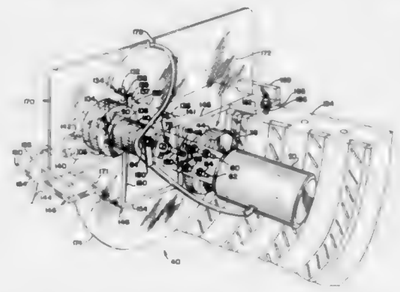
including a separate return line (25) between the work chamber (12) of the work cylinder (8) and supply tank (21) and means to control the amount of medium delivered to the work chamber including a throttle valve (26) therein which sharply reduces the return flow of pressure medium (18) compared to flow of pressure medium into the work chamber, whereby center offset of one joint part relative to another is eliminated.

4,805,282

PROCESS FOR REVAMPING THE STATOR BLADES OF A GAS TURBINE

Benjamin H. Reaves, West Texas City, and William E. Nelson, Dickinson, both of Tex., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 896,757, Aug. 14, 1986, Pat. No. 4,741,128. This application Mar. 23, 1988, Ser. No. 172,206
Int. Cl.[4] B23P *15/04*
U.S. Cl. 29—156.8 R **6 Claims**



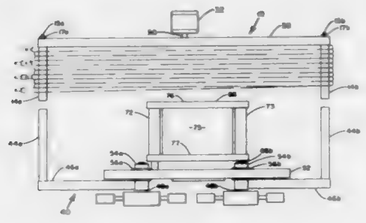
1. A process for revamping the stator blades of a gas turbine, comprising the steps of:
- removing the stator blades of a gas turbine by
  - severing upper portions of the stator blades in a base ring section of an axial flow compressor case of said gas turbine with an arc air torch, thereby leaving lower stub portions of the stator blades,
  - arcuately cutting the lower stub portions of the stator blades in said base ring section in two or more pieces with a grinding wheel of a cutter assembly,
  - knocking, vibrating, and jarring loose the cut, lower stub portions of the stator blades from said base ring section by repetitively striking the cut, lower stub portions with a hammer, and
  - emptying the loosened stub portions from grooved channels in the base ring section; and
- replacing the stator blades of the gas turbine by inserting new stator blades into the grooved channels of the axial flow compressor case at generally uniform intervals after said loosened stub portions have been removed.

4,805,283

METHOD FOR FORMING SLIT FIN COILS

John R. McManus, Marcellus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 939,823, Dec. 9, 1986, Pat. No. 4,770,241, which is a division of Ser. No. 695,435, Jan. 18, 1985, Pat. No. 4,682,488. This application Nov. 27, 1987, Ser. No. 125,920
The portion of the term of this patent subsequent to Oct. 28, 2003, has been disclaimed.
Int. Cl.[4] B21D *53/02*
U.S. Cl. 29—157.3 R **3 Claims**



1. A method of forming a slit fin heat exchanger comprising the steps of:
- wrapping slit fin tubing about a pair of spaced parallel mandrels to form a flat coil having two spaced rows;
- with the flat coil in place on a pair of spaced parallel mandrels which are rotatable about spaced axes which are initially parallel to and in the same plane as the mandrels on which the coil is in place, rotating the mandrels on which the coil is placed in opposite directions, thereby, shifting the plane in which the coils and the mandrels are located;
- initially contacting a planar surface of a platen with a portion of a first one of the rows of the coil;
- with the first one of the rows of the coil contacting the planar surface of the platen shifting the second one of the rows of the coil into contact with the portion of the first one of the rows overlying the platen to cause nesting of the first and second rows of the coil;
- folding the portions of the coil extending past the platen about curved portions of the platen and, thereby, extending the portions of the first and second rows which are nested; and
- contacting additional curved portion of the platen with the first one of the rows of the coil to form a knob at each end of the coil at the mandrels to extend the portions of the first and second rows which are nested to essentially the ends of the coil.

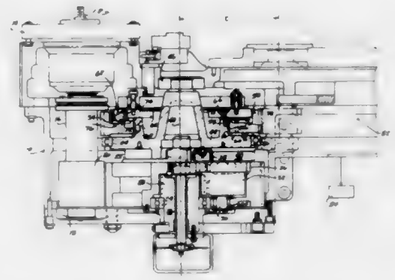
4,805,284

MOTION GENERATING MECHANISM WITH BACKLASH REGULATION

Bart R. Obra, Warren, Mich., assignor to Exxon Engineering & Manufacturing Corporation, Mt. Clemens, Mich.

Continuation of Ser. No. 938,806, Dec. 8, 1986, abandoned. This application Apr. 25, 1988, Ser. No. 188,175
Int. Cl.[4] B23Q *17/00*
U.S. Cl. 29—406 **6 Claims**

1. A method of assembling a motion generating mechanism for driving an output means in a work cycle wherein said output means is accelerated from a predetermined start position and then decelerated to a finish position, said mechanism including a constant speed rotary input means, motion modifying means including a first gear which may vary from true circularity and have a pitch circle whose diameter at various points may differ from its design pitch circle diameter D, means for mounting said first gear for rotation about a first fixed axis, said motion modifying means being driven by said input means and being operable to transform the constant speed rotation of said input means into a variable speed rotation of said first gear wherein said first gear is accelerated through a first portion of a complete revolutionary cycle from an initial position corresponding to said predetermined start position and decelerated through a final portion of said one complete revolutionary cycle until said first gear returns to said initial position, motion multiplying means including a second gear mounted for rotation about a second fixed axis parallel to said first axis in mesh with said first gear, said second gear having a pitch diameter D_2, said first and second fixed axis disposed a distance C from one another, and means drivingly coupling said motion multiplying means to said output means; said method of assembling comprises locating said first gear relative to said first axis by performing the steps of:



- finishing the formation of teeth on said first gear prior to finishing a circular opening on said first gear for engagement with a rotary member centered on said first fixed axis;
- measuring said first gear after formation of said teeth to determine a circumferential location of maximum diameter D_m on the pitch circle of the first gear;
- marking a first point on the first gear corresponding to the circumferential location of maximum diameter D_m;
- establishing an axis of rotation for said first gear at a radial distance R measured from said first point on said pitch circle along the maximum diameter, wherein $R=C-(D_2/2)$ and $2R>D_m$;
- grinding the circular opening centered on a second point defined at the radial distance R along the maximum diameter measured from the first point; and
- assembling said first gear with the circular opening engaging said rotary member and with said first point in meshing engagement with said second gear when said mechanism is in said start position such that when said first gear is in said initial position a straight line intersecting said first and said second axes intersects the pitch circle of said first gear at a radial distance R from said first axis which is greater than a second radial distance from said first axis to any other point on said pitch circle of said first gear and wherein said first and second gears meshingly engage at said initial position having backlash in the range from 0 to 0.002 inches inclusive.

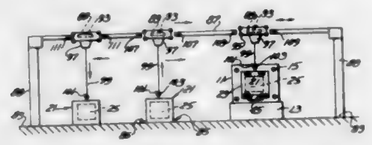
VOL 1099 ISS 3 FEB 21 1989 UMI

4,805,285

METHOD OF CHANGING INJECTION MOLDS

Jose L. Reyes, Monterrey, Mexico, assignor to Carol S. Moresey, Rochester, Mich.

Filed Feb. 19, 1987, Ser. No. 16,571
Int. Cl.[4] B23Q *17/22*
U.S. Cl. 29—407 **4 Claims**



1. A method of removing and replacing a mold assembly upon an injection plastic molding machine, said machine having opposed fixed and movable platens mounting a mold assembly and a vertical centerline, comprising the steps of:
positioning a replacement mold assembly in an upright position upon a floor surface in a staging area spaced from and in the plane of the fixed platen;
movably mounting transverse crane support tracks upon overhead crane ways for reciprocal movements longitudinally of the molding machine;
movably positioning an overhead crane having a retractable cable and hook upon the support tracks and aligning the crane with the platen plane;
said crane being adapted for reciprocal movements in said plane;
positioning the support tracks and crane upon the crane ways with the crane located upon said vertical centerline
lowering the crane cable and hooking it to the mold assembly;
disconnecting the mold assembly from the platens;
with the platens separated, lifting the mold assembly from the platens and transporting the mold assembly in said plane and lowering the mold assembly in said plane to the floor surface of said staging area in an upright position in alignment with said replacement mold assembly;
positioning the support tracks and crane above the replacement mold assembly and hooking its cable thereto;
lifting and transporting the replacement mold assembly into alignment with the machine center line and lowering the replacement mold assembly into registry with said platens, with its mounting plates located, centered and supported upon said platens respectively;
and with the platens brought together, connecting the replacement mold assembly to said platens.

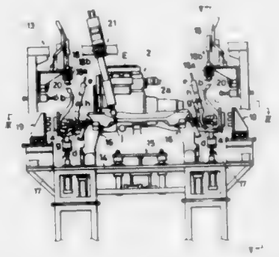
4,805,286

PROCESS FOR ADJUSTING ALIGNMENT OF A SUSPENSION SUB-ASSEMBLY

Kunisobu Uchida; Kenji Nemoto; Kunio Nokajima; Nagatoshi Murata, and Mitsuo Kaneko, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1987, Ser. No. 67,072
Claims priority, application Japan, Jul. 2, 1986, 61-154213
Int. Cl.[4] B23Q *17/00*
U.S. Cl. 29—407 **3 Claims**

1. A process for adjusting alignment of a suspension sub-assembly having a pair of wheel mounting elements suspended from a subsidiary frame relative to a vehicle body which includes means thereon for attaching said sub-assembly thereto comprising the steps of:
measuring the position of said means on said vehicle body for attaching said sub-assembly to said vehicle body,
detecting the extent to which said means for attaching said sub-assembly deviates from a reference position for said means for attaching said sub-assembly to said vehicle body,
mounting said suspension sub-assembly to apparatus adapted to hold said suspension sub-assembly with said wheel mounting elements oriented the same as though said suspension sub-assembly were attached to said vehicle body, and
adjusting the orientation of said wheel mounting elements



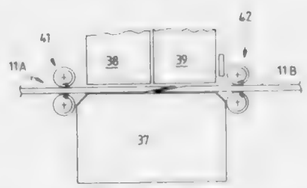
relative to said subsidiary frame to compensate for the extent to which said means for attaching said sub-assembly deviates from said reference position whereby the wheel mounting elements of the adjusted sub-assembly will have a predetermined orientation relative to the vehicle body when the sub-assembly is attached to said vehicle body.

4,805,287

PANEL JOINTING SYSTEM AND METHOD OF JOINING PANELS

Richard Perini, Kirribilli, and Terry Costigan, Cambridge Park, both of Australia, assignors to Rilin Investments Pty. Limited, Rockdale, Australia

Filed Apr. 16, 1987, Ser. No. 39,624
Claims priority, application Australia, Apr. 16, 1986, PH5500
Int. Cl.[4] B23Q *17/00*
U.S. Cl. 29—407 **7 Claims**



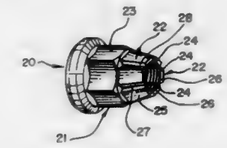
1. A method of joining panels including the steps of: providing a plurality of panels each with two major parallel surfaces, with each panel having a pair of parallel bevelled edge faces, said edge faces intersecting the major surfaces of the panel, at a predetermined acute angle, so as to provide two generally parallel edges, and at a predetermined obtuse angle, so as to provide two generally parallel ridges;
apply adhesive to the edge faces;
moving the panels successively along a predetermined path with the edge faces transverse of said path, so that adjacent edge faces of an adjacent leading and trailing panel are parallel and facing in opposite directions;
measuring the thickness of the leading panel and providing a signal indicative thereof;
using said signal to compute the position of the trailing ridge of the leading panel relative to its trailing edge;
locating the trailing ridge of the leading panel at the predetermined position by positioning the trailing edge of the leading panel;
applying a clamping force to said leading panel at or adjacent the trailing ridge thereof when at said predetermined position; and
moving said trailing panel into contact with said leading panel while being subjected to clamping force, to abut the leading face of the trailing panel with the trailing face of the leading the trailing panel with the trailing face of the leading panel so as to secure the abutted faces together.

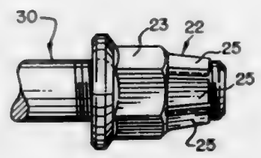
4,805,288

METHOD FOR MAKING AND USING A LOCKING BEAM NUT

Frank J. Cosenza, Rolling Hills, and Roy L. Warkentin, Lomita, both of Calif., assignors to Rexnord Inc., Torrance, Calif.

Division of Ser. No. 880,869, Jul. 1, 1986, which is a continuation of Ser. No. 644,417, Aug. 27, 1984, abandoned. This application Jan. 14, 1988, Ser. No. 144,559
Int. Cl.[4] B23P *19/06*
U.S. Cl. 29—426.5 **6 Claims**





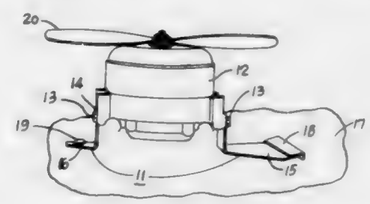
1. A method for repeatedly fastening an externally threaded member to a locking beam nut, the nut being securely fastened to the member following each repeated fastening, the method comprising steps of:
providing a locking beam nut having a substantially rigid body, with a circular opening extending through it, and a plurality of resilient, circumferentially-spaced locking beams projecting generally axially away from one end of the rigid body, wherein the locking beams have inner surfaces that define a circular opening aligned with the circular opening in the body, wherein the locking beams taper radially inwardly such that the circular opening they define has a uniformly-decreasing diameter, and wherein the step of providing includes steps of
forming threads in the aligned circular openings of the rigid body and plurality of locking beams, for receiving an externally threaded member, and
configuring the plurality of locking beams to each have side walls arranged in spaced, confronting relationship with the side walls of circumferentially-adjacent locking beams, wherein each locking beam and its side walls are radially continuous, substantially planar, and free of any debris-retaining cavities from the beam's inner threaded surface to the beam's outer surface, and wherein the side walls of each pair of confronting side walls diverge from each other in a direction of increasing radial distance;
threading an externally threaded member into the locking beam nut, the locking beams resiliently flexing radially outwardly to lock the member in place;
exposing the locking beam nut to an environment where debris can enter the spaces between the confronting side walls of adjacent locking beams and harden in place;
unthreading the externally threaded member from the locking beam nut, the locking beams being configured in the step of providing such that they resiliently return to their unflexed locations despite the presence of hardened debris in the spaces between the confronting side walls of adjacent beams; and
repeating the step of threading an externally threaded member into the locking beam nut, the locking beams again flexing radially outwardly to lock the member in place.

4,805,289

MOTOR MOUNT AND METHOD OF MAKING

Giles W. Morrill, P.O. Box 531, Rocky Fork, Erwin, Tenn. 37650

Continuation of Ser. No. 55,160, May 28, 1987, abandoned. This application Jan. 10, 1988, Ser. No. 206,911
Int. Cl.[4] B21D *39/03*
U.S. Cl. 29—428 **13 Claims**



1. A method of making an electric motor mount for a motor having predetermined mounting apertures, said method comprising the steps of:
selecting a strip of sheet metal having a selected width and a long length;
determining the positions on said sheet metal strip of first and second complementary nested pieces of different shapes;
said first nested piece having first and second ends with said second end wider than said first end;
said second nested piece having a length between first and second ends less than the length of said first nested piece;
said first nested piece having a median transition portion forming a transition in width between said wider second end and said narrower first end and which portion is generally complementary to a portion of said second nested piece;
said first ends of said first and second pieces having a combined width approximating the width of said second end of said first piece;
forming at least one motor mounting aperture in each of said first and second pieces with the apertures corresponding to the apertures in the motor to be supported;
stamping said first and second pieces from said strip;
and attaching said first and second pieces to an electric motor.

4,805,290

BLOW MOLDING OF DOUBLE-WALLED BOX IN DIAGONAL HALVES

John D. Brush, Jr., Webster, and Patrick J. Beattie, West Henrietta, both of N.Y., assignors to John D. Brush & Co., Inc., Rochester, N.Y.

Continuation of Ser. No. 828,243, Feb. 10, 1986, abandoned. This application Sep. 11, 1987, Ser. No. 96,600
Int. Cl.[4] B29C *49/00, 49/22*
U.S. Cl. 29—434 **19 Claims**

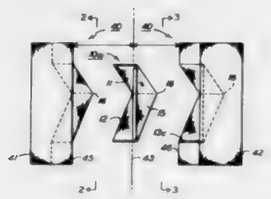
1. A method of making a generally rectangular, double-

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walled box having a hinged cover, a bottom, and opposed sides and ends arranged with a depth-to-width ratio of greater than 0.5, said method comprising:

a. molding said cover and separately blow molding halves of said box so that each of said halves includes an adjoining side and end subtending a diagonal half of said bottom;

b. positioning said cover between said molded box halves,



and juxtaposing said halves to hingedly trap said cover between said halves; and

c. joining said juxtaposed halves together to retain said cover between said halves for hingedly moving open and closed, said blow molding including blow molding said halves in an orientation within a mold so that said side, end, and bottom are all angled obliquely to a mold parting plane.

4,805,291

METHOD FOR MAKING A MOLD HALF FOR LAMINATED PARTS

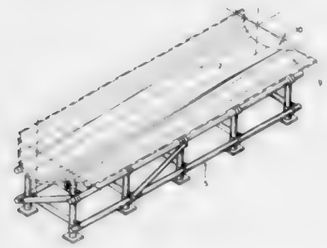
Michael Hahn; Peter Wackerle, both of Ottobrunn; Peter Eschenfelder, Waldkraiburg, and Ralf-Thilo Schulz, Herborn, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 899,749, Aug. 21, 1986, abandoned, which is a continuation of Ser. No. 726,924, Apr. 25, 1985, abandoned, which is a continuation of Ser. No. 487,846, Apr. 21, 1983, abandoned, which is a division of Ser. No. 212,194, Dec. 2, 1980, Pat. No. 4,398,693. This application Jul. 7, 1987, Ser. No. 70,421

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948690

Int. Cl.[4] B21D *5/00*

U.S. Cl. 29—434 4 Claims



1. A method for forming a molded component consisting of a developable surface which approximates a nondevelopable surface comprising the steps of:

determining a nondevelopable surface to be approximated by a mold component and forming on an identical nondevelopable surface points having equal tangential slopes at profile lines remote from each other;

connecting said profile points of equal tangential slopes on said nondevelopable surface with nonintersecting straight lines;

forming planar surface areas successively between each of said straight lines thereby to convert said nondevelopable surface into a developable surface;

forming from said developable surface thus formed a flat development having said straight lines thereon;

bending said flat development along each of said straight lines with a bending angle defined by the corresponding intersecting angle of said planar surface areas existing prior to formation of said flat development in order thereby to form a mold member defining a mold cavity having an inner surface identical with said developable surface; and

utilizing said mold member to form a molded component.

4,805,292

SUTURING NEEDLE WITH SUTURE AND METHOD OF PRODUCING THE SAME

Takeshi Noguchi, Osaka, Japan, assignor to Kabushiki Kaisha Mutec, Osaka, Japan

Division of Ser. No. 58,173, Jun. 4, 1987. This application Dec. 30, 1987, Ser. No. 140,779

Claims priority, application Japan, Jun. 12, 1986, 61-136758; Sep. 22, 1986, 61-224664; Nov. 21, 1986, 61-279250

Int. Cl.[4] B23P *9/00*

U.S. Cl. 29—445 12 Claims



1. A method of producing a suturing needle with suture characterized in that, inserting an inner core material in

one end of a hollow tube having a unit length inwardly deforming said one end of said hollow tube and core therein to form a tapered point holding one end of the inner core material to produce a needle body,

cutting said needle body into the needle length and forming a suture fixing hole on the other end of the needle body opposite the needle point,

processing the other end of said needle body to fix the other end of the inner core material therein and to form the needle,

bending said needle fixed with the inner core material therein to a curve of a prescribed shape, and

fixing a tip of a suture of in the suture fixing hole of the needle.

4,805,293

INSULATED CABINET MANUFACTURE

William J. Bucher, Marrs Township, Posey County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 299,037, Sep. 3, 1981, Pat. No. 4,715,512. This application Oct. 15, 1987, Ser. No. 108,461

Int. Cl.[4] B23P *19/04;* B29D *9/00*

U.S. Cl. 29—460 18 Claims

1. A method of manufacturing a foamed-in-place refrigerator cabinet structure including an outer shell and an inner liner with a through-the-wall wiring structure therein, comprising the steps of:

providing a cabinet liner;

forming an opening in the wall of said liner;

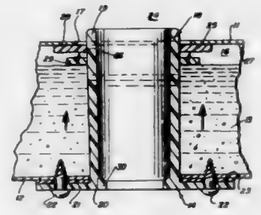
providing a foam stop member on the outer surface of the portion of said liner defining said opening, said foam stop member having a radially inner portion overlying said liner opening and defining a smaller opening;

providing a cabinet shell;

forming an opening in the wall of said shell;

extending a tubular member inwardly through said shell wall opening;

placing said liner within said shell in spaced, nested relationship to form an insulation space therebetween and with said tubular member extending inwardly successively through said foam stop member and linear openings; and



forming foamed-in-place insulation in said insulation space while effecting a foam stop seal between said foam stop member and said tubular member.

6. The method of manufacturing a foamed-in-place refrigerator cabinet structure of claim 1 wherein said foam stop member is adhesively affixed to said outer surface portion of the liner.

4,805,294

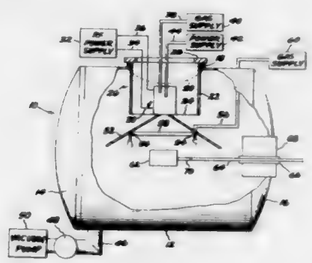
METHOD FOR FINISHING THE SURFACE OF PLASMA SPRAYED TI-ALLOY FOILS

Paul A. Siemers, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 4, 1987, Ser. No. 10,883

Int. Cl.[4] B21B *1/46*

U.S. Cl. 29—527.7 11 Claims



1. A method of forming a thin sheet of a titanium alloy which comprises

providing a RF powered plasma gun,

providing a supply of powder of the titanium alloy to be formed into a sheet, said powder having a particle size of greater than about 100 μm,

supplying said powder to a plasma in said gun to cause a plasma deposit of said powder to form on a receiving surface,

separating said plasma deposit from said surface as a free standing sheet having at least one rough surface,

rolling the as-deposited sheet to reduce the thickness of said sheet and to increase the smoothness of the surfaces thereof.

4,805,295

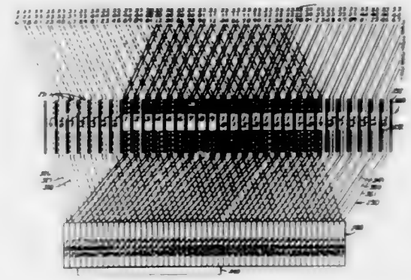
METHOD FOR WINDING ARMATURE FOR ROTARY CONVERTER

George J. Wanka, Highway 86 South, Lakefield, Minn. 56150

Division of Ser. No. 843,031, Mar. 24, 1986, Pat. No. 4,707,629. This application Sep. 8, 1987, Ser. No. 93,646

Int. Cl.[4] H02K *15/09*

U.S. Cl. 29—598 3 Claims



1. A method of wiring a rotor for a rotary converter, the rotor of the type having a central shaft, a commutator concentric with the shaft, an armature core concentric with the shaft and adjacent the commutator, the core having slots in its outer circumference parallel to the axis of the shaft, and concentric slip ring means including at least one slip ring mounted on the armature shaft, wherein the armature core has twenty-five slots, and the commutator consists of fifty-one bars individually insulated from each other, the method comprising the steps of:

(a) routing a first winding in a wave pattern through the armature slots, this winding comprising:

(i) a first wire electrically connected at its first end to a first commutator bar, wound through a first slot and a sixth subsequent slot of the armature core, and electrically connected at its second end to a twenty-sixth subsequent commutator bar relative to the first commutator bar,

(ii) a second wire electrically connected at its first end to a second subsequent commutator bar, wound through the first slot and the sixth subsequent slot of the armature core, and electrically connected at its second end to the twenty-sixth subsequent bar relative to the second commutator bar, wherein each wire of each subsequent pair of wires is electrically connected at its first end to one of a pair of next adjacent subsequent commutator bars, each pair of wires being wound through its first available subsequent armature slot relative to the first slot of the preceding pair of wires and wound through its sixth subsequent armature slot relative to its own first slot, each wire of such subsequent pair being electrically connected at its second end to a twenty-sixth subsequent commutator bar relative to the bar to which its first end is connected; except that a wire is not electrically connected at its first end to a twenty-ninth commutator bar relative to the first commutator bar and a wire electrically connected at its first end to the twenty-eighth commutator bar is electrically connected at its second end to a twenty-seventh subsequent commutator bar;

(b) electrically connecting a jumper at its first end to a third commutator bar and at its second end to a twenty-ninth commutator bar relative to the first commutator bar;

(c) routing a second winding in a series of alternating clockwise and counterclockwise loops through the armature slots; and

(d) electrically connecting the second winding to the slip ring means.

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4,805,296

METHOD OF MANUFACTURING PLATINUM RESISTANCE THERMOMETER

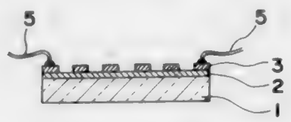
Akihito Jinda, Nara; Hisatoshi Furubayashi; Masaya Hijikigawa, both of Yamatokoriyama, and Hiroki Tabuchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 10, 1986, Ser. No. 905,392

Claims priority, application Japan, Sep. 10, 1985, 60-201155; Oct. 31, 1985, 60-246505; Nov. 27, 1985, 60-182779[U]; Dec. 19, 1985, 60-287113; Jan. 7, 1986, 61-1587

Int. Cl.⁴ H01C *17/06*

U.S. Cl. 29—620 **3 Claims**



1. A method of manufacturing a resistance thermometer which comprises the steps of forming an aluminum oxide film on a silicone substrate, subjecting the formed aluminum oxide film to heat-treatment at a temperature in the range of from 500° to 1,700° C., and thereafter, forming a platinum film on the surface of the formed heat-treated aluminum oxide film.

4,805,297

APPARATUS FOR APPLYING FRAMES TO FABRIC

Robert W. Seseff, W224 N2829 Stonewood Ct., Waukesha, Wis. 53186

Filed Oct. 16, 1987, Ser. No. 108,885

Int. Cl.⁴ B23Q *16/12*

U.S. Cl. 29—721 **7 Claims**



1. The apparatus for applying a frame to fabric comprising:
a stand;
a work surface supported by the stand;
means supported by the stand above the work surface for applying the frame to fabric overlying the work surface; and
laser means supported by the stand for emitting a beam of visible light incident upon the fabric at a location predetermined to align the fabric with the frame;
wherein the means for applying the frame to the fabric includes:
a pneumatic pressure operated cylinder;
an arm to support the cylinder over the work surface; and
a column having an axis and supporting the arm above the work surface; and
wherein the column is rotatably adjustable to swing the pneumatic cylinder about the axis of the column and the arm is slidably adjustable relative to the column so as to vary the radius of the arc through which the cylinder can be swung so that the position of the cylinder above the work surface can be adjusted.

4,805,298

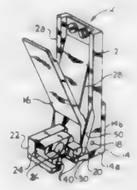
LEVERED CONNECTOR EXTRACTOR

Ted H. Takahashi, Los Angeles, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Dec. 3, 1987, Ser. No. 128,195

Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—764 **14 Claims**



1. An electrical connector extractor for separating mated male and female multipin electrical connectors having connector bodies, each surrounded by a horizontal flange comprising an "L" shaped outer body having an upright portion and a planar base portion for insertion between and for bearing against one of said flanges pivotally coupled at said upright portion proximate to said planar base portion to an inner lever that is in turn pivotally connected to a rotating foot member, said foot member for insertion between and for engaging the other said flange of a connector to thereby apply and maintain translation forces normal to said flanges as said lever is compressed into said outer body for separation of said connectors.

4,805,299

WORKING APPARATUS FOR USE IN AN ASSEMBLING/PROCESSING LINE

Isao Sekimoto; Isoroku Mihara; Shigeo Ueda; Shinichi Yasui; Shunso Wakaoka, all of Hiroshima, and Kyoji Hida, Aichi, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

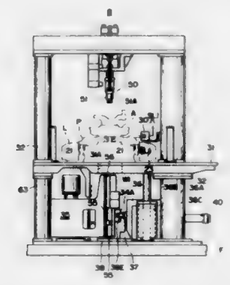
Filed Dec. 29, 1987, Ser. No. 139,353

Claims priority, application Japan, Dec. 29, 1986, 61-310934; Dec. 29, 1986, 61-310935; Dec. 29, 1986, 61-310936; Dec. 29, 1986, 61-310937

Int. Cl.⁴ B23P *19/00*

U.S. Cl. 29—796 **17 Claims**

1. A working apparatus for applying a working upon a work from beneath, said work being carried on a pallet conveyed by a conveyer, said working apparatus comprising:
guide means;
at least one working head slidably mounted on said guide means for vertical sliding movement between a raised working position for applying a working upon a work on said pallet from beneath and a lowered rest position;
lifting means disposed beside said working head when in said rest position for lifting said working head from said rest position to said working position; and
operating means disposed beside said working head when in said rest position and movable horizontally from a withdrawn position to a cooperative position where the operating means cooperates with said working head lifted and



placed in said working position for operating said working head to apply a working on said work from beneath.

4,805,300

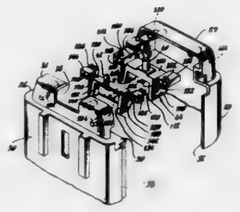
ELECTRIC DRY SHAVER HAVING AN IMPROVED DRIVE ARRANGEMENT

Aivars Miska, Stratford, Conn., assignor to Remington Products, Inc., Bridgeport, Conn.

Filed Sep. 17, 1986, Ser. No. 908,329

Int. Cl.⁴ B26B *19/10*

U.S. Cl. 30—34.1 **6 Claims**



1. An improved electric dry shaver comprising:
a. An elongated, hand-held housing;
b. Said housing formed by first and second elongated members which engage along a length of said housing to provide a unitary housing;
c. A shaver head positioned at one end of said housing;
d. Said shaver head having a short hair cutter including an inner assembly of cutter blades, and, a hair trimmer having a reciprocating cutter including a plurality of cutter teeth;
e. An electric motor positioned within said housing;
f. Coupling means for mechanically coupling said motor to said cutter blade assembly and to said trimmer cutter for simultaneously imparting reciprocating motion thereto;
g. Said coupling means including first and second drive bodies having independently movable segments integrally formed therein for engaging said cutter blade assembly and said trimmer cutter;
h. Each of said drive bodies having a generally U-shaped configuration including a platform segment, first and second leg segments depending from said platform segments, first and second relatively thin walled segments, and first and second support members integrally formed with said first and second relatively thin walled segments, respectively for engaging said housing members and supporting said drive bodies within said housing.

4,805,301

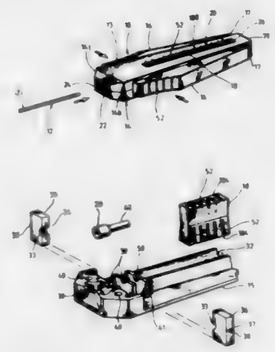
CONDUCTOR STRIPPING TOOL

David S. Chapin, Raleigh, N.C., and Paul D. Stack, Jr., Cadillac, Mich., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Jul. 23, 1987, Ser. No. 76,957

Int. Cl.⁴ H02G *1/12*

U.S. Cl. 30—90.1 **18 Claims**



1. A tool for stripping insulation or cladding from a conductor comprising:
a pair oppositely opposed pivotably mounted notched cutting blades;
means for moving said oppositely opposed pivotably mounted notched cutting blades from an open position to a position where said notch is in contact with the insulation or cladding on the conductor;
means for stopping the movement of said oppositely opposed pivotably mounted notched cutting blades before making contact with the conductor;
means for resiliently returning said oppositely opposed pivotably mounted notched cutting blades to an open position;
a housing including:
means for guiding said notched blades;
means for positioning the conductor with respect to said oppositely opposed pivotably mounted notched cutting blades.

4,805,302

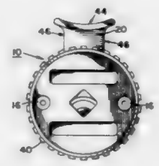
WIRE STRIPPER

Richard A. Steiner, East Haddam, Conn., assignor to Rostra Tool Company, Branford, Conn.

Filed Nov. 17, 1987, Ser. No. 121,526

Int. Cl.⁴ H02G *1/12*

U.S. Cl. 30—90.1 **25 Claims**



1. A wire stripper, comprising:
(a) a generally circular body;
(b) a first circular cutting blade disposed within said body, said first circular cutting blade being mounted against rotation within said body, but can be manually rotated as the cutting edge of said first circular cutting blade wears;

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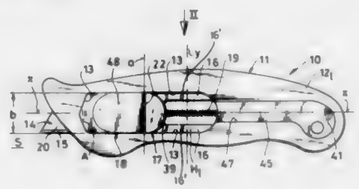
(c) means to accept a cable within said body, such that said cable will be disposed generally centrally in said body, said cable having at least one layer surrounding a central core;
(d) means to bring said circular cutting blade into cutting contact with said cable; and
(e) rotation of said body may be effected by a person grasping the outer periphery of said body and turning said body in a circular motion around said cable in a plane substantially orthogonal to the axis of said cable;
whereby; when said body is rotated around said cable, said first circular cutting blade will selectively cut through and sever at least one layer of said cable.

4,805,303
MULTI-BLADE FOLDING KNIFE WITH LOCK OPEN FEATURE
Philip W. Gibbs, South St., Camillus, N.Y. 13031
Filed Mar. 10, 1988, Ser. No. 166,407
Int. Cl.[4] B26B *3/06*
U.S. Cl. 30—161 12 Claims



1. In a folding knife having a handle portion and at least two blades each having a tang portion pivotally mounted for movement about a common axis at one end of said handle for movement of said blades between closed and open positions, locking and release mechanism for releasably securing each of said blades in the fully open position, said mechanism comprising, in combination:
(a) a first lock lever mounted upon said handle for limited pivotal movement with respect thereto about a pivot axis parallel to said common axis, and having a first end portion configured for engagement in a notch in the tang portion of a first of said blades which is aligned with said first lock lever first end portion when said first blade is in its fully open position, wherein said first lock lever and said first blade are in substantially longitudinally aligned relation;
(b) a first beam spring mounted upon said handle, and having a first end portion anchored to said handle at the end thereof opposite said one end, and a second end contacting said first lock lever at a position on the opposite side of said pivot axis from said first lock lever first end portion and exerting a biasing force urging said first lock lever toward rotation in a direction moving said first lock lever first end portion into engagement with said notch in said first blade tang portion, said first spring second end being flexibly moveable against said biasing force by manual pressure exerted on a predetermined portion of said first lock lever;
(c) a second lock lever mounted upon said handle for limited pivotal movement with respect thereto about said pivot axis, and having a first end portion configured for engagement in a notch in the tang portion of a second of said blades which is aligned with said second lock lever first end portion when said second blade is in its fully open position, wherein said second lock lever and said second blade are in substantially longitudinally aligned relation;
(d) a second beam spring mounted upon said handle, and having a first end portion anchored to said handle at said opposite end thereof, and a second end contacting said second lock lever at a position on the opposite side of said pivot axis from said second lock lever first end portion and exerting a biasing force urging said second lock lever toward rotation in a direction moving said second lock lever first end portion into engagement with said second blade tang portion, said second spring second end being flexibly moveable against said biasing force by manual pressure exerted on a predetermined portion of said second lock lever; and
(e) means longitudinally spaced along said handle at said opposite end thereof defining said predetermined portions of said first and second lock levers.

4,805,304
UTILITY KNIFE HAVING A SLIDING BLADE HOLDER
Heinz-Peter Knoop, Solingen, Fed. Rep. of Germany, assignor to D. G. S. Research & Development, Haifa, Israel
Filed Jun. 22, 1987, Ser. No. 65,331
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1986, 3622342
Int. Cl.[4] B26B *1/08*
U.S. Cl. 30—162 16 Claims



1. In a knife with a substantially hollow handle aligned along a longitudinal axis comprising a knife blade, having a broad side, guided longitudinally movable in a knife blade guide track and at least one guided slider member coupled with the broad side of said longitudinally movable knife blade, said slider member penetrating a wall of said handle in a slider member longitudinal slot in a handle broad side, the improvement wherein said slider longitudinal slot extends across the entire thickness of said handle, said slider member has an operating piece on each of said handle broad sides, there is at least one guide strip extending parallel to said handle longitudinal axis, said at least one guide strip being received between both of said operating pieces said knife blade is held between both of said operating pieces, said guide strips are provided inside of said handle and one guide strip is on each long side of said slider longitudinal slot, said slider member is divided approximately in a plane extending between both of said guide strips and each of two slider member portions so formed are connected with each other, of which each one has one of said operating pieces.

4,805,305
REPLACEABLE RAZOR BLADE SCISSORS
Lamar Davis, New Smyrna Beach, Fla., assignor to Sazor, Inc., New Smyrna Beach, Fla.
Filed Jun. 1, 1987, Ser. No. 55,992
Int. Cl.[4] B26B *13/04*
U.S. Cl. 30—258 13 Claims

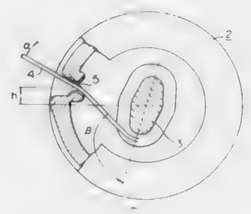
1. A scissors for cutting hair comprising a cross pair of elongated unitary members each having opposite end portions, pivot means interconnecting said members intermediate their said end portions, each said member and portion forwardly of said pivot means having cooperating jaws and rearwardly of said pivot means having cooperating handles, said pivot means including a hinge joint having cooperating shoulders on said members closely adjacent thereto limiting relative pivotal movements of said handles apart from each other and limiting

pivotal movement of said handles toward each other, one said jaw reliaseably receiving a straight-edged razor blade, another of said jaws including an elongated jaw member having a longitudinal recess disposed substantially centrally between inwardly facing vertical faces of said other jaw, said vertical faces being spaced apart so that no contact is made with said razor when disposed between vertical faces, said razor blade having an elongated cutting edge when said scissors are fully



closed very closely adjacent along a bottom surface of said recess whereby said cutting edge cleanly chops hair positioned across said recess by cooperation of said elongated cutting edge with said elongated jaw member, said hinge joint aligning said one jaw in a vertical plane of said other jaw to accurately position a straight-edged razor carried by said one jaw in substantially vertical alignment with said longitudinal recess in said other jaw.

4,805,306
CORD CUTTER HEAD
Toru Babe, Yokosuka, Japan, assignor to Kioritz Corporation, Tokyo, Japan
Filed May 20, 1987, Ser. No. 53,025
Claims priority, application Japan, May 24, 1986, 61-78616[U]
Int. Cl.[4] A01G *3/06*; A01D *25/26*
U.S. Cl. 30—276 2 Claims



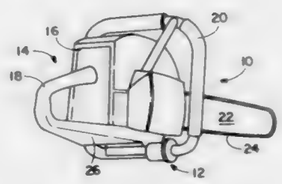
1. A cord cutter head comprising:
a housing;
a spool mounted substantially in the center of the housing and carrying a flexible cutter cord wound thereon, said spool having a first horizontal length dimension and a second horizontal length dimension, said first dimension being greater than said second dimension; and
an aperture formed in the wall of said housing and adapted to allow a portion of said cutter cord unwound from said spool to pass through an entrance thereto, said aperture being disposed at a position on said housing offset from the horizontal central axis of the housing passing through a central point of said spool;
wherein the unwound portion of said cutter cord comprises a bent portion formed at the entrance of said aperture by the horizontal axis of said aperture being offset with respect to the horizontal central axis of the housing which passes through said spool, to the trailing side of the central axis as viewed in the direction of rotation, and a straight portion formed between said spool and said bent portion.

4,805,307
GRAPE THINNING TOOL
George A. Lucas, Jr., Rte. 2, Box 490, Delano, Calif. 93215, and Richard Garcia, 14097 Avenue 272, Visalia, Calif. 93277
Filed May 1, 1987, Ser. No. 44,669
Int. Cl.[4] B26B *29/00*
U.S. Cl. 30—294 9 Claims



1. A tool for excising laterals of berries from the main stem of a bunch, comprising,
a cutter head;
longitudinal guide means on said cutter head for slideable engagement with the main stem of a bunch of berries;
said cutter head being formed with a generally rectangular cavity extending inwardly from the leading edge thereof towards the center of said cutter head to form a recess therein;
said cutter means having a sharp edge thereon, and being mounted within said recess with said sharp edge exposed in said recess toward said leading edge of said cutter head;
a rigid support post attached to said cutter head, said support post having a gooseneck configuration, and terminating in a handle;
said handle being disposed at a predetermined acute angle with said guide means, whereby a user of said tool pulling downward with said guide means resting on said stem will cause laterals in the path of said cutter to be severed at a point spaced from the main stem.

4,805,308
CHAIN SAW SAFETY DEVICE
Irvin W. Ritola, 23424 NE. Johnson Rd., Yacolt, Wash. 98675
Filed Mar. 16, 1987, Ser. No. 25,949
Int. Cl.[4] B23B *17/00*
U.S. Cl. 30—382 4 Claims



1. A safety device for use in conjunction with a chain saw having a front handle extending transversely around the main body of said saw and a saw chain extending forward from said main body and around a guide bar that defines a plane, comprising:

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a roller positioned underneath said main body of said saw so as to extend through said plane defined by said guide bar; and

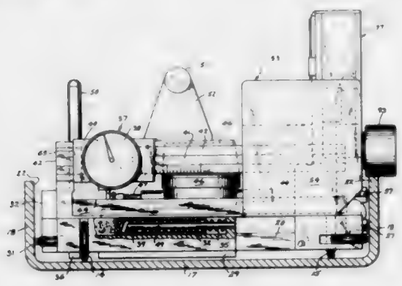
an assembly for rotatably mounting said roller on said front handle of said saw, said assembly including a detachable joint adapted to form a removable section in said handle, means for laterally retaining said roller in position on said handle, and a bracket for securing said joint and said handle to said main body of said saw.

4,805,309

GAUGE FOR MONITORING THE DIMENSIONS OF A STRUCTURAL MEMBER

Hideo Kofke, Milwaukee, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Feb. 1, 1988, Ser. No. 151,107
Int. Cl.[4] G01B *5/04, 5/14, 5/24*
U.S. Cl. 33—147 L **10 Claims**



1. A guage apparatus for monitoring deviations in the nominal dimensions of a structural member having a center web and integral flanges extending perpendicular to the web from the lateral edges thereof, the apparatus comprising:

(a) a wheeled carriage supporting the apparatus for rolling movement on the web and between the flanges along the length of the member;

(b) web width tracking and width deviation indication means attached to the carriage and in engagement with the flanges for continuously monitoring and providing an indication of the magnitude of deviation in the actual web width from the nominal web width dimension;

(c) angle tracking and angle deviation indication means attached to the carriage and in engagement with one flange for continuously monitoring and providing an indication of the magnitude of deviations of said flange from perpendicularity with respect to the web;

(d) flange height tracking and height deviation indication means attached to the carriage and in engagement with the upper edge of one flange for continuously monitoring and providing an indication of the magnitude of deviations in the actual flange height from the nominal flange height; and,

(e) each of the tracking and deviation indication means of the web width, angle and flange height being operable in response to movement of the carriage along the member.

4,805,310

PROBE FOR THE MEASUREMENT OF DIMENSIONS

Beaumann Fernand, Le Locle, Switzerland, assignor to Dysafer SA, Switzerland

Filed Sep. 4, 1987, Ser. No. 93,362
Claims priority, application France, Sep. 11, 1986, 86 12832
Int. Cl.[4] G01B *5/02*
U.S. Cl. 33—170 **3 Claims**

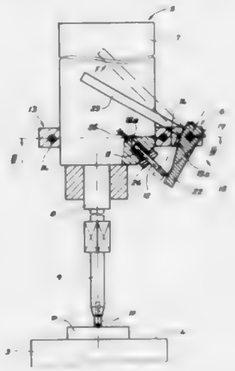
1. A manually actuable control device for selectably retracting a measuring probe of a thickness measuring instrument having a measuring probe extending from a housing, said probe being resiliently urged outwardly from said housing towards a measuring plane along a first axis, comprising:

probe retraction control means extending from said housing and linearly actuable in a second axis offset from said first axis;

means for resiliently biasing said retraction control means outwardly from said housing;

a manually operable lever arm;

a bracket removably attached to said housing for pivotably mounting said lever arm about a third axis perpendicular to said second axis, said bracket including means for clamping said bracket to said housing;



an actuator mounted for rotation about said third axis in fixed relationship with and under the control of said lever arm, said third axis and said actuator being oriented such that rotation of said lever arm about such third axis in a first direction brings said actuator into contact with and depresses said retraction control means for raising said probe against bias away from said measuring plane and that rotation of said lever arm in the other direction permits said probe to advance under bias into contact with an object to be measured on said measuring plane.

4,805,311

MEASURING DEVICE FOR THE IDENTIFICATION OF THE ENVELOPING CYLINDER OF PRECISION ROUND PARTS

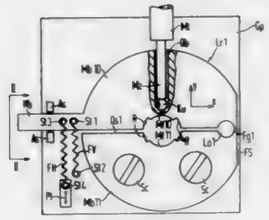
Volker Fuchs, Ottobrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 5, 1987, Ser. No. 22,005
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1986, 3609722
Int. Cl.[4] G01B *3/34*
U.S. Cl. 33—178 R **22 Claims**

1. A measuring device for the identification of the enveloping cylinder of precision round parts, particularly of light waveguide plug pins, said device comprising:

a gauge ring (Lr1) having at least two measuring jaws (Mb10, Mb11) said jaws having inwardly disposed, measuring surfaces (Mf10,Mf11), said measuring surfaces being sections of a cylinder;

said measuring jaws (Mb10, Mb11) being connected to one another at a first position by a first peripheral spring joint (Fg1) and being resiliently connected to one another at a



second position to allow the relative motions between the at least two measuring jaws (Mb10, Mb11); and

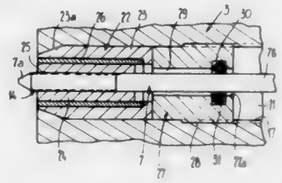
sensor means for measuring said relative motions.

4,805,312

ENGRAVING HEAD FOR APPARATUS FOR ENGRAVING PRINTING CYLINDERS

Max Dätwyler, Langenthal, Switzerland, assignor to MDC Max Dätwyler Bleienbach AG, Bleienbach, Switzerland

Filed Jun. 5, 1987, Ser. No. 58,569
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1986, 3619320
Int. Cl.[4] B41C *1/02*
U.S. Cl. 33—18.1 **8 Claims**



1. In an engraving head for apparatus for engraving printing cylinders, the improvement compriaing in combination:

a drivable engraving tool;

a sensing organ contacting any printing cylinder being engraved by the drivable engraving tool;

means for effecting a firm and accurate guidance of the drivable engraving tool by the sensing organ contacting the printing cylinder, including a common mounting fixture for the drivable engraving tool and the sensing organ; and

damping means between the sensing organ and the engraving tool for at least substantially barring transmission of oscillations from the sensing organ to the engraving tool, while preserving said firm and accurate guidance of the drivable engraving tool

by the sensing organ contacting the printing cylinder; said sensing organ including a sensing stylus, an inner sleeve for retaining the sensing stylus, and an outer sleeve for mounting the inner sleeve and the sensing stylus in the common mounting fixture; and

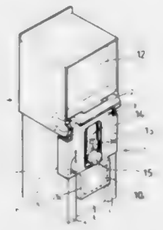
said damping means including an elastically deformable, energy absorbent element between said inner and outer sleeves.

4,805,313

APPARATUS FOR ILLUMINATING A SIGHT ON A WEAPON

Arthur Stocker, Munich, and Werner Schmid, Ircheanberg, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 27, 1988, Ser. No. 148,842
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1987, 3702560
Int. Cl.[4] F41G *1/06, 1/16*
U.S. Cl. 33—241 **12 Claims**



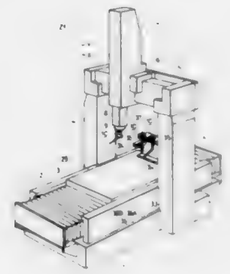
1. An apparatus for illuminating a graticule disk of a reflex sight for a weapon, comprising a carrier frame, hollow glass body means supported by said carrier frame, gaseous tritium inside said hollow glass body means, and slidable attachment means for removably securing said carrier frame holding said glass body means to said sight for a sliding movement between first and second positions so that in said first position light collected by said glass body means illuminates said graticule disk for an improved contrast between a target and lines on said graticule disk of said sight, and so that in said second position light from said hollow glass body means is prevented from illuminating said graticule disk, whereby the first position is an effective position and said second position is an ineffective position.

4,805,314

METHOD AND APPARATUS FOR SPATIAL COORDINATE MEASUREMENT

Koji Hayashi; Susumu Yoshioka, and Noritsugu Ono, all of Utsunomiya, Japan, assignors to Mitutoyo Corporation, Tokyo, Japan

Filed Apr. 17, 1987, Ser. No. 40,521
Int. Cl.[4] G01B *7/28*
U.S. Cl. 33—503 **9 Claims**



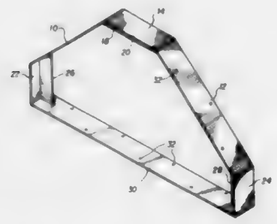
1. A coordinate measuring apparatus, comprising:

a mounting table adapted to support thereon an object to be measured;

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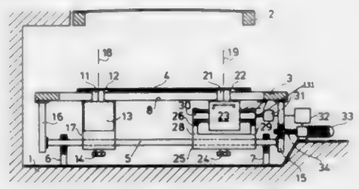
a plurality of probe means selectively supported one at a time by a Z-spindle on a body of said apparatus;
first drive means for spatially moving said probe means and said object relative to each other;
detection means for detecting the relative movement between a surface on said object and said probe means;
data processing means for processing the detected data from said detection means and which indicates the magnitude of the relative movement so that dimensions and the like of said object are measured;
second rotary drive means for selectively turning said Z-spindle in a Z-axis structure supported on said body of said apparatus and yet be capable of axial movement while simultaneously being incapable of turning relative to said body of said apparatus;
one of said probe means including a main body having an elongated axis, a support member extending in a direction perpendicular to said axis of said main body, a holding member movable along said support member, and a probing tip connected to said holding member;
means for changing the posture of said probing tip of said probe means by moving said probing tip relative to said main body of said probe means in said direction perpendicular to said axis of said main body of said probe means;
said detection means including a diametral displacement detector for displacing and outputting a signal representative of a diametral displacement of said probing tip, said diametral displacement occurring in the diametral direction of said object when said rotary drive means is operated while said probing tip is in contact with a round shaft portion of said object, said displacement varying in accordance with the contour of the surface of said round shaft portion; and
said detection means further including an angle detector connected to said rotary drive means and adapted for detecting the relationship between the rotational positions of said probing tip and said surface of said round shaft portion when said probing tip is displaced by the operation of said rotary drive means.

4,805,315
FREE STANDING SQUARING TOOL WITH OPEN CORNERS
Hugh M. Nesbitt, R.R. 1, Box 414, Lyndhurst, Va. 22459
Filed Feb. 29, 1988, Ser. No. 162,216
Int. Cl.[3] G01B 5/00
U.S. Cl. 33—535 **6 Claims**



1. A fixture comprising
a pair of mutually perpendicular legs,
a bridge interconnecting said legs, said bridge extending obliquely to each of said legs,
a pair of end portions, one on each of said legs, each end portion extending obliquely to its respective leg, and
a hypotenuse member extending between said end portions, the hypotenuse member being oblique to each of said legs,
said legs, bridge, end portions and hypotenuse member defining a polygon lying in a plane, each of said legs, bridge, end portions and hypotenuse member being disposed with its width extending perpendicular to said plane.

4,805,316
METHOD OF AND APPARATUS FOR ALIGNING PRINTED CIRCUIT CARRIERS PREPARATORY TO THE APPLICATION OF PRINTED CIRCUITS
Ezio Carti, Strada Padana Superiore 57/59, I-20063 Cernusco Sul Naviglio Milano, Italy
Filed Feb. 25, 1988, Ser. No. 160,367
Claims priority, application Italy, Feb. 25, 1987, 19484 A/87
Int. Cl.[4] B23Q 3/00; B25B 11/00
U.S. Cl. 33—613 **20 Claims**

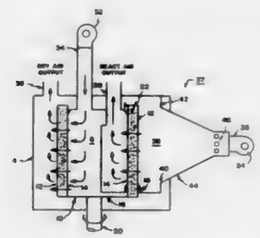


5. A machine for applying printed circuits to carriers of the type having first and second indicia spaced apart from one another an actual distance which is expected to match but can deviate from a predetermined distance, particularly as a result of manufacturing tolerances and/or temperature-induced expansion or contraction of the carrier, comprising a mobile support for carriers; a first locating member arranged to share the movements of said support and defining a first centering axis; a second locating member defining a second centering axis and being mounted on said support for movement relative to said first locating member, said first and second locating members being respectively arranged to center the first and second indicia of the carrier on said support so that the second locating member moves relative to the first locating member and relative to said support when the actual distance between the indicia of the carrier on said support deviates from the predetermined distance; signal generating means for monitoring the extent of deviation of the position of said second locating member from a position corresponding to that when the locating members center the respective indicia of a carrier while the actual distance between the indicia matches said predetermined distance; and adjusting means for moving said support and the carrier thereon in response to signals from said monitoring means through a distance matching or approximating 50 percent of the extent of deviation.

4,805,317
MICROWAVE REGENERATION OF ADSORBENT MATERIALS FOR REUSE AS DRYING AGENTS
Robert S. Ingila, Mt. Airy, Md., and Owen Thomas, Reston, Va., assignors to Airflow Company, Frederick, Md.
Filed Nov. 13, 1987, Ser. No. 120,433
Int. Cl.[4] F26B 3/34
U.S. Cl. 34—1 **22 Claims**

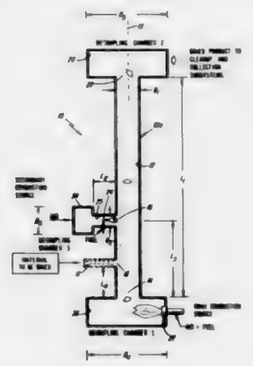
1. A method of regenerating porous desiccant material for reuse as a drying agent, said method comprising the steps of:
(a) irradiating a bed of the desiccant material with microwave energy to heat moisture adsorbed by said material and to vaporize said moisture in consequence of the heating thereof;
(b) purging the vaporized moisture from the bed with blown scavenging air while said bed undergoes irradiation by said microwave energy;
(c) discharging the purged vaporized moisture in admixture with said scavenging air to an effluent receiving region isolated from said bed;

(d) preheating the blown scavenging air enroute to the bed of desiccant material to a temperature, e.g., about 120° F.,



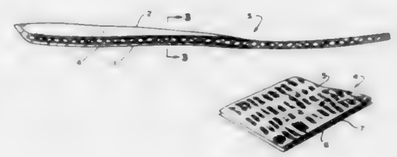
which is considerably below the vaporization level of said moisture adsorbed by said material.

4,805,318
ACOUSTICALLY ENHANCED HEAT EXCHANGE AND DRYING APPARATUS
T. Taxwell Bramlette, Livermore, and Jay O. Keller, Oakland, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jul. 10, 1987, Ser. No. 71,953
Int. Cl.[4] F26B 17/00
U.S. Cl. 34—57 A **13 Claims**



1. A heat transfer apparatus, comprising:
a first chamber, having a longitudinal axis and first and second ends, and including first heat transfer gas inlet means, second heat transfer gas inlet means located intermediate to said first and second ends, and gas outlet means,
a first heat transfer gas source for providing a first heat transfer gas to said first chamber through said first heat transfer gas inlet means,
a second heat transfer gas source for providing a second heat transfer gas to said first chamber through said second heat transfer gas inlet means, and
means for generating acoustic waves for causing acoustical coupling of said second heat transfer gas to said first heat transfer gas in said first chamber, said means comprising a second chamber extending longitudinally from said first chamber at said second heat transfer gas inlet means, said second heat transfer gas source being located in said second chamber.

4,805,319
CUSHIONING AND IMPACT ABSORPTIVE MEANS FOR FOOTWEAR OPERATIVE COMPONENT
Raymond F. Tenkel, St. Louis, Mo., assignor to Kangaroos U.S.A., Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 705,659, Feb. 26, 1985, Pat. No. 4,656,760. This application Feb. 19, 1987, Ser. No. 17,085
The portion of the term of this patent subsequent to Apr. 14, 2004, has been disclaimed.
Int. Cl.[4] A43B 13/18
U.S. Cl. 36—28 **18 Claims**



1. A cushioning and impact absorptive means for application within footwear of the type having a shoe upper affixed to a sole formed at least partially of a polymer-like material, comprising, a shoe upper, and a shoe sole, said upper secured to said sole, means operatively associated with the shoe sole to provide cushioning for the said footwear during its application, said means also being formed of a polymer-like material, a cellular insert, said cellular insert being applied within the polymer-like material formed associated with the said shoe sole, said cellular insert compriaing upper and lower layers of woven polymer material, and also comprising a series of sinusoidally shaped cellular components formed of woven polymer-like material and arranged intermediate and connecting to said layers of said polymer material, said cellular components formed having upper, lower, and side surfaces, said layers of polymer material connecting with the upper and lower surfaces of the said cellular components, said cellular components having cavities generally formed therethrough, with said formed cavities being arranged intermediate the said upper and lower layers of the cellular insert, the series of cellular components provided therein being secured together along their contiguous side surfaces, said cellular insert being arranged substantially aligned within the said footwear means during shoe usage, said cellular insert as formed of woven polymer material having a hardness greater than the polymer-like material forming the said shoe sole, whereby the cellular insert formed within the sole tending to effect the absorption of any forces of impact, while furnishing conservation of energy for the user of the footwear during application.

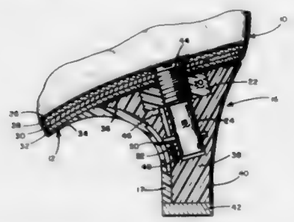
4,805,320
SHOE WITH EXCHANGEABLE HEEL
Tzvika Y. Goldenberg, 7000 Woddale Ave. South, Edina, Minn. 55435, and Avraham Y. Levi, 757 Decorah La., St. Paul, Minn. 55120
Filed Oct. 26, 1987, Ser. No. 112,621
Int. Cl.[4] A43B 21/36, 21/50
U.S. Cl. 36—42 **7 Claims**

1. In a shoe of the type having an upper and a heel attached to said upper, the improvement comprising:
(a) a rigid pin member projecting outwardly and generally perpendicular to the sole portion of said upper proximate the location at which the heel joins the upper and said heel includes an internal bore for receiving said pin member;
(b) manually operable latch means for releasibly locking said pin member within said internal bore, said latch means comprising a strip member having an aperture extending through the thickness dimension thereof, said strip member fitted into a laterally extending recess in said heel with the portion thereof including said aperture being located

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within said bore in said heel, said pin member fitting through said aperture; and

(c) means for normally biasing said strip member out of perpendicular alignment with said pin member to prevent



relative movement of said heel relative to said upper, the application of a force overcoming said biasing means positioning said strip in perpendicular alignment with said pin member whereby said heel is removable from said pin.

4,805,321

REVERSIBLE SHOE TONGUE

Raymond F. Tonkel, St. Louis, Mo., assignor to Kangaroos U.S.A., Inc., Chesterfield, Mo.

Filed Oct. 14, 1987, Ser. No. 108,434

Int. Cl.[4] A43B *23/26*

U.S. Cl. 36—54 **5 Claims**



1. In the construction of footwear of the type having a vamp, toe piece, quarter portions, and counters, all integrated together to form a shoe upper, and secured to a shoe sole, the improvement which comprises, a tongue portion, said tongue portion having upper and lower surfaces, said tongue portion removably securing to the toe piece, said toe piece having an upper edge, fastening means holding said tongue portion to the toe piece at its upper edge, said fastening means comprising a hook and pile fastening means, wherein at least one of said hook and pile fastening means securing with the upper edge of the shoe toe piece, and the other of said hook and pile fastening means securing with the lower edges of both the upper and lower surfaces of the tongue portion, the hook and pile fastening means connecting with both said lower edge of the tongue portion and with the upper edge of the toe piece extending for the full width of the tongue portion lower edge, and said tongue portion being removable and reversible in its securement with the said toe piece.

4,805,322

EXCAVATING BLADE ASSEMBLY

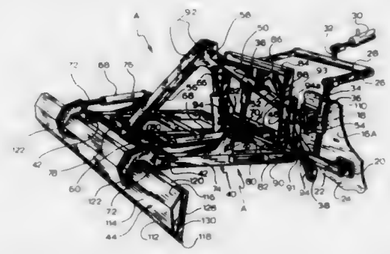
Antoine-Noël Lemire, 528 Route 132, Baieville, Quebec, Canada JOA 1GO; Christian Lemire, 5390 Aubert, Trois-Rivieres Quest, Quebec, Canada G8Y 5C4, and Paul Lemire, Route 132, Baieville, Quebec, Canada JOA 1GO

Filed Jan. 30, 1987, Ser. No. 9,513

Int. Cl.[4] E02F *3/80*

U.S. Cl. 37—118 R **6 Claims**

1. A back filling blade assembly adapted to be mounted to the conventional rear three-point hitch system of a farm tractor, said hitch system including a central hitch bracket fixed to the back of the tractor body and a pair of laterally-spaced first hitch lever arms pivoted for up and down movement at their front ends to the back of said tractor body below the level of said central hitch bracket and having free rear ends, said assembly comprising a blade having an upper portion and a lower scraping edge, an elongated boom adapted to extend rearwardly of said tractor, having a rear end pivotally connected to the upper portion of said blade and a front end adapted to be pivotally connected to the rear ends of said first hitch lever arms, a central lever arm extending centrally over said boom, having a front end adapted to be pivotally connected to said central hitch bracket and having a rear end, an upstanding spacer frame extending between said boom and said central lever arm and pivotally connected at its upper portion to an



intermediate portion of said central lever arm and at its lower portion to the front end of said boom, a link pivotally interconnecting the rear end of said central lever arm and the rear portion of said boom and an upstanding double-action hydraulic jack having an upper end pivotally connected to the pivotal connection of said central lever arm with said link and a lower end pivoted to said boom intermediate its front and back ends, whereby, when the front ends of said boom and of said central lever arm are respectively connected to the rear end of said first hitch lever arms and to said hitch bracket, said link, said boom, said spacer frame and the portion of said central lever arm which is located rearward of said spacer frame form the sides of a deformable quadrilateral structure which causes raising and lowering of said boom by extension and retraction of said hydraulic jack respectively.

4,805,323

SNOW REMOVAL DEVICE FOR VEHICLE

Yoshio Motohashi, Atsugi, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 31, 1987, Ser. No. 90,927

Claims priority, application Japan, Sep. 1, 1986, 61-205270; Jan. 6, 1987, 62-480[U]

Int. Cl.[4] E01H *5/09*; A47L *1/00*

U.S. Cl. 37—254 **13 Claims**

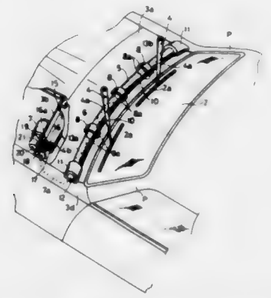
1. A snow removal device for a vehicle including window glass and a wiper therefor, comprising:

an elongated casing provided adjacent to and extending along a lower edge section of the window glass and having a snow guide channel therethrough, a snow intake port facing said lower edge section and a snow discharge port formed in at least one end of said snow guide channel;

said snow guide channel for receiving snow entering said snow intake port and for guiding said now toward said snow discharge port;

a transfer means positioned in said snow guide channel to move said snow therein toward said snow discharge port; and

a drive means which drives said transfer means;



wherein said snow which is wiped from said lower edge section of said window glass by the wiper is removed through said snow discharge port.

4,805,324

LIGHT SIGN

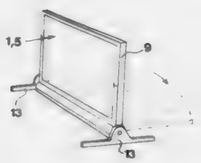
Lorentz Andersson, 2 Guldringen 32, 421 52 Västra Frölund, Sweden

Continuation of Ser. No. 694,454, filed as PCT SE84/00162 on Apr. 30, 1984, published as WO84/04416 on Nov. 8, 1984, abandoned. This application Nov. 19, 1986, Ser. No. 933,346

Claims priority, application Sweden, May 4, 1983, 8302544

Int. Cl.[4] G09F *13/00*

U.S. Cl. 40—541 **11 Claims**



1. A light sign comprising: a one-piece translucent illuminant plate having a front face, two pairs of opposite edges, the edges of each pair being parallel to each other and transverse to the edges of the other pair and a plurality of coplanar, parallel passages extending internally through the plate for receiving illuminating discharge tubes, the passages being open at both ends at one of the pairs of opposite edges of the illuminant plate; a translucent sign panel overlying and spaced outwardly from the front face of the illuminant plate, said panel having edges corresponding to the edges of the illuminant plate; and a frame assembly peripherally surrounding the illuminant plate and the sign panel, said frame assembly including two first frame members extending along one of the pairs of the opposite edges of the illuminant plate, each of said first frame members having spaced-apart flanges providing a channel in which the corresponding edge of the illuminant plate is located and each of said first frame members having a guide groove separate from the channel and extending along the length of the respective frame member, the corresponding edges of the sign panel being located in and slidable along the grooves, the frame assembly further including two second frame members extending along the other pair of opposite edges of the illuminant plate, each of said second frame members having spaced-apart flanges forming a channel in which the corresponding edge of the illuminant plate is located, said first and second pairs of frame members being connected end-to-end so as to support and retain the illuminant panel within the frame assembly, the second frame members being free of guide grooves for the sign panel, and the frame assembly further including profile members overlying and detachably connected to the second frame members, each profile member having a flange spaced from the respective second frame member and forming with the latter a groove for the respective edge of the sign panel, the arrangement being such that when a profile member has been detached from its respective second frame member the sign panel can be removed from the frame assembly by sliding the sign panel longitudinally out of the grooves in the first frame members and past one of the second frame members.

4,805,325

CLIP-FRAME TYPE DEVICE FOR DISPLAYING A DOCUMENT

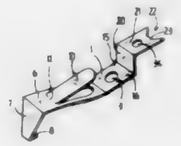
Denis J. Cassard, Saint-Cloud, France, assignor to S.A.R.L. Etablissements Rignac, Villeneuve Le Roi, France

Continuation of Ser. No. 873,703, Jun. 12, 1986, abandoned. This application Dec. 23, 1987, Ser. No. 139,147

Claims priority, application France, Jun. 13, 1985, 85 08972

Int. Cl.[4] A47G *1/06*; G09F *1/12*

U.S. Cl. 40—152 **5 Claims**



1. Device for mounting planar element such as a document in the form of a text, picture or the like, comprising a plane support having a front surface on which said document is to be mounted and a plurality of spring clips on a back surface of the support, each clip having at least one claw for engaging over a respective edge of the support and overlaying said front surface of the support to retain the planar element thereon, each clip having a base fixedly attached to the support and an elastic branch extending from the base and terminating in said claw, the branch being curved for applying two elastic forces to the claw, one of said forces being in a direction from the respective edge of the support towards the center of the support and the other of said forces being in a direction from said front surface of the support to said back surface of the support, each clip further including an offset lever extending outwardly from the branch towards the base and generally parallel to the support for reversing both said force simultaneously when the lever is depressed to eliminate the offset thereby dis-engaging the claw from over the respective edge of the support.

4,805,326

FRAME FOR RELEASABLY FRAMING ARTICLES

John P. Rainone, 87-89 Dyke Road, Brighton, East Sussex, England (BN1 3JE), and Derek J. C. Bernard, Jersey, Channel Islands, assignors to John P. Rainone, East Sussex, England

Continuation-in-part of Ser. No. 816,200, Jan. 6, 1986, Pat. No. 4,726,133. This application Nov. 27, 1987, Ser. No. 126,205

Claims priority, application United Kingdom, Jan. 4, 1985, 8500243; May 10, 1985, 8511909; Sep. 20, 1985, 8523324

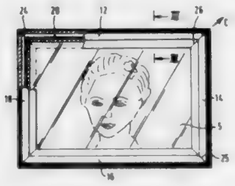
Int. Cl.[4] A47G *1/06*

U.S. Cl. 40—155 **18 Claims**

1. A frame for framing at least one article comprising a plurality of frame members arranged in end to end relationship to form the frame and means consisting solely of an elastic band, for maintaining said relationship, the elastic band being disposed in a continuous channel formed around the frame by the alignment of sub-channels located along the length of each

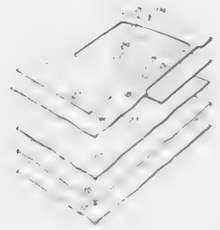
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of the frame members, each sub-channel having an entrance passage leading into it along the whole of its length arranged



both to allow the elastic band to be threaded into the sub-channel and to prevent the elastic band from being visible after assembly of the frame.

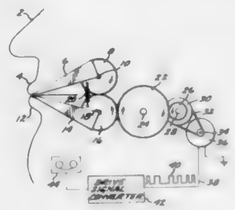
4,805,327
TV COMMERCIAL STORY BOARD
John Buckley, 433 California St., San Francisco, Calif. 94104
Filed Aug. 27, 1987, Ser. No. 90,016
Int. Cl.[4] A47G *1/06*
U.S. Cl. 40—159 5 Claims



1. A display board comprising a composite panel having a stiffener,
a sheet of vinyl-like material affixed to said stiffener,
a front-facing over said vinyl-like material, said facing being cut away in a plurality of windows,
said front facing being loose relative to said vinyl-like material in the areas around each said window, a sketch sheet for each said window having a drawing thereon inserted between said vinyl-like material and said facing and visible through one said window, said front facing being formed with a slit adjacent each said window through which said sketch-sheet may be inserted under said front-facing, said vinyl-like material being of a type which restrains by friction unintentional movement of said sketch from a position under said window.

4,805,328
TALKING DOLL
William C. Mirabeau, Reseda, Calif., assignor to Marmetx Company, Chatsworth, Calif.
Filed Sep. 29, 1986, Ser. No. 912,781
Int. Cl.[4] G09F *27/00*
U.S. Cl. 40—457 17 Claims

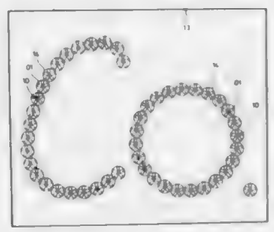
1. A talking doll with movable features which comprisies:
a mannequin, said mannequin incorporating at least one movable feature and an underlying structure;
a direct drive mechanism connected between said movable feature and said structure of said mannequin to produce relative motion of said feature and said mannequin;
said direct drive mechanism further comprising electromechanical means responsive to constant amplitude, variable duration electrical signals to move said movable features unidirectionally in opposition to the force exerted by deflection of an elastic means connected between said direct drive mechanism and said structure of said mannequin; and



means to generate constant amplitude, variable duration electrical signals to be applied to said electromechanical means, said duration of said electrical signals derived from the amplitude of an audio signal supplied to said talking doll.

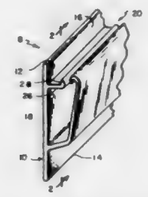
4,805,329
SELF-POWERED COMPUTERIZED ADVERTISEMENT BOARD
Hung-Chie Tsai, No. 26-4 Shuang-Cheng St., Taipei, Taiwan 104
Continuation of Ser. No. 795,171, Nov. 5, 1985, abandoned. This application Jan. 25, 1987, Ser. No. 65,138
Int. Cl.[4] G09F *13/28*
U.S. Cl. 40—550 5 Claims





1. A system for an advertisement board comprising:
(a) a plurality of illuminating units arranged on an advertising board in a predetermined pattern, each illuminating unit comprising:
(i) a stationary support mounted on the advertising board;
(ii) a shaft rotatably mounted on the stationary support;
(iii) a fan blade mounted on the shaft such that wind acting on the fan blade causes rotation of the blade and shaft;
(iv) electrical generating means mounted between the support and the shaft such that, electrical power is produced as the shaft rotates; and,
(v) light bulb means mounted on the shaft and normally electrically connected to the electrical generating means.
(b) an electrical power handling circuit means connected to the electrical generating means so as to store electical power generated by the generating means, the power handling circuit comprising
(i) an auxiliary electrical power source;
(ii) connecting means electrically connecting the auxiliary electrical power source to the light bulb means; and
(iii) switch means interposed between the auxiliary power source, the generating means and the light bulb means so as to automatically connect the light bulb means to the auxiliary power source and disconnect it from the generating means if the electrical power produced by the generating means falls below a predetermined level; and,
(c) control means connected between the electrical power handling circuit means and the light bulb means to control the illumination of each of the light bulbs, such that, at any given time, only a portion of the total number of light bulbs are illuminated, the control means comprising:
(i) data storage means to store data relating to the time and duration of illumination for each of the light bulbs; and
(ii) input means to input data into the data storage means relating to the time and duration of illumination for each light bulb.

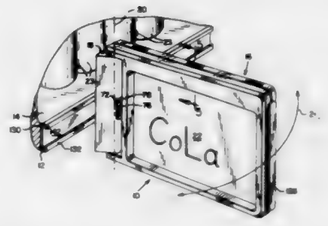
4,805,330
HANGER FOR A WALL COVERING
John Babernak, 119 South St., Plainville, Mass. 02762
Continuation of Ser. No. 795,871, Nov. 7, 1985, Pat. No. 4,676,016. This application Jun. 29, 1987, Ser. No. 68,038
Int. Cl.[4] G09F *7/22*
U.S. Cl. 40—617 9 Claims



1. A hanger for suspending flexible sheet material to a wall, comprising an attaching strip for securing the hanger to the wall from which the sheet material is to be suspended, vertically-spaced, longitudinally-extending first and second supports integral with and extending forwardly from the attaching strip, oppositely-facing, longitudinally-extending inner and outer lips at the extremities of the supports and means yieldably supporting the second support for rectilinear and angular movement thereof relative to the first support to elastically engage the inner side of the outer lip at the extremity of the second support and the inner side of the inner lip at the extremity of the first support with the edge of the flexible sheet material to be suspended disposed between the lips.

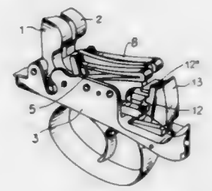
4,805,331
PIVOTABLE DISPLAY AND DISPENSING APPARATUS
Charles H. Boggess, Tualatin, Oreg., and Richard G. Krautsack, Arlington Heights, Ill., assignors to Comark Merchandising, Inc., Elk Grove Village, Ill.
Continuation-in-part of Ser. No. 819,855, Jan. 10, 1982, abandoned. This application Oct. 31, 1986, Ser. No. 925,320
Int. Cl.[4] G09F *3/20*
U.S. Cl. 40—651 18 Claims

1. A self-aligning apparatus for displaying sheets of promotional material to observers approaching from generally opposite directions, comprising:
frame means defining sheet-receiving cavity means;
said frame means including front and rear walls having transparent sheet-like window means for displaying, in opposed directions, promotional material received in said cavity means;
said frame means further including intermediate wall means extending between said front and said rear walls and cooperating therewith and with the sheet-like window means to substantially enclose said cavity means and sheets of promotional material received therewithin;



material transfer means for moving sheets of promotional material into and out of said cavity means including slot means formed in said intermediate wall means dimensioned so as to permit the passage of said promotional material sheets therethrough without flexing; and
bracket means for securing the frame means to a support structure, the frame means being pivotably movable relative to the bracket means.

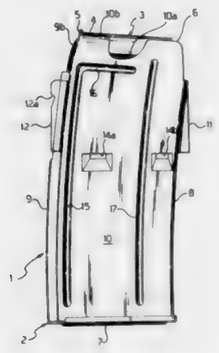
4,805,332
SNAP MECHANISM FOR DOUBLE-BARRELLED SHOT-GUNS WITH ARRANGEMENT FOR SELECTIVE RELEASE OF THE HAMMERS
Daniele Perazzi, Botticino Mattina, Italy, assignor to Manifattura Armi Perazzi S.p.A., Italy
Filed Dec. 28, 1987, Ser. No. 138,290
Claims priority, application Italy, Oct. 20, 1987, 5238 A/87
Int. Cl.[4] F41C *19/00*
U.S. Cl. 42—42.01 3 Claims



1. Snap mechanism for double-barrelled shot-guns comprising:
(a) two hammers pivoting on an underguard and coordinated with the barrels' firing mechanisms;
(b) two snap rods for blocking said hammers in the armed position;
(c) a trigger for separately controlling the displacements of said rods, so as to release in succession said two hammers;
(d) an inertial mass or rocker for effecting the actions of said trigger on said rods;
(e) an oscillating connector mounted on said trigger on the tail end thereof and connecting said trigger with said rocker; said snap mechanism being characterized by:
(f) a selector arrangement mounted on said connector and displaceable transversely thereon into two different positions, so as to interact with and detach in succession by means of said rods first one hammer and then the other hammer, following the movements of the trigger.

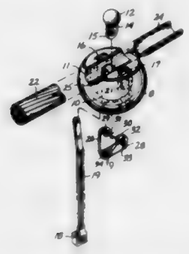
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4,805,333
PACK-TYPE CLIP FOR SHOTGUN CARTRIDGES
Pierluigi Doria, and Sergio Mottana, both of Brescia, Italy, assignors to Luigi Franchi S.p.A., Italy
Filed May 19, 1987, Ser. No. 52,010
Claims priority, application Italy, Jan. 4, 1986, 22095/86[U]
Int. Cl.[4] F41C *25/02*
U.S. Cl. 42—50 **3 Claims**



1. A pack-type clip for shotgun cartridges, comprising a container of box-like construction and elongate shape with an open end, there being also defined in the container oppositely located, respectively muzzle and breech side, minor walls and major side walls, characterized in that it comprises a respective guide rib formed lengthwise on each said major side walls proximately of said breech side minor wall and projecting into said clip, said lengthwise ribs being in oppositely located and confronting relationship, being set mutually apart by a distance substantially equal to the diameter dimension of said cartridges forward of their rims, and being spaced from said breech side minor wall by a distance greater than the thickness of the rims of said cartridges but less than or equal to about twice said thickness.

4,805,334
FISHNET HANGING SYSTEM
Robert W. Barclay, 4710 University Way NE.; #712, Seattle, Wash. 98105
Continuation-in-part of Ser. No. 762,003, Aug. 2, 1985, Pat. No. 4,763,432. This application Jan. 27, 1987, Ser. No. 8,221
The portion of the term of this patent subsequent to Aug. 16, 2005, has been disclaimed.
Int. Cl.[4] A01K *71/00*
U.S. Cl. 43—7 **10 Claims**



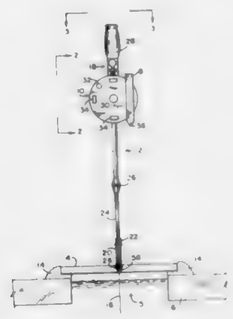
4. Mechanism for coupling a net to a cylindrical length, such net being carried by a hanging cord, comprising several anchor blocks of rigid material, means for clamping said blocks to the cylindrical length at fixed locations spaced lengthwise of the cylindrical length, and connection means for connecting each anchor block to the hanging cord, said connection means including several identical first connection components, one for each of said blocks, carried by said blocks, respectively, and several identical second connection components, one for each of said first connection components, carried by the hanging cord at fixed locations spaced lengthwise of such cord, said first and second connection components having cooperable, complemental, manually connectible and disconnectible, rigid, quick-coupling parts for manual connection and disconnection of said first and second connection components to connect and disconnect the anchor blocks and the hanging cord without structural damage to said connection components and without tying or untying or cutting the hanging cord.

4,805,335
SORTING DEVICE FOR TRAWL NETS
Charles W. West, Seattle, and Gary F. Loverich, Bainbridge Island, both of Wash., assignors to Nor'Eastern Trawl Systems, Inc., Bainbridge Island, Wash.
Filed Mar. 1, 1988, Ser. No. 162,986
Int. Cl.[4] A01K *73/02*
U.S. Cl. 43—9 **10 Claims**



1. A sorting device for hydrodynamically sorting marine life in a trawl net, the net having a mouth opening to an inside region and at least one cod end attached thereto, the sorting device comprising:
turbulence means for creating a water disturbance in the inside region of the net that causes preselected marine life to move in one direction in the inside region and nonselected marine life to move in a different direction in the inside region of the net.

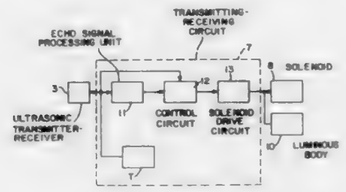
4,805,336
ICE FISHING ROD
Thomas A. Heyerman, 5556-36th Avenue South, Minneapolis, Minn. 55417
Continuation of Ser. No. 873,992, Jun. 13, 1986, abandoned. This application Jul. 27, 1987, Ser. No. 78,014
Int. Cl.[4] A01K *97/12*
U.S. Cl. 43—17 **19 Claims**



1. Ice fishing apparatus comprising:
(a) a fishing rod having a handle and a flexible rod member extending therefrom;

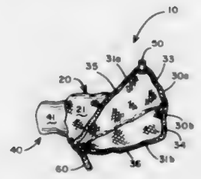
(b) a spooled reel of fishing line rotatively mounted to said handle and passing through a tip mounted line guide of said rod;
(c) an ice hole cover member having a fishing line receiving slot extending inwardly from an outer peripheral edge and including a recessed notch adjacent said slot; and
(d) means for detachably securing said fishing rod to said cover member in upright relation with the line guide mounted in said notch and said rod pointing down with said fishing line passing through the slot.

4,805,337
FISH SONAR BODY
Hisao Kurata, Aichi, Japan, assignor to Honda Electric Co., Ltd., Aichi, Japan
Filed Oct. 22, 1987, Ser. No. 111,216
Claims priority, application Japan, May 13, 1987, 62-71300[U]
Int. Cl.[4] A01K *97/12*
U.S. Cl. 43—17.5 **15 Claims**



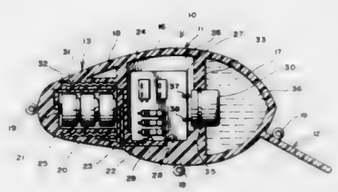
1. A fish sonar buoy having a transmitting circuit for transmitting pulse signals, a transmitter-receiver for transmitting ultrasonic signals according to the pulse signals in water, the transmitter-receiver being mounted in a bottom portion of said buoy, a receiving circuit having a control circuit for receiving echo signals converted by the transmitter-receiver during a desired time after the ultrasonic signals are emitted and for generating electric signals, and a signal information device for informing the existence of a school of fish in a desired deep portion of the water according to the desired time by a change of a color or an emission of a light or sound, wherein the signal information device includes an information body driven by a solenoid.

4,805,338
FISHING MITT
Gerald G. Schubiom, P.O. Box 6473, Duluth, Minn. 55806
Filed Jul. 22, 1988, Ser. No. 222,891
Int. Cl.[4] A01K *97/00*
U.S. Cl. 43—25 **9 Claims**



1. A mitt to be worn on the hand while fishing with a rod and reel combination comprising:
(a) a double cuff portion which fits snugly about the wearer's wrist; and
(b) a main portion which is attached to the double cuff and is intended to surround the wearer's hand as well as the handle portion of the wearer's fishing pole, said main portion having an outer shell made of a water resistent breathable fabric, an inner lining which forms a pocket, and at least one insulative layer within said pocket, said main portion also including adjoining first and second break away seams so that the main portion can be opened up and folded back over the wearer's forearm exposing the wearer's hand when desire.

4,805,339
SONIC FISHING LURE
Gabriel S. F. Fuentes, Buenos Aires, Argentina, and Orlando L. Hidalgo, Miami, Fla., assignors to TANI Enterprises, Inc., Miami, Fla.
Filed Dec. 16, 1987, Ser. No. 133,498
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.31 **7 Claims**



1. A fishing lure adapted to be used in water comprising a body,
an electrical power source within said body,
electronic means connected to said power source for producing an electric signal having a frequency range between 50 to 300 hertz and having wave characteristics which enhance the attraction of fish,
a transducer connected to said electronic means for converting said electrical signal into sound, comprising a housing, an electrical coil, a first disk, a second disk connected to said first disk by a rod therebetween, said coil being located within said housing whereby an electrical signal furnished to said coil causes said connected disks to vibrate and produce said sound having said frequency range, and,
means for transmitting said sound produced by said transducer into said water.

4,805,340
HUMANE GLUE TRAP FOR RATS, MICE AND OTHER VERMIN HAVING CARBOMAL IN THE BAIT
Jerome Becker, Brooklyn, N.Y., and Robert E. Connolly, Parsippany, N.J., assignors to Tamby Chemical Corp., Brooklyn, N.Y.
Filed Feb. 24, 1988, Ser. No. 159,779
Int. Cl.[4] A01M *1/14*
U.S. Cl. 43—58 **4 Claims**

1. A glue trap for rats, mice or other vermin comprising a polymeric substrate, an adhesive substance held by said substrate, and a pelletized animal food held by said adhesive substance which contains carbromal in an amount sufficient to calm the trapped pest when it ingests said carbromal.

4,805,341
METHOD OF EXTERMINATING INSECTS UNDER THE FLOOR OF A HOUSE OR BUILDING
Hiroshi Maeda, No. 26-2, Suberiwahama, Ookuwajima, Muya-cho, Naruto-shi, Tokushima-ken, Japan (772)
Filed Dec. 23, 1987, Ser. No. 137,324
Int. Cl.[4] A01M *9/00*
U.S. Cl. 43—132.1 **2 Claims**

1. A method of applying finely powdered insecticide to

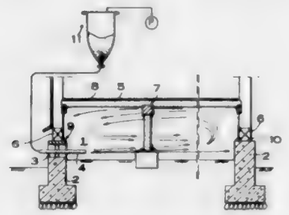
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exterminate harmful insects under the floor of a house or building, which comprises:

(a) loading the powdered insecticide into a sealed airtight dispenser so that the insecticide outlet opening is blocked with insecticide;

(b) pressurizing the dispenser to forcefully deliver insecticide under pressure from said insecticide outlet opening toward a nozzle;

(c) spraying insecticide at a high speed, from said nozzle, into the enclosed area under the floor of the house or building so that insecticide adheres to all exposed surfaces



and in all crevices in said enclosed area under the floor of the house or building;

characterized in that the insecticide is forced out of said insecticide outlet opening and flows with a high flow rate within a hose which flow rate is greater than or equal to 5 m/sec through the hose the length of which is greater than or equal to 5 m, said house having at least an inner surface made of highly electrically resistant synthetic resin, said insecticide being sprayed from said nozzle after being electrically charged by frictional electricity created by friction between the insecticide and the synthetic resin inner surface of the hose.

4,805,342

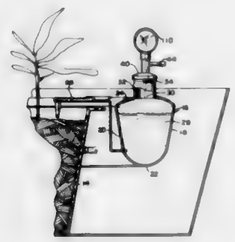
PLANT IRRIGATION SYSTEM

Wayne C. Jenkins, 2764 SW. 10th St., Boynton Beach, Fla. 33435, and Richard P. Marx, 1068 Larch Way, W. Palm Beach, Fla. 33414

Filed Jun. 5, 1986, Ser. No. 870,849

Int. Cl.[4] A01G *27/00*

U.S. Cl. 47—79 **9 Claims**



1. A plant watering apparatus for attachment about the side of a plant for providing a liquid under pressure to a plant in a grow pot at a substantially constant rate, comprising:

a closed reservoir affixed to the outside of said grow pot;

means for introducing a liquid into said reservoir, said liquid introduction means being hermetically resealable;

means about the upper portion of said reservoir for introducing a pressurized gas into said reservoir, said gas introduction means being hermetically resealable;

a pressurized gas within said reservoir;

conduit means communicating with the interior of said reservoir about the lower portion of said reservoir and extending outwardly and upwardly from said reservoir to said grow pot for delivering liquid under the pressure of said pressurized gas in said reservoir to the top portion of the plant, said conduit means having at least one discharge outlet;

means for regulating flow of liquid through said discharge outlet so as to provide a substantially constant flow rate; and

means for attaching said apparatus to the side of a grow pot.

4,805,343

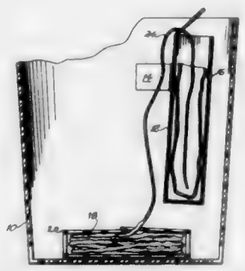
OSMOTIC FIBER SYSTEMS

James A. Patterson, Sarasota, Fla.; Robert M. Piecuch, Warsaw, Ind., and Charles E. Hamilton, Englewood, Fla., assignors to Southeastern Illinois College Foundation, Ill.

Filed Oct. 20, 1986, Ser. No. 920,440

Int. Cl.[4] A01G *27/00*

U.S. Cl. 47—79 **12 Claims**



10. Demand watering apparatus for use with a plant in a pot containing soil comprising:

a pot having soil therein;

hollow fiber means positioned in the soil;

a substantially rigid foraminous enclosure containing said hollow fiber means; and

said hollow fiber means having walls permeable to water and impermeable to dissolved and suspended solids.

4,805,344

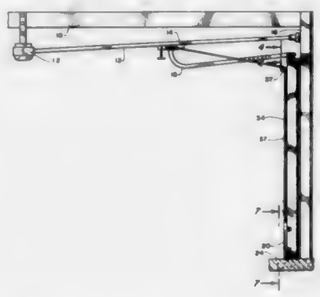
AUTOMATIC DOOR LOCKING ASSEMBLY

Deso I. Hrboka, P.O. Box 2242, Oxnard, Calif. 93034

Filed Dec. 28, 1987, Ser. No. 138,568

Int. Cl.[4] E05F *15/00*

U.S. Cl. 49—280 **18 Claims**



1. A deadbolt lock for an automatic door enclosing a garage having a floor, said door having an upper portion and a lower portion with a carriage movable along a powered track means and a lift arm connecting the carriage with the door for lifting and lowering the door about hinge means comprising:

a sleeve means mounted vertically to the inside lower portion of said door;

a shaft slidably engaged with said sleeve means having sufficient weight to overcome counteracting friction forces for gravity movement from an unlock position to a lock position when said door is lowered to a vertical position;

actuation means connecting said shaft with said carriage for moving said shaft upon movement of said carriage; and,

bracket means mounted to said upper portion and a delay means connecting an outer end of said lift arm with said bracket means whereby said actuation means will move said shaft before said lift arm will move said door.

4,805,345

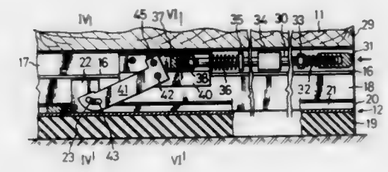
SEALING DEVICE FOR A DOOR

Kenji Ohi, Osaka, Japan, assignor to Nankai Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 10, 1987, Ser. No. 71,818

Int. Cl.[4] E06B *7/20*

U.S. Cl. 49—308 **3 Claims**



1. A sealing device for a door comprising:

a channel member secured to the lower edge of the door, said channel member having an open face facing downwardly

a sealing element provided inside the channel member, said sealing element being capable of movement in a upward or downward direction and having an lower portion made of an elastic material and a upper portion made of a rigid material;

a rod provided inside the channel member and movable in the axial direction;

said rod having a first tip end;

a first spring exerting pressure on the rod so that the tip end of the rod protrudes slightly from the side edge of a door;

a lever provided to oscillate against the channel member;

said lever having a first end and a second end;

the first end of said lever connected to the sealing element;

the second end of said lever connected to the rod;

a cylinder secured to an upper chamber almost at the center of the channel member;

a slider movably contained in the cylinder and connected to a second end of the rod;

a first pin providing said lever with oscillating motion in the cylinder; and

a second pin connecting said lever and said slider;

a third pin is secured to the top surface of the sealing element; and

a slot provided at the first end of the lever fits the third pin.

4,805,346

VEHICLE DOOR GLASS ATTACHMENT TO CABLE DRIVE WINDOW REGULATOR MECHANISM

Bela Gergoe, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 4, 1987, Ser. No. 94,118

Int. Cl.[4] E05F *11/48*

U.S. Cl. 49—352 **8 Claims**



1. In combination, a cable drive window regulator mechanism and an attachment means for attaching a movable window of a vehicle door assembly to the regulator mechanism comprising:

a stationary generally vertically extending guide means which is adapted to be secured to the door assembly, a cable drive means including a cable which is guided for movement in opposite directions along said guide means and biasing means for tensioning said cable;

a sash plate which is adapted to be secured to the window adjacent its lower end and which is slidably connected to and supported on said guide means;

connecting means for connecting said cable to said sash plate so that when the cable is moved the sash plate and window are slidably moved relative to said guide means to raise and lower said window, the improvement being that said connecting means comprises:

a ferrule secured to said cable and which has a width greater than the diameter of said cable;

and that said sash plate has a boss portion which defines a ferrule receiving pocket having upper and lower end walls, a bottom wall and an opening which faces in a direction away from said stationary guide means, and a cable receiving slot which extends through said boss portion including the end walls and bottom thereof defining said pocket and with said slot having a width which is less than the width of the ferrule but greater than the width of the cable to freely receive the latter, said boss portion having a ramp located beneath said pocket,

said cable being readily connectable to said sash plate, after the latter is slidably connected to said guide means, by positioning the backside of said sash plate over said cable above the ferrule so that the cable can be received through said slot, pulling on said cable in opposition to its tension biasing means to move the ferrule to the front of the sash plate and the cable through the slot, moving the sash plate and window downward and releasing the cable and with the ferrule being engageable with said ramp of said boss portion until the pocket on the sash plate is positioned behind the ferrule whereupon the tension biasing means moves the ferrule into the pocket and biasingly retains the same therein to drivingly connect the ferrule to the boss portion of the sash plate due to the engagement between the ferrule and the upper and lower end walls of the pocket,

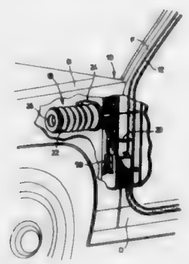
said cable being readily disconnected from said sash plate by pulling said ferrule and cable outwardly and reversing the procedure noted above.

4,805,347

BELLOWS SYSTEM FOR DEFLATING WEATHERSTRIPS

Jack E. Smith, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 3, 1987, Ser. No. 92,759
Int. Cl.[4] E06B 7/16
U.S. Cl. 49—477 **2 Claims**



1. An apparatus for sealing between a closure and a body such as a door and a door frame of a vehicle, comprising:

a deflatable sealing member for resilient interference engagement between said closure and said body;

vacuum source means in the form of a bellows actuatable by resilient memory to form a vacuum when connected to said deflatable sealing member; means for mounting said bellows at one of said closure or said body and including an opposite, relatively displaceable end for actuating said bellows to condition said bellows for actuation by resilient memory;

means for remotely connecting said relatively displaceable end of said bellows to the other of said closure or said body, said connecting means including means to condition said bellows for actuation by resilient memory only during opening of said closure, said bellows being actuated by resilient memory during closing of said closure; and

a flow control circuit connected to said bellows including first valve means openable to connect said sealing means to said bellows during actuation by resilient memory to deflate said sealing member to a reduced cross-section only during closing of said closure so as to allow passage of air from inside the vehicle past said sealing member to substantially reduce closing effort and eliminate compression shock, and including second valve means openable when said closure is closed to allow internal pressure of said sealing member to return to ambient pressure and expand said sealing member by resilient memory to full cross-section after closing of said closure so as to provide firm sealing engagement with the desired resilient interference between said closure and said body.

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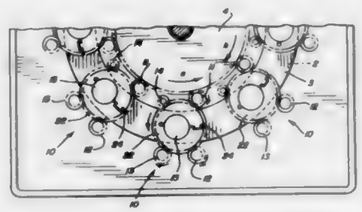
FLAT LAPPING MACHINE

Hatsuyuki Arai, Zama; Isao Nagahashi, Fujisawa; Seiichi Maeda, Ayase; Kazumi Yasuda, Zama; Shiro Furusawa, Fujisawa; Kazuhiko Hirata, Sagamihara; Kastumori Nagao, Ayase; Kazuhiko Kondo, Atsugi; Takaya Sasaki, Ebina; Mineo Sugiyama, Hadano, and Shinichi Kusano, Yamato, all of Japan, assignors to Speedfam Co., Ltd., Japan

Filed Jul. 29, 1986, Ser. No. 891,241
Claims priority, application Japan, Jul. 31, 1985, 60-117510[U]; Jul. 31, 1985, 60-117509[U]; Feb. 13, 1986, 61-29705; Feb. 18, 1986, 61-33378
Int. Cl.[4] B24B 7/00
U.S. Cl. 51—118 **16 Claims**

1. A flat lapping machine of the type including a plural number of carriers located around and driven by a center gear connected to a drive source, each carrier being capable of retaining a work thereon for lapping said work by upper and lower lapping plates, the improvement comprising, in combination:

a plural number of support gear mechanisms located around said center gear and each constituted by a plural number



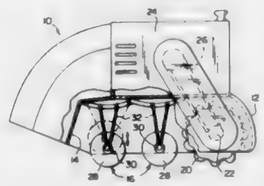
of small gears to support said carriers rotatably in predetermined positions, said carriers being meshed with said center gear through small gears of said support gear mechanisms, at least one small gear in meshing engagement wtih said center gear having a larger diameter than another of said small gears which serves to support said carrier but is free of engagement with said center gear.

4,805,349

SANDER PAINT SCRAPER

Kris Demetrius, 2843 State St., Apt. 4, Santa Barbara, Calif. 93105, and George Spector, 233 Broadway RM 3815, New York, N.Y. 10007

Filed Oct. 30, 1987, Ser. No. 114,514
Int. Cl.[4] B24B 23/00
U.S. Cl. 51—170 PT **5 Claims**



1. A paint scraper and sander machine which comprises:

(a) a frame structure having an open bottomed chamber;

(b) means for adjustably supporting said frame structure on a working surface, said support means being adjustable to vary the height of the frame structure to the working surface;

(c) a scraping and sanding wheel rotatable within the open bottomed chamber so as to engage the working surface;

(d) means for supporting said scraping and sanding means on said frame structure for rotation about a horizontal axis relative to the working surface; and

(e) a motor supported on said frame structure and connected in a drive relation with said scraping and sanding wheel, whereby material scraped and sanded by said wheel is discharged out from the open bottomed chamber, wherein said adjustable support means includes:

(a) two pressure sensitive rollers each having a shaft therethrough and being horizontally rotatable and moveable within the open bottomed chamber; and

(b) two sets of two tension springs, each set disposed within the open bottomed chamber to bias each shaft of each said rollers downward so that said rollers can bear against the working surface, wherein said frame structure includes slots for providing vertical movement of said shafts for adjustment purposes, said springs being external to said slots.

4,805,350

KNIFE SHARPENER AND SCABBARD

Peter B. Farrer, Victoria, Australia, assignor to Wiltshire Consolidated Limited, Australia

Continuation of Ser. No. 840,474, Mar. 14, 1986, abandoned, which is a continuation of Ser. No. 946,157, Dec. 23, 1986, abandoned, which is a continuation of Ser. No. 750,972, Jun. 28, 1985, abandoned, which is a continuation of Ser. No. 554,723, Nov. 23, 1983, abandoned. This application Mar. 1, 1988, Ser. No. 166,815
Claims priority, application Australia, Nov. 24, 1982, PF6956/82
Int. Cl.[4] B24B 3/54
U.S. Cl. 51—214 **21 Claims**



1. A knife scabbard including, an elongate housing having a knife receiving passage therein, top and bottom walls of said housing forming upper and lower extremities respectively of said passage, a latch device at a front end of said top wall and forming a forward continuation of that wall, an access opening for said passage at the front end of said latch device, means connecting said latch device to said housing for relative pivotal movement about an axis which extends transverse to said passage and is located adjacent said top wall front end, a carrier member positioned between said latch device and said bottom wall and being at least partially located within said passage and extending lengthwise thereof, said carrier member having a front selection which is adjacent said access opening and a rear section which is remote from that opening, a sharpening device mounted on said front section at a location adjacent said access opening such that it is engageable by a knife blade extending through said opening, a pivotal mounting connecting said carrier member to said housing and having its axis extending transverse to said passage, said pivotal mounting axis being located adjacent said top wall and at an end of said carrier member which is remote from said access opening and is located rearwardly of said latch device pivot axis, biassing means acting between said carrier member and said housing and urging said carrier member about the pivotal mounting axis to move said sharpening device towards said top wall, said latch device reacting with said carrier member at a location between the two said pivot axes so that a front end of said latch device is urged towards said bottom wall, said rear section comprising two laterally spaced arms which extend rearwardly from said front section and define between them an open slot through which a knife blade can pass to project beyond and below said arms, a rear end portion of at least one of said arms forms part of said pivotal mounting, and said rear end portions are arranged so that a knife blade can be received between them and thereby intersect said axis.

4,805,351

BLADE AIRFOIL HOLDING SYSTEM

Keith F. Dobson, Liberty, and Walter E. Steeves, Greer, both of S.C., assignors to Avco Corporation, Providence, R.I.

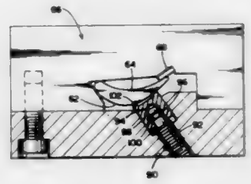
Filed Feb. 8, 1988, Ser. No. 153,263
Int. Cl.[4] B24B 41/06
U.S. Cl. 51—217 R **9 Claims**

6. A holding system for accurately positioning within an acceptable range of tolerances successive turbine blades in an as-cast condition preparatory to grinding of the root form and/or of the shroud thereof wherein each blade has an airfoil portion with convex and concave surfaces and leading and trailing edges extending between the root form at a platform end and the shroud at a tip end distant from the platform end, and a stacking axis intermediate the leading and trailing edges and generally parallel thereto, and wherein the size and shape of each airfoil portion is variable between a minimum contour and a maximum contour, said system comprising:

vee block means for supporting the leading edge of the blade including:

first and second cooperating holding members having blunt surfaces, said first holding member adapted to receptively and contiguously engage the blade proximate to the convex surface thereof, said second holding member adapted to receptively and contiguously engage the blade proximate to the concave surface thereof; and

third and fourth cooperating holding members having blunt surfaces, said third holding member adapted to receptively and contiguously engage the blade proximate to the convex surface thereof at a location spaced from said first holding member, said fourth holding member adapted to receptively and contiguously engage the blade proximate to the concave surface thereof at a location spaced from said second holding member; and



said system including:

a trailing edge support member fixed relative to said vee block means having a generally planar surface substantially coplanar with the concave surface of the airfoil portion and adapted to receptively and contiguously engage the concave surface of the blade adjacent the trailing edge thereof such that the stacking axis of each blade supported by said holding system is substantially aligned with a predetermined axis within a range of movement which is always less dimensionally than the difference between the minimum contour and the maximum contour of the airfoil.

4,805,352

FLYER DOFFER FOR AUTOMATICALLY REPLACING FULL ROVING BOBBINS WITH EMPTY ROVING BOBBINS

Herbert Grasale, Schwäbisch-Gmünd-Metlangen; Manfred Hasers, Viersen; Dieter Vits, Neuss, and Hans-Peter Weeger, Hattenhofen, all of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

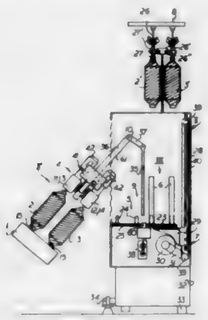
Filed Sep. 4, 1987, Ser. No. 93,585
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1986, 3630214
Int. Cl.[4] D01H 9/08, 9/10, 9/18
U.S. Cl. 57—267 **17 Claims**

1. In a flyer doffer for automatic exchange of at least one full bobbin with at least one empty one of said bobbins in a flyer comprising a transport device extending to along said flyer to transport said full bobbins and said empty bobbins, a doffing region and a mounting region which extend over a plurality of spindles of said flyer for groupwise exchange of said full bobbins with said empty bobbins on said spindles and a lifting region extending to said transport device for groupwise exchange of said full with said empty bobbins on said transport device, the improvement wherein said doffing region and said mounting region on one hand and said lifting region on the

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other hand are spatially separated from each other, and an exchanging region is provided extending to said doffing, mounting and lifting regions,

a bobbin carrier, a gripper and lifter being provided and operating in said doffing region and said mounting region for removing said full bobbins from said spindles, for depositing said full bobbins on said bobbin carrier, for



removing said empty bobbins from said bobbin carrier and for mounting said empty bobbins on said spindles, a lifting device operating in said lifting region for moving said full bobbins to said transport device, and an exchange device operating in said exchanging region which shifts said bobbins between said regions, said gripper and lifter and said lifting device being operable independently of each other and simultaneously.

4,805,353

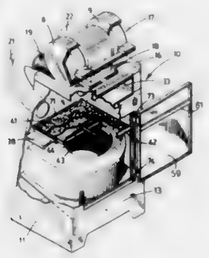
PEDESTAL VACUUM SYSTEM FOR GRINDER OR OTHER TOOL

Malcolm E. Keith, West Chicago, and Michael P. Cayley, South Barrington, both of Ill., assignors to Midaco Corporation, Elk Grove Village, Ill.

Filed Feb. 22, 1988, Ser. No. 158,723

Int. Cl.[4] B24B *55/06*

U.S. Cl. 51—273 **4 Claims**



1. A combination stand and vacuum cleaning system for a power tool comprising, a rectangularly shaped pedestal formed with a top surface, a top inlet compartment formed in said pedestal, a power tool mounted on said top surface of said pedestal, a conduit extending from said power tool and having a second end in communication with said top inlet compartment, said top inlet compartment formed with a floor in which an opening is formed, a planar filter mounted over said opening in said floor, a second compartment in said pedestal formed with a floor and an exhaust outlet in a backwall below said top inlet compartment, a blower mounted on the floor of said second compartment and said blower having an exhaust which is connected to said exhaust oulet in the backwall of said second compartment, a motor connected to said blower and mounted below the floor of said second compartment, and said floor of said second compartment and said backwall of said pedestal are tilted.

4,805,354

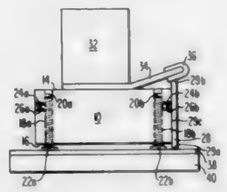
APPARATUS AND METHOD FOR LAPPING AN EDGE SURFACE OF AN OBJECT

Vito N. Rossi, Hamilton Township, Mercer County, N.J., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 860,446, May 7, 1986, abandoned. This application May 21, 1987, Ser. No. 53,559

Int. Cl.[4] B24B *1/00*

U.S. Cl. 51—283 E **9 Claims**



5. A method for accurately lapping an edge surface of a thin flat object said object having wide and edge surfaces, said method comprising:

setting surfaces of adjustable spacers having the same abrasion rate as the object and disposed on a side of a block to be substantially the same distance from the block;

affixing the wide surface of the object directly to an outer different side of said block;

urging said spacers and the edge surface of said object towards a lap plate with equal pressure wherein said step of urging comprises placing a spring on said block and on an opposing edge surface of said object, and placing a weight on said spring, the weight and tension of the spring being selected such that the same pressure is applied to each of the spacers and the bottom edge of the object;

lapping said edge surface of said object:

inspecting said edge for parallelism to a reference line;

resetting said spacers; and

relapping said edge surface.

4,805,355

INFLATABLE BUILDING STRUCTURE

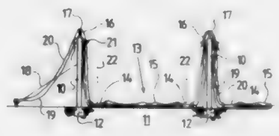
David D. Plant, Toowoomba, Australia, assignor to Geraldton Waxflower Marketers Pty. Ltd., Queensland, Australia

Continuation of Ser. No. 853,960, Apr. 21, 1986, abandoned. This application Nov. 12, 1987, Ser. No. 120,164

Claims priority, application Australia, Apr. 24, 1985, PH00297

Int. Cl.[4] A01G *9/14*

U.S. Cl. 52—1 **4 Claims**



1. An inflatable building structure erectable in situ for housing plants comprising:

a plurality of vertically oriented support posts arranged in two or more spaced parallel rows thereof, the outer rows of which define opposite sides of the building structure;

a roof structure formed from one or more inflatable membranes attached to and standing between two spaced parallel rows of support posts and constituting the roof of the building structure;

elevating means including cables connected to the tops of the posts of said two rows thereof for raising said one or more inflatable membranes in an uninflated condition to a position supported on the tops of said posts and providing upper and lower support cables for roof members when inflated;

one or more side curtains associated with the outer rows of said support posts and extending substantially from the top of the posts to adjacent ground level;

actuating means for selectively raising or lowering the lower end of said one or more side curtains;

thermostat control means for operating said actuating means to raise or lower the bottom end of said one or more curtains in response to temperature variations from a selected temperature in order to maintain the temperature of the interior of the building structure at the selected temperature;

said actuating means including a support rail attached to an adjacent vertically oriented support post;

a carriage member for reciprocatable movement along the support rail;

a support rod for supporting at least one of said side curtains in the course of its raising and lowering movement;

a motor assembly mounted in the support rail; and

gear means interconnecting the motor assembly and said support rod for said one side curtain.

4,805,356

COLLAPSIBLE BUILDING

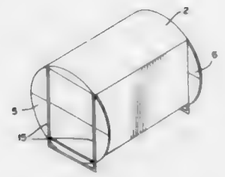
Kenneth W. Feisst, 150 Victoria St., Cambridge, New Zealand

Filed Mar. 4, 1988, Ser. No. 168,868

Claims priority, application New Zealand, Mar. 4, 1987, 219486

Int. Cl.[4] E04B *1/346*

U.S. Cl. 52—71 **10 Claims**



1. A collapsible building which is substantially box shaped having a stabilizing means, a substantially rectangular first panel and a second panel opposite the first panel, opposite substantially rectangular third and fourth panels both of which are pivoted to the first or second panels so that they can lie substantially parallel to at least one of them when the building is collapsed and substantially normal to at least one of them when the building is erected, and opposite fifth and sixth panels which are substantially normal to at least one of the first and second panels and to the third and fourth panels and are pivotally attached to both the first and second panels, the fifth and sixth panels also having a pivotal joint so that an outer face of each panel may be collapsed onto itself in accordian fashion, each fifth and sixth panel being provided with a substantially circular rim the construction and arrangement being such that the building when erected can be rolled into location on the rims and stabilized by means of the stabilizing means when it is in its chosen position.

4,805,357

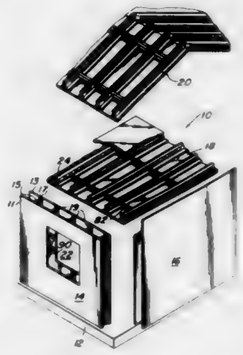
STRUCTURAL MOLD SYSTEM

Vitor C. Aleixo, 125A Hamilton St., Philadelphia, Pa. 19116

Filed Jan. 12, 1987, Ser. No. 2,886

Int. Cl.[4] E04G *11/00*

U.S. Cl. 52—79.1 **16 Claims**



1. In a structural mold system for on-site fabrication of units selected from the group consisting of walls, floors, ceilings, roofs and the like, the unit comprising:

a first planar member;

a second planar member, said first and second planar members being parallel;

a first joint means being fastened to said first planar member and including a flange member being parallel to said first planar member, a web member being perpendicular to said flange member, and a channel having an elongated slot therethrough, said slot having a width less than a width of said channel, said channel being disposed at an end of said web member opposite said flange;

a second joint means being fastened to said second planar member and including a flange member being parallel to said second planar member, a web member being perpendicular to said flange member, and a channel having an elongated slot therethrough, said slot having a width less than a width of said channel, said channel being disposed at an end of said web member opposite said flange, said first and second joint means being disposed on said respective planar members, such that said channels are parallel and said slots are aligned; and

male connector means for sliding and locking engagement with said channels, said male connector means including lateral edge portions and a web member being integral with said lateral edge portions, a width of said lateral edge portions being less than said width of said channel and greater than said width of said slot.

4,805,358

ELECTRICAL TRENCH ASSEMBLY

Frank W. Fork, Allison Park, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Apr. 27, 1987, Ser. No. 43,561

Int. Cl.[4] E04D *15/00*

U.S. Cl. 52—126.2 **12 Claims**

1. In an electrical trench assembly having opposite sides and a cover plate spanning the distance between said opposite sides, the improvement comprising:

each of said opposite sides comprising:

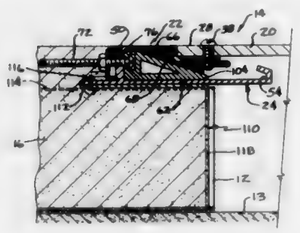
a side rail supporting one end of said cover plate and having a rail lower face;

a base member beneath side rail and having a base upper face; and

adjustment means acting directly on said rail lower face

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for vertically displacing said side rail relative to said base member, said adjustment means being displaceable



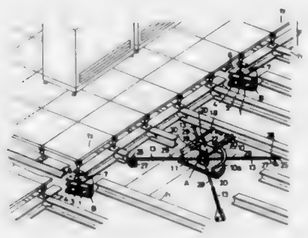
horizontally in a direction transverse to said side rail, being coextensive in length with said side rail, and being operable from the exterior said trench assembly.

4,805,359

METHOD OF APPLYING FLOOR VIBRATION-DAMPING WORK AND VIBRATION-DAMPING FLOOR DEVICE

Hiraku Miyake, Yokohama; Tadahiro Yano, Tokyo; Yoshio Tsuno, Noda; Yutaka Hayamizu, Yokohama; Satoru Aizawa; Masahiko Higashino, both of Tokyo, and Ikuo Shimoda, Fujisawa, all of Japan, assignors to Takenaka Komuten Co., Ltd. and Oiles Industry Co., Ltd., both of, Japan

Filed Sep. 21, 1987, Ser. No. 99,326
Int. Cl.[4] E04H *9/02*
U.S. Cl. 52—167 **13 Claims**



1. A floor vibration-damping device comprising a movable support portion for supporting respective support points of a floor structure and a spring damper portion disposed between said floor structure and a fixed floor,

said movable support portion comprising a lower ball receiving steel plate disposed on said fixed portion, a bearing ball disposed on said lower steel plate and an upper ball receiving steel plate secured to said floor structure and placed on said bearing ball,

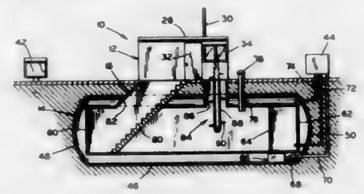
said spring damper portion comprising a damper main body of a shallow and flat vessel shape mounted on and secured to said fixed floor a viscous fluid contained by a predetermined amount in said damper main body, a movable member attached to said floor structure, immersed in said viscous fluid and ensuring a predetermined gap between a lower surface of said movable member and a bottom of said damper main body, a coil spring secured to said fixed floor at one end thereof, a rope-like member not transmitting a compressive force and being connected to the other end of said coil spring at one end thereof and connected to said movable member at the other end thereof, and a reaction force receiving roller attached to said rope-like member and abutted against an inner surface of said damper main body.

4,805,360

STRUCTURE FOR SUPPLYING GOODS AND SERVICES

George E. Kachal, 3657 Coronada Dr., Toledo, Ohio 43615

Continuation of Ser. No. 502,296, Jun. 8, 1983, abandoned. This application Aug. 9, 1985, Ser. No. 763,972
Int. Cl.[4] E02D *29/00*
U.S. Cl. 52—169.1 **12 Claims**



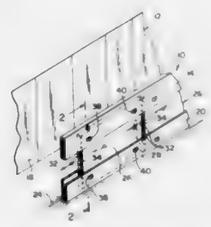
1. A structure for supplying goods to customers at ground level, said structure being particularly adapted for small and odd-sized sites, including fringes of shopping center parking lots and the like, said structure comprising a freestanding ground level building having access means through which goods can be dispensed to the customers and through which the customers can pay for the goods, said building being of a sufficient size that a worker can move about therein and dispense goods to the customers by means of said access means, at least one vehicle path extending alongside said building adjacent said access means for customers' autos, an underground container having an internal height sufficient for workers to stand, and stair means connecting said container and said building.

4,805,361

THERMO TEX

Alan R. Mason, 4261 Grange Hall Rd. #60, Holly, Mich. 48442, and George Spector, 233 Broadway RM 3815, New York, N.Y. 10007

Filed Nov. 2, 1987, Ser. No. 115,382
Int. Cl.[4] B60R *27/00*
U.S. Cl. 52—169.12 **3 Claims**



1. A skirting system for enclosing an air space beneath a mobile home comprising:

(a) an elongated upper track mountable to exterior of the mobile home;

(b) an elongated lower track adapted to be secured on a support ground surface;

(c) a plurality of insulation material panels, each of which having a groove formed on a rear face to serve as a hand grip; and

(d) a plurality of hook and loop fastener strips each of which is affixed to one side edge of each of said panels to hold said side edges of said panel together whereby said panels are maintained in an enclosing position about the mobile home for a water vapor barrier protection thus making it cooler in summer and warmer in winter, further comprising a plurality of vertical corner members, each of which includes mating hook and loop fastener strips for mating

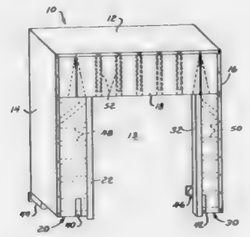
engagement with the first said strips on the side edges of adjacent panels at right angles to each other at a corner of the mobile home.

4,805,362

HOOK SEAL FOR LOADING DOCK SHELTER

John A. Frommelt, Dubuque, Iowa, and Floyd D. West, Galena, Ill., assignors to Frommelt Industries, Inc., Dubuque, Iowa

Filed Sep. 23, 1987, Ser. No. 100,315
Int. Cl.[4] E04F *10/04*
U.S. Cl. 52—173 DS **19 Claims**



1. A loading dock shelter for use with a truck having a pair of hinge-mounted swinging doors, said loading dock shelter comprising:

a head panel and curtain positioned along the top of a doorway in a wall in outwardly projecting relation to said wall;

left and right side panels positioned adjacent to respective lateral portions of said doorway in outwardly projecting relation to said wall and extending downward from said head panel and curtain;

left and right side curtains attached to respective distal edge portions of said left and right side panels and extending inwardly toward said doorway;

left and right resilient biasing means respectively coupled to said left and right side panels for respectively urging and maintaining said left and right side curtains in a fully extended configuration wherein said side curtains are aligned generally parallel with said wall, while allowing said side curtains to bend toward said wall in response to engagement by a truck backed into operative position relative to said doorway for loading or unloading thereof;

left and right sealing means coupled to respective distal ends of said left and right biasing means for respectively engaging an aft portion of the truck and an adjacent portion of one of its doors when the doors are in an open position in forming a seal between each of the open doors and the truck;

left and right curtain extensions respectively coupled to said left and right side curtains and respectively disposed about said left and right sealing means in tight fitting relation and in a sealed manner; and

coupling means for attaching each of said curtain extensions to its associated side curtain and for allowing each of said curtain extensions to be removed from its associated sealing means for facilitating repair or replacement of said sealing means.

4,805,363

WINDOW RETENTION SYSTEM FOR AUTOMOTIVE VEHICLES

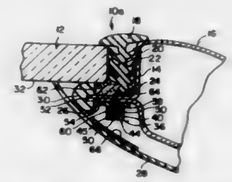
Peter Gold, 465 North Wood Rd., Rockville Centre, N.Y. 11570

Filed May 17, 1988, Ser. No. 194,883
Int. Cl.[4] E06B *3/56;* **B60J** *1/02*
U.S. Cl. 52—208 **7 Claims**

1. An apparatus for use with a curable adhesive for retaining a window panel supported on a flanged body panel of an automotive vehicle body, said apparatus comprising:

a flange on the flanged body panel having an outer surface on which the window panel is retained by the curable adhesive and having a plurality of openings therethrough; and

a plurality of retaining elements attached to an inner surface of said flange, each of said retaining elements having an interior portion thereof in communication with each of



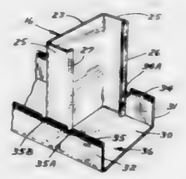
said openings in said flange and receiving the curable adhesive, the cross-section of said interior portion receiving the curable adhesive of each of said retaining elements being greater than the cross-section of said openings in said flange whereby a mechanical interlock is formed between the curable adhesive, upon the curing thereof, and the inner surface of the said flange.

4,805,364

WALL CONSTRUCTION

Robert A. Smolik, 670 W. 7th St., St. Paul, Minn.

Continuation of Ser. No. 10,269, Feb. 2, 1987, abandoned. This application Apr. 29, 1988, Ser. No. 191,792
Int. Cl.[4] E04H *1/00*
U.S. Cl. 52—241 **16 Claims**



9. A wall construction track for receipt of an end of a wall stud comprising:

an elongate longitudinal channel shaped member formed of bendable material having a base and first and second side walls extended in perpendicular relationship from the base, said first side wall having an outer edge with a first continuous row of serrations formed substantially along the length of the member, said serrations extending in a direction from the outer edge toward the base to form an outer margin of the first side wall, said second side wall having an outer edge with a second continuous row of serrations formed substantially along the length of the member, said serrations extending in a direction from the outer edge toward the base to form an outer margin of the second side wall, said serrations comprised as relatively narrow teeth spaced apart a distance of approximately the width of a tooth, said serrations being initially parallel and selectively bendable inward of the channel to a position generally parallel to the base in the formation of a pocket at a chosen position along the channel of a shape to receive the end of a wall stud.

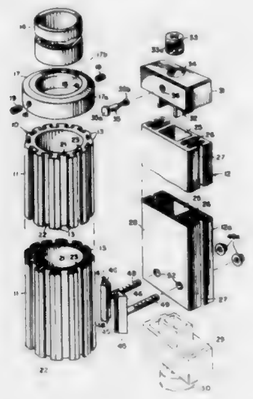
VOL 1099 ISS 3 FEB 21 1989 UMI

4,805,365

CORNER POST ASSEMBLY

John M. Bastian, Manitowoc, Wis., assignor to Hamilton Industries, Inc., Two Rivers, Wis.

Filed Dec. 10, 1987, Ser. No. 128,687
Int. Cl.[4] E04B 2/56; E04C 3/30
U.S. Cl. 52—282 12 Claims



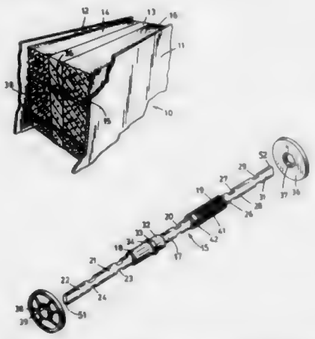
1. A corner post assembly comprising a straight, vertically-extending, corner post tube having a plurality of outer bearing faces which, when viewed in a horizontal cross-section of said tube, define a regular polygon in which the included angles between adjacent faces are equal and obtuse; said faces having a plurality of vertical channels formed therein with each channel being externally accessible through a relatively narrow entry slit extending along and between a pair of vertical side flanges; a vertical riser extending along at least a portion of the length of said tube and having a planar side wall facing said tube; upper connecting means for releasably joining the upper end portion of said riser to said tube; said upper connecting means comprising a draw member movably carried by said upper end portion of said riser for horizontal movement between extended and retracted positions; said draw member projecting through said entry slit of one of said channels and having an enlarged head portion disposed within said one channel; said head portion being slidable in said one channel when said draw member is extended and, when said draw member is retracted, bearing against side flanges to urge said bearing face in which said one channel is formed against said planar wall of said riser; and lower connecting means for releasably joining the lower end portion of said riser to said tube and for stabilizing said tube and riser against relative twisting movement when connected; said lower connecting means comprising a pair of laterally-spaced support members projecting through entry slits for two of said channels in said tube immediately adjacent said one channel and along opposite sides thereof; said support members each being mounted upon said riser at the lower end thereof for movement between extended and retracted positions; said support members having head portions received in said two channels; said head portions of said support members being slidable in said two channels when said support members are extended and tightly engaging the side flanges of said two channels when support members are retracted; whereby, said draw member and said support members engage said tube at three traction zones to hold the bearing face of said one channel tightly against said planar wall of said riser when said draw member and said support members are retracted.

4,805,366

SNAPLOCK RETAINER MECHANISM FOR INSULATED WALL CONSTRUCTION

Robert T. Long, Ames, Iowa, assignor to Thermomass Technology, Inc., Ames, Iowa

Filed Dec. 18, 1987, Ser. No. 134,744
Int. Cl.[4] E04C 2/26, 5/18
U.S. Cl. 52—309.11 7 Claims



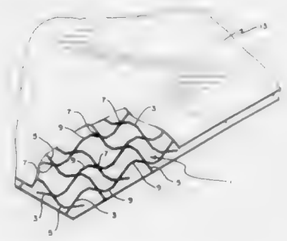
1. An insulating wall comprising two spaced outer layers of form-poured concrete; an insulating, interior layer disposed between said outer layers; a plurality of rods extending perpendicularly through said insulating layer and further extending to respective outer surfaces of said outer layers; and a plurality of retainer means mounted to receive and immovably hole one of said rods for fixing the lateral position of said rods with respect to said insulation layer, whereby said rods abut a form during pouring of said concrete to retain said interior layer substantially immovably during pouring and are retained in said concrete after curing for forming a mechanical connection between said interior layer and each of said outer layers, wherein said retainer means comprises a pair of snap rings for each of said rods each formed with an outer flange and a central opening surrounded by flexible finger means, each of said rods formed with a first notched engaging portion upon which a first one of said pair of snap rings can be locked in a fixed position, said rod formed with a second engaging portion which is longitudinally offset from said first notched engaging portion and a second one of said pair of snap rings receivable on said rod and lockable to said second engaging portion.

4,805,367

VENTILATING SUPPORT FOR ROOF INSULATION

John R. Kleckner, 3205 Fulton St., Laureldale, Pa. 19605

Filed Jan. 26, 1987, Ser. No. 67,293
Int. Cl.[4] E04B 5/00
U.S. Cl. 52—408 7 Claims



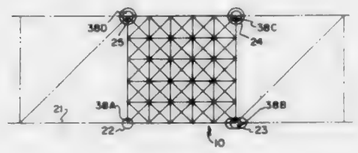
1. A ventilating support adapted to support roof insulation in spaced relationship from a roof deck, the ventilating support being comprised of two sets of similarly shaped undulating elongated members, the first set of elongated members extending in an angular direction with respect to the second set of elongated members and intersecting the second set of members, the members rigidly affixed to each other at the points of intersection, and the points of intersection of the members being intermediate the high and low points of the undulating members.

4,805,368

EXPANDABLE PALLET FOR SPACE STATION INTERFACE ATTACHMENTS

Clarence J. Wesselski, Alvin, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 929,875, Nov. 13, 1986, Pat. No. 4,765,114.
This application Apr. 21, 1988, Ser. No. 184,233
Int. Cl.[4] E04H 12/00
U.S. Cl. 52—573 13 Claims



1. A space station deployable in earth orbit comprising a main truss having node point connector means thereon for mounting components to the space station, a foldable expandable pallet having a plurality of foldable face struts and a plurality of non-foldable diagonal struts joined together by node point fitting means connected thereto, pin means carried by said pallet for cooperation with and attachment to the connector means of the truss, said connector means of said truss being adapted to receive said pin means of the fitting means, said fitting means including a series of apertures at least one of which approximates the diameter of the pin means to provide a close fitting relationship, at least a pair of apertures having a size far exceeding the diameter of the pin means to provide a relatively loose fitting relationship, and an aperture being in the form of an elongated slot in order to receive said pin means and allow freedom of movement laterally therein, said pin means and said fitting means thereby allowing for thermal expansion and contraction between said truss and pallet.

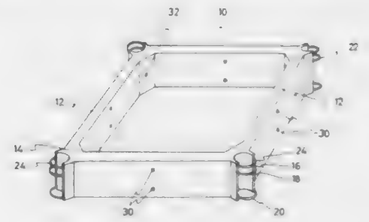
4,805,369

STRUCTURAL MODULE FOR CONSTRUCTION OF ROOFS

Agustin Maqueo-Cario, No. 175, Rosas St., Col. Terreón Jardín, Torreon, State of Coahuila, Mexico

Filed Dec. 9, 1983, Ser. No. 559,776
Claims priority, application Mexico, Apr. 4, 1983, 196810
Int. Cl.[4] F04C 1/00
U.S. Cl. 52—600 6 Claims

1. A structural module for the construction of roofs, comprising: a rectangular member having side walls of substantially equal length; a vertically extending concave recess at each corner of said rectangular member; a plurality of vertically spaced reinforcing elements projecting outwardly from each of said concave recesses; each of said concave recesses extending from at least the topmost reinforcing element to the bottommost reinforcing element to define, together with another module in juxtaposition thereto, a cylindrical recess for the receipt of mortar to form a unitary structure; and a substantially centrally located transverse aperture extending through the walls defining each of said concave recesses, whereby holding means may be received in the apertures of adjacent modules and extend diagonally across the cylindrical recess so formed to hold said modules together during the pouring and hardening of the mortar.



4,805,370

CABINET CORNER CAP AND METHOD OF ASSEMBLY

Keith W. Gerdes, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jul. 20, 1987, Ser. No. 76,476
Int. Cl.[4] F16B 12/00; B65B 7/00
U.S. Cl. 52—716 6 Claims



1. A corner cap for insertion into a space at the junction of two panels of a cabinet comprising:

an elongated horizontal top wall having a central longitudinal axis; and

a continuous vertical wall projecting downwardly from the central longitudinal axis of the top wall and extending a major portion of the length of the horizontal top wall, said vertical wall having;

a series of spaced apart deformable ribs perpendicular to and on each side of the vertical wall and diverging away from the vertical wall in the direction of the top wall and joining the horizontal top wall, and

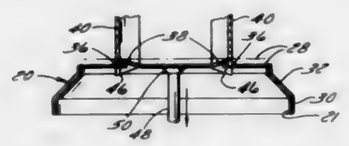
resilient fingers secured at one end to the vertical wall and having free ends extending toward and spaced from the horizontal top wall, said fingers diverging outwardly from the vertical wall a distance greater than the ribs and the width of the space at the junction of two panels of the cabinet.

4,805,371
BUILDING STRUCTURES
Jan de Jong, Florauna, and Johan van Wyk, Pretoria, both of South Africa, assignors to Level Construction Company (Proprietary) Limited, Pretoria, South Africa
Filed May 2, 1986, Ser. No. 858,765
Claims priority, application South Africa, May 3, 1985, 85/3343
Int. Cl.[4] E04B *7/00*
U.S. Cl. 52—745 **3 Claims**



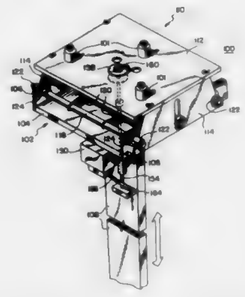
1. A method of making a domed building structure, which includes
casting a continuous ring beam having a inwardly extending peripheral locating formation, in position along the top of an upwardly extending continuous, rounded wall;
thereafter locating a plurality of prefabricated dome units adjacent one another on the locating formation of the ring beam in a first course extending along the inner periphery of the ring beam, with the distance which the course protrudes inwardly from the ring beam being greater than the thickness of the units, and with locating formations on the units extending inwardly, thereby to form at least a portion of a self supporting domed top on top of the wall; and
locating further prefabricated dome units adjacent one another on the locating formations of the dome units making up the first course to form a second course of dome units abutting the first course and hence extending along the inner periphery of the first course, thereby to form a further portion of the self supporting domed top.

4,805,372
CONTOURED PACKAGE COVER DISPENSER
Nicholas B. Nigrelli, Cleveland, Wis., assignor to Nigrelli Systems, Inc., Kiel, Wis.
Filed Mar. 31, 1988, Ser. No. 175,920
Int. Cl.[4] B65B *17/02*; B65G *59/00*
U.S. Cl. 53—48 **14 Claims**



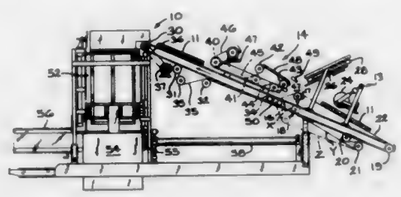
1. A bottle packaging apparatus comprising;
a dual line bottle conveyor for conveying bottles in groups of six;
a cover conveyor including an inclined ramp for feeding contoured covers to a position with the front edge of the cover in the path of travel of the tops of the bottles;
a magazine positioned above said cover conveyor and including a pair of guide tubes for supporting a stack of contoured covers, each cover including flexible means for separating the bottom cover from the next cover in the stack; and
means mounted at the bottom of each of said tubes for bending said flexible means into engagement with the next cover in the stack as the cover is pulled downward to separate the bottom cover from the stack.

4,805,373
COLLAPSIBLE ELEVATOR FOR PACKAGE ELEVATING WRAPPING MACHINE
Joseph M. Gaccetta; Kinrod Bowling; Lee E. Trontesud, and Michael A. Whitby, all of Dayton, Ohio, assignors to Hobart Corporation, Troy, Ohio
Filed Oct. 1, 1987, Ser. No. 120,568
Int. Cl.[4] B65B *57/08*
U.S. Cl. 53—77 **5 Claims**



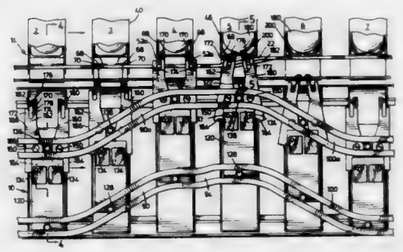
1. A collapsible elevator for a package elevating wrapping machine comprising:
a base member;
a package supporting member; and
resilient means for coupling said package supporting member to said base member in a package elevating position, said resilient means permitting said package supporting member to be resettably collapsed relative to said base member upon exertion of a defined force on said package supporting member.

4,805,374
FIBROUS INSULATION BATT DELIVERING MACHINE
Richard C. Yawberg, Grand Rapids, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Nov. 13, 1987, Ser. No. 120,061
Int. Cl.[4] B65B *63/04*
U.S. Cl. 53—120 **2 Claims**



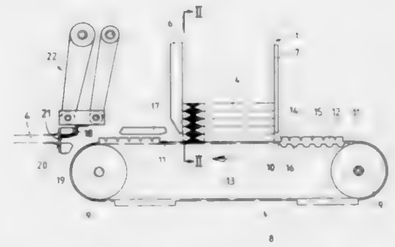
1. Apparatus for delivering fibrous insulation batts comprising an upstream batt receiving section and a downstream batt delivering station, the upstream batt receiving station being adapted for two modes of operation, the first mode being for folding batts and delivering folded batts to the downstream batt delivering station and the second mode for delivering unfolded batts to the downstream batt delivering station, the upstream batt receiving station comprising a. a conveyor belt for transporting batts through the upstream batt receiving station, b. a plurality of rolls for guiding the conveyor belt along a first path in the first mode of operation, and c. means for moving at least one of the rolls to guide the conveyor belt along a second path for the second mode of operation, a support member spaced apart from the conveyor, thereby defining a gap between the conveyor belt in the first mode of operation and the support member, the support member being adapted to support a portion of the batt as it is transported off the downstream end of the conveyor belt, and a folding plate member reciprocally mounted to engage the batt near its midsection and push the batt through the gap and into engagement with the downstream batt delivering station, thereby folding the batt.

4,805,375
CARTON END CLOSURE
Marinus J. M. Langen, Toronto, and Peter Guttinger, Milton, both of Canada, assignors to H. J. Langen & Sons Limited, Mississauga, Canada
Filed Dec. 16, 1987, Ser. No. 133,606
Int. Cl.[4] B65B *7/22*
U.S. Cl. 53—142 **13 Claims**



1. In a carton loading machine in which loaded cartons are conveyed through an end closure station, each carton having a load storage compartment formed therein, first and second oppositely disposed side closure flaps hingedly connected to the opposite side walls of the carton along side hinges, said first and second side flaps each comprising a proximal panel which extends from its associated side hinge and a distal panel which is hingedly connected to the proximal panel along a second hinge which extends parallel to the side hinge, the proximal panel having an extension which projects beyond the second hinge line and is initially co-extensive with the distal panel, the improvement of;
(a) means for initially locating the proximal panels and their extensions so that they extend in the plane of their associated side wall and the distal panels extend transversely inwardly across the open end of the article storage compartment,
(b) tucking means for tucking and folding the side closure flaps, each tucking means comprising; a set of right and left tucking arms each having a proximal end and a distal end, means pivotally mounting said right and left tucking arms in a side-by-side relationship with their distal ends directed toward the open end of a carton in use, each tucking arm having long and short fingers projecting one on either side of a notch formed at the distal end thereof, the long fingers of the tucking arms of each set being located adjacent one another,
(c) means for moving the tucking arms relative to their associated carton to initially advance the tucking arms of each set toward an open end of the associated carton to cause the long finger to engage the transversely extending distal panels and to fold the distal panels into a face-to-face relationship with their associated proximal panels and thereafter to cause the tucking arms of each set to pivot, to cause the distal ends thereof to toe-in toward one another to fold the proximal panel about its side hinge line and release the distal panel to allow it to pivot away from the proximal panel along said second hinge line to be located within the carton in a position extending obliquely toward its associated side wall, and thereafter to withdraw the tucking arms and progressively return the tucking arms to their initial position.

4,805,376
APPARATUS FOR EJECTING CIGARETTES FROM A MAGAZINE
Manfred Oberdorf, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany
Filed Oct. 2, 1987, Ser. No. 104,640
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1986, 3633865
Int. Cl.[4] B65B *19/12*, *5/06*
U.S. Cl. 53—151 **17 Claims**



1. Apparatus for ejecting a row of generally aligned cigarettes from a magazine, the cigarettes being loaded into the magazine at an upper region thereof and being discharged through a discharge end of the magazine at the bottom thereof, the cigarettes being arranged within the magazine in side-by-side vertical stacks so as to form a bottom-most cigarette row, the cigarettes in the bottom-most row having leading and trailing ends in the direction of movement during ejection thereof from the magazine, the magazine discharge end generally defining a plane, said apparatus comprising:
conveyor means positioned below the magazine and being partly in registration with the magazine, said conveyor means including an endless conveyor belt which is movable relative to the magazine discharge end, said conveyor means belt including a plurality of spaced troughs formed on the side of said belt which faces the magazine discharge end, said troughs each being in part defined by an ejector surface, said ejector surfaces engaging the trailing ends of the cigarettes in the bottom-most row during the movement of said conveyor means belt whereby the bottom-most row of cigarettes is received in a said trough and is moved with said conveyor means belt under the influence of a said ejector surface;
drive means for imparting step-wise motion to said conveyor means belt; and
transversely movable slide means for engaging the trailing end of a row of cigarettes received in a said trough and ejecting said row of cigarettes from the said trough after the row has been moved out of registration with the magazine.

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4,805,377

METHOD OF PACKAGING AND STERILIZING A PHARMACEUTICAL PRODUCT

Douglas V. Carter, Lenoir, N.C., assignor to Entravision, Inc., Lenoir, N.C.

Filed Dec. 23, 1987, Ser. No. 137,436
Int. Cl.[4] B65B *55/02, 7/28*
U.S. Cl. 53—415 **6 Claims**

1. A method of preparing and sterilizing a pharmaceutical package comprising a semi-rigid, squeeze-type bottle containing a selected pharmaceutical liquid product; said method including the steps of:

(a) preparing, in a predetermined period of time prior to the filling operation, a plurality of bottles formed of a material compatible with the product to be contained therein, by application of a self-adhesive label having a width sufficient to extend a prescribed distance around the circumference of said bottle; said label being made from a prescribed material and having the required identifying indicia printed thereon;

(b) preparing a cap for each of said bottles by inserting an appropriately sized washer into the top of said cap; said washer being formed of a non-toxic expandable material and serving to absorb expansion of said bottle and cap during subsequent sterilization and to eliminate leakage therefrom;

(c) filling the individual bottles with the selectable pharmaceutical product, ensuring that each bottle is filled to capacity and eliminating residual air in the bottle of bottle neck;

(d) inserting a plug-type adapter into the neck of each bottle, forcing out excess liquid; said adapter being of the type used for connecting the pharmaceutical package to a cannula or other such medical apparatus;

(e) placing one of said prepared caps with said washer therein on each of said bottles and tightening by prescribed means;

(f) forming a package by inserting each of said bottles into an individual blister pack formed of a prescribed polymeric material suitable for use in a steam sterilization procedure; and sealing each of said blister packs along the open side thereof with a closure lid made from a non-woven material having the characteristics of being fluid permeable and capable of withstanding and remaining sealed during a steam-sterilization procedure;

(g) placing each of said packages blister-side-up in sterilizing trays formed of a wire mesh material, removing the supported weight of the enclosed bottle from the blister;

(h) sterilizing said package using an over-pressure steam-sterilizing technique, at a prescribed temperature and pressure; and

(i) removing said packages to a drying room and allowing to dry before inspecting and preparing for shipping.

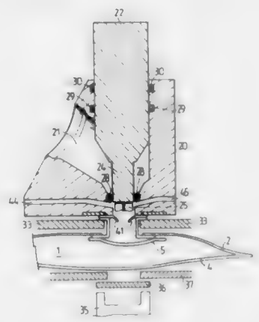
4,805,378

ASEPTIC FILLING STATION

Ian M. Anderson, Sandringham, Australia, assignor to Wrightcel Limited, Auburn, Australia

Continuation-in-part of Ser. No. 408,835, Aug. 17, 1982, abandoned. This application Mar. 27, 1986, Ser. No. 844,546
Claims priority, application Australia, Aug. 18, 1981, PF0305
Int. Cl.[4] B65B *55/08, 55/10, 43/26, 7/02*
U.S. Cl. 53—426 **3 Claims**

1. A method of aseptically filling containers through a container inlet from a filling dispenser comprising the steps of: (a) sterilizing sealed containers in which the container inlet has a heat sealable flap on one side of said inlet and is covered on the other side of said inlet by a rupturable closure; (b) maintaining the internal surfaces of the filling dispenser in a sterile state; (c) bringing the closed inlet of the container into abutment with the outlet nozzle of the filling dispenser by means of a movable container support; (d) introducing sterilizing fluid into the space between said nozzle and said closed inlet in a direction laterally of product flow from said outlet nozzle into said container inlet and withdrawing it laterally; (e) breaking said rupturable closure and filling said container; (f) closing said inlet by heat sealing said heat sealable flap to the interior side of said inlet; (g) introducing sterilizing fluid in to the space



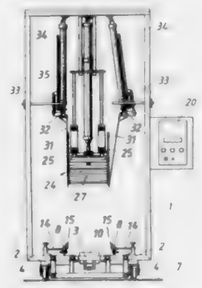
between said nozzle and said closed inlet in a direction lateral to product flow from said outlet nozzle in to said container inlet and withdrawing it laterally; (h) removing said container from said dispenser.

4,805,379

PROCESS AND APPARATUS FOR PACKAGING STACKS WHICH CONSIST OF NESTED CUPLIKE OBJECTS AND HAVE THE BASIC SHAPE OF ELONGATE CYLINDERS

Ferdinand Leibetseder, Pestalozzistrasse 7, A-4300 St. Valentin, and Kurt Böttcher, Liebermaanweg 38, A-4020 Linz, both of Austria

Filed Oct. 6, 1987, Ser. No. 105,272
Int. Cl.[4] B65B *5/10*
U.S. Cl. 53—444 **9 Claims**



1. A process of packaging stacks consisting of nested cuplike objects having a basic shape of elongate cylinders, wherein the stacks are inserted into containers to form a plurality of layers each consisting of a plurality of stacks in a horizontal orientation, comprising the steps of

(a) feeding respective ones of the stacks longitudinally of the axis thereof to respective ones of the containers in a horizontal orientation,

(b) then feeding the respective stack transversely of said axis to a layer-forming means having a flexible bottom and arranged over the respective container until the layer-forming means contains a complete layer of stacks supported on the flexible bottom,

(c) lowering the layer-forming means and the layer of stacks contained therein into the respective container,

(d) then deflecting the flexible bottom of the layer-forming means and pulling the deflected flexible bottom out from under the layer and upwardly beside the layer whereby the layer is deposited in the respective container while maintaining the orientation of the stacks in the layer,

(e) thereafter raising the layer-forming means into a region in which the stacks are fed,

(f) returning the flexible bottom to a position wherein it closes the layer-forming means, and

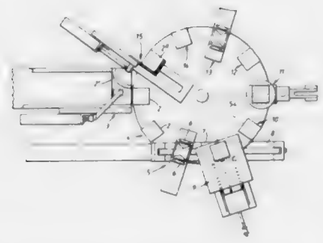
(g) repeating steps (a) to (f).

4,805,380

METHOD OF AND AN APPARATUS FOR PREFORMING OPERATIONS IN RELATION TO A CONTAINER SLEEVE

Richard W. E. Mosse, London, England, assignor to Liquipak International B.V., London, England

Filed Aug. 28, 1986, Ser. No. 901,424
Int. Cl.[4] B65B *43/26, 59/00*
U.S. Cl. 53—458 **19 Claims**



1. A method of performing sequential operations in relation to a container sleeve having an upper end and a lower end, in which method the container sleeve is advanced stepwise through a series of stations at which stations different operations are performed, said method comprising the steps of:

performing at a first of the stations a preselected operation on said lower end of the sleeve with the lower end being disposed at a first desired level;

adjusting the disposition of the sleeve vertically subsequent to completion of said operation at said first station by an amount determined by its height so as to bring said upper end to a second desired level; and

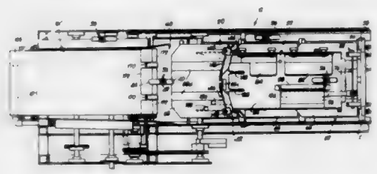
performing at a subsequent station a preselected operation on said upper end of the sleeve with the upper end being disposed at said second desired level.

4,805,381

NEWSPAPER BAGGING METHOD AND APPARATUS

Charles N. Hannon, Olathe, Kans., assignor to Stepper, Inc., Olathe, Kans.

Filed Mar. 6, 1987, Ser. No. 22,436
Int. Cl.[4] B65B *43/34, 43/36, 43/20*
U.S. Cl. 53—459 **22 Claims**



1. Apparatus for bagging newspapers comprising:

means defining an inserting station;

a flat tray;

a stack of superimposed thermo-plastic bags on said tray, each having a newspaper-receiving entry mouth adjacent one end of the bag and a marginal flap projecting outwardly beyond the mouth; means engageable with the flap of the endmost bag in the

stack for retaining the bags on the tray, said bags being removable from said tray by tearing the

flap of the bag being removed from said retaining means;

means for holding the tray at said inserting station in a manner to present the bags for successively receiving newspapers handled by the apparatus; means at said station for opening the mouth of each successive bag and holding the same in an open condition during the insertion of a newspaper into the bag,

said opening means including positive air pressure means directed toward the mouth; means for successively delivering newspapers to said station and inserting the newspapers into respective bags at said station while the bags are held open at the station;

conveyor means leading away from said station for conveying the bagged newspapers in a predetermined direction away from the station;

said flap of each of said bags being foldable into overlying relationship with the bagged newspaper to close the bag;

means along the path of travel of the bagged newspaper downstream from said inserting station engageable with said flap for folding the same into its closed position; and

sealing means along the path of travel of the bagged newspaper downstream from said flap folding means in disposition for causing the flap of each bagged newspaper passing said sealing means to heat seal permanently in said closed position,

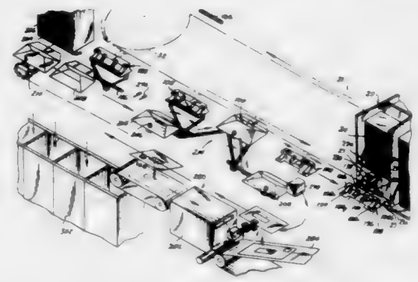
said tray having a flat, upper bag-supporting surface and a projection rising upwardly from said surface and located directly below the mouths of the bags in the supported stack and spaced inwardly from opposite sides of the tray to raise the central portion of the mouths relatively to laterally outboard portions thereof for facilitating opening by said positive air pressure means.

4,805,382

MAIL INSERTING AND COLLATING APPARATUS

John A. DePasquale, New York; Ivar R. Segalowitz, Great Neck, and Ceasar P. Andolfi, Bellerose, all of N.Y., assignors to J.A.D. Enterprises, Inc., New York, N.Y.

Division of Ser. No. 918,578, Oct. 14, 1986, Pat. No. 4,712,359.
This application Oct. 9, 1987, Ser. No. 106,389
Int. Cl.[4] B65B *25/14, 63/00*
U.S. Cl. 53—520 **3 Claims**



1. Mail inserting and collating apparatus comprising:

envelope conveyor means for continuously conveying a plurality of envelopes along a first path;

at least one envelope carrier means mounted on said enve-

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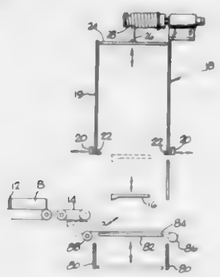
lope conveyor means and movable therewith, for holding said envelopes on said envelope conveyor means;
insert conveyor means for continuously conveying a plurality of inserts along a second path, at least a portion of said second path running substantially parallel and adjacent to said first path;
at least one adjustable length pocket means mounted on said insert conveyor means and movable therewith, for holding said inserts on said insert conveyor means;
cam means for moving each envelope carrier means toward a respective pocket means at an insert and envelope merge station;
means for reducing the length of each pocket means as it approaches said merge station while said pockets are moving to allow said envelopes to move over said pocket means; and
insert supply means for supplying said inserts to said conveyor means, said insert supply means including
web means for supplying a roll of paper;
cutter means for cutting said roll of paper into a plurality of said inserts; and
feed means for feeding said inserts to said at least one pocket means.

4,805,383

BATT PACKAGING MACHINE AND METHOD

Robert J. Allwein, Littleton, Colo., assignor to Manville Corporation, Denver, Colo.

Filed Jan. 11, 1988, Ser. No. 142,592
Int. Cl.[4] B65B *11/08, 63/02*
U.S. Cl. 53—528 **6 Claims**



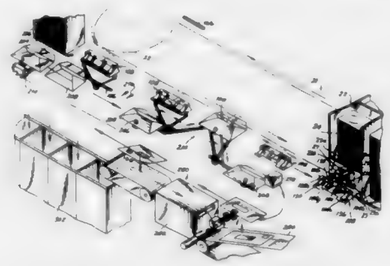
1. A machine for packaging compressible articles, comprising:
means for abutting and aligning the articles to form a vertical stack,
means for positioning a web of wrapping material beneath the bottom of the stack;
a support plate beneath the web, the support plate being mounted for vertical movement between an upper position and a lower position and being biased toward the upper position;
means beneath the upper position of the support plate for receiving a compressed stack of articles;
means for compressing the stack of articles against the support plate with sufficient force to overcome the bias of the support plate and push the articles and the support plate into the article receiving means, the web thereby covering the bottom end and two sides of the compressed stack of articles;
means for moving the web over the upper end of the compressed stack to enclose the compressed stack of articles in the web; and
wherein the means for forming the stack comprises tower means for holding the stacked articles, a lifting tray for supporting articles thereon, the lifting tray being normally both vertically and transversely spaced from the bottom of the stack at a location outside the tower, means for lifting the lifting tray from outside the tower to within the tower to add articles to the bottom of the stack and to push the stack upwardly during upward vertical movement and to move down and out of the tower during downward vertical movement, and means associated with the tower for supporting the stack of articles within the tower when the lifting tray is not supporting the stack.

4,805,384

MAIL INSERTING AND COLLATING APPARATUS

John A. DePasquale, New York; Ivar R. Segalowitz, Great Neck, and Ceasar P. Andolfi, Bellerose, all of N.Y., assignors to J.A.D. Enterprises, Inc., New York, N.Y.

Division of Ser. No. 918,578, Oct. 14, 1986, Pat. No. 4,712,359.
This application Oct. 9, 1987, Ser. No. 106,522
Int. Cl.[4] B65B *25/14*
U.S. Cl. 53—569 **8 Claims**



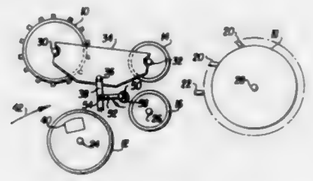
1. Mail inserting and collating apparatus comprising:
envelope conveyor means for continuously conveying a plurality of envelopes along a first path;
at least one envelope carrier means mounted on said envelope conveyor means and movable therewith, for holding said envelopes on said envelope conveyor means;
insert conveyor means for continuously conveying a plurality of inserts along a second path, at least a portion of said second path running substantially parallel and adjacent to said first path;
at least one adjustable length pocket means mounted on said insert conveyor means and movable therewith, for holding said inserts on said insert conveyor means;
cam means for moving each envelope carrier means toward a respective pocket means at an insert and envelope merge station;
means for reducing the length of each pocket means as it approaches said merge station while said pockets are moving to allow said envelopes to move over said pocket means; and
vacuum shuttle plate means for removing a lowermost insert from a stack of inserts and moving said lowermost insert toward a respective pocket means positioned adjacent said stack, said vacuum shuttle plate means including
a vacuum shuttle plate having vacuum apertures on an upper surface thereof for providing a suction to the lowermost insert from said stack;
means for reciprocating said vacuum shuttle plate between a first position and a second position; and
vacuum means for supplying a vacuum to said vacuum apertures of said vacuum shuttle plate when said vacuum shuttle plate is reciprocated to said first position and for removing said vacuum when said vacuum shuttle plate is reciprocated to said second position.

4,805,385

VARIABLE SENSITIVITY METAL DETECTION SYSTEM

Carl E. Bohman, New Holland, and Mark K. Chow, Leola, both of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Dec. 29, 1987, Ser. No. 138,990
Int. Cl.[4] A01D *75/18*
U.S. Cl. 56—10.2 **9 Claims**



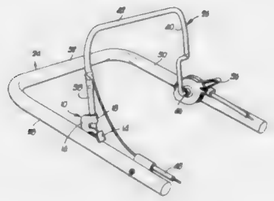
1. In a forage harvester having a metal detector system for detecting tramp metal moving with crop material through a crop feed, and a pair of feed rolls for feeding crop material through said crop feed, at least one of said feed rolls being movable relative to a metal detector in said metal detector system at varying distances therefrom to induce a noise component in the output signal produced by said metal detector, a method of providing a more uniform detection of tramp metal in said crop material, said method comprising sensing displacement of said one feed roll relative to said metal detector, and varying the sensitivity of said metal detector system in accordance with said displacement.

4,805,386

BAIL STOP

Arthur L. Urban, Wichita, Kans., assignor to Wescon Products, Inc., Wichita, Kans.

Continuation of Ser. No. 895,357, Aug. 11, 1986, abandoned.
This application Feb. 22, 1988, Ser. No. 159,303
Int. Cl.[4] A01D *75/20*
U.S. Cl. 56—10.8 **3 Claims**



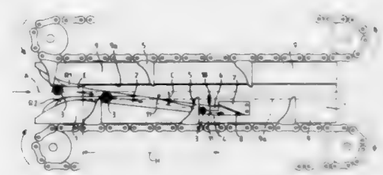
1. A bail stop for use in limiting the foreward rotational movement of a control bail or the like relative to a lawnmower handle or the like to which the bail is rotatably coupled, the lawnmower handle presenting an upper surface and a rearward end, the bail including a support leg and a rotation shaft coupled and disposed at a right angle thereto for reception of the shaft in a corresponding rotation aperture defined in an elongated portion of the lawnmower handle whereby the bail is rotatably coupled to the handle, said bail stop comprising:
a central body including means defining a rotation hole therethrough for reception of the bail rotation shaft therein thereby positioning said body between the handle and the support leg, said body presenting a first face disposed toward the handle and second face disposed toward the support leg;
a rotation stop tab coupled with said body and extending outwardly away from said first face for abutting engagement with the upper surface of the handle in order to limit the forward rotation of said bail stop, said tab having an end edge surface oriented for contact with the upper surface of the handle when in said abutting engagement therewith, said tab, when in said engagement, lying in a plane oriented at an oblique angle relative to the longitudinal axis of said elongated portion; and
a bail support leg clip coupled with said body, angularly displaced from said tab, and extending outwardly away from said second face, said clip including walls defining a U-shaped configuration and opening toward said rearward end for receiving a portion of the bail support leg therein, said clip including a pair of spaced apart, opposed side walls and an end wall intercoupling said side walls, said portion of the lawnmower handle lying in a first plane, said end wall lying in a second plane generally transverse to said first plane so that said bail support leg portion engages said end wall during forward rotation thereof.

4,805,387

HARVESTER DEVICE FOR STALKED PLANTS OF THE SUNFLOWER KIND WHICH CAN BE FITTED ON A CUTTER FOR STALKED CORN TYPE PLANTS

Gérard Bouin, 9, rue de la Gravelle, 86220 Dange Saint-Romain, France

Filed Sep. 28, 1987, Ser. No. 101,403
Claims priority, application France, Sep. 29, 1986, 86 13660
Int. Cl.[4] A01D *45/02*
U.S. Cl. 56—66 **9 Claims**



1. In a harvesting device for stalked plants of the sunflower kind, adapted to be fitted on any cutters for corn type stalked plants, said cutter comprising:
(a) at least two stripper plates having adjoining edges orientated substantially parallel to the intended direction of advance of the cutter, said edges defining an inlet passage for the stalks of plants to be harvested, said inlet passage having a median direction;
(b) movable fingers mounted for displacement above the plates towards the cutter on either side of the said inlet passage, the improvement wherein there is one harvesting plate adapted to be mounted in place of one of the conventional stripper plates, said harvesting plate comprising means defining a cut out which is offset in relation to said inlet passage in such a way that the stalks are completely taken over by said movable fingers situated on one side only of the said inlet passage.

4,805,388

CROP GATHERING HEAD AND BELT, SPROCKET AND SHEAVE THEREFOR

Ralph W. Kell, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 382,268, May 26, 1982, abandoned.
This application Aug. 20, 1984, Ser. No. 642,696
Int. Cl.[4] A01D *45/02*
U.S. Cl. 56—98 **5 Claims**

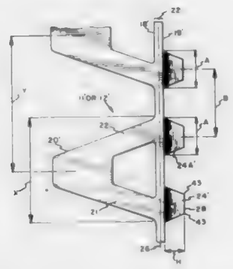
1. A reinforced elastomeric belt comprising:
(a) a flexible reinforced structure having a top surface and a bottom surface, and a reinforcement embedded therein,

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the centerline of the reinforcement defining the pitch line of the belt;

(b) a plurality of cleats of elastomeric material projecting generally perpendicularly from the top surface of the structure, each of said cleats when viewed in a longitudinal cross section of the belt being of triangular configuration having a bore extending therethrough with the base of the triangle joined to the top surface of the structure;

(c) a plurality of driving lugs of elastomeric material projecting generally perpendicularly from the bottom surface of



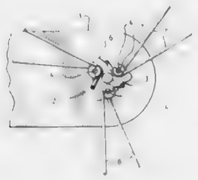
the structure, each of said driving lugs when viewed in longitudinal section of the belt being of trapezoidal configuration with the base of the trapezoid joined to the bottom surface of the structure, each of said lugs when viewed in a transverse section of the belt being of trapezoidal configuration with the base of the trapezoid joined to the bottom surface of the structure, with the sides of each lug converging in a direction away from the bottom surface of the structure, wherein the base of each cleat extends from a point opposite one lug to a point opposite the next adjacent lug.

4,805,389

ROTARY DEBRIS REMOVER

Bruce R. Hawkenson, Prince George, Canada, assignor to Hawk Forest Enterprises Ltd., Prince George, Canada

Filed Jun. 14, 1988, Ser. No. 206,317
Int. Cl.⁴ A01D *51/00*; B27U *1/00*
U.S. Cl. 56—295 **8 Claims**



1. A rotationally driven hub mounting for a plurality of pairs of tine members of a manually portable debris remover, said tine members being directed radially outwardly from the rotational axis of said hub mounting and connected in pairs by coiled ends movably coiled around respective coil axes passing through said hub mounting equidistantly from the rotational axis of the hub mounting and at angles inclined from the perpendicular to the plane of rotation of the hub mounting by an angle of from substantially 3 to substantially 10 degrees, said coil axes lying in a plane substantially tangent to the surface of the theoretical cylinder generated by rotation of said coil axes around the rotational axis of the hub mounting.

4,805,390

MODULAR SICKLE BAR SECTIONS

David S. Majkrzak, West Fargo, N. Dak., assignor to Crary Company, Fargo, N. Dak.

Filed May 14, 1987, Ser. No. 50,147
Int. Cl.⁴ A01D *34/14*
U.S. Cl. 56—300 **7 Claims**



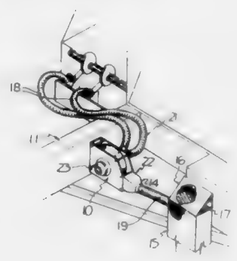
1. A modular sickle knife assembly comprising at least first and second sickle modules, each sickle module comprising a knifeback portion having a longitudinal length and a plurality of knife sections mounted on each of the sickle modules, and said sickle modules each having splice forming means on at least one end thereof for splicing adjacent sickle modules together, said splice forming means comprising complemental splice plates integral with each of the knifeback portions and having a radiused surface formed where the splice plate joins the respective knifeback portion and a shoulder surface generally perpendicular to the splice plate being formed at the junction with the respective knifeback portions and joining the radiused surface, said splice plates overlapping each other at the splice in direction of the longitudinal length, said splice plates having aligning openings when positioned overlapped to form a sickle knife assembly and each splice plate having an end spaced in longitudinal direction from the shoulder surface of other knifeback portion when the openings in the splice plates are aligned, a splice knife section having a plurality of openings greater than two passing through the splice knife section, said openings in the splice knife section, including separate openings in each end of the splice knife section, each of which separate openings aligns with openings through a separate one of the separate knifeback portions of the adjacent sickle modules other than openings in the splice plates, and said openings in the splice knife section including at least one opening aligning with the aligning openings of the overlapping splice plates, and fastening means in each of the openings of the splice knife section to fasten the splice knife section to the knifeback portions and splice plates of the two modules being joined.

4,805,391

TWINE TAIL COLLECTOR SYSTEM FOR AGRICULTURAL BALERS

Walter H. De Zylva, Victoria, Australia, assignor to Ford New Holland, Inc., New Holland, Pa.

Filed Mar. 31, 1988, Ser. No. 175,892
Claims priority, application Australia, Apr. 3, 1987, PI1235
Int. Cl.⁴ A01D *59/04*
U.S. Cl. 56—343 **5 Claims**



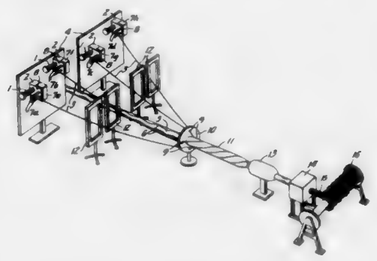
1. In an agricultural baler of the type including a knotter for binding bales with twine, the improvement comprising suction means connected by duct means to the knotter and to a container, said duct means including mouth means at least partially enveloping the knotter to collect twine tails when in use, the suction means acting to convey said twine tails to the container.

4,805,392

OPTICAL FIBER CABLE MANUFACTURING APPARATUS

Cesare Seveso, Cinisello Balsamo, and Luigi Lacchini, Capriate San Gervasio, both of Italy, assignors to Societa' Cavi Pirelli S.p.A., Milan, Italy

Filed Mar. 1, 1988, Ser. No. 162,732
Claims priority, application Italy, Mar. 2, 1987, 19542 A/87
Int. Cl.⁴ G02B *6/16, 6/44*; H01B *13/02*
U.S. Cl. 57—6 **3 Claims**



1. In apparatus for manufacturing an optical fiber cable comprising a core with grooves, each groove receiving at least one optical fiber, said apparatus comprising a plurality of bobbins rotatable around respective axes and for carrying the optical fibers to be inserted into said grooves, means for advancing said core, a rotatable optical fiber inserting head spaced from said bobbins in the direction of advance of said core, said head having a passageway for the passage of said core therethrough and having extensions insertable in said grooves and a rigid tubular body intermediate said bobbins and said head, said body having a passageway therethrough for the passage of said core and having one end thereof spaced from said bobbins and the opposite end thereof adjacent said head, the improvement comprising intermediate each of said bobbins and said one end of rigid tubular body;

paying off means for removing optical fiber from a bobbin and advancing the optical fiber toward said one end of said rigid tubular body;

means for driving said paying off means;

first and second optical systems disposed intermediate the bobbin from which the optical fiber is removed and said one end of said rigid tubular body, said first optical system being disposed above said second optical system and each said optical systems comprising at least one light means for directing light energy transversely to the plane of the path of the optical fiber from said bobbin to said one end of said rigid tubular body and at least one photoelectric cell disposed adjacent said path at the opposite side thereof from said light means for providing signals indicating the position of the optical fiber; and

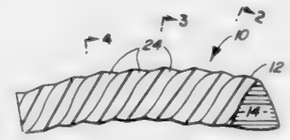
controlling means for controlling the speed of said paying off means connected to each said photoelectric cell and responsive to said signals for varying the speed at which said paying off means removes optical fiber from a bobbin dependent upon the position of the optical fiber as it passes from said paying off means to said end of said rigid tubular member.

4,805,393

STRING CONSTRUCTION FOR A SPORTS RACKET

Marcos A. Reta, 1900 W. 54th St., Apt. 206, Hialeah, Fla. 33012

Continuation-in-part of Ser. No. 934,311, Nov. 20, 1986, abandoned. This application Feb. 22, 1988, Ser. No. 158,955
Int. Cl.⁴ D02G *3/34, 3/44*
U.S. Cl. 57—248 **19 Claims**



1. A construction for a string for use on a sports racket and designed, when connected in combination with a plurality of other such strings on the head portion of the racket, for the striking of a ball or like object, said construction comprising:

a. a common, substantially multi-sided cross-sectional configuration extending continuously along the length of the string,

b. an outer surface including a helical oriented twist configuration extending along the length of the string continuously between opposite ends thereof,

c. a plurality of indentation formed on said outer surface and extending inwardly into the interior of the string, and

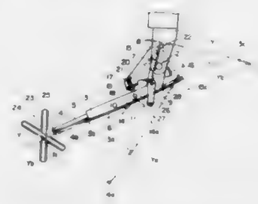
d. each of said plurality of indentations spaced successively from one another about the outer periphery of said outer surface and collectively extending along the length of the string.

4,805,394

METHOD AND APPARATUS FOR FALSE TWISTING

Mitsuhiko Miyaoka, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

PCT No. PCT/JP79/00321, § 371 Date Aug. 25, 1980, § 102(e) Date Aug. 25, 1980, PCT Pub. No. WO80/01288, PCT Pub. Date Jun. 26, 1980
PCT Filed Dec. 22, 1979, Ser. No. 205,959
Claims priority, application Japan, Dec. 25, 1978, 53-165008
The portion of the term of this patent subsequent to Nov. 21, 2002, has been disclaimed.
Int. Cl.⁴ D02G *1/02*; D01H *15/00*
U.S. Cl. 57—280 **12 Claims**



1. A false twisting apparatus comprising two running false twisting endless belts intersecting to define a nip point therebetween, a stationary bracket, a fulcrum shaft on said stationary bracket, a false twist threading device including an arm having a yarn guide on the top end thereof and a turning locus at the other end thereof, a pivoted bracket which has an adjust bolt on one end and a stopper piece located within the turning locus of the arm on the other end thereof and which is turnably

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supported by said fulcrum shaft mounted on said stationary bracket, a first spring having opposite ends secured to the stationary bracket and arm, said first spring being arranged so that when the arm is turned beyond the maximum extension position of the first spring, the direction of the urging force to the arm applied by the first spring is reversed, a cam rotatably supported on the arm in contact with the adjust bolt, and a second spring having opposite ends secured to the stationary bracket and pivoted bracket, said second spring being arranged so that when the pivoted bracket is turned beyond the maximum extension position of the spring, the direction of the urging force to the pivoted bracket applied by the second spring is reversed, wherein said false twist threading device is disposed so that the yarn guide of said false twist threading device is brought into close proximity to the nip point between the two running false twisting endless belts.

4,805,395

OPENING ROLLER FOR AN OPENING DEVICE OF AN OPEN-END SPINNING MACHINE

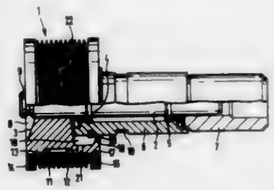
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Uberkingen; Hans Stahlecker, Haldenstrasse 20, 7334 Sussen; Gerhard Fetzer, 7334 Sussen, and Engen Bader, Birenbach, all of Fed. Rep. of Germany, assignors to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 793,122, Oct. 30, 1985, abandoned. This application May 9, 1988, Ser. No. 191,402

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1984, 3439664; Apr. 26, 1985, 3515153

Int. Cl.[4] **D01H** *7/892, 7/895;* **D01G** *15/84, 19/10*

U.S. Cl. 57—408 **26 Claims**



1. An opening assembly for an open-end spinning arrangement comprising:

steel alloy fitting ring means arranged on a rotatable roller body means for opening up a sliver into individual fibers, said fitting ring means including a base wall having a radial thickness no greater than 2.2 mm and including a plurality of radially extending teeth unitary with said fitting ring means extending from said base wall, said teeth having tip portions and base portions;

said teeth having lateral flanks being formed by at least one circumferential groove on at least a portion of an outer surface of said fitting ring means and having front and back edges being formed by at least two axially extending axial grooves extending across at least a portion of said at least one circumferential groove;

said front and back edges having a radial height of about 0.75–0.80 times a radial height of said lateral flanks, said base wall radial thickness having a dimension of about 0.60–0.72 times said radial height of said lateral flanks; and

said teeth being separated axially between said lateral flanks by a distance and exhibiting a height, said height being greater than said distance, said fitting ring exhibiting a rotational direction when said opening assembly is operational, said teeth being inclined toward said rotational direction, said teeth having an angle between said front and back edges between about 15 degrees to 45 degrees.

4,805,396

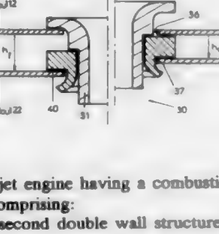
AUTOMATIC FUEL CONTROL AND ENGINE SYNCHRONIZER SYSTEM AND APPARATUS

Dan S. Veerhusen, and David C. Pattison, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 3, 1986, Ser. No. 915,167

Int. Cl.[4] **F02C** *6/00*

U.S. Cl. 60—39.15 **5 Claims**



1. An automatic, independent, redundant, and computer controlled engine fuel control system for aircraft of the type having at least a first engine having a first engine throttle and a second engine having a second engine throttle, comprising in operative combination:

a. a first flight computer controlled servo;

b. a rotatable capstan attached to said first servo;

c. a cable extending from said rotatable capstan to the first engine throttle;

d. a second flight computer controlled servo;

e. a second rotatable capstan attached to the second servo;

f. a cable extending from said second rotatable capstan to the second engine throttle;

g. a selecting clutch attached to the second engine throttle; and

h. an elongated connecting member extending from the first engine throttle to the selective clutch, whereby the first throttle with the attached elongated connecting member is selectively clutched and is capable of being engaged or disengaged with the second engine throttle by the selective clutch.

4,805,397

COMBUSTION CHAMBER STRUCTURE FOR A TURBOJET ENGINE

Gérard Y. G. Barbier, Morangis; Gérard J. P. B. Laboure, Avon; Michel A. A. Desaulty, Vert-Saint-Denis; Francois Duchene, Melun, and Pascal M. Trouillot, Courbevoie, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA), Paris, France

Filed Jun. 3, 1987, Ser. No. 56,884

Claims priority, application France, Jun. 4, 1986, 86 08015

Int. Cl.[4] **F02C** *7/20, 1/00*

U.S. Cl. 60—39.32 **10 Claims**

1. In a turbojet engine having a combustion chamber, the improvement comprising:

(a) first and second double wall structures defining transverse limits of the combustion chamber, each double wall structure comprising:

(i) a hot wall structure exposed to high temperature gases within the combustion chamber; and,

(ii) a cold wall structure; and,

(b) means to attach the hot wall structure to the cold wall structure so as to permit transverse movement of the hot wall with respect to the cold wall between minimum and maximum spacing while preventing relative longitudinal movement therebetween, the means comprising:

(i) an orifice member defining an air orifice therethrough, extending through the cold wall and the hot wall so as to allow air to flow into the combustion chamber, the orifice member having a first generally cylindrical portion, a second generally cylindrical portion, and a first flange extending radially outwardly from the first generally cylindrical portion; and,

(ii) an annular member attached to the second generally cylindrical portion of the orifice member and to the hot wall, the annular member having a second flange extending radially therefrom disposed between the hot wall and the cold wall, and spaced from the first flange such that a length of the first generally cylindrical portion extending between the first and second flanges defines the maximum amount of transverse movement between the hot and cold walls and a thickness of the second flange defines the minimum spacing between the hot and cold walls.

4,805,398

TURBO-MACHINE WITH DEVICE FOR AUTOMATICALLY CONTROLLING THE RATE OF FLOW OF TURBINE VENTILATION AIR

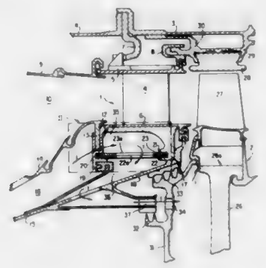
Gérard E. A. Jourdain, Corbeil Essonnes; Jean M. Payen, Le Mee sur Seine, and Georges Mazeaud, Yerres, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S. N. E. C. M. A.", Paris, France

Filed Oct. 1, 1987, Ser. No. 103,417

Claims priority, application France, Oct. 1, 1986, 86 13671

Int. Cl.[4] **F02C** *3/00, 5/00*

U.S. Cl. 60—39.75 **10 Claims**



1. In a turbo-machine,

a turbine,

a system for supplying ventilation air to said turbine, and

a device for automatically controlling the rate of flow of said turbine ventilation air in said system, said control device comprising

a support,

two radially superimposed rings mounted concentrically on said support, each of said rings having

a transverse slit whereat said ring is open, and

a plurality of slots uniformly distributed around the periphery of said ring,

means fixing each of said superimposed rings to said support at a single point diametrically opposite said transverse slit of said ring, the fixed points of said two rings being diametrically opposite one another,

said two superimposed rings and said support being disposed in said ventilation air supply system, and

said two superimposed rings being made of a material having a coefficient of thermal expansion which is distinctly different from that of the material from which said support is made,

whereby said peripheral slots in said two superimposed rings either register with each other to provide a maximum ventilation air flow, are completely offset from one another to shut off the ventilation air flow altogether, or are in an intermediate, partly registering, position to provide a modulated ventilation air flow, depending on the thermal expansion of said support caused by the operating conditions on said turbo-machine.

4,805,399

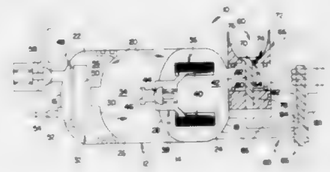
MONOPROPELLANT PLENUM PROPULSION SYSTEM WITH INTEGRATED VALVE/NOZZLE FOR FAST RESPONSE THRUST

Frank X. McKevitt, Bellevue, Wash., assignor to Rockcor Incorporated, Redmond, Wash.

Continuation of Ser. No. 811,569, Dec. 18, 1985, abandoned. This application Jan. 20, 1988, Ser. No. 147,072

Int. Cl.[4] **F02K** *9/60, 9/68*

U.S. Cl. 60—200.1 **16 Claims**



1. In a monopropellant propulsion system, the combination comprising:

(a) enclosure means defining a liquid chamber and a gas plenum;

(b) a monopropellant liquid contained in said liquid chamber;

(c) a monopropellant gas generator communicating with said gas plenum and said liquid chamber and being operable to generate pressurized monopropellant gas in said gas plenum upon receiving monopropellant liquid from said liquid chamber;

(d) means for controlling flow of monopropellant liquid from said liquid chamber to said monopropellant gas generator; and

(e) thrust-producing means communicating with said gas plenum so as to contain said pressurized monopropellant gas in conjunction with said gas plenum and being operable to produce thrust upon command;

(f) said thrust-producing means including means defining a thrust chamber communicating with said gas plenum such that said pressurized monopropellant gas is contained concurrently by both of said thrust chamber and said gas plenum, a thrust-generating mechanism communicating with said thrust chamber and being actuatable between a closed condition in which no thrust is produced and an open condition producing thrust, and means for selectively actuating said thrust-generating mechanism;

(g) said actuating means of said thrust-producing means including an actuator disposed in said thrust chamber for movement between retracted and extended positions for correspondingly actuating said thrust-generating mechanism between its closed and open conditions, resilient means and pressure forces biasing said actuator to its retracted position and thereby said thrust-generating

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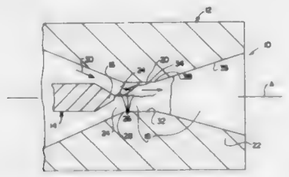
mechanism to its closed condition, and means for selectively communicting said pressurized propellant gas to said actuator independent of said thrust chamber for forcing said actuator against said biasing of said resilient means to its extended position and thereby said thrust-generating mechanism to its open position.

4,805,400

NON-EROSIVE ARCJET STARTING CONTROL SYSTEM AND METHOD

Steven C. Knowles, Seattle, Wash., assignor to Olin Corporation, Stamford, Conn.

Filed Apr. 27, 1987, Ser. No. 42,994
Int. Cl.[4] F03H *1/00*
U.S. Cl. 60—203.1 **12 Claims**



1. In combination with an arcjet thruster including an anode, a cathode and a gap defined therebetween, a starting control system for initiating a substantially non-erosive arc across said gap comprising:

(a) propellant supply means defining a feed path for supplying propellant at a predetermined flow pressure into said thruster past said gap therein;

(b) power control means operable for supplying to said anode and cathode an electrical potential of a predetermined magnitude being less than that required to generate an electrical arc in said thruster across said gap through propellant at the predetermined flow pressure;

(c) valve means interposed in said feed path of said propellant supply means and being actuatable to switch between opened and closed positions for respectively permitting and preventing flow of propellant at said predetermined flow pressure into said thruster past said gas therein; and

(d) valve driver means electrically coupled to said valve means and being operable to actuate said valve means to switch it between its opened and closed positions, said valve driver means being further operable, concurrently with application of said electrical potential by said power control means for initiation of said electric arc generation and after actuation of said valve means to switch it to its opened position, to again actuate said valve means in order to switch it during only a momentary period of time from its opened position to its closed position and then back to its opened position for causing transmission of a pulse of propellant gas, being at a flow pressure below said predetermined flow pressure, into said thruster and past said gap such that a substantially non-erosive arc can be initiated within said thruster across said gap and then forced to move downstream within the thruster so as to minimize erosion therein.

4,805,401

CONTROL VENT FOR DIVERTING EXHAUST NOZZLE

Edward B. Thayer, Jupiter, and Herman L. Stevens, West Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

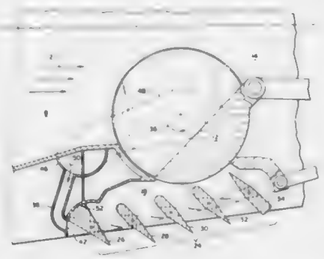
Filed Aug. 18, 1987, Ser. No. 86,342
Int. Cl.[4] F02K *3/02*
U.S. Cl. 60—226.2 **7 Claims**

1. In a gas turbine engine having a stream of working fluid exhausted therefrom, said exhausted working fluid entering a nozzle structure having two working fluid discharge paths and means for biasing the flow of working fluid therebetween, said biasing means including

means for selectably controlling the discharge flow area of the primary working fluid discharge path

and the discharge flow area of the alternative working fluid discharge path such that the alternative discharge path is opened to pass working fluid therethrough only when the flow area of the primary discharge path is less than a preset minimum area, and

means, disposed in the alternative discharge path, for selectably vectoring the flow of working fluid passing through



the alternative discharge path, said vectoring means having an operating range of orientations and a stowed orientation,

the improvement comprising:

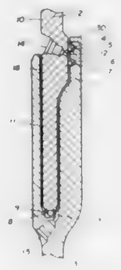
means, responsive to the orientation of the vectoring means, separate and independent of the alternative discharge path, for venting a portion of the working fluid from the primary discharge path, the venting means being closed to working fluid flow when the vectoring means is in the stowed orientation, and open to working fluid flow when the vectoring means is in at least one of the orientations within the operating range.

4,805,402

METHOD AND APPARATUS FOR SEALING ROCKET MOTOR SEGMENT JOINTS

Bernard A. Power, and Mark B. Power, both of 255 Touzin Avenue, Dorval, Quebec, Canada H9S 2N1

Filed Aug. 18, 1986, Ser. No. 897,728
Int. Cl.[4] F02K *9/34, 9/00*
U.S. Cl. 60—253 **2 Claims**



1. A method of sealing the joint crevice which is formed between the mating motor segment casings in a segmented rocket motor, against escape of rocket motor gas outwardly through the joint crevice to the exterior, and against ambient pressure or ambient exhaust gas pressure surges which could act inwardly through the joint crevice to unseat the joint crevice seals, said method comprising the steps of

placing two deformable, resilient, annular seal rings in two matching annular ring seating channels in the joint crevice

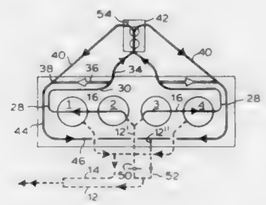
seating said rings into the joint crevice to positively seal it by partially or completely evacuating the air from the portion of the joint crevice located between the said rings through a vent port providing access thereto from the exterior of the casing, and then closing the vent port by a valve means, said evacuation of air thereby causing the rings to partially extrude or to flow resiliently into the joint crevice to positively seal it, with the outermost ring being thereby seated inwardly into the joint crevice to prevent the intrusion into the joint crevice of exterior air pressure surges or exhaust gas pressure surges from the exterior of the rocket casing, and with the inner ring thereby seated outwardly into the joint crevice to prevent the escape of rocket motor gas through the joint crevice from the rocket motor interior.

4,805,403

ENGINE EXHAUST SYSTEM

Timothy J. Bowman, Bexley; Robert A. Marshall, Ilford, and Trevor W. Biddulph, Maldon, all of United Kingdom, assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 11, 1987, Ser. No. 131,975
Claims priority, application United Kingdom, Dec. 23, 1986, 8630706
Int. Cl.[4] F01N *3/04*; F02N *17/06*
U.S. Cl. 60—320 **8 Claims**



1. An internal combustion engine having intake ducts, at least one exhaust duct and coolant flow passages, a portion of the exhaust duct being located in good thermal contact with the engine coolant, the exhaust duct including flow diverting valves operable at times to direct exhaust gases to flow through said exhaust duct portion when the engine is cold to warm the latter duct to accelerate engine warm-up, the valves at other times being operable to cause the duct portion to be bypassed under normal operating conditions, the exhaust duct portion being formed as an integral part of the cylinder head in thermal contact with a coolant flow passage therein.

4,805,404

PORTABLE PNEUMATIC MACHINE HAVING EMBODIED CONTROL ELECTRONICS

Claude Dupin, Meban sur Tevre, France, assignor to Societe d'Exploitation F.F.D.M.-Pneumat, Bourges Cedex, France

Filed Jul. 24, 1987, Ser. No. 77,656
Claims priority, application France, Jul. 31, 1986, 86 11141
Int. Cl.[4] F16B *31/02*; B25B *23/145*
U.S. Cl. 60—409 **11 Claims**

1. A portable pneumatic machine for rotating a tool comprising:

a body having a compressed air inlet pipe and a casing connected to said inlet pipe to be fed with compressed air by pneumatic feeding means,

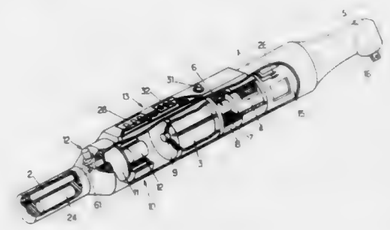
rotary drive means located within said casing, to be actuated by said compressed air and removably mechanically connected to the tool for rotating said tool,

an actuating device for opening and shutting off the compressed air inlet pipe,

electric generator means having a rotor to be rotated by said rotary drive means, a stator fixed to the casing and signal delivering means for delivering signals representative of the value of at least one operating parameter of the machine,

an electronic circuit having means for controlling and setting the value of said operating parameter and for monitoring the value of said operating parameter, incorporated into the body of said pneumatic machine, energized by said electric generator means, connected to said signal delivering means of said electric generator means and to the actuating device for controlling said actuating device, whereby control and monitoring of said actuating device allows control of the value of said operating parameter, and

programmable logic controller means for programming the electronic circuit,

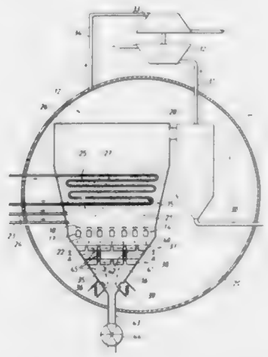


4,805,405

POWER PLANT WITH COMBUSTION OF A FUEL IN A FLUIDIZED BED

Arne Jonsson, Finspong, Sweden, assignor to Asea Stal Ab, Finspong, Sweden

Filed Jun. 23, 1987, Ser. No. 65,475
Claims priority, application Sweden, Jul. 3, 1986, 86029592
Int. Cl.[4] F02C *3/26*
U.S. Cl. 60—39.464 **6 Claims**



1. A power plant with combustion of a fuel in a fluidized bed, comprising:

a bed vessel;

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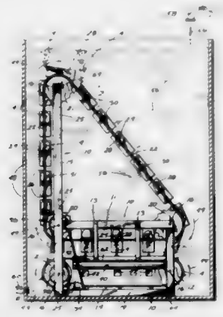
a bottom dividing said bed vessel into an upper combustion chamber and a lower ash discharge chamber;
a plurality of openings in said bottom for passing ashes and consumed bed material to said ash discharge chamber;
feed means for feeding bed material and fuel into the combustion chamber of said bed vessel;
a compressor for supplying said bed vessel with air for the fluidization and the combustion;
a discharge means for discharging ashes and consumed bed material from said ash discharge chamber;
means for introducing cooling air into material present in said ash discharge chamber for direct cooling of said material;
air collecting and distributing means provided across said ash discharge chamber above said means for introducing air, said collecting and distributing means including substantially horizontal members forming downwardly open channels for collecting upwardly flowing cooling air and distributing said collected air over the area of said ash discharge chamber, to provide substantially uniform cooling of said ash discharge chamber.

4,805,406

AIR ACTIVATED LIQUID DISPLACEMENT MOTOR

Zlatan Graetic, 574 Oakwood La., Paradise, Calif. 95969

Filed Jun. 27, 1988, Ser. No. 212,006
Int. Cl.[4] F03G *7/00*
U.S. Cl. 60—496 **11 Claims**



1. An air activated liquid displacement motor, comprising:
a double membered L-shaped framework formed of an elongated vertically inclined portion, a horizontally inclined base portion, a horizontally inclined superstructure portion affixed downwardly in parallel alignment with said base portion to said vertically inclined portion and to superstructure vertical support members affixed to the distal ends of said base portion, said dual members of said L-shaped framework affixed one to the other by horizontally inclined cross bracing;
dual continuous chains arranged on chain gears to move along a vertically inclined paralleling right triangular path in said L-shaped framework;
a multiple of open ended tubular air collectors attached between said dual continuous chains in a manner to reverse ends at the apex position of said right triangular path;
water and air proofed flexible air bags having an opened end attached centrally circumferentially inside said tubular air collectors with the length of said bags somewhat less than half the length of said tubular air collectors and having the bag portion and the closed end thereof free to reposition into either half of said tubular air collectors;
screening covering both openings of said open ended tubular air collectors, said screening sized to prevent debris from entering said tubular air collectors;
an air receiver chamber rectangularly configured horizontally mounted longitudinally paralleling said horizontal base leg of said L-shaped framework attached upwardly to said horizontally aligned superstructure member of said horizontal base, said air receiver chamber widened and opened longitudinally downwardly and opened longitudinally upwardly with the upwardly edges affixed oppositely with horizontally aligned paralleling retainer belt guides;
an apertured belt continuously mounted below said air receiver chamber on drums affixed by axles to vertical end members of said L-shaped framework, said apertured belt, the apertures therein, having protruding funnel shaped edges and the upwardly portion of said belt arranged to pass through said air receiver chamber retainer belt guides;
means for air supply;
means for air reserving;
means to captively distribute air from said air supply source through said air reserving means into said air receiver chamber;
means for positioning said air collectors vertically for horizontal movement adjacently above said apertured conveyor belt;
means for coordinating said air collectors vertically positioned properly aligned in said duel continuous chains with said apertures and said protruding funnel shaped ends in said apertured belt for air passage from said upwardly opened air receiver chamber through said apertures in said apertured conveyor belt upwardly into said opened ends of said collectors;
means for power output;
means for containment of sufficient water for total submersion of said double membered L-shaped framework in operational assemblage.

4,805,407

THERMOMECHANICAL ELECTRICAL GENERATOR/POWER SUPPLY FOR A DOWNHOLE TOOL

Ronnie J. Buchanan, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 841,924, Mar. 20, 1986, abandoned. This application Mar. 18, 1988, Ser. No. 173,011
Int. Cl.[4] F03G *1/04*
U.S. Cl. 60—517 **4 Claims**



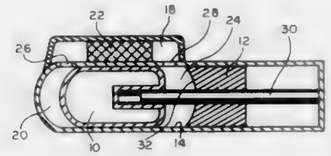
1. A power supply for use in a subterranean well bore of a limited diameter, said power supply being for a generally tubular, longitudinally extending oil or gas well downhole tool deployable in said well bore and having a system requiring energy from said power supply and having a receptacle for receiving said power supply, comprising:
housing means for being received within the receptacle of the downhole tool, said housing means including a tubular member having a maximum outer diameter less than an inner diameter of the downhole tool and having an outer length less than the length of the downhole tool so that said tubular member is receivable entirely within the downhole tool, said tubular member including:
a cylindrical side wall across which said maximum outer diameter is defined;
a first end wall disposed transversely to said side wall at one end thereof, said first end wall having an opening defined therethrough for receiving a closure cap so that when said closure cap is removed from said opening a fuel capsule can be inserted into or removed from said tubular member through said first end thereof; and
a second end wall disposed transversely to said side wall at another end thereof;
a fuel capsule removably retained inside said housing means said fuel capsule including means for generating thermal energy, wherein said means for generating thermal energy includes a radioisotope;
Stirling cycle engine means, disposed in said housing means immediately adjacent to and in heat transfer relationship to said fuel capsule, for converting said thermal energy to mechanical motion;
conversion means, disposed in said housing means adjacent to said Stirling Cycle engine means and on the opposite side of said Stirling Cycle engine means from said fuel capsule, for converting said mechanical motion to energy usable by the system within the downhole tool, said conversion means including linear alternator means for generating an electrical voltage in response to said Stirling cycle engine means; and
connecting means, communicating externally of said housing means, for connecting said electrical voltage from said linear alternator means to the system of the downhole tool, said connecting means including terminal means, disposed through said second end wall of said tubular member, for providing said electrical voltage externally of said housing.

4,805,408

STIRLING ENGINE POWER REGULATION SYSTEM

William T. Beale, and David M. Berchowitz, both of Athens, Ohio, assignors to Sunpower, Inc., Athens, Ohio

Filed Jun. 29, 1987, Ser. No. 67,002
Int. Cl.[4] F02G *1/04, 1/06*
U.S. Cl. 60—520 **11 Claims**



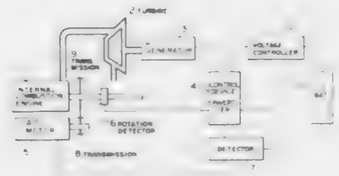
1. An improved free piston Stirling cycle engine of the type having a displacer and a piston reciprocating in a cylinder formed in a housing and having a working gas flow path from a hot space adjacent one end of the displacer to a cold space adjacent the opposite end of the displacer, wherein the improvement comprises:
(a) linkage means for being actuated in response to the excursion of the piston beyond a selected first amplitude; and
(b) valve means in said gas flow path connected for actuation by the linkage means for restricting the flow path for the working gas between the hot space and the cold space in response to piston excursion beyond the selected amplitude.

4,805,409

METHOD OF AND APPARATUS FOR RECOVERING EXHAUST GAS ENERGY OF INTERNAL COMBUSTION ENGINE

Hideaki Kobayashi, Sakura, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 21, 1988, Ser. No. 184,116
Claims priority, application Japan, Apr. 24, 1987, 62-100129
Int. Cl.[4] F02G *5/02*
U.S. Cl. 60—597 **7 Claims**



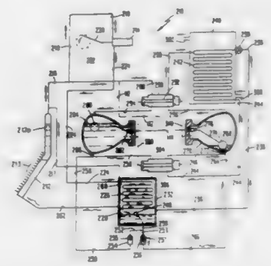
1. A method of recovering exhaust gas energy of an internal combustion engine of a type which incorporates a turbine generator driven by the exhaust gas energy of said internal combustion engine and in which driving power of a motor driven by power generated by said generator is added to driving power of said internal combustion engine, characterized in that said method includes a control device for controlling an output torque of said motor in different forms at low and high speed areas within a variable control range of a rotation speed of said internal combustion engine, and that said motor is operated with constant torque characteristics at said low speed area and with reduced torque characteristics at said high speed area.

4,805,410

CLOSED LOOP RECIRCULATION SYSTEM FOR A WORKING FLUID WITH REGENERATION

Barry Johnston, 1622 Q St., N.W., Washington, D.C. 20009

Filed Jan. 28, 1988, Ser. No. 150,435
Int. Cl.[4] F01K *21/00, 25/10*
U.S. Cl. 60—671 **14 Claims**



1. In a closed loop thermodynamic system, wherein a recirculating working fluid undergoes changes between its liquid and vapor phases in a working cycle, in which energy received from an external energy source is utilized to vaporize the working fluid at a high pressure in a vaporizing means and the vapor is utilized in an energy utilizing means, whereafter the utilized vapor is condensed at a relatively lower pressure by a

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condensing means into a condensate returned to the vaporizing means for repeating of a thermodynamic cycle, and wherein the condensate flow intermediate the condensing means and the vaporizing means is collected in one of two holding tanks that are in selective pressure communication with the vaporizing means and the condensing means such that each holding tank in selective alternation is at the relatively low pressure of the condensing means while receiving condensate therefrom and at the high pressure of the vaporizing means while delivering condensate for conveyance to the vaporizing means, wherein the heat utilizing means is locatable above or below the condensing means as convenient, an improvement comprising:

thermal regeneration means for providing regenerative heating of the working fluid in the form of a condensate, the regeneration means being formed to have a first portion having a passage with a thermally conductive wall and connected to the energy utilizing means to transfer the utilized vapor therefrom to a second portion of the thermal regeneration means that is connected to the condensing means to transfer thereto at least a portion of said received utilized vapor, the first portion of the regeneration means being selectively connectable to a delivering one of the two holding tanks to receive any condensate delivered therefrom for regenerative heating of such received condensate by energy transferred thereto from the received utilized vapor across the thermally conductive wall, the first portion of the regeneration means being connected to the vaporizing means to deliver regeneratively heated condensate thereto, the second portion of the regeneration means communicating with the first portion by way of the passage with the thermally conductive wall whereby any utilized vapor received therethrough is conveyed to the condensing means and any incidental condensate formed from this utilized vapor due to energy transfer therefrom in the first portion of the regeneration means is collected within the second portion of the regeneration means for periodic delivery in selective alternation to that holding tank which is receiving condensate under the influence of the pressure differential between the pressure in the second portion of the regeneration means and the relatively low pressure in the holding tank that is filling at that particular time.

4,805,411

COMBUSTION CHAMBER FOR GAS TURBINE

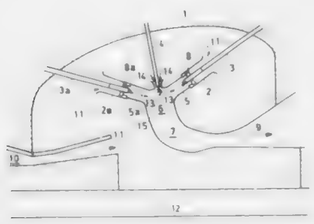
Jean Hellat, Baden-Rütihof, and Jakob Keller, Dottikon, both of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Nov. 25, 1987, Ser. No. 125,126

Claims priority, application Switzerland, Dec. 9, 1986, 4892/86

Int. Cl.[4] F02C *1/00*; F02G *1/00*

U.S. Cl. 60—733 5 Claims



1. A combustion chamber of a gas turbine for operation with liquid fuels, the combustion chamber comprising:

a main combustion space defined within the combustion chamber and having an upstream end and a downstream end;

a secondary burner centrally positioned at the upstream end of the main combustion space and including fuel feed means for introducing a fuel mist into the main combustion space;

two primary burners symmetrically positioned with respect to the secondary burner, each of the primary burners including a primary combustion space which is positioned upstream of the secondary burner with respect to the main combustion space; and

air supply means for supplying an unswirled stream of air enveloping the fuel mist as the fuel mist enters the main combustion space to protect the fuel mist from direct exposure to hot gases leaving the primary combustion space when the fuel mist is first introduced into the main combustion space.

4,805,412

KRYPTON SEPARATION

Charles R. Colley, deceased, late of Wanstead, and by Muriel E. Passant, executrix, Felixstowe, both of United Kingdom, assignors to BOC Cryoplants Limited, United Kingdom

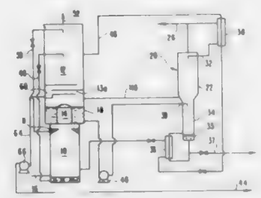
PCT No. PCT/GB87/00295, § 371 Date Feb. 29, 1988, § 102(e) Date Feb. 29, 1988, PCT Pub. No. WO87/06684, PCT Pub. Date Nov. 5, 1987

PCT Filed May 5, 1987, Ser. No. 141,591

Claims priority, application United Kingdom, May 2, 1986, 8610766

Int. Cl.[4] F25J *3/04*

U.S. Cl. 62—22 10 Claims



1. A method of separating air by cryogenic distillation, comprising the steps of:

forming a first liquid oxygen stream having a first krypton concentration;

thereafter forming a second liquid oxygen stream from condensed vapor of said first liquid oxygen stream, said second liquid oxygen stream having a lower concentration of krypton than said first stream;

flowing said first liquid oxygen to means for subjecting the first stream to further separation to enrich it in krypton; and

withdrawing the second liquid stream after formation thereof as product having a reduced krypton concentration through a product line.

4,805,413

PROCESS FOR CRYOGENICALLY SEPARATING NATURAL GAS STREAMS

E. Keith Mitchell, Shawnee, and Donald N. Reed, Edmond, both of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Mar. 10, 1988, Ser. No. 166,445

Int. Cl.[4] F25J *3/02*

U.S. Cl. 62—24 23 Claims

1. A process for cryogenically separating a gaseous feed stream containing nitrogen, methane and ethane and heavier hydrocarbons comprising:

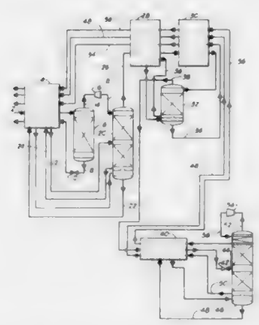
(a) cooling said feed stream by indirect heat exchange with at least one process-derived refrigerant stream to effect a partial condensation of said feed stream;

(b) separating the cooled and partially condensed feed stream into a first liquid effluent stream and a first vapor phase stream;

(c) further cooling the first vapor phase stream;

(d) commingling the first liquid effluent stream and the further cooled first vapor phase stream and separating the commingled streams into an ethane-rich liquid product stream and a methane-rich vapor phase stream;

(e) recovering the ethane-rich liquid product stream and the methane-rich vapor phase stream and further cooling and methane-rich vapor phase stream by means of indirect heat exchange with at least one process-derived refrigerant stream to effect a partial condensation of the methane-rich vapor stream;



(f) separating the further cooled and partially condensed methane-rich vapor phase stream into a first methane-rich liquid product stream and a nitrogen-rich vapor phase stream;

(g) recovering the first methane-rich liquid product stream and the nitrogen-rich vapor phase and further cooling the nitrogen-rich vapor phase stream by means of indirect heat exchange with at least one process-derived refrigerant stream to effect a partial condensation of the nitrogen-rich vapor phase stream;

(h) reducing the pressure of said further cooled and condensed nitrogen-rich vapor phase stream and separating said stream into a substantially pure nitrogen gas stream and a methane-rich liquid product stream; and

(i) recovering, individually, the substantially pure nitrogen gas stream and the second methane-rich liquid product stream.

4,805,414

PROCESS TO RECOVER HYDROGEN-FREE HIGHER BOILING SYNTHESIS GAS COMPONENT

Theodore F. Fisher, Tonawanda, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 15, 1987, Ser. No. 133,430

Int. Cl.[4] F25J *3/02*

U.S. Cl. 62—28 20 Claims

1. A process to recover substantially hydrogen-free higher boiling synthesis gas component comprising:

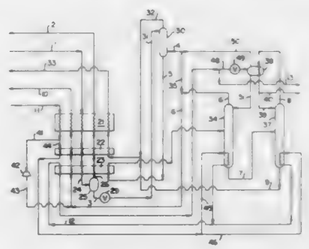
(A) providing a feed comprising hydrogen, higher boiling synthesis gas component, and heavier fraction(s);

(B) partially condensing the feed to produce hydrogen-rich vapor and hydrogen-containing liquid;

(C) passing the hydrogen-containing liquid into a stripping column containing at least two equilibrium stages, and down the stripping column through all of the equilibrium stages against upflowing vapor;

(D) stripping hydrogen from the downflowing liquid into the upflowing vapor to produce substantially hydrogen-free fluid;

(E) passing the substantially hydrogen-free fluid into at least one cryogenic fractional distillation column;



(F) separating the substantially hydrogen-free fluid in said column(s) into substantially hydrogen-free higher boiling synthesis gas component, and heavier fraction(s); and

(G) recovering substantially hydrogen-free higher boiling synthesis gas component product.

4,805,415

MINE COOLING

Carl S. J. Van Rensburg, Alberton, and Johannes Van Der Walt, Roodepoort, both of South Africa, assignors to General Mining Union Corporation Limited, South Africa

Filed Apr. 16, 1987, Ser. No. 44,488

Claims priority, application South Africa, Apr. 22, 1986, 86/3001

Int. Cl.[4] F25D *23/12*

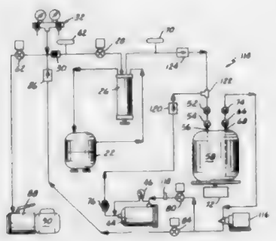
U.S. Cl. 62—260 9 Claims



1. Apparatus to carry out the method of cooling a subterranean excavation that is of the order of 1000 meters or more below ground which consists of a compressor located at a station at least 1000 meters above a subterranean excavation to be cooled, means to feed a stream of gaseous ammonia to the compressor, a condensor at the station located to receive compressed ammonia from the compressor, an evaporator within the excavation to be cooled, an upcast ventilation shaft, a down pipe connecting the condensor to the evaporator, and an up pipe connecting the evaporator to the compressor wherein the up pipe is located concurrent within the upcast ventilation shaft.

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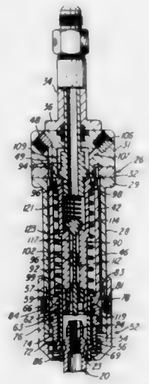
4,805,416
REFRIGERANT RECOVERY, PURIFICATION AND RECHARGING SYSTEM
Kenneth W. Manz, Paulding; Roger D. Shirley, W. Unity, both of Ohio; Richard D. Parks, Horton, Mich., and Dennis W. Hickman, Edon, Ohio, assignors to Kent-Moore Corporation, Warren, Mich.
Continuation-in-part of Ser. No. 117,098, Nov. 4, 1987, Pat. No. 4,768,347. This application Feb. 19, 1988, Ser. No. 157,579
Int. Cl.[4] F25B *45/00*
U.S. Cl. 62—292 **45 Claims**



15. A system for recovering, purifying and recharging refrigerant in a refrigeration system comprising: a refrigerant compressor having an input and an output; means including evaporator means and a recovery control valve for connecting said compressor input to a refrigeration system from which refrigerant is to be recovered, purified and recharged; condenser means coupled to said compressor output in heat exchange relation to said evaporator means for liquifying refrigerant from said compressor output; refrigerant storage means having first and second ports; means for feeding refrigerant from said condenser means to said first port; filter means for removing contaminants from refrigerant passing therethrough; means including a circulation valve for selectively circulating refrigerant in a closed path from said second port through said filter means to said first port; means for evacuating said refrigeration system including a vacuum valve for selectively connecting said refrigeration system through said evacuating means; means including a recharging valve for selectively connecting said second port to said refrigeration system for selectively feeding refrigerant from said storage means to said refrigeration system; and means for selectively operating said recovery control valve, said circulation valve, said vacuum valve and said recharging valve for recovering refrigerant from said refrigeration system and storage thereof in said storage means, purification of refrigerant in said storage means by circulation through said filter means, evacuating said refrigeration system, and recharging said refrigeration system with refrigerant from said storage means.

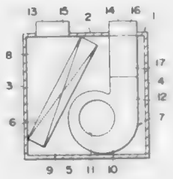
4,805,417
DISPENSING TOOL ASSEMBLY FOR CHARGING A REFRIGERANT INTO A SYSTEM
Kim A. Weaver, and James M. Jones, both of Dayton, Ohio, assignors to Production Control Units, Inc., Dayton, Ohio
Filed Nov. 5, 1987, Ser. No. 116,961
Int. Cl.[4] F25B *45/00*
U.S. Cl. 62—292 **19 Claims**

9. A dispensing tool assembly for connecting a refrigerant charging unit to a refrigerant receiving system having a tubular fitting with an internal movable valve element, said tool assembly comprising a tubular body having a center axis, means supported within said body and defining an axially extending fluid passage, means for selectively connecting a suction line and a refrigerant supply line to said passage, means forming a fluid-tight seal between said means defining said passage and the fitting, an elongated tubular valve member disposed within said passage for axial movement, an elongated valve element opening member disposed within said valve member for axial movement, first fluid actuating means for moving said valve element opening member between a retracted position and an extended position where the valve element within the fitting is moved to an open position, second fluid actuated means for moving said valve member on said valve element opening member to control the flow of fluid through said passage, coupling means supported by said body for movement between a released position and a locked position positively connecting



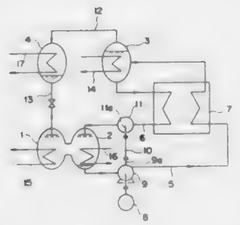
said body to the fitting, a tubular piston supported by said body for axial movement between an extended position and a retracted position, means connecting said piston to said coupling means for moving said coupling means to said locked position in response to the application of a pressurized fluid to move said piston to said extended position, and means for moving said piston to said retracted position for moving said coupling means to said released position to provide for convenient coupling of said tool assembly to the fitting and automatic release of said tool assembly from the fitting after the receiving system has received a predetermined charge of refrigerant.

4,805,418
INDOOR UNIT FOR ROOM AIR CONDITIONERS
Yutaka Ishizuka, and Teruyuki Nagao, both of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan
Filed Nov. 27, 1987, Ser. No. 125,983
Int. Cl.[4] F25D *19/00*
U.S. Cl. 62—298 **2 Claims**



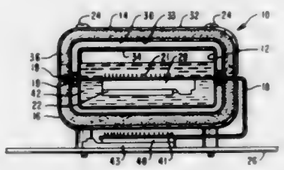
1. An indoor unit for room air conditioners, comprising;
(a) a substantially rectangular hollow case having first and second adjacent substantially perpendicular side walls;
(b) an air inlet and an air outlet in said substantially rectangular hollow case for fluidly connecting the interior and the exterior of said hollow case, and each said air inlet and air outlet being in said first side wall of said hollow case;
(c) a heat exchanger having first and second ends disposed in said case, said first end of said heat exchanger being connected to said first side wall of said rectangular case substantially at a midpoint of said first side wall, said second end of said heat exchanger being connected to said second side wall adjoining said first side wall at a portion adjacent to one end of said second side wall remote from said first side wall, and said heat exchanger separating the interior of said case into an intake compartment fluidly connected with said air inlet and a discharge compartment fluidly connected with said air outlet;
(d) a scroll-shaped blower unit disposed in said discharge compartment, said scroll-shaped blower unit having a discharge opening located at a position in which said scroll-shaped blower unit has a maximum outside diameter; and
(e) connecting means attached to said discharge opening of said blower unit and to said air outlet in said first side wall of said substantially rectangular hollow case for fluidly communicating said discharge opening and said air outlet.

4,805,419
ABSORPTION TYPE HEAT EXCHANGING APPARATUS
Tetsuro Furukawa, Saitu; Kousuke Yoshikawa, Katano; Mitsuru Mizuuchi, Nishinomiya; Masaharu Furutera, Gose; Nobuharu Sakabata, Osaka; Yoshiaki Matsushita, Maizuru; Tomoyoshi Muto, Kusamoto, and Tatsuhiko Umeda, Nara, all of Japan, assignors to Hitachi Zosen Corporation, Japan
Filed Feb. 25, 1988, Ser. No. 162,499
Claims priority, application Japan, Mar. 19, 1987, 62-66693
Int. Cl.[4] F25B *15/00*
U.S. Cl. 62—476 **4 Claims**



1. An absorption type heat exchanging apparatus having an evaporation unit, an absorption unit, a regeneration unit and a condensation unit, comprising:
diluted absorption liquid transfer pipe means whereby a diluted liquid which as absorbed a refrigerant in the absorption unit is transferred to the regeneration unit,
concentrated absorption liquid transfer pipe means whereby a concentrated absorption liquid having its refrigerant evaporated in the regeneration unit is transferred to the absorption unit,
pump means placed in one of said diluted and concentrated absorption liquid transfer piep means and having a rotary shaft,
a rotatively driving means for driving the pump means,
power take-off means placed in the other of said diluted and concentrated liquid transfer pipe means, having a rotary shaft and adapted to receive rotative driving power from the absorption liquid flowing through said other pipe means,
wherein the rotary shaft of said power take-off means being connected to the rotary shaft of said pump means.

4,805,420
CRYOGENIC VESSEL FOR COOLING ELECTRONIC COMPONENTS
Warren W. Porter, Escondido, and Donald K. Louffer, Poway, both of Calif., assignors to NCR Corporation, Dayton, Ohio
Filed Jun. 22, 1987, Ser. No. 64,626
Int. Cl.[4] F25B *19/00*
U.S. Cl. 62—514 R **12 Claims**



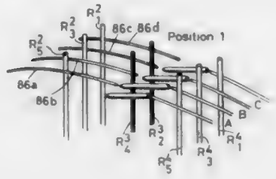
1. A cryogenic vessel for cooling electronic components, said cryogenic vessel comprising:
a pair of vessel portions, each having an outer wall and an interior immersion chamber;
a membrane member between said vessel portions for separating said immersion chambers, said membrane member having opening means therein for providing fluid transfer between the immersion chambers of said vessel portions and a portion extending from between said vessel portions to a point exterior of said vessel portions;
sealing means between said membrane member and each of said vessel portions for providing a fluid tight seal of said immersion chambers; and
electronic component mounting means on a portion of said membrane member within said immersion chambers for mounting thereon an electronic component to be cooled.

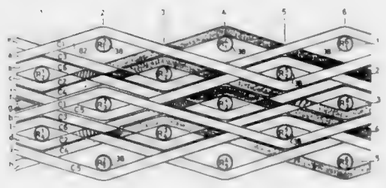
4,805,421
METHOD FOR KNITTING COMPOSITE REINFORCEMENTS
Georges J. J. Cahuzac, Saint Jean D'Illac, France, assignor to Aerospatiale Societe Nationale Industrielle, France
Filed Feb. 17, 1988, Ser. No. 157,459
Claims priority, application France, Feb. 17, 1987, 87 02013
Int. Cl.[4] D04B *9/12*
U.S. Cl. 66—13 **1 Claim**

1. A method for knitting composite reinforcements with woof threads and warp threads having a texture formed by a basic pattern constituted by fifteen woof threads R arranged in staggered relation forming six columns 1 to 6 of alternately two and three threads and at least five lines 1 to 5 perpendicular to said columns and each having three threads, and by six imbricated layers C1 to C6 of at least two parallel warp threads, namely at least twelve threads a, b, c . . . 1 each connecting every third woof thread of the same column in two adjacent lines and the warp threads of the consecutive layers connecting woof threads in alternated columns, the first thread a of the first layer C1 connecting the woof thread R of the column 2 in line 1, namely R_1^2 to the woof thread R of column 5 in line 2, namely R_2^5; the second thread b of the first layer C1 connecting the woof thread R of column 2 in line 3, namely R_3^2, to the woof thread R of column 5 in line 4, namely R_4^5; the first thread c of the second layer C2 connecting the woof thread R of column 1 in line 2, namely R_2^1, to the woof thread R of column 4 in line 1, namely Rx_1^4; the second thread d of the second layer C2 likewise connecting the woof threads R_4^1 and R_3^4, the paths of the threads of the following layers C3 . . . C6 being obtained by adding 2 to each preceding corresponding column reference, namely, for the first thread of layer $C3=R_2^{1+2}=R_2^3$ and $R_1^{4+2}=R_1^6$, etc., this pattern being capable of being enlarged in the direction of the thickness of the material to be produced with an uneven number of lines,
said method comprising rotating flexible and elastic rods

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disposed in circular rows of radially aligned N rods representing the woof threads R so that their upper ends circulate in concentric circular passages formed by filaments each including radially aligned switching means, depositing the layers of warp threads C1 to C6 under and in alignment with the filaments, elastically bending and deviating said ends of the rods by the action of said switching means by shifting said switching means between a neutral position 0, a position 1 oriented inwardly and a position 2





oriented outwardly in accordance with the following sequence during six complete rotations, namely for the basic pattern:

For the layer C1 : 1, 1, 0, 0, 0, 1×N/6
For the layer C2 : 0, 2, 2, 0, 1, 1×N/6
For the layer C3 : 2, 0, 1, 1, 0, 2×N/6
For the layer C4 : 0, 2, 2, 2, 0, 0×N/6
For the layer C5 : 1, 1, 0, 2, 2, 0×N/6
For the layer C6 : 2, 0, 1, 1, 0, 2×N/6

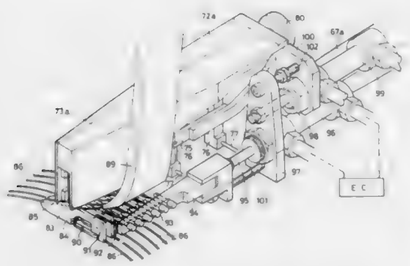
and replacing said rods by the woof threads R proper.

4,805,422

MACHINE FOR KNITTING COMPOSITE REINFORCEMENTS

Georges J. J. Cahuzac, Saint Jean d'Illac, France, assignor to Societe Nationale Industrielle et Aerospatiale, France

Filed Feb. 17, 1988, Ser. No. 157,573
Claims priority, application France, Feb. 17, 1987, 87 02013
Int. Cl.[4] D04B *9/12*
U.S. Cl. 66—13 **14 Claims**



1. A machine for knitting composite reinforcements with woof threads and warp threads having a texture formed by a basic pattern constituted by fifteen woof threads R arranged in staggered relation forming six columns 1 to 6 of alternately two and three threads and at least five lines 1 to 5 perpendicular to said columns and each having three threads, and by six imbricated layers C1 to C6 of at least two parallel warp threads, namely at least twelve threads a, b, c . . . 1 each connecting every third woof thread of the same column in two adjacent lines and the warp threads of the consecutive layers connecting woof threads in alternated columns, the first thread a of the first layer C1 connecting the woof thread R of column 2 in line 1, namely R_1^2 to the woof thread R of column 5 in line 2, namely R_2^5; the second thread b of the first layer C1 connecting the woof thread R of column 2 in line 3, namely R_3^2, to the woof thread R of column 5 in line 4, namely R_4^5; the first thread c of the second layer C2 connecting the woof thread R of column 1 in line 2, namely R_2^1, to the woof thread R of column 4 in line 1, namely R_1^4; the second thread d of the second layer C2 likewise connecting the woof threads R_4^1 and R_3^4, the paths of the threads of the following layers C3 . . . C6 being obtained by adding 2 to each preceding corresponding column reference, namely, for the first thread of layer C3=R_2^{1+2}=R_2^3 and R_1^{4+2}=R_1^6, etc., this pattern being capable of being enlarged in the direction of the thickness of the material to be produced with an uneven number of lines, said machine being of the type comprising a frame having a plurality of vertical columns, horizontal frames spaced apart one above the other and in guided relation to the columns, rotary disks provided with circular rows of radially aligned orifices and carried by the frames, corresponding rows of N vertical rods disposed in the orifices, and a knitting apparatus mounted in an upper part of said columns and comprising an annular ring having radial grooves, bars slidably mounted the grooves, an annular preasure plate for maintaining said bars, and a device for recycling the said oars, said machine comprising in an upper part thereof a fixed frame, means carried by the frame and defining therebetween horizontal concentric passages in which respectively circulate upper ends of said rows of N rods, switching means provided on said means defining the passages for switching the rods from one passage into selected one of adjacent passages, depending on a predetermined sequence, means for depositing warp threads in successive layers C1, C2 . . . C6 between said circular rows of rods, beneath said means defining said circular passages, and means for maintaining and packing the successive layers of warp threads as they are deposited.

4,805,423

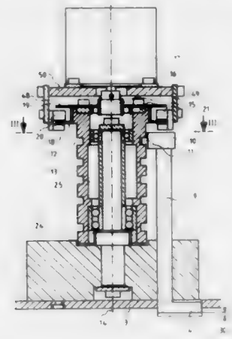
DEVICE FOR ACTUATING MOVABLE CAMS IN A FLAT KNITTING MACHINE

Fernando Hoya, Couvet, Switzerland, assignor to Edouard Dubied & Cie. S.A., Couvet, Switzerland

Filed Nov. 27, 1987, Ser. No. 127,039
Claims priority, application Switzerland, Dec. 1, 1986, 4783/86
Int. Cl.[4] D04G *7/00*
U.S. Cl. 66—78 **7 Claims**

1. Device for actuating movable cams of a flat knitting machine having a cam plate and a plurality of cams arranged thereon, said cams being movable in a direction substantially perpendicular to the plane of movement of the cam box, and to each of which a groove designed on a carrier and an engaging part running in the groove are assigned, which is mounted on a rod firmly attached to a cam involved, whereby said carrier is attached to a control shaft driven reversibly at a definite angle, characterized by the fact that the carrier is a drum on which grooves are formed in the peripheral portion of said drum at an axial distance from each other and with selected

axial positions over the periphery of said drum, an axis of rotation of drum being perpendicular to the plane of movement



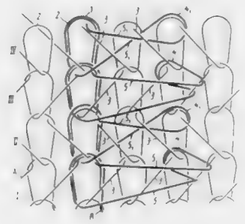
of the cam plate and being located substantially centrally with respect to said movable cams.

4,805,424

SINGLE WARP-KNITTED PILE FABRIC

Alexandr V. Charkovsky, Vitebsk; Natalya B. Dobrova, Moscow; Vladimir N. Filatov, Moscow; Nanna A. Iofis, Moscow; Alexandr S. Bukatov, Moscow; Zinaida P. Danilova, Moscow; Alexandr V. Kovarsky, Moscow, and Jury G. Egorov, Moscow, all of U.S.S.R., assignors to Vitebsky Tekhnologichesky Institut Legkoi Promyshlennosti, Vitebsk, U.S.S.R.

Filed Jan. 29, 1988, Ser. No. 150,396
Claims priority, application U.S.S.R., Jan. 23, 1987, 4177270
Int. Cl.[4] D04B *7/12*
U.S. Cl. 66—194 **5 Claims**



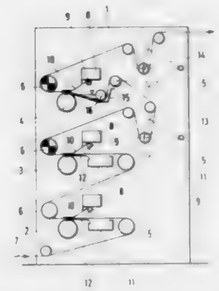
1. A single warp-knitted pile fabric of ground threads and pile threads, comprising: loop courses of the ground threads and of the pile threads, wherein the loops of the pile threads are run jointly with the loops of the ground threads; floats, respectively, of the loops of the ground threads and of the loops of the pile threads, interconnecting said courses; transfers of the pile threads laid in the same said loop courses where the loops of said pile threads are run; the floats of said transfers in some of said courses overlying the floats of the ground loops and in other ones of said courses underlying the floats of the ground loops.

4,805,425

DEWATERING DEVICE USING SUCTION REMOVAL OF LIQUID

Gerold Fleissner, Chur, Switzerland, assignor to Vepa Aktiengesellschaft, Basel, Switzerland

Filed Nov. 20, 1987, Ser. No. 123,274
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1986, 8631105
Int. Cl.[4] D06B *15/04, 21/02*
U.S. Cl. 68—20 **12 Claims**



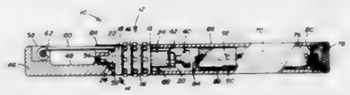
1. A device for treating a length of fibrous material, especially textile material, which comprises a plurality of suction pipes, each pipe equipped with a suction slot and arranged horizontally underneath a route of travel of the length of fibrous material, each pipe being associated with a respective unit arranged upstream thereof, said suction pipes and said wetting units being arranged in series to treat the textile material with a treatment liquid and to remove excess treatment liquid from the length of fibrous material by suction; said suction pipes being located superimposed one above the other in several tiers along one side of the device to promote accessibility to the suction slots and to facilitate cleaning of said suction slots, and guide means for providing a zigzag-like guidance of the textile material along said route of travel, said guide means including guide rolls arranged one above the other in at least two rows aligned in side-by-side relationship each row including a feed guide roll and a discharge guide roll; each of said suction pipes being associated with a discharge guide roll.

4,805,426

LOCKING DEVICE

Gary S. Dimmick, Pittsburgh, and Scott G. Lockerman, Sewickley, both of Pa., assignors to Lockmas Products Company, Inc., Pittsburgh, Pa.

Filed Jul. 27, 1987, Ser. No. 78,106
Int. Cl.[4] F05B *73/00*
U.S. Cl. 70—14 **20 Claims**



1. A locking device comprising:

a lock having a housing with a pin receiving recess formed therein;

a lock element slidably received within said lock housing, said lock element being movable relative to said lock housing between a locked position and an unlocked position,

VOL 1099 ISS 3 FEB 21 1989 UMI

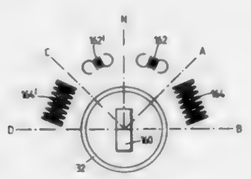
a pin housing connected to said lock element,
a pin pivotally retained on said pin housing for movement between an open position and a closed position,
said lock element being movable relative to said lock housing when said pin is in an open position,
said lock element being fixed relative to said lock housing in said locked position when said pin is received within said pin receiving recess to lock said pin in a closed position,
a length of chain for wrapping around a fixed object said chain being formed of a plurality of interconnecting links,
a slide member having a longitudinal bore therethrough and a transverse longitudinal bore communicating with said bore,
said chain extending through said longitudinal bore and from said slide member to form a loop extending from said slide member, and
said pin in the closed position extending through said transverse bore to engage said chain within said slide member to secure said slide member to said pin housing.

4,805,427

CENTRALIZED DOOR LOCKING SYSTEM

Trevor Bates; Graham Smith, both of Bedfordshire, and Gary C. Fulks, Buckinghamshire, all of England, assignors to Delco Products Overseas Corporation, Detroit, Mich.

Filed Apr. 24, 1987, Ser. No. 42,395
Claims priority, application United Kingdom, May 2, 1986, 8610859
Int. Cl.⁴ E05B *65/36*
U.S. Cl. 70—264 **5 Claims**



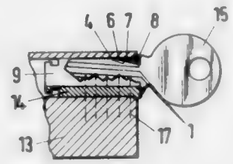
1. A centralised door locking system in a motor vehicle having a door for a driver of the vehicle, one or more doors providing access for passengers in the vehicle, and a tailgate providing access to a luggage compartment of the vehicle, in which system lockable latches are provided on all of the doors and on the tailgate, and lockable latches on the driver's door and the tailgate being key-operable lockable latches, and said lockable latches are interconnected by a switchable actuation system;
the lockable latch on the driver's door having a key movable member effective to actuate the lockable latch on the driver's door between locked and unlocked conditions and further effective to activate a first multi-position switch connected in the switchable actuation system, the key movable member of the lockable latch on the driver's door being movable from an unbiased position in one direction by key rotation against a first bias to a first biased position in which the lockable latch on the driver's door is actuated to an unlocked condition and further movable in the one direction against a second bias far stronger than the first bias to a second biased position in which the first multi-position switch is actuated to condition the switchable actuation system to unlock all of the lockable latches and further being movable from the unbiased position in the opposite direction against a third bias to a third biased position in which the first multi-position switch is actuated to condition the switchable actuation system to lock all the lockable latches;
the lockable latch on the tailgate having a key movable member effective to actuate the lockable latch on the tailgate between locked and unlocked conditions and further effective to activate a second multi-position switch connected in the switchable actuation system, the key movable member of the lockable latch on the tailgate being movable from an unbiased position in one direction by key rotation agianst a fourth bias to a fourth biased position in which the second multi-position switch is actuated to condition the switchable actuation system to lock all the lockable latches and further being movable in the opposite direction against a fifth bias to a fifth biased position in which the lockable latch on the tailgate is actuated to the unlocked condition.

4,805,428

LOCK AND KEY

Jürgen Krün, Berlin, Fed. Rep. of Germany, assignor to Zeiss Ikon AG, Fed. Rep. of Germany

Filed Aug. 4, 1987, Ser. No. 81,230
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1986, 3626550
Int. Cl.⁴ E05B *19/00*
U.S. Cl. 70—393 **11 Claims**



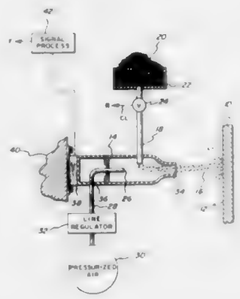
1. A lock and key, comprising:
a key having a spine and a profile shape proceeding at a first angle that differs from zero degrees relative to said spine of said key; and
a cylinder core of said lock having a profile shape within said cylinder core corresponding to said profile shape of said key, said profile shape of said cylinder core proceeding at said first angle relative to an outside surface of said cylinder core.

4,805,429

SHOT PEENING SYSTEM AND METHOD WITH VELOCITY SENSING

Robert A. Thompson, New York, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 28, 1987, Ser. No. 138,004
Int. Cl.⁴ B24C *1/10*
U.S. Cl. 72—53 **19 Claims**



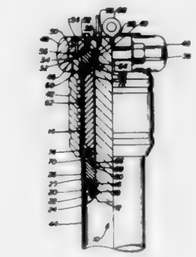
10. A method of shot peening comprising the steps of:
supplying shot to a shot peening gun;
operating the shot peening gun to expel shot; and
sensing with a force sensor the reaction force on the gun from the expulsion of the shot from said peening gun.

4,805,430

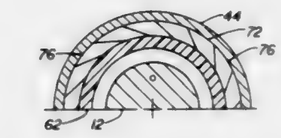
TOOL FOR COLD FORGING TUBULAR MEMBERS

Thomas R. Schmitz, Katy, and Arthur H. T. Chin, Houston, both of Tex., assignors to Cameron Iron Works USA, Inc., Houston, Tex.

Filed Oct. 13, 1987, Ser. No. 106,803
Int. Cl.⁴ B21D *26/02, 39/20*
U.S. Cl. 72—58 **9 Claims**







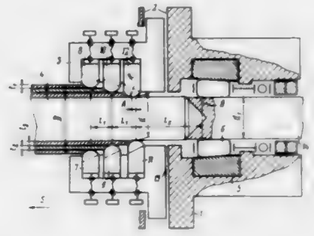
1. A tool for forging tubular members comprising
a cylindrical body having a passage extending from its upper end and exiting at an intermediate position on its outer surface,
an upwardly facing shoulder surrounding the lower portion of said body,
a downwardly facing upper shoulder surrounding the upper portion of said body,
a packer assembly surrounding said body between said shoulders and including
a resilient sleeve,
an upper anti-extrusion ring surrounding the upper end of said resilient sleeve below said downwardly facing upper shoulder,
a lower anti-extrusion ring surrounding the lower end of said resilient sleeve above said upwardly facing shoulder,
each of said rings including a plurality of segments and means urging said segments radially inward,
each of said segments being formed as though they were cut from a metal ring having an outer diameter which is substantially the same as the maximum diameter to which said segments are to be expanded.

4,805,431

CONTRIVANCE FOR THE CUTTING-DEFORMING OF CYLINDRICAL SURFACES

Gennady M. Azarevich; Boris I. Akimov, and Elena V. Kirsanova-Belova, all of Moscow, U.S.S.R., assignors to Nauchno-Proizvodstvennoe Obiedinenie Po Tekhnologii Tractornogo I Selskokhozyaistvennogo Mashinostroenia NPO Nii Tractorosselkhozmash, Moscow, U.S.S.R.

Filed Jul. 8, 1987, Ser. No. 71,087
Int. Cl.⁴ B23B *5/00*
U.S. Cl. 72—70 **1 Claim**



1. A contrivance for the cutting-deforming of cylindrical surfaces, comprising:
a housing;
a tool-holder installed in said housing for movement in a plane perpendicular to a direction of longitudinal feed of the contrivance:
a means for longitudial feed of the contrivance;
an opening in said tool-holder for a workpiece to be machined;
a main pair of cutting tools secured in said tool-holder and having oppositely disposed cutting noses disposed in one plane in relation to a cylindrical surface under machining;
at least one additional pair of cutting tools installed in said tool-holder and disposed oppositely to each other in relation to the cylindrical surface under machining, one of the cutting tools of this additional pair having a nose which is displaced relative to a nose of the other cutting tool of this additional pair in the direction of longitudinal feed by a value not exceeding the value of a radius of the noses of the cutting tools of this additional pair;
a head arranged in said housing in tandem with said tool-holder;
at least two deforming rollers arranged in said head; said deforming rollers disposed in relation to the cutting tools of said open additional pair at a first distance which is not a multiple of a second distance between said main and additional pairs of the cutting tools, the second distance being equal to 0.1–1.5 of a set-up size of the cutting tools of said additional pair.

4,805,432

DEVICE FOR AXIALLY SUPPORTING A ROLLER

René Paulhac, Sorbiers, France, assignor to Clecim S. A., Courbevoie, France

Filed Mar. 12, 1987, Ser. No. 25,116
Claims priority, application France, Mar. 12, 1986, 86 03530
Int. Cl.⁴ B21D *1/02*
U.S. Cl. 72—164 **5 Claims**

1. Device for axially maintaining a roller mounted in a fixed frame for rotation, with axial play, about an axis of said roller, said roller being merely radially maintained in working position and comprising a rotation shaft having two ends and being provided, at each said end, with an axially supporting device

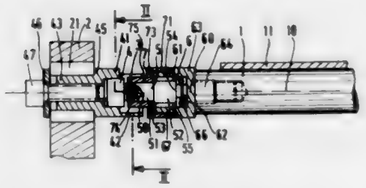
VOL 1099 ISS 3 FE 21 1989 UMI

comprising a contact ball centered about said axis of rotation and adapted to contact a wear plate mounted on said fixed frame, wherein each said axially supporting device comprises

(a) a recess provided at an end of said roller and delimited, on the roller side, by a transverse end wall and, on its periphery, by a cylindrical side wall;

(b) a support piece consisting of a cylindrical tip extended, on the roller side, by an enlarged base piece fitting inside said recess and having a diameter greater than that of said tip so as to form a shoulder between cylindrical side surfaces of said tip and of said enlarged base piece;

(c) said enlarged base piece bearing, in the axial direction,



against said transverse end wall of said recess, by means of an axial bearing, and, in the radial direction, against said cylindrical side wall of said recess, by means of a rolling bearing centering said tip about said axis of rotation;

(d) a contact bearing ball seated on an end of said tip opposed to said enlarged base; and

(e) a cap for holding the whole assembly in position, said cap being fixed onto said side wall of said tip for closing it and comprising a flat end wall provided with an orifice through which said tip passes and bearing, in the axial direction, against said shoulder formed between the cylindrical side surfaces of said tip and of said enlarged base piece.

4,805,433

MULTI-ROLL ROLLING STAND HAVING INTERMEDIATE ROLLS WHICH CAN BE DISPLACED IN PAIRS IN OPPOSITE DIRECTIONS AND HAVE TAPERED ENDS

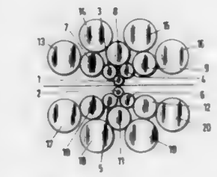
Helarich Reinschaum, Menden, Fed. Rep. of Germany, assignor to Sundwiger Eisenhutte Maschinenfabrik Grah & Co., Fed. Rep. of Germany

Filed Aug. 5, 1987, Ser. No. 81,992

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1986, 3626516; Jun. 23, 1987, 3720610

Int. Cl.[4] B21B *29/00, 31/18*

U.S. Cl. 72—242 **16 Claims**





1. Multi-roll rolling stand comprising two work rolls, each supported via a pair of intermediate rolls being axially movable and adjustable and being supported on back-up rolls, each intermediate roll having at least one reduced diameter roll barrel end and there being for each pair of intermediate rolls, at least two reduced diameter roll barrel ends adjacent each other on at least one side of the rolling stand, means for axially adjusting independently of each other the intermediate rolls (3, 4, 33, 34 and 5, 6, 35, 36 respectively) which engagingly support each said work roll (1, 31 and 2, 32 respectively), said adjacent intermediate reduced diameter roll barrel ends (21–24, 39, 40, 43, 44 respectively) being axially offset with respect to one another.

4,805,434

METHOD FOR STRAIGHT-LINE DRAWING OF ROUND MATERIAL

Karl-Heinz Koup, Aachen-Oberforsthach, and Bruno Walczak, Aachen-Eilendorf, both of Fed. Rep. of Germany, assignors to Schumag AG, Aachen, Fed. Rep. of Germany

Continuation of Ser. No. 788,782, Oct. 18, 1985, abandoned. This application Aug. 10, 1987, Ser. No. 85,275

Claims priority, application European Pat. Off., Oct. 19, 1984, 84112638.6

Int. Cl.[4] B21C *1/04*

U.S. Cl. 72—282 **10 Claims**



1. Method of straight-line drawing for reducing the cross section of round material, tubing, solid and hollow profiles in at least two drawing stages, which comprises feeding material with a leading end to a first drawing machine, drawing the material through the first drawing machine in a first drawing stage, feeding the material with the leading end in a straight line downstream of the first drawing machine, subsequently feeding the material with the leading end to at least one second drawing machine having a linearly movable intermittently operable drawing carriage operating at a discontinuous speed at the beginning of the second drawing stage while said first drawing machine is already operating continuously, being disposed downstream of the straight line, deflecting the material from the straight line upstream of the second drawing machine as soon as the leading end of the material has reached the second drawing machine, and varying the length of the deflected material for equalizing differences in feeding speed between said first and second machine.

4,805,435

METHOD FOR PRODUCING ALUMINUM DRUMS HAVING HIGHLY SMOOTH SURFACE

Minobu Sukimoto; Hiromune Chuma, both of Oyamashi, and Teruo Tachi, Kanamashi, all of Japan, assignors to Showa Aluminum Kabushiki Kaisha, Japan

Filed Jan. 27, 1988, Ser. No. 148,981

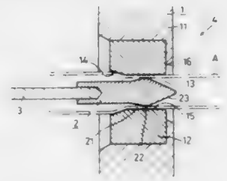
Claims priority, application Japan, Jan. 29, 1987, 62-19323

Int. Cl.[4] B21C *1/24*

U.S. Cl. 72—283 **6 Claims**

1. A method for producing aluminum drums having highly smooth surfaces from aluminum pipe, the method comprising: preparing an aluminum pipe by extrusion; and drawing the pipe through a die unit, wherein the die unit comprises a die including a first approach section having an inwardly reduced diameter and a first bearing section having a constant diameter, and a plug including a second approach section and a second

bearing section, said second approach section having an increasing diameter towards the second bearing section and the second bearing section having a constant diameter over a predetermined length, wherein the first approach section is open towards the plug at an approach angle of 45° to 75° and



wherein an approach angle between the second approach section and the second bearing section is in the range of 10° to 20°, said drawing of the pipe being in a direction where the pipe moves from the approach section to the bearing section of both the plug and die unit.

4,805,436

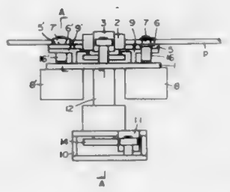
APPARATUS FOR BENDING METAL TUBE OF SMALL DIAMETER

Shigeru Saegusa, Shizuoka, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Nagaswa, Japan

Filed Nov. 12, 1987, Ser. No. 120,084

Int. Cl.[4] B21D *7/024*

U.S. Cl. 72—306 **4 Claims**



4. An apparatus for bending a metal pipe including: a support; a pipe retaining mechanism for retaining metal pipe in a linear relationship relative to said support on both sides of said retaining mechanism mounted on said support; and a pair of pipe bending units mounted in spaced relation to said retaining mechanism on said support on two opposed sides of said pipe retaining mechanism, said bending units having pipe forming rolls supported to fixtures on said support on two opposed sides of an extension of an axis of a pipe secured in said pipe retaining mechanism, said bending units further comprising press rolls pivotable about the respective forming rolls, wherein the improvement is characterized in that said support is fixed to drive means mounted on a base for rotating said support and the pipe retaining mechanism and bending units mounted on said support in the plane of said support to bend spaced apart portions of the pipe in opposed directions with substantially minimal swinging of the bent portions of the pipe during a bending process and said support is a single rigid platform with each press roll being pivotal about said respective forming rolls relative to said support and said support is rotatable by said drive means relative to said base.

4,805,437

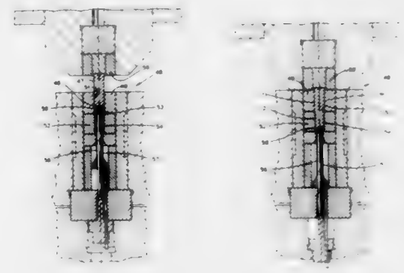
METHOD AND APPARATUS FOR PRODUCING FASTENERS HAVING WRENCHING SOCKETS THEREIN

Nicholas A. Heil, Jr., and Robert J. Schilling, both of Tiffin, Ohio, assignors to The National Machinery Company, Tiffin, Ohio

Filed Dec. 21, 1987, Ser. No. 135,610

Int. Cl.[4] B21D *37/08;* **B21K** *1/44*

U.S. Cl. 72—356 **17 Claims**



8. A method of forming metal elongated articles having a non-circular socket extending into one end, comprising pressing a circular punch into one end of a blank to form a cylindrical socket in said one end thereof, positioning a noncircular punch in said cylindrical socket, and while said noncircular punch is so positioned pressing said one end of said blank through an extrusion throat by a force applied to the other end of said blank to displace the material of said blank around said cylindrical socket into engagement with said noncircular punch to form said cylindrical socket into a non-cylindrical socket without applying substantially longitudinal forces to said non-circular punch.

4,805,438

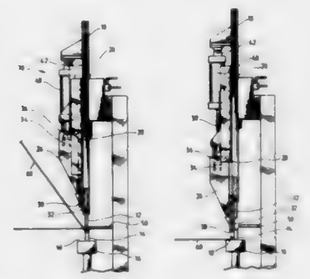
HEMMING DIE FIXTURE FOR METAL PRESSES

Albert R. Gina, Jr., Magnolia, and Lynn Widrick, Spring, both of Tex., assignors to Metal Building Components Incorporated, Houston, Tex.

Filed Mar. 5, 1987, Ser. No. 22,219

Int. Cl.[4] B21D *17/02*

U.S. Cl. 72—384 **12 Claims**



9. A method of forming a hem on a piece of sheet metal, comprising the steps of:

placing a piece of sheet metal on a first, fixed working surface of a stationary work table so that a longitudinal edge of said sheet metal lies in a plane parallel to a stationary

longitudinal bottom die providing said first, fixed, working surface;

actuating a ram, positioned above said work table, to be displaced vertically so that a primary die attached to a longitudinal bottom edge of said ram, coacts with said first, fixed, working surface of said stationary bottom die to deform said sheet metal located there between, thereby forming a full bend along said longitudinal edge of said sheet metal;

displacing said ram upwardly, away from said first, fixed, working surface thereby releasing said sheet metal;

repositioning said sheet metal to a second fixed, lower, working surface on said work table, said second, fixed, working surface being located in a different horizontal plane than the first, fixed, working surface and adjacent to said first working surface, said longitudinal edge of said sheet metal being positioned so that said full bend formed along said edge is parallel to said bottom die and said ram, and abuts against said bottom die;

said stationary bottom die thereby providing an alignment stop for said sheet metal;

engaging a hemming die assembly so that a hemming die is automatically displaced along a front face of said ram until it is locked into a working position below and adjacent to said primary die, and above said lower, fixed, second working surface on said stationary work table; and

actuating said ram a second time so that said primary die is again brought into relative engagement with said bottom die, while said hemming die simultaneously coacts with said fixed, second, lower working surface to compress said full bend of said sheet metal, thereby forming a hem along the longitudinal edge of said piece of sheet metal.

4,805,439

WORK FOLLOWING APPARATUS AND METHOD FOR PRESS WORKING

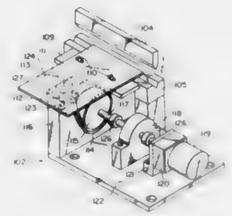
Shigeo Kobayashi; Osamu Yoshida; Haruo Saito; Tsutomu Shigeta; Hiroshi Nara; Shinji Abe, and Kiyoharu Yamamoto, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

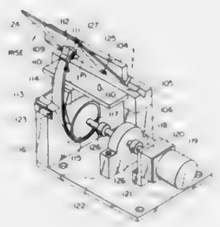
Filed Sep. 8, 1987, Ser. No. 94,405

Claims priority, application Japan, Sep. 5, 1986, 61-207815; Dec. 5, 1986, 61-288916; Mar. 17, 1987, 62-60053

Int. Cl.[4] B21D *11/22*

U.S. Cl. 72—419 **25 Claims**





24. A work following method for controlling the movement of the free portion of a work during press working process to prevent the free portion of the work from warping and for restoring the work to its initial position after the same has been pressed by using a work following apparatus comprising: a base plate fixed to the bed of the press brake; a drum case fixedly disposed at one end of said base plate; a work holding means which holds to the free portion of a work positioned on the work supporting table of the press brake and moves together with the free portion of the work during the press working process; a work holding means holding member fixedly holding said work holding means; a positioning block fixedly mounted on said drum case so as to receive said work holding means holding member thereon to position said work holding means holding member at a predetermined seating position; a drum rotatably supported within said drum case; an elongate elastic member having one end fixed to said work holding means holding member, and the other end fixed to the circumference of said drum, and wound on said drum; a shaft extending concentrically with said drum and having one end fixedly mounted with said drum, a clutch means having an output member fixedly connected to the other end of said shaft, a bracket fixed to said base plate, a reduction gear fixed to said bracket and having an output shaft connected to the input member of said clutch means; a motor fixed through said reduction gear to said bracket and having an output shaft connected to the input shaft of said reduction gear; a sensor provided on said positioning block to detect the arrival of said work holding means holding member at the seating position; and a control unit including a microcomputer which controls said work holding means, said clutch means, the press brake and an industrial robot in accordance with a control program, and an interface which receives external detection signals, gives signals corresponding to the external signals to the microcomputer and transmits command signals provided by the microcomputer to circuits respectively for driving said work holding means, said clutch means and the press brake, said work following method comprising steps of:

connecting the press brake, the work following device and the industrial robot to a power source;

starting the control program to actuate the robot for feeding a work to the press brake;

energizing the work holding means so as to hold to the work upon the detection of placement of the work at a predetermined position on the press;

lowering the ram of the press brake to press the work between the movable die secured to the ram and a fixed die fixed to the bed of the press brake;

allowing the work holding member to follow the movement of the free portion of the work as the work is pressed;

raising the movable die after the movable die has been kept at the lowermost position for a predetermined time;

engaging the clutch means upon the detection of the arrival of the movable die at the uppermost position so that the drum is rotated to wind an elongate elastic member gradually on the drum;

disengaging the clutch means upon the detection of the arrival of the work holding means holding member at the seating position on the positioning member by the sensor to stop the rotation of the drum;

actuating the industrial robot to transfer the pressed work from the press brake to a predetermined position; and

returning the industrial robot to its home position.

4,805,440

PUNCHING OR STAMPING MACHINE

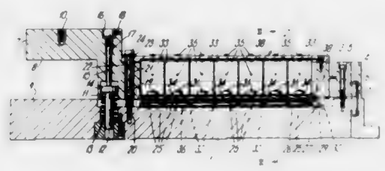
Henricus J.P. Lenders, Tilburg, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 16, 1987, Ser. No. 62,759

Claims priority, application United Kingdom, Aug. 22, 1986, 8620470

Int. Cl.[4] B21D *37/12*

U.S. Cl. 72—455 **6 Claims**



1. A punching or stamping machine comprising a fixed first member carrying a first tool and a movable second member which carries a second tool for cooperation with the first tool in the operation of the machine, the second member being supported by the first member and being connected thereto by means which permit operative vertical movement of the second member relative to the first member, wherein the first and second members are of elongate form and extend substantially parallel with one another and carry the respective tools at one end, the connecting means between the two members comprise a resiliently flexible web which lies in a horizontal plane and which is joined to each member at the end thereof remote from the respective tool, the two members are made of the same material and the movable second member is of hollow construction, and the two members are further interconnected by flexible elements which are made of a material of good thermal conductivity for transferring heat between the two members, said connecting means comprising said web providing for substantially free movement of said first and second members in the direction of operative vertical movement and being substantially fixed against movement in a substantially horizontal direction perpendicular to said direction of operative vertical movement.

4,805,441

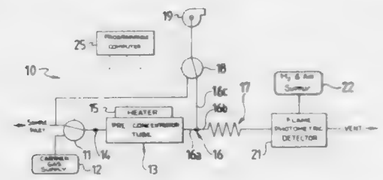
CONTINUOUS AIR MONITORING APPARATUS AND METHOD

Gary D. Sides, Alabaster, and Marion H. Cates, Pinson, both of Ala., assignors to CMS Research Corporation, Birmingham, Ala.

Filed Feb. 22, 1988, Ser. No. 158,334

Int. Cl.[4] G01N *30/08*

U.S. Cl. 73—23.1 **20 Claims**



1. Apparatus for use in gas chromatography comprising:

(a) a gas chromotographic column;

(b) a solid sorbent preconcentrator tube in communication with said gas chromatographic column;

(c) means for selectively introducing an airstream to be sampled or a carrier gas to said solid sorbent preconcentrator tube at ambient temperatures;

(d) means for selectively venting said carrier gas, intermediate said preconcentrator tube, and said gas chromatographic column; and

(e) means for backflushing said gas chromatographic column with a gas.

4,805,442

KNOCKING SENSOR FOR INTERNAL COMBUSTION ENGINE

Shigeo Okamura, and Koshiro Inaba, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 908,259, Sep. 17, 1986, abandoned. This application May 17, 1988, Ser. No. 195,488

Claims priority, application Japan, Sep. 19, 1985, 60-205267

Int. Cl.[4] G01L *23/22*

U.S. Cl. 73—35 **10 Claims**



1. A knocking sensor for an engine having at least two cylinders spaced so that the engine construction effects vibration damping therebetween that fire alternatively, a knocking sensor mounted in proximity to one of said cylinders and spaced from the other of said cylinders, means for effecting and recording a reference signal commencing immediately after the other of said cylinder fires, and means for comparing the signal from said knocking sensor with said reference signal commencing immediately after the one cylinder fires to determine a knocking condition in the one cylinder.

4,805,443

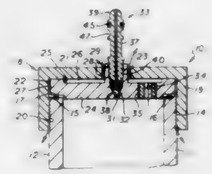
PRESSURE VESSEL FOR TESTING FLUID SAMPLES

Royce E. Schroeder, Spring, Tex., assignor to OFI Testing Equipment, Inc., Houston, Tex.

Filed Mar. 14, 1988, Ser. No. 167,552

Int. Cl.[4] B65D *51/16*; G01N *15/04*

U.S. Cl. 73—37 **13 Claims**



1. A pressure vessel for containing test samples of substances to be subjected to high temperature and pressure conditions compriaing;

a hollow cylindrical container having a side wall, a closed end wall and an open end,

said side wall having an end surface and external threads at said open end,

a cylindrical disk removably received on and closing said container open end,

said disk having a reduced diameter cylindrical neck portion extending beyond the surface thereof and having a

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threaded bore communicating between the interior and exterior of said container through said disk and operable to receive conventional threaded fittings for connecting pressurizing and/or monitoring apparatus to the vessel to pressurize the contents and/or monitor the conditions inside the container,

seal means between said container end surface and said disk,

a hollow cylindrical cap member having an internally threaded side wall, and end wall with a central hole of greater diameter than said disk neck portion to define an annular passageway therebetween, said cap member side wall being greater in diameter than the diameter of said disk,

said cap member being threadedly received on said container over said cylindrical disk to secure the same in place,

the inside of said cap member being radially spaced from said disk and said disk neck portion being received through the hole in said cap top wall,

said cap member and container threads being sized to provide a threaded connection which may be made up by hand and with a sufficiently loose fit whereby pressure or gases may escape through the thread convolutions, and

the assembled pressure vessel having pressure relief passageways around the circumference of said cylindrical disk, between said disk neck portion and the hole in said cap and through the threaded connection between said cap and container whereby pressure, fluids, or gases may escape upon failure of said seal means.

4,805,444

SECONDARY CONTAINMENT SYSTEM

Michael C. Webb, 15 E. Uwchlan Ave., Exton, Pa. 19341

Filed Oct. 1, 1987, Ser. No. 103,206

Int. Cl.⁴ G01M *3/04*

U.S. Cl. 73—40.5 R 20 Claims



1. In a pumping system for fluid products, such as gasoline, diesel fuel and chemicals, and including a pump for pumping such products from a storage tank through a primary pipeline to a product dispenser, the improvement comprising a secondary containment system for the pipeline between the storage tank and the product dispenser and including a secondary pipe system surrounding said primary pipeline, said secondary pipe system including telescoping pipe sections of different diameters, which are installed around the primary pipeline and which are, prior to final installation, movable between intermediate and final positions, for enabling completion, testing and inspection of the primary pipeline prior to final completion of the secondary containment system.

4,805,445

PROCESS FOR MONITORING THE LEAKTIGHTNESS OF A STORAGE FACILITY

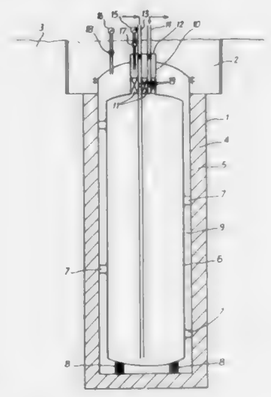
Jacques Grappe, Paris, France, assignor to Societe Francaise de Stockage Geologique- Geostock, Rueil Malmaison Cedex, France

Filed Jun. 26, 1987, Ser. No. 66,669

Claims priority, application France, Jul. 2, 1986, 86 09650

Int. Cl.⁴ G01M *3/32*

U.S. Cl. 73—49.2 12 Claims



1. Method for storing a fluid product under pressure, comprising the following steps:

providing around said material a leakproof inner enclosure (6) and a leakproof and rigid outer enclosure (5),

providing spacing means (7, 8) for maintaining an intermediate space (9) between the two enclosures so that a first fluid continuous in phase can be circulated in said intermediate space, said first fluid having a known composition and exhibiting a first pressure other than that of the material stored,

providing, in the inner enclosure, an opening in the shape of a neck (10), said neck extending outwards at least as far as the outer enclosure (5), said neck being closed by an outer closure (12), and also being closed by an inner plug (11) at the height of the inner enclosure, said neck containing conduits (13, 14) for conveying said stored material into or out of the inner enclosure (6),

introducing in said neck a second fluid continuous in phase, having a second known composition and exhibiting a second pressure other than the pressure of the stored material, and

providing monitoring means (15, 17) for monitoring said second pressure and said second composition of said second fluid.

4,805,446

PORTABLE MEANS FOR TESTING AUTOMATIC TRANSMISSIONS

Robert J. Brown, 3297 Bedford Rd., Hastings, Mich. 49058

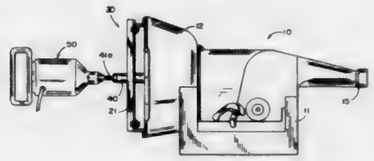
Filed Oct. 30, 1987, Ser. No. 114,755

Int. Cl.⁴ G01M *19/00*

U.S. Cl. 73—118.1 4 Claims

4. A portable machine for testing a rebuilt automatic transmission having a bell housing and a torque converter assembly prior to installation on the vehicle, said machine comprising: a saddle having a cross bar and a pair of brackets, one adjacent each end, each of said brackets having a foot portion adapted to seat against the forward end surface of the transmission's bell housing for receiving a fastener element for detachably securing it to said bell housing; a journal secured to said cross

bar and a shaft rotatably mounted in said journal; the axis of said shaft being aligned with the axis of said torque converter; first means for separately adjusting the spacing between said brackets and second means for adjusting the position of said



journal lengthwise of said bar, third means permitting the selection of different ones of the openings in the bell housing to effect alignment of the axes of said shaft and torque converter; the opposite end of said shaft being adapted to be secured to a portable source of variable speed rotary motion.

4,805,447

DEVICE FOR DETECTING AN ABNORMALITY OF A ROTATION SENSOR

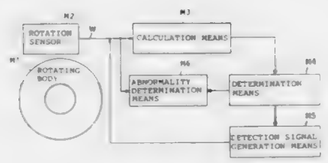
Kazuhisa Meguro, and Yuichi Ono, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 31, 1988, Ser. No. 200,415

Claims priority, application Japan, Jun. 2, 1987, 62-138763

Int. Cl.⁴ G01L *5/28*

U.S. Cl. 73—121 6 Claims



1. An abnormality detection device for a rotation sensor which generates an electrical signal based on rotation of a rotating body, comprising:

calculation means responsive to the electrical signal from said rotation sensor for calculating a rotating speed and a rotating acceleration of the rotating body;

determination means for generating a determination signal when the calculated rotating acceleration is greater than a predetermined value and the calculated rotating speed is zero;

detection signal generation means responsive to the determination signal for generating a detection signal and inputting said detection signal into the rotation sensor, said rotation sensor generating a return signal in response thereto; and

abnormality determination means for detecting a change in the return signal and for determining that the rotation sensor is abnormal based on the change.

4,805,448

DOWNHOLE PRESSURE AND/OR TEMPERATURE GAUGES

Richard A. Armell, Angus, Scotland, assignor to Drexel Equipment (UK) Limited, London, England

Filed Aug. 18, 1987, Ser. No. 86,677

Claims priority, application United Kingdom, Aug. 20, 1986, 8620212

Int. Cl.⁴ E21B *47/00*

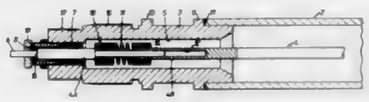
U.S. Cl. 73—151 13 Claims

1. In an assembly for continuously monitoring down-hole pressure or temperature parameters in an oil or gas well or other remote location accessible only along a narrow passageway,

means defining a sensing element having a longitudinal axis and two further axes each orthogonal to the longitudinal axis, the sensing element being subject to angular deflection about the longitudinal axis over a limited range in response to any change in the parameter being measured and motion in the direction of the longitudinal axis of the sensing element,

means for recording on a continuous basis the said changes in the parameter sensed by the sensing element and converted to said angular deflection,

elongate means coupling the sensing element and the continuous recording means,



means supporting the elongate means at spaced locations along the length of the elongate means, the supporting means including

an elongate housing, and

a compliant device interposed along the length of the elongate coupling means, said compliant device exhibiting torsional rigidity such that the angular deflection of the sensing element is transmitted with high precision to the recording means while any motion of the sensing element in the direction of said longitudinal axis is accommodated by the compliant device substantially without transmission of the motion of the sensing element in the direction of the longitudinal axis of the sensing element.

4,805,449

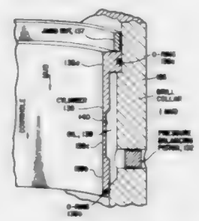
APPARATUS AND METHOD FOR MEASURING DIFFERENTIAL PRESSURE WHILE DRILLING

Pralay K. Das, Sugar Land, Tex., assignor to Anadrill, Inc., Sugar Land, Tex.

Filed Dec. 1, 1987, Ser. No. 126,645

Int. Cl.⁴ E21B *47/06*

U.S. Cl. 73—151 23 Claims



1. An apparatus for measuring the difference of pressure of fluids internal and external a pipe, comprising:

(a) first means disposed along said pipe for detecting axial deformation of said pipe and for generating a first signal representative thereof;

(b) second means disposed along said pipe in proximity to said first means, for detecting hoop deformation of said pipe and for generating a second signal representative thereof;

(c) means responsive to said first and second signals for providing pressure determinations representing the difference of pressure between the fluids internal and external the pipe as a substantially linear function of the difference of said first and second signals.

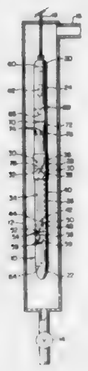
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4,805,450

METHOD OF LOCATING HYDROCARBON PRODUCING STRATA AND THE INSTRUMENT THEREFOR

Richmond Bennett, Columbus, Ohio; Paul D. Schettler, and Todd D. Gustafson, both of Huntingdon, Pa., assignors to Columbia Gas System Service Corporation, Columbus, Ohio

Filed Feb. 1, 1988, Ser. No. 151,162
Int. Cl.[4] E21B *49/00*
U.S. Cl. 73—155 **20 Claims**



15. Apparatus for measuring the mass flow rate of gas in a well comprising,

an instrument mounted in said well, said instrument having a tracer gas dispensing means near one end and a tracer gas concentration measuring means near the other end,

a source of tracer gas in said instrument,

means connecting the source of tracer gas to the gas dispensing means, and

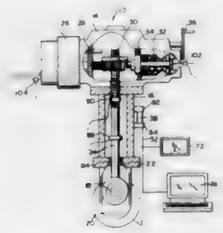
means for discharging said tracer gas through said dispensing means at a constant mass flow rate.

4,805,451

SYSTEM FOR EVALUATING THE CONDITION AND PERFORMANCE OF A VALVE AND VALVE OPERATOR COMBINATION

Robert L. Leon, Roslyn, Pa., assignor to Liberty Technology Center, Inc., Conshohocken, Pa.

Filed Aug. 20, 1987, Ser. No. 87,541
Int. Cl.[4] F16K *31/05*; G01L *5/00*
U.S. Cl. 73—168 **27 Claims**



1. A device for measuring and indicating the forces on a valve stem of a valve having a valve stem, and a valve yoke over at least a portion of the valve stroke, the device comprising:

first strain sensor means for sensing strains experienced by the valve yoke along a strain axis, the first strain sensor means being secured to the valve yoke parallel to the strain axis, the first strain sensor for generating electrical signals proportional to the sensed valve yoke strains, the valve yoke strains being proportional to forces on the valve yoke and being equal and opposite to the forces created on the valve stem during valve operation including seating, backseating and packing forces so that the generated electrical signals are also proportional to the forces on the valve stem; and

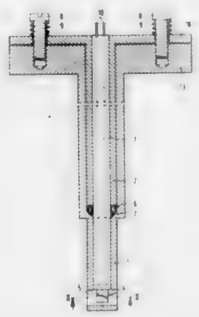
display means electrically connected to the first strain sensor means for receiving the electrical signals and for indicating the forces on the valve stem.

4,805,452

DEVICE FOR THE THERMAL MEASUREMENT OF THE MASS FLOW GASES AND LIQUIDS

Kurt Eiermann, Pfungstadt; Reiner Goebel, Hanau; Peter Gries, Goetzenhain, and Martin Hohenstatt, Hammersbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 18, 1986, Ser. No. 931,777
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1985, 3542788
Int. Cl.[4] G01F *1/68*
U.S. Cl. 73—204.26 **17 Claims**



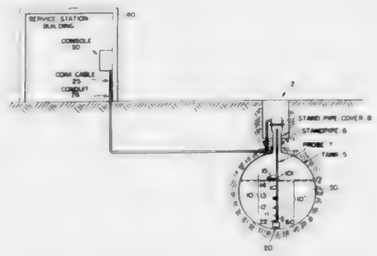
1. A device for the use in the thermal measurement of the mass flow of gases and liquids in pipelines comprising a protective tube with a longitudinal axis extending along its length and a centrally located longitudinal bore formed therein which is parallel to the longitudinal axis thereof, said protective tube having a transverse cylindrical bore formed therein which is at a distal end thereof, said transverse bore being oriented 90° with respect to the central longitudinal bore and positioned such that the longitudinal bore opens into said transverse bore; a temperature dependent thin film resistor located in said transverse bore and forming part of a bridge circuit, the length to diameter ratio of said transverse bore being greater than 1.5, the metal layer of the thin film resistor being aligned parallel to the axis of said transverse bore and said protective tube, in the region of the transverse cylindrical bore, is of hexagonal external shape and the transverse cylindrical bore runs perpendicular to two parallel faces of the hexagonal shaped portion of said protective tube.

4,805,453

TANK SONIC GAUGING SYSTEM AND METHODS

John S. Haynes, Greensboro, N.C., assignor to Gilbarco, Inc., Greensboro, N.C.

Division of Ser. No. 039,772, Apr. 14, 1987, Pat. No. 4,748,846, which is a continuation of Ser. No. 884,870, Jul. 10, 1986, abandoned, which is a continuation of Ser. No. 753,795, Jul. 8, 1985, abandoned, which is a continuation of Ser. No. 434,386, Oct. 14, 1982, abandoned. This application Dec. 24, 1987, Ser. No. 138,911
Int. Cl.[4] G01F *23/28*; G01H *05/00*; G01S *15/08*
U.S. Cl. 73—292 **20 Claims**



1. A method of ultrasonic measurement of liquid level comprising the steps of:

(a) transmitting from a transducer periodic bursts of ultrasonic pulses;

(b) setting an ultrasonic receiver at a predetermined sensitivity;

(c) adjusting the sensitivity of said receiver until a first reflection of said periodic bursts is detected;

(d) setting as a first value for the echo delay time the time between the detection of said first reflection and the transmission of the pulse burst which was reflected to form said burst reflection;

(e) adjusting the sensitivity and measuring subsequent echo delay times between the detection of reflections and the transmission of the pulse bursts causing said reflections;

(f) measuring an echo delay time difference between the most recently measured echo delay time and the next most recently measured echo delay time;

(g) assigning the most recently measured echo delay time as the new value of a said echo delay time if said echo delay time difference is equal to one period of said pulses in said burst;

(h) adjusting the sensitivity if said echo time difference is less than or equal to one period of said pulses in said burst;

(i) terminating the measurement of said echo delay time if said sensitivity is at a predetermined limit;

(j) choosing as an echo time to be used in ranging the next most recently measured echo delay time if said echo delay time difference exceeds one period of said pulses in said burst; and

(k) using said echo delay time to determine the desired liquid level.

4,805,454

CONTINUOUS FLUID LEVEL DETECTOR

Francis E. LeVert, 1909 Matthew La., Knoxville, Tenn. 37923

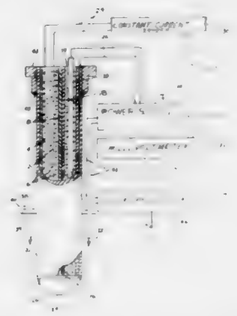
Filed Aug. 11, 1986, Ser. No. 895,284
Int. Cl.[4] G01F *23/22*
U.S. Cl. 73—295 **4 Claims**

1. A fluid level detector comprising:

a junctionless thermocouple cable consisting of two thermoelectric elements enclosed in a metallic sheath wherein a negative resistance temperature coefficient insulant is interpositioned between the thermoelectric elements and the inner surface of the metallic sheath thereby providing electrical insulation and thermal energy transfer between the thermoelectric elements;

a metallic sheathed resistance heater, which is used to input thermal energy to the fluid level detector;

an outer metallic cylindrical tube capable of being sealed on one end, into which said junctionless thermocouple cable and resistance heater are inserted and held in place by mechanically swaging or drawing, to reduce the outer diameter of said metallic cylindrical tube, thereby causing mechanical interference and thermal energy transfer between the inner surface of the outer metallic sheath, and the sheaths of said thermocouple cable and said resistance heater;



separate means for supplying electric currents to said thermoelectric elements and to said resistance heater; and,

electronic and computing means for measuring the loop resistance of the thermoelectric elements with a temporary junction, caused by a temperature gradient at an axial location, across an interface between a liquid and a gas in a tank, along said thermocouple cable contained in said metallic cylindrical tube, which is formed when the resistance heater is used to raise the temperature of the level measuring device above the temperature of the liquid in which it is submerged, and for estimating the distance to the temporary junction, and hence the level of fluid using the output of said resistance measuring means.

4,805,455

MUSCLE TESTING APPARATUS AND METHOD

Daniel DeGiorno, Fort Salonga; Henry Medias, Melville, and William R. Accolla, Sea Cliff, all of N.Y., assignors to MYOTECH Corp., Boca Raton, Fla.

Filed Apr. 24, 1987, Ser. No. 42,475
Int. Cl.[4] A61B *5/22*
U.S. Cl. 73—379 **14 Claims**

5. A method of comparing the strengths of first and second selected muscles or muscle groups of a subject, comprising the steps of:

stabilizing the subject's body;

determining the range of motion of a first body area moved by the first selected muscle or muscle group;

locating a force sensing means in said range;

contacting the sensing means with the first body area;

flexing the first selected muscle or muscle group to apply a first force against the sensing means for a first test period;

measuring a selected parameter of the first force;

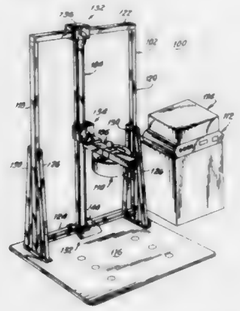
determining the range of motion of a second body area moved by the second selected muscle or muscle group;

locating the force sensing means in the range of motion of the second body area;

contacting the sensing means with the second body area;

flexing the second selected muscle or muscle group to apply

a second force against the sensing means for a second test period;
measuring a selected parameter of the second force; and



displaying a signal representing a comparison of the selected parameters of the first and second forces.

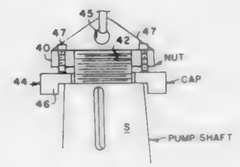
4,805,456
RESONANT ACCELEROMETER
Roger T. Howe, Belmont, Mass., and Shih-Chia Chang, Troy, Mich., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed May 19, 1987, Ser. No. 52,026
Int. Cl.[4] G01P *15/10*
U.S. Cl. 73—517 AV **35 Claims**



1. An accelerometer comprising:
a weight;
at least 2 micromachined mechanical beams for substantially equally suspending the weight from a support, one arm having one end attached to one side of the weight and the second arm having one end attached to an opposite side of the weight such that respective longitudinal axes of the one and second arms form a common axis through the weight, said arms vibrating at respective resonant frequencies in respective planes through the common axis; and
means for measuring a difference in resonant frequencies between said one arm and second arm to provide an indication of acceleration in a direction along the common axis, the respective resonant frequency of each arm changing as a function of extension or compression of the arm due to acceleration of the support.

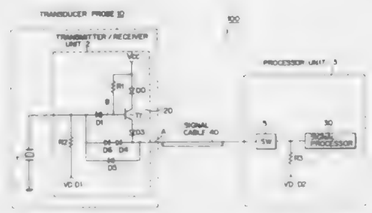
4,805,457
SHAFT TO IMPELLER INTEGRITY DETERMINATION IN ASSEMBLED PUMPS BY REMOTE SENSING
James H. Oates, Gilroy; Lan K. Liu, Morago; Swaminathan H. Sundaram, and Hassanali Tafarrodi, both of San Jose, all of Calif., assignors to General Electric Company, San Jose, Calif.
Filed May 28, 1987, Ser. No. 54,930
Int. Cl.[4] G01H *1/14*
U.S. Cl. 73—572 **10 Claims**

1. A process of testing a casing-enclosed shaft and impeller without removal of said shaft and impeller comprising the steps of:
placing said casing-enclosed shaft and impeller in a static condition;
suspending the casing-enclosed shaft and impeller in the casing;
observing said suspended casing-enclosed shaft and impeller as suspended relative to said casing and noting the boundary conditions of said suspension;
suspending a model of said shaft and impeller exterior of a casing and duplicating said observed boundary conditions of suspension:
vibrating said model as suspended with said duplicated boundary conditions of suspension;
simultaneous with said vibrating of said model reproducing



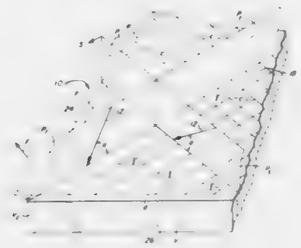
suspected defects of said suspended casing-enclosed shaft and impeller on said model of said shaft and impeller;
analyzing the vibrational signature of said model of said shaft and impeller and correlating said signature to said reproduced defects;
vibrating said suspended casing-enclosed shaft and impeller without disassembly,
analyzing the vibrational signature of said casing-enclosed shaft and impeller; and,
correlating the vibrational signature of said model of said shaft and impeller to the vibrational signature of said suspended casing-enclosed shaft and impeller to determine the structural integrity of said suspended shaft and impeller.

4,805,458
ULTRASONIC IMAGING APPARATUS INCLUDING IMPEDANCE CONVERTER
Tsuyoshi Yoshie, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 1, 1987, Ser. No. 91,946
Claims priority, application Japan, Sep. 30, 1986, 61-229690
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—602 **5 Claims**



1. An ultrasonic imaging apparatus comprising:
transducer probe means including at least one transducer element for transmitting an ultrasonic beam toward an object under exmaination, and for receiving an echo of said beam and converting the echo into an echo signal;
signal processing means for processing said echo signal derived from said transducer probe means;
echo-signal transmission means connected between said transducer probe means and said signal processing means for transferring said echo signal from said transducer probe means to said signal processing means via said echo-signal transmission means; and
emitter follower means having an emitter resistor and being provided within said transducer probe means except for said emitter resistor, for converting a high input impedance into a low output impedance, and for outputting said echo signal with the low output impedance to said signal processing means via said echo-signal transmission means, said emitter resistor being connected to the connection between said echo-signal transmission means and said signal processing means.

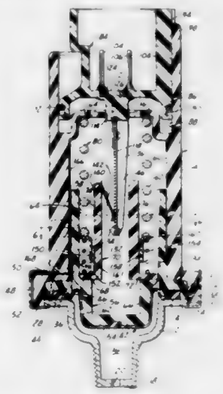
4,805,459
ULTRASONIC TESTING METHOD
Nicholas C. Ferreira, Manchester, Conn., assignor to Aerospace Testing Lab, Inc., Windsor, Conn.
Filed Feb. 29, 1988, Ser. No. 162,051
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—620 **15 Claims**



1. In an ultrasonic sound scanning method for detection of ultrasonic anomalies in a workpiece having an inspection surface and at least one formation which results in an echo-masked zone in the workpiece, the method including carrying out an inspection pass by (a) directing a beam of ultrasonic sound pulses from a probe along a beam axis through a transmission medium and impinging the beam upon the inspection surface at a selected impingement angle and thence into the workpiece, (b) receiving echo pulses thereby reflected from the workpiece, (c) displaying the echo pulses to reveal those, if any, which indicate the existence of anomalies within the workpiece, and (d) traversing the beam in a pre-selected path along the inspection surface, the improvement comprising: making one or more first inspection passes with the probe oriented so that, relative to the workpiece, the beam lies within one or more first scanning planes which are non-perpendicular to at least one said return-reflecting formation at its point or respective points of intersection with the first plane or planes, whereby to reduce the volume of the echo-masked zone relative to that which would be generated with the probe oriented in a corresponding number or one or more scanning planes which are perpendicular to said at least one return-reflecting formation.

4,805,460
OIL PRESSURE TRANSDUCER
Joseph T. Betterton, Arab; Alfred H. Glover, Decatur; Ranald L. Griffin, Huntsville, all of Ala., and Anthony J. Kerstiens, El Paso, Tex., assignors to Chrysler Motors Corporation, Highland Park, Mich.
Filed Nov. 3, 1987, Ser. No. 116,438
Int. Cl.[4] G01L *7/08, 9/02*
U.S. Cl. 73—725 **2 Claims**

1. An improved fluid pressure transducer, comprising: generally hollow first and second housing members attached together in an end to end manner; a diaphragm member with a peripheral edge and a flexible mid portion, the edge being attached between the housings and the mid portion having first and second surfaces whereby the first surface is exposed to pressurized fluid and the second surface is exposed to atmosphere thereby generating a net pressure force on the mid portion; a piston member having an end portion operatively attached to the mid portion, an integral tubular portion of the piston extending within the second housing, whereby the piston is supported for axial reciprocation in the interior of the second housing corresponding to the movements of the mid portion; the second housing having an outwardly extending end wall which defines an end recess; a terminal support member insertably adjustable within the recess and having an elongated central portion which extends generally co-axially into the interior of the second housing; an electrical circuit board attached to the terminal support member and extending in the

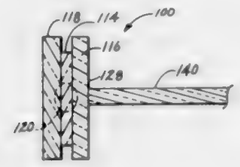


axial direction with respect to the piston member and through the interior of the tubular piston, an electrical resistance grid on one exposed surface of the circuit board; a contact support member attached to the piston for movements therewith and having a contact thereon adapted to slide along the elongated grid as the piston moves relative to the stationary circuit board; the central portion of the terminal support member is separated into two spaced side edge portions to engage and support the board yet expose the surface of the board and the grid thereon to the contact portion of the assembly, whereby the resistance of a pressure indicating circuit including the contact and the circuit board varies in response to the relative movement therebetween and corresponding to the pressure of fluid adjacent to the diaphragm.

4,805,461
TRANSDUCER AND SYSTEMS FOR HIGH SPEED MEASUREMENT OF SHOCK LOADS
Y. M. Gupta, and Paul D. Horn, both of Pullman, Wash., assignors to Washington State University Research Foundation, Inc., Pullman, Wash.
Filed Oct. 2, 1987, Ser. No. 104,204
Int. Cl.[4] G01L *1/24*
U.S. Cl. 73—800 **37 Claims**

1. An optical stress transducer for use in measuring high stresses applied at high loading rates with a time resolution of at least one microsecond, and having the ability to discern stress from nonhydrostatically applied loads, the transducer comprising:
a transducer piece made of a luminescent crystalline material that exhibits a frequency shift in luminescent output as a function of stress, the transducer piece substantially comprising a single crystal within a detection area, said transducer piece being specifically positioned in a known orientation relative to the direction of at least one applied

force; the transducer piece having first and second faces which are substantially flat and parallel and adapted to receive applied force, the faces being separated by a thickness dimension which is substantially uniform over the faces of the transducer piece; the transducer piece also having at least one minimum lateral dimension which defines a minimum width across the faces of the transducer piece; said minimum lateral dimension being sufficient so that a strain rarefaction wave which propagates inwardly from an outer edge of the transducer piece during high stress conditions, does not reach the detection



area of the transducer piece within a time period sufficient for information indicating stress to be detected from said detection area;

a first support piece having an inner face which is substantially flat and engages the transducer piece to apply an approximately uniform stress over the first face of the transducer piece; and

a second support piece having an inner face which is substantially flat and engages the transducer piece to apply an approximately uniform stress over the second face of the transducer piece.

4,805,462

METHOD AND APPARATUS FOR CONTINUOUSLY MEASURING A FLOW RATE OF A STREAM OF FLOWABLE BULK MATERIAL

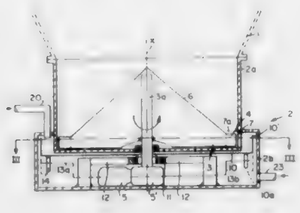
Hartmut Labuchies, Aisbach-Haehnlein, Fed. Rep. of Germany, assignor to Carl Schenck AG, Darmstadt, Fed. Rep. of Germany

Filed May 3, 1988, Ser. No. 189,535

Claims priority, application Fed. Rep. of Germany, May 25, 1987, 3717615

Int. Cl.[4] G01F *1/82*

U.S. Cl. 73—861.36 **19 Claims**



11. An apparatus for continuously determining a delivery rate signal for a stream of loose, flowable bulk material, comprising housing means for enclosing said apparatus, measuring wheel means for transporting said bulk material through an approximately semicircular path, material supply means for feeding bulk material into an inlet of said semicircular path, bulk material outlet means for removing said bulk material from said semicircular path, said inlet being spaced from said outlet means by approximately 180°, mounting means including a substantially vertical drive shaft for said measuring wheel means and bearing means for said drive shaft, drive means connected to said drive shaft for rotating said measuring wheel means, said mounting means comprising connecting rods for restraining said bearing means in such a way that a centrifugal force effective on said measuring wheel means due to said bulk material being present on said measuring wheel means, is measurable, and force sensing means operatively connected to said bearing means for sensing said centrifugal force to provide said delivery rate signal.

4,805,463

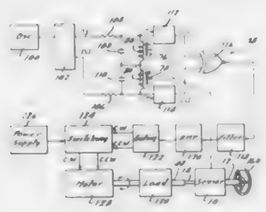
TORQUE TRANSDUCER

William L. Kelledes, Brighton, and Walter K. O'Neil, Birmingham, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 520,358, Aug. 4, 1983, abandoned, which is a continuation of Ser. No. 255,919, Apr. 20, 1981, abandoned. This application May 11, 1987, Ser. No. 48,159

Int. Cl.[4] G01L *3/10*

U.S. Cl. 73—862.33 **45 Claims**



1. A transducer comprising:

first and second members mounted for relative displacement;

at least one inductor;

control means in circuit with said inductor operative to effect flow of alternating current therethrough to establish an electromagnetic field thereabout; and

electromagnetic field shunting means operatively engaging said members for selective positioning within said electromagnetic field in response to the relative displacement of said members to effect a change in phase of said alternating current, said control means further effecting generation of a member condition signal as a function of said alternating current phase change.

4,805,464

DIAL TORQUE WRENCH STRUCTURE

Bosko Grabovac, City of Arcadia, Calif., assignor to Consolidated Devices, Inc., City of Industry, Calif.

Filed Jan. 29, 1988, Ser. No. 150,033

Int. Cl.[4] G01L *5/24*; **B25B** *23/159*

U.S. Cl. 73—862.26 **11 Claims**



1. A dial torque wrench structure comprising an elongate, horizontal rigid metal lever arm with front and rear ends, a hand grip projecting rearwardly from the arm, an elongate resilient metal deflection beam with front and rear ends in spaced parallel relationship with the arm, mounting means fixing the rear end of the beam to the arm, an elongate vertically-extending resilient metal work-engaging head, the head has an upper end fixed to the front end of the beam and a lower end portion depending freely from the beam, a multiplying gear

dial works is positioned rearward of the beam and fastened to the arm, said dial works includes an elongate horizontal, pivotally movable input lever and a vertical rotatable output shaft, a dial face assembly including a horiziontal dial face card with an annular series of force-indicating calibrations thereon is carried by the arm with said calibrations concentric with said shaft, an elongate pointer is carried by the shaft and is directed toward said calibrations, an elongate horizontal operating rod with front and rear ends is positioned in working spaced parallel relationship with the beam, the front end of the rod is fixed to the beam at a point spaced rearward from the work-engaging head, a drive coupling means is positioned between the rear end of the rod and the lever, said coupling means includes an elongate drive part carried by and projecting rearwardly from the rod, said drive part has a vertically-extending finger in driving engagement with said lever.

4,805,465

ARRANGEMENT FOR THE PRODUCTION OF STRAIGHT-LINE SYMMETRICAL SIGNALS

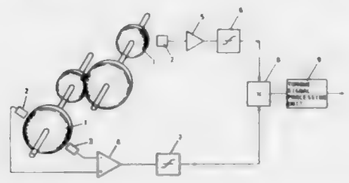
Karl-Heinz Gerrath; Eberhard Strauss, both of Griesheim; Hans-Joachim Decker, Wiesbaden, and Heinz Vinson, Langen, all of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 8, 1987, Ser. No. 59,220

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1986, 3619408

Int. Cl.[4] G01L *3/04, 3/10*; **G01D** *5/244*

U.S. Cl. 73—862.34 **15 Claims**



12. In an apparatus for measuring the torque between first and second positions on a rotating shaft arrangement including first and second signal generator wheels, each having a periodic structure on its periphery, disposed at said first and second positions respectively for rotation with said shaft arrangement, first and second sensor means, disposed adjacent said first and second generator wheels respectively and responsive to the respective periodic structures, for providing respective first and second output signals corresponding to the respective positions of said generator wheels, and means for combining said first and second output signals to provide a measure of the torque between said first and second positions; the improvement wherein at least one of said first and second sensor means includes two sensors positioned to be offset with respect to each other by at least one half period of the periodic structure of the respectively associated said generator wheel, and with each of said two sensors being responsive to the periodic structure to produce a respective output signal, and a subtraction or addition stage to which said output signals from said two sensors are fed and which provides an output signal corresponding to one of said first and second output signals.

4,805,466

DEVICE FOR THE CONTACTLESS INDIRECT ELECTRICAL MEASUREMENT OF THE TORQUE AT A SHAFT

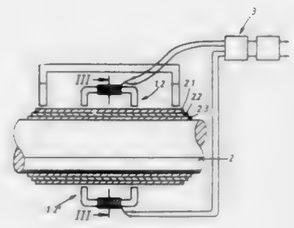
Edmund Schiessle, Schorndorf, and Khaldoun Alasafi, Schwaebisch-Gmuend, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1987, Ser. No. 108,442

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1986, 3635207

Int. Cl.[4] G01L *3/10*

U.S. Cl. 73—862.36 **6 Claims**



1. A device for the contactless indirect electrical measurement of torque at a shaft, having a sensor system which is arranged a small distance from said shaft, said sensor system having U-shaped magnetic field generator means and at least one sensor means having core means and coil means with electrical connections, and an evaluation circuit in which first said sensor means is integrated via said connections, said device comprising:

a plurality of coatings fixed on the shaft in the area of said sensor system wherein said coatings include:

a highly soft magnetic, magnetostrictive amorphous first layer for causing a-magnetic direct-axis field generated by said magnetic field generator means to be conducted in longitudinal direction of said shaft for closing of a magnetic circuit, said sensor means being arranged in the area of the direct-axis field conducted through said first layer and, upon torsion of said shaft, detecting a change in magnetisation in the first layer in a form of a change of a magnetic flux in said sensor core means,

a second layer underlying said first layer and being highly nonmagnetic; and

a highly permeable nonmagnetostrictive, amorphous third layer on which said second layer lies, said third layer being applied directly on said shaft,

wherein said core means is in said magnetic circuit, and comprises nonmagnetostrictive amorphous metal;

wherein said magnetic field generated by said magnetic field generator means is a direct-current field which is superimposed on an alternating-current field generated by said coil means when said coil means is excited, such that a change in said magnetic flux effects a change in dynamic permeability of said core means by a non-linear function $B=f(H)$ of a magnetisation curve and is a consequence of an inductance of said coil means, said change being converted in said evaluation circuit into a torsion-analogous electrical signal.

4,805,467

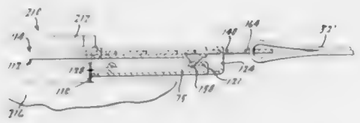
FORCE RECORDING SEAT BELT ASSEMBLY

Donald D. Bartholomew, Marine City, Mich., assignor to Proprietary Technology, Inc., Mt. Clemens, Mich.

Continuation-in-part of Ser. No. 776,643, Sep. 16, 1985, Pat. No. 4,677,861. This application Jan. 17, 1987, Ser. No. 63,102

Int. Cl.⁴ G01D *1/12*; G04F *7/00*

U.S. Cl. 73—862.54 16 Claims



5. A safety belt assembly for measuring the point in time when a force was exerted on the assembly, said assembly comprising:

a first and second member;

a flat elongated biasing means in communication with said first and second members for resiliently restraining relative movement and movably restraining said members with respect to one another;

means responsive to relative movement of said first and second members for indicating a point in time when a force was exerted on said assembly; and

means for securing said assembly onto a safety belt.

4,805,468

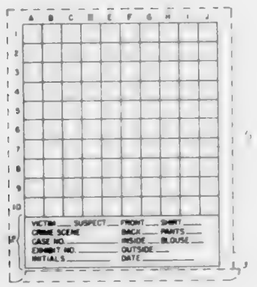
FIBER COLLECTION AND STORAGE DEVICE

Muhammad Y. Choudhry, Stone Mountain, Ga., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 12, 1988, Ser. No. 155,405

Int. Cl.⁴ G01N *33/36*, *1/04*

U.S. Cl. 73—864.71 10 Claims



6. A method for the rapid collection and recovery of fragments transferred fibers from a surface of textile articles comprising applying to the textile surface a fiber collection and storage device comprised of:

(a) a stable, transparent carrier base material preprinted, on a surface thereof, with a grid and label, said grid having discrete areas for displaying the location of collected fibers and the label providing identification indicia;

(b) an adhesive layer which is disposed on the surface of the carrier base, said adhesive layer being capable of collecting and recovering transferred fibers from textile articles; and

(c) a transparent and flexible cover means for occlusively covering said adhesive layer, said method further comprising removing the cover from the adhesive layer before the application step and restoring the cover so that it exclusively covers the adhesive layer after the application step.

4,805,469

APPARATUS FOR AUTOMATICALLY TAKING AND ANALYZING SAMPLES OF SUBSTANCES WHICH ARE MADE AVAILABLE IN RANDOM MANNER

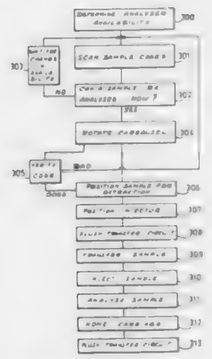
Roger Commarmot, Lyons, France, assignor to Rhone-Poulenc Recherches, Courbevoie, France

Filed Jun. 17, 1987, Ser. No. 63,092

Claims priority, application France, Jun. 17, 1986, 86 08990

Int. Cl.⁴ G01N *35/00*

U.S. Cl. 73—864.81 10 Claims



1. Apparatus for automatically taking and analyzing samples of substances made available in random manner, the apparatus being of the type comprising an analysis assembly including at least two analysis stations having different characteristics, and a module delimiting temporary storage slots for receptacles containing different substances to be analyzed by different methods applicable to each of said substances, said apparatus comprising:

receptacles each bearing a code identifying the substance contained therein, the analysis treatment to which it is to be subjected, and a treatment priority attributed thereto;

means for detecting the in-use or available status of each analysis station;

means defining slots each bearing a code corresponding to an address;

means for scanning the slots in the storage module for reading the codes of the slots and the code of the receptacles stored in the slots and for storing said codes in priority order in conjunction with the characteristics of the corresponding treatment and the addresses of the slots;

means for seeking in priority order correspondence between a treatment to be performed and a currently available compatible analysis station and for selecting the sample receptacle bearing such a treatment;

means for displacing an insertion system from an original position into relationship with the available analysis station;

means for bringing the selected sample receptacle into relationship with an extraction station;

means for extracting at least a portion of the sample from the selected receptacle and for transferring it into the insertion system;

means for inserting the sample into the analysis station;

means for controlling the operating conditions of the analysis station as a function of the analysis treatment to be performed; and

means for returning the insertion system to its original position in readiness for a new operating cycle.

4,805,470

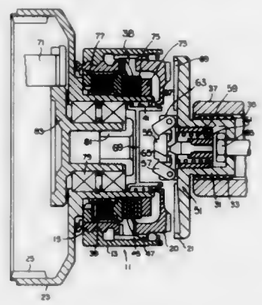
STARTER JAW BLOCKER

Frank Woodruff, New Hartford, N.Y., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Mar. 27, 1986, Ser. No. 845,093

Int. Cl.⁴ F02N *15/02*; F16D *43/06*

U.S. Cl. 74—7 C 1 Claim



1. An engagement mechanism for starting an aircraft engine or the like, comprising:

a rotatable drive assembly including a drive jaw and a center plate which, together, are axially movable between an engagement position and a disengagement position; and

a rotatable driven assembly disposed for being rotatably driven by said rotatable drive assembly and including:

a driven jaw which engages said drive jaw when said drive jaw is said engagement position and which does not engage said drive jaw when said drive jaw is in said disengagement position;

a blocking rod disposed at the axis of said driven assembly and axially movable between a blocking position which blocks said center plate and, thereby, said drive jaw from moving to said engagement position, and a non-blocking position which does not block said center plate and said drive jaw from moving to said engagement position;

a spring urging said blocking rod to said non-blocking position;

a flyweight body rotating with said driven assembly and disposed about said blocking rod; and

flyweights pivotably connected to said flyweight body, each of said flyweights having an arm which engages said blocking rod so that when flyweights are pivotably extended by rotation of the body said arms move said blocking rod against said spring to said blocking position, said flyweights being balanced so that when rotation of said flyweight body is greater than or equal to a predetermined speed, said flyweights overcome said spring to move said blocking rod to said blocking position.

4,805,471

MULTI-SPEED TRANSMISSION

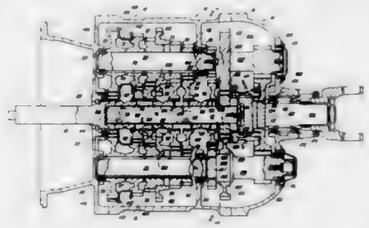
John M. Loeffler, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Sep. 25, 1987, Ser. No. 100,952

Int. Cl.⁴ F16H *3/08*, *3/02*

U.S. Cl. 74—333 15 Claims

1. In a multi-speed transmission having main and range sections with the main section providing a plurality of gear ratios through gears on at least one main countershaft meshing with gears on a main shaft located parallel to said one main countershaft; and the range section selectively multiplying a gear ratio provided by the main section, with at least one range countershaft driven from said main shaft, and means for selectively driving an output shaft located parallel to said one range countershaft from said one range countershaft or directly from the main shaft, the improvement comprising: at least one reverse idler gear, on said one range countershaft, aligned and being driven by a gear on said one main countershaft and aligned and driving one of said gears on the main shaft.



4,805,472

ROTARY TORQUE TRANSMISSION APPARATUS FOR FOUR-WHEEL DRIVE VEHICLES

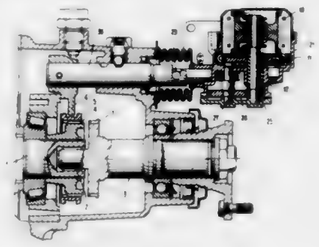
Kongoh Aoki, Toyota, and Junichi Kano, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 29, 1987, Ser. No. 102,437

Claims priority, application Japan, Sep. 30, 1986, 61-229542; Sep. 30, 1986, 61-148691[U]; Sep. 30, 1986, 61-148692[U]; Sep. 30, 1986, 61-148693[U]

Int. Cl.⁴ B60K *20/16*, *23/08*

U.S. Cl. 74—335 15 Claims



1. A rotary torque transmission apparatus for a four-wheel drive vehicle compriaing:

a two-four wheel drive change over slider for changing the drive of the vehicle between two and four wheel drive;

a reciprocably movable fork shaft including a shift fork engageable with said change over slider for moving the slider between a two wheel drive position and a four wheel drive position; and

fork shaft drive means for moving said fork shaft, said fork shaft drive means including a casing, an output shaft rotatably supported in said casing, a motor, a worm wheel rotatably supported on said output shaft and driven by said motor, a pair of fixed plates mounted on said output shaft, a pair of rotary plates rotatable with said worm wheel and positioned axially between said fixed plates along said output shaft, and a torsion spring arranged radially outwardly of said rotary plates and including two ends each retained between one of said rotary plates and one of said fixed plates, whereby the rotary torque of said driven worm wheel is transmitted to said output shaft by said torsion spring.

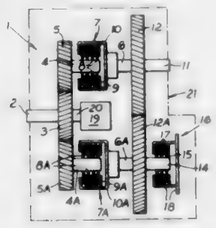
VOL 1099 ISS 3 FEB 21 1989 UMI

4,805,473

BI-DIRECTIONAL TORQUE TRANSMISSION UNIT

Lewis R. B. Bower, Shelmerthorpe, England, assignor to Fletcher Sutcliffe Wild Limited, Horbury Wakefield, England

Filed Jul. 14, 1987, Ser. No. 72,891
Claims priority, application United Kingdom, Jul. 23, 1986, 8618020
Int. Cl.[4] F16H 3/14, 3/08
U.S. Cl. 74—361 11 Claims



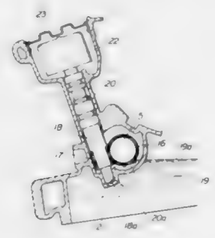
1. A bi-directional torque transmission unit comprising an input shaft connectable to a prime mover, an input drive gear wheel provided on said input shaft, first and second driven shafts, a driven gear wheel provided on said first and second driven shafts, said driven gear wheels being in mesh with said input drive gear wheel, such that said first and second driven shafts are rotatable only in the same direction; first and second intermediate output shafts, geared together and, in their respective drive modes, rotatable in the same direction; first and second hydraulically actuated and modulated clutches interconnecting said first and second driven shafts, respectively, with said first and second intermediate output shafts, with said clutches engageable selectively; and a final output shaft in drivable relationship with both said first and second intermediate output shafts, whichever clutch is selected for engagement determining the direction of rotation of said final output shaft, and said first and second modulated clutches being sequentially engageable for simultaneous engagement to provide regenerative retarding of the rotation of said final output shaft in either of said directions.

4,805,474

STRUCTURE FOR SUPPORTING GOVERNOR SHAFT OF AUTOMATIC TRANSMISSION

Hiromi Taguchi, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 31, 1988, Ser. No. 176,017
Claims priority, application Japan, Mar. 31, 1987, 62-46999
Int. Cl.[4] F16H 5/46
U.S. Cl. 74—404.5 2 Claims



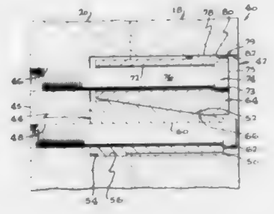
1. An automatic transmission comprising;
a transmission case,
a governor driving shaft having a governor drive gear,
a governor shaft having a governor shaft gear engaging with said governor drive gear, and extending upwardly from a lower end to an upper end,
a governor connected with said upper end of said governor shaft, and
governor shaft supporting mans for rotatably supporting said governor shaft, said supporting means having a lower portion which supports said lower end of said governor shaft, and which is formed with an opening for allowing a lubricating oil contained in said transmission case to flow into a clearance between said lower end of said governor shaft and said lower portion.

4,805,475

ANTI-BACKLASH GEAR ASSEMBLY

Clifford L. Hansel, Los Angeles, Calif., assignor to Lockheed Corporation, Calabasas, Calif.

Filed Jul. 17, 1987, Ser. No. 74,660
Int. Cl.[4] F16H 55/04, 55/18
U.S. Cl. 74—440 7 Claims



1. An anti-backlash gear assembly comprising:
a shaft having a longitudinal axis;
a first gear mounted to said shaft having a first slot substantially aligned with said longitudinal axis;
a second gear rotatably mounted to said shaft having a second slot alignable with said first slot;
first and second wedge members having contiguous bevelled side surfaces mounted in said first and second slots, said first wedge member rigidly attached to said first gear and said second wedge member moveably attached to said first gear; and
biasing means mounted between said second wedge member and one of the side walls of said second slot for urging said second wedge member toward said first wedge member.

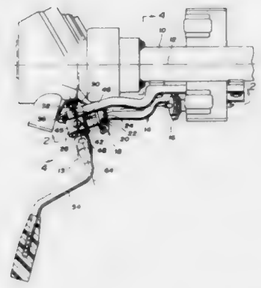
4,805,476

TRANSMISSION SHIFT CONTROL ASSEMBLY

Howard D. Beauch, Frankenmuth; Benjamin H. Everett, II, and Frederick P. Arndt, both of Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 3, 1988, Ser. No. 189,855
Int. Cl.[4] G05C 9/16
U.S. Cl. 74—473 SW 2 Claims

1. A transmission shift control assembly mounted on a tiltable steering column having a longitudinal axis and a tilting axis said assembly comprising: bracket means secured to said steering column; transmission shift cable means having a portion secured to said bracket means and a portion linearly movable relative to said secured portion; cable driver arm means having a rotary axis and being rotatably mounted on said rotary axis on said bracket means oblique to said longitudinal axis and including a cable connecting portion secured to said movable portion of said cable means; operator control means including pin means for pivotally mounting said operator control means on said cable drive arm means on a pivot axis substantially perpendicular to and intersecting said rotary axis and positioning arm means extending from said pin means; detent gate means disposed on said bracket means in position to abut said positioning arm means for limiting the extent of pivotal movement thereof, said detent gate means including a gear select detent plate means for engaging said positioning arm means at one pivotal extent for establishing operating positions in a transmission; spring means for urging said positioning arm into said detent gate means; and operator lever control means secured to said operator control means for manipulation by an operator for pivoting said operator control means on said pin means and for rotating said operator control means and said cable drive arm means about said rotary axis for selectively positioning said shift cable means to control the transmission at the operating position established by said detent plate means said tilting axis passing through the intersection of said rotary axis and said pivot axis.

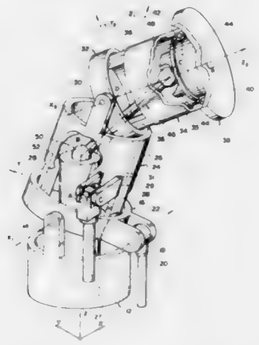


4,805,477

MULTIPLE JOINT ROBOT PART

Hadi A. Akeel, Rochester Hills, Mich., assignor to GMF Robotics Corporation, Auburn Hills, Mich.

Filed Oct. 22, 1987, Ser. No. 111,304
Int. Cl.[4] G05G 11/00; B25J 17/00, 17/02
U.S. Cl. 74—479 17 Claims



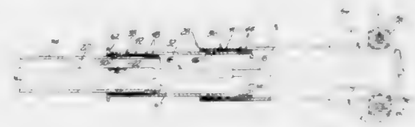
1. A robot part adapted to be driven by a robot drive means, the part comprising:
a relatively stationary base;
a first pair of independent rotational axes having a first point of mutual intersection (A) and being movable relative to each other;
a second pair of independent rotational axes having a second point of mutual intersection (D) spaced a first distance (AD) from the first point of mutual intersection, the second pair of axes being movable relative to each other;
first link means supported on said base;
second link means being rotationally supported on each of the first pair of axes and the second link means being rotationally supported on each of the second pair of axes;
third link means having first and second end points (B and C, respectively) fixed relative to the base, and the second link means, respectively, for establishing a fixed second distance (BC), during rotation of the first and second link means about their respective axes, wherein none of the first and second points of mutual intersection (A and D, respectively) and the first and second end points (B and C, respectively) are coincident, the first point of intersection and the first end point (A and B, respectively) defining a third distance (AB) and the second point of intersection and the second end point (D) and (C) respectively) defining a fourth distance (DC); and
actuator means for providing independent rotation of said first link means about each of the first pair of axes to operatively transfer corresponding bend movements in more than one stage to selectively establish the position of said second link means relative to the base.

4,805,478

STEERING COLUMN FOR VEHICLE WITH MULTITUBE ENERGY ABSORBING MAST JACKET

Howard D. Beauch, Frankenmuth, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 26, 1987, Ser. No. 66,612
Int. Cl.[4] B62D 1/18
U.S. Cl. 74—492 1 Claim



1. An energy absorbing steering column assembly for a vehicle comprising first, second and third telescopically related metallic tubes having first and second deformer units operatively mounted respectively between an upper and intermediate tube and between the intermediate and lower tubes, said first deformer unit comprising a first cylindrical sleeve having a complement of balls therein adjacent opposite ends thereof located at opposing diametrical positions of said first cylindrical sleeve, said second deformer unit comprising a second cylindrical sleeve having a complement of balls therein adjacent opposite ends thereof located at opposing diametrical positions of said second cylindrical sleeve and arcuately offset with respect to said complement of balls in said first cylindrical sleeve of said first deformer unit, said complement of balls in said first deformer unit rolling paths in the interfacing walls of said first and second tubes in a first stage of energy absorption upon application of a predetermined load telescopically collapsing said first and second tubes with respect to one another and said complement of balls in said second deformer unit rolling paths in the interfacing walls of said second and third tubes in a second stage of energy absorbing operation to provide optimized energy absorption stroke as said column assembly is collapsed from an extended position toward a fully telescoped position.

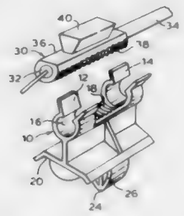
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4,805,479

CABLE CLIP

David L. Brightwell, Billericay, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 9, 1987, Ser. No. 94,628
Claims priority, application United Kingdom, Sep. 12, 1986, 8622027
Int. Cl.[4] F16C *1/14*
U.S. Cl. 74—502.4 5 Claims



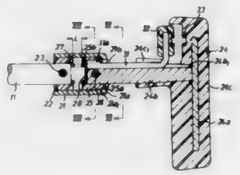
1. A snap-on retaining clip and Bowden cable assembly, comprising a U-shaped channel member having resilient limbs and ribs on its inner surface, and a sleeve, to fit over the outer sheath of the cable, having ribs on its outer surface, said sleeve being retainable in said channel by the resilient limbs with the interengagement of the ribs preventing relative axial movement between the sleeve and the channel member.

4,805,480

HAND BRAKE LEVER ASSEMBLY FOR PARKING BRAKE

Kaoru Tsubouchi, Toyota; Takeo Yamazaki, Anjo; Tomio Tachino, Chiryu; Takuya Inabe; Yoshihiro Nakagiri, both of Toyota; Hiroshi Uemura, Okazaki, and Juichi Shibatani, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 31, 1987, Ser. No. 80,306
Claims priority, application Japan, Jul. 31, 1986, 61-117888; Jul. 31, 1986, 61-117890; Aug. 22, 1986, 61-128514
Int. Cl.[4] G05G *1/00*
U.S. Cl. 74—503 11 Claims



1. A hand brake lever assembly for a parking brake, said hand brake lever assembly comprising:

(a) a longitudinal plunger mounted in a support member for axial slidable movement and for rotation about its axis and having a first end and a second end;

(b) a locking mechanism associated with said plunger to retain said plunger in a pulled out position against a returning effort of the parking brake acting thereon and being arranged to be released by rotation of said plunger;

(c) a sleeve member coaxially secured to the second end of said plunger for rotation therewith, said sleeve member having an annular end wall formed with an annular cam surface and an axial key groove;

(d) a handle having a shaft extending therefrom and inserted into said sleeve member for axial movement and rotation about its axis, said handle shaft having formed thereon an axial guide groove and being integrally provided with a cam member which is formed with an annular cam surface complementary with the annular cam surface of said sleeve member, said handle shaft being contained within said sleeve member for axial movement and rotation about its axis;

(e) first resilient means for pressing the annular cam surface of said same member into contact with the annular cam surface of said sleeve member to retain said handle in a predetermined annular position in relation to said plunger;

(f) a release rod axially slidably coupled with the axial guide groove of said handle shaft for rotation with said handle, said release rod being integrally formed at one end thereof with a key which is axially slidably coupled with an axial groove in said cam member to be brought into engagement with the axial key groove of said sleeve member, said release rod being further provided at the other end thereof with a knob which is arranged adjacent a grip portion of said handle; and

(g) second resilient means for biasing the knob of said release rod toward said plunger to disengage the key of said release rod from the axial key groove of said sleeve member.

4,805,481

SELF-LOCKING REVOLUTE JOINT, ADJUSTABLE TO AN ANGLE BY MOVING AN ACTIVATION LEVER BACK AND FORTH

Heinz Bauer; Burckhard Becker; Ernst-Reiner Frohnhaus; Alfred Gedig, all of Solingen; Josef Klink, Nagold, and Antonin Koucky, Sindelfingen, all of Fed. Rep. of Germany, assignors to C. Rob. Hammerstein GmbH and Daimler-Benz AG, both of, Fed. Rep. of Germany

Filed May 14, 1987, Ser. No. 50,286
Claims priority, application Fed. Rep. of Germany, May 14, 1986, 3616290
Int. Cl.[4] G05G *5/06*; F16H *27/02, 31/00*
U.S. Cl. 74—528 10 Claims



1. A self-locking revolute joint that is adjustable at various angles by moving a hand lever back and forth, particularly for adjustment of seat height or inclination of backrest vehicle seats, the revolute joint comprising:

a mount, in which a bearing shaft rests so that it can be turned, supporting an adjustment wheel provided with tooth profiles and having a rotation connection with an adjusting arm of the revolute joint,

a turning axle around which the hand lever can be turned from a central position into two turning directions and which is located outside the adjustment wheel, the turning axle of the hand lever resting in the mount,

said hand lever having two carriers which, in the central position of the hand lever do not engage with the adjustment wheel, one of said carriers engages into an adjacent tooth profile of the adjustment wheel when the hand lever is turned so as to move said adjustment wheel,

each one of said carriers being joined with turning capability to the hand lever via a carrier axle around which the respective carrier can be turned without touching the tooth profiles of the adjustment wheel when the hand lever is in the central position, whereby a stop on the hand lever is assigned to and co-acts with each carrier, preventing the carriers from being turned under an action of an adjustment force applied to said hand lever and removed from the tooth profile of the adjustment wheel,

two locking arms are provided, capable of moving on said mount which, when the hand lever is in the central position, the locking arms rest against tooth profiles of the adjustment wheel, locking it, and are disengaged when the hand lever is turned, each one of said locking arms has a locking effect only in one rotational direction but slides over the tooth profiles of the adjustment wheel in the other direction,

two radial cams arranged on the hand lever, and

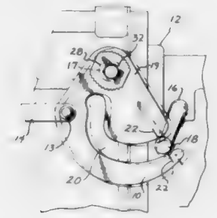
a release arm for each locking arm of which one release arm always engages with one of the radial cams when the hand lever is turned out of the central position, whereby the release arm is brought along and disengages the locking arm which is locking in the applicable drive direction.

4,805,482

CAM ADJUSTMENT ASSEMBLY

James C. Boda, Winneconne, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Aug. 24, 1987, Ser. No. 88,844
Int. Cl.[4] G05G *1/04*
U.S. Cl. 74—571 M 2 Claims



1. A cam adjustment to provide proper vertical and horizontal alignment between a throttle cam and its associated pickup lever where the throttle cam is pivotally mounted to a stationary structure by means of a hole disposed in the throttle cam, said adjustment comprising:

rotatable cam adjustment means disposed within the cam hole and providing an eccentric surface on which the throttle cam hole rides, said cam adjustment means comprising,

a base plate provided with at least a pair of flat surfaces about its circumference for engagement by a tool for rotation of the cam adjustment means,

a cylindrical shoulder extending from said base plate and having a diameter substantially equal to that of the cam hole the throttle cam being mounted on said shoulder with said shoulder provided with an eccentrically located hole,

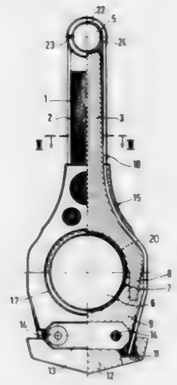
mounting means for releasably securing the throttle cam to an adjacent stationary structure, said mounting means passing through said eccentrically located hole.

4,805,483

CONNECTING ROD WITH A SHANK COMPOSED OF FIBER COMPOSITE MATERIAL

Hans-Dieter Beckmann, Gifhorn; Siegfried Brudgam, Brunswick, and Dieter Roeper, Ulm, all of Fed. Rep. of Germany, assignors to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 10, 1987, Ser. No. 61,183
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1986, 3621704
Int. Cl.[4] G05G *1/00*; F16C *7/02*
U.S. Cl. 74—579 E 10 Claims



1. An improved connecting rod with a connecting rod shank composed of a fiber composite material and extending essentially between a piston boss and a crank pin boss, furthermore with a tension-stressed flexible tightening band which surrounds the connecting rod shank and at least the piston boss in a loop-like manner, as well as with a loop tensioner encompassing the tightening band locally in a housing-like manner and pulling the band onto the surface of the connecting rod shank, moreover, a cylindrical crank pin bearing is set into the crank pin boss, the improvement comprising: the loop tensioner being supported on the crank pin bearing by means of an approximately semi-cylindrical base body which is provided with a center gap directed towards the piston boss and having a length which corresponds to the width of the connecting rod shank at this point; and the connecting rod shank being composed of a plurality of laminated plates having a thickness, measured in the direction of the axis of the crank pin bearing, which maximally equals the width of the center gap measured in the direction of the crank pin bearing axis, the laminated plates being supported on the base body, and an additional plate which passes through the gap with a thickness corresponding to the gap width and is supported on the crank pin bearing.

4,805,484

POWER TRANSFER MECHANISM FOR FOUR-WHEEL DRIVE

Kazuyoshi Hiraiwa, Atsugi, Japan, assignor to Nissan Motor Co., Ltd., Japan

Continuation of Ser. No. 754,922, Jul. 15, 1985, abandoned. This application Oct. 5, 1987, Ser. No. 105,445
Claims priority, application Japan, Jul. 19, 1984, 59-148546; Mar. 28, 1985, 60-62100
Int. Cl.[4] F16H *37/08*
U.S. Cl. 74—665 T 11 Claims

1. A power transfer mechanism comprising:

an input member;

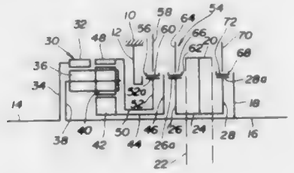
a first output member;

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a second output member;

a planetary gear assembly including a ring gear, a carrier, a plurality of first planet gears in mesh with aid ring gear and journalled on said carrier, a plurality of second planet gears, each in mesh with one of said first planet gears, journalled on said carrier, and a sun gear in mesh with said second planet gears;

said ring gear being drivingly connected to said input member;



said carrier being drivingly connected to said first output member; and

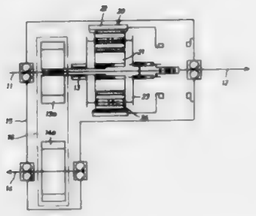
means for shifting said power transfer mechanism to a plurality of operating modes, aid shifting means including first clutch means for selectively engaging said first output member with said second output member and second clutch means for selectively engaging said second output member with said sun gear.

4,805,485

POWER TRANSFER DEVICE FOR FOUR-WHEEL DRIVE VEHICLES

Shuichiro Ida, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Apr. 9, 1987, Ser. No. 36,359
Claims priority, application Japan, Apr. 10, 1986, 61-82680
Int. Cl.⁴ F16H *37/06, 1/44*
U.S. Cl. 74—674 **5 Claims**



1. A power transfer device for four-wheel drive vehicles, comprising:

a housing;

an input shaft rotatably mounted within said housing for drive connection to an output shaft of a power transmission;

a first output shaft rotatably mounted within said housing in a coaxial relationship with said input shaft;

a second output shaft rotatably mounted within said housing in a concentric relationship with said input shaft; and

a planetary gear unit including a sun gear, a carrier, a ring gear, and a plurality of planet gears journaled on said carrier and in mesh with said sun and ring gears and being axially slidably mounted on said input and output shafts;

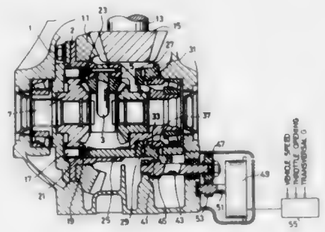
wherein said planetary gear unit is shiftable between first, second and third positions to establish a high speed two-wheel drive mode in the first position wherein said carrier is engaged with said input shaft and said first output shaft, said sun gear is engaged with said second output shaft, and said ring gear is disengaged, said planetary gear unit being arranged to establish a high speed four-wheel drive mode in the second position wherein said carrier is engaged with said input shaft and said first output shaft, said sun gear is engaged with said input shaft and said second output shaft, and said ring gear is disengaged to restrict differential action between said output shafts and being further arranged to establish a low speed four-wheel drive mode in the third position wherein said sun gear is engaged with said input shaft, said carrier is engaged with said output shafts, and said ring gear is locked by engagement with said housing to restrict the differential action between the output shafts.

4,805,486

LOCKING DIFFERENTIAL GEAR ASSEMBLY

Makoto Hagiwara, and Masao Teraoka, both of Tochigi, Japan, assignors to Tochigifujisangyo Kabushiki Kaisha, Japan

Filed Jan. 1, 1987, Ser. No. 56,377
Claims priority, application Japan, Jan. 4, 1986, 61-084036[U]; Aug. 7, 1986, 61-120415[U]; Nov. 18, 1986, 61-176101[U]; Feb. 20, 1987, 62-027315
Int. Cl.⁴ F16H *1/44, 1/44.5*
U.S. Cl. 74—710.5 **5 Claims**



1. A locking differential gear assembly comprising; clutch means for restricting the differential action of said assembly; movable means movable in a linear direction to actuate said clutch means; rotatable pressing means for moving said movable means in said linear direction; drive means for rotating the pressing means; and converting means for converting the rotation of said pressing means into linear movement, said converting means including an element fixed in relation to said pressing means, with interengaged threaded portions on said pressing means and said element.

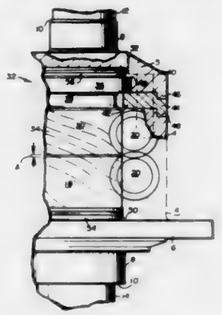
4,805,487

SIDE GEAR MOUNTING FOR DIFFERENTIAL ASSEMBLY

Harry Pedersen, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Oct. 23, 1987, Ser. No. 111,906
Int. Cl.⁴ F16H *1/38*
U.S. Cl. 74—715 **15 Claims**

1. A differential gear assembly of the type which includes a differential gear housing having means for receiving a pair of axle ends together with a pair of substantially axially aligned side gears coupled to said pair of axle ends for rotation therewith, said side gears having helix angles inclined in the same direction with respect to the axes of rotation thereof, characterized in that the gear assembly includes means for preventing axial thrust forces developed by one of said side gears from loading the other of said side gears; said preventing means includes means for separating said side gears such that there is no direct or indirect engagement between confronting end faces of said side gears when thrust forces of said one of said side gears are directed toward said other of said side gears; and said means for axially separating the side gears includes a pair



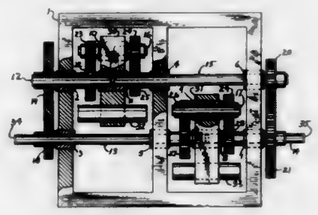
of overlapping elements associated with one of said side gears and said gear housing.

4,805,488

ADAPTIVE-RATIO TRANSMISSION

Albert J. Sherman, 50 Haveawood Dr., Livingston, N.J. 07039

Filed Mar. 24, 1986, Ser. No. 842,990
The portion of the term of this patent subsequent to Apr. 21, 2005, has been disclaimed.
Int. Cl.⁴ F16H *3/74*
U.S. Cl. 74—752 F **3 Claims**



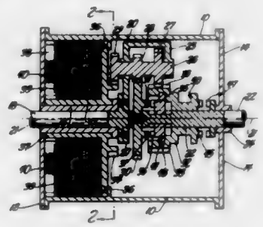
1. An automatically self-adjusting gear mechanism providing a limited range of continuously variable mechanical advantage or an unrestricted range of continuously variable output to input rotary-speed ratio, said mechanism comprising: an input shaft rotatably supported coaxial with a rotatably supported output shaft, an epicyclic gear train, said epicyclic gear train comprising a first sun gear fixed to the input shaft, a second sun gear fixed to the output shaft, a rotor rotatably mounted coaxial with the shafts and rotatably supporting a planetary gear spool, the gear spool being parallel to the shafts and supporting first and second unequal planetary gears fixed at opposite ends thereof, said first and second planetary gears mesh with first and second sun gears, respectively; and pitch diameters of each one of said sun gears and planetary gears are proportioned individually with respect to each other so as to produce torque static balance between said rotor and epicyclic gear train.

4,805,489

INFINITELY VARIABLE RATIO TRANSMISSION

Erwin F'Geppert, Oakland, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 16, 1987, Ser. No. 96,993
Int. Cl.⁴ F16H *3/44, 57/10*
U.S. Cl. 74—793 **5 Claims**



1. A variable ratio vehicle transmission whose gear ratio is determined essentially only by torque on the output shaft of the transmission, comprising:

a housing fixed in the vehicle;

a power input shaft entering one end of the housing;

a power output shaft entering the other end of the housing;

a planet carrier mounted concentrically on the input shaft;

a planet shaft mounted rotatably to the planet carrier;

planet gears fixed coaxially to the planet shaft, one planet gear being a power transferring gear, a second planet gear being a reaction planet gear;

a brake means rotatable about the input shaft sleeve for controlling the rate of rotation of the reaction planet gear about the planet shaft axis when the reaction planet gear orbits about the input shaft axis, the brake means having an inhibitor means for providing a substantially constant drag against rotation of the brake means about the input shaft;

the brake means having a disk-like wall encircling the input shaft and a brake gear meshed with the reaction planet gear;

the inhibitor means having two sets of annular friction disks disposed between the disk-like wall and the one end of the housing, one set of friction disks angularly fixed relative to the housing and the other set of disks angularly fixed relative to the disk-like wall, the disks of the one set alternated with disks from the other set, the inhibitor means further having at least one resilient member compressed between the one end of the housing and the friction disks, whereby the resilient member supplies a substantially constant drag to inhibit rotation of the reaction brake means about the input shaft;

the transmission further comprising means for operatively connecting the transferring planet gear to the output shaft.

4,805,490

VALVE AND CLOSURE ASSEMBLY FOR AN AUTOMATIC TRANSMISSION

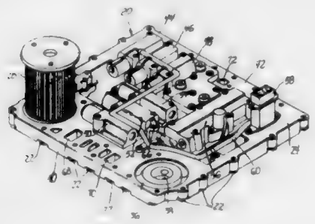
Reece R. Fuehrer, Dunville, and Peter E. Swingler, Carmel, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 23, 1987, Ser. No. 29,057
Int. Cl.⁴ B60K *41/22;* **F16H** *57/02*
U.S. Cl. 74—867 **2 Claims**

1. A valve and closure assembly for a transmission wherein the transmission includes a housing with an opening therein said housing enclosing a plurality of hydraulically controlled elements such as fluid-operated friction devices and having formed therein passages for distributing fluid to said friction devices and the transmission also including a plurality of elec-

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tronic sensors such as speed sensors disposed in the housing, said valve and closure assembly comprising: closure plate means for providing the sole closing member of said opening in the housing; a plurality of fluid passages formed in said closure plate means; valve assembly means secured to said closure plate means and enclosing said fluid passages and including a plurality of valve means for controlling the flow of fluid in said passage means; solenoid means for operating said valve means including a plurality of wire means for conducting electrical signals to respective ones of said solenoid means; a single multi-contact plug secured to said closure plate means and



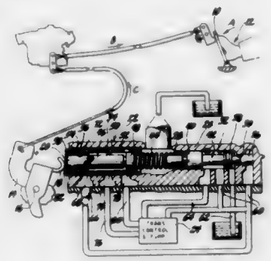
connected with said wire means; a plurality of flow transfer passages in fluid communication with a portion of said fluid passages for conducting fluid flow as directed by said valve means, said flow transfer passages being alignable with said passages in said housing so that flow therebetween is perpendicular only to said closure plate means and said multi-contact plug being connectible with a mating plug on said housing; and means for securing said valve and closure assembly with said housing to maintain said plugs in mating connection and said transfer flow passages in flow registration with the passages in said housing to permit controlling of said hydraulically controlled elements and for closing said opening in said housing.

4,805,491

THROTTLE VALVE WITH DETENT FEEL

Steven R. Saia, Plymouth, and Edward F. Militello, Brighton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 16, 1988, Ser. No. 155,879
Int. Cl.[4] B60K *41/16*
U.S. Cl. 74—867 **2 Claims**



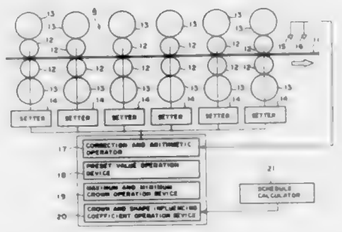
1. A pressure regulating throttle valve for use with a power transmission and a manually operated accelerator pedal movable to a plurality of positions by an operator, said pressure regulating valve comprising: a valve body having a stepped diameter central bore; a downstream pressure regulator valve spool slidably disposed in a first portion of said stepped diameter bore of said valve body; a bushing slidably disposed in a second portion of said stepped diameter bore of said valve body at a location displaced longitudinally from said valve spool, said bushing including a centrally disposed stepped diameter bore; a sleeve slidably disposed in one portion of said stepped diameter bore of said bushing and cooperating therewith to provide a pressure differential area effective to urge separation between said sleeve and said bushing; a manually operated plunger having a small diameter slidably disposed in said sleeve and a large diameter slidably disposed in another portion of said stepped diameter bore of said bushing such that a pressure differential area is formed between said sleeve and said plunger which is effective when pressurized to urge separation between said sleeve and said plunger; ring means secured in said bushing for limiting the movement of said sleeve in one direction relative to said plunger; spring means disposed between said plunger and said valve spool such that movement of said plunger imposes a spring bias force on said valve spool; and manual input means maintained in abutment with said plunger and being movable with said accelerator pedal to cause said plunger to move toward said valve member and compress said spring when the accelerator pedal is depressed, said manual input means engaging said sleeve at a predetermined position of said accelerator pedal to create an increased reaction force on said accelerator pedal which is proportional to the differential area between said sleeve and said bushing.

4,805,492

METHOD FOR CONTROLLING A SHAPE OF A PLATE

Makoto Tsuruda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1987, Ser. No. 81,751
Claims priority, application Japan, Sep. 24, 1986, 61-225694
Int. Cl.[4] B21B *1/22, 37/00*
U.S. Cl. 72—8 **6 Claims**



1. A method for controlling a rolling shape of a plate in a rolling system comprising a rolling mill including a plurality of stands for rolling plates continuously fed lengthwise into a predetermined plate thickness, and a roll bending mechanism for controlling a rolling shape of the plate so that the rolling operation of said rolling mill is carried out without producing an unacceptable shape including a crown in which a center line side is convex or concave with respect to opposite edge sides over the width of a thickness of said plate, the method comprising;

a first step for providing a roll bending force in each stand in order to obtain a target crown on the basis of estimated control values including an estimated thickness, an estimated tension of said plate to be rolled and an estimated pressing force of said rolling mill, said first step including calculating a crown range between maximum and minimum crown in a final stand, employing the calculated crown range to preset a roll bending force at each stand for obtaining at said final stand a crown within said range and for restricting the change of shape of the plate between successive stands, and

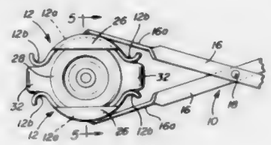
a second step for providing a correction amount with respect to the roll bending force in said first step to establish a preset value of the final roll bending force in each stand so as to provide a target shape of plate in said final stand and between said stands.

4,805,493

HOT RADIATOR CAP AND PRESSURE REMOVER

Locke M. Stein, R.R. 2, Spearville, Kans. 67876

Filed Jul. 11, 1983, Ser. No. 512,741
Int. Cl.[4] B67B *7/00*
U.S. Cl. 81—3.44 **13 Claims**



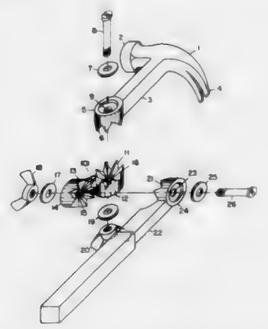
1. A tool for releasing pressure in a hot radiator by applying a loosening torque to the radiator cap, the tool comprising elongated tongs formed from pivoted links, the tongs having jaws at one end adapted to embrace and apply torque to the radiator cap, and handgripping portions at the other end for opening and closing the jaws from a position removed from the cap, wherein each jaw has a concave central portion curved to embrace a radiator cap and outwardly extending end portions, the jaws being related to the links for the central portions to embrace the cap and for diametrically opposed protruding ears of the cap to fit between the end portions of the respective jaws for the application of torque to the cap when the jaws are closed toward one another by manipulation of the links, and wherein each jaw includes a locating plate on top of the central portion for engaging the top of the cap.

4,805,494

ARTICULATE HAMMER

Richard Santoro, 1621 Bayo Vista Ave., San Pablo, Calif. 94806

Filed Aug. 24, 1987, Ser. No. 88,270
Int. Cl.[4] B25G *1/06*
U.S. Cl. 81—20 **2 Claims**



1. A hammer with a hammer head having a shank extending to a circular extension, a handle having at one end a circular extension, said hammer head circular extension having a plurality of radially disposed locking teeth about a central bore and said handle lateral circular extension having a plurality of radially disposed locking teeth around a central bore and an adjustable coupling member interposed therebetween

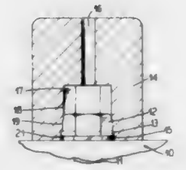
wherein said coupling member is a first lateral circular extension and a second lateral circular extension at right angle to said first lateral circular extension, each extension having a centrally located circular bore with the locking teeth radially disposed around the bore, when each of said bores is individually aligned with the bore of said radially disposed locking teeth of said handle lateral circular extension and with the bore of said radially disposed locking teeth of said hammer head circular extension, respectively, each can accept a means for aligning and securely but movably locking the hammer head and handle in relative angular position one to the other.

4,805,495

BOLT HEAD REFORMING TOOL

Michael J. Tauber, 1908 S. Ashland Ave., Park Ridge, Ill. 60068

Filed Oct. 2, 1987, Ser. No. 103,673
Int. Cl.[4] B25B *13/50, 23/02, 13/06*
U.S. Cl. 81—53.2 **3 Claims**



1. A removing tool for rotatably removing a stripped bolt having a head that has plural flat outer surfaces, but which has become stripped and cannot be turned with a normal flat-sided wrench, said tool comprising, an elongated tool body formed with an outer periphery having plural flat surfaces and formed with a central opening having plural flat sides which extend longitudinally into said tool body,

said central opening comprising a polygonal guide opening extending longitudinally from a first end of said tool body to a polygonal transition opening which is longitudinally tapered and extends to a first polygonal cutting and reforming opening to form a cutting and reforming edge therewith, said guide opening being slightly larger than the head of said bolt, an impact receiving surface located on a second end of said tool body, said first cutting and reforming opening being slightly smaller than the guide opening and the head of the bolt such that when said tool body is placed over said stripped bolt head and is forcefully driven thereon said guide opening will guide said removing tool, and said cutting and removing opening will reshape said bolt head to provide it with flat sides such that said bolt can be removed by turning said tool body and said bolt head with a normal flat-sided wrench.

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HYDRAULIC POWER WRENCH

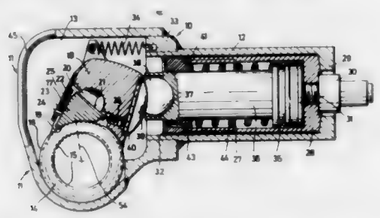
Paul-Heinz Wagner, Much; Alois Meyer; Karl-Richard Hirtsiefer, both of Neunkirchen-Seelscheid, and Karl Beuke, Neunkirchen, all of Fed. Rep. of Germany, assignors to Paul Heinz-Wagner, Fed. Rep. of Germany

Filed Mar. 5, 1987, Ser. No. 22,313
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1986, 3608697; Jan. 20, 1986, 3620753
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—57.39 **11 Claims**

1. A hydraulic power wrench comprising a wrench head including a ring, means for rotatably supporting said ring within said wrench head, a lever, means for supporting said lever within said wrench head to impart rotation to said ring through cooperative ratching elements, a housing member projecting from said wrench head, said housing member containing a hydraulic cylinder, a piston movable within said hydraulic cylinder and having a piston rod for moving said lever, said housing member being a protective sheet protective

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against damage should said hydraulic cylinder burst, said housing member including an interior generally cylindrical surface defining a generally annular channel with an exterior generally cylindrical surface of said hydraulic cylinder, said interior and exterior generally cylindrical surfaces being spaced from each other a substantially constant radial distance, said interior and exterior generally cylindrical surfaces being in generally coax-



ial relationship to each other, means for preventing axial movement of said hydraulic cylinder relative to said member, said hydraulic cylinder and piston cooperatively defining a high pressure chamber, means for introducing hydraulic fluid under relatively high pressure into said high pressure chamber, and said annular chamber being constructed and arranged so as to be at all times isolated hydraulically from the high pressure chamber and the high pressure hydraulic fluid therein.

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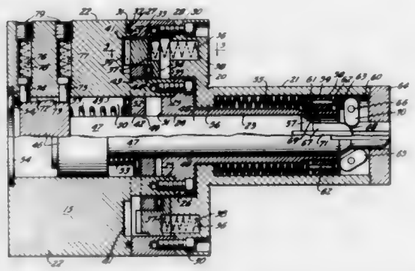
EXTERNALLY INDEXABLE TURRET-LIKE DEVICE FOR CUTTING MACHINES

Russell H. Dunham, New Fairfield, Conn., assignor to The Dunham Tool Co., Inc., New Fairfield, Conn.

Continuation of Ser. No. 927,241, Nov. 4, 1986, abandoned. This application Apr. 18, 1988, Ser. No. 185,237

Int. Cl.[4] B23B *29/00*

U.S. Cl. 82—36 A **1 Claim**



1. For use in combination with a multi-tool cutting machine having a primary tool holding mechanism indexable about a primary axis, an externally actuated turret-like indexable secondary tool mounting device, which comprises

(a) a body member having a shank mountable on said primary tool holding mechanism in one tool holding position thereof and bodily movable upon indexing of said primary tool holding mechanism about said primary axis,

(b) an index head supported on said body member for rotation about a secondary axis parallel to said first axis and having a plurality of means thereon for mounting cutting tools,

(c) index positioning means cooperable with said body member and said index head for locking said index head in any one of several index positions for presenting cutting tools in a working position,

(d) an externally engageable and operable plunger-like actuating member mounted in said turret-like device coaxially of said secondary axis and controllably movable along said secondary axis,

(e) said actuating member being operable, when externally engaged and axially moved, first to temporarily release said index positioning means and then to incrementally rotate said index head relative to said body,

(f) said actuating member having a portion exposed at the front of said index head and mechanically actuatable coaxially by a fixed external actuating element mounted on said machine tool.

4,805,498

APPARATUS FOR CUTTING ADHESIVE TAPE ROLL STOCKS

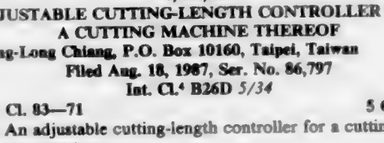
Shunetsu Abe, Tokyo, Japan, assignor to Pioneer Koki Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1988, Ser. No. 170,963

Claims priority, application Japan, Mar. 19, 1987, 62-062580

Int. Cl.[4] B23B *3/32, 13/04*

U.S. Cl. 82—92 **4 Claims**



1. An apparatus for cutting adhesive tape roll stocks comprising:

a feeder for feeding a plurality of adhesive tape roll stocks to a cutting section, in a parallely arranged state,

a tape stock holding device having a plurality of shafts each of which is arranged to be axially moved so as to be inserted into a corresponding paper bobbin of a tape stock;

a cutting blade receiving shaft device having axially movable receiving shafts each of which is to be inserted into the corresponding bobbin from the opposite end thereof;

a chucking device having chucks each of which is arranged to be axially moved and to grip the corresponding bobbin and to rotate the bobbin; and

a cutting device having cutters for cutting the tape stocks at predetermined positions on the receiving shaft.

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ADJUSTABLE CUTTING-LENGTH CONTROLLER AND A CUTTING MACHINE THEREOF

Chang-Long Chiang, P.O. Box 10160, Taipei, Taiwan

Filed Aug. 18, 1987, Ser. No. 86,797

Int. Cl.[4] B26D *5/34*

U.S. Cl. 83—71 **5 Claims**

1. An adjustable cutting-length controller for a cutting machine comprising:

a frame;

a driving motor coupled to a driving shaft rotatably mounted on said frame;

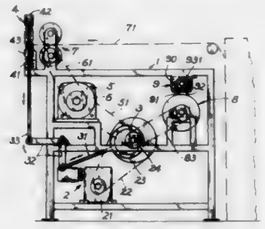
an eccentric-wheel transmission mechanism having an eccentric wheel mounted on said driving shaft, an eccentric link pivotally secured to the eccentric wheel, a crank means pivotally connected with said link and rotatably mounted on said frame, and a pair of vertically reciprocating rods pivotally secured to said crank means, said transmission mechanism synchronously driven by said motor;

a pair of cutting knives having an upper knife vertically reciprocating with respect to a lower knife along a vertical guide formed on said frame as driven by said reciprocating rods of said eccentric-wheel transmission mechanism, and the lower knife fixed under a level of a strip of article to be cut;

an electromagnetically-operating clutch of normal open having an input shaft coupled to said driving shaft;

an electromagnetically-operating brake of normal close having an output shaft coupled to a set of conveying rollers, said input shaft of said clutch operatively coupling said output shaft of said brake for transmitting an output from said driving shaft as synchronously driven by said driving shaft;

said set of conveying rollers forwarding said strip to be cut therebetween and being driven by said output shaft of said brake; a bright and dark color cylinder having a light reflecting bright-color area and a dark-area respectively disposed on a periphery of the cylinder, said cylinder having its rotatating shaft horizontally rotatably mounted on said frame and synchronously driven by said motor;



a photo-electric controller adjustably moving above said cylinder along an axis parallel to a longitudinal axis of said rotating shaft of said cylinder, including a photo sensor having a light emitter projecting a light beam toward said cylinder and a photoelectric cell receiving a light signal reflected from said bright color area of said cylinder or receiving no light signal from the dark area of said cylinder, said photo sensor transmitting and converting the light signal as sensed from said cylinder to an electric signal which is amplified to actuate a pair of relays for activating said clutch and said brake, whereby upon the sensing of said light signal from said bright color area of said cylinder, said normal-open clutch is closed and said normal-close brake is opened to drive said set of rollers for forwarding said strip;

whereas upon receiving no light signal from said dark area of said cylinder, said brake is closed and said clutch is opened to stop the running of said rollers and said strip which is adapted to be cut by said pair of cutting knives.

4,805,500

HORIZONTAL BAND SAW MACHINE

Shuichi Saito; Hisao Kanazawa; Toru Tokiwa, and Toshihisa Yoshishige, all of Kanagawa, Japan, assignors to Amada Company, Limited, Japan

Filed Jun. 27, 1986, Ser. No. 879,625

Claims priority, application Japan, Jun. 29, 1985, 60-99593[U]; Jul. 2, 1985, 60-100056[U]; Jul. 5, 1985, 60-101711[U]; Jul. 5, 1985, 60-101712[U]; Jul. 5, 1985, 60-101713[U]; Jul. 9, 1985, 60-103510[U]

Int. Cl.[4] B23D *55/04*

U.S. Cl. 83—277 **3 Claims**

1. A cutting apparatus comprising:

a base;

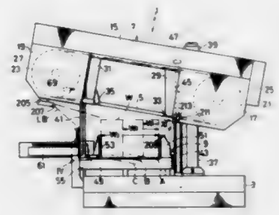
a cutting head provided in a freely elevatable manner on the base;

a cutting tool mounted on the cutting head for cutting a workpiece;

a main vise device for grasping and securing the workpiece, positioned on the rear side of a cutting position where the cutting of a workpiece is performed, the main vise device having a vise bed, a fixed vise jaw mounted on one side of the vise bed, and a movable vise jaw mounted on the other side of the vise bed for grasping the workpiece in cooperation with the fixed vise jaw;

a lower limit detection device provided on one of the base and the cutting head to detect the lower limit of the cutting head; and

a lower limit setting device, provided on the other of the



base and the cutting head, for activating the lower limit detection device to regulate the lower limit of the cutting head, the lower limit of the cutting head being determined by the lower limit detection device detecting the lower limit setting device;

wherein the lower limit detection device or the lower limit setting device on the base side is connected to the movable vise jaw for movement so that the position of the lower limit detection device or the lower limit setting device on the base side is changed in accordance with the width of the workpiece.

4,805,501

SYSTEM FOR PROCESSING A WEB

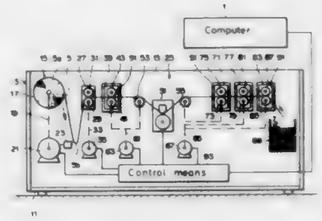
Pierre Nattin, Massagno, Switzerland, assignor to Fabelmac Consulting AG, Zug, Switzerland

Filed Feb. 20, 1987, Ser. No. 17,208

Claims priority, application Switzerland, Oct. 15, 1986, 04128/86

Int. Cl.[4] B26D *1/62*

U.S. Cl. 83—300 **21 Claims**



1. Apparatus for providing a flexible web with cuts running in the transverse direction of the web, comprising: a support; two processing members operatively held in the support, each of the processing members comprising at least one knife and at least one of the processing members being rotatably mounted, and wherein the cutting edges of the knives belonging to different processing members are arranged to form an angle with each other and at least one of the cutting edges being arranged to form an angle different than 90° with the transporting direction of the web; a holding member arranged to support at least one processing member is adjustably held in the support so that

at least one processing member is pivotably disposed around a pivot axis that runs at a right angle to the axis of rotation of at least one of said rotatable processing members; transporting means for conveying the web past the two processing members; and drive means for driving at least one of said rotatable processing members so that the cutting edges of the knives cross each other during the cutting process in a crossing point subject to displacement along said cutting edges, said drive means comprising a gear rotatably supported in the support, wherein said gear is in engagement with a mating gear connected with at least one of said rotatable processing members supported by the holding member, and is provided for transmitting the driving motion onto the mating gear, and wherein the teeth of the two gears have, in a view perpendicular to the rotational axis of the respective gear, flanks convexly curved so that the axes of rotation of the two gears may be tilted relative to each other around a pivot axis arranged to cross said axes of rotation and to pass through the teeth of the two gears.

4,805,502

SHEET MATERIAL SLOTTING DEVICE

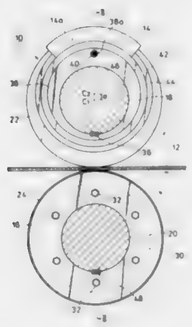
Masaaki Ishigure, Aichi, Japan, assignor to Isowa Industry Co., Ltd., Aichi, Japan

Filed May 4, 1988, Ser. No. 189,999

Claims priority, application Japan, Jun. 4, 1987, 62-140186

Int. Cl.[4] B26D *1/56;* **B65H** *35/02*

U.S. Cl. 83—332 **2 Claims**



1. A sheet material slotting device provided with an upper slotter shaft and a lower slotter shaft, in a vertical relationship, which rotate in opposite directions to each other in synchronization with the speed of feeding the sheet material; and an upper slotting knife disposed relative to an upper ring attached to the upper slotter shaft and also a pair of lower slotting knives disposed relative to a ring attached to the lower slotting shaft, with a lower predetermined space therebetween, in the axial direction and having a constitution in which slotting of a sheet material is carried out under cooperation of the upper slotting knife with the lower slotting knives characterized in that said slotting device comprises:

an eccentric member fitted to the upper slotter shaft having an axis deviated from the axis of said upper slotter shaft;

a holder pivotally fitted with play around the outer periphery of this eccentric member and having the upper slotting knife fixed thereon so that the edge of said knife may be extended outwardly in the radial direction from the cicumferential surface of the upper ring; and

a turning means for allowing said bolder to turn relative to said eccentric member;

and that said device has two positions wherein selection can be made between a first of second position wherein at said first position the edge of the upper slotting knife fixed to said holder is extended outwardly in the radial direction from the circumferential surface of said upper ring so that the upper slotter knife will engage with the lower slotter knives to produce a slot in the sheet material and wherein at said second position the position where said edge is retracted inwardly in the radial direction from the circumferential surface of said upper ring so that the edge of the upper slotter knife does not extend beyond said upper ring.

4,805,503

LOAF SLICING MACHINE

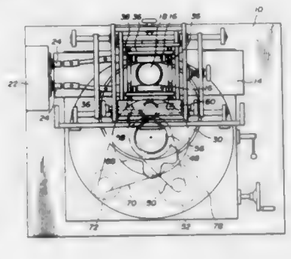
Toshiyuki Yokokawa, Tokyo, Japan, assignor to Omori Machinery Co., Ltd., Japan

Filed Sep. 17, 1987, Ser. No. 98,011

Claims priority, application Japan, Sep. 17, 1986, 61-141445[U]; Sep. 25, 1986, 61-145862[U]; Nov. 7, 1986, 61-170282[U]

Int. Cl.[4] B26D *1/18, 7/06*

U.S. Cl. 83—355 **17 Claims**



1. A loaf slicing machine comprising:

a cutting blade adapted to rotate about a center axis thereof while moving around an orbital axis to thereby cut the loaf cyclically;

feed means for intermittently advancing the loaf toward said cutting blade and extending substantially perpendicularly to said cutting blade;

a guide member disposed between said feed means and a path of said cutting blade for guiding the loaf;

a frame member supporting said feed means and said guide member, said frame member being movable together with said feed means and said guide member relative to said cutting blade in a plane substantially parallel thereto;

an abutment plate having a surface spaced from the edge of said cutting blade toward a direction of advance of the loaf for permitting the end of the loaf to substantially abut on said surface during each cutting cycle, said abutment plate having a rotational center aligned with said orbital axis and being adapted to rotate synchronously with said cutting blade; and

an opening formed through said abutment plate at a position adjacent said cutting blade for permitting slices as cut to be transferred through said opening.

4,805,504

SAFETY COVER FOR MITER SAW

Fusao Fushiya; Nobuhiro Inoue, and Kazunori Tsuge, all of Anjo, Japan, assignors to Makita Electric Works, Ltd., Anjo, Japan

Filed Dec. 24, 1987, Ser. No. 137,668

Claims priority, application Japan, Dec. 29, 1986, 61-312440

Int. Cl.[4] B23D *45/14;* **B27B** *5/18*

U.S. Cl. 83—397 **3 Claims**

1. A power miter saw comprising:

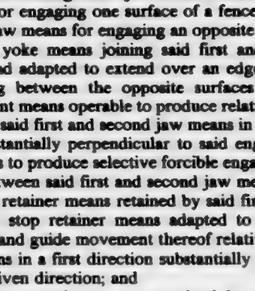
a support base;

a mounting arm connected to said support base for swinging movement around a vertical axis;

a miter saw unit pivotally connected to said mounting arm for movement between a rest position and an operational position, said saw unit having a circular saw blade and a drive motor for driving said saw blade;

a blade case attached to said miter saw unit and adapted to partially encase said saw blade so as to provide an exposed operational portion of said saw blade;

a movable safety cover mounted on said blade case and adapted to cover said exposed operational portion of said new blade; and



actuating means disposed between said mounting arm and said safety cover, associating said safety cover with the pivotal movement of said miter saw unit, for fixing said safety cover to said saw unit for limited movement of said cover to partially uncover the operational portion of said saw blade in response to movement of said saw unit along a predetermined distance from said rest position, and for freeing said safety cover for movement independently of said saw unit upon movement of said saw unit beyond said predetermined distance from said rest position.

4,805,505

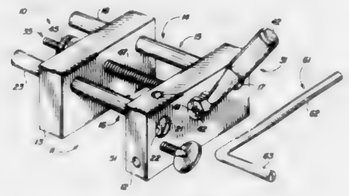
MULTI-STOP

John Cantlin, Deer Run Rd., Lincoln, Mass. 01773

Filed Mar. 2, 1988, Ser. No. 162,832

Int. Cl.[4] B27B *5/20, 27/02*

U.S. Cl. 83—467 R **15 Claims**



1. A woodworking accessory comprising:

vice means including a first jaw means with an engagement surface for engaging one surface of a fence or the like, a second jaw means for engaging an opposite surface of the fence, a yoke means joining said first and second jaw means and adapted to extend over an edge of the fence extending between the opposite surfaces thereof, and adjustment means operable to produce relative movement between said first and second jaw means in a given direction substantially perpendicular to said engagement surface so as to produce selective forcible engagement of the fence between said first and second jaw means;

a first stop retainer means retained by said first jaw means, said first stop retainer means adapted to retain a stop member and guide movement thereof relative to said first jaw means in a first direction substantially perpendicular to said given direction; and

a second stop retainer means retained by said first jaw means, said second stop retainer means adapted to retain a stop member and guide movement thereof relative to said first jaw means in a second direction substantially perpendicular to both said given direction and said first direction.

4,805,506

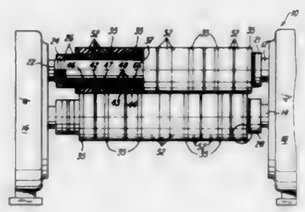
SLITTING MACHINE FOR SHEET MATERIAL

John R. Gosnell, Wapakoneta, Ohio, assignor to The Wapakoneta Machine Company, Wapakoneta, Ohio

Filed Sep. 3, 1987, Ser. No. 92,443

Int. Cl.[4] B23D *19/06;* **B26D** *1/24*

U.S. Cl. 83—500 **21 Claims**



1. An improved spacer member for use in a slitting machine for precisely spacing a set of circular slitter knives on an arbor, said spacer member comprising a subetantially rigid carrier ring having a predetermined axial width, said carrier ring being continuous and uninterrupted in a circumferential direction, a set of at least three gage blocks carried by said carrier ring at circumferentially spaced locations, each of said gage blocks having precisely parallel surfaces, the width of each said gage block in an axial direction between said parallel surfaces being highly precise and slightly greater than the axial width of the supporting said carrier ring, means for retaining each of said gage blocks within the supporting said carrier ring with said carrier ring providing protection for said gage blocks, and means for securing said carrier ring to the supporting arbor and providing for axial alignment of the corresponding said gage blocks on a series of said carrier rings on the arbor between each pair of adjacent knives.

4,805,507

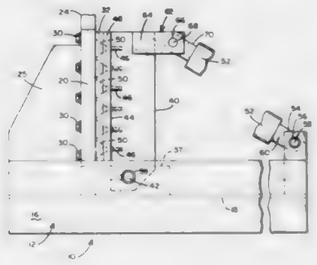
TIRE CUTTING MACHINE

Raymond H. Schmidt, R.R. 1, Box 238A, Buffalo, Minn. 55313, and Wesley G. Sprunk, 6434 City West Parkway, Eden Prairie, Minn. 55344

Filed Nov. 18, 1987, Ser. No. 122,208

Int. Cl.[4] B26D *1/30*

U.S. Cl. 83—601 **5 Claims**



1. Tire shearing apparatus comprising:

(a) a base member;

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(b) first and second anvil member affixed to said base member and projecting vertically upwardly therefrom, said anvil members being parallel to one another and spaced laterally by a predetermined distance to define a gap therebetween;

(c) a shear member in the form of an elongated bar of generally rectangular cross-section pivotally secured to said base member and centered in the space between said first and second anvil members and of a width less than said predetermined distance for rotation into and out of said gap, said bar having a working edge including a plurality of regularly spaced, non-intersecting semi-circular recesses along the length dimension thereof so as to inhibit any tendency of a tire to ride up the surfaces of the first and second anvils as the shear member is forced against the tire; and

(d) reciprocally operating force applying means disposed between said shear member and said base member for causing said rotation of said shear member.

4,805,508

SOUND SYNTHESIZING CIRCUIT

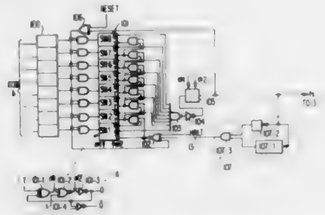
Tomoaki Isozaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 671,353, Nov. 14, 1984, abandoned. This application Jul. 24, 1987, Ser. No. 77,546

Claims priority, application Japan, Nov. 14, 1983, 58-213637

Int. Cl.⁴ G10H *1/00*

U.S. Cl. 84—1.01 **7 Claims**



1. A sound synthesizing circuit comprising a clock generator generating a clock signal, a synthesizing circuit having means for storing information relating to sound to be synthesized and means for synthesizing sound data into a desired waveform according to said information in said storing means, said information having digital data indicating an amplitude level of a sound to be synthesized at each of a plurality of sampling points in a predetermined pitch period, said synthesizing means sequentially reading said digital data at each said plurality of sampling points out of said storing means and producing a plurality of sound data according to the read out digital data to create said waveform, a dividing ratio generating means for generating a plurality of dividing ratio data, a dividing circuit comprising a counter coupled to said clock generator and said dividing ratio generating means for dividing said clock signal and generating a sequence of sampling pulses according to a dividing ratio data supplied thereto from said dividing ratio generating means, and a digital to analog converting circuit sequentially converting said plurality of sound data into a sound analog signal, said plurality of sound data being transferred to said digital to analog converting circuit in response to said sequential sampling pulses, said dividing ratio generating means including register means for storing said dividing ratio data and said counter being responsive to said register means and said clock generator for counting to a predetermined count established in response to said dividing ratio data to generate said sampling pulses, and converting circuit means comprising a programmable counter and a gate means responsive to said sampling pulses for generating a control signal for altering at least one interval of said sequential sampling pulses and means for stopping a dividing operation of said dividing circuit during a predetermined period in response to said control signal.

4,805,509

ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF STORING AND REPRODUCING TONE WAVEFORM DATA AT DIFFERENT TIMINGS

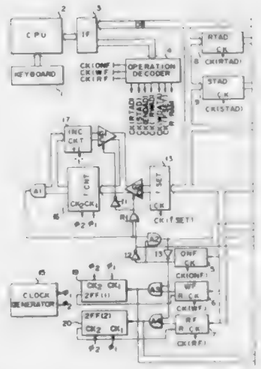
Takashi Matsuda, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 923,397, Oct. 27, 1986, abandoned. This application Jan. 22, 1988, Ser. No. 147,046

Claims priority, application Japan, Nov. 22, 1985, 60-261498

Int. Cl.⁴ G10H *1/057, 7/00*

U.S. Cl. 84—1.01 **6 Claims**



1. An electronic musical instrument, comprising:

memory means capable of storing musical tone waveform data of at least one period of a tone waveform therein;

read circuit means for reading out the musical tone waveform data repetitively from said memory means;

musical tone generator means for generating a musical tone signal in accordance with the musical tone waveform data read out by said read circuit means; and

write circuit means which, when a musical tone signal is generated from said musical the generator means, writes musical tone waveform data into any address of a memory area in which the repetitively read-out musical tone waveform data is stored, the write operation being performed at a timing different from a timing at which the musical tone waveform data is read by the read circuit means out of said memory means.

4,805,510

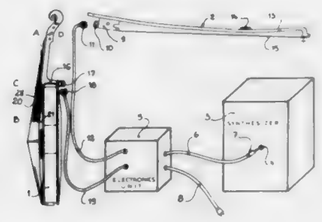
SYNTHESIZER-DRIVING PICKUP SYSTEM FOR BOWED STRING INSTRUMENT

Hervé De Dianous, Château des Meurs, Liniers (Vienne), France

Filed Oct. 27, 1987, Ser. No. 114,276

Int. Cl.⁴ G10H *1/02, 7/00*

U.S. Cl. 84—1.16 **9 Claims**



1. In combination with:

a string instrument having a plurality of strings and an elongated fingerboard against which the strings can be stopped,

a bow having a filament adapted to be drawn across the strings, and

a frequency synthesizer, a pickup assembly comprising:

pickup means on the fingerboard for detecting which strings are stopped, where therealong and for, generating an output corresponding thereto;

pickup means connected to the bow for detecting action thereof for generating an output corresponding thereto; and

pickup means connected to the strings for detecting which string is being contacted by the bow and for generating an output corresponding thereof.

4,805,511

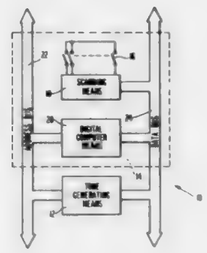
ELECTRONIC BELL-TONE GENERATING SYSTEM

Gregory L. Schwartz, Spinnerstown, Pa., assignor to Schaimerich Carillons, Inc., Sellersville, Pa.

Continuation of Ser. No. 899,435, Aug. 12, 1986, abandoned. This application Apr. 22, 1988, Ser. No. 186,763

Int. Cl.⁴ G10H *1/02, 1/08*

U.S. Cl. 84—1.22 **24 Claims**



1. An electronic bell-tone generating system, comprising:

a plurality of tone generators, each said tone generator producing, upon its energization, a discrete tone having a full-scale amplitude;

keyboard means for energizing one or more predetermined combinations of said plurality of tone generators to produce one or more bell tones, each said bell tone comprising said discrete tones produced by a selected one of said one or more predetermined combinations that is characteristic of a given bell, said discrete tones that are produced by each said selected combination including a fundamental tone which is representative of a normal pitch of said given bell, and at least one discrete tone other than said fundamental tone having a frequency below said fundamental tone; and

decay generating means for interdependently diminishing the amplitude of each said discrete tone produced by each said selected combination according to a musically-scalar relationship of each said discrete tone produced by each said selected combination to its respective fundamental tone, each said discrete tone produced by each said selected combination thereby decaying at a decay rate that is independent of the decay rate of that same discrete tone in the others of said selected combinations.

4,805,512

Patent Not Issued For This Number

4,805,513

LAMINATED FRP SOUND BAR FOR PERCUSSIVE MUSICAL INSTRUMENTS

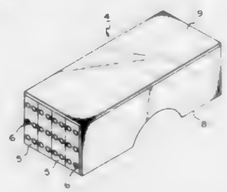
Kenji Ito, and Ikuji Kurokawa, both of Shizuoka, Japan, assignors to Yamaha Corp., Japan

Filed Dec. 22, 1987, Ser. No. 136,375

Claims priority, application Japan, Dec. 25, 1986, 61-313535; Dec. 25, 1986, 61-313536

Int. Cl.⁴ G10D *13/08*

U.S. Cl. 84—402 **3 Claims**



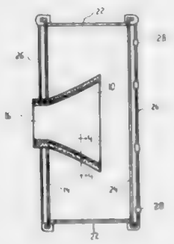
1. A laminated FRP sound bar for percussive musical instruments comprising:

a plurality of plate like FRP components each including at least one generally planar side surface, said FRP components being laminated and bonded together at said side surfaces to form a laminated body in which reinforcing fibers are oriented in the longitudinal direction of said body, each said FRP component including at least one array of isolated pores elongated in the direction of said fiber orientation; and

a protective plate located on one surface of said body, said surface lying generally perpendicular to said side surfaces.

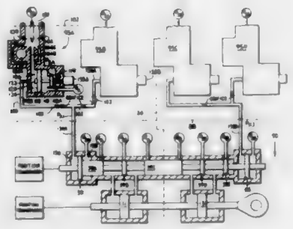
VOL 1099 ISS 3 FEB 21 1989 UMI

4,805,514
DRUM MUFFLING, SOUND ENHANCING DEVICE
Christopher E. Billings, 496 Stewart St., Welch, W. Va. 24801
Filed May 1, 1987, Ser. No. 44,574
Int. Cl.[4] G10D *13/02*
U.S. Cl. 84—411 M 5 Claims



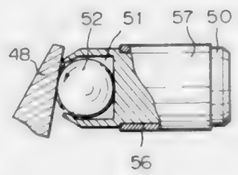
1. In a musical drum having resonating and attack membranes, a device comprising a generally funnel-like form or bell terminating in a generally cylindrical, collar-like form or base emergent from the smaller proximal portion of said bell, said device having an interior which is open along its entire axial length, and said device having a wall thickness of about ⅛ inch composed of moldable material, said device being disposed within said musical drum by abutment and attachment of said base within a circular opening cut into said resonating membrane with the larger distal extremity of said bell directed toward said attack membrane, whereby to capture, concentrate and direct outward the sound vibrations produced by the percussive impacts to said attack membrane.

4,805,515
FAIL-SAFE SERVOVALVE SYSTEM
Howard B. Kast, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Division of Ser. No. 553,336, Nov. 18, 1983, Pat. No. 4,538,504.
This application Apr. 1, 1985, Ser. No. 718,321
Int. Cl.[4] F15B *13/02, 15/17*
U.S. Cl. 91—461 4 Claims



1. A servovalve system comprising:
a modulator piston which controls fluid pressure applied to a ram piston;
a biasing means for biasing the modulator piston in a first direction;
a manifold connected to the modulator piston for supplying fluid pressure to the modulator piston for urging the modulator piston in a second direction opposite the first direction; and
a plurality of servovalves connected to the manifold for supplying fluid pressure to the manifold, each servovalve containing means for removing the fluid pressure supplies by each servovalve to the manifold when a predetermined event occurs, but leaving substantially unaffected the fluid pressure supplies by the other servovalves to the manifold.

4,805,516
AXIAL AIR MOTOR
Nobuo Mori; Terumasa Takeuchi, both of Aichi, and Hiroshi Kiyohara, Fukushima, all of Japan, assignors to CKD Corporation, Aichi, Japan
Filed Sep. 11, 1987, Ser. No. 95,577
Claims priority, application Japan, Sep. 12, 1986, 61-215348
Int. Cl.[4] F01B *3/10, 3/02*
U.S. Cl. 91—503 9 Claims

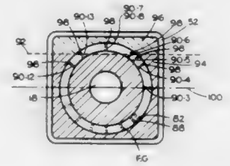


1. An axial air motor comprising:
a housing;
an output shaft rotatably supported by said housing;
a swash plate rotatably mounted on said output shaft and having an inclined relationship with respect to the axis of rotation of said output shaft;
a plurality of cylinder holes in said housing around the axis of rotation of said output shaft and circumferentially spaced from each other;
a piston movably disposed within each of said cylinder holes for pressing against said swash plate, each said piston having a ball receiving hole at one end thereof adjacent said swash plate, and said ball receiving hole having a chamferred portion in the inner periphery of the open end of said ball receiving hole;
a control valve operatively connected to said output shaft for controlling the supply of air to said cylinder holes; and
a ball and lubricant received within said ball receiving hole, said ball being ceramic and contacting said swash plate for pressing against said swash plate and for being rotated thereby, the rotation of said ball bringing a part of said lubricant out of said ball receiving hole, and said chamferred portion returning some of the part of said lubricant brought out of said hole back into said hole.

4,805,517
GAS RETURN RAILWAY CAR HYDRAULIC CUSHIONING UNIT AND METHOD OF CONVERTING A SPRING RETURN UNIT
Arthur Conley, Hayward; Owen Darcey, Los Altos, both of Calif., and Joseph Mulligan, Jr., Omaha, Nebr., assignors to Rail Car America, Inc., San Francisco, Calif.
Filed Nov. 16, 1987, Ser. No. 121,176
Int. Cl.[4] F15B *15/22*
U.S. Cl. 92—8 8 Claims

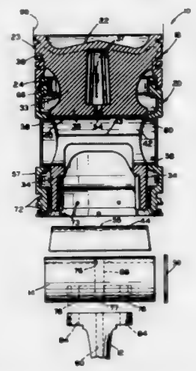
1. A hydraulic cushioning unit for use in a railway car, comprising
a high pressure cylinder having a wall and an opposite rod end and head end,
an outer housing encompassing said cylinder,
head means at the ends of said cylinder and housing for closing the ends of said cylinder and housing,
said head means and outer housing forming a main reservoir around said high pressure cylinder,
a piston movable through said cylinder,
said head means at the rod end of said cylinder and housing having a piston rod opening formed therein,

a piston rod connected to said piston and extending out of said main reservoir through said opening,
hydraulic oil partially filling said main reservoir,
a plurality of porting holes formed through the wall of said high pressure cylinder, said holes being operative to effect a metered flow of hydraulic fluid from said high pressure cylinder to said main reservoir in response to relative movement between said piston and high pressure cylinder,



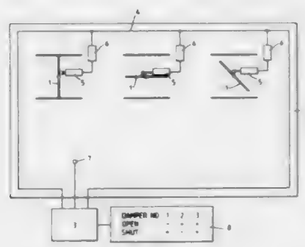
a gas under pressure filling the remainder of said main reservoir and operative to restore the piston to a neutral position adjacent said rod end of the cylinder upon removal of external relative forces between said high pressure cylinder and piston,
said porting holes being arranged on the wall of said high pressure cylinder at positions below the level of gas in said main reservoir.

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PISTON
Norb A. Heben, Jr., Rossford, Ohio, assignor to Dana Corporation, Toledo, Ohio
Continuation of Ser. No. 334,959, Dec. 28, 1981, abandoned.
This application Apr. 27, 1984, Ser. No. 604,760
Int. Cl.[4] F16J *1/14*
U.S. Cl. 92—189 6 Claims



1. A crosshead piston assembly comprising:
a skirt member having means for drivingly engaging a piston pin and a radially outer cylindrical surface for close sliding association with a cylinder wall,
a head member formed separately from said skirt member, said head member having a crown for exposure to a combustion chamber, a radially outer cylindrical surface for close sliding association with said cylinder wall, said skirt cylindrical surface being coaxial with said head cylindrical surface, and means for drivingly engaging a piston pin independently of said skirt member;
said skirt member having a reduced diameter end portion defining a skirt cylinder, said skirt cylinder received within said head member;
said head member having a radially inner cylindrical surface adjacent an end portion thereof defining a head cylinder, said skirt cylinder received within said head cylinder, wherein said skirt cylinder and said head cylinder are substantially coaxial and wherein said skirt cylinder diameter is less than said head cylinder diameter, whereby a cylindrical gap exists between said skirt cylinder and said head cylinder;
said skirt member having a generally radially extending annular surface between said skirt cylinder and said skirt member radially outer cylindrical surface, wherein said head member end portion comprises a generally radially extending annular surface positioned coaxially and adjacent said radially extending annular skirt surface, wherein a generally radially extending annular gap exists between said generally radially extending head and skirt surfaces and adjacent said cylindrical gap; and
an annular seal between said skirt cylinder and said head cylinder.

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CONTROL SYSTEM
Derek O. Boddey, Colchester, and Alan G. Young, Ipswich, both of England, assignors to EDI Engineering Limited, Ipswich, England
Filed Jul. 27, 1987, Ser. No. 77,899
Int. Cl.[4] F24F *11/00*
U.S. Cl. 98—1 7 Claims



1. A system for controlling the operation of a plurality of dampers serving ventilation apertures in the structure of a building, which system comprises a plurality of actuation means, one or more to be associated with each damper and to actuate the damper between an open and a closed position; said actuation means incorporating means for receiving a signal from a control means, for identifying that signal contains instructions relevant to the damper which that means actuates; said plurality of actuation means being adapted to be connected in series on a single connecting cable, with the connecting cable forming a loop, the two ends of which are connected to the control means.

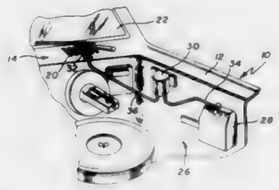
4,805,520
VEHICLE DEODORIZER
Carl R. Freedman, P.O. Box 237, Charlton, Mass. 01507
Filed Jan. 11, 1988, Ser. No. 142,540
Int. Cl.[4] B60H *3/00*
U.S. Cl. 98—2.11 4 Claims

1. Vehicle deodorizer system, comprising:
(a) a venting system consisting of an air duct having an inlet opening to the outside of the vehicle and an outlet opening within the cab of the vehicle and means for creating air flow from the inlet opening to the outlet opening,
(b) a reservoir for containing a deodorizing fluid,
(c) an atomizing nozzle immediately outside the inlet opening of the air duct,

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(d) a supply tube operatively connecting the atomizer to the reservoir, and

(e) means for pumping deodorizing fluid from the reservoir to the atomizing nozzle, wherein the pumping means comprises an electric pump operatively connected to the supply tube, a source of electrical power, and electrical control means for connecting the pump to the electrical



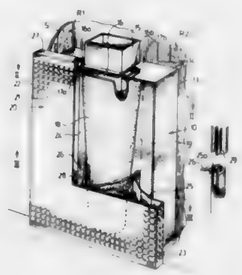
power source, and wherein the electrical control means comprises an electrically operated recycler for alternately connecting and disconnecting the pump to the source of electric power for predetermined "ON" time periods and "OFF" time periods, respectively, and a manually-operated automatic control switch for connecting the recycler to the source of electric power.

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SUPPLY AIR DEVICE

Bengt O. D. Eckebring, and Sven C. Wallin, both of Enköping, Sweden, assignors to AB Bahco Ventilation, Enköping, Sweden

Filed Jan. 7, 1988, Ser. No. 141,527
Claims priority, application Sweden, Jan. 28, 1987, 8700327
Int. Cl.⁴ F24F *13/06*
U.S. Cl. 98—40.01 **13 Claims**



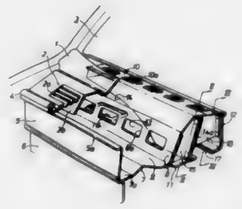
1. A supply air device for spreading an air flow from a generally flat, perforated external element (21,22,23), comprising a box-like casing (10) serving as an air distribution chamber and having means (15) for connection to a supply air duct, and at least one primary side-spreading means (18,26) located in the distribution chamber and being adapted to bring about a forwardly directed, transversally diverging air flow towards and through said perforated external element, characterized in that side guiding plates (24,25) are provided in the distribution chamber so as to extend between said primary side-spreading means and side edge portions (22,23) of said perforated external element, said guiding plates being bent into a convexly curved configuration, as seen from the front of the device, whereby the air flow (P1,P2,P3) is caused to additionally diverge transversally, especially to about 180°.

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CROSS MEMBER STRUCTURE FOR AUTOMOBILE

Nobuyuki Tonoe, and Hirokazu Yoshikawa, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 867,332, May 23, 1986, abandoned. This application May 25, 1988, Ser. No. 198,675
Claims priority, application Japan, May 29, 1985, 60-080777[U]; May 29, 1985, 60-115700
Int. Cl.⁴ B60H *1/10*
U.S. Cl. 98—2.07 **10 Claims**



1. A cross member structure for an automobile having a hollow cross member which is disposed laterally across the automobile so as to form a part of a dashboard of the automobile and to define a part of an air duct structure for air conditioning a passenger compartment of the automobile comprising:

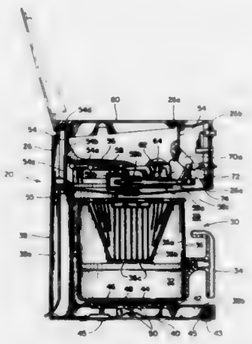
a bulkhead provided substantially in a laterally central portion of the air duct structure portion of the cross member so as to divide the interior of the cross member into a first chamber for fresh air to be air conditioned on one lateral side of the bulkhead and a second chamber for fresh air to be directly introduced into a passenger compartment on the other lateral side of the bulkhead; the two chambers being provided with individual air inlets and outlets.

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COMBINATION ELECTRIC COFFEE MAKER AND WATER HEATER

Carl E. Stuckey, Decatur, Ga., and Thomas C. Maddocks, Racine, Wis., assignors to Sunbeam Corporation, Downers Grove, Ill.

Filed Dec. 7, 1987, Ser. No. 130,035
Int. Cl.⁴ A47J *31/00*
U.S. Cl. 99—281 **15 Claims**



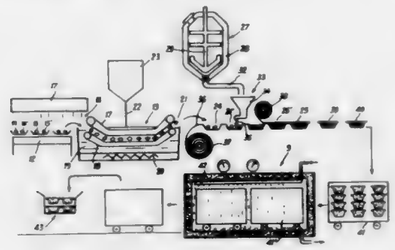
1. A combination coffee maker and water heater comprising means including a reservoir having heating means for heating a quantity of water to an elevated temperature for food and beverage preparation, said heating means including means responsive to water temperature to de-energize said heating means when said water has been heated to said elevated temperature, said reservoir having an outlet with valve means for dispensing said quantity of water at either one of two different rates of flow into either coffee brewing apparatus or a receptacle for making instant beverages, said valve means having a manually positionable control movable to a first position in which said quantity of water will be dispensed at a first rate of flow which will be accommodated in said coffee brewing apparatus and movable to a second position in which said quantity of water will be dispensed at a second rate of flow which is substantially greater than said first rate of flow and which is greater than maximum flow rate accommodated by said coffee brewing apparatus, said valve means including a valve body supported by said reservoir and a movable valve mounted in said valve body, said valve member being movable from a central closed position in one direction to obtain said first rate of flow through said valve means and in an opposite direction to obtain said second rate of flow.

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PROCESS FOR PREPARING ELABORATED FOOD PRODUCTS AND INSTALLATION FOR CARRYING OUT THE PROCESS

Claude Deneuville, Villeneuve d'Ascq, and Dominique Hondermarck, Marcq en Baroeul, both of France, assignors to S N C Le Petit Cuisinier, Villeneuve D'Ascq, France

Filed Apr. 13, 1987, Ser. No. 37,540
Claims priority, application France, Apr. 14, 1986, 86 05294
Int. Cl.⁴ A23L *1/00, 3/00*
U.S. Cl. 99—339 **7 Claims**



1. Installation for preparing elaborated food products ready for consumption, of the cooked dish type, said food products comprising at least one main solid food component, and an accompanying sauce in a substantially liquid state, the solid food component and the sauce being packed together in a hermetically welded sachet of synthetic material, said food product being thus adapted to be preserved for several weeks at a temperature of between 1° and 5° C., said installation being constituted by enclosures for storing the food components, enclosures for cooking said food, packing means for packaging into individual containers and transfer means for conveying the food, wherein said installation further comprises:

(a) a first pre-cooking line for preparing the solid products and incorporating:
at least one enclosure,
an alimentary fluid contained in said enclosure;
programmable heating means to heat said alimentary fluid;
an admission station and an exit station in said enclosure;
an endless conveyor belt to move said solid products from the admission station to the exit station;
means for controlling the advance of the belt;

(b) a second pre-cooking line for preparing liquid aromatic phases incorporating:
a least one vat;
programmable heating means;
programmable internal stirring and scraping means;
sources of supply of alimentary liquids;
transfer circuits to convey said liquid from said sources to said vat;

(c) a packing station incorporating:
a plurality of containers, each adapted to receive at least one solid food product;
at least one reel of film adapted to be deformed to constitute said containers;
at least one hopper adapted to receive said aromatic liquid phase;
a spout at the base of said hopper;
a device for automatically dosing and pouring said liquid aromatic phase into the containers;

(d) transfer means incorporating:
a circulation conduit connecting at least one vat for preparing the liquid aromatic phase to the said hopper in the packing station;

(e) welding means to close and seal said containers containing said pre-cooked food;

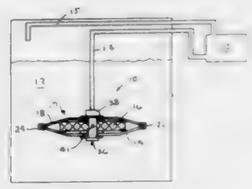
(f) cooking means incorporating:
a cooking enclosure adapted to receive the containers containing the solid food products and the liquid aromatic phase;
a source of heating liquid;
a source of cooling liquid maintained at a temperature of between 0° and 5° C.;
means for pouring said heating liquid and cooling liquid;
data-processing programming means adapted to control supply of the heating or cooling liquid from said pouring means.

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APPARATUS FOR FILTERING LIQUIDS

Thomas H. Bivens, 6907 F.M. 1488, P.O. Box 1250, Magnolia, Tex. 77355-1250

Filed May 29, 1987, Ser. No. 56,402
Int. Cl.⁴ A47J *37/12*
U.S. Cl. 99—408 **8 Claims**



1. In combination with food cooking apparatus employing cooking oil disposed in a container in which food particles and other particulate matter become deposited, a cooking oil filtering apparatus comprising:

a filter assembly disposed in the cooking oil in the container comprising a deformable porous filter insert member of a relatively rigid material containing sufficient voids to allow vertical and lateral fluid flow therethrough,

said filter insert being removably contained within and surrounded by an upper and a lower stainless steel wire mesh filter element,

a peripherally extending fastener releasably securing said filter insert and the wire mesh filter element in an assembled condition,

a hollow fitting secured centrally of one of said wire mesh filter elements having fluid passageways in communication with said filter insert,

suction means operatively connected to said hollow fitting for drawing cooking oil from said container through said wire mesh filter elements and thence through said filter insert to filter the cooking oil,

fluid transmission means operatively connected to said suction means for transmitting the filtered cooking oil to a desired destination, and

coagulating means disbursed in the cooking oil for providing filter cake directly on the outer surface of said wire mesh filter elements.

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BAKING PLATE

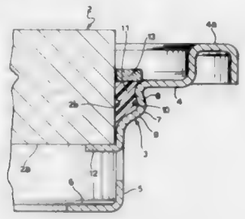
Teobaldo Riva, Corso Duca degli Abruzzi 41, Torino, Italy

Filed Dec. 17, 1986, Ser. No. 942,756

Claims priority, application Italy, Dec. 23, 1985, 54284/85[U]

Int. Cl.[4] A47J *37/00, 27/00*

U.S. Cl. 99—422 **3 Claims**



1. A baking plate comprising a stone slab inserted in an annular metal support, wherein said metal support and a facing peripheral portion of said slab together define a peripheral space and wherein a high-temperature-resistant bonding resin fills said space, said resin being an organic-silicate-based resin;

wherein said peripheral portion of said slab comprises its lateral peripheral surface and said peripheral space is defined between said surface and a surrounding annular wall of said support; and

wherein said annular wall includes an upper, downwardly-diverging portion and a lower, downwardly-converging portion terminating in correspondence with the lower face of the stone slab.

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SHELL-CRACKING APPARATUS FOR HARD-SHELL COATED SEEDS

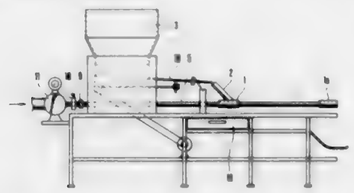
Masazumi Yoshihara, 1-12, Kawara-machi, Naka-ku, Hiroshima-shi, Hiroshima-ken, Japan

Filed Jan. 14, 1988, Ser. No. 143,953

Claims priority, application Japan, Feb. 22, 1987, 62-12939

Int. Cl.[4] A23N *5/00*

U.S. Cl. 99—571 **1 Claim**



1. A shell-cracking apparatus for hard-shell coated seeds comprising:

a hopper having at least one side;

a tank adapted to holding compressed air;

an outer cylindrical member having a suitable diameter and having first and second openings therein;

a cylindrical seed-discharging member having the same diameter as that of said outer cylindrical member and fitted into said outer cylindrical member in a state wherein it is inclined with respect to said hopper side in order to receive seeds dropped from said hopper;

an air injection pipe supporting plug member having first and second ends, with a small air injection bore at said first end and an air injection pipe insertion bore at said second end, said air injection pipe supporting plug member being inserted into said first opening of said outer cylindrical member at said side of said hopper and fixed to said outer cylindrical member;

an air-pressure adjusting device and a cock;

an air injection pipe having first and second ends, said first end being inserted into said air injection pipe insertion bore and said air injection pipe second end fixed to said compressed air tank after having been mounted with said air-pressure adjusting device and said cock;

a seed ejection pipe supporting plug member having first and second ends, said first end portion opened in the form of a funnel the narrow portion of which is directed toward said second end of said seed ejection pipe supporting plug member, said second end portion being formed with a seed-ejection pipe insertion bore, said seed ejection pipe supporting plug member being inserted into said second opening of said outer cylindrical member;

a seed ejection pipe having a diameter slightly larger than about the size of a longitudinal portion of said seeds, said seed ejection pipe having one end portion inserted into said seed ejection pipe insertion bore of said seed ejection pipe supporting plug member and fixed to said seed ejection pipe supporting plug member by a fastener to said outer cylindrical member;

a pipe supporting plug member having substantially the same size in outer diameter as the size of the inner diameter of said outer cylindrical member said pipe supporting plug member being centrally formed with a through bore for permitting the passage therethrough of said seed ejection pipe, said seed ejection pipe being inserted through said pipe supporting plug member;

a second outer cylindrical member having an inner bore and first and second ends said first end portion being cut away, in the form of an arch, at a distance from the tip of said first end, corresponding to about ¼ of a vertical length of said second outer cylindrical member;

a partitioning wall provided on the surface of said inner bore at said second end portion of said second outer cylindrical member said partitioning wall having a seed ejection pipe insertion bore, said bore being formed so as to permit the insertion therethrough of said seed ejection pipe passed through said pipe supporting plug member;

a pad plate being formed with tapered bores through said plate each bore having a narrowest diameter of approximately 3 to 4 mm, said bores having increased diameters toward the outer periphery of said pad plate, said pad plate having a projection integrally at its outer periphery, adapted to be engaged with an edge of said second end of said second outer cylindrical member, said pad plate being inserted into said second end of said second outer cylindrical member and being fixed at a position at which said projection is engaged with said edge of said second end of said second outer cylindrical member, there being a plurality of units each including said air injection pipe and said seed ejection pipe, said units being arranged in parallel beneath said hopper to receive said seeds.

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COTTON BALE RECOMPRESSING AND RETYING MACHINE AND PROCESS

Thomas A. Rogers, 5409 21st St., Lubbock, Tex. 79407, and David H. Underwood, 3021 22nd St., Lubbock, Tex. 79410

Filed Sep. 18, 1984, Ser. No. 651,988

Int. Cl.[4] B65B *13/20*

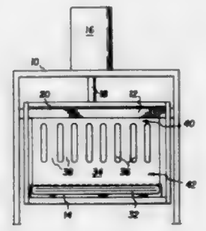
U.S. Cl. 100—3 **10 Claims**

1. A method of recompressing and re-tying a cotton bale comprising steps of:

placing a loose bale, with its original baling wires intact, in a press,

laterally confining the bale while permitting outward bulging of the baling wires in one lateral direction,

compressing the bale sufficiently to cause the baling wires to bulge away from the bale,



engaging the bulged wire portions and applying tension to said portions is said direction away from the bale,

compressing the bale to a desired final dimension while maintaining said wire tension, and then

re-tying the original baling wires, under tension, so that the wires are shortened sufficiently to hold the bale in its compressed state.

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SELF-INKING RUBBER STAMPS

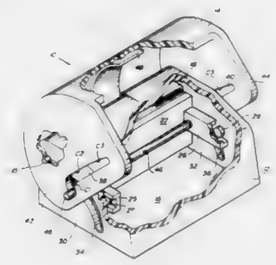
David Becher, 8 Dresner Street, Tel Aviv, Israel

Filed Jun. 9, 1987, Ser. No. 59,944

Claims priority, application Israel, Jun. 19, 1986, 79158

Int. Cl.[4] B41K *1/40*

U.S. Cl. 101—334 **6 Claims**



1. In a self-inking rubber stamping device comprising a housing having opposite side walls and an open bottom adapted to be placed over a surface to be stamped;

an ink pad fixedly mounted within the housing;

a manipulable member having a top wall and opposite side walls, the member being coupled to and moveable with respect to the housing;

a pivotable and displaceable stamp plate; and

an overturning mechanism for effecting the pivotal displacement of the stamp plate by the manipulable member between an inoperative position, wherein the stamp plate is withdrawn into the housing and the stamp plate faces the ink pad, and an operative position, wherein the stamp plate is pivoted and displaced to become pressed against the surface to be stamped through the bottom of the housing,

the improvement which comprises:

the ink pad is mounted in an upright position and has a lower side that is substantially flush with the bottom of the housing;

in the inoperative position, the stamp plate is maintained at a predetermined distance away from the ink pad;

a plurality of first guide slots supporting the stamp plate for allowing a combined linear and rotational movement of the stamp plate;

first axles fixed to the housing and coupled to the first guide slots for enabling the combined movement of the stamp plate with respect to the first axles;

a second axle fixed to the stamp plate for causing the combined movement of the stamp plate as the second axle is moved; the second axle having two projecting ends;

second guide slots formed in opposite side walls of the housing through which the projecting ends of the second axle pass;

third guide slots formed in the opposite side walls of the manipulable member through which the projecting ends of the second axle also pass;

the second and third guide slots being shaped differently from one another but overlapping each other for cooperating to move the second axle along both the second and the third slots simultaneously and also for defining only one location along each of the second and third slots for each position of the manipulable member with respect to the housing and the second and third guide slots also being so shaped that by operating the manipulable member toward the operative position the second axle is moved such that the stamp plate is initially moved laterally toward and into a contact with the ink pad, and then laterally away from the ink pad and then is also rotated into the face-down surface-pressing position.

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PRINTING MACHINE INKER SYSTEM

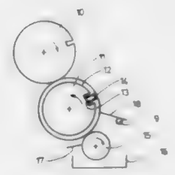
Ingo Kobler, Ambassen, and Georg Hartung, Augsburg, both of Fed. Rep. of Germany, assignors to M.A.N. Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Feb. 19, 1988, Ser. No. 157,868

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1987, 3706011

Int. Cl.[4] B41J *31/06*

U.S. Cl. 101—350 **10 Claims**



1. Printing machine inker having a forme or plate cylinder (1), an ink source (6; 15, 16, 17), and an ink application roller (2) receiving ink from the ink source and directly engaging and applying ink to the forme or plate cylinder,

said ink application roller having an ink accepting surface which is formed with shallow cup-like depressions,

and wherein

said ink accepting surface is formed by a layer of a compressible material; and

means for selectively controlling the depth of said shallow cup-like depressions on the ink accepting surface, said means comprising

means (7, 18) engageable with said compressible material having said ink accepting surface, means to control the pressure of engagement of said means engageable to vary the depth of said shallow cup-like depressions to thereby control the quantity of ink being applied to said forme or plate cylinder (1).

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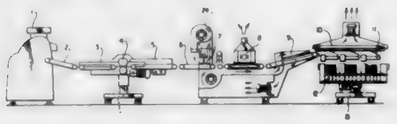
THERMOGRAPHIC MACHINE FOR RELIEF PRINTING

Jean L. Sarda, 25, Rue Pradier, 75019 Paris, France

Continuation of Ser. No. 850,739, Apr. 11, 1986, abandoned. This application Sep. 30, 1987, Ser. No. 102,870

Int. Cl.⁴ B41J *3/02*

U.S. Cl. 101—488 **9 Claims**



9. A method for thermographically printing in relief, comprising in combination:

conveying from a printer a sheet of printed paper containing wet ink and transporting the sheet on a conveyor longitudinally; then

slitting the sheet of printed paper longitudinally into a plurality of strips as the sheet is moved along the conveyor and while the ink is still wet; then

distributing a thermographic powder onto the strips as the strips are moved along the conveyor, and removing from the strips powder other than that which adheres to the wet ink on the strips; then

discharging a hot gas onto the strips for heating the powder on the strips to cause the thermographic powder to fuse as the strips move along the conveyor; then

cooling the strips as the strips are moved along the conveyor; then

conveying the strips laterally from the conveyor onto a lateral conveyor; then

cutting the strips transversely into cards as the strips move laterally on the lateral conveyor.

4,805,532

DEPLOYING ARRANGEMENT FOR AN ON-BOARD TARGETING DEVICE OF A BOMBLET

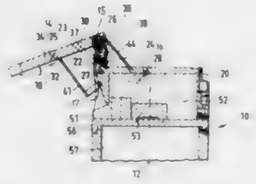
Reinhard Synofzik, and Manfred Busch, both of Jüchen, Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jan. 7, 1988, Ser. No. 141,376

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1987, 3700342

Int. Cl.⁴ F42B *25/20*; **F42C** *13/02*

U.S. Cl. 102—213 **8 Claims**



1. In a bomblet having a central longitudinal axis, a casing and a targeting device including a reflector and coupling means swingably securing said reflector to said casing; said reflector having a position of rest in which it is situated within a cross-sectional outline of the casing and a working position in which it is in a deployed state externally of said cross-sectional outline; the improvement wherein said coupling means comprises a first guide arm articulated to said reflector to provide for a relative pivotal motion between the first guide arm and the reflector about a first pivotal axis, said first guide arm being articulated to said casing to provide for a relative pivotal motion between the first guide arm and the casing about a second pivotal axis, a second guide arm articulated to said reflector to provide for a relative pivotal motion between the second guide arm and the reflector about a third pivotal axis, said second guide arm being articulated to said casing to provide for a relative pivotal motion between the second guide arm and the casing about a fourth pivotal axis; said first, second, third and fourth pivotal axes being parallel to and spaced from one another and being perpendicular to said central longitudinal axis; said first and second guide arms being arranged for guiding said reflector in a swinging motion from the position of rest into the working position; said reflector having a center of gravity located, in said position of rest, offset from said central longitudinal axis in a direction of said swinging motion, whereby, upon rotary motion of said bomblet about said central longitudinal axis, said reflector is moved by centrifugal forces from said position of rest into said working position while said center of gravity moves in a curved path in a plane containing said central longitudinal axis; the improvement further comprising interengaging locking means for immobilizing said reflector in said working position.

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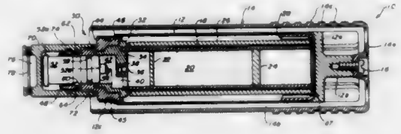
SWIMMER PYROTECHNIC SIGNAL DEVICE

Stanley J. Herold, Switz City; Donald E. LaGrange, Washington; Thomas R. Limberger, Bloomington, and James F. Taylor, Lyons, all of Ind., assignors to The United States of America as Represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 21, 1987, Ser. No. 136,613

Int. Cl.⁴ F42B *4/26*

U.S. Cl. 102—341 **1 Claim**



1. A pyrotechnic signal device for use by swimmers or divers, said device comprising:

a tubular case;

pyrotechnic candle means disposed in said tubular case;

ignition means, fixed in one end of said tubular case, for blocking water entry to said pyrotechnic candle means during periods of non-use and operable bybumping or striking a portion of said ignition means against a relatively stationary surface to effect ignition of said pyrotechnic candle means, said ignition means comprising a primer carrier comprising a first body mounted in one end of said tubular case adjacent said pyrotechnic candle means, said body having a first bore that is stepped to define a seat for a primer charge, and a radially offset passage communicating between said pyrotechnic candle and said first bore, a firing pin carrier comprising a second body fixed in said end of said tubular case and having a second bore axially aligned with said first bore, a firing pin disposed for axial movement between first and second positions in said aligned first and second bores, said firing pin having a point adapted to engage and pierce said primer charge, detent means for releasably holding said firing pin in said first position with said point spaced from said primer charge, said detent means being yieldable to predetermined axial force by said bumping or striking on said firing pin to release said firing pin for movement to said second position to effect ignition of said primer, said detent means comprising a spring clip having a circular portion having a contracted position for holding said firing pin against inadvertent axial movement and an expanded position for allowing axial movement of said firing pin, and cover means normally confining said spring clip in said contracted position and removable to allow movement to said expanded position;

a carrying pouch; and

lanyard means connected between said carrying pouch and said cover means for effecting removal of said cover means upon movement of said signal device from said pouch beyond the limit of said lanyard means.

4,805,534

AMMUNITION EJECTION DEVICE

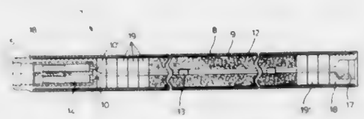
Hubert Vockensperger, Feldkirchen-Westerham; Franz Hieble, Neu-Ulm, and Robert Gebhardt, Poing, all of Fed. Rep. of Germany, assignors to Bayern-Chemie Gesellschaft für flugchemische Antriebe mbH, Fed. Rep. of Germany

Filed Sep. 1, 1987, Ser. No. 92,058

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1986, 3630083

Int. Cl.⁴ F42B *13/50*

U.S. Cl. 102—489 **11 Claims**



1. A device for ejecting containers, in particular containers of ammunition from a war head, comprising, a longitudinally extending bellows with first and second ends and having a longitudinal axis said longitudinally extending bellows forming longitudinally extending circumferentially arranged open pockets around said longitudinal axis, a container in each of said pockets, bulkhead means for closing said bellows at each end, a gas generator for inflating the bellows including a gas permeable tube arranged in the interior of said bellows and extending substantially the length of said bellows, a solid propellant charge in said gas permeable tube of a particulate material said propellant charge being sub-divided into individual chambers formed of a plurality of radially extending partition walls dividing said gas-permeable tube into said chambers, said chambers being arranged along the longitudinal axis and being each filled with said particulate material, a film for damming up said gas permeable tubes arranged within said gas permeable tube toward the outside of said propellant charge and being consumable so that upon being pressurized said propellant gases flow to the outside of said gas permeable tube, and igniting means for igniting the propellant charge extending over a substantial portion of the length of said propellant charge said ignition means comprises a mixture of a perchlorate oxygen releasing compound and a metal powder comprising at least one of boron, aluminum and magnesium.

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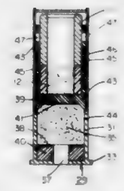
PROJECTILE

Robert V. Marcon, 3471 Sinnicks Avenue, Niagara Falls, Ontario, Canada L2J 2G6

Filed May 13, 1987, Ser. No. 48,929

Int. Cl.⁴ F42B *11/00*

U.S. Cl. 102—503 **17 Claims**



1. A composite cylindrical tubular projectile useful in guns having rifled or unrifled bores, said projectile having a hollow center portion, a front end and an aft end,

(a) said front end being fabricated of a material relatively heavier than the material used to fabricate the aft end, said front end having a forward leading edge portion and a rearward end portion,

(b) said aft end being fabricated of a separate and relatively lighter material that the material used to fabricate the said front end, said aft end extending substantially completely only rearwardly from the rearward end portion of said front end, said aft end having a trailing edge portion,

(c) the distance from a point on said aft end to a plane passing through the center of gravity of the porjectile and perpendicular to the axis of the projectile being from about 1.2 to about 1.8 times the distance from a corresponding point on the front end of said projectile to said plane, and

(d) a separable wad means positioned contiguous to the aft end of said projectile providing a substantially gas tight seal across said aft end while the projectile is propelled through a gun barrel.

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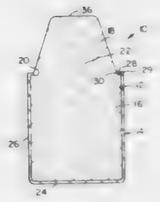
SEMI-WADCUTTER BULLET AND METHOD OF MANUFACTURING SAME

Gregory R. Kosteck, Godfrey, Ill., assignor to Olin Corporation, Stamford, Conn.

Filed Dec. 3, 1987, Ser. No. 128,320

Int. Cl.⁴ F42B *11/08*

U.S. Cl. 102—514 **10 Claims**



1. A method of manufacturing a semi-wadcutter bullet, comprising the steps of:

(a) inserting a cylindrical lead core into a cup-shaped metal jacket with a continuous cylindrical sidewall having an opening of a diameter greater than the maximum diameter of the core such that a body of the core is surrounded by the sidewall of the jacket so as to define an annular gap therebetween and such that a conical nose of the core being integral with the core body protrudes beyond a rim portion of the jacket sidewall;

(b) seating the core body within the jacket sidewall so as to cause an expansion of the core body in diameter which fills the gap therebetween and a reduction of the core body in height to slightly below that of the jacket sidewall which projects the rim portion thereof slightly beyond the core body and along the core nose;

(c) deforming the core nose so as to cause a reduction of the core nose in diameter which forms an annular ledge on the core body surrounding the core nose; and

(d) deforming the jacket sidewall rim portion so as to cause a bending of the sidewall rim portion into overlying relation with the ledge on the core body and defines a forwardly-facing sharp corner between the rim portion and the remainder of the jacket sidewall.

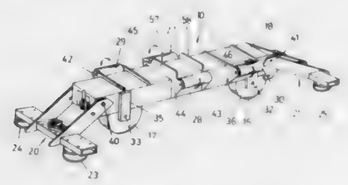
VOL 1099 ISS 3 FE 21 1989 UMI

4,805,537

VEHICLE AND JOIST MONORAIL TRACKWAY AND METHOD OF TRANSPORTING ROOF DECKING THEREOVER

Romeo Desroches, 65 Charlemont cres., Scarborough, Ontario, Canada

Filed Sep. 16, 1987, Ser. No. 97,653
Claims priority, application Canada, Oct. 28, 1986, 521653
Int. Cl.[4] B60D *1/48*
U.S. Cl. 104—246 **3 Claims**



1. A means for transporting sheets of roof-decking over a roof for installation thereon, comprising in combination with a joist member having an upper flange with parallel side edges thereto serving as a track for said means;

a roof-decking carrying truck embodying a plurality of rotary guiding elements on said truck engageable with said joist, rotary joist-riding means also on said truck for supporting and moving said truck along said joist, said truck including roof-decking supporting means spanning said rotary guiding elements; means for selectively engaging and disengaging said guiding elements from said joist including means for raising and lowering said guiding elements clear of said joist independently of the roof decking supporting means; means for clamping the guiding elements against the edges of the joist; said truck includes roof-decking support means in the form of a pair of parallel ly spaced rollers having their axes of rotation horizontal and perpendicular to the direction of travel of the truck on the joist and allowing the said roof-decking to be skewed angularly to said path of travel for facilitating off-loading of decking sheets and the avoidance of vertical obstructions upstanding from the roof when the truck is pushed along the joist; and load transfer members upstanding from said roof decking supporting means maintaining said decking sheets thereon when the truck is moved forward on the joist-track.

4,805,538

ELECTRIC TERMINAL TABLE

David W. Fisher; Lee N. Denny, both of Quakertown, and Joseph T. Furlong, Perkasie, all of Pa., assignors to JG Furniture Systems, Inc., Quakertown, Pa.

Filed Jun. 14, 1983, Ser. No. 504,303
Int. Cl.[4] A47B *9/04*
U.S. Cl. 108—7 **15 Claims**

1. A table assembly comprising:

a first table;

a second table;

a base;

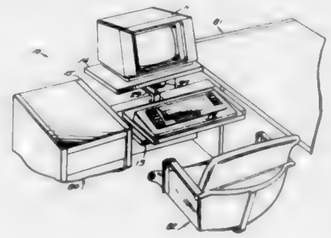
a first support for interconnecting said base and said first table said first support comprising a tube that is quadrate in cross-section, and an adjustable bushing mounted to said base and for receipt of said tube for positively guiding it in reciprocation with respect to said base;

a second support, distinct from said first support, for connecting said second table to said base;

first power means, connected to said base, for adjusting the vertical position of said first table with respect to said base;

second power means, connected to said base, for adjusting the vertical position of said second table with respect to said base;

said power means comprising: a motor; a vertically extending lead screw operatively connected to said motor, said lead screw extending into the interior of said support tube; a nut disposed interiorly of said support tube and in screw-threaded engagement with said lead screw; and means for mounting said nut so that it is stationary with respect to said support tube;



adjustment means, associated with said second table and said second support, for providing adjustment of the angular orientation of said second table with respect to the horizontal; and

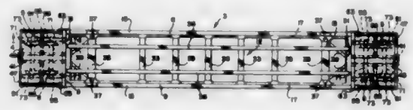
wherein said first support comprises a single support post extending upwardly from said base and operatively interconnected to said first table; and wherein said second support comprises a single support post extending upwardly from said base and operatively connected to said second table.

4,805,539

WELL CAR END STRUCTURE HAVING FRAMELESS RADIAL TRUCK

Ray L. Ferris, Thornton, Ill., and Phillip G. Przybylinski, Schererville, Ind., assignors to Trinity Industries, Inc., Dallas, Tex.

Filed May 7, 1987, Ser. No. 47,980
Int. Cl.[4] B61F *1/10*
U.S. Cl. 105—355 **19 Claims**



1. A railway car train comprising:

a truck including a first transversely extending axle and having a first pair of wheels supported thereon whereby said truck is rollingly support on a pair of rails;

the truck having first and second transversely spaced pairs of longitudinally spaced support means for receiving vertical loads;

a car body having end structures supported on the support means of the truck;

each of said end structures including

first and second transversely spaced generally longitudinally extending side structures;

a first generally transversely extending beam member fixedly connected with each of the side structures;

a center sill extending generally longitudinally and being supported between said side structures;

first and second cross support members positioned longitudinally inwardly of the first transversely extending beam member, each fixedly connected with the center sill and with said first and second side structures, respectively;

first and second truck support members each being fixedly connected with the first transversely extending beam member and the first and second cross support members respectively;

the truck support members each having a pair of longitudinally spaced truck engagement means thereon, engaging a respective pair of support means for supporting the car body on the truck;

said cross support members and said first transversely extending beam member receiving vertical loads from the side structures and transferring said loads to the associated truck support beams for supporting the end structure of the car on the truck;

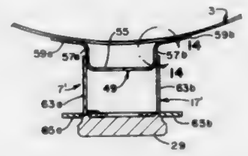
one of each pair of truck engagement means on the respective truck support member being supported adjacent the first transversely extending beam member and the other of each pair of truck engagement means being supported adjacent the cross support member connected with the respective truck support member for receiving the vertical loads from the beam member and cross support members and transferring the loads to the support means of the truck for supporting the end structure of the railway car thereon, and generally horizontal plate means being fixedly connected with said side structures, the center sill, said beam member, said cross support members, and said truck support members to reinforce said members for support loads in the end structure.

4,805,540

CENTER STUB STILL RAILWAY TANK CAR CONSTRUCTION

James D. Mundloch, St. Louis County, and William U. Casseau, St. Louis, both of Mo., assignors to ACF Industries, Incorporated, Earth City, Mo.

Filed Jul. 14, 1986, Ser. No. 866,693
Int. Cl.[4] B61D *5/00*
U.S. Cl. 105—358 **11 Claims**



1. In a stub sill railway tank car having a generally cylindric, elongate tank with a tank end at each end thereof, a center stub sill assembly secured to the lower portion of the tank at each end thereof for transferring longitudinal train loads and lading loads between the tank and the center stub sill assembly, each center stub sill assembly carrying a coupler and a truck assembly which is pivotally connected to the center stub sill assembly for rollingly supporting said railway car on the rails, said center stub sill assembly comprising a center stub sill secured to the bottom portion of said tank and extending inboard of the tank end but terminating short of the center of the tank and extending outboard beyond the end of the tank for carrying its respective said coupler, a bolster assembly secured to said center stub sill and extending transversely thereof proximate the connection of said truck assembly to said center stub sill assembly, and a cradle assembly secured to the lower end portion of said tank for reinforcing said tank bottom end portions and for transferring loads between said tank and said center stub sill assembly and said bolster assembly, wherein the improvement comprises: an improved cradle assembly having an arcuate cradle extending circumferentially upwardly form the bottom centerline of the tank somewhat inboard of the intersection between said tank and said tank end generally at the longitudinal position of said bolster assembly, and an elongate cradle pad secured to the bottom of said tank and extending in inboard direction along the bottom centerline of the tank, said cradle pad having a lower center web spaced below the bottom centerline of the tank, said center web having a thickness, and said cradle pad further having a pair of vertical flanges extending upwardly from said center web and being secured to said tank on opposite sides of the bottom centerline thereof, said center stub sill extending inboard form the coupler and having a pair of vertical sill flanges with said vertical sill flanges being disposed on the outer faces of said cradle pad vertical flanges inboard of said bolster assembly, said vertical sill flanges being in adjustable inside face-to-outside face slip fit engagement with said cradle pad vertical flanges thereby to facilitate adjustment between said center stub sill and said cradle pad through a range of adjustment substantially greater than said thickness of said center web to a desired adjusted position, and weld means for securing said center stub sill to said cradle pad when the latter are in their said adjusted position.

4,805,541

TABLETOP CONSTRUCTION

Mark R. Drane, Memphis; Jerry E. Johnson, Grand Junction, and Samuel L. Ragnes, Germantown, all of Tenn., assignors to Hart/Troxel Joint Venture, Moscow, Tenn.

Filed Apr. 6, 1987, Ser. No. 35,160
Int. Cl.[4] A47B *17/00*
U.S. Cl. 108—27 **12 Claims**



1. In a table having a frame and a top plate supported on the frame, the top plate having a marginal edge, the improvement comprising a rim bounding the marginal edge of the top plate and having an upper flange extending inwardly towards the center of the top plate and dimensioned to overlay at least a portion of the top plate and a lower flange spaced below said upper flange and extending inwardly towards the center of the top plate, a plurality of wedge members disposed between said upper and lower flanges of said rim and including means for maintaining the top plate in a fixed position adjacent said upper flange and in spaced relation to said lower flange, and a plurality of connectors configured to interengage said wedge members and said frame to prevent relative movement between said frame and said wedge members.

4,805,542

TABLE

Warren J. Peterson; Charles E. Warner, and Peter J. Waldmann, all of Stevens Point, Wis., assignors to Joerns Healthcare, Inc., Stevens Point, Wis.

Filed Dec. 9, 1986, Ser. No. 939,613
Int. Cl.[4] A47B *9/00*
U.S. Cl. 108—150 **34 Claims**

1.

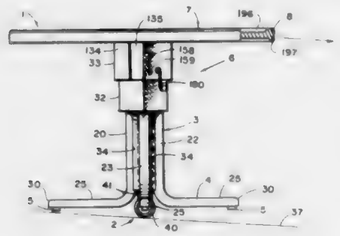
A portable table, comprising:

a top shaped to selectively support articles thereon;

a base having an upper end thereof operably connected with said top, and being adapted to selectively support said top on a support surface at a preselected height; said table having a center o gravity below which at least a portion of

said base is positioned to selectively support said table in stationary positions on the support surface;

a retractable caster, including a ground engaging wheel with means for shifting said caster wheel between an extended position wherein said caster wheel is weight-bearing and supports said table on the support surface, and a retracted position wherein said caster wheel is not weight-bearing, and said base supports said table on the support surface; said retractable caster being connected with said table at a



location selected so that said caster wheel is disposed substantially directly below the center of gravity of said table when said caster wheel is in the extended position, whereby said table can be easily transported from one location to another by shifting said caster wheel to the extended position, positioning said table in a generally poised condition over said caster wheel, and manually translating said table in the generally poised condition over the support surface.

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MICROPOSITIONING DEVICE

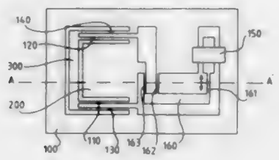
Philippe M. Schwab, Yverdon, and Pierre M. Genequand, Geneva, both of Switzerland, assignors to Centre Suisse D'Electronique et de Microtechnique S.A., Neuchatel, Switzerland

Filed Aug. 27, 1986, Ser. No. 900,693

Claims priority, application France, Aug. 30, 1985, 85 12944

Int. Cl.⁴ G01B *5/00*

U.S. Cl. 108—20 **2 Claims**



1. A device for precisely positioning a mobile platform with respect to a reference base in at least two orthogonal directions, comprising:

at least one plate connected to an actuator for each of said orthogonal directions, each plate comprising a reference part rigidly fixed to said reference base, an intermediate platform, a mobile part, and a transmission lever connected to said actuator, connected to said reference part and connected to said intermediate platform, respectively, by means of a first set of three parallel elastic strips so as to transmit from the actuator to the intermediate platform a translational movement in a first direction and according to a given reduction ratio;

said intermediate platform being connected to said reference part by means of a second set of parallel elastic strips so that said intermediate platform moves in said first direction responsive to movement transmitted by the transmission lever; and

said mobile part being rigidly fixed to said mobile platform and being coupled to said intermediate platform by means of a third set of parallel elastic strips, said third set of parallel elastic strips being disposed perpendicular to said second set of parallel elastic strips and being arranged whereby said mobile platform can be moved in a direction perpendicular to said first direction substantially without affecting movement of said mobile platform in said first direction.

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SEWING MACHINE WITH THREAD MONITOR FOR THE BOBBIN THREAD

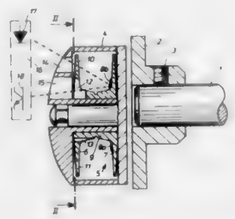
Reinhold Dobner; Bernhard Mertel, and Erich Willenbacher, all of Kaiserslautern, Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Feb. 2, 1988, Ser. No. 151,471

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1987, 8701858

Int. Cl.⁴ D05B *45/00*

U.S. Cl. 112—278 **13 Claims**



1. A sewing machine having a thread monitor comprising: a light source; a light receiving member; a bobbin mounted for rotation, said bobbin having a first flange and a second flange, said second flange having an inner surface facing toward said light source and having a first reflecting surface positioned on the inner side of said second flange, said first flange having an outlet opening associated with said first reflecting surface for the emergence of light rays deflected off the corresponding first reflection surface; a second reflection surface positioned on said second flange facing said light source spaced circumferentially from said first reflecting surface; a second outlet opening in said first flange, said second outlet opening being associated with the second reflection surface for the emergence of light rays reflected off the second reflection surface; and, comparison circuit means for receiving a signal from said light receiver and producing a warning signal based on a given ratio of signals obtained from the light receiver corresponding to signals obtained from light rays corresponding to the emergence of light rays from the first outlet opening and the second outlet opening.

4,805,545

TEMPORARY STORAGE MAST SUPPORT

Jerry Groth, 2525 S. 162nd St., New Berlin, Wis. 53151

Filed May 26, 1987, Ser. No. 53,878

Int. Cl.⁴ B63H *9/04*

U.S. Cl. 114—90 **3 Claims**

1. A temporary mast storing and supporting device for a detachable mast including:

a. a hollow elongated cylindrical first sleeve with a first flange extending radially from one end of said first sleeve;

b. a hollow cylindrical second sleeve with a second flange extending radially from one end of said second sleeve, said second sleeve adapted to fit telescopingly within said first sleeve, said second sleeve having a smaller outside cylindrical radius than the inside cylindrical radius of said first sleeve and said first and second sleeves having a common longitudinal centerline axis;



c. wherein said first and second flanges are provided with detent structure on their upwardly and outwardly facing flange surfaces when said second flange is at least partially overlying said first flange limiting relative rotational movement of said second sleeve within said first sleeve.

4,805,546

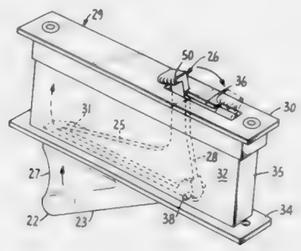
RETRACTABLE WATER BOARD FIN

Douglas A. Geller, Arcadia; Stephen E. Schneider, Claremont, and William C. Holbrook, San Gabriel, all of Calif., assignors to Krasco Manufacturing, Inc., San Francisco, Calif.

Continuation of Ser. No. 820,104, Jan. 21, 1986, abandoned. This application Feb. 1, 1988, Ser. No. 148,161

Int. Cl.⁴ B63B *41/00*

U.S. Cl. 114—132 **7 Claims**



1. The combination of a retractable fin assembly mounted within a water board, the water board having a top and a bottom and a given depth, said assembly comprising:

a casing including a hollow body having a cavity defined therein and said body having a depth equal to or less than that of the board, said casing body having a top and a bottom and there being a fin-receiving opening defined through the bottom of the casing;

said casing further having first and second flanges secured to the top and bottom of said casing body extending laterally of said casing body and engaging the top and bottom of the board with the board sandwiched between said flanges, said casing including one section having said first flange and another section separable from the one section having said second flange and the assembly further including detachable fastener means securing said one and said other sections together, removal of said fastener means and separation of the sections permitting the casing to be extended through the board,

a fin receiving within the cavity, said fin being so proportioned relative to the casing that it may be fully contained therein;

means mounting the fin within the casing for select movement between a first position fully contained within the casing and a second position extending from the fin-receiving opening of the casing; and

detent means to selectively lock the fin body in said respective first and second positions.

4,805,547

ANCHOR FOR HOOKING, SEVERING AND HOLDING MARINE CABLE

Akira Matsuzaki; Yoshihiro Ejiri; Taiichiro Nakai, and Yoshiro Yamaguchi, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1987, Ser. No. 5,048

Claims priority, application Japan, Jan. 24, 1986, 61-11847; Jan. 24, 1986, 61-11848; Mar. 10, 1986, 61-50563

Int. Cl.⁴ B26D *1/26*

U.S. Cl. 114—221 A **24 Claims**



1. An anchor for hooking, cutting and holding an underwater marine cable, comprising a body means having a hook-like configuration in that said body means has a cable-receiving channel which leads to a closed end such that in hooking a cable, the cable moves along said channel to said closed end, cable-responsive means mounted on said body means at said closed end and operable to be engaged by a cable which has been hooked, cutter-gripping means mounted on said body means for cutting said hooked cable and for gripping one end of the cut cable such that said gripped one end of said cable can be raised by said anchor, and cylinder-piston means operably connected between said cable-responsive means and said cutter-gripper means for utilizing the ambient liquid pressure as a source of power for powering said cutter-gripping means to effect a cutting action on a hooked cable upon being actuated by said cable-responsive means, said cylinder-piston means comprising buffering means utilizing a compressible gas medium for buffering the effect of the ambient liquid pressure applied to said cutter-gripping means during said cutting action.

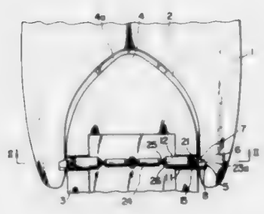
VOL 1099 ISS 3 FEB 21 1989 UMI

4,805,548

MEANS OF CONNECTING A PUSHER BOAT AND A BARGE

Takuma Yamaguchi, 7-5-203, Sodegaura 2-chome, Narashino (Chiba-ken), Japan

PCT No. PCT/JP82/00108, § 371 Date Nov. 9, 1982, § 102(e) Date Nov. 9, 1982, PCT Pub. No. WO82/03610, PCT Pub. Date Oct. 28, 1982
Continuation of Ser. No. 442,227, Nov. 9, 1982, abandoned. This PCT application Apr. 7, 1982, Ser. No. 91,324
Claims priority, application Japan, Apr. 10, 1981, 56-50907[U]
Int. Cl.[4] B63B *21/56*
U.S. Cl. 114—248 3 Claims



1. Apparatus for connecting a pusher boat and a barge, said barge having a notch formed in the stern portion of said barge, said notch shaped to receive a bow portion of said pusher boat which has a bow fender mounted at the front thereof, said barge having two vertically elongated channels facing each other transversely of a centerline of said barge and so formed within the side walls of said notch as to have a greater clear width at their entrances at said side walls than at their bottoms, and said pusher boat having, on both sides of said bow portion, two transversely elongated connecting pins arranged to be axially extended and retracted by the function of hydraulic power means and having helmets mounted at their outer ends and shaped to engage with said channels, wherein:

(a) the forward side walls of said channels, which correspond to the fore of said barge, are formed as oblique flat vertical walls;

(b) the rearward side walls opposite to said forward side walls of said channels have concavities of a same shape stepwise arranged from top to bottom at an approximate equidistance apart and horizontally extending from the entrances to the bottoms of said channels;

(c) each of said helmets is mounted on either of said connecting pins in such a manner that relative turn of said helmet and said connecting pin about the axis of said connecting pin cannot take place and relative turns in other directions can be permitted within a small limited range;

(d) the forward faces of said helmets are oblique flat surfaces corresponding to said oblique forward side walls of said channels, while the rearward sides of said helmets are teeth which can tightly engage with said concavities of said channels; and

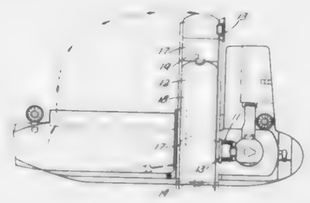
(e) the outer end sides of said forward faces of said helmets are located slightly abaft the entrance ends of said forward side walls of said channels when the bow fender of said pusher boat comes into contact with the deepest point of said notch of said barge.

4,805,549

DEVICE FOR SUBSEA OPERATIONS

Bjornar Svensnes, Trondheim, Norway; Rune Svensson, Hällvikskila, and Lars Truedsson, Klagstorp, both of Sweden, assignors to Den norske stats oljeselskap a.s, Norway

Continuation of Ser. No. 838,118, Mar. 10, 1986, abandoned. This application Dec. 9, 1987, Ser. No. 131,337
Claims priority, application Norway, Mar. 11, 1985, 850957
Int. Cl.[4] B63B *1/02*
U.S. Cl. 114—325 8 Claims



1. A submarine vehicle comprising:

(a) a first side pressure hull, said first side pressure hull having a front end and a back end, said first side pressure hull being cylindrical in shape;

(b) a second side pressure hull, said second side pressure hull having a front end and a back end, said second side pressure hull being cylindrical in shape, said second side pressure hull spaced away from and parallel to said first side pressure hull, said front end of said first side pressure hull being opposite said front end of said second side pressure hull and said rear end of said first side pressure hull being opposite said rear end of said second side pressure hull;

(c) a front transverse pressure hull, said front transverse pressure hull having one end connected to said front end of said first side pressure hull and said front transverse pressure hull having another end connected to said front end of said second side pressure hull;

(d) a rear transverse member, said rear transverse member having one end connected to said rear end of said first side pressure hull and said rear transverse member having another end connected to said rear end of said second side pressure hull;

(e) an external hull surrounding and connecting said first and said second side pressure hull;

(f) a cargo compartment positioned between said first and second side pressure hull, said first side pressure hull, said second side pressure hull and said cargo compartment having a similar cross-sectional areas and in substantially the same plane, said cargo compartment for carrying a separable cargo module therein;

(g) a frame pivotally mounted between said first and second side pressure hull in said cargo compartment; and

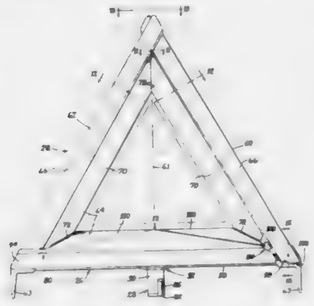
(h) means for pivoting said frame between a rest position where said frame is parallel to said first and second side pressure hull and a work position where said frame is substantially perpendicular to first and second side pressure hull, thereby moving said separable cargo module between a rest position where said separable cargo module is parallel to said first and second side pressure hull and a working position where said separable cargo module is substantially perpendicular to said first and second side pressure hull.

4,805,550

SAFETY TRIANGLE

Ron Raczkowski; Rich Wojcik, and Thomas Franczyuski, all c/o Sparklite Inc. 3725 W. Diversey Ave., Chicago, Ill. 60647

Filed Sep. 29, 1982, Ser. No. 426,602
Int. Cl.[4] E01F *9/10*
U.S. Cl. 116—63 T 13 Claims



1. A safety triangle construction comprising,

a base,

a triangle mounted on the base made up of a bottom blade and two upright blades, each blade including an outer portion of day reflecting material and an inner portion, the outer portion of each blade lying essentially in a common plane, and the inner portion of each blade forming a vane inclined from said plane and thereby operable for deflecting wind that blows generally transverse to the plane at an angle to its general direction and thereby operable for producing relative low pressures on respective sides of the triangle to counteract high pressures imposed by the wind, the vanes of the upright blades being inclined in mutually opposite directions from said plane, and

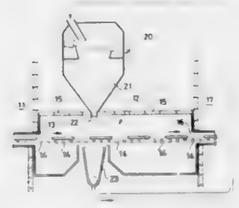
the vane on the bottom blade having portions at opposite ends inclined mutually oppositely from said plane, and that portion at each end being inclined oppositely from the vane on the adjacent upright blade.

4,805,551

PROCESS AND APPARATUS FOR PRODUCING GLAZED CERAMIC TILES, AND TILES SO OBTAINED

Filippo Marazzi, Sassuolo, Italy, assignor to Ceramica Filippo Marazzi S.p.A.

Division of Ser. No. 816,751, Jan. 7, 1986, abandoned. This application Sep. 22, 1987, Ser. No. 99,479
Claims priority, application Italy, Feb. 21, 1985, 19589 A/85
Int. Cl.[4] B05C *11/00*
U.S. Cl. 118—64 5 Claims



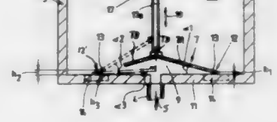
1. An apparatus for firing and glazing clay tiles, comprising a firing furnace having a first section with a first inlet mouth for receiving dried raw clay tile, means in said first section for gradually heating raw tiles as they pass through said first section to a temperature sufficient for substantially completing firing reactions in the clay tile and for raising the temperature of the tiles to an incandescent plastic temperature, said first section having a first exit mouth for discharging the tile at the incandescent plastic temperature, a glazing section for receiving fired tiles at the incandescent plastic temperature directly from said first exit mouth, means in said glazing station for permitting an abrupt drop in temperature of said fired tiles to a temperature below a vitrification temperature of a dry loose glaze, glaze spreading means in said glazing station for spreading dry loose glaze on the fired tile in said glazing station, said firing furnace having a second station with a second inlet mouth for receiving glaze covered tiles from said glazing station, means in said second section for maintaining tiles in said second section at an initial temperature sufficient for vitrifying the glaze on the tiles and for providing a subsequent controlled and decreasing temperature for the progressive cooling of the tiles in said second section, said second section having a second exit mouth for discharging glazed, fired and cooled tiles, and conveying means extending in a single pathway through said first section, said glazing station and said second station, and past said first and second inlet and said first and second exit mouths, for conveying tiles from said first inlet mouth to said second mouth so that raw tiles are fired and glazed in a continuous process.

4,805,552

APPARATUS FOR REGULATING THE FLOW OF GASEOUS AND LIQUID MEDIA

Ralph Pagendarm, Halstenbek, and Albert Hebels, Hamburg, both of Fed. Rep. of Germany, assignors to Pagendarm Beschichtungstechnik GmbH, Hamburg, Fed. Rep. of Germany

Filed Nov. 3, 1987, Ser. No. 116,442
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1986, 3637452
Int. Cl.[4] B05B *9/00, 12/02*
U.S. Cl. 118—325 20 Claims



1. Apparatus for regulating the flow of a gaseous or liquid medium, comprising a housing defining an internal chamber and having a wall member bounding a portion of said chamber; a partitioning member provided in said housing, adjacent said wall member and dividing said chamber into a first compartment and a second compartment, said housing having means for admitting the medium into one of said compartments and means for evacuating the medium from the other of said compartments, said evacuating means including nozzle means having at least one elongated discharge orifice for the medium, said members defining at least one path for the flow of the medium between said compartments in a direction from said one compartment into said other compartment and at least one of said members being movable relative to the other of said members to a plurality of different positions of inclination of said members with reference to one another to thereby vary the effective cross-sectional area of said path and hence the rate at which the medium can flow between said compartments; and means for advancing a web of carrier material in a predetermined direction past said nozzle means so that the medium issuing from said orifice forms a layer on the advancing web.

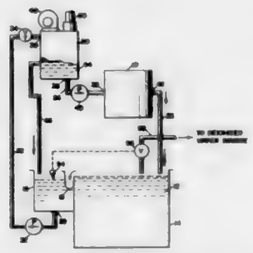
VOL 1099 ISS 3 FE 2 1 1989 UMI

4,805,553

APPARATUS FOR BAILOUT ELIMINATION AND FOR ENHANCING PLATING BATH STABILITY IN ELECTROSYNTHESIS/ELECTRODIALYSIS ELECTROLESS COPPER PURIFICATION PROCESS

Gerald A. Krulik, Laguna Hills, Calif., assignor to Morton Thiokol, Inc., Chicago, Ill.

Continuation of Ser. No. 69,349, Jul. 2, 1987, which is a division of Ser. No. 923,233, Oct. 27, 1986, Pat. No. 4,719,128. This application Aug. 15, 1988, Ser. No. 232,356
Int. Cl.[4] B05C *11/00*
U.S. Cl. 118—603 1 Claim



1. In an electroless copper plating system for replenishing and maintaining the stability of an electroless copper plating solution in a plating bath, which solution tends to become depleted as the result of the reduction of water soluble cupric salt in an alkaline solution under copper plating and reducing conditions and which is replenished by an electrosynthesis-/electrodialysis purification process,

wherein in the continued operation of the plating bath, the rate of evaporation of water from the surface thereof is insufficient to preclude growth in the volume of electroless copper solution in the plating bath resulting from liquid additions thereto required to replace consumed constituents, thus giving rise to a need for bailout of the plating bath to prevent overflow thereof, and

wherein increase in the amount of oxygen in the electroless copper solution and purging of waste hydrogen therefrom contribute to enhanced stability of the electroless copper solution, comprising

a plating bath containing electroless copper plating solution,

an electrosynthesis/electrodialysis purification system for chemically removing waste products from the electroless copper solution and for simultaneously replenishing the electroless copper solution with electrosynthesized hydroxyl ions, said purification system having an input and an output,

a forced air, ambient temperature, atmospheric evaporator, and

fluid conductor means for connecting said evaporator to said plating bath and to said purification system to cause the electroless copper solution to pass through said evaporator, said purification system being remotely located with respect to each of said plating bath and said evaporator,

a source of deionized water,

a first three-way valve connected to said fluid conducting transfer means between said purification system and said evaporator, said first three-way valve being located adjacent said evaporator and having a first adjusted position in which a flow of electroless copper solution is directed to flow from said evaporator through said fluid conducting transfer means to the input of said electrosynthesis/electrodialysis purification system and having a second adjusted position in which deionized water from a source thereof is directed to flow through said fluid conducting transfer means for purging said fluid conducting transfer means,

a second three-way valve connected to said fluid conducting transfer means between said purification system and said evaporator, said second three-way valve being located adjacent said electrosynthesis/electrodialysis purification system and having a first adjusted position in which a flow of electroless copper solution is directed to flow to the input of said purification system and through said electrosynthesis/electrodialysis purification system to the output thereof and to said plating bath and having a second adjusted position in which said input and said output of said electrosynthesis/electrodialysis purification system are directly connected whereby electroless copper solution conducted by said fluid conducting transfer means bypasses said purification system and flows directly to said plating bath,

said atmospheric evaporator being operative to expose the electroless copper solution to an amount of air at atmospheric pressure sufficient to increase the rate of evaporation of water therefrom to at least a level where the amount of water evaporated from the electroless copper solution of the plating bath matches the liquid additions thereto required to replace consumed constituents, to saturate the electroless copper solution with oxygen, and to purge the electroless copper solution of waste hydrogen,

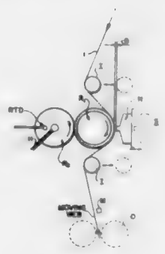
whereby during the operation of the plating bath there is no tendency for the plating bath to overflow, thus eliminating the need for bailout, and whereby the electroless copper solution is saturated with oxygen and hydrogen waste is purged therefrom to enhance the stability thereof.

4,805,554

METHOD OF AND APPARATUS FOR MAINTAINING UNIFORM HOT MELT COATINGS ON THERMALLY SENSITIVE WEBS BY MAINTAINING DIMENSIONAL STABILITY OF SILICONE AND RUBBER-LIKE WEB BACK-UP ROLLS

Frederic S. McIntyre, Wellesley, Mass., assignor to Acumeter Laboratories, Inc., Marlborough, Mass.

Filed May 22, 1987, Ser. No. 53,386
Int. Cl.[4] B05C *11/00*
U.S. Cl. 118—666 12 Claims



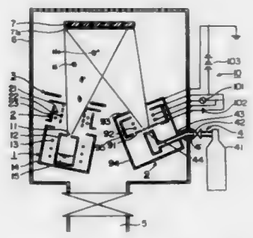
1. In a system in which a hot melt coating is deposited by a hot-melt dispensing nozzle upon the front of a thermally sensitive web moving past the nozzle, with the nozzle being spaced a predetermined distance from the front of the web and with back-up roll means engaging the back of the web opposite the nozzle, and wherein the back-up roll means comprises a material, the dimensions of which tend to vary with temperature changes and thereby to vary said predetermined distance of said nozzle from the front of said web, apparatus for maintaining the dimensional stability of said back-up roll means comprising heat-conducting roll means rotatably directly contacting the back-up roll means and having means for varying the temperature of the heat-conducting roll means to transfer heat directly from or to the back-up roll means, means for monitoring the surface temperature of the back-up roll means to sense temperature variations thereof, including temperature variations caused by the deposition of hot melt coatings from the nozzle onto the front of the web and by the transfer of heat between the web and the back-up roll means, tending to vary the dimensions of the back-up roll means and thus the distance between the nozzle and the front of the web, and means for controlling the temperature of the heat-conducting roll means in response to the monitoring means and thereby to control the direct transfer of heat between the back-up roll means and the heat-conducting roll means, so as to maintain the dimensional stability of the back-up roll means and the distance between the nozzle and the web.

4,805,555

APPARATUS FOR FORMING A THIN FILM

Hiroki Itoh, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 27, 1987, Ser. No. 113,165
Claims priority, application Japan, Oct. 29, 1986, 61-255848; Mar. 13, 1987, 62-56686; May 8, 1987, 62-110613
Int. Cl.[4] C23C *16/00*
U.S. Cl. 118—719 14 Claims



1. An apparatus for forming a thin film comprising:

a vacuum chamber;

reactive gas supplying means for supplying an activated reactive gas in the vicinity of a surface of a substrate disposed in said vacuum chamber;

vapor producing means for producing vapors of a material to be deposited on said substrate;

clusterizing means for forming clusters of said vapors;

ionizing means for partially ionizing said vapors and said clusters; and

means for directing said cluster ions, said vapor ions, and non-ionized clusters and vapors toward the surface of said substrate so that said cluster ions, said vapor ions, and non-ionized clusters and vapors can react with said activated reactive gas in the vicinity of the surface to form a thin film of reaction compounds on the substrate surface.

4,805,556

REACTOR SYSTEM AND METHOD FOR FORMING UNIFORMLY LARGE-DIAMETER POLYCRYSTALLINE RODS BY THE PYROLYSIS OF SILANE

David W. Hagan, Circleville, Ohio; William D. Burke, Vancouver, Wash.; Thomas R. Thomas, and McRea B. Willmert, both of Moses Lake, Wash., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 15, 1988, Ser. No. 144,164
Int. Cl.[4] C23C *16/00*
U.S. Cl. 118—725 6 Claims

1. A reactor system for pyrolyzing silane to form a high-purity polycrystalline silicon rod of uniform diameter substantially independent of diameter size comprising:

a base member;

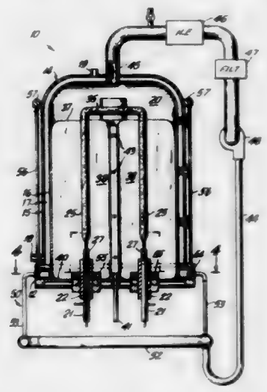
a shell for covering said base member to form an enclosure within said reactor;

an array of filament starter rods vertically disposed within said enclosure in a substantially symmetrical spaced apart relationship;

means for introducing silane feed gas into said enclosure;

means for heating each starter rod to a predetermined temperature to initiate the heterogeneous decomposition of silane for depositing silicon upon each rod;

means for forming an elongated chamber about each filament rod with each chamber extending below each starter rod;



means for recycling exhaust gas from said reactor back into said enclosure such that at least part of the recycle stream is reintroduced separately from the silane feed gas; and

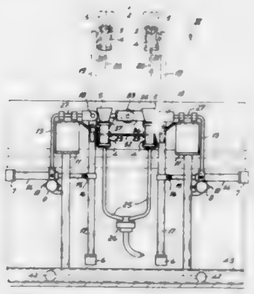
means for directing said recycled gas into each chamber surrounding each electrode at one end thereof and at a level below each starter rod.

4,805,557

METHOD OF AND AN IMPLEMENT FOR MILKING AN ANIMAL

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to Cornelis van der Lely, N.V., Maasland, Netherlands

Filed Jan. 15, 1987, Ser. No. 3,610
Claims priority, application Netherlands, Jan. 16, 1986, 8600076
Int. Cl.[4] A01J *3/00*
U.S. Cl. 119—14.08 17 Claims



1. An implement for milking an animal such as a cow comprising:

scanning means for determining the disposition of one or

more teats of the animal's udder, said scanning means comprising a substantially upwardly directed distance-measuring sensor;

attachment means for attaching teat cups to the teat or teats, said attachment means comprising moving members for each said teat cup and a subframe interconnected to a corresponding said teat cup, wherein each said teat cup is provided with a first said moving member to cause said subframe to pivot in a substantially vertical plane, a second said moving member connected to said subframe to cause a third said moving member to pivot in a substantially second vertical plane which is approximately perpendicular to said first-mentioned plane, said third moving member being adapted to move the corresponding said teat cup in a substantially upwardly direction.

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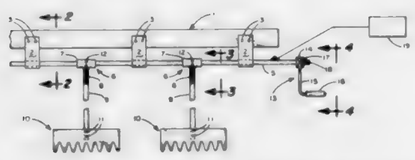
ELECTRIC COW TRAINER

Donald E. Lehmann, Rte. 1, Hillman, Minn. 56338

Filed May 4, 1987, Ser. No. 45,533

Int. Cl.[4] A01K *15/02*

U.S. Cl. 119—29 **6 Claims**



1. A cow trainer for use in a barn having stalls comprised of:

(a) a plurality of electrically conductive training members;

(b) an electrically conductive support shaft;

(c) first locking means for securing said electrically conductive training members to said shaft in any one of a plurality of pre-selected angular orientations;

(d) means for supporting said shaft above said stalls;

(e) means for electrically insulating said support means from said shaft;

(f) means for simultaneously rotating said shaft and the electrically conductive training members locked to it between a plurality of pre-selected positions;

(g) second locking means for maintaining said shaft and electrically conductive training members in a desired pre-selected position; and

(h) means for energizing said shaft and said electrically conductive training members.

4,805,559

IMPLEMENT FOR MILKING ANIMALS

Ary Van der Lely, Maasland, and Karel Van den Berg, Bleskensgraaf, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

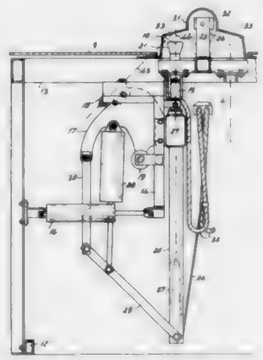
Filed Aug. 27, 1987, Ser. No. 90,035

Claims priority, application Netherlands, Aug. 27, 1986, 8602172

Int. Cl.[4] A01J *7/00*

U.S. Cl. 119—14.1 **29 Claims**

1. An implementation for milking an animal, such as a cow, comprising a support frame, a scanning means for determining the position of one or more teats of the animal's udder, carrying means for carrying one or more teat cups nearby the teats to which said one or more teat cups should be attached, said carrying means further comprising an attachment member for each said teat cup, each said teat cup being connected to an associated said attachment member by a flexible connection



member permitting each said teat cup, after attachment to said teat, to be separated from said associated attachment member.

4,805,560

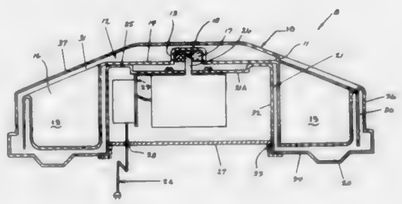
AUTOMATIC PET FEEDING DEVICE

Frank M. Knego, 8109 Barbour Manor Dr., Louisville, Ky. 40222; Fred D. Cox, 6924 Wythe Cir., Louisville, Ky. 40059, and James W. Klapheke, 2306 Village Dr., Louisville, Ky. 40205

Continuation-in-part of Ser. No. 817,620, Jan. 10, 1986, abandoned. This application Aug. 28, 1987, Ser. No. 90,538

Int. Cl.[4] A01K *5/02*

U.S. Cl. 119—51.12 **9 Claims**



1. An automatic pet feeding device comprising:

a stationary base unit defining a central enclosure having a closed to;

a motor/timer mechanism located within the enclosure with the driven shaft of the motor projecting upwardly and outwardly of the enclosure through a central hole in the top of the base unit;

a stationary annular bearing concentric and unitary with the closed top, and spaced radially from the central hole formed therethrough, of the base unit and raised above the closed top;

a food tray having a plurality of food compartments circumferentially spaced apart about the perimeter of the food tray, the food tray being supported and rides solely on the annular bearing of the base unit for rotation thereon relative to the base unit;

means associated with the food tray for engaging the portion of the driven shaft of the motor projecting through the center hole of the closed top of the base unit for engaging the driven shaft of the motor so that the food tray rotates with the driven shaft of the motor on the annular bearing relative to the stationary base unit; and

a removable lid covering the food tray and supported on the base unit, the lid having a feed opening therethrough sized and configured to expose two adjacent food compartments of the food tray therebeneath.

4,805,561

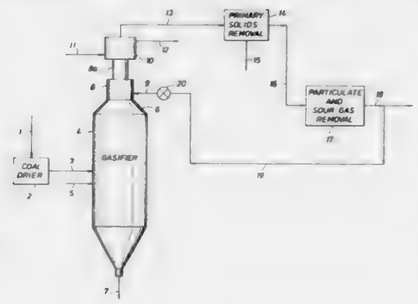
COAL GASIFICATION PROCESS WITH INHIBITION OF QUENCH ZONE PLUGGING

D. G. Davis, and L. W. R. Dicks, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 131,606, Dec. 11, 1987, abandoned. This application Jul. 13, 1988, Ser. No. 220,421

Int. Cl.[4] F22D *1/00*

U.S. Cl. 122—7 R **3 Claims**



1. A process for the gasification of coal comprising oxidizing coal under conditions to produce hot synthesis gas containing flyslag and having a temperature of from about 1050° C. to about 1800° C.;

passing the hot synthesis gas containing flyslag upward from the gasification zone and quenching the synthesis gas and flyslag in a quench zone, the quench zone comprising an indirect heat exchange zone, the heat transfer surfaces of said indirect heat exchange zone in contact with said hot synthesis gas and flyslag and through which heat is extracted from the hot gas to a coolant at least partly being composed of titanium diboride.

4,805,562

COAL GASIFICATION PROCESS WITH INHIBITION OF QUENCH ZONE PLUGGING

D. G. Davis; L. W. R. Dicks, both of Houston, and J. A. Horwege, Seabrook, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 131,600, Dec. 11, 1987, abandoned. This application Jul. 13, 1988, Ser. No. 220,448

Int. Cl.[4] F22D *1/00*

U.S. Cl. 122—7 R **3 Claims**

1. A process for the gasification of coal comprising oxidizing coal under conditions to produce hot synthesis gas containing flyslag and having a temperature of from about 1050° C. to about 1800° C.;

passing the hot synthesis gas containing flyslag upward from the gasification zone and quenching the synthesis gas and flyslag in a quench zone, the quench zone comprising an indirect heat exchange zone, the heat transfer surfaces of said indirect heat exchange zone in contact with said hot synthesis gas and flyslag and through which heat is extracted from the hot gas to a coolant at least partly being composed of silicon nitride.

4,805,563

BLOCK CONSTRUCTION OF ENGINE

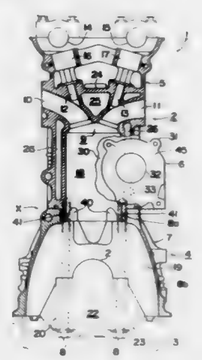
Hirofumi Nishimura, and Akira Kageyama, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed May 26, 1987, Ser. No. 53,461

Claims priority, application Japan, May 27, 1986, 61-121881

Int. Cl.[4] F02F *1/36*

U.S. Cl. 123—41.82 A **11 Claims**



1. An engine block for a water cooled engine of the reciprocating type, comprising:

a combustion chamber including a head portion at an upper end thereof, a cylinder portion having an upper wall, and an upper wall top-face above the upper wall;

a lower deck portion defining first and second sides and first and second cooling water passages, said head portion being located to the first side of the lower deck portion and included by the first cooling water passage, the cylinder portion and the upper wall top-face being located to the second side of the lower deck portion and included by the second cooling water passage;

a communication passage communicating between the first and second cooling water passages and being formed in said lower deck portion; and

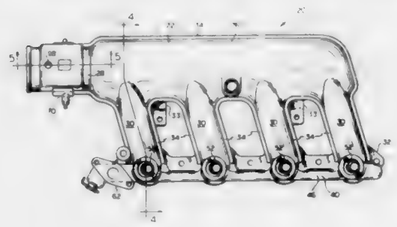
a cooling water opening connected with the second cooling water passage so that cooling water may flow into the second cooling water passage and through the first cooling water passage.

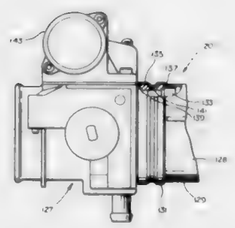
4,805,564

ENGINE INTAKE MANIFOLD ASSEMBLY

Sharon J. Hudson, Jr., Lambertville, Mich., assignor to Sharon Manufacturing Company, Lambertville, Mich.

Filed Sep. 22, 1987, Ser. No. 99,591
Int. Cl.[4] F02M *61/14*
U.S. Cl. 123—52 MC **21 Claims**





1. An improved intake manifold for an internal combustion engine, said manifold comprising: a ported mounting plate, at least two members made of sheet material defining an air intake throat section, a plenum section downstream from said throat section and a plurality of tubular runners extending from said plenum to said ported mounting plate said runners being attached at their outer ends to said plate, and a fuel injection rail having receptacles for holding a plurality of electromagnetic fuel injectors and supplying fuel to them, each of said receptacles being located above the mounting plate end of its respective runner and having an apertured bottom end in communication with the interior of said runner.

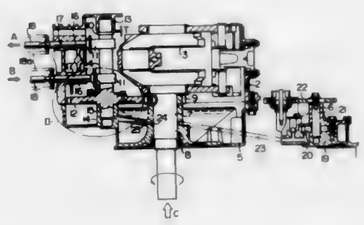
4,805,565

STRUCTURE OF CAM SHAFT FOR ENGINE

Masato Sato, Akashi; Keiichi Nakamizo, Hyogo, and Takashi Mitadera, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Oct. 14, 1987, Ser. No. 108,078
Claims priority, application Japan, Dec. 9, 1986, 61-292953
Int. Cl.[4] F01L *1/04*; F01M *9/10*
U.S. Cl. 123—90.6 **6 Claims**

1. Structure of a cam shaft for engine having a crankshaft provided with a helical crank gear and a cam shaft provided with a helical cam gear meshing with said crank gear and rotatably supported at both ends thereof by journal bearing boxes, characterized in that either one of said journal bearing boxes is communicated with a pressure oil supply passage, thereby causing the oil pressure produced within said one journal bearing box to act upon the end face of the cam shaft



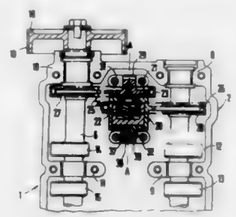
so that the cam shaft is normally biased in a constant axial direction.

4,805,566

ARRANGEMENT FOR INFLUENCING THE CONTROL TIMES OF VALVES

Herbert Ampferer, Sachsenheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.f. Porsche AG, Fed. Rep. of Germany

Filed Nov. 5, 1987, Ser. No. 116,866
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1986, 3638087
Int. Cl.[4] F01L *1/34*; F02D *13/02*
U.S. Cl. 123—90.15 **9 Claims**



1. A cam control connection arrangement for influencing the control times of valves of an internal combustion engine, comprising

two devices that are arranged coaxially with respect to one another and are equipped with machine elements for transmitting rotating motions, one device being radially adjustable with respect to the other device and interacting with camshaft actuating engine valves, wherein the cam control connection arrangement is disposed between two camshafts located above the valves in a cylinder head, and is connected by means of the machine elements of the devices with corresponding machine elements of the camshafts.

4,805,567

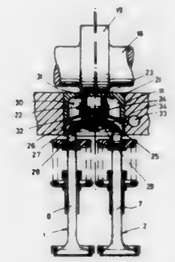
VALVE MECHANISM FOR AT LEAST TWO SIMULTANEOUSLY ACTUABLE VALVES

Fritz Heimburg, Nauheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 10, 1987, Ser. No. 71,789
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1986, 3624108
Int. Cl.[4] F01L *1/26*
U.S. Cl. 123—90.22 **4 Claims**

1. Valve gear for at least two valves of an internal combustion engine to be operated simultaneously on longitudinal axes, wherein the valve gear comprises a thrust device which is

common to all valves and displaceable on an axis by a cam shaft and against which the valves abut by their valve stems so that displacement of the thrust device causes corresponding displacement of the valves, characterized in that the camshaft (18) includes a single cam (19) that is seated on the thrust device (11) eccentrically relative to its axis (17) causing rota-



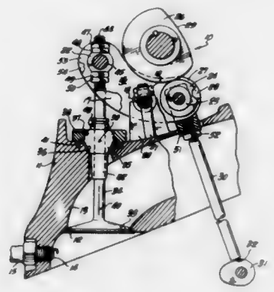
tion of the thrust device (11) about its axis (17) when the thrust device (11) is displaced, the thrust device (11) is axially symmetrical, and the valve stems (7,8) each abut against the thrust device (11) at positions centered on points offset from the longitudinal axes (12, 13) of the valves causing rotation of the valves (1,2) about their longitudinal axis (12, 13) when the valves are displaced.

4,805,568

SWING VALVE FOR INTERNAL COMBUSTION ENGINES

Joseph E. Sprinzer, 11247 Monte Vista, Ontario, Calif. 91762, and James R. Edwards, 4871 W. Howard, Ontario, Calif. 91761

Filed Feb. 27, 1987, Ser. No. 19,967
Int. Cl.[4] F01L *1/30, 3/08*
U.S. Cl. 123—188 GC **17 Claims**



1. A valve assembly mounted in the head of an internal combustion engine including a valve and valve support and opening and closing apparatus comprising:

an engine head including at least one valve seat;

a rocker arm held to the head by rocker arm to head bearing means, said rocker arm having a valve end and a cam follower end;

an engine valve having a valve face, a stem, a valve end and a stem end, said valve being supported along its stem by a valve guide which permits the non-axial movement of the valve stem while having a fixed point of movement with which the longitudinal axis of the valve stem always intersects, and said engine valve being affixed to said rocker arm by affixed to the valve stem, which bearing means

rocker arm to valve bearing means moves in an arcuate motion about the center of movement of the rocker arm to head bearing means thereby moving the valve stem in a non-axial movement so that the longitudinal axis of the valve stem changes its angle with respect to the vertical as the valve opens and closes; and

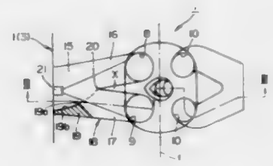
means for oscillating the rocker arm about the rocker arm to head bearing means whereby the valve face moves downwardly and sidewardly away from the valve seat as the valve end of the rocker arm moves downwardly and returns to its closed, seated position as the valve end of the rocker arm moves to its uppermost position.

4,805,569

INTAKE SYSTEM FOR AN ENGINE

Koji Suzumura; Hunihiko Fujiwara; Naoya Matsuo, and Kouichi Miyamoto, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 11, 1988, Ser. No. 155,156
Claims priority, application Japan, Feb. 13, 1987, 62-18876[U]
Int. Cl.[4] F02B *31/00*
U.S. Cl. 123—308 **17 Claims**



1. An intake system for an engine comprising an inlet passageway for one cylinder including a common inlet passageway and first and second branch inlet passages having a branch portion at a downstream side of the common inlet passageway, said first branch inlet passage communicating with a first inlet port and said second branch inlet passagae communicating with a second inlet port;

said first inlet port having an opening for the cylinder and being designed to allow air to be admitted into the cylinder in a direction in which the air swirls therein, and said second inlet port having an opening therefor and being designed to cause air to be admitted thereinto in a direction it disturbs formation of such swirls; and

said inlet passageway being provided at its inner wall portion with a wall member for deflecting air admitted from the common inlet passageway toward the first branch inlet passage.

4,805,570

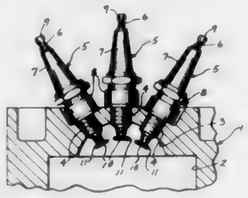
MULTIPOINT SPARK IGNITION SYSTEM

James A. Davis, Ripon, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 23, 1987, Ser. No. 137,057
Int. Cl.[4] F02P *1/00, 15/02*
U.S. Cl. 123—310 **16 Claims**

1. In an internal combustion engine, a cylinder having an end enclosed by a head, said head having at least three openings therein, the axes of the openings being at an angle to each other, a group of spark plugs, each spark plug being mounted in one of said openings, each spark plug having a single electrode with the inner end of each electrode disposed within the cylinder, an electrically conductive member extending laterally from the inner end of each electrode, the periphery of each member being in spaced proximate relation to the periphery of adjacent members to provide a spark gap therebetween, means for connecting the electrode of a first spark plug of said group

to the ignition coil of an engine, means for connecting the electrode of the last spark plug of said group to ground, and



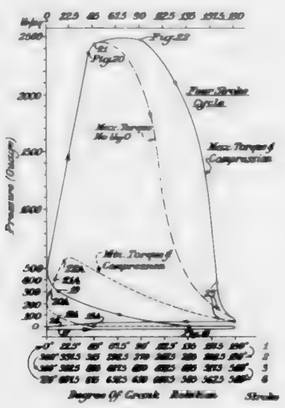
means for capacitively loading the electrode of an intermediate spark plug in said group.

4,805,571

INTERNAL COMBUSTION ENGINE

Duane W. Humphrey, Wilmington, Del., assignor to Humphrey Cycle Engine Partners, L.P., Wilmington, Del.

Continuation of Ser. No. 734,057, May 15, 1985, abandoned. This application Sep. 15, 1986, Ser. No. 907,101
Int. Cl.[4] F01L *13/00*; F02D *9/06, 13/02*; F02B *77/02*
U.S. Cl. 123—316 20 Claims



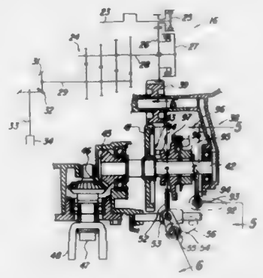
1. An improved internal combustion engine having pistons, cylinders forming combustion chambers, intake and exhaust valves, and having means for injecting a combustion fuel and introducing air into the cylinders, means for igniting the fuel and air mixture in the cylinders and means for exhaustng gases from the cylinders following combustion, the improvement comprising continuously adjustable intake and exhaust valve control means, adjustable on demand, which provides a variable air charge and compression ratio coupled with a fixed, high expansion ratio, said expansion ratio being at least 17:1, and means for metering said combustion fuel injected into the combustion chamber just before the end of compression to stoichiometric proportions to match the air charge at all engine loads.

4,805,572

CONTROL DEVICE FOR VEHICLE

Minoru Fujita, Iwata, and Hirotaka Shibata, Hamamatsu, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwtat, Japan

Filed Mar. 31, 1986, Ser. No. 846,565
Int. Cl.[4] F02D *9/08, 29/00, 31/00*
U.S. Cl. 123—352 26 Claims



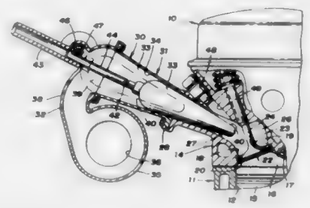
1. In an internal combustion engine having a speed controlling element moveable in speed increasing and speed decreasing directions, a manual actuator for operating said speed controlling element inboth said speed increasing and said speed decreasing directions, and an automatic actuator for operating said speed controlling element in both said speed increasing and said speed decreasing directions, the improvement comprising means for selectively coupling either said manual actuator or said automatic actuator to said speed controlling element for either manual or automatic speed control in both the speed increasing and speed decreasing directions.

4,805,573

ENGINE WITH VARIABLE AREA INTAKE PASSAGES

Glen R. Macfarlane, Utica; Jordan R. Lee, Sterling Heights, and Ross R. Smith, Taylor, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 22, 1988, Ser. No. 158,967
Int. Cl.[4] F02D *9/12*
U.S. Cl. 123—403 12 Claims



1. An internal combustion engine comprising, in combination,

a cylinder intake port,

means defining an intake passage having wall portions with consistently converging inner surfaces connecting with the intake port, and

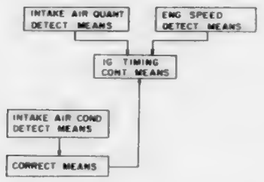
a flow control element in the passage and having outer surface portions generally parallel with and opposing the converging inner surfaces, the element being movable along the direction of fluid flow toward and away from the port to vary the flow area and thereby the velocity and inertia of fluid flow into the intake port.

4,805,574

IGNITION TIMING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Katsuhiko Sakamoto; Kouichi Hatamura, and Yoshinori Ohtsu, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 31, 1987, Ser. No. 90,898
Claims priority, application Japan, Sep. 8, 1986, 61-210879
Int. Cl.[4] F02P *5/15*
U.S. Cl. 123—421 18 Claims



1. An ignition timing control system for use in an internal combustion engine equipped with a supercharger, which comprises:

intake air quantity detecting means for detecting an amount of intake air flowing in an intake air passage defined at an upstream side of the supercharger;

engine speed detecting means for detecting speed of the engine;

ignition timing control means for controlling timing of the ignition on the basis of outputs from said intake air quantity detecting means and said engine speed detecting means;

intake air condition detecting means for transmitting a signal indicative of a substantial preasure of the intake air drawn into a combustion chamber of the engine;

correcting means for correcting the ignition timing in compliance with an output from said intake air condition detecting means; and

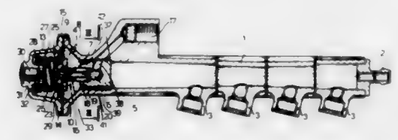
an inter-cooler being interconnected between said supercharger and said intake air condition detecting means.

4,805,575

FUEL MANIFOLD UNIT WITH INTEGRATED PRESSURE REGULATOR FOR THE FUEL INJECTION SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Roberto de Concini, Zoia Predosa, and Rino Stagni, S. Pietro in Casale, both of Italy, assignors to Weber S.r.l., Torino, Italy

Filed Nov. 16, 1987, Ser. No. 120,971
Claims priority, application Italy, Nov. 18, 1986, 54100/86[U]
Int. Cl.[4] F02M *29/00*
U.S. Cl. 123—468 11 Claims



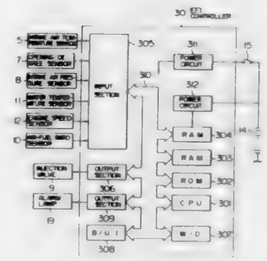
1. A supply unit for fuel injection apparatus of an internal combustion engine comprising a manifold for supplying the said fuel to the injectors of the engine and a pressure regulator operable to maintain the preasure of the said fuel substantially constant within the said manifold, the said manifold defining a duct for the fuel and having a plurality of connectors which are connectable to the said injectors, the said pressure regulator comprising a chamber for the fuel which is in communication with the said manifold duct and one wall of which is constituted by a deformable diaphragm, and a valve operable to put the said chamber into communication with a fuel discharge channel the opening of which is controlled by the said deformable diaphragm, characterised by the fact that the said chamber is formed within one end of the said manifold duct and is separated from the remaining part of the duct by means of a separation element fitted in the duct itself, the said separation element being shaped in such a way as to define passages for the fuel between the said chamber and the said remaining part of the duct itself, said fuel passages being formed between portions of outer surfaces of the said separation element and inner surfaces of the said duct.

4,805,576

FAULT DETECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE CONTROL APPARATUS

Tomoaki Abe, Obu; Mitsunori Takao, Kariya, and Masashi Kiyono, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 25, 1988, Ser. No. 173,595
Claims priority, application Japan, Mar. 31, 1987, 62-80718
Int. Cl.[4] F02B *37/12, 77/00*; F02P *11/00*; G05B *9/02*
U.S. Cl. 123—479 16 Claims



1. A fault detection system for an internal combustion engine control apparatus comprising

an actuator included in an internal combustion engine,

main control means for controlling the actuator,

first fault detection means for detecting a fault of the main control means,

subcontrol means for controlling the actuator in place of the main control means only when a fault of the main control means is detected by the first fault detection means, and

second fault detection means for detecting a fault of the subcontrol means on the basis of selected one of a driving condition signal representing the drive of the actuator controlled by a control signal produced from the subcontrol means and the control signal produced from the subcontrol means.

4,805,577

FUEL SUPPLY CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Yoshiaki Kamo; Kazuya Nakamoto, and Jiro Sumitani, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 29,765, Mar. 24, 1987, abandoned. This application Jun. 22, 1988, Ser. No. 210,188
Claims priority, application Japan, Apr. 23, 1986, 61-93871; Apr. 23, 1986, 61-93872
Int. Cl.[4] F02D *41/10*
U.S. Cl. 123—488 2 Claims

1. A fuel supply control apparatus for an internal combustion engine comprising:

an air flow sensor for detecting an air intake quantity which is sucked into said internal combustion engine to be controlled,

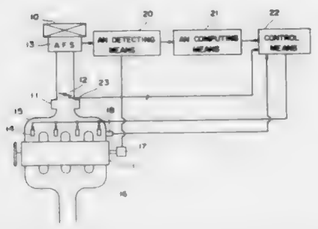
VOL 1099 ISS 3 FE 21 1989 UMI

a revolution sensor which detects the number of revolutions of said internal combustion engine,

an AN detecting means for detecting synchronously with each revolution the air intake quantity per each suction of said internal combustion engine on the basis of an output of said air flow sensor and said revolution sensor,

an AN computing means for damping an output of said AN detecting means, synchronously with each revolution,

a control means for controlling a fuel supply to said internal combustion engine on the basis of an output of said AN computing means,



an air intake incremental detecting means for detecting an incremental value of the output of said AN computing means at each damping cycle,

a means for increasing fuel supply quantity to said internal combustion engine on the basis of the output of said AN computing means corrected by the incremental value of the output thereof, when said air intake incremental detecting means detects that the incremental value of the output of said AN computing means is larger than a predetermined value.

4,805,578

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

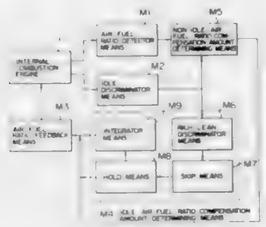
Toshiaki Kikuchi; Masumi Kinugawa, both of Okazaki, and Kenichirou Kamai, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 22, 1987, Ser. No. 111,289

Claims priority, application Japan, Oct. 27, 1986, 61-255215

Int. Cl.[4] F02D *41/14, 41/16*

U.S. Cl. 123—489 **15 Claims**



1. An air-fuel ratio control system for an internal combustion engine, comprising:

air-fuel ratio detector means for detecting an air-fuel ratio of the internal combustion engine,

idle discriminator means for discriminating whether the internal combustion engine is in an idle state or not,

idle air-fuel ratio compensation amount determining means for determining an amount of air-fuel ratio compensation in the idle state in accordance with an output of the air-fuel ratio detector means when the idle discriminator means discriminates the idle state

non-idle air-fuel ratio compensation amount determining means for determining the amount of air-fuel ratio compensation in a non-idle stat in accordance with the output of the air-fuel ratio detector means when the idle discriminator means discriminates the non-idle state, and

air-fuel ratio feedback means for subjecting the air-fuel ratio of the internal combustion engine to a feedback control in accordance with the air-fuel ratio compensation amount determined by the air-fuel ratio compensation amount determining means;

wherein the idle air-fuel ratio compensation amount determining means includes rich-lean discriminator means for discriminating whether the air-fuel ratio if on the rich or lean side when the output of the idle discriminator means indicates the idling state of the engine, skip means for skipping the air-fuel ratio compensation amount by a degree greater than under the non-idle state when the rich-lean discriminator means determines that the air-fuel ratio has shifted to the lean or rich side, hold means for holding the after-skip compensation amount for a predetermined length of time, and integrator means for integrating the compensation amount after a lapse of the predetermined length of time.

4,805,579

METHOD OF CONTROLLING FUEL SUPPLY DURING ACCELERATION OF AN INTERNAL COMBUSTION ENGINE

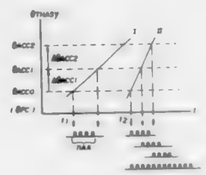
Kazushige Toshimitsu; Tadashi Umeda, and Hisashi Igarashi, all of Wako, Japan, assignors to Honda Gikea Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1987, Ser. No. 8,241

Claims priority, application Japan, Jan. 31, 1986, 61-19877; Feb. 14, 1986, 61-30108

Int. Cl.[4] F02D *41/10*

U.S. Cl. 123—492 **8 Claims**



1. In a method of controlling fuel supply during beginning acceleration and acceleration after a fuel cut of an internal combustion engine including detecting the amount of opening of a throttle valve, generating a throttle signal as a function thereof and providing a first correctional increase to the basic fuel supply amount upon detecting the throttle signal indicating beginning acceleration or acceleration after a fuel cut, said method comprising the steps of detecting a throttle signal indicating that said throttle valve is opened from a predetermined beginning acceleration or fuel cut position; immediately providing the first correctional increase in response to the throttle signal indicating said predetermined throttle valve opening position during a predetermined time period; adding a predetermined value to the detected value of the opening of said throttle valve upon detection that said throttle valve is opened from the beginning acceleration or fuel cut position, the sum becoming a reference value for the opening of said throttle valve; and providing as a function of noncompletion of the first correctional increase an additional correctional increase to the first correctionally increased basic fuel supply amount if the first correctional increase of the basic fuel supply amount, initiated upon detection of the throttle signal indicating the beginning of acceleration or fuel cut position, is not complete when the detection amount of the opening of said throttle valve reaches the reference value.

4,805,580

FUEL INJECTION DEVICE

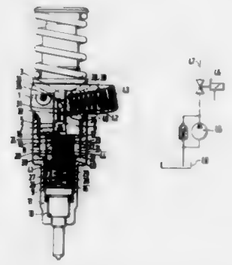
Dominique Buisson, Villeurbanne; Francois Henry, Ste Foy les Lyon; Jean Leblanc, Lyons, all of France; Helmut Pfeifle, Stuttgart, Fed. Rep. of Germany, and Jean Pigeroulet, Villeurbanne, France, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 4, 1986, Ser. No. 870,468

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1985, 3521427

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—506 **2 Claims**



1. A fuel injection device for internal combustion engines comprising

a pump housing that receives a pump cylinder and a reciprocally driven pump piston being guided therein,

a pump work chamber defined by said pump piston within said pump cylinder,

a fuel injection valve,

a fuel injection line connectable at one end to the fuel injection valve which fuel injection line being arranged to be made to communicate with said pump work chamber at its other end,

a pressure valve having a pressure valve closing member guided tightly in a guide cylinder, which pressure valve closing member defining at its rear side a spring chamber receiving a first spring to act upon said valve closing member, means for connecting said spring chamber with a relief chamber through which fuel under pressure that is variable in accordance with engine operating parameters acts upon said rear side of said pressure valve closing member, further said valve closing member being arranged to cooperate with stop means to thereby define the stroke of said valve closing member in said guide cylinder, said valve closing member further having a front side forming a sealing face matching with a valve seat which defines a flow cross section of said injection line, said front side further forming a pressure shoulder which joins said sealing face and defines part of a chamber which chamber is permanently connected to a part of said injection line between said injection valve and said valve seat, said pressure shoulder of said pressure valve closing member is acted upon by the pressure in said injection line between said injection valve and said valve seat of said pressure valve closing member, and

a control valve (flow cross section control valve) which provides communication between said pump work chamber and a relief conduit upon the end of the effective supply stroke of said pump piston.

4,805,581

ARRANGEMENT OF CANISTER-USED EMISSION CONTROL SYSTEM IN MOTOR VEHICLE

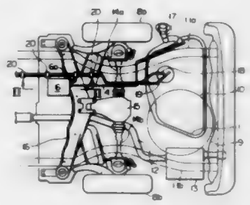
Tomiharu Yamada, Isehara; Atsushi Shizuta, Atsugi; Tomonori Shizuta, Yokohama, and Tetsuro Kondo, Isehara, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 1, 1987, Ser. No. 127,164

Claims priority, application Japan, Dec. 2, 1986, 61-287094

Int. Cl.[4] F02M *33/02;* **B60P** *3/22*

U.S. Cl. 123—519 **8 Claims**



1. In a motor vehicle having a floor panel, a fuel tank mounted beneath said floor panel, two side members welded to lateral sides of said floor panel and extending along the same, a suspension member extending across said floor panel, and an exhaust tube, said floor panel having major and depressed portions which are bounded by a laterally extending raised wall part of the floor panel,

an emission control system comprising:

an activated charcoal canister received in said depressed portion of said floor panel;

a bracket secured to said depressed portion of said floor panel;

means for detachably connecting said canister to said bracket; and

a fuel vapor conveying tube extending from said fuel tank to said canister;

wherein said canister is positioned within a given zone which is enclosed by said laterally extending raised wall part, said suspension member, said exhaust tube and one of said side members.

4,805,582

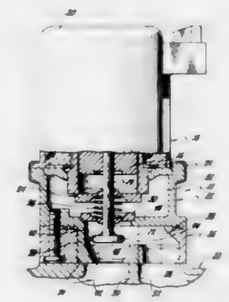
EXHAUST GAS RECIRCULATION VALVE

Charles W. Braun, Macedon; Joseph Fornuto, and Dwight O. Palmer, both of Rochester, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 10, 1988, Ser. No. 204,833

Int. Cl.[4] F02M *25/06*

U.S. Cl. 123—568 **2 Claims**

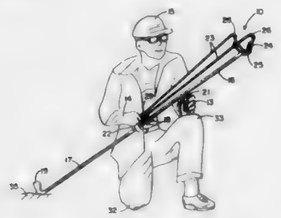


1. An exhaust gas recirculation valve suitable for mounting

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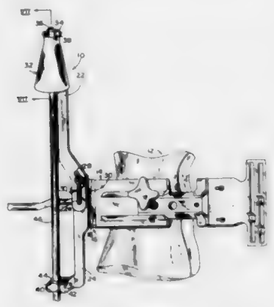
in a base having a pair of apertures and a recess connecting said apertures, said valve comprising a seat member having a portion adapted for closing said recess and also having a projection adapted to be received in one of said apertures, said projection having a cavity with an orifice adapted to open through said one aperture and a window adapted to open to said recess to thereby define an exhaust gas flow path between said apertures, said seat member having a seat surrounding said orifice, said valve further comprising a pintle aligned with said seat and an actuator for positioning said pintle to control the flow of exhaust gases through said seat.

4,805,583
SLING APPARATUS
Kenneth J. Mosser, P.O. Box 242, Clarissa, Minn. 56440
Filed Mar. 2, 1987, Ser. No. 20,862
Int. Cl.[4] A63B *53/00*
U.S. Cl. 124—20 R 18 Claims



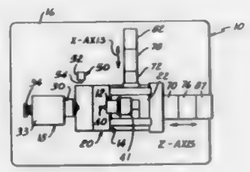
1. An apparatus for directing a ball toward a desired target comprising: an elongated shaft means having a first shaft and a second shaft connected in end-to-end relation, said first shaft having an upper end remote from the second shaft, said second shaft having a lower end remote from the first shaft, means releasably holding the first and second shafts together, sling means mounted on the upper end of the first shaft for propelling an object toward a selected target, and a putter head mounted on the lower end of the second shaft for stroking the ball along the ground toward the target.

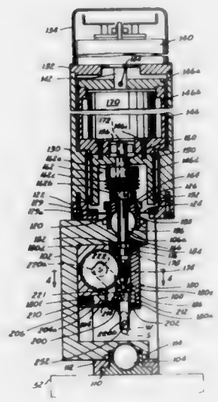
4,805,584
LIGHWEIGHT COLLAPSIBLE ARCHERY QUIVER
Robert E. Stinson, 7292 Peaceful Valley Rd., Acme, Mich. 49610
Filed Oct. 31, 1986, Ser. No. 925,558
Int. Cl.[4] F41B *5/00*; F41D *10/00*
U.S. Cl. 124—86 4 Claims



1. A compact, collapsible arrow quiver for hunters and other such sportsmen, comprising in combination: a pair of support arm members and means connecting such members to one another for movement between at least a pair of relative positions, a first such position having said support arm members extended generally lengthwise with respect to one another to form an elongated structure and a second such position having said arm members disposed generally adjacent one another to form a shortened structure; an arrowhead shield carried on one of said support members and an arrow shaft holder carried on the other such member; and a releasable mounting means connected to at least one of said support arm members, said mounting means being adapted to releasably mount said quiver upon an archery bow as well as upon any other support structures having a cooperative base for such mounting means, whereby said quiver may be conveniently carried upon the person of the hunter as well as mounted by said mounting means upon a bow or any of said other support structures having such a cooperative base.

4,805,585
RADIUS DRESSING APPARATUS
James V. Halvorsen, Springfield, Vt., assignor to Bryant Grinder Corporation, Springfield, Vt.
Filed Aug. 19, 1987, Ser. No. 87,813
Int. Cl.[4] B24B *53/00*
U.S. Cl. 125—11 R 17 Claims

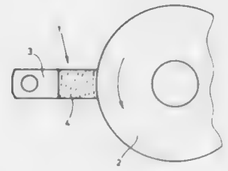




1. A dresser apparatus for dressing a radius-defined working surface of a grinding wheel comprising:
(a) a support means,
(b) a dresser holder arm that is pivotable on the support means about a pivot axis,
(c) a first shaft operably connected to the dresser holder arm,
(d) first motor means for rotating the first shaft to pivot the dresser arm,
(e) a dresser member mounted on the arm such that pivoting of the arm carries the dresser member along a circular arc path relative to the working face of the grinding wheel to dress same,

(f) means for movably mounting the dresser member on the arm for movement relative to the pivot axis to vary the radius of the circular arc path traveled by the dresser member and thus the radius of the working surface dressed on the grinding wheel,
(g) a second shaft operably connected to the dresser member through a drive mechanism,
(h) second motor means for rotating the second shaft to move the dresser member on the arm through the drive mechanism, said second shaft being coaxial with the first shaft and the first shaft and the second shaft being nested one inside the other, and
(i) computer control means for controlling the second motor means in accordance with a stored wheel dresser program that is correlated with workparts to be ground with different radius surfaces by a grinding wheel so as to adjust the position of the dresser member on the arm to dress the same or different grinding wheels with working surfaces defined by different radii.

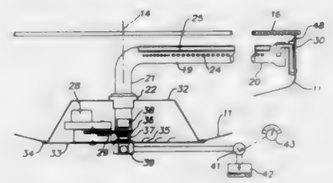
4,805,586
DRESSING TOOL FOR GRINDING WHEELS
Dietrich Borse, Hamburg, Fed. Rep. of Germany, assignor to Ernst Winter & Sohn (GmbH & Co.), Hamburg, Fed. Rep. of Germany
Filed Jul. 30, 1987, Ser. No. 79,835
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1986, 3625754; Mar. 4, 1987, 3706868
Int. Cl.[4] B24B *53/00*
U.S. Cl. 125—11 R 22 Claims



1. In a dressing tool for grinding wheels, comprising a base body and a diamond coat on said base body, said diamond coat including diamond grains held in a metallic bond, the improvement comprising said diamond grains being artificially roughened so that a surface area of said grains is enlarged by a factor of at least two as compared to a natural surface of diamond grains, said diamond grains being arranged in said coat with such a density that the majority of said diamond grains are in direct contact with adjacent diamond grains.

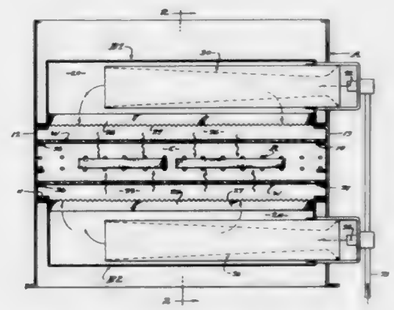
4,805,587
GAS GRILL
Ronald D. Schweitzer, Mansfield, Ohio, assignor to Universal Enterprises, Inc., Mansfield, Ohio
Filed Mar. 18, 1988, Ser. No. 170,005
Int. Cl.[4] F24C *3/00*
U.S. Cl. 126—39 L 13 Claims

1. A cooking grill assembly comprising, in combination:
a support having an axis;
a grill carried relative to said support;
a heat source carried relative to said support adjacent said grill and extending substantially perpendicularly to said axis to cooperate with any food on said grill;
a bearing on said support substantially coaxial at said axis;
the food to be cooked on the grill adapted to be disposed on a given area less than 100% of the area of the grill;
means to limit the heat source to substantially said given area of said grill;
said limiting means including a motor, drive linkage and variable means;
said drive linkage connecting said motor to rotate one of said heat source and said grill in said bearing; and
said variable means varying the effective area of cooperation



of said heat source to said given of said grill and including variable position means to stop rotation of said one of said heat source and said grill and effect rotation in the opposite direction.

4,805,588
OVER AND UNDER RADIANT BROILER OVEN
Howard S. Reynolds, Tustin, Calif., assignor to Casserton Appliance Company, Santa Ana, Calif.
Filed Jan. 1, 1987, Ser. No. 55,911
Int. Cl.[4] F24C *5/00*
U.S. Cl. 126—51 24 Claims



1. A radiant broiler oven including in combination;
an oven body defining an oven chamber therein and having at least one side wall with a frame opening into the oven chamber,
a burner means radiating infra-red heat waves from a surface plane thereof and supported by the frame with said surface plane exposed into the oven chamber,
and a transparent liner of high heat resistant material coextensive with the surface plane of the burner means to transmit the infra-red waves therefrom and into the oven chamber.

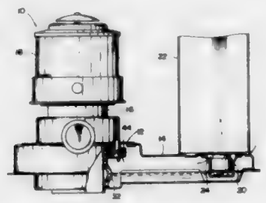
4,805,589
FIRE-EXTINGUISHING DEVICE FOR OIL BURNER
Yutaka Nakanishi; Toshihiko Yamada, and Shigeo Gamou, all of Aichi, Japan, assignors to Toyotomi Kogyo Co., Inc., Japan
Filed Apr. 27, 1988, Ser. No. 186,985
Int. Cl.[4] F24C *5/04*
U.S. Cl. 126—96 10 Claims

1. A fire-extinguishing device for an oil burner including an oil reservoir for storing fuel oil therein which is communicated to an ambient atmosphere, comprising:
a wick receiving chamber for movably receiving a wick therein, said wick receiving chamber having a width larger than a thickness of said wick so as to be communi-

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cated to a combustion cylinder construction of the oil burner;

an air chamber arranged adjacent to said wick receiving chamber and provided with an opening for communicating said air chamber therethrough to said wick receiving chamber, said opening of said air chamber being arranged at a position above an upper end of said wick when said wick is at a wick lowered position;



a valve provided at said air chamber and actuated in association with movement of said wick so as to be opened when said wick is at a wick raised position and be closed when said wick is at said wick lowered position;

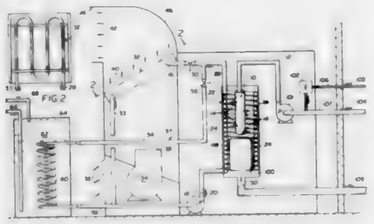
said valve being arranged at a portion of said air chamber which is positioned in a space of said oil reservoir so as to cause said air chamber to be communicated through said oil reservoir to an ambient atmosphere when said valve is opened.

4,805,590

GAS SPACE HEATING UNIT

Alfred J. Farina, 1939 Anita Rd., Baldwin, N.Y. 11510, and Laurence B. Craig, 116 Duck Pond Rd., Glen Cove, N.Y. 11542

Continuation of Ser. No. 496,196, May 19, 1983, abandoned. This application Dec. 3, 1984, Ser. No. 677,538
Int. Cl.⁴ F24D *9/00*
U.S. Cl. 126—101 **1 Claim**



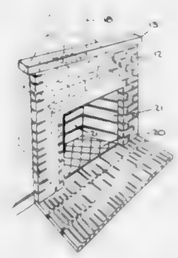
1. In a gas space heating unit for a dwelling or the like comprising, in combination, a heat exchanger consisting of a porous elongated-shaped gas combustion device operatively arranged to provide an incandescing surface and a source of hot combustion gases eminating radially therefrom and along the length of said elongated shape, a source of water for use in heat exchange with said hot combustion gases, a combination cylindrical housing having an exit opening at one end and a first helical coil disposed in a clearance position in surrounding relation to and along said elongated-shaped combustion device and connected to said source of water for the flowing through said first helical coil of said water incident to establishing said heat exchange between said combustion gases and said water, a plug located at the end of said cylindrical housing to block the flow of combustion gases centrally therethrough directly to said exit opening of said cylindrical housing so as to assist in producing gas movement radially outwardly therefrom into contact with said first helical coil, and pressure means urging a gas and air mixture to said surface of said combination device for supporting said incandescence thereon and also causing the production of hot gas from said mixture and the movement of said hot gas through said porosity thereof and radially outwardly from said elongated-shaped combustion device into heat exchange contaot with said first helical coil for enhancing the transfer of heat from said said incandeacing surface and said resulting hot gas to said flowing water through said first helical coil, a dwelling space to be heated by hot air having an inlet thereinto and an exist therefrom, an air blower having an inlet in communication with said dwelling space exit for removing cool air therefrom and operatively effective to cause said cool air to issue under pressure from an outlet thereof for flow along a path having communication with said dwelling space inlet, and a closed conduit loop for flowing said heated water for subsequent heat exchange service, said closed conduit loop having said first helical coil therein and a second coil therein located downstream of said first helical coil and disposed in the path of air issuing from said air blower, whereby there is heat transfer from said previously heated water to said exiting from said blower incident to the air entering into said dwelling space.

4,805,591

FIREBOX OF PREFABRICATED BLOCKS, ASSEMBLAGE THEREFOR AND METHOD OF ASSEMBLY

Jay R. Pitha, Eagle Rock Village, Bldg. 34, Apt. 8-A, Budd Lake, N.J. 07828

Continuation of Ser. No. 16,122, Feb. 18, 1987, abandoned. This application Apr. 22, 1988, Ser. No. 186,730
Int. Cl.⁴ F24B *7/00*
U.S. Cl. 126—500 **25 Claims**



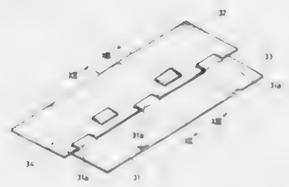
1. A replacement firebox for a pre-existing open-hearth fireplace and self-supporting chimney, wherein the pre-existing fireplace comprised a standard metal firebox integrated into the fireplace construct, and wherein the standard metal firebox has been removed to leave the self-supporting chimney, said replacement firebox comprising an assemblage of prefabricated modular masonry components in which a plurality of courses of refractory concrete blocks are superposed one above the other consistent with the hearth opening and forming a U-shape first structure with facing side walls joined by a rear wall, and a transition cone located atop said first structure for interconnecting said first structure with the pre-existing chimney, said first structure having side walls of uniform thickness which diverge in the forward direction from said rear wall; said rear wall having a lower portion of uniform thickness and vertical surfaces, and having an adjacent upper portion wherein the inner surface is inclined forwardly in the upward direction; and said transition cone having a front inner surface that is inclined rearwardly in the upward direction; said U-shape first structure and said transition cone being a free-standing-unit and providing no support for said chimney.

4,805,592

JOINT CONSTRUCTION FOR METAL SHEETS

Toshiaki Ezumi, Nara, Japan, assignor to Ezumi Seiki Mfg. Co., Ltd., Yao, Japan

Filed Feb. 20, 1987, Ser. No. 17,063
Int. Cl.⁴ B21D *39/02*; B23P *11/00*
U.S. Cl. 126—273 R **5 Claims**



1. A method for making a sheet metal joint between an edge of a first piece of sheet metal and a second piece of sheet metal, comprising the following steps:

(a) leaving said edge of said first piece of sheet metal as a flat edge initially undisturbed and without any holes,

(b) punching a plurality of generally U-shaped slots into said second sheet metal piece for forming a tongue surrounded by its respective U-shaped slot,

(c) bending said tongue out of said second sheet metal piece sufficiently for forming a gap between said tongue and said second sheet metal piece,

(d) pushing said initially undisturbed holeless flat edge of said first sheet metal piece into said gap, and

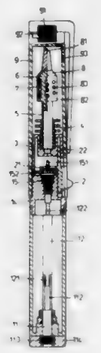
(e) pressing said tongue against said first sheet metal piece for plastically deforming a portion of said first sheet metal piece into said U-shaped slot surrounding said tongue, whereby said plastically deformed portion of said first sheet metal piece anchors said first sheet metal piece to said second sheet metal piece and whereby said pressed tongue maintains the anchoring.

4,805,593

GAS SOLDERING IRON

Jui-Fu Hsu, 3F., No. 14, Lane 20, Hou Kang St., Taipei, Taiwan

Filed Dec. 1, 1987, Ser. No. 127,926
Int. Cl.⁴ B23K *3/02*
U.S. Cl. 126—414 **2 Claims**



1. A gas soldering iron comprising a reservoir including a gas refill port, a link post connected to the reservoir, a gas regulating rod mounted in the reservoir, a gas outlet port connected to the link post, an on/off knob mounted to the gas outlet port for moving the gas outlet port interconnected to the gas refill port through the gas regulating rod to control the flow of gas from the reservoir, a nozzle protector, a cooling fin projecting forward from the protector, a nozzle tube extending within the protector, a nozzle mounted to a forward end of the nozzle tube to receive said gas through the tube from the outlet port, and a soldering joint mounted to the nozzle, wherein said on/off knob is placed on the nozzle protector and includes a protuberance received in said nozzle protector when the on/-off knob is pushed forward towards the nozzle, and said knob also including a projecting captivating to move a head of the said gas outlet port to control gas flow to the nozzle from the reservoir; said nozzle protector having a trough at a rear top portion thereof and threaded at a front inner end thereof, said trough receiving the protruberance of said cooling fin, said nozzle tube extending through said cooling fin having fins at one end for dissipating heat and the other end of the cooling fin having threads for threaded connection with the threaded end of said nozzle protector; wherein when the on/off knob is pushed forward, the protuberance will be guided forward and clamped by the trough of the nozzle protector with the projection of the knob moving the head of the gas outlet port forward so that gas is released from the reservoir and injected into the nozzle tube; and wherein when the on/off knob is pulled backward, the protuberance will be guided backward and the head of the gas outlet port will retreat to its original position to disrupt the flow of gas through the nozzle tube.

4,805,594

TUBE MAT FOR SOLAR COLLECTOR

Robert L. Reach, Jr., York Town Heights, N.Y., assignor to Delford Industries, Inc., Middletown, N.Y.

Filed Jan. 28, 1988, Ser. No. 149,390
Int. Cl.⁴ F24J *2/36, 2/24*
U.S. Cl. 126—426 **3 Claims**



1. A tube mat for a solar collector, the tube mat being comprised of a plurality of identical tube strips each formed with:

a plurality of parallel longitudinally extending tubes including two edge tubes at opposite longitudinal edges of the strip and inner tubes between the edge tubes;

respective longitudinally extending webs transversely interconnecting the inner tubes and connecting the edge tubes to the inner tubes along their full lengths with all of the tubes lying in a plane, whereby each edge tube has an inner edge joined by the respective web to the adjacent inner tube and an opposite outer edge;

a respective U-section flexible seal having an inner lip joined to the outer edge of each edge tube along the full length thereof and an outer edge spaced outward therefrom and defining with the respective inner lip a longitudinally extending groove open perpendicular to the plane of the strip, the grooves of the seals being generally complementary to the outer lips and opening oppositely from the strip plane, whereby the outer leg of the seal at one edge of a strip can be engaged in the groove of the seal of the outer tube of an adjacent strip to join these two strips together along their full lengths,

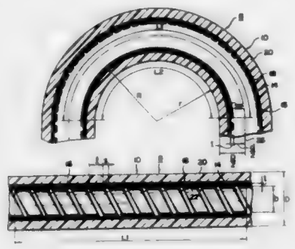
wherein the webs are of generally uniform wall thickness and generally U-shaped and have faces concave all in the same direction perpendicular from the respective strip plane.

4,805,595

FLEXIBLE TUBE ASSEMBLY FOR ENDOSCOPE

Koji Kambara, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1988, Ser. No. 184,289
Claims priority, application Japan, Apr. 28, 1987, 62-103250
Int. Cl.[4] A61B 1/00
U.S. Cl. 128—4 **6 Claims**



1. A flexible tube assembly for an endoscope, which has outer diameter D, comprising:

a helical tube constituted by a helically wound belt-like member having width l and thickness t, said helical tube having inner diameter d, and gap s being formed between adjacent coils of said belt-like member of said helical tube so as to satisfy the following inequality:

$$3 \geq s \geq l(d/2+t)/(30+D/2-d/2-t) \text{ (mm)};$$

a net tube covering an outer surface of said helical tube; and

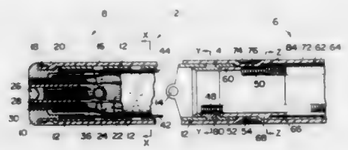
an outer sheath covering an outer surface of said net tube.

4,805,596

ENDOSCOPE

Tsurao Hatori, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1988, Ser. No. 174,116
Claims priority, application Japan, Apr. 3, 1987, 62-82626
Int. Cl.[4] A61B 1/00
U.S. Cl. 128—4 **6 Claims**



1. An endoscope comprising:

an operating section; and

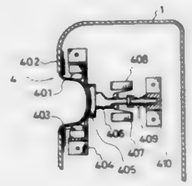
an insertion section connected to said operating section and having a flexible tube which forms the body of said insertion section, a bending tube which forms the distal end portion of said insertion section, at least two wire means for operating said bending tube from the operating section, one end of each of said wire means being connected to said bending tube, at least two wire guide means arranged in said flexible tube and serving to guide said wire means, and a coupling means for coupling the flexible tube and the bending tube to each other, said coupling means including at least two parts which can be combined integral, and one of the wire guide means being fixed to each of said parts.

4,805,597

ENDOSCOPIC APPARATUS

Keiichi Iwakoshi, Nara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 28, 1987, Ser. No. 101,641
Claims priority, application Japan, Sep. 30, 1986, 61-229700
Int. Cl.[4] A61B 1/00
U.S. Cl. 128—4 **6 Claims**



1. An endoscopic apparatus comprising:

an imaging element disposed at an end of the apparatus; and

operating means for setting the position of a region of interest provided by the imaging element by an operator's one hand, and enlarging and reducing the set region of interest in size by the operator's one hand,

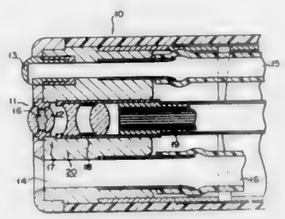
wherein said operating means comprises a switch for moving the region of interest upward, downward, rightward and leftward to set the position of the region of interest, and for enlarging and reducing the set region of interest.

4,805,598

ENDOSCOPE HAVING OPTICAL ELEMENTS THAT ARE RESISTANT TO CONDENSATION

Yasuhiro Ueda, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1987, Ser. No. 99,490
Claims priority, application Japan, Sep. 26, 1986, 61-146513[U]
Int. Cl.[4] A61B 1/06
U.S. Cl. 128—6 **4 Claims**



1. An endoscope comprising:

an insertion section adapted to be inserted within a body cavity of a human subject, and a control section for controlling the operation of the insertion section;

a distal end portion for insertion in the body cavity of the human subject,

said distal end portion having an illumination window for allowing light from an optical source to be emitted toward the inner wall of the body cavity, and an observation window for receiving the light which has been reflected from the inner wall of the body cavity;

light guide means, extending from the insertion section to the control section, for guiding the light from the light source to the illumination window;

an eyepiece section located at the control section, to enable the inner wall of the body cavity to be observed from outside of the body cavity;

image guide means located within the insertion section, for optically connecting the observation window to the eyepiece; and

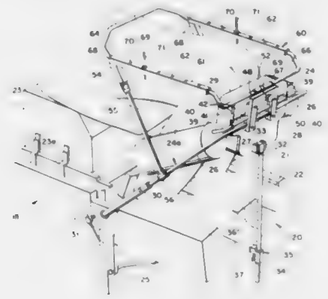
at least two transparent optical members located between the observation window and the image guide means, said optical members being spaced from one another, said space being filled with a transparent, highly viscous gel-like substance.

4,805,599

FRAMEWORK FOR SUPPORTING SURGICAL INSTRUMENTS AT A SURGICAL WOUND

Charles D. Ray, Wayzata, Minn., assignor to Cedar Surgical, Inc., Minnetonka, Minn.

Filed Jun. 25, 1987, Ser. No. 66,147
Int. Cl.[4] A61B 17/02; A61F 13/00; A61G 13/00
U.S. Cl. 128—2 **10 Claims**



1. Framework useful for supporting surgical instruments such as retractors at a surgical wound during back surgery in conjunction with a kneeling attachment, said framework comprising:

a platform,

means for attaching the platform to an operating table to permit a patient to kneel on the platform with the torso positioned over one end of an operating table,

a rigid U-shaped yoke,

means for releasably supporting the yoke from the operating table to permit the buttocks of a kneeling patient to be supported by the crosspiece of the yoke,

a substantially rectangular rigid frame including two substantially parallel legs, the ends of which are interconnected by first and second crossarms that extend substantially orthogonally to the legs,

means for releasably attaching the first crossarm to the crosspiece of the yoke, and

means for releasably supporting the frame near each end of the second crossarm from the operating table so that the legs of the frame extend over the operating table substantially parallel to its sides.

4,805,600

COUPLING THE BODY OF A PATIENT TO A MEMBRANE

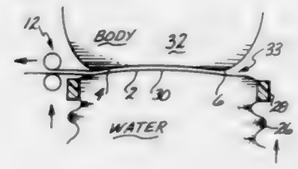
Othmar Wess, Munich; Reiner Groesinger, Alling; Kai Isdebski, Seulgau; Manfred Windsheimer, Germering, and Wolfgang Erhardt, Faerstenfeldbruck, all of Fed. Rep. of Germany, assignors to Dornier Medizintechnik GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Dec. 16, 1986, Ser. No. 942,252
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1985, 3544710
Int. Cl.[4] A61H 1/00
U.S. Cl. 128—24 A **3 Claims**

1. Method for air gaplesaly coupling the body of a human being to the membrane of therapeutic shock wave equipment by providing on the body a gel layer through which shock waves are to be transmitted without attentuation, comprising:

placing a gel releasing bag upon said membrane, the bag having at least one opening along one edge of the bag;

moving the membrane towards said body; and



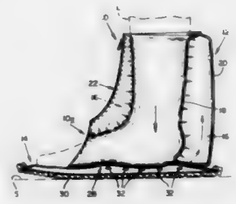
removing said bag from the gap between the skin of the patient and the membrane whereby a gel layer emerges from said at least one opening along the one edge and fills the gap completely with gel as the bag is removed.

4,805,601

DEVICE FOR LOWER LIMB EXTREMITY HAVING WEIGHT-RESPONSE PRESSURE CHAMBERS

Clement G. Elsches, Sr., 601 NE. 167th Pl., Portland, Oreg. 97230

Continuation of Ser. No. 712,180, Mar. 15, 1985, abandoned. This application Mar. 12, 1987, Ser. No. 24,863
Int. Cl.[4] A61F 5/00; A61H 9/00
U.S. Cl. 128—64 **6 Claims**



1. A therapeutic device adapted to be worn by an individual on a lower limb extremity to promote rehabilitation of the extremity by promoting venus blood flow comprising:

a first flexibly walled inflatable envelope structure having a first internal chamber for receiving fluid under pressure, the envelope structure including said first chamber being dimensioned substantially to surround the lower limb extremity, wherein said first envelope structure comprises opposed internal and external panels each having a first and an opposite edge, said first edges being joined to each other to form one marginal edge of the envelope structure and said opposite edges being joined to each other to form an opposite marginal edge of the envelope structure, said envelope structure when positioned on the lower limb extremity forming a sleeve encircling the ankle and the internal and external panels then defining said first chamber which similarly encircles the ankle,

means for securing the envelope structure, said means completing the substantially surrounding envelopment of the lower limb extremity by said envelope structure, wherein said securing means comprises means for detachably securing said one and said opposite marginal edges of the envelope structure together,

another flexibly walled envelope structure having another internal chamber for receiving fluid under pressure, said other envelope structure including said other chamber

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being dimensioned to underlie the foot of the lower limb extremity in a region extending between the opposite lateral sides of the foot, and

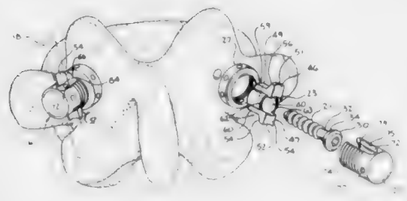
fluid transfer means interconnecting said first and said other chamber, compression of said other envelope structure under foot pressure operating to transfer fluid under pressure from said other to said first chamber to produce isostatic compression of said lower limb extremity, and decompression of said other envelope structure in the absence of foot pressure operating to return the pressure of the fluid in said first and said other chamber to equilibrium.

4,805,602

TRANSPEDICULAR SCREW AND ROD SYSTEM

Rolando M. Puno, Louisville, Ky., and Kevin A. Kelly, Columbus, Ohio, assignors to Danninger Medical Technology, Columbus, Ohio

Filed Nov. 3, 1986, Ser. No. 926,386
Int. Cl.[4] A61F *5/00;* **A61B** *17/18*
U.S. Cl. 128—69 **7 Claims**



4. A device for the stabilization of one or more bone segments comprising two sets of implants, each implant set comprising:

a rod; and

at least two anchors, each anchor comprising a screw;

rod support means having a longitudinal axis and being adapted to be attached to a bone by a screw which extends into the bone along said longitudinal axis, so that the rod support means is held against the bone while allowing movement between the screw and the rod support means, the rod support means further including a rod-receiving channel transverse to the longitudinal axis;

a threaded clamp that engages the rod support means and which cooperates with the rod support means to capture the rod independently of the engagement between the screw and the rod support means; and

an annular collar having threads that engage the threads of the clamp such that rotating the collar in relation to the rod support means exerts a compressive force on the rod to clamp the rod into position.

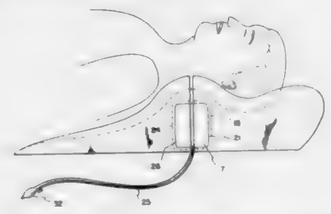
4,805,603

INFLATABLE CERVICAL TRACTION PILLOW

Keith Cumberland, 1314 Concerde Ave., Amory, Monroe County, Miss. 38821

Filed Jul. 13, 1988, Ser. No. 218,163
Int. Cl.[4] A47G *9/00;* **A61F** *5/00*
U.S. Cl. 128—75 **6 Claims**

1. A cervical traction apparatus comprising a head/neck/-shoulder support unit having a vertical slot in the region corresponding to the cervical area, said slot separating said unit into a first section and a second section, the upper surfaces of said support unit being shaped to receive the head, neck and shoulders of a reclining person, an inflatable air sac located within said unit between said first and second sections and means for



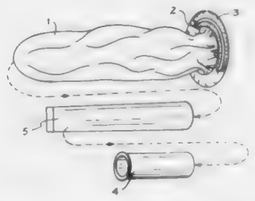
inflating said air sac so as to cause said first and second sections to separate.

4,805,604

RECEPTIVE CONDOM

Nanette S. Spery, 880 W. 181st St., New York, N.Y. 10033

Continuation-in-part of Ser. No. 33,796, Jun. 15, 1987, abandoned. This application Mar. 9, 1988, Ser. No. 169,391
Int. Cl.[4] A61F *5/00, 13/00, 5/44;* **A61B** *19/00*
U.S. Cl. 128—79 **10 Claims**



1. A condom adapted to be received by a passive sexual organ comprising

a thin, uniform elastic sheath having a closed end, an open end, and which has a generally phallic shape, said sheath being sized to selectively receive and enclose, without actively gripping, a male sexual organ via said open end, and said sheath having a front portion proximate to said closed end and a rear portion proximate to said open end,

an outer flexible ring circumferentially affixed to the open end of said sheath, said outer ring containing a thin, inflexible inner ring, the two ring combination having an internal diameter adapted to receive and guide the male sexual organ into said sheath, without actively gripping said male sexual organ, and

a selectively removable insertion tube having an open front end, said insertion tube having a housing portion which extends from the open front end of said tube, surrounds the front portion of said sheath, and at least a part of which housing portion of said insertion tube is surrounded by at least one of said outer ring and at least a part of said rear portion of said sheath, said sheath comprising a circumferential seal at the open front end of said insertion tube, where the front and rear portions of said sheath meet.

4,805,605

ABDUCTION PILLOW

Andrew H. Glassman, Alexandria, Va., assignor to Glassman Medical Products, Inc., Columbus, Ohio

Filed Jan. 11, 1988, Ser. No. 142,177
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—80 A **10 Claims**

10. An abduction pillow comprising:

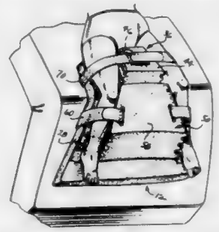
a substantially rhomboid shaped base pad formed of a high density foam rubber and having major and minor bases and interconnecting side edges,

means defining a first pair of slots through said base portion adjacent said minor base thereof and inwardly of said side edges and a second pair of slots adjacent said major base thereof and inwardly of said side edges,

a cephalad section of substantially rhomboid shape having major and minor bases and interconnecting side edges removably secured to said base pad with said major and minor bases and side edges thereof substantially parallel to but disposed inwardly of said major and minor bases and side edges of said base pad,

a caudad section of substantially rhomboid shape having major and minor bases and interconnecting side edges permanently affixed to said base pad with said major and minor bases and side edges of said caudad section disposed parallel to but inwardly of said major and minor bases and side edges of said base pad,

fabric strips positioned along an upper surface of said base pad outwardly of said side edges of said caudad section,



heel rests having substantially flat bases covered by a hook-type fastener material and concave upper surfaces removably secured to said fabric strips by means of said hook-type fasteners,

means defining aligned pairs of slots through said caudad section and underlying portions of said base pad,

straps extending through said aligned slots in said caudad section and said base pad for securing a patient's lower extemities to said abduction pillow,

means defining a pair of slots through said base pad beneath said cephalad section, and

strap means extending through said slots beneath said cephalad section for securing a patient's lower extemities to said abduction pillow said cephalad section extending from a point at or above said patient's knees toward said patient's genitals and said caudad section extending from a point at or below said patient's knees toward said patient's ankles, whereby said patient's lower extremities may be flexed at said knees and soft tissues thereof unloaded.

4,805,606

KNEE BRACE

Robert F. McDavid, III, Downers Grove, Ill., assignor to Terrence M. Fee, Clarendon Hills, Ill.

Filed Sep. 23, 1986, Ser. No. 910,632
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—80 C **12 Claims**



1. An improved knee brace for constraining a wearer's knee to its natural position and motion despite tension forces tending to open medial portions of the knee joint upon application of an applied compresaive force to lateral portions of the knee, comprising:

a hinged support means including a lower plate member extending below the wearer's knee and an upper plate member extending above the wearer's knee and upper plate member attaching above the wearer's knee, and means for pivotally attaching said lower and upper plate members adjacent the wearer's knee;

support means, including straps of pliable stretch-resistant material attached to the upper and lower plate members and lying along lines which intersect the medial center of the knee, laterally opposite said hinged support means;

means for connecting the straps together so as to support the medial center of the wearer's knee and so as to maintain the point of intersection generally at the medial center of the knee throughout normal range of motion of the knee; and

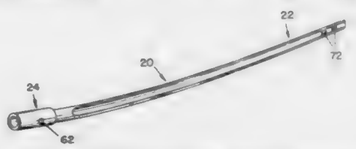
lower and upper securement means for securing said hinged support means to a lateral portion of the wearer's leg, and for stretch-resistant securing of said straps to respective plate members, whereby forces tending to open the medial portion of the wearer's knee are transmitted in tension through said straps to said plate members at points remote from the wearer's knee joint.

4,805,607

MODULAR INTRAMEDULLARY NAIL SYSTEM

John A. Engelhardt, and Richard R. Tarr, both of Warsaw, Ind., assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Dec. 3, 1987, Ser. No. 128,091
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—92 YZ **21 Claims**



14. A modular intramedullary nail for the repair of long bone fractures comprising:

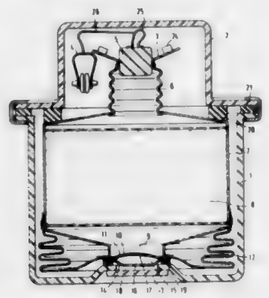
an elongated base nail adapted to be completely imbedded in the bone and having a longitudinal axis and generally conforming to the shape of the bone, said base nail extending between a leading end and a trailing end, said base nail including cylindrical support means adjacent said trailing end thereof;

an extension member adapted to be completely imbedded in the bone and having a longitudinal axis and a longitudinal bore therethrough, and extending between a first end and a second end, said extension member intended for selective attachment to said trailing end of said base nail by intimate reception of said cylindrical support means into the bore thereof; and

first locking means at said trailing end of said base nail for reception within the longitudinal bore of a selected one of said extension members and second locking means on said extension member engageable with said first locking means upon relative movement of said base nail toward said extension member to a fully locket position whereat said base nail and said extension member become a rigid unit and are positively prevented from unintended separation while completely imbedded in the bone during the healing process, said first and second locking means fixedly attaching said extension member to an associated one of said base nails to prevent inadvertent separation of said base nail and said extension member while enabling relative rotational positioning of said extension member and said base nail and while maximizing strength of said modular nail.

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4,805,608
BREATHING APPARATUS
Wolfgang Eckstein, Sereetz, and Günther Kolbe, Mölln, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany
Filed Mar. 27, 1987, Ser. No. 31,942
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1986, 3610492
Int. Cl.⁴ A62B 7/08
U.S. Cl. 128—202.26 **5 Claims**



1. In a breathing apparatus for a person including means for processing breathing air and housing means for enclosing said processing means until required for use, wherein the improvement comprises:

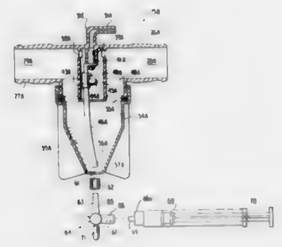
said means for processing the breathing air including: a container having first and second breathing air pass-through openings; breathing conduit means connected to said first opening for use by the person when breathing with the apparatus; chemical means disposed in said container for processing the breathing air;

stopper means for closing said second opening until said container is required for use; and,

moisture-sensitive means held in said stopper means in gas contact with said chemical means for visually indicating the presence of moisture in said container; and,

window means for permitting viewing of said moisture-sensitive means from outside of said housing means.

4,805,609
PRESSURIZED VENTILATION SYSTEM FOR PATIENTS
Josephine A. Roberts, 7509 Ben Avon Rd., Bethesda, Md. 20817, and Jephthae W. Burwell, Washington, D.C., assignors to Josephine A. Roberts, Bethesda, Md.
Filed Jul. 17, 1987, Ser. No. 74,867
Int. Cl.⁴ A61M 16/10, 16/20
U.S. Cl. 128—200.21 **6 Claims**



1. In a ventilatory support system for a human including means for providing a main supply of breathable gas under pressure, means for controlling the flow of such gas through a first conduit means and maintaining a desired pressure in such system, a moisture addition means operatively connected in said first conduit means, a nebulizer means hermetically sealed from the exterior of such system, operatively connected in the first conduit means, for generating an aerosol of a liquid substance in such flowing gas, exhalation means providing for intermittent exhalation while maintaining the pressure level in such system, and a secondary gas supply means for nebulizing gas connected to the nebulizer means, such nebulizer means comprising:

an inlet port, an outlet port and a nebulizing gas supply port, with said inlet port being operatively connected to the main supply of gas through the first conduit means, the outlet port connected to a second conduit means that communicates with the patient, and the nebulizing gas supply port being connected to such secondary gas supply means;

a vial-like member disposed within the nebulizer means and having a region for retaining a liquid substance to be atomized by the nebulizing gas; and

a two-position valve means operatively connected to such region of the vial-like member, adapted to intermittently permit accessing the interior of said vial-like member to withdraw liquids accumulated therein or to add a liquid substance, such valve means including:

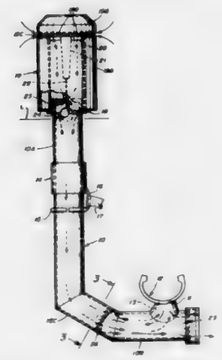
a valve body having a defined periphery adapted for movement within the valve means, such valve body defining:

a passage through the valve body intercepting such periphery of the valve body for providing communication between the interior of the vial-like member and the exterior of such system by being movable between a first position and a second position, with first position maintaining the hermetically sealed relationship and pressure level normally existing between the nebulizer vial and the exterior of such system drainage of any liquid substance standing in the liquid retaining region of the vial-like member by controllable liquid handling means and, alternatively, permitting introduction of a liquid substance into such region of the vial-like member for nebulizing; either liquid transfer step being carried out while maintaining the hermetically sealed relationship and pressure level of such system; and

handle means for controlling the valve body and adapted to permit movement of the valve body between such first and second positions.

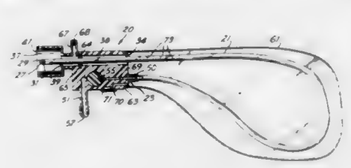
4,805,610
SWIMMER'S SNORKEL
Howard W. Hunt, 4116 Accomack Dr., Louisville, Ky. 40241
Filed Mar. 23, 1987, Ser. No. 29,138
Int. Cl.⁴ B63C 11/16
U.S. Cl. 128—201.11 **5 Claims**

1. A snorkel for use by a skin diver, said snorkel including a tube having first and second ends, the first end being the air intake end and the second end being the air exhaust end, a mouthpiece opening into the tube adjacent the second end, means operable to secure the snorkel to the head of a diver with the first end then extending above the diver's head, valve means incorporated in the second end for opening during diver exhalation, and second valve means, means connecting the second valve means to the first end of the tube, said second valve means including a buoyant operating sleeve and first and second valve elements of which one is a ball and the other a seat, said sleeve surrounding and extending beyond said first end and shaped and dimensioned relative thereto so as to enable the sleeve both to rock and to move vertically relative to said first end, said first and second valve elements within said sleeve, the first valve element fixed on said first end of the tube, said second valve element connected to the interior of the sleeve in a manner bringing the second valve element into sealing engagement with the first element on vertical movement of the sleeve when the water level is close to but below said first end and when the sleeve is rocked by a wave, said



engaged elements then holding said sleeve connected to said first end.

4,805,611
ASPIRATING DEVICE
Harold M. Hodgkins, East Brunswick, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Feb. 10, 1988, Ser. No. 154,665
Int. Cl.⁴ A61M 16/00
U.S. Cl. 128—207.14 **30 Claims**



1. An operable aspirating device for use in conjunction with a patient ventilation apparatus for removing undesirable secretions comprising:

an elongate flexible catheter having a proximal first portion including a first end, a distal second portion including a second end and a passageway therethrough, said catheter being adapted for insertion into the trachea of a patient, said catheter having at least one aperture in said second portion for allowing fluid communication between the exterior of said catheter and said passageway,

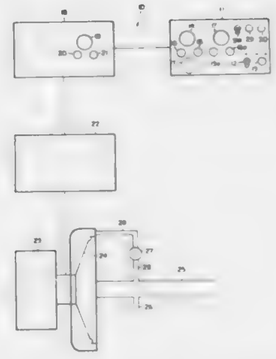
a housing including a proximal end having a proximal opening, a distal end having a distal opening and a side wall therebetween defining a conduit in said housing, said catheter passing through said proximal opening and capable of passing through said distal opening, said housing including means for connecting said housing to a patient ventilation apparatus;

catheter connector means on said housing for connecting said first portion of said catheter to said housing:

vacuum connector means for facilitating fluid communication between said catheter connector means and a source of vacuum, so that when vacuum forces are applied through said vacuum connector means the vacuum forces are communicated to said passageway of said catheter; and

a flexible envelope connected to said housing so that substantially all portions of said catheter between said catheter connector means and said proximal opening are within said envelope, said envelope being flexible enough to allow manual movement of said second end of said catheter toward and away from said distal opening by grasping said envelope adjacent to a portion of said catheter and manually moving said catheter.

4,805,612
HIGH FREQUENCY VENTILATION
Robert L. Jensen, San Antonio, Tex., assignor to SensorMedics Corporation, Anaheim, Calif.
Division of Ser. No. 776,014, Sep. 13, 1985, Pat. No. 4,719,910, which is a continuation-in-part of Ser. No. 728,146, Apr. 29, 1985, abandoned, which is a continuation of Ser. No. 519,387, Aug. 1, 1983, abandoned, which is a continuation-in-part of Ser. No. 485,900, Apr. 18, 1983, abandoned, which is a continuation-in-part of Ser. No. 358,648, Mar. 16, 1982, abandoned. This application Oct. 26, 1987, Ser. No. 113,641
Int. Cl.⁴ A61M 16/00
U.S. Cl. 128—204.21 **10 Claims**



1. A method of ventilating a patient comprising:

simultaneously delivering a flow of gas to both the first and the second sides of a piston which is diaphragmatically sealed in an oscillator;

directing the flow of gas delivered to said first side of said piston through a means for moving said piston back and forth within said oscillator, thereby cooling said oscillator;

moving said piston a selected distance back and forth within said oscillator, thereby creating a polar pressure wave in said flow of gas delivered to said second side of said piston;

directing the flow of gas delivered to said second side of said piston into the lungs of a patient; and

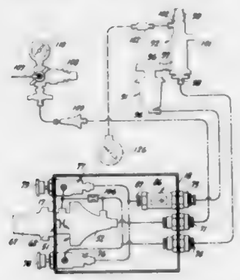
venting the flow of atmosphere directed into the lungs of the patient to the atmosphere.

4,805,613
VENTILATOR WHICH CAN BE READILY TRANSPORTED FOR EMERGENCY SITUATIONS
Forrest M. Bird, P.O. Box 817, Sandpoint, Id. 83864
Filed May 23, 1986, Ser. No. 866,791
Int. Cl.⁴ A61M 16/00
U.S. Cl. 128—204.25 **14 Claims**

1. In a ventilator adapted to be connected to a source of gas under pressure, a case, an inlet adapted to be connected to the source of gas, an oscillator cartridge carried by the case and having a body, the body having an inlet and an outlet and a flow passage interconnecting the inlet and an outlet, a valve member carried by the body and movable between open and closed positions with respect to the outlet, diaphragm means carried by the body and connected to the valve member for

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moving the valve member between open and closed positions to interrupt the flow of gas in the flow passage between the inlet and the outlet, servo port means carried by the body for supplying gas to the diaphragm for causing movement of the diaphragm to thereby cause movement of the valve member to the closed position to interrupt the flow of gas in the flow passage between the inlet and the outlet, adjustable metering valve means for metering the flow of gas from the outlet to the servo port to provide for cyclic operation of the oscillator



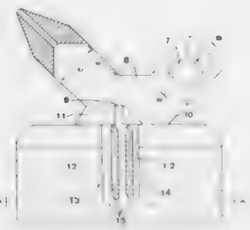
cartridge between inspiratory and expiratory phases, a patient adapter having an inlet and an outlet, pneumatic clutching means having an inlet and an outlet coupled to the inlet of the patient adapter, means coupling the outlet of the oscillator cartridge to the inlet of the pneumatic clutching means, said adjustable metering valve means having a single control knob whereby adjustment of the single control knob changes the frequency of cyclic operation and the ratio between the inspiratory phase and the expiratory phase.

4,805,614

RHINITIS RELIEF DEVICE

Yaakov Lerner, Beer-Sheva, Israel, assignor to Yahav Limited, Israel

Filed Jul. 1, 1987, Ser. No. 69,007
Int. Cl.[4] A61M *15/00*
U.S. Cl. 128—203.17 **7 Claims**



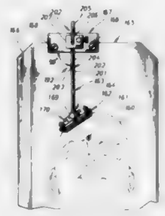
1. A Rhinitis relief device comprising:
a. a substantially enclosed water reservoir;
b. steam generating means within said water reservoir;
c. gas inlet means for the inlet of a gaseous medium;
d. outlet conduit means for conducting a mixture of gas and steam away from said water reservoir, said outlet conduit means including a first end and a second end, said first end of said outlet conduit means including an outlet means for said gas-steam mixture;
e. a hollow mixing space between said gas inlet means and said second end of said outlet conduit means;
f. a pressure-equalizing and water drainage opening connecting between said hollow mixing space and said water reservoir; and
g. a steam outlet opening separate from said pressure-equalizing and water drainage opening and communicating with said steam generating means, said steam outlet opening positioned within said hollow mixing space and having a hydraulic diameter such as to allow outflow of steam under its own vapour pressure, whereby said steam is injected into said hollow mixing space and mixed with said gaseous medium therein, and a substantially homogeneous mixture of said steam and said gaseous medium is delivered to said second end of said outlet conduit means.

4,805,615

METHOD AND APPARATUS FOR PERFORMING STEREOTACTIC SURGERY

Mark P. Carol, P.O. Box 748, Cooperstown, N.Y. 13326

Filed Jul. 2, 1985, Ser. No. 751,213
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—303 B **35 Claims**



1. A method for performing stereotactic surgery with a medical instrument upon a target within a skull, comprising the steps of:
(a) establishing a first, predetermined geometric relationship between a positioning fixture attached to both the skull and to a support surface upon which the skull is disposed;
(b) scanning the skull to produce an image of the target within the skull with respect to the positioning fixture;
(c) transferring at least a portion of the positioning fixture to a phantom fixture and disposing the positioning fixture portion with respect to the phantom fixture to establish a second, predetermined geometric relationship therebetween, which is identical to the first, predetermined geometric relationship, whereby the slope of the skull where the positioning fixture is attached to the skull is duplicated within the phantom fixture;
(d) disposing a phantom target within the phantom fixture at a location which corresponds to the location of the target within the skull;
(e) determining the trajectory and distance of a medical instrument extending from the positioning fixture portion to the phantom target;
(f) attaching the portion of the positioning fixture upon the skull in the same location it was originally attached to the skull; and
(g) inserting the medical instrument through the positioning fixture in the trajectory determined from the phantom fixture, whereby the medical instrument will intersect the target in the skull.

4,805,616

BIPOLAR PROBES FOR OPHTHALMIC SURGERY AND METHODS OF PERFORMING ANTERIOR CAPSULOTOMY

David S. C. Pao, 95 High Point Dr., Churchville, Pa. 18966

Continuation-in-part of Ser. No. 690,266, Jan. 10, 1985, Pat. No. 4,674,459, which is a continuation-in-part of Ser. No. 611,967, May 18, 1984, abandoned, which is a division of Ser. No. 428,849, Sep. 30, 1982, Pat. No. 4,476,862, which is a division of Ser. No. 213,861, Dec. 8, 1980, abandoned, which is a continuation of Ser. No. 900,422, Feb. 5, 1979, abandoned. This application Nov. 20, 1986, Ser. No. 933,026
Int. Cl.[4] A61B *17/39*
U.S. Cl. 128—303.17 **9 Claims**



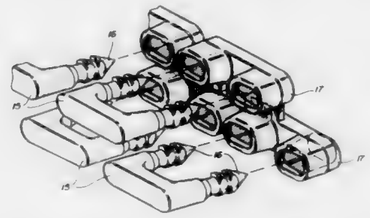
1. In a coaxial, bi-polar electrode device suitable for opthalmic surgery, the improvement comprising:
(a) a first tubular electrode having a central axis at a first hollow tubular end thereof;
(b) a second electrode extending from said hollow tubular end of said first electrode and radially away from said central axis, said second electrode having an outer dimension of about 0.10 mm to about 0.25 mm and having an extreme tip permanently spaced about 0.7 mm or less from said first electrode so as to provide a single axis of closest approach between said electrodes for concentrating current density along said single axis; and
(c) an insulating sleeve disposed between said first and second electrodes along said central axis.

4,805,617

SURGICAL FASTENING SYSTEMS MADE FROM POLYMERIC MATERIALS

James J. Bedi, Cincinnati, Ohio; Donald M. Golden, Cherry Hill, N.J.; Mark T. Gaterud, Flemington, N.J.; Anthony S. Mifsud, Bound Brook, N.J.; Jose C. Deniega, Readington, N.J.; Richard Smith, Cincinnati, Ohio, and W. Brinton Yorks, Jr., Yardley, Pa., assignors to Ethicon, Inc., Somerville, N.J.

Filed Nov. 5, 1987, Ser. No. 117,592
Int. Cl.[4] A61B *17/04*
U.S. Cl. 128—334 C **22 Claims**



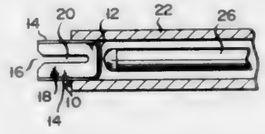
1. In a surgical fastening system for joining tissue, said system comprising a plurality of parallel rows of staples and a plurality of parallel rows of receivers, each of said staples comprising a pair of legs, said legs being joined at one end thereof by a linking member, the opposite end of each leg being adapted to penetrate tissue so the linking member lies adjacent the tissue penetrated by said legs, each receiver having a body portion and a plurality of openings disposed in said body portion, said openings being located so as to engage the legs of the staple after said legs have penetrated the tissue so that the receiver lies on the opposite side of the tissue to be joined, means on said legs and on said receivers for interlocking the staple and the receiver together; the improvement comprising each receiver being connected to at least two receivers in an adjacent row with each connection comprising a plurality of parallel linkages between receivers, said linkages being flexible and sufficiently strong to maintain the receivers connected during both the application of the fastening system when joining the tissue and the use of the fastening system to hold the tissue until such tissue has healed.

4,805,618

OVIDUCT CLOSING APPARATUS

Yasuhiro Ueda; Isao Nagai; Naruto Shinkai; Masaaki Nakazawa, and Toshiki Terayama, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 891,525, Jul. 31, 1986, abandoned. This application Apr. 11, 1988, Ser. No. 183,288
Claims priority, application Japan, Aug. 8, 1985, 60-174701; Aug. 8, 1985, 60-174702; Aug. 8, 1985, 60-174703; Oct. 30, 1985, 60-243376
Int. Cl.[4] A61B *17/08, 17/00*
U.S. Cl. 128—346 **7 Claims**



1. An oviduct-closing apparatus for closing an oviduct passage comprising:
a body provided with a passage closing portion which is deformable to assume an open state for engagement with an oviduct, and a closed state capable of closing the oviduct passage, said portion being prepared from a shape memory alloy and deforming from the open to the closed state or vice versa according to a predetermined temperature change;
a flexible support pipe means adapted to accommodate in its distal end at least a portion of said body;
a probe means sized to slide through said pipe means toward said distal end, and adapted to be heated to a preselected temperature;
wherein said body is constructed and arranged so that all of said body including said passage closing portion can be operatively applied to an oviduct when said body is inserted in the distal end of said flexible support pipe means, and the state of said passage closing portion is deformed by thermal contact with said probe means inserted into the support pipe means.

4,805,619

THERAPEUTIC COOLING SCARF, WRAP OR COLLAR

David W. Swearingen, 3502 E. Ludlow Dr., Phoenix, Ariz. 85032

Filed Jul. 20, 1987, Ser. No. 75,437
Int. Cl.[4] A61N *3/00*; A61F *7/00*
U.S. Cl. 128—380 **3 Claims**

1. An ice applicator for wearing around the neck of a person subjected to high ambient heat conditions comprising:

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an elongated member having two ends and formed of a water absorbent textile material,
said member having an elongated cavity formed therein closed by a zipper means,
said member being adaptable to substantially encompass and form a scarf around the neck of a wearer when placed therearound with said ends meeting in a juxtapositioned side-by-side arrangement,
a first fastening means mounted on one of said ends of said



member for detachably surrounding and holding said ends together in said juxtapositioned side-by-side arrangement,
said first fastening means comprising a strap with one end of said strap being provided with one portion of a hook and loop fastener and the other end of said strap being provided with a cooperating hook and loop fastener, and
a second fastening means mounted on said ends of said member for detachably surrounding the chest of the wearer to hold said ends against the chest to secure said member in place during physical activity of the wearer.

4,805,620

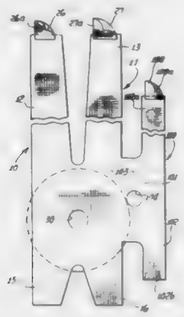
ADJUSTABLE WRAPPABLE, STRETCHABLE WRAP SHEET

William R. Meistrell, Manhattan Beach, Calif., assignor to Dive N'Surf, Inc., Hermosa Beach, Calif.

Continuation-in-part of Ser. No. 803,634, Dec. 2, 1985, Pat. No. 4,706,673, which is a continuation-in-part of Ser. No. 687,909, Dec. 31, 1984, Pat. No. 4,585,003. This application Jun. 15, 1987, Ser. No. 61,810

Int. Cl.[4] A61F *7/00*; **A61N** *3/00*

U.S. Cl. 128—402 **6 Claims**



1. In a retention device for use with a hot or cold liquid pack, the pack having a neck, the device itself comprising
(a) an insulative, flexible, relatively thin sheet that is longitudinally elongated and is bi-directional stretchable lonitudinally and laterally, the sheet including a first elastomeric layer, consisting of neoprene foam and a second layer of pile fabric attached to and substantially covering one side of the first layer,
(b) the sheet having a portion forming a first through opening to receive said pack neck and said portion then substantially flatly engaging the pack extent about said neck, the opening surrounded by pile fabric,
(c) the remainder of the sheet then adapted to adjustably wrap, and to be tensioned, about a user's anatomy, and there being first tab means integral with and contacting said first elastomer layer at one end portion of the sheet, the tab means carrying hook elements for removably attaching to said second layer at any position of wrap adjustment of the sheet,
(d) the sheet having a mid-portion in which said opening is formed, and the sheet also including a T-shaped portion defining a stem and a cross-piece, the stem projecting laterally from and substantially in the plane of said mid-portion and said cross-piece extending longitudinally beyond the stem in laterally openly spaced relation from the main extent of the sheet, the T-shaped portion forming a second through opening to receive the neck of an auxiliary hot or cold liquid pack,
(e) the cross-piece having an overall length less than that of the main extent of the sheet,
(f) and including additional tab means integral with one end of said cross-piece, the additional tab means carrying hook elements for removably attaching to said second layer on the T-shaped section at any position of wrap adjustment of the cross-piece about the upper arm of a human wearer, and when the sheet mid-portion extends over the shoulder of the wearer.

4,805,621

APPARATUS FOR MEASURING IMPEDANCE OF BODY TISSUE

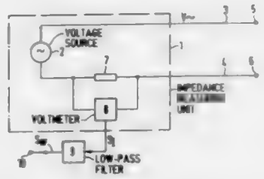
Roland Heinze, and Karl Stangl, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 15, 1987, Ser. No. 61,549

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1986, 3620280

Int. Cl.[4] A61N *1/00*; **H05G** *00/00*

U.S. Cl. 128—419 PG **16 Claims**



1. An apparatus for metabolism measurement of body tissue, said body tissue having a conductance, said apparatus comprising:
a signal source adapted to be connected to said body tissue for impressing an electrical signal into said body tissue:
means adapted to be connected to said body tissue for acquiring an impedance signal therefrom dependent on the impressed electrical signal and said conductance, said impedance signal including higher-frequency signal components corresponding to periodic body cycles and lower-frequency signal components corresponding to the metabolism of said body tissue; and
an evaluation means connected to said means for acquiring said impedance signal for evaluating only said signal components in said impedance signal corresponding to the metabolism of said body tissue for making a metabolism measurement, said evaluation means including means for filtering said lower-frequency signal components out of said impedance signal, said means for filtering having a signal output to which the filtered-out signal components are supplied.

4,805,622

DIRECTION-FINDING SYSTEM FOR LOCALIZATION OF REFLECTION-CAUSING INTERFACES IN THE HUMAN BODY

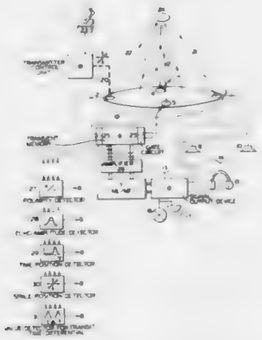
Rainer Riedlinger, Bernhardstr. 7, 7500 Karlsruhe 1, and Friedrich Ueberle, Goethestrasse 62, 6901 Dossenheim, both of Fed. Rep. of Germany

Filed Mar. 13, 1987, Ser. No. 25,510

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1986, 3612151

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—660.06 **10 Claims**



1. A system for localizing reflection-causing interfaces, particularly concretions, in the human body, the system comprising:
ultrasound pulse transmitter means for transmitting ultrasound pulses in a plurality of directions;
a plurality of ultrasound receiver means for receiving the transmitted pulses;
gate circuit means coupled to the receiver means for accepting the received ultrasound pulses, the gate circuit means only accepting pulses within a preset time period;
amplifier means coupled to the gate circuit means for amplifying the accepted ultrasound pulses;
storage means coupled to the amplifier means for storing the amplified ultrasound pulses;
MF transformation means coupled to the storage means for transforming the amplified ultrasound pulses into amplified audio pulses within a preset audio frequency range;
ML transformation means coupled to the storage means and the MF transformation means, the ML means measuring the time delay between the received ultrasonic pulses, calculating an appropriate audio frequency time delay, and applying the time delay to the MF audio pulses to produce time delayed audio pulses;
stereophonic audio output means coupled to said ML transformation means and MF transformation means for outputting a stereophonic audio signal, the presence of a time delay in the audio signals skewing the perceived location of the sound source to an appropriate side.

4,805,623

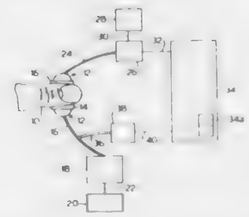
SPECTROPHOTOMETRIC METHOD FOR QUANTITATIVELY DETERMINING THE CONCENTRATION OF A DILUTE COMPONENT IN A LIGHT- OR OTHER RADIATION-SCATTERING ENVIRONMENT

Franz F. Jöbsis, Efland, N.C., assignor to Vander Corporation, Efland, N.C.

Filed Sep. 4, 1987, Ser. No. 93,482

Int. Cl.[4] G01N *33/48*

U.S. Cl. 128—633 **23 Claims**



1. A spectrophotometric method of quantitatively determining the concentration of a dilute component in an environment containing the dilute component of known identity but of unknown concentration in combination with a reference component of known concentration, by a series of successive, substantially contemporaneous measurements of transmitted and/or reflected radiation at selected wavelengths, comprising:
(a) determining the apparent effective pathlength in said environment;
(b) directing at said environment incident electromagnetic radiation of a first wavelength in a selected spectral region at which the dilute and/or reference component(s) exhibit absorption for the electromagnetic radiation;
(c) measuring the first wavelength radiation transmitted and/or reflected by the environment;
(d) directing at the environment incident electromagnetic radiation of at least one other wavelength in the selected spectral region at which the dilute and/or reference component(s) exhibit absorption of different relative intensities than for the first wavelength incident radiation;
(e) measuring the other wavelength radiation transmitted and/or reflected by the environment;
(f) determining extinction coefficient values for the dilute component at said first and other wavelengths in said environment; and
(g) based on the apparent effective pathlength determined for the environment, the extinction coefficient values for the dilute component at said first, and other wavelengths, and the measured absorbed and/or reflected radiation at said wavelengths, determining the relative amount of the dilute component to the amount of the reference component, as the concentration of the dilute component in the environment.

4,805,624

LOW-POTENTIAL ELECTROCHEMICAL REDOX SENSORS

Shang J. Yao, and Sidney K. Wolfson, Jr., both of Pittsburgh, Pa., assignors to The Montefiore Hospital Association of Western PA, Pittsburgh, Pa.

Continuation of Ser. No. 774,281, Sep. 9, 1985, abandoned. This application Apr. 14, 1987, Ser. No. 37,976

Int. Cl.[4] A61B *5/00*

U.S. Cl. 128—635 **18 Claims**

1. An improved electrochemical redox sensor for precise in vitro and in vivo measurement of one or more carbohydrates present in organic and biological fluids and tissues by cyclic

voltammetric or coulometric scanning, comprising in operative combination:

(a) a cell having:

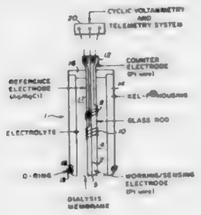
(i) a first, working electrode adapted to permit contact with a test specimen of said carbohydrate being measured, said test specimen exhibiting at least one voltage peak upon said cyclic scanning;

(ii) a second, counter electrode;

(iii) a third, reference electrode;

(iv) said working electrode being disposed to contact one or more carbohydrates present in a test specimen, and said second and said third electrodes being in ionic contact with each other and with said first electrode;

(b) means for providing a current to said working electrode and withdrawing it from said counter electrode;



(c) means for cyclic scan of said cell within a low potential far negative voltage domain of −0.9 V to −0.2 V vs. silver/silver chloride;

(d) means for sensing the amount of current flow between said working and said counter electrodes for at least one voltage peak exhibited by said test specimen when scanned in said voltage domain, said voltage peak being selected from a cathodic reduction peak and an anodic oxidation peak, said peak being present in the range of about −0.70 V to −0.90 V vs. silver/silver chloride at 37 C; and

(e) means for correlating said test specimen peak height sensed to a value of carbohydrate in said test specimen.

4,805,625

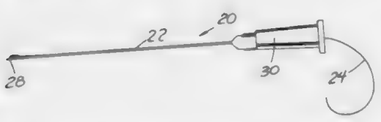
SPHENOIDAL ELECTRODE AND INSERTION METHOD

Allen R. Wyler, Memphis, Tenn., assignor to Ad-Tech Medical Instrument Corporation, Racine, Wis.

Filed Jul. 8, 1987, Ser. No. 71,075

Int. Cl.[4] A61N *1/00*

U.S. Cl. 128—642 **6 Claims**



1. In an apparatus for insertion of a sphenoidal wire electrode of the type having a hollow needle with a slant-tip and an opposite grip end and the wire inside the needle, the improvement comprising:

the wire having a turned-back distal portion which is beside the needle and terminates forwardly along the slant-tip;

the wire being a sole wire whereby electrical brain impulses are received in well-defined unambiguous electrical signals;

the wire having a diameter of about 0.20–0.30 mm such that it is of sufficient size for pickup of electrical brain impulses in the sphenoidal area;

the wire being of a metal selected from the class consisting of silver, platinum and gold such that despite its size it is sufficiently malleable to unfold and straighten upon an initial pulling of the wire from the tissue without damaging tissue during its removal; and

the wire being free within the needle for coaxial movement with respect thereto and extending away from the distal end to beyond the grip end of the needle for electrical attachment.

4,805,626

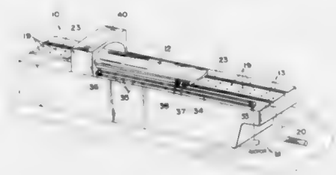
AIR FLOTATION PATIENT BED

Virgil DiMassimo, Huntington Station, and Mark J. Gelbien, Levittown, both of N.Y., assignors to Fonar Corporation, Melville, N.Y.

Filed Nov. 26, 1986, Ser. No. 935,207

Int. Cl.[4] A61B *5/05*

U.S. Cl. 128—653 **31 Claims**



1. An examination apparatus having an examination region and a surface extending into said region, said examination apparatus further comprising:

(a) means for examining an object in said examination region;

(b) support means for supporting said object;

(c) fluid pressure supply means for providing a source of pressurized fluid;

(d) valve means protruding from said surface and operable to communicate pressurized fluid from said fluid pressure supply means to a location beneath said support means when said support means contacts said valve means;

(e) a first sprocket and a second sprocket spacedly positioned adjacent said surface and belt means disposed around and cooperating with said first and second sprockets; and

(f) said support means including engagement means thereon adapted to be engaged by said belt means for selectively positioning said support means relative to said examination region.

4,805,627

METHOD AND APPARATUS FOR IDENTIFYING THE DISTRIBUTION OF THE DIELECTRIC CONSTANTS IN AN OBJECT

Klaus Klingenbeck, Heusdorf, and Judith Regn, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 4, 1986, Ser. No. 903,999

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1985, 3531893

Int. Cl.[4] A61B *6/00*

U.S. Cl. 128—653 **23 Claims**

1. A method for identifying the distribution of dielectric constants in an object in a scan of said object comprising the steps of:

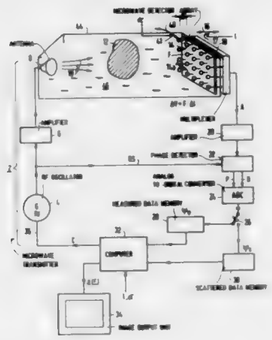
during said scan, emitting radiation directed at said object thereby causing said object to multiply scatter and transmit radiation attenuated by said object forming a three-dimensional attenuated and scattered radiation field;

defining a selected volume outside said object in said attenuated and scattered radiation field;

receiving said attenuated and scattered radiation within said selected volume;

measuring at each of a plurality of selected locations within said volume the received radiation in terms of amplitude and phase to obtain a data set for said scan;

calculating a three-dimensional distribution of the dielectric constants in said object from the amplitudes and phases of



the radiation received within said selected volume in said data set based at least in part on the multiple scattering of said radiation within said object;

selecting a section of said three-dimensional distribution; and visually displaying said section.

4,805,628

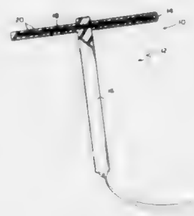
ULTRASOUND CONTRAST MEDIA FOR MEDICALLY IMPLANTABLE AND INSERTABLE DEVICES

Francis J. Fry, and Burney, Bryan T., both of Indianapolis, Ind., assignors to Indianapolis Center For Advanced Research, Inc., Indianapolis, Ind.

Filed Dec. 6, 1982, Ser. No. 447,262

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—662.02 **3 Claims**



1. A method for enhancing ultrasound detection of an implantable or insertable device which can be placed in a body comprising the steps of

providing a space in the device having a substantially gas-impermeable wall, and

placing a sheet-like inclusion of gas within the space.

4,805,629

CARDIORESPIRATORY MONITORING APPARATUS

Gilbert Farges, Compiegne, France, assignor to Gradient "Association régie par la loi de 1901", Cedex, France

Filed May 7, 1987, Ser. No. 48,367

Int. Cl.[4] A61B *5/02, 5/08*

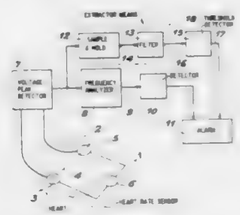
U.S. Cl. 128—671 **9 Claims**

1. A cardiorespiratory monitoring apparatus comprising:

a sensor for sensing electric cardiac potentials and outputting signals which include beat pulses;

a detector connected to the output of said sensor for detecting heart beat pulses in said signals supplied by said sensor; and

extraction means connected to the output of said detector of heart pulses for extracting a signal representing respiratory rate from said signals supplied by said heart beat pulses detector, wherein said respiratory rate signal is supplied as an output of said extraction means, said means for extracting a signal representing the respiratory rate



comprising a sample and hold circuit connected to the output of said heart pulses detector and a filter connected to the output of said sample and hold circuit in order to extract the average component signal of the signal supplied by said sample and hold circuit wherein said average component signal represents the respiratory rate signal which is supplied by an output of said filter which constitutes the output of said extraction means.

4,805,630

PRESSURE MONITORING DEVICES

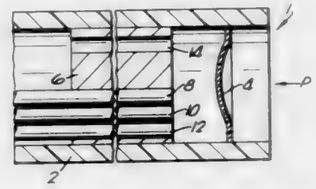
Philip A. Storey, Hertfordshire, England, assignor to The BOC Group, Inc., Montvale, N.J.

Filed Jul. 14, 1987, Ser. No. 73,022

Claims priority, application United Kingdom, Aug. 1, 1986, 8618845

Int. Cl.[4] A61B *5/02*

U.S. Cl. 128—675 **4 Claims**



1. A probe for use in monitoring the pressure of blood contained within a blood vessel of a patient comprising a catheter tube having a distal end for placement within the blood vessel, a flexible diaphragm having a central axis and mounted at the distal end of said catheter tube and having one side directly contacting the blood and the other side reflective, said flexible diaphragm being deformable in response to changes in pressure of the blood, a cylindrical support member fitted within said catheter tube and facing said reflective side of said flexible diaphragm, said cylindrical support member having a radial slot formed therein, a single emitter light guide fitted within said slot and offset from the central axis of said flexible diaphragm for directing light at an off axis region of said reflective side of said flexible diaphragm, a pair of receiver light guides fitted within said slot and radially aligned on either side of said emitter light guide, said receiver light guides receiving light reflected from said reflective side of said flexible diaphragm from said light emitter, the proportion of the light that is reflected by said flexible diaphragm and received by each of

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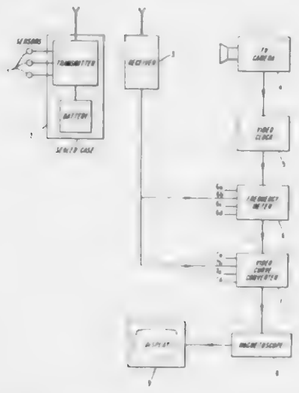
said receiver light guides varying in accordance with deformation of said diaphragm.

4,805,631

DEVICE FOR THE DETECTION, THE STUDY AND THE SUPERVISION OF DISEASES, AND IN PARTICULAR HEART DISEASES, RESULTING IN ELECTRICALLY RECORDABLE MANIFESTATIONS

Sa Majeste H. Roi du Maroc, IL., Palais Royal, Rabat, Morocco

Filed Apr. 9, 1986, Ser. No. 849,800
Claims priority, application Morocco, Apr. 9, 1985, 20630
Int. Cl.[4] A61B 5/04
U.S. Cl. 128—710 12 Claims



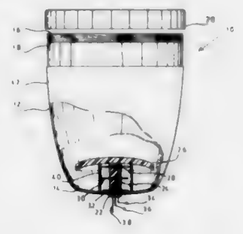
1. A device for observing and recording activity of at least an organ of the body of a patient producing electrically recordable manifestations, for the purpose of in particular studying and supervising heart diseases, comprising video means for filming motions of the patient which is free to move within a determined space such as a swimming pool, means for detecting and transmitting electrical signals produced by the activity of said organ, means for combining video signals corresponding to an image of the patient with the electrical signals produced by the activity of said organ, means for recording said combined signals, and means for simultaneously displaying images relating to the motions of the patient within said space and images of the electrical signals produced by the activity of said organ, said means for detecting and transmitting the electrical signals produced by the activity of said organ comprising sensors fastened to the body of the patient so as to receive data relating to the activity of said organ, a transmitter carried by the patient and connected to the sensors, an autonomous electrical power supply connected to the transmitter, a receiver for receiving the signals from the transmitter, a video curve converter, a video frequency meter, said receiver being connected to an input of the video curve converter which has another input connected to an output of the video filming means, the video curve converter being adapted to permit a synchronized recording and/or observation of images relating to the motions of the patient within said space filmed by the video filming means and images of a diagram as a function of time of the operation of said organ, the receiver being furthermore connected to an input of the video frequency meter which has another input connected to an output of the video filming means, the frequency meter being adapted to permit the synchronized recording and/or observation of the images relating to the motions of the patient filmed by the video filming means, and images of numerical data relating to the operation of said organ.

4,805,632

URINE SPECIMEN RECEIVER WITH USER VERIFICATION

Herbert J. Pope, 2012 Marsky-Swamp Pt. NW., Knoxville, Tenn. 37932

Filed Nov. 17, 1986, Ser. No. 931,252
Int. Cl.[4] A61B 5/00
U.S. Cl. 128—760 18 Claims



1. A container for the collection of a urine specimen of a donor, which comprises:

a collector body to receive a urine stream from said donor, said collector body having a side wall with a top rim defining an opening into said collector body, and a bottom member joined to said side wall;

a conductive coating applied to at least a portion of the exterior of said side wall of contact with a hand of said donor;

three spaced-apart electrical contacts mounted upon an insulative support within said container proximate said bottom member, each of said contacts being a different selected distance from said bottom member; and

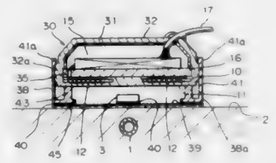
a shield mounted upon said support positioned proximate said electrical contacts in a direction toward said rim, said shield preventing direct deposit of said urine stream upon said eletrical contacts.

4,805,633

DISPLACEMENT SENSOR

Tsutomu Kotani, Kamagaya, and Minoru Takahashi, Funabashi, both of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Dec. 31, 1987, Ser. No. 140,043
Claims priority, application Japan, Jan. 26, 1987, 9635/87
Int. Cl.[4] A61R 7/04
U.S. Cl. 128—715 6 Claims



1. A displacement sensor comprising;

a sensor body having a substrate (16), a plurality of saturable inductors connected alternately in series mounted on one surface of said substrate radially with a predetermined angular period, each of said saturable inductors having a saturable magnetic core and a coil wound on the core, a process circuit (15) for processing output of said saturable inductors mounted on the other surface of said substrate, a lead wire coupled with said process circuit for supplying power to said process circuit and obtaining output of the process circuit, a shield case (31) surrounding said process

circuit, and a housing (32) for securing above members having a ring (32a) on external wall of the housing, and

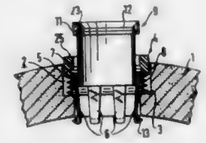
a magnet assembly having a bottom ring (38a) with a plurality of upright wall chips (41) positioned perpendicularly at periphery of said bottom ring, a film (39) having a permanent magnet at center of said film attached to said bottom ring, each of said wall chips having a jaw at the extreme end so that said jaw engages detachably with said ring (32a) of the housing (32), and a plurality of bars (43) fixed to said bottom ring (38) so that it touches with said sensor body when it is engaged with the magnet assembly, and said magnet is positioned close to said saturable inductors.

4,805,634

ADAPTER ASSEMBLY FOR USE WITH A CRANIAL BIOSENSOR

Georg J. Ullrich, Freiburg im Breisgau; Karl-Heinz Pomorin, Stegen; Harald Kronberg, Staufen; Günter Brauns, Mandelbachtal; Peter Koschke, Bad Fellnbach; Pavel Novak, Munich, and Michael R. Gaab, Hanover, all of Fed. Rep. of Germany, assignors to Hellige GmbH, Freiburg, Fed. Rep. of Germany

Filed Jun. 4, 1987, Ser. No. 58,057
Claims priority, application European Pat. Off., Jun. 6, 1986, 86107721.2
Int. Cl.[4] A61B 5/00
U.S. Cl. 128—748 10 Claims



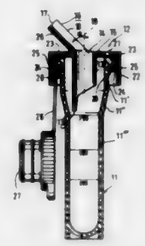
1. An adapter assembly for accurately positioning a removable biosensor, having a cylindrical body portion, in a stepped circular hole bored through the cranium, said hole having an upper portion and a lower portion, the upper portion of said hole having a larger diameter than and coaxial with the lower portion so as to form a radial bearing surface intermediate said upper and lower portions, said adapter assembly comprising: (a) a first tubular member adapted for insertion into said hole, said tubular member having an upper portion and a lower portion, the upper portion of which tubular member is formed as a radially outwardly extending flange adapted to the inside diameter of the upper portion of the hole, the lower portion of which tubular member formed as a plurality of downwardly depending spring-like legs adapted to the inside diameter of the lower portion of the hole, said legs having lower tips formed as outwardly extending cams; and (b) a second tubular member adapted for insertion into the first tubular member, said tubular member having an upper portion and a lower portion, the upper portion of which tubular member is formed as a radially outwardly extending flange adapted to the inside diameter of the upper portion of the first tubular member, the lower portion of which is adapted to the inside diameter of the lower portion of the first tubular member, the inside diameter of the second tubular member being slightly larger than the outside diameter of the cylindrical body portion of the biosensor such that said body portion is slidable therein, whereby when the second tubular member is inserted into and coaxially aligned with the first tubular member the spring-like legs are urged into contact with the cranial wall defined by the lower portion of the hole and the outwardly extending cams engage the lower outer periphery of the cranium defined by the lower portion of the hole.

4,805,635

BLOOD COLLECTING VESSEL

Dieter Korf, Neuenbrecht-winterborn, and Eberhard Seibel, Waldbrol-Brol, both of Fed. Rep. of Germany, assignors to Walter Sarstedt Kunststoff-Spritzgusswerk, Neuenbrecht-Rommelsdorf, Fed. Rep. of Germany

Filed Nov. 18, 1986, Ser. No. 932,065
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1985, 3541041
Int. Cl.[4] A61B 5/14
U.S. Cl. 128—763 26 Claims



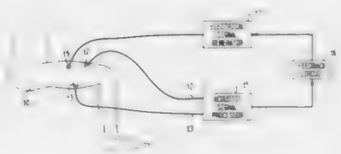
1. A blood collecting vessel comprising a collecting tube having a bottom end and a top end, said tube being open at said top end and closed at said bottom end, a blood feed cap mounted on said top end of the collecting tube, said cap having an upper wall, substantially central inner tube which extends from a substantially central bore in said upper wall of the blood feed cap into the interior of the collecting tube, and a scoop which extends outwardly from the bore in said upper wall, said scoop having a front edge, said front edge being engageable with the blood taking surface, characterized in that the scoop (16) subtends an angle (α) relative to the central axis (18) of the inner tube (13), or relative to the normal to the upper wall (15) which is clearly greater than 0° and clearly smaller than 90°.

4,805,636

SYSTEM FOR CONTROLLING MUSCLE RESPONSE

Daniel T. Barry, Ann Arbor, Mich., and Raphael A. Monsanto, Cranford, N.J., assignors to The University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 832,830, Feb. 24, 1986, abandoned.
This application Nov. 20, 1987, Ser. No. 124,348
The portion of the term of this patent subsequent to Feb. 25, 2003, has been disclaimed.
Int. Cl.[4] A61B 7/00, 5/10; A61N 1/36; A61F 2/70
U.S. Cl. 128—773 10 Claims



1. A method of controlling muscle activity, the method comprising the steps of:

obtaining an acoustic signal from a muscle responsive to activity of said muscle; and

applying an electric signal to said muscle responsive to said acoustic signal.

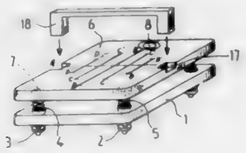
VOL 1099 ISS 3 FE 21 1989 UMI

4,805,637

APPARATUS FOR THE DETECTION AND CORRECTION OF ANOMALIES IN THE EQUILIBRIUM OF THE HUMAN BODY

Nicole Walthert, 6, rue de Jargeau, F-45000 Orleans, France

PCT No. PCT/FR86/00325, § 371 Date May 20, 1987, § 102(e) Date May 20, 1987, PCT Pub. No. WO87/01923, PCT Pub. Date Apr. 9, 1987
PCT Filed Sep. 24, 1986, Ser. No. 60,710
Claims priority, application France, Sep. 25, 1985, 85 14196
Int. Cl.[4] A51B 5/10
U.S. Cl. 128—774 7 Claims



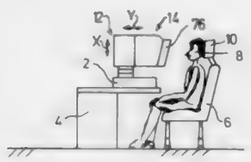
1. Apparatus for detecting and correcting anomalies in the equilibrium in the human body including a means (8) for indicating the horizontality of a mobile mechanism mounted on at least one deformable member (5) and on which the user is placed, characterized in that said apparatus comprises a single mobile plate (6) which rests via at least three deformable members (5) on a base (1) resting on the ground and which carries the indicator means (8) of the spirit level kind integrally moving with said mobile plate, and in that said mobile plate carries elements for marking the positioning of one or both feet formed of axial lines (BB', CC', DD') in accordance with the axis of the feet, as well as a removable system (18,20) for fixing the foot with respect to a transverse line AA' dividing the weight of the body, in the middle of said plate.

4,805,638

APPARATUS FOR PHOTOGRAMMETRICALLY MEASURING THE HUMAN HEAD

Eric Steinhauer, La Canada, Calif., and Karl-Heinz Lange, Bunde, Fed. Rep. of Germany, assignors to Eyemetrics - Systems AG, Chur, Switzerland

Filed Nov. 21, 1986, Ser. No. 933,580
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1985, 3545875
Int. Cl.[4] A61B 5/10
U.S. Cl. 128—774 26 Claims



1. Apparatus for photogrammetrically measuring the human head, comprising: base means; projector means for projecting a pattern image onto the head; camera means capable of simultaneously taking at least two pictures of the head with the pattern image projected onto it; and an apparatus carrier affixed to said base means and carrying both said camera means and said projector means, said apparatus carrier firstly being moveable relative to said base means in a vertical direction and secondly being moveable relative to the head to be measured in a horizontal direction essentially parallel with an optical axis of the camera means.

4,805,639

MEDICAL CAP WITH FACE SHIELD

Darrell D. Dial, and John M. Geesbreght, both of Fort Worth, Tex., assignors to CareSystems, Inc., Aledo, Tex.

Filed Nov. 9, 1987, Ser. No. 117,974
Int. Cl.[4] A62B 9/06; A41D 13/00; A42B 1/06
U.S. Cl. 128—857 7 Claims



3. A protective device for the head, comprising in combination:

a flexible cap having a bag-like configuration with a top adapted to fit loosely over a user's head, the cap being formed of a spun fibrous breathable material;

elastic means extending around the edge of the cap for causing the cap to grip the user's head to retain the cap on the user's head; and

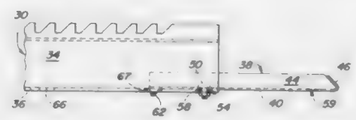
a transparent liquid impervious plastic shield stationarily secured across a hole formed in the top of the cap, the breathable material of the cap surrounding the entire periphery of the shield, the material of the shield being stiffer than the top of the cap, the elastic means allowing the cap to be worn in a first position with the shield on top of the user's head and facing upward, and in a second position with the cap pulled downward from the first position with the shield positioned over the user's face, the shield being of a size sufficient to allow the user to see through the shield when the cap is in the second position.

4,805,640

STRAW WALKER EXTENSION PAN

Robert E. Bennett, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed Jun. 12, 1987, Ser. No. 62,537
Int. Cl.[4] A01F 12/30
U.S. Cl. 130—26 19 Claims



1. A straw walker in an agricultural combine, the straw walker comprising:

an open longitudinal trough having two side members and a bottom member, the trough is adapted and constructed to receive straw and in an oscillating motion propel the straw longitudinally rearward, the bottom member of the trough is provided with at least one mounting aperture and at least two mounting slots;

an extension pan mounted to the trough, the extension pan is provided with a bottom plate that rests against the bottom member of the trough and is provided with at least two mounting holes which together with the mounting aperture of the trough define a pan extended position and a pan retracted position, the pan is further provided with depending engaging means extending from the bottom plate of the pan which cooperate with the mounting slots to further define the extended and retracted positions of the pan; and

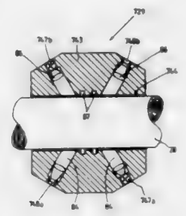
releasable mounting means engaging the mounting aperture and the mounting holes to mount the pan to the trough in either the retracted position or the extended position.

4,805,641

METHOD AND APPARATUS FOR ASCERTAINING THE DENSITY OF WRAPPED TOBACCO FILLERS AND THE LIKE

Andrzej Radzio, Quinton, Va., and Wolfgang Siems, Hamburg, Fed. Rep. of Germany, assignors to Körber AG, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 760,995, Jul. 31, 1985. This application Mar. 6, 1986, Ser. No. 837,096
Int. Cl.[4] A24C 5/14
U.S. Cl. 131—280 34 Claims



1. A method of ascertaining the density of a body of fibrous material, particularly a wrapped rod-like filler which contains particles of tobacco, comprising a first step of directing at least one beam of electromagnetic radiation with a wavelength in one of the ultraviolet, visible and infrared ranges of the spectrum into the body of fibrous material so that the beam penetrates through at least a portion of the body and at least one of its characteristics is influenced by the density of such body, said first step including directing radiation in at least one predetermined direction whereby at least some radiation is reflected and scattered by the fibrous material of the body and such radiation emerges from the body in at least one second direction at an angle to the predetermined direction; a second step of monitoring the one characteristic of the beam subsequent to its penetration through at least a portion of the body of fibrous material, said second step comprising monitoring at least one characteristic of at least some of the scattered and reflected radiation subsequent to its emergence from the body; and a third step of generating a signal which is indicative of the monitored characteristic of the beam.

4,805,642

PROCESS FOR REMOVING INORGANIC NITRATE FROM AGRICULTURAL PRODUCTS

Norman B. Rainer, 2008 Fondulac Rd., Richmond, Va. 23229

Filed Sep. 8, 1987, Ser. No. 94,151
Int. Cl.[4] A24B 15/24, 15/28; A23K 1/00
U.S. Cl. 131—297 13 Claims

1. A process for treating nitrate-containing agricultural plant material to remove nitrate thereform comprising:

(a) conveying said agricultural material having a moisture content between about 3% and 12% to a reaction zone,

(b) contacting said material with HCl gas in said reaction zone for at least 3 seconds in a manner whereby reaction gases are produced by the interaction of the HCl gas with the nitrate.

(c) limiting the duration of contact of said reaction gases with said material to less than three minutes, and

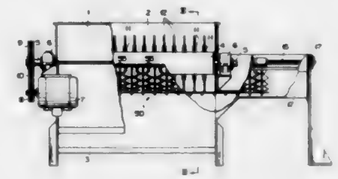
(d) sweeping the HCl-contacted material with a carrier gas.

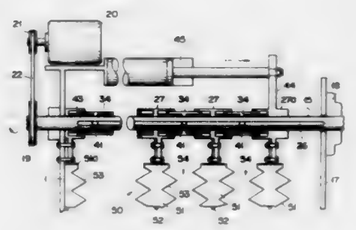
4,805,643

APPARATUS FOR ADJUSTING GAPS BETWEEN A PLURALITY OF MEMBERS DISPOSED IN A LINE AND TOBACCO THRESHER ADOPTING THE SAME

Kenju Tetska, Kumamoto, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan

Filed Mar. 7, 1988, Ser. No. 164,858
Claims priority, application Japan, Mar. 9, 1987, 62-52046
Int. Cl.[4] A24B 5/10
U.S. Cl. 131—311 16 Claims





1. An apparatus for adjusting the gaps of a plurality of members which are arranged in a line and spaced apart from one another, and each of which has two ends, said apparatus comprising:

a drive shaft arranged in the vicinity of one end side of said members and extending parallel to the array of said members;

drive means for rotating said drive shaft in forward/reverse directions;

a plurality of first sliders arranged at predetermined intervals, each of said first sliders being movable along said drive shaft and coupled to the first each of the corresponding one of said members so that rotation thereof is prohibited, and having a first right-handed thread portion on one end thereof and a first left-handed thread portion on the other end thereof;

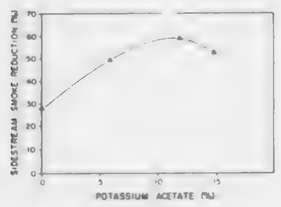
a plurality of second sliders located between said first sliders, each of said second sliders having, on its two ends, second right- and left-handed, thread portions which are screwed to said first right- and left-handed thread portions on the ends of said adjacent first sliders;

coupling means for guiding each of said second sliders in the axial direction of said drive shaft and for rotating at least said second right- and left-handed thread portions together with said drive shaft; and

guide means for guiding the second ends of said members in the axial direction of said drive shaft.

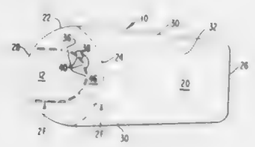
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4,805,644
SIDESTREAM REDUCING CIGARETTE PAPER
Vladimir Hampl, Jr., Roswell; Robert D. Fields, Atlanta, and Edward P. Ballwinkel, Roswell, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Jun. 30, 1986, Ser. No. 880,213
Int. Cl.[4] A24D *1/02*
U.S. Cl. 131—365 19 Claims



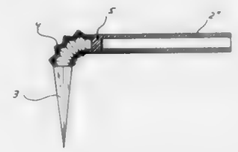
1. In a web material adapted for use as a wrapper for smoking articles, said material comprising a cellulosic base web having a substantially water insoluble and thermally stable filler having a superficial surface area in the range of at least about twenty M^2/g providing a superficial surface area in the web of at least eighty square meters per square meter of web and containing up to about 15 percent by weight of an alkali metal salt.

4,805,645
TWO MODE ARTIFICIAL NAIL
Jane A. Schiff, Lawrenceville, N.J., and Edward Fishman, Simi Valley, Calif., assignors to Jazco International, Inc., Bensalem, Pa.
Filed Jul. 27, 1987, Ser. No. 77,906
Int. Cl.[4] A45D *29/00*
U.S. Cl. 132—73 11 Claims



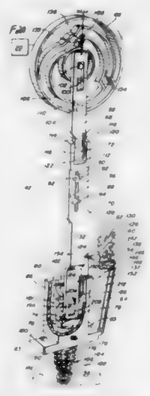
1. An artificial nail tip apparatus having a top side and a bottom side for attachment to a human finger having a nail plate with a forward edge, said apparatus comprising:
a forward section which normally extends beyond the forward edge of said nail plate when attached to said nail plate;
a rear section attachable to said nail plate and connected to said forward section along a boundary, said rear section having an average cross-sectional profile which is thinner than the average cross-sectional profile of said forward section; and
portion removing means incorporated in said rear section for separating a removable portion of said rear section from said rear section, said portion removing means comprising a series of apertures arranged in a line so that said removable portion can be snapper off,
wherein removal of said removable portion permits said rear section to attached more securely nail plates.

4,805,646
TOOTHPICK
Marat Shimenkov, 65-46 Parsons Blvd., #2A, Flushing, N.Y. 11365
Filed Jul. 24, 1987, Ser. No. 77,449
Int. Cl.[4] A61C *15/00*
U.S. Cl. 132—329 7 Claims



1. A toothpick, comprising
a body part having at least two body portions which are movable relative to one another so as to assume at least two positions with at least two different angles relative to one another, and means for connecting said body portions with one another and including a hollow substance accommodating bellows which connects said body portions with one another and formed so that when one of said body portions is moved relative to the other of said body portions, a substance is squeezed from said bellows into one of said body portions.

4,805,647
TIMER TO DISPENSER TOLERANCE TAKE-UP FOR DISHWASHER
Larry D. Marks, St. Joseph Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Aug. 27, 1986, Ser. No. 901,008
Int. Cl.[4] B08B *13/00*; A47L *15/44*
U.S. Cl. 134—57 D 13 Claims



1. In a dishwashing apparatus having a tub defining a wash chamber and having a timer mechanism for controlling operation of the dishwashing apparatus through an operating cycle, a reservoir for containing a supply of washing additive, and dispensing means for selectively closing said reservoir as a result of the dispensing means being disposed in a first position and opening the reservoir to release additive therefrom into the wash chamber as a result of the dispensing means being disposed in a second position, improved structure for connecting between the timer mechanism and dispensing means comprising:
a cam follower associated with the timer mechanism and

movable in a prescribed path in response to operation of the timer mechanism as the dishwashing apparatus is cycled and residing in a first position at a predetermined stage in an operating cycle;
an actuating member for connection with the cam follower and movable to change the dispensing means from the first position to the second position;
means for blocking movement of the actuating member with the actuating member in an intended position of the actuating member at said predetermined stage of an operating cycle; and
cooperating means on the cam follower and actuating member for adjustably fixing the relative positions of the cam follower and actuating member as the actuating member and cam follower are moved relative to each other,
whereby the actuating member can be blocked by the means for blocking movement in the intended position of the actuating member at the predetermined stage of an operating cycle and the timer mechanism can be cycled to move the cam follower to the first position thereof to establish consistent interconnection of the cam follower and actuating member in operative position.

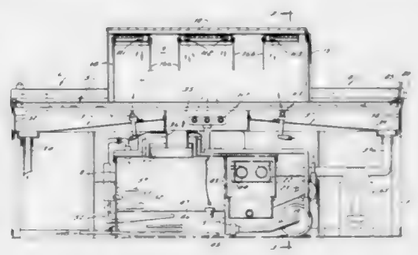
7. A method for adjustably setting the relative positions of a cam follower and an actuating member on a dishwashing apparatus, said dishwashing apparatus having a dispensing means controlled by a timer mechanism through the cam follower and actuating member, said actuating member being associated with the dispensing means and movable in a prescribed path during an operating cycle for the dishwashing apparatus, said method comprising the steps of:
blocking said actuating member in a first position in which said actuating member is intended to be in at a predetermined stage in an operating cycle;
moving said timer mechanism to cause said cam follower to move relative to the actuating member to a second position that the cam follower is intended to be in with the dishwashing apparatus at the predetermined stage in an operating cycle; and
fixing the cam follower and actuating member relative to each other in operative relationship with the actuating member in the first position and the cam follower in the second position.

4,805,648
AUTOMATIC WASHING AND STERILIZING DEVICE FOR A STABLE
Tyh-Yuan Hour, 82, To-Syh Village, Luh-Jeau Shian, Chiayi Hsien, Taiwan
Filed Dec. 7, 1987, Ser. No. 129,168
Int. Cl.[4] B08B *3/00*
U.S. Cl. 134—57 R 5 Claims



1. An automatic washing and sterilizing apparatus for washing and sterilizing a space located beneath the apparatus, such as a stable or the like, comprising:
frame means for mounting wires so as to extend over the space, a set of fixed wires extending across the space and secured by said frame means, and a set of moving wires mounted on pulleys secured to the frame means,
a main transmission system fixed above the space in the vicinity of the wires and intermediate between said frame means, said transmission system including a pair of motors, each operable in a different direction, and a plurality of wire drive wheels, each wire drive wheel being encircled by a moving wire such that turning of the wire drive wheels moves the wires lengthwise between said frame means, turning about said pulleys, said wire drive wheels operatively connected to the motors to be operated thereby, said main transmission system including a control means which, when engaged in one direction operates one of the two motors and when engaged in the other direction operates the other motor,
a pair of cranes mounted on the fixed and movable wires, one crane on each side of the main transmission system, each crane supported by the fixed wires for movement therealong and fixedly securable to the movable wires for movement therewith, such that as the wire drive wheels move the moveable wires and hence both cranes in one direction, both cranes move synchronously, one crane moving toward the main transmission system and the other moving away from the main transmission system toward the frame means on that side, and wherein when the wire drive wheels move in the other direction, both cranes move synchronously in that other direction,
each crane having a stop means positioned to engage the control means of the main transmission system as that crane reaches the main transmission system, to cause the control means to turn off one motor and turn on the other motor, to thereby reverse the direction of movement of the wire drive wheels, the moveable wires and hence also the two cranes,
and a liquid shooting and spraying system including nozzles fixed onto the cranes for movement therewith as the cranes move with the moveable wires, said nozzles being directed downwardly to shoot and spray liquid into the space located therebelow, a liquid supply means including a pump and flexible hoses for delivering liquid to the nozzles at the cranes.

4,805,649
BEVERAGE GLASS WASHER
James E. Nezworski, Waukesha, Wis., assignor to Perlick Corporation, Milwaukee, Wis.
Filed Oct. 30, 1987, Ser. No. 117,155
Int. Cl.[4] B08B *3/02*
U.S. Cl. 134—57 R 20 Claims



1. A machine for washing articles such as beverage glasses, comprising a plurality of spray nozzles arranged in sets, conveyor means for carrying articles to be washed along a defined path, from a loading station successively through a washing zone having a set of washing nozzles from which washing liquid is discharged against the articles and a rinsing zone having a set of rinsing nozzles from which rinsing liquid is discharged against the articles, to an unloading station, means for delivering washing liquid under pressure to said set of washing nozzles, means for delivering rinsing liquid under pressure to said set of rinsing nozzles, a retention tank, and means for conducting into said retention tank a substantial portion of the rinsing liquid discharged from said set of rinsing nozzles, said machine being characterized by:

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A. A set of prewash nozzles along said path, in a prewash zone between said loading station and said washing zone;
B. means comprising a prewash pump for withdrawing liquid from said retention tank and delivering it under pressure exclusively to said set of prewash nozzles for discharge from them against articles on said conveyor, to prewash the articles prior to their being sprayed with washing liquid;
C. a washing liquid tank at a level below said set of washing nozzles and having a recirculation outlet near its bottom;
D. return means for collecting substantially all washing liquid discharged from said set of washing nozzles and directing it towards said washing liquid tank;
E. a wash pump communicated only with said recirculation outlet and with nozzles of said set of washing nozzles, for withdrawing washing liquid through said recirculation outlet and delivering it under pressure to those nozzles for discharge from them;
F. means for introducing makeup washing liquid from a source thereof into said washing liquid tank;
G. means providing for one-way communication between said tanks, permitting flow into the retention tank from the washing liquid tank whenever liquid in the latter tends to rise above a predetermined filled level but at all times preventing opposite flow; and
H. said source of washing liquid comprising:
(1) a heating tank below said washing liquid tank, having
(a) a top wall which serves as the bottom wall of the washing liquid tank to provide for heat transfer between contents of those tanks,
(b) an inlet connectable with a source of water, and
(c) an outlet communicated with the interior of the washing liquid tank; and
(2) an electric heating element in said heating tank.

4,805,650

APPARATUS FOR CLEANING A TANK-LIKE VESSEL

Hideo Yasui, Kobe; Toragoro Mitani, and Takamichi Komabashiri, both of Takasago, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 6, 1987, Ser. No. 46,366
Claims priority, application Japan, May 10, 1986, 61-70472[U]
Int. Cl.[4] B08B *3/04*; B66C *13/18*
U.S. Cl. 134—57 R **9 Claims**



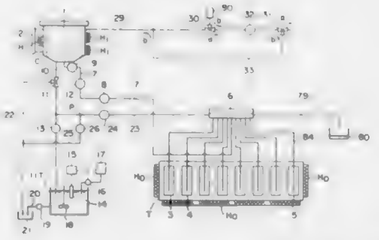
1. An apparatus for cleaning a tank-like vessel comprising
(a) a supporting arm attached to a fixing plate in such a manner that the supporting arm can perpendicularly extend downward, the fixing plate being fixable to an upper opening of a tank-like vessel to be cleaned,
(b) a folding arm of which base portion is rotatably attached to the lower end of the supporting arm, a position of the folding arm being changeable between a housed position wherein the folding arm is folded along the supporting arm and a position in use wherein the folding arm is approximately horizontally stretched out from the lower end of the supporting arm, the improvement wherein
(c) a rope passes over a guide sheave provided at the head of a folding arm, and is winded up and winded down by a hoist attached to the fixing plate for moving said folding arm into said housed position and said horizontal position, and a cleaning nozzle is fixed directly to the lower end of the rope, is moved up and down in said tank-like vessel when said arm is in said horizontal position and said end of said rope is moved up and down as said rope is wound on said sheave and is capable of injecting water in a multi-dimensional direction.

4,805,651

APPARATUS FOR DYEING SKELETONS OF ANIMAL FETUSES

Toshiyasu Takeuchi, Togura, Japan, assignor to Kabushiki Kaisha Tiyoda Seisakusho, Kouseboku and Sakura Finetechnical Co., Ltd., Tokyo, both of, Japan

Filed Jun. 23, 1987, Ser. No. 65,862
Claims priority, application Japan, Jun. 23, 1986, 61-94596[U]
Int. Cl.[4] B08B *3/04*
U.S. Cl. 134—98 **11 Claims**



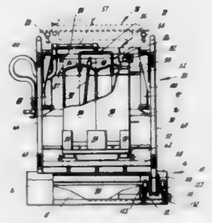
1. An apparatus for dyeing a skeleton of a fleshy, skeletal animal fetus by treating said animal fetus with various medical liquids to dissolve its fleshy moieties and dye its skeleton, said apparatus comprising:
(a) a treating tank for receiving a cage in which a fetus of a fleshy, skeletal animal has been put and, successively, various medical liquids so as to have a liquid surface in the treating tank, said treating tank being provided with a medical liquid-dispersing means for dispersing said medical liquids when circulated thereto over said liquid surface;
(b) a plurality of medical liquid tanks for respectively storing said medical liquids;
(c) a circulating piping system for circulating said medical liquids, when communicated thereto, to said medical liquid-dispersing means, said system including a circulating motor;
(d) a rotary valve for selectively communicating one of said medical liquid tanks at a time with said system for feeding said medical liquid thereof into said treating tank; and
(e) a neutralization tank and a main discharge pipe means selectively connecting said neutralization tank to said treating tank for receiving into the former a waste liquid from the latter, said waste liquid comprising one of said medical liquids after receipt in said treating tank, said neutralization tank including a pH sensor for sending an electrical signal corresponding to a pH degree of said waste liquid and a pH controller for controlling supply of a counter active to said neutralization tank in said response to said signal.

4,805,652

WASH STATION FOR TANKS

Larry D. Hartley, and Duane R. Greenquist, both of Beatrice, Nebr., assignors to Hoover Group, Inc., Roswell, Ga.

Filed Sep. 21, 1987, Ser. No. 99,119
Int. Cl.[4] B08B *3/04*
U.S. Cl. 134—159 **1 Claim**



1. A wash station for receiving and washing tanks in a tank and pallet assembly consisting of a support pallet and a plurality of upright tanks supported on said pallet, each tank having an upper end with a central opening therein, said wash station comprising:
a stationary frame having two pairs of spaced and aligned rollers rotatably mounted thereon;
a carriage positioned above and resting on said rollers capable of receiving, supporting and clamping said tank and pallet assembly therein, said carriage including a pair of parallel arcuate carriage frame members arranged in a side-by-side spaced relation, transverse support members connected between said arcuate members for maintaining said arcuate members in said side-by-side relation and a horizontal platform secured to and extending between said arcuate carriage frame members for receiving and supporting said pallet;
said carriage having an open upright side between said arcuate members through which a tank and pallet assembly to be washed can be moved during loading and unloading;
a movable hold down frame positioned between said arcuate members, said hold down frame having a clamping pad and a plurality of spray nozzles mounted thereon, said hold down frame being movable to a position engaging said clamping pad with said upper ends of said tanks to clamp said tank and pallet assembly on said carriage, and inserting one of said nozzles within each of said tanks through said tank openings when said tanks are clamped on said carriage;
a drive motor mounted on said frame drivingly connected to one of said pairs of rollers for inverting said carriage; and
means for directing washing fluid upwardly and outwardly through said spray nozzles within said tanks on said carriage when said carriage is rolled to a position inverting said tank and pallet assembly to wash the interior of said tanks.

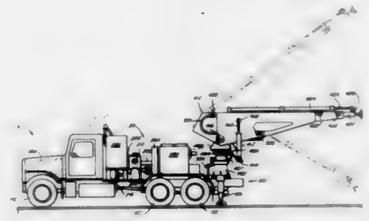
4,805,653

MOBILE ARTICULATABLE TUBE BUNDLE CLEANER

Richard W. Krajicek, Houston, Tex., and Robert R. Cradeur, Sulphur, La., assignors to Serv-Tech, Inc., Houston, Tex.

Filed Sep. 9, 1985, Ser. No. 773,642
Int. Cl.[4] B08B *3/02*
U.S. Cl. 134—166 C **16 Claims**

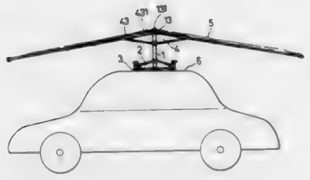
11. A tube bundle cleaner for cleaning a bundle of tubes fouled with carbonaceous and/or calcareous deposits comprising:
a mobile chassis;
internal combustion power means mounted on said chassis;
a variable speed, positive displacement, high velocity, high pressure water pump mounted on said chassis and operatively interconnected with said power means;
a top channeled elongate, hollow vertically and horizontally articulatable support boom mounted above said chassis;
a channeled scope hydraulically telescopically mounted on said support boom;
water delivery means comprising inflexible water conduit means extending from said water pressuring means to the mid point of said support boom adjacent the bottom of said support means and flexible articulatable water delivery means nested within the hollow of said support boom and said channeled scope, whereby articulation of said support means will articulate said flexible articulatable water delivery means wholly within the confines of said support boom and said channeled scope
water discharge means fluidly connected to said water delivery means at the discharge end thereof;
said tube bundle cleaner also comprising an elongate nippled manifold fluidly interconnected with said water discharge means and dependently mounted on the free end of said boom;
a multi-lance cleaning means;
said nippled manifold being interconnected at the lower end thereof and at the top of said multi-lance cleaning means adjacent the mid point thereof by a rotatable articulatable joint, said rotatable, articulatable joint being the sole support means for said multi-lance cleaning means,



said multi-lance cleaning means including:
an elongate chambered frame having an elongate channeled lance housing extending along the top thereof;
a hollow manifold block slidably mounted in said lance housing;
a plurality of tube cleaning lances slidably longitudinally positioned in said lance housing and fluidly connected at their rear ends to said manifold block and longitudinally alignable with a corresponding plurality of tubes of a tube bundle, the interiors of which are to be cleaned;
a plurality of flexible hoses fluidly connected to said nipples of said nippled manifold, extending into the chamber of said elongate chambered frame and fluidly interconnecting said nippled manifold with the hollow of said manifold block;
a drag chain mounted in said chamber of said elongate frame and connected at its free end with said manifold block, said plurality of hoses being nested in said drag chain;
hydraulically actuatable power means operably connected with said support boom, said scope and said drag chain for independently moving the same in response to hydraulic pressure; and
remotely actuatable control means operably connected with said power means for controlling said support boom, said scope, said water delivery means and for controlling said drag chain to simultaneously move said cleaning lances in response to movement of said drag chain.

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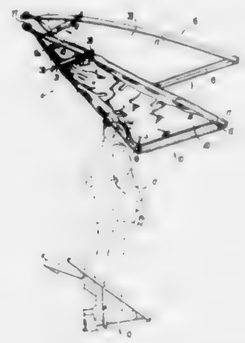
4,805,654
SUN SHIELD FOR AUTOMOBILES
Kuo-Hsin Wang, 140-77 Cho-Lu Chien, Pao-An Vill., Jen-Te Hsiang, Tainan Hsien, Taiwan
Filed May 18, 1988, Ser. No. 195,264
Int. Cl.[4] E04H *15/06*; B60J *7/20*; A45B *23/00*
U.S. Cl. 135—88 4 Claims



1. A sun shield for automobiles comprising: a main rod, one end portion of which has a joint fixed thereon, the rod having three runners slidably sleeved thereon, said runners herein being referred to as first runner, second runner and third runner according to their position relative to the joint, between the joint and the second runner having locking means mounted on the rod for detachably locking the first runner; a plurality of main ribs radially extended from the axis of the main rod, each main rib being assembled from at least two sub-units which are slidably and stretchably telescoped on one another, one end of each main rib being hinged in said joint, the other end of the same herein being referred to as free end; a plurality of auxiliary ribs correspondingly mounted with the main ribs, one end of each auxiliary rib being hinged in said first runner, the other end of the same being hinged in a corresponding main rib; at least three legs isometrically extended from the axis of said main rod, one end of each leg being hinged in said second runner, the other end of the same having a sucker hinged thereon; at least three supporting ribs correspondingly mounted with the legs, one end of each supporting rib being hinged in said third runner, the other end of the same being hinged in the corresponding leg; and a flexible cloth disposed over the main ribs which is fixed at its periphery to the free ends of said main ribs, the size of said cloth being capable of entirely covering the main ribs while the main ribs are in a stretched state.

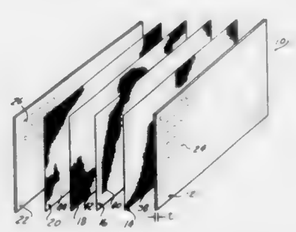
4,805,655
PORTABLE AWNING
Craig A. Justice, 90 Cartwright Dr., Bonaire, Ga. 31005
Filed Feb. 18, 1988, Ser. No. 157,602
Int. Cl.[4] E04H *15/04*
U.S. Cl. 135—90 9 Claims

1. Portable support apparatus for temporary attachment to an upright such as a tree trunk or the like without dependence on any other device attached to the tree, comprising:
- a substantially inflexible end member,
- a pair of side members each connected to the end member in spaced-apart relation therealong;
- the side members extending form laterally outwardly from the end member and mutually converging to interconnect at a point laterally spaced from the end member; and
- means extending between the side members at a selectively adjustable distance from the convergent point of the side members, so that the means and the portions of the mutually converging side members between the means and the convergent point form a triangle for receiving and gripping the upright in a range of diameters,
- so that the converging side members firmly grip the trunk and support the apparatus at a selected vertical location on the trunk while the side members extend outwardly from the trunk at a substantial angle relative to horizontal and



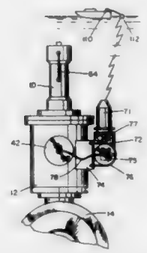
with the end member located in laterally spaced relation to the trunk.

4,805,656
POROUS COMPOSITE STRUCTURE
Frederic W. Cole, Broken Arrow, Okla., and James B. Padden, W. Bloomfield, Mich., assignors to Facet Enterprises Inc., Tulsa, Okla.
Filed Apr. 4, 1983, Ser. No. 481,396
Int. Cl.[4] F15D *1/02*
U.S. Cl. 138—41 26 Claims



1. A porous composite element for the control of gas flow expansion therethrough, comprising:
- a pair of porous elements, one of said pair of porous elements being adjacent but spaced apart from the other of said pair of porous elements, each of said pair of porous elements comprising a sheet having a first plurality of perforations defining a total predetermined perforation cross-sectional area;
- at least one intermediate porous element interposed the one and the other of said pair of porous elements, said at least one intermediate porous element having a plurality of pores defining a total predetermined pore cross-sectional area smaller than said total predetermined perforation cross-sectional area ; and
- means for bonding said at least one intermediate porous element to said pair of porous elements in face-to-face contact to form an integral structure whereby said at least one intermediate porous element regulates the gas flow through said composite porous element and said pair of porous elements mechanically strengthen said composite porous element.

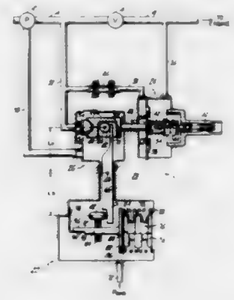
4,805,657
METHOD AND APPARATUS FOR REMOTE CONTROL OF AN UNDERWATER VALVE
R. Jan Carman, Sugar Land; Michael R. Fitzgibbons, and James A. Sweety, both of Houston, all of Tex., assignors to Ferranti Subsea Systems, Inc., Sugar Land, Tex.
Filed Feb. 29, 1988, Ser. No. 163,985
Int. Cl.[4] F16K *31/46*
U.S. Cl. 137—68.2 20 Claims



1. Apparatus for remotely controlling operation of a subsea valve in a fluid transmission pipeline with an acoustic signal transmitted from the surface to the subsea valve, the valve including a valve stem rotatable for controlling the flow of fluid through the valve body and thus the transmission line, the apparatus comprising:
- a control housing fixedly connected to the valve body;
- a valve actuator housing fixedly connected to the control housing;
- an actuator shaft rotatably mounted within the valve actuator housing;
- biasing means for applying a preselected torque to the actuator shaft;
- a control shaft rotatably mounted within the control housing and interconnected at one end to the valve stem and at the other end to the actuator shaft;
- mechanical connector means for removably interconnecting the control shaft and the control housing to prevent the biasing means from rotating the control shaft; and
- disconnecting means adjacent the subsea valve for automatically deactivating the mechanical connector means in response to the acoustic signal, such that deactivation of the mechanical connector means automatically operates the valve in response to the preselected torque of the biasing means.

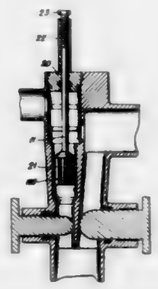
4,805,658
VARIABLE PRESSURE REGULATING VALVE
Robert H. Perkinson, Somers, and Charles E. Reuter, Granby, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Apr. 24, 1987, Ser. No. 42,080
Int. Cl.[4] F16K *17/36*; G05D *11/00*
U.S. Cl. 137—81.1 7 Claims

1. Apparatus for metering the weight flow of fuel (WF) to a gas turbine engine characterized by:
- a metering valve for metering said weight flow,
- PRV means for providing a constant pressure drop across said fuel metering valve by comparing a supply pressure of said weight flow with a metered pressure of said weight flow, said PRV means variably porting said weight flow as a result of said comparison to maintain said constant pressure drop; and
- external means for comparing ambient pressure with a vacuum and for adjusting the variable porting of said PRV means as a function of comparing ambient pressure with a



vacuum such that said PRV means provides a distinct constant pressure drop for each altitude.

4,805,659
METHOD OF DRIVING A CENTRIFUGE AND DEVICE FOR CARRYING OUT THE METHOD
Hubert Gusewig, Oelde, and Ulrich Wrede, Ennigerloh-Ostenfelde, both of Fed. Rep. of Germany, assignors to Westfalia Separator AG, Oelde, Fed. Rep. of Germany
Filed Mar. 31, 1987, Ser. No. 32,886
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1986, 3612063
Int. Cl.[4] F16K *11/07*
U.S. Cl. 137—118 6 Claims



1. A device for regulating flow comprising: a flow channel; adjustable flow regulating means for controlling the flow of fluid containing solids from the channel including a valve piston; means for adjusting the flow regulating means as a function of the viscosity of the fluid in the channel comprising a flow-body disposed in the channel and configured to obtain an increase in the force exerted on it by solids in a fluid in response to an increase in the viscosity of the fluid and a rod downstream of the flow body and connecting the flow body to the valve piston, a common housing for the flow channel and the flow regulating means and having an intake and two outlets; wherein the flow regulating means further comprises means forming a first constriction between the flow channel and one outlet and a second constriction between the flow channel and the outlet and wherein the piston is configured to reduce the open cross-section of one of the first and second constrictions while increasing the open cross section of the other of the first and second constrictions in response to the movement of the piston by the flow body, a second channel

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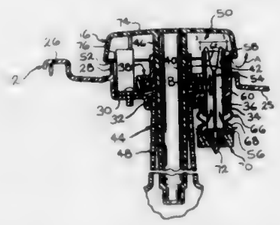
extending from the intake to the first mentioned channel and a third channel extending from the intake to one outlet.

4,805,660

VENT STRUCTURE FOR FLUSH WATER HOLDING TANK OF VEHICLE TOILETS

John M. Astos, Ann Arbor, and David B. Cameron, Milford, both of Mich., assignors to Thetford Corporation, Ann Arbor, Mich.

Filed Nov. 9, 1987, Ser. No. 118,562
Int. Cl.[4] F16K *33/18*
U.S. Cl. 137—202 7 Claims



1. In a sanitary system for a mobile vehicle of the type including a bench structure, and a storage tank filled with water for flushing waste from the bench, an improved vent structure for allowing air to flow into and escape from said storage tank and preventing fluid from passing out of said tank, comprising

a boss including a central bore that is normally open to permit air from the atmosphere to pass into the tank, a float member mounted in said bore for movement from a first position wherein the bore is open and to a second position to close the bore and prevent water in the tank from passing therethrough when the float is acted upon a rise in the water level in the tank, and a deformable seal member mounted on said boss and located interiorly of said tank for effecting a 360° seal between said boss and said float member upon movement of said float member to said second position.

4,805,661

FAUCET VALVE WITH ANTI-SIPHON BACK FLOW PREVENTER

Alfons Knapp, Biberach an der Riss, Fed. Rep. of Germany; Robert D. Roland, Zionsville, and Joe D. Hutto, Indianapolis, both of Ind., assignors to Masco Corporation of Indiana, Taylor, Mich.

Continuation of Ser. No. 805,280, Dec. 5, 1985, Pat. No. 4,696,322. This application Jul. 9, 1987, Ser. No. 71,640
The portion of the term of this patent subsequent to Sep. 29, 2004, has been disclaimed.
Int. Cl.[4] F16K *24/02*
U.S. Cl. 137—218 4 Claims



1. A faucet mixing valve characterized by:

a housing having a valve chamber and two supply inlets for hot and cold water in communication with said valve chamber, respectively, and a supply outlet having one end adjacent to said valve chamber directly exiting from said valve chamber;

a rigid movable valve element within said valve chamber operably movable to selectively cover and uncover said two supply inlets and closing and opening communication to said supply outlet from either of said two supply inlets;

said housing including an auxiliary opening to said valve chamber in parallel to said supply outlet and in communication with a passage through said movable valve element forming an anti-siphon air passageway that is parallel and independent of said supply outlet;

said air passageway having its distal end open to the atmosphere and is independent of said supply outlet;

a one way check valve mounted within said air passageway to prevent fluid from either of said two supply inlets from exiting said auxiliary opening but allowing air to enter from said auxiliary opening into said air passageway and bypassing said supply outlet.

4,805,662

HOT WATER HEATER FAILURE PROTECTION DEVICE WITH SOLENOID

Ronald W. Moody, 5371 N.W. 32 St., Margate, Fla. 33063

Filed Jan. 21, 1988, Ser. No. 146,333
Int. Cl.[4] H16K *33/00*; H01H *29/04, 35/18*
U.S. Cl. 137—312 2 Claims



1. A non-complex water leakage detector and automatic cut-off system for installation with special wiring in combination with a hot water heater comprising:

water supply means operably connected to said hot water heater,

control means controlling the supply of water to said hot water heater,

a leakage collector means operatively connected to said hot water heater and said control means,

said leakage collector means for automatically actuating said control means and terminates the flow of supply water to said hot water heater when the presence of leakage water is in said leakage collector means,

said control means includes a ground fault interrupter circuit having a first and second electrical outlet plug,

an electrical solenoid valve having spring biasing means controlling the flow of water in said water supply means,

first electrical connection means connecting said electrical solenoid valve to said first electrical outlet plug; second electrical connection means connecting said leakage collector means to said second electrical outlet plug,

said second electrical connection means including a neutral wire, hot wire and ground wire,

said hot wire being connected to a metal conductor fixedly mounted in said leakage collector means,

said neutral wire mounted in spaced relation above said metal conductor,

said ground wire located a predetermined distance below said metal conductor and above the base of said leakage collector means,

said leakage collector means completes the electrical connection between said hot wire and said ground wire thus shorting out said ground fault interrupter circuit and terminating supply of electrical current to said electrical solenoid valve permitting a spring biasing means to close said solenoid valve and terminating the supply of water to said hot water heater when water is present in said leakage collector means,

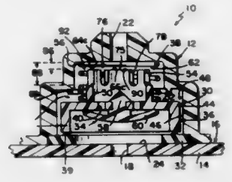
said hot water heater includes a water tank and an outer housing enveloping said water tank with a space therebetween and said leak collector means comprises a leakage collector vessel and a conduit interconnecting said space between said water tank and said outer housing with said leakage vessel whereby leakage accumulated in said space at a level of said conduit wherein the water leakage is transferred to said collector vessel to prevent said supply water inflow upon activation of said solenoid valve.

4,805,663

FLOW CONTROL VALVE

Emil Szlaga, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Division of Ser. No. 935,814, Nov. 28, 1986, Pat. No. 4,715,403. This application Oct. 13, 1987, Ser. No. 107,663
Int. Cl.[4] F16K *24/00, 17/26*
U.S. Cl. 137—493.2 3 Claims



1. A flow-metering pressure-relief valve assembly for vehicle fuel tanks and the like, the assembly comprising

a valve housing having an interior wall configured to define a chamber, inlet opening means for admitting fuel vapor into the chamber, and outlet opening means for exhausting fuel vapor from the chamber, the interior wall providing a first flow-metering surface situated in close proximity to the outlet opening means,

a valve seat attached to the valve housing and situated in the chamber to surround the inlet opening means,

a pressure-relief element in the chamber, the pressure-relief element including a valve member having an inner surface confronting the inlet means, and an upstanding skirt attached to the valve member and having a distal portion extending in an outward direction toward the outlet means in spaced relation to the interior wall of the valve housing, the distal portion providing a second flow-metering surface which cooperates with the first flow-metering surface to define a variable flow-metering orifice therebetween, and

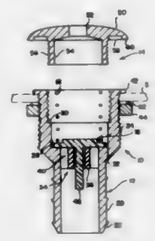
biasing means for yieldably biasing the valve member against the valve seat normally to close the inlet opening means, the second flow-metering surface being moved in relation to the first flow-metering surface in response to relative movement of the valve member and the valve seat to vary the size of the variable flow-metering orifice, the first and second flow-metering surfaces having predetermined shapes that are configured to meter the flow of pressurized fuel vapor through the variable flow-metering orifice in accordance with a predetermined specification matching the flow rate of fuel vapor exhausted through the outlet opening means to the magnitude of the pressure exposed to the inner surface of the valve member, the distal portion of the upstanding skirt being formed to include a plurality of circumferentially spaced slots in the region providing the second flow-metering surface.

4,805,664

SPA VALVE

Spartaco F. Mattei, and Gerard Brune, both of 3 Paris Road, Parow Industria, Parow, South Africa

Continuation of Ser. No. 892,306, Jul. 31, 1986, abandoned. This application Jan. 15, 1988, Ser. No. 145,731
Claims priority, application South Africa, Aug. 1, 1985, 85/5804
Int. Cl.[4] F16K *15/02*; B05B *1/22*; A61H *33/02*
U.S. Cl. 137—543.23 6 Claims



1. An air injector valve for a spa, the valve comprising a body having an internally threaded section and an externally threaded section, a support section above the externally threaded section, said support section being of larger transverse dimensions than the externally threaded section, the underface of the larger section forming a valve support surface and the part of the body below said externally threaded section being of smaller transverse dimensions than the support section whereby the valve body can be passed downwardly through an aperture in a spa shell until said underface of the support section engages said shell, a valve seat within the body at a level below said underface, a cap which is releasably secured to the upper end of the body, said cap comprising an externally threaded sleeve which screws into said internally threaded section, and said cap further comprising an externally threaded sleeve which screws into said internally threaded section, and said cap further comprising a dome-shaped portion, said sleeve protruding downwardly from the underside of said dome-shaped portion and there being a non-circular opening in said dome-shaped portion, and a valve jumper within the body, said jumper being below said surface, co-operating with said valve seat and being in a chamber which is bounded partly by said body and partly by the cap, the jumper being removable through the open upper end of said chamber once said cap has been detached from the body.

4,805,665

FLUID FLOW CHECK DEVICE

Billy E. League, 109 Archer, White Oak, Tex. 75693

Filed Jan. 4, 1988, Ser. No. 140,461
Int. Cl.[4] F16K *37/00*
U.S. Cl. 137—554 4 Claims

1. A fluid flow check device adapted for interconnection with a fluid flow line check valve while the check valve is positioned in the flow line, comprising:

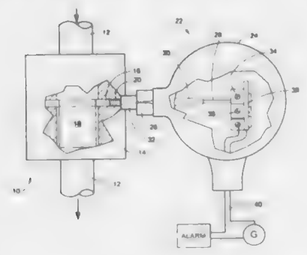
a pivot shaft removably connected at a first end with a flapper pivot axle within the check valve while the check valve is positioned in the flow line;

a fluid flow check device housing having an opening therethrough;

a switch mounted within the fluid flow check device hous-

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ing actuated by rotation of a second end of the pivot shaft, which extend into the fluid flow check device housing through the opening; and



alarm means operatively connected to the switch for indicating a fluid flow or no-fluid flow condition of the check valve.

4,805,666

SLIDE VALVE

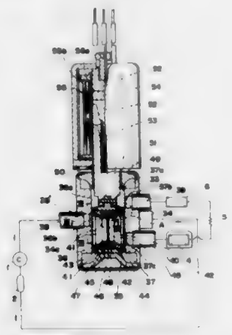
Tokinori Araki, Higashiosaka, and Masaharu Asada, Ayama, both of Japan, assignors to Matsushita Refrigeration Company, Higashiosaka, Japan

Filed Jun. 19, 1987, Ser. No. 63,830

Claims priority, application Japan, Feb. 20, 1987, 62-38489

Int. Cl.[4] F16K *31/06, 11/00*

U.S. Cl. 137—625.43 **6 Claims**



1. A slide valve compriaing:

a housing for an interior valve chamber provided with flat opposed parallel first and second valve seats;

a first port extending through a wall of said chamber between said seats to the exterior of said housing;

a second port in said first seat extending through a wall of said chamber to the exterior of said housing;

a third and a fourth port in said second seat extending through a wall of said chamber to the exterior of said housing;

a slider movable linearly in said chamber parallel to said seats between two positions and having a through hole for selectively communicating said second port with said third port or said fourth port;

slide members carried by and on opposite sides of said slider and surrounding the ends of said through hole;

spring means urging said slide members in opposite directions against said seats; and

solenoid means for selectively moving said slider between said two positions.

4,805,667

FLOW CONTROL VALVE

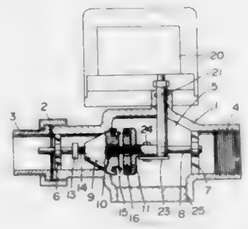
Keiichi Kimura, Yao, Japan, assignor to Kimura Kohki Co., Ltd., Osaka, Japan

Filed Jun. 24, 1987, Ser. No. 65,868

Claims priority, application Japan, Mar. 4, 1987, 62-31265[U]; Mar. 4, 1987, 62-31266[U]

Int. Cl.[4] F16K *47/02*

U.S. Cl. 137—630.14 **2 Claims**



1. A flow control valve comprising:

a valve box having a valve chamber, a valve body housed in said valve chamber, and a drive mechanism for operating said valve body,

a valve shaft supported axially movably relative to said valve chamber and driven by said drive mechanism, a valve holder for holding said valve body, a plurality of flow grooves formed at the outer periphery of said valve shaft, a valve support portion for axially movably supporting said valve body, and a stopper for restricting a moving range of said valve body, said flow grooves being formed at an intermediate portion of said valve shaft, said valve holder and said stopper being disposed on said intermediate portion of said valve shaft at opposite ends of said flow grooves, said valve body being slidably supported on said valve shaft between said valve holder and said stopper, whereby fluid can flow in said flow grooves between said valve body and said valve shaft,

a support member which is supported on said valve box and which supports one end of said valve shaft such that said valve shaft can slide freely relative to said support member in an axial direction, said valve shaft having at its other end a tubular shaft having a screw thread on its internal surface,

a spring interposed between said valve body and said valve holder so as to bias said valve body toward said stopper and allow a fluid flowing through said flow grooves to flow into said valve chamber, and

a sealing member which has an annular shape and is interposed between said valve body and said valve holder and, when said valve body is operated for closing, applies a gap with respect to said valve body, said gap allowing said fluid flowing through said flow grooves to flow into said valve chamber and which closes said flow grooves by further moving said valve shaft with respect to said valve body in the position of closing operation, wherein said valve box is provided with an inlet and an outlet for said fluid, said outlet communicating with said valve chamber perpendicularly with respect to said inlet, said driving mechanism being disposed in alignment with and opposite to said inlet, said driving mechanism including a motor having a driving shaft disposed in alignment with said valve shaft and in screw thread engagement with said valve shaft in said valve chamber, and wherein said valve box is provided with an opening through which said valve chamber is open in alignment with said inlet and a valve lid mounted detachably to said opening to close said opening, said motor being mounted on said valve lid said driving shaft having one end which passes through said valve lid and projects into said valve chamber and which screwably engages with said screw thread on said tubular shaft, said valve shaft and said valve body being made removable from said valve box through said opening.

4,805,668

BRAKE FLUID CONTAINER

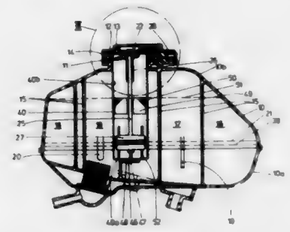
Gerhard Gester, Hemmingen; Edgar Schmitt, Vaihingen, and Hans-Dieter Siems, Eberdingen-Nussdorf, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 4, 1988, Ser. No. 188,321

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1987, 3724802

Int. Cl.[4] B60T *11/20, 17/22*

U.S. Cl. 137—558 **20 Claims**



1. A brake fluid container for a hydraulic brake system for a motor vehicle, comprising a housing having an interior with a housing floor and a housing ceiling, a fill connector in said ceiling, the housing having at least two chambers communicating with one another at a predetermined height above the housing floor, a filling filter suspended from said fill connector and protruding into the housing interior, a container cap closing off said fill connector, a level switching secured to said container cap for indicating a minimum allowable fill level in the housing interior, said level switch having a float that plunges into said filling filter and an electrical switch contact actuated by said float, said filling filter (40) being embodied as an enclosed float chamber extending from said fill connector to below the minimum allowable fill level, said float including float chamber guides (52) for guiding said float (27), a throttle bore (47) being disposed on the lower end of said filling filter (40) below the minimum allowable fill level (39) and preferably in the bottom (40*a*) of the filling filter (40).

4,805,669

ELECTROMAGNETIC VALVE

Douglas C. Lillicrap, Waverton, United Kingdom, assignor to The Electricity Council, London, United Kingdom

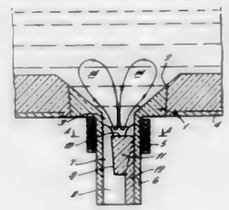
Filed May 10, 1988, Ser. No. 192,266

Claims priority, application United Kingdom, May 11, 1987, 8711041

Int. Cl.[4] F15C *1/04*

U.S. Cl. 137—827 **20 Claims**

1. An electromagnetic valve for use for discharge of molten metal from a container, comprising a main body providing a discharge passage through which, in use, molten metal will flow from a container under the action of gravity; an electrical induction coil located about the passage; means to supply an alternating electric current to the coil whereby the coil provides an alternating magnetic field which induces electric currents in any moltion metal in the passage; and a centre member located in the passage and shaped such that the passage has an upper circular cross-section parallel sided portion leading to an asymmetric outwardly tapering conical portion which in turn leads to a lower smaller diameter circular cross-section portion the axis of which is offset in relation to that of the upper portion, the centre member having a flat top located at the junction between the upper and conical portions of the passage and being supported by a single web extending from the main body, the arrangement being such that interaction between the magnetic field provided by the coil and the currents induced in the molten metal in the passage provide a



force which as it is decreased causes the flow rate of the molten metal through the valve to be reduced until the force is sufficient to urge the molten metal away from the wall of the passage until the molten metal is supported on the flat top of the centre member and the flow of molten metal is cut off.

4,805,670

METHOD AND APPARATUS FOR DETECTING CLINGING WARP THREADS IN A WEAVING MACHINE

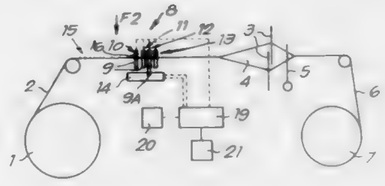
Henry Shaw, Vleteren, Belgium, assignor to Picanol N.V., Belgium

Filed Sep. 18, 1987, Ser. No. 98,302

Claims priority, application Netherlands, Sep. 24, 1986, 8602410

Int. Cl.[4] D03D *51/28*

U.S. Cl. 139—353 **10 Claims**



1. A method for operating a weaving machine, in particular, for detecting a stop motion signal caused by clinging warp threads, said weaving machine including a warp defect stop motion means arranged to generate a stop motion signal upon detection of a warp thread defect by means of warp thread engaging drop wires that fall to make an electrical contact when a warp thread break occurs, and make an electrical contact without falling when displaced by clinging warp threads or warp thread straps, said drop wires being detectable when in their fallen condition, comprising the steps of:

(a) stopping the weaving motion in response to a stop motion signal generated by the stop motion means;

(b) detecting whether or not a drop wire has fallen;

(c) if no drop wire is detected, restarting the weaving machine;

(d) upon the generation of a second stop machine signal immediately upon restarting the weaving machine, stopping the weaving machine a second time; and

(e) upon stopping of the weaving machine the second time, providing a signal indicative of the presence of clinging warp threads.

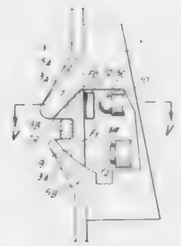
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4,805,671

DEVICE FOR THE CONTROL OF THE WEFT YARN IN THE LOOMS OPERATED BY COMPRESSED AIR

Carlo Castellini, and Giuseppe Longobardi, both of Firenze, Italy, assignors to Instituto Nazionale Di Ottica, Italy

Filed May 18, 1987, Ser. No. 51,489
Int. Cl.[4] D03D 51/34
U.S. Cl. 139—370.2 5 Claims



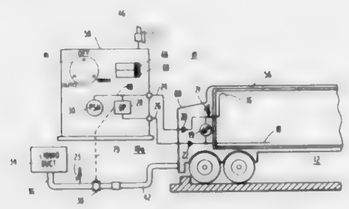
1. In an air jet weaving loom including a reed having a plurality of closely spaced blades with recesses aligned to define a channel along which the weft yarn is inserted by an air stream, a device for detecting the presence of the weft yarn inserted in the shed including a one-piece, planar, metallic foil having opposite major surfaces defining the foil thickness and minor surfaces extending transversely between said major surfaces defining edges, portions of said edges having been optically polished to provide first and second, spaced apart, specular surfaces, the foil being inserted in the space between two adjacent blades of the reed with said major surfaces adjacent respective blades and with the specular surfaces located on opposite sides of the channel defining first and second reflection surfaces, respectively; said foil being C-shaped, opening in the same direction as the channel and providing a cavity extending from the opposite sides of the channel, said reflection surfaces spanning the space between adjacent blades of the reed; a light source and a light sensor, placed within said cavity defined by said metallic foil, the light source being arranged to direct a beam of light towards the first specular reflection surface, so that the light beam is reflected by the first reflection surface across the channel to the second reflection surface which reflects the light beam to the sensor.

4,805,672

AUTOMATIC PRECISION LIQUID LOADING CONTROL METHOD

Bruce J. Berrettini, Allentown; Donald P. Bacci, Mertztown, and Roy D. Hollopeter, Coopersburg, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 690,233, Jan. 10, 1985, Pat. No. 4,649,968.
This application Nov. 12, 1986, Ser. No. 929,966
Int. Cl.[4] B65B 3/10
U.S. Cl. 141—5 4 Claims



1. A method of loading fluid from a source controlled by a fixed station having differential pressure sensing means into a sealed tank of a mobile vehicle having first and second pressure sensing conduit means each sensing unequal substantially high pressures in the tank comprising the steps of:

(a) supplying fluid into the sealed tank through a supply conduit separate from the first and second pressure sensing conduit means;

(b) detachably coupling first pressure transmitting conduit means to the first pressure sensing conduit means;

(c) applying a first pressure to the differential pressure sensing means by way of the first pressure transmitting conduit means for sensing the pressure within the first pressure sensing conduit means;

(d) detachably coupling second pressure transmitting conduit means to the second pressure sensing conduit means;

(e) applying a second pressure unequal to the first applied pressure to the differential pressure sensing means by way of the second pressure transmitting conduit means for sensing the pressure within the second pressure sensing conduit means;

(f) sensing the substantially small value differential pressure between the first and second pressure sensing conduit means by the differential pressure sensing means wherein the sensed differential pressure value is substantially small relative to the pressures of the first and second pressure sensing conduit means and producing a differential pressure signal related to the substantially small value differential pressure within the tank;

(g) producing a differential pressure set point signal when the produced differential pressure signal is beyond a predetermined set point; and

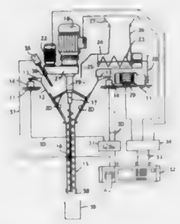
(h) controlling the supply of fluid free of measurement within the supply conduit in response to the differential pressure set point signal.

4,805,673

PROCESS AND DEVICE FOR DISPENSING PREDETERMINED DOSES HAVING A PRECISE WEIGHT OF A FLUID FILLING MATERIAL

Ernst Wöhrle, Heidenheim-Oggenhausen, and Claudio Anselmino, Cologne, both of Fed. Rep. of Germany, assignors to Carl Edelmann Verpackungstechnik GmbH, Heidenheim and Bayer AG, Leverkusen, both of, Fed. Rep. of Germany

PCT No. PCT/DE87/00031, § 371 Date Sep. 24, 1987, § 102(e) Date Sep. 24, 1987, PCT Pub. No. WO87/04404, PCT Pub. Date Jul. 30, 1987
PCT Filed Jan. 27, 1987, Ser. No. 116,074
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1986, 3602493
Int. Cl.[4] B65B 1/04, 1/34
U.S. Cl. 141—10 3 Claims



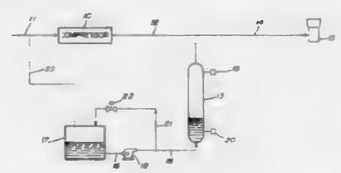
1. Process for filling packaging containers, with a predetermined amount, having a predetermined weight, of a fluid, powdery or finely granulated filling material, said filling material being gravimetrically introduced into the packaging containers, the improvement being in that in the first step the predetermined amount of filling material to be introduced into the packaging container is fed by means of a speed-controlled metering screw at intervals, gravimetrically regulated, from a first filling material supply, and in a second step a measured amount of the filling material approximately equivalent to the amount dispensed in the first step is subsequently fed from a second filling material supply to the first filling material supply within a time period corresponding to the period between the dispensing of material from said first material supply to two successive packaging containers.

4,805,674

NATURAL GAS STORAGE AND RETRIEVAL SYSTEM

Robert E. Knowlton, Tsawwassen, Canada, assignor to C-I-L Inc., North York, Canada

Filed Sep. 16, 1987, Ser. No. 97,053
Int. Cl.[4] B65B 31/00
U.S. Cl. 141—47 2 Claims



1. A natural gas storage and retrieval system comprising:

natural gas storage means adapted to receive and store natural gas under pressure and a natural gas displacing liquid under pressure;

means for feeding natural gas under pressure to said natural gas storage means whereby said stored displacing liquid is displaced;

means for feeding said displacing liquid under pressure to said natural gas storage means whereby said stored natural gas is displaced;

means for collecting said displaced natural gas;

a first natural gas pressure sensing means to initiate and terminate, over a present range of lower gas pressures within said storage means, said feeding of said displacing liquid by said means for feeding said displacing liquid to said storage means;

a second natural gas pressure sensing means to permit, at a preset maximum value of gas pressure within said storage means, displacement of said displacing liquid from said storage means by said natural gas under pressure;

a first displacing liquid sensing means to initiate said feeding of natural gas by said means for feeding natural gas to said natural gas storage means; and

a second displacing liquid sensing means to terminate said feeding of natural gas by said means for feeding natural gas to said natural gas storage means.

4,805,675

VALVES FOR CHEMICAL CONTAINERS

Frank Joseph, Gernsheim; Helmuth Krauss, Heppenheim; Peter Müller, Darmstadt, and Klaus Kreher, Münster, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft MIT Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

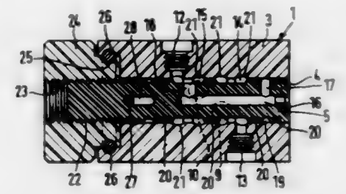
Filed Jun. 11, 1986, Ser. No. 873,006
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1985, 3520795
Int. Cl.[4] B65B 3/04
U.S. Cl. 141—302 8 Claims

1. A valve for connection to a source of product in the form of a container having liquid or gaseous products therein, which products are displaced by and protected by a source of inert gas, the valve comprising:

a housing, the housing having a bore defining a circular wall and having first and second product ports and first and second inert gas ports, the ports communicating with the bore; the first inert gas and first product ports communicating with the sources of the gas and product, respectively, the second inert gas and second product ports respectively supplying gas to and dispensing product from the container,

a valve spool slidably received within the bore, the valve spool having a surface with first, second, and third annular grooves therein, distributed axially therealong, a passageway within the spool connecting the second annular groove to the third annular groove, the first annular groove being disposed between the second and third annular grooves;

means for axially moving the spool between a first position



and a second position wherein when the spool is in the first position the first annular groove aligns with the first and second product ports while the second annular groove aligns with the first and second gas ports, the third annular groove being out of communication with the first product port but in communication with the first gas port allowing the product to be pressurized by the inert gas so as to flow from the container while the passageway in the spool is filled with inert gas, and wherein when the spool is in the second position the second annular groove remains in alignment with the first gas port while being out of alignment with the second gas port whereby the inert gas flushes the valve when the spool is in the second position while the first annular groove is out of alignment with the second product port preventing the product from leaving the container.

4,805,676

AUTOMATIC WHOLE AND MULTIPLE TREE FIREWOOD/HOG FUEL PROCESSOR

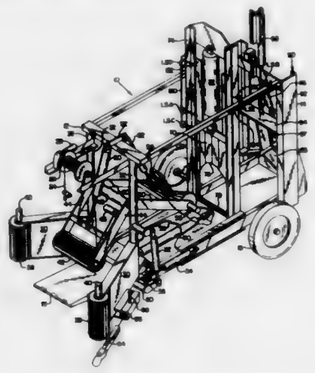
Warren A. Alkins, 3489 Indian Creek Dr., Longview, Wash. 98632

Filed Feb. 16, 1988, Ser. No. 155,961
Int. Cl.[4] B27L 7/00
U.S. Cl. 144—3 K 20 Claims

1. A wood/log processing machine comprising an elongated main frame having an input end and an output end, a shear blade carriage movable along said main frame, a shear blade mounted in said shear blade carriage transverse to said main frame, means for advancing said shear blade less than entirely through a log in said main frame leaving the leading end of the log connected to its trailing end, power operated means to move said shear blade carriage away from the input end of said main frame to advance the log along said main frame, a pair of said squeeze arms on opposite sides of said input end of said main frame having power operated vertical feed rolls, a top squeeze arm on said input end of said main frame having a power operated horizontal feed roll, a power operated hori-

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zontal hold down feed roll in said main frame on the input side of said shear blade, and means to complete the advance of said



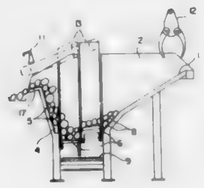
shear blade entirely through the log to shear off said leading end.

4,805,677

APPARATUS FOR REMOVING BARK FROM CUT LOGS

Airik Wallin, 1907 Bahia Mar Dr., Stone Mountain, Ga. 30087

Filed May 23, 1988, Ser. No. 197,655
Int. Cl.[4] B27C *9/00*
U.S. Cl. 144—208 B **17 Claims**



1. An apparatus for removing bark from cut logs, said apparatus comprising:
- a container for receiving cut logs;
- a feeder for feeding logs into said container;
- a discharge means for discharging debarked logs from said container;
- said container having means disposed therein for removing bark from cut logs;
- said debarking means having at least one horizontally and vertically movable section;
- means for moving said at least one section, said moving means having means for maintaining said at least one section substantially horizontal during movement and for moving substantially all parts of at least one of said at least one section, in unison, in both vertical and horizontal directions.

4,805,678

METHOD AND APPARATUS FOR PRETREATING AND DEBARKING LOGS

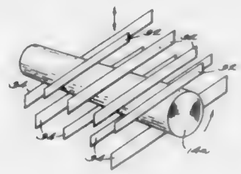
Eugen E. Kutilin, White Rock, Canada, assignor to Beloit Corporation, Beloit, Wis.

Filed Nov. 12, 1987, Ser. No. 120,289
Int. Cl.[4] B27L *1/00*
U.S. Cl. 144—342 **23 Claims**

18. A method for removing back from a log comprising:

scoring the log in a first set of substantially parallel helical cuts penetrating the bark layer;

scoring the log in a second series of generally parallel helical cuts penetrating the bark layer, said second series of cuts



intersecting with said first series of cuts to define discrete bark pieces;

rolling the log between cutting means for simultaneously performing said first and second scoring steps; and

scraping the discrete bark pieces from the log.

4,805,679

APPARATUS AND METHOD FOR PROCESSING LUMBER

Robert L. Czinner, Toronto, Canada, assignor to Integrated Wood Research Inc., Agincourt, Canada

Filed Jan. 25, 1988, Ser. No. 148,302
Int. Cl.[4] B27B *1/00*; G01N *3/20*
U.S. Cl. 144—357 **30 Claims**



26. A method of cutting lumber pieces into an optimum number of pieces of optimum value comprising the steps of:
- pre-determining the amount of lumber required to be cut into the optimum number of pieces of cut lumber of optimum value;
- moving each lumber piece along a conveyor means to a first station having a modulous of elasticity measuring means;
- at said first station, measuring the modulous of elasticity along the length of each lumber piece;
- sending the information gathered at said first station via a first transfer interface system to computer system;
- moving the lumber piece along a conveyor means from the first station to a second station having a surface scanning means;
- at the second station, scanning the lumber piece to determine its surface characteristics;
- sending the information gathered at said second station via a second transfer interface system to said computer system to which the information from the first station has been sent;
- comparing the information gathered by said modulous of elasticity measuring means and said surface scanning means in the computer system, and determining a cutting pattern for the lumber within the computer system;
- sending instructions via a third transfer interface system from the computer system to a third station having means for cutting the lumber;
- cutting the lumber into pieces of optimum grade value at said third station according to the instructions sent from the computer system.

27. An apparatus for cutting lumber pieces into an optimum number of pieces of optimum value comprising:

means for pre-determining the amount of lumber required to

be cut into the optimum number of pieces of cut lumber of optimum value;

two preliminary stations, one of said two preliminary stations having a modulous of elasticity measuring means for measuring the modulous of elasticity between fixed points along the length of the lumber piece, the other of said preliminary stations having a surface scanning means for determining surface characteristics of the lumber piece;

a conveyor means for moving the lumber piece to and from each of said preliminary stations;

a computer system for receiving and comparing information gathered by the modulous of elasticity measuring means and the surface scanning means, said computer system being programmable to determine a cutting pattern of the lumber in response to the input of the information gathered by the modulous of elasticity measuring means and the surface scanning means;

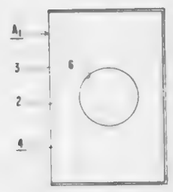
at least one further station having a cutting means to cut the lumber piece in a pattern determined by said computer system.

4,805,680

CARD CASE WITH A MAGNIFYING GLASS

Minoru Ueno, #403, 1-9, 3-chome, Nizigaoka Aso-ku, Kawasaki-shi, Kanagawa-ken, Japan

Filed Aug. 15, 1986, Ser. No. 897,027
Int. Cl.[4] A45C *11/18*; G02B *27/02*
U.S. Cl. 150—147 **1 Claim**



1. A card case comprising:
- a plurality of sheets and means securing said sheets together to define a pocket for receiving card-shaped articles;
- one of said sheets having, in a portion opposed to the other sheet on the opposite side of said pocket, a magnifying glass mounted in said sheet for enabling viewing of the contents of the pocket through said magnifying glass, the other of said sheets having an aperture therein opposite said magnifying glass and corresponding to the shape of the magnifying glass.

4,805,681

CONTROL VALVE FOR INFLUENCING THE TIRE PRESSURE OF A VEHICLE WHEEL

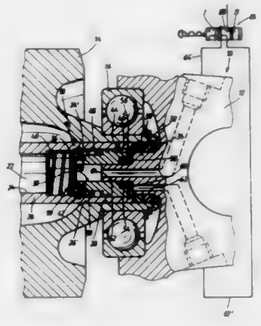
Karl Vollmer, Gernsbach, and Klaus Kellpfing, Malsch, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jan. 2, 1987, Ser. No. 56,706
Claims priority, application Fed. Rep. of Germany, Jan. 4, 1986, 3618827
Int. Cl.[4] B60C *23/00*
U.S. Cl. 152—417 **5 Claims**

1. A control valve for influencing the tire pressure of a vehicle wheel, having a valve chamber that on one end, is connected to an interior of a tire of said wheel and, on another end, is connected to a supply duct and a control duct, said valve chamber having a penetrating space that axially penetrates a wheel hub and is sealed off with respect to an axle part carrying the vehicle wheel, said control valve having automatically closing valve means, and control piston means acted upon by a pressure medium via said control duct for directing said automatically closing valve means into an open position against the interior pressure of the tire, said supply duct and said control duct extending through said axle part, and air being suppliable to and removable from said supply duct independently of said control duct via a supply control valve, and wherein said closing means is capable of being opened by pressurized air in said supply duct and said control duct being connectable with a fluid pressure medium source at least while air is removed simultaneously from said supply duct, wherein said control piston means is penetrated by an axial duct, and said axle part has a nonbearing cylindrical projecting that is penetrated by said supply duct, said cylindrical projection projecting into said axial duct, and wherein said axle part and said control piston means define an annular intermediate space therebetween into which said control duct leads out.

4. A control valve arrangement for influencing the tire pressure of a vehicle wheel carried on an axle part, comprising:

supply duct means for fluidly communicating air to and from said tire;



automatically closing valve means connected between said supply duct means and said tire for selectively allowing and preventing fluid communication between said tire and said supply duct means; and wherein said closing valve means is capable of being opened by presurized air in said supply duct;

control duct means for providing a fluid control pressure for controlling said closing valve means wherein said control duct means and said control pressure is independent of said supply duct means; and

control piston means for controlling said closing valve means in response to said control pressure, wherein said control duct means opens into a space between said control piston means and an axle part wherein said axle part has a projection, and said control piston means has an axial duct for receiving said projection.

4,805,682

TIRE BEAD TOE WITH SLITS

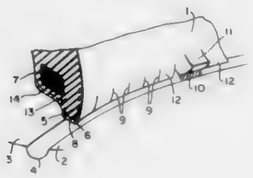
Phillip N. Griffiths, Sutton, and Mathew Simpson, Birmingham, both of United Kingdom, assignors to S P Tyres UK Limited, Birmingham, England

Filed Jul. 16, 1987, Ser. No. 74,056
Claims priority, application United Kingdom, Jul. 16, 1986, 8617411
Int. Cl.[4] B60C *15/02, 5/16*
U.S. Cl. 152—544 **8 Claims**

1. A tire comprising a tread portion, sidewalls and a pair of spaced-apart beads, each containing a substantially inextensible annular bead core having bead seats and an extended toe portion made of an elastromeric material extending axially and radially inwards of the bead, the toe portion being rigid in the direction of its length so that in the use of the tire on a wheel rim having a groove complementary to the toe and in engagement with the toe, when an axially inward force is applied to

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the tread portion, a radially and axially outwardly extending force is generated at the bead core to affect bead retention, wherein the toe is subdivided in the circumferential directions of the tire by a plurality of substantially radial cuts having



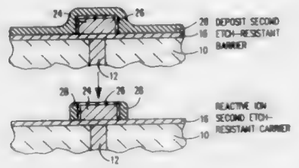
substantially no cross-sectional dimension such that when circumferentially adjacent portions of the toe are decoupled from one another the displacement of one of said portions does not dislodge or displace an adjacent portion.

4,805,683

METHOD FOR PRODUCING A PLURALITY OF LAYERS OF METALLURGY

Ingrid E. Magdo, Hopewell Junction, and Douglas W. Ormond, Jr., Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 4, 1988, Ser. No. 164,363
Int. Cl.[4] B44C *1/22*; **C23F** *1/02*; **C03C** *15/00, 25/06*
U.S. Cl. 156—643 **14 Claims**



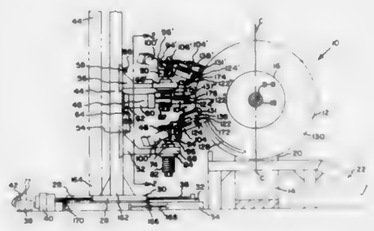
1. A method for selectively depositing a plurality of metal layers on a substrate, comprising the steps of:
(a) providing a substrate;
(b) depositing at least one layer of blanket metal on a surface of the substrate;
(c) building a lift-off stencil over the blanket metal, said lift-off stencil having selected open areas through which the blanket metal is exposed;
(d) depositing at least one layer of redundant metal over the lift-off stencil and in the selected open areas;
(e) depositing a first etch-resistant barrier over the redundant metal;
(f) removing the lift-off stencil and the overlying layers of redundant metal and the overlying first etch-resistant barrier;
(g) depositing a second etch-resistant barrier over the blanket metal and the first etch-resistant barrier;
(h) reactive ion etching the second etch-resistant barrier so as to expose the blanket metal and at least partially and selectively remove the second etch-resistant barrier from the first etch-resistant barrier; and
(i) etching the blanket metal.

4,805,684

TIRE TREAD GROOVING METHOD AND APPARATUS

Max D. Brinkley, North Canton; Norman B. Harding, Akron, both of Ohio, and Richard J. Licence, Fort Pierce, Fla., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 18, 1986, Ser. No. 887,056
Int. Cl.[4] B29H *21/08*
U.S. Cl. 157—13 **3 Claims**



2. Apparatus for grooving a tread in a curved tread surface in a radial plane of a tire mounted on a chuck member rotatably mounted on a tire supporting stand for rotation about an axis coaxial with the axis of the tire comprising a base member, a frame slidably mounted for selective movement on said base member between a retracted position and a grooving position for a tire of a predetermined diameter, knife means including a knife and a bracket mounted on said frame, adjustment means such that said knife means is adjustable relative to said frame for positioning said knife to cut a groove having sides perpendicular to said curved tread surface of the tire in said grooving position of said frame, and said knife means further including a knife assembly having a knife actuating means for moving said knife relative to said chuck member and said frame into and out of cutting engagement with the tread surface for cutting said groove to a predetermined length on said tread surface, and said knife assembly being pivotally supported on said bracket for angular adjustment about an axis generally parallel to a centerplane of the tire, means for moving said knife assembly longitudinally relative to said bracket, means to fix the longitudinal position of said knife assembly on said bracket, said adjustment means including means to change the angular position of said knife assembly on said bracket and means to fix said angular position of said knife assembly on said bracket to cut a groove having sides perpendicular to said curved tread surface, and said knife assembly further including a knife holder mounted on said knife actuating means for movement toward and away from said chuck, said knife being fastened to said knife holder, and a roller adjustably mounted on said knife holder for rolling engagement with said tread surface to control the depth of the groove cut by said knife.

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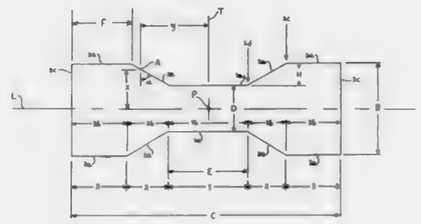
MOLD FOR THE CONTINUOUS CASTING OF BEAM BLANKS

Donald P. Lorento, Ontario, Canada, assignor to SMS Concast, Montvale, N.J.

Continuation-in-part of Ser. No. 834,935, Feb. 28, 1986, abandoned. This application Feb. 5, 1988, Ser. No. 152,886
Int. Cl.[4] B22D *11/04*
U.S. Cl. 164—418 **19 Claims**

1. A mold for the continuous casting of beam blanks, comprising a first section including a pair of first walls defining a first casting passage having opposite open ends, the transverse cross section of said first section having a center, and substantially orthogonal longitudinal and transverse center lines which intersect at said center; and at least one expanding section to one side of said first section, as considered in the direction of said longitudinal center line, and including a pair

of second walls defining at least one expanding casting passage which communicates with said first casting passage and has opposite open ends, said second walls being inclined relative to one another in such a manner that said one expanding casting passage widens in a direction away from said first casting passage, and said one expanding casting passage including a first end remote from, and a second end nearer to, said first casting passage, said one expanding casting passage having a maximum width at said first end and a minimum width at said



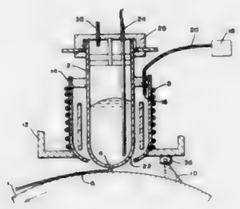
second end, and each of said second walls having a height, as measured in the direction of said tranverse celter line, no smaller than about 0.25 times said maximum width, and at least one of said second walls having an angle of inclination no smaller than arc tangent (y/z) where:
y is the distance from a point on said one second wall to said transverse center line, and
z is the distance from said point to said longitudinal center line.

4,805,686

AN APPARATUS FOR FORMING ALUMINUM-TRANSITION METAL ALLOYS HAVING HIGH STRENGTH AT ELEVATED TEMPERATURES

David J. Skinner, Flanders; Paul A. Chipko, Madison, and Kenji Okazaki, Basking ridge, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 794,279, Nov. 4, 1985, abandoned, which is a continuation of Ser. No. 538,650, Oct. 3, 1983, abandoned. This application May 15, 1987, Ser. No. 52,197
Int. Cl.[4] B22D *11/06*
U.S. Cl. 164—423 **4 Claims**



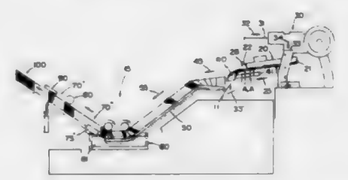
1. An apparatus for forming rapidly solidified metal within an ambient atmosphere, comprising:
(a) a movable casting surface which has a quenching region for solidifying molten metal thereon;
(b) reservoir means for holding molten metal, said reservoir means having orifice means for depositing a stream of molten metal on said casting surface quenching region;
(c) heating means for heating molten metal contained in said reservoir;
(d) gas means for providing a non-reactive gas atmosphere at said quenching region to minimize oxidation of said deposited metal; and
(e) conditioning means for disrupting a moving gas boundary layer carried along by said moving casting surface to minimize disturbances of said molten metal stream that inhibit quenching of the molten metal on the casting surface,
said condition means comprising a high velocity gas jet spaced from said reservoir in a direction counter to the direction of casting surface movement, directed toward said movable casting surface and angled toward the direction of the oncoming boundary layer to strike and disrupt said boundary layer, thereby minimizing disturbance of said molten metal stream by said boundary layer, said casting surface speed and said gas jet being selected and arranged to provide a uniform quench rate of at least about 10^6°C./sec and to allow formation on said casting surface of an aluminum-base alloy having at least about 70% microeutectic microstructure.

4,805,687

METHOD AND MACHINE FOR ALIGNING AND SECURING ROD SHAPED FASTENERS

Kenneth J. Gall, 1949 Shawnee Road, Windsor, Ontario, Canada N8N 1S9

Filed Jan. 8, 1987, Ser. No. 1,365
Int. Cl.[4] B22D *19/04*
U.S. Cl. 164—461 **8 Claims**



1. A method of arranging into a rigid parallel array, a plurality of uniformly formed rod-shaped fastener elements, such as nails, comprising the steps of:
(a) conveying the said fasteners sequentially and specially one behind the other along a first straight linear run;
(b) orienting the elements in a common direction respectively parallel one to the other along said first run;
(c) compacting the adjacent special distance of the elements so as to place adjacent elements into proximate, planar and parallel relationship;
(d) immersing similar ends of the planar and parallel adjacent elements in a metallic bonding agent so as to form a menisicus therebetween; and,
(e) solidifying the mensicus so as to form, into a rigid planar parallel array, a pluarlity of said elements.

4,805,688

PROCESS FOR PROTECTING AGAINST OXIDATION AND/OR NITRIDATION OF A LIQUID METAL STREAM AND DEVICE FOR CARRYING OUT THE PROCESS

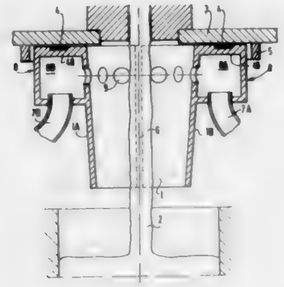
Jean Foulard, 15, rue La Sablière, 94480 Ablon; Jacques Nicolas, 8, rue Alasseur, 75015 Paris, and Jean-Francois Mignot, 275, rue de l'Archeaux, 38530 Pontcharra, all of France

Filed Aug. 12, 1986, Ser. No. 896,124
Claims priority, application France, Aug. 14, 1985, 85 12378
Int. Cl.[4] B22D *11/04, 11/10*
U.S. Cl. 164—475 **19 Claims**

1. A process for protecting against oxidation and/or nitridation of a liquid metal pouring stream flowing from an outlet orifice of a ladle or a distribution vessel into an oscillating ingot mould, comprising surrounding the pouring stream in at least a part of the height of the pouring stream with a tube having a lower part and an outlet orifice in said lower part, injecting into the tube a gas for protecting the liquid metal stream and thereby limiting contact of the liquid metal with the ambient

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air between the outlet orifice of the tube and the oscillating ingot mould, the protective tube being sealably connected to the ladle or the distribution vessel, the protective tube having such length that the maximum distance D_1 between the lower part of the tube and the oscillating ingot mould, when the ingot mould is in a lower position, is less then 100 mm, and the protective tube having impervious means for effecting an aerodynamic deflection placed in the vicinity of the lower part of the tube and surrounding the tube substantially throughout the periphery thereof, the process further comprising injecting the protective gas into the tube at a flow rate in excess of 30 Nm^3/hour to surround the pouring stream, and discharging the protective gas to the exterior through the lower part of said tube with a mean velocity of the gases discharged in the vicinity of the lower part of the tube of between about 0.7 m/s and 5.5 m/s so as to limit the dilution of the protective gas with the air at any point in the vicinity of the pouring stream and the aspiration of the ambient air toward the pouring stream.



9. A device for protecting against oxidation and/or nitridation of a liquid metal pouring stream flowing from an outlet orifice of a ladle or a distribution vessel, said device comprising means for surrounding the pouring stream in at least a part of the height of the pouring stream, means for injecting a protective gas into said means for surrounding the pouring stream at a flow rate in excess of 30 Nm^3/hour, said protective gas surrounding the pouring stream so as to minimize contact of the liquid metal with the ambient air, the means for surrounding the pouring stream comprising two complementary semi-shells, means for articulating the semi-shells so as to permit an opening and closing thereof, impervious aerodynamic deflecting means located close to a lower part of the semi-shells, and at least one annular sealing element in an upper part of the device for providing a seal between the shell and the distribution vessel.

4,805,689

OUTDOOR UNIT FOR A HEAT PUMP

Masami Inada, Kariya; Shigenori Haramura, Toyoake; Seiji Hayakawa, Nagoya, and Sadayuki Matsuoka, Obbu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 27, 1987, Ser. No. 54,693

Claims priority, application Japan, May 29, 1986, 61-081652[U]

Int. Cl.[4] F25B *29/00;* **G05D** *23/00*

U.S. Cl. 165—29 **6 Claims**

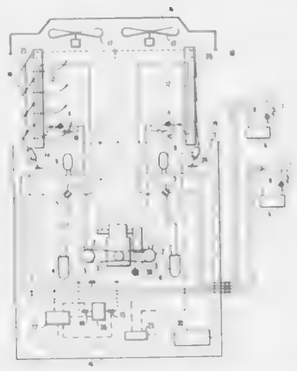
1. An outdoor unit for an internal combustion engine driven heat pump comprising:

a heat exchanger in said outdoor unit forming a portion of said heat pump;

fan means for circulating air through said heat exchanger;

auxiliary heating means including a boiler and said internal combustion engine for heating a liquid medium and circulation means for circulating said liquid medium through said heat exchanger, said boiler and said engine, said liquid medium acting as a coolant for said engine;

air flow preventing means for preventing air flow through said heat exchanger;



temperature sensing means for sensing very cold weather conditions; and

controlling means connected to and controlling said boiler and said flow preventing means according to said temperature sensing means.

4,805,690

COOLING ROLLER

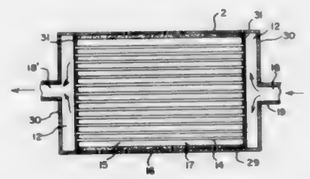
Kunihiko Minami, Osaka, and Akimichi Noyori, Tokyo, both of Japan, assignors to Sun A. Chemical Industries Co., Ltd. and Sasakura Engineering Co., Ltd., Tokyo, both of, Japan

Filed May 3, 1988, Ser. No. 189,625

Claims priority, application Japan, May 9, 1987, 62-112215

Int. Cl.[4] F28F *5/02;* **F28D** *15/02*

U.S. Cl. 165—89 **2 Claims**



1. A cooling roller of a cooling machine for continuously and quickly cooling a high temperature sheet, said cooling roller comprising a rotary shaft, a cylindrical outer wall and end walls mounted on said shaft and forming an enclosure, a tube bundle extending through said enclosure and close to said outer wall, said tube bundle having an inlet and an outlet for a cooling fluid, the heat transfer area of said tube bundle being made larger than the inner area of said outer wall, the inner area of said outer wall being covered with a wick, and a heat transfer liquid, which repeats evaporation and condensation cycles during use, sealed within said enclosure.

4,805,691

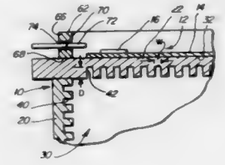
COOLING TECHNIQUE FOR COMPACT ELECTRONICS INVERTER

Alex Cook, and Charles E. Lents, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 22, 1986, Ser. No. 944,758

Int. Cl.[4] H01L *23/42;* **F28D** *15/02*

U.S. Cl. 165—104.33 **4 Claims**



1. In combination:

a substrate;

a plurality of individual heat producing electronic components;

means mounting each of the plurality of electronic components directly on the substrate so that each of the plurality of components is in direct heat exchange relationship with the substrate;

a heat dissipating structure being made at least partially of metal and having first and second facing wall surface pairs defining a flow chamber with first and second ends and first and second end walls spaced in a first direction for sealing the flow chamber;

a supply of cooling fluid within the flow chamber and having a predetermined vaporization temperature;

means mounting the substrate in direct heat exchange relationship with a part of the heat dissipating structure that is metal adjacent the first end of the flow chamber so that upon the dissipating structure being heated above the vaporization temperature of the cooling fluid heat is transferred to the cooling fluid to cause vaporization thereof and so that a temperature differential is established between the end walls of the heat dissipating structure;

means for causing cooling fluid vapor to move from the first chamber end towards the second chamber end so that the vapor condenses and for causing movement by capillary action of condensed vapor to the first chamber end for cooling of the heat dissipating structure adjacent the first cooling end and thereby the substrate and attached components,

said means for causing movement of condensed vapor comprising a first plurality of channels defined in each of the first and second facing wall surfaces of the one wall pair and a second plurality of channels defined in each of the first and second facing wall surfaces of the other wall pair; and

means for hermetically sealing the components and at least a portion of the substrate.

4,805,692

CONDENSER FOR WATER PURIFICATION APPARATUS

David G. Palmer, and Keith L. Vacha, both of Lincoln, Nebr., assignors to Pure Water, Inc., Lincoln, Nebr.

Filed Mar. 10, 1987, Ser. No. 24,257

Int. Cl.[4] B01D *3/42;* **F28B** *1/06*

U.S. Cl. 165—110 **6 Claims**

1. A condenser for condensing steam to water in a water purification system having means to convert raw water to steam and cooling means for establishing a flow of cooling fluid from a cooling fluid inlet over said condenser, said condenser comprising:

a steam inlet;

a water outlet;

a set of first tubes having opposite ends and an internal steam flow path, substantially all of said first tubes having a uniform first predetermined cross-sectional area;

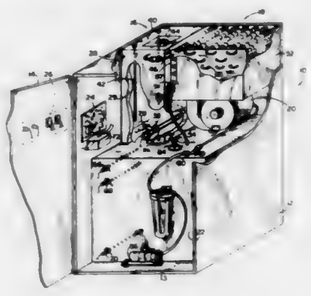
said first tubes being parallel with each other and disposed in a first plane that is transverse the flow of cooling fluid;

first interconnect means for connecting adjacent ones of said ends of said first tubes such that steam and condensate will flow in a planar serpentine fashion serially through said first tubes;

second interconnect means for connecting said steam inlet to a first one of said ends of said first tubes that is not connected to another one of said ends defining an upstream portion of said first tubes with respect to the flow of steam and condensate;

a set of second tubes having opposite ends and an internal steam flow path, substantially all of said second tubes having a uniform second predetermined cross-sectional area that is less than said first cross-sectional area;

said second tubes being parallel with each other and disposed in a second plane that is parallel with said first plane, said second plane being disposed between said first plane and said cooling fluid inlet;



third interconnect means for connecting adjacent ones of said ends of said second tubes together such that steam and condensate will flow in a planar serpentine fashion serially through said second tubes;

fourth interconnect means for connecting a second one of said ends of said first tubes that is not connected to another one of said ends of said first tubes and is downstream of said upstream portion to a first one of said ends of said second tubes that is not connected to another one of said ends of said second tubes defining an upstream portion of said second tubes with respect to the flow of steam and condensate; and

fifth interconnect means for connecting a second one of said ends of said second tubes that is not connected to another one of said ends of said second tubes and which is downstream of said upstream portion of said second tubes to said water outlet, whereby steam and condensate will flow through said tubes countercurrent to said cooling fluid.

4,805,693

MULTIPLE PIECE TUBE ASSEMBLY FOR USE IN HEAT EXCHANGERS

Dennis S. Fiessate, Racine, Wis., assignor to Modine Manufacturing, Racine, Wis.

Filed Nov. 20, 1986, Ser. No. 932,877

Int. Cl.[4] F28D *1/02*

U.S. Cl. 165—153 **7 Claims**

3. An internally finned multiple piece tube for use in a heat exchanger comprising:

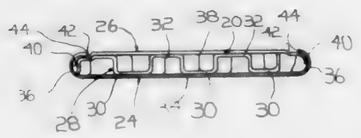
an elongated fin;

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a first, elongated, C-shaped channel having a first base and spaced first legs; and

a second elongated, C-shaped channel having a second base and spaced second legs;

said fin and said second channel being nested in said first channel between said first legs thereof such that said fin is sandwiched between and engaged by both said first and



second bases, said first legs extending and clinched around and behind said second legs to hold said tube in assembled relation;

said second legs being offset from said second base in the direction toward said first base a distance nominally equal to the thickness of said first legs so that said first legs are clinched to positions that are approximate extensions of said first base.

4,805,694

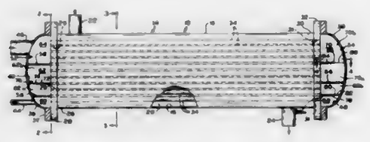
HEAT EXCHANGER

Zahid H. Ayub, Constantine, Mich., assignor to E. L. Nickell, Co., Inc., Constantine, Mich.

Filed Nov. 25, 1987, Ser. No. 125,194

Int. Cl.⁴ F28F *9/02*

U.S. Cl. 165—158 **14 Claims**



8. A heat exchanger comprising:

a shell including a chamber and a plurality of bundles of tubes in said shell chamber extending from one end of said shell to the other end thereof,

a first flow reversing bonnet mounted on one end of said shell and a second flow reversing bonnet mounted on the other end of said shell, each of said bonnets having at least one flow reversing chamber in fluid communication with two bundles of tubes,

said chambers being serially arranged along the flow path of coolant fluid whereby fluid flows from a bundle of tubes into one chamber, then through another bundle of tubes to the next chamber in the serial arrangement;

secondary baffle means in each of said flow reversing chambers for subdividing the chamber into two subchambers, one subchamber aligned with a bundle of tubes leading into the chamber and the other subchamber aligned with a bundle of tubes leading out of the chamber, said baffle means defining a restricted flow area for coolant fluid flowing from one subchamber to the next subchamber;

the tube bundles aligned with successive subchambers having increasingly larger cross-sectional flow areas;

the cross-sectional restricted flow area defined by the baffle means of each flow reversing chamber being larger than the cross-sectional restricted flow area defined by the baffle means of the preceding flow reversing chamber.

4,805,695

COUNTERFLOW HEAT EXCHANGER WITH FLOATING PLATE

Yoshitaka Ishikawa, and Takeo Matsumoto, both of Tokyo, Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

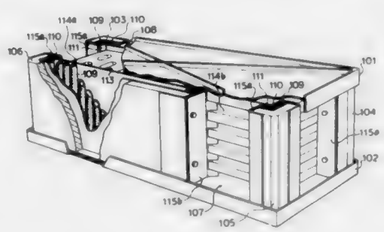
PCT No. PCT/JP87/00256, § 371 Date Dec. 23, 1987, § 102(e) Date Dec. 23, 1987, PCT Pub. No. WO87/06686, PCT Pub. Date Nov. 5, 1987

PCT Filed Apr. 22, 1987, Ser. No. 150,658

Claims priority, application Japan, Apr. 25, 1986, 61-96285

Int. Cl.⁴ F28F *3/00*

U.S. Cl. 165—166 **15 Claims**



1. A counterflow type floating plate heat exchanger comprising

an enclosing frame including a pair of parallel rectangular wall members and four corner members connecting the pair of wall members at least at corresponding corners;

four pieces of seal strips in contact with an inside surface of the corner members through resilient members for sealing at least the inside surface of each corner member, a pair of seal strips at diagonal positions with respect to a line connecting respective centers of the wall members being extended along a pair of planes defined by longer sides of the wall members and the corner members so that the planes are sealed leaving unsealed portions thereof to serve as entrances or exits;

at least three separate parallel floating plates, mounted, in parallel to the wall members and in contact with the seal strips, within a space defined by the seal strips and the wall members;

spacer means for maintaining a spacing between the floating plates for channels defined between the floating plates; and

control means for evenly diffusing and aligning the flow of fluids in the channels;

in which fluids which are different in temperature respectively flow in adjacent channels on opposite surfaces of each floating plate and heat exchange is realized between the fluids through each floating plate, and wherein

the fluids which are different in temperature flow in directions opposite to each other and along the direction of the longer sides in a predetermined portion of the channels.

4,805,696

HYDRAULIC RELEASE TUBING SEAL DIVIDER

William D. Henderson, Frisco, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Feb. 3, 1988, Ser. No. 151,898

Int. Cl.⁴ F21B *17/07, 43/00;* **F16L** *27/12*

U.S. Cl. 166—114 **12 Claims**

1. A hydraulic release tubing seal divider for coupling an upper tubing string in telescopic relation with a lower tubing string and releasing the tubing strings in a wellbore for relatively longitudinal movement therein comprising: a first inner housing assembly connectable with a first of said tubing strings to define an integral length of said first of said tubing strings, said first housing assembly having an external lock recess

located on said assembly and said assembly being configured to permit longitudinal movement of said first housing assembly over the length of a predetermined stroke relative to the second of said tubing strings; and second and third housing assemblies in concentric relation on said first housing assembly and connectable to said second tubing string to provide telescoping relation between said first and said second tubing strings, including lock means for engaging said lock recess on said first



housing assembly to lock said first housing assembly with said second and third housing assemblies, a hydraulic piston, lock means holding and lock means release means connected with said piston for operating said lock means between lock and release conditions; releasable means for holding said piston in lock condition; means for holding said piston in release condition; and means for sealing between said first and second tubing strings during relative telescopic movement of said tubing strings over said predetermined stroke.

reinject the aqueous phase into a reinjection zone, characterized by the fact that said installation comprises a regulating



means for regulating the reinjection rate as a function of the hydrocarbon content in the reinjected aqueous phase of.

4,805,698

PACKER COOLING SYSTEM FOR A DOWNHOLE STEAM GENERATOR ASSEMBLY

John L. Baugh, Huntsville; Frank X. Mooney, The Woodlands, both of Tex., and Joseph E. Vandevier, Claremore, Okla., assignors to Hughes Tool Company, Houston, Tex.

Filed Nov. 17, 1987, Ser. No. 121,485

Int. Cl.⁴ E21B *43/24*

U.S. Cl. 166—272 **6 Claims**

4,805,697

METHOD OF PUMPING HYDROCARBONS FROM A MIXTURE OF SAID HYDROCARBONS WITH AN AQUEOUS PHASE AND INSTALLATION FOR THE CARRYING OUT OF THE METHOD

Christian Foullout, Pau, and Daniel Sauge, Serres Castet, both of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Sep. 2, 1987, Ser. No. 92,172

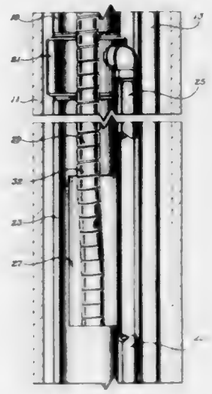
Claims priority, application France, Sep. 2, 1986, 86 12341

Int. Cl.⁴ E21B *43/40*

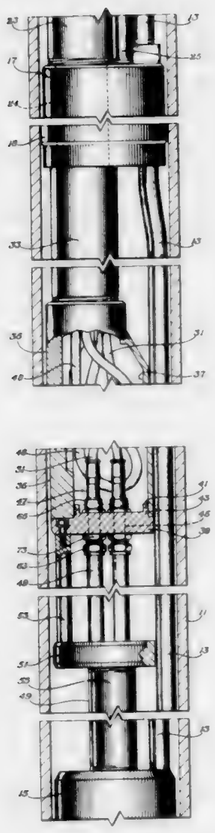
U.S. Cl. 166—265 **16 Claims**

1. A method of pumping hydrocarbons from a mixture of said hydrocarbons with an aqueous phase, said mixture being contained within a producing zone, the method comprising a stage of separating the mixture into an aqueous phase and a light phase containing essentially hydrocarbons and reinjecting said aqueous phase into a reinjection zone, characterized by the fact that said reinjecting rate of flow is regulated as a function of the hydrocarbon content in the reinjected aqueous phase.

2. A pumping installation for the production of hydrocarbons from a mixture of said hydrocarbons with an aqueous phase, located at the lower end of a production well, and comprising a means of separating the mixture into an aqueous phase and a light phase containing essentially hydrocarbons, a reinjection means comprising a centrifugal pump in order to



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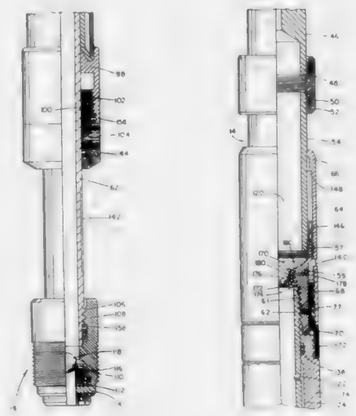


6. A method for installing and operating a steam generator in a well, comprising in combination:
mounting a steam generator to the lower end of a packer of a type having at least one conduit extending therethrough and having a setting means that sets the packer against casing in the well when supplied with fluid pressure;
providing the packer with a setting fluid passage leading to the setting means and a cooling fluid passage leading from the setting fluid passage to the conduit;
connecting the packer to a string of tubing which has an aperture in a sidewall located above the packer;
feeding an electrical cable from the steam generator through the conduit in the packer and out the aperture of the tubing;
lowering the packer and steam generator into the well on the tubing;
when at the desired depth, supplying fluid from the surface down the tubing to the setting fluid passage to set the packer;
preventing with a disk the fluid supplied to the setting fluid passage from circulating through the cooling fluid passage until the packer setting means has set; then
increasing the pressure of the fluid supplied to the setting fluid passage to rupture the disk; then
circulating cooling fluid down the tubing to flow from the setting fluid passage through the cooling fluid passage and up the packer to the surface; and
supplying feed water to the steam generator and electrical power through the cable to the steam generator.

4,805,699
METHOD AND APPARATUS FOR SETTING, UNSETTING, AND RETRIEVING A PACKER OR BRIDGE PLUG FROM A SUBTERRANEAN WELL

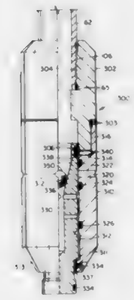
Anna L. Halbardier, Pasadena, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 877,421, Jun. 23, 1986, Pat. No. 4,708,208. This application Oct. 23, 1987, Ser. No. 113,172
Int. Cl.[4] E21B *33/127*
U.S. Cl. 166—387 **18 Claims**



1. An apparatus for providing electrical power to a downhole steam generator in a cased well, comprising in combination:
a packer supported on a string of tubing, the packer having means for sealing against casing in the well and at least one conduit extending longitudinally through the packer;
a connector box mounted below the lower end of the packer, the connector box having a connector plate containing at least one passage;
a plurality of feed through electrical connectors mounted in insulations in the passage in the connector plate;
support means for mounting the steam generator below the connector box;
an aperture located in the sidewall of the tubing immediately above the packer;
an electrical cable extending from the surface alongside the tubing into the aperture and through the conduit into the connector box, the electrical cable having a plurality of electrical conductors, each of which ends in a terminal that is electrically connected to one of the electrical connectors;
a plurality of electrical conductors extending between the steam generator and engaging a lower end of each electrical connector in the connection plate; and
cooling fluid passage means extending through the packer for circulating cooling fluid pumped down from the surface through the packer and back up the well to the surface.

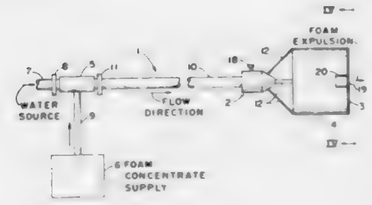
from the subterranean well through the small diameter tubing string by raising the wireline.



4,805,700
FOAM GENERATOR ADJUSTABLE TO PRODUCE FOAM HAVING VARIOUS EXPANSION RATIOS

Stanley M. Hoover, Gibsonia, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed May 29, 1987, Ser. No. 55,604
Int. Cl.[4] A62C *5/04*
U.S. Cl. 169—15 **4 Claims**



1. A foamaking generator comprising:
a water supply source;
a hose adapted to receive said source at one end and fluidically connected to an output of an eductor;
a second hose adapted at one end to receive a foamaking concentrate solution and fluidically connected to a second input opening of said eductor;
a third hose, one end of which is fluidically connected to an output opening of said eductor, adapted to receive a water and foamaking concentrate mixture stream formed in said eductor and having a second end fluidically connected to a nozzle;
said nozzle having means to adjust the angle of projection of said mixture stream to cause said mixture stream to exit said nozzle in a full cone spray pattern;
a screen housing attached to said nozzle positioned to internally receive said mixture stream from one open end; and,
a screen completely enclosing a second end of said housing.

4,805,701
FIRE EXTINGUISHER AND ALARM APPARATUS

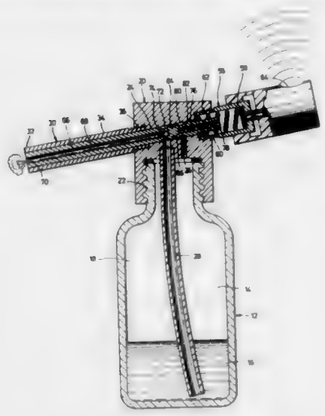
George S. Mountford, 434 Lake View Ct., Lowell, Ind. 46356

Filed Apr. 7, 1987, Ser. No. 35,175
Int. Cl.[4] A62C *37/12*
U.S. Cl. 169—57 **17 Claims**

1. A fire extinguisher and alarm apparatus for a container having a rim and a cavity to retain combustible materials, comprising:
a reservoir having a chamber for retaining a fire extinguishing fluid under gas pressure said reservoir also containing gas under pressure;
a hollow nozzle for ejecting the fire extinguishing fluid;
temperature sensitive means which softens in the presence of heat;
means for mounting the reservoir on the container rim with the nozzle and temperature sensitive means located adjacent the container cavity;
an alarm which issues a signal responsive to gas under pressure; and
valve means responsive to softening of the temperature sensitive means for simultaneously connecting the fire

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extinguishing fluid in the reservoir to the nozzle for ejection therethrough into the container cavity and connecting said gas under pressure in said reservoir to the alarm to issue the signal.

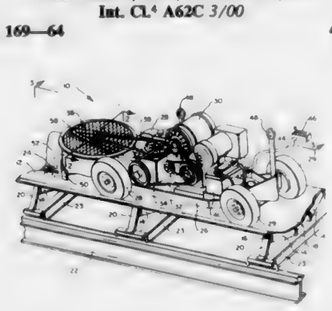


4,805,702

METHODS AND APPARATUS FOR ROCK DUSTING MINE TUNNELS

Earl R. White, Price, Utah, assignor to Utah Power & Light, Salt Lake City, Utah

Filed Dec. 15, 1987, Ser. No. 132,991
Int. Cl.[4] A62C *3/00*
U.S. Cl. 169—64 **40 Claims**



15. A method for spreading rock dust in an underground mine, said mine having a permanent conveyor system within the mine, the method comprising the steps of:

(a) placing a substantially even layer of rock dust on the portion of the permanent conveyor which runs within the portion of said underground mine which is to be coated with rock dust;

(b) providing a rock dust spreading apparatus, said apparatus comprising self-contained engine means, a plurality of wheels, means for placing said engine means in communication with at least one of said wheels such that the wheels can be selectively rotated, blower means, means for placing said blower means in communication with said engine means such that said blower means can be selectively driven by said engine means whereby a flow of air is produced, means for directing said flow of air such that rock dust is propelled by said flow of air in a predetermined direction;

(c) placing the apparatus on the conveyor and causing the apparatus to move along the conveyor such that the apparatus travels over the rock dust; and

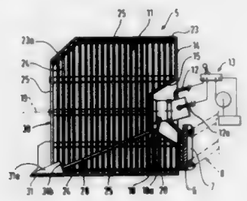
(d) directing the blower means such that rock dust is propelled from the conveyor onto the walls of the tunnel.

4,805,703

METHOD AND APPARATUS FOR SEPARATING FINE AND COARSE MATERIALS FROM EXCAVATED MATERIALS

Leif E. C. Carlsson, Eslöv, Sweden, assignor to Prodec Inter AB, Eslöv, Sweden

Filed Oct. 17, 1985, Ser. No. 788,639
Claims priority, application Sweden, Oct. 18, 1984, 8405199
Int. Cl.[4] E02F *7/00, 3/40*
U.S. Cl. 171—132 **22 Claims**



1. An apparatus for separating from excavated materials fine constituents and coarse constituents, said apparatus comprising:

(a) an excavating and separating bucket with a closed rear side, four sidewalls extending forward from said rear side each of the sidewalls having openings further comprising a grid structure for the fine constituents, at least one of said sidewalls having an excavating blade, and a permanently open front side;

(b) means for connecting said excavating and separating bucket to an excavating and separating assembly of a vehicle; and

(c) means mounted on said bucket for continuously rotating through a plurality of revolutions said excavating and separating bucket about an axis of rotation extending through said bucket from said rear side thereof towards said front side, whereby the rotation of said excavating and separating bucket causes the fine constituents to fall out of the bucket through the opening provided in said sidewalls.

4,805,704

ROTARY TILLING DEVICE

Teruhisa Kobashi; Ichiro Kobashi; Yoshio Touki, and Yasuhiro Kobiki, all of Okayama, Japan, assignors to Kobashi Kogyo Co., Ltd., Okayama, Japan

Filed Oct. 6, 1986, Ser. No. 916,018
Claims priority, application Japan, Oct. 12, 1985, 60-227085; Nov. 20, 1985, 60-261957
Int. Cl.[4] A01B *33/02, 33/14*
U.S. Cl. 172—91 **4 Claims**

1. A rotary tilling device having a frame drawn by a tractor in a travelling direction comprising:

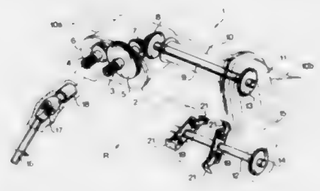
a rotary shaft disposed in a lateral direction with respect to the travelling direction and horizontal with respect to ground, and rotatably supported on the frame;

a plurality of supporting members secured to the rotary shaft;

at least two cutters respectively rotatably mounted on each of said supporting members at diametrically opposite positions of each of said supporting members;

each of the cutters having a radial portion, at one end portion of said radial portion the cutter being rotatably mounted at a pivot on the supporting member, and having a lateral portion bent at the other end portion of the radial portion in the axial direction of the rotary shaft, and having a tilling edge on at least part of a front side of the radial and lateral portions of the cutter and a mowing edge on at least part of a rear side of the radial and lateral portions of the cutter;

separate stop means provided on the supporting member at a position spaced from the shaft and adjacent the pivot of the cutter so that the same radial side portion of the cutter as the mowing edge abuts on the stop means, for holding the cutter in a tilling position and respectively for releasing the cutter into a freely pivoted grass-cutting position;



transmitting means for transmitting power of the tractor to the rotary shaft to rotate the rotary shaft;

reversing and speed changing means for selectively reversing the direction of rotation of the rotary shaft, so as to rotate the rotary shaft in a downward tilling rotary direction at a low speed for tilling operation with the tilling edge and, respectively, in an opposite rotary mowing direction at a higher speed for mowing operation with the mowing edge; and

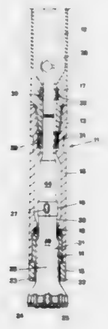
each of said cutters is so arranged that a bottom surface of the lateral portion of a cutter is angled to a horizontal surface of the soil in the grass cutting position.

4,805,705

DRILL BIT

Sven P. Liljebrand, Sandviken, and Berat S. Liljekvist, Storvik, both of Sweden, assignors to Santrade Limited, Lucerne, Switzerland

Continuation of Ser. No. 847,708, Apr. 3, 1986, abandoned. This application Sep. 8, 1987, Ser. No. 96,266
Claims priority, application Sweden, Apr. 4, 1985, 8501698
Int. Cl.[4] E21B *4/14*
U.S. Cl. 173—80 **4 Claims**



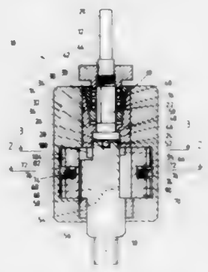
1. A drill string comprising a drill bit, a plurality of mutually aligned central rod members disposed behind and in alignment with said drill bit, a forwardmost one of said rod members abutting said drill bit for transmitting impacts to the drill bit, and a plurality of tubular members for transmitting rotation to the drill bit, said tubular members surrounding said rod members and spaced radially therefrom to form a space therebetween defining a continuous uninterrupted fluid passage which extends forwardly beyond a rear end of said bit to conduct a forward flow of flushing medium, the drill bit provided with a flushing channel which extends rearwardly from the bit front end and terminates short of a bit rear end in an intermediate portion of the drill bit, and a transverse passage at the intermediate portion, said transverse passage interconnecting said flushing channel with said annular space, said flushing channel comprising at least two end passages terminating in the bit front end, the cross-sectional area of each of the end passages being smaller than the overall cross-sectional area of a portion of the flushing channel extending between the end passages and the transverse passage, said drill bit comprising separate front and rear members, said rear member resting loosely against said front member and including a solid rear face which defines said rear end of said drill bit to be contacted by an adjacent one of said rod members for transferring impact forces to said front end of said drill bit defined by said front member, said front member comprising a one-piece body carrying cutting elements at a forward end thereof and being engaged at a rearwardly facing end thereof by said rear member.

4,805,706

ROTARY IMPACT APPARATUS

Alan M. Stone, 168 Mountain View Rd., Greensborough, Victoria 3088, Australia

Filed Aug. 12, 1987, Ser. No. 84,687
Claims priority, application Australia, Aug. 12, 1986, PH07393
Int. Cl.[4] B25D *15/00*
U.S. Cl. 173—93.5 **13 Claims**



1. A rotary torque device comprising a rotatable input means, an impact assembly rotatively driven by the input means and output means drivable by the impact assembly, the impact assembly comprising a rocker normally biased out of engagement with the output means but displaceable into engagement with the output means by a force greater than the biasing force and acting on the rocker at a preselected rotational speed of the impact assembly, and wherein an overload release clutch assembly is provided between the input means and the impact assembly, said overload clutch assembly being adapted to permit substantially instantaneous relative rotation between the input means and the impact assembly above a preselected torque applied to the output means whereupon rotational drive to the impact assembly and output means is reduced so as to permit disengagement of the rocker from the output shaft under the action of the biasing force.

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4,805,707

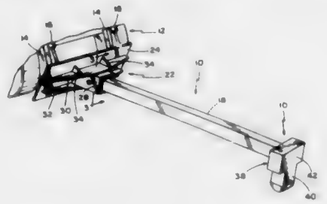
WRECKING APPARATUS

Dennis W. P. Davis, 4624 W. 128th St., Alsip, Ill. 60658, and Timothy Tough, 8400 S. 84th Ct., Hickory Hills, Ill. 60457

Continuation of Ser. No. 871,823, Jun. 9, 1986, abandoned. This application Dec. 30, 1987, Ser. No. 140,927

Int. Cl.[4] B25D *17/24*

U.S. Cl. 173—139 **10 Claims**



1. A wrecking implement for attachment to a loader machine, comprising:

a base plate operably connectable on said loader machine;

a boom mounting member secured on said plate;

a boom having a distal end and a proximal end;

the proximal end being selectably releasably retained on said boom mounting member;

means for securing said boom on said mounting member;

cushioning means for three directional cushioning of said boom with respect to said mounting member; and

hammer means depending from said distal end of said boom.

4,805,708

CONTROLLING SULFIDE SCAVENGER CONTENT OF OIL-BASED DRILLING FLUID

Stephen D. Matza, Stafford; William E. Ellington, and Henry C. Fleming, III, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 6, 1987, Ser. No. 47,835

The portion of the term of this patent subsequent to Apr. 21, 2004, has been disclaimed.

Int. Cl.[4] G01N *31/02, 33/24*

U.S. Cl. 175—40 **20 Claims**

1. A process for determining the amount of unspent zinc-based sulfide scavenger in an oil-based drilling fluid, performed at a field location comprising:

mixing one part by volume of circulating oil-based drilling fluid from a well site with at least about 4 parts by volume of a selective solvent for zinc ions, which solvent establishes a mixture with a pH of no less than about 6 and is capable of dissolving substantially all of the zinc present in the drilling mud except for zinc ions that have been combined into molecules of zinc sulfides;

separating the resulting aqueous solution from any oil phase and undissolved solids; and

measuring the amount of zinc in the aqueous solids-free solution in order to determine the amount of unspent zinc-based sulfide scavenger in the circulating oil-based drilling fluid.

4,805,709

DRILL BIT AND DRILL ASSEMBLY

Walter F. Johnsey, Birmingham, and Donald D. Drummond, Jasper, both of Ala., assignors to DRUMCO, Jasper, Ala.

Continuation-in-part of Ser. No. 818,326, Jan. 13, 1986, abandoned. This application Jul. 30, 1987, Ser. No. 79,834

Int. Cl.[4] E21B *10/18*

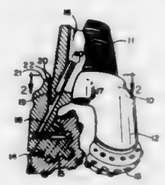
U.S. Cl. 175—228 **10 Claims**

1. In combination with a drilling system having a drill string, a source of gaseous fluid at a controlled pressure providing a flow in the drill string, and lubricant supply means providing a forced flow of lubricant under the pressure of said source of gaseous fluid, said drill string including a flow restricting orifice which controls the flow of gaseous fluid in the drill string and regulates the gaseous fluid pressure exerted on said lubricant supply means, a drill bit comprising:

(a) a body portion having a hollow interior;

(b) a shank portion extending from said body portion for attachment of the drill bit to the drill string and having an opening for receiving the gaseous fluid flow from the drill string for conducting the flow into the hollow interior of the body portion, the body portion having at least one leg portion extending from said body portion;

(c) at least one cutting cone supported on said leg portion by bearings;



(d) the body portion having at least one discharge opening communicating with said hollow interior for exhausting gaseous fluid from the hollow interior onto the surface being drilled;

(e) at least one first conduit means extending through the leg portion providing gaseous passage means communicating between said hollow interior of the body portion and said cutting cone bearings, the first conduit means receiving a gaseous fluid flow from the interior of the body portion; and

(f) second conduit means communicating with said first conduit means at a junction and extending through the body portion providing passage means for the lubricant, and communicating at one end with said forced flow of lubricant from said lubricant supply means and at the other end with said first conduit means at said junction.

4,805,710

ARRANGEMENT IN INDUSTRIAL TRUCKS

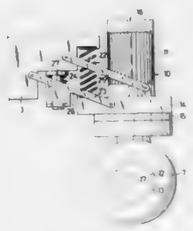
Bernt Jarl, Motala, and Tore Gustafsson, Mjölby, both of Sweden, assignors to Aktiebolaget Bygg-Och Transportekonomi (BT), Mjolby, Sweden

Continuation of Ser. No. 877,969, Jun. 24, 1986, Pat. No. 4,750,579. This application Feb. 8, 1988, Ser. No. 153,143

Claims priority, application Sweden, Jul. 8, 1985, 8503380

Int. Cl.[4] B62D *63/00*

U.S. Cl. 180—38.02 **20 Claims**



1. In an industrial truck, an arrangement for increasing the braking force of at least one wheel of the industrial truck relative to a driving surface on which the industrial truck is driven, the industrial truck including a chassis carried on support wheels which have substantially no spring suspension and which are driven and braked by a sprung drive-wheel arranged between two of the support wheels and a load carrying device which can be raised and lowered relative to the chassis by means of a hydraulic lifting arrangement, and which truck further includes a spring means arranged between the chassis and the sprung drive-wheel and which is adapted to exert on said drive-wheel a spring force acting towards said driving surface,

the improvement wherein said spring means includes:

coupling means coupling said chassis to said drive-wheel while permitting substantially vertical movement of said chassis relative to said drive-wheel;

a spring;

power means coupled to said spring for adjusting the bias or spring force of said spring means, said power means including means responsive to change in weight of a load carried by said load carrying device for increasing said bias or spring force exerted on said drive-wheel and thus said braking force of the industrial truck with increasing weight of the load carried by said load carrying device.

4,805,711

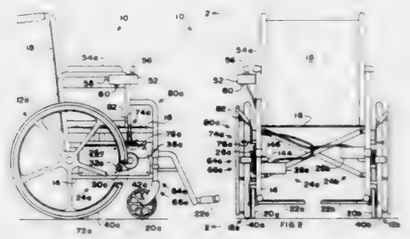
MECHANICAL CONTROL MECHANISM FOR CONVEYANCE

John L. Lautzenhiser, 726 Main Street East, Hamilton, Ontario, Canada L8M 1K9

Filed Mar. 13, 1987, Ser. No. 25,330

Int. Cl.[4] B60K *1/02*

U.S. Cl. 180—65.1 **40 Claims**



1. A conveyance (**10**) of the type having a structural portion (**14**), having a propulsion element (**12***a*), having a motor (**28***a*), and having a power transmitting device (**64***a*) that transmits power from said motor to said propulsion element, the improvement which comprises:

power control means (**66***a*), being operatively attached to said structural portion and being movable to drive and power-release positions, for cooperating with said power transmitting device to transmit power from said motor to said propulsion element when said power control means is in said drive position, and for releasing said transmitting of power when said power control means is in said power-release position;

braking means (**74***a*), having brake-on and brake-off positions, for braking movement of said propulsion element when said braking means is in said brake-on position;

function control means (**80***a*), comprising a unitary control (**82**) that is positionable to first and second retained positions, and to an intermediate retained position that is disposed between said first and second retained positions, for actuating said power control means to one of said positions thereof, and for actuating said braking means to one of said positions thereof; and

said brake is in said brake-on position when said unitary control is in one of said positions thereof, said power control means is in said drive position when said unitary control is in two of said positions thereof, and said power control means is in said power-release position and said brake is in said brake-off position when said unitary control is in the third of said positions.

4,805,712

WHEELCHAIR

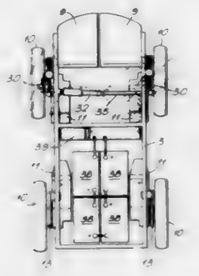
John M. Singleton, Solihull, England, assignor to The Spastics Society, London, England

Filed Mar. 27, 1987, Ser. No. 30,574

Claims priority, application United Kingdom, Apr. 1, 1986, 8607946; Jul. 5, 1986, 8616434

Int. Cl.[4] B60L *11/18;* **B60K** *1/00*

U.S. Cl. 180—65.1 **7 Claims**



5. An electrically driven wheelchair comprising a chassis supported on first and second pairs of wheel assemblies, said first pair of wheel assemblies being resiliently mounted on respective arms of a steering linkage, said arms being mounted for rotation on respective side frame members of said chassis and pivotally connected to opposed ends of a link extending between said side frame members, an actuator operable by battery means through a manually operable control unit accessible to the user to displace said link and rotate said arms simultaneously for steering said wheel assemblies, said second pair of wheel assemblies being resiliently mounted on said side frame members, and each said wheel assembly comprising a support plate resiliently mounted by a suspension unit, a ground engaging driven wheel mounted for rotation on said support plate and an electric motor mounted on said support plate inboard of said wheel and connected to said wheel by drive transmitting means, each said motor being operable by said battery means through said control unit and each said drive transmitting means being manually releasable by a respective lever accessible to the user outboard of the associated wheel to disengage the drive to permit free rotation of the wheel for manual propulsion of the wheelchair.

4,805,713

POWER TRANSMITTING SYSTEM FOR A FOUR-WHEEL DRIVE VEHICLE

Masaaki Tsuneda, Kokubunji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1987, Ser. No. 128,227

Claims priority, application Japan, Dec. 12, 1986, 61-297215; Dec. 12, 1986, 61-297216; Dec. 12, 1986, 61-297217; Dec. 12, 1986, 61-297218

Int. Cl.[4] B60K *17/00*

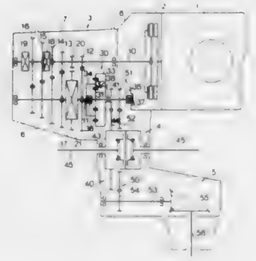
U.S. Cl. 180—70.1 **10 Claims**

1. In a power transmitting system for a four-wheel drive motor vehicle, having a transmission provided on a transmission case, the transmission disposed transversely relative to a longitudinal direction of the vehicle, and including an input shaft operatively connected to an output axle of an engine through a clutch provided in a clutch housing secured to the transmission case, and an output shaft including an end portion parallel with the input shaft, central differential means for enabling different rotating speeds between axle shafts and a

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drive shaft of the vehicle, the axle shafts including a right axle shaft and a left axle shaft, and a differential operatively connected to said right and left axle shafts for enabling different rotating speeds between the right and left axle shafts, the improvement of the system wherein

said central differential means comprises input means coaxially connected with the end portion of the output shaft of



the transmission, and two output means connected with the axle shafts through the differential, and operatively connected with the drive shaft, and

said central differential means is mounted between the end portion of the output shaft of the transmission and the clutch housing and within the transmission case, thereby providing a simplified construction and reduced space occupied by the system.

4,805,714

POWER STEERING SYSTEM WITH HYDRAULIC REACTION

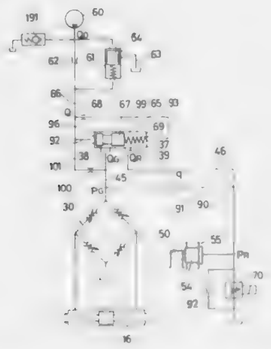
Keiichi Nakamura, Kariya; Susumu Honaga, Aichi; Mikio Suzuki, Hekinan, and Hiroshi Kawakami, Toyota, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 16, 1987, Ser. No. 3,766

Claims priority, application Japan, Jan. 16, 1986, 61-5132

Int. Cl.⁴ B62D *5/06*

U.S. Cl. 180—141 **3 Claims**



1. A power steering system which utilizes fluid source means for supplying pressure fluid of a constant flow rate and fluid motor means for supplementing manual steering torque, comprising:

a valve housing;

a rotatable output shaft partially positioned within said valve housing and operatively connected with said fluid motor;

a rotatable input shaft partially positioned within said valve housing, aligned with said output shaft and adapted for manual actuation;

servo-valve means located in said valve housing for distributing fluid flow to said fluid motor in accordance with relative rotation between said input and output shafts;

reaction means located in said valve housing for providing resistance against relative rotation between said input and output shafts in accordance with fluid pressure supplied thereto;

magnetic control valve means connected to said reaction means for controlling fluid pressure applied thereto in accordance with a vehicle operating condition;

flow dividing valve means including a valve casing having first and second outlet ports, a spool movable in said valve casing so as to vary opening areas of said first and second outlet ports in an inverse manner with respect to each other, first flow path means for connecting said fluid source means to said first outlet port through the interior of said valve casing; second flow path means for connecting said fluid source means to said second outlet port through the interior of said valve casing; a metering orifice located in said second flow path means; and biasing means for urging said spool in a direction so as to open said second outlet port, said spool being urged against said biasing means by the pressure difference across said metering orifice, said first outlet port being connected to said servo-valve means and said second outlet port being connected to said reaction means;

a bypass conduit provided with a bypass orifice therein and connected between said fluid source means and said servo-valve means in parallel relation with said flow dividing valve means; and

a conduit provided with an orifice therein and connected between said first and second outlet port.

4,805,715

DIFFERENTIAL PAWL ACTIVATION APPARATUS

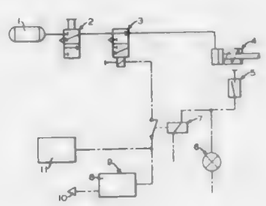
Horst Deike, Clauen, and Erwin Petersen, Wunstorf, both of Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Dec. 11, 1986, Ser. No. 940,704

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1985, 3543894

Int. Cl.⁴ B60K *23/04*

U.S. Cl. 180—197 **6 Claims**



1. An activation apparatus for a differential pawl, said differential pawl capable of rotating at least two drive wheels in a motor vehicle which can rotate independently of one another in synchronization, said activation apparatus having an actuator which can be pressurized at least in an engagement direction of said differential pawl and an activation mechanism which controls its connection in such engagement direction with a fluid pressure source, said activation apparatus comprising:

(a) a monitoring means positioned on such motor vehicle for monitoring slip of at least one drive wheel, and for emitting a wheel-slip signal when said at least one drive wheel slips;

(b) a magnetically-activated multi-way valve arranged in a connection between said fluid pressure source and said actuator in series with said activation mechanism which interrupts said connection when its activation magnet is excited; and

(c) said activation magnet of said multi-way vavle being connected for excitation by said wheel-slip signal; and

(d) a disabling means for disabling said activation magnet from being excited independently of said wheel-slip signal when said differential pawl is in an engaged position, and said disabling means includes a switching device which interrupts an exciter circuit of said activation magnet of said multi-way valve when said differential pawl is engaged, and said disabling means includes a measurement sensor to control said switching device by activating said switching device when said differential pawl reaches said engaged position.

4,805,716

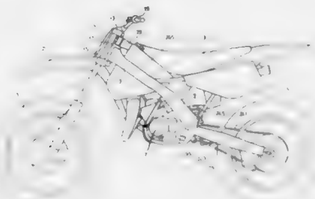
MOTORCYCLE BODY FRAME STRUCTURE

Kazuhiko Tsunoda; Hiroyuki Furuyama; Toshimitsu Asakura, and Tomoyuki Tagami, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1987, Ser. No. 84,349

Int. Cl.⁴ B62D *61/02*

U.S. Cl. 180—219 **10 Claims**



1. In a motorcycle (1) having an engine (7) disposed between front and rear wheels (3, 5) and supported by a body frame (9) made of aluminum-based alloy and comprising a front frame portion (23) and a rear frame portion (27), said front frame portion extending rearwardly from a head pipe (17) steerably supporting an upper portion of a front fork (11) for suspending said front wheel, and said rear frame portion being connected to said front frame portion and having a rear fork (25) for supporting said rear wheel pivotally connected thereto, the improvement consisting of a body frame structure comprising

(a) said front frame portion, being constituted by one upper frame member (29) and left and right lower frame members (31), said upper frame member extending rearwardly from an upper portion of said head pipe (17) above said engine, and said lower frame members extending rearwardly from a lower portion of said head pipe above or through an upper side of said engine;

(b) a coupling member (71) connecting a rear portion of said upper frame member and rear portions of said lower frame members, said upper frame member being detachably connected to said head pipe and said coupling member;

(c) a fuel tank (265) mounted on said front frame portion (23) in a space defined between said upper frame member (29) and said left and right lower frame members (31), said fuel tank (265) having at least two upwardly projecting portions, a fuel filler port (277) in an upper portion of one of said upwardly projecting portions, and a tubular member providing communication between an upper end of the projecting portion provided with said fuel filler port and an upper end of another of said at least two upwardly projecting portions.

4,805,717

BRACKET CONSTRUCTION FOR A MOTOR CYCLE ASSEMBLY

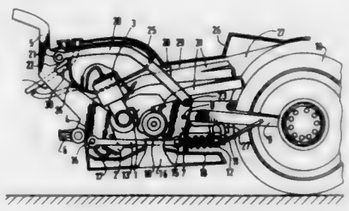
Daniel Trema, Bezons, France, assignor to ELF FRANCE, Courbevoie, France

Filed Mar. 27, 1987, Ser. No. 31,997

Claims priority, application France, Apr. 1, 1986, 86 04602

Int. Cl.⁴ B62K *25/16, 25/20*

U.S. Cl. 180—219 **4 Claims**



1. An engine and transmission assembly of a motorcycle of the type including a front axle assembly, said assembly comprising:

a motor;

case means forming a longitudinal hollow beam made of assembled cast parts for supporting the motor;

a transmission gear contained in said case means;

said assembly comprising on each longitudinal side of said motorcycle;

a stiff front plate secured by screw elements to said engine and transmission assembly and connected to said front axle assembly and including upper and lower portions;

having a front wheel, a front wheel suspension and steering means for steering said front wheel;

a stiff rear plate secured by screw elements to said engine and transmission assembly and connected to said rear axle assembly and including upper and lower portions;

a rear axle assembly having a rear wheel, a rear wheel suspension and drive means for driving said rear wheel; and means for connecting said front and rear axle assemblies to said engine and transmission assembly;

at least one draw bar, each draw bar having opposite ends with a hinging head at each end that is crossed through by one of the screw elements respectively securing the front and the rear plates, each end of each draw bar that is crossed through by a screw element being connected to the lower portion of the respective front and rear plates, so that the neutral axis, during bending, of said longitudinal hollow beam is displaced downwardly relative to the said beam to reduce bending tensile streases on said hollow beam which is subjected to various other tensile stresses including those due to the pressure of combustion gases.

4,805,718

POWER TRANSMISSION SYSTEM FOR A FOUR-WHEEL DRIVE

Seiichi Iwata, and Kyoji Takenaka, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1986, Ser. No. 892,523

Claims priority, application Japan, Aug. 5, 1985, 60-172138

Int. Cl.⁴ B60K *17/34*

U.S. Cl. 180—233 **11 Claims**

1. A power transmission system for a four-wheel drive vehicle having front and rear wheels and a transmission, the system comprising:

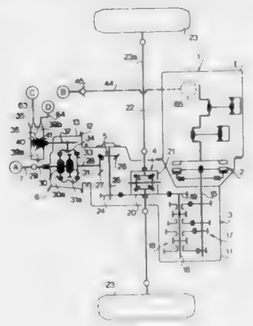
a power transmitting system for transmitting the output of the transmission to the front and rear wheels;

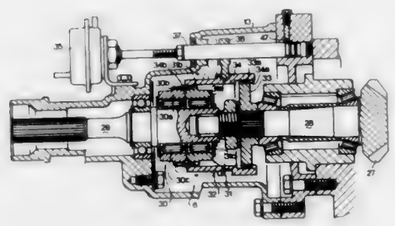
a forward overrunning clutch and a reverse overrunning clutch provided in said power transmitting system and

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when selected effective for forward drive and reverse drive respectively;

means for selecting alternate ones of said overrunning clutches at a time for transmitting the output of the transmission through the selected one of said overrunning clutches, said selected one of said overrunning clutches at





the time being arranged so as to permit overrunning of said selected overrunning clutch; and

said means further for selecting and locking together both said forward and reverse overrunning clutches for transmitting the output of the transmission through one of said clutches and such that the other of said clutches makes overrunning of said one of said clutches impossible.

4,805,719

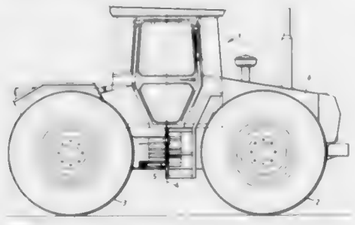
VEHICLE

Pentti Kostamo, Jyvaskyla, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed Sep. 18, 1987, Ser. No. 98,216

Int. Cl.[4] B60K *17/34*

U.S. Cl. 180—242 **5 Claims**



1. A vehicle having a front pair of ground contacting wheels, a rear pair of ground contacting wheels, an internal combustion engine, hydraulic motors for driving each said ground contacting wheel, and a plurality of variable flow hydraulic pumps for driving the hydraulic motors wherein the internal combustion engine is arranged to drive directly a first variable displacement pump for driving the motors of the front pair of wheels and a second variable displacement pump for driving the motors of the rear pair of wheels and also to drive first and second boost pumps; a pressure actuated control valve is supplied with hydraulic fluid from one of the boost pumps and is arranged to give, on the downstream side of a throttle positioned in the path of hydraulic fluid from the control valve, an output hydraulic pressure which is dependent on the speed of the engine; and a pair of further valves, which are responsive to the output hydraulic pressure from the control valve, and are positioned each in the path of hydraulic fluid from a respective boost pump to a corresponding respective operating piston and cylinder arrangement for adjusting the displacement of a respective variable displacement pump in dependence on the speed of the engine.

4,805,720

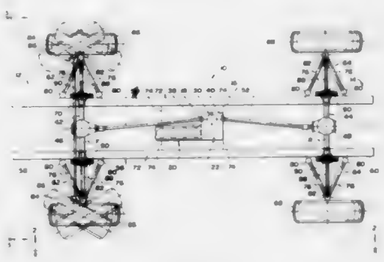
VEHICLE DRIVETRAIN

Alain J-M Clenet, 1211 Harbor Hill Dr., Santa Barbara, Calif. 93109

Continuation of Ser. No. 833,959, Feb. 27, 1986, abandoned. This application Sep. 22, 1987, Ser. No. 102,816

Int. Cl.[4] B60K *17/348*

U.S. Cl. 180—248 **18 Claims**



1. In a vehicle including front and rear ends and an intermediate portion extending therebetween, a drivetrain comprising: an engine mounted on the intermediate portion of the vehicle between the front and rear ends thereof and having a plurality of cylinders spaced longitudinally along the length of the vehicle; a single transmission that is mounted on the vehicle and driven by the engine; said transmission including multiple gear paths for providing different speeds and having an interaxle differential selectively driven by each gear path; the transmission also including a housing defining a single oil bath in which the multiple gear paths and interaxle differential are located; the transmission further including front and rear outputs that are axially aligned with each other extending generally longitudinally along the length of the vehicle; the front and rear outputs being driven by the interaxle differential; front and rear axles respectively supported by the front and rear ends of the vehicle with the engine and transmission located entirely between the axles; the front and rear axles including front and rear differentials; and front and rear drive shafts having first ends respectively driven by the axially aligned front and rear outputs of the transmission, and the front and rear drive shafts having second ends for respectively driving the front and rear differentials of the front and rear axles to provide full time four wheel driving.

4,805,721

POWER TRANSMITTING SYSTEM FOR A FOUR-WHEEL DRIVE VEHICLE

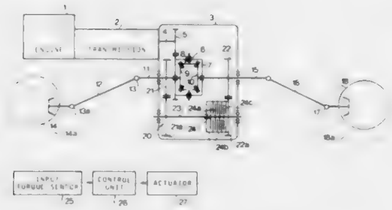
Mitsuo Takahashi, Oota; Fusami Oyama, Ouramachi, and Yukio Kodama, Ohta, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1987, Ser. No. 16,875

Claims priority, application Japan, Feb. 26, 1986, 61-42601; Feb. 26, 1986, 61-42602; Feb. 28, 1986, 61-43596; Feb. 28, 1986, 61-43597; Mar. 26, 1986, 61-67789

Int. Cl.[4] B60K *17/04*

U.S. Cl. 180—248 **7 Claims**



1. A power transmitting system for a four-wheel drive vehicle in which power of an engine is transmitted to front and rear wheels through a central differential, the system comprising:

a torque distribution device including clutch means provided for changing torque transmitted to front and rear wheels;

control means for rendering the clutch means operative;

the clutch means is provided between both side gears of the central differential;

said clutch means has opposite disks; and

each of the opposite disks of the clutch means is operatively connected to a corresponding side gear through a gear train.

4,805,722

ANTI THEFT SYSTEM FOR MOTOR VEHICLES AND THE LIKE

William Keating, and John Flanagan, both of 90-40 80th St., Woodhaven, N.Y. 11421

Filed Jun. 26, 1987, Ser. No. 66,558

Int. Cl.[4] B60R *25/04*; **G08B** *1/00*

U.S. Cl. 180—287 **8 Claims**



1. An anti theft system for motor vehicles and the like, comprising:

(a) a computer control which contains a date/time clock and has in its memory a vehicle ID number;

(b) a card reader/time display input/output device which converts information stored on a card into electrical signals decodeable by said computer control and displays the time remaining for the operation of said motor vehicle and the like; and

(c) at least one output vehicle shutdown device wherein said output device is controllable by said computer control, and wherein said card reader/time display comprises a magnetic card reader whereby said magnetic card reader will prevent the enabling of an ignition shutoff until a magnetic card is removed thereby discouraging an operator from leaving said vehicle without first removing said magnetic card.

4,805,723

LOCK ASSEMBLY FOR ONBOARD OPENING COVER

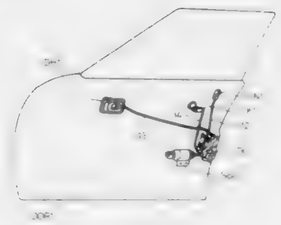
Kohji Aoki, Nagoya, and Yasuda Tomio, Kasukabe, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 10, 1987, Ser. No. 131,424

Claims priority, application Japan, Dec. 12, 1986, 61-295909

Int. Cl.[4] B60K *28/12*

U.S. Cl. 180—289 **8 Claims**



1. A lock assembly for an onboard opening cover which can be opened and closed to cover an opening of a vehicle comprising:

a lock mechanism for blocking an opening operation of the onboard opening cover;

means for detecting an open or closed condition of the onboard cover;

means for detecting the presence or absence of an occupant within the vehicle including:

a detecting electrode which establishes an electric field passing through at least part of an occupant;

means for detecting a capacitance defined by the detecting electrode; and

decision means for determining the presence or absence of an occupant based on a change in the capacitance detected; and

control means for locking the lock mechanism whenever the absence of an occupant is detected and the closed condition of the onboard opening cover is detected.

4,805,724

SOUND-ABSORBING PANEL

Werner Stoll, and Edgar Weiss, both of Neckarsteinach, Fed. Rep. of Germany, assignors to Odenwald-Chemie GmbH, Schlossa, Fed. Rep. of Germany

Filed May 13, 1987, Ser. No. 49,661

Claims priority, application Fed. Rep. of Germany, May 13, 1986, 8613009[U]

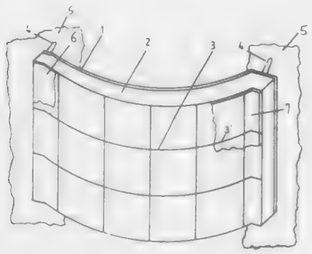
Int. Cl.[4] E04B *1/82*

U.S. Cl. 181—290 **16 Claims**

1. Sound-absorbing panel, comprising a synthetic foam mat having a given size, a synthetic fiber web having substantially said given size, a riveted seam attaching said synthetic foam mat to said synthetic fiber web at least pointwise in a given

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pattern, and second means for attaching the sound-absorbing panel to a wall for damping sound radiation of the wall while



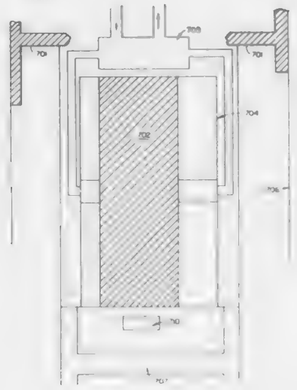
maintaining a distance between the sound-absorbing panel and the wall.

4,805,725

NONDESTRUCTIVE DOWNHOLE SEISMIC VIBRATOR SOURCE AND PROCESSES OF UTILIZING THE VIBRATOR TO OBTAIN INFORMATION ABOUT GEOLOGIC FORMATIONS

Bjorn N. P. Paulsson, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 841,074, Mar. 18, 1986, Pat. No. 4,702,343. This application Sep. 10, 1987, Ser. No. 95,291
Int. Cl.[4] G01V *1/40*
U.S. Cl. 181—106 **3 Claims**



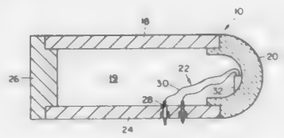
1. A downhole seismic source comprising:
a housing;
means for clamping the housing in a well bore;
a reaction mass in said housing, said reaction mass oriented to move generally perpendicular to the well bore axis;
means for hydraulically moving said reaction mass such that forces are transmitted through, through said clamp and into the well bore to generate at least one detectable seismic wave of predetermined frequencies to said housing; and
means for rotating said reaction mass around an axis generally parallel to the well bore axis so as to orientate said mass in a selected direction.

4,805,726

CONTROLLED IMPLOSIVE DOWNHOLE SEISMIC SOURCE

D. Thomas Taylor, and James E. Brooks, both of Houston, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Nov. 12, 1985, Ser. No. 797,301
Int. Cl.[4] G01V *1/40*
U.S. Cl. 181—106 **20 Claims**



1. An implosive downhole seismic source comprising:
a generally cylindrical vessel body comprised of a material of sufficient strength to withstand the force of implosion;
and end cap sealing said cylindrical vessel body to form a chamber, said end cap being comprised of a material capable of being selectively ruptured to cause an implosion under the hydrostatic pressure of the fluid into which said vessel body is lowered; and
explosive means for selectively rupturing said end cap to implode the fluid surrounding said vessel body into said chamber as a result of the hydrostatic pressure of the fluid.

4,805,727

DOWN HOLE PERIODIC SEISMIC GENERATOR

Harry C. Hardee, Albuquerque; Richard G. Hills, Las Cruces, and Richard P. Striker, Albuquerque, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 28, 1982, Ser. No. 437,404
Int. Cl.[4] G01V *1/40*
U.S. Cl. 181—106 **18 Claims**



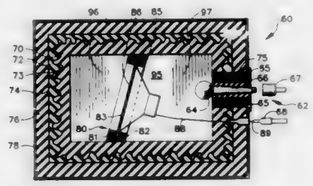
1. A down hole periodic seismic source for operation within a borehole to produce seismic shear waves through surrounding earth strata comprising
an elongated housing;
means for lowering said housing into a borehole;
clamping means carried by the housing for selectively, rigidly clamping said housing to the wall of the borehole;
self-contained pneumatic reservoir means carried by the housing;
a longitudinal pneumatic oscillator carried by the housing; and
valve means operably connected between the reservoir and the oscillator for reciprocally driving said oscillator longitudinally with respect to the borehole at low frequencies to produce predominantly vertical shear waves,
whereby vibratory seismic vertical shear waves are transmitted through the clamping means into the surrounding earth strata.

4,805,728

SOUND SYSTEM WITH ANECHOIC ENCLOSURE

Robert Carter, 9050 Flanders Dr., San Diego, Calif. 92126, and Allan Hamilton, 2020 Mark Ave., Escondido, Calif. 92027

Filed Sep. 29, 1987, Ser. No. 102,430
Int. Cl.[4] H04R *27/00*
U.S. Cl. 181—141 **9 Claims**



1. A sound system for a musical performer comprising in combination:
a music source for producing a first music signal;
first amplifier means connected to said music source for receiving said first music signal from said music source and for producing a first amplified music signal in response thereto;
an anechoic enclosure having an inner chamber and further including:
a first speaker disposed within said chamber and connected to said first amplifier means for receiving said first amplified music signal and for producing sounds in response thereto; and
microphone means disposed within said chamber for receiving the sounds from said first speaker and for producing a second music signal in response thereto;
second amplifier means connected to said microphone means for receiving said second music signal and for producing second amplified signal in response thereto; and
second speaker means connected to said second amplifier means for receiving said second amplified signal and for producing musical sounds in response thereto.

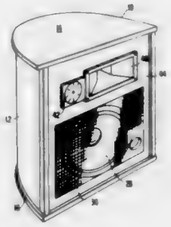
4,805,729

SPEAKER ENCLOSURE

Bart A. Wascom, 25671 LA Hwy., 16, Denham Springs, La. 70726

Filed Jul. 14, 1987, Ser. No. 73,179
Int. Cl.[4] H05K *5/00*
U.S. Cl. 181—144 **7 Claims**

1. A speaker enclosure for a speaker member, a horn member, a tweeter member and the like comprising a curved back wall having a thickness and a vertical height, a planar top surface, a planar bottom surface and a generally rectangular front opening, a mounting plate adapted to be retained within said front opening for mounting said speaker member thereon, said horn member and said tweeter member being adapted to be mounted in said front opening above said speaker member, at least said curved back wall being made out of wood, said radius of curvature of said curved wall being in a range of 6 inches to 15 inches, said thickness of said back wall being in a



range of ¼ inch to ½ inch, said vertical height of said back wall being in a range of 16 inches to 36 inches.

4,805,730

LOUDSPEAKER ENCLOSURE

Robert M. O'Neill, and Jason K. Dunaway, both of Meridian, Miss., assignors to Peavey Electronics Corporation, Meridian, Miss.

Filed Jan. 11, 1988, Ser. No. 142,018
Int. Cl.[4] H05K *5/00*
U.S. Cl. 181—148 **13 Claims**



1. An enclosure adapted to contain a sound generating means, the enclosure comprising a front wall through which sound can emanate, two end walls, each in the shape of a trapezoid, a back wall, and two side walls extending between the end walls and all joined together to form the enclosure, each of said side walls having a plurality of outwardly projecting linear ribs extending on a line between the front wall and the back wall, one of the two side walls having an even number of ribs and the other of said side walls having an odd number of ribs and adjacent ribs on each of said side walls defining grooves therebetween, each of said grooves is of a width to receive one of said ribs therein, spacing between the ribs being approximately equal, the ribs having a thickness approximately equal to the spacing between the ribs and a space between one of said end walls and the grooves on one side of said walls being equal to the spacing between the other of said end walls and the ribs on the other of said walls so that a pair of enclosures may be disposed in side-by-side relation with adjacent side walls thereof touching and the ribs thereof interdigitated.

4,805,731

SOUND PROJECTION METHOD AND APPARATUS

Wayne L. Staley, Frankfort, Ind., assignor to Audionics, Inc., Frankfort, Ind.

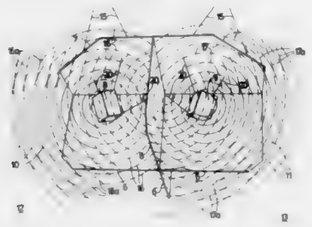
Filed Mar. 31, 1988, Ser. No. 176,040
Int. Cl.[4] H05K *5/00*
U.S. Cl. 181—175 **2 Claims**

1. Method of providing a plurality of selected audience areas

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with intelligible sound waves from a plurality of sources of sound waves, said method comprising:

(a) generating from a plurality of sound generating sources, each of said sound generating sources being associated with one only of said plurality of selected audience areas, a plurality of direct sound waves, each of said plurality of direct sound waves being directed towards the selected audience area associated with a particular sound generating source, said step of generating each of said plurality of direct sound waves unavoidably generating indirect sound waves in a direction generally away from the selected audience area associated with the said direct sound wave,



(b) simultaneously reflecting each of said indirect sound waves generated at one of said sound generating sources substantially only to the selected audience area associated with said one sound generating source, thereby preventing indirect sound waves generated by each of said sound generating sources from being directed to selected audience areas associated with other sound generating sources,

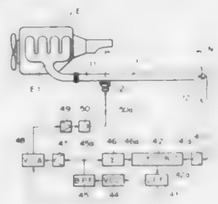
(c) whereby each selected audience area receives intelligible sound waves only from said respective sound generating source.

4,805,732
MOTOR POWERED SOUND EMITTER
Mats Moritz, Trelleborg, Sweden, assignor to Prodeo AB, Malmo, Sweden
Filed Oct. 28, 1987, Ser. No. 113,664
Claims priority, application Sweden, Oct. 31, 1986, 8604685
Int. Cl.[4] G10K *11/00*
U.S. Cl. 181—175 **10 Claims**



1. A sound emitter for generating a sound wave by a motor driven piston arranged to oscillate in a housing connected to a horn in which—at a working speed of the motor and at normal temperature—resonance sound waves occur in the horn, said piston being oscillated by a three phase asynchronous electric motor connected to the piston by a gear train, wherein the three phase asynchronous motor has a maximum torque at a speed less than ½ of a maximum speed of the motor at zero torque.

4,805,733
ACTIVE SILENCER
Masahiko Kato, Nukata; Masanori Katou, Toyoake; Satosi Kuwakado, Nukata; Katsuyuki Tanaka, Nishio, and Koji Ito, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan
Filed Jul. 7, 1987, Ser. No. 70,447
Int. Cl.[4] F01N *1/06*
U.S. Cl. 181—206 **14 Claims**



1. An active silencer provided at a pipe which has one end reaching a noise source and another end open, said active silencer comprising:

means for generating a sound into said pipe so that a noise passing through said pipe from said noise source is reduced;

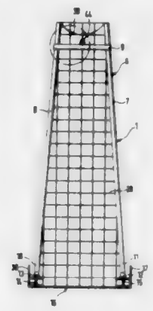
means for collecting the sound dissipated from the open end of the pipe, said sound collecting means being provided outside the pipe close to said another open end and away from said sound generating means;

means connected to said sound collecting means for generating a lead phase output signal by leading a phase of an output signal of said sound collecting means by a phase substantially corresponding to a predetermined time τ, said predetermined time τ being set so that $\tau=L/C$, wherein L is a distance between said sound generating means and said sound collecting means and C is the speed of sound; and

means connected to said phase leading means for outputting a drive signal which is an inverted signal of said lead phase output signal and for driving said sound generating means by said drive signal.

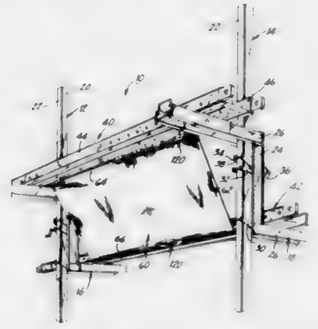
4,805,734
ACOUSTIC WALL
Werner Mast, Niedermohr, Fed. Rep. of Germany, assignor to Mast Garten - und Landschaftsbau KG, Niedermohr, Fed. Rep. of Germany
Filed Apr. 2, 1987, Ser. No. 34,123
Int. Cl.[4] E04H *17/00*; G10K *11/00*
U.S. Cl. 181—210 **10 Claims**

1. An elongated, decorative, wall-like sound barrier member having front and rear facing surfaces and side facing surfaces, comprising a base, plural side-by-side inverted U-shaped frame parts upstand from said base, each said frame part having a pair of upstanding legs, said frame parts being spaced from one another and so that planes containing said legs extend parallel to each other, means for securing portions of said legs adjacent said base to said base so as to define a rigid frame, plural side mats mounted on said front facing surface and said side facing surfaces of said sound barrier member, at least one narrow-mesh floor mat being mounted on said base, said plural side mats and said floor mat defining an upwardly opening upper end of said rigid frame, said upwardly opening upper end being adapted to receive fill material therein, and fastening means on said base for facilitating a lifting of said rigid frame by a lifting device, said at least one narrow-mesh floor mat preventing said



fill material from falling out of said rigid frame during transport.

4,805,735
SCAFFOLDING NET SYSTEM
Carl Anderson, 2589 Richmond Ter., Staten Island, N.Y. 10303
Filed Feb. 28, 1968, Ser. No. 160,656
Int. Cl.[4] E04G *1/26*
U.S. Cl. 182—138 **22 Claims**



1. A guard system for a scaffolding arrangement having upper and lower sections respectively traversing a pair of spaced apart poles, the sections respectively located on opposing directions of a plane defined by the poles, said guard system comprising net means spanning the gap between said upper and lower sections, and clamping means for clamping an upper edge of the net means to the upper sections and a lower edge of the net means to the lower section.

4,805,736
DISAPPEARING LADDER
John J. Byrnes, Jr., Lebanon, Conn., assignor to Fabrication Specialists, Inc., Manchester, Conn.
Filed May 26, 1988, Ser. No. 199,994
Int. Cl.[4] E06C *9/06*, *1/383*
U.S. Cl. 182—95 **20 Claims**

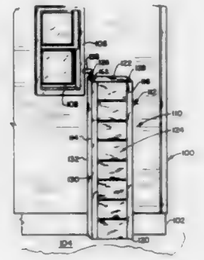
1. A ladder comprising:

a pair of spaced apart rails having front and back edges and having upper and lower ends;

a plurality of substantial identical slats located transversely between the rails;

support means extending from each slat and engaging the rails, for defining a respective axis of rotation for each slat;

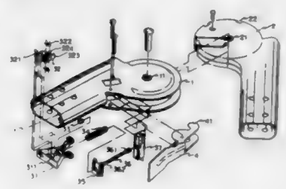
actuating means operatively connecting together each of the slats for selective simultaneous rotation of the slats from a closed orientation wherein the slats form a substantially solid planar surface parallel to the rails, to an open orientation wherein the slats are spaced apart and transverse to the rails;



means for restraining the actuating means to hold the slats in the closed position; and

trigger means located at the upper end of a rail and operatively connected to the actuation means., for selectively releasing the means for restraining, whereby the slats can rotate to the open orientation.

4,805,737
LADDER POSITIONING MECHANISM
Ching L. Peng, No. 11, Alley 26, Lane 207, Tung Shan Street, Taichung City, Taiwan
Filed Nov. 18, 1987, Ser. No. 122,202
Int. Cl.[4] F16C *11/00*; E06C *7/50*
U.S. Cl. 182—163 **1 Claim**



1. A ladder positioning mechanism comprising:

an external shell member having a tube shaped handle;

an internal shell member rotatably mounted within said external shell member, said internal shell member having predetermined slots formed in a peripheral surface;

a claw member insertable within said external member and having a pair of rounded spaced apart ends sandwiching said internal shell member therebetween;

means for positioning said internal shell member with respect to said external shell member, said positioning means being located within said tube shaped handle of said external shell member, said positioning means including a lock block member being linearly displaceable into and out of said slots formed in said internal shell peripheral surface responsive to a rotative displacement of said claw member, said lock block member fixedly secured to a shaft extending through an opening formed in a fixed seat member secured to said tube shaped handle, said shaft passing through a spring member being compressively mounted between said lock block member and said fixed seat member on opposing ends thereof, said shaft having a ball shaped edge member secured to an end thereof, said ball shaped edge member being reversibly insertable into an engagement seat formed by a pair of laterally displaced

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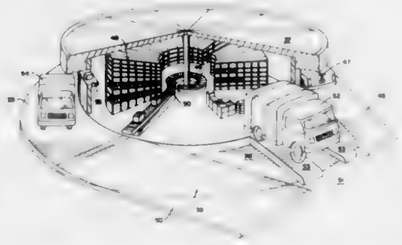
face plate members displaceably coupled to each other by a spacer spring member, said face plate members for clampingly engaging said ball shaped edge member when said lock block member is inserted within one of said slots.

4,805,738

TIMED CYCLE SINGLE STOP SHOPPING FACILITY

Mark Vayda, 8380 Greensboro Dr., Suite 917, McLean, Va. 22102

Filed Aug. 20, 1987, Ser. No. 87,288
Int. Cl.[4] E04H *3/04*
U.S. Cl. 186—36 21 Claims



1. A facility for vending vehicle fuel and consumer merchandise comprising:

a circular building for storing consumer merchandise;

first conveyor means disposed around the exterior of said building and extending from an entry location to an exit location, said first conveyor means being operative to receive vehicles at parking positions thereon and to transport each such vehicle around the exterior of said building from said entry location to said exit location in a predetermined time interval;

fuel dispensing means for delivering fuel, during said predetermined time interval, to vehicles that are located on said first conveyor means, said fuel dispensing means being mounted for movement in synchronism with the movement of said vehicles on said first conveyor means around the exterior of said building;

ordering devices accessible to the occupants of vehicles on said first conveyor means for permitting the ordering of consumer merchandise stored in said circular building; and

second conveyor means located within said building for use in assembling merchandise that is ordered by the occupant of a given one of said vehicles during said predetermined time interval, said second conveyor means being operative to transport merchandise assembled within said building to a position adjacent a delivery opening in said building at a time synchronized with the time of arrival adjacent said delivery opening of the vehicle from which said assembled merchandise was ordered.

4,805,739

ELEVATOR CONTROL SWITCH AND POSITION INDICATOR ASSEMBLY

Larry W. Lind, and Richard E. Watt, both of La Mesa, Calif., assignors to U.S. Elevator Corporation, San Diego, Calif.

Filed Jan. 14, 1988, Ser. No. 143,943
Int. Cl.[4] B66B *3/00*
U.S. Cl. 187—121 14 Claims

1. An elevator control switch assembly, comprising:

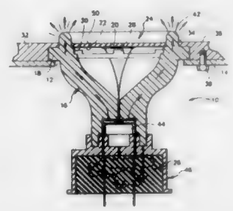
a lens guide having an opening at one end;

means for mounting said lens guide in an operating panel with its open end facing outwardly;

switch means mounted in said lens guide, comprising a piezoelectric element for generating an output signal on application of force to said piezoelectric element;

control means connected to said piezoelectric element for generating an elevator control pulse in response to an output signal from said piezoelectric element;

push button means mounted in said lens guide for deflecting said piezoelectric element to generate an output signal on application of force to said push button means by an operator, the push button means being movable a predeter-



mined distance between a first inoperative position and a second operative position in which it deflects the piezoelectric element; and

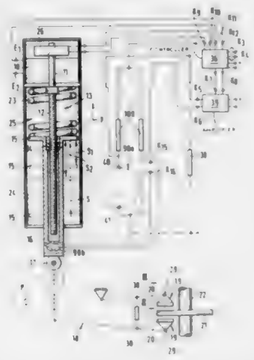
restraining means for limiting movement of said push button means to a predetermined distance sufficient to produce an output signal from said piezoelectric element.

4,805,740

MOTOR-DRIVEN BRAKE SYSTEM, ESPECIALLY FOR RAIL VEHICLES

Richard Wilke, Am Weissenfeld 4, 5830 Schwelm, and Helmut Korthaus, Fernblick 3, 5600 Wuppertal, both of Fed. Rep. of Germany

Filed Mar. 25, 1988, Ser. No. 173,729
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1987, 3709952
Int. Cl.[4] B60T *13/04*
U.S. Cl. 188—173 11 Claims



1. A brake-operating system for a brake mechanism having a brake rod, at least one brakeshoe operatively connected with said rod and a rotary brake member engageable by said brakeshoe, especially for a rail vehicle, said brake operating system comprising:

a brake actuator connected to said rod and displaceable in one direction to cause said brakeshoe to engage said member and in an opposite direction to retract said brakeshoe from said member;

an electric motor energizeable to retract said brakeshoe from said brake member and provided with a driver connected with said actuator, and a control circuit for variable electrical energization of said electric motor;

a force-storing spring acting upon said brake actuator to drive said actuator in said one direction to apply said brakeshoe to said member with a braking force generated by said spring, said spring being stressed upon energization of said motor to retract said brakeshoe from said member; and

a brake-force controller comprising:

a brake-force sensor in the form of at least one strain-gauge measuring resistance disposed between said spring and said brakeshoe and varying in accordance with said braking force,

a command-variable resistance including a photoresponsive field-effect transistor having output terminals bridged by a parallel-connected fixed resistor, and an infrared light source of variable intensity juxtaposed with said field-effect transistor for controlling the command-variable resistance and selectively energizeable to vary the command-variable resistance on command, and

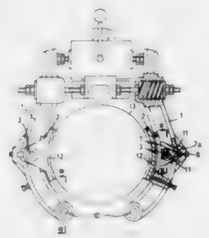
means connecting said resistances as respective branches in a Wheatstone bridge circuit connected to said control circuit for varying energization of said electric motor to control said braking force upon an imbalance of said bridge resulting from development of different resistance values in said branches from those at which said bridge is in balance.

4,805,741

ELEVATOR BRAKE

Johannes de Jong, Järvenpää, and Jouko Perttula, Hyvinkää, both of Finland, assignors to Kone Elevator GmbH, Baar, Switzerland

Filed Mar. 9, 1987, Ser. No. 23,274
Claims priority, application Finland, Mar. 10, 1986, 860963
Int. Cl.[4] F16D *66/00*; B66B *7/00*
U.S. Cl. 188—1.11 4 Claims



1. A torque-responsive brake comprising:

a brake drum;

at least two brake arcs;

brake shoes carried by respective ones of said brake arcs;

said brake shoes having attached thereto brake linings;

brake actuator means for urging said brake linings into braking engagement with said brake drum and for releasing said brake linings from said brake drum;

means for pivotally connecting each of said brake shoes to its respective brake arc;

said pivotal connection means comprising a pivot shaft extending through the respective brake shoe; and

torque-responsive means connected directly between each of said brake arcs and the respective pivot shafts for providing signals representing the torque in said brake.

4,805,742

CALIPER BRAKE

Masataro Sato, 191-banchi, Ooaza Ikenobo, Miki-cho, Kita-gun, Kanagawa, Japan

Filed May 6, 1987, Ser. No. 46,369
Claims priority, application Japan, Feb. 2, 1987, 62-22242
Int. Cl.[4] B62L *1/00, 3/00*
U.S. Cl. 188—24.11 4 Claims



1. A caliper brake comprising a first operating member provided with a pad adapted to come into slide contact with one of opposite side surfaces of a vehicle wheel, a second operating member provided with a pad adapted to come into slide contact with the other side surface of the wheel, and a stationary support shaft having an axis and pivotably supporting said first and second operating members such that the operating members straddle the wheel and have their pads resiliently biased in directions away from the wheel, one of the operating members being connected with an end of an outer cable while the other operating member being connected with an end of an inner cable projected from said outer cable,

further comprising means for restricting ranges of pivotal movements of both the members relative to said support shaft, said means including a restriction portion formed on said support shaft extending in an axial direction of the shaft at a position deviated from the axis of the shaft, said restriction portion being inserted through restriction holes formed in the operating members, said holes serving to make equal maximum distances between the respective pads and the wheel.

4,805,743

HANDBRAKE OPERATING LINKAGE FOR MULTI-UNIT RAIL CARS

Marvin G. Raine, Tualatin, Oreg., assignor to Gunderson, Inc., Portland, Oreg.

Filed Dec. 15, 1987, Ser. No. 136,189
Int. Cl.[4] B61H *13/00*
U.S. Cl. 188—47 13 Claims



1. In a railroad freight car having a pair of wheeled trucks located respectively at opposite ends thereof and brakes arranged to apply brake shoes to respective wheels on each of said trucks, a manual brake operating mechanism for mechanically applying said brake shoes to respective wheels on each of said trucks with effective braking force, in response to operation of a single manual brake-operating device, comprising:

(a) first shaft means located proximate a first end of said railroad car for transmitting torque;

(b) an intermediate brake lever pivotably mounted on said car proximate said first end thereof, said intermediate

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brake lever having respective first and second lever ends, said first lever end being connected through linkage to a truck brake mechanism on a respective one of said wheeled trucks located at said first end of said car;

(c) manually operable means for rotating said first shaft means through a predetermined angle and simultaneously applying force to said second lever end so as to pivot said intermediate brake lever in a direction required to apply said brake shoes to respective wheels on said one of said wheeled trucks located at said first end of said car;

(d) an arcuate tensioner mounted on said first shaft means for rotation therewith; and

(e) first tension transmitting means extending longitudinally of said car and having a first end attached to said tensioner and a second end operatively connected through intermediate means to apply operative force for applying respective ones of said brake shoes to respective wheels of the one of said wheeled trucks located at the other of said opposite ends of said car, said tensioner being so shaped and located on said first shaft means that it provides an effective lever arm about said first shaft means and perpendicular to said tension transmitting means which varies in effective length between maximum effective length provided when said manually operable means is in a brake-releasing position and a minimum effective length provided when said manually operable means is operated so that said brake shoes are applied to said respective wheels of each of said wheeled trucks with effective braking force.

4,805,744

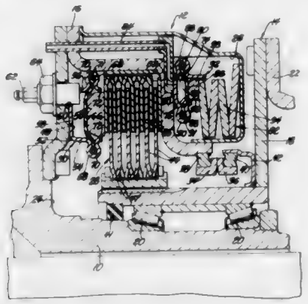
BRAKE ACTUATOR ASSEMBLY AND METHOD

William L. Pringle, 999 Lake Shore Rd., Grosse Pointe Shores, Mich. 48236

Filed Sep. 24, 1982, Ser. No. 422,705

Int. Cl.⁴ F16D *55/36, 65/24;* **F01B** *19/00;* **B60T** *13/00*

U.S. Cl. 188—71.5 **3 Claims**



1. A hydraulic brake actuator assembly (12) for selectively actuating a friction brake (28), said assembly comprising; first actuator means (30) responsive to fluid pressure from a hydraulic fluid source (100) for directly actuating the friction brake (28) as a service brake; second actuator means (32,32') in fluid communication with said first actuator (3) and having a brake-off condition for storing fluid therein and a brake-actuated condition for releasing the stored fluid to said first actuator means (30) to actuate the friction brake (28) as a parking brake; fluid control means for controlling said second actuator means (32,32') between said brake-actuated and brake-off conditions, said second actuator means (32,32') including an expandable first chamber (74,74') for storing the fluid when said second actuator means (32,32') is in said brake-off condition, said second actuator means (32,32') further including biasing means (92,92') for applying a biasing force against said first expandable chamber (74,74') to expel the fluid stored therein when said second actuator means (32,32') is in said brake-actuated condition, said first actuator means (30) including a second expandable chamber (48) in fluid communication with said first expandable chamber (74,74') to said second chamber (48) and engagement means (50) operatively connected to said second expandable chamber (48) for engaging the friction brake (28), said engagement means (50) comprising an annular engagement member (50) for reciprocating axial movement against the friction brake (28) in response to expansion of said first chamber (74,74'), whereby expansion of said second expandable chamber (48) in response to fluid pressure released from said first expandable chamber (74,74') moves said engagement means (50) to actuate the friction brake (28); said second actuator means (32) including substantially U-shaped in cross section as having a pair of spaced second legs (78) and a second base portion (80) therebetween and having at least one hydraulic fluid inlet (82) in fluid communication with said fluid inlet (62) of said first actuator (30), said second actuator means (32) further including an annular second diaphragm (86) fixedly mounted between said second legs (78) of said second casing (76) and spaced from said second base portion (80) thereof to define said first expandable chamber (74), said second diaphragm (86) engaging said biasing means (92).

4,805,745

SPOT-TYPE DISC BRAKE WITH A RADIALLY ACTING SPRING

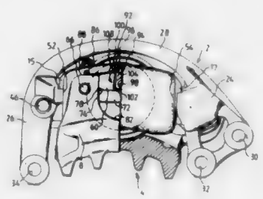
Radolf Thiel, Frankfurt am Main, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 23, 1987, Ser. No. 29,866

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1986, 3610104

Int. Cl.⁴ F16D *55/00, 65/40;* **B60T** *11/00*

U.S. Cl. 188—73.31 **2 Claims**



1. A spot-type disc brake for automotive vehicles comprising a brake carrier, a brake housing having two radial legs and an interconnecting bridge portion for straddling the rim of a brake disc and brake pads located in the housing adjacent the legs so as to be on either side of the brake disc, the brake housing being disposed in axially displaceable manner on the brake carrier and actuating means for actuating said brake, means for attaching one of said brake pads to the adjacent leg of the brake housing, said attaching means including at least one rigid attachment element engaging openings in the leg and in said one brake pad and a spring means fixedly secured to the brake pad is provided for bracing the brake pad in resilient abutment radially outward with bearing points provided on the brake housing, wherein the brake pad comprises at least one stop effective in the radial direction, and wherein the stop is formed for abutment with radially outwardly disposed front faces of said adjacent leg of said brake housing.

4,805,746

DISC BRAKE WITH SQUEAL PREVENTIVE MEANS

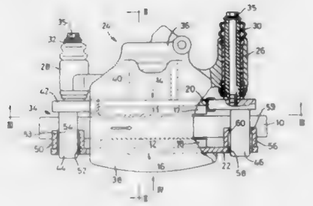
Masayoshi Katagiri, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 19, 1987, Ser. No. 109,448

Claims priority, application Japan, Nov. 17, 1986, 61-273111

Int. Cl.⁴ F16D *55/224*

U.S. Cl. 188—73.37 **14 Claims**



1. A disc brake for a vehicle, having a disc rotor rotating with a wheel of the vehicle, a pair of friction pads each including a friction member and a backing plate secured to a back surface of the friction member, an actuator device for forcing said pair of friction pads against opposite friction surfaces of said disc rotor, for frictional contacts of said friction members with said opposite friction surfaces, and a torque member which is secured to a fixed member of the vehicle such that said torque member is immovable relative to said fixed member and which supports said pair of friction pads movably toward and away from said opposite friction surfaces of said disc rotor, said torque member receiving, through said backing plates, tangential forces which act on said friction pads in a circumferential direction of said disc rotor during said frictional contacts of said friction members with said friction surfaces of the disc rotor; wherein the improvement comprises:

said backing plate of each of at least one of said pair of friction pads including a force-transmitting portion which contacts said torque member in said circumferential direction to transmit thereto the tangential force acting on the corresponding friction pad, at a first position defined by a first plane including the corresponding one of said opposite friction surfaces of said disc rotor and contains a second plane including the other friction surface of the disc rotor, said first position containing said first plane, said backing plate having no portion thereof which contacts said torque member in said circumferential direction lying in a second position defined by said first plane.

4,805,747

ARRANGEMENT FOR SUPPLYING COOLING AIR TO A BRAKE DISK

Wolfgang Moedinger, Weinstadt; Michael Preiss, Vaihingen/-Enz-Aurich, and Reinhard Lechner, Pforzheim, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jul. 23, 1987, Ser. No. 76,859

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1986, 3630334

Int. Cl.⁴ B60T *5/00;* **F16D** *65/84*

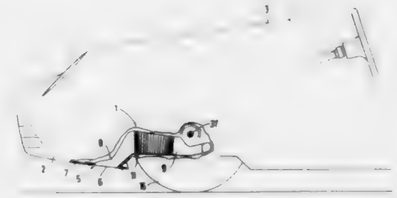
U.S. Cl. 188—264 A **12 Claims**

1. An air guiding duct arrangement for the feeding of cooling air to a brake disk at a vehicle wheel brake of a vehicle wheel, said air guiding duct arrangement having an air inlet opening disposed in a front end of a motor vehicle at a position in front of the vehicle wheel brake and an air outlet opening that is directed toward the wheel brake disk when in an in-use position on a vehicle, said air guiding duct arrangemnt comprising:

a plurality of rigid duct portions that are fixedly attachable at vehicle parts, at least one of said rigid duct portions being fixedly attachable to a vehicle part which moves relative to other vehicle parts in response to vehicle wheel and wheel brake movements in driving operations, and

flexible intermediate duct portions interconnecting the rigid duct portions in such a way that the rigid duct portions can be moved relative to one another during operation of the vehicle while maintaining a continuous duct from the air inlet opening to the air outlet opening,

wherein the rigid duct portions include first, second and third rigid duct portions, wherein said first rigid duct portion is fixedly attachable to a front vehicle part and



defines said air inlet opening at the forward end thereof, wherein the second rigid duct portion is fixedly attachable to a wishbone of a wheel suspension system for the vehicle wheel, wherein the third rigid duct portion is fixedly attachable to a guard plate for the brake disk, wherein a first of the flexible intermediate duct portions is interconnected between the first and second rigid duct portions, and wherein a second of said flexible intermediate duct portions is interconnected between the second and third rigid duct portions.

4,805,748

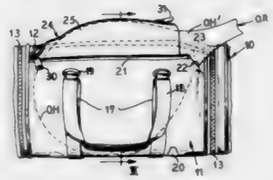
SPORTS DUFFLE BAG WITH HEIGHT EXPANSIBLE RACKET POCKET

Edward L. Gerch, Chicago, Ill., assignor to Kingpert International Corporation, Evanston, Ill.

Continuation-in-part of Ser. No. 158,901, Feb. 22, 1988, which is a continuation-in-part of Ser. No. 656,255, Oct. 1, 1984. This application May 9, 1988, Ser. No. 191,355

Int. Cl.⁴ A45C *7/00*

U.S. Cl. 190—103 **13 Claims**



1. A sports duffle bag which comprises a top opening tubular body having vertical side walls, a top opening slide fastener closed pocket on one of the sidewalls adapted to receive the head of a tennis racket or the like and having a top corner opening permitting the racket handle to project from the pocket in an upwardly inclined direction, a height expansion panel for said pocket having a pair of flaps suspended from the mouth of the top opening of the pocket below the slide fastener and a second slide fastener connecting the flaps along their lengths whereby the panel can be pulled above the pocket to increase the pocket height and the second fastener pulled into closed position above the corner opening to encase and seal the oversized head of an oversized tennis racket in the expanded

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pocket with the handle projecting through the same corner opening.

4,805,749
DUFFEL TYPE SPORTS BAG
Edward L. Gerch, Evanston, Ill., assignor to Kingport International Corporation, Evanston, Ill.
Filed Oct. 1, 1984, Ser. No. 656,255
Int. Cl.[4] A45C *3/00*
U.S. Cl. 190—111 11 Claims



1. In a tube-like sports bag of the type made of pliable material and including a main storage compartment having two-like shape opposed main compartment end panels and a first generally rectangular side wall being rolled for joinder along its opposed ends to the periphery of respective ones of said end panels for defining at least a portion of the boundaries of said main storage compartment therein, a first opening in said first side wall for providing access to said main compartment and first closure means mounted adjacent said first opening, means mounted on said side wall for user carrying of said bag;

a second rolled side wall extending laterally from one of said opposed end panels between said first side wall and one of said main compartment end panels, and a third like-shape end panel joined to said second side wall along an outward end thereof and enclosing same for forming a second compartment on said bag, a second opening in said second side wall for providing access to said second compartment and second closure means mounted adjacent said second opening; and

an improvement wherein said one main compartment end panel positioned between said main and said second compartments includes a third opening therein and a first expansible bag of flexible material secured along an open top edge thereof to the periphery of said third opening defining a first expansible chamber adapted to expand the size of at least one of said main and said second compartments on said bag.

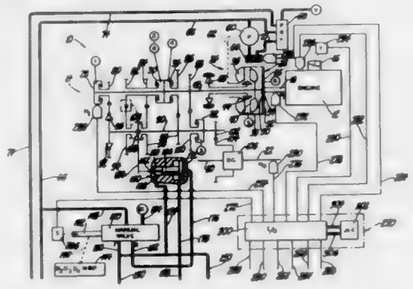
4,805,750
STEADY STATE SLIP DETECTION/CORRECTION FOR A MOTOR VEHICLE TRANSMISSION
Larry T. Nitz, Troy, Mich., assignor to Saturn Corporation, Troy, Mich.
Filed Sep. 28, 1987, Ser. No. 101,833
Int. Cl.[4] B60K *41/22*
U.S. Cl. 192—3.58 5 Claims

1. In a motor vehicle power transmission including a fluid operated transmission torque establishing device for transmitting torque between input and output shafts of the transmission, and a fluid pressure control mechanism for controlling the torque transmitting capacity of said torque establishing device in accordance with a pressure command, a method of operation for regulating the torque capacity of said torque establishing device during steady state operation of said transmission, comprising the steps of:

determining a pressure command for the fluid pressure control mechanism in accordance with a measure of the torque being transmitted through the torque establishing device;

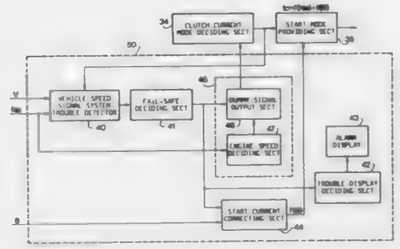
periodically generating a slip indication in relation to the cumulative amount of slippage of the torque establishing device;

measuring the time required for the slip indication to exceed a predetermined reference, and when said reference is exceeded:



increasing the commanded pressure in relation to the measured time if the measured time is less than a threshold defining a range of acceptable slippage, thereby to increase the torque transmitting capacity of said torque establishing device when the slippage thereacross is outside said acceptable range of slippage.

4,805,751
SYSTEM FOR CONTROLLING A CLUTCH FOR A MOTOR VEHICLE
Hiroya Ohkuma, Kagawa, and Ryuzo Sakakiyama, Tokyo, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 28, 1987, Ser. No. 43,433
Claims priority, application Japan, Apr. 30, 1986, 61-100321
Int. Cl.[4] B60K *41/02*
U.S. Cl. 192—0.076 5 Claims



1. In a system for controlling an electromagnetic clutch for a motor vehicle having an engine with a throttle valve operatively connected to an accelerator pedal, a transmission operatively transmitting the power of the engine through the clutch to wheels of the vehicle, a vehicle speed sensor for producing a vehicle speed signal in accordance with the vehicle speed, an engine speed sensor for producing an engine speed signal in accordance with the engine speed, an accelerator pedal switch for sensing depression of the accelerator pedal for producing an accelerator signal, a throttle position sensor for sensing opening degree of the throttle valve and for producing a throttle signal in accordance with the opening degree of the throttle valve, start mode providing means for providing a start mode for producing a start clutch current, at the depression of the accelerator pedal, which increases with increase of speed of the engine, and which is supplied to the electromagnetic clutch, drag mode providing means for providing a drag mode for producing a drag clutch current which is supplied to the electromagnetic clutch to produce a drag torque on the electromagnetic clutch, lock-up mode providing means for providing a lock-up mode for producing a lock-up clutch current which is supplied to the electromagnetic clutch to lock-up the electromagnetic clutch, and mode deciding means for deciding one of the modes operatively responsive to the accelerator signal, vehicle speed signal, and engine speed signal, the improvement in the system comprising:

trouble signal producing means responsive to the vehicle speed sensor, engine speed signal and an output signal of the mode deciding means for producing a trouble signal upon absence of the vehicle speed signal from the vehicle speed sensor for a first predetermined period in the start mode at engine speed higher than a first predetermined speed;

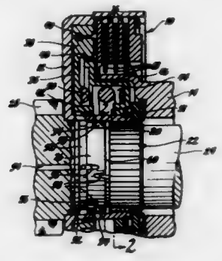
fail-safe signal producing means responsive to the trouble signal for producing a fail-safe signal when the trouble signal continues for a second predetermined period;

engine speed deciding means responsive to the engine speed signal for producing an output signal when the engine speed is higher than a second predetermined speed;

dummy signal producing means responsive to the fail-safe signal and the output signal of the engine speed deciding means for producing a dummy signal; and

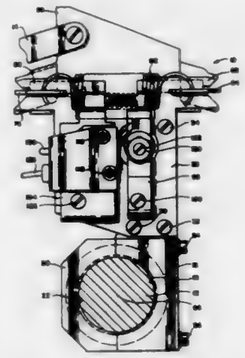
said mode deciding means responsive to the dummy signal for deciding the start mode in spite of releasing of the accelerator pedal so as to provide an engine brake effect when the accelerator pedal is released.

4,805,752
VARIABLE CAPACITY TORQUE TRANSMITTER
John D. Malloy, Troy, and John E. Mahoney, West Bloomfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 21, 1988, Ser. No. 170,773
Int. Cl.[4] F16D *25/063, 25/14*
U.S. Cl. 192—85 AA 2 Claims



1. A variable capacity fluid operated friction torque transmitting means comprising; torque transmitting means having a plurality of substantially equally spaced teeth disposed thereon; a hub member having a plurality of substantially equally spaced teeth disposed thereon meshing with the teeth on said torque transmitting means, the teeth being spaced such that relative angular displacement is permitted within a limited extent between said torque transmitting means and said hub; an output member; a plurality of friction discs disposed between said hub member and said output member with alternate ones of said discs being drivingly connected with respective ones of said hub member and said output member; piston means slidably disposed in said hub member and cooperating therewith to form a fluid apply fluid chamber having a predetermined effective area; a wall member positioned on said hub member, said piston and said wall member cooperating to provide an opposing fluid chamber on the opposite side of said piston means from said apply fluid chamber and having a smaller effective area than said predetermined effective area of said apply fluid chamber; first and second fluid passage means formed in said torque transmitting means; and valve means for connecting said first fluid passage means to both fluid chambers when said torque transmitting means and said hub member are at one end of the permitted relative angular displacement and for connecting said first passage means to said apply fluid chamber and for connecting said second passage means to said opposing fluid chamber when said torque transmitting means and said hub member are at another end of the permitted relative angular displacement.

4,805,753
BI-DIRECTIONAL SELF-RESETTING FORCE TRANSMITTING OVERLOAD ARM
Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 29, 1982, Ser. No. 454,199
Int. Cl.[4] H01H *21/28*
U.S. Cl. 192—150 9 Claims



1. Drive coupling apparatus comprising:

an input member configured for coupling to a power drive;

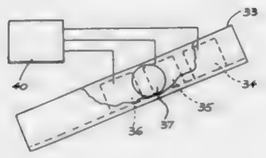
an output member configured for coupling to a work load;

means for mounting said members for relative movement of at least a given portion thereof along parallel paths, at least said given portion of said members being extended in a direction parallel to said path; and

means for biasing said extended portion of said members into a given location overlying each other and for resisting displacement of said members therefrom along said parallel path, said biasing means including a pair of yokes mounted respectively at the extended portions of said input and output members and tensioning means for biasing said yokes toward each other and into engagement with said extended portions so as to urge said input and output members toward said given location, said tensioning means including a pair of tension springs mounted alongside the exterior surfaces of said extended portions of said input and output members in connection with one transverse end of each of said yokes.

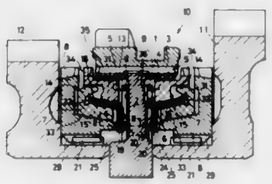
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4,805,754
COIN DETECTION DEVICE
Geoffrey Howells, Portsmouth, England, assignor to Kabanos Pty. Limited, Annandale, Australia
PCT No. PCT/AU86/00119, § 371 Date Dec. 30, 1986, § 102(e) Date Dec. 30, 1986, PCT Pub. No. WO86/06264, PCT Pub. Date Nov. 6, 1986
PCT Filed May 1, 1986, Ser. No. 44,496
Claims priority, application United Kingdom, May 2, 1985, 8511163
Int. Cl.[4] G07D 5/08
U.S. Cl. 194—317 12 Claims



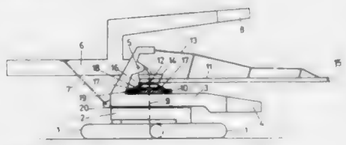
1. A coin detecting device which comprises a track which is formed at least in part from a non-conductive material and which defines a path along which a coin can move under the influence of gravity, three spaced-apart metal plates located on a portion of the track, the plates being disposed so as to be passed one after the other as a coin moves down the track and the plates being spaced apart in the direction of movement of the coin by a distance such that the coin will initially overlap first and second ones of the plates to form a first pair of series capacitors and, thereafter, will overlap the second and third plates to form a second pair of series capacitors, an insulating material covering the plates for preventing electrical contact between the plates and the coin, a pulse generator for applying voltage pulses to the second plate, and a detector circuit connected in circuit with the first and third plates, the detector circuit being arranged to provide an output signal indicative of a predetermined change in the capacitance of the circuits which incorporate the first and second pair of capacitors responsive to movement of the coin past the pairs of plates, and the detector circuit including means for timing the period during which the coin travels a predetermined distance as it moves along the track and means for producing a signal which constitutes a measure of the velocity of the coin during its movement over the predetermined distance.

4,805,755
SYNCHRONIZER
Takashi Fukumoto, and Kiyoshi Anzai, both of Fujisawa, Japan, assignors to Isuzu Motors Limited, Shinagawa, Japan
Filed Oct. 30, 1987, Ser. No. 115,626
Claims priority, application Japan, Nov. 14, 1986, 61-269800
Int. Cl.[4] F16D 23/08
U.S. Cl. 192—53 F 3 Claims



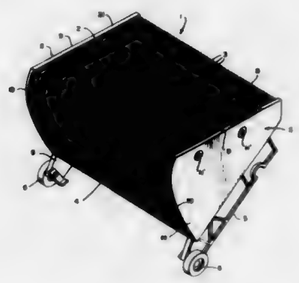
1. A synchronizer comprising:
a clutch hub capable of transmitting torque;
a sleeve which is coupled to the outer periphery of said clutch hub to drive it, and is allowed to move in the axial direction thereof;
a block ring which rotates in engagement with said clutch hub, and is allowed to move in the axial direction thereof, and said block ring having dog teeth formed on an outer periphery thereof to engage with said sleeve to drive it, and further having a frictionally coupled tapering surface formed in the inner periphery thereof;
a rotatable synchromesh cone which is arranged on the side of said clutch hub, and has a frictionally coupled tapering surface formed along an outer periphery thereof and dog teeth capable of engaging with said sleeve to drive it, and further has a plurality of recesses formed in the peripheral end surface opposed to said clutch hub; said recesses being opened toward a side surface of said clutch hub and having tapered surfaces that are tilted so that said recesses expand circumferentially toward the side surface of said clutch hub.
an inside ring which has an inner tapering surface formed on the inner periphery thereof and an outer tapering surface formed on the outer periphery thereof, said inner tapering surface being in frictional contact with said frictionally coupled tapering surface of said synchromesh cone; and
an outside ring capable of moving in the axial direction thereof having an outer tapering surface that can be brought into frictional contact with said frictionally coupled tapering surface of said block ring and an inner tapering surface that can be brought into frictional contact with said outer tapering surface of said inside ring, and further having a side surface that extends inwardly in the radial direction to oppose the side surface of said clutch hub as well as locking claws that are inserted in said recesses of said synchromesh cone at the end of said side surface of said outside ring to come into slide contact with said tapered surfaces of said recesses.

4,805,756
LOADING DEVICE, IN PARTICULAR BUCKET-WHEEL EXCAVATOR
Horst Kolleth, Zeltweg, and Andreas Wieczorek, Leoben, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria
Filed Sep. 8, 1987, Ser. No. 93,677
Claims priority, application Austria, Sep. 5, 1986, 2396/86
Int. Cl.[4] B65G 65/20
U.S. Cl. 198—314 9 Claims



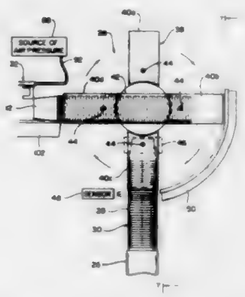
1. A bucket-wheel excavator, comprising:
a substructure;
a platform mounted on said substructure for swiveling, relative to the substructure, about a substantially vertical axis;
a bucket-wheel boom cantilevered at a rear end thereof to said platform and carrying a bucket-wheel at a forward end thereof;
a first continuous conveyor means, provided on said bucket-wheel boom for conveying material received from the bucket-wheel, and spillingly discharging said material off said rear end of said bucket-wheel boom;
an elongated bridge having a forward end thereof by mounting means onto said platform for swiveling mounted about a substantially vertical axis;
a second continuous conveyor means, provided on said and having one end positioned for accepting material spillingly discharged off said first continuous conveyor means and a discharge end longitudinally spaced along said bridge from said forward end of said bridge;
said mounting means including a superstructure fixed on said platform and a turntable connected with said bridge and journalled for rotation on said superstructure;
said turntable including at least one raking protrusion extending radially in superimposed juxtaposition with a generally upwardly-facing surface of said superstructure, for raking off of said surface of said superstructure, as said turntable turns about said substantially vertical axis, excavated debris which, in spilling from said first continuous conveyor means at said rear end of said bucket-wheel boom, has missed acceptance by said second conveyor means and, instead, fallen onto said superstructure.

4,805,757
ESCALATOR STEP SIDE PLATE
John R. Wilcox, 7534 Ivory La., Rockford, Ill. 61108
Filed Dec. 31, 1986, Ser. No. 947,943
Int. Cl.[4] B66B 23/12
U.S. Cl. 198—333 1 Claim



1. An escalator step having side plates adapted to pass in close proximity to stationary skirt panels, said step having opposite side walls normally spaced inwardly from said skirt panels, said side plates each comprising:
a unitary substantially planar member overlying one said step side wall and having an outer face presenting a low co-efficient of friction surface juxtaposed one said skirt panel,
each side plate including a pair of counterbores, disposed away from its corresponding stationary skirt panel,
a bottom wall of each said counterbore extending away from its corresponding stationary skirt panel, said bottom wall having an aperture,
a pair of tie rods extending between each pair of side plates and having end portions thereon,
said end portion of each tie rod extending through its corresponding aperture in said bottom wall and into its corresponding counterbore,
push-on fastener means engaging each tie rod end portion and its corresponding bottom wall whereby each side plate is securely fastened against its corresponding side wall,
said step including an uppermost cleated tread, and
each of said side plates including a top tread edge having an inwardly offset arm overlying said uppermost cleated tread.

4,805,758
CROSSED TURRET CUP FEEDER
James Dominico, West Paterson; Paul Cino, Clifton, and Carlos E. Fardin, Wayne, all of N.J., assignors to Van Dam Machine Corporation, West Paterson, N.J.
Filed Jul. 8, 1987, Ser. No. 71,099
Int. Cl.[4] B65G 47/08
U.S. Cl. 198—444 7 Claims



1. Apparatus for supplying rows of stacked containers to a feeding assembly of a container decorating apparatus, said feeding assembly intermittently supplying each container on a respective mandrel assembly of a mandrel wheel of the container decorating apparatus, said apparatus for intermittently supplying comprising:
rotatable, hollow, crossed turret means for supplying a first row of stacked containers to said feeding assembly and for automatically supplying a subsequent row of stacked containers in stacked relation on said first row after a level of said first row has decreased to a lower predetermined level and before a last container of said first row has been supplied on a respective mandrel assembly;
sensing means for sensing when the level of said first row has decreased to said lower predetermined level;
rotating means for rotating said crossed turret means in response to said sensing means to supply said subsequent row of stacked containers in stacked relation on said first row of stacked containers; and
supply means for intermittently supplying a row of stacked containers to said crossed turret means after a level of said subsequent row of stacked containers had decreased to a higher predetermined level which is above said lower predetermined level.

4,805,759
INSTALLATION AND METHOD FOR HANDLING DELICATE OBJECTS IN AN ATMOSPHERE HAVING A CONTROLLED DUST CONTENT
André Rochet, Meylan; Guy Dubois, St. Etienne de Crossey; Louis Faure, Fontaine, and Alain Lalanne, Isnier, all of France, assignors to Societe pour l'Etude et la Fabrication de Circuits Integres Speciaux EFCIS, Grenoble, France
PCT No. PCT/FR86/00112, § 371 Date Dec. 8, 1986, § 102(e) Date Dec. 8, 1986, PCT Pub. No. WO86/06245, PCT Pub. Date Oct. 23, 1986
PCT Filed Apr. 2, 1986, Ser. No. 2,631
Claims priority, application France, Apr. 12, 1985, 85 05561
Int. Cl.[4] B65G 47/00
U.S. Cl. 198—346.1 12 Claims

1. An installation for handling and processing delicate objects in a dedusted environment adapted to be placed in a room, comprising:
means for introducing dedusted air into said room proximate to an upper part of said room and means for removing air from said room at a lower part thereof so as to induce a

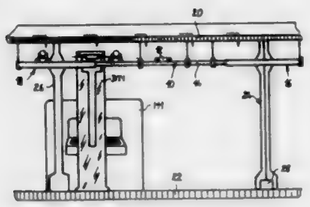
VOL 1099 ISS 3 FE 21 1989 UMI

substantially vertically downward flow of laminar air in the room from said upper part to said lower part,

a plurality of motorless carriages having cassette means removably received in said carriages for accommodating a group of objects to be processed,

rails defining a closed-loop path located above work stations for processing said objects, said carriages having wheels in rolling contact with said rails,

an endless traction belt adapted to be driven at constant speed parallel to said rails and having means connecting said carriages to said traction belt at spaced locations along said traction belt, said rails, said traction belt, and said carriages being located in said upper part of said



room, said rails and said traction belt being located substantially immediately adjacent said means for introducing dedusted air into said room so as to be exposed to substantially vertically downward flowing laminar air free from disturbances in air flow due to said work stations and any contaminants generated by said work stations,

motor drive means, for driving said traction belt, located in said lower part of said room, and

automatic transfer tool means disposed in proximity to said rails for picking up cassette means from said carriages and delivering said cassette means to said work stations and/or moving said cassette means from said work stations and removing said cassette means from said work stations and returning them to said carriages.

4,805,760

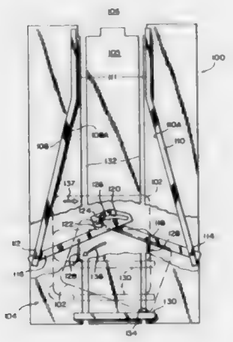
PACKAGE POSITIONING APPARATUS AND METHOD

Fritz F. Treiber, Centerville, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Aug. 17, 1987, Ser. No. 86,121

Int. Cl.[4] B65G 47/26

U.S. Cl. 198—456 **16 Claims**



1. Article positioning apparatus for a machine wherein articles are conveyed into said machine along an article entryway, said article positioning apparatus comprising:

first and second convergent article guide members mounted along the sides of said entryway for pivotal movement above and into said entryway for engaging and positioning articles being conveyed along said entryway;

first and second levers connected to said first and second guide members, respectively, beneath said entryway; and

releasable locking means incorporated into the distal ends of said first and second levers for maintaining said article guide members in an article positioning orientation until both of said first and second article guide members are engaged by an article upon substantial positioning of said article, said releasable locking means comprising a release slot and a locking notch extending from one side of one end of said slot in said first lever, a pin extending from said second lever for engaging said slot and locking notch, and resilient means for biasing said levers, and hence, said package guide members, to an article positioning orientation wherein said pin engages said locking notch where by an article moving in said entryway will be positioned by engaging one of said guide members which is restrained from movement by said pin and said locking notch until said article engages both guide members to remove said pin from said locking notch for movement along said slot.

4,805,761

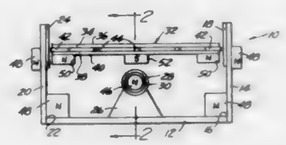
MAGNETIC CONVEYOR SYSTEM FOR TRANSPORTING WAFERS

John W. Totsch, R.R. 1 Box 1484A, Sheldon, Vt. 05483

Filed Jul. 14, 1987, Ser. No. 72,896

Int. Cl.[4] B05G 35/00

U.S. Cl. 198—619 **2 Claims**



1. A conveyor system for transporting integrated circuit wafers on a platform to and from different work stations in a clean controlled environment, comprising:

an elongated rail including a tube having opposite ends for directing the wafers along a predetermined path between said work stations, each said rail, tube and platform being comprised of a nonmagnetic material,

first magnetic means connected to the rail and the platform for producing a piston magnet to magnetically repulse one another and thereby form a magnetic cushion levitating the platform above the rail,

second magnetic means connected to said platform and centered with said piston magnet for magnetically coupling the platform to the tube,

drive means for selectively driving the piston magnet in the tube between said ends whereby the platform transports wafers between the work stations;

said first magnetic means comprising a first magnet on each lateral side of the platform, and a second magnet extending along each side of the rail each being adjacent to one respective first magnet, said second magnetic means including a third magnet medially of said first magnets and adjacent to the piston magnet,

a runner extending along the interior surface of each sidewall adjacent to one lateral side of the platform, the lateral sides of the platform and each runner being of Teflon whereby to reduce contamination resulting from the platform contacting the runners, and

said platform comprising a pair of longitudinal guide plates sandwiched between a pair of planar sheets, each guide

plate extending outwardly from the sheets to define the lateral sides and terminating adjacent to its respective runner.

4,805,762

RECIPROCATING DISCHARGER

Anthony W. Hooper, Montreal, and Andre Martel, Fleurimont, both of Canada, assignors to Uniweld, Inc., Montreal, Canada

Continuation-in-part of Ser. No. 913,472, Sep. 30, 1986, Pat. No. 4,763,777. This application Mar. 2, 1988, Ser. No. 163,009

Int. Cl.[4] B65G 25/08

U.S. Cl. 198—747 **9 Claims**



1. In a discharger assembly for discharging solid materials from the underside of a pile including at least one stoker rod extending beneath the pile, a thrust member fixedly mounted adjacent one end of the stoker rod, a stationary hydraulic cylinder mounted on the outer face of said thrust member remote from the stoker rod, a piston reciprocating within said cylinder connected to a piston rod, said piston rod being in adjoining alignment with said stoker rod and having the inner end thereof directly connected to the one end of said stoker rod, said thrust member including a frame having a width greater than the length of the stroke of the piston rod whereby the piston rod does not extend outside the frame during reciprocation thereof to prevent exposure of the piston rod to the discharging solid material, a hydraulic system for said stationary hydraulic cylinder comprising:

a hydraulic oil reservoir positioned above the thrust member,

an integral hydraulic power unit mounted on top of the hydraulic oil reservoir with an electric motor directly coupled to a variable flow, reversible piston type pump connected in a closed loop hydraulic circuit with the cylinder, and

an automatic reversing means to reverse flow of hydraulic oil to the cylinder after each stroke.

4,805,763

PASSENGER CONVEYOR GUIDE ARRANGEMENT

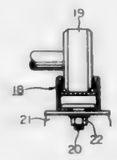
Shigeharu Kitamura, and Kazuhiko Sugita, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jun. 25, 1987, Ser. No. 66,198

Claims priority, application Japan, Jun. 30, 1986, 61-153408

Int. Cl.[4] B66B 23/12

U.S. Cl. 198—332 **9 Claims**



1. A guide arrangement of a passenger conveyor comprising:

a guide rail which supports and guides step rollers mounted on passenger conveyor steps; and

a fastener including a nut and a bolt having a threaded shank and a substantially rectangular head which fixedly fastens said guide rail to a conveyor main frame;

said guide rail including:

first means providing a bottom guide surface for engaging a tread of the step rollers in a rolling contact relationship;

second means providing side guide surfaces rising from opposite sides of said bottom guide surface for engaging sides of the step rollers to limit lateral movement of the step rollers, said bottom guide surface and said side guide surfaces together forming a substantially U-shaped cross section;

side plates extending from said side guide surfaces at opposite sides of said bottom guide surface in a direction substantially perpendicular to said bottom guide surface; and

in-turned portions extending from said side plates in a direction substantially parallel to said bottom guide surface and towards each other to form a slit between inner edges of said in-turned portions through which said rectangular head of said bolt passes in a first orientation, and said bolt being rotatable from the first orientation to a second orientation at which the inner edges of said in-turned portions engage a portion of said rectangular head of said bolt and lock said bolt against rotation as said nut is turned on said threaded shank and fastens said guide rail on said conveyor frame.

4,805,764

CHAIN CONVEYOR, A CONVEYOR CHAIN AND A BEND SEGMENT FOR THE TRACK OF SUCH CHAIN CONVEYOR

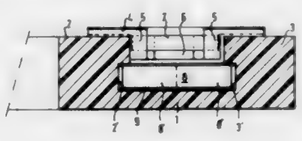
George J. van Zijderveld, Jr., 's-Gravenzande, Netherlands, assignor to M.C.C. Nederland B.V., Gravenzande, Netherlands

Filed Mar. 31, 1988, Ser. No. 176,143

Claims priority, application Netherlands, Apr. 6, 1987, 8700801

Int. Cl.[4] B65G 17/06, 23/18

U.S. Cl. 198—805 **16 Claims**



1. A chain conveyor comprising a track including at least one bend zone and a conveyor chain, said track comprising two spaced parallel rails over which the chain can move, said chain having links presenting a substantially rectangular carrying surface made of synthetic plastics material and a connecting system situated below said carrying surface and including at least two spaced eyes on one side of the link, at least one eye situated intermediate said spaced eyes on the opposite side of the link, and a hinge pin for hinging adjacent links together, said hinge pin being embraced by the at least two spaced eyes connected to one of the links and the at least one eye situated intermediate said spaced eyes and connected to an adjacent link, the carrying surfaces, the hinge pins and the hinge eyes being designed so that the chain is capable of flexing not only about the hinge pins but also in the plane of transport defined by the carrying surfaces of the successive links, and guide surfaces depending from the underside of the carrying surfaces for guiding the chain laterally relative to the rails, characterized in that the connecting system of the links consists at least in part of a ferromagnetic material, that, exclusively in the bend zones of the track, in the space between the two rails, under the connecting system of the links, means are provided for generating a magnetic field, and that the maximum perpendicular distance between the guide surfaces formed on the carrying surfaces of the links is shorter than the minimum

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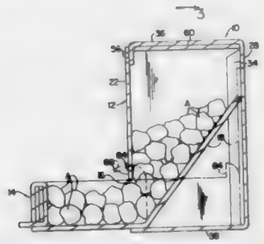
perpendicular distance between the guide surfaces formed on the rails.

4,805,765

DISPENSING PACKAGE FOR SMALL ARTICLES

Charles G. Barrett, 247 Neptune Dr., Groton, Conn. 06340, and James B. Malloy, 73 Keeney Ave., West Hartford, Conn. 06107

Filed Jan. 5, 1988, Ser. No. 140,817
Int. Cl.⁴ B65D *5/38, 5/36*
U.S. Cl. 206—45.15 **20 Claims**



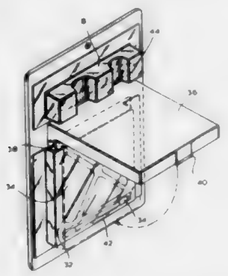
1. A dispensing package comprising a container, means for defining a drawer opening in a lower frontal portion of said container, a drawer supported within said lower portion for movement from a closed position wherein said drawer is disposed within said container to an open position wherein said drawer projects from said container, and means defining a hopper within said container when said drawer is in its open position for directing articles disposed within the upper portion of said container into said drawer and including a chute wall disposed within said container and extending above said drawer, said chute wall being disposed generally adjacent an associated wall of said container when said drawer is in its closed position, and means for moving said chute wall to another position wherein it is forwardly and downwardly inclined toward said drawer in response to movement of said drawer to its open position, said chute wall cooperating with associated portions of the walls of said container to define said hopper.

4,805,766

DISPLAY PACKAGE FOR A COSMETIC ARTICLE

Frank Garcia, Brooklyn, N.Y., assignor to Arthur Matney Co., Inc., Brooklyn, N.Y.

Filed Mar. 14, 1988, Ser. No. 167,410
Int. Cl.⁴ B65D *73/00*
U.S. Cl. 206—45.34 **12 Claims**



1. A display package for a cosmetic article, which comprises:

a support backing having a display surface;

a first pre-formed blister mounted on the display surface of the support backing, the first pre-formed blister having a main blister portion which is raised from the display surface, and an edge flange joined to the main blister portion and secured to the display surface, the main blister portion having an open side and defining a pocket for receiving a cosmetic article therein and for securing the article to the support backing; and

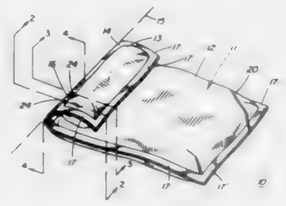
a second pre-formed blister mounted on the display surface of the support backing, the second pre-formed blister having a main blister portion which is raised from the display surface and an edge flange joined to the main blister portion of the second blister and secured to the display surface, the second pre-formed blister being situated on the display surface adjacent to the open side of the first pre-formed blister such that the second pre-formed blister forms an obstruction to the removal of the cosmetic article from the first pre-formed blister through the open side thereof.

4,805,767

PACKAGE SYSTEM

Duncan A. C. Newman, 78 Glendora Ave., Toronto, Ontario, Canada M2N 2W1

Filed Oct. 19, 1987, Ser. No. 110,178
Claims priority, application Canada, Jun. 18, 1987, 540085
Int. Cl.⁴ B65D *25/08*
U.S. Cl. 206—219 **11 Claims**



1. A package system for mutually mixing a plurality of materials separately contained in hermetically sealed relation, comprising in combination:

pouch means having compliant side walls comprising a pair of facing coplanarly disposed film strips each including a heat sealable interior lamina and a non-heat sealable exterior lamina coplanarly bonded thereto, the interior laminae being heat sealed along a common boundary and adjacent the peripheral edges thereof to define first and second storage chambers in the form of a flattened tube, the exterior laminae being substantially impervious to the respective vapors of the materials stored in the chambers and to the effects of ambient air from without on such materials, and the common boundary comprising a portion transverse to the long axis of the tube wherein the facing surfaces of the interior laminae are sealed together in a common plane with an unsealed portion defining a flexible narrow flattened conduit communicating the chambers across the common boundary;

a fold formed in the common boundary, said fold being disposed on a line placed transversely of the conduit for closing same by forming a king thereacross to initially isolate the respective chambers for storing the materials therein and subsequently opening the conduit by flattening the fold to remove the kink and intercommunicating said chambers for controllably combining the separated materials and mixing same by kneading the side walls; and

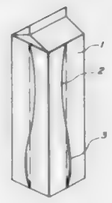
at least one aperture disposed in one strip on each side of the fold line such that corresponding pairs of apertures enter into registry within the fold, whereby the heat sealable lamina of the other strip is communicable through the corresponding pairs of apertures to permit heat sealing therethrough for maintaining the fold to effect closure of the conduit.

4,805,768

PAPER CONTAINER FOR LIQUID SEALED WITH GAS IN HEAD SPACE, METHOD OF FILLING GAS AND APPARATUS FOR FILLING GAS

Yoshichi Nishiguchi, and Kazuo Suzuki, both of No. 12-1, Yurakucho 1-Chome, Chiyoda-Ku, Tokyo, Japan

Continuation of Ser. No. 793,272, Oct. 29, 1985, abandoned. This application Sep. 17, 1987, Ser. No. 96,786
Claims priority, application Japan, Nov. 2, 1984, 59-230322; Nov. 6, 1984, 59-233080
Int. Cl.⁴ B65D *85/72*
U.S. Cl. 206—213.1 **2 Claims**



1. A gas-tightly sealed container, comprising:

walls defining said container having an inside volume; and

at least one wall adapted to be flexed inwardly solely upon a reduction in pressure of said inside volume of said container to form an inward flexure, said container having a liquid and a gas sealed therein and said inside volume of said container being greater than the volume of the liquid such that a head space is formed between an upper surface of the liquid and a top of said container, said gas occupying the head space in said container and consisting essentially of a member selected from the group consisting of carbon dioxide and mixtures of carbon dioxide with nitrogen, wherein the volumetric ratio of carbon dioxide to nitrogen in the head space is from 100:0 to 30:70;

wherein, dissolution of said carbon dioxide in said liquid reduces the pressure of said inside volume of said container thereby forming said inward flexure along an upper portion of said wall, said inward flexure providing an indication of proper gas substitution and proper sealing of said container and the absence of pinholes in said container.

4,805,769

COMPACT DISC SECURITY HOLDER

Joseph R. Soltis, Shoreview, and Robert E. Montrose, Plymouth, both of Minn., assignors to Liberty Diversified Industries, New Hope, Minn.

Filed Mar. 28, 1988, Ser. No. 174,197
Int. Cl.⁴ B65D *85/30*
U.S. Cl. 206—309 **16 Claims**

1. A compact disc security holder to engagingly receive at least one of a plurality of different compact disc display packages, said compact disc security holder comprising:

a base section, said base section including a pair of opposing side walls and a pair of opposing end walls, each said end wall connected to and extending between each of said side walls, each said side wall defining a lower segment having a top edge and a bottom edge and a height measured therebetween, and a raised segment having a top edge and a bottom edge and a height measured therebetween which is greater than said height of said lower segment, said lower segment of each said side wall of said base section having a length, said side walls and said end walls of said base section defining an interior region of the compact disc security holder;

a lid member, said lid member having a pair of opposing side walls, said side walls having a pair of opposing ends and a length measured therebetween, said lid member being hingedly connected to the base section adjacent one of the end walls thereof and being pivotable between a closed position whereat each of said side walls of said lid member closely confronts one of the side walls of the base section, and an open position generally displaced from said closed position, each said side wall of said lid member having a length being generally equal to or less than the length of the lower segment of the side wall of the base section confronting said side wall of said lid member when said lid member is pivoted to said closed position;

securing means for engagingly securing the lid member in close confronting contact with the base section when the lid member is pivoted to the closed position;

a top wall connected to and extending between the side walls of the lid member;

a bottom wall connected to and extending between the side walls of the base section, said bottom wall and the top wall at least partially enclosing the interior region of the compact disc holder adjacent the lower segment thereof when the lid member is pivoted to the closed position;

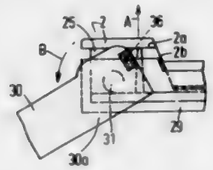
at least one tab extending partially inwardly from the top edge of the raised segment of the base section; and

at least one tab extending inwardly from the bottom edge of the raised segment of the base section, said tab extending partially inwardly from the bottom edge of the raised segment of the base section continuously enclosing the interior region of the compact disc holder adjacent the raised segment thereof;

whereby at least one of the plurality of different compact disc display packages may be selectively inserted and received within the interior region of the compact disc holder adjacent the lower segment thereof when the lid member is in the open position, at least a portion of the compact disc display package being slidably receivable within the partially enclosed portion of the interior region of the base section adjacent the raised segment thereof, with the lid member being pivotable to the closed position and securable thereat.

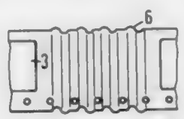
VOL 1099 ISS 3 FEB 21 1989 UMI

4,805,770
CASSETTE WITH TRAY EJECTION MEANS
Hermann Grobecker, Garbsen, Fed. Rep. of Germany; Gilbert E. Mestdagh, Zonhoven, Belgium, and Masaaki Ito, Osaka, Japan, assignors to Polygram International Holding B.V., DN Baarn, Netherlands
Continuation of Ser. No. 816,547, Jan. 6, 1986, Pat. No. 4,722,439. This application Oct. 16, 1987, Ser. No. 109,806
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1985, 3500323.5; European Pat. Off., Oct. 2, 1985, 85112438.8
Int. Cl.[4] B65D *85/30*
U.S. Cl. 206—309 7 Claims



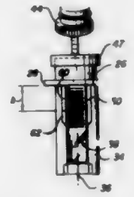
1. A combination of a storage cassette comprising a bottom and a pivotably connected lid with a removable tray, adapted to be inserted into said bottom, which tray has a disc receiving recess, retaining means for retaining an information disc in the recess and a grip member at one end characterized in that the lid is provided with at least one push-up projection which pushes the tray up from the bottom at the location of the grip member after a pivotal movement of the lid through more than 180°.

4,805,771
BELT FOR MACHINE DELIVERY OF PIECE GOODS, ESPECIALLY ELECTRICAL COMPONENTS AND MODULES IN AUTOMATIC CIRCUIT BOARD ASSEMBLY MACHINES
Hans Hein, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jul. 17, 1987, Ser. No. 74,936
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1986, 3624185
Int. Cl.[4] B65D *85/38, 85/42*
U.S. Cl. 206—332 12 Claims



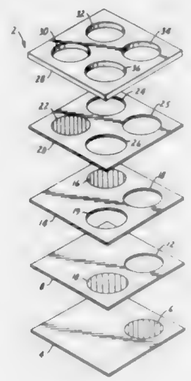
1. Belt assembly for machine delivery of piece goods, comprising a carrier belt having feed holes formed therein, said carrier belt having relatively stiff zones with throughs formed therein at regular intervals for receiving piece goods, said carrier belt having relatively flexible folding zones free of said throughs disposed at fixed intervals, and said folding zones including means for permitting said carrier belt to fold through 180° without strain, whereby a multiplicity of said carrier belts can be stacked to form an ammo pack.

4,805,772
ADAPTORS FOR USE WITH VARIOUS CONTAINERS BEARING BAR CODE LABELING
James D. Shaw, Hilton, and Michael P. Tarzynski, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 26, 1988, Ser. No. 160,625
Int. Cl.[4] B65D *81/30*
U.S. Cl. 206—443 7 Claims



1. A tube adaptor for accommodating differently-sized containers in a tray for aspirating sample from such containers with positive sample identification, the adaptor comprising
means for holding a container within the adaptor;
means permitting the scanning through the adaptor, of an identification label on such a container;
locating means for restraining said adaptor within a tray, against rotation therein;
and means on said adaptor for generating a signal indicative of the size of the container held by the adaptor.

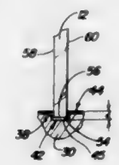
4,805,773
LAMINATE MULTIMEDIA SAMPLING DEVICE
Gerhan J. Sabongi, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 2, 1988, Ser. No. 162,897
Int. Cl.[4] B65D *73/00*
U.S. Cl. 206—489 14 Claims



1. A device for providing a number of samples removable by pressure or abrasion comprising:
(a) a spacer layer having a thickness of between 0.5 and 15 mm and at least two holes therein,
(b) a topmost carrier layer having at least one pressure or abrasion removable sample thereon, said carrier being secured to said spacer and said at least one sample aligned with one of said at least two holes in said spacer layer, and

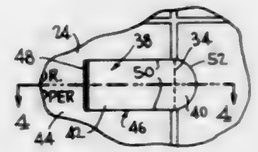
said topmost carrier layer having a hole therein which is aligned with another of said at least two holes in said spacer layer, and
(c) a next topmost carrier layer having at least one pressure or abrasion removable sample thereon, said next topmost carrier being secured to said topmost carrier and said at least one pressure or abrasion removable sample on said next topmost layer being aligned with said another of said at least two holes in said spacer layer.

4,805,774
SUPPORT LOG FOR SHIPPING SHEET MATERIAL
John W. Salisbery, 31746 Stanton Ctr., Farmington Hills, Mich. 48018
Filed Aug. 27, 1987, Ser. No. 90,287
Int. Cl.[4] B65D *85/48*
U.S. Cl. 206—454 5 Claims



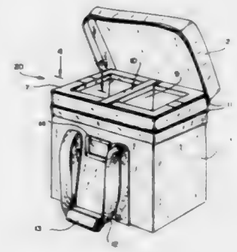
1. A device for storage and transportation of a plurality of sheet members in a container, each of said plurality of sheet members having a top surface, a bottom surface and a pair of side surfaces, said device comprising:
an elongated log member having a base portion and at least one arm portion, said at least one arm portion having a plurality of spaced apart elongated slots, each of said plurality of slots being defined by a pair of parallel surfaces and a bottom surface, said pair of parallel surfaces spaced apart a predetermined width to abut said pair of side surfaces of each of said plurality of sheet members whereby each of said plurality of sheet members is supported by said pair of parallel surfaces in a spaced apart parallel relationship from each adjacent one of said plurality of sheets, said base portion having a generally planar surface and a plurality of spaced apart grooves, each of said plurality of grooves extending inwardly into said base portion from said planar surface, each of said plurality of grooves having a longitudinal axis extending through a corresponding one of said plurality of slots of said at least one arm portion whereby each of said plurality of grooves having a bottom surface and a pair of sides, said bottom surface of each groove being spaced a predetermined depth from said planar surface; and
a resilient strip member having a top surface and a lower surface, said lower surface affixed to said planar surface of said base portion, said strip member extending across said plurality of grooves, said top surface of said resilient strip having a first adhesive coating, said strip member having a portion deformable to extend into each of said plurality of grooves when one of said plurality of sheet members is supported in said one of said plurality of slots and a respective one of said plurality of grooves, said portion of said resilient strip being compressed in said one of said plurality of slots between said bottom surface and said pair of side surfaces of said sheet member and said bottom surface and said pair of sides of said one of said plurality of slots so that said compressed portion of said strip and said first adhesive coating of said top surface adhesively contact said bottom surface and along a portion of said side surfaces of said sheet member to prevent longitudinal displacement of said sheet member.

4,805,775
CARTON WITH PRODUCT INDICATING TAB
Robert E. Fear, Wheaton, Ill., assignor to Continental Bondware, Inc., Rolling Meadows, Ill.
Continuation of Ser. No. 811,366, Dec. 20, 1985, Pat. No. 4,630,733. This application Nov. 21, 1986, Ser. No. 933,115
The portion of the term of this patent subsequent to Dec. 23, 2003, has been disclaimed.
Int. Cl.[4] B65D *73/00*
U.S. Cl. 206—459 11 Claims



1. A carton formed of a laminate including a core formed of a readily delaminatable material and separate inner and outer surface layers, said carton having at least one corner wherest said laminate is generally reversely folded, at least one product indentifying tab formed at said corner by a cut line through said outer surface and terminating in said core, said tab terminating at and being permanently connected to said carton along a fold line, said product identifying tab having a starting end extending partially around said corner and said fold line being remote from said starting end, and product identifying indicia on said carton generally aligned with said tab and positioned adjacent said fold line, said starting end being rounded to effect automatic separation of said tab starting end from said laminate when said laminate is folded to form said corner.

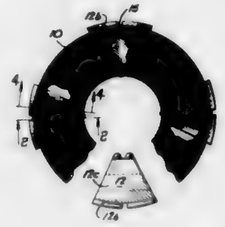
4,805,776
AIR CASE
Champa Nanagyal, Co. Cork, Ireland, and Robert Weinreb, New York, N.Y., assignors to Tenba, Inc., New York, N.Y.
Filed Oct. 21, 1987, Ser. No. 112,093
Int. Cl.[4] B65D *85/30*
U.S. Cl. 206—523 13 Claims



1. An air case for accommodating equipment during shipment of said equipment, which comprises a plurality of rigid, shock-absorbing wall portions defining an enclosed internal region of said air case in a closed condition thereof, each wall portion having a first layer of a rigid material comprising honeycomb or corrugated plastic having surface regions spaced apart by internal webs or ribs and a second layer of shock-absorbing resilient material, said layers being bonded together in a substantially unitary structure and said rigid, shock-absorbing wall portions being operable to protect equipment from damage during shipment of said air case having said equipment stored in said internal region thereof.

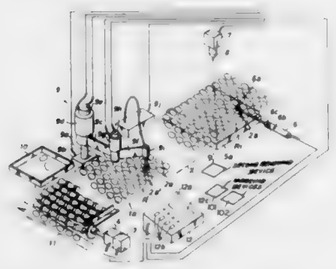
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4,805,777
MATERIAL HANDLING ARRANGEMENT
Ronald L. Mandel, 9115 Old State Rd., Evansville, Ind. 47711
Filed Aug. 30, 1984, Ser. No. 645,503
Int. Cl.[4] B65D *85/04*
U.S. Cl. 206—597 **5 Claims**



1. A material handling arrangement comprising a grouping of spaced apart pairs of opposing independent blocks selectively and directly disposed beneath cylindrical material in a supporting relationship, each of said blocks presenting a cut-out area adapted to receive a lifting mechanism, and securing means encircling each block and a portion of said material, where each of said blocks includes an upstanding circumferential rim against which said cylindrical material abuts, where each of said blocks has a bottom portion, where said cut-out area is in said bottom portion and generally parallel to that in an opposing block for receiving said lifting mechanism in opposing blocks, and where a recess is provided in said bottom portion to receive said securing means.

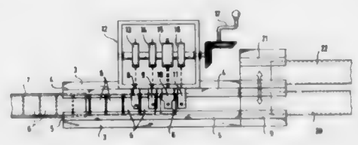
4,805,778
METHOD AND APPARATUS FOR THE MANIPULATION OF PRODUCTS
Yukio Namba, Kameoka-shi, Japan, assignor to Namba Electric Co., Ltd., Kyoto, Japan
Continuation of Ser. No. 778,235, Sep. 20, 1985, abandoned. This application Sep. 29, 1987, Ser. No. 104,596
Claims priority, application Japan, Sep. 21, 1984, 59-199167; Sep. 21, 1984, 59-199168
Int. Cl.[4] B07C *3/14, 5/00*; A01K *43/00*
U.S. Cl. 209—3.3 **24 Claims**



1. An apparatus for manipulation of products, comprising:
conveying means for conveying a plurality of products along a path which includes a first zone, and a second zone downstream of said first zone;
a light emitting assembly comprising a manual gripping portion which is freely movable to any position, a rod connected at one end to one end of said manual gripping portion and light emitting means, attached to the other end of said rod, for emitting light at a position of a specific product among said plurality of products in said first zone of said path, said other end of said rod also being freely movable to any position, said manual gripping portion being provided with (a) a switch to be manually operated to command light to be emitted from said light emitting means and (b) detection indicating means for providing a perceivable indication of a recognition of said position of said specific product indicated by means of said light issued from said light emitting means, based on a response signal supplied thereto;
first signal generating means, comprising a video sensor, for imaging said first zone to receive the light from said first zone and for issuing a first signal indicating a first position of said specific product in said first zone based on said received light;
second signal generating means for detecting a speed of said conveying means and issuing a second signal indicative of said speed;
third signal generating means for recognizing said first position of said specific product in said first zone based on said first signal from said first signal generating means, and for producing a third signal indicating a second position of said specific product in said second zone of said conveying means based on said recognized position of said specific product in said first zone and said second signal issued by said second signal generating means, and for producing said response signal and supplying said response signal to said detection indicating means to thereby indicate on said detection indicating means that said first position of said specific product in said first zone has been recognized; and
manipulating means for treating said specific product in said second zone based on said third signal.

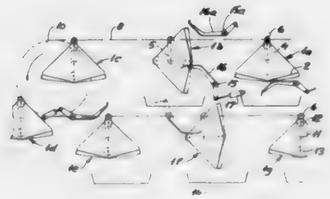
5. The apparatus according to claim 1, wherein said manipulating means comprises means for placing a mark on said specific product.

4,805,779
DEVICE FOR SEPARATION OF INTEGRATED CIRCUITS
Ing. H. Heigl, Pullach-Kolbermoor, Fed. Rep. of Germany, assignor to Firma Microhandling Handhabungsgerate GmbH, Fed. Rep. of Germany
Filed Mar. 3, 1987, Ser. No. 21,262
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1986, 8605799[U]
Int. Cl.[4] G01R *31/26*; B09C *5/344*
U.S. Cl. 209—573 **8 Claims**



1. Device for separation of electrical components, particularly integrated circuit components sliding out of storage rods, and particularly in order to make it possible to feed the components individually and in a correct position to a test base where contact can be established, characterized by a sloping slide track adjusted to the width of the components, in a center area of which a frame for testing the components has been provided, further, characterized by a total of four levers influencing the components in the slide path and located at a mutual distance equal to or slightly greater than the length of an individual component with respect to the direction of the sliding movement, all of the levers are activated in directions towards or away from the slide track by means of a common cam drive with four cams of different design, of which levers at least the third one, which is located above the test base, includes a sensor pressing the components downwards, and whereby the first and second, and the third and fourth levers work sequentially in such a manner that when the second and the fourth lever releases a component, the first and the third lever holds the component located below it, and vice versa, and further characterized by two exit slide tracks, each one of which may be selectively connected with the slide track.

4,805,780
SORTING MACHINE, IN PARTICLAR FOR SMALL PARCELS
Jorgen Soland, Tappernoje, Denmark, assignor to ITS-Intern Transport System A/S, Tappern Oje, Denmark
PCT No. PCT/DK86/00094, § 371 Date Apr. 14, 1987, § 102(e) Date Apr. 14, 1987, PCT Pub. No. WO87/01311, PCT Pub. Date Mar. 12, 1987
PCT Filed Aug. 25, 1986, Ser. No. 41,136
Claims priority, application Denmark, Aug. 26, 1985, 3864/85
Int. Cl.[4] B07C *3/08*
U.S. Cl. 209—698 **2 Claims**



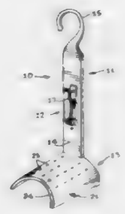
1. In a sorting machine, in particular for small parcels, with trays which are moved in an endless path including an upper and a lower run extending in a vertical plane in such a manner that carrying surfaces of the trays are disposed in a substantially vertical plane such that the trays face upwardly both in the upper and lower run of the path, the trays being pivotally suspended about a pivot axis between two synchronously driven conveyors, a plurality of stationary receiving means being provided below at least one of the upper and lower runs of the path and for each receiving means a selectively controllable activation means operable in an activated state to engage a passing tray so that said tray is pivoted for emptying contents onto the associated receiving means, the improvement comprising:
two wheels carried by at least one side of each tray placed above and below the pivot axis of the tray, respectively, in a tray equilibrium position; and
a first activation means disposed above and below the pivot axis of the tray for engagement with one of said two wheels, said first activation means consisting of a lever which is mounted for pivotal movement about a horizontal shaft in the sorting machine.

4,805,781
STAND FOR DISPLAYING SPECTACLES OR SPECTACLE FRAMES
Christiaan J. Tegel, Wijnoldy Daniëlslaan 37, 2062 HB Santpoort, Netherlands
Filed May 19, 1987, Ser. No. 51,948
Claims priority, application Netherlands, May 23, 1986, 8601326
Int. Cl.[4] A47F *7/02*
U.S. Cl. 211—13 **7 Claims**

1. A display stand for spectacles comprising:
a stationary body member having a plurality of slots formed in a front face thereof;
spectacle support members projecting from said front face adjacent said slots;
a locking bolt slidably mounted in said body member behind said front face;
spectacle locking members projecting forwardly from said bolt and through said slots;
said bolt being movable between a first position wherein said locking members cooperate with associated support members to prevent removal of spectacles retained therebetween and a second position wherein said locking members move away from associated support members to permit removal of retained spectacles; and
electrically driven means for moving said bolt between said first and second positions, said means being controllable by authorized persons using a control panel.



4,805,782
CAP SHAPING AND DRYING APPARATUS
Everett D. Hale, and Violet E. Hale, both of 301 Pine Ridge, Manitou Springs, Colo. 80829
Filed May 3, 1988, Ser. No. 189,865
Int. Cl.[4] A47G *25/10*
U.S. Cl. 211—30 **1 Claim**



1. A cap shaping and drying apparatus for caps having a crown and a bill wherein the cap shaping and drying apparatus consists of:
a suspension unit comprising an elongated suspension member having a top portion, an intermediate portion and a bottom portion; wherein, the top portion of the suspension member is provided with a hook element; wherein, the intermediate portion of the suspension member is provided with a plurality of spaced and vertically aligned apertures;
a capture unit comprising a clamp member having a pair of spring loaded jaw elements which are operatively associated with the intermediate portion of the suspension member; wherein, the clamp member is adapted to captively secure the bill of said cap; and,
a support unit comprising a support member secured to the bottom portion of the suspension member; wherein, the top surface of the support member is provided with an arcuate configuration that will conform to the interior of

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the crown of said cap; and, wherein the support member is further provided with a plurality of holes to promote air circulation to the crown of said cap; wherein, the clamp member is further provided with a pair of spaced post members that are dimensioned to be received in selected ones of said plurality of spaced apertures in said suspension member; and, at least one of the pair of post members is threaded and provided with a cooperating locking member for operatively connecting the clamp member to said suspension member.

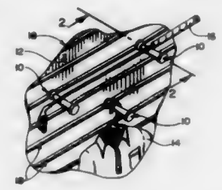
4,805,783
SLAT WALL ADVERTISING PANEL
John R. Mayer, W223 N4971 East View Dr., Sussex, Wis. 53089
Filed Jul. 23, 1986, Ser. No. 889,806
Int. Cl.[4] A47B 47/00
U.S. Cl. 211—94 13 Claims



1. An advertising display apparatus comprising a panel assembly formed from a number of hollow rectangular panels of equal length, width and height, each panel having connecting means along the top and bottom, said connecting means at the top of each panel matingly engaging the connecting means on the bottom of the adjacent panel and a frame for enclosing the top, bottom and ends of the said panel assembly whereby said assembly is maintained in a vertical relation, said panels being spaced apart by said connecting means to form horizontal slots on both sides of said panels whereby display hangers of the type having an offset flange can be mounted in the slots between the panels.

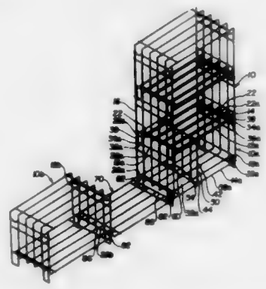
4,805,784
SLATWALL MOUNTING DEVICE
John A. Solheim, Phoenix, and Gary E. Keller, Mesa, both of Ariz., assignors to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Jan. 14, 1988, Ser. No. 143,669
Int. Cl.[4] A47F 5/08
U.S. Cl. 211—94 18 Claims

1. A display mounting device for demountable use with a slatwall of the type having at least one elongated groove formed therein which is of T-shape cross section to define an elongated inner channel with an elongated relatively narrow throat portion extending from the midpoint of the channel so as to open onto the front face of the slatwall, the channel portion of the groove having an outwardly facing bottom surface and an opposed pair of inwardly facing front surfaces that are located above and below the open throat portion of the groove of the slatwall, said display mounting device comprising:
(a) base means having a flat surface which faces the front surface of the slatwall in spanning overlaying relationship with the forwardly open end of the open throat portion of the groove of the slatwall when said mounting device is mounted on the slatwall;
(b) pin means extending normally from the flat surface of said base means for extending through the open throat portion of the groove of the slatwall, said pin means defining a longitudinal axis;
(c) a transverse cross bar means on the extending end of said pin means for aligned movement through the open throat portion into the channel portion of the groove of the slatwall;



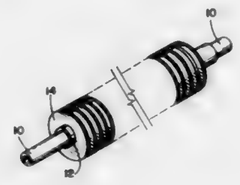
(d) said base means, said pin means and said cross bar means being rotatable as an entity about the longitudinal axis of said pin means for rotating said cross bar means in the channel of the groove of the slatwall between longitudinally aligned and transversely disposed positions therein;
(e) means exteading from said base means in a direction opposite to the flat surface thereof for supporting merchandise to be displayed; and
(f) means on said cross bar for interacting with the slatwall to prevent lateral sliding movements of said display mounting device in the elongated groove of the slatwall.

4,805,785
SHELF UNIT
William Pfeifer, Springdale; Charles J. Stahl, Butler, and David C. Fair, Evans City, all of Pa., assignors to Armstrong Store Fixture Corporation, Pittsburgh, Pa.
Filed Aug. 12, 1987, Ser. No. 84,633
Int. Cl.[4] A47F 43/00
U.S. Cl. 211—188 20 Claims



1. A shelf unit comprising:
top and bottom, spaced, generally parallel and coextensive horizontal surfaces having outer edges and comprising a plurality of spaced, generally parallel and coextensive elongated horizontal members and a plurality of generally parallel, spaced and coextensive crossmembers extending generally perpendicularly to said elongated horizontal members;
left and right, spaced, generally parallel and coextensive vertical sidewalls comprising a plurality of spaced, generally parallel and coextensive elongated vertical bars and a plurality of spaced, generally parallel and coextensive crossbars extending generally perpendicularly to said elongated vertical bars, said left and right sidewalls secured to and extending between said outer edges and generally perpendicularly to said top and bottom surfaces to define a chamber;
each said sidewalls having at least one U-shaped leg member extending downwardly beyond said bottom horizontal surface forming engagement means, each said U-shaped leg member being adapted for hooking engagement with one of said crossbars of one of said sidewalls, between said outer edges of said top and bottom horizontal surfaces, of a lower shelf unit upon which said shelf unit is placed to releasably secure said shelf unit atop said lower shelf unit, all of said crossbars of said sidewalls being located between said top and bottom horizontal surfaces, with no portions thereof or engagement means extending above said top horizontal surface.

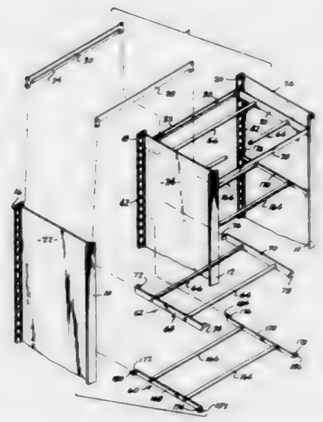
4,805,786
FINNED TUBE SUPPORT FOR COAT HANGERS
Charles R. Miller, 6123 S. Quebec, Tulsa, Okla. 74136
Filed Nov. 17, 1982, Ser. No. 442,391
The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.
Int. Cl.[4] A47H 1/02
U.S. Cl. 211—105.1 2 Claims



1. A finned tube support for coat hangers comprising a hollow plastic tube of sufficient length and sufficient internal diameter to slip over a closet rod of the type normally employed for holding hangers thereon in a closet; said plastic tube having a wall thickness of about between 1/32 and 1/16 inch, a plurality of circular plastic disks mounted in spaced parallel relation on the tube and at right angles to the longitudinal central axis of the tube, said disks having an axial thickness of about 1/16 of an inch and a central opening equal to the outer diameter of the tube, said disk having an outer diameter such that the disk would extend beyond the location of the tip of a coat hanger which was supported on said tube; the spacing between adjacent disks being between ⅛ of an inch and ¼ of an inch.

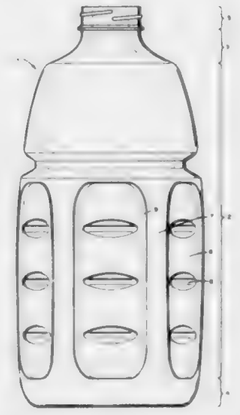
4,805,787
HANGING COMPARTMENT SUPPORT SYSTEM
Mark P. Gillotte, Columbia, S.C., assignor to National Service Industries, Atlanta, Ga.
Filed Apr. 11, 1986, Ser. No. 851,118
Int. Cl.[4] A47F 43/00
U.S. Cl. 211—191 13 Claims

1. In a hanging compartment support system of the type including a frame having first and second front vertical support columns and first and second rear vertical support columns with each vertical support column having vertically aligned downwardly tapering attachment permitting openings for receiving members to be supported by said frame, the improvement comprising a hanger frame including a pair of parallel hanger support rails, a pair of parallel rigid support beams each respectively being fixedly connected to one end of each of said support rails and pin means extending outwardly of opposite



ends of each of said support beams and removable positioned in one of said attachment permitting openings.

4,805,788
CONTAINER HAVING COLLAPSE PANELS WITH LONGITUDINALLY EXTENDING RIBS
Ota Akiho, Funabashi, Japan, assignor to Yoshino Kogyosho Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 760,533, Jul. 30, 1985, abandoned. This application Nov. 19, 1987, Ser. No. 124,359
Int. Cl.[4] B65D 23/00
U.S. Cl. 215—1 C 16 Claims



1. A thin-walled container made of thermoplastic material, comprising:
a bottom section;
a neck section; and
a body section having a longitudinal axis and extending between said neck section and said bottom section;
said body section including a plurality of collapse panels which provide controlled, quantified collapse upon exposure of an interior of said container to a partial vacuum; lands between adjacent said collapse panels; and at least

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one longitudinal support rib extending longitudinally along each side of at least one of said plurality of collapse panels between said at least one of said collapse panels and an adjacent said land and being shorter than a length of said at least one of said plurality of collapse panels, each said longitudinal rib being indented with respect to its adjacent respective collapse panel side at all points along its length in the longitudinal axis.

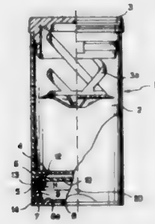
13. A thin-walled container made of thermoplastic material, said material being a hot-fillable container material and said container comprising a bottom section, a neck section, and a body section having a longitudinal axis and extending between said bottom section and said neck section; said body section including at least one longitudinally elongated collapse panel which provides controlled, quantified collapse upon exposure of an interior of said container to a partial vacuum; at least one land outside said collapse panel between adjacent collapse panel sides; a support rib extending longitudinally along each side of said collapse panel between said collapse panel and an adjacent said land and terminating near upper and lower ends of said collapse panel, each said longitudinal rib being indented with respect to its adjacent respective collapse panel side at all points along its length in the longitudinal axis.

4,805,789

PACKAGING TUBE FOR TABLETS, PILLS AND THE LIKE, WITH A RESERVE BOX

Francois Lancesseur, Choisy-Le-Roi, and Claude Maudin, Neuilly-Sur-Seine, both of France, assignors to Hoffmann-La Roche Inc., Nutley, N.J. and Air Sec, Choisey-Le-Roi, France

Filed Feb. 29, 1988, Ser. No. 162,129
Claims priority, application France, Mar. 13, 1987, 8703445
Int. Cl.[4] B65D *1/04*
U.S. Cl. 215—6 2 Claims



1. A packaging tube for tablets, pills and like products wherein:

(a) said packaging tube is provided at the bottom end thereof with a cavity which is formed by a partition wall and the side wall of said packaging tube and which accommodates a removable box forming a bottom end plug;

(b) said removable box comprises two half-shells which are joined together by means of a flexible tongue and are thus permitted to come into oppositely-facing relation in order to close said removable box;

(c) the one of said two half-shells constituting the base of said removable box has a flat main portion from which projects a vertical skirt the external dimensions of which correspond to the internal dimensions of said cavity, a shoulder being abuttingly applied against the extremity of the side wall of said cavity; and

(d) the one of said two half-shells constituting the lid of said removable box has a flat main portion surrounded by a rib which is sized, shaped, and positioned to fit against the internal face of said vertical skirt and by a flange which is sized, shaped, and positioned to bear on the top edge of said vertical skirt.

4,805,790

FLIP TOP CAP

Frank A. Leonetti, and Richard L. Leonetti, both of P.O. Box 2415, Santa Cruz, Calif. 95063

Filed Sep. 8, 1987, Ser. No. 94,219
Int. Cl.[4] B65D *51/04*
U.S. Cl. 215—235 24 Claims



1. A dispensing cap comprising:

a closure comprising (a) a base portion containing an orifice, and (b) a top portion mounted to said base portion by a hinge connection at one side thereof and containing a stopper to mate with said orifice, said closure defining a longitudinal axis of said dispensing cap;

an operating member mounted to said closure, having an exposed end at the same side of said closure as said hinge connection, said operating member being movable upon exertion of an externally applied force on said exposed end directed laterally with respect to said longitudinal axis to abut a contact surface on said closure and thereupon exert a contact force on said contact surface; and

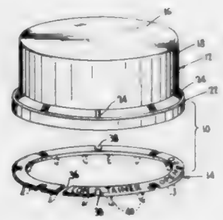
means for transmitting said contact force to said top and bottom portions in opposing directions to disengage said stopper from said orifice.

4,805,791

BAND WITH LOCK RING FOR TAMPER-EVIDENT CAP

Douglas G. Begley, Palatine, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.

Filed May 4, 1988, Ser. No. 190,086
Int. Cl.[4] B65D *41/34*
U.S. Cl. 215—252 14 Claims



9. A combination of a lock ring and a closure cap having a tamper-evident band connected to a skirt of said closure cap by a plurality of depending ruptureable bridges, said lock ring being radially outwardly expansible and of an external diameter to sit on said tamper-evident band.

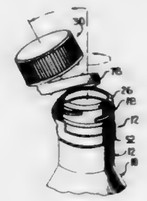
4,805,792

LITTERLESS TAMPER INDICATING CLOSURE

Frank H. Leclaski, Jr., Harwood Heights, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.

Filed Apr. 17, 1984, Ser. No. 601,207
Int. Cl.[4] B65D *49/12*
U.S. Cl. 215—253 3 Claims

1. A tethered closure cap comprising an upper cap portion including an end panel and a skirt, and a lower tether portion in the form of an extension of said skirt, said skirt extension being joined to said skirt along a first peripheral weakening line having a first starting end spaced from a first terminal end, said skirt extension including a lower anchoring band, a second peripheral weakening line separating said anchoring band from an upper part of said skirt extension, said second peripheral weakening line having a second starting end spaced from a second terminal end, an intermediate weakening line joining said first terminal end to said second starting end, first anchoring means carried by said skirt for releasably securing said cap to a container, and second anchoring means for permanently securing said anchoring means to the same container, all of said weakening lines being in the form of open spaces interrupted by bridges, and said intermediate weakening line being defined by angular extensions of spaces of said first and second weakening lines.

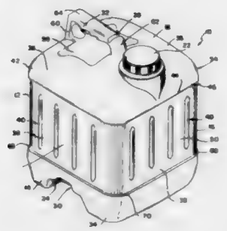


4,805,793

STACKABLE BOTTLE

Charles M. Brandt, Douglasville; Donald P. Denhoff, Marietta; C. Joe Everett, Marietta; Donald F. Murray, Marietta, all of Ga., and William H. Wilcox, Sparta, N.C., assignors to Pioneer/Eclipse Corporation, Sparta, N.C.

Filed Oct. 23, 1987, Ser. No. 115,152
Int. Cl.[4] B65D *1/02, 21/02, 23/10*
U.S. Cl. 215—10 10 Claims



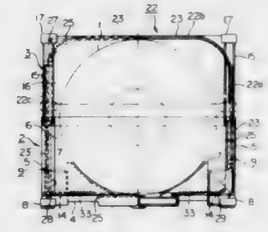
1. A blow molded container which is vertically stackable with geometrically similar containers, each container comprising a unitary body formed of a thermoplastic material having a bottom surface, a generally rectangular sidewall and a top surface including a handle and an opening closed by a cap, said handle and opening being arranged along a first plane midway between and parallel to a first pair of opposing walls of said sidewall and perpendicular to a second pair of opposing walls of said sidewall, said bottom surface having a recessed portion including a release groove bifurcating the bottom surface into two load-bearing portions straddling the release groove, said release groove having a stepped profile from end-to-end thereof and being arranged along a second plane orthogonal to said first plane midway between and parallel to said second pair of opposing walls, a first portion of said release groove having a width along the entire longitudinal extent thereof sufficient to receive therein the opening and cap of an underlying one of said containers, a second portion of said release groove having a width along the entire longitudinal extent thereof less than the width of the first portion and sufficient to receive therein the handle of an underlying one of said containers, said first groove portion being in closer proximity to the bottom surface of the container than said second groove portion, both said handle and said opening and cap being disposed completely within the release groove of an overlying one of said containers, said release groove including a web-like external rib depending downwardly from the second portion of the release groove, said handle including notch means for receiving the external rib of an overlying one of said containers to laterally locate and stabilize the relative positions of the containers.

4,805,794

CONTAINER FOR HOUSING METAL STRIP COIL

Masanori Tsuchiya, Tokyo, and Teruo Suzuki, Yokohama, both of Japan, assignors to Trade Ocean Line, Ltd. and Nissin Engineering Co., Ltd., both of Yokohama, Japan

Filed Dec. 28, 1987, Ser. No. 138,599
Claims priority, application Japan, Jan. 8, 1987, 62-141500
Int. Cl.[4] B65D *85/00*
U.S. Cl. 220—8 8 Claims



1. A container for housing a metal strip coil, comprising:

a lower box (2) made of steel for housing a metal strip coil (1) with the axis thereof directed horizontally and covering the lower half thereof, said lower box (2) comprising a rectangular bottom wall (4) formed into a lattice, four lower side walls (6), an open upper end, and four lower props (5), having an L-shaped cross section, each fixed vertically to each of the four corners of said bottom wall (4), and said lower side walls (6) and said lower props (5) having a height substantially a half that of said coil (1);

an upper box (3) made of steel having a rectangular cross section, inserted into said lower box (2) so as to be vertically movable along said lower props (5), for covering the upper half of said coil (1), said upper box (3) comprising four upper side walls (16), an open lower end, and an upper end which is openable and closeable by means of a pair of shutters (23, 23'), and said upper side walls (16) having a height substantially a half that of said coil (1), each of said shutters having a leading end; (15) each having an inner bore (15a) therein and each fixed vertically to each of the four corners of said upper box (3), four pistons (9) each comprising a piston head (11), having a through-hole (11a) at the center thereof, slidably and vertically inserted into said inner bore (15a) of each of said cylinders (15) and a hollow piston body (10) vertically fixed to the center of the lower surface of said piston head (11), the lower end of said piston body (10) being fixed to each of the four corners of said bottom wall (4) of said lower box (2), and an air supply pipe (12) for supplying air, through said piston body (10) and said through-hole (11a) of said piston head (11), into said inner bore (15a) of each of said cylinders (15), and discharging air in said inner bore (15a) of each of said cylinders (15), through said through-hole (11a) of said piston head (11) and said piston body (10); and

a shutter opening-closing mechanism for closing said upper end of said upper box (3) by closing said pair of shutters

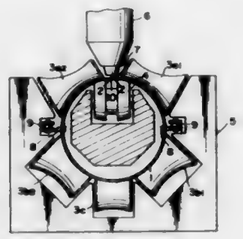
(23, 23') when said upper box (3) is moved up by means of said lift mechanism, and for opening said upper end of said upper box (3) by opening said pair of shutters (23, 23') when said upper box (3) is moved down by means of said lift mechanism, said shutter opening-closing mechanism comprising a pair of inverse U-shaped guide rails (22, 22'), symmetrically provided on the inner surfaces of a set of said upper side walls (16) opposed to each other of said upper box (3), for symmetrically guiding said pair of shutters (23, 23'), a pair of shutter rewinding rollers (24, 24'), each provided on each of the both sides of said bottom wall (4) of said lower box (2), for rewinding respectively each of said pair of shutters (23, 23'), and four ropes (25, 25'), one end of each of which is fixed to each of the both sides of the leading end of each of said pair of shutters (23, 23') and the other end of each of which is fixed to the lower portion of said upper box (3), each of said ropes (25, 25') having a length substantially equal to that of the circumference in the vertical direction of said upper box (3) and being extended along each of said pair of guide rails (22, 22'), said upper side wall (16) of said upper box (3) and said bottom wall (4) of said lower box (2).

4,805,795

BUTT-WELDED CANS AND PROCESS FOR MANUFACTURING THE SAME

Nobuyuki Sato, Yokohama; Hiroshi Matsubayashi, Kamakura; Seiichi Kobayashi, Yokohama; Minoru Mitsuhashi, Yokohama; Kenji Matsuno, Yokohama, and Kunihiro Ishikawa, Tokyo, all of Japan, assignors to Toyo Seikan Kaisha Ltd., Japan

Filed Dec. 28, 1987, Ser. No. 140,683
Claims priority, application Japan, Dec. 27, 1986, 61-310194; Jan. 9, 1987, 62-3822; Jan. 20, 1987, 62-10959; Jan. 20, 1987, 62-10960; Jan. 20, 1987, 62-10961
Int. Cl.[4] B23K 26/18
U.S. Cl. 220—75 4 Claims



1. Butt-welded cans made of steel plates having a carbon concentration of 0.02 to 0.09% by weight, said butt-welded cans being characterized in that a coating film for preventing the adhesion of melted metal particles is applied to at least the inner surface of the weld portion and its vicinity of each can, and a carbon concentration index I of said weld portion satisfies the formula (1)

$$I\ (Iw/Ic)\times 10^3 \leqq 15 \quad (1)$$

wherein

Iw is a Kα X ray intensity, of carbon in said weld portion, measured by the EPMA method, and

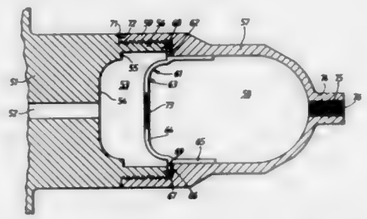
Ic is a Kα X ray intensity, of carbon in graphite, measured by the EPMA method.

4,805,796

DUAL GAS PRESSURE VESSEL

Ivan H. Dinsmore, Weston-super-Mare, England, assignor to HAJ Limited, England

Filed Nov. 3, 1987, Ser. No. 116,458
Claims priority, application United Kingdom, Nov. 6, 1986, 8626535
Int. Cl.[4] F17B 1/14
U.S. Cl. 220—89 A 8 Claims



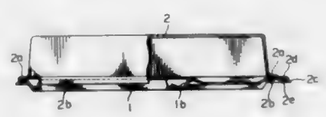
1. In a dual gas pressure vessel for sequentially dispensing two different gases comprising a housing defining a cavity having dividing means defining first and second chambers with exhaust means leading from said first chamber which has a first pressurized gas therein so that said first pressurized gas is dispensed upon opening of said exhaust means, said dividing means having burster means and said second chamber having a second pressurized gas, said burster means placing said second chamber in communication with said exhaust when the pressure differential between said chamber exceeds a predetermined level.

4,805,797

CASING FOR PACKING

Eiji Natori, Kanagawa, Japan, assignor to Chuo Kagaku Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 13, 1987, Ser. No. 120,554
Claims priority, application Japan, Dec. 9, 1986, 61-189597[U]
Int. Cl.[4] B65D 41/16
U.S. Cl. 220—306 12 Claims



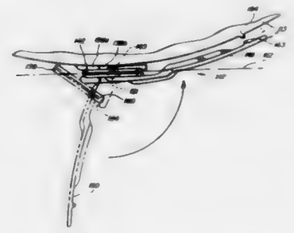
1. A packing casing comprising a main body having an opening and an outer main body fringe protruding outwardly from said opening, a lid releasably secured to said main body, said lid having a lid fringe, said lid fringe having an outwardly extending portion and a depending portion depending downwardly from said outwardly extending portion, said main body fringe having an upper face, a lower face, and an outer boundary edge, said outwardly extending portion of said lid fringe being superimposed on said upper face of said main body fringe, said depending portion of said lid fringe being disposed about said outer boundary edge of said main body fringe, inner protrusion means extending inwardly from said depending portion to a position underlying said lower face of said main body fringe such that said main body fringe is disposed between said underlying inner protrusion means and said overlying outwardly extending portion of said lid fringe, said lid fringe having an outwardly extending finger part which extends outwardly beyond said depending portion of said main body fringe and which enables a person's finger to be positioned underneath said outwardly extending finger part to simultaneously engage both said outwardly extending finger part and said main body fringe to effect separation between said lid and said main body.

4,805,798

CONTAINER AND CLOSURE HAVING FASTENING MEANS

Michael D. Stedman, Lake Forest, Ill., assignor to International Precision Components Corporation, Lake Forest, Ill.

Continuation-in-part of Ser. No. 64,673, Jun. 22, 1987, Pat. No. 4,741,453. This application Apr. 29, 1988, Ser. No. 188,365
Int. Cl.[4] B65D 45/00
U.S. Cl. 220—315 15 Claims



1. A closure for use with a container having an annular end portion defining a radially outwardly opening annular recess, said closure comprising:

a unitary wall element formed of molded synthetic resin and having a transverse center wall, and a peripheral portion comprising a split annular flange having spaced end portions and radially inwardly projecting securing structure; and

means for constricting the flange to urge the securing structure radially inwardly, said securing structure being adapted to be fitted into an annular recess of a container end portion as a result of such constriction of the flange, said means for constricting the flange comprising a pair of radially outturned tabs adjacent said flange end portions, and retaining means movable to an overcenter position for adjustably drawing said tabs toward each other and releasably locking said securing structure in said annular recess when said retaining means is in said overcenter position.

4,805,799

CONTAINER WITH UNITARY BLADDER

Edward S. Robbins, III, 499 N. Court St., Florence, Ala. 35630

Filed Mar. 4, 1988, Ser. No. 163,900
Int. Cl.[4] B65D 25/16
U.S. Cl. 220—403 24 Claims

1. A container comprising:

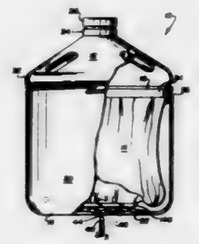
a rigid upper container segment which establishes one portion of a total volumetric capacity for the container;

a rigid lower container segment;

means for coupling said upper and lower container segments one to another; and

a flexible bladder which establishes a remaining portion of the total volumetric container capacity so that said upper container segment and said bladder collectively establish said total volumetric container capacity,

said bladder being integrally formed with said upper container segment such that said bladder depends from said upper container segment and is housed within said lower container segment, wherein



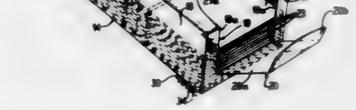
said upper container segment also defines an access opening to permit access to contents within said upper container segment and bladder.

4,805,800

DISPENSER FOR PLASTIC BAGS

Robert S. Necuh, Stamford, Conn.; Per Bentson, Suffern, N.Y., and Herbert H. Zivkovic, River Vale, N.J., assignors to Minigrip, Inc., Orangeburg, N.Y.

Filed Sep. 4, 1986, Ser. No. 904,108
Int. Cl.[4] B65D 85/62
U.S. Cl. 221—63 9 Claims



1. A dispenser for reclosable plastic bags, comprising:

a container having a dispensing opening through which bags can be withdrawn seriatim from said container;

brake means on said container at said dispensing opening;

a pack of plastic bags within said container and each bag having a leading end portion and a trailing end portion;

means connecting said bags at least two-by-two with the trailing end portion of a lead bag attached to the leading end portion of a trailing bag along a line of weakened resistance;

a reclosable fastener assembly extending from side-to-side on the leading end portion of the trailing bag adjacent to said connecting means;

said fastener assembly and said brake means cooperating for effecting automatic separation at said line of weakened resistance of the lead bag from the trailing bag when the lead bag is pulled from the container through said opening and pulls said leading end portion of the trailing bag toward and into engagement of the reclosable fastener on said leading end portion against said brake means; and

said pack of bags comprising pairs of bags stacked within the container, said bags having top ends comprising the trailing end portion of the lead bag and the leading end portion of the trailing bag, the top ends of both of the bags in each pair having separable fastener assemblies on the top end of each bag will pull flanges projecting from the fastener

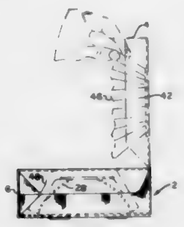
assemblies and connected end-to-end at said line of weakened resistance.

4,805,801

BEVERAGE FILTER DISPENSER

Edward J. Knopf, 1038 Terrace Wood Ct., Ballwin, Mo. 63011

Filed Nov. 9, 1987, Ser. No. 118,807
Int. Cl.[4] B23Q 7/04; B65H 1/08
U.S. Cl. 221—210 **8 Claims**



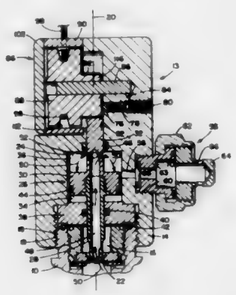
1. A container for marketing flat bottomed or related beverage filter papers, of the type having a central cavity therein, said container being of the type for use for holding a plurality of beverage filter papers, and which container also being capable of dispensing said beverage filter papers, one at a time, comprising a box adapted to hold a supply of the filters, said filters being arranged in the container in an inverted position such that said flat bottom is directed upwardly, a closely fitting generally planar lid therefor, biasing means in the form of a spring means adapted to fit within the bottom of the box and centrally thereof so as to be arranged within the central cavity of the inverted filters to support and to urge them upwardly and said flat bottom against the inside of the container lid, a pad of adhesive material affixed flush with the lid on its underside thereof, the adhesive pad having a sticky surface so that the top filter urged against it by means of the biasing means is lifted thereby when the lid is raised into an open position.

4,805,802

VALVE FOR PUNCTURING AND RELEASING GAS FROM A PRESSURIZED CYLINDER

Robert R. MacKendrick, Milford, and John J. McKeon, Hamden, both of Conn., assignors to Air-Lock, Incorporated, Milford, Conn.

Filed Feb. 10, 1987, Ser. No. 12,868
Int. Cl.[4] B67B 7/64
U.S. Cl. 222—5 **15 Claims**



1. Apparatus for opening the seal on the mouth of a cylinder which contains pressurized gas comprising:

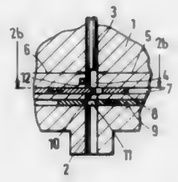
(a) a body having an axis and including a chamber;
(b) means for attaching the body to the cylinder in the region of the mouth so that the axis intersects the mouth;
(c) a piston assembly journaled in the body for movement along the axis, the piston assembly including:
(i) a piston which divides the chamber into a portion away from the mouth and a portion towards the mouth, the portion towards the mouth being isolated from the mouth; and
(ii) means which moves with the piston for opening the seal;
(d) means for conducting gas from the mouth to the portion of the chamber away form the mouth
(e) means for venting the portion of the chamber towards the mouth; and
(f) means for moving the piston assembly along the axis towards the mouth for a limited portion of the total stroke of the piston through the chamber so that the means for opening opens the seal by producing an initial puncture of the seal, the gas escaping from the mouth through the puncutre being conducted to the portion of the chamber away from the mouth by the conducting means where it moves the piston assembly towards the mouth for the remainder of the total stroke of the piston to produce a complete puncture of the seal.

4,805,803

DEVICE FOR PREPARING AND EJECTING A CHEMICALLY REACTING MIXTURE

Klaus Pontius, Hermesknll, and Manfred Settinger, Ockten, both of Fed. Rep. of Germany, assignors to Klockner Ferromatik Desma GmbH, Malterdingen, Fed. Rep. of Germany

Filed Aug. 21, 1987, Ser. No. 87,818
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1986, 3629041
Int. Cl.[4] B67D 5/52
U.S. Cl. 222—52 **10 Claims**



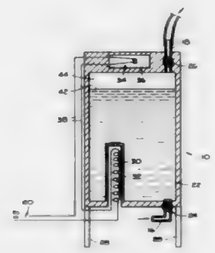
1. A device for preparing a chemically reacting mixture, and for ejecting the mixture into a mold, the mixture comprising at least two components, in particular a mixture of isocyanate and a polyol that reacts completely to form polyurethane, the device comprising a mixing head having an outwardly open bore, a reciprocable ram coupled to said head, said ram having an ejector rod axially movable in said bore for ejecting the mixture therefrom when in an extended position, said rod defining with said bore a mixing chamber in a retracted position of said rod, said head having inlet passages for inletting the respective components into said chamber for preparing the mixture, said mixing head having guide passage means extending perpendicular to the axis of said bore and being positioned downstream of said rod from said retracted position thereof for delimiting said chamber, a pair of slides having through openings of a size equal to that of said bore, said slides being at least reciprocable in said guide passage means relative to one another between a mixture ejecting position and mixture preparation positions, means for at least reciprocating said slides at a predetermined frequency and/or amplitude and phase shift in accordance with a predetermined mixing pressure required for the mixture, said openings of said slides being coaxial with said bore in said mixture ejecting position to permit said rod to extend therethrough, and said openings of said slides in said mixture preparation positions being out of alignment with said bore for dynamically setting the mixing pressure required for the mixture.

4,805,804

POTTED PLANT FEEDER

Romuald Raczkowski, 4902 N. Lawndale, Chicago, Ill. 60625

Filed Aug. 6, 1987, Ser. No. 82,310
Int. Cl.[4] F04B 19/24; B67D 5/08
U.S. Cl. 222—54 **1 Claim**



1. A potted plant feeder comprising,
a container,
means for providing a source of water at atmospheric pressure at a level no higher than the bottom of the container,
an inlet water line leading from the water source to the container at the bottom of the container,
a first one-way valve in the inlet water line,
an outlet water line leading from the container at the top of the container to a plant,
a second one-way valve in the outlet water line,
the container including means forming a cell at the bottom of the container sealed to the interior of the container and open to the exterior,
an electrical heating element in said cell in heat transfer relation to water in the container,
the container having a space in the construction thereof at the top of the container and a thermo switch in said space in heat sensing relation to water in the container,
the thermo switch being operable for closing at a predetermined lower temperature of the water and opening at a predetermined higher temperature of the water, and
electrical circuitry interconnecting the thermo switch and heating element with an electrical source and the thermo switch being thereby operable for energizing and de-energizing the heating element respectively at said lower and higher temperatures, and consequently heating the water and enabling it to cool, respectively,
whereby the water when heated holds the first one-way valve closed and forces the second one-way valve open, and thereby forces a portion of itself through the outlet water line.

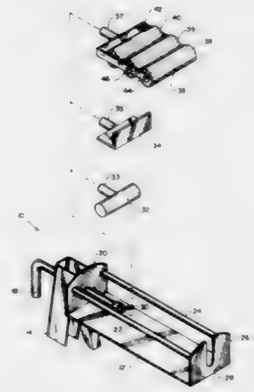
4,805,805

TUBE DISPENSER

Glen D. Ocheskey, R-2, Box 331, Eldon, Mo. 65026

Filed Feb. 19, 1988, Ser. No. 157,952
Int. Cl.[4] B65D 35/28
U.S. Cl. 222—102 **2 Claims**

1. A new and improved tube dispenser, comprising:
a generally rectangular tube support receptacle;
a tube support partition floor in said receptacle;
a front end wall perpendicularly connected adjacent a front end of said tube support receptacle;
a tube nozzle receiving aperture formed centrally in said front end wall;
a bottom wall spaced from and extending parallel to said tube support partition floor, forming an elongated channel;
an elongated toothed rod slidably received in said channel;
a handle connected to said bottom wall, said handle extending generally perpendicular to said bottom wall;
a ratchet actuation lever pivotally mounted on said handle, said ratchet actuation lever having one end positioned for engagement with said toothed rod;
a spring abutting said handle and said ratchet actuation lever for urging said lever away from said handle;



a slide yoke mounted on an end of said toothed rod, said slide yoke mounted for sliding movement in said channel;
a pair of parallel triangular roller support mounts connected to said slide yokes on opposite sides of said partition floor, said triangular roller support mounts extending generally perpendicular to said partition floor;
three rollers rotatably mounted on said triangular roller support mounts, each of said rollers having opposite ends mounted adjacent an apex of each of said triangular roller support mounts; and
a tube squeezing slot formed between said rollers.

4,805,806

APPARATUS FOR DISPENSING LIQUEFIED GAS

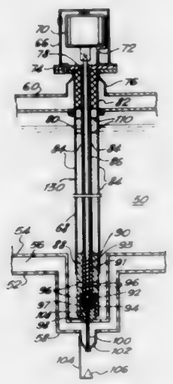
Bryan K. Smith, Chertsey, United Kingdom, assignor to BOC Limited, Windlesham, United Kingdom

Filed Dec. 4, 1981, Ser. No. 327,533
Claims priority, application United Kingdom, Dec. 17, 1980, 8040342
Int. Cl.[4] B67D 5/62
U.S. Cl. 222—146.6 **16 Claims**

1. Apparatus for dispensing a cryogenic liquid comprising a thermally insulated reservoir for containing said cryogenic liquid; a substantially solid block of heat conductive material disposed in said reservoir and having a passage therethrough with the diameter of said substantially solid block being at least three times greater than the diameter of said passage; a first end of said passage adapted to dispense said cryogenic liquid from said reservoir and a second end of said passage disposed at a location in the reservoir spaced away from the thermal insulation thereof; and valve means disposed at said second end of

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said passage for selectively admitting said cryogenic liquid into said passage wherein evaporation of said cryogenic liquid is substantially precluded prior to its discharge from said first end thereof.



4,805,807

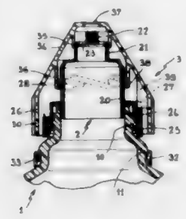
DISPENSING STOPPER WITH ROTATING CAP FOR PASTY PRODUCTS

Raymond Perse, Morsasce/Anse, and Philippe Odet, Chasselay, both of France, assignors to Astra Plastique, Saint Georges De Reneins, France

Filed Oct. 26, 1987, Ser. No. 112,216

Int. Cl.[4] B67D 5/32

U.S. Cl. 222—153 6 Claims



1. A dispenser for pasty products comprising a container having elastically deformable walls, said container having an opening disposed along an elongated axis, a body member including an annular base having inner and outer portions, a central cylindrical skirt of a lesser diameter than said annular base and an end piece which is of a lesser diameter than said central cylindrical skirt, said end piece being coupled to a central boss extending along said axis of said container, an opening between said boss and said end piece and arm means for supporting said boss with respect to said end piece, first oblique projection means extending outwardly of said central cylindrical skirt, inclined ramp means disposed along said outer portion of said annular base, first stop means associated with said ramp means, a cap means having inner and outer portions, said cap means having first and second annular skirt means depending from said inner portion thereof, said first skirt means surrounding said end piece of said body member, said second skirt means including second oblique projections for slidingly engaging said first oblique projections below said first skirt means, and second stop means disposed along said inner portion of said cap means below said second skirt means for selectively engaging said first stop means.

4,805,808

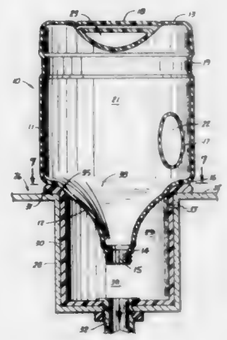
CONTAINER AND LIQUID DISPENSER

Raymond L. Larson, Fargo, N. Dak., assignor to BMR Investments, Inc., Fargo, N. Dak.

Continuation of Ser. No. 19,342, Feb. 26, 1987, and Ser. No. 940,842, Dec. 11, 1986, and Ser. No. 906,156, Sep. 11, 1986. This application May 29, 1987, Ser. No. 55,440

Int. Cl.[4] B67D 5/60

U.S. Cl. 222—185 24 Claims



1. A container for storing a liquid and a liquid dispenser accommodating said container comprising:

a liquid dispenser having a top wall with an opening,

wall means providing a well below the top wall for accommodating a liquid, annular seal means mounted on said top wall surrounding said opening, and means operable to allow liquid to flow from said well; container means for storing said liquid, said container means comprising a one-piece bottle made of disposable flexible plastic material, said bottle having an annular side wall, a base joined to the side wall, and a neck joined to the side wall, said neck having an opening allowing the liquid in the container means to flow out of the container means into the well, said neck having annular flexible shoulder means located in surface sealing engagement with the annular seal means when the container means is located on said dispenser and the neck projects into the well whereby the liquid in the container means flows into the well, said shoulder being flexed into sealing conformity with the configuration of the annular seal means, said side wall having a first generally upright handle adapted to be gripped by one hand of a person, said base having a second handle adapted to be gripped by the other hand of a person whereby the container means can be lifted and inverted in operative relationship with said dispenser means, said first handle being in transverse alignment with said side wall, said side wall having a first recess means extended under the first handle, and said base having a second recess means extended over the second handle, said second handle being in transverse alignment with said base so as to not interfere with resting of the container means on a flat surface.

4,805,809

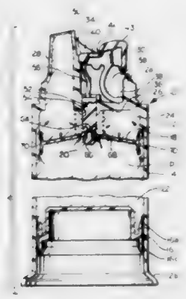
DISPENSING PACKAGE FOR A VISCOUS PRODUCT

Kurt N. Harris, Haskins, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Filed Mar. 14, 1988, Ser. No. 167,939

Int. Cl.[4] G01F 11/04

U.S. Cl. 222—260 21 Claims



1. A dispensing package for containing and dispensing a viscous product, said dispensing package comprising:

a container having a generally cylindrical body portion with an inside, a first end and a second end, one of said first end and said second end serving as a dispensing end, said container further having wall means extending across said dispensing end of said container, said wall means forming a dispensing spout, said inside of said generally cylindrical body portion having a first portion and a second portion, said first portion being closer to said dispensing end of said container than said second portion, said first portion having a first inside diameter, said second portion having a second inside diameter, said first inside diameter being smaller than said second inside diameter;

a pumping piston having a central portion with an aperture therein and an outer annular portion, said outer annular portion slidingly engaging said first portion of said inside of said generally cylindrical body portion, said pumping piston being reciprocable along an axis of reciprocation within said generally cylindrical body portion between a first position and a second position, said first position being closer to said dispensing end of said container than said second position, said pumping piston separating said dispensing package into a reservoir and a staging area, said staging area being closer to said dispensing end than said reservoir;

recess means in said first portion of said generally cylindrical body portion, said recess means being open to flow of the viscous product from said reservoir to said staging area when said pumping piston is in said second position, said recess means being closed to flow of the viscous product from said reservoir to said staging area by said outer annular portion of said pumping piston when said pumping piston is in said first position;

externally operable dispensing pump means for pumping the viscous product from said container through said dispensing spout, said pump means having a pumping piston engaging portion which extends through said aperture in said central portion of said piston, said pumping piston engaging portion being reciprocable by the operation of said dispensing pump means and engaging said pumping piston to move said pumping piston toward said dispensing end by the operation of said dispensing pump means, said portion having an enlarged head portion, said enlarged head portion sealingly engaging said aperture in said central portion as said pumping piston is moving toward said dispensing end; and

a follower piston positioned within said cylindrical body portion of said container away from said dispensing end of said container, said follower piston having a first side in contact with the viscous product and a second side, said second side being open to atmospheric pressure, said follower piston sealingly and slidingly engaging said inside of said body portion of said container.

4,805,810

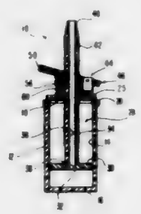
DOSATING DISPENSER FOR TOPICAL FORMULATIONS

Albert S. Czetwertynski, PointeClaire, Canada, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 5, 1983, Ser. No. 491,676

Int. Cl.[4] B67D 5/08

U.S. Cl. 222—319 6 Claims



1. A dispenser for delivering measured dosages of topical preparations comprising, in combination, a container for holding a supply of topical preparation, said container including a closed lower end and an open mouth at an upper end;

a plunger assembly adapted to be operatively mounted in said container, said plunger assembly comprising a plunger piston, including a central bore, adapted to slidably move and snugly fit within the interior walls of said container,

and a plunger shaft including a series of teeth extending along at least a portion of the length thereof and further including a longitudinal bore extending from a first end to a second end of said plunger shaft, said second end terminating in a dispensing orifice which extends beyond the mouth of the container, said first end of said plunger shaft being connected to said plunger piston with said longitudinal bore thereof in communication with said bore of said plunger piston;

cap means adapted to fit over and seal off the mouth of said container and including an opening through which said plunger shaft passes as it extends upon the mouth of said container;

a lever assembly mounted on top of and extending above said cap means and operatively associated with said plunger shaft, said lever assembly including lever means and lever mounting means for pivotally mounting said lever means to said cap means, said lever means including an opening through which said plunger shaft extends, and teeth engaging means for engaging said lever with said teeth of said plunger shaft, said teeth engaging means comprising an appendage which is connected to but extends downwardly from said lever means and which appendage includes means for engaging teeth of said plunger shaft, and spring means encircling said plunger shaft and disposed between said cap means and said lever means at least a portion of said spring means being in contact with said appendage of said teeth engaging means, said spring means maintaining the appendage in contact with said teeth of said plunger shaft when said lever means is depressed and limiting downward movement of said lever means and upon release of said lever means, returning said lever means to its rest position, whereby upon depressing said lever means, said appendage comprising said teeth engaging means of said lever means engages said teeth of

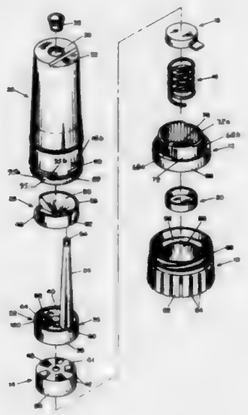
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said plunger shaft thereby forcing said plunger shaft and plunger piston connected thereto downwardly into said container and forcing a topical preparation held in said container upwardly through said bore of said plunger piston, through said longitudinal bore of said plunger shaft and out the second end of said plunger shaft.

4,805,811
DOSAGE DEVICE

Kjell I. L. Wetterlin, S. Sandby, Sweden, assignor to Aktiebolaget Draco, Lund, Sweden

Continuation-in-part of Ser. No. 717,539, Mar. 29, 1985, abandoned. This application Mar. 30, 1988, Ser. No. 175,174
Int. Cl.[4] G01F *11/24*
U.S. Cl. 222—337 3 Claims



1. In a device for releasing a dosage of a particulate medication that includes:

a dosage dispensing unit having a face with a plurality of recesses therein adapted to receive and meter a reproducible amount of said medication,

a storage chamber adapted to contain the medication and having a face thereon and an outlet opening on said face which is mounted in slidable, abutting relation to the face of said dispensing unit, and

a dispensing tube having a first open end through which medication can be discharged and a second open end mounted in slidable abutting relation to the face of said dispensing unit, the improvement wherein

(1) said dispensing unit is mounted for rotation around an axis, and said recesses, the outlet opening of said storage chamber and the second end of said dispensing tube are all disposed in relation to said axis, such that, upon rotation of said dispensing unit, said recesses are rotated successively between operative engagement with the outlet opening of said storage chamber for reception of medication and operative engagement with the second end of said dispensing tube for discharge of medication,

(2) there is a resilient scraper located in the outlet opening of the storage chamber in sliding, resilient contact with the face of said dispensing unit and configured and disposed relative to the axis of rotation such that it first pushes medication into the recess and then removes excess medication from above said recesses during rotation of said dispensing unit and insure that each recess contains a reproducible amount of medication,

(3) said dispensing unit has ratchet means thereon arranged around the axis on which said unit rotates,

(4) said device has ratchet engaging means mounted for rotation around the axis on which said dispensing unit rotatrs, said ratchet engaging means being in slidable spring-loaded contact with said ratchet means,

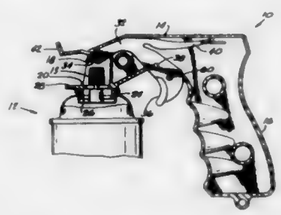
(5) said ratchet means and ratchet engaging means are adapted to cooperate with each other such that rotation of said engaging means in one rotational direction will cause said dispensing unit to rotate in the same direction to a plurality of stations wherein at each station at least one of the recesses in said dispensing unit is in mating relation to the outlet opening in said storage chamber and another of said recesses is in mating relation to the second end of said dispensing tube and such that said engaging means will release from said ratchet means as the ratchet engaging means is rotated in the opposite rotational direction, and

(6) the device has stop means coacting between the ratchet engaging means and the storage chamber for stoping the dispensing unit at each station and preventing it from advancing to the next station until the ratchet means has been released, the ratchet engaging means has been rotated in said opposite rotational direction, and the ratchet means corresponding to the next station has been engaged.

4,805,812
SPRAY CAN ACTUATION DEVICE WITH LOCKING MECHANISM

Harvey Brody, Costa Mesa, Calif., assignor to Delshar Industries, Inc., Santa Ana, Calif.

Filed Dec. 11, 1987, Ser. No. 131,908
Int. Cl.[4] B65D *83/14*
U.S. Cl. 222—402.11 22 Claims



1. An improved actuation device for holding a pressurized container and actuating a push button valve in the top of the container to dispense the pressurized contents thereof, the device having a body including a handle, attachment means for removably attaching the body to the container, an actuation member engageable with the push button valve for actuation thereof, and trigger means, operatively connected to the actuation member, and operable by a user to bring the actuation member into operable engagement with the push button valve, the actuation member including a lever operatively connected to the trigger means, the lever having a free end that is engageable with the push button valve, characterized by:

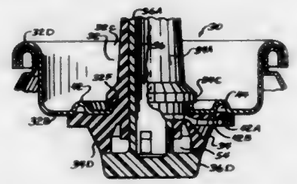
actuation member locking means operatively connected to the front of the body of the actuation device, and selectively movable between a first position in which the actuation member is engageable against the push button valve by operation of the trigger means, and a second position that locks the actuation member in a disengaged position from the push button valve, the actuation member locking means comprising:

a plate having a portion pivotally connected to the body of the device, the plate having a notch dimensioned to receive the free end of the lever, the plate being pivotable between the first position wherein it is out of the path of travel between the free end of the lever and the push button valve, and the second position wherein the free end of the lever is received in the notch so as to be restrained from moving into engagement with the push button valve.

4,805,813
AEROSOL TILT VALVE MOUNTING CUP AND ASSEMBLY

Dale M. Metcoff, Flossmoor, Ill., and Walter Holzboog, Ballwin, Mo., assignors to Epic Corporation, Chesterfield, Mo.

Division of Ser. No. 755,413, Jul. 15, 1985, abandoned. This application Oct. 9, 1986, Ser. No. 917,164
Int. Cl.[4] B65D *83/14*
U.S. Cl. 222—402.22 3 Claims



1. An aerosol tilt valve assembly, comprising:

a valve cup with a side wall of substantially circular cross section and a bottom wall with a central mounting hole therethrough, said bottom wall having a substantially flat outer surface for making sealing engagement with a mating surface of a grommet and an annular groove therein which concentrically encircles said central mounting hole;

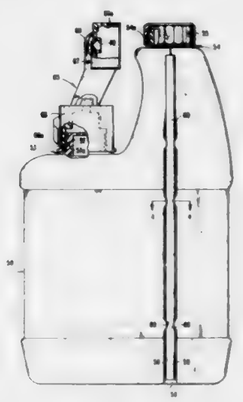
a valve stem mounting grommet with a body portion having a substantially flat mating surface for making sealing engagement with the substantially flat outer surface of the bottom wall of the valve cup and with a neck portion extending through the central mounting hole, said body portion covering said groove, and said groove forming a reservoir for material pressed in between the body portion of the valve stem mounting grommet and a valve cup; and

a valve stem extending through said grommet to form a valve therewith.

4,805,814
CONTAINER FOR LIQUIDS HAVING A MOUNTING BOSS FOR STORAGE OF A REMOVABLE DISPENSER

William R. Allen, Sr., La Porte, Ind. 46350, assignor to National Products Division, Kingsbury, Ind.

Filed Aug. 3, 1987, Ser. No. 80,881
Int. Cl.[4] B05B *7/30*
U.S. Cl. 222—538 12 Claims



1. A container for liquids having a separate removable closure and a separate removable dispensing apparatus, wherein the dispensing apparatus is a hose-end sprayer having a threaded hose adaptor portion and a threaded bottle adaptor portion, comprising:

a bottle defining an interior cavity for holding a liquid product;

a spout on said bottle opening into said cavity and having first means for removably engaging said closure thereon and for removably engaging said dispensing apparatus thereon, said first means having first external threads on said spout;

a sealed mounting boss on said bottle having second means for removably engaging the dispensing apparatus thereon when the closure is engaged on said spout, said second means having second external threads on said mounting boss; and further wherein;

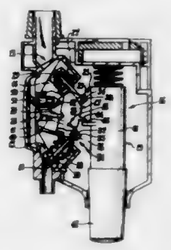
said first external threads are configured so that each of said closure and the threaded bottle adaptor portion can be interchangeably engaged thereon; and

said second external threads are configured so that the hose adaptor portion can be removably engaged thereon.

4,805,815
METERING DISPENSER

Peter K. Bayly, Kangaroo Ground; John E. Oretti, Doncaster, and Michael J. Mote, Glen Iris, all of Australia, assignors to Peter Bayly Associates Australia Pty. Ltd., Balwyn, Australia

Continuation-in-part of Ser. No. 601,323, Apr. 17, 1984, abandoned. This application Aug. 18, 1986, Ser. No. 896,322
Claims priority, application Australia, Apr. 22, 1983, PF9029
Int. Cl.[4] G04C *23/00*
U.S. Cl. 222—644 24 Claims



1. A metering dispenser including a metering chamber having an inlet port and an outlet port, an inlet valve for admitting flowable material to the metering chamber through the inlet port, an outlet valve for allowing discharge of the material from the metering chamber through the outlet port, and valve control means operative to control operation of the inlet and outlet valves so as to change the condition of the metering dispenser between a fill condition in which the inlet port is open and the outlet port is closed and a discharge condition in which the outlet port is open and the inlet port is closed, said valve control means including: a rigid valve control member engaging both the inlet and outlet valves and being pivotally movable between two extreme limits of pivotal movement which correspond respectively to the fill and discharge conditions, control biasing means associated with the valve control member and which continuously biases the valve control member towards an initial position being the one of said extreme limits of pivotal movement corresponding to the dispenser being in the fill condition, and actuating means operative to move the valve control member against the action of the biasing means to change the dispenser from its fill condition to its discharge condition and to maintain the dispenser in the discharge condition against the action of the biasing means for predetermined time allowing discharge of material from the metering chamber through the outlet port, the actuating means

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being operative, after material discharge, to allow the valve control member to return entirely under the continuous action of the control biasing means to its said initial position in which the dispenser is in the fill condition.

4,805,816
COMBINATION DISPLAY FORM AND GARMENT HANGER
David M. Freund, Syracuse, N.Y., assignor to RPM Industries, Inc., Auburn, N.Y.
Filed Jun. 1, 1987, Ser. No. 56,101
Int. Cl.[4] A41H 5/00; A47G 25/36
U.S. Cl. 223—66 6 Claims



6. A combination garment display form and hanger that includes a single piece plastic shell having a vertically disposed front face that replicates a portion of a human torso, said shell having a recessed hanger slot formed in the upper part thereof, said slot having a circular aperture centered on the vertical axis of the form which opens laterally into a vertical entranceway that passes upwardly through the top of the shell whereby a circular rod can be seated therein, a first rectangular notch positioned over the circular aperture that opens downwardly into said aperture whereby a first rectangular shaped rod having a cross section that complements said first notch can be seated therein, and a second smaller rectangular notch positioned over the first notch that opens downwardly into said first notch whereby a second rectangular shaped rod having a cross section that complements said second notch, can be seated therein, said shell further including a series of horizontally disposed spaced apart garment engaging indentations formed in the opposite sides of said shell, and a rearwardly turned peripheral wall integral with and perpendicularly disposed from the front face of said shell, said peripheral wall extending in a closed loop about the entire periphery of the shell, the recessed hanger slot, and the garment engaging indentations.

4,805,817
LOCKING BAR FOR USE WITH A SPARE TIRE CARRIER
David L. Helterbrand, 3508 University Dr., Garland, Tex. 75043
Division of Ser. No. 928,274, Oct. 17, 1986, Pat. No. 4,711,382.
This application May 21, 1987, Ser. No. 52,467
Int. Cl.[4] B62D 43/04
U.S. Cl. 224—42.23 13 Claims

1. Apparatus adapted for supporting a spare tire on the underside of a vehicle, comprising:
- a pair of spaced apart side members adapted for attaching to the underside of the vehicle, each said side member having a track;
- a carriage adapted to receive the spare tire and supported by said tracks so that said carriage is moveable between a retracted tire storage position and an extended position; and
- an elongate locking bar attached to said carriage so as to be movable relative to said carriage, such that said bar is movable while said carriage is fixed, and having ends engageable with corresponding said side members, said locking bar having two sections intermediate the ends which are grippable respectively by a user's hands for moving said carriage between said storage position and said extended position and for effecting locking of said carriage to said side members by movement of said locking bar with respect to said carriage, and including means on one end of said locking bar lockable with one said side member when said locking bar is moved to a first position, and unlockable with said one side member when said locking bar is moved to a second position.



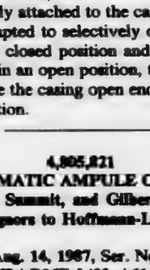
4,805,818
KNIFE SHEATH AND TOOL DEVICE
Dan W. Harrison, Rte. 1, Box 507, Brownsboro, Tex. 75756
Filed Jun. 19, 1987, Ser. No. 64,003
Int. Cl.[4] B26B 29/02
U.S. Cl. 224—232 19 Claims



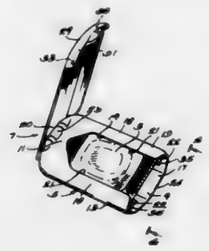
1. A knife sheath device comprising a back plate, a sheath and tool means, said sheath having a closed end, an open end, and a blade cavity, said cavity adapted for receiving a knife blade, said sheath being pivotally mounted on said back plate, and said tool means being positioned in a portion of said sheath and said back plate such that said sheath and said back plate cooperate in the operation of said tool means, said back plate extending at least the length of said sheath.

4,805,819
SHEATH FOR A RETRACTABLE KNIFE
Walter L. Collins, North, S.C., assignor to Gerber Legendary Blades, Inc., Portland, Oreg.
Filed Jan. 4, 1988, Ser. No. 141,932
Int. Cl.[4] B26B 29/02
U.S. Cl. 224—232 12 Claims

1. A sheath for use with a retractable tool comprising
(a) a first elongated sheath section including means for securing said first sheath section to an article of clothing worn by a user and
(b) a second elongated sheath section having one end pivotably connected to one end of said first section and having a receiving means capable of housing a tool portion of an unretracted tool when said first and second sections are in a first alignment extending away from each other and housing a retracted tool when said sections are in a second alignment overlapping each other.



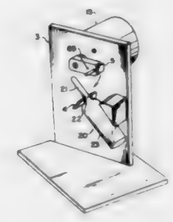
4,805,820
PORTABLE RECEPTACLE
Thomas G. Kearney, W221 N2670 Lindenwood Ct., and Charles K. Johnson, 21885 Hillcrest Dr., both of, Waukesha, Wis. 53186
Filed Mar. 22, 1988, Ser. No. 171,557
Int. Cl.[4] B65D 85/14; A45C 11/00
U.S. Cl. 224—252 13 Claims



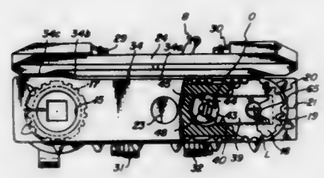
1. A portable receptacle comprising:
a. a casing having opposed top and bottom walls and opposed side walls and a closed end to form an open end container, the bottom wall terminating at the casing open end at an edge located farther from the casing closed end than the top wall open end edge, the casing top, bottom, and sides cooperating to define a pair of opposed grooves sized to removably receive a predetermined package through the open end; and
b. a cover pivotally attached to the casing at the closed end thereof and adapted to selectively overlie the casing top wall when in a closed position and to expose the casing top wall when in an open position, the cover having a lip adapted to close the casing open end when the cover is in the closed position.

4,805,821
AUTOMATIC AMPULE OPENER
Ladwik Kowalczyk, Summit, and Gilbert C. Kaetzel, Wayne, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Aug. 14, 1987, Ser. No. 85,441
Int. Cl.[4] B26F 3/00; A61J 1/08
U.S. Cl. 225—96.5 7 Claims

1. An ampule opener for opening an ampule having a head, neck including a score line and a body, said ampule opener comprising:
a mounting plate;
an ampule opener arm rotatably mounted in the mounting plate;
pneumatic actuator means releasably connected to the ampule opener arm for rotating the arm toward the head of the ampule and for providing a predetermined build up of pressure by the rotating arm at a point of contact with the head of the ampule;
a knife edge attached to the mounting plate and positioned so that an ampule may be placed in the ampule opener with its neck on the knife edge and its head extending into the path of the ampule opener arm when the ampule opener arm is rotated; and
an ampule support block attached to the mounting place and positioned to contact the body of the ampule and prevent the ampule from pivoting about the knife edge when pressure is applied by the opener arm on the head of the ampule;
whereby when the ampule opener arm is rotated and contacts the head of the ampule and the predetermined build-up of pressure is exerted thereon by the rotating arm, the neck of the ampule is broken along the score line and the head of the ampule drops away.



4,805,822
TRACTOR WITH BELT TENSIONING MECHANISM
Arthur J. J. Milano, Jr., Burlington, Conn., assignor to Data Motion, Inc., Torrington, Conn.
Filed Dec. 21, 1987, Ser. No. 135,723
Int. Cl.[4] B65H 20/20, 20/36
U.S. Cl. 226—74 8 Claims



1. In a drive tractor for web material adapted to be mounted on support and drive shafts in a printer assembly, the combination comprising:
(a) a tractor chassis having a pair of spaced passages extending transversely therethrough;
(b) a drive sprocket rotatably mounted in one said passages in said tractor chassis and adapted to receive an associated drive shaft for driving thereby upon rotation of the drive shaft about its longitudial axis;
(c) an idler sprocket;
(d) a support member mounted on said chassis for movement longitudinally thereof and rotatably mounted said idler sprocket on said tractor chassis in spaced relation to said drive sprocket;

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(e) an endless belt disposed about said tractor chassis in engagement with said idler and drive sprockets for rotation by said drive sprocket upon driving of said drive sprocket by the associated drive shaft, the outer surface of said drive belt being adapted to engage an associated web and advance it through the tractor along a substantial rectilinear path between said sprockets from the entrance end of the web into said tractor to the exit end upon rotation of said belt; and

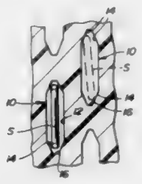
(f) a cam member rotatably supported on said chassis and having rectilinear surfaces about its periphery converging at apices at different radial spacing from its axis of rotation, said cam member acting upon said support memer to move it longitudinally of said chassis relative to said drive sprocket to vary the spacing between said sprockets and thereby the tension on said belt, said support member having said idler sprocket journalled thereon adjacent the end thereof spaced from said drive sprocket and being slidably supported on said chassis, said cam member effecting sliding of said support member on said chassis, said support member having a recess in its other end in which said cam member is seated, said recess having inwardly sloping surfaces against which said rectilinear surfaces of said cam member bear to provide different amounts of longitudinal motion of said support member upon rotation.

4,805,823

POCKET CONFIGURATION FOR INTERNAL ORGAN STAPLERS

Robert G. Rothfuss, Bellevue, Ky., assignor to Ethicon, Inc., Somerville, N.J.

Filed Mar. 18, 1988, Ser. No. 169,666
Int. Cl.[4] A61B 17/00
U.S. Cl. 227—19 **8 Claims**



1. In a stapler having pockets through which pass staple drivers adapted to drive unformed staples, each said pocket generally conforming to the shape of one of said unformed staples, said pockets permitting said drivers to position said unformed staples on anvils for forming said staples, one of said pockets having first parallel sides generally corresponding to the length of said unformed staples, said first parallel sides connected by second parallel sides to form said pocket, said second parallel sides generally conforming to the width of said unformed staples, the improvement comprising the addition of a tapered side to each end of each first parallel side, each said tapered side diagonally approaching one of said second parallel sides, the resulting pocket formed with a generally hexagonal shape, wherein staples within said pocket become self-aligning.

4,805,824

APPARATUS FOR ATTACHING CABLE TO A SURFACE

Gary W. Erickson, 819 Arthur St., Menasha, Wis. 54952

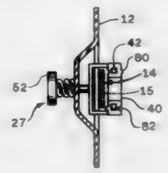
Continuation of Ser. No. 782,317, Oct. 1, 1985, abandoned. This application Jun. 8, 1987, Ser. No. 59,198
Int. Cl.[4] B25C 5/02, 5/06; B27F 7/00
U.S. Cl. 227—120 **5 Claims**

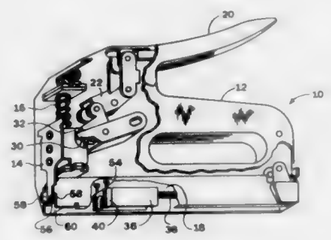
1. As an article of manufacture, a gun for driving fastener means comprising a clip and at least one nail fastener, and said gun having a bottom surface, and comprising:

(a) a frame;

(b) a plunger mounted to said frame and moveable with respect to said frame, said plunger comprising a plunger body and a driver extending from said plunger body, for driving fastener means, for attachment of fastener means to a substrate;

(c) means for moving said plunger and driving said fastener means;





(d) a single magazine adjacent said bottom surface of said gun, for locating and aligning said fastener means, and for movement of said fastener means into alignment with said plunger; and

(e) a brake in said magazine, said brake being functional for moving a leading fastener means in said magazine out of alignment with said driver,

said brake being functional for moving the leading fastener means out of alignment with said driver, such that said gun can be repositioned over a previously partially set fastener means and said driver can be used to redrive the previously partially set fastener means.

4,805,825

SAFETY NAIL DRIVING DEVICE

Bao-Shen Liu, Taipei, Taiwan, assignor to Yun Yueh Liu Yang, Taipei, Taiwan

Filed Aug. 13, 1987, Ser. No. 125,141
Int. Cl.[4] B25C 1/02
U.S. Cl. 227—121 **11 Claims**

1. A nail guiding device for use in driving a nail from a strip of nails, comprising:

a housing having a longitudinal first wall with an access opening, and a longitudinal second wall opposite to said first wall;

a panel for covering said access opening, hinged to said first wall, said panel being movable between an open position and a closed position and including a longitudinal first nail guiding member projecting therefrom into said housing;

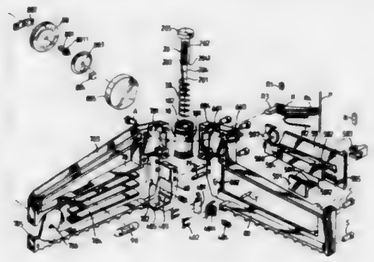
a locking means for retaining said panel in said closed position;

a longitudinal second nail guiding means disposed on said second wall, said second nail guiding means cooperating with said first nail guiding member to confine a longitudinal narrow space for receiving the strip of nails when said panel is in said closed position;

a nail advancing member mounted movably in said housing for moving within said narrow space, said advancing member being urged to a first direction to advance the nails;

means for urging said advancing member in said first direction;

a third nail guiding means mounted in said housing at one end of said narrow space in said first direction, said third nail guiding means having a bottom nail outlet;



two nail clamping plates attached movably to said third nail guiding means above said nail outlet for moving between a clamping position and a releasing position and being urged to the clamping position;

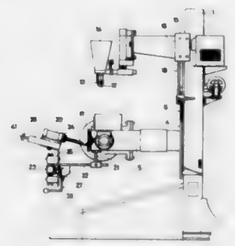
a nail driving member mounted in said housing in a vertically movable position and having a portion extending out of said housing for being hammered by a tool, said driving member having a lower driving portion to transmit an impact pressure to the nail.

4,805,826

SLAG REMOVING APPARATUS FOR PAD-WELDING MACHINE

Yasumitsu Moriki, Tokyo; Hirotomo Numakura, Kawasaki, and Masahiro Sakurai, Tokyo, all of Japan, assignors to Maruma Jyusharyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1987, Ser. No. 99,408
Claims priority, application Japan, Sep. 30, 1986, 61-148819[U]
Int. Cl.[4] B23K 9/04, 9/32
U.S. Cl. 228—18 **6 Claims**



1. A slag removing apparatus in combination with a pad-welding machine, comprising:

a C-shaped roller holder located beneath a movable welding torch and provided with a rotational drive mechanism for rotating the roller to be padded;

a pair of extension arms horizontally extended on the open side of said roller holder and fixable in vertically adjustable positions;

a guide rail support member provided with a rack and bridged between said extension arms in parallel relation with the rotational axis of said roller drive mechanism and detachable at least at one end thereof;

a carriage having on a rockable plate a drive motor and a pinion disengageably meshed with said rack and movable along said support member;

an inclined mount plate provided on said carriage with a predetermined angle of inclination; and

a vibrational beating mechanism on said mount plate holding at least one needle bundle with a fore end thereof in face-to-face relation with a welding surface of said roller for vibrational beating thereof;

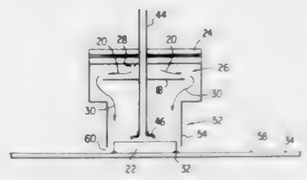
said drive motor being driven in synchronism with movements of said torch in a transverse direction.

4,805,827

METHOD OF SOLDERING WITH HEATED FLUID AND DEVICE THEREFOR

Bradford W. Coffman, Baltimore, and William J. Siegel, Silver Spring, both of Md., assignors to Pace Incorporated, Laurel, Md.

Continuation of Ser. No. 790,448, Oct. 23, 1985. This application Jul. 15, 1987, Ser. No. 92,469
Int. Cl.[4] B23K 1/12
U.S. Cl. 228—20 **22 Claims**



1. In combination, an electronic component, a substrate and a device for effectuating the removal or installation of said electronic component by the delivering of heated fluid along the sides of said electronic component to melt solder at terminals disposed at the periphery thereof, said device comprising means for generating a flow of said heated fluid and nozzle means removably mounted in association with said means for generating and said electronic component for receiving the flow of said heated fluid from the means for generating and for passing it along the sides of said electronic component while maintaining a pocket of cooler fluid above said electronic component;

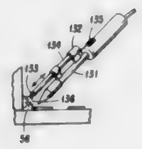
wherein said nozzle means consists of a tube having four side plates of a metallic material having a low thermal conductivity, high temperature capability and structural stability, said side plates being connected together into a rectangular parallelepiped having a hollow interior space completely spanning the distance between said plates;

wherein said electronic component is disposed within said interior space in a manner creating a means for evenly distributing said flow of heated fluid along side walls of the component by defining a constricted passageway between the each side plate and a respective side wall of the electronic component that has a width, between each respective side plate and side wall of the component, in a range of 5–50 mils; and

wherein said nozzle means is oriented with said side plates extending normal to said substrate in a manner creating a means for controlling the transfer of heat to said terminas from the fluid flow exiting said nozzle means, by a lower edge of the side plates being spaced from the substrate by a distance within a range of 5–50 mils.

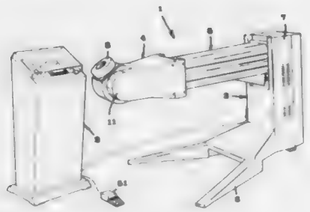
VOL 1099 ISS 3 FEB 21 1989 UMI

4,805,828
THERMALLY DURABLE SURFACE MOUNTED DEVICE PRINTED WIRING ASSEMBLIES AND APPARATUS AND METHOD FOR MANUFACTURE AND REPAIR
Donald R. Witherell; Jay W. Donaldson, both of Cedar Rapids, and Howard B. Rooks, Marion, all of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jan. 23, 1987, Ser. No. 7,076
Int. Cl.[4] B23K *3/02*
U.S. Cl. 228—46 3 Claims



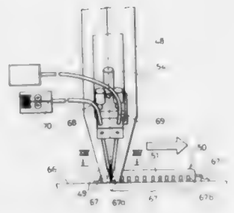
1. An apparatus for melting a solder joint, comprising:
a. a soldering iron having a handle and a soldering tip for heating a solder joint; and
b. a quenching fluid sprayer means attached to the soldering iron and extending toward the soldering tip.

4,805,829
POSITIONING DEVICE
Leif Pege, and Nils-Goran Pege, both of Alvvagen 13, S-820 41 Farila, Sweden
Filed Feb. 24, 1987, Ser. No. 17,590
Int. Cl.[4] B23K *37/04, 9/32*
U.S. Cl. 228—47 9 Claims



1. A positioning device comprising:
frame means;
support means mounted on said frame means, said support means comprising spaced apart members having bearing means for rotatably supporting a housing;
pivotable linkage means extending between said frame means and said support means for positioning said support means between upper and lower positions;
said support means having work table means associated therewith, said work table means being rotatable about an axis and tiltable relative to said support means, said work table means being rotatably mounted relative to said housing;
hydraulic motor means and gear means associated with said housing, said gear means being operatively associated with said motor means and said work table, said motor means communicating with a source of hydraulic fluid provided at a position spaced from said support means;
a double-acting piston and cylinder assembly comprising cylinder means and piston rod means for effecting tilting movement of said work table means through said housing, said cylinder means being pivotably connected to said support means;
connection means comprising a V-shaped yoke having first and second legs, said piston rod being pivotably connected to said V-shaped yoke;
link means pivotably connected to bracket means rigidly mounted on said housing;
said first leg of said V-shaped yoke being pivotable about a first pivot point which is stationary relative to said support means, and said second leg of said V-shaped yoke being pivotably connected to said link means.

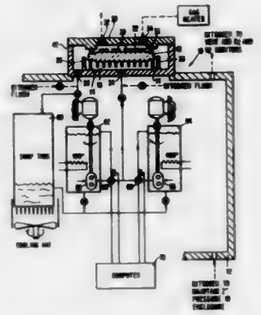
4,805,830
METHOD FOR SOLDERING ARRAYED TERMINALS AND AN AUTOMATIC SOLDERING DEVICE
Seiji Kawaguchi, Tokyo, Japan, assignor to Apollo Seiko Ltd., Tokyo, Japan
Filed Mar. 13, 1987, Ser. No. 25,903
Claims priority, application Japan, Apr. 9, 1986, 61-80220; Jul. 18, 1986, 61-167869
Int. Cl.[4] B23K *3/02*; H01L *21/98*
U.S. Cl. 228—179 20 Claims



1. A method of soldering terminals arrayed in a first predetermined direction, comprising the steps of:
moving the tip of a soldering iron against said terminals which are arrayed in said first predetermined direction with a predetermined amount of spacing defined between successive terminals;
supplying solder to said soldering iron tip so as to perform a soldering operation upon said arrayed terminals; and
upon completion of said soldering operation, horizontally moving said soldering iron tip in a second direction which is substantially perpendicular to said first predetermined direction of said arrayed terminals.

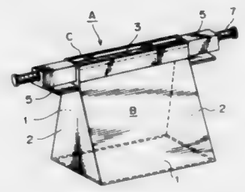
4,805,831
BONDING METHOD
Lewis D. Lipschutz, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 856,516, Apr. 28, 1986, Pat. No. 4,747,533. This application Mar. 7, 1988, Ser. No. 164,680
Int. Cl.[4] B23K *31/02*
U.S. Cl. 228—180.2 13 Claims

1. A method of reflowing solder terminals that join an electronic device to a substrate, comprising,
contacting the bottom surface of said substrate with a liquid,
rapidly increasing the temperature of said liquid from a temperature below the melting point of the solder to a temperature exceeding the melting point of the solder material of said solder terminals,



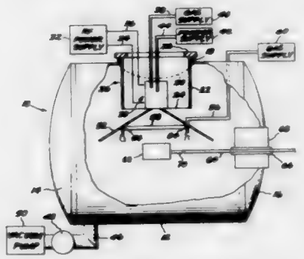
subsequently rapidly decreasing the temperature of said liquid to a temperature below the melting point of the solder material of said solder terminals.

4,805,832
FOUNTAIN-TYPE SOLDERING APPARATUS
Mitsuo Zen, Souka, Japan, assignor to Senju Metal Industry Co., Ltd., Tokyo, Japan
Filed Aug. 13, 1987, Ser. No. 84,767
Claims priority, application Japan, Apr. 13, 1986, 61-190284; Aug. 23, 1987, 62-100591
Int. Cl.[4] B23K *1/06*
U.S. Cl. 228—260 10 Claims



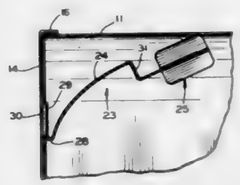
1. A fountain-type soldering apparatus which comprises:
an outer tank which contains molten solder;
a nozzle which is immersed in said molten solder in said outer tank, said nozzle having a longitudinally-extending discharge port which extends above the surface of said molten solder and having two end panels at the opposite ends of said nozzle which form the end walls thereof, each of said end panels having a through opening formed therein;
a moving body which is disposed in said discharge port and which extends for the length thereof, the opposite ends of said moving body passing loosely through said through openings in said end plates; and
support means for supporting each end of said moving body such that said moving body can oscillate vertically therein.

4,805,833
METHOD OF FORMING COMPACTS WITH INTEGRAL CONSOLIDATION CONTAINERS
Paul A. Seimers, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Feb. 25, 1987, Ser. No. 18,552
Int. Cl.[4] B23K *20/14*
U.S. Cl. 228—190 10 Claims



1. The method of forming a relatively high density structure including an enclosing envelope of low pressure plasma deposited titanium base metal which comprises
RF plasma spray depositing at low pressure a first low porosity outer layer of said metal as a first element of said envelope,
superposing on said first outer layer a sub-compact to be consolidated to high density,
low pressure RF plasma spray depositing a second low porosity outer layer of said metal as a second element of said envelope over said sub-compact to form a compact which includes a sealed envelope of titanium based metal plasma deposited about said sub-compact, and
consolidating the compact so formed at high pressure and high temperature to a relatively high density structure by direct application of fluid pressure to said envelope.

4,805,834
MAILBOX SIGNAL FLAG
T. Paul Saba, 5313 Patriot, Toledo, Ohio 43611
Filed Nov. 16, 1987, Ser. No. 121,123
Int. Cl.[4] A47G *29/12*
U.S. Cl. 232—34 5 Claims



1. A signal device for attachment to a mailbox for indicating to a remotely located observer that mail has been deposited in the box, the mailbox being of the type including a housing open at one end and a door hingedly connected at its lower edge to the open end of the housing and pivotable between open and closed positions, said signal device comprising a thin elongated spring strip having a brightly colored flag member at one end and adhesive means affixing said spring strip to the inner surface of said door adjacent its other end, said spring strip including a reversely bent portion that defines a mounting tab at said other end of said spring strip which is adhesively affixed to the

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inner surface of said door, said reversely bent portion providing a spring effect thereby increasing the effective length of the spring in order to minimize the stress at the top of said tab where tension is applied and where failure of the said adhesive means would first occur, said spring strip being adapted to normally lie in erect position along the inner surface of said door with said flag member projecting beyond the periphery of said door and to be manually deflected with said door for insertion into said mailbox upon closing of said door, whereby said spring strip returns to said normally erect position with said flag exposed outside said mailbox upon opening and closing of said door for delivery of mail.

4,805,835

METHODS AND APPARATUS FOR THE CONTROL OF SMOKE AND FIRE IN BUILDINGS

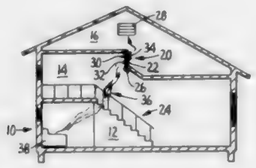
Herbert J. Schaus, 4853 Wolf Way, Concord, Calif. 94521

Continuation of Ser. No. 357,143, Mar. 11, 1982, Pat. No. 4,463,896. This application Jul. 16, 1984, Ser. No. 630,973

The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.

Int. Cl.[4] F24F *13/14*

U.S. Cl. 236—49 5 Claims



3. A smoke control system, comprising:

smoke control valve means;

smoke responsive means for opening said valve means in response to the presence of smoke in the vicinity of said valve means;

temperature responsive means for closing said valve means in response to elevated temperature in the vicinity of said valve means; and

means for initiating the operation of smoke extracting means for extracting smoke from the vicinity of said valve means through said valve means;

said valve means being disposed in an opening communicating between a passageway of a building and a smoke evacuating duct, and said smoke extracting means comprising said duct and an exhaust fan for withdrawing smoke therefrom, said exhaust fan being controlled by said operation initiating means.

4,805,836

DEVICE FOR THE THERMAL SPRAY APPLICATION OF WELDING MATERIALS

Karl-Peter Streb, Markt Mömbris; Uwe Szieslo, Waldems, and Manfred Oechsle, Bad Homburg, all of Fed. Rep. of Germany, assignors to Castolin S.A., Lausanne, Switzerland

Filed Jun. 9, 1987, Ser. No. 60,100

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1986, 3620183; Jun. 16, 1986, 3620201

Int. Cl.[4] B05B *1/24*

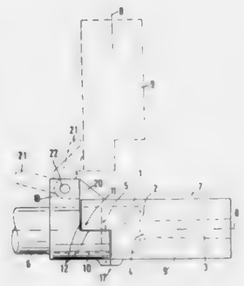
U.S. Cl. 239—80 11 Claims

1. A device for the thermal spray application of welding materials, which comprises

(a) a jet focussing nozzle having an axis and defining a combustion chamber and an elongated, axially extending jet focussing spray channel having a feed-in end in communication with, and adjacent, the combustion chamber for receiving combustion gases therefrom, and

(b) a burner nozzle connected to said combustion chamber and receiving a controlled amount of combustion components and arranged to deliver the combustion components into the combustion chamber,

(1) the jet focussing nozzle being divided into two connected parts along a plane extending transversely to the jet focussing nozzle axis in the area of the feed-in end and dividing the jet focussing nozzle into a front part and a rear part into which the burner nozzle extends, and



(2) the front nozzle part being adjustable with respect to the rear part between an operating position wherein the nozzle parts have contacting end faces in said plane and the jet focussing channel extends continuously through the nozzle parts, and an ignition position wherein the front part clears the burner nozzle for access thereto whereby the combustion components may be manually ignited and the resultant flame is focussed in the front nozzle part upon adjustment thereof into the operating position.

4,805,837

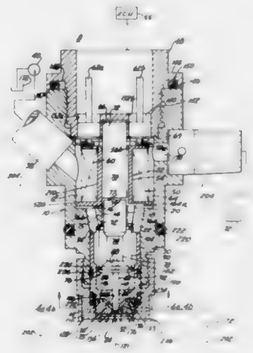
INJECTOR WITH SWIRL CHAMBER RETURN

Mark A. Brooks, Sterling Heights; Robert Fallis, Milford, and Paul Daly, Troy, all of Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 925,780, Oct. 30, 1986, abandoned. This application May 2, 1988, Ser. No. 189,457

Int. Cl.[4] B05B *1/30, 1/34*

U.S. Cl. 239—125 6 Claims



1. A high pressure vortex fuel injector comprising a hollow housing or body including a plurality of passages at least one of which is adapted to receive fuel through an inlet;

a valve seat secured to said housing, including a metering orifice, a first surface disposed directly upstream of said metering orifice;

means for guiding a piston into seating relationship with said valve seat;

means for moving said piston relative to said valve seat;

means, fixedly positioned upstream of said first surface, for forming a constant dimension swirl or vortex chamber in cooperation with said first surface such that upon removal of said piston from said valve seat, fuel flows out from said metering orifice in a conical spiral manner, including a plurality of passages, obliquely situated relative to said first surface, for receiving preasurized fuel and for causing said fuel to enter said vortex chamber in a helical, spiraling down manner;

means for causing fuel to flow within said swirl chamber during instances when said injector is closed, wherein said moving means includes a stator and an electro-magnetically movable armature substantially axially aligned with the movable through an air gap relative to said stator said piston comprising a cylindrical rod extending from said armature and of a diameter substantially smaller than said armature;

said flow means including first passage means within said armature and said piston for communicating said swirl chamber to an end of said armature remote from said piston, said end adapted to seat against an oppositely positioned surface of said stator when the injector is activated; and second passage means, for communicating said first passage means to a drain.

4,805,838

WATER SPRINKLER

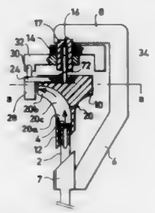
Ilan Greenberg, Haifa, Israel, assignor to Plastro Gvat, Kibbutz Gvat and Agrotexn Consultants Ltd., Ramat Eshai, both of, Israel

Continuation of Ser. No. 006,999, Jan. 27, 1987, abandoned. This application Aug. 9, 1988, Ser. No. 230,668

Claims priority, application Israel, Jan. 31, 1987, 77747

Int. Cl.[4] B05B *3/08*

U.S. Cl. 239—222.17 16 Claims



1. A water sprinkler, comprising:

a nozzle connected to a water supply pipe and discharging the water in the form of a water jet;

a distributor head mounted on the sprinkler for rotary movement with respect to the nozzle and formed with a passageway aligned with the nozzle to receive the water jet therefrom and to direct it outwardly of the sprinkler;

a direction-reversing member pivotally mounted at one end to the distributor head, and including at its opposite end a first surface impinged by the outwardly directed water jet in a first position of the direction-reversing member, and a second surface impinged by the outwardly directed water jet in a second position of the direction-reversing member;

said direction-reversing member further including a third surface contactable with said distributor head for rotating it in one direction when said first surface is impinged by the water jet, and a fourth surface contactable with said distributor head for rotating it in the opposite direction when said second surface is impinged by the water jet;

an abutment mounted on said opposite end of the direction reversing member;

a first stop engageable by said abutment after the distributor head has been rotated a predetermined distance in said first direction, and effective to move said direction-reversing member from said first position to said second position;

and a second stop engageable by said abutment after the distributor head has been rotated a predetermined angular distance in said opposite direction, and effective to move said direction-reversing member from said second position to said first position to rotate the distributor head in said first direction.

4,805,839

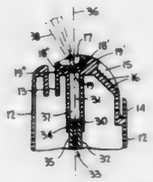
TILT-SPRAY AEROSOL ACTUATOR BUTTON AND DIES

Edward J. Malek, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed May 11, 1988, Ser. No. 192,571

Int. Cl.[4] B05B *7/32*

U.S. Cl. 239—337 4 Claims



1. An aerosol actuator button comprising a body having a top and a bottom portion and a cavity located in the bottom thereof adapted to sealingly receive the free end of an aerosol valve stem having a hollow bore which is in flow communication with an orifice in the top portion of said body for releasing a pressurized liquid to be atomized, said cavity and said bore having a central long axis said orifice having an inlet and an outlet coaxial with the central long axis of said cavity and bore, said orifice outlet being located at the bottom of an asymmetrical conical depression in said button which is open to the atmosphere wherein the conical depression is configured to cause the liquid escaping from the orifice to be tilted away from the central long axis of the cavity as it is atomized into an aerosol spray pattern also having a central long axis, and wherein the central long axis of said aerosol spray pattern is tilted away from the central long axis of said cavity at a preselected angle.

4,805,840

THRUST DEFLECTORS FOR PROPULSION NOZZLES OF TURBOMACHINES

Robert F. Tape, Marietta, Ga., assignor to Rolls-Royce, Inc., New York, N.Y.

Filed Apr. 14, 1986, Ser. No. 851,931

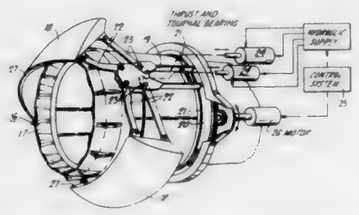
Int. Cl.[4] F02K *1/12*

U.S. Cl. 239—265.35 4 Claims

1. A thrust deflector means for a propulsion nozzle of a turbojet aero-engine, said nozzle having a central axis, comprising at least two thrust deflector plates, a common ring means mounting both of said plates for rotation together about the axis of the nozzle, each of said deflector plates having separate actuator means with each actuator means being operable to move a said respective plate from a first position where said plate is stowed out of the flow path of gases from the nozzle, which in use flow through the nozzle, to and from a second position where said respective plate is deployed in the flow path for the purpose of deflecting the gases and thereby

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redirect the thrust produced by the nozzle in a direction angled to the flow of gases which, in use, issue from the nozzle, and



rotation means for effecting rotation of said ring means to vary the direction of the redirected thrust relative to the axis of the nozzle.

4,805,841

METHOD AND APPARATUS FOR FEEDING GRINDING BODIES TO A GRINDING AREA

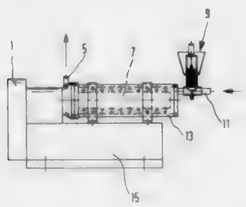
Horst Pausch, Schwarzenbach, Fed. Rep. of Germany, assignor to Gebrüder Netzsch Maschinenfabrik GmbH & Co., Selb, Fed. Rep. of Germany

Filed Aug. 20, 1987, Ser. No. 87,606

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1986, 3629421

Int. Cl.⁴ B02C *17/18*

U.S. Cl. 241—30 **9 Claims**



1. A method of feeding grinding bodies to the grinding area of an agitator mill which comprises

(a) providing apparatus which includes

a storage vessel for grinding bodies;

an intermediate chamber having an inlet to receive an irregular charge of grinding bodies from said storage vessel and an outlet to discharge grinding bodies to the grinding area;

a proportioning chamber communicating between said storage vessel and said intermediate chamber;

a first controllable valve means in said inlet;

a second controllable valve means in said outlet; together with

means for controlling said first and second valve means;

(b) controlling said first and second valve means to feed grinding bodies to the grinding area; and

(c) passing grinding bodies from said storage vessel to said proportioning chamber, thereby preproportioning the grinding bodies.

4,805,842

ROTARY MACE ADAPTER BLOCK

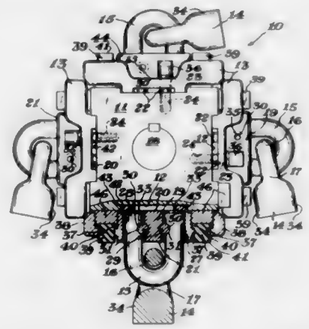
A. Dean Vander Jagt, P.O. Box 190, Bay City, Mich. 48707

Filed Apr. 27, 1987, Ser. No. 43,110

Int. Cl.⁴ B02C *13/26, 13/28*

U.S. Cl. 241—194 **14 Claims**

1. In an improved rotary mace comprising a hub having an axis of rotation and a peripheral, radially outward surface, at least one hammer, and means for pivotally but removably securing each hammer to the surface of the hub, wherein the improvement comprises: at least one adapter block for supporting the at least one hammer and means for fixedly but removably attaching each adapter block to the radially outward surface of the hub, each adapter block having a face which substantially contacts the surface of the hub and an opposed face, the means for pivotally but removably securing each hammer being attached to the opposed face of the associated adapter block upon which the hammer is borne.



4,805,843

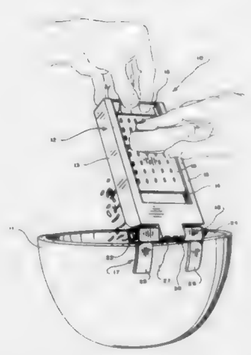
FOOD GRATER HOLDER

A. Allen Draper, 3860 S. Midland, Roy, Utah 84067

Filed Sep. 30, 1987, Ser. No. 102,887

Int. Cl.⁴ B02C *23/00*

U.S. Cl. 241—287 **1 Claim**



1. A food grater holder comprising:

a frame with provisions for the mounting thereon of a food grater;

a clip adapted to simultaneously engage both inside and outside vertical surfaces of an upstanding wall of a grated food receptacle;

a hinge connecting the frame and the clip, the hinge permitting substantial rotation of the frame thereabout upwardly from and downwardly towards the receptacle;

means positively immobilizing the frame in selected inclined position with respect to the receptacle, the frame immobilizing means comprising provisions for releasably locking the frame against rotation about the hinge; wherein the hinge includes the provisions preventing rotation of the frame, said hinge comprising;

an uppermost portion of the clip having a horizontal bore, the wall of said bore having at least one keyway extending along the length thereof;

an end portion of the frame carrying a horizontal bore therethrough axially aligned with the clip bore, said frame and portion having also a multiplicity of indexing notches spaces circumferentially around the frame bore at an end thereof adjacent the clip;

a hinge pin disposed through the frame bore, having an externally threaded end portion extending into the clip bore, and an enlarged head member at its opposite end; and

a locking sleeve disposed in the clip bore, an outer wall thereof having a radially outwardly extending key in engagement with the at least one keyway, an internal axial bore of the sleeve having internal threads engaged with the threads of the pin, and the outer wall of the sleeve having at least one indexing projection engaged with the indexing notches.

13. Apparatus for monitoring and controlling winding operation of a winding station in a textile winding machine of the type wherein a bobbin is reotatbly driven by a friction roller in peripheral contact with said bobbin for winding a traveling strand about said bobbin, said friction roller being driven by an associated drive means, characterized by means associated with said bobbin for measuring a value proportional to the time period per revolution of said bobbin, means associated with said friction roller for measuring a value proportional to the time period per revolution of said friction roller, an electronic calculator operatively connected with each said value measuring means, said calculator comprising a comparator for comparing the measured values of said bobbin and said friction roller and means or establishing theoretical values for the result of comparison of said measured values, said calculator being operatively associated with said drive means for selectively controlling regulation of said drive means of said friction roller, intervention in said winding operation, and stopping of said winding station as a function of deviations in said comparison result determined by said comparator from said theoretical values determined by said establishing means of said calculator.

4,805,844

METHOD AND APPARATUS FOR MONITORING AND CONTROLLING WINDING OPERATION OF A WINDING STATION IN A TEXTILE WINDING MACHINE

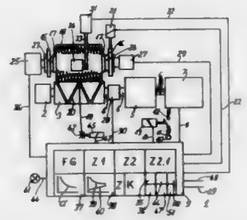
Ferdinand-Josef Hermanns, Erkelenz, and Rolf Hassen, Moenchen-Gladbach, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Moenchen-Gladbach, Fed. Rep. of Germany

Filed Feb. 5, 1988, Ser. No. 152,782

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1987, 3703869

Int. Cl.⁴ B65H *54/42, 63/00*

U.S. Cl. 242—18 DD **28 Claims**



1. A method of monitoring and controlling winding operation of a winding station in a textile winding machine of the type wherein a bobbin is rotatably driven by a driven friction roller in peripheral contact with said bobbin for winding a traveling strand about said bobbin, said method characterized by the steps of essentially constantly varying the time period per revolution of said friction roller while constantly measuring the time period per revolution of each of said friction roller and said bobbin and at least intermittently comparing the time periods per revolution of said friction roller and said bobbin, establishing theoretical values for the result of comparison of the time periods per revolution of said friction roller and said bobbin over the course of a winding operation, and selectively controlling regulation of the drive of said friction roller, intervention of said winding operation, and stopping of said winding station as a function of deviations in said comparison result from said theoretical values.

4,805,845

METHOD AND APPARATUS FOR WINDING A THREAD AND A PACKAGE FORMED THEREBY

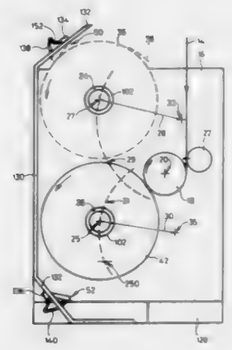
Jakob Flaek, and Felix Graf, both of Winterthur, Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Aug. 19, 1987, Ser. No. 86,952

Claims priority, application Switzerland, Aug. 22, 1986, 03390/86

Int. Cl.⁴ B65H *54/00, 55/00, 55/04*

U.S. Cl. 242—18 EW **23 Claims**



1. A method for winding a multifilament thread into a package comprising the steps of

winding a continuous multifilament thread into a package with the last winding forming an end section of parallel windings on an outer surface of the package;

severing the thread to form a thread end portion; and

interlacing the thread end portion with at least one winding of said end section by disturbing the filaments of the thread end portion to releasably secure the thread end portion with said end section.

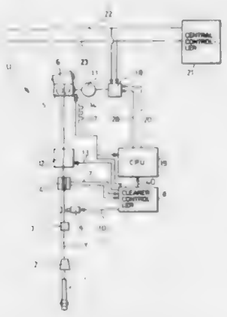
VOL 1099 ISS 3 FEB 21 1989 UMI

4,805,846

AUTOMATIC WINDER

Yutaka Ueda, Nara, and Shuzo Kawamura, Joyo, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Apr. 23, 1987, Ser. No. 41,610
Claims priority, application Japan, Apr. 29, 1986, 61-98763; Jun. 4, 1986, 61-129938
Int. Cl.[4] B65H 54/02, 59/00
U.S. Cl. 242—36 19 Claims



1. An automatic winder for performing a winding operation whereby yarn is drawn out from a layer of yarn wound on a spinning bobbin and is rewound onto a package, said automatic winder comprising:

a winding unit operable for drawing out and rewinding said yarn at a particular winding speed; and

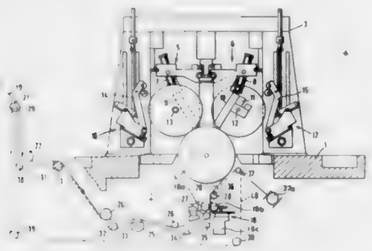
a winding controlling means associated with said winding unit, for adjusting said particular winding speed at the lapse of a preset time period during the winding operation.

4,805,847

APPARATUS FOR TREATING A WEB OF CONTINUOUS MATERIAL

Herbert Schönmeier, Düsseldorf, and Reinhard Hehner, Haan, both of Fed. Rep. of Germany, assignors to Jagenberg AG, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 25, 1988, Ser. No. 173,730
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1987, 3710039
Int. Cl.[4] B65H 23/04
U.S. Cl. 242—56.2 12 Claims



1. A device for feeding a web of a flexible material centrally along a path in a web-processing machine, comprising:

a plurality of upper web-guide rolls engageable with a web of flexible sheet material from above and a plurality of lower web-guide rolls engageable with said web from below and disposed between said upper web-guide rolls along a path of said web from an inlet side of said path to an outlet side thereof;

a respective first wire-deflection roll disposed axially substantially midway along each of said lower web-guide rolls and provided with a circumferential wire-receiving wire guide;

a respective second wire-deflection roll spaced radially below and juxtaposed with each upper web-guide roll whereby said web can pass between each second wire-deflection roll and the respective upper web-guide roll, each second wire-deflection roll being provided with a circumferential wire-receiving wire guide;

a guide wire lying in said wire guides and running in said wire-deflection rolls to alternately pass over and under same along said path and generally centrally thereof, said guide wire being driven to draw said web along said path;

a kite wire affixed centrally to a leading end of said web and attached to said guide wire for drawing said web into contact with successive ones of said web-guide rolls along said path as said guide wire is driven; and

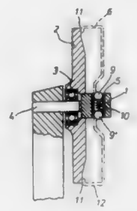
cooperating means for laterally deflecting said kite wire out of the wire guide of each second wire-deflection roll as said leading end approaches the respective upper web-guide roll to ensure substantially central positioning of said web along said path.

4,805,848

CLAMPING DEVICE FOR THE HUBS OF REELS OF MAGNETIC TAPE

Josef Birkmann, Fuerstenfeldbruck, and José Toral, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 56,115
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1986, 8615786[U]
Int. Cl.[4] B65H 18/04, 16/04
U.S. Cl. 242—68.3 4 Claims



1. A clamping device for mounting reel hubs on tape processing machines comprising a block mounted on a disc and rotatable around a central shaft as an axis of rotation,

a pair of bushings in said block symmetrically arranged with relation to the axis and spaced apart adjacent opposite ends of said block,

each bushing having opposing restrictive collars and containing two balls and a spring centrally located in the bushing seated against the respective balls in said bushing to urge each ball to bear on one of the collars of the bushing,

the bushings being axially spaced from the disc,

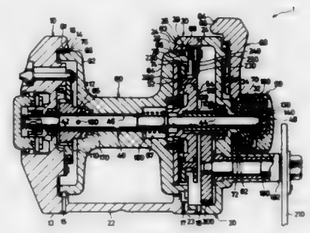
the external circumference of the block being so constructed and arranged that the internal bore of a hub is engageable on the block and against spherical surfaces of the balls whereby the hub may be subjected to a symmetrically divided force pressing an edge of the hub against the disc.

4,805,849

SPOOL IN A DOUBLE-BEARING TYPE FISHING REEL

Kazuya Nambu, Tokyo, Japan, assignor to Daiwa Seiko Inc., Higashikurume, Japan

Filed Sep. 23, 1987, Ser. No. 100,357
Claims priority, application Japan, Nov. 8, 1986, 61-171755[U]; Dec. 27, 1986, 61-203795[U]
Int. Cl.[4] A01K 89/02
U.S. Cl. 242—84.5 R 4 Claims



1. A double-bearing type fishing reel comprising:

first and second frames each having a lower portion;

a spool having an axis therethrough and first and second flanges, said first and second flanges each having a peripheral shoulder, said spool being mounted between said first and second frames and disposed for rotation about its axis and having first and second peripheral grooves therein having an outside wall formed in the respective peripheral shoulder, each shoulder having a diameter and a peripheral part formed on the outer side wall of said peripheral groove, said peripheral part of at least one shoulder having a larger diameter than said peripheral shoulder;

a means in contact with said spool for rotating said spool about its axis;

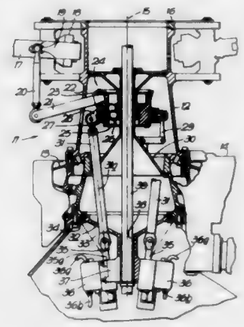
a means disposed to contact said spool for stopping the rotation of said spool about its axis.

4,805,850

HELICOPTER ROTOR CONTROL SYSTEMS

Peter J. Flux, and Christopher S. Hughes, both of Yeovil, England, assignors to Westland Group plc, Yeovil, England

Filed Jun. 8, 1987, Ser. No. 59,756
Claims priority, application United Kingdom, Jun. 20, 1986, 8615109
Int. Cl.[4] B64C 27/54
U.S. Cl. 244—17.25 5 Claims



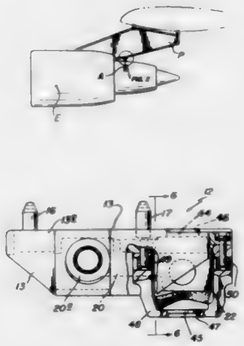
1. A helicopter rotor control system for a rotor having a hollow rotor drive shaft attched to a hollow gearbox output for rotating a rotor head about an axis of rotation and pitch control means internally of the drive shaft for converting non-rotating control inputs to rotating control outputs for changing the pitch of a plurality of rotor blades attached to the rotor head, wherein a plurality of control rods extend downwardly through the hollow rotor drive shaft and the gearbox and are connected directly to individual actuators located generally symmetrically about the axis of rotation.

4,805,851

TURBINE ENGINE MOUNTING BRACKET ASSEMBLY

Paul T. Herbst, Lord Corporation, 2000 W. Grandview Blvd, P.O. Box 10038, Erie, Pa. 16514-0038

Filed Aug. 10, 1987, Ser. No. 83,218
Int. Cl.[4] B64D 27/26
U.S. Cl. 244—54 16 Claims



1. A mounting bracket assembly for use in isolating vibrations in an aircraft having a turbine engine, comprising:

mounting base means adapted to be secured to the aircraft for carrying the engine;

an engine attachment fitting assembly disposed between said mounting base means and the engine, said attachment fitting assembly having arm means extending alongside said mounting base means and torque shaft means extending laterally of said arm means at one end thereof, said arm means adapted to be connected to said engine at a location spaced from said torque shaft means;

laminated elastomeric bearing means connecting said torque shaft means to said mounting base means and mounting said arm means in cantilever fashion to permit said torque shaft means to pivot about a pivot axis in response to displacement of said arm means;

abutment means carried by said mounting base means for limiting at least pivotal motion of said arm means about said torque shaft pivot axis; and

said laminated elastomeric bearing means including surface means carried by said torque shaft means and said base means for compressing the laminated elastomeric bearing means on diametrically opposite sides of said pivot axis when said arm means pivots about said pivot axis while permitting other resilient displacements of said torque shaft with respect to said pivot axis;

whereby the mounting bracket assembly attenuates engine noises transmitted to the aircraft cabin.

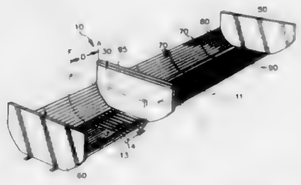
VOL 1099 ISS 3 FEB 21 1989 UMI

4,805,852

AIRPLANE CARGO HANDLING SYSTEM

Arnold Nordstrom, Fallbrook, Calif., assignor to Ascra Corporation, Hawthorne, Calif.

Filed Apr. 20, 1987, Ser. No. 39,709
Int. Cl.[4] B64C 1/22; B64D 9/00
U.S. Cl. 244—137.1 **7 Claims**



1. In an aircraft, a cargo handling system comprising in combination:
- a cargo compartment having a floor structure and a door opening;
- an end panel within said compartment; said end panel movable between a first position adjacent said door opening and a second position away from said door opening and defining said compartment end;
- a drive panel within said compartment; said drive panel movable between a first position adjacent said door opening and a second position toward said compartment end from said drive panel first position and immediately adjacent said end panel first position;
- drive panel drive means for driving said drive panel longitudinally between its said positions such that, upon movement of said drive panel from its said first position to its said second position, any cargo therebetween is moved toward said compartment end; end panel drive means for driving said end panel from said second position toward said first position such that cargo between said positions is displaced toward said door opening; said end panel drive means comprising:
- an end panel drive assembly, including end panel drive transmission means attached to said end panel and disposed between said end panel second position and said drive panel first position;
- a power cable disposed between said drive panel first and second positions and connected to said drive panel such that movement of said power cable results in movement of said drive panel;
- power stroke means connected to said power cable for moving said power cable; and
- indexing means for selectively connecting said drive panel with said end panel drive transmission means such that, when so connected, said end panel moves simultaneously with and in the same direction as said drive panel.

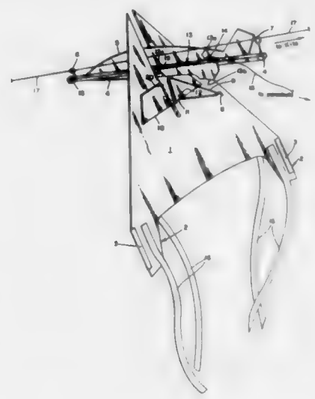
4,805,853

AUTOMATIC ACTION TOY GLIDER-KITE STRING FLYER

Willis R. Battles, 560 S. Helberta, Redondo Beach, Calif. 90277

Filed Jul. 13, 1987, Ser. No. 73,167
Int. Cl.[4] B64C 31/06
U.S. Cl. 244—155 R **3 Claims**

1. In an improved Kite-String Flyer operable to travel up and down an inclined string such as a kite string, comprising in combinstion:
- (a) a fuselage;
- (b) a pivotal wing for operating aerodynamically and incorporating a slot in its center section;
- (c) a guide and support means including two split ring eye hooks disposed in spaced apart positions over and fastened to said fuselage and operable to freely receive the kite string, allowing the flyer to slide up and down;
- (d) pivot means secured to said wing at a position displaced from the center of gravity thereof and secured to said fuselage for pivotally mounting said wing to said fuselage for rotation on a transverse axis between a generally horizontal plane and a generally vertical plane; and
- (e) toggle action means of assisting said wing to execute a toggle action of approximately 90 degrees from the horizontal to a vertical position; said toggle means including an elastic band affixed to the front end of said fuselage and also affixed to an elastic holding hook; said elastic holding hook being fastened to said wing surface at a point adja-



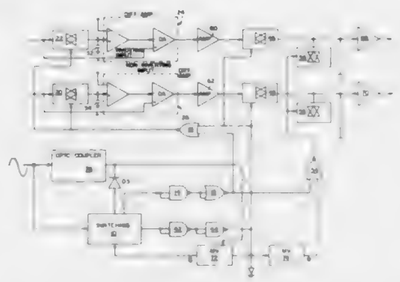
cent to said fuselage and to the rear of said wing slot, said elastic holding hook projecting several inches above said wing surface in order to provide a leverage position for said elastic band; wherein the improvement comprises: a means for protecting the kit operator from receiving a blow made by the front of the fuselage when the flyer dives; an improved launching means; a means for reducing the diving speed of the flyer; wherein said means of protecting the operator comprises a cubic member of foam rubber or other resilient compressible material attached to the front of the fuselage.

4,805,854

GATE CIRCUITRY FOR HOT BOX DETECTORS

Roland A. Howell, Harrison, Tenn., assignor to Southern Railway Company, Norfolk, Va.

Filed Feb. 25, 1987, Ser. No. 18,443
Int. Cl.[4] B61L 3/10
U.S. Cl. 246—169 D **8 Claims**



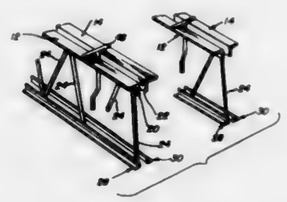
1. A gating circuit for controlling the output of data from the scanner of a heat detector in response to a bi-polar signal indicating the presence of an object within the scanning window of the heat detector, comprising:
- means for storing said data output;
- means for sensing the stored data with respect to a reference signal and including a differential amplifier responsive to said data output;
- means for gating said data output to said storing means and including a first gate interconnecting said data output with said differential amplifier;
- means responsive to said bi-polar signal to generate control signals for opening and closing said gate with different states of said bi-polar signal for controlling said gating means such that said reference signal represents the last immediate data output;
- means for detecting the difference between the peak value stored in said storing means and the highest data value of said output data subsequent to turning off said first gate; and
- said gating means further including a second gate interconnecting the output of said sensing means with said means for detecting and controlled by said control signals to be open with said first gate closed and closed with said first gate open.

4,805,855

BAR HANGER FOR HANGING CONDUITS OR THE LIKE

Thomas S. Kirby, 205 Colman Rd., Soddy, Tenn. 37349

Filed Dec. 18, 1987, Ser. No. 134,700
Int. Cl.[4] F16L 3/00
U.S. Cl. 248—58 **8 Claims**



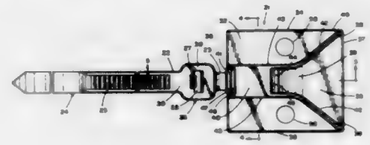
1. A bar hanger for supporting a conduit hanger or the like from a joist of a building, said joist including a pair of chords each having a substantially horizontal top surface including a space therebetween; said bar hanger comprising a head having an axis of elongation extending in a first direction, and a tail; said tail having a first portion secured to said head and elongated along a first axis substantially normal to said axis of elongation of said head, a second portion extending from and inclined relatively to said first portion, and a third portion extending from and inclined relatively to said second portion and terminating at a free end; said third portion being elongated along an axis substantially parallel to and off-set from said first axis; said head and said tail lying in substantially the same plane; the width of said head and at least a part of said first portion adjacent said head normal to said plane being less than the width of said space, and the length of said head in said first direction in said plane being larger than the width of said space, such that said head and at least said part of said first portion may be passed through said space to dispose the head above said top surface and permit said bar hanger to be turned 90° to operatively position said head on the top surface of both chords with the free end extending downwardly; and connecting means at said free end for connecting to said conduit hanger.

4,805,856

CABLE MOUNT

Robert Nicoll, Glenwood, and Karl S. Clausen, Orland Park, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Dec. 29, 1987, Ser. No. 139,529
Int. Cl.[4] F16L 3/08; B65D 63/00
U.S. Cl. 248—74.3 **9 Claims**



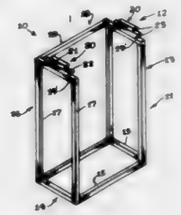
1. A cable mount, comprising:
- a high strength cable tie, including a strap having a free end and an opposite end joined to a strap locking head, the locking head having a strap receiving opening therein;
- a support plate including channel means formed on the support plate for positioning the strap and securing the strap to the support plate;
- a mounting means for securing the support plate to a mounting surface; and
- a flexible hinge disposed between the strap locking head of the high strength cable tie and the support plate joining the head of the cable tie to the support plate.

4,805,857

SUPPORT RACK FOR PLASTIC BAGS

Elmer E. Travis, 10804 Central SE., Albuquerque, N. Mex. 87123

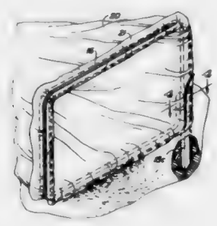
Filed May 16, 1988, Ser. No. 194,623
Int. Cl.[4] A63B 55/04
U.S. Cl. 248—97 **1 Claim**



1. A support rack adapted to suspend and support twin handled plastic bags so as to selectively choose the effective width of the mouth of the plastic bag; wherein, the support rack consists of:
- a support framework unit comprising an open generally rectangular framework member including a base portion, vertical side portions and a top portion; and,
- a handle capturing unit comprising a pair of stepped handle capturing members disposed on opposed sides of the top portion of said framework unit; wherein, each of the pair of stepped handle capturing members comprises:
- a plurality of trapezoidally configured step elements stacked one upon the other wherein the effective length of each of the plurality of step elements diminishes in accordance with the relative distance of the step element from the top portion of said framework unit; and, wherein the top portion of said framework element has a generally C-shaped configuration and the handle capturing members are disposed on the opposed arms of the generally C-shaped top portion.

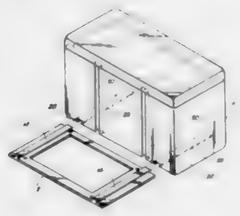
VOL 1099 ISS 3 FE 21 1989 UMI

4,805,858
REFUSE BAG HOLDER
Blair T. Taylor, 30552 Mirandel La., Laguna Niguel, Calif. 92677
Filed Dec. 21, 1987, Ser. No. 135,646
Int. Cl.[4] B65B 67/12
U.S. Cl. 248—99 7 Claims



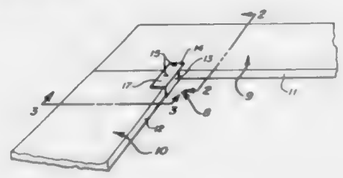
1. A device for supporting a bag and holding such bag in an open position comprising in combination:
(a) a rigid frame surrounding an open area which area can receive an opened bag folded over said frame a distance;
(b) said frame having inner and outer sides with a channel substantially about the periphery of said frame and positioned on the outer side thereof;
(c) a cord member with an end thereof secured to said frame;
(d) the outer side of one end of said frame positioned adjacent and overlapping an inner side of said frame in a manner such that a space is formed between the outer side of said frame end and of the inner side of said frame;
(e) whereby the free end of said cord member is extended and passed about said frame in said channel to engage said bag against said frame and thereafter between adjacent sides of said frame in said space, the dimensions of said space being such that the free end of said cord member is snugly engaged in said space so as to exert a tension on said cord and against the side of said frame.

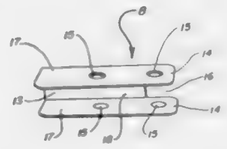
4,805,859
APPARATUS FOR SECURING CONTAINERS TO MOVING PLATFORMS
Don Hudson, 218 Randall Dr., Biloxi, Miss. 39531
Filed Nov. 5, 1987, Ser. No. 117,042
Int. Cl.[4] A47G 23/02
U.S. Cl. 248—148 5 Claims



1. Means for anchoring a box upon a surface of a moving support comprising:
a. a support plate adapted to fixed attachment to said surface;
b. two parallel rail members arising from said support plate, spaced a distance apart;
c. each of said rail members having a planar top face a spaced distance from said support plate;
d. said top face connecting to said support face along two inwardly sloping, planar side faces, said top face and said inwardly sloping side faces defining a truncated pyramidal cross section, defining a base width connection to said plate;
e. said base width having a width being a substantial function of said top face;
f. the intersection of said top face and said side faces being radiused;
g. said parallel rails interlocking with a box mounted base, said box mounted base comprising a pair of parallel first and second outwardly sloping inwardly projecting side faces, at an angle parallel to said inwardly sloping planar side faces, said outwardly sloping side faces defining an inward support face, said outwardly sloping side faces and said inward support face defining a second truncated pyramidal cross section equivalent in dimension to said first truncated pyramidal cross section.

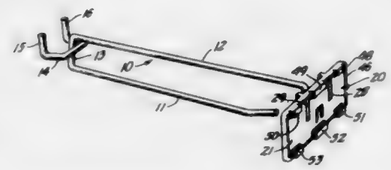
4,805,860
SHELF SUPPORT BRACKETS
John A. Holmstrom, P.O. Box 63, Palo Cedro, Calif. 96073
Filed May 12, 1988, Ser. No. 193,074
Int. Cl.[4] F16L 3/08
U.S. Cl. 248—220.1 5 Claims





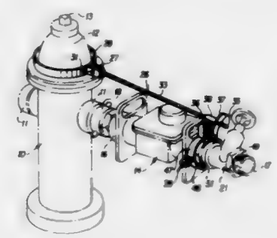
1. A shelf support bracket for securing two shelves, comprising:
an elongated front wall, having:
first and second ends oriented substantially parallel to each other and third and fourth ends oriented substantially parallel to each other and substantially perpendicular to said first and second ends;
a top wall oriented substantially perpendicular to said front wall attached to said first end of said front wall and having an extension extending beyond said third end of said front wall, and
a bottom wall oriented substantially perpendicular to said front wall and substantially parallel to said top wall, attached to said second end of said front wall wherein an opening is defined between said front wall and said top and bottom walls for receiving a first shelf, and a second opening is defined between said wall and said extensions for securing a second shelf perpendicular to said first shelf and having an extension extending beyond said third end of said front wall.

4,805,861
LABEL HOLDER FOR MERCHANDISE DISPLAY HOOK
David R. Thalenfeld, Bear Creek, and Joel I. Glickman, Huntingdon Valley, both of Pa., assignors to Triton Industries Inc., Wilkes-Barre, Pa.
Continuation-in-part of Ser. No. 902,431, Aug. 29, 1986, Pat. No. 4,718,626. This application May 12, 1987, Ser. No. 48,659
Int. Cl.[4] A47F 5/00
U.S. Cl. 248—225.1 3 Claims



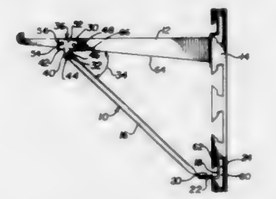
1. A molded plastic label holder for point-of-purchase merchandise displays and the like, comprising
(a) a generally thin, flat plate-like label support formed of molded rigid plastic material and having front and back faces,
(b) a first set of integrally molded vertically oriented generally L-shaped flanges projecting rearward from the back face of said plate-like label support,
(c) a second set of integrally molded horizontally oriented generally L-shaped flanges projecting forward from the front face of the label support,
(d) each of said sets of flanges including outer flange portions spaced from and in opposition to the adjacent face of said label support for the confinement of a thin object therebetween,
(e) said label support being formed with through openings therein substantially coextensive in size and shape with said outer flange portions and located directly opposite said outer flange portions, whereby flange portions on one side of said label support are accessible from the opposite side of said label support,
(f) one of said sets of L-shaped flanges being comprised of horizontally disposed retaining flange means extending discontinuously along the respective upper and lower edge margins of the front face of said label support for engagement with upper and lower edge margins of a label or the like,
(g) the other of said sets of L-shaped flanges comprising a spaced pair of mounting flanges extending vertically along the back face of said label support and engageable with a mounting plate,
(h) said horizontally disposed retaining flange means comprising upper and lower sets of aligned flange sections, each constituting a discontinuous flange, along an edge margin of said label support,
(i) the flange along said upper margin comprising at least a center flange section and two outer flange sections spaced laterally therefrom,
(j) spaced openings being formed in the label support directly opposite the spaced apart flange sections alongs said upper margins,
(k) said vertically extending flanges being aligned generally with and projecting into the spaces between said center flange section and said outer flange sections,
(l) the discontinuous flange along the lower margin comprising at least a center flange section and two outer flange sections spaced laterally therefrom,
(m) said label holder including a pair of downwardly divergent, integral guide ribs extending from said vertically extending flanges,
(n) spaced openings being formed in the label support directly opposite the spaced apart flange sections along said lower margins, and
(o) the lower ends of said guide ribs being aligned generally with and extending into the spaces between the center and outer sections of the lower flange.

4,805,862
HARNESS FOR SUPPORTING A METER ON A FIRE HYDRANT AND THE COMBINATION OF A METER, FIRE HYDRANT AND HARNESS
Edward E. Wiseman, Millersville, Md., assignor to Washington Suburban Sanitary Commission, Hyattsville, Md.
Filed Jul. 30, 1987, Ser. No. 79,326
Int. Cl.[4] E04G 3/00
U.S. Cl. 248—229 7 Claims



1. In combination;
a fire hydrant having a horizontal outlet and a conical top;
a water meter having an inlet pipe extending therefrom in a first direction and an outlet pipe extending therefrom in a second direction, the outlet pipe being parallel to and aligned with the inlet pipe, and means for coupling the inlet pipe to the outlet of the fire hydrant wherein the water meter extends from the fire hydrant in the horizontal direction and is cantilevered from the outlet of the fire hydrant, and
rod means connected to the conical top of the fire hydrant and connected to the water meter for further supporting the water meter in cantilevered suspension on the fire hydrant and holding the inlet pipe and coupling means in juxtaposition with the outlet of the fire hydrant, whereby the danger of the water meter being dislodged from the fire hydrant is minimized.

4,805,863
BRACE AND SHELF SUPPORT ASSEMBLY
Bruce Armstrong, Pittsburgh, and William Pfeifer, Springdale, both of Pa., assignors to Armstrong Store Fixture Corporation, Pittsburgh, Pa.
Filed Mar. 30, 1987, Ser. No. 32,827
Int. Cl.[4] A47G 29/02
U.S. Cl. 248—243 7 Claims



1. A brace for a shelf support, said shelf support having a lower edge, and extending outwardly from a slat wall, said brace comprising:
an elongated member having first and second ends;

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a V-shaped member attached to said first end of said elongated member for releasably securing said brace to said slat wall at a position below said shelf support; and

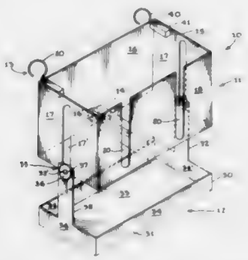
a U-shaped channel member connected to said second end of said elongated member for releasably securing said brace to said shelf support, said U-shaped channel member having a slot therein with a lower edge for receiving and supporting said lower edge of said shelf support, said U-shaped channel member being pivotally connected to said elongated member so as to provide adjustability of the angle between said elongated member and said U-shaped channel member, such that the lower edge of the shelf support when inserted within the slot of said U-shaped channel member is flush with and supported by the U-shaped channel member at the lower edge of said slot.

4,805,864

BEVERAGE CADDY APPARATUS FOR VEHICLES

Michael Votta, 6416 Friars Rd., #311, San Diego, Calif. 92108

Filed Dec. 1, 1987, Ser. No. 127,136
Int. Cl.[4] A47G *29/00*
U.S. Cl. 248—311.2 5 Claims



1. A beverage carrier apparatus for supporting and suspending beverage containers and disparate articles from the interior of a vehicle; wherein, the apparatus comprises:

an upper housing unit provided with a support unit for suspending the apparatus from the interior of a vehicle; wherein, the upper housing unit comprises an open top enlarged upper tray member dimensioned to accommodate beverage containers; wherein, the upper tray member comprises four vertical wall segments including a rear wall, side walls, a front wall and a floor panel wherein a vertical aperture is formed in both of the side walls and the front wall is provided with a pair of elongated narrow recesses dimensioned to accept the handles of beverage containers;

a lower housing unit operatively associated with said upper housing unit and comprising a lower tray member including a generally shallow tray element provided with a pair of vertically projecting elongated arm elements which are disposed on opposed sides of the lower tray member; wherein the upper portion of the arm elements are operatively connected to the elongated vertical apertures in the upper tray member; and wherein the operative connection between the arm elements of the lower tray member and the elongated apertures of the upper tray member comprise: releasable locking members which extend between the upper and the lower housing units; and,

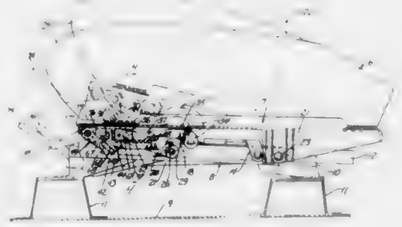
a leveling means associated with the upper housing unit; wherein, the leveling means is adapted to be laterally translated to vertically align the apparatus parallel to a vertical surface on the interior of a vehicle.

4,805,865

MANUAL SEAT ADJUSTER WITH OVERCENTER LOCKING ELEVATION ADJUSTMENT

William R. Goforth, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 18, 1987, Ser. No. 86,553
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—393 13 Claims



1. A manual vehicle seat adjuster for adjusting the elevation of a seat, said adjuster in combination comprising:

a first link for holding said seat and for being pivotally mounted with respect to said vehicle;

a support link having first and second ends for being pivotally mounted with respect to said vehicle at said first end;

a lock bar having first and second ends and being pivotally connected with said first link along said lock bar first end and said lock bar having means of selective engagement with said support link to set the elevation of said seat;

an overcenter lock plate pivotally connected with said first link and pivotally urged into a position preventing pivotal movement of said lock bar away from engagement with said support link by contact of said lock bar with said overcenter lock plate; and

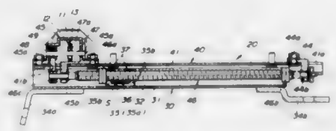
means for sequentially pivoting said overcenter lock plate away from said lock bar and releasing said lock bar from engagement with said support link whereby the elevation of said seat can be adjusted.

4,805,866

POWERED SEAT SLIDE DEVICE

Tsutomu Aihara, Yokohama; Yasuo Hirama, and Hiroaki Iwamoto, both of Kanagawa, all of Japan, assignors to Ikeda Bussan Co., Ltd., Ayase and Oki Seisakusho Co., Ltd., Yokohama, both of, Japan

Filed Jul. 28, 1987, Ser. No. 78,705
Claims priority, application Japan, Jul. 31, 1986, 61-181032
Int. Cl.[4] B60N *1/08*
U.S. Cl. 248—429 14 Claims



1. A powered seat slide device for sliding a seat over a floor to a desired position, comprising:

two stationary rails extending on the floor in parallel with each other;

two movable rails slidably and respectively coupled with said stationary rails and mounting thereon the seat, each movable rail and the associated stationary rail being assembled to define therebetween an elongate tunnel which extends along a common axis of the stationary and movable rails;

a threaded shaft housed in said elongate tunnel and having both ends which are rotatably supported by said movable rail through respective end holders, at least one of said ends of the threaded shaft being projected outwardly from the associated end holder to form an exposed end;

a nut received in said elongate tunnel and fixed to the stationary rail, said threaded shaft being operatively engaged with said nut so that rotation of said threaded shaft about its axis induces an axial movement of the movable rail relative to the stationary rail;

an electric motor mounted on the movable rail and having a drive shaft; and

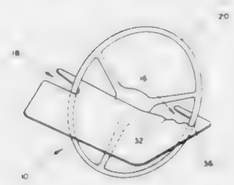
a gear mechanism arranged between said drive shaft of the electric motor and said exposed end of the threaded shaft thereby to transmit rotation of the drive shaft to the threaded shaft.

4,805,867

STEERING WHEEL PLATFORM

Bruce E. McAllister, 6300 Montgomery, N.E. #331-W, Albequerque, N. Mex. 87109

Filed Sep. 28, 1987, Ser. No. 102,023
Int. Cl.[4] A47B *37/00*
U.S. Cl. 248—441.1 6 Claims



1. A portable platform for detachable mounting on and support by a steering wheel having a rim comprising:

a generally parallelogram-shaped platform member comprising an upper edge, a lower edge, a left side edge, a right side edge, and generally parallel planar top and bottom surfaces; and

two generally parallel elongated, U-shaped steering wheel rim receiving slot means in said platform member, said slot means opening in a generally common direction, and positioned generally parallel to said upper and lower edges and disposed to be removably engagable with the rim of the steering wheel, one said slot means being disposed on one of said side edges and substantially near said upper edge of said platform member, and said other slot means being disposed on said upper edge and substantially near said other side edge of said platform member.

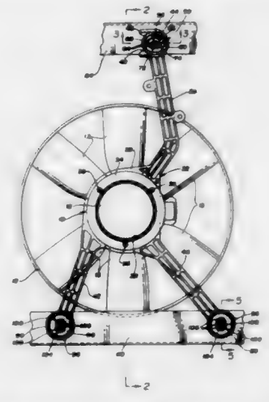
4,805,868

ISOLATION BRACKET ASSEMBLY FOR ENGINE COOLING FAN AND MOTOR

George T. Claude, Bellbrook, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 890,688, Jul. 25, 1986, abandoned. This application Oct. 15, 1987, Ser. No. 115,574
Int. Cl.[4] F24H *3/06*
U.S. Cl. 248—603 2 Claims

1. In combination with a radiator through which engine coolant is circulated, support structure adjacent to said radiator, a bracket assembly for mounting a rotating cooling fan assembly to said support structure and closely adjacent to a face of said radiator for drawing cooling air therethrough, said bracket assembly comprising first and second arm means, each of said arm means having an attachment end portion, each attachment end portion having wall means defining an opening therethrough, first and second grommet means of resilient rubber-like material for each of said openings and secured to the wall means defining said openings, each of said grommets being substantially identical with each having an endless curved body of predetermined thickness as defined by laterally spaced first and second side walls and having inner and outer generally diametrical surfaces, said inner diametrical surface defining an elongated opening and having a plurality of spaced and inwardly projecting resilient contact fingers integral with said body portion, a spacer for each of said grommet means which includes a flattened head portion engaging one of said side walls and having a neck portion extending through the opening in the associated grommet means for physically engaging the tips of said contact fingers, the neck portion of one of said spacers being of thin wall material to define an elongated



adjustment slot, the neck portion of the other of said spacers being of thick wall material having an outer surface of substantially the same configuration as said one of said spacers and defining a locator opening therethrough, separate fastener means extending through said adjustment slot of said one of said neck portions through said locator opening of said neck portion of said other of spacers into engagement with said support and having washer means thereon for compressively loading said first and second grommet means so that said grommet means has a high spring rate in a longitudinal direction while said fingers of said grommet means deflect with a degree of resilience to provide a low spring rate in a radial direction and transverse to said longitudinal direction.

4,805,869

APPARATUS FOR MANUFACTURING OF TAPE DISPENSER

Craig M. Saunders, Sagamore Hills, and John R. Nottingham, Moreland Hills, both of Ohio, assignors to Masco, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 47,936, May 8, 1987. This application Jan. 23, 1987, Ser. No. 65,423
Int. Cl.[4] B41B *11/62*
U.S. Cl. 249—67 1 Claim

1. An apparatus for the manufacture of one of a plurality of molded plastic tape dispensers in a unitary piece formed in a closed mold cavity defined between two opposing mold plates, said plurality of tape dispensers having differing design shape portions, each of said differing design shape portions having a generally planar shape and a peripheral edge, and further having common design shape portions comprising a base upon which said tape dispensers stand upright, a tape roll hub and a tape cutting edge, said common design shape portions all being spaced inwardly from the peripheral edges of said planar shaped portions, said apparatus comprising:

ejector pins associated with said closed mold cavity;

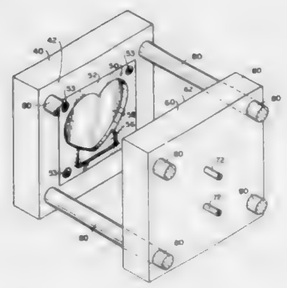
a first of said opposing mold plates having a generally planar surface surrounding surfaces defining first cavities in said

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first mold plate, said cavities adapted to form said base, said tape roll hub, and said cutting edge, said generally planar surface being adapted to form a rear surface of one of said generally planar shapes and having apertures adapted for extension of said ejector pins outwardly therefrom against said rear surface;

a second of said opposing mold plates having a surface with a recess defined therein; and,

an insert adapted to be closely and releasably received in



said recess, said insert having a peripheral surface surrounding a surface defining a second cavity in said insert, said second cavity being defined by a surface adapted to form a front surface of one of said generally planar shapes and by a peripheral cavity edge, said peripheral cavity edge corresponding to said peripheral edge of said generally planar shape and being adapted to surround said first cavity and said apertures at said surface of said first mold plate with said peripheral surface of said insert in contact with said generally planar surface of said first mold plate.

4,805,870

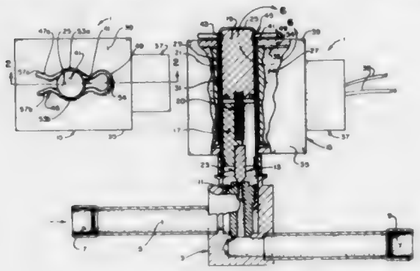
COIL RETAINER FOR SOLENOID

Denny W. Mertz, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 463,626, Feb. 3, 1983, abandoned. This application Mar. 25, 1985, Ser. No. 715,588

Int. Cl.[4] F16K *31/02*

U.S. Cl. 251—129.15 **5 Claims**



1. In a solenoid operated valve comprising a valve body having a passage therethrough of the flow of a fluid, a valve seat within said passage, a valve member movable between an open position in which said fluid flows through said flow passage and a closed position in which said valve member cooperates with said valve seat to block the flow of fluid through said passage, and solenoid actuating means for effecting movement of said valve member between its opened and closed positions, said solenoid actuating means comprising a coil selectively energizable and de-energizable by a source of electrical power for generating a magnetic flux, a tube having a closed outer end and an open inner end disposed generally coaxially with respect to said coil, said inner end of said tube being secured to said valve body, said tube receiving, at least in part, said valve member as it moves axially within said tube as said valve member moves between its open and closed positions, a housing receiving said coil, said housing having an outer face with an opening therein such that with said housing and said coil receiving said tube, the outer end of said tube extends beyond said outer face of said housing, wherein the improvement comprises: said tube having a circumferential groove therearound adjacent its outer end, said groove being spaced beyond the outer face of said housing, and fastening means secured to said housing and being carried on said outer face thereof for resiliently, cammingly cooperating with said groove on said tube as said housing and said coil are installed on said tube by moving said housing and said coil axially with respect to said tube, wherein said fastening means comprises a spring clip having a pair of resilient arms spaced from one another on generally opposite sides of said opening in the outer face of said housing and a base section integral with said arms, said base section being secured to said housing, said arms being cammingly engaged by and being resiliently movable away from one another upon axial movement between said housing and said tube so as to permit the outer end of said tube to be resiliently received by said arms, such that with said groove in register with said arms, said housing and coil are secured together in predetermined axial relation.

4,805,871

ELECTROMAGNETIC VALVE

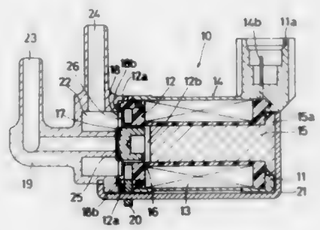
Mamoru Nakamura, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Aug. 31, 1987, Ser. No. 91,023

Claims priority, application Japan, Sep. 26, 1986, 61-147991[U]

Int. Cl.[4] F16K *31/06*

U.S. Cl. 251—129.17 **6 Claims**



1. An electromagnetic valve comprising:

casing means for defining a flow passage therein;

a valve member, including a plunger and a seal for a valve seat, mounted in the casing means for bi-directional movement in two directions for opening and closing the flow passage;

electromagnetic means for moving the valve member in one of the two directions, including a core for magnetically attracting the valve member;

a support including a resilient metal disc for supporting the valve member in the casing means, said metal disc moving the valve member in the other direction, said plunger and seal being attached to the metal disc on opposite sides thereof;

means for limiting the movement of the valve member in the one direction for maintaining a separation between the valve member and the core, said limiting means including at least one resilient projection on the metal disc; and

said casing means including a guide surface interacting with the resilient projection for limiting movement of the valve member in the one direction, said guide surface being inclined with respect to the direction of movement of the valve member in the one direction.

4,805,872

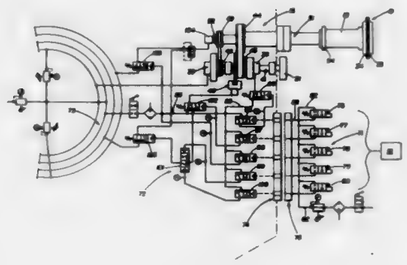
SHAPING TURRET

Earl F. Loeffler, Uniontown, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 633,317, Jul. 23, 1984, abandoned, which is a division of Ser. No. 458,680, Jan. 17, 1983. This application Jun. 22, 1988, Ser. No. 211,164

Int. Cl.[4] F16K *31/12*

U.S. Cl. 251—25 **1 Claim**



1. A means for transmitting logic information from a relatively fixed member to a movable member comprising:

(a) a source of compressed air associated with said fixed member;

(b) valve means operatively connected to said source of compressed air and associated with said fixed member for selectively outputting compressed air from said valve means; and

(c) air flow detection means affixed to said movable member and mounted proximate to the output of said valve means including pilot operated valve means adapted to be actuated in response to compressed air outputted from said valve means wherein said air flow detection means is spaced from said valve means.

4,805,873

CONTROL DEVICE FOR A STARTER VALVE OF A TURBINE AERO-ENGINE

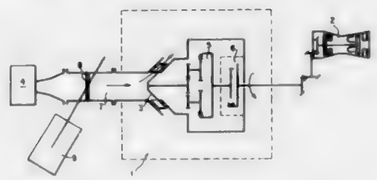
Pierre C. Montos, Grigny, France, assignor to Societe Nationale D'Etude et de Construction De Moteurs D'Aviation "S.N.E.C.M.A.", Paris, France

Filed Nov. 18, 1987, Ser. No. 122,683

Claims priority, application France, Nov. 20, 1986, 86 16137

Int. Cl.[4] F16K *31/363*

U.S. Cl. 251—31 **5 Claims**



1. A control device for a butterfly valve for controlling the supply of compressed air to the starter of a turbine aero-engine, said device comprising

a cylinder,

an operator slide mounted for linear movement in said cylinder,

first and second chambers defined by said cylinder and said operator slide whereby said slide is movable under the action of a pressure differential between said first and second chambers,

a spindle on which said butterfly valve is mounted and which is operatively connected to said operator slide whereby said linear movement of said slide causes rotation of said spindle to open and close said valve,

retaining means for holding said operator slide when said valve is closed and temporarily preventing movement of said slide to open said valve in response to creation of a negative pressure in said first chamber relative to said second chamber until a predetermined minimum pressure differential is reached, whereupon said slide travels at high speed in said cylinder to recompress said first chamber, and

means for limiting the subsequent speed of travel of said operator slide when recompression of said first chamber has taken place.

4,805,874

VALVE CASING FOR USE IN A BUTTERFLY VALVE

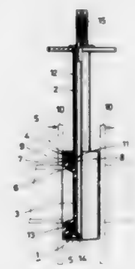
Katsunobu Miyake; Hiroshi Horii, and Kenji Ikeuna, all of Osaka, Japan, assignors to Kurimoto, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 784,122, Oct. 4, 1985, Pat. No. 4,669,499. This application Dec. 31, 1986, Ser. No. 948,277

Claims priority, application Japan, Sep. 12, 1986, 61-294386

Int. Cl.[4] F16L *7/00*

U.S. Cl. 251—306 **2 Claims**



1. A valve casing for use in a butterfly valve, comprising:

an inner shell and an outer shell formed as a double structure, said inner shell comprising a cylindrical part defining an inner bore and seal ring receiving portions formed on the ends of said cylindrical part, said outer shell surrounding said inner shell and defining therewith a space, said inner and outer shell being solidly fixed to each other at the ends of the valve casing; and

a cylindrical member comprising an elastic material, said cylindrical member having an extent so that the inner bore and seal ring receiving portions of said cylindrical part are covered by said cylindrical member, said cylindrical member forming a passage and serving as a seal ring.

4,805,875

JACK ASSEMBLY FOR RAILROAD CARS

Kenneth J. Jackson, St. John, Ind.; Jagdish Shah, Lombard, Ill., and Robert E. Graham, Jr., Omaha, Nebr., assignors to Trailer Train Company, Chicago, Ill.

Filed Jan. 13, 1987, Ser. No. 2,936

Int. Cl.[4] B60P *1/00*

U.S. Cl. 254—2 R **27 Claims**

1. For use with a railroad car supported by spaced wheeled

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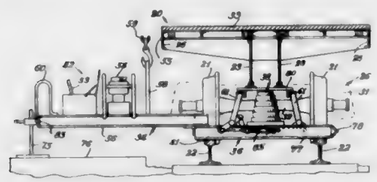
truck assemblies to roll on two laterally spaced track rails, a jack assembly comprising the combination of:

a pair of spaced apart, elongated structural beams of a length to extend across the rails; said beams having bottom surfaces for contact with said rails to deliver the load received by said beams to the rails;

power lift means disposed between the beams, and a plate connected to said power lift means and to each said beam to deliver all the load received by said power lift means from said car engaging means to said beams;

a car engaging means coupled to the power lift means to be moved in a direction transverse to the beams;

said beams, car engaging means and power lift means being sized, when the power lift means is contracted, to fit with clearance between the tops of the track rails and the lowest portion of the railroad car, in order to manipulate the said jack assembly from one side of the railroad car to an operating position wherein the beams, car engaging means and power lift means are disposed under the railroad car



and the beams extend across the rails in contact therewith, and

said power lift means, when in said operating position, having an operative stroke sufficient to move the car engaging means against the overlying railroad car and then to lift said car to an elevated car retaining position;

means for activating the power lift means; and

further including block means carried relative to the beam, said block means being adapted to be moved between an inoperative position spaced clear of the car engaging means and an operative position against the car engaging means, when the latter is raised, effective to hold the car engaging means so raised independently of the activating means and the power lift means, said block means including at least one rigid link having an end pivoted upon said beam and an opposite free end engaged with said car engaging means when in said operative position and disengaged from said car engaging means when in said inoperative position.

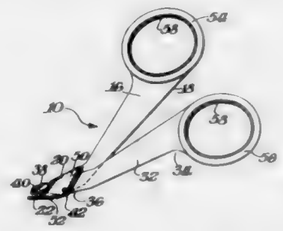
4,805,876

SURGICAL STAPLE REMOVER

Joseph W. Blake, 88 Main St., New Canaan, Conn. 06840, and Paul C. Di Cesare, New Canaan, Conn., assignors to Joseph W. Blake, III, New Canaan, Conn. and Jack W. Kaufman, Merrick, N.Y.

Filed Jan. 6, 1983, Ser. No. 456,160
Int. Cl.⁴ B25C *11/00*
U.S. Cl. 254—28 **8 Claims**

1. A surgical staple remover comprising a first handle element having a rear portion and a front portion terminating in a pair of outwardly extending anvil sections, portions of which are separated from one another by a slotted opening, the anvil sections having outside surfaces that diverge away from each other in a front to rear direction whereby different size staples may be received thereon until the staples contact the diverging outside surfaces thereof, a second handle element having a rear portion and a front portion provided with a blade section constructed and arranged for movement toward and away from the anvil sections and into and out of the slotted opening therebetween, the blade section having a lower concavely curved staple engaging edge, and means pivotally connecting together the first and second handle elements whereby the concavely curved edge of the blade section moves toward the anvil sections and through the slotted opening when the rear portions of the handle elements are moved toward each other



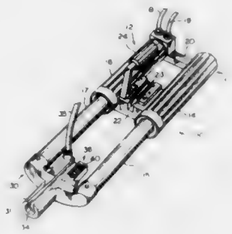
to cause the curved edge to engage a staple on the anvil sections with a downward and rearward force and thereby crimp the staple without forward or rearward movement of the staple on the anvils.

4,805,877

TENDON STRESSING JACK AND METHOD

Charles Hoekstra, 4294 Hopkins Lake Dr., Duluth, Ga. 30136

Filed Sep. 28, 1987, Ser. No. 101,829
Int. Cl.⁴ E21B *19/00*
U.S. Cl. 254—29 A **9 Claims**



1. In a tendon stressing jack of the type having hydraulic cylinder means that includes a stationary component adapted to be positioned against a structure out of which a tendon extends and a movable component that bears tendon gripping means, the improvement comprising gauge means mounted to one of said components of said hydraulic cylinder means for measuring the linear travel of the tendon out of the structure in response to actuation of said hydraulic cylinder means for use in determining the magnitude of stress being applied to the tendon.

4,805,878

ANTI-ROTATION CABLE STRINGING

Glen R. Dickey; Alton M. Bosley; Robert H. Weyrich, and Charles C. Juarez, all of Houston, Tex., assignors to Houston Industries Incorporated, Houston, Tex.

Filed May 7, 1986, Ser. No. 860,640
Int. Cl.⁴ B05H *59/00*
U.S. Cl. 254—134.3 R **19 Claims**

1. An apparatus for stringing a cable while resisting rotation of the cable as it is pulled from a storage reel and being strung, comprising:

(a) a leader member formed of a plurality of flexibly connected segments;

(b) said leader member being attachable at one end to the cable;

(c) said leader member being attachable at an opposite end to a pulling rope for pulling the cable from the reel; and

(d) weight means mounted with said leader member for exerting a force on said leader member resisting rotation of said leader member and the cable, said weight means comprising a plurality of flexible weight members mounted at spaced positions from each other along said



leader member, each of said plurality of weight members comprising:

(1) a number of individual weight bodies;

(2) a flexible tubular member for containing said weight bodies; and

(3) means for attaching said tubular member to one of said flexibly connected segments.

4,805,879

HAND RAILING ASSEMBLY

Vittorio Spera, 7189 Lieseux Street, St. Leonard, Quebec, Canada H1S 2G3

Filed Dec. 9, 1987, Ser. No. 130,638
Int. Cl.⁴ E04H *17/14*
U.S. Cl. 256—65 **8 Claims**



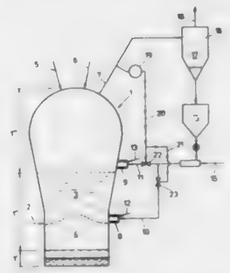
1. In a hand railing assembly with a top rail and a bottom rail secured in spaced apart parallel relationship by a plurality of spaced apart vertical pickets, the railing assembly being supported by a plurality of spaced apart vertical posts connected to the top rail, the improvement comprising each of the vertical pickets having a substantially H-shaped cross section with curved flanges and a center web, the top and bottom rails each having a first member and a second member, the first member extending for the length of the railing assembly and having pairs of slots spaced apart along the length, the pairs of slots holding the flanges at the end of the pickets, the second member positioned in opposing grooves in the first member having a snap lock connection to notches located in the flanges at the ends of the pickets, and a first positive stop for the end of each of the flanges, the web of each of the pickets being cut out at the ends of the pickets to provide a second positive stop with the first member between slots in each of the pairs of slots.

4,805,880

FLUIDIZED BED ARRANGEMENT FOR THE PRODUCTION OF MOLTEN PIG IRON AND STEEL PRE-PRODUCTS

Rolf Hauk, Düsseldorf; Gero Papst, Buchl-Weitenung; Klaus Langner, Meerbusch Osterath, all of Fed. Rep. of Germany; Michael Nagl, Linz, Austria; Werner Kepplinger, Linz, Austria, and Leopold Seirlehner, Linz, Austria, assignors to Voest-Alpine Akt., Austria and Korf Engineering GmbH, Fed. Rep. of Germany

Division of Ser. No. 797,820, Nov. 14, 1985, Pat. No. 4,728,360.
This application Sep. 21, 1987, Ser. No. 99,233
Claims priority, application Austria, Nov. 15, 1984, 3613/84
Int. Cl.⁴ F27B *15/20*
U.S. Cl. 266—87 **4 Claims**



1. In an arrangement for the production of molten pig iron and steel pre-products from particulate ferrous material and for the production of reducing gas, said arrangement including a refractory lined meltdown gasifier having a side wall, apertures in said sidewall for introducing coal and ferrous material, a discharge duct for drawing off said reducing gas produced, and melt and slag tapping means, said meltdown gasifier being composed of a lower section provided for collecting molten material and liquid slag, a central section equipped with feed lines for oxygen-containing gas and provided for accommodating a coke fluidized bed, and an upper section, the improvement comprising:

burner means arranged above said feed lines so as to penetrate said side wall of said meltdown gasifier and adapted to supply additional heat, said burner means being equipped with dusty fuel particle supply ducts and with oxygen supply ducts;

means for measuring the temperature in said reducing gas; and,

means for controlling said additional heat provided by said burner means in accordance with said reducing gas temperature.

4,805,881

INTERNAL GAS GENERATOR FOR HEAT TREATING FURNACE

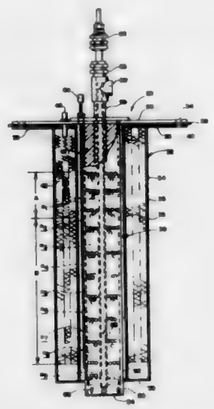
Thomas J. Schultz, Maumee; Donne A. Horne, Toledo, both of Ohio; Stephen J. Sikirica, Chicago, Ill., and James W. Bender, Toledo, Ohio, assignors to Gas Research Institute, Chicago, Ill.

Filed May 28, 1987, Ser. No. 55,426
Int. Cl.⁴ C21D *1/76*
U.S. Cl. 266—257 **16 Claims**

1. A modular gas generator for universal application to and in combination with a standard, heat treating furnace, said furnace having a sealed heat treat chamber defined by its casing for heat treating metal workpieces therein by controlling the temperature of the workpiece and the composition of the gaseous atmosphere within said chamber, said gas generator comprising:

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(i) an elongated, tubular reaction cartridge having a closed flanged end and an open gas-discharge end, an inlet in said closed end for injecting gaseous reactants into said cartridge;
(ii) catalytic reaction means disposed within said reaction cartridge for enhancing the production of an endothermic product gas;
(iii) an elongated tubular heating member circumscribing and concentric with said cartridge and having a flanged end adjacent said flanged end of said cartridge;
(iv) control means controlling the flow rate and composition of said reactant gases in said cartridge and the heat from said heating element to produce an endothermic product gas; and



(v) mounting means for releasably securing said cartridge and said heating element into an opening in said heat treatment chamber and generally flush with said casing for replacement only of said cartridge in the event said catalytic reaction means become inoperative, and

said cartridge is a cylindrical tubular member, said heating member includes a ring-shaped cylindrical casing having an inner cylindrical wall surface in close proximity to said cartridge, an electric heating element within said ring-shaped casing extending the substantial length thereof, said control means operative to cause said heating element to generate less heat over a portion of said ring-shaped casing spaced form said flanged end thereof whereby the gas reactions produced by said catalytic reaction means is balanced over the length of said reaction tube.

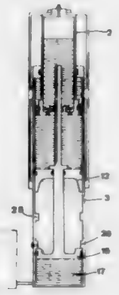
4,805,882

SHOCK ABSORBER WITH ADJUSTABLE RESIDUAL STROKE

Jacques Veaux, Chatillon, and Michel Derrien, Versailles, both of France, assignors to Messier-Hispano-Bugatti, France

Filed Jun. 25, 1987, Ser. No. 66,166
Claims priority, application France, Jul. 7, 1986, 86 09860
Int. Cl.[4] F16F 9/22
U.S. Cl. 267—64.25 **2 Claims**

1. A shock absorber comprising a hollow rod slidable in a cylinder via a piston determining at least two variable volume chambers in communication with one another by means of apertures through said piston, one of said chambers being divided into three portions by a moving end plate and a raising piston slidably but sealingly mounted within said cylinder, a compressible fluid at a first pressure being disposed in one chamber in communication with a first one of said portions, a compressible fluid at a second pressure being disposed in a second of said portions between said moving end plate and said raising piston, and means for introducing incompressible fluid within a third of said portions on a side of said raising piston opposite said second compressible fluid, said moving end plate and said raising piston being connected by linking means comprising a rod attached to one of said end plate and said raising piston, said rod extending through said second compressible



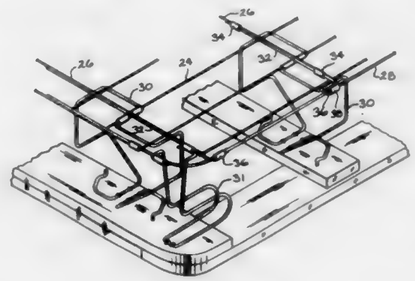
fluid and through a respective one of said raising piston and said end plate, and abutment means mounted on said rod so that said end plate and said raising piston can move toward each other but are prevented from moving a farther apart than a predetermined position.

4,805,883

BOX SPRING ASSEMBLY WITH A GRID STRUCTURE FORMED OF BOTH BASIC AND SPRING WIRE

John P. Kitchen, Georgetown, Ky., assignor to Hoover Group, Inc., Roswell, Ga.

Filed Aug. 10, 1987, Ser. No. 83,353
Int. Cl.[4] F16F 3/00; A47C 23/02, 23/04
U.S. Cl. 267—103 **5 Claims**



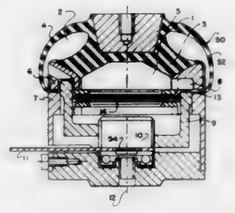
1. A box spring assembly comprising a generally horizontal frame having a generally horizontal welded wire grid disposed a predetermined distance above said frame, said grid including a plurality of straight wires arranged criss-cross fashion, some of said wires extending lengthwise of said frame and others of said wires extending crosswise of said frame, and a border wire supporting said lengthwise and crosswise wires, said border wire being of generally rectangular shape having side sections and end sections; a plurality of grid support springs arranged between and secured to said grid and said frame so as to yieldably support said grid on said frame, and auxiliary grid wires formed of spring wire connected to and extending crosswise of said border wire, and means connecting at least one of said auxiliary grid wires intermediate its ends to one of said grid cross wires and at its ends to said border wire side sections.

4,805,884

FLUID CUSHIONING MOUNTING PARTICULARLY FOR ENGINES IN MOTOR VEHICLES

Ernst-Günter Jordens, Damme, and Johannes Sprute, Osnabrück, both of Fed. Rep. of Germany, assignors to Lemförder Metallwaren A.G., Fed. Rep. of Germany

Filed Apr. 20, 1987, Ser. No. 40,316
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1986, 3614162
Int. Cl.[4] F16F 13/00; B60K 5/12
U.S. Cl. 267—140.1 **5 Claims**



1. A dual-chamber support bed with hydraulic cushioning for engine mount vehicles, having a working chamber and a compensating chamber filled with liquid, and walls defining said chambers made of annular rubber diaphragms having a predetermined buckling characteristics adapted to an operating load, and being connected to a housing, first and second rigid components of said housing overlapping one another and forming a nozzle chamber, said first and second rigid components of said housing being adjustable relative to one another, a rotatable spindle supported in said second component, said channel having a flow resistance which is adjustable by means of a regulating unit connected to said spindle, said first and second components being adjustable relative to one another in the direction of the vertical axis of the mount, and one of said components being threaded on said spindle which is rotatable freely in said housing, and said unit including an operating member extending out of said housing, said nozzle channel being positioned concentrically to the vertical axis in a plane perpendicular to it, said one component having a raised profile engaged in a corresponding die profile of said other component and being adjustable in this profile, said nozzle channel having a raised die profile which is connected by openings to the working chamber and to the compensating chamber and is sealed by means of an elastic diaphragm, and the raised profile of the component is adjustable relative to said diaphragm.

4,805,885

SINUOUS SPRING

William H. Rose, Harrisburg; David W. Rupaik, Mechanicsburg, and David T. Shaffer, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

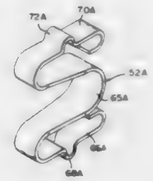
Division of Ser. No. 610,179, May 14, 1984, Pat. No. 4,531,030, which is a continuation-in-part of Ser. No. 452,002, Dec. 21, 1982, abandoned. This application May 29, 1985, Ser. No. 715,855
Int. Cl.[4] F16F 1/18
U.S. Cl. 267—165 **2 Claims**

1. A sinuous spring member for compression to a loaded state and relaxable to a substantially unloaded state, comprising:

a central section of U-shaped configuration having a first bight section and two legs extending from said first bight section;

outer sections extending integrally and continuously from second bight sections joining respective ones of said two legs, first outwardly therefrom then therealong and including outwardly arcuate sections about midway thereof to receive compressive force thereat, said outer sections thereby being adapted to be deflected in cantilever fashion about said second bight sections; and

free ends of said outer sections being curved inwardly to have end sections parallel to and having major surfaces facing opposing portions of said respective ones of said two legs adjacent the juncture of said legs and said first bight section, said end sections thereby being adapted to



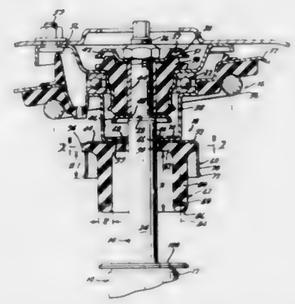
engage said opposing portions with said major surfaces and not damage said central section upon engagement when the spring member is compressed to said loaded state, whereby the inward movement of said outer sections is limited and the spring characteristics of the spring member are increased when said major surfaces of said end sections so engage said opposing portions.

4,805,886

JOUNCE BUMPER ASSEMBLY FOR VEHICLE SUSPENSION STRUT

Morris Hassan, Trenton, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Apr. 11, 1988, Ser. No. 179,721
Int. Cl.[4] F16F 13/00
U.S. Cl. 267—220 **6 Claims**



1. A jounce bumper assembly for a vehicle suspension strut comprising a shock absorber having an outer support casing and a piston rod extending out of the casing upper end cover plate, means connecting said casing to the vehicle unsprung mass, an upper mount connecting the upper end of said piston rod to the vehicle sprung mass, said upper mount including a transverse portion having a central aperture therein receiving said piston rod therethrough in a spaced concentric manner, and means connecting the upper end of said piston rod to said sprung mass, said jounce bumper assembly comprising:

a rigid inverted cup-shaped shell member and a molded flexible elastomeric sleeve member;

said cup-shaped shell member having a transverse upper closed end portion and a right cylindrical shaped outer side wall portion concentric with said piston rod;

said shell member upper closed end portion formed with an upwardly extending neck portion of an external size and shape to closely fit within said upper mount aperture;

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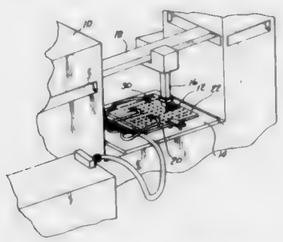
said neck portion defining an internal piston rod passage including locking means adapted for retaining said shell neck portion within said mount aperture;
said shell side wall portion formed with a plurality of slots positioned adjacent its upper closed end;
said elastomeric sleeve member defining a cylindrical shaped annular hollow lower sleeve portion and an upper cap portion, said lower sleeve portion concentrically encircling the piston rod and radially spaced intermediate said shell member cylindrical side wall portion and said piston rod;
said sleeve portion having control ring means embedded therein adjacent its lower end;
said sleeve member upper cap portion formed with a central aperture receiving said piston rod therethrough, said cap portion molded with a plurality of integral resilient locking tabs around its outer periphery, each said locking tab sized for reception in an associated aligned slot such that upon said piston rod being inserted through said cap portion central aperture said sleeve member cap portion is positively retained in said shell member;
said sleeve portion defining a predetermined height such that its lower end face is positioned a determined axial distance above the casing upper end cover plate with said strut in its neutral vehicle height position;
whereby upon said sleeve portion lower end face being initially impacted the resulting impact is substantially absorbed by the column effect of said sleeve portion assisted by said embedded control ring means providing a high initial spring rate and thus high early damping of the shock jounce strokes with minimal axial compression travel of the piston rod; and
upon said sleeve portion being further compressed the resultant stress causes an intermediate portion of said sleeve to buckle outwardly, wherein such outward movement is restricted in a controlled manner by said shell member cylindrical outer side wall thereby achieving increased damping adjacent the end of said piston rod jounce stroke.

4,805,887

UNIVERSAL VACUUM AND CLAMP SETUP FIXTURE FOR COORDINATE MEASURING MACHINES

Larry L. Ray, Flushing, Mich., assignor to Rayco Manufacturing, Inc., Auburn Heights, Mich.

Filed Nov. 12, 1987, Ser. No. 119,669
Int. Cl.[4] B25B *11/00*
U.S. Cl. 269—21 **29 Claims**



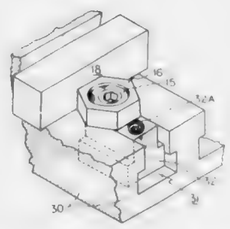
1. An apparatus for securing articles relative to a work surface comprising:
(A) a rigid surface disposed in a fixed position relative to said work surface;
(B) a plurality of cavities disposed on said rigid surface;
(C) at least one article holder having an inlet opening, an outlet opening, a flexible suction cup mated to said outlet opening and means for removably securing said article holder in a fixed position in one of said cavities;
(D) a vacuum source; and
(E) means for coupling said vacuum source to said inlet opening of each article holder.

4,805,888

ORBITAL-ACTION CLAMPS

Maurice E. Bishop, Moultonville Rd., Center Ossipee, N.H. 03814

Continuation of Ser. No. 93,081, Sep. 1, 1987, abandoned, which is a continuation of Ser. No. 838,092, Mar. 10, 1986, abandoned. This application Aug. 30, 1988, Ser. No. 239,050
Int. Cl.[4] B25B *1/08*
U.S. Cl. 269—99 **3 Claims**



1. An orbital-action two-part clamp for holding a workpiece in relation to a mount, comprising first clamping means having at its lower end a support portion adapted to be supported within an accommodating recess in the mount when inserted therein and being angularly adjustable in relation thereto about an axis, and an upper eccentric free end portion integral with and above said lower portion and having outer peripheral bearing surfaces which are disposed outwardly above said recess in said mount when said lower end is inserted therein and which have a center eccentrically offset laterally in relation to said axis, and second clamping means having inner peripheral bearing surfaces fitted for relative angular motion closely about said outer peripheral surfaces and further having at least one workpiece-engaging face displaced laterally outwardly away from said bearing surfaces, said upper eccentric free end portion of said first clamping means extending laterally beyond said support portion at said lower end, said free end portion having outer surface area and said second clamping means having inner surface area which mechanically catch and interfere with one another and thereby prevent unintended separation of said first and second clamping means when they are mated together and said lower end of said first clamping means is supported in said mount, said outer and inner surface areas being disposed to leave space laterally about said first clamping means to accommodate orbital movement of said second clamping means without jamming, said workpiece-engaging face extending substantially transversely in opposite angular directions from a radius to said axis and thereby promoting wedging actions which resist turning and loosening of said second clamping means in either angular direction about said axis once said second clamping means has been orbited into an engagement with a workpiece centered substantially at the site of said radius, wherein the maximum distances between the workpiece and said workpiece-engaging face of said second clamping means do not exceed twice the lateral offset between said axis and said center of said outer peripheral bearing surfaces of said first clamping means, wherein at least one of said peripheral surfaces comprises a surface of revolution substantially concentric with said center which is eccentrically offset in relation to said axis, said first clamping means further including angular-adjustment provisions in the form of surfaces shaped and disposed to fit separately and cooperatively with a torque-applying tool and to respond to angular movement of the tool by angularly adjusting orientation of said upper eccentric end portion about said axis, whereby said second clamping means may be caused to orbit about said axis

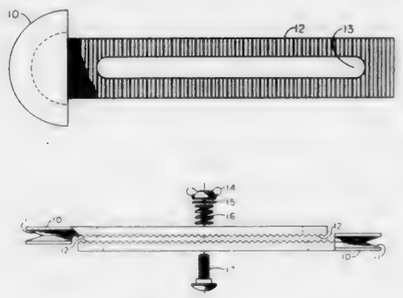
and thereby to move said workpiece-engaging face thereof in relation to said axis and laterally into and out of engagement with a nearby workpiece by angularly adjusting said first clamping means by no more than one-half turn about said axis by way of said angular-adjustment provisions.

4,805,889

CHAIN-KEEPER

Robert K. Liepse, P.O. Box 218, Mexico, Mo. 65265

Filed Nov. 9, 1987, Ser. No. 118,270
Int. Cl.[4] B25B *1/02*
U.S. Cl. 269—210 **3 Claims**



1. An adjustable device for carrying and storing various sizes of chain saw cutting chains in orderly untangled fashion, ready for use, comprising two identical components, each of the two identical components comprising a bar to having opposite ends and a plurality of serrations on a longitudinal face thereof, said serrations facilitating a face to face interlocking relationship between the two identical components at any point throughout the length of the bar, said components further comprising at one end of said bar an arcuate portion having a groove around the circumference thereof and configured in such a way so that a portion of a chain saw cutting chain may be inserted, said adjustable device further comprising a separate locking mechanism in operational contact with each of said components so as to interlock the serrations of said two components and maintain said components in a fixed position, said arcuate portions of each component being located at opposing ends of the locked together components, wherein said chain saw cutting chain is retained in said grooves of said arcuate portions when said components are locked together by said locking mechanism.

4,805,890

SHEET STACKING MACHINE

Merrill D. Martin, 5405 Bacon Rd., Oakland, Calif. 94619

Filed Aug. 6, 1987, Ser. No. 82,280
Int. Cl.[4] B65H *29/68*
U.S. Cl. 271—203 **5 Claims**

1. A machine for handling sheets on conveyors to form a stack thereof comprising:
a first tiltably mounted flow control conveyor disposed to receive sheets from the discharge of a cutting knife of a sheet processing machine and to discharge said sheets onto,
a second inclined belt conveyor positioned to receive said sheets from said first flow control conveyor and to discharge said sheets to,
a pair of rotating pinch rollers positioned to grip said sheets therebetween and to discharge said sheets onto,
a platform of a vertical elevator positioned against said rollers and disposed to receive said sheets successively from said rollers while descending from an initial elevated position opposite the discharge of said rollers to form a stack upon said platform;
said first flow control conveyor being further equipped with a vacuum source positioned beneath its carrying surface to effect retention of sheets thereon;
separate driving means for said first conveyor and said second conveyor;
speed control means disposed for operating said driving means of both of said conveyors initially at a first speed lower than the linear velocity of said sheets discharging from said processing machine thereby causing overlapping of said sheets on said conveyor;
said speed control means being disposed for increasing the speed of both of said conveyors to a second relatively high speed for a short interval of time after a predetermined number of sheets has been discharged from said processing machine;
said speed control means being further disposed for decreasing the speed of said first control conveyor to a third relatively slow speed said tilting control means being disposed for simultaneously positioning said first conveyor to said second vertical angle thereby interrupting



the discharge of said sheets onto said second conveyor and slowing the forward movement of said sheets on said first flow control conveyor thus causing them to accumulate thereon while continuing the operation of said second conveyor at said second relatively high speed; tilting control means for positioning said first flow control conveyor alternately from a first vertical angle to a second increased vertical angle;
said speed control means being still further disposed for continuing the operation of said second conveyor at said relatively high speed until said predetermined number of sheets has been discharged onto said descending platform thereby completing said stack thereon;
means for arresting the descent of said elevator platform and means for discharging said stack therefrom said speed control means being disposed for simultaneously changing the speeds of both of said conveyors back to the said first speed said tilting control means being further disposed for positioning said flow control conveyor back to said first vertical angle;
means for returning said elevator platform back to said initial position.

4,805,891

STANDARD AND REVERSE COLLATOR

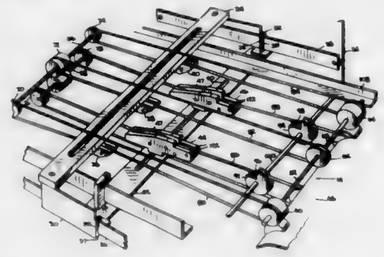
Harry E. Luperti, Wilton; Robert Irvine, Riverside, and Anthony Lavara, Stamford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 4, 1988, Ser. No. 140,695
Int. Cl.[4] B65H *39/10*
U.S. Cl. 271—212 **5 Claims**

1. A reversible collating machine for stacking sheets of paper fed seriatim thereto from a singulating feeder in the same or reverse order as said sheets appear in said singulating feeder, comprising:
a housing;

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means secured to said housing for rotatably mounting endless, elastic belts;
at least one upper, endless, elastic belt rotatably mounted to said mounting means;
at least one lower, endless, elastic belt rotatably mounted to said mounting means, each of said belts having an upper and a lower reach, wherein the lower reach of the upper belt is situated slightly above the upper reach of the lower belt to thereby frictionally engage and transport said sheets of paper;



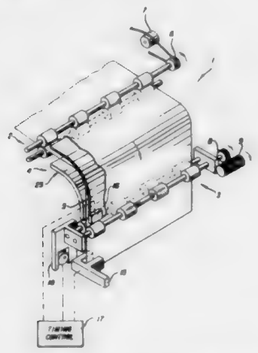
a frame slidably mounted to said housing, said frame being movable between an upstream and a downstream position;
an upper ramp guide block secured to said frame; and
a lower ramp guide block secured to said frame, said lower block having a L-shaped downstream portion, whereby when said frame is located in said upstream position collation in one of said two orders is effected and when said frame is located in said downstream position the other of said two orders is effected.

4,805,892

CROSS-TRACK REGISTRATION DEVICE FOR SHEET TRANSPORT SYSTEM

Lee M. Calhoun, Bergen, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1988, Ser. No. 177,245
Int. Cl.[4] B65H 7/14
U.S. Cl. 271—225 7 Claims



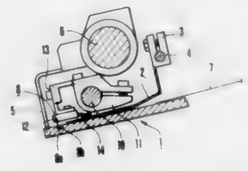
1. A cross-track registration device for a sheet transport system, comprising:
upstream and downstream pairs of rollers for driving a sheet along a path, the in-path distance between the pairs of rollers being less than the in-path dimension of a sheet to be transported,
means for continuously driving both pairs of rollers and for driving the downstream pair at a peripheral speed slower than the peripheral speed of the upstream pair to form a loop in a sheet being transported,
means for sensing the cross-track position of an in-track edge of a sheet being driven by the downstream pair of rollers, and
means for axially moving the downstream pair of rollers until an in-track edge of a sheet is sensed, thereby registering the sheet in the cross-track direction.

4,805,893

ABNORMAL-PAPER SENSING APPARATUS IN A PRINTING MACHINE

Akehiro Kusaka, Higashikatsushika, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1987, Ser. No. 125,484
Int. Cl.[4] B65H 7/14, 7/06, 7/08, 7/10
U.S. Cl. 271—258 8 Claims



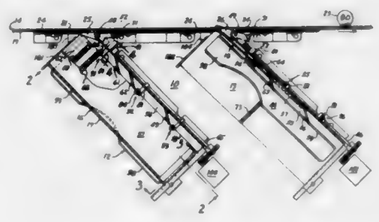
1. An abnormal-paper sensing apparatus in a printing machine comprising a stationary insertion guide plate, front stays at the forward edge of the guide plate for aligning the forward edge of the paper on the guide plate, means for feeding the paper over the guide plate into engagement with said front stays and light-projecting sensors supported above the guide plate for sensing light reflected from a normal sheet, and the absence of reflected light due to the presence of a front folded corner at the forward edge of a sheet of paper engaged with the front stays, said guide plate having a pair of transversely-spaced recesses adjacent the front edge below the sensors, said recesses having a cross section such that in the event that a corner of the sheet is folded light from at least one of said light-projecting sensors will be diffused away by means of the recess cross section and means operable in the event that light fails to be reflected to abort operation of the means for feeding the paper.

4,805,894

STACKING METHODS AND APPARATUS

Andrew J. Scherer, San Dimas; Dwight G. Westover, Sierra Madre; William H. Spencer, Monrovia, and Bayani E. Roldan, Glendale, all of Calif., assignors to TransTechnology Corporation, Sherman Oaks, Calif.

Filed Jun. 12, 1986, Ser. No. 873,517
Int. Cl.[4] B65H 39/10
U.S. Cl. 271—297 36 Claims



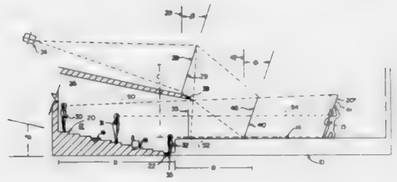
1. In a method of stacking predetermined sheets of various intermixed sizes in a stacking location by advancement of stacking means into said stacking location, and of selectively guiding further sheets with guiding means past the stacking location, the improvement comprising the steps of:
mounting said stacking means indepenedently of said guiding means; and
mechanically slaying said guiding means for a guiding of further sheets past the stacking location to said advancement of stacking means into the stacking location.

4,805,895

IMAGE FORMING APPARATUS AND METHOD

Robert E. Rogers, 824 N. Victory, Burbank, Calif. 91502

Filed May 1, 1987, Ser. No. 44,936
Int. Cl.[4] A63J 5/02
U.S. Cl. 272—10 17 Claims



1. Apparatus for displaying a multi-media image to an audience comprising:
an image projection source for projecting an image to an image forming surface;
real image forming surface means for providing an image to be reflected to create a virtual image to be viewed by and in front of an audience region, the real image forming surface means disposed in spaced apart relationship in front of the image projection source;
means for masking the real image forming surface means from the audience;
a stage region;
an audience envelope defining a region in which a significant number of individuals may be gathered as an audience for simultaneous viewing the stage region, the stage region defining regions for viewing by a far observer, a close observer and an average observer, the close observer, far observer and average observer viewing regions defining central level sightlines and limit sightlines for the stage region; and
a first partially transmissive reflecting member for creating a virtual image in front of the real image forming surface, the reflecting member means disposed in front and in spaced apart relationship to the real image forming surface, substantially directly in front of and substantially within the limit sight lines of the close observer, far observer and average observer viewing regions, the reflecting member disposed at an acute angle to a vertical plane in front of the line of sight of the viewing audience;
whereby the central sightline to the virtual image of the average observer is substantially direct, the distance of the audience is relatively close to the virtual image, and the apparatus is housed in a theater of economially modest architectural and technical construction to minimize the reflecting member size and theatre size demands.

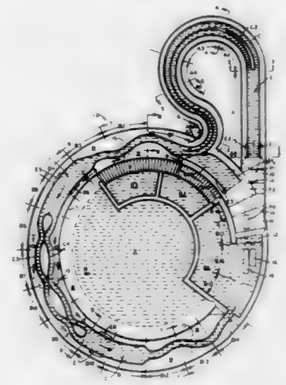
4,805,896

LOW RISE WATER RIDE

James C. Moody, 1758 Woodway Dr., New Caney, Tex. 77357

Filed Oct. 23, 1987, Ser. No. 111,676
Int. Cl.[4] A63G 21/18
U.S. Cl. 272—56.5 R 28 Claims

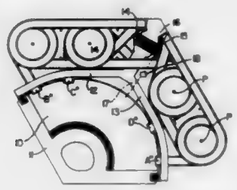
11. A water ride for human participants comprising;
a continuous channel having at least one circuitous course through which water is conducted,
said channel having at least one elevated portion into which a large predetermined quantity of water is introduced for flow therethrough to a lower elevation and on which the participant is propelled,
the quantity of water at the elevated portion having a weight substantially greater than the weight of the participant whereby the participant is moved by flow of the water through the circuitous course at a predetermined velocity while maintaining a depth sufficient to allow the participant to swim in the water or float on the water surface,
said channel having a first portion through which water flows at a first predetermined rate and a second portion adjoined thereto and in fluid communication therewith and through which water flows at a rate greater than the first rate,
pump means for conducting a large quantity of water from a source of supply to the elevated portion of said channel at a predetermined rate comprising first pump means for conducting water through the first portion of said channel at the first predetermined rate and second pump means for conducting water through the second portion of said channel at the second predetermined rate,
said channel and said pump means being interrelated in size

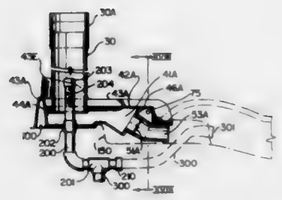


and operated to maintain a continuously flowing body of water in said channel having a depth sufficient to permit a participant to float or swim thereon and substantially prevent such a floating or swimming participant from contacting the bottom of said channel,
entrance means on the elevated portion of said channel for allowing participants to enter the channel at the point through which the large quantity of water is being conducted,
said continuous channel configured along its length to have variations in depth, width, slope, and curvature to produce variations in the velocity and flow characteristic of the water flowing therethrough,
a water reservoir for supplying the water for said channel located and sized for use for swimming, wading, sunbathing, diving and other water recreation, and partitioned into one or more deeper areas for diving and other recreational water activities, and
said pump means having an inlet in fluid communication with said reservoir for conducting water from said reservoir into the elevated portion of said channel,
main entry means on the first portion of said channel for allowing participants to enter the channel, and
main entry means and exit means on the second portion of said channel for allowing participants to enter and exit the channel.

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4,805,897
WATER SLIDE SYSTEMS
David J. Dubeau, P.O. Box 539, Sylvan Lake, Alberta, Canada T0M 1Z0
Filed May 21, 1987, Ser. No. 52,067
Int. Cl.[4] A63G 21/18
U.S. Cl. 272—56.5 R 21 Claims

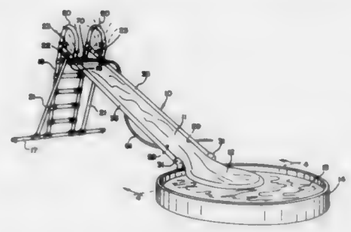




1. Improvement in water slide recreational installations of the type that include a water chute slide for the participants, a platform at an elevated start end of the slide, a landing pool at the bottom end of the slide and a water pumping system that delivers water to the elevated end of the slide for flow down the slide for the occupants thereof, said improvement comprising a generally vertically rising water tower reservoir at some location upstream from the end of the slide, means for directing water from a source of the same into said reservoir, valve means having a valved outlet communicating with a bottom portion of the water tower reservoir for discharging water from said reservoir into said chute and means controlling said valve for suddenly releasing a quantity of water at selected intervals from said reservoir into said chute to provide gushes of water that flow in spaced relation one after the other down said slide.

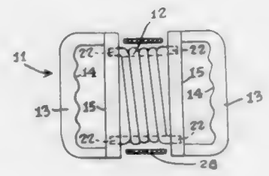
4,805,898
RECREATIONAL SLIDE SYSTEM AND COMPONENTS THEREOF
Jeffrey M. Jacober, 2 Round Hill Ct., East Greenwich, R.I. 02818; Antone F. Macedo, Jr., P.O. Box 33, Manville, R.I. 02838, and Robert H. Bruno, 208 Burnham Rd., Avon, Conn. 06001
Filed Sep. 15, 1987, Ser. No. 96,780
Int. Cl.[4] A63G 21/00
U.S. Cl. 272—56.5 R 24 Claims

1. A recreational slide comprising:
a ladder assembly having a ground-engaging end and an upwardly extending opposite end;
a frame assembly having one end secured to said upwardly extending opposite end of the ladder assembly, said frame assembly further including a ground-engaging other end and a pair of spaced and substantially parallel support members which define a sloped slide area generally between said one end and said other end of the frame assembly;
a web-like flexible slide member attached to both of said support members along opposite margins of said web-like flexible slide member and substantially filling the space between said support members to provide a sloped flexible sliding surface extending between first and second end portions of said web-like flexible slide member, said first end portion being at a height greater than said second end portion, said web-like flexible slide member includes anchor means along said first end portion thereof, said anchor means being attached to said frame assembly for



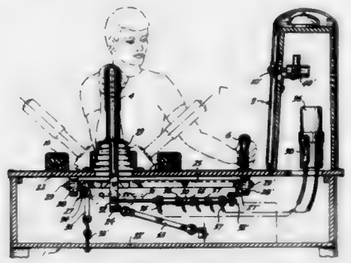
holding said slide member in extended condition along said sloped slide area; and
water distribution means form a part of said frame assembly generally adjacent to said first end portion of said flexible slide member, said anchor means being attached to said water distribution means to hold said flexible slide member in extended condition along said sloped slide area.

4,805,899
ARM AND WRIST EXERCISE APPARATUS
Ruth P. Roehlk, 25804 Texas Ct., Sun Lakes, Ariz. 85248
Filed Feb. 24, 1988, Ser. No. 160,039
Int. Cl.[4] A63B 21/32
U.S. Cl. 272—67 6 Claims



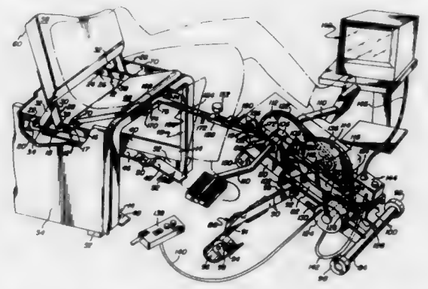
1. An arm and wrist exercise apparatus comprising:
a pair of handle units wherein each of the handle units comprises a disc member and a generally U-shaped handle member disposed in a generally perpendicular relationship relative to the disc member; and wherein, the bottom surface of each of the disc member is provided with widely spaced and opposed recesses; wherein, the bottom surface of each of said disc members are further provided with stem elements that are adapted to operatively engage one another; and,
a pair of spring units operatively attached on their opposite ends to each of the said disc members; wherein, each of the said pair of spring units comprise: a helical spring member including a coiled helical spring element; wherein, the free ends of the spring element are disposed in a tangential relationship to the helical coils of the spring element; and wherein, said free ends of the spring element are adapted to be received in one of the said widely spaced and opposed recesses in each of the handle units; and, wherein the free ends of each of said spring elements are aligned in a parallel relationship, faced in opposite directions, and disposed on opposite sides of the respective spring elements.

4,805,900
STRENGTH TRAINING AMUSEMENT DEVICE FOR SIMULATING ARM-WRESTLING
William E. Sapp, Rte. 5, Box 39-B, Riverside, Wash. 98849
Filed Jan. 15, 1987, Ser. No. 3,669
Int. Cl.[4] A63B 5/00, 21/00, 67/00
U.S. Cl. 272—67 4 Claims



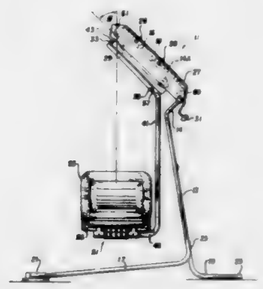
1. In a strength training amusement device for simulating an arm-wrestling contest for use by a player and including a base, a generally upright mechanical arm, means mounting the mechanical arm to the base for movement relative thereto in a generally vertical plane and power-drive means for applying a force tending to move the arm in a first direction in such plane for resistance by the player, the improvement comprising the mechanical arm mounting means including a support member, a first means mounting the mechanical arm to said support member for swinging relative thereto in the generally vertical plane, and a second means mounting the support member to the base for swinging of said support member relative to the base so as to move the mechanical arm transversely of the direction of movement caused by the power-drive means.

4,805,901
COLLAPSIBLE EXERCISE DEVICE
John M. Kulick, 9 Gemstone Dr., Collinsville, Conn. 06022
Filed Apr. 9, 1987, Ser. No. 36,081
Int. Cl.[4] A63B 21/00; A47C 13/00
U.S. Cl. 272—73 24 Claims



23. A collapsible exercising mechanisms adapted for attachment to and containment within a storage unit, comprising: an elongated frame having ground-engaging members adjacent its opposite ends; an exercising system on said frame, including operatively interconnected dynamic resistance means and manual drive means; an attaching member adapted for attachment of said frame to a storage unit; and a supporting member adapted to provide underlying support or said frame, said supporting member being mounted on said frame for movement between a storage position proximate thereto and a supporting position extended downwardly therefrom, said supporting member having an outer end portion with ground-engaging means thereon capable of stably engaging an underlying surface, said attaching member being mounted on said frame for movement between a storage position proximate thereto and an attaching position extended rearwardly therefrom, said attaching and supporting members being rigid and elongated, and pivotably mounted on said frame, said members extending along the top and bottom of said frame, respectively, in said storage positions thereof.

4,805,902
INCLINED-AXIS PENDULUM SWING
Joseph E. Casagrande, Dayton, Ohio, assignor to Spalding & Evenflo Companies, Inc., Tampa, Fla.
Filed Jun. 30, 1987, Ser. No. 67,913
Int. Cl.[4] A63G 9/16
U.S. Cl. 272—86 22 Claims



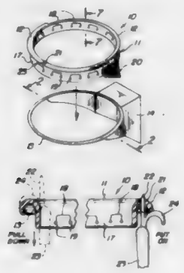
1. An infant swing comprising
support means including legs;
oscillatory spring motor means;
means for mounting said motor means above said support means so that the axis of said motor means is inclined at a predetermined angle substantially less than a 90° inclination from a vertical line extending above said support;
a rotatable carriage mounted to and oscillated by said motor means, the longitudinal axis of said carriage being substantially parallel to the longitudinal axis of said spring motor means;
an infant seat;
means for pivotally mounting said seat to and substantially vertically below said motor means; and
means for interconnecting said means for pivotally mounting said seat to said carriage whereby said seat is oscillated with said carriage.

4,805,903
PARK BASKETBALL NET FIXTURE
James J. McArdle, 64-10 77th St., Middle Village, N.Y. 11379
Filed Apr. 8, 1987, Ser. No. 36,370
Int. Cl.[4] A63B 63/08
U.S. Cl. 273—1.5 R 6 Claims

1. A park basketball fixture, comprising, a main body for being received removably on a mounted basketball hoop, a magnetic strip secured to said main body, for magnetically adhering said main body to said hoop, a net removably received on said main body, and a boat hook provided for the installation and removal of said fixture from said hoop, and wherein said main body is circular in shape, is of a resilient material, and includes a bottom skirt with an integrally attached and arcuate lip, and said skirt is received within the confines of said basketball hoop, and wherein equally spaced cut-outs are provided through said skirt of said main body,

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causing portions of said skirt to be urged inward or outward, and cord portions of said net are engaged within the confines



of the cut-outs that retain and support said net from said main body and said hoop.

4,805,904

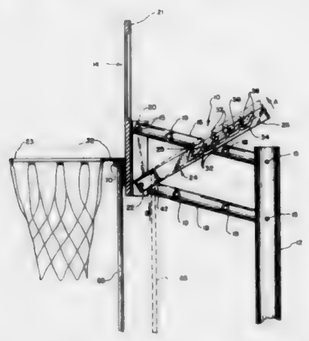
METHOD AND APPARATUS FOR ADJUSTING A BASKETBALL GOAL

Stephen F. Nye, Roy, Utah, assignor to Lifetime Products, Inc., Clearfield, Utah

Continuation-in-part of Ser. No. 922,041, Oct. 21, 1986, Pat. No. 4,781,375. This application Feb. 19, 1988, Ser. No. 157,898

Int. Cl.[4] A63B *63/08*

U.S. Cl. 273—1.5 R **18 Claims**



6. An adjustable basketball goal system allowing for adjustment of the height of a basketball goal above a playing surface, comprising:

a deformable parallelogrammatic structure, said parallelogrammatic structure being deformable into a plurality of configurations wherein at each configuration the basketball goal is disposed at a different height above the playing surface;

a post connected to said parallelogrammatic structure;

means for securing said deformable parallelogrammatic structure to a rigid object such that said parallelogrammatic structure is suspended above the playing surface;

means for attaching the basketball goal to said parallelogrammatic structure;

at least one support brace having a pivotal axis at one end by which it is pivotally connected to said parallelogrammatic structure and said support brace slidably engaging said post such that said support brace pivots about said pivotal axis in a vertical plane between a first position and a second, lower position, said support brace being configured such that said support brace will move from said first position to said second position when acted upon solely by the force of gravity, said support brace including a slot having a plurality of notches such that when said support brace is in said first position, said post engages said slot thereby allowing said parallelogrammatic structure to be deformed to any of the configurations, and such that when said support brace is in said second position said post engages one of said notches thereby securing said parallelogrammatic structure into one of the configurations; and

guiding means for guiding said support brace from said first position to said second position such that said locking means may secure said parallelogrammatic structure into one of the configurations, said guiding means comprising a plurality of sloped, guiding teeth configured along said slot such that for each of said notches there corresponds one guiding tooth.

4,805,905

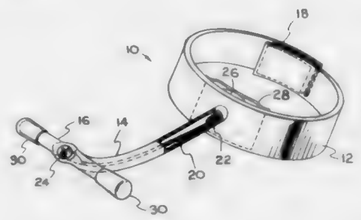
BASKETBALL PLAYER'S TRAINING AID FOR TEACHING PROPER FOLLOW THROUGH

Gary Haub, P.O. Box 335, Corydon, Ind. 47112

Filed Oct. 5, 1987, Ser. No. 104,120

Int. Cl.[4] A63B *69/00*

U.S. Cl. 273—1.5 A **15 Claims**



1. A training said for use by a basketball player in executing proper shooting technique comprising:

a flexible wrist band securely and non-slippably connectable about the forearm of a basketball player's shooting arm near the wrist;

feeler means constructed of a flexible material projecting from and connected to said wrist band for permitting fingers of said player's shooting hand to contact a portion thereof only upon proper downward follow through motion of said player's shooting hand following release of a basketball in the course of shooting the same, and

means associated with said feeler means for rigidifying the latter such that the shape of said feeler means can be changed to change the downward and inward follow through distance that the fingers of a player's shooting hand must travel in order to touch said feeler means to accommodate different players having varying hand sizes.

4,805,906

PINBALL MACHINE CONSTRUCTION

Max Wiczer, Skokie, and Albin Peters, Crystal Lake, both of Ill., assignors to Home Safe Corp., Niles, Ill.

Filed Oct. 13, 1987, Ser. No. 108,048

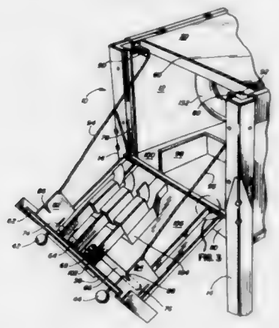
Int. Cl.[4] A63D *3/02*; A63B *71/00*; A47B *77/10*; H01H *3/16*

U.S. Cl. 273—119 A **23 Claims**

1. An improved pinball machine construction, comprising:

a horizontal hinged security door mounted in a front wall of the pinball machine and having a top control panel having at least one control actuator mounted thereon, said top control panel overlying a portion of the top of said pinball machine and securely clamping a glass cover panel into

said machine when said door is closed, said door including a double hinge mechanism with first hinge means securing



the door to said machine and second hinge means securing an accessory panel hingedly to said door.

4,805,907

SLOT MACHINE

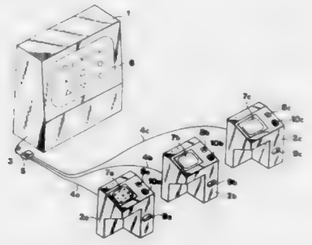
Takashi Hagiwara, Zama, Japan, assignor to Sigma Enterprises, Incorporated, Tokyo, Japan

PCT No. PCT/JP85/00117, § 371 Date Oct. 29, 1986, § 102(e) Date Oct. 29, 1986, PCT Pub. No. WO86/05113, PCT Pub. Date Sep. 12, 1986

PCT Filed Mar. 8, 1986, Ser. No. 930,283

Int. Cl.[4] A63F *9/22*; G06F *15/28*

U.S. Cl. 273—138 A **6 Claims**



1. A slot machine system comprising a main machine and a plurality of subordinate machines, each of said subordinate machines including means thereat for betting coins on the outcome of a game, said main machine comprising:

control means for starting a given game in response to either a signal from at least one of said subordinate machines and a game starting command, and controlling the progress of the game in accordance with a predetermined procedure and judging a result of the game won or lost;

means for displaying the progress of the game by symbol rows made up of plural kinds of symbols while the game is in progress; and

payment command means for commanding each of said subordinate machines to pay out coins, the amount of which depends on the amount of coins bet at an associated subordinate machine whent he game is judged as won by said control means, and

each of said subordinate machines comprising:

a slot through which bet coins are deposited;

detecting means for sensing bet coins deposited in the slot to provide a signal to said main machine;

display means for displaying the same information as that of said display means provided in said main machine, each of said subordinate machines simultaneously playing said given game and displaying the same information; and

coin pay-out means for paying out coins in response to said command from said payment command means.

4,805,908

BOX FOR SHAKING DICE

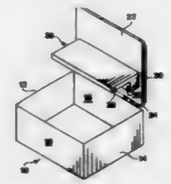
Normand M. Asclair, 79, Perreault, Beloeil/Quebec, Canada J3G 1X4, and André J. Gladu, 40, St. Charles, St-Hilaire/Quebec, Canada J3H 2Z8

Filed Dec. 23, 1987, Ser. No. 137,184

Claims priority, application United Kingdom, Jan. 19, 1987, 8701122

Int. Cl.[4] A63F *9/04*

U.S. Cl. 273—145 C **5 Claims**



1. A box for shaking dice comprising an enclosed casing having a flat bottom, a transversal wall adjacent said bottom, two lateral walls for delimiting said transversal wall adjacent said bottom, a lid for closing said casing, a L-shaped partition fixed to and under said lid, the said L-shaped partition being located and oriented on said lid for delimiting a space between said partition, said flat bottom and said transversal wall when said lid is closed, the cross-section of said space substantially corresponding to the cross-section of the dice to be shaken so as to hinder the rotation of the dice.

4,805,909

SCORE KEEPING APPARATUS

Homer L. Roland, 205 N. Murray, #46, Colorado Springs, Colo. 80916

Filed Apr. 8, 1988, Ser. No. 179,334

Int. Cl.[4] A63F *1/16*

U.S. Cl. 273—148 R **16 Claims**

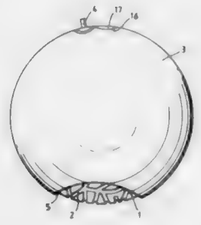


1. A score keeping apparatus for keeping track of both the sequence of play and the score of a game wherein the apparatus comprises in general:

a clipboard unit; and,

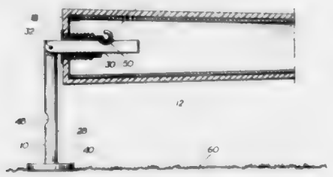
a sequence monitoring unit operatively associated with the clipboard unit and comprising a movable peg member and a plurality of discrete apertures formed in the clipboard unit; wherein, the plurality of discrete apertures are arranged in a pattern representative of the rotation of a given responsibility attendant upon the participants in a particular game.

4,805,910
MAZE PUZZLE
Carlo G. Monticolombi, Isleworth, and James M. Norris, London, both of England, assignors to Carlo Geoffrey Richard Monticolombi, Isleworth, England
Filed Oct. 7, 1987, Ser. No. 106,063
Claims priority, application United Kingdom, Sep. 29, 1987, 8722828
Int. Cl.[4] A63F 9/08
U.S. Cl. 273—153 R 12 Claims



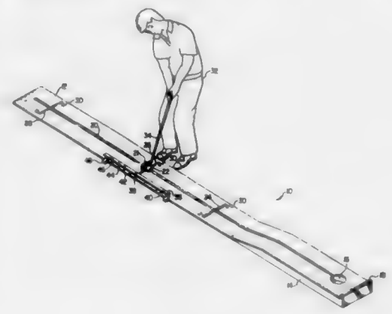
1. A puzzle device comprising a first member of spherical configuration and a second member constituting a housing within which said first member is rotatably mounted, said second member being constructed and arranged to surround said first member in such a manner that said first member is retained within said second member, an aperture through said second member to provide access to said first member to enable manual rotation thereof, a peg mounted on one of said members and a maze defined in a surface of the other of said first and second members, the peg and the maze being so constructed and arranged that the peg engages the maze, the construction and arrangement of the peg and the maze being such that upon selectively rotating said first member within said second member said peg is caused to move through said maze, and means to indicate when the peg is at a predetermined destination in the maze while said first member is retained within said second member.

4,805,911
GOLF CLUB STAND HIDABLE IN HANDLE
Anthony P. Feriazzo, 267 6th St., West, Boulta Springs, Fla. 33923, and Samuel J. Rapaport, 725 Parkview La., Naples, Fla. 33940
Filed Jul. 1, 1987, Ser. No. 68,478
Int. Cl.[4] H63B 55/10
U.S. Cl. 273—162 R 7 Claims



1. A golf club stand hideable in a grip handle of a golf club and extendable from a terminal end of said grip handle, said golf club stand comprising:
an elongated member having a stand section that is hinged at one end to a support section, said stand section having a stand head at an opposite end from said hinged end of said stand section;
an interface coupling adapted to be mounted in a terminal end of a grip of a golf club, said coupling having a through passage within which is slideably disposed said stand section of said elongated member, said stand head adapted to be disposed proximate a grip terminal end in a first mode of operation of said golf club stand and said hinged end of said stand section adapted to be disposed proximate the grip terminal end in a second mode of operation;
means for releaseably locking said elongated member within the grip handle when in said first mode of operation, a hinged end of said support section protruding beyond the grip terminal end when disposed in said second mode of operation and a mid region of said support section being disposed within said through passage when the stand is in said second mode of operation; and
means for prohibiting the further extension of said support section from said grip handle during said second mode of operation comprising a stopping means acting upon said interface coupling.

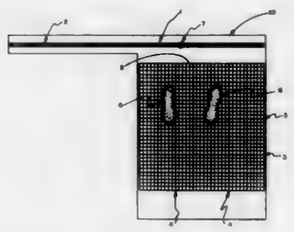
4,805,912
GOLF PUTTING TEACHING AID
Robert D. Hickman, Stroud, Okla., assignor to H&F Enterprises, Stroud, Okla.
Filed Jul. 22, 1987, Ser. No. 76,375
Int. Cl.[4] A63B 53/04
U.S. Cl. 273—176 FB 4 Claims

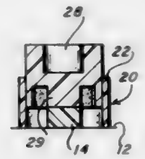


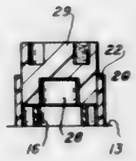
1. A golf putting teaching aid comprising:
(a) a generally rectangular putting surface;
(b) a putter path line running lengthwise on said putting surface;
(c) a plurality of squaring lines on said putting surface, each of said squaring lines disposed perpendicular to said putter path line; and
(d) a moveable, ruler-like apparatus disposed along an edge of said putting surface, said ruler-like apparatus having indicia means for indicating the proper alignment of said ruler-like apparatus with each of said squaring lines, and for indicating the length of backswing for each of said squaring lines.

4,805,913
DEVICE FOR DEVELOPING GOLF BALL ADDRESS STANCE
Roger L. Bott, 3330 57th Ave., Vero Beach, Fla. 32960
Continuation of Ser. No. 878,781, Jun. 26, 1986, abandoned.
This application Sep. 11, 1987, Ser. No. 96,769
Int. Cl.[4] A63B 69/36
U.S. Cl. 273—187 R 1 Claim

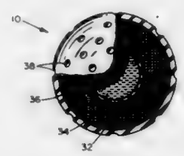
1. A golf teaching, training and practicing device, comprising in combination:
a. a mat comprising an essentially rectangular segment together with an elongated segment, wherein said rectangular segment consists of an imprinted (1) precision stance measurement grid on said mat comprising a multiplicity of vertical and horizontal perception lines, and (2) a swing path line, aligned with said elongated segment, and wherein said elongated segment consists of an imprinted swing path line extension in line with said imprinted swing path line and extending in the direction of the intended flight of a golf ball and being of a length sufficient to provide an aid for determining if a ball struck from the ball image location on said swing path line is moving along the intended ball flight direction;
b. at least one pair of removably attachable foot silhouettes, attachable to said essentially rectangular segment of said mat for the alignment of a golfer's feet;
c. a removably attachable golf ball image, which is removably attachable to said swing path.

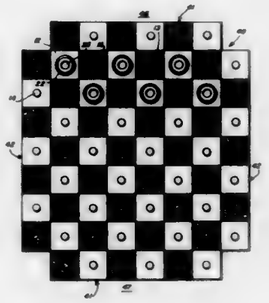






4,805,914
GOLF BALL AND METHOD OF MAKING THE SAME
J. William Toland, 13011 Blanche Coker Dr., San Antonio, Tex. 78216
Filed Sep. 4, 1986, Ser. No. 903,679
Int. Cl.[4] A63B 37/08
U.S. Cl. 273—231 6 Claims





1. An improved game ball of the type having a liquid core wherein the liquid in said liquid core in its natural state contains dissolved gases wherein the improvement comprises:
removing a selected amount of the dissolved gases from said liquid to decrease the degree of compressibility of said liquid.

4,805,915
BOARD GAME WITH CHANGEABLE PLAYING PIECES
Stewart M. Lamle, 55 W. 86th St., New York, N.Y. 10024
PCT No. PCT/US86/01181, § 371 Date Feb. 3, 1987, § 102(e) Date Feb. 3, 1987, PCT Pub. No. WO86/07276, PCT Pub. Date Dec. 18, 1986
Continuation-in-part of Ser. No. 740,484, Jun. 3, 1985, abandoned. This PCT application May 30, 1986, Ser. No. 15,132
Int. Cl.[4] A63F 3/02
U.S. Cl. 273—261 18 Claims

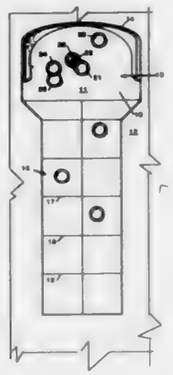
12. A board game apparatus for use in playing a game between two players, said apparatus comprising:
a playing board;
first and second sets of keying means attached to said playing board;
a plurality of game pieces;
first means on one end of each of said game pieces for changing the appearance of said game pieces in response to said first keying means;
second means on the other end of each of said game pieces for changing the appearance of said game pieces in response to said second keying means, wherein the first means on the end of said game pieces is unaffected by said second keying means, and the second means on the other end of said game pieces is unaffected by said first keying means; and
a telescoping sleeve in each game piece, wherein said telescoping sleeve extends from said game pieces to change the appearance of said game pieces.

4,805,916
GAME OF SKILL AND COORDINATION: RING BALL
John R. Zentner, Jr., 22442 Bessemer St., Woodland Hills, Calif. 91367
Filed Sep. 14, 1987, Ser. No. 96,902
Int. Cl.[4] A63B 67/06
U.S. Cl. 273—336 13 Claims

1. A game of skill, comprising:
a playing court having a hard base covered with a yieldable covering,
a spherical ball located on said court and able to roll thereon,
a plurality of identically shaped rings with a round cross section having an inner across-the-ring diameter some-

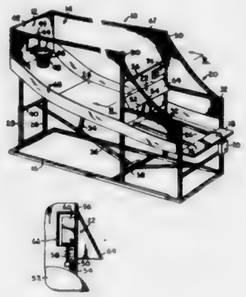
VOL 1099 ISS 3 FEB 21 1989 UMI

what larger than the diameter of said ball to provide a loose clearance when a ring encircles said ball, and



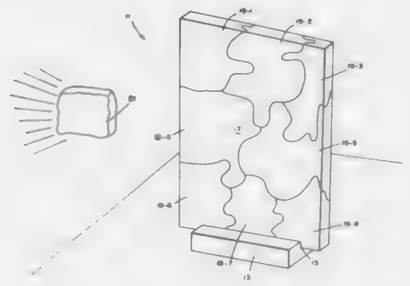
a plurality of throwing stations at spaced distances from said court from each of which at least one ring is thrown by each participant.

4,805,917
BASKETBALL GAME
Ken C. Cochran, and Donald R. Frye, both of Salina, Kans., assignors to Pop-A-Shot, Inc., Salina, Kans.
Filed Aug. 13, 1987, Ser. No. 84,849
Int. Cl.[4] A63B *63/08*
U.S. Cl. 273—397 **13 Claims**



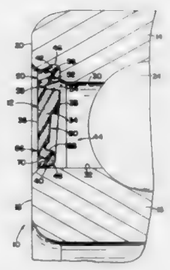
1. A basketball game comprising:
a framework having front and rear portions;
a basket mounted on the rear portion of the framework;
partition coupled with the framework and positioned between the front and rear portions of the framework, said partition having an opening for passage of said balls;
a gate bar coupled with said partition said gate bar being moveable between a first position allowing said ball to return to the front portion and a second position blocking said return;
a solenoid coupled with said partition and positioned above said opening;
said solenoid comprising a vertically extendable and retractable plunger coupled with said gate bar for moving the gate bar between said first and second positions;
means coupled with said framework for returning a ball from the rear to the front portion after a shot attempt; and
wherein said return means comprises a forwardly inclined rigid chute positioned between said gate and the front portion of the framework.

4,805,918
FRANGIBLE TARGET GAME
Andrea L. Feinberg, 15 Alexander St., Framingham, Mass. 01701
Filed Sep. 11, 1987, Ser. No. 95,116
Int. Cl.[4] A63F *9/02*; F41J *7/04*
U.S. Cl. 273—380 **2 Claims**



1. A game for use in alleviating stress comprising:
(a) a stand having a groove and being weighted for increased stability, sized to fit on a table top or other similar surface and
(b) a plate disposed in said groove, said plate comprising a plurality of separate interlocking pieces of dissimilar size and shape and made of transparent plastic, said plate having a smooth surface upon which figures of letters may be drawn and later erased, and
(c) a bean bag for impacting against said plate and for dissociating said plate into said plurality of separate interlocking pieces.

4,805,919
BEARING SEAL
John M. Wihlyi, and John Rizzi, both of Bristol, Conn., assignors to Wasley Products, Inc., Plainville, Conn.
Filed Jul. 14, 1987, Ser. No. 72,926
Int. Cl.[4] F16C *33/76*; F16J *15/32*
U.S. Cl. 277—152 **12 Claims**

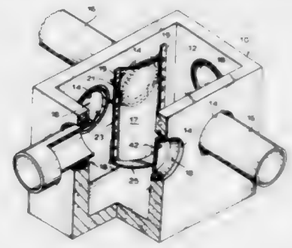


1. A seal apparatus for transversely sealing a volume interior to a pair of opposing elements having generally axially extending element surfaces one of said elements having a first coefficient of thermal expansion and being capable of dynamic contractive and expansive movement, said elements defining a

radial space therebetween with a pair of parallel radial planes extensions across said space said seal apparatus comprising:
a annular seal body having a second coefficient of thermal expansion formed from a uniform, stiff, single piece of material,
said seal body having an inner peripheral end portion and an outer peripheral end portion and having a substantially rigid, and nonflexible, intermediate body portion interposed between said inner peripheral end portion and said outer peripheral end portion said end portions each having a part thereof located substantially on said pair of parallel radial planes extending across said radial space;
said seal body having opposed first and second major surfaces with each major surfaces axially facing and each defining at least one radial plane, and two minor surfaces extending generally transversely to said first and second major surfaces, said two minor surfaces each being respectively included within each of said inner and outer peripheral end portions;
said seal body minor surfaces each having an elongate dimension in the radial direction with respect to said radial space substantially less than the elongate dimension in said radial direction of each of said major surfaces;
one of said minor surfaces being secured to one of the element surfaces and said intermediate body portion having a substantially greater radial dimension than that of either of said peripheral end portions to substantially preclude seal body seal body deformation of the entire seal body axially out of any radial plane defined by any portion of said major surfaces
one of said outer and inner peripheral end portions having a first substantially annular hinge in said seal body formed by a groove extending substantially axially inwardly from said first major surface, said first hinge being positioned closer to said second major surface than to said first major surface a second substantially annular hinge in aid seal body formed by a groove extending substantially inwardly form said second major surface, said second annular hinge being positioned closer to said first major surface than to said second major surface said first and second hinge portions being on the same end portion
said intermediate body portion being free of hinges; and
said first and second hinges providing contractive and expansive movement of said one of said inner and outer peripheral end portions of said seal body relative to the intermediate body portion primarily in a direction substantially parallel to said elongate dimension of said major surfaces to compensate for dimensional differences between said seal body and the element induced by the difference between said first and second coefficients of thermal expansion, thereby maintaining seal integrity.

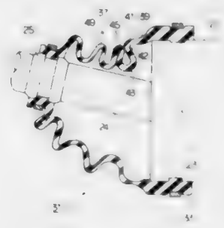
4,805,920
PIPE SEAL AND CLOSURE MEMBER
Norman Gavin, 2545 Ridge Rd., North Haven, Conn. 06473
Continuation-in-part of Ser. No. 858,341, May 1, 1986, Pat. No. 4,732,397. This application Mar. 21, 1988, Ser. No. 175,662
Int. Cl.[4] F16J *15/10*
U.S. Cl. 277—207 A **13 Claims**

1. A combination aperture closure and low preasure seal for an exterior surface of a pipe adapted to be mounted in a cylindrical aperture and to receive an end portion of a pipe in a monolithically cast fluid distribution box or the like of cementitious material; said seal being composed of molded elastomeric material and comprising an annular body portion having generally cylindrical inner and outer surfaces, the former defining a central cylindrical pipe receiving opening which extends axially through the body portion and the latter engageable with the aperture wall, an integral annular flange on said body portion extending generally radially outwardly and adapted to be embedded in the cast cementitious material about the aperture during casting of said box whereby to secure the seal in position in the aperture, and a hollow generally frusto-conical sealing skirt formed integrally at its larger diameter end portion with the seal body portion and projecting inwardly at an angle between radial and axial planes, the smaller diameter end portion of said sealing skirt being slightly smaller in diameter than the pipe to be received and being disposed radially inwardly from said inner cylindrical body surface and free to expand diametrically, said frusto-conical sealing skirt being adapted to receive and guide an end portion of a pipe introduced at its said larger diameter end portion and urged toward and axially through its said free smaller diameter end portion whereby to slightly diametrically expand said free end portion and thus to establish firm frictional engagement and effective sealing thereof with the exterior peripheral surface of the pipe,



said seal further including a knock-out web which takes a substantially circular disc configuration and which extends radially across the smaller diameter free end portion of the frusto-conical sealing skirt, said web being molded integrally with the skirt and having an integrally molded first weakened narrow annular portion adjacent the skirt free end portion to facilitate web knock-out and a second weakened narrow annular portion radially inwardly of said first weakened annular portion so that said web can be knocked out at either said first or said second weakened narrow annular portions whereby said seal can serve a dual purpose selectively as a closure for an associated aperture and a seal for pipes of one of two different diameters entered in the aperture.

4,805,921
MECHANICAL SHAFT JOINT BOOT
Mikio Ukai, Nagoya; Takashi Furukawa, Ama, and Yasuo Hojo, Nagoya, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan
Filed Mar. 2, 1988, Ser. No. 163,097
Claims priority, application Japan, Mar. 4, 1987, 62-031243[U]
Int. Cl.[4] F16J *3/04*, *15/52*
U.S. Cl. 277—212 FB **4 Claims**



1. A mechanical shaft joint boot comprising:
(a) a large-diameter ring portion to be attached to a large-diameter ring mounting portion of a housing of the mechanical shaft joint;

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(b) a small-diameter ring portion to be attached to a small-diameter ring mounting portion of a shaft of the mechanical shaft joint;

the distance l1 between said large-diameter ring portion and said small-diameter ring portion when said boot is in a no-load state being smaller than the distance l2 between the large-diameter ring mounting portion and the small-diameter ring mounting portion of the mechanical shaft joint;

(c) a bellows portion provided between said large-diameter ring portion and said small-diameter ring portion; and

(d) a straight portion provided between said large-diameter ring portion and said bellows portion, said straight portion being connected with a first bottom portion (as numbered from the side of said large-diameter ring portion) of said bellows portion, and the outside diameter of a first crest (as numbered from the side of said large-diameter ring portion) of said bellows portion being not larger than the inside diamber of said straight portion.

4,805,922

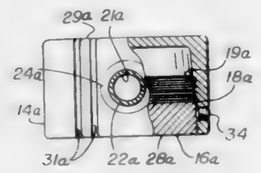
PUTTER

Robert L. Whitfield, 50 27th Ave., San Mateo, Calif. 94403

Filed Sep. 3, 1987, Ser. No. 92,639

Int. Cl.[4] A63B 53/04

U.S. Cl. 273—164 6 Claims



1. A golf putter having a handle and a hollow, mallet-type, two-piece head attached to said handle, said head comprising a hollow first portion having an elongated cylindrical exterior, an external first end integral with said first portion having a first face perpendicular to the longitudinal axis of said first portion and an open second end opposite said first end; a plug second portion fitting into said open second end having an external second face perpendicular to said axis; cooperating first means on said first portion and said plug portion securing the same together; and second means fixing said handle to said head, said cooperating first means comprising internal threads on said first portion inward of said first end and external threads on said plug second portion mating with said internal threads.

4,805,923

ADAPTIVE CONTROL SYSTEM FOR OPERATING ADJUSTABLE AUTOMOTIVE SUSPENSION UNITS

Michael W. Seltis, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 16, 1987, Ser. No. 133,985

Int. Cl.[4] B60G 11/26

U.S. Cl. 280—707 18 Claims

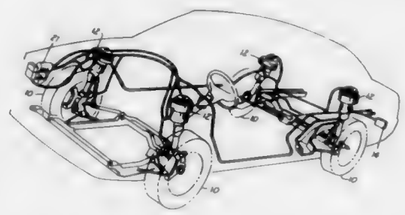
1. A control system for governing a plurality of multiple operating mode adjustable suspension units in an automotive vehicle, comprising:

adjustment means for receiving an adjustment control signal and for placing said suspension units in any of said multiple adjustment modes;

fault warning means for detecting an inability of said adjustment means to adjust one or more of said suspension units and for generating a fault warning signal in response to said detection;

diagnostic means responsive to said fault warning signal and operatively connected with said adjustment means for determining the extent to which the ability to adjust said units has been impaired; and

mode selection means, operatively connected with said diagnostic means, for deciding into which of said multiple



operating modes said suspension units should be directed, based upon the determination of said diagnostic means, with said mode selection means further comprising means for generating an adjustment control signal corresponding to said operating modes and for communicating said signal to said adjustment means.

4,805,924

INSTRUMENT PANEL STRUCTURE FOR AN AUTOMOTIVE VEHICLE

James M. Birchfield, Livonia; Ralph A. Molinaro, Grosse Isle, and Lynn K. Tilly, Lake Orion, all, Mich., assignors to Chrysler Motors Corporation, Highland Park, Mich.

Filed Dec. 16, 1987, Ser. No. 133,982

Int. Cl.[4] B60K 37/00; B60R 21/04

U.S. Cl. 280—752 4 Claims



1. An instrument panel structure for an automotive vehicle including an energy absorbing panel member fabricated of a relatively rigid impact resistant resinous material, the panel member having an upper portion and a lower portion interconnected to each other, the upper portion having an outer surface adapted to accept vehicle occupant head impact and the lower portion having an outer surface adapted to accept vehicle occupant knee impact, the upper portion having an inner surface, a plurality of discrete spaced apart unconnected protuberances on said inner surface, said protuberances resulting in weakening of said upper portion when subjected to vehicle occupant head impact on the outer surface thereof causing said outer portion to more readily give under such impact forces and absorb the energy of impact in a manner tending to reduce head injury, said lower portion having a protuberance-free inner surface whereby it is more resistant to giving under impact than the upper portion so that when subjected to vehicle occupant knee impact on the outer surface thereof it will impede forward movement of a vehicle occupant.

4,805,925

ADJUSTABLE REAR WHEEL MOUNTING ASSEMBLY FOR WHEELCHAIRS

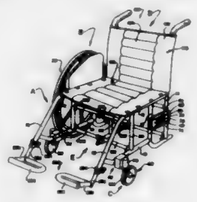
Gilbert E. Henry, Grafton; Nathalal C. Patel; Walter G. Lockard, both of Elyria; Thomas R. Wiatrak, Brunswick, and Neal J. Curran, Fairview Park, all of Ohio, assignors to Invacare Corporation, Elyria, Ohio

Division of Ser. No. 837,743, Mar. 10, 1986, Pat. No. 4,721,321, which is a division of Ser. No. 548,370, Nov. 11, 1983, Pat. No. 4,595,212, which is a continuation-in-part of Ser. No. 442,037, Nov. 16, 1982, Pat. No. 4,500,102. This application Oct. 9, 1987, Ser. No. 107,495

The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.

Int. Cl.[4] B62M 1/14

U.S. Cl. 280—250.1 15 Claims



1. A wheelchair comprising:

a frame assembly;

supporting means for supporting a user, the supporting means being operatively connected with the frame assembly;

a pair of rear wheels;

an adjustable rear wheel mounting means for selectively mounting each of the rear wheels to the frame assembly in one of a plurality of positions, the rear wheel mounting means being operatively connected with the frame assembly, the rear wheel mounting means including:

a mounting plate including at least one slot which is elongated along slot axes;

an axle receiving assembly which is selectively positionable in the slots at a selectable position along the slot axis;

a stop means for stopping the axle receiving assembly from shifting along the slot axis;

a pair of front wheels; and,

a front wheel mounting means for mounting each of the front wheels to the frame assembly.

4,805,926

SELF-LUBRICATING DEVICE FOR COUPLING SEMITRAILERS

Gaby Mamery, F-51300 Vitry le Francois, Loisy sur Marne, France

PCT No. PCT/FR86/00250, § 371 Date Mar. 13, 1987, § 102(e) Date Mar. 13, 1987, PCT Pub. No. WO87/00495, PCT Pub. Date Jan. 29, 1987

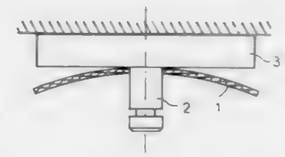
PCT Filed Jul. 11, 1986, Ser. No. 37,258

Claims priority, application France, Jul. 15, 1985, 85 10921

Int. Cl.[4] B62D 53/08

U.S. Cl. 280—433 1 Claim

1. A removable self-lubricating device for the coupling of semi-trailer vehicles having a bearing plate on the semi-trailer vehicle and a fifth wheel on the tractor vehicle, comprising a self-lubricating plate disposed between said bearing plate of the semi-trailer vehicle and said first wheel, said bearing plate including a pivot pin having a base, wherein said self-lubricating plate includes means defining an aperture which is slid onto said pivot pin, and is held in position against said bearing plate by action of said means defining said aperture pinching said pivot pin adjacent said base of said pivot pin under the effect of



the curvature of said self-lubricating plate under its own weight.

4,805,927

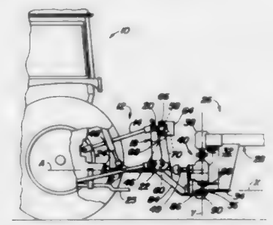
HITCH ADAPTER FOR USE IN CONNECTING SEMI-INTEGRAL, PTO-DRIVEN IMPLEMENTS TO TRACTOR THREE-POINT HITCH

Roger D. Stephenson, Bloomfield; James C. Walters, and Craig A. Richardson, both of Ottumwa, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Nov. 20, 1987, Ser. No. 123,427

Int. Cl.[4] A01B 59/00

U.S. Cl. 172—47 2 Claims



1. In a combination including a tractor hitch structure having an upper central portion and transversely spaced lower side portions and including a three-point hitch defined by a central upper link and a pair of lower links and being swingable vertically between upper and lower extremes, a hitch adapter carried by the hitch structure and including a centrally located drawbar, a semi-integrally mounted implement having a tongue coupled to the drawbar for articulation about an upright axis, and a drive shaft universally coupled at its opposite ends to a tractor power take-off shaft and to an input shaft of a transmission housing located above the drawbar and carried by the implement tongue for pivoting about said axis, the improvement comprising: said hitch adapter including an upper central portion connected to the upper central portion of the hitch structure, a pair of legs diverging downwardly from the upper central portion and terminating at opposite side portions connected to the transversely spaced lower side portions of the hitch structure and a cross member extending between and having opposite ends joined with said opposite side portions and including a central portion disposed downwardly and rearwardly from the opposite ends thereof and supporting said drawbar; said drawbar being located relative to the hitch structure so that the drawbar and drive shaft are both disposed substantially horizontally when the hitch structure is positioned adjacent its upper extreme, the implement tongue then being held at a normal working height and the drawbar further being at an elevation below that of the hitch structure for engaging the ground, when the hitch structrue is lowered for lowering the implement tongue below its normal

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working height, before the hitch structure comes into contact with the drive shaft.

4,805,928

RECLINING MECHANISM OF BABY CARRIAGE

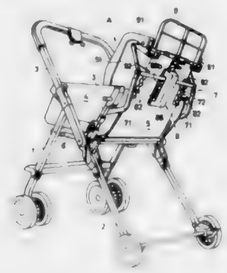
Shizuoka Nakao, Kanagawa; Yoshiyuki Suzuki, and Hitoshi Kato, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1987, Ser. No. 76,802

Claims priority, application Japan, Jul. 23, 1986, 61-113055[U]; Jul. 23, 1986, 61-113056[U]; Jul. 23, 1986, 61-113057[U]; Aug. 22, 1986, 61-127982[U]; Aug. 22, 1986, 61-127983[U]; Aug. 22, 1986, 61-127984[U]

Int. Cl.⁴ A61G *5/00*

U.S. Cl. 280—642 **9 Claims**



1. A baby carriage, comprising:
- a baby carriage body comprising a seat for supporting a baby and a plurality of wheels supporting said seat;
- a reclinable backrest connected to said seat for supporting a back of said baby;
- an engagement/stopper mechanism attached to a rear surface of said backrest and having a cover with a notch at a lateral side thereof; and
- an inclination angle adjusting bar of substantially a U-shape in front view comprising;
- frame bars pivotally attached at opposite ends thereof to said body of said baby carriage, and
- a cross bar crossing a rear surface of said backrest and slidable through said notch of said cover and selectively and releasably engaged and stopped at predetermined positions with said engagement/stopper mechanism, wherein said engagement/stopper mechanism comprises a fixed plate having a plurality of horizontal engagement/stopper grooves and an engagement releasing plate slidably attached to fixed plate and wherein said cross bar is engageable with a selected one of said grooves and releasable by a sliding of said engagement releasing plate; and
- wherein said engagement releasing plate has inclined surfaces formed on a side remote from said backrest for releasing engagement of said cross bar from said grooves.

4,805,929

SPRING-CONSTANT VARIABLE TYPE STABILIZER DEVICE

Nobuo Shibata, Okazaki; Toshio Suzuki, Anzyo; Takashi Fujii, Okazaki; Junichi Arai, and Hisami Kato, All of Kani, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha and Kayaba Kogyo Kabushiki Kaisha, both of, Japan

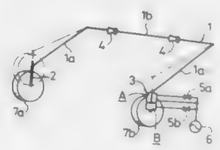
Filed Nov. 30, 1987, Ser. No. 126,831

Claims priority, application Japan, Dec. 1, 1986, 61-286384; Jul. 16, 1987, 62-177767

Int. Cl.⁴ B60G *19/02*

U.S. Cl. 280—721 **6 Claims**

1. In a stabilizer device provided with a control cylinder so that a torsional rigidity of the stabilizer disposed so as to generate a torsional torque according to upward and downward operation of left and right wheels of a vehicle is made variable, a spring-constant variable type stabilizer device, characterized in that a piston is slidably inserted into a cylinder body constituting a control cylinder, said piston being urged from both directions thereof by means of a pair of springs disposed on said cylinder body and defining the interior of the cylinder body into an upper chamber and a lower chamber, operation



check valves are disposed in oil passages, respectively, for communicating said upper and lower chambers with a reservoir chamber, said operation check valves each being formed to be opened simultaneously by one pilot operation, and an oil port of an oil passage in communication with the reservoir chamber is formed in said cylinder body in a neutral position of a piston stroke region within said cylinder body so that locking of the piston is only possible when the piston is in the neutral position.

4,805,930

PRESSURE REGULATION DEVICE FOR VEHICLE SAFETY AIR BAG

Juichiro Takada, 3-12-1, Shin-machi, Setagaya-ku Tokyo, Japan

Filed Aug. 26, 1987, Ser. No. 89,581

Claims priority, application Japan, Aug. 26, 1986, 61-128870[U]

Int. Cl.⁴ B61R *21/16, 21/28*

U.S. Cl. 280—739 **4 Claims**



1. In a vehicle safety air bag having an inflatable envelope of fabric coated with a polymeric film to make it gas tight and pressure-relief means associated with the envelope for enabling gas to escape from the envelope when the gas pressure exceeds a predetermined level, the improvement wherein the pressure relief means comprises first and second fabric elements of the envelope disposed in overlapping relation along their respective margins and a stitched thread seam along said overlapping margins adapted to induce opening up of the fabric elements and rupture of the films thereof along the seam to degrees that vary in accordance with the level of gas pressure in the envelope above said predetermined level and to allow gas to escape along the opened up seam.

228-660 O.G.-89-9

4,805,931

LIGHTWEIGHT FOLDABLE WHEELCHAIR

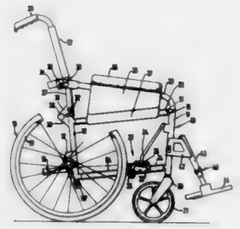
James F. Slasor, Milton Keynes, England, assignor to The Spastics Society, London, England

Filed Jan. 22, 1988, Ser. No. 147,210

Claims priority, application United Kingdom, Jan. 28, 1987, 8701818

Int. Cl.⁴ B62B *11/00*

U.S. Cl. 280—650 **20 Claims**



1. A foldable wheelchair comprising two main side frames connected together by first and second foldable links, seat and back panels extending between said two main side frames with said panels being of flexible material that is foldable when said links are folded to bring the wheelchair into a folded condition wherein said main side frames are closely adjacent to each other, each said main side frame comprising a front member and a rear member connected together by upper and lower cross members with said front and rear members mounted respective front and rear wheels, each said front member mounting a detachable footrest assembly including a bifurcated hanger bracket having spaced apart arms between which said front member is received with each said arm having a slot for reception of a lug on said front member to secure releasably said footrest assembly to said front member and, upper and lower resilient bushings between said arms and engageable with said front member to load resiliently said footrest assembly, each said rear member having an upwardly extending back member hingedly connected for folding movement between an aligned first position for supporting said back panel when the wheelchair is in an erected condition and a folded second position in which said back member is folded about said hinge remote from said front member to extend downwardly adjacent to said rear member with the handgrip of said back member beside the respective said rear wheel, and each said main side frame being connected to the other by said first foldable link extending between the opposed said back members and further connected together by said second foldable link extending between the opposed said rear members, the arrangement of said main frames being such that, in said erected condition of the wheelchair with said back members being in said aligned first position, said first and second links maintain said main side frames spaced apart with said seat and back panels extending between the respective said upper cross members and said back members, and to fold the wheelchair, said first and second links are folded and said back members are turned about their hinges to said folded second position to be received with said back panel between said rear wheels with said two main side frames being moved together with said panel folded therebetween.

4,805,932

JOINT SECURED AGAINST SLIDING

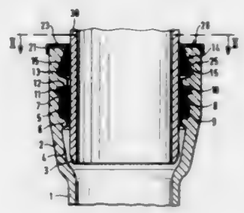
Erich Imhof, and Manfred Verbeck, both of Laufach, Fed. Rep. of Germany, assignors to Eisenwerke Friedrich Wilhelm Duker GmbH & Co., Karlstadt, Fed. Rep. of Germany

Filed Mar. 4, 1987, Ser. No. 21,881

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1986, 3607268

Int. Cl.⁴ F16L *21/04*

U.S. Cl. 285—4 **26 Claims**



1. A spigot-and-socket joint for pipes, wherein a spigot end of a pipe is inserted into a socket end of another pipe, comprising:
- a socket end on a pipe having a larger diameter than the spigot end for providing radial play between said socket end and spigot end;
- a sealing ring in said socket end between said socket end and spigot end;
- an interior surface portion on said socket end defining a gripping ring chamber and having a substantially conical configuration which is narrower in the direction of the distal end of said socket end;
- a separate gripping ring in said gripping ring chamber, said gripping ring comprising
  - a plurality of gripping segments in circumferentially spaced relationship,
  - intermediate pieces of resiliently deformable material interconnecting said gripping segments,
  - a substantially spherically convex radially outer surface on each gripping segment engageable with said conical interior surface portion, and
  - a radially inner surface on each gripping segment having a toothed configuration engageable with said spigot end, so that axial force in the direction of separation of said socket end and inserted spigot end causes said gripping segments to be pressed radially inwardly against said spigot end by interaction between said conical interior surface portion of said socket end and said outer surfaces of said gripping segments for retaining said spigot end in said socket end against said axial force;
- an elastomeric collar on said gripping ring attached on the distal end of said socket end; and
- a connecting part connecting said collar to said gripping ring for supporting said gripping ring and facilitating expansible movement of said gripping segments during insertion of said spigot end into said socket end.

4,805,933

HOSE END SLEEVE

Jerald M. Swisher, Warrensburg, Mo., assignor to Swisher Mower & Machine Co., Inc., Warrensburg, Mo.

Filed May 20, 1987, Ser. No. 51,655

Int. Cl.⁴ F16L *35/00*

U.S. Cl. 285—38 **1 Claim**

1. In combination with a hose end including a tube terminating at and connected to a female hose coupling with a threaded, rotatable nut, the improvement of a sleeve, which comprises:

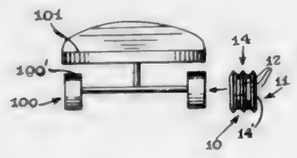
VOL 1099 ISS 3 FE 21 1989 UMI

(a) a rubber body;
(b) a proximate end;
(c) a distal end;
(d) a longitudinal bore extending between and open at said proximate and distal ends;
(e) the nut being permanently and fixedly received in the bore at said sleeve distal end with said sleeve distal end expanded to receive the nut;
(f) said bore having a greater diameter than the hose tube whereby an annular clearance is provided between the hose tube and the sleeve body and the hose tube is freely rotatable within the sleeve bore;



(g) an annular, brass compression ring swaged onto said body distal end, said body distal end when expanded to receive said nut having an outside diameter greater than an inside diameter of said compression ring whereby said compression ring compresses said sleeve distal end onto the nut;
(h) said body proximate end being positioned a distance sufficient from the hose coupling to resist crimping the hose tube at its connection with the hose coupling; and
(i) adhesive between said body and the nut for providing a fixed connection therebetween.

4,805,934
SLIP-ON ATTACHMENT FOR SKATEBOARDS
Ken E. Mallesax, 823 S. Logan, Colorado Springs, Colo. 80910
Filed Nov. 12, 1987, Ser. No. 119,508
Int. Cl.[4] A63C *17/18*
U.S. Cl. 280—7.12 3 Claims



1. A slip-on attachment apparatus for use in combination with the conventional wheels of a typical skateboard device wherein the apparatus consists of:
a plurality of attachment members, each attachment member being provided with at least one radially disposed runner means wherein each of the attachment members is adapted to slidingly engage the wheels of said typical skateboard device; and, each of the attachment members further comprises a generally elongated hollow cylindrical housing including an open inboard end; a closed outboard end; and, interior walls which are dimensioned to receive and frictionally engage the periphery of the wheels of said typical skateboard device; wherein said runner means comprises a plurality of radially projecting, axially spaced, narrow runner elements and each of said runner elements is comprised of at least one runner blade; and, wherein at least one of the runner elements is disposed adjacent the closed outboard end of said attachment member.

4,805,935
CHILD PROTECTOR AND SHOPPING BASKET ALIGNER
Leslie E. Grayson, 1088 Lupin Ave., Chico, Calif. 95926
Filed Aug. 18, 1987, Ser. No. 86,577
Int. Cl.[4] B62B *11/00*
U.S. Cl. 280—33.992 2 Claims



1. A seat-like covering sized to fit an upper frontal portion of the wheel-attach frame section on a grocery shopping cart removably retained by snap-on clamp fitting comprising;
a substantially rectangular panel shaped with one wide end and two sides slanting inwardly from said wide end to a somewhat narrowed end, said panel arranged for horizontal placement on the upper side of said wheel-attach frame of said grocery shopping cart with the upwardly surface designated top, the downwardly surface designated bottom, said wide end being the back thereof and positioned towards the vertical frame of said shopping cart, said narrowed end being the front thereof and positioned somewhat frontward of the swivel-attachment affixing the front wheels to said grocery shopping cart, said front, at the corners thereof, rounded outwardly and cupped downwardly into fender-like coverings over said swivel attachments and the upper part of said front wheels, said sides having edges thereof beveled downwardly forming protective runners paralleling side members of said wheel-attachment frame;
said panel said top thereof affixed adjacent to and paralleling said front with a short grocery-stop ridge;
said panel said top thereof affixed at said sides towards said back thereof with two low profile handles longitudinally aligned paralleling the edge on each said side;
said panel said bottom thereof affixed with at least four said snap-on clamp fittings two along each said side positioned cornerwise in alignment to snap downwards over said side members of said wheel-attach frame.

4,805,936
WHEELED SKI
Jeremy J. Krantz, 134 Strawtown Rd., West Nyack, N.Y. 10994
Filed Dec. 21, 1987, Ser. No. 135,598
Int. Cl.[4] A63C *17/04*
U.S. Cl. 280—842 3 Claims

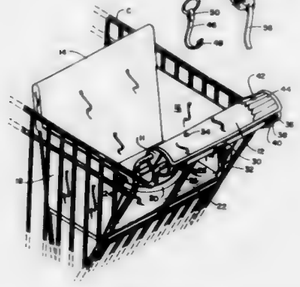
1. A pair of off-road roller skis, each ski comprising:
an elongate, generally planar ski member having a front end, a central portion, and a rear end;
said central portion having a foot receiving area for receiving a foot of a rider;
a steerable off-road front caster wheel pivotally mounted at said front end;
inner and outer off-road rear wheels consisting of soft pneumatic tires, said rear wheel being carried in spaced apart relation by a stationary axle mounted at said rear end perpendicular to the elongate dimension of said ski members, each of said wheels being located beneath and within the peripheral boundary of said ski members;

each of said rear wheels being resiliently deformable and pressurized in the range of about 15 to 25 psi to accommodate an off-road surface; and



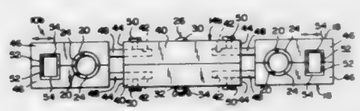
hand brake means manually actuable by a rider for variably opposing rotation of at least one of said rear wheels.

4,805,937
HANDLER COVER AND SEAT COVER FOR A SHOPPING CART
Joan L. Boucher, 8121 Capistrano Ave., Canoga Park, Calif. 91304, and Pamela Mitchell, 15223 Valleyheart Dr., Sherman Oaks, Calif. 91403
Filed Mar. 16, 1988, Ser. No. 168,923
Int. Cl.[4] A47C *31/00*
U.S. Cl. 280—33.992 2 Claims



2. A new and improved handle cover and seat cover for a shopping cart, comprising:
an elongated rectangular piece of a flexible padded washable fabric material;
an elastic fabric storage pouch on an upper surface of said fabric material adjacent an end edge thereof;
a snap fastener on an exterior surface of said elastic fabric storage pouch removably retaining a small squeeze toy;
a snap fastener on said upper surface of said handle cover removably retaining a toy rattle;
three spaced straps secured on said upper surface along one longitudinal side edge of said handle cover and extending transversely thereto;
a plurality of hook VELCRO fasteners on an upper end of each of said straps;
three spaced loop VELCRO fastening strips secured on a bottom surface of said handle cover along an opposite longitudinal side edge in alignment with said three spaced straps;
a snap fastener on a central upper portion of each of said three spaced straps; and
a small clothes pin removably retained by said snap fastener on a middle one of said three spaced straps.

4,805,938
DEVICE FOR CONNECTING TWO BABY STROLLERS TOGETHER
Thomas Redmond, and Regina Redmond, both of 2602 Central Ave., Baldwin, N.Y. 11510
Filed Mar. 28, 1988, Ser. No. 174,376
Int. Cl.[4] B62B *9/12*
U.S. Cl. 280—47.35 5 Claims



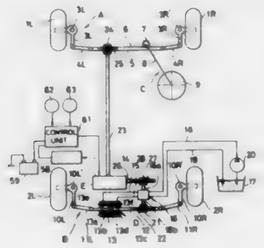
1. A device for connecting two baby strollers together, comprising:
(a) a pair of bracket units spaced apart and clamped between frames of the baby strollers so that one person can operate the strollers simultaneously for transporting two babies therein, each of said bracket units including two housing segments each of said segments having two spaced apart half aperture portions within a mating edge thereof and padding material disposed with said half aperture portions an means for removably fastening said two housing segments together so that said half aperture portions will come together to form complete apertures in which said padding material can bear against the frames of the baby strollers, said fastening means including a bolt extending centrally through said two housing segments and a washer to fit onto distal end of said bolt and a wing nut threaded onto the distal end of said bolt to hold said two housing segments coming together, each of said housing segments having a central inwardly extending recess from said mating edge in which said bolt passes therethrough, each of said housing segments in each of said bracket units including a stationary middle member having a side square shaped hole at each end and a pair of moving members each of said moving members having a side square shaped shaft to slideably fit into said respective side square shaped hole and a pair of set screws each of said set screws transversely thread into said middle member to said respective hole to bear against said respective shaft for locking said shaft thereto making said device adjustable to accommodate various types of baby strollers; and
(b) a spring disposed onto said bolt between said recesses so that said housing segments will separate when said wing nut is loosened on said bolt.

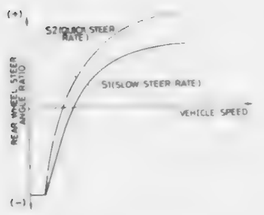
4,805,939
VEHICLE STEERING SYSTEM
Hirotaka Kanazawa; Shunsuke Kawasaki; Shigeki Furutani, and Akihiko Miyoshi, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Continuation-in-part of Ser. No. 885,781, Jul. 15, 1986, abandoned. This application Jun. 30, 1987, Ser. No. 68,723
Claims priority, application Japan, Jul. 18, 1985, 60-156935
Int. Cl.[4] B62D *6/02*
U.S. Cl. 280—91 5 Claims

1. In a steering mechanism for a vehicle including front wheel steering means for steering front wheels of the vehicle, operating means for effecting a steering movement of said front wheel steering means to a desired angle, and rear wheel steering means for steering rear wheels of said vehicle, steering

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angle control means for effecting a steering movement of said rear wheel steering means in relation to the steering movement of the front wheels, said steering angle control means including actuating means for moving said rear wheels to a desired steering angle of the rear wheels, the improvement comprising steering rate detecting means for detecting a rate of the steering operation for said operating means and producing signals





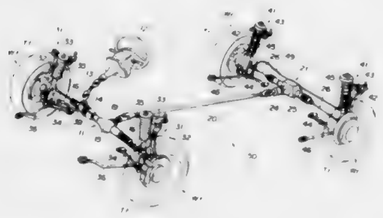
denoting the rate of the steering operation, and steering ratio changing means for changing a steering angle of the rear wheels based on the signals from the steering rate detecting means in such a manner that a steering angle ratio of the steered angle of said rear wheels to the steered angle of said front wheel increases as the rate of the steering operation increases.

4,805,940

FOUR-WHEEL STEERABLE MOTOR VEHICLE

Kenichi Ohno, and Kanji Kubo, both of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1988, Ser. No. 178,207
Claims priority, application Japan, Apr. 8, 1987, 62-86575
Int. Cl.⁴ B62D *5/00*
U.S. Cl. 280—91 **9 Claims**



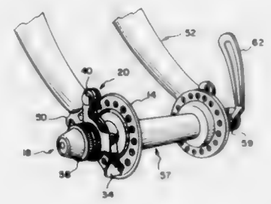
1. A four-wheel steerable motor vehicle comprising:
a steering wheel;
front wheels;
rear wheels;
a mechanism for steering said front wheels in response to turning motion of said steering wheel;
a mechanism for steering said rear wheels in response to steering of said front wheels; and
said rear wheels having camber with respect to ground which is more negative than camber of said front wheels with respect to ground.

4,805,941

QUICK RELEASE WHEEL RETAINER

Verlon D. Downing, and Timothy J. Dietz, both of Centerville, Ohio, assignors to Huffy Corporation, Miamisburg, Ohio

Continuation of Ser. No. 742,689, Jun. 10, 1985, abandoned. This application Sep. 30, 1986, Ser. No. 914,531
Int. Cl.⁴ B62K *25/02*
U.S. Cl. 280—279 **6 Claims**



1. A quick-release wheel retainer comprising:
a bicycle front fork having at least one drop-out including a substantially vertical slot;
a hook-shaped member having an open, crook portion being arcuately-shaped and including top and bottom portions forming an arcuate inner periphery extending greater than 180°;
means for pivotally connected said top portion of said member to said drop-out at a point directly vertically above said slot such that said member pivots in a plane perpendicular to a central axis of axis of an axle extending through said drop out to a position wherein said crook portion is in registry with said slot to close an open end of said slot retain an axle therein; and
said inner periphery being shaped such that said bottom portion curves upwardly toward said top portion, when said member is in registry with said slot, sufficiently to require a slight upward movement of said axle to enable said crook portion to be pivoted out of registry with said slot, whereby gravity acting upon a retained axle against said member urges said member to remain in registry with said slot.

4,805,942

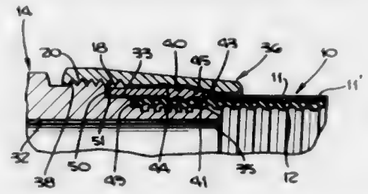
FIELD ATTACHABLE AND REUSABLE HOSE END FITTING FOR CONVOLUTED END

Stuart Goodridge, Collins Road, Totnes, Devon T09 5PJ, England

Filed Aug. 24, 1987, Ser. No. 88,813
Int. Cl.⁴ F16L *39/02*
U.S. Cl. 285—149 **1 Claim**

1. A hose and fitting assembly for corrugated hose of a synthetic plastic material comprising:
a hose having an outer flexible sheath, an inner fluid sealing corrugated tubing of a synthetic plastic material and a fiberglass coating between the sheath and the tubing, said hose terminating in a free end;
a nipple having a first elongated substantially cylindrical portion with a plurality of spaced ridges on the outer surface thereof received inside of the hose, a second substantially cylindrical portion of an outer diameter greater than the other diameter of said first cylindrical portion

integral with said first cylindrical portion, and a threaded portion on said nipple adjacent said second cylindrical portion of larger diameter than said second cylindrical portion, said first and second cylindrical portion and said threaded portion being a single integral piece, wrench flats integral with said threaded portion of said nipple and of an outer diameter substantially greater than the outer diameter of said nipple threaded portion, and a coupling member with a plurality of spaced flats on the outer surface thereof having a threaded portion on the interior thereof rotatably connected to said nipple;
a collar member having an inner diameter substantially the same as the outer diameter of said hose with a generally cylindrical smooth outer surface, said collar member having a threaded portion on the interior thereof threadably receivable on the free end of said hose and threaded over said coating and said tubing with said coating abutting against said threaded portion of said collar member, said collar member also having a smooth inner bore adjacent the threaded portion of said collar member receivable over the free end of said hose when said collar member is threaded substantially all the way on to the free end of said hose, said hose abutting against the intersection of said first and second nipple cylindrical portions, said collar member having a tapered surface on the exterior thereof extending in direction away from said threaded portion and remote therefrom, said first cylindrical portion of said nipple being at least as long in overall length as both the length of said threaded portion of said collar member and a substantial portion of the length of the smooth inner bore



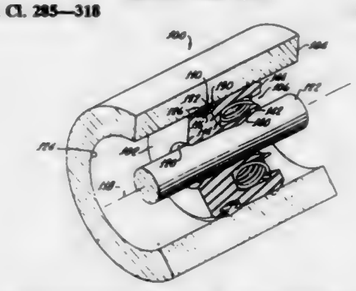
of said collar member, said collar member having a forward end abutting against the intersection of said nipple threaded portion and said second cylindrical portion; and
a socket having an internally threaded section adjacent one end thereof of an outer diameter related to the outer diameter of the threaded portion of said nipple and threaded onto said nipple threaded portion, said socket having a plurality of spaced flats on the outer surface thereof and a generally linear intermediate section adjacent the threaded section thereof being generally smooth walled and of an inner diameter related to the outer diameter of said collar member, said sheath being disposed between the interior of said socket and the exterior of said collar member, a terminal generally cylindrical section on said socket being generally smooth walled on the interior thereof and of an inner diameter less than the inner diameter of said intermediate section, a tapered section on said socket being generally smooth walled on the interior thereof and connecting said intermediate section to said socket cylindrical section, said tapered section having a taper substantially conforming to the tapered surface of said collar member whereby, with said member threaded onto the free end of said hose, said socket encircles said collar member and is threaded to said nipple, the corrugations of said hose are compressed linearly along the longitudinally axis thereof with the terminal free end of said hose compressing directly against the intersection of said nipple first and second cylindrical portions widening radially creating a seal between the nipple outer surface and the smooth bored inner surface of said collar member so that fluid cannot flow therepast.

4,805,943

ROTARY/RECIPROCATING SEAL APPARATUS

Peter J. Balsells, 17592 Sherbrook Dr., Tustin, Calif. 92680, assignee to Peter J. Balsells and Joan C. Balsells, both of Santa Ana, Calif.

Continuation-in-part of Ser. No. 896,722, Aug. 15, 1986, Pat. No. 4,678,210. This application Jan. 19, 1987, Ser. No. 64,858
Int. Cl.⁴ F16F *1/12*
U.S. Cl. 285—318 **15 Claims**



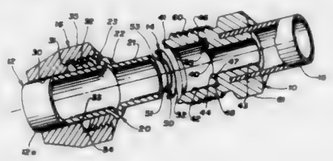
1. Rotary/reciprocating seal apparatus comprising:
a resilient ring member including means defining a circumferential groove therein, said circumferential groove including a first surface of revolution disposed at an angle with the axis of said ring member, said resilient member including means defining an axial opening therein sized for accepting and enabling a shaft to be rotated and/or reciprocated therein;
a cylindrical housing including means defining an axial opening sized to accommodate said ring member, said cylindrical housing including means defining a groove in an inside surface of said cylindrical housing, the inside surface groove including a second surface of revolution disposed at an angle with the axis of said cylindrical housing;
spring means disposed in both the ring member and cylindrical housing grooves for forcing said first and second surfaces of revolution away from one another to cause an axial loading between the ring member and the cylindrical housing; and,
biasing means, disposed in the ring member in a spaced apart relationship with said spring means, for urging portions of the ring member against the shaft and the cylindrical housing inside surface, respectively, in order to create a seal therebetween.

4,805,944

BEADED TUBE COUPLING WITH END SEAL RING

Alberto N. Reginaldo, Rochester Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 9, 1988, Ser. No. 204,472
Int. Cl.⁴ F16L *25/00*
U.S. Cl. 285—331 **2 Claims**



1. A beaded tube type coupling including a tube with a plug member at least at one end thereof, said plug member having a free end and having a raised annular bead adjacent to the free end of the plug member, a straight tube portion extending between said free end and annular bead, a hollow nut with internal threads loosely encircling said tube outboard of the beaded plug member, a socket member having a free end and

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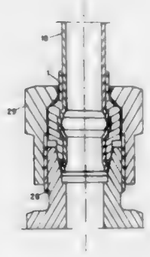
a stepped bore extending inwardly therespon adapted to receive said straight tube portion of the plug member so that its free end is adapted to sealingly engage one surface side of the annular bead, said bore including an annular shaped groove defined by wall surfaces of said socket member, a seal ring having a U-shaped cross section operatively positioned in said groove, the U-shaped cross section of the seal ring being sized so that it is adapted to receive the free end of said plug member, said socket member having external threads to threadingly receive the hollow nut, the arrangement being such that the hollow nut is rotatable relative to the socket to sealing sandwich the annular bead in metal-to-metal sealing relationship therebetween and to compress and expand the seal ring into sealing engagement between the free end of the plug member and against the wall surfaces defining the annular shaped groove.

4,805,945

TUBE JOINT COMPRISING MEANS FOR ANCHORING A SLEEVE AT ITS END

Joël Foucault, Blois, and Alain Bonnargent, Montesson, both of France, assignors to Ermeto-Hydexco, Blois, France

Continuation of Ser. No. 756,280, Jul. 18, 1985, abandoned, which is a division of Ser. No. 597,255, Apr. 6, 1984, Pat. No. 4,688,318. This application Jan. 15, 1987, Ser. No. 6,306
Claims priority, application France, Apr. 11, 1983, 83 05872
Int. Cl.⁴ F16L *19/04*
U.S. Cl. 285—341 **11 Claims**



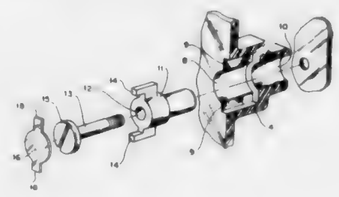
1. Apparatus for joining a flexible tube to a sleeve, said tube being adapted to have said sleeve tightly anchored on said tube, said sleeve being rigid and having a plurality of internal channels, each of said channels being substantially annular and generally transverse to an axis of said sleeve, said tube being positioned within said sleeve and having at least one tube portion which is deformed within each of said channels, said sleeve having a substantially smooth internal bore and a first of said plurality of channels being positioned approximately midway between two free ends of said sleeve, wherein said first channel has first and second oppositely disposed shoulders and a diameter larger than the diameter of any other of said plurality of channels, said plurality of channels including at least one additional channel terminating at a first side at one of said first channel shoulders, said at least one additional channel being shoulderless at said first channel first side, a second side of said additional channel having a shoulder, said apparatus further comprising a joint member and a nut surrounding the exterior surface of said sleeve, wherein said plurality of channels are concentric and contiguous, said first channel and at least one of said additional channels having different diameters, all of said channels being directly adjacent to each other.

4,805,946

POSTAGE METER SECURITY SEAL

Timothy R. Erwin, Redding, and Jeffrey J. Prior, Monroe, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 718,585, Apr. 1, 1985, abandoned. This application May 1, 1987, Ser. No. 48,967
Int. Cl.⁴ E05C *5/04*
U.S. Cl. 292—251 **17 Claims**



1. A security sealing means for locking the housing of a postage meter to a postage member frame comprising in combination a housing panel having an aperture therein,

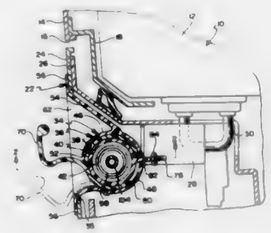
an insert fitting into and mating with said aperture in the housing panel, said insert having a bore therein receiving a screw engaging said postage meter frame, said insert having upwardly extending tabs, said tabs extending beyond the head of the screw received in said bore, a cover member attached to said tabs by welding thereto, said cover member being of a shape so as to cover said aperture when welded to said tabs, and said cover member thereby being operative when welded to said tabs to prevent access to the screw received in the bore.

4,805,947

DOOR HANDLE ASSEMBLY

Timothy M. Farris, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 13, 1987, Ser. No. 72,419
Int. Cl.⁴ E05B *7/00*
U.S. Cl. 292—336.3 **7 Claims**



1. A vehicle door, handle for mounting within an aperture of a vehicle door and actuating a door latch comprising:

a cylindrical housing member adapted for mounting within the aperture of the vehicle door;

a cylindrical handle member rotatably journaled within the housing for rotary movement about a vertical axis and having a handle grip extending outward through the aperture of the door;

a cylindrical actuator member journaled within the cylindrical handle member for vertical movement relative to the handle member movement and having associated means connecting with the door latch to unlatch the door latch upon vertical movement of the actuator member;

cam means acting between the handle member and the actuator member;

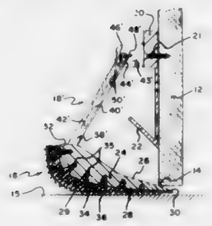
and means acting between the actuator member and the housing member and adapted to prevent the actuator member from rotating whereby rotary movement of the handle member effects vertical movement of the actuator member to effect unlatching of the door latch.

4,805,948

DOOR SECURITY WEDGE DEVICE

David A. Renzi, 160 Dare Ave., Bridgeton, N.J. 08302

Filed Feb. 22, 1988, Ser. No. 158,856
Int. Cl.⁴ E05C *17/54*
U.S. Cl. 292—342 **17 Claims**



1. A security device to be positioned on a floor at an inside bottom edge of a door with an inside surface, the door opening inwardly in the direction the inside surface is facing, the device being to prevent unauthorized entry through the door, the device comprising:

(a) a wedge shaped member comprising:

(i) an upper surface and a lower surface meeting at a front acute angle forming a pointed edge positionable proximate the inside bottom edge of the door,

wherein the acute angle between the upper and lower surfaces is sufficient to allow the bottom edge of the door to ride up on the upper surface toward a rear portion of the wedge shaped member as the door is open inwardly, and

(ii) a dragging surface means attached to the lower surface to resist sliding movement of the dragging surface means in pressure contact with the floor, and

(b) guide means attached between the wedge member and the door to fix and hold a minimum distance attained between the door and the wedge member when the door is pulled toward closure after engaging the wedge member, the guide comprising a guide member having a first and second end, a pivotal connection of the first end to the rear portion of the wedge shape, and a pivotal connection of the second end to the inside surface of the door, the length of the guide member being sufficient to angle upwardly from the floor, the pivotal connection to the door comprising:

(a) a horizontal pin member rigidly attached to the inside surface of the door,

(b) an open slot along the length of the guide member terminating at the second end and of a size and shape sufficient to allow the guide member to freely ride on the horizontal pin upwardly and toward the door as the door edge engages the wedge shape, and

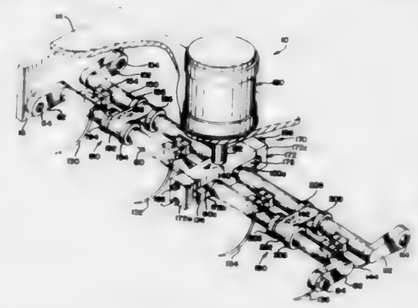
(c) a plurality of downwardly depending stops extending into the slot, the stops being shaped and angled to engage the horizontal pin as the guide member is moved downwardly and away from the door.

4,805,949

MATERIAL-HANDLING APPARATUS

Kevin Conway, Kalamazoo, Mich., assignor to Prab Robots, Inc., Kalamazoo, Mich.

Filed Oct. 19, 1987, Ser. No. 93,491
Int. Cl.⁴ B25J *15/10*; B66C *3/04*
U.S. Cl. 294—61 **8 Claims**



1. A material-handling device comprising:

a framework;

a pair of substantially parallel shafts pivotally mounted on said framework for rotation, each in a fixed arc having a radius of curvature, about substantially parallel axes;

at least one arcuate talon on each of said shafts and extending therefrom in a plane substantially normal to said parallel axes, each of said talons having a distal end, and each of said talons having a radius of curvature that is substantially the same as the radius of curvature of said fixed arc, the talons being mounted to the shafts in opposed pairs for movement in coplanar arcuate paths, such that the distal ends of the talons of each such pair move away from each other as the talons of said same pair are being extended relative to the framework and move toward each other as the talons of said same pair are being retracted relative to the framework; and

drive means engaging said shafts for imparting thereto rotational motion so as to extend and retract said talons relative to said framework, the drive means comprising a slotted block having a pair of aligned slots, each slot receiving one of said shafts, and a prime mover for displacing the slotted block in one direction substantially normal to said parallel axes so as to move each talon from a fully retracted position to a fully extended position and for displacing the slotted block in an opposite direction so as to move each talon from a fully extended position to a fully retracted position.

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IMPELLER DRIVEN SUCTION DEVICE FOR ROTATABLY HOLDING FLAT OBJECTS

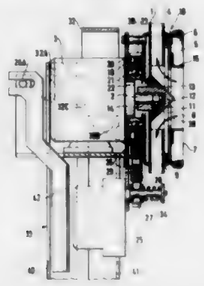
Jean-Claude Haroutel, Orsay, and Philippe Michel, Asnieres, both of France, assignors to SMH Alcatel, Paris, France

Filed Dec. 15, 1987, Ser. No. 133,392
Claims priority, application France, Dec. 17, 1986, 86 17688
Int. Cl.⁴ B25J *15/06*; B66C *1/02*
U.S. Cl. 294—64.1 **8 Claims**

1. Device for holding flat products, comprising a motor having an output shaft, a terminator assembly mounted on and rotatable on said shaft and a turbine rotatable within said terminator assembly, wherein said terminator assembly is partly partitioned forwardly of said turbine and comprises a flat suction chamber open laterally and adapted to contain said

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turbine and a flat holding chamber forward of and communicating with said suction chamber having an open holding



surface facing forwardly and adapted to be closed off by a product to be held.

4,805,951

GRIPPING MECHANISM

Rolf J. Andersson; Chajkiel Pajes; Kjell Höglund; Tore Nilsson, all of Västerås, Sweden; Ragnar Husebye, Trondheim, Norway; Sigbjørn Høyland, Hommersåk, Norway; Hans Lindland, Sandnes, Norway; Tore Moug, Randaberg, Norway, and Erling Nesse, Stranmagrend, Norway, assignors to AB Asea-Atom, Västerås, Sweden

Filed Oct. 22, 1987, Ser. No. 111,282
Claims priority, application Sweden, Oct. 22, 1986, 8604505
Int. Cl.[4] B25J *15/10*; B66C *1/66*
U.S. Cl. 294—116 2 Claims



1. A mechanism for gripping a retraction cone attached to a workpiece and for aligning the retraction cone with respect to the mechanism and for fixing the retraction cone in position relative to the mechanism, said mechanism comprising:

an outer shroud which includes an outer tubular part and an outer funnel-shaped part, said outer tubular part having an inner wall which includes a plurality of equally circumferentially spaced axial guide slots,

a gripper device which is axially movably located within said outer shroud, said gripper device including

a tubular sleeve which has a threaded axial bore therethrough and which includes a plurality of equally circumferentially spaced, outwardly-extending wings which respectively fit within said axial guide slots in said tubular part of said outer shroud, and

a plurality of finger elements which are respectively pivotally attached to said wings so as to extend within said outer funnel-shaped part of said outer shroud,

an operating device which is positioned within said gripper device, said operating device including

a central shaft having a first end and a second end,

a threaded sleeve attached to said central shaft at the first end thereof, said threaded sleeve being independently rotatable relative to said central shaft and threadingly engaged in said threaded axial bore in said tubular sleeve of said gripper device,

an inner funnel connected to the second end of said central shaft and positioned within said outer funnel-shaped part of said outer shroud, said inner funnel including a plurality of equally circumferentially spaced control slots which are respectively aligned with said finger elements of said gripper device, and

means connecting said inner funnel to said funnel-shaped part, and

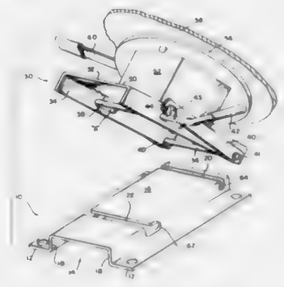
a drive means for rotating said threaded sleeve of said operating device, rotation of said threaded sleeve in a first rotation direction causing said tubular sleeve of said gripper device to move within said tubular part in a first axial direction such that said finger elements will move within said control slots towards and into engagement with said retraction cone, and then rotation of said threaded sleeve in an opposite rotation direction causing said tubular sleeve of said gripper element to move within said tubular part in an opposite axial direction such that said finger elements will move within said control slots to position said retraction cone within said inner funnel.

4,805,952

DETACHABLE VAN SEAT

Jack E. Coleman, Mishawaka, Ind., assignor to Welded Products, Inc., Mishawaka, Ind.

Filed Jul. 23, 1987, Ser. No. 76,680
Int. Cl.[4] B60N *1/00*
U.S. Cl. 296—65.1 24 Claims



1. A seat mounting assembly for a motor vehicle which allows a seat to be both tilted out of a driving position and easily removed from the vehicle without the need for tools, comprising;

a floor plate;

a tube plate;

a latching means for securing said tube plate to said floor plate;

said floor plate having two edges for bolting to a floor of the vehicle and a raised portion in the shape of a channel with legs and a web, said legs connected to the edges of the floor plate;

said floor plate having a first slot and a second slot substantially perpendicular to the longitudinal axis of the the floor plate and extending across the entire width of the web of the channel and legs having a top portion of each slot open and each slot extending downwardly from the channel web towards a far edge of the channel legs;

the first slot having a substantial U-shape with a slight indentation in the direction of the second slot;

the second slot having an L-shape with the top of the L open across the entire web of the channel and a bottom toe of the L in the direction of the first slot;

said tube plate being channel shaped with a web portion slightly wider than the web portion of the floor plate so that the tube plate overlaps said floor plate;

said latching means attached to said tube plate including, a first rod, a second rod with a handle, two link elements connecting said first and second rods, and two discs attaching to said links and attaching to said second rod to form an eccentric pivoting means.

said first rod extending through the legs of the tube channel and engaging the first slot of the floor plate, said link elements secured to said first rod;

said second rod extending through the legs of the channel, a handle attached to one end of the second rod to facilitate rotation of said second rod, said second rod welded to two circular discs outside of the link elements, the discs being parallel to the longitudinal axis of the links and have openings to attach to protrusions extending outwardly from the link;

said discs operating as part of a bell crank mechanism allowing linear movement of said second rod in a direction inwardly in a closed bottom portion of the L slot of the floor plate towards the first rod; and

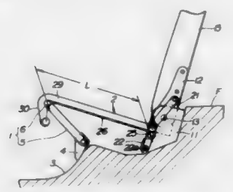
a frictional over-center lock means whereby the rods pull towards each other from the pivotable movement of the link and circular discs.

4,805,953

FOLDABLE SEAT FOR MOTOR VEHICLE

Yoshihiko Yamauchi, Kanagawa Prefecture, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Dec. 30, 1987, Ser. No. 139,828
Claims priority, application Japan, Mar. 30, 1987, 62-47299[U]
Int. Cl.[4] B60N *1/02*
U.S. Cl. 296—65.1 7 Claims



1. A foldable seat having a seat cushion and a seatback and mounted on a floor, said foldable seat comprising:

a pair of front brackets secured to said floor;

a front frame structure pivotally connected to the paired front brackets;

a pair of rear brackets secured to said floor at positions behind said front brackets;

a pair of hinge arms secured to said seatback and pivotally connected to the paired rear brackets;

a pair of first links pivotally connected at their one ends to said hinge arms respectively;

a pair of second links pivotally connected at their one ends to the other ends of said first links and pivotally connected at their other ends to said rear brackets respectively;

a rear frame structure extending between said second links and secured thereto; and

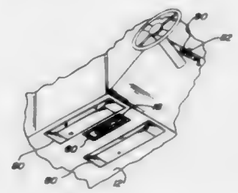
a cushion supporter extending between said front and rear frame structures and resiliently supporting thereon said seat cushion.

4,805,954

DRIVER WHEELCHAIR LOCKDOWN

Lewis S. Lazaroff, 4901 Ward Rd., Wheat Ridge, Colo. 80033

Filed Oct. 13, 1987, Ser. No. 107,154
Int. Cl.[4] B60N *1/02*
U.S. Cl. 296—65.1 6 Claims



1. A clamping apparatus for releasably securing a wheelchair to a base, said apparatus comprising:

clamping adapter which is sized and configured so as to be capable of rigid attachment to a frame structure of the wheelchair;

a frame which is capable of being rigidly secured to a base;

a clamp which is pivotally attached to said frame and capable of being pivotally moved between a wheel chair clamping position and a wheelchair release position, said clamp being capable of clamping engagement with said clamping adapter when said clamp is in the clamping position so that a relative movement between the clamp and adapter is prevented and the wheelchair is in the clamping position so that a relative movement between the clamp and adapter is prevented and the wheelchair is secured to the base, said clamp also being capable of disengagement from said clamping adapter when said clamp is in the release position so that the wheelchair is capable of being moved relative to the base;

said clamp includes a pair of inner and outer telescoping members, each of said telescoping members having a telescoping end and an outer free end, said telescoping ends being releasably secured by a manual release means, the free end of one of said telescoping member being pitovally attached to said frame, the free end of the other telescoping member having a C-shaped clamp affixed thereto for clampingly engaging the clamping adapter when the movable clamp is moved into the clamping position; and

actuating means for pivotally moving said moveable clamp between the positions, the actuating means includes a power driven actuator which is pivotally attached to said telescoping members by a bell crank means for moving said clamp between the positions, said frame is mounted below the surface of said base and the power driven actuator, bell crank means and pivoted end of the telescoping members is mounted within said frame and below the surface of said base, the portion of the frame adjacent to the surface of said base being open so that telescoping members and clamp for the clamping position can pivot upward above the base so as to engage the clamping adapter and yet allow the telescoping members with the clamp to be retracted below the surface of the base when the clamp is in the released position.

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MOTOR VEHICLE SUNSHIELDS AND SUNSHIELD MAKING METHODS

Abraham Levy, P.O. Box 17212, Tel Aviv, Israel 61171

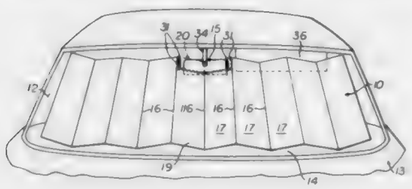
Filed Mar. 24, 1988, Ser. No. 172,627
Int. Cl.[4] B60J *1/20*
U.S. Cl. 160—84.1 21 Claims

1. In a method of making a sunshield for shading a motor

vehicle inside a window thereof, said motor vehicle having a component inside and in the vicinity of said window, the improvement comprising, in combination, the steps of:

making said sunshield of a shading material having a predetermined value per unit area;

dividing said sunshield into a main body and a predetermined portion adjacent said main body corresponding in



location to said component of the motor vehicle in terms of a positioning of the sunshield in said window;

scoring said sunshield between said main body and said predetermined portion; and

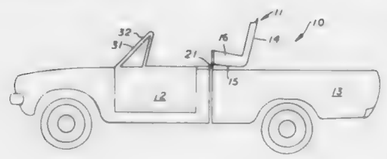
imparting to said predetermined portion a redeemable value being greater in terms of unit area than the value per unit area first mentioned herein.

4,805,956

CONVERTIBLE PICKUP TRUCK

Charles L. Saunders, 2595 Sherwood, Apt. #4, Las Vegas, Nev. 89109

Filed Jun. 15, 1987, Ser. No. 61,407
Int. Cl.⁴ B60J *7/043*
U.S. Cl. 296—107 **7 Claims**



1. A convertible pickup truck comprising;

a body having a windshield within a frame, a lower cab portion with a rear wall, and a bed portion including a front wall and extending rearwardly from the lower cab portion,

a convertible cab top having an integral roof portion, rear wall including a rear window, and opposed side panels of substantially rigid sheet material pivotally mounted on said lower cab portion and movable between a raised position covering said lower cab portion and a stored position within said bed rearwardly of said lower cab portion,

said cab top in the raised position releasably connected to the windshield frame and said roof portion extending from the windshield rearwardly and downwardly over the lower cab portion and pivotally attached to the rear wall of said lower cab portion,

metal reinforcing straps secured to the upper portion of the rear wall of said lower cab portion and the rear wall of said cab top to strengthen and reinforce the rear walls of said lower cab and cab top members,

a pair of hinges each having one strap element secured at the reinforced top of the rear wall of said lower cab portion and the adjoined strap elements of the hinges secured at the reinforced bottom of the rear wall of said cab top in a laterally spaced relation with hinge pins positioned rearwardly a distance from the rear wall of said lower cab portion such that backward pivoting of said cab top pivots the same into the truck bed,

resilient seal means at the forward end of the roof portion of said cab top to form a weather-tight seal between the top of the windshield frame the forward edge of said cab top in the raised position,

releasable clamping means for releasably securing the cab top to the windshield frame in the raised position including a pair of apertured bracket members secured to the interior surface of the windshield frame beneath the top edge in a laterally spaced relation, a pair of latch members secured to the interior surface of the top portion of the cab top in operative alignment with said brackets and each latch member having a guide pin adapted to be received in an aperture in said bracket, and a lever operated hooked clamping member adapted to be received in another aperture in said bracket and movable to a locked position,

a pair of releasable latch members each having one element secured near the top of the rear wall of said lower cab portion in a laterally spaced relation and the adjoining element secured near the bottom of the rear wall of said cab top to releasably secure the cab top to the lower cab portion in the raised position,

a lower resilient seal member secured to the top edge of the rear wall of said lower cab portion and an upper resilient seal member secured to bottom edge of the rear wall of said cab top to form a weather-tight seal between the abutting surfaces of the hinged members in the raised position, and

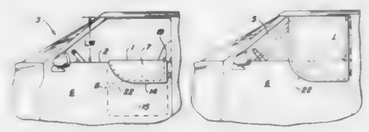
support means in said truck bed positioned in alignment to recieve and support said cab top in the stored position, the supporting surface of which is adapted to prevent scratching or marring the surface of the roof portion of said cab top when supported thereon.

4,805,957

AUTOMOBILE WINDOW SILL ARM REST AND SUNSCREEN

Paul J. Fletcher, 44122 N. 20th St., East, Space 46, Lancaster, Calif. 93534

Filed Jun. 20, 1988, Ser. No. 208,469
Int. Cl.⁴ B60J *9/00*
U.S. Cl. 296—153 **10 Claims**



1. An arm rest for a window sill of a vehicle said arm rest comprising a flexible cover having opposite sides, having along a first side magnet means for securing said first side to an iron surface of said vehicle and having along a second side opposite said first side weight means for urging by gravity said arm rest downward when said arm rest is disposed across said sill with said frist side outside said vehicle and said second side inside said vehicle, wherein said magnet means exerts a magnetic force on said iron surface and on said arm rest which force exceeds the force by which said weight means urges said arm rest downwards with the consequence that an upward force on said arm rest exerted by a window of said vehicle during closure of said window causes said second side having weight means to shift upwards as said window moves upward, and said first side having magnet means does not move, and wherein said weight means exerts a force by gravity downward on said second side which gravity force exceeds frictional forces and the weight force on said arm rest acting upward on said second side with the consequence that as said window moves downward to open said window of said vehicle, said second side shifts downward.

4,805,958

SUNROOF HOUSING FOR AUTOMATIVE VEHICLES

Kazuhisa Nagata, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Apr. 16, 1987, Ser. No. 38,948
Claims priority, application Japan, Apr. 28, 1986, 61-63302
Int. Cl.⁴ B60J *7/00, 7/20*
U.S. Cl. 296—216 **4 Claims**



1. A housing for accommodating a vehicle sunroof adapted to open and close a window formed in a stationary roof having an inner side, said housing comprising:

a housing body made of a synthetic resin fixedly attached to the inner side of the stationary roof at the window for receiving the sunroof and having an opening corresponding to the window; and

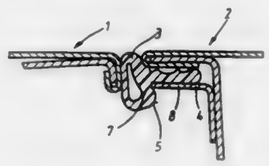
a reinforcing plate having a stepped cross-section portion discontinuously enclosed within said housing body along a substantial length of said reinforcing plate, said reinforcing plate being disposed along a rearward portion of said opening and having two end portions adapted to be fixedly secured to the inner side of the stationary roof for supporting the housing body.

4,805,959

VEHICLE SLIDING ROOF SEALING ARRANGEMENT

Rolf Öhrle, Herrenberg; Werner Herlemann, Aidlingen, and Jochen Pfirsch, Herrenberg, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 7, 1987, Ser. No. 105,532
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1986, 3634271
Int. Cl.⁴ B60J *7/043, 7/053;* **F16J** *9/00;* **E06B** *7/16*
U.S. Cl. 296—216 **4 Claims**



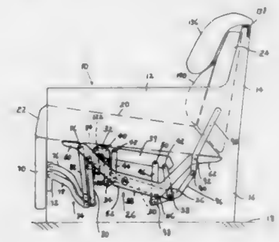
1. Seal, for the gap between a rigid sliding roof and a motor vehicle solid roof region surrounding it, comprising a peripheral hollow chamber seal which is accepted, underneath the solid roof region, by a rail fixed adjacent to the solid roof region, the hollow chamber seal having a bead associated with the front of the rail, which bead is only locally in contact with a plurality of protrusions formed on the front of the rail, wherein each protrusion is aligned with and at a distance from a penetration whose width can be increased or decreased by means of a tool in such a way that each protrusion is moved towards or away from the penetration whose width is decreased or increased.

4,805,960

WALL PROXIMITY CHAIR

Bill D. Tacker, Okolona, Miss., assignor to Super Sagless Corp., Tupelo, Miss.

Filed Aug. 20, 1987, Ser. No. 87,511
Int. Cl.⁴ A47C *1/02*
U.S. Cl. 297—85 **15 Claims**



1. A frame within a frame incliner chair comprising

a fixed outer chair frame having a stationary back and side panels,

a seat and backrest disposed within the outer frame and a footrest operatively connected to the seat, said seat, backrest and footrest being movable between upright, TV and reclining positions,

and linkage mechanisms on each side of the chair carrying the seat and backrest, each of said mechanisms including:

a support plate secured to the inside of the side panel,

a support link carried on front and rear pivot links which are pivotally connected to the support plate,

front and rear swing links pivotally connected to the support link and in turn pivotally connected to a seat mounting link, said seat mounting link carrying the seat,

a lazy tong linkage carrying the footrest and mounted on the seat mounting link for movement between retracted and extended positions,

a backrest bracket pivoted on the seat mounting link and connected to the rear swing link by a backrest support link,

and a handle actuated mechanism interconnected to the lazy tong linkage and to the support link for extending the leg rest and for swinging the support link forwardly on the pivot links to move the seat and back rest forwardly and downwardly within the fixed outside frame from an upright to a TV position,

said backrest support link swinging the seat link forwardly with respect to the support link and outside frame when pressure is exerted against the backrest to recline the backrest as the seat moves forward within the outside frame.

4,805,961

SEAT RECLINER LATCH APPARATUS AND METHOD OF UTILIZATION THEREOF

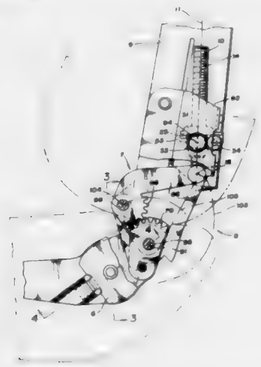
Frank O. Garrod, Hudsonville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 17, 1988, Ser. No. 208,210
Int. Cl.⁴ B60N *1/02*
U.S. Cl. 297—361 **7 Claims**

1. A vehicle seat recliner latch for adjustably setting the inclination of a seat back pivotally mounted with respect to a seat cushion along a first pivotal axis, said latch in combination comprising:

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a sector gear fixed with respect to said seat cushion;
an elongated rod having a primary axis;
means to pivotally connect said rod with respect to said seat back along a third pivotal axis and to adjust the position of connection of said seat back along said primary axis of said rod by restraining movement of said seat back with respect to said rod primary axis to set the inclination of said seat back; and



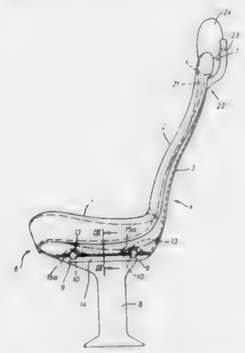
a first link pivotally connected with said rod along a second pivotal axis generally parallel to said first pivotal axis and said first link being pivotally connected with said seat back along a forth pivotal axis generally parallel with said first pivotal axis, said first link having a geared section in mesh with said sector gear whereby said second axis translates in a curvilinear path when the inclination of said seat is adjusted.

4,805,962

SEAT SHELL FOR A MOTOR VEHICLE SEAT

Bruno Sacco; Josef Gallitzendorfer, both of Sindelfingen; Michael V. Klein, Bondorf; Gerhard Jaax, Rohrau, and Alfred Ernst, Weil der Stadt, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 21, 1982, Ser. No. 400,255
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3129073
Int. Cl.⁴ B60N *1/00, 3/02*
U.S. Cl. 297—454 **16 Claims**



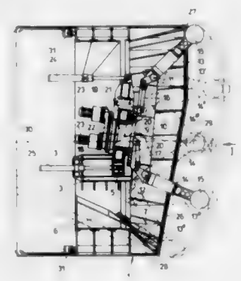
1. A seat shell for a motor vehicle seat comprising a seat portion, a backrest portion, and continuous channel means extending along each lateral side of th seat shell from a front area of the seat portion to a top area of the backrest portion for supporting the seat portion and backrest portion and for accommodating a plurality of discrete fittings for receiving fastening means, the channel means being disposed so as to project from a rear side of the seat shell and being open toward a front side of the seat shell, said discrete fittings being disposed in the channel means in a manner for cooperating with the fastening means for affixing the seat shell to a support, and fitted over means for closing the channel means and for forming a continuous surface with the front side of the seat shell.

4,805,963

SHIELD ADVANCING MACHINE

Peter Kogler, Kaittelfeld; Berthold Scheiber, Zeltweg; Wulf Martin, Grosslobming, and Herwig Wrulich, Zeltweg, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Oct. 1, 1986, Ser. No. 914,162
Claims priority, application Austria, Oct. 14, 1985, 2972/85
Int. Cl.⁴ F21D *9/08*
U.S. Cl. 299—33 **7 Claims**



1. A shield-advancing cutting machine for advancing a shield in an advancing direction having a longitudinal axis, said machine comprising:
a generally cylindrical tubular shield having an inner circumferential surface and a leading circumferential edge;
means for axially advancing said shield in said advancing direction for maintaining proximity of said leading edge with a wall being mined;
a carrier means;
mounting said carrier means to said inner circumferential surface of said shield for selective movement along said longitudinal axis relative to said shield and for tilting movement relative to said longitudinal axis for providing said carrier means with a selectively varied angle of longitudinal axis inclination relative to said longitudinal axis of said shield;
a rest;
rotary drive means mounting said rest to said carrier means for selective rotary movement about the longitudinal axis of said carrier means;
a plurality of cantilever arms having rear ends pivotally mounted by swivel means to said rest so as to project axially forwards and radially outward from said rest;
control means mounted between each said cantilever arm and said rest for swiveling said arms about said swivel means;
said cantilever arms further having free forward ends provided with respective rotatable cutting heads, whereby said cantilever arms, when swivelled cause said rotatable cutting heads to be moved through respective arcs oriented generally transverse to said longitudinal axis of said carrier means;
said swivel axes of said rear ends of said cantilever arms

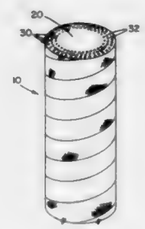
being located at least two different distances radially away from said longitudinal axis of said carrier means; and
said axes of movement of respective ones of said cutting heads intersecting one another.

4,805,964

METHOD OF MAKING A TRACK BROOM BRISTLE

Richard W. Everson, Salisbury, N.C., assignor to Thermoid, Inc., Bellefontaine, Ohio

Division of Ser. No. 890,241, Jul. 28, 1986. This application Feb. 16, 1988, Ser. No. 156,773
Int. Cl.⁴ A46B *7/10, 13/02*
U.S. Cl. 300—21 **3 Claims**



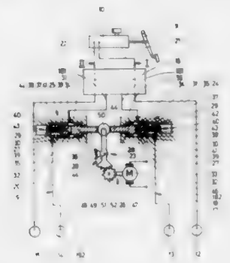
1. The method of making a sweeper bristle element comprising the steps of extruding a longitudinally extending cylindrical core of rubber, wrapping at least one ply of fabric having a plurality of cords coated with rubber, said wrapped ply of fabric having a radial exterior surface and a radial interior surface around said core, spiral winding a ply of nylon material around said ply of fabric to form an uncured bristle element, vulcanizing said bristle element, thence unwrapping said ply of nylon, and cutting said bristle element into a plurality of small length of bristle elements.

4,805,965

APPARATUS FOR SYNCHRONIZING THE RPM OF DRIVE WHEELS OF A MOTOR VEHICLE UPON STARTING

Wolf-Dieter Jonner, Bellstein; Guenter Kaes, Stuttgart; Wolfgang Maisch, and Alwin Stegmaier, both of Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 3, 1988, Ser. No. 163,674
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1987, 3707068
Int. Cl.⁴ B60K *28/16;* **B60T** *8/32*
U.S. Cl. 303—100 **15 Claims**



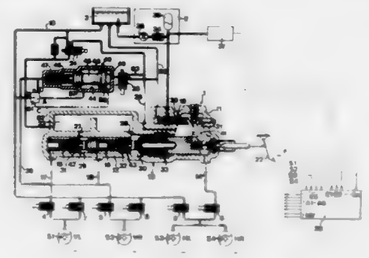
1. An apparatus for synchronizing the rpm of drive wheels upon starting of a motor vehicle equipped with a pressure-fluid-controlled brake system having suitable brake lines extending to the brakes by application of metered brake pressure to the wheel having the higher rpm, at least two brake pressure controllers incorporated one in each brake line between a master brake cylinder of the brake system and one wheel brake cylinder of one of the at least two drive wheels, said controllers each having one control piston axially displaceable in a control cylinder counter to a restoring spring and one valve each in said control cylinder actuated by said control piston arranged to control the connection opening of the control cylinder to the master brake cylinder, a final control element adapted to drive the control piston in contrary directions actuatable by a control signal derived from the rpm difference between the at least two drive wheels, and an electric reversible control motor (46) adapted to drive one or the other of said control pistons (28), said control motor (46) is a rotary motor which includes a shaft (47) which acts upon said control pistons (28) of the brake pressure controllers (24, 25) via a conversion gear (48; 248; 348) and thereby is adapted to convert the rotational motion into a displacement motion.

4,805,966

SLIP-CONTROL HYDRAULIC BRAKE BOOSTER WITH BRAKING-PRESSURE RESPONSIVE VALVE FOR FAST-FILL CYLINDER

Hans-Dieter Reinartz, Frankfurt am Main, and Helmut Steffes, Hattersheim, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 25, 1987, Ser. No. 30,145
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1986, 3610352
Int. Cl.⁴ B60T *8/44, 15/40*
U.S. Cl. 303—114 **6 Claims**



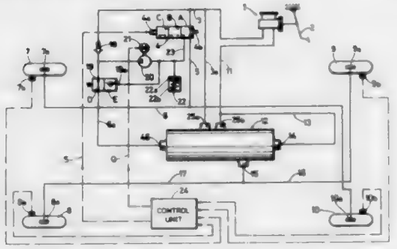
3. A hydraulic brake system for automotive vehicles comprising a hydraulic power booster and a master cylinder connected downstream of the power booster, wherein the pressure chamber of the power booster is pressurizable by auxiliary pressure which is dependent on the position of a pedal-actuatable brake valve and wherein there is provision of an auxiliary cylinder, which is pressurizable by dynamic pressure and with the aid of which a working chamber of the master cylinder can be supplied with additional pressure fluid in the initial phase of braking, wherein said auxiliary cylinder is a fast-fill cylinder (40) wherein a chamber (48) between two piston steps (57, 58) of the fast-fill cylinder (40) is connectable with an unpressurized supply reservoir (3) by way of a valve assembly (51) and wherein the valve assembly (51) is furnished with the wheel cylinder pressure as a control variable, and wherein the valve assembly (51) comprises a piston (53) designed as stepped piston of which the step with the lesser diameter is designed as valve closing member (60) and the step with the larger diameter confines two chambers (55, 61) one of which is connected with the wheel cylinder and the other with the pressure chamber (21) of the hydraulic power booster (11).

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4,805,967
ANTI-SKID CONTROL APPARATUS FOR A VEHICLE BRAKING SYSTEM

Tetsuro Arikawa, Kanagawa, Japan, assignor to Nippon A B S, Ltd., Tokyo, Japan

Filed Sep. 24, 1986, Ser. No. 911,103
Claims priority, application Japan, Sep. 26, 1985, 60-212848
Int. Cl.[4] B60T *8/40, 13/70, 8/88*
U.S. Cl. 303—116 9 Claims



1. An anti-skid control apparatus for a vehicle braking system, comprising:

(A) master cylinder means, a plurality of wheels, and a wheel cylinder means associated with said wheels;

(B) a control unit for judging or measuring skid conditions of said wheels;

(C) fluid pressure control valve means, arranged between said master cylinder means and said wheel cylinder means, receiving instructions from said control unit to control brake fluid pressure of said wheel cylinder means;

(D) hydraulic reservoir means for reserving brake fluid discharged through said fluid pressure control valve means from said wheel cylinder means to lower said brake fluid pressure of the wheel cylinder means with the control of said fluid pressure control valve means;

(E) fluid pressure pump means including an inlet means and an outlet means for pressurizing the discharged brake fluid of said hydraulic reservoir means and supplying the pressurized brake fluid into a conduit connecting said master cylinder means with said wheel cylinder means;

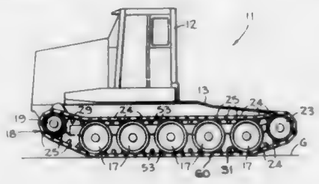
(F) said fluid pressure control valve means being movable between at least a first and second position, in said first position said fluid pressure control valve means allows said master cylinder means to communicate with said wheel cylinder means and in said second position said fluid pressure control valve means allows said wheel cylinder means to communicate with said hydraulic reservoir means and interrupts communication between said master cylinder means and said wheel cylinder means, and

(G) means for circulating said brake fluid discharged from said wheel cylinder means when said fluid pressure control valve means is in said second position through a path consisting of a first conduit connecting the outlet means of said fluid pressure pump means directly with said wheel cylinder means, a second conduit connecting said wheel cylinder means with said fluid pressure control valve means and a third conduit connecting said fluid pressure control valve means through said hydraulic reservoir means with the inlet means of said fluid pressure pump means, wherein said circulating means includes a controllable check valve arranged in said first conduit connecting the outlet means of said fluid pressure pump means directly with said wheel means, and said hydraulic reservoir means includes a reservoir chamber and a piston, said anti-skid apparatus further comprising a check valve connected in a conduit connecting said master cylinder means and said outlet means of the fluid pressure pump means, said check valve permitting fluid to flow only in the direction from said outlet of the fluid pressure pump means toward said master cylinder means, said controllable check valve normally allowing said fluid pressure pump means and said wheel cylinder means to freely communicate with each other and functioning as a check valve to permit fluid flow only in the direction from said wheel cylinder means toward the outlet means of said fluid pressure pump means when said piston is moved more than a predetermined distance or when fluid pressure becomes higher than a predetermined value in the reservoir chamber of said hydraulic reservoir means.

4,805,968
VEHICLE TRACK SHOE WITH REINFORCING GROUSER

James J. Counerley, Georgetown, Ky., assignor to FMC Corporation, Chicago, Ill.

Filed Jun. 16, 1986, Ser. No. 875,029
Int. Cl.[4] B62D *55/20*
U.S. Cl. 305—39 2 Claims

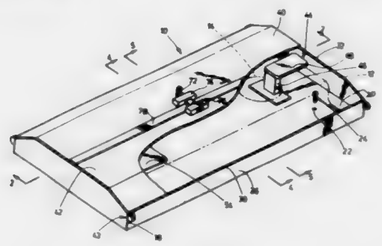


1. A one piece cast track shoe having a flat body portion (31) formed with three front and two rear laterally spaced apart apertured pivot pin and bushing receiving lug segments (36, 42), the two rear lug segments symmetrically spaced apart on opposite sides of a median line passing lengthwise through the track shoe for interweaving between three front lug segments on an identical track shoe for constructing an endless crawler track, the flat body portion formed with a lengthwise fin-like guide member (53) on the median line for guiding sprocket and bogey wheels over the flat body portion, the guide member positioned over the middle front lug segment of the three front lug segments when the track shoe is in a ground engaging position, a grouser member (52) formed on a ground contacting side (60) of the track shoe and extending laterally and positioned rearwardly of the three front lugs and below the guide member when the track shoe is in the ground engaging position, pairs of laterally spaced reinforcing ribs symmetrically positioned on opposite sides of the median line and forming longitudinal sides of a pair of sprocket tooth receiving openings (30) in the flat body portion, the grouser member forming a leading side of the openings and the two rear lug segments forming a trailing side of the openings, a transverse reinforcing rib (61) extending across the lateral space between the two rear lug segments connecting the pairs of ribs at the trailing ends of the openings, the grouser member connecting the pairs of ribs at the leading ends of the openings, the grouser member together with the guide member and the middle front lug segment forming a solid cast mass, when the track shoe is in the ground engaging position extending upwardly into the guide member and rearwardly to the leading sides of the openings when the track shoe is in the ground engaging position, thereby reinforcing the flat body portion on lateral opposite sides of the guide member.

4,805,969
BAG HOLDER

Stephanie Hancock, 74-4 Upper Canada Dr., Willowdale, Ontario, Canada M2P 2A3

Filed Jan. 4, 1987, Ser. No. 58,131
Int. Cl.[4] A47F *1/00*
U.S. Cl. 312—50 9 Claims



1. A bag holder comprising:

a housing having an opening through which bags are both inserted into and removed from the interior of the housing;

a first door mounted to the housing to one side of the housing opening for pivoting movement between open and closed positions relative to the housing opening;

a second door mounted to the housing to an opposite side of the housing opening for pivoting movement between open and closed positions relative to the housing opening;

manually-operable locking means for releasably locking and maintaining the doors in their closed positions, the locking means being releasable to permit the doors to be repeatedly pivoted between their open and closed positions for introduction and removal of bags through the housing opening, the locking means permitting the doors to be repeatedly locked in their closed positions;

a bag retainer mounted in interior of the housing and accessible through the housing opening, the bag retainer being positioned to engage each of the bags as each bag is inserted through the housing opening into the interior of the housing and adapted to releasably retain an upper end portion of each bag upon such engagement, the bag retainer permitting each of the bags to be repeatedly engaged with and disengaged from the bag retainer;

means for folding the bags when the bags are retained by the bag retainer and the doors have been pivoted to their open positions, the bag folding means comprising a bag folding element and means mounting the bag folding element to the housing for movement between a first position in which the bag folding element extends outwardly through the housing opening and a second position in which the bag folding element is located in the interior of the housing, the bag folding element folding lower end portions of retained bags upwardly towards the rest of the retained bags as the bag folding element is moved from the first position to the second position.

4,805,970
DRAWER STOP

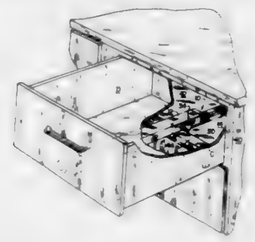
Matt C. Scalf, High Point, N.C., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Apr. 8, 1988, Ser. No. 179,421
Int. Cl.[4] A47B *88/00*
U.S. Cl. 312—348 5 Claims

1. A drawer stop means for use in case goods wherein the frame of the case goods defines a drawer slideway having front and rear base plates spaced below and underlying the bottom wall of the drawer when the drawer is inserted in the slideway; and wherein a first, elongated upper drawer guide is attached to the undersurface of the drawer, and a second elongated lower drawer guide is attached to the upper surface of the base plates; and said first and second drawer guides are slidably engaged to guide the drawer as it is moved in and out of said slideway; the improvement wherein said stop means including:

a. a body portion having an upper, resilient finger means and a lower, depending leg member;

b. said body portion being pivotally attached to a side of said first, upper drawer guide such that said stop means is pivotally movable between a first release position wherein said stop means pivots in a first arcuate direction and passes over said front base plate when said drawer is inserted and moved along said slideway in one direction, and a second normal position wherein said leg member will engage said front base plate to impede movement of



the drawer as said drawer is pulled along said slideway in an opposite direction and said finger rests against the undersurface of said drawer;

c. said body portion having an overall vertical dimension when in said second normal position greater than the vertical distance between the undersurface of said drawer and said front base plate whereby said stop means cannot bypass said front base plate without engagement thereof;

d. means for causing said stop means to normally be oriented in said second normal position; and

e. said finger means being so shaped and formed of such material as to flex responsive to application of additional force in said opposite direction on the drawer, thereby overriding said engagement of said leg member against said front base plate and permitting said leg to pass over said base plate.

4,805,971
PERISCOPIC VIEWFINDER

Stephen D. Fantone, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 20, 1987, Ser. No. 87,428
Int. Cl.[4] G02B *13/14, 13/18, 23/00*
U.S. Cl. 350—1.2 6 Claims



1. A periscopic viewfinder for use following an afocal zoom, said periscopic viewfinder comprising:

a pickoff mirror for intercepting a small bundle of rays

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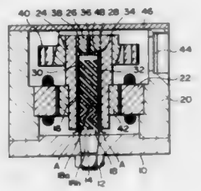
emerging from the zoom and reflecting them in a predetermined direction along the viewfinder optical axis;
an objective lens arranged to intercept the rays reflected from said pickoff mirror and form a real image therefrom, said objective lens comprising a positive glass element followed by an aspheric plastic element having an aspheric surface for correcting for spherical aberrations;
a field lens positioned more or less at the position of said real image;
a relay section including a symmetrical pair of new achromats for reimaging said real image to an intermediate location along the optical axis of said viewfinder, said relay section having a central stop located between said symmetrical pair of new achromats and each of said pair of new achromats being bent about said central stop to correct for spherical aberrations;
a field stop positioned at said intermediate image location; and
an eyepiece focused more or less on said field stop for viewing said intermediate image.

4,805,972

DYNAMIC PRESSURE GAS BEARING DEVICE

Katsuhiko Tanaka, Yamato-shi; Takanobu Sato, Odawara-shi, and Ikunori Sakatani, Fujisawa-shi, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 810,530, Dec. 17, 1985, abandoned, which is a continuation of Ser. No. 463,011, Feb. 1, 1983, abandoned. This application Jan. 22, 1987, Ser. No. 8,149
Claims priority, application Japan, Feb. 5, 1982, 57-16299; May 14, 1982, 57-80213
Int. Cl.⁴ G02B *26/10*; F16C *17/10*
U.S. Cl. 350—6.7 **20 Claims**



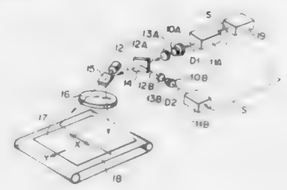
1. A dynamic pressure assembly comprising as members within a closed housing:
a body;
a solid fixed shaft without a bore therethrough fixed to said body and having a free end;
a rotational member including a sleeve portion surrounding said fixed shaft with a radial clearance and a bottom portion having an internal surface opposed to an end surface of the free end of the fixed shaft, the rotational member being shiftable relative to the fixed shaft;
a pressure chamber formed between the internal surface of said bottom portion and the end surface of said free end;
means for rotating said rotational member, said rotating means including a rotor fixed to said rotational member at an axial position thereof and a stator opposed to the rotor and fixed to said body;
means for generating dynamic pressure in said radial clearance and supplying it to said pressure chamber through said radial clearance, the dynamic pressure generating means being formed between the shaft and the sleeve portion of the rotational member; and
pressure regulating means including a restricted flow passage which has an opening in the center of said internal surface to vent a pressurized flow from the pressure chamber, thereby regulating dynamic pressure therein, the rim of said opening defining an annular seat for engagement by a portion of the end surface for closing the opening;
the arrangement being such that said portion of the end surface of said shaft contacts said annular seat of the rotational member and closes the opening and thereby closes the passage when there is no relative rotation between the shaft and the sleeve or when such relative rotation is only at a low speed insufficient to develop in said pressure chamber a sufficiently high hydrodynamic pressure to axially displace the shaft relative to said housing by the hydrodynamic pressure established in said pressure chamber and opens the opening to said pressure chamber and thereby opens the passage when the rotation of the rotational member is at a high speed sufficient to develop a sufficiently high hydrodynamic pressure in said pressure chamber.

4,805,973

METHOD OF RECORDING CONTINUOUS TONE IMAGE

Hideo Watanabe, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 2, 1986, Ser. No. 847,372
Claims priority, application Japan, Apr. 3, 1985, 60-70500
Int. Cl.⁴ G02B *26/10*
U.S. Cl. 350—66 **4 Claims**



1. In a continuous tone image recording method for controlling a drive circuit of a semiconductor laser to modulate the intensity of a laser beam emitted therefrom in accordance with an image density signal, and scanning a continuous tone-forming photosensitive material with the intensity modulated laser beam to record a continuous tone image on the photosensitive material,
the improvement comprising the steps of:
providing a plurality of semiconductor lasers, controlling drive currents of the respective semiconductor lasers to thereby produce plural intensity modulated laser beams, coalescing the laser beams emitted by said plurality of semiconductor lasers, said lasers respectively emitting laser beams of different wavelengths, the spectral sensitivity of said photosensitive material being different for said different wavelengths, and scanning said photosensitive material with the coalesced laser beam.

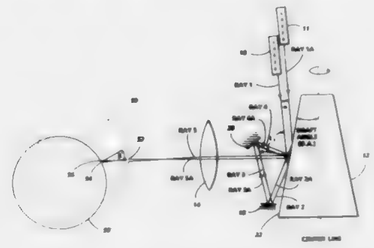
4,805,974

POLYCONE™ SCANNING SYSTEM WITH MULTIPLE BEAMS

Harry P. Brueggemann, San Marino, and Melvin E. Swanberg, Claremont, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1987, Ser. No. 115,486
Int. Cl.⁴ G02B *26/10*
U.S. Cl. 350—6.7 **4 Claims**

1. In a rotating mirror scanning system including a multi-surface mirror assembly having plurality of surfaces and an axis of rotation, first and second light sources for introducing first and second sources of light beams toward said multi-surface mirror, said light beams being reflected in turn by each of said surfaces of said mirror, a first mirror placed in the path of said light beams reflected from said multi-surface mirrors, a second mirror placed in the path of said light beams reflected from said first mirror, said second mirror reflecting said light beams back to the same surface of said multi-surface mirror, the last reflection forming first and second scanning light beams of predetermined ranges of arc of one rotation of said multi-surface mirror, said multi-surface mirror assembly comprising a polygonal array of mirror facets, said mirror facets having a predetermined draft angle with respect to the axis of rotation of said multi-surface mirror assembly, and a photo-sensitive



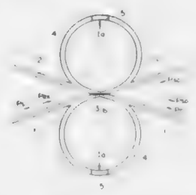
surface upon which said scanning light beams are to be raster drawn, said photo-sensitive surface being tilted with respect to said light beams to eliminate the differential scan length between said scanning light beams, wherein the scanning light beam with the shorter scan length, when the scanning light beams, are normal to said photosensitive surface, travels a greater distance before impinging on said photo-sensitive surface.

4,805,975

OPTICAL WAVEGUIDE SWITCH

Katsuyuki Utaka, Musashino; Kazuo Sakai, Tokyo, and Yuichi Matsushima, Tanashi, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1988, Ser. No. 143,820
Claims priority, application Japan, Jan. 21, 1987, 62-9942
Int. Cl.⁴ G02F *1/29*
U.S. Cl. 350—96.13 **12 Claims**



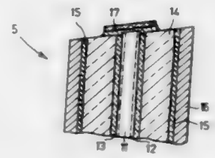
12. An optical waveguide switch comprising, two waveguides intersecting at an angle in an intersection region intermediate corresponding light input regions of the two waveguides and corresponding light output regions thereof for outputting guided light, an optical switch element controlled by incident light energy as a function of the intensity thereof and disposed in said intersection region of the waveguides in the path of input light in the waveguides for switching a light output optical path from one of the waveguides to the other of the waveguides and two loop feedback waveguides each associated with a corresponding one of the two waveguides for branching output light back to the input region of said corresponding one of the two waveguides.

4,805,976

COUPLING MEANS FOR MONOMODE FIBER

Günter Wilkening, Braunschweig, and Rolf Krüger, Vechelde, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed May 1, 1987, Ser. No. 44,707
Claims priority, application Fed. Rep. of Germany, May 9, 1986, 3615727
Int. Cl.⁴ G02B *6/36*
U.S. Cl. 350—96.2 **10 Claims**



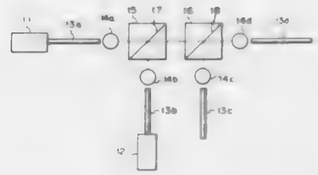
8. Coupling means for coupling incident laser radiation into an end of monomode optical fiber, wherein said fiber comprises a core having a first refractive index and a cladding having a second refractive index which is less than said first refractive index, a transparent capillary having a bore in which said optical fiber is fixedly mounted in a longitudinal region near and up to said fiber end, said fiber end and the corresponding end of said capillary being sloped to accord with a single plane which is inclined to a normal to the axis of the fiber, and a substantially totally opaque light-absorbing jacket surrounding said capillary, whereby such laser radiation as is directed to have incidence with said sloped end and within the aperture angle for entry into the fiber core will be the only light accepted for transmission by the fiber core, and further whereby laser radiation entering said sloped end outside said aperture angle will be absorbed by said jacket.

4,805,977

OPTICAL COUPLER FOR OPTICAL DIRECT AMPLIFIER

Yasuaki Tamura, and Kiyofumi Mochizuki, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd and Kokusai Denshin Denwa Co., Ltd., both of Tokyo, Japan

Filed Nov. 2, 1987, Ser. No. 115,769
Claims priority, application Japan, Nov. 4, 1986, 61-260598
Int. Cl.⁴ G02B *6/28*
U.S. Cl. 350—96.16 **6 Claims**



1. An optical coupler for an optical direct amplifier using stimulated Raman effect in which pump light is wavelength multiplexed with signal light and multiplexed light is applied to a transmission optical fiber, comprising;
a polarization multiplex prim for multiplexing two linear polarization beams with the same wavelength and perpendicular polarization planes generated by semiconductor lasers, and for providing a single output multiplexed beam,
a wavelength multiplexer optically coupled with said single output multiplexed beam of said polarization multiplex prism so that the output of said polarization multiplex

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prism is wavelength division multiplexed with signal light, and

the output of said wavelength multiplexer being applied to a single transmission optical fiber.

4,805,978

DEVICE HAVING A LIGHT WAVEGUIDE PLUG CONNECTOR

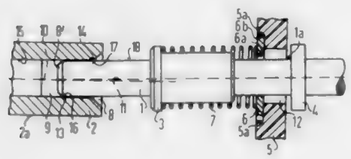
Helmut Bruch, Berlin, and Peter Pohl, Krailling, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 24, 1987, Ser. No. 77,640

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1986, 8620245

Int. Cl.⁴ G02B *6/36*

U.S. Cl. 350—96.20 **11 Claims**



1. In a device containing at least one light waveguide plug connector, said plug connector having a pin-shaped part received in a socket-shaped part, said connector having at least one of the two parts being mounted on a wall member with radial movement relative to the wall member and means for axially biasing the two parts together, said two parts having cylindrical sections mated to one another during a plugging-in operation, the improvement comprising the socket-shaped part having an intermediate tapering section between a front conical section and the cylindrical section and the intermediate tapering section being provided with less taper than the front conical section.

4,805,979

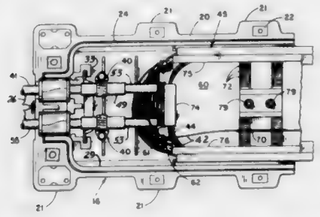
FIBER OPTIC CABLE SPLICE CLOSURE

Ronald G. Bossard, Austin; Dean C. Kranz, Round Rock, and Russell P. Smith, Georgetown, all of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 4, 1987, Ser. No. 93,339

Int. Cl.⁴ G02B *6/36, 6/38*

U.S. Cl. 350—96.20 **13 Claims**



1. A splice closure assembly for a branch-line fiber optic cable splice which fiber cable comprises an outer sheath, a plurality of optical fibers and a strength member, said assembly comprising

a pair of mating shell-like closure members including base means and cover means for defining a three dimensional chamber, said base means and cover means each having a mating surface having opposed arcuate wall portions defining at least a pair of cable entry ports when assembled,

anchor means within said base means and disposed in generally aligned relationship with said entry ports for securing a strength member of a said fiber optic cable to said base means,

said chamber having length, width and depth dimensions to afford a first open storage area for at least one loop of optical fiber therein without deleterious effect on said optical fiber,

retaining means supported by said base means for positioning said at least one loop of optical fiber in said base means, and

said cover means affording means for receiving and storing at least one splice tray supported from said base means and spaced from said first storage area.

4,805,980

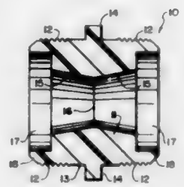
UNIVERSAL FIBER OPTIC TERMINATION SYSTEM

Einhard Mackenroth, Lo Salem Rd., So. Salem, N.Y. 10590

Filed Dec. 9, 1985, Ser. No. 806,419

Int. Cl.⁴ G02B *6/38*

U.S. Cl. 350—96.21 **15 Claims**



1. In a coupling for a fiber optic cable wherein the cable has a termination element affixed to one end thereof, the improvement wherein said coupling comprises a core and an adapter means, said core comprising a sleeve of non-light transmissive material, the sleeve having external threads at each end and having an axially central radially extending projection, the interior of the sleeve defining a hole extending therethrough with opposed frusto-conical surfaces, the minimum diameter ends of said frusto-conical surfaces abutting axially centrally of said core, said adapter means being threaded on said threaded core and shaped to conform to said termination element, said frusto-conical surfaces of said hole extending substantially to the respective ends of said core.

4,805,981

TELECOMMUNICATIONS CABLE CONTAINING OPTICAL FIBERS

Colin A. Gould, Ipswich, England, assignor to British Telecommunications, plc, London, England

Filed Nov. 15, 1985, Ser. No. 798,289

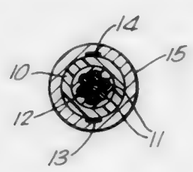
Claims priority, application United Kingdom, Nov. 15, 1984, 8428878

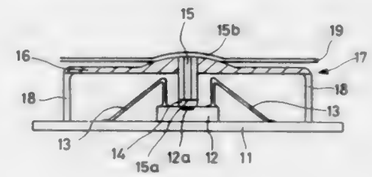
Int. Cl.⁴ G02B *6/44*

U.S. Cl. 350—96.23 **16 Claims**

14. A submarine cable for serving as an undersea communications medium comprising: a tubular strength member surrounded by an abrasion resistant cladding, said tubular strength member being formed of a longitudinally orientated thermoplastic polymer which strength member is capable of withstanding breaking loads in the range of 100kg to 3000kg and which contains in its bore a plurality of longitudinally extending optical fibres which are embedded in an embedding composition which occupies the space between the fibres, whereby

the cable is filled, said cable having a density in the range of 0.9 to 4 gm cm^{-3}, said cable having sufficient strength, water exclusion properties and pressure resistance to provide long term undersea service.





4,805,982

LED ARRAY HEAD

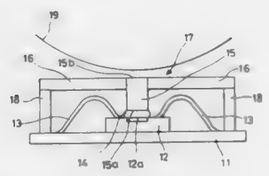
Makoto Tomoyori, and Shinji Murata, both of Iwate, Japan, assignors to Alps Electric Co., Ltd, Japan

Filed Sep. 21, 1987, Ser. No. 98,781

Claims priority, application Japan, Nov. 27, 1986, 61-182596[U]

Int. Cl.⁴ G02B *6/04*

U.S. Cl. 350—96.24 **4 Claims**



1. An LED array head assembly comprising:

a longitudinal base member;

two supporting members disposed orthogonally to said base member for supporting said base member;

a ceramic substrate for supporting said supporting members;

an LED chip disposed on said substrate;

a transparent resin disposed on said LED chip;

a bundle of optical fibers having one end seated on said transparent resin, and the other end retained in position by said base member;

said base member, supporting members and ceramic substrate forming an enclosure for containing said LED chip, said transparent resin and said bundle of optical fibers.

4,805,983

LED ARRAY HEAD

Makoto Tomoyori, and Shinji Murata, both of Iwate, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Sep. 21, 1987, Ser. No. 98,782

Claims priority, application Japan, Nov. 27, 1986, 61-182594[U]

Int. Cl.⁴ G02B *6/04*

U.S. Cl. 350—96.24 **3 Claims**

1. An LED array head in which a light emitting section thereof is selectively caused to emit light to expose an object to the light wherein

a fiber bundle comprising a plurality of optical fibers providing substantially no optical convergence is arranged with an end portion thereof to be located at a position in the vicinity of the light emitting section and wherein another end portion of the fiber bundle is formed to have a curved surface.

4,805,984

TOTALLY INTERNALLY REFLECTING LIGHT CONDUIT

Sanford Cobb, Jr., St. Mary's Point, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 799,869, Nov. 21, 1985, abandoned, and Ser. No. 819,118, Jan. 15, 1986, abandoned. This application Sep. 5, 1986, Ser. No. 903,657

Int. Cl.⁴ G02B *6/00*

U.S. Cl. 350—96.28 **36 Claims**



10. A light fixture, comprising:

a housing having an inner surface and an outer surface;

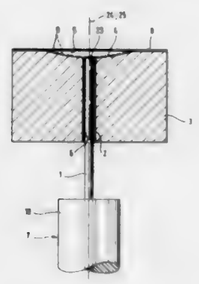
a hollow, tubular light conduit contained within said housing including a wall member of a transparent material, said wall member having a structured surface on one side and a smooth surface opposite said structured surface on the other side, and at least a portion of the cross-section of said wall member lying in a smooth arcuate curve, said structured surface having a linear array of substantially right angled isosceles prisms arranged side-by-side, the perpendicular sides of said prisms making an angle of approximately 45° with the tangent to said smooth surface opposite said structured surface;

performance manipulating means associated with said wall member for allowing light to be emitted from said light

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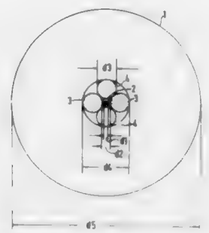
conduit through said wall member without being contained within said light fixture by total internal reflection;
optical window means in said housing for allowing the emission of light from said light conduit through said optical window means; and
light source means associated with said light conduit for supplying light into said light conduit so that light entering said light conduit may be emitted from said light conduit and may thereby exit from said light fixture through said optical window means.

4,805,985
METHOD OF PRODUCING A FIBER-OPTICAL REFLECTION SENSOR AND SENSOR SO PRODUCED
Carl M. Fleck, Doktorberg 23 E5, A-2391 Kaltenleutgeben, Austria
Filed Jul. 2, 1986, Ser. No. 881,109
Claims priority, application Austria, Jul. 8, 1985, 2013/85
Int. Cl.⁴ G02B *26/00*
U.S. Cl. 350—96.29 **26 Claims**



2. An amplitude- or intensity-modulated fiber-optical reflection sensor comprising an optical fiber having a core of a predetermined diameter, a block having a through bore and an end face, and a light-reflecting surface, the optical fiber being arranged to transmit light to the light-reflecting surface, to receive the reflected light from the surface and to conduct the light for further processing, and the optical fiber having an end with an end face spaced from the light-reflecting surface at a distance of a magnitude in the range of the optical fiber core diameter, the distance not substantially exceeding the maximum amplitude of the relative movement of the light-reflecting surface with respect to the end face of the optical fiber, a hardened adhesive mass surrounding the optical fiber end in the through bore of the block, the hardened adhesive mass fixing the optical fiber end in the through bore and having an annular end face, the end faces of the optical fiber end, of the hardened adhesive mass and of the block being commonly ground to be completely flush, the end face of the block being concavely ground at least in the region of the end face of the optical fiber end, and an elastic membrane carrying the light-reflecting surface and scanning the concavely ground end face of the block.

4,805,986
METHOD OF PRODUCING POLARIZATION-MAINTAINING SINGLE-MODE OPTICAL WAVEGUIDES AND PREPORMS USED THEREIN
Herbert Weissert, Asperg, Fed. Rep. of Germany, assignor to Standard Elektrik Lorenz AG, Stuttgart, Fed. Rep. of Germany
Filed Jul. 21, 1987, Ser. No. 76,149
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1986, 3625002
Int. Cl.⁴ C03B *37/12;* **G02B** *6/10*
U.S. Cl. 350—96.30 **11 Claims**



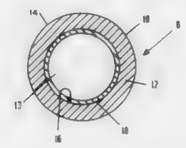
1. A method of producing an optical waveguide preform, comprising the step of:
assembling a preform comprising a tube of cladding material, a rod having a core and a cladding disposed centrally in said tube, a first pair of filler rods having a first composition, a second pair of filler rods having a second composition, the tow rods of each pair being disposed diametrically opposed to each other with respect to the central rod, all of the filler rods being of equal diameter and resting both against the central rod and against the inside wall of the tube, the diameters of the central rod, the inside wall of the tube, and the filler rods are so chosen that each of the filler rods also rests against the two filler rods of the other pair.

7. A preform for an optical waveguide comprising:
a tube of cladding material;
a central rod having a core and a cladding, said rod disposed centrally in said tube;
a first pair of filler rods having a first composition;
a second pair of filler rods having a second composition, the two rods of each pair being disposed diametrically opposed to each other with respect to the central rod, all of the filler rods being of equal diameter and resting both against the central rod and against the inside wall of the tube, the diameters of the central rod, the inside wall of the tube and the filler rods are chosen such that each of the filler rods also rests against the two filler rods of the other pair.

4,805,987
HOLLOW LIGHTPIPE USING A LOW REFRACTIVE INDEX INNER LAYER
Katherine D. Laakmann, and Peter Laakmann, both of The Highlands, Seattle, Wash. 98177
Filed Dec. 29, 1987, Ser. No. 139,285
Int. Cl.⁴ G02B *6/20*
U.S. Cl. 350—96.32 **13 Claims**

1. A waveguide for high efficiency transmission of laser light, comprising:
an elongated housing having an interior surface defining an elongated interior space through which the laser light is transmitted; and

a reflective layer formed on the interior surface of the housing for reflecting the laser light incident thereon, the layer



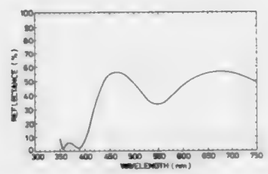
being composed of a material having a complex index of refractivity with a real part (n) less than about 0.4.

4,805,988
PERSONAL VIDEO VIEWING DEVICE
Nelson Dones, 2829 Larkspur St., Yorktown, N.Y. 10598
Filed Jul. 24, 1987, Ser. No. 77,903
Int. Cl.⁴ G02B *27/22*
U.S. Cl. 350—137 **13 Claims**



1. A personal video viewing device comprising a stereoscopic binocular external image viewing system for viewing external images, and an electronic imaging device displaying images different from the external image, combined with a monoscopic binocular electronic image viewing system for viewing said electronic imaging device simultaneously with an external image, and means for varying the relative intensities of both said external image viewing system and said electronic image viewing system.

4,805,989
MULTI-LAYERED BACK REFLECTING MIRROR
Yuji Nakajima, Tokyo, Japan, assignor to Hoya Corporation, Tokyo, Japan
Filed Sep. 18, 1987, Ser. No. 98,346
Claims priority, application Japan, Sep. 18, 1986, 61-220657
Int. Cl.⁴ G02B *5/08, 5/28*
U.S. Cl. 350—164 **8 Claims**



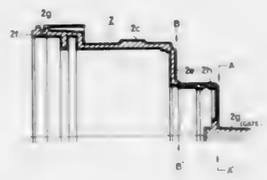
1. A multi-layered back reflecting mirror having a dielectric multi-layered coating on one side of a glass or plastic transparent substrate which is further overlaid with a light-absorbing layer, said dielectric multi-layered coating being composed of four to eight dielectric layers laminated one on top of another having alternately differing refractive indices, at least one of said dielectric layers having an optical thickness of $\lambda_0/2$, wherein λ_0 is the wavelength of light used as the reference measurement for design purposes, each of the remaining dielectric layers has an optical thickness of $\lambda_0/4$, and said mirror has a relative reflection minimum for visible light in a range of 480 to 550 nanometers.

4,805,990
APPARATUS FOR VIEWING A REFRACTED IMAGE AND PHOTOGRAPHIC METHOD
Clarence C. Edwards, 4256 E. Capitol St., NE., Washington, D.C. 20019
Filed Feb. 4, 1987, Ser. No. 10,767
Int. Cl.⁴ G02B *5/04;* **G01J** *3/14, 3/46, 3/51*
U.S. Cl. 350—168 **25 Claims**



1. Apparatus for viewing a refracted image of a scene comprising:
(a) light dispersing means comprising at least one prism having an objective face and an ocular face angularly related,
(b) a support for said prism, and
(c) positioning means connected with said support for contacting only a part of the head of a viewer substantially spaced from the eye region for enabling said apparatus to be held by the hand of the viewer for positioning said prism with said faces converging downwardly and the ocular face in position to transmit refracted light of a scene to the eye of the viewer and for moving said prism relative to the eye of the viewer while said positioning means is in contact with the said part of the head of the viewer.

4,805,991
MULTI-LAYER RESIN MOLDED ARTICLE AND METHOD OF MAKING THE SAME
Takashi Arai, Tokyo; Katsuo Kawano, Kawasaki, and Hidekazu Okajima, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 5, 1987, Ser. No. 22,210
Claims priority, application Japan, Mar. 13, 1986, 61-55266; Apr. 1, 1986, 61-75142; Jun. 12, 1986, 61-90158[U]; Sep. 18, 1986, 61-221135; Dec. 1, 1986, 61-286243; Dec. 1, 1986, 61-286244; Dec. 18, 1986, 61-302294
Int. Cl.⁴ G02B *7/04*
U.S. Cl. 350—255 **3 Claims**



2. A lens assembly comprising:
a fixed cylinder;
motor means for transmitting a driving force;

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a transmitting member for receiving the driving force from said motor means;

a rotatable cylinder driven by said transmitting member, said rotatable cylinder having a helicoid portion and a groove portion for supporting ball bearings disposed between said fixed cylinder and said rotatable cylinder, said rotatable cylinder being sandwich-molded and having a central portion and an outer peripheral portion, wherein said central portion comprises a core layer material mixed with reinforcement material and said outer peripheral portion surrounding said central portion is formed by a skin layer material without said reinforcement material, with an outer surface of said groove portion and said helicoid portion being covered with said skin layer material; and

a moving cylinder having a helicoid portion for meshing with said helicoid portion of said rotatable cylinder, said rotatable cylinder being sandwich-molded so that a central portion thereof is formed by a core layer material mixed with reinforcement material and an outer peripheral portion surrounding the central portion is formed by a skin layer material without said reinforcement material, and contact surfaces of said helicoid portions in said rotatable cylinder and said moving cylinder being formed by said skin layer material.

4,805,992

ASTIGMATISM GENERATOR

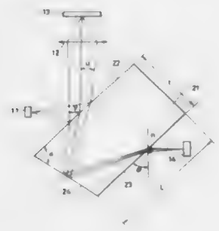
Takanori Maeda, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 1, 1987, Ser. No. 103,158

Claims priority, application Japan, Oct. 1, 1986, 61-151736[U]

Int. Cl.⁴ G02B *5/04, 27/10*; G11B *7/135*

U.S. Cl. 350—286 **6 Claims**



1. An astigmatism generator comprising a plate of a transparent material having a first plane surface through which light is introduced to said generator; a second plane surface parallel to said first plane surface and through which light transmitted from said first plane surface exits said generator; and a third plane surface by which light transmitted through said first plane surface is reflected toward said second plane surface and which is arranged at an oblique angle to said first and second plane surfaces selected so as to substantially eliminate comatic aberration of the light exiting said generator through said second plane surface.

4,805,993

METHOD OF ASSEMBLING OPTICAL COMPONENTS AND ARRANGEMENT THEREFOR

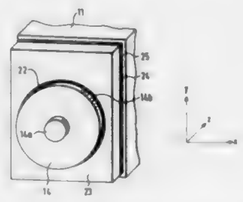
Martin Blumentritt, Königsbronn; Hermann Gerlinger, Aalen-Ebnat; Horst Schneider, Königsbronn, and Franz Gluck, Aalen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Mar. 13, 1987, Ser. No. 25,718

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1986, 3608434

Int. Cl.⁴ G02B *27/00*

U.S. Cl. 350—321 **27 Claims**



2. Arrangement for assembling an optical component in a frame having a mounting surface, the optical component being connected to said frame only by means of an adjusting device, the arrangement comprising:

an assembly plate having a cylindrically-shaped cutout formed therein;

said optical component having a circular cross section and defining a longitudinal axis;

said optical component also having a rim and being disposed in said cutout so as to cause said rim and the surface of said cutout to conjointly define a gap therebetween which permits said optical component to be movable in the direction of said longitudinal axis and to be rotatable about said axis;

a first quantity of a self-hardening substance disposed in said gap;

said plate defining a plane and being mounted on said mounting surface so as to be movable in at least two translational directions in said plane;

said gap having a width selected to ensure a thickness and volume of said substance to provide a permanent first fixation of said component which will be stable over time while at the same time permitting at least a limited degree of rotation about an axis lying in said plane before said substance has hardened;

said plate and said mounting surface conjointly defining an interface therebetween;

a second quantity of a self-hardening substance disposed at said interface; and,

said interface having a width selected to ensure a thickness and volume of said second quantity of said self-hardening substance to provide a second permanent fixation of said optical component which will be stable over time.

4,805,994

MATRIX DRIVE LIQUID CRYSTAL DISPLAY DEVICE WITH HIGH HORIZONTAL RESOLUTION AND LOW DUTY RATIO

Akira Miyajima, Hoya, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 22,971, Mar. 6, 1987, abandoned. This application Apr. 14, 1988, Ser. No. 183,492

Claims priority, application Japan, Mar. 18, 1986, 61-59995

Int. Cl.⁴ G02F *1/133*

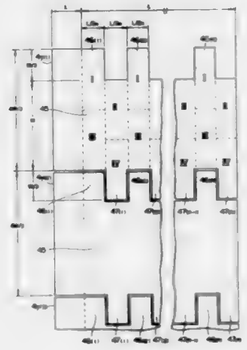
U.S. Cl. 350—336 **1 Claim**

1. A quadruplex matrix type liquid crystal display device in which sampling holds are taken with a frequency of n times

with respect to each of 4m picture signals necessary for a one-field picture display where n and m are integers; whenever 4n sampling holds are taken with repect to 4 picture signals, selective pulses are successively sent by time division from m horizontal scanning electrodes; every 4n sampling data for 4 picture signals with respect to the selective pulse from one of the horizontal scanning electrodes are given by 4n signal electrodes, respectively; and thus pictures are formed, wherein

(a) an order of the data sampled by the (k)th (where k=1, 2 . . . n) sampling of each of 4 continuous picture signals is (4p−4)n+k, (4p−3)n+k, (4p−2)n+k and (4p−1)n+k (where k=1, 2 . . . n, and p=1, 2 . . . m), ((4p−4)n+k)th and ((4p−2)n+k)th samplings are in phase and ((4p−3)n+k)th and ((4p−1)n+k)th samplings are in phase and are 180° out of phase with the ((4p−4)n+k)th and ((4p−2)n+k)th samplings;

(b) each of portions for forming directly picture elements of said m horizontal scanning electrodes includes a center portion in the shape of a rectangle having a width of W and a length of L; said length of L is divided by 2n to make 2n divisions of said center portion, each of said portions for forming directly picture elements further includes n upper projections each having a length of L/2n and a width of W/3 and extending upwards from the respective center portion divisions in odd numbers counted in a direction of said L from one end of said each horizontal



scanning electrode; and n lower projections each having a length of L/2n and a width of W/3 and extending downwards from the respective center portion divisions in even numbers;

(c) each of portions for forming directly picture elements of said 4n signal electrodes is shaped so that along a width of 4Wm/3, electrodes for producing m picture elements each having a length of L/2n and a width of 2W/3 are coupled by means of leads; and

(d) a region made by adding the width (W/3) of the upper projection of each of said scanning electrodes to the width (W) of the center portion which exists on a lower part of said upper projection is vertically divided into two equal parts, the upper part and the lower part of the two equally divided parts of each scanning electrode are called a first position and a third position respectively of the scanning electrode, and also a region made by adding the width (W/3) of the lower projection of each of the scanning electrodes to the width (W) of the center portion which exists]on an upper part of the lower projection is vertically divided into two equal parts, the upper part and the lower part of the two equally divided parts are called a second position and a fourth position respectively of the saanning electrode, and furthermore, the positions of each of the signal electrodes opposite to the corresponding positions of each of said scanning electrodes are also called said first position, said third position, said second position and said foutth position of the signal electrode, said ((4p−4)n+k)th sampling data are given into said first position of the signal electrode, said ((4p−3)n+k)th sampling data are given into said second position of the signal electrode, said ((4p−2)n+k)th sampling data are given into said third position of the signal electrode and said ((4p−1)n+k)th sampling data are given into said fourth position of the signal electrode.

4,805,995

LIQUID CRYSTAL DISPLAY WITH SMALL CARBON PARTICLES IN ITS MARK

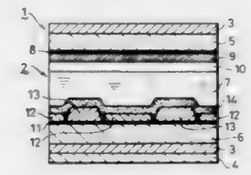
Tamemitsu Torigoe, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jan. 21, 1988, Ser. No. 147,243

Claims priority, application Japan, Apr. 24, 1987, 62-102439

Int. Cl.⁴ G02F *1/133*

U.S. Cl. 350—339 R **1 Claim**



1. In a liquid crystal display device wherein a black mask layer is formed on an inner face of a substrate, the improvement wherein particles of carbon in ink which forms said black mask layer have a diameter ranging from about 0.1 to about 0.3 microns.

4,805,996

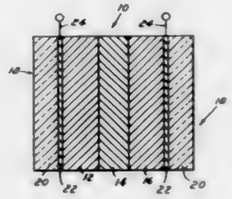
ELECTROCHROMIC OPTICAL SHUTTER

Robert L. Carlson, Southgate, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 18, 1986, Ser. No. 943,234

Int. Cl.⁴ G02F *1/01*

U.S. Cl. 350—357 **4 Claims**



3. A method of making an electrochromic optical shutter which comprises an electrochromic material, an ion conductor, and a counter electrode, in that order, sandwiched between visibly transparent electrodes, wherein the method comprises forming said ion conductor of a solid state lithium-doped aluminum oxide applied to, as a base therefor, either said electrochromic material or said counter electrode by a pyrolytic spray process in which a solution containing lithium and aluminum as pyrolyzable organic salts dissolved in an organic medium are sprayed on said base heated to a temperature sufficient to pyrolyze said sprayed materials and form a lithium-doped, aluminum oxide ion conductor layer.

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4,805,997

GRADIENT REFRACTIVE INDEX TYPE ANAMORPHIC PLANAR MICROLENS AND METHOD OF PRODUCING THE SAME

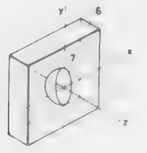
Yoshiyuki Asahara, Tokyo; Shigeaki Ouai, Saitama; Hiroyuki Sakai, Tokyo; Shin Nakayama, Tokyo, and Yoshitaka Yoneda, Tokyo, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

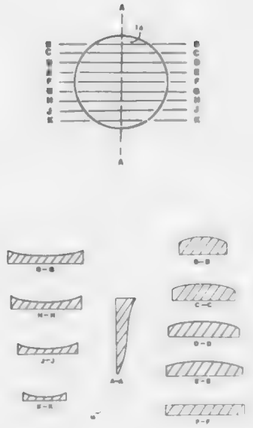
Filed May 30, 1986, Ser. No. 868,696

Claims priority, application Japan, May 31, 1985, 60-116347; Jun. 6, 1985, 60-123515

Int. Cl.[4] G02B *3/00, 13/08*

U.S. Cl. 350—413 **6 Claims**





1. A gradient refractive index type anamorphic planar microlens having a refractive index distribution region formed in a transparent substrate, said region having an optical axis perpendicular to a surface of said substrate, the refractive index of said region being maximum at the central point thereof where said optical axis intersects said substrate surface, and being gradually radially reduced from the central point, said refractive index distribution region in said transparent substrate being formed as a semiellipsoidal shape having a major and minor axes which are not equal on said surface of said substrate.

4,805,998

VARIABLE ANAMORPHIC LENS SYSTEM

Ying T. Chen, Apartment #2, 84 S. Greenwood Ave., Pasadena, Calif. 91107, and Mary Z. Luo, Apartment #5, 293 N. Hill Ave., Pasadena, Calif. 91106

Filed Nov. 13, 1987, Ser. No. 120,530

Int. Cl.[4] G02B *13/12, 13/18, 5/10*

U.S. Cl. 350—420 **9 Claims**

1. A variable anamorphic lens system comprising:

(a) an optical element defining an optical axis and having a first optical surface substantially ahead of a plane perpendicular to said optical axis,

(b) a second optical surface substantially behind said plane perpendicular to said optical axis, and

(c) said first optical surface of said element being configured at variable distances relative to said perpendicular plane wherein thickness variation of said element causes a variation of effective focal length of said optical system as defined by the equation

$$Z^2(X^2+Y^2)=K^2,$$

where X^2, Y^2 and Z^2 are the coordinates relative to the lens axis and K^2 is a constant defining the extent of the curvature of the surface of the optical element.

4,805,999

VARIABLE MAGNIFICATION LENS SYSTEM WITH CONSTANT OBJECT-IMAGE DISTANCE

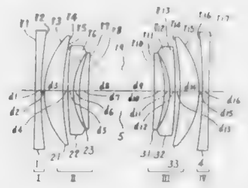
Toshihiko Ueda, Toyokawa, and Kunihiko Konoma, Aichi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 20, 1986, Ser. No. 933,091

Claims priority, application Japan, Nov. 22, 1985, 60-263189

Int. Cl.[4] C02B *15/16*

U.S. Cl. 350—425 **2 Claims**



1. A variable magnification lens system having the capacity of unity magnification, comprising from the light incident side:

a fixed first lens unit having negative refracting power in its entirety;

a movable second lens unit consisting of a positive lens element having a convex surface with a large curvature and faced to the light incident side of the whole lens system, a negative lens element having a concave surface with a large curvature and faced to the center of the whole lens system and a positive meniscus lens element having a convex surface faced to the light incident side of the whole lens system;

an aperture stop positioned at the center of the lens system;

a movable third lens unit constructed symmetrically with the second lens unit with respect to the aperture stop; and

a fixed fourth lens unit positioned and constructed symmetrically with the first lens unit with respect to the aperture stop; wherein the second and third lens units are positioned symmetrically with each other with respect to the aperture stop at unity magnification, while the second and third lens units are positioned asymmetrically with each other with respect to the aperture stop at other than unity magnification.

4,806,000

ZOOM LENS CAPABLE OF MACRO PHOTOGRAPHY

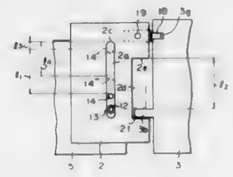
Yoshiharu Shinkawa, Kawasaki; Naoto Ohtz; Hiroshi Okano, both of Tokyo, and Kiyotaka Imahona, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Feb. 7, 1986, Ser. No. 826,985

Claims priority, application Japan, Feb. 13, 1985, 60-25640; Jun. 6, 1985, 60-123212

Int. Cl.[4] G02B *15/00*

U.S. Cl. 350—430 **11 Claims**



1. A zoom lens including:

an optical system;

zoom operating ring means rotatable to vary the focal length of said optical system between a first focal length and a second focal length

distance ring means rotatable to effect focusing of said optical system with respect to an object to be photographed which is positioned in a normal photographing distance range including infinity;

macro operating ring means rotatable to effect focusing of said optical system with respect to an object to be photographed which is positioned in a macro photographing distance range including an area of a shorter distance than a close distance in said normal photographing distance range, said optical system having a maximum magnification when the focal length is of said optical system equal to said first focal length; and

rotating means responsive to rotation of said macro operating ring means for rotating said zoom operating ring means when the focal length of said optical system is equal to a given focal length different from said first focal length and said macro operating ring means is in a position of rotation corresponding to a shortest distance within said macro photographing distance range conforming to said given focal length.

4,806,001

OBJECTIVE FOR AN ENDOSCOPE

Minoru Okabe; Akira Yokota, and Kimihiko Nishioka, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1987, Ser. No. 7,941

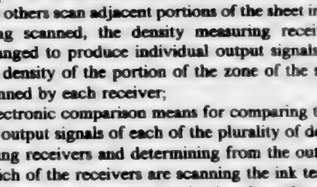
Claims priority, application Japan, Jan. 28, 1986, 61-14673

The portion of the term of this patent subsequent to Jan. 23, 2004, has been disclaimed.

Int. Cl.[4] G02B *23/00, 9/60, 9/62*

U.S. Cl. 350—432 **30 Claims**

1. An objective for an endoscope comprising, in the order from the object side, a first lens having a negative refractive power, a second lens unit having positive refractive power, a third lens unit having positive refractive power, an aperture stop arranged between the front end of said second lens unit and rear end of said third lens unit, and a fourth lens unit comprising a lens component having a concave surface on the object side, said objective for an endoscope being arranged to comprise at least three positive lens components including a



cemented doublet and respectively located at positions between the front end of said second lens unit and rear end of said fourth lens unit.

4,806,002

DENSITOMETRIC SENSING DEVICE FOR USE IN PRINTING PRESSES

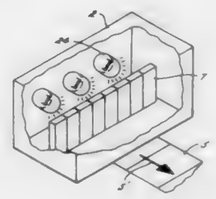
Claus Simeth, and Peter Schramm, both of Offenbach am Main, Fed. Rep. of Germany, assignors to M.A.N. Roland Druckmaschinen, Offenbach am Main, Fed. Rep. of Germany

Filed Sep. 14, 1987, Ser. No. 96,859

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1986, 3631204

Int. Cl.[4] G01N *21/47*

U.S. Cl. 356—445 **7 Claims**



1. Apparatus for scanning and measuring the optical density of an ink test strip printed on a sheet, the ink test strip being partitioned into discrete zones corresponding to the ink density of respective zones of print on the printed sheet, said apparatus comprising the combination of:

(a) a density measuring head comprising a plurality of density measuring receivers disposed in a linear array in said density measuring head perpendicular to the scanning direction of the head and generally transverse to the ink test strip, said linear array being wider than the ink test strip so that some of the receivers scan the ink test strip and others scan adjacent portions of the sheet in each zone being scanned, the density measuring receivers being arranged to produce individual output signals related to the density of the portion of the zone of the sheet being scanned by each receiver;

(b) electronic comparison means for comparing the individual output signals of each of the plurality of density measuring receivers and determining from the output signals which of the receivers are scanning the ink test strip;

(c) logic means for processing the data from the comparison means to select from the output signals those to be used in outputting a composite density value for the discrete zone of the ink test strip scanned.

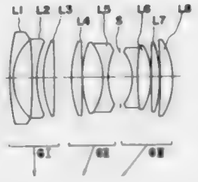
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4,806,003

INVERTED-TELEPHOTO TYPE WIDE ANGLE LENS SYSTEM

Hiromu Mukai, Kawachinagano, and Hitoshi Tokumaru, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 28, 1987, Ser. No. 90,680
Claims priority, application Japan, Sep. 1, 1986, 61-205507
Int. Cl.⁴ G02B *15/15, 13/04*
U.S. Cl. 350—459 **10 Claims**



1. An inverted-telephoto type wide angle lens system, comprising from the object side to the image side:
a first lens group of a negative refractive power;
a second lens group of a positive refractive power; and
a third lens group of a positive refractive power;
wherein the second and third lens groups are shiftable to the object side along the optical axis of the lens system at different speeds from one another in a focusing operation to a closer object, while the first lens group is stationary on the optical axis in the focusing operation and wherein the lens system fulfills the following conditions:

$$1.0<R<1.5$$

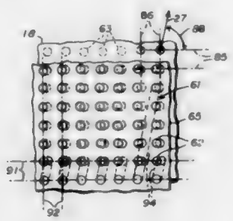
wherein:
R represents a ratio of shifting speed beyond the second and third lens groups in the focusing operation.

4,806,004

SCANNING MICROSCOPY

J. Harold Wayland, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Jul. 10, 1987, Ser. No. 72,150
Int. Cl.⁴ G02B *21/06*
U.S. Cl. 350—527 **35 Claims**



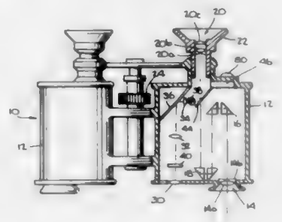
1. In a method of improving contrast and resolution of a predetermined response of an object to illumination, the improvement comprising in combination the steps of:
providing a two-dimensional array of light-transmitting apertures in a plate;
transmitting light through said apertures to provide a two-dimensional array of light spots on the object; and
using the same apertures in said plate for both said transmitting of light to the object and a transmission of light of said spots from the object.

4,806,005

SPOTTING SYSTEM FOR BINOCULARS AND TELESCOPES

Richard T. Schneider, 17 Alachua Highlands, Alachua, Fla. 32615, and Richard H. Keates, 264 N. Drexel Ave., Columbus, Ohio 43209

Filed Mar. 31, 1987, Ser. No. 32,778
Int. Cl.⁴ G02B *23/14, 15/0*
U.S. Cl. 350—557 **16 Claims**



1. A hand-held telescope comprising:
(a) principal objective lens and an ocular lens defining a principal magnification optical path having a fixed magnification of from 6× to 10×;
(b) an auxiliary objective lens; and
(c) light diverting means comprising a mirror movable between a first and a second position; and
(d) actuation means adapted to instantly displace said mirror from said first position to said second position and from said second position to said first position;
said movable mirror in said first position reflecting light passing through said auxiliary objective lens onto the focal plane of said ocular lens to permit a substantially unmagnified view through said ocular lens and blocking said principal magnification optical path, and in said second position breaking said optical path through said auxiliary objective lens and opening said principal magnification optical path to permit the magnified target image to be viewed through said ocular lens.

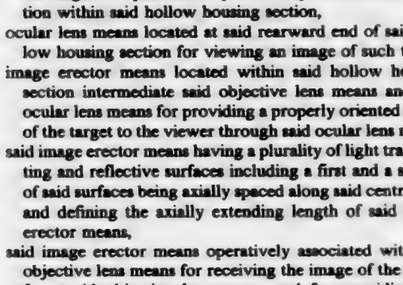
4,806,006

OPTICAL DEVICE WITH RECEIVING MEANS ADJUSTABLE TO VIEW DIFFERENT PORTIONS OF AN IMAGE

William P. Nathan, 20 Brocks Drive, Fairlands, Worplesdon, Guildford, Surrey GU3 3NQ, England

Filed May 15, 1987, Ser. No. 50,116
Claims priority, application United Kingdom, May 16, 1986, 8612935
Int. Cl.⁴ G02B *23/00, 23/16, 25/04*
U.S. Cl. 350—567 **8 Claims**

1. An optical device comprising image producing means for producing an image, receiving means for receiving a selected portion of the image, and an adjustment mechanism for adjusting the receiving means so as to select the portion of the image, wherein said image producing means has an aperture stop and defines principal rays passing through the centre of the aperture stop; and in which the receiving means is mounted so that, at any of its positions of adjustment, its optical axis is co-linear



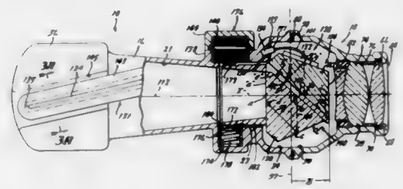
with either the optical axis of the image producing means or a said principal ray.

4,806,007

OPTICAL GUN SIGHT

Glyn A. J. Bindon, Farmington Hills, Mich., assignor to Armson, Inc., Farmington Hills, Mich.

Filed Nov. 6, 1987, Ser. No. 118,410
Int. Cl.⁴ G02B *27/34*
U.S. Cl. 350—569 **54 Claims**



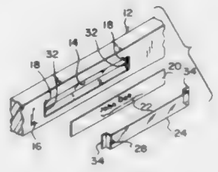
1. An optical gun sight for attachment to a manually portable gun having a firing axis comprising:
tubular housing means having a generally elongated and hollow housing section for receiving a target to be sighted at its forward end and for viewing an image of such target at its rearward end,
said tubular housing means having a central axis,
said tubular housing means having securing section means for securing said gun sight to the gun,
objective lens means located at said forward end of said hollow housing section for receiving the target to be sighted and for providing a substantially focused image of the target at a preselected plane at a predetermined location within said hollow housing section,
ocular lens means located at said rearward end of said hollow housing section for viewing an image of such target,
image erector means located within said hollow housing section intermediate said objective lens means and said ocular lens means for providing a properly oriented image of the target to the viewer through said ocular lens means,
said image erector means having a plurality of light transmitting and reflective surfaces including a first and a second of said surfaces being axially spaced along said central axis and defining the axially extending length of said image erector means,
said image erector means operatively associated with said objective lens means for receiving the image of the target from said objective lens means and for providing and locating the image of the target at said preselected plane at said predetermined location within said axially extending length of said image erector means and providing a properly oriented image of the target to the viewer through said ocular lens means,
internal adjustment means operative on said image erector means for selectively moving said image erector means in two transverse directions which are in turn transverse to said central axis of said tubular housing means to permit calibration of the position of the image of the target relative to the firing axis of the gun whereby compensation can be provided for the trajectory of the bullet to the target.

4,806,008

IDENTIFIABLE EYEGLASSES

Frank Tarloff, 9596 Shirley La., Beverly Hills, Calif. 90210

Filed May 18, 1987, Ser. No. 50,326
Int. Cl.⁴ G02C *11/02, 5/14*
U.S. Cl. 351—51 **14 Claims**



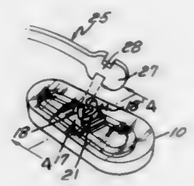
1. An eyeglass temple bar comprising means at the front end for attachment to the lens support member of an eyeglass frame and an ear supported portion at the back end, an oblong-shaped recess in the inner side of the portion between said ends, and retained within said recess a removable identification strip of flexible sheet material carrying identifying indicia on its inwardly facing surface, the opposite horizontal or vertical sides of said recess being undercut so that the bottom of the recess is wider or longer than the recess opening and said identification strip corresponding roughly in dimensions to said bottom.

4,806,009

NOSE PAD

Vincent F. Sordillo, Greenville, R.I., and Arthur R. Hilsinger, Jr., Needham, Mass., assignors to The Hilsinger Corporation, Plainville, Mass.

Filed Feb. 16, 1988, Ser. No. 155,975
Int. Cl.⁴ G02C *5/02, 5/12*
U.S. Cl. 351—88 **4 Claims**



1. In spectacles in combination a nose pad arm with a necked portion, a deformable nose pad constructed of soft material having an anchor member comprising a plastic plate with a pair of upstanding resilient prongs molded into the soft pad material, the terminal ends of the prongs having inturned ends, the resiliency of the prongs grasping the said necked portion of the nose pad arm.

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4,806,010
MULTIFOCAL LENS
Ronald W. Ewer, deceased, late of Meadows; Dean G. Scott, legal representative, Adelaide, and Kevin D. O'Connor, Longwood, all of Australia, assignors to Pilkington Visioncare Holdings, Inc., Menlo Park, Calif.
Filed Nov. 19, 1986, Ser. No. 932,369
Claims priority, application United Kingdom, Nov. 19, 1985, 8528460
Int. Cl.[4] G02C 7/06
U.S. Cl. 351—169 6 Claims



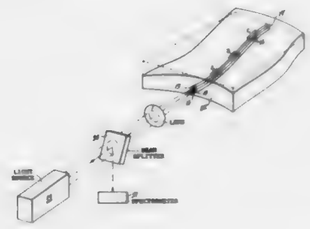
1. A multifocal lens having at least three viewing zones including distance and near vision zones of constant dioptric power and a zone of progressively increasing dioptric power, said distance vision zone having a dioptric power less than the dioptric power of said near vision zone, there being a visible division between said distance vision zone and said zone of progressively increasing dioptric power provided by an abrupt change in dioptric power in the range from about 0.5 dioptres to about 0.5 dioptres less than the difference between the dioptric powers of said near and distance vision zones.

4,806,011
SPECTACLE-MOUNTED OCULAR DISPLAY APPARATUS
David S. Bettinger, 9030 Coventry, Grosse Ile, Mich. 48138
Filed Jul. 6, 1987, Ser. No. 69,854
Int. Cl.[4] G02C 7/14, 1/00
U.S. Cl. 351—158 13 Claims



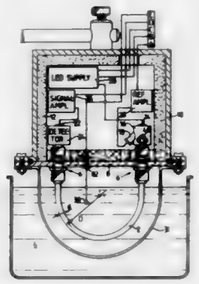
1. Ocular display apparatus comprising:
spectacles including a frame for mounting on a wearer's head and at least one lens carried by said frame for positioning in spaced alignment with a wearer's eye on a central axis for defining a cavity between said lens and the wearer's eye said central axis generally corresponding to a wearer's natural forward line of sight, said lens having at least one surface which is concave with respect to said cavity and being of partially reflective construction,
means for radiating an optical image in the form of an objective image into said cavity from a direction generally orthogonal to said central axis, and
a relay mirror positioned within said cavity for intercepting and reflecting said visible objective image onto said lens surface, and being reflected by said lens surface to a wearer's eye to form a virtual image of said radiating means of infinity.

4,806,012
DISTRIBUTED, SPATIALLY RESOLVING OPTICAL FIBER STRAIN GAUGE
Gerald Meltz, Avon; William H. Glenn, Vernon, both of Conn., and Elias Snitzer, Wellesley, Mass., assignors to United Technologies Corporation, Hartford, Conn.
Division of Ser. No. 915,891, Oct. 3, 1986, Pat. No. 4,761,073, which is a continuation of Ser. No. 640,490, Aug. 13, 1984, abandoned. This application Nov. 19, 1987, Ser. No. 122,826
Int. Cl.[4] G01B 11/16
U.S. Cl. 356—32 4 Claims



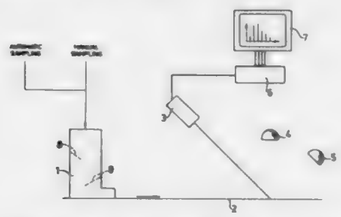
1. A strain sensor arrangement for measuring strain in a predetermined region within a rigid body, comprising:
an optical fiber having a single core and a cladding surrounding said core, said fiber being disposed in a predetermined path passing through the predetermined region of the rigid body, said core including at least one measuring region having at least one grating with a predetermined grating spacing permanently provided prior to the use of the optical fiber in the arrangement in at least one grating region of said measuring region by directing two beams of ultraviolet radiation through said cladding into said core at such acute angles relative to the longitudinal axis of said cores as to complement each other to 180° for the two beams to interfere with one another and to create an interference pattern having fringes situated at said predetermined grating spacing from each other and for the interference pattern to propagate transversely through said core with attendant permanent change in the index of refraction of the core in correspondence with the interference pattern;
means for launching into one end of said core optical radiation in a predetermined wavelength range and including at least one characteristic radiation component having a wavelength that is so related to the actual grating spacing under the existing stress conditions of the predetermined region of the rigid body that said characteristic radiation component is at least partially reflected from said grating for propagation through said core back toward said one end of said core; and
means for evaluating the optical radiation emerging from at least one of the ends of said core to form a measurement representative of the strain within the predetermined region of the rigid body, including means for analyzing the emerging optical radiation for the presence and intensity of said characteristic radiation component as an indication of the magnitude of the strain.

4,806,013
REFRACTOMETER FOR FLUIDS
Joseph S. Bodenheimer, Jerusalem; Itzhak Klein, Petach Tikva, and Yehuda L. Levi, Jerusalem, all of Israel, assignors to Jerusalem College of Technology, Jerusalem, Israel
Continuation-in-part of Ser. No. 568,497, Jan. 5, 1984. This application Oct. 14, 1986, Ser. No. 918,047
Int. Cl.[4] G01N 21/14
U.S. Cl. 356—133 8 Claims



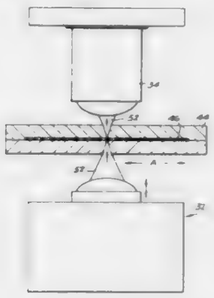
1. An apparatus for measuring the refractive index of fluids, comprising a single substantially U-shaped and substantially rigid sensor rod made of a transparent material and being submersible in said fluid, the bent portion of which sensor rod has a radius of curvature at least ten and at most two hundred times larger than the radius of said sensor rod, the optimal radius of curvature for a selectable level of sensitivity being a function of a given range of indices of refraction, a housing to which are connectable the two ends of said U-shaped sensor rod, a light source inside said housing, which light source has optical access to the face of one of said sensor-rod ends, and at least one first light detector means inside said housing, which light detector means has optical access to the face of the other one of said sensor rod ends.

4,806,014
METHOD FOR MEASURING SIZE DISTRIBUTION
Jens C. Eliasson, Stockholm, and Sven-Olof Lundqvist, Högersten, both of Sweden, assignors to Svenska Traforskningsinstitutet, Stockholm, Sweden
Continuation of Ser. No. 822,415, filed as PCT SE85/00118 on Mar. 14, 1985, published as WO85/04249 Sep. 26, 1985
This application Oct. 19, 1987, Ser. No. 110,582
Claims priority, application Sweden, Mar. 14, 1984, 8401410
Int. Cl.[4] G01N 15/02, 21/85
U.S. Cl. 356—335 1 Claim



1. A method for determining the size distribution of wood chip material of varying dimensions for the manufacture of cellulose pulp, including the steps of: distributing the material on a conveying surface so that a substantial majority of the chips are arranged with a shortest dimension of said varying dimensions at substantially right angles to the conveying surface; advancing the conveyor and the materials thereon at a predetermined speed; determining the speed of the conveyor at predetermined times; subjecting the materials to light radiation in the range of 600–800 nanometers provided by at least one light source positioned above the conveying surface, optically registering the materials and obtaining a signal representative of a two dimensional configuration of the material, electronically processing and recording the signal over a number of predetermined two dimensional size classes, using a relation between the chip material width, length and thickness tgether with the processed signals for obtaining the volume of the material pieces, obtaining the size distribution of the chip material on one of a volume and weight basis over the number of predetermined size classes.

4,806,015
AGGLUTINATION DETECTION APPARATUS
Hugh V. Cottingham, 49 Mountain Ave., Caldwell, N.J. 07006
Filed Dec. 8, 1987, Ser. No. 130,717
Int. Cl.[4] C01N 15/02, 21/59, 21/82
U.S. Cl. 356—335 8 Claims



1. In an apparatus for detecting the degree of agglutination of particles in an agglutination reaction in a test slide having a display area of predetermined length and thickness, said thickness defining a gap; the improvement comprising a light source means for directing a diffraction limited spot at said gap at predetermined distance intervals along the length of the display area, and detection means for detecting the level of light attenuated by particles in said gap, and for producing a detector signal representative of the size and number of particles scanned.

4,806,016
OPTICAL DISPLACEMENT SENSOR
Gary P. Corpron, Chanhassen; Lowell A. Kleven, Eden Prairie, both, Minn., and Lawrence A. Johnson, Bozeman, Mont., assignors to Rosemount Inc., Eden Prairie, Minn.
Filed May 15, 1987, Ser. No. 49,628
Int. Cl.[4] G01J 5/16
U.S. Cl. 356—373 37 Claims



1. An optical displacement sensor for modulating intensity of an optical beam, the optical displacement sensor comprising:

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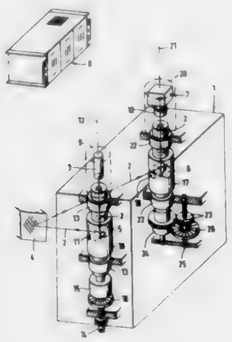
guide means for guiding the optical beam along a path;
target means positioned in the path and having a nonreflective portion which is surrounded by a reflective portion, the nonreflective portion having been formed from the reflective portion in situ by a beam which was guided along the path by the guide means and which altered a reflective characteristic of the target means, the nonreflective portion having a shape and alignment with respect to the path resulting from the in situ formation; and
displacement means for causing relative displacement of the target means with respect to the path in a direction essentially perpendicular to the path to cause a modulation in the intensity of the optical beam.

4,806,017

APPARATUS FOR THE CONTACTLESS MEASUREMENT OF GEOMETRICAL DIMENSIONS

Lothar Sebastian, Bochum, and Kuno Guse, Dortmund, both of Fed. Rep. of Germany, assignors to Bochumer Eisenhütte Heintzmann GmbH & Co. KG, Bochum, Fed. Rep. of Germany

Filed Apr. 9, 1987, Ser. No. 36,296
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1986, 3611896
Int. Cl.[4] G01B *11/00*
U.S. Cl. 356—376 **11 Claims**



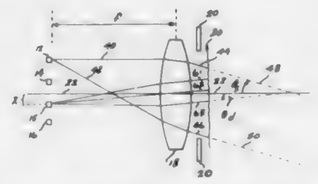
1. An optical apparatus for the contactless measurement of distances with the triangulation method, comprising a light source emitting a focused monochromatic light beam, a first deflector for deflecting the light beam at an angle toward an object to be measured, a receiver having a point-like sensitive portion sensibilized to the light beam meeting the object, a second deflector for deflecting the light beam reflected by the object toward the receiver, the second deflector rotating about an axis extending perpendicularly to the triangulation plane, electronic evaluating means for determining the distance to be measured on the basis of the triangulation method, wherein the axis of the light beam emitted by the light source toward the first deflector extends perpendicularly to the triangulation plane and parallel to the axis of rotation of the second deflector, and wherein the light beam conducted from the second reflector to the receiver extends coaxially to the axis of rotation of the second deflector.

4,806,018

ANGULAR REFLECTANCE SENSOR

Robert A. Falk, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 6, 1987, Ser. No. 69,637
Int. Cl.[4] G01N *21/47*; G01B *11/30*
U.S. Cl. 356—446 **8 Claims**



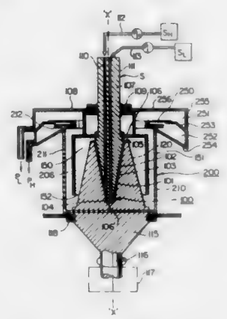
8. An angular reflectance sensor for measuring the reflectance of a surface as a function of refection angle, the sensor comprising:
a lens having a positive focal length f and an optical axis;
an optical source positioned on a first side of the lens at a distance f therefrom; and
a plurality of photodetectors positioned on the first side of the lens, each photodetector being at a distance f from the lens;
whereby when the sensor is positioned such that the surface is adjacent a second side of the lens opposite the first side, each photodetector receives light from the source that has been reflected by the surface at a reflection angle that is a function of the distance of the photodetector from the optical axis.

4,806,019

METHOD AND APPARATUS FOR MIXING TWO OR MORE COMPONENTS SUCH AS IMMISCIBLE LIQUIDS

Gerald D. Lutwick, and James D. MacAulay, both of Dartmouth, Canada, assignors to Nova Scotia Research Foundation Corporation, Dartmouth, Canada

Continuation-in-part of Ser. No. 771,606, Sep. 3, 1985, abandoned. This application Sep. 1, 1987, Ser. No. 91,979
Int. Cl.[4] B01F *9/10*, *15/02*
U.S. Cl. 366—167 **29 Claims**



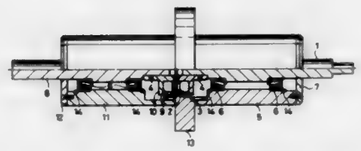
1. Apparatus for mixing together two or more flowable materials comprising
(a) an annular elongate chamber having a central axis and defined by respective first and second wall surfaces radially spaced apart from one another about said axis;
(b) means mounting a structure having one of said wall surfaces thereon permitting movement of such wall surface relative to the other;
(c) material flow passage means for introducing the materials, to be mixed, individually into said chamber adjacent one end thereof; and
(d) means permitting discharging the mixture of materials from said chamber adjacent an opposite end thereof, said chamber tapering in a direction from the inlet thereto in a direction toward the outlet therefrom.

4,806,020

MAGNETIC ROTATOR

Kazue Matsuda, Miyagi, Japan, assignor to Sendai Mechanic Kogyo Kabushiki Kaisha, Miyagi, Japan

Filed Sep. 18, 1987, Ser. No. 98,342
Int. Cl.[4] B01F *13/08*
U.S. Cl. 366—273 **3 Claims**



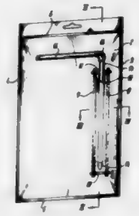
1. A magnetic rotator designed to extend through a hole formed in a nonmagnetic container, in which magnets of opposite polarities are attached to the adjacent ends of rotating shafts received in two cylinders mounted face-to-face through a flange.

4,806,021

CONTAINER FOR DRINK AND METHOD OF MANUFACTURING THE CONTAINER

Willem Koudstaal, Vlaardeen, Netherlands; Alan Thomas, Woking, and Jeffrey L. Lewis, Farnham, both of United Kingdom, assignors to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

Continuation of Ser. No. 901,436, Aug. 28, 1986, abandoned. This application Oct. 15, 1987, Ser. No. 107,913
Claims priority, application Netherlands, Aug. 28, 1985, 8502366
Int. Cl.[4] B65D *30/22*
U.S. Cl. 383—40 **4 Claims**



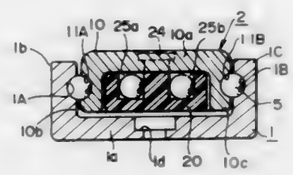
1. A container for a drink comprising a bag of tear-resistant flexible thermoplastic first material for housing the drink contents therein formed by welding two parallel sheets of said material at top, bottom and opposite side edge seams, one of said parallel sheets forming said bag having a space for housing a straw, said space formed from a third sheet of elastically deformable second material welded upon the inside of said one of said parallel sheets by means of two spaced apart parallel longitudinal seams and two spaced apart parallel transverse seams in such a manner that the layer thickness of said seams defining the bag remains constant over the entire length thereof and such that said straw can move only in a longitudinal direction therein, an outer wall of said space having an opening open towards the outside of said bag to allows a first free end of said straw to remain permanently outside said space and to further allow said straw to move only in the longitudinal direction such that said straw can be urged to puncture an elastically deformable inner wall of said space with a second sharpened end thereof, said inner wall of said space elastically enclosing the outer perimeter of said straw after the sharpened end of said straw has punctured said inner wall of said space for removal of the enclosed drink contents.

4,806,022

MINIATURE LINEAR GUIDE APPARATUS

Seki Takahiro, Mashashi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 2, 1988, Ser. No. 151,588
Claims priority, application Japan, Feb. 2, 1987, 62-13856[U]
Int. Cl.[4] F16C *29/06*
U.S. Cl. 384—45 **4 Claims**



1. In a miniature linear guide apparatus of the type comprising:
a guide rail extending in a longitudinal direction and having a U-shaped cross section, said guide rail having ball rolling grooves formed, respectively, in the inner surface of the side walls thereof in an opposed relationship;
a slider including a race member having an inverted U-shaped cross section and having ball rolling grooves, respectively, formed in the outer surfaces of the side walls thereof, said ball rolling grooves of said guide rail respectively opposing the said ball rolling grooves of said race member, and a ball guide member adapted to be fitted into a U-shaped recess of said race member and having ball circulating paths formed therein, said ball circulating paths being in communication with said ball rolling grooves of said race member and said guide rail member; and
a plurality of balls inserted in said ball rolling grooves of said race member and said guide rail, and in said ball circulating paths within said ball guide member; the improvement which comprises:
said ball guide member housing said ball circulating paths being formed in a groove form having upwardly directed openings, the ball guide member, including at each end portion corresponding to the longitudinal end portions of said race member protruding portions, the protruding portions protruding laterally and having curved ball grooves respectively, each of said protruding portions protruding towards and close to a corresponding one of said ball rolling grooves of said guide rail and said race member in communication through said curved ball groove, said protruding portions being integrally formed with said ball guide member;
said slider is formed by superposing said race member on said ball guide member to cover said openings of said groove-shaped ball circulating paths, and;
securing means, including female and male parts, respectively, provided at corresponding positions on said race member and said ball guide member to secure said race member to said ball guide member.

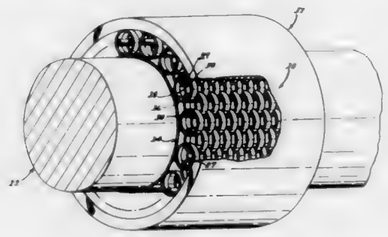
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4,806,023

COMPLIANT HYDRODYNAMIC GAS BEARING

Daniel F. Cragel, Northville, Mich., assignor to Williams International Corporation, Walled Lake, Mich.

Filed May 31, 1988, Ser. No. 200,251
Int. Cl.[4] F16C *17/02*
U.S. Cl. 384—106 **2 Claims**



1. A foil support and Couloumb damping system for a compliant hydrodynamic gas bearing comprising

a plurality of discrete circular springs arranged in a plurality of axially stacked circumferential arrays with the central axes thereof in parallel relationship, each of said springs having overlapping end portions,

adjacent circumferential arrays of said springs being circumferentially displaced relative to one another so as to define two diametrically related overlapping retainer segments on each of said springs, respectively,

a plurality of spring retainer rods extending axially through the overlapping retainer segments of each of said springs for retaining said springs in said circumferential and axially stacked array, and

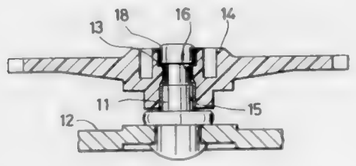
a flexible foil disposed radially inwardly of said springs and directly supported thereby.

4,806,024

ROTATABLY SUPPORTING STRUCTURE

Shinsaku Tanaka, Tokyo, and Toshio Yoshimura, Kawasaki, both of Japan, assignors to Tanashin Denki Co., Ltd., Japan

Continuation of Ser. No. 925,554, Oct. 31, 1986, abandoned. This application Dec. 16, 1987, Ser. No. 134,594
Int. Cl.[4] F16C *17/10*
U.S. Cl. 384—125 **5 Claims**



1. A device for rotatably supporting an elastic member on a shaft, the shaft being coupled at one end to a fixed part, said device comprising:

means for supporting the member substantially along the entire length of a central bore formed through the member, said means including:

a raised portion provided on the inner circumferential surface of said central bore of the member;

a tapered portion formed along a lower end portion of said raised portion;

an annular recess formed in the outer circumferential surface of the shaft;

a curved surface formed along an upper end portion of the shaft, said curved surface being brought into contact with said tapered surface to facilitate ease in snap-fitting said shaft longitudinally within said central bore of the member, said raised portion being received in said annular recess once the shaft is fitted within said central bore, with both axial end faces of the member being in contact with the shaft; and

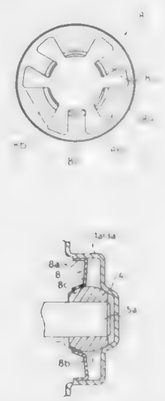
a cylindrical groove formed in the member, concentric to said central bore, said groove opening onto one of said end faces of the member.

4,806,025

HOLDING DEVICE FOR AUTOMATIC SELF-ALIGNING BALL METAL

Akira Kamiyama; Yoshimasa Kimura, and Yukiteru Hosoya, all of Kiryu, Japan, assignors to Mitsuba Electric Manufacturing Co., Ltd., Gunma, Japan

Filed Dec. 8, 1987, Ser. No. 130,168
Claims priority, application Japan, Dec. 9, 1986, 61-189520[U]
Int. Cl.[4] F16C *23/04*; F16F *1/18*; H02K *7/08*
U.S. Cl. 384—202 **5 Claims**



1. A holding device for an automatic self-aligning ball metal of which the outer peripheral surface is spherical, said ball metal being adapted to be held by means of a metal holder, wherein said metal holder is formed with at least two kinds of pawls having a different intensity of resilient force, the pawls having a lower intensity of resilient force coming into contact with the outer peripheral surface of the ball metal under light load and those having a higher intensity of resilient force coming into contact with the outer peripheral surface of the ball metal only under heavy load, in order to resiliently hold the ball metal regardless of load.

4,806,026

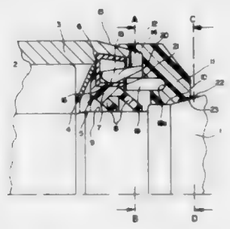
SEAL FOR BEARING BUSHINGS

Bernhard Bauer, Hassfurt, and Herbert Dobhan, Bergrheinfeld, both of Fed. Rep. of Germany, assignors to SKF GmbH, Fed. Rep. of Germany

Filed Apr. 7, 1988, Ser. No. 178,618
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1987, 8705291[U]
Int. Cl.[4] F16C *33/78*
U.S. Cl. 384—486 **3 Claims**

1. Seal for bearing bushing comprising a sealing ring in a bore of the bearing bushing having a sealing surface which rests against a cylindrical surface of a machine part supported in the bearing bushing, an auxiliary seal located between the

open end of the bearing bushing and a shoulder of the machine part, said auxiliary seal having a ring-shaped collar extending in the axial direction by which it is connected to the bearing bushing and at least one sealing lip engaging the bearing bushing, means pretensioning the ring-shaped collar with radial



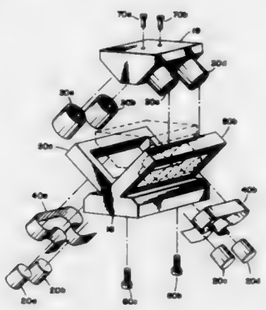
pretension, said auxiliary seal (11) having axially oriented projections (19) located in a ring-shaped recess (19a) on the side facing the bearing bushing (3), each projection being situated over a portion of its length on tongue (18) of the ring-shaped collar (14).

4,806,027

APPARATUS FOR STRAIN-FREE MOUNTING OF OPTICAL COMPONENTS

Roger R. Tousimoss, La Palma, and Nasser Ahmed, Palos Verdes Estates, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 21, 1988, Ser. No. 170,525
Int. Cl.[4] F16C *29/04*
U.S. Cl. 384—50 **11 Claims**



1. A linear bearing for providing bidirectional linear movement between a first and a second substantially coplanar mechanical assemblies, comprising:

a first frame member fixedly mounted on said first mechanical assembly, said first frame member comprising a base member adapted at a lower portion for mounting to said first mechanical assembly, said first frame member further comprising a first and a second arm member each projecting in a generally upwards fashion from an upper portion of said base member, each of said arm members having at least one interiorly disposed hollow region for containing a first plurality of cylindrical rollers and a flexible band therein, each of said bands being captured at each end by a tensioning means for adjusting the tension within said band; and

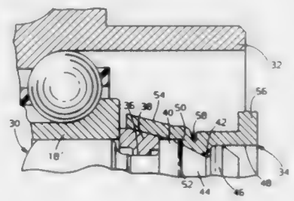
a second frame member having a cross-sectional shape for allowing said second frame member to be at least partially disposed within a region between said arm members, said second frame member having a second plurality of cylindrical rollers journably coupled for rotation thereon, said second plurality of rollers being of a number corresponding to the number of said first rollers and each being disposed upon said second frame member such that the outer cylindrical surface of each is in close proximity to the outer cylindrical surface of a corresponding one of said first rollers so that one of said bands partially encircles and passes between corresponding ones of said first and said second rollers to create a plurality of S-shaped regions in said band, each of said S-shaped regions corresponding to a corresponding pair of said rollers whereby said corresponding rollers are urged towards one another by the tension in said band such that a rotation of one of said rollers due to a linear motion of one of said mechanical assemblies is transferred to the other one of said rollers.

4,806,028

BEARING RACE KEEPER RING RETENTION SLEEVE

Richard F. Miller, and David A. Foster, both of Castalia, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 20, 1988, Ser. No. 208,694
Int. Cl.[4] F16C *43/04*
U.S. Cl. 384—510 **3 Claims**



1. A means for preventing a keeper ring from separating from a keeper ring groove cut into the surface of a wheel bearing shaft at a location axially inwardly spaced from the end of said shaft, comprising,

an axially outwardly facing shoulder extending radially above the surface of said shaft between said keeper ring groove and the end of said shaft,

a retention groove cut into the surface of said shaft between said stop shoulder and the end of said shaft, and,

a generally cylindrical sleeve sized so as to fit over the end of said shaft including a skirt at one end sized so as to fit closely over the outside of said keeper ring, said sleeve further including a stop that is engageable with said shaft shoulder so as to locate said skirt over said keeper ring and a crimping portion that overlays said retention groove when said sleeve stop and shaft shoulder engage and which is configured so as to be radially inwardly deformable by an axial force tending to collapse said sleeve,

whereby, said sleeve may be installed on said shaft by slipping said sleeve over said shaft until said stop and shoulder engage and then applying an inward force to said sleeves thereby deforming said crimping portion radially inwardly into said retention groove to lock said sleeve to said shaft.

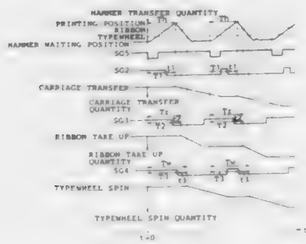
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4,806,029

CARRIAGE DRIVE UNIT FOR AVOIDING A LOSS TIME PERIOD IN A PRINTER

Kiyoshi Takahashi; Haruyuki Shimomura, and Masaru Mizuno, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 22, 1987, Ser. No. 136,543
Claims priority, application Japan, Jan. 22, 1987, 62-13846
Int. Cl.[4] B41J *19/50*
U.S. Cl. 400—144.2 **10 Claims**



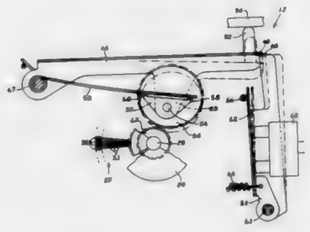
1. A carriage drive unit for a printer comprising;
a printing hammer for striking a typewheel toward a printing paper which is set on a platen;
hammer driving means for driving the printing hammer;
a carriage for being bi-directionally transferred in a longitudinal direction along the platen, the typewheel and the printing hammer being provided on the carriage;
carriage driving means for driving the carriage; and means to avoid a loss time period due to a carriage response delay to a start of carriage drive means signal including
control means outputting a first drive control signal to the carriage driving means before the printing hammer reaches a printing position.

4,806,030

CORRECTION DEVICE FOR TYPEWRITERS

Giovanni Quaranti, Banchette; Claudio Gillio, Brosso, and Gianpaolo Bonnassouri, Ivrea, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Dec. 14, 1987, Ser. No. 132,254
Claims priority, application Italy, Jan. 29, 1987, 67055 A/87
Int. Cl.[4] B41J *1/30*
U.S. Cl. 400—144.2 **18 Claims**



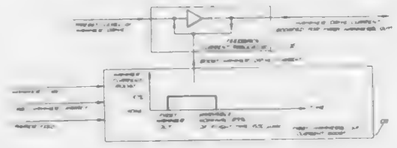
1. A correction device for typewriters comprising a platen roller which defines a typing point, a correcting ribbon, a rotatable character-carrying member, a carrier for the correcting ribbon which can be lifted to permit correction of characters, a selector motor for selectively rotating the character-carrying member in the clockwise and counterclockwise directions for selecting the characters to be typed and corrected, a control member for lifting the carrier, a coupling means actuatable for coupling the control member to the selector motor, and a control unit for causing actuation of the coupling means and producing activation of the selector motor such as to select the character to be cancelled in front of the typing point and to actuate the control member for positioning the carrier in an operative position in which the correcting ribbon is disposed in front of the typing point, wherein the motor comprises a selector shaft and the character-carrying member is of the type having flexible blades and is fixed on the selector shaft, and a connecting element of the selector shaft cooperates selectively with the control member in response to the actuation of the coupling means to move the carrier to its operative position in response to a predetermined rotary movement of the selector shaft.

4,806,031

UNIFORM PRINT DENSITY AND REGISTRATION IN AN IMPACT PRINTER

Paul O. Amdahl, Granada Hills; John K. Ham, Simi Valley, and Doina Mazilu, Woodland Hills, all of Calif., assignors to DataProducts Corporation, Woodland Hills, Calif.

Filed Aug. 15, 1986, Ser. No. 897,734
Int. Cl.[4] B41J *9/14, 3/10*
U.S. Cl. 400—157.3 **8 Claims**



1. In an impact printer in which plural hammers sequentially strike a paper form to print each line, the improvement comprising:
means for imparting to the first print hammer to strike said paper form in the printing of each line a higher energy than that imparted to other hammers used in printing that line, said higher energy being available for a predetermined time period to subsequently actuated print hammers in successively decreasing amounts according to proximity in time of the firing of the subsequent print hammers to the firing of the first print hammer, said higher energy being in compensation for the loss of impact energy due to movement of the paper by said hammers.

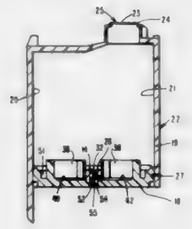
4,806,032

CONICAL VENT CONTAINING CAPILLARY BORE

Brian D. Gregg; Jon J. Fong, and Arthur K. Wilson, all of San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 11, 1987, Ser. No. 48,190
Int. Cl.[4] B41J *32/00;* **B65D** *51/16*
U.S. Cl. 400—194 **19 Claims**

1. In combination a cartridge for retaining an amount of liquid ink and a vent for said cartridge comprising:
said cartridge including a housing having an inner surface and an outer surface, said inner surface being adapted to retain the liquid;
an outlet opening; and and said vent including
a conical-shaped member integral with said inner surface and having an air opening defined by a bore that extends substantially axially through the center of said conical-shaped member, said bore extending from said inner surface to said outer surface of the housing and having a diameter small enough to constitute a capillary so as to create a capillary force on any small amount of liquid ink that may enter into said air opening to thereby substantially prevent significant quantities of ink from leaking from within said housing.

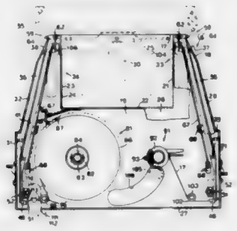


4,806,033

RIBBON CARTRIDGE FOR PRINTING MACHINES

Boris Ukmar, Banchette, and Mario Trompetto, Mercenasco, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Division of Ser. No. 582,738, Feb. 23, 1984, Pat. No. 4,669,902. This application Mar. 6, 1987, Ser. No. 22,674
Claims priority, application Italy, Mar. 7, 1983, 67254 A/83
Int. Cl.[4] B41J *32/00*
U.S. Cl. 400—208 **2 Claims**



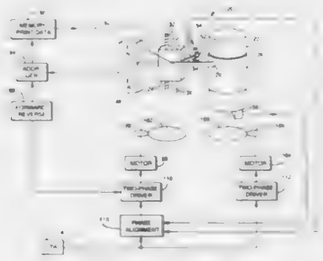
1. A ribbon cartridge for a typewriter or other printing machine of the type comprising a toothed wheel for unidirectional feeding of a typing ribbon and in which the cartridge comprises a casing having a bottom portion, a rear wall portion, and cover portion; a typing ribbon carried by said casing and having an operative portion stretched outside said casing; a feed spool on which the typing ribbon is wound and a take-up spool on which the typing ribbon is rewound after the typing ribbon has been used; wherein said feed spool comprises a flange and wherein said take-up spool comprises a core tube and wherein the bottom portion and the cover portion of said casing comprise support means for supporting and guiding the feed spool and the take-up spool in the casing; and rewinding and tensioning means for causing the typing ribbon to be rewound on said take-up spool and said operative portion to be held tensioned without slackening, said rewinding and tensioning means defining a combination comprising:
first means for defining an aperture in said bottom portion having the form of a circular sector disposed adjacent to the core tube of the take-up spool and configured to house the toothed wheel of the typewriter in order to cause said toothed wheel to engage the typing ribbon which is wound on the take-up spool and to rewind the typing ribbon on said take-up spool for unidirectional feeding of the typing ribbon;
a resilient blade having a portion which is integral with both the rear wall portion and the bottom portion of said casing adjacnt to said feed spool, wherein the flange of said feed spool is provided on its outside edge with a series of peripheral notches, and wherein said resilient blade is cooperative with the series of peripheral notches to prevent casual rotation of the feed spool and thus uncontrolled unwinding of the typing ribbon;
second means in said bottom portion defining a seat positioned adjacent to but spaced apart from the aperture wherein said seat has a predetermined form for housing the core tube of the take-up spool; and
a resilient tongue which is integral with the bottom portion of said casing, is provided with a pawl member and is housed with said pawl member in the seat, wherein the core tube of said take-up spool is provided with a series of saw teeth positioned in the seat and coplanar with the pawl member of the resilient tongue, and wherein the pawl member of said resilient tongue cooperates with the series of saw teeth of the core tube of said take-up spool for enabling the rotary movement of the core tube in the direction of rewinding of the typing ribbon but preventing rotary movement of said core tube in the other direction, even when the cartridge is removed from the typewriter.

4,806,034

WRITE HEAD CONTROLLER WITH GRID SYNCHRONIZATION

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 10, 1988, Ser. No. 154,302
Int. Cl.[4] B41J *21/16*
U.S. Cl. 400—279 **21 Claims**



1. A system for positioning a carriage relative to a rotatable drum, said system comprising:
a drum rotatable about an axis;
a carriage having arm means for interaction with said drum and displacement means for moving said carriage along a path parallel to said drum axis;
grid means disposed along said path for generating a first signal designating a position of said carriage along said path during movement of said carriage;
sensor means operatively connected to said drum for generating a second signal designating rotational position of said drum during rotation of said drum; and
synchronizing means responsive to said first and said second signal synchronizing movement of said carriage with rotation of said drum.

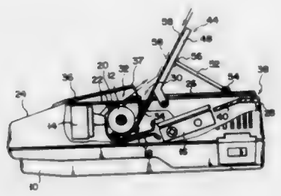
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4,806,035

PRINTER WITH SHEET GUIDE AND SEPARATOR

Tsuyoshi Maeda, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 25, 1987, Ser. No. 100,881
Claims priority, application Japan, Sep. 29, 1986, 61-147770[U]
Int. Cl.[4] B41J *13/14*
U.S. Cl. 400—647.1 6 Claims



1. A printer for printing on a cut or continuous sheet, comprising:

a platen adapted to be wound with the sheet;

a printing head located to face the platen, for printing on the sheet wound on the platen;

a cover arranged so as to hide the platen and the printing head, said cover including a top plate with a rear end, a rear plate, a discharge aperture, and a cut-sheet feed aperture, the apertures being situated close to the platen, the rear plate extending substantially vertically downward from the rear end of the top plate and having a continuous-sheet feed aperture, whereby the platen discharges the printed sheet toward the rear end of the top plate from the discharge aperture;

a cut-sheet guide for guiding the cut-sheet to the platen through the cut-sheet feed aperture, the cut-sheet guide having a guide surface, a proximal end portion rockably mounted on the top plate near the cut-sheet feed aperture, and a distal end portion situated at a distance from the proximal end portion, the distance between the proximal and distal end portions being shorter than that between the proximal end portion of the cut-sheet guide and the rear end of the top plate, said cut-sheet guide being rockable between a feed position, in which the guide surface is inclined at a predetermined angle to the top plate, and a discharge position, in which the guide surface is situated substantially parallel to the top plate; and

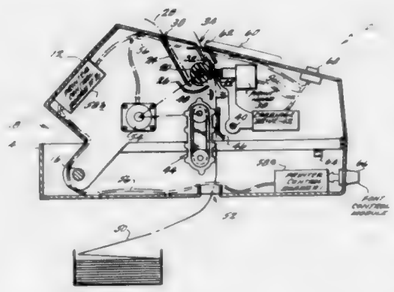
a separator having a proximal end portion rockably mounted on the top plate, and a distal end portion situated at a distance from the proximal end portion, the distance between the proximal and distal end portions of said separator is shorter than that between the proximal end portion of the separator and the cut-sheet feed aperture, and is longer than that between the proximal end portion of the separator and the rear end of the top plate of the cover, the separator being rockable among a holding position, in which the distal end portion engages and holds the cut-sheet guide in the feed position, a rest position in which the distal end portion of the separator is located near the cut-sheet feed aperture and the separator is substantially parallel to the top plate, and a separating position, in which the distal end portion projects from the rear end of the top plate, thereby delivering the continuous sheet, discharged from the discharge aperture, to a position spaced from the rear end of the top plate.

4,806,036

PRINTER MECHANISM CARRIED BY UPPER PORTION OF HINGED HOUSING

David O. Ward, Waynesboro; Theodore S. Zajac, Jr., Charlottesville, both of Va., and Frederick B. Hadtke, New Providence, N.J., assignors to Genicom Corporation, Waynesboro, Va.

Continuation of Ser. No. 797,119, Nov. 12, 1985, abandoned.
This application Oct. 7, 1987, Ser. No. 106,006
Int. Cl.[4] B41J *29/02*
U.S. Cl. 400—691 22 Claims



1. A printer comprising:

an external lower housing member; and

an external upper housing member disposed above and rotatably secured in a closed position to said lower housing member;

said external upper housing member having affixed thereto a printing mechanism and a paper drive mechanism collectively including

i. a platen; and

ii. a tractor drive, said tractor drive being disposed below said platen and having an accessible portiond depending from said upper housing into said lower housing in said closed position, means to enable paper loading access when said upper housing member with said printing mechanism and said paper drive mechanism is rotated upwardly to an open position with respect to said lower housing member, the angular separation of said external upper and lower housing members defining an access region in said open position, said accessible portion of said tractor drive being disposed in said access region when the housing members are in the open position.

4,806,037

LIQUID WAX APPLICATOR

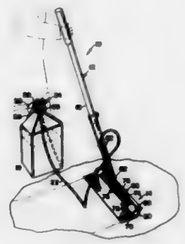
Joseph A. Bergland, 2319 Kirkwood La., Plymouth, Minn. 55441

Continuation of Ser. No. 816,710, Jan. 7, 1986, abandoned. This application Dec. 3, 1987, Ser. No. 129,934
Int. Cl.[4] A47L *13/22*
U.S. Cl. 401—6 1 Claim

1. Apparatus for applying wax to a floor, comprising: a wax container;

means for attaching said container to a person;

means for applicating wax to said floor, said applicating means including an applicator pad and a handle, said applicating means also including an elongated reservoir with a cylindrical wall and means for attaching said pad to said reservoir, said applicating means further including a slot in the cylindrical wall of said reservoir, said handle having a lower end fitted in said slot, said reservoir and said handle each having an axis, said applicating means still further including means for pivotably attaching said handle to said reservoir, said handle attaching means having a pivot axis, said pivot axis being perpendicular to said axes of said reservoir and said handle, said reservoir including means for emptying only a portion of wax therein onto said pad depending on movement of said pad and reservoir while waxing said floor, said emptying means including a plurality of openings regularly spaced



in an axial direction along said cylindrical wall, said openings being aligned along a first line spaced forwardly from a second line which forms the bottom of said cylindrical reservoir when said handle is vertical; and

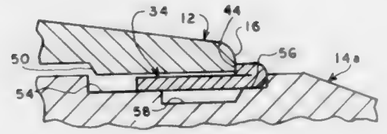
means for adjustably directing wax from said container to said reservoir.

4,806,038

KNOCK TYPE MECHANICAL PENCIL CONNECTION

Owen S. Jones, Janesville, Wis., assignor to Parker Pen (Benelux) B.V., East Sussex, England

Filed Oct. 26, 1987, Ser. No. 112,295
Int. Cl.[4] B43K *15/00, 21/00*
U.S. Cl. 401—86 10 Claims



1. A mechanical pencil of the type having an elongate lead reservoir and feed mechanism mounted from the rear with an elongate outer barrel with the forward end of said mechanism defining a tip, said tip extending through an opening at the front end of said barrel, comprising in combination

an external stop surface disposed on said lead reservoir and feed mechanism within said barrel and facing toward the front end of said barrel,

a rearwardly facing abutment surface interiorly of said barrel,

resilient means compressed between said abutment surface and said stop surface for urging said lead reservoir and feed mechanism rearwardly in said barrel,

an external annular groove on said tip of said lead reservoir and feed mechanism

said annular groove extending from a location rearward of said forward end of said barrel to a location forward of said front end of said barrel,

a resilient, radially compressible, elongate locking sleeve disposed o said annular groove, and being compressible radially inwardly on said groove during the mounting of said feed mechanism in said barrel,

said sleeve having at the forward end thereof radially extending stop means engaging the front end of said barrel to limit rearward movement of said lead reservoir and feed mechanism in said barrel, and

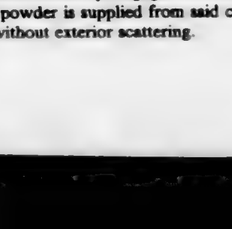
said sleeve having a rearward tubular portion extending a substantial distance into said barrel from said front end to retain said sleeve on said groove.

4,806,039

CHALK LINER FOR SEWING

Mancsaburo Kawamura, Tajimi, Japan, assignor to Kawamurseichukogyo Co., Ltd., Tajimi, Japan

Continuation of Ser. No. 941,102, Dec. 12, 1986, abandoned.
This application Apr. 12, 1988, Ser. No. 183,346
Claims priority, application Japan, Dec. 24, 1985, 60-198756[U]
Int. Cl.[4] B05C *19/00*
U.S. Cl. 401—208 3 Claims



1. A chalk liner for sewing comprising:

a vessel shaped main body having a lower tip, a chamber to which chalk powder is supplied, an upper opening through which chalk powder is supplied to said chamber, and a lower opening at said tip through which chalk powder is dispensed, said main body comprising a pair of letter-D shaped opposed side walls, the straight peripheral portions of said walls being uppermost and the arcuate peripheral portions of said walls converging and being secured together except at said lower tip to define said lower opening, each said wall having a rectangular notch centrally in said straight peripheral portion thereof, and transverse wall portions connecting the sides of each said notch with corresponding sides of the other notch, said upper opening being defined by said transverse wall portions and the bottom edges of said notches, each of said transverse wall portions being provided with a transversely extending groove near an upper end thereof;

a gear rotatably disposed in said lower opening with a portion of said gear extending out of said lower opening for drawing lines on a cloth surface by dispensed chalk powder; and

a cartridge for holding and supplying chalk powder to said chamber, said cartridge comprising a rectangular prism-shaped vessel having opposed side walls, opposed transverse walls, a bottom and an open end opposite said bottom, a removable closure for said open end, a step facing said open end on the exterior of each of said cartridge side walls, a transversely extending rib on the exterior of each of said cartridge transverse walls fittable in the corresponding transversely extending groove in said body transverse wall portions when said cartridge is installed in said main body, that portion of said cartridge between said steps and said bottom being complementary to said notches and said body transverse wall portions, whereby when said cartridge is inserted end opening first into said upper opening, said ribs fit into said transversely extending grooves and said steps engage said notch bottom edges and chalk powder is supplied from said cartridge to said chamber without exterior scattering.

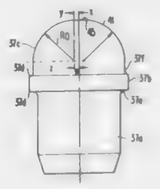
VOL 1099 ISS 3 FEB 21 1989 UMI

4,806,040

CERAMIC BALL AND SOCKET JOINT

Daniel E. Gill, Columbus, Ind.; Shigeo Suzaki, and Yasuo Sakata, both of Kanagawa, Japan, assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Feb. 12, 1987, Ser. No. 13,902
Int. Cl.[4] F16D 1/00; F01L 1/14
U.S. Cl. 403—24 10 Claims



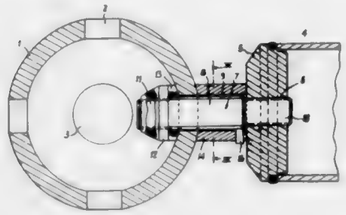
1. A ball and socket joint comprising a socket part formed of a ceramic material and having a socket therein, and a ball part formed of a ceramic material; wherein said socket is defined by a spherically curved surface having a radius of curvature originating at a center line axis of symmetry of the socket, and the ball part has an offset ball surface with a radius of curvature that is offset from the center line axis of symmetry of the ball part; wherein said ball part is provided with a plug-in end portion for attachment thereof within a recess in an end of a rod; wherein said offset ball surface is defined by a locus of points swept by the offset radius of curvature as it is rotated about said center line axis of symmetry of the ball part and swung in an angular direction relative to axial and radial lines through said ball part, said offset ball surface terminating a radial plane extending normal to said axis of symmetry and at which it merges with a cylindrically shaped portion of the ball part that has a radius corresponding to the radius of curvature of the offset ball surface plus its offset from the center line axis of symmetry of the ball part.

4,806,041

DEVICE FOR JOINING TUBES OR BARS

Gérard Chamayou dit Felix, 93 Rue Broca, 75013 Paris, France

Filed Nov. 19, 1986, Ser. No. 932,275
Claims priority, application France, Nov. 19, 1985, 85 17055; Dec. 27, 1985, 85 19308
Int. Cl.[4] F16B 7/18
U.S. Cl. 403—171 12 Claims



1. A device for assembling rods or tubes provided with tapped tips, said device comprising

a hollow hub comprising a wall defining an interior chamber and having a plurality of holes therein,

at least two studs, each of said studs having a first helical thread at one end thereof, and a second helical thread at the other end thereof, said first and second threads having opposite hand, each of said studs being inserted through a respective one of said holes so that one of said ends is within said chamber,

a nut installed on each threaded stud end within said chamber, the oppositely threaded end outside said chamber thus being available for engaging the tapped tip of a respective rod,

one of said holes having dimensions greater than those of said nuts to allow the nuts to be inserted into the chamber, and

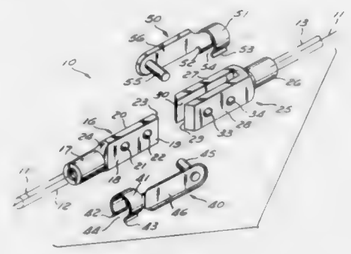
means for locking each stud to its corresponding tip.

4,806,042

QUICK-DISCONNECT RIGID COUPLING

David T. Swank, Millersburg; Edrick H. Eater, Mansfield, both of Ohio, and Les A. Daniel, Lake Orion, Mich., assignors to The Fluorocarbon Company, Aurora, Ohio

Filed Nov. 19, 1987, Ser. No. 122,750
Int. Cl.[4] F16D 1/00
U.S. Cl. 403—341 4 Claims



1. An apparatus, comprising:

an eye having first and second spaced parallel holes therethrough;

a clevis having third and fourth spaced parallel holes therethrough, said third and fourth holes being spaced a distance equal to the distance between said first and second holes;

first connection means for insertion through said first and third holes and attachment to said clevis in a locking relation; and

second connection means for insertion through said second and fourth holes and attachment to said eye in a locking relation.

4,806,043

METHOD AND DEVICE FOR DRAINAGE OF BORDERS OF ALL STABILIZED CIVIL ENGINEERING AREAS OR OF ADJACENT BORDERS OF A STRUCTURE

Christian Fourcier, Moissy-Cramayel, France, assignor to Fournier Drainage S.A., Moissy-Cramayel, France

Filed Oct. 1, 1987, Ser. No. 103,746
Claims priority, application France, Nov. 10, 1986, 86 15633
Int. Cl.[4] E01F 5/00
U.S. Cl. 404—2 12 Claims



1. Apparatus for placing a vertical drainage element within

a channel dug in the ground by an excavating machine, comprising

(a) a drum for carrying a roll of filtering material;

(b) a casing arranged adjacent the excavating machine for unwinding a continuous strip of filtering material from said drum, said casing including side walls and guide means for directing said strip of filtering material into said channel and for forming said strip into the configuration of a U-shaped trough including a bottom wall and side walls having top edges, said bottom wall being placed at the bottom of the channel and said side walls resting against the channel side walls;

(c) a hopper arranged adjacent said casing, said hopper discharging bulk material in granular form into said trough to define a vertical filtration block therein, said hopper having a lower portion including side walls located in the line of extension of the side walls of the strip-laying casing and at least partially engaging the channel;

(d) said hopper lower portion including means for retaining the top edges of said trough of filter material against the channel walls while bulk material is discharged into said trough; and

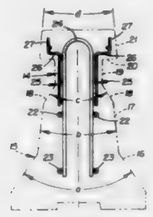
(e) means arranged adjacent said hopper for closing the top edges of said trough following discharge of said filter material and for fastening said top edges together to define a closed jacket around the filtration block.

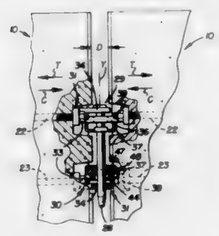
4,806,044

ANTI-CRASH LANE BARRIER WITH SELF-CENTERING HINGES

John W. Duckett, Sausalito, Calif., assignor to Barrier Systems, Inc., Sausalito, Calif.

Filed May 20, 1988, Ser. No. 196,435
Int. Cl.[4] E01F 13/00, 15/00
U.S. Cl. 404—6 28 Claims





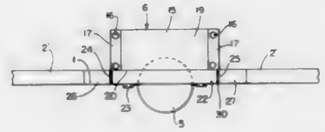
1. A lane barrier system comprising at least one pair of upstanding first and second modules disposed in closely spaced and tandem relationship relative to each other to normally assume a composite nominal length and connecting means connecting said modules together for relative pivotal movement about a common, single vertical pivot axis and for permitting said modules to: (1) Elongate or contract, both under a biasing force, to assume a composite varied length different from said nominal length in response to the imposition of a load on said lane barrier system, and (2) Automatically return to their nominal length under said biasing force when said system either elongates or contracts and when said load is removed from said lane barrier system.

4,806,045

MOVABLE CURB STRUCTURE AND METHOD OF PROVIDING EASY ACCESS TO A MANHOLE STRUCTURE

James M. Pitts, Warrensville Hts., and Richard L. Tans, Sagamore Hills, both of Ohio, assignors to The Ohio Bell Telephone Company, Cleveland, Ohio

Filed Jun. 16, 1988, Ser. No. 207,457
Int. Cl.[4] E01C 11/22; E02D 29/14
U.S. Cl. 404—7 19 Claims



1. A movable curb structure for providing easy access to a manhole structure wherein a permanent curb structure is substantially in line with the manhole structure but stops on opposite sides of the manhole structure comprising a cover box, first mounting means for removably mounting said cover box in partial overlying relation to said manhole structure with a front vertical wall of said cover box substantially in line with a back side of said permanent curb structure, a movable curb section, and second mounting means for removably mounting said movable curb section to said front vertical wall of said cover box so that said movable curb section is substantially in line with said permanent curb structure.

13. A method of providing easy access to a manhole structure wherein a permanent curb structure is substantially in line with said manhole structure comprising the steps of stopping said permanent curb structure on opposite sides of said manhole structure, removably mounting a cover box over a portion of said manhole structure with a front vertical wall of said cover box substantially in line with a back side of said permanent curb structure, and removably mounting a movable curb section to said front vertical wall of said cover box substantially in line with said permanent curb structure.

4,806,046

SELF-UPRIGHTING DELINEATOR POST

Richard O. Clark, 1630 Waterson, Austin, Tex. 78701

Filed Jun. 29, 1987, Ser. No. 67,962
Int. Cl.[4] E01F 9/01
U.S. Cl. 404—10 17 Claims

1. A self-uprighting delineator post construction comprising:

(a) base means adapted to be fixed to any suitable stationary object;

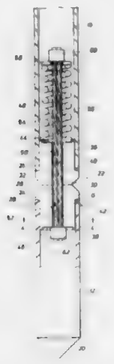
(b) a delineator post of light weight impact resistant composition;

(c) a pivotal load cell having supported connection with said base means and having supporting connection with said delineator post and comprising:

(1) upper and lower load cell elements disposed in abutting relation and forming an abutment joint, said load cell elements each forming a vertically aligned cable passage, said passage cross-section dimensioned in one direction slightly greater than a single cable diameter and in a perpendicular direction slightly greater than two cable diameters, said upper load cell element capable of pivoting at said abutment joint relative to said lower load cell element;

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(2) a pair of wire rope cables disposed in close fitting side-by-side relation and extending through said vertically aligned passages of said upper and lower load cell elements said wire rope cables being capable of bending and resisting tensile elongation and cooperating with said geometric configuration of said aligned passages to prevent relative rotation of said load cell elements; and



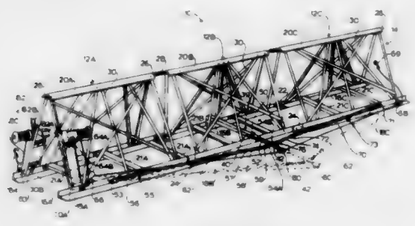
(3) at least one compression spring placing said wire rope cables under predetermined tensile load, said compression spring being further compressed upon pivoting of said upper load cell element relative to said lower cell element and developing an uprighting force urging said upper and lower load cell elements and said delineator post to the vertically aligned and properly oriented positions thereof.

4,806,047

SCREED FRAME AND STIFFENING APPARATUS

Donald R. Morrison, 6228 Eagle Peak Dr., Charlotte, N.C. 28208

Filed Feb. 23, 1988, Ser. No. 159,262
The portion of the term of this patent subsequent to Feb. 2, 2005, has been disclaimed.
Int. Cl.[4] E01C *19/22*
U.S. Cl. 404—118 14 Claims



1. A frame for a concrete screed comprising:
(a) a frame assembly;
(b) a tube assembly mounted on the frame assembly transversely to the length of the frame assembly; and
(c) elongated structural means removably connected to the frame assembly and the tube assembly for forming a truss with the frame assembly prior to advancement and for stiffening the frame as the frame is advanced during a screeding operation.

4,806,048

APPARATUS FOR PRODUCING ARTIFICIAL WAVE

Soichi Ito, Tokyo, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1988, Ser. No. 153,320
Claims priority, application Japan, Feb. 27, 1987, 62-42729
Int. Cl.[4] E02B *3/00*
U.S. Cl. 405—79 4 Claims



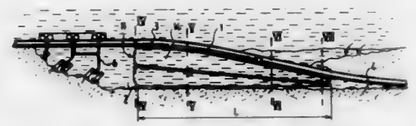
1. An apparatus for producing an artificial wave, comprising:
an embankment (1) provided in the sea substantially in parallel to a shore so that an upper portion thereof is exposed above the sea, said embankment (1) having on the offshore side thereof a slope (7) for causing sea water to crawl up over said embankment (1) in the form of a wave, and on the inshore side thereof a vertical surface (1*a*);
a rectangular parallelepiped tank (2), having an open upper end, fitted to said embankment (1) so as to be vertically movable along said vertical surface (1*a*) thereof, said tank (2) extending horizontally along said vertical surface (1*a*) of said embankment (1), said tank (2) having a capacity sufficient to receive sea water having crawled up over said slope (7) of said embankment (1) a plurality of times through said open upper end, and a side wall (14) on the inshore side of said tank (2), which side wall (14) is parallel to said vertical surface (1*a*) of said embankment (1), said side wall being capable of being opened and closed with a first rotation axle (14*a*) as a fulcrum, which first rotation axle (14*a*) is provided on the upper end of said tank (2) horizontally and in parallel to said vertical surface (1*a*) of said embankment (1*a*);
main buoy (13) fixed onto a bottom wall of said tank (2), said main buoy (13) having buoyancy sufficient to cause substantially the entire of said tank (2) to float up above the sea, and a lower surface (13*a*) of said main buoy (13) inclining upwardly toward the shore;
a tank supporting mechanism (3) having a function of supporting said tank (2) at a prescribed position above the sea, said tank supporting mechanism (3) releasing said function thereof when said tank (2) is filled up with sea water; whereby said tank (2) falls down on the sea along said vertical surface (1*a*) of said embankment (1) when said tank (2) is filled up with sea water, to push out sea water thereunder toward the shore, thereby producing an artificial wave (30) toward the shore; and
an opening-closing mechanism (4) for opening and closing said side wall (14) on the inshore side of said tank (2) with said first rotation axle (14*a*) as a fulcrum, said opening-closing mechanism (4) closing said side wall (14) when said function of said tank supporting mechanism (3) is active, and opening said side wall (14) when said function of said tank supporting mechanism (3) is released, whereby sea water received in said tank (2) is discharged toward the shore when said tank (2) falls down on the sea, thereby promoting said production of said artificial wave (30).

4,806,049

PROCESS AND DEVICE FOR TEMPORARILY SUPPORTING THE WALLS OF A TRENCH

Francis Cour, Maisons-Laffitte, France, assignor to Geodia, Paris, France

Filed Apr. 10, 1987, Ser. No. 36,910
Claims priority, application France, Apr. 14, 1986, 8605274
Int. Cl.[4] F16L *1/04*
U.S. Cl. 405—161 9 Claims



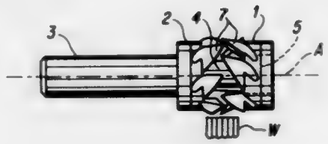
1. In a method for temporarily supporting the walls of a trench following digging thereof in a soil, particularly an undersea bed formed of materials having low cohesion, for burying a pipe such as an oil pipeline, characterized by providing at least one means for temporarily holding the walls, formed of a closed envelope of constant predetermined length, made from a flexible and deformable material filled with a fluid at a pressure greater than the hydrostatic pressure, utilizing said means to take the place of the materials extracted from the trench as the trench advances, on which envelope the pipe rests during descent of the pipe to the bottom of the trench, and giving said envelope a structure such that the points of the outer wall of said envelope remain fixed with respect to the trench in which said envelope is placed as well as with respect to the pipe which said envelope supports, whereas the ends of said envelope are turend in on one side along a longitudinal axis and open out on the other side from the inside to the outside so that the simultaneous contraction and opening out of the envelope along said longitudinal axis ensure that advance of the assembly in the manner of two superimposed caterpillar tracks, under the action of the weight exerted by the pipe, combined eventually with complementary means promoting the advance.

4,806,050

EDGE ROUTING CUTTER

Kenneth W. Bryant, Rte. 4, Box 409F, Farmington, Mo. 63640

Filed Nov. 27, 1987, Ser. No. 125,889
Int. Cl.[4] B23B *51/00*
U.S. Cl. 408—203.5 13 Claims



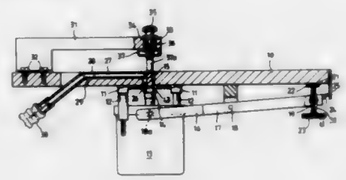
1. A rotary cutting tool for routing the edge of a workpiece comprising:
a cylindrical shank with a longitudinal axis; and
two cylindrical collars on the shank having peripheral cutting teeth; wherein
each collar has a base portion extending to the shank and a tubular portion forming a series of spaced, discrete teeth extending axially beyond said base portion and extending over and around a central open space between the teeth and the shank, the teeth on respective collars extending oppositely toward each other;
whereby the teeth slice chips from the edge of the workpiece centrally of the edge and the collars in two, opposite directions toward and into the open space.

4,806,051

METHOD FOR FORMING A TEMPLATE

Malcolm Craven, and Mason S. Small, both of Leeds, England, assignors to Automated Machinery System, Inc.

Filed Feb. 11, 1988, Ser. No. 155,532
Claims priority, application United Kingdom, Feb. 27, 1987, 8704665
Int. Cl.[4] B23C *0/00*
U.S. Cl. 409—84 4 Claims



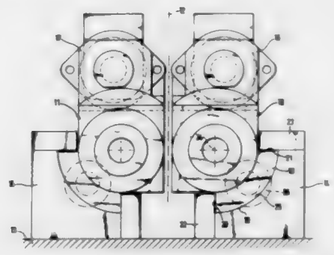
1. A method of making a template from a blank comprising first and second plates that overlie one another and are hinged together along a substantially rectilinear hinge line by a flexible web of material, the method comprising supporting the blank on a support table with the first plate lowermost, releasably securing a pattern to the upper surface of the second plate, positioning the blank so that it lies over a rotary cutting tool movable upwardly and downwardly through an opening in the support table with an edge region of the pattern lying against a stylus secured above the opening in the support table, the stylus having a circular periphery and being substantially in axial vertical alignment with the cutting tool, cutting a track through the thickness of both plates while moving the blank so that the edge of the pattern travels in contact with the periphery of the stylus, and making separating cuts through the thickness of the first plate only, the separating cuts extending respectively from start and finish regions of the track across the hinge line to a free edge of the first plate.

4,806,052

CARRIAGE FOR MACHINE TOOLS

Konrad Till, Neustetten-Remmingsheim, Fed. Rep. of Germany, assignor to KM Werkzeugmaschinen GmbH, Mössingen, Fed. Rep. of Germany

Filed Jan. 4, 1987, Ser. No. 58,354
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1986, 3615213
Int. Cl.[4] B23Q *1/18*; F16C *29/00*
U.S. Cl. 409—231 4 Claims



1. A carriage unit for a machine tool, especially forming a tool support for drilling or milling machines, comprising a carriage having a guiding foot which has a cross-section in form of a quarter of a circular cylindrical ring and is provided with a cylindrical outer surface and two ring intersecting surfaces which form sliding surfaces of said guiding foot; and

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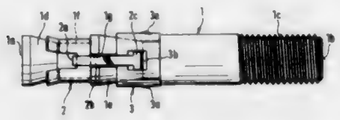
supporting means including a parallelepiped-shaped guiding block mountable on a machine tool housing and having a quarter cylindrical bearing surface on which said outer cylindrical surface of said guiding foot abuts, and two guiding strips mounted on said guiding block and each having a counter surface for abutting by a respective one of said ring intersecting surfaces of said guiding foot.

4,806,053

EXPANSION DOWEL WITH TWO DIFFERENT EXPANSION MEMBERS

Armin Herb, Apfeldorf, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Liechtenstein

Filed Nov. 4, 1987, Ser. No. 117,230
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1986, 3637658
Int. Cl.[4] F16D *13/06*
U.S. Cl. 411—32 **10 Claims**



1. An expansion dowel assembly including shell-shaped expansion elements and an axially elongated partially cylindrically shaped anchor bolt, said anchor bolt having a leading end and a trailing end spaced axially from the leading end and said leading end being insertable first into a borehole, means on said anchor bolt adjacent the trailing end for applying a load to the anchor bolt, said anchor bolt having an axially extending leading end section extending from the leading end toward the trailing end and having two serially arranged axially extending conically shaped expansion members each widening toward the leading end, said expansion members comprise a leading expansion member closer to the leading end and a trailing expansion member more remote from the leading end, said expansion elements comprise a leading expansion element arranged to receive said leading expansion member and a trailing expansion element arranged to receive said trailing expansion member, said leading and trailing expansion members having different cone angles with the cone angle of said leading expansion member being greater than the cone angle of said trailing expansion member, axially extending web means interconnecting said leading and trailing expansion elements, wherein the improvement comprises interconnecting means allowing axial displacement of said leading expansion element relative to said trailing expansion element when said anchor bolt is drawn in the axial direction into said expansion elements.

4,806,054

MALE THREADED FASTENER CAPABLE OF USE WITH A SWAGED COLLAR

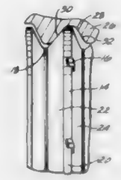
Jack Rath, 9823 Kincardine Ave., Los Angeles, Calif. 90034

Continuation of Ser. No. 846,299, Mar. 31, 1986, abandoned. This application May 31, 1988, Ser. No. 204,939
Int. Cl.[4] F16B *39/02*
U.S. Cl. 411—361 **4 Claims**

1. In a male fastener used with a cooperating threaded female fastener or a swaged collar, the male fastener having a thread extending from one end of the fastener to an interior end of the thread, the thread having root, a major diameter, a load bearing flank, a nonload-bearing flank, and no projections on either flank, an improvement comprising;

a plurality of spaced apart impressions only on the thread major diameter and on the nonload-bearing flank, the nonload-bearing flank being smooth and continuous except for the impressions, the load-bearing flank being smooth and continuous and free of the impressions,

whereby, when used with a swaged collar, collar material



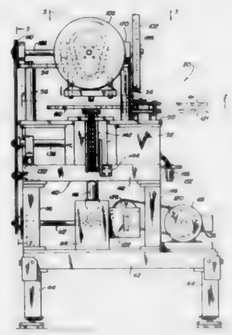
enters the impressions to lock the collar and the male fastener together, but when used with a threaded female fastener the impressions do not increase the friction between the male and female fasteners during installation.

4,806,055

APPARATUS FOR INSERTING POURING SPOUTS INTO CONTAINER TOPS

Frederick A. Plassmann, Edison, N.J., assignor to Seal Spout Corporation, Liberty Corner, N.J.

Continuation of Ser. No. 586,862, Mar. 6, 1984, Pat. No. 4,583,899. This application Apr. 10, 1986, Ser. No. 850,267
Int. Cl.[4] B21D *51/00*
U.S. Cl. 413—53 **15 Claims**



1. A machine for inserting pouring spouts into container tops comprising:

inlet means to bring a supply of tops for processing;

exit means to allow passage from the apparatus of tops with inserted spouts;

spout inserting means;

indexing means to carry the tops from the inlet means to the spout inserting means and then to the exit means;

said indexing means including receptacle means mounted in said indexing means to receive and secure the tops mounted in the indexing means;

mounting means to mount the tops in the indexing means;

ejecting means to eject the tops with inserted spouts from the receptacle means of the indexing means;

means to sequentially feed tops to said mounting means;

spout positioning means to position the spout with relation to the container top;

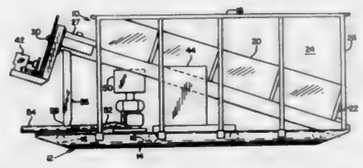
means to stabilize and align said tops while awaiting action by said mounting means composed of a waiting plate disposed at the end of said inlet means; a back up stop; a receptacle for tops awaiting actuation by said mounting means and a camming surface in said inlet means adapted to position said empty tops into said receptacle in said waiting plate wherein the mounting means comprise: a mounting plunger; and wherein the means to sequentially feed tops to said mounting means comprise: a timing finger; arm means connecting said timing finger to said mounting plunger; and means to pivotally mount said arm to said mounting plunger to actuate said timing finger in opposition to movement of said mounting plunger.

4,806,056

MODULAR FUEL METERING APPARATUS AND METHOD FOR USE THEREOF

Michael W. Rouse, West Linn, and Robert L. Thelen, Woodburn, both of Oreg., assignors to Waste Recovery, Inc., Dallas, Tex.

Filed Jul. 7, 1986, Ser. No. 882,603
Int. Cl.[4] F23K *3/14*
U.S. Cl. 414—160 **1 Claim**



1. A portable modular apparatus for metering and delivering combustion fuel in the form of pieces of various sizes no greater than a predetermined maximum, at a predetermined rate, the apparatus comprising:

(a) a base, said base including skid means for supporting said apparatus movably;

(b) hopper means mounted on said base for containing a supply of said combustion fuel;

(c) a feed metering conveyor located in said hopper means;

(d) a feed metering conveyor controller supported on said base;

(e) variable speed motor means connected electrically with and responsive to said feed metering conveyor controller and connected drivingly with said feed metering conveyor for driving said feed metering conveyor at a speed controllably variable during operation;

(f) delivery means for receiving said fuel from said feed metering conveyor and delivering said fuel to a combustion chamber, said delivery means including a pneumatic fuel transport conduit and blower means connected to said fuel transport conduit for providing a fuel-transporting flow of air through said fuel transport conduit, and infeed means for introducing said fuel into said fuel transport conduit in amounts delivered by said feed metering conveyor, wherein said infeed means includes nozzle assembly means for controlling the flow of air in said fuel transport conduit so as to entrain said fuel and carry said fuel in a flow of air through said fuel transport conduit; and

(g) an inclined bottom channel included in said hopper means, said feed metering conveyor being located along said bottom channel and driven by said variable speed motor means so as to move said combustion fuel upwardly along said inclined bottom channel to said delivery means.

4,806,057

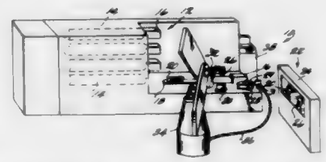
AUTOMATIC WAFER LOADING METHOD AND APPARATUS

Norman S. Cay, Los Gatos, and Gerald M. Bowers, Boonville, both of Calif., assignors to Motion Manufacturing, Inc., Santa Clara, Calif.

Filed Apr. 22, 1986, Ser. No. 855,088
Int. Cl.[4] B65G *65/30*
U.S. Cl. 414—225 **34 Claims**

1. A system for unloading a set of a plurality of semiconductor wafers from a transport container containing a set of a plurality of mutually spaced, separately supported wafers, comprising:

container and wafer supporting means positionable relative to a transport container containing a set of a plurality of wafers for supporting the transport container and positionable relative to a set of wafers unloaded from a transport container for supporting the unloaded set of wafers in mutually spaced relationship and independent of a container, said container and wafer supporting means having both container-engaging and waferengaging portions separate from one another for separately supporting a transport container and a set of wafers;



unloading means for unloading simultaneously a plurality of wafers from a transport container while maintaining the wafers as a set in mutually spaced relationship and independent of a container;

transport means coupled to said supporting means for transporting controllably said supporting means to said unloading means; and

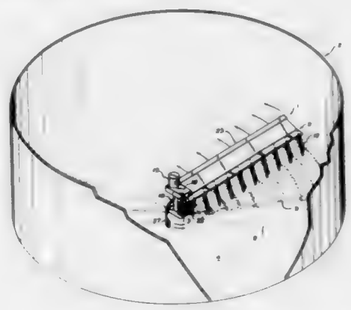
control means coupled to said transport means for causing said supporting means to support and transport a transport container containing such set of wafers to said unloading means for unloading said wafers.

4,806,058

MATERIAL HANDLING DEVICE

Joseph Galichowski, Box 13, Two Hills, Alberta, and John D. Skokoples, 12830 - 101 St. Ste. "B", Edmonton, Alberta, both of Canada

Filed Sep. 4, 1984, Ser. No. 647,152
Int. Cl.[4] B65G *65/48*
U.S. Cl. 414—304 **3 Claims**



1. A device for moving a body of granular material to a central discharge outlet in a generally flat-bottomed cylindrical storage bin, said body having a generally triangular section and an inwardly downwardly sloping upper surface, comprising:

an upstanding, rotatable drive shaft;

means for supporting the drive shaft in an upstanding position over the central outlet;

means, associated with the drive shaft, for rotating it about its longitudinal axis;

a sweep arm pivotally mounted at its inner end to the base of

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the drive shaft for rotation thereby and extending outwardly to adjacent the inner upstanding surface of the container side wall, said sweep arm being operative to pivot in a vertical plan about its inner connection, so as to conform to the changing gradient of the body of granular material, said sweep arm having an upwardly inclined leading edge portion which leading edge portion functions to prevent the sweep arm from diving into the granular material; and

a plurality of stationary fins mounted on the lower surface of the sweep arm, to extend downwardly therefrom, for penetrating into the granular material and moving it inwardly to the discharge outlet, said fins being spaced apart and substantially parallel one to another, said fins being angularly arranged relative to the radius of the container and increasing in depth inwardly from the outer end of the arm, whereby said fins will each move substantially the same amount of granular material.

4,806,059

STACKING DEVICE FOR UNIFORM, ESPECIALLY FLATELIKE PIECES

Erhard Gössl; Hans Lutz, both of Gerlingen, and Peter Schöttle, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

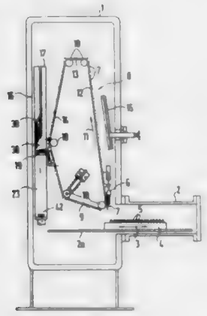
PCT No. PCT/DE86/00202, § 371 Date Feb. 11, 1987, § 102(e) Date Feb. 11, 1987, PCT Pub. No. WO86/07520, PCT Pub. Date Dec. 18, 1986

PCT Filed May 14, 1986, Ser. No. 33,120

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1985, 3521010

Int. Cl.[4] B65G *65/00*; **H05K** *13/02*

U.S. Cl. 414—331 **10 Claims**



1. Stacking device for uniform platelike pieces having a front side to be treated and a back side, the device comprising a conveying device conveying said pieces which are treated on said conveying device to produce a sensitive treated surface on the front side of each piece; a movable container means for receiving said pieces advanced by said conveying device to said container means in such a way that they are deposited and stacked in said container means such that a front side of one piece is against a back side of the other piece; and means to protect the sensitive treated surface on the front side of each piece deposited in the container means against contact with the back side of a previously deposited piece in said container means, said means to protect the sensitive treated surface including intermediate layers introduced between each two consecutive deposited pieces in said container means, each intermediate layer being formed as an inherently rigid frame which rests only on border areas of the front and back sides of each of said pieces; and a means for introducing said intermediate layers between two consecutive deposited pieces and releasing said intermediate layers as said container means is moved opposite to a stacking direction during a stacking process, said means for introducing said intermediate layers between two consecutive deposited pieces and releasing said intermediate layers being arranged in said container means, and said container means being open toward said conveying device.

4,806,060

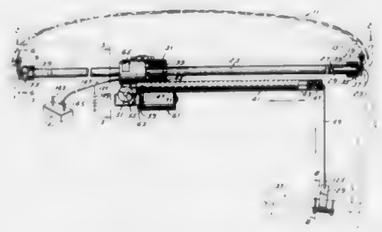
WHEEL CHAIR HOIST ASSEMBLY FOR VEHICLES

Bernard E. Molski, 5001 Coventry, Royal Oak, Mich. 48073

Filed Jun. 1, 1987, Ser. No. 56,382

Int. Cl.[4] B60P *1/54*

U.S. Cl. 414—462 **15 Claims**



1. A wheel chair hoist assembly adapted for mounting upon the interior of a vehicle having a roof, a body with a door opening upon the driver's side and a battery comprising:

spaced hanger brackets secured to and depending from the roof within and upon opposite sides of the body;

a transverse support bar adjacent the door opening and at its ends connected to said brackets;

a mount tube slidably mounted upon said support bar;

a winch mount bracket secured to and depending from said mount tube;

a tubular boom parallel to and spaced from said support bar and at one end secured to said mount tube, with its other end extending longitudinally of said mount tube, said boom being normally retracted within the body;

said boom being slidable along said support bar to an advanced position for projecting said other end of said boom laterally outward through said door opening;

a reversible motor operated winch assembly adapted to be connected to the battery and secured upon said winch mount bracket and including a rotatable drum;

a cable at one end secured to and mounted around said drum, guidably projected through said boom with its free end depending therefrom;

hook means mounted upon the other end of said cable adapted to supportably engage the collapsed arms of a wheel chair;

a rack gear spaced laterally of, parallel to and at its ends adjustably secured to said support bar;

a motor mount bracket secured to and extending laterally of said mount tube;

a reversible electric motor adapted to be connected to the battery, mounted upon said motor mount bracket and having a drive shaft;

a pinion gear connected to said drive shaft in mesh with said rack gear, whereby energizing the motor driving said pinion along said rack gear effects corresponding movements of said mount tube for moving said boom from a retracted position to an advanced position, and energizing of said winch assembly successively winds and unwinds said drum for alternately raising and lowering a wheel chair;

the mounting of said rack gear including a stop collar secured upon the ends of said support bar;

the opposite ends of said rack gear including apertured mount flanges; and

fasteners extending through said mount flanges and secured respectively to said stop collars.

4,806,061

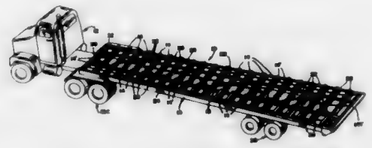
TRAILER AND TRAILER UNLOADING SYSTEM

E. Dale Fenton, Columbia, Mo., assignor to Automatics Sales, Inc., Hammond, Ind.

Filed Sep. 18, 1986, Ser. No. 908,821

Int. Cl.[4] B60P *1/04*

U.S. Cl. 414—475 **9 Claims**



1. A trailer for use by a prime mover unit for unloading a load on the ground, the prime mover unit having means for receiving a trailer connection which connection receiving means is maintained at a substantially fixed height above the ground as the prime mover moves over the ground, comprising:

a longitudinal frame having a tail end and a forward end, said longitudinal frame being always inclined downward from the forward end to the tail end;

means on the forward end of said frame for connection to the prime mover unit and allowing a tilt upward and downward of the frame therefrom;

a wheeled under-carriage mounted to said frame so as to be shiftable longitudinally along said frame, said frame and said under-carriage being so arranged that a longitudinal shift of said under-carriage in one direction tilts said frame downward from said forward end connection means to the prime mover and lowers the tail end to the ground level, while the reverse shift tilts said frame upward from said forward end connection means to the prime mover and raises the tail end to an over-the-road height, said under-carriage having brakes which are connected to be controlled from the prime mover independently of the prime mover's brakes, and

means near the tail lend of said frame for contacting the ground and for moving on the ground when the tail lend is lowered to the ground,

whereby the tail end may be lowered to the ground and raised therefrom solely by applying the brakes of said under-carriage while moving the prime mover and said frame relative to said under-carriage, and the trailer moved along the ground on said tail-end ground contacting means.

4,806,062

STOWABLE LIFT FOR FREIGHT VEHICLES

Herbert A. Stier, Arcadia, Calif., assignor to Maxon Industries, Inc., Huntington Park, Calif.

Filed Oct. 29, 1987, Ser. No. 114,015

Int. Cl.[4] B60P *1/46*

U.S. Cl. 414—545 **13 Claims**

1. In a stowable lift, the combination comprising:

a support means;

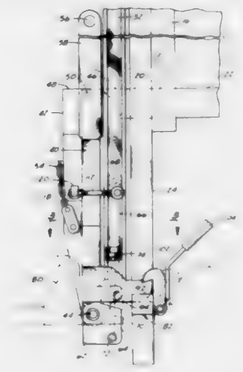
a runner means mounted on said support means for vertical movement therealong;

a platform having a forward edge pivotally connected to said runner means on a horizontal pivot axis for movement between horizontal and vertical positions of said platform;

a rigid stopper means having a proximal end rigidly secured to one side of said platform at a location spaced rearwardly from said platform axis,

said stopper means having a distal end that projects beyond the plane of said platform in a direction so that when said platform is in said vertical position said distal end of said stopper means projects forwardly towards said support means, and

a stirrup means rigidly affixed to said support means within the range of vertical reciprocation of said runner means relative to said support means so that said distal end of said stopper means and said stirrup means are in coplanar interfering alignment when said platform is disposed in said vertical position,



said stirrup means having shape characteristics defining a seat having an entrance onto said seat for said stopper means that is both upwardly and rearwardly open,

whereby, when said pivot axis of said platform is at substantially the elevation of said stirrup means with said stirrup means and said distal end of said stopper means spaced approximately at the same radial distance from said pivot axis of said platform, said stopper means can be swung into and out of seating contact with said stirrup means by pivotal movement of said platform between said horizontal and vertical positions thereof.

4,806,063

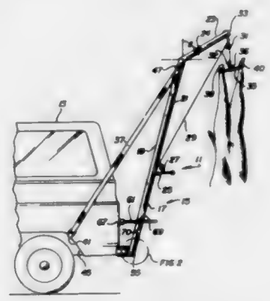
PORTABLE WILD GAME HOIST

W. Clifton York, Rte. 6, Box 35, Quincy, Fla. 32351

Filed Mar. 11, 1988, Ser. No. 167,278

Int. Cl.[4] A22B *5/06*; **B60R** *9/06*

U.S. Cl. 414—462 **11 Claims**



1. A wild game hoist for removable attachment to a vehicle comprising

a boom having an angular section at its upper end;

a cylindrical section at the lower end of said boom for adapt-

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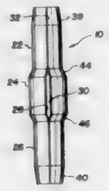
ing said boom to a mating relationship with the ball of a trailer hitch attached to a vehicle;
at least two straps secured to the upper section of said boom;
a hook secured to the distal end of each strap adapted to be hooked to the fenders of a vehicle;
a winch secured to said boom;
at least one pulley secured to the distal end of said boom;
a rope extending from said winch and through said pulley;
hanger means secured to the end of said rope adapted to support an animal by its legs; and
a torsion bar secured to said boom and adapted to bear against the body of a vehicle.

4,806,064

COMPENSATING ROLL PIN FOR HEAT SINK MOUNTING

Leonard S. Breese, Carrollton, Tex., assignor to Thermalloy Incorporated, Dallas, Tex.

Continuation of Ser. No. 851,517, Apr. 14, 1986, abandoned, which is a division of Ser. No. 644,215, Aug. 24, 1984, Pat. No. 4,602,315. This application Feb. 29, 1988, Ser. No. 162,150
Int. Cl.⁴ H05U *7/20*
U.S. Cl. 411—479 9 Claims



1. A pin for mounting a heat sink on a circuit board comprising a hollow cylindrical body forming an elongated tube with an axially extending gap in the wall of said tube extending substantially the full axial length thereof, said cylindrical body having first and second end portions and a middle portion intermediate said end portions and having an external diameter reducing taper adjacent the terminal ends of said end portions, the external diameter of said middle portion being greater than the external diameters of said first and second end portions.

4,806,065

TRAILER

Joseph C. Holt, Veedersburg, and Russell L. Losh, Rensselaer, both of Ind., assignors to Talbert Manufacturing, Inc., Rensselaer, Ind.

Continuation-in-part of Ser. No. 759,598, Jul. 26, 1985, Pat. No. 4,635,997, which is a continuation-in-part of Ser. No. 637,958, Aug. 6, 1984, Pat. No. 4,580,830. This application Jan. 12, 1987, Ser. No. 2,141
Int. Cl.⁴ B62D *27/02*
U.S. Cl. 414—481 26 Claims



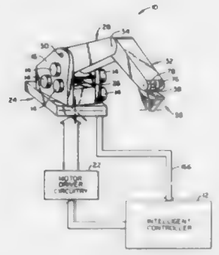
1. A trailer for use on a road or other underlying surface, the trailer comprising a frame including a forward section and a rearward section laterally spaced apart from the forward section, a middle section received between the forward and rearward sections, the middle section having at least a first position elevated above the underlying surface and a second position elevated above the first position, support elements fixed to and extending downward from the forward and rearward sections for supporting the middle section at the prescribed positions, locking means for locking the middle section to the support elements at the prescribed positions, roller means for guiding the middle section from one of the positions to another of the positions linearly along the support elements, the roller means comprising a plurality of roller assemblies on the middle section engaging both forward and rearward facing surfaces of the support elements on at least the forward section, the roller assemblies engaging the forward facing surface of the support elements on the forward section comprising a cylinder axially movable with respect to the middle section, an end plate fixed to one end of the cylinder, an axle unit coupled to the end plate, a roller coupled to the axle unit outside of said one end of the cylinder, and position maintaining means removably coupling the cylinder to the middle section to engage the roller with one forward facing surface of the supporting elements of the forward section, the position maintaining means being at least partially removable to permit the separation of the forward section from the middle section and allow front loading of the trailer middle section.

4,806,066

ROBOTIC ARM

Guy W. Rhodes, Los Altos Hills; John W. Hill, Palo Alto; Clement M. Smith, Portola Valley, and Thomas M. Grimm, Santa Clara, all of Calif., assignors to Microbot, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 438,314, Nov. 1, 1982, abandoned. This application Sep. 23, 1985, Ser. No. 779,159
Int. Cl.⁴ B25J *9/10*
U.S. Cl. 414—729 25 Claims



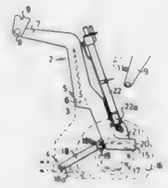
21. In an open-loop system of structural members, wherein each structural member is linked for relative pivotable movement with another of the structural members at a different one of a plurality of joints, and further wherein at least two of the structural members are intercoupled such that the movement of one of the intercoupled structural members about a joint results in movement of the other intercoupled structural member about a different joint, an apparatus responsive to a homing command for position-calibrating the structural members with respect to a predetermined home position for each joint, comprising
a plurality of home position means, each of which is associated with a different joint, each for providing positional information about the particular structural members coupled at the associated joint, said positional information including an indication of the direction of the predetermined home position for that joint from the current position of the particular structural members, and a home signal when the particular structural members are in the predetermined home position; and
control means responsive to the home signal and to the direction indication from each home position sensor means for modifying the position of all structural members in parallel in the direction of their associated predetermined home position until all position sensing means have generated a home signal, wherein the control means reverses the direction or movement of any particular structural member whenever the associated home sensor means for the particular structural member indicates a transition from one side of its associated predetermined home position to the other, so that the position of the particular structural member is caused to vary about its associated predetermined home position until all other home position sensor means have generated a home signal and wherein the control means include means operative after all position sensing means have generated a home signal for modifying the position of each structural member, one at a time, in a predetermined order and by predetermined positional increments so that each of the structural members is caused to be moved to within a predetermined distance from its home position.

4,806,067

UNIT, ATTACHABLE TO A LOADER

Björn A. L. Ödlund, Box 2025, 361 02 Emmaboda, Sweden

PCT No. PCT/SE85/00303, § 371 Date Apr. 24, 1986, § 102(e) Date Apr. 24, 1986, PCT Pub. No. WO86/01190, PCT Pub. Date Feb. 27, 1986
Continuation of Ser. No. 852,957, Apr. 7, 1986, abandoned. This PCT application Aug. 7, 1985, Ser. No. 177,883
Claims priority, application Sweden, Aug. 7, 1984, 8403997
Int. Cl.⁴ B66C *1/42*
U.S. Cl. 414—734 8 Claims



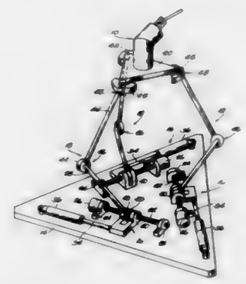
1. An assembly for attachment to a loader having front wheels, lower assembly attachment means and upper assembly attachment means, comprising:
a central region of the assembly having means for attaching the assembly to the upper assembly attachment means of the loader;
a pivotal attachment at the upper end of the assembly for attaching lifting arms that are intended to carry a load handling device;
a lower part of the assembly located above a central axis of the front wheels of the loader;
piston-cylinder devices attached to said assembly lower part for acting on said lifting arms attached to the pivotal attachment;
elongated fixed length members having first and second ends, the first end of each member being pivotally connected to one of the lower assembly attachment means for fixing the position of the assembly with respect to the loader; and
attachment means mounted on the lower part of the assembly for pivotally connecting the second end of each of the elongated fixed length members to the lower part of the assembly.

4,806,068

ROTARY LINEAR ACTUATOR FOR USE IN ROBOTIC MANIPULATORS

Dilip Kohli, 16615 W. Dane Ct., Brookfield, Wis. 53005, and George N. Sandor, 1717 NW. 23rd Ave., Apt. 3C, Gainesville, Fla. 32605

Filed Sep. 30, 1986, Ser. No. 913,523
Int. Cl.⁴ B66C *1/00*
U.S. Cl. 414—735 22 Claims



1. A robotic manipulator adapted to be supported by a base and for supporting a load for selective controlled movement, the robotic manipulator comprising:
a movable member adapted to support a load for selective controlled movement,
a first link means having opposite ends, one of said ends of said first link means being movably joined to said movable member for supporting said movable member, and the opposite end of said first link means including a longitudinal axis,
a rotary linear actuator adapted to be supported by the base and supporting the opposite end of said first link means, said rotary linear actuator including means for supporting said opposite end of said first link means for movement in the direction of a second axis, said second axis being transverse to said longitudinal axis, means for causing linear movement of said opposite end of said first link means in the direction of the second axis, the means for causing linear movement of the opposite end of the first link means being adapted to be supported by the base and means for causing pivotal movement of said opposite end of said first link means about said second axis, the means for causing pivotal movement of said opposite end of the first link means being adapted to be supported by the base independently of the means for causing linear movement of the opposite end of the first link means.

4,806,069

ROBOT WRIST

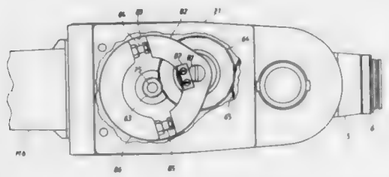
Leif Tellden, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Jun. 10, 1987, Ser. No. 60,310
Claims priority, application Sweden, Jun. 12, 1986, 8602626
Int. Cl.⁴ B66C *1/10*
U.S. Cl. 414—735 13 Claims

1. A robot wrist comprising a wrist housing mounted on a robot arm; a tilt which is journalled in said wrist housing to be rotatable about a tilt axis which is perpendicular to a longitudinal axis of said robot arm; a tool attachment rotatably journalled in said tilt; and drive means for rotating said tilt and said tool attachment, said drive means comprising at least one gear train which includes a first cylindrical gear wheel, a second cylindrical gear wheel, and an intermediate cylindrical gear wheel which interengages with said first and second gear wheels, said cylindrical gear wheels having parallel axes of

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rotation, said intermediate cylindrical gear wheel being journalled on a movable support member which is displaceable by means of adjusting members along a circular path defined by a circular cylindrical guide surface provided in said housing,



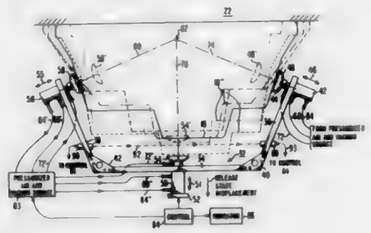
said circular cylindrical guide surface having an axis of curvature which coincides with the axis of rotation of said first cylindrical gear wheel, and a surface part of said movable support member being arranged to bear against said circular cylindrical guide surface.

4,806,070

ARTICLE TRANSFER APPARATUS

Christopher J. Poux, Trenton, and Donald P. Sinkus, Hamilton Square, both of N.J., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 13, 1987, Ser. No. 37,658
Int. Cl.⁴ B65G *65/02*
U.S. Cl. 414—752 **8 Claims**



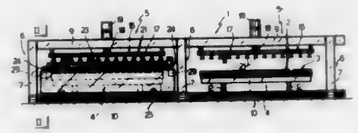
1. An article transfer apparatus comprising:
a support;
a plurality of spaced actuating means secured to the support, each having extended and retracted states and including a member displaceable along a corresponding axis, said axes intersecting substantially at a common point spaced from said support, said point lying in a plane; and
a gripping member secured to each displaceable member and facing said common point in a operating position for gripping an article located on said axes when said actuating means are extended, each gripping member lying spaced from and facing the same side of said plane;
said support comprising a base member and a pair of spaced legs secured to the base member to form a U-shaped structure, a separate actuating means secured to each of said legs spaced from said base member and to said base member, said actuating means lying in a plane; a first element secured to one of said legs for emitting a light beam to the other of said legs, said beam being normal to the axis of said base member actuating means, and beam sense means secured to the other of said legs in the path of said beam for generating a control signal in response to said beam impinging thereon.

4,806,071

METHOD OF UNSTACKING METAL SHEETS

Franco Sartorio, Turin, Italy, assignor to Prima Industrie S.p.A., Turin, Italy

Filed Jan. 4, 1988, Ser. No. 140,605
Claims priority, application Italy, Jan. 16, 1987, 67022 A/87
Int. Cl.⁴ B65H *3/46*
U.S. Cl. 414—786 **13 Claims**



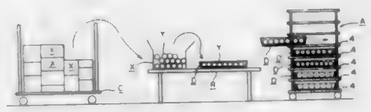
1. A method of unstacking metal sheets, characterized by the fact that it comprises stages consisting in:
removing a pack of the said sheets off the said stack;
feeding the said pack, comprising at least one said sheet, between an upper and lower element having respective de-activatable upper and lower gripping means designed to cooperate respectively with a top and bottom sheet in the said pack;
performing at least one separating cycle comprising at least a first stage consisting in bringing together the said upper and lower elements in a first direction substantially perpendicular to the said sheets, so as to cause the said upper and lower gripping means to cooperate actively with the said top and bottom sheets; and at least a second stage consisting in parting the said upper and lower elements in the said first direction, while at the same time maintaining the said gripping means in the said active condition, so as to divide the said pack into a first part connected to the said upper element, and a second part connected to the said lower element;
de-activating the said gripping means on the said lower element;
performing a first unloading cycle consisting in unloading the said second part of the said pack off the said lower element;
bringing together the said upper and lower elements so as to release the said first part of the said pack on to the said lower element, after first de-activating the said upper gripping means; and
performing a second unloading cycle consisting in unloading the said first part of the said pack off the said lower element.

4,806,072

METHOD AND APPARATUS FOR KEEPING AND SUPPLEMENTING GOODS

Etsuo Karashima, Ebina, Japan, assignor to Nissho Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1987, Ser. No. 97,644
Claims priority, application Japan, Aug. 4, 1987, 62-193659
Int. Cl.⁴ B65G *3/00*
U.S. Cl. 414—786 **2 Claims**



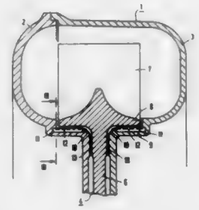
1. A method for keeping and supplementing goods, characterized by the steps of disposing a group of temporary goods keeping carts each having shelves at a plurality of levels, on standby, at a temporary goods holding place in a store warehouse leading to a shopping floor, moving goods receiving carts brought into said warehouse and said temporary goods keeping carts to working tables within the warehouse, classifying the goods on said goods receiving carts and accommodating them in goods holding trays on said working tables, thereafter placing said trays on the respective shelves in said temporary goods keeping carts, then returning said temporary goods keeping carts to said temporary goods holding place, subsequently bringing goods supplementing carts each having shelves at a plurality of levels to said temporary goods holding place, transferring the trays on the respective shelves in said temporary goods keeping carts onto the respective shelves in said goods supplementing carts, then bringing said goods supplementing carts to the shopping floor, or directly bringing said temporary goods keeping carts to the shopping floor, and displaying the goods in the trays on the respective shelves in said goods supplementing carts or in said temporary goods keeping carts in showcases in the shopping floor.

4,806,073

DUST STRIPPER FOR USE IN A SIDE-CHANNEL COMPRESSOR

Siegfried Schäwald, Bad Neustadt/Saale, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 2, 1988, Ser. No. 151,571
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1987, 8704066[U]
Int. Cl.⁴ F04D *5/00, 29/08*
U.S. Cl. 415—53 T **6 Claims**



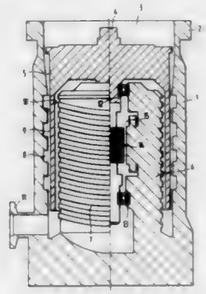
1. In a side-channel compressor comprising:
a rotor and a housing, said rotor being supported in said housing for rotating about an axis, said rotor comprising a central disk shaped hub; and an outer blade ring, said outer blade ring including at least one blade ring portion which is laterally extending, said portion extending beyond said hub in the direction of said axis and said portion having a substantially circumferential radially inner surface;
said housing comprising at least one housing portion which is laterally extending, said housing portion having a substantially circumferential surface extending radially inward of said laterally extending portion of said blade ring such that said laterally extending portion of said blade ring laterally overlaps said housing portion so as to leave a radial gap between the inner surface of the laterally extending portion of the blade ring and the outer surface of the laterally extending portion the housing, the extent of said overlap defining the width of said radial gap;
the improvement comprising at least one dust stripper radially protruding from said circumferential surface of said laterally extending portion of said housing into said radial gap, said dust stripper extending axially along substantially the entire width of the radial gap and extending radially into the radial gap for less than a complete circumference of the housing around said axis.

4,806,074

HIGH-VACUUM PUMP HAVING A BELL-SHAPED ROTOR

Heinz-Dieter Bürger, Wertheim, Fed. Rep. of Germany, and Claude Soulgeot, Veyrier du Lac, France, assignors to Alcatel Hochvakuumtechnik GmbH, Wertheim, Fed. Rep. of Germany

Filed Feb. 10, 1988, Ser. No. 154,563
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1987, 3705912
Int. Cl.⁴ F01D *1/36*
U.S. Cl. 415—72 **3 Claims**



1. A high-vacuum pump, comprising: a downwardly depending rotor (5) including a rotor bell land an axial, downwardly extending shaft, an upwardly extending stator (1, 6) supporting the rotor via axially spaced roller bearings (12, 13) located inside the rotor bell between the stator and the shaft, said stator defining a first pumping stage (7, 10) with an inner cylindrical surface (10) of the rotor and a second pumping stage (8, 9) with an outer cylindrical surface (9) of the rotor, at least the first pumping stage being of the Holweck type, a suction inlet (3) provided at an apex (4) of the rotor bell, and a discharge outlet (11) disposed proximate a lower rim of the rotor bell, said Holweck type first pumping stage defining a blind bore terminating at a closed upper end of the rotor bell and being configured to pump particles towards said rim to produce a higher vacuum in an interior space (15) in which the roller bearings are disposed than at the rim of the rotor bell, and said first and second pumping stages converging at outlet ends thereof proximate the discharge outlet.

4,806,075

TURBOMOLECULAR PUMP WITH IMPROVED BEARING ASSEMBLY

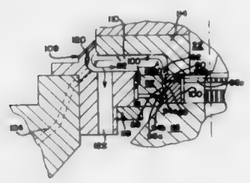
Gordon E. Osterstrom, San Diego, Calif.; Leonid Livshits, Morton Grove, and Mark B. Renz, Northbrook, both of Ill., assignors to Sargent-Welch Scientific Co., Skokie, Ill.

Continuation-in-part of Ser. No. 767,657, Aug. 20, 1985, Pat. No. 4,674,952, which is a continuation of Ser. No. 539,977, Oct. 7, 1983, abandoned. This application Dec. 15, 1986, Ser. No. 941,815
The portion of the term of this patent subsequent to Jun. 23, 2004, has been disclaimed.
Int. Cl.⁴ F04D *29/04*
U.S. Cl. 415—170 R **25 Claims**

1. In a single-ended vertical turbomolecular vacuum pump which is adapted to operate in the free molecular flow pressure range in a thermally insulating vacuum, said pump including a rotor-stator assembly which is mounted above a motor, the rotor-stator assembly including a plurality of rotor blades mounted to a central pump shaft which is co-axially aligned with a drive shaft of said motor, said plurality of rotor blades being interleaved with a plurality of stator blades to define a series of pump stages which are interposed between an inlet

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and an outlet of said turbomolecular vacuum pump, the improvement comprising a multiple journal-bearing assembly mounted between said rotor-stator assembly and said motor, said multiple journal-bearing assembly including at least a first and second pair of journal-bearing components, said first journal-bearing component including a first journal portion which is co-rotatable with the co-axially aligned central pump shaft and motor drive shaft, said first journal portion of the first journal-bearing component having a generally smooth and substantially uniform outer cylindrical working surface having a first journal working surface axial length and a first journal working surface outer diameter, said first journal-bearing component also including a first bearing portion having a generally smooth and substantially uniform inner cylindrical working surface concentrically disposed in a predetermined radial clearance with respect to the outer cylindrical working surface of said first journal component, the working surface of said first bearing portion having a first bearing working surface axial length, said second journal-bearing component including a second journal portion also having a generally smooth and substantially uniform outer cylindrical working surface having a second journal working surface axial length and a second journal working surface outer diameter, said second journal-bearing component also including a second bearing component having a generally smooth and substantially uniform inner cylindrical working surface concentrically disposed in a predetermined radial clearance with respect to the outer cylindrical working surface of said second journal component, the working surface of said second bearing portion having a second bearing working surface axial length, the ratio of the combined axial lengths of the working surfaces of said first bearing portion and said second bearing portion to the respective outer diameters of the working surfaces of each of said first and second journal portions associated therewith being from approximately 1:20 to 3:10, at least one of each of said first journal portion and said first bearing portion including a first port for admitting lubricant from a lubricant source into the radial clearance therebetween, and at least one of each of said second journal portion and said bearing portion including a second port for admitting lubricant from a lubricant source into the radial clearance therebetween, said first and second lubricant ports cooperating with the respective working surfaces of the journal and bearing portions of said first and second journal-bearing components to establish a generally uniform and effective hydrodynamic lubricant film in the radial clearances therebetween, whereby separation of the respective working surfaces of the bearing and journal portions of each said first and second journal-bearing components is maintained at high rotational speeds, a reduction of lubricant shear in said generally uniform lubricant film in said radical clearances and a corresponding reduction of heat build up and pump shaft rotational vibration are obtained enabling said rotor of said rotor-stator assembly to be operated at higher rotational speeds.



4,806,076

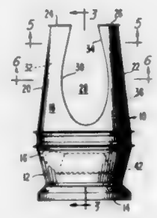
RADIAL UPBLAST EXHAUST FAN APPARATUS

John S. Andrews, South Glamorgan, United Kingdom, assignor to Strobic Air Corporation, Bensalem, Pa.

Filed Feb. 22, 1988, Ser. No. 158,552

Int. Cl.[4] F04D 29/44

U.S. Cl. 415—209 **22 Claims**



1. A radial upblast exhaust fan apparatus comprising:

(a) main housing means comprising:

(1) a fan housing defining a fan inlet means to receive air to be exhausted and a fan outlet means to expel air to be exhausted;

(2) an upper housing positioned immediately above said fan housing and including a first outer wall section and a second outer wall section each approximately shaped as a partial conical section being concave toward each other and being oppositely positioned with respect to one another, said upper housing being in fluid flow communication with said fan housing through said fan outlet means to receive exhaust gases therefrom for expelling, said upper housing defining at least one first upper air outlet and at least one second upper air outlet for releasing exhaust gases therefrom;

(3) a passive zone section positioned within said upper housing, said passive zone section including:

(a) a first inner wall section positioned in spaced relation with respect to said first outer wall section of said upper housing, said first inner wall section being approximately shaped as a partial conical section being convex toward said first outer wall section to define at least one first exhaust flow path therebetween adapted to receive exhaust gases from said fan outlet means and guide same to release upwardly through said first upper air outlet;

(b) a second inner wall section positioned in spaced relation with respect to said second outer wall section of upper housing, said second inner wall section being approximately shaped as a partial conical section being convex toward said second inner wall section to define at least one second exhaust flow path therebetween adapted to receive exhaust gases from said fan outlet means and guide same to release upwardly through said second upper air outlet;

(c) at least one first end wall means extending from said first inner wall section to said first outer wall section to confine gases passing therebetween within said first exhaust flow path;

(d) at least one second end wall means extending from said second inner wall section to said second outer wall section to confine gases passing therebetween within said second exhaust flow path; and

(b) a fan means positioned within said fan housing and adapted to draw air for exhausting in through said fan inlet means and expel air for exhausting out through said fan outlet means into said first exhaust flow path and said second exhaust flow path.

4,806,077

COMPOSITE MATERIAL BLADE WITH TWIN LONGERON AND TWIN BOX STRUCTURE HAVING LAMINATED HONEYCOMB SANDWICH COVERINGS AND A METHOD OF MANUFACTURING SAME

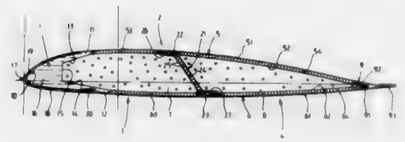
Michel Bost, Joinville-le-Pont, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Jul. 28, 1987, Ser. No. 78,497

Claims priority, application France, Jul. 28, 1986, 86 10882

Int. Cl.[4] B64C 27/46

U.S. Cl. 416—226 **13 Claims**



1. A composite material blade, more particularly for the rotor of an aircraft with rotary wing, including:

a forward torsion and flexion box extending substantially over the forward half of the blade and defined by

a forward longeron disposed along the leading edge of the blade over the whole of its span and formed from at least one bundle of laminated threads of high mechanical strength fibers agglomerated by means of a synthetic polymerized resin,

a central and transverse rib disposed substantially along the thickness of the blade so as to substantially connect its extrados with its intrados, in the mean part of the chord of the blade, and which extends over the whole span thereof,

front extrados and intrados covering parts which connect the front longeron to the transverse rib so as to close the forward box, and

a core filling the forward box, made from an alveolar material, and

a rear filling element, also made from an alveolar material, adjacent the transverse rib and extending therefrom to the vicinity of the trailing edge of the blade and over the whole span thereof, with a wedge shape profiled to the shape of the rear half of the blade, which blade further comprises:

a central longeron extending also over the whole span of the blade and having a section in the form of a Z whose end flanges forming respectively an extrados sole piece and an intrados sole piece each formed from at least one bundle laminated threads of high mechanical strength fibers agglomerated by means of a synthetic polymerized resin, integrated respectively in the extrados covering and in the intrados covering and whose web is formed by said central rib which has a laminated shell structure with a filling formed of honeycomb panel of constant thickness sandwiched between two lateral sheets to which the honeycomb is bonded and which are each formed from at least one layer of a fabric of fibers agglomerated by a synthetic polymerized resin extending beyond the upper and lower ends of its filling so as to form two flanges extending one on one side and the other on the other side of the mean plane of said honeycomb filling and firmly secured against said internal sheets of the extrados and intrados coverings at the level of said sole pieces of the central longeron.

4,806,078

DEVICE FOR TRANSMITTING TORQUE TO BRITTLE IMPELLERS OF FLUID FLOW MACHINES

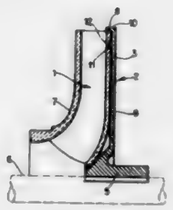
Anton Heumann, Nuremberg, Fed. Rep. of Germany, assignor to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal/Pfalz, Fed. Rep. of Germany

Filed Jan. 21, 1988, Ser. No. 146,323

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1987, 3702016

Int. Cl.[4] F04D 29/38

U.S. Cl. 416—186 R **8 Claims**



1. In a fluid flow machine, such as a centrifugal pump, the combination of a rotary impeller having a back shroud and containing a brittle material, and an adapter for connecting the impeller to a rotary component, such as a pump shaft, said back shroud having a peripheral surface and said adapter containing a ductile material and including means for engaging said back shroud in the region of said peripheral surface.

4,806,079

APPARATUS FOR SIMULTANEOUSLY PUMPING A PLURALITY OF LIQUIDS

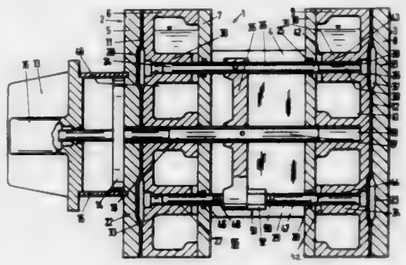
Wolfgang Kahn, Schloss Holte-Stukenbrock, Fed. Rep. of Germany, assignor to Kopperschmidt-Mueller GmbH & Co. KG, Bielefeld, Fed. Rep. of Germany

Filed Dec. 11, 1986, Ser. No. 940,623

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1985, 3544016

Int. Cl.[4] F04B 17/00, 9/08, 23/04

U.S. Cl. 417—343 **21 Claims**



1. Apparatus for simultaneous delivery of metered quantities of a plurality of liquids, comprising a plurality of pump units, at least one for each liquid and each comprising a first and a second pump, the first and second pumps of each unit being arranged to operate alternatingly and being connected in parallel; a prime mover; operating means for connecting said pumps with said prime mover, including a reciprocable input member arranged to operate the first and second pumps of at least one of said units and including coaxial first and second components operatively connected to the first and second pumps of said at least one unit with freedom to perform idle strokes relative to

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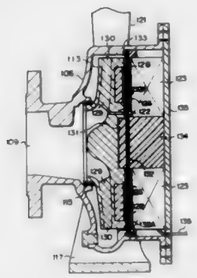
the respective pumps; and adjusting means for simultaneously varying the capacity of pumps in said at least one unit to the same extent, including means for moving said components axially toward and away from each other to thereby vary the idle strokes and hence the capacity of pumps in said at least one unit.

4,806,080

PUMP WITH SHAFTLESS IMPELLER

Shotaro Misubuchi, Kanagawa; Katsumi Suzuki, Tokyo, and Yoshikazu Kimura, Kanagawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 627,731, Jul. 3, 1984. This application Feb. 13, 1987, Ser. No. 14,530
Claims priority, application Japan, Jul. 6, 1983, 58-121567
Int. Cl.[4] F04D *29/04*
U.S. Cl. 417—353 23 Claims



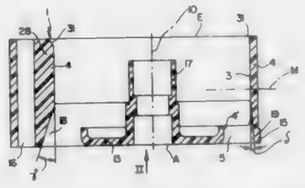
1. A pump comprising:
a casing having an inlet and an outlet;
a shaftless impeller having a rotary axis and rotatably mounted within the casing for rotation about said rotary axis;
driving force receiving means disposed to the impeller,
said driving force receiving means being an annular permanent magnet in an outer rear end of the impeller perpendicular to said rotary axis and having alternating magnetic polarities in the peripheral direction thereof;
stator coils arranged within the casing opposed to said outer rear end of said impeller and which impart the driving force to the driving force receiving means;
separating means mounted on the casing for separating the impeller from the stator coils;
a first element secured to one end of the impeller in a plane perpendicular to the rotary axis of the impeller; and
a second stationary element arranged in the casing opposing the first element arranged in the casing opposing the first element and in parallel therewith,
the first and the second elements being adapted to abut against each other at their flat surfaces, one of the opposed flat surfaces of the first and the second elements having a spiral groove pattern forming a dynamic bearing therebetween, the first and the second elements being made of a ceramic material,
said impeller being supported by a dynamic pressure produced between said first and second elements during rotation of said impeller for making said impeller shaftless.

4,806,081

MINIATURE AXIAL FAN

Siegfried Harmsen, St. Georgen/Schwarzwald, and Gunter Wrobel, Villingen, both of Fed. Rep. of Germany, assignors to Papst-Motoren GmbH and Company KG, St. Georgen, Fed. Rep. of Germany

Continuation of Ser. No. 928,476, Nov. 10, 1986, abandoned.
This application Jul. 6, 1988, Ser. No. 221,947
Int. Cl.[4] F04D *25/08, 29/44*
U.S. Cl. 417—354 18 Claims



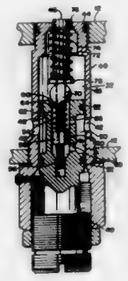
1. A miniature axial fan, particularly of an axially compact construction, comprising:
a central motor driving a rotor disk, said rotor disk having a diameter of not more than 60 mm;
a one-piece molded unitary housing surrounding said rotor disk and including an inlet flow side being cylindrical with an approximately constant diameter extending rearwardly to and over the axial center of said housing;
said housing also including more than one web means on the outlet side for holding said central motor and rotor disk and a square flange plate means at the housing outlet side for defining the configuration thereof;
said housing further including a fastening pillar means having a continuous fastening bore which extends from said inlet side to said outlet side of the housing, said fastening pillar extending from the square flange plate at the outlet side to the inlet side of the housing; and
wherein said rotor disk has a number of fan blades thereon which number of blades differs from the number of web means.

4,806,082

FLUID ACTUATED PUMP WITH IMPROVED FLOW-LIMITING FLUID REFILL VALVE

Jacob W. Schenk, North Haledon, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 9, 1987, Ser. No. 118,500
Int. Cl.[4] F04B *43/10*
U.S. Cl. 417—388 3 Claims



1. In a fluid-actuated pump having a fluid chamber, an improved flow-limiting fluid refill valve comprising:
a valve housing;

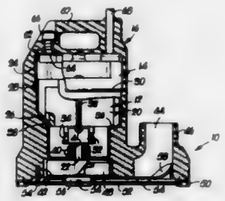
fluid inlet means in fluid communication with a source of hydraulic fluid;
fluid outlet means in fluid communication with the fluid chamber of the pump; and
first valve means within the valve housing between the fluid inlet means and the fluid outlet means for permitting a flow of fluid from the fluid source to the fluid chamber when suction pressure within the fluid chamber exceeds a first predetermined pressure limit indicating that the fluid within the fluid chamber has been depleted below a predetermined fluid limit,
wherein the improvement comprises second valve means within the valve housing for preventing the flow of fluid from the fluid source to the fluid chamber when the suction pressure within the fluid chamber exceeds a second predetermined pressure limit greater than the first predetermined pressure limit indicating abnormal operation of the pump, the second valve means including;
a spool chamber between the fluid inlet means and the fluid outlet means and in fluid communication with the fluid outlet means;
at least one fluid conduit extending between the spool chamber and the fluid inlet means;
a spool member movable within the spool chamber; and
biasing means engaging the spool member for biasing the spool member away from the fluid conduit when the pressure within the fluid chamber is less than or equal to the second predetermined pressure limit to permit the flow of fluid into the spool chamber, the biasing means being overcome so that the spool member moves to block the flow of fluid into the spool chamber when the suction pressure within the fluid chamber exceeds the second predetermined limit.

4,806,083

SUBMERSIBLE PUMP WITH EXPANDED FOAM HOUSING

Nyle D. LaGrange; Darryl M. Nielsen, both of Lenexa, and Terry A. Peterson, Linwood, all of Kans., assignors to The Marley-Wylain Company, Mission, Kans.

Filed Oct. 21, 1986, Ser. No. 921,315
Int. Cl.[4] F04B *17/00, 35/04*
U.S. Cl. 417—423.14 7 Claims



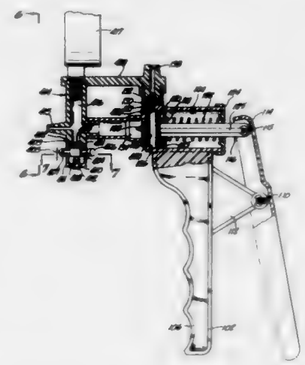
1. A submersible pump comprising:
a hollow metallic casing including a continuous metallic sidewall, a metallic top wall and a metallic bottom wall cooperating to define an enclosed internal chamber;
an electric motor received within said chamber and having a rotatable armature shaft projecting through said bottom wall;
an impeller fixed to said armature shaft below said bottom wall of the casing for rotation with the shaft when electrical power is supplied to the motor; and
a microcellular, expanded foam housing of initially flowable, cured synthetic resinous material around the exterior only of said casing in surrounding relationship therewith.
said housing comprising an integral body of said material adhered tightly to said sidewall and said top wall in firm, rigid, face-to-face, contacting engagement therewith,
said casing extending substantially around the periphery of said motor and being normally substantially free of openings for generally precluding contact of said material with said motor,
said housing including a portion extending downwardly beyond said bottom wall and configured to present a volute cavity which receives said impeller, a fluid inlet leading into said cavity and a fluid discharge passage leading out of said cavity.

4,806,084

HAND-HELD VACUUM PUMP

Theodore C. Neward, 521 Scripps Dr., Claremont, Calif. 91711

Continuation-in-part of Ser. No. 684,338, Dec. 20, 1984, abandoned. This application Sep. 5, 1986, Ser. No. 903,959
Int. Cl.[4] F04B *41/00, 39/10*
U.S. Cl. 417—440 12 Claims



1. A hand-held vacuum pump, comprising:
(a) cylinder means for isolating a certain volume from the atmosphere and equipped with an inlet opening and an outlet opening,
(b) biased piston means, for drawing a vacuum through the inlet opening of the cylinder means when said biased piston means is drawn back, and for automatically returning said piston means to the end of said cylinder means when said piston means is no longer drawn back,
(c) first valve means coupled with the inlet opening of the cylinder means, wherein said first valve means comprises an umbrella valve, and second valve means coupled with the outlet opening of the cylinder means, said second valve means being separate from the first valve means,
(d) hand operated piston retractor means for drawing said piston means back within said cylinder means, whereby drawing said piston means back causes air to be drawn into said cylinder means via the inlet opening of the cylinder means, and whereby releasing said piston retractor means causes that air which was drawn in to be forced out via the outlet opening of said cylinder means, and
(e) vacuum release valve means located in the inlet forwardly of the first valve means, including an arm associated with a valve closure means, said arm being operable by a finger of a hand about the piston retractor means, and substantially without removal of said hand from the piston retractor means, the arm in a first position corresponding to the vacuum release valve being open and in a second position corresponding the release valve being closed.

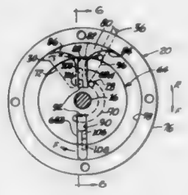
VOL 1099 ISS 3 FEB 21 1989 UMI

4,806,085

ROTARY HYDRAULIC PISTON MOTOR WITH FLUID PATH IN PISTONS FOR INLET PRESSURE

Irenio Costa, 220 SW. 56th Ter., Margate, Fla. 33063

Filed Apr. 16, 1987, Ser. No. 38,954
Int. Cl.[4] F03C *2/22*
U.S. Cl. 418—184 35 Claims



1. A hydraulic motor comprising:
an outer casing;
a rotating member positioned within said casing and having a pair of separated slots therein, a chamber being formed between said rotating member and said casing;
a shaft attached to the rotational center of said rotating member and extending from said casing;
a pair of pistons independently movable radially in said slots, said pistons having a fluid path formed therein from the side of said piston facing said shaft towards said chamber, said fluid path having a length such that fluid can flow through said fluid path when said piston is extended to contact said casing and fluid is prevented from flowing through said fluid path when said piston is directed towards said shaft;
means within said chamber to direct said pistons to move towards said shaft at least once each revolution;
means for providing hydraulic fluid under pressure on the shaft facing side of said pistons; and
means for providing a free return path for said hydraulic fluid to said means for providing, said return path including a return outlet from said chamber and a fluid path bridging said outlet and the interior space between said piston and said rotating member when said piston is directed towards said shaft.

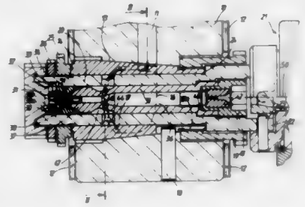
4,806,086

EXTRUDER HEAD WITH A ROTARY DIE AND PROCESS FOR LUBRICATING THIS HEAD

Peter Bloch, Montcherand, and Robert Aste, Yverdon, both of Switzerland, assignors to Swisscab E.A. Schoen S.A., Yvonand, Switzerland

PCT No. PCT/CH86/00088, § 371 Date Feb. 13, 1987, § 102(e) Date Feb. 13, 1987, PCT Pub. No. WO86/07562, PCT Pub. Date Dec. 31, 1986
PCT Filed Jun. 16, 1986, Ser. No. 44,036
Claims priority, application France, Jun. 17, 1985, 85 09290
Int. Cl.[4] A23G *1/20*
U.S. Cl. 425—114 7 Claims

1. An extruder head for fabricating a helicoidal element of thermoplastic synthetic material, comprising:
a body having an axial bore and a feed channel for a flow of pressurized synthetic material from an extruder to said axial bore,
a distributing cartridge fixedly mounted within said axial bore and provided with a first axial cylindrical bore and with distribution channels for distributing said synthetic material around said first cylindrical bore,
rotary die means slidably mounted in said first cylindrical bore and having an axial output orifice, the form of which corresponds to the cross section of the element to be fabricated, and through which said synthetic material is extruded and shaped helicoidally, and channel means for said synthetic material flow between the periphery of said first cylindrical bore and said output orifice,
and a rotary driving mechanism coupled to said rotary die means, wherein said rotary die means includes an intermediate rotary sleeve, a rotary die and a rotary mandrel rod, said sleeve having an axial central bore and an outer cylindrical surface slidably rotating in said first cylindrical bore of the distributing cartridge, wherein said rotary die is provided with said output orifice and said rotary mandrel rod is provided aligned with and spaced axially from said rotary die, said rotary die and said rotary mandrel rod



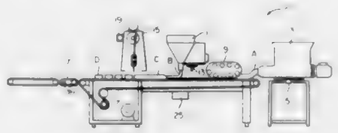
being fixed in said central bore of said intermediate rotary sleeve, said sleeve being provided with a peripheral shoulder slidably applied on one end of said distributing cartridge, and wherein an adjusting nut is engaged on a threaded outer portion of said sleeve for exerting an adjustable axial force on the other end of said cartridge, whereby a leakage flow of said synthetic materials is permitted along said outer cylindrical surface of said sleeve for lubricating said surface, said leakage flow being controlled by axial clamping of said cartridge between said shoulder and said adjusting nut, said shoulder and said nut being slidably applied to said ends of said cartridge.

4,806,087

APPARATUS FOR PRODUCING COMPOSITE FOOD HAVING A CONTROLLED COMPOSITION OF MATERIALS

Torahiko Hayashi, Utsunomiya, Japan, assignor to Rheon Automatic Machinery Co., Ltd., Japan

Filed Jul. 30, 1987, Ser. No. 79,880
Claims priority, application Japan, Jul. 30, 1986, 61-179259
Int. Cl.[4] B29C *47/92*
U.S. Cl. 425—130 10 Claims



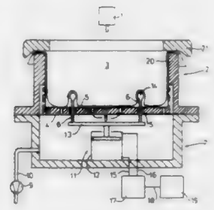
1. An apparatus for producing composite food having a controlled composition of materials, comprising:
(a) a plurality of supply means for supplying a plurality of raw materials,
(b) conveyor means for receiving and transferring said raw materials provided from said supply means so as to combine said raw materials into a composite food,
(c) a measuring means provided at each supply means for measuring the weight of said raw materials supplied from each supply means per unit time, and
(d) control means operating a selecting means for selecting acceptable portions of said composite food by said control means comparing a preselected control weight ratio value of said raw materials with the weight ratio of said raw materials in a given portion of said composite food, said weight ratio in said given portion of said composite food calculated from the weight of said raw materials measured by said measuring means.

4,806,088

APPARATUS FOR THE PRODUCTION OF EXPANDED CUSHIONS WITH A TEXTILE COVER

Ralf Busch, Cologne, and Volker Ossenberg, Wiehl-Drabenderhoehe, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 24, 1987, Ser. No. 65,986
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1986, 3622971
Int. Cl.[4] A23G *1/20*
U.S. Cl. 425—127 6 Claims



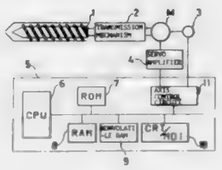
1. An apparatus for the production of foam cushions having a textile cover, said apparatus comprising a mold having a fixed floor and walls which define a mold cavity, said apparatus further comprising vacuum means, which are outside said mold and said mold cavity, for applying a vacuum to said mold cavity through holes which extend through said mold and between said mold cavity and said vacuum means, said apparatus having one or more gates which extend into said mold cavity from the fixed floor or walls and means for moving said one or more gates in relation to both the fixed floor and walls of said mold, said apparatus additionally comprising a cover and means for introducing a foamable reaction mixture into said mold cavity.

4,806,089

INJECTION-MOLDING MACHINE WITH VARIABLE INJECTION ACCELERATION/DECELERATION TIME

Noriaki Neko, Hachioji, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP87/00173, § 371 Date Nov. 9, 1987, § 102(e) Date Nov. 9, 1987, PCT Pub. No. WO87/05558, PCT Pub. Date Sep. 24, 1987
PCT Filed Mar. 20, 1987, Ser. No. 130,236
Claims priority, application Japan, Mar. 20, 1986, 61-60872
Int. Cl.[4] B29C *45/77*
U.S. Cl. 425—145 2 Claims



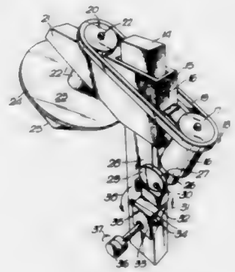
1. Apparatus for controlling an injection-molding machine, comprising:
means for outputting an injection speed command pulse distribution value at a different quantity for plural control steps, each of the plural control steps having a predetermined duration;
means for computing a numeric value n based on the ratio of a predetermined acceleration and deceleration time period to a sampling cycle time period, wherein said acceleration and deceleration time period comprises plural sampling cycle time period;
means for adding the total number of pulses distributed during a time interval between a current sampling cycle time period and the sample cycle time period preceding the current sampling cycle by n−1 cycles;
means for dividing the total number of added pulses by n and obtaining a quotient; and
means for adjusting the injection speed command pulse distribution according to the quotient.

4,806,090

CHAPATI MAKING MACHINE

Patrick A. Finlay, Slough, United Kingdom, assignor to Richford Holdings, Inc., Luxembourg, Luxembourg

Filed Jan. 30, 1987, Ser. No. 8,725
Claims priority, application United Kingdom, Jan. 30, 1986, 8602257
Int. Cl.[4] A01J *21/00*
U.S. Cl. 425—194 13 Claims



1. An apparatus for use in manufacturing a substantially circular dough product from a mass of dough, comprising:
a turntable having a planar rolling surface formed in a plane, for supporting thereon the mass of dough, and rotatable about a turntable axis of rotation perpendicular to said planar surface;
a rotatable conical roller having a roller axis of rotation and a conical rolling surface, said conical rolling surface having a rolling line spaced from said planar surface; and
means for supporting said conical roller in spaced relation to said turntable, said supporting means including
means for automatically changing the relative positions of said conical roller and said turntable from a first relative position in which a distance from said conical roller to said planar surface if relatively large and said conical roller is spaced from the mass of dough when the mass of dough is disposed on said planar surface, to a second relative position in which the distance from said conical roller to said planar surface is relatively small and said conical roller is in contact with the mass of dough along the rolling line when the mass of dough is disposed on the planar surface, then automatically maintaining said conical roller and said turntable in said second relative position for a predetermined operational period of time, and then automatically changing the relative positions of said conical roller and said turntable from the second relative position to the first relative position, and
means for rotating the mass of dough on said planar surface about said turntable axis of rotation while said rolling line is in contact with the mass of dough, such

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that said conical roller rolls on the mass of dough in rotation about said roller axis of rotation and said turntable rotates with the mass of dough about such turntable axis of rotation.

4,806,091

APPARATUS FOR MANUFACTURING A PLASTIC HOLLOW BODY WITH A BLOW-MOLDED BODY PART

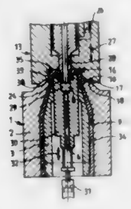
Gerhard Lissa, and Karl F. Ossberger, both of Weissenburg, Fed. Rep. of Germany, assignors to Ossberger-Turbinenfabrik GmbH, Weissenburg, Fed. Rep. of Germany

Filed Feb. 10, 1988, Ser. No. 154,280

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1987, 3704265

Int. Cl.⁴ B29C 49/06

U.S. Cl. 425—529 **15 Claims**



1. An apparatus for manufacturing a hollow body from thermoplastic material,

said hollow body comprises an injection-molded head piece, a body part formed by blow molding a preform segment which segment is integral with the head piece,

wherewith the said apparatus comprises a ring-shaped nozzle wherein a ring-shaped nozzle opening is defined between a nozzle cone piece and a nozzle opening piece, wherewith a reciprocally movable stamp means is provided in the cone piece,

a withdrawal device operative with respect to the ring-shaped nozzle is provided, which is axially, reciprocally movable and has a recess, and

a blow mold with a plurality of blow mold parts which are laterally, reciprocally movable is provided, with said blow mold parts being disposed laterally near the ring-shaped nozzle and the withdrawal device, whereby a blow mold is formed which, when closed, is disposed between the ring-shaped nozzle and the retracted withdrawal device; whereby the ring-shaped nozzle opening is radially outwardly offset with respect to the outer edge of a head-piece cavity of the recess on the withdrawal device; further in that the side of the recess which side is nearest the ring-shaped nozzle has a disc-shaped space which radially extends beyond the head-piece cavity and is open toward the ring-shaped nozzle, and when the withdrawal device rests on the ring-shaped nozzle the edge regions of said disc-shaped space extend over, but not necessarily beyond, the ring-shaped nozzle opening;

and in that an end face of the stamp means forms a boundary of the disc-shaped space, and the thickness of the injection-molded disc element can be reduced with the aid of said stamp means.

4,806,092

APPARATUS FOR MANUFACTURING A PLASTIC HOLLOW BODY OPEN ON ONE END AND CLOSED ON THE OTHER

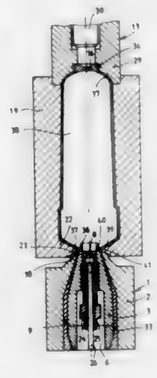
Gerhard Lissa, and Karl-Friedrich Ossberger, both of Weissenburg, Fed. Rep. of Germany, assignors to Ossberger Turbinenfabrik GmbH & Co., Weissenburg, Fed. Rep. of Germany

Filed Feb. 10, 1988, Ser. No. 154,590

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1987, 3704264

Int. Cl.⁴ B29C 49/06

U.S. Cl. 425—529 **9 Claims**



1. An apparatus for manufacturing a hollow body comprised of thermoplastic material, which hollow body is open on one end and closed on the other, has a head piece fabricated by injection molding, has a body part comprised of a tubular segment integrally joined to said head piece, and has a bottom member, wherewith the subject apparatus is comprised of a ring-shaped nozzle wherein a nozzle cone piece and a nozzle piece define a ring-shaped nozzle opening, which opening can be closed with severance of the plastic, said apparatus being further comprised of a withdrawal device with a recess for forming the head piece, which withdrawal device is axially reciprocally movable with respect to the ring-shaped nozzle, said apparatus further comprised of a blow mold having a plurality of blow-mold pieces which are laterally reciprocally movable, said apparatus further comprised of bottom elements of the blow-mold pieces, disposed at the altitude of the ring-shaped nozzle, which bottom elements rest on the ring-shaped nozzle when the blow-mold pieces are in the assembled position, and said apparatus comprised of blow means for blowing air into the tubular segment; characterized in that the withdrawal device is configured for forming a head piece which is closed to the exterior; in that the bottom elements of the blow mold which rest on the ring-shaped nozzle form a perforation in the bottom member of the body part of the hollow body, which perforation extends over the region surrounded by the ring-shaped nozzle opening; and in that the blow means disposed in the ring-shaped nozzle is associated with the perforation in the bottom member of the body part.

4,806,093

APPARATUS COMPRISING A RING-SHAPED NOZZLE, FOR MANUFACTURING A HOLLOW BODY COMPRISED OF PLASTIC MATERIAL

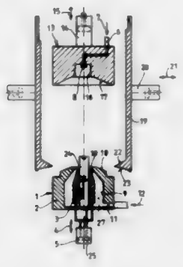
Gerhard Lissa, and Karl F. Ossberger, both of Weissenburg, Fed. Rep. of Germany, assignors to Ossberger-Turbinenfabrik GmbH & Co., Weissenburg, Fed. Rep. of Germany

Filed Feb. 10, 1988, Ser. No. 154,279

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1987, 3704266

Int. Cl.⁴ B29C 49/04

U.S. Cl. 425—529 **8 Claims**



1. An apparatus for manufacturing a hollow body of thermoplastic material, said body has a formed head piece and a body member formed by blow-molding a tube segment attached to and integral with the head piece, comprising:

a ring-shaped nozzle with a ring shaped nozzle opening bounded by a nozzle piece and a controllably, reciprocally movable nozzle cone piece;

a withdrawal device operaive with respect to said ring-shaped nozzle, said withdrawal device is axially, reciprocally movable and has a recess for said head piece;

a blow mold with a plurality of blow mold parts which are laterally reciprocally movable, wherein, when the blow mold is closed, its support surface on bottom members rests on a seat surface on said nozzle piece, and said closed blow mold leaves said nozzle opening free; and

a blowing device which blows the extended withdrawn tube segment against the closed blow mold; whereby,

the said closed blow mold leaves free said passage to said nozzle opening;

a control device is provided for controlling the stretching of said extruded tube segment by means of said withdrawal device, under conditions of cessation of a feed of plastic;

said nozzle opening is open until a start of said blowing process; and

at said start of said blowing process, said nozzle opening is controlled such that said opening is closed by shear action, while said hollow body is under pressure, wherein as part of the shear action, a forward end member of the cone piece entirely passes between said bottom members of the closed blow mold.

4,806,094

INJECTION MOLDING APPARATUS FOR FORMING FILM COVERED INSERTS FOR INSTRUMENT PANELS

Richard D. Rhodes, Jr., Dover, and Frank J. Preston, Hampton, both of N.H., assignors to Ex-Cell-O Corporation, Walled Lake, Mich.

Division of Ser. No. 889,016, Jul. 24, 1986, Pat. No. 4,734,230. This application Nov. 18, 1987, Ser. No. 122,174

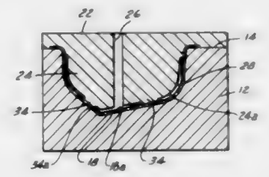
Int. Cl.⁴ B29C 45/16, 45/32, 67/22

U.S. Cl. 425—543 **1 Claim**

1. Apparatus for manufacturing a film covered insert for instrument panels wherein the insert is preformed to have openings therethrough which are covered by a removable film to prevent escape of foam material through the insert during a reaction injection molding process wherein plastic foam is bonded to the insert comprising:

injection mold press means including a cavity platen member with a cavity surface and a mold cover with a die head thereon;

said die head extending interiorly of said cavity platen member when said mold cover is closed with respect to said cavity platen member and shaped to form a film member into juxtaposed relationship with said cavity surface and to form a plastic injection space in overlying relationship to said shaped film which space has a thickness corresponding to that of an instrument panel insert to be formed by injecting plastic into said plastic injection space;



said die head having spaced inboard extensions thereon each having a length which bridges said plastic injection space and each having a distal surface engaging the inboard surface of a shaped film to prevent injected plastic from forming against said film at said distal surface thereby to form openings in the insert formed by injection of plastic into said plastic injection space which are covered by a layer of impervious film to prevent the escape of foam material through the insert as it subsequently is loaded in a mold cavity in which reaction injection mold material is directed to be integrally formed with the insert formed by the injected plastic material.

4,806,095

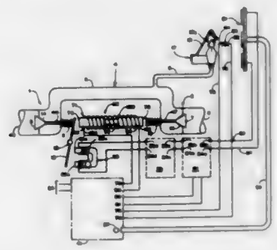
FUEL VALVE CONTROL SYSTEM

Mark K. Goldstein, La Jolla, and Earl M. Dolnick, Encinitas, both of Calif., assignors to Quantum Group, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 701,369, Feb. 13, 1985, abandoned. This application Jan. 21, 1988, Ser. No. 147,262

Int. Cl.⁴ F23Q 9/08

U.S. Cl. 431—54 **10 Claims**



1. A valve for a gas appliance comprising:

normally closed pilot valve means for controlling gas flow to a pilot flame;

normally closed main valve means for controlling gas flow to a main burner;

a bidirectional solenoid for alternatively opening the pilot valve means or the main valve means; and

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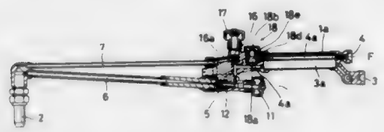
an electromagnet for latching the pilot valve means in the open position in response to presence of a pilot flame.

4,806,096

BACK-FIRE PREVENTIVE UNIT IN A GAS CUTTING TORCH

Souji Kobayashi, Kawaguchi, Japan, assignor to Taseto Co., Ltd., Japan

Filed Jun. 3, 1987, Ser. No. 57,793
Claims priority, application Japan, Jun. 4, 1986, 61-130891; Oct. 29, 1986, 61-259551; Jan. 12, 1987, 62-5774
Int. Cl.⁴ F23D *14/82*
U.S. Cl. 431—346 6 Claims



1. A gas cutting torch comprising:
a housing providing an elongate hollow handle portion having front and rear ends;
gas and oxygen entry fittings mounted on the rear end;
a manifold block mounted on the front end;
separate passages for gas and oxygen extending through the handle portion connecting the fittings to the manifold block;
gas and oxygen pipes extending forwardly from the manifold block to join at a cutting tip;
the manifold block being formed with bores interconnecting the respective gas and oxygen passages and pipes;
first and second chambers in the bores interconnecting the gas passage with the gas pipe, the first chamber being located upstream of the second chamber;
a back-fire preventive device releasably mounted in the first chamber;
the second chamber being a gas mixing chamber and having a gas mixing valve mounted therein;
a further bore connecting the oxygen passage with the gas mixing chamber whereby a gas and oxygen mixture is supplied by the gas mixing chamber to the gas pipe; and,
a third chamber in the bore interconnecting the oxygen passage and the oxygen pipe, the third chamber having an oxygen jet control valve mounted therein whereby the oxygen jet gas supplied to the oxygen pipe can be adjusted.

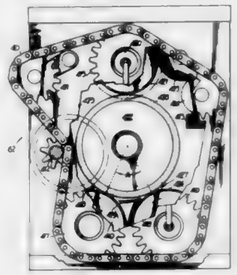
4,806,097

FUSER ASSEMBLY FOR AN ELECTROPHOTOGRAPHIC PRINT ENGINE

Charles S. Palm, Norcross; Danny L. Slayton, Lilburn; Khosrow Lak; Peter F. Sampson, both of Doraville; David R. Davis, Buford; Maurice S. Wheatley, Jr., Duluth; Gregory A. Chatham, Marietta; Wayne C. Jones, Duluth; Kirk W. Charles, Atlanta, all of Ga., and Anthony J. Ireland, El Cerrito, Calif., assignors to Coloroco Corporation, Norcross, Ga.

Continuation of Ser. No. 929,121, Nov. 10, 1986, abandoned, which is a division of Ser. No. 791,218, Oct. 25, 1985, Pat. No. 4,652,115. This application Mar. 15, 1988, Ser. No. 170,075
Int. Cl.⁴ F27B *9/28*; H05B *1/00*
U.S. Cl. 432—60 8 Claims

1. An improved fuser assembly for use in an electrophotographic print engine comprising in combination:
a heat roller having a deformable circumferential surface; a selectively operable heat source located within said heat roller;
means for transferring heat from said heat source to said deformable surface of said heat roller and for maintaining said deformable surface at a temperature within a predetermined temperature range;
a first compression roller having a deformable surface fixedly urged against said deformable surface of said heat roller and defining a first predetermined contact area between said deformable surface of said heat roller and said first compression roller, said deformable surface of said heat roller being less deformable per force unit than said deformable surface of said first compression roller; and
a second compression roller having a surface fixedly urged



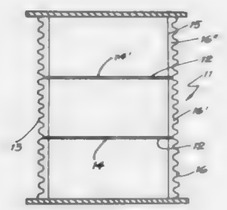
against said deformable surface of said heat roller and defining a second predetermined contact area between said deformable surface of said heat roller and said second compression roller distinct from said first predetermined contact area, said deformable surface of said heat roller being more deformable per force unit than said surface of said second compression roller,
such that as said heat roller, first compression roller, and second compression rollers rotate, an image receptor may pass through said first contact area, remain in contact with said heated roller, and subsequently pass through said second contact area.

4,806,098

HEAT TRANSFER AND STABILIZING APPARATUS

Eric J. Raum, 10 Inmarna Street, Lilli Pilli, N.S.W. 2229; Wilhelmus J. Bukyz, 12 Newland Place; John G. Padgett, 45 Waratah Road, both of Engadine, N.S.W. 2233, and Alfred E. Ringwood, 3 Vancouver Street, Redhill, A.C.T. 2603, all of Australia

Filed Jul. 14, 1986, Ser. No. 884,962
Claims priority, application Australia, Jul. 16, 1985, PH01497
Int. Cl.⁴ F27B *15/00*; B65D *6/12*
U.S. Cl. 432—215 8 Claims



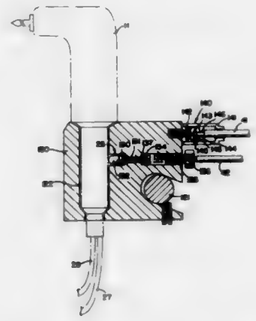
1. A metal container for processing solid particulate material, comprising:
a generally-cylindrical container having a metal cylindrical side wall extending around the axis of the container with a bellows-like formation, and a base wall across one end of the side wall, for filling with solid particulate material and subjecting to heating and pressure, whereby the solid particulate material is processed, densified and adapted to be retained within the metal container; a lid opposite the base wall for closing the filled container; at least one apertured plate of thermally conductive material extending generally transversely across the container and attached in thermally conducting relationship to the side wall of the container, the apertured plate having spaced portions around the axis of the container and extending radially inwardly from the periphery of the apertured plate towards the axis for defining between the spaced portions apertures through which the particulate material falls when the container is being filled, the spaced portions of the plate being shaped and dimensioned for conducting heat to the particulate material in the central region of the container and for strengthening the container by resisting substantial radial deformation of the container during the application of pressure.

4,806,099

FLUIDIC CONTROL ASSEMBLY FOR DENTAL TOOLS

Michael A. Peralta, 3500 Washington St., Apt. No. A-212, Hollywood, Fla. 33021

Filed Nov. 2, 1987, Ser. No. 115,198
Int. Cl.⁴ A61C *19/02*
U.S. Cl. 433—28 8 Claims



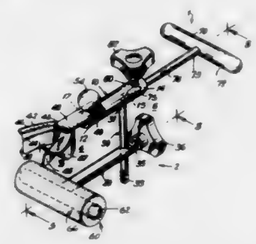
1. A fluidic control assembly for controlling the supply of drive air and/or water from respective sources of supply to a tool adapted to be removably stored in a hanger including a primary fluidic control unit and a secondary control, wherein said primary control unit is formed from a modular body comprising:
a primary control chamber having a main inlet and a main outlet, with said main outlet coupled to said tool:
means for directing drive air into said control chamber from said main inlet;
a control valve for controlling the flow of drive air from said control chamber to said main outlet;
a secondary chamber;
means for bleeding air from said control chamber into said secondary chamber;
means in said secondary chamber for operating said control valve in response to a predetermined pressure level in said secondary chamber; and
means for discharging air from said secondary chamber into said secondary control with said secondary control including means for blocking the discharge of air from said secondary chamber in response to the absence of said tool from said hanger.

4,806,100

MANDIBLE MANIPULATION DEVICE

Herbert Schelabolz, 316 Locust St., Teaneck, N.J. 07006

Filed Dec. 14, 1987, Ser. No. 132,815
Int. Cl.⁴ A61C *19/04*
U.S. Cl. 433—73 16 Claims



1. A mandible manipulation device including:
an elongated frame having,
a pair of elongated, lengthwise members, located in one plane adapted for adjustable movement to fixed positions towards and away from one another, and
means, spaced from one side of said frame, for adjustably connecting said lengthwise members to one another in said fixed positions;
means for holding a dental impression against the teeth of the mandible of a patient and for connecting said dental impression to one end of one of said lengthwise members, on said one side of said frame; and
means, located directly opposite to said dental impression holding means, connected to one end of the other of said lengthwise numbers, on said one side of said frame, at right angles to said one plane of said lengthwise member and having a length at least as wide as said mandible for supporting the underside of said mandible, whereby said lengthwise members are operable for movement to a said fixed position in which said mandible is securely held between said dental impression and said mandible supporting means and said mandible is operable to be manipulated by changing the orientation of said frame.

4,806,101

PORTABLE APPARATUS FOR REMOVING FOOD REMAINS FROM THE ORAL CAVITY

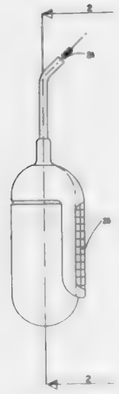
Gianfranco Rossi, 20 Via Enrico Panzacchi, I-00137 Roma RM, Italy

Filed Mar. 23, 1988, Ser. No. 174,455
Int. Cl.⁴ A61C *17/04*
U.S. Cl. 433—92 4 Claims

1. Portable apparatus for removing food remains from the oral cavity which comprises:
(a) a suction chamber formed with a cap and a base in threaded engagement, said cap having an upwardly extending tapered projection with a first through passage and said base having a downwardly extending projection with a second through passage and an annular outer groove, said first and second through passages being coaxial;
(b) a removable filter enclosed inside said suction chamber;
(c) a suction member removably fixed to said annular outer groove of said downwardly extending projection;
(d) a substantially hemispherical casing having an inner cavity for receiving said suction chamber, a hole on the top coaxial to said first and second through passages, a lower rim formed with hooking means and a downwardly extending rib integral with said casing;
(e) a support fixed on top of said casing and having a channel aligned and in fluid communication with said first and second through passages;

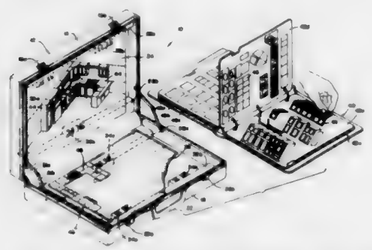
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(f) a pipe having an end sealingly engaged into the channel of said support and coaxial thereto and in fluid communication with said suction chamber and the opposite end free;
(g) an outer cover of collapsible material removably fixed to said hooking means; and
(h) a check valve connecting said suction member and said outer cover,



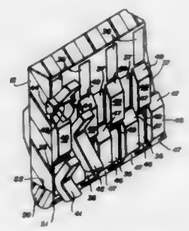
so that upon pressing said outer cover of collapsible material and, as a consequence, said suction member, the check valve in this situation being closed, the food remains, as an effect of the depression, are moved from the oral cavity through said pipe and said first through passage of said cap and are collected on said filter.

4,806,102
MODULAR LAYOUT ASSEMBLY
Chris S. Pedersen, and Sue M. Merkel, both of Bismarck, N. Dak., assignors to EZ Designer, Inc., Bismarck, N. Dak.
Filed Jan. 23, 1984, Ser. No. 572,757
Int. Cl.⁴ G09B *25/00*
U.S. Cl. 434—80 **8 Claims**



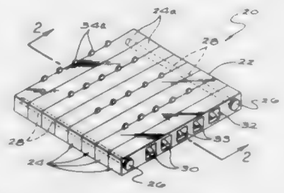
1. A modular layout assembly for facilitating the layout of elements within a space, said assembly comprising:
(a) a plurality of modules configured and dimensionally scaled to represent the elements, each of said modules made of a magnetically attracting material;
(b) a layout board made of a ferrous metal and presenting a substantially planar surface, said planar surface having a grid thereon for assisting the placement of selected of said modules on said layout board; and
(c) a case comprising first and second sections, means for hinging together said first and second sections to permit said case to be opened and closed, said first section having a pocket for receiving said layout board, and means for retaining said layout board within said case to facilitate the arrangement of selected of said plurality of modules on said layout board and for readily releasing said layout board to facilitate the copying of said arrangement of modules.

4,806,103
HIGH DENSITY EDGECARD CONNECTOR SYSTEM
Wolfgang Knieso, and Otto Schumpp, both of Bad Rappenau, Fed. Rep. of Germany, assignors to Winchester Electronics, Heilbronn-Biberach, Fed. Rep. of Germany
Filed Feb. 29, 1988, Ser. No. 162,187
Claims priority, application European Pat. Off., Mar. 20, 1987, 87104122.4
Int. Cl.⁴ H01R *9/09, 23/70*
U.S. Cl. 439—60 **14 Claims**



1. A high density edgecard connector system including a connector housing having an opening for receiving the bottom edge of a circuit board, the system comprising:
a first and second row of cantilever contacts mounted in the connector, the contacts in the second row having a length which is greater than the length of the contacts in the first row;
a first and second row of contact pads on a first side of the circuit board, the contact pads of the second row being spaced a greater distance from the bottom edge of the circuit board than the contact pads of the first row;
a series of ribs which project from the surface of the circuit board and are positioned one each between the contact pads of the first row, wherein the ribs lift the cantilever contacts of the second row from the surface of the circuit board to prevent contact between the cantilever contacts of the second row and the contact pads of the first row.

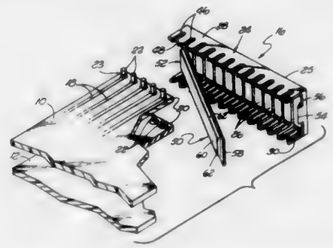
4,806,104
HIGH DENSITY CONNECTOR
Michael K. Cabourne, Hacienda Heights, Calif., assignor to ITT Corporation, New York, N.Y.
Filed Feb. 9, 1988, Ser. No. 154,163
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 439—66 **17 Claims**



1. An electrical connector comprising:
a stack of insulators;

said stack having opposite surfaces;
a series of aligned cavities in said insulators extending lengthwise through said stack;
contacts mounted in selected ones of said cavities; and
said contact in each said selected cavity having ends extending beyond said surfaces, and a middle spring portion extending from said selected cavity into the next adjacent cavity in said series whereby said middle portion occupies two cavities.

4,806,105
STACKING CONNECTOR
Steven Z. Munsky, Huntington Beach, Calif., assignor to ITT Corporation, New York, N.Y.
Filed Jan. 11, 1988, Ser. No. 142,601
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 439—74 **24 Claims**

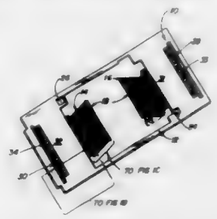


1. An electrical connector for making electrical connection between corresponding conductive pins of two spaced parallel rows of said pins mounted on insulative support means, comprising:
an elongated insulative member;
a plurality of spaced contacts mounted on said member;
each said contact having a central portion and two end portions;
each said end portion being a tuning fork element comprising two spaced contact beams defining a slot therebetween for receiving one of said pins therein, said beams having facing edges; and
a recess in at least one of said edges of each said tuning fork element of each said contact for receiving said pin to provide a detent lock between the pin and said contact as well as electrical connection therebetween.

4,806,106
INTERCONNECT LEAD FRAME FOR THERMAL INK JET PRINTHEAD AND METHODS OF MANUFACTURE
Janet E. Mebane; Lawrence W. Chan; Duong T. La, and Ruben Nevarez, all of San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 9, 1987, Ser. No. 37,289
Int. Cl.⁴ H05K *1/00*; H01R *43/00*
U.S. Cl. 439—77 **13 Claims**

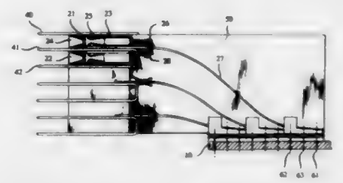
1. An electrical interconnecting member suitable for use in establishing a substantially two dimensional removable pressure contact between two interconnect members in a single plane of interconnection, comprising: a lead frame having a plurality of electrically isolated contacts at one area thereon and connected to a corresponding plurality of flexible leads at another area thereon, a continuous insulating coating extending across the width of all of said leads on the top and bottom surfaces thereof and in the spaces between adjacent leads, but exposing the tips of said leads for enabling electrical connection to be made thereto, said insulating coating holding said leads together and still allowing said leads to flex somewhat independently, with said leads extending at a predetermined angle with respect to said plane of interconnection, said angle being defined by an arc which extends between a position at which said tips of said leads are electrically disconnected and a position lying in said plane of interconnection, whereby said flexible leads may be spring biased through said predetermined angle to said plane of interconnection when receiving an electrical device in contact therewith, and said electrical device and said plurality of contacts of said lead frame all will lie substantially in said plane of interconnection.

8. A method of connecting an ink jet printhead to external electrical circuitry which includes the steps of:



a. providing a flexible lead frame with exposed contacts on individual leads thereof, and
b. connecting an ink jet printhead to one side of said lead frame and connecting said external electrical circuitry to the other side of said lead frame, while
c. biasing leads of said lead frame to a single common plane, whereby removable spring biased lead contacts may be made to individual contact area on said printhead.

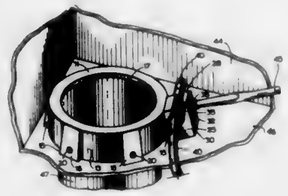
4,806,107
HIGH FREQUENCY CONNECTOR
Richard M. Arnold, New Albany; Paul A. Baker, Columbus, both of Ohio; Coleen A. Drucker, Morristown, N.J.; Robert J. Gaubler, Westerville; Dominic T. Lipari, Reynoldsburg, both of Ohio; Max S. Robin, Denville, N.J., and Howard C. Schell, Westerville, Ohio, assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 16, 1987, Ser. No. 112,193
Int. Cl.⁴ H01R *13/658*
U.S. Cl. 439—79 **8 Claims**



1. An electrical connector comprising:
a plurality of female conductive members arranged in a plurality of columns;
a plurality of conductive blades positioned between each column of the female conductive members and extending beyond the female conductive members; and
flexible circuit means comprising a plurality of flexible circuit sheets with conductive strips on at least one major surface thereof and having two ends, the conductive strips at one end being coupled to a column of female conductive members and an adjacent conductive blade such that shielding is provided between each column of female conductive members and the other end being coupled to terminal means at a portion of the connector remote from said plurality of conductive blades and female conductive members.

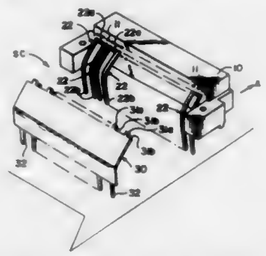
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4,806,108
GROUNDING BUSHING
Ben W. Meinhardt, 6615 Highway 12, Maple Plain, Minn. 55359
Filed Sep. 13, 1982, Ser. No. 417,057
Int. Cl.[4] H01R 4/66
U.S. Cl. 439—100 2 Claims



1. A grounding bushing and grounding lug combination comprising an annular bushing body having an inner and an outer surface and a front and a rear surface, said inner surface fitting over a conduit, a plurality of more than four bosses raised from the outer surface thereof at spaced annular locations, said bosses each having a generally planar surface forming an angle with respect to the central axis of the annular bushing body, and increasing in distance from the central axis in direction from the front of the bushing body to the rear of the bushing body, a threaded screw opening extending through each of said bosses from the planar surface of the boss to the interior surface of the bushing body, each threaded screw opening having an axis which is generally perpendicular to the plane of the outer surface of its associated boss and therefore inclined in direction toward the front of the bushing as the axis extends outwardly from the bushing, said grounding lug comprising a block having a front end and a rear end and having a first generally planar surface extending between the ends of the block that mates against an outer surface of one of the bosses on said bushing, said block having a second planar outer surface substantially parallel to the first planar surface and extending as a plane from the front to the rear ends, an aperture passing through the block extending from the second surface to the first surface and having a countersunk recess surrounding the aperture and opening to the second surface, first screw means passing through said block and engaging the threaded opening of the associated boss to hold the block in position on such boss, the first screw means having a head fitting in said recess, a receptacle formed in said block between said first and second surfaces of size to receive a conductor, said block having an opening from the receptacle on the outer end between the first and second surfaces and facing toward the outer end of the bushing and defined by an overlying lip portion positioned outwardly of the opening and providing an outer wall defining the upper edge of the opening and part of the receptacle, the first surface of the block being of size substantially the same as the boss planar surface so the outer end does not extend substantially beyond the front surface of the bushing when the first screw means is positioned in one of the threaded openings of the bushing to hold the block in a working position, and second screw means generally parallel to said first screw means passing through the second surface and the overlying lip portion and adapted to engage a conductor resting in the receptacle of said grounding lug.

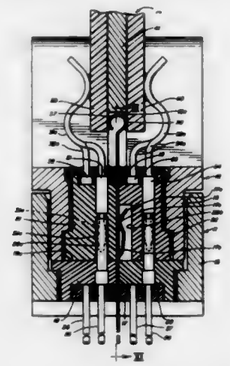
4,806,109
SHIELDED ELECTRICAL CONNECTOR
Sakae Masuda, Kanagawa; Takashi Kamono, Yokohama; Tetsuro Tokaichi, and Shoji Umemoto, both of Tokyo, all of Japan, assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 26, 1988, Ser. No. 148,465
Int. Cl.[4] H01R 4/66
U.S. Cl. 439—108 4 Claims



1. A shielded electrical connector, comprising:
a dielectric housing having rows of contact-receiving passages extending therethrough;
a plurality of electrical contact members having contact sections disposed in said contact-receiving passages and exposed terminal sections extending outwardly in rows from a rear surface of said housing for electrical engagement with signal paths of a printed circuit board;
a shield plate having an insulation layer covering the exterior surfaces thereof and disposed along one of said rows of terminal sections to eliminate noise faults between and among certain contact sections, where selected said contact members of said one row include ground tabs,
said shield plate including along an upper edge thereof ground terminals each aligned with and connected to a said ground tab, and at the lower end thereof a like plurality of ground terminals aligned with and electrically connected to a said ground path of said printed circuit board, whereby said selected contact members are isolated from the remaining contact members of said shielded electrical connector such that noise faults are eliminated between said remaining contact members in said one row.

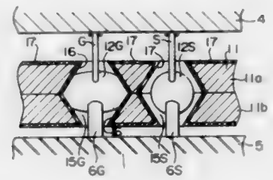
4,806,110
ELECTRICAL CONNECTORS
Richard J. Lindeman, Wood Dale, Ill., assignor to Labinal Components and Systems, Inc., Elk Grove Village, Ill.
Continuation-in-part of Ser. No. 876,179, Jun. 19, 1986, Pat. No. 4,710,133. This application Dec. 29, 1986, Ser. No. 947,317
Int. Cl.[4] H01A 4/66
U.S. Cl. 439—108 16 Claims

1. An electrical connector assembly including a pair of mating connectors and arranged for high velocity propagation of electrical signals along a plurality of paths between first circuit means connected to one connector and second circuit means connected to the other connector, each connector comprising:
a plurality of signal contact elements for propagation of said signals, each having connection means at one end thereof for connection to a terminal of said first circuit or second circuit means and having a contact surface at an opposite end thereof for engagement with a contact surface of a contact element of the mating connector, common ground means for all of said contact elements including a plurality of ground plates each having connector means along one edge thereof for connection to a terminal of said first circuit means and having contact surface means along an opposite edge thereof for engagement with contact surface means of a ground plate of a mating connector, said contact surface means of one connector being in the form of multi-spring-fingered contact surface means along said opposite edge thereof for engagement with a pair of oppositely disposed contact surface means of a continuous ground plate of the mating connector, and support means for supporting all of said signal contact elements in a certain fixed and electrically insulated relation to each other and to said common ground means such as to obtain a uniform characteris-



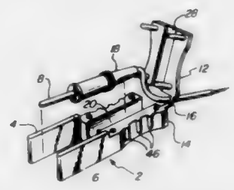
tic impedance along all signal paths through said mating connectors, said signal contact elements including a plurality of groups of elements, each group being associated with one of said ground plates and each being supported in at least one row in longitudinally spaced parallel relation to said associated ground plate.

4,806,111
CONNECTOR STRUCTURE
Masaaki Nishi, Hachioji; Moritoshi Yasunaga, and Ryotaro Kasukawa, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 3, 1986, Ser. No. 925,904
Claims priority, application Japan, Nov. 1, 1985, 60-243909
Int. Cl.[4] H01R 3/00
U.S. Cl. 439—109 8 Claims



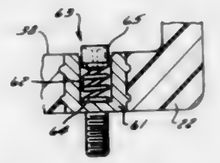
1. A connector structure comprising:
an electrically conductive plate having a plurality of through holes formed therein;
an electrically insulating film formed on the inner wall of at least one of said plurality of through holes with at least one of said plurality of through holes being not covered with an electrically insulating film;
an electrically conductive film formed on the inner wall of at least one of the through holes which is not covered with an electrically insulating film.

4,806,112
SAFETY ADAPTOR FOR ELECTRICAL CONNECTOR HOUSINGS
Richard R. Roberts, Dana Point; Robert J. Frank, Tustin; Philip H. Booker, III, El Toro, and Rodney A. Hosmer, Costa Mesa, all of Calif., assignors to Transmed, Inc., San Juan Capistrano, Calif.
Filed Oct. 1, 1987, Ser. No. 103,503
Int. Cl.[4] H01R 13/44
U.S. Cl. 439—144 17 Claims



1. A safety adaptor for a male electrical connector housing have at least one male terminal comprising:
a body member having a central groove with forward and rear flanges therein of a configuration to receive a the electrical connector housing while operatively supporting a cantilevering of the male terminal from the body member;
means, extending from the body member and positioned adjacent the male terminal, for limiting the size of a complementary female connector capable of operatively receiving the male terminal member; and
means for fastening the body member about the male electrical connector housing whereby a standard electrical connector housing has an added safety feature to prevent an improper insertion of the male terminal into an undesirable female connector, wherein the means for fastening includes a cover member pivotally attached to the body member.

4,806,113
HIGH VOLTAGE CONNECTOR FOR X-RAY EQUIPMENT
Edward T. Rate, Jr., Mequon; John W. Newman, Elm Grove, both of Wis., and Robert W. Meade, Cincinnati, Ohio, assignors to General Electric Company, Milwaukee, Wis.
Filed Jan. 3, 1986, Ser. No. 815,849
Int. Cl.[4] H01R 13/22
U.S. Cl. 439—190 10 Claims



1. An electrical connector comprising:
a female receptacle portion made of an insulating material for receiving a male portion and having in one interior wall thereof at least one recess for mating with a projecting male contact, said female portion including an electrically conductive resilient spring contact connected within said recess and having at its outer end an active surface for establishing an electrical connection with a male contact when a male plug portion is inserted into said female receptacle portion, wherein said active surface projects

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beyond said one wall unless displaced by a male contact bearing against said active surface; and

fluid passage means for permitting fluid flow between said recess and the remainder of said female receptacle portion.

4,806,114

UNDERWATER ELECTRICALLY CONDUCTIVE COUPLING

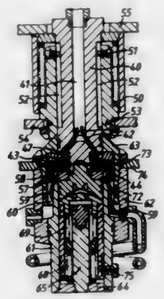
Hans P. Hopper, Whitemakes, Scotland, assignor to The British Petroleum Company p.l.c., London, England

Filed Sep. 11, 1986, Ser. No. 905,650

Claims priority, application United Kingdom, Sep. 14, 1985, 8522772; Jul. 26, 1986, 8618305

Int. Cl.[4] H01R *13/523*

U.S. Cl. 439—191 **7 Claims**



1. An electrically conductive coupling, suitable for passing an electric current to or from an underwater well or underwater equipment comprising:

(a) an outer body having, on its inner surface, a recess,

(b) an inner body having, on its outer surface, a recess, the recesses being positioned so that they are aligned when the inner and outer bodies are mated to form an annular space,

(c) a resilient non-conductive member associated with the outer body having at least one inset conductive contact,

(d) a resilient non-conductive member associated with the inner body having at least one inset conductive contact, the two conductive members occupying the annular space and providing, through their inset conductive contacts an electrical path between the outer and inner bodies, and

(e) a passage for dielectric fluid to pass from one body to the other between the resilient non-conductive members and around the contact surfaces of the inset contacts.

4,806,115

ASSEMBLY PROVIDING AN ELECTRICAL CONNECTION THROUGH A PIPE FORMED OF SEVERAL ELEMENTS

Andre Chevallier, Pantin; Pierre Morin, Levallois Perret, and Michel Chardin, Paris, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 7, 1987, Ser. No. 129,769

Claims priority, application France, Dec. 5, 1986, 86 17174

Int. Cl.[4] H01R *4/60*

U.S. Cl. 439—194 **13 Claims**

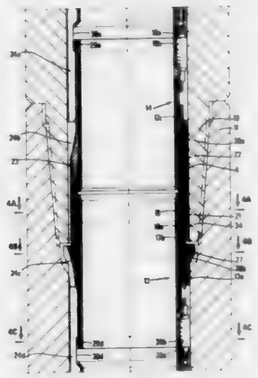
1. An assembly making it possible to provide at least one electric connection through a pipe formed of elements fixed together, in which each element has a first and a second end, adapted for cooperating mechanically with the complementary ends of the adjacent elements, this assembly being particularly characterized in that it includes in combination, per pipe element:

a conductor placed inside the element,

a first connector fixed to one end of the conductor which is held in position in the first end of the pipe element and which cooperates electrically with the conductor,

a second connector fixed to the other end of the conductor which is held in position in the second end of the pipe element and which cooperates electrically with said conductor,

a first double connector having a first end which includes at least one contact and a second end having at least one annular contact connected electrically to the preceding one, the first end of the first double connector cooperating



electrically with the first connector, the second end of the first double connector cooperating electrically with a second end of the second double connector of an adjacent pipe element,

said second double connector having a first end with at least one contact, and a second end with at least one annular contact connected electrically to the preceding one, the first end of the second double connector cooperating electrically with a second connector, and

means for positioning and fixing the connectors.

4,806,116

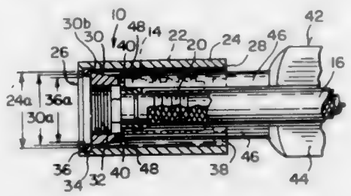
COMBINATION LOCKING AND RADIO FREQUENCY INTERFERENCE SHIELDING SECURITY SYSTEM FOR A COAXIAL CABLE CONNECTOR

Abram Ackerman, 179 Fox Hollow Rd., Woodbury, N.Y. 11797

Filed Apr. 4, 1988, Ser. No. 177,142

Int. Cl.[4] H01R *13/44*

U.S. Cl. 439—304 **5 Claims**



1. A combination locking and radio frequency interference shielding security system for a coaxial cable connector of the type having a female coaxial plug and a male coaxial plug on a coaxial cable, said system comprising:

(a) a sleeve having an open forward end and a partially covered rearward end, said sleeve sideably disposed onto the coaxial cable;

(b) a head having an internal locking well, said head rotatably affixed to the male coaxial plug so that said well can lockably engage with the female coaxial plug;

(c) means for retaining said head and the male coaxial plug with said sleeve, when said sleeve is pushed over the male coaxial plug and said head whereby said sleeve is rotatable with respect to the male coaxial plug and said head when the male coaxial plug and said head are so retained within said sleeve; and

(d) means for selectively engaging said head with and disengaging said head from the female coaxial plug when said head and the male coaxial plug are retained within said sleeve.

4,806,117

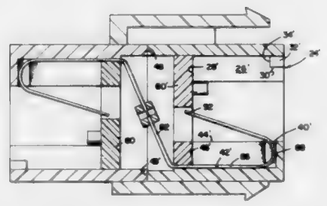
MODULAR PLUG COUPLER

James J. Johnston, Old Saybrook, Conn., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 21, 1987, Ser. No. 88,184

Int. Cl.[4] H01R *13/625*

U.S. Cl. 439—344 **17 Claims**



1. An electrical coupler for electrically coupling at least two similar electrical connectors, the coupler comprising:

an insulative housing means having at least two mating faces for access of the two electrical connectors, where the two mating faces are transversely directed relative to each other; and

a terminal subassembly disposed within the housing means, the subassembly including a plurality of solid wires spaced apart in a common plane, the wires including intermediate portions having a first and a second leg at first and second ends of the intermediate portion, and two spring contact portions extending from ends of the first and second legs, a portion of the length of the intermediate portions being integrally molded within an insulative web of material which transversely spans the wires, the intermediate portions including a deformed portion within the integral web, and the first and second legs being formed relative to the intermediate portion to dispose the spring contact portions adjacent to the mating faces of the housing means.

4,806,118

FUSE PACKAGE

Alan J. Herrmann, Southington, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 19, 1988, Ser. No. 144,940

Int. Cl.[4] H01R *13/68, 13/627*

U.S. Cl. 439—352 **2 Claims**

1. A fuse package for retaining and handling a plug-in type fuse, said package comprising,

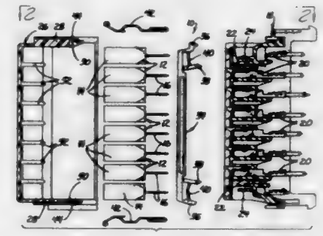
an insulator block including a lock ramp and a release member and an electrical terminal adapted to receive the plug-in fuse with a gripping force,

a cover adapted to be installed and removed from the insulator block and also adapted to hold a plug-in type fuse with a holding force sufficient to maintain said fuse in the proper orientation to plug into said terminal as said cover is installed, but less than said gripping force so that said fuse remains with said terminal and block as said cover is removed,

a fuse retainer having a flexible leg at each end which engages the cover with a retention force sufficient to prevent said fuse from falling out of said cover before installation, so that said fuse, retainer and cover may be handled and installed together as a unitary assembly, and

a second flexible leg on said retainer interengageable with the lock ramp on said insulator block as said unitary assembly is installed with a locking force sufficient to lock said retainer to said insulator block,

said second flexible leg being connected to one of the flexible legs at the ends of the retainer by a strap which is engaged by the release member to release the retainer from the cover when the unitary assembly is installed whereby the retainer stays with said insulator block without interfering with the cover when the cover is removed to provide access to the fuse.



4,806,119

CUTTING-CLAMPING TERMINAL ELEMENT FOR ELECTRICAL CONDUCTORS

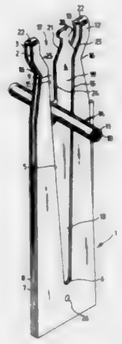
Hermann Herfort, and Gunter Hegner, both of Berlin, Fed. Rep. of Germany, assignors to Krone Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 6, 1987, Ser. No. 118,431

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1986, 3637929

Int. Cl.[4] H01R *4/24*

U.S. Cl. 439—395 **17 Claims**



1. A cutting/clamping terminal element for an electrical conductor, the conductor having a core and having insulation comprising: a clamping piece having a base portion and an upper portion with a first sharp cutting/clamping edge and a second sharp cutting/clamping edge; a front U-shaped clamping member including a first front clamping leg and a second front clamping leg, each of said front clamping legs having an

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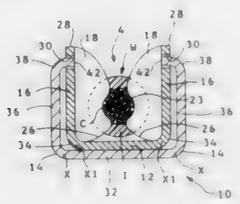
upper portion with a sharp cutting/clamping edge, said front U-shaped member having a base portion connected to the base portion of said clamping piece; and, a rear U-shaped clamping member including a first rear clamping leg and a second rear clamping leg, each of said clamping legs having an upper portion with a sharp cutting/clamping edge, said rear U-shaped clamping member including a base portion connected to the base portion of said clamping piece, the sharp edge of said front clamping legs lying in a front cutting plane, the sharp edge of said rear clamping legs lying in a rear cutting plane, said first and second clamping piece sharp edges laying in a central cutting plane, the clamping piece upper portion being movable with respect to said first front and rear clamping legs and said second front and rear clamping legs from a clamping piece rest position to define a clamping slot region between one of said first clamping piece edge and said first front and rear clamping legs and said second clamping piece edge and said second front and rear clamping legs, a conductor being positionable within said clamping slot so the edges of said clamping legs and said clamping piece cut into the insulation and contact the core of the conductor at three cutting positions.

4,806,120

ELECTRICAL TERMINAL

Robert W. Baker, Harrow, United Kingdom, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 19, 1988, Ser. No. 145,423
Claims priority, application United Kingdom, Feb. 16, 1987, 8703551
Int. Cl.[4] H01R *4/24*
U.S. Cl. 439—399 11 Claims



1. An electrical terminal having a body part which has been stamped and formed from a piece of sheet metal, the body part being of substantially U-shaped cross section and thus comprising a base from opposite edges of which upstand a pair of opposed side walls, each side wall having an extension thereof projecting towards the other side wall, the extensions cooperating to define a wire receiving slot extending normally of the base and between the two side walls and having a wire receiving mouth opening in a direction away from the base, each side wall together with the extension thereof, being deflectable away from the other side wall as a result of a wire being forced into the wire receiving slot through the wire receiving mouth thereof, the terminal further having a spring part which is separate from the body part and which has been stamped and formed from a spring metal, the spring part also being a substantially U-shaped cross section and thus comprising a base from opposite edges of which upstand a pair of opposed side walls, the base of the body part overlying that of the spring part and the side walls of the spring part engaging the side walls of the body part resiliently to restrain deflection thereof away from each other, the spring part is releasably connected to the body part by means of projections thereon which engage in openings in the side walls of the body part whereby, a wire when inserted into the wire receiving slot is tightly constrained between the extensions of the sidewalls of the body part.

4,806,121

CONTACT SOCKET ELEMENT, STRIP COMPRISING IT AND ITS MANUFACTURING

Lecourtois, Eugene, Evry, France, assignor to N.E.D. Nicomatic Electronic Department, France

PCT No. PCT/FR87/00276, § 371 Date Mar. 9, 1988, § 102(e) Date Mar. 9, 1988, PCT Pub. No. WO88/00762, PCT Pub. Date Jan. 28, 1988
PCT Filed Jul. 9, 1987, Ser. No. 171,426
Claims priority, application France, Jul. 11, 1986, 86 10183
Int. Cl.[4] H01R *4/24*
U.S. Cl. 439—417 10 Claims



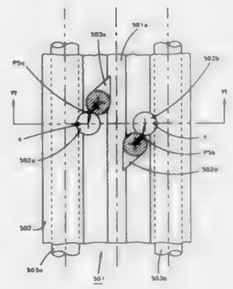
1. Contact socket element of one single piece, for connector, of the type which comprises a plugging part (12) and a junction part (14), both formed from one single metal sheet, characterized in that the junction part (14) is flat and comprises at least one carved out spot (32) of rectangular shape, having two teeth (34, 36) at opposite edges of the carved out spot and defined by complementary edges, each tooth being arranged transverse to the junction part.

4,806,122

ELECTRIC CONTACT ARRANGEMENT FOR A MULTI-STRAND CABLE

Rudolf Neidecker, Basel, and Jacques Kunz, Schönenbuch, both of Switzerland, assignors to Multi-Contact AG Basel, Basel, Switzerland

Filed Feb. 5, 1987, Ser. No. 11,010
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1986, 3627041
Int. Cl.[4] H01R *23/66*
U.S. Cl. 439—495 20 Claims



1. An electric contact arrangement between a multi-strand cable having an insulation made of an elastically yieldable material and a plurality of elongated conductor extending in side-by-side relationship and imbedded in the insulation and a plug having first and second plug contacts, said electric contact arrangement having at least one connection position

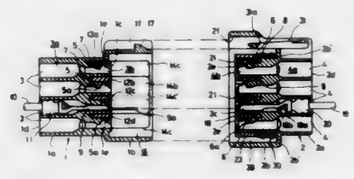
arranged within the lengthwise extent of the cable and defined by first and second insulated openings arranged within the lengthwise extent of the cable and located in a space between two adjacent conductors for receiving said first and second plug contacts, respectively, each of the first and second openings intersecting at an edge zone thereof one of the two adjacent conductors to form a contact point thereat, the contact points of the first and second openings or complementary insulation zones thereof being arranged symmetrically with respect to the two adjacent conductors, each of the first and second plug contacts having a contact element for engaging the conductor intersected by respective one of the first and second openings at the contact point of the respective one opening upon insertion of the respective one of the first and second plug contacts into the respective opening.

4,806,123

ELECTRICAL CONNECTOR DEVICE WITH A NUMBER OF TERMINALS

Kenjiro Konishi, Hiratsuka, and Ken Obata, Tokyo, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1988, Ser. No. 149,107
Claims priority, application Japan, Feb. 3, 1987, 62-13827[U]; Feb. 4, 1987, 62-24274; Mar. 9, 1987, 62-33150[U]
Int. Cl.[4] H01R *13/44*
U.S. Cl. 439—595 13 Claims



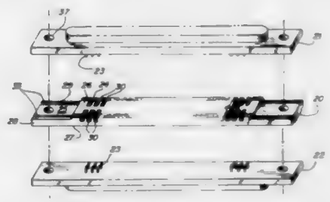
1. An electrical connector device comprising:
a male housing formed with a plurality of male-terminal chambers adapted individually to contain male terminals;
a female housing formed with female-terminal chambers as many as said male-terminal chambers, said female-terminal chambers corresponding individually to said male-terminal chambers and adapted individually to contain female terminals connected to said male terminals corresponding thereto;
male-terminal seating detecting means; and
female-terminal seating detecting means,
said male housing including first retaining means, protruding in the form of a cantilever from each of partition walls, which define said male-terminal chambers of said male housing, and resiliently bendable in a first flexure space, whereby said male terminals contained in said male-terminal chambers are prevented from slipping out therefrom as said male terminals engage said first retaining means,
said female housing including second retaining means protruding in the form of a cantilever from each of partition walls, which define said female-terminal chambers of said female housing, and resiliently bendable in a second flexure space, whereby said female terminals contained in said female-terminal chambers are prevented from slipping out therefrom as said female terminals engage said second retaining means,
said male-terminal seating detecting means being adapted to be fitted into said first flexure space when said male terminals are contained in their corresponding male-terminal chambers in a manner such that said male terminals normally engage said first retaining means, and
said female-terminal seating detecting means being adapted to be fitted into said second flexure space when said female terminals are contained in their corresponding female-terminal chambers in a manner such that said female-terminals normally engage said second retaining means,
characterized in that:
said male-terminal seating detecting means includes at least one integral planar portion adapted to extend parallel to said male terminals, from a connection-side end face of said male housing toward said female housing, when said male-terminal seating detecting means is fitted normally in said first flexure space, an extended end of said planar portion being situated nearer to said female housing than the distal ends of said male terminals are, thereby protecting said male terminals from collision with objects running toward said male terminals; and
said female housing has at least one fitting groove bored therein so as to open to a connection-side end face thereof and adapted to receive said planar portion.

4,806,124

ELECTRICAL CONNECTIONS

Robert F. Bowlin, Downers Grove, Ill., assignor to Labinal Components and Systems, Inc., Elk Grove, Ill.

Filed May 1, 1987, Ser. No. 44,968
Int. Cl.[4] H01R *13/648*
U.S. Cl. 439—607 15 Claims



1. An electrical component for a multiple connection electrical member comprising an electrically insulating body, the body having an end, and multiple spaced grooves containing an electrically conducting material, and a slot directed to intersect the grooves thereby dividing the grooves into two electrically isolated sections.

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4,806,125

TREATMENT OF LEWIS BASE POLYMERS TO IMPROVE ANTISTATIC, HYGROSCOPIC AND DYE RECEPTIVE PROPERTIES

Michael E. Dyer, Cleveland, Tenn., assignor to Interx Corporation, Cleveland, Tenn.

Division of Ser. No. 803,233, Dec. 2, 1985, Pat. No. 4,705,831, which is a division of Ser. No. 579,801, Feb. 17, 1984, Pat. No. 4,563,507, which is a continuation-in-part of Ser. No. 364,045, Mar. 31, 1982, abandoned, which is a continuation-in-part of Ser. No. 128,062, Mar. 7, 1980, abandoned. This application Sep. 24, 1987, Ser. No. 100,547

Int. Cl.[4] **D06M** *1/00*; **C08G** *18/08, 18/71*; **D04B** *7/100*

U.S. Cl. 8—116.1 **16 Claims**

1. A method of treating a shaped structure of a solid, high molecular weight polymer selected from the group consisting of cotton, rayon anc. acetate to improve the antistatic, hygroscopic and dye receptive properties of said polymer while retaining its structural shape, comprising:

heating said polymer structure with an aqueous treating solution containing an ethylenically unsaturated monomer which does not readily polymerize under the treating conditions, and a catalyst which is a source of hydrogen ions or protons, and continuing the treatment for a sufficient time and at a temperature so as to form a branched polymer with substantially no graft polymerization of said monomer.

4,806,126

PROCESS FOR ALKALI-FREE DYEING AND PRINTING WITH REACTIVE DYES

Klaus Sternberger, Bad Vilbel; Karl-Heinz Keil, Hanau, both of Fed. Rep. of Germany; Dieter Gevert, and Oscar Navarrete, both of Santiago, Chile, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 23, 1988, Ser. No. 172,010

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1987, 3709766

Int. Cl.[4] **C09B** *62/00*; **D06P** *1/38, 1/54*

U.S. Cl. 8—543 **7 Claims**

1. A process for alkali-free dyeing and printing with reactive dyes direct dyes, acid dyes, water-soluble-sulfur dyes or pigment dyes, which comprises pretreating the cellulose textile material to be dyed with a wetting agent and a quaternized or unquaternized reaction product of polyethyleneimine with a bifunctional alkylating agent, then dyeing with reactive dyes, direct dyes, acid dyes, water-soluble sulfur dyes or pigment dyes in a conventional manner but without the use of alkali, and finishing by rinsing and drying.

4,806,127

WATER-SOLUBLE DISAZO COMPOUNDS, CONTAINING TRIAZINYL PYRIDINIUM GROUP PROCESSES FOR THEIR PREPARATION AND THEIR USE FOR DYEING CELLULOSE

Ludwig Schläfer, Kelkheim; Hartmut Springer, and Reinhard Hilbale, both of Königstein/Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

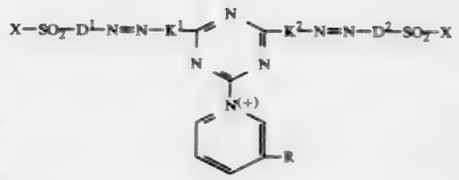
Filed Aug. 27, 1987, Ser. No. 90,222

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1986, 3629574

Int. Cl.[4] **C09B** *43/40, 62/51*; **D06P** *3/70, 1/38*

U.S. Cl. 8—549 **13 Claims**

1. A process for dyeing a hydroxy-containing fiber-material, which comprises applying a disazo compound conforming to the formula

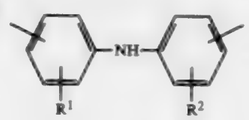


in which

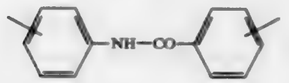
D^1 is a benzene ring which is unsubstituted or substituted by 1 or 2 substituents which are selected from the set consisting of 2 methyl, 2 ethyl, 2 methoxy, 2 ethoxy, 2 sulfo, 1 carboxy, 1 chlorine and 1 bromine, one of these substituents being bonded to the benzene nucleus in the ortho-position relative to the azo group, or

D^1 is a naphthalene ring which is unsubstituted or substituted by sulfo in the ortho-position relative to the azo group, or

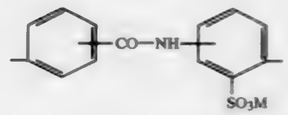
D^1 is a group of the formula



or



or



in which

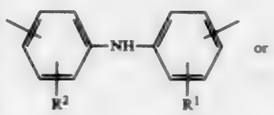
R^1 is hydrogen, nitro, sulfo, methyl, ethyl, methoxy or ethoxy and

R^2 has one of the meanings of R^1 and is identical to R^1 or different from R^1,

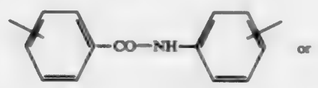
D^2 is a benzene ring which is unsubstituted or substituted by 1 or 2 substituents which are selected from the set consisting of 2 methyl, 2 ethyl, 2 methoxy, 2 ethoxy, 2 sulfo, 1 carboxy, 1 chlorine and 1 bromine, one of these substituents being bonded to the benzene nucleus in the ortho-position relative to the azo group, or

D^2 is a naphthalene ring which is unsubstituted or substituted by sulfo in the ortho-position relative to the azo group, or

D^2 is a group of the formula

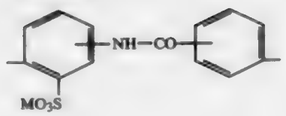


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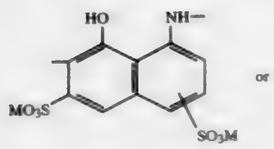


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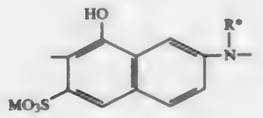
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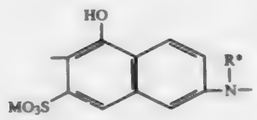
in which
R^1 is hydrogen, nitro, sulfo, methyl, ethyl, methoxy or ethoxy and
R^2 has one of the meanings of R^1 and is identical to R^1 or different from R^1,
D^1 and D^2 having meanings identical to or different from each other and M being hydrogen or an alkali metal;
K^1 is a group of the formula



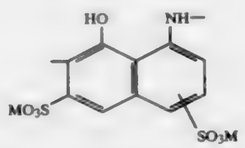
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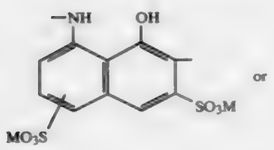
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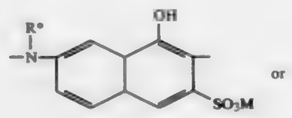
in which
M is hydrogen or an alkali metal,
R° is ethyl or hydrogen or methyl and the one $-SO_3M$ group in the formula



is in the meta- or para-position relative to the NH group;
K^2 is a group of the formula

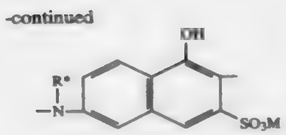


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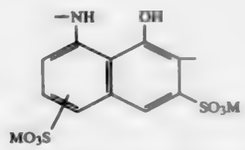


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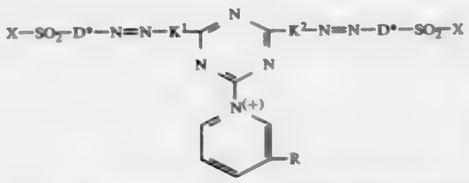
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in which
M and R° have the abovementioned meanings and the one $-SO_3M$ group in the formula



is in the meta- or para-position relative to the NH group, K^1 and K^2 having a meaning identical to each other or different from each other;
R is carboxy or carbamoyl;
one of the sulfo and carboxy groups in the radicals R, D^1, D^2, K^1 and K^2 forms an anion equivalent to the pyridinium cation, and
X is a vinyl group or the β-sulfatoethyl or the β-chloroethyl group, the X's being the same or different from each other;
or applying a 1:1-copper complex disazo compound of a compound of the formula



in which X and R have the meanings mentioned above, the two D°'s have meanings identical to each other or different from each other and have one of the meanings of D^1 or D^2 as set forth above, yet subject to the proviso that one or both the D°'s denote a benzene ring which is substituted in the ortho-position relative to the azo group by an oxy group to which the copper atom is complex-bonded and which, apart from the $-SO_2-X$ group shown and this oxy group, is unsubstituted or substituted by methyl, ethyl, methoxy, sulfo, carboxy, chlorine or bromine, or is a naphthalene ring which is substituted in the ortho-position relative to the azo group by an oxy group to which the copper atom is complex-bonded, and K^1 and K^2 have one of the meanings mentioned above, yet subject to the proviso that one of the naphtholic hydroxy groups of K^1 or K^2 or both are complex-bonded as oxy group(s) to the copper atom;
in aqueous solution to said material and fixing a said compound on said material by allowing it to act on the material from the aqueous solution at a pH value of between 4 and 8 and at a temperature between 100° and 150° C.

4,806,128

PROCESS FOR PREPARING VAT PIGMENT DYES

Juan M. Figueras, Barcelona, Spain, assignor to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Oct. 10, 1986, Ser. No. 917,457
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1985, 3536168
Int. Cl.[4] C09B 47/04; C09C 3/08; C09D 5/36
U.S. Cl. 8—650 20 Claims

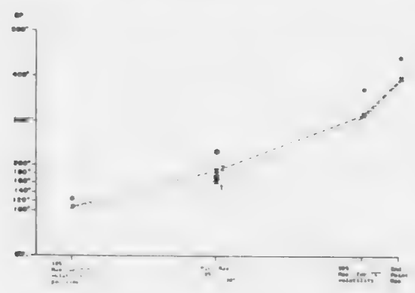
1. In a process for preparing an insoluble and safe pigment dye from a mixture of a finely divided substrate and an aqueous solution of a leucobase of a vat dye, said solution formed by reducing a colloidal dispersion of a vat dye, said process comprising adding at least one oxidizing agent to said mixture to oxidize the solution and form the vat dye thereby causing said vat dye to precipitate and coat said substrate, the improvement wherein the vat dye is initially used in the process in an impure form containing at least about 30–60% impurities and said resultant coating on the substrate contains said dye at a purity which is substantially greater than the purity of the initial vat dye.

4,806,129

FUEL EXTENDER

George K. Dorn, and Herbert A. Gilbert, both of Beaver Falls, Pa., assignors to Prepalene Industries, Inc., Beaver Falls, Pa.

Continuation-in-part of Ser. No. 98,797, Sep. 21, 1987. This application Jan. 15, 1988, Ser. No. 206,675
Int. Cl.[4] C10L 1/02
U.S. Cl. 44—56 19 Claims



1. An efficient and cost competitive fuel extender liquid for blending with lead-free gasoline as an additive thereto in a maximum amount of up to about 35% thereof with 65% by volume of the gasoline in a blended mixture wherein, the content of said extender in the resultant fuel as proportioned on the basis of its thus representative maximum content consists essentially of: naphtha X as represented by C_4, C_5 and C_6 hydrocarbons having a Reid vapor pressure of about 8.5 to 9.6 per ASTM, D323 test procedure and an initial distillation point of about 101° F. and an end point of about 280° F. within a range of about 10 to 25% by volume, about 3.8 to 6.0% by volume of anhydrous ethanol, a stabilizing amount of a water repellent of the class consisting of ethyl acetate and methyl isotubyl ketone; and about 4 to 10.5% by volume of aromatics benzene and toluene, of benzene and xylene or of benzene with toluene and xylene; said extender having a specific gravity substantially comparable with that of the lead-free gasoline to which it is to be added and having phase stability in the presence of water when mixed with the gasoline.

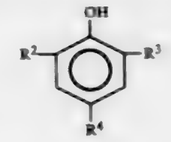
4,806,130

PHENOLIC-CONTAINING MANNICH BASE REACTION PRODUCTS AND FUEL COMPOSITIONS CONTAINING SAME

Sheldon Chilnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 813,813, Dec. 27, 1985, Pat. No. 4,717,492. This application Dec. 21, 1987, Ser. No. 136,977
Int. Cl.[4] C10L 1/24
U.S. Cl. 44—63 13 Claims

1. A product of reaction suitable for use as a liquid hydrocarbyl fuel additive made by reacting a preformed Mannich base with a reactive compound selected from hydrocarbyl thiols having at least one reactive hydrogen, said reaction being carried out with an equivalent amount of Mannich Base, or with a molar ratio varying 1 to 1 to about 2 to 1 of Mannich Base to thiol at temperatures varying from about 25° to about 250° C. said Mannich base having been prepared from (1) a phenol, (2) a C_1–C_8 alkyl aldehyde and (3) an amine having a lower boiling point than that of said reactive thiol, said phenol having the following generalized structural formula:



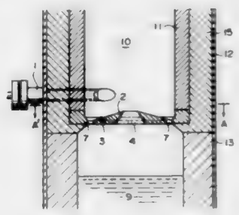
where R^2 and R^3 are the same or different and are hydrogen or C_1 to about C_{18} alkyl or tertiary alkyl and R^4 is H or C_1 to about C_{30} hydrocarbyl.

4,806,131

GASIFICATION PROCESS FOR COAL GASIFICATION FURNACE AND APPARATUS THEREFOR

Atsushi Morihara, Katsuta; Tomohiko Miyamoto, Takahagi; Shuntaro Koyama, Katsuta; Shunsuke Negita, and Yukio Hishinuma, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 9, 1987, Ser. No. 36,433
Claims priority, application Japan, Apr. 9, 1986, 61-79932
Int. Cl.[4] C10J 3/46
U.S. Cl. 48—210 9 Claims



1. A coal gasification process comprising the steps of:
ejecting coal and an oxidizing agent into a gasification chamber of a furnace in such a manner that a whirling stream is formed of the coal and oxidizing agent, thereby producing a combustible gas from the coal while ash present in the coal melts to form a slag;
causing the whirling stream to produce a pressure differential in the gasification chamber such that pressure decreases from wall surfaces of the gasification chamber to a center of the gasification chamber, the pressure near the wall surfaces of the gasification chamber being greater than pressure in a slag cooling chamber of the furnace, and

the pressure near the center of the gasification chamber being less that the pressure in the slag cooling chamber;

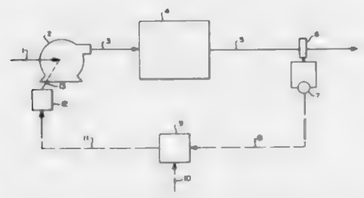
passing a portion of the combustible gas and slag through at least one slag flow-down hole formed through a slag tap, which separates the gasification chamber from the slag cooling chamber, the at least one slag flow-down hole being formed near the wall surface of the gasification chamber, and returning the combustible gas from the slag cooling chamber to the gasification chamber through a gas return hole formed through the slag trap near the center of the gasification chamber, wherein the portion of the combustible gas and slag pass through the at least one slag flow-down hole because of the pressure difference between the slag cooling chamber and the gasification chamber near the wall surface, and the combustible gas returns through the gas return hole because of the pressure difference between the slag cooling chamber and the gasification chamber near the center.

4,806,132

TURNDOWN CONTROL METHOD FOR MEMBRANE SEPARATION SYSTEMS

Michael J. Campbell, Clarence Center, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 23, 1987, Ser. No. 65,482
Int. Cl.⁴ B01D *53/22*
U.S. Cl. 55—16 **12 Claims**



1. In a permeable membrane process in which, under design operating conditions, a fluid feed stream is passed, at a desired feed flow rate and pressure, into contact with the feed side of a permeable membrane system having an installed membrane surface area capable of selectively permeating a more readily permeable component of said feed stream containing a less readily permeable component, with a desired amount of said less readily permeable component being withdrawn at essentially the design feed stream pressure level as non-permeate and with a desired amount of the more readily permeable component being withdrawn at a lower pressure level as permeate, with the partial pressure of said feed stream components across the membrane providing the driving force for said permeable membrane separation, the improved turndown control method comprising:

(a) maintaining the feed stream flow rate and the partial pressure driving force across the membrane such that the quantity and purity of the permeate and non-permeate obtained are at the design quantity and purity levels, with the installed membrane surface area of the membrane system being fully utilized;

(b) monitoring the quantity and/or purity of the product stream, either permeate or non-permeate, in the product flow line downstream from the membrane system;

(c) sending a process variable signal proportional to the product flow and/or product purity in said product flow line to a process computer system adapted to send a corresponding output signal to a capacity control device for control of the feed flow rate and/or pressure conditions to the membrane under design and variable demand conditions;

(d) reducing the feed flow rate and said driving force across the membrane, while continuing to maintain the full use of the installed membrane surface area of the system, during periods of reduced demand for quantity and/or purity of the product stream, either permeate or non-permeate, in response to output signals from said capacity control device, so that the product stream is withdrawn from the membrane system at the desired turndown quantity and/or quality during said turndown periods of reduced demand; and

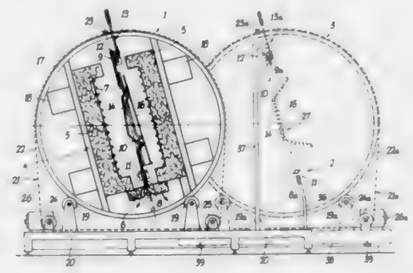
(e) adjusting the feed flow rate and said driving force across the membrane between the design conditons of step (a) for design demand conditions, wherein the product stream, either permeate or non-permeate, is obtained at the design quantity and purity levels, and lower feed flow rate and driving force conditions during step (d) for lower demand conditions in which the product stream is recovered at lower quantity and/or purity levels than said design levels, in response to said output signals from said capacity control device in response to said process variable signals proportional to the desired product flow and/or product purity in the product flow line from the membrane system, whereby the efficiency of the membrane process is enhanced by the full utilization of the available membrane surface area under variable demand conditions.

4,806,133

PROCESS AND APPARATUS FOR BENDING AND TEMPERING GLASS SHEETS

Giuseppe Mazzaroppi, Aprilia, Italy, assignor to Mazzaroppi S.r.L., Italy

Filed Dec. 18, 1987, Ser. No. 135,444
Claims priority, application Italy, Dec. 31, 1986, 48799 A/86
Int. Cl.⁴ C03B *23/025*
U.S. Cl. 65—107 **12 Claims**



1. A process for bending and tempering a glass sheet wherein the glass sheet is held in an almost vertical position and heated up to the plastic state and as soon as the plastic state is attained, it is tilted toward horizontal from said almost vertical position to a tilted orientation so that it bends by effect of gravity so as to rest on a skelet-type mold, and then it is tempered by sudden cooling, said process being characterized in that during the cooling and tempering stage said sheet is kept at the same tilted orientation.

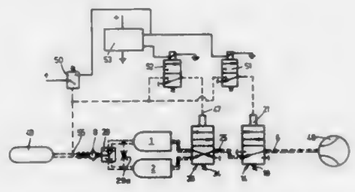
2. An apparatus for bending and tempering glass sheets, said apparatus comprising, in a sequence along a horizontal line, heating chamber and a cooling section both assembled on a single rotatable cylindrical frame with horizontal axis, means for supporting and driving the glass sheets through the apparatus, and means for tilting the heating chamber and the cooling section through rotation of the frame.

4,806,134

METHOD AND SYSTEM FOR CONTROLLING A COMPRESSED AIR FLOW IN AN AIR DRIER

Jiri E. J. Lhota, Salvagnsm, Sweden, assignor to Garphyttan Haldex AB, Landskrona, Sweden

Filed Dec. 22, 1987, Ser. No. 136,693
Claims priority, application Sweden, Dec. 22, 1986, 8605525
Int. Cl.⁴ B01D *53/04*
U.S. Cl. 55—162 **6 Claims**



1. Apparatus for controlling a compressed air flow from an air compressor to either one of two drying towers of an air drier, said apparatus including: an air-operated switch-over valve between the air drier and the compressor, an air-operated unloader valve being arranged between the switch-over valve and the compressor, an electric pressure switch downstream of the air drier for sensing air drier outlet pressure, the air for operating the unloader valve passing through a first, electrically controlled pilot valve and the air for operating the switch-over valve passing through a second, electrically controlled pilot valve, control means for controlling the positions of the first and second pilot valves, the control means including an electronic control device and the pressure switch, the electronic control device being responsive to the time the pressure switch is open, wherein the arrangement is such that voltage is supplied to the first pilot valve for directing operating air pressure to the unloader valve through one of the pressure switch, which is closed when the pressure at the drier outlet is at a predetermined level, and the electronic control device during periods of prolonged continuous air loading from the compressor through the air drier in the absence of operation of the pressure switch after a predetermined time, and that voltage is supplied to the second pilot valve for directing operating air pressure to the switch-over valve in a period from one to a next subsequent commencement of voltage supply to the first pilot valve and voltage is not supplied in the period from said next subsequent to the second subsequent commencement of voltage supply to the first pilot valve for allowing the switch-over valve to return to rest position.

4,806,135

BUBBLE TRAP FOR PHASE-SEPARATING GAS BUBBLES FROM FLOWING LIQUIDS

George G. Sipos, 2930G Grace La., Costa Mesa, Calif. 92626

Filed Mar. 1, 1988, Ser. No. 162,608
Int. Cl.⁴ B01D *19/00*
U.S. Cl. 55—204 **10 Claims**

1. A bubble trap for phase-separating gas bubbles from a flowing liquid comprising:

a body, said body being substantially a body of revolution about an upright axis, said body having a cover and a floor to define a debubbling chamber therein, an outlet in the upper portion of said debubbling chamber to permit the release of coalesced gas bubbles from said debubbling chamber;

an upwardly directed inlet fitting having an inlet passage therein, said inlet fitting being positioned beside said body, an inlet passage in said body connecting said inlet passage in said inlet fitting with said debubbling chamber, said inlet passage tangentially joining the walls defining said debubbling chamber so that fluid passing in through said inlet passage tangentially enters said debubbling chamber and rotates fluid around said axis in the counterclockwise direction in said debubbling chamber;

a central post mounted on said floor and extending upward on said axis to reduce volume in said debubbling chamber and eliminate vortexing on said axis; and

an outlet connection on said body, said connection having an outlet passage therethrough adjoining said debubbling chamber between the wall of said body and said central post, said outlet passage being away from said axis to eliminate vortexing and being downwardly directed so that a naturally draping inlet hose can be connected to said inlet connection and a naturally draping outlet hose can be connected to said outlet connection.

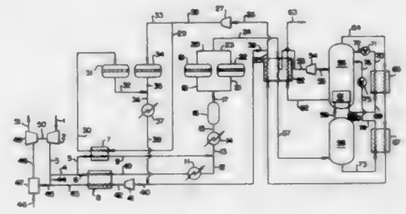


4,806,136

AIR SEPARATION METHOD WITH INTEGRATED GAS TURBINE

Donna F. Kiesz, Buffalo, N.Y., and Karen D. Paryeck, Danbury, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 15, 1987, Ser. No. 133,429
Int. Cl.⁴ F25J *3/00*
U.S. Cl. 62—18 **23 Claims**



1. A method for purifying feed air for separation in an air separation facility comprising:

(a) compressing feed air;

(b) cooling the compressed feed air;

(c) passing a first portion of the cooled, compressed feed air through a first purifier containing heat regenerable adsorbent, and a second portion of the cooled, compressed feed air through a second purifier containing heat regenerable adsorbent, wherein the first and second portions are substantially cleaned of impurities by transfer of the impurities to the adsorbent;

(d) introducing the cleaned first and second portions into an air separation facility as feed air;

(e) separating the feed air in the air separation facility into nitrogen-rich and oxygen-rich components;

(f) warming a first part of the nitrogen-rich component;

(g) passing the warmed first part through a third purifier containing heat regenerable adsorbent which contains impurities so as to transfer those impurities to the warmed part and thus clean the adsorbent;

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(h) passing a second part of the nitrogen-rich component through a fourth purifier containing clean, warm, heat regenerable adsorbent to cool the adsorbent;
(i) expanding the resulting first and second parts through an expansion turbine for the production of external work; and
(j) employing at least a portion of said external work to compress the feed air of step (a).

4,806,137

PROCESS FOR LUBRICATING A SURFACE SUCH AS A MOULD FOR THE MANUFACTURE OF A GLASS OBJECT

Franck Virey, Paris, France, assignor to L'Air Liquide, Paris, France

PCT No. PCT/FR87/00071, § 371 Date Oct. 19, 1987, § 102(e) Date Oct. 19, 1987, PCT Pub. No. WO87/05595, PCT Pub. Date Sep. 24, 1987
PCT Filed Mar. 13, 1987, Ser. No. 110,214
Claims priority, application France, Mar. 17, 1986, 86 03733
Int. Cl.⁴ C03B *9/48*
U.S. Cl. 65—26 **10 Claims**

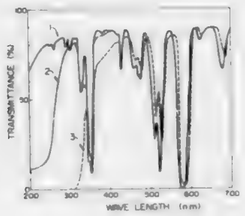
1. A process for providing a lubrication layer on a mold surface, in which the layer of lubricant is periodically deposited onto the surface, the process comprising maintaining the temperature of the surface at least about 500° C. as the lubricant is deposited thereon, producing said layer of lubricant by a flame having a temperature higher than 2000° K., and injecting a gaseous hydrocarbon through the flame for a given period of time, the gaseous hydrocarbon comprising at least 15% of a constituent in respect of which the ratio of the number of the carbon atoms to the number of hydrogen atoms C/H is higher than 0.75, the rate of injection of the hydrocarbon through the flame and the temperature of the flame being controlled in such manner as to obtain a porous layer of carbonaceous particles capable of burning in the air when they are deposited on the surface when the surface temperature is equal to at least about 500° C., the particles adhering to the surface.

4,806,138

METHOD FOR MELTING FLUOROPHOSPHATE GLASS

Kiyotaka Miura, Akishima; Tetsuro Izumitani, Hino, and Toshiharu Yamashita, Hachioji, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jan. 21, 1988, Ser. No. 146,679
Claims priority, application Japan, Jan. 24, 1987, 62-14953
Int. Cl.⁴ C03B *5/42*
U.S. Cl. 65—32.1 **8 Claims**



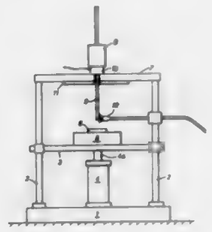
1. A method for melting a fluorophosphate glass, which comprises melting a fluorophosphate glass having a total oxide content of 5 to 30% in terms of cationic %, in a carbon container under a non-oxygen gas atmosphere.

4,806,139

PERMANENT ANTI-ADHERENT COATING FOR GLASSMAKING MOULDS AND ASSOCIATED EQUIPMENT

Michel Cartier, Chalain-Le-Comtal, and Jean-Paul Farjaudon, Saint-Just-Saint-Rambert, both of France, assignors to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement, Andrezieux-Boutheon, France

Filed Dec. 23, 1987, Ser. No. 137,018
Claims priority, application France, Dec. 30, 1986, 86 18378
Int. Cl.⁴ C03B *9/30, 11/06*
U.S. Cl. 65—170 **5 Claims**



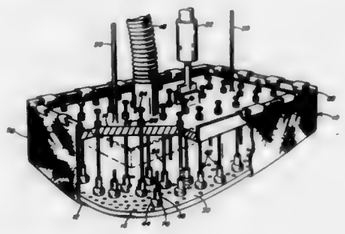
1. In an apparatus for the shaping of a mass of viscous glass wherein said glass mass is formed into a desired shape by contact with a forming surface, the improvement wherein said forming surface with which said glass mass comes into contact consists of a metallic layer comprising 30 to 55 percent by weight of molybdenum and less than 4 percent by weight of iron.

4,806,140

ADJUSTABLE PRESS FACE

George C. Krug, Newry; Donald J. Boeler; David C. Plauk, both of Altoona; Robert W. Sitman; Walter F. Shaaf, both of Bellwood, and Robert F. Pike, Altoona, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 21, 1987, Ser. No. 135,901
Int. Cl.⁴ C03B *23/023*
U.S. Cl. 65—290 **19 Claims**



1. An adjustable shaping mold comprising:
a rigid mounting plate;
a flexible shaping member with a first major surface forming a shaping surface of said mold;
a plurality of adjustable connectors positioned between said rigid plate and a central zone of said shaping member to maintain a predetermined spaced distance therebetween, each of said connectors including a base member secured to a surface opposite said shaping surface of said shaping member and an adjusting bolt with a first and extending through said rigid plate and an opposing end rotatably secured to said base member;
means cooperating between said rigid plate and said first end of said bolt to allow for axial adjustment of said bolt relative to said plate; and
means permitting adjustment of said bolt so as to change said space distance and configuration of said shaping surface of said shaping member wherein said permitting means is positioned outside of said space between said plate and shaping member and further wherein adjustment of said bolt in a first direction displaces said shaping member in a first direction relative to said rigid plate and adjustment of said bolt is a second, opposite direction displaces said shaping member in a second, opposite direction relative to said rigid plate.

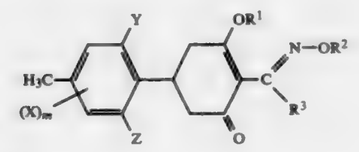
4,806,141

HERBICIDAL COMPOUNDS AND COMPOSITIONS

Keith G. Watson, Box Hill North; Lynette A. Garson, Parkville; Graham J. Bird, North Melbourne, and Graeme J. Farquharson, Reservoir, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Continuation of Ser. No. 457,387, Jan. 12, 1983, abandoned. This application Dec. 2, 1986, Ser. No. 937,467
Claims priority, application Australia, Jan. 29, 1982, PF2489; May 31, 1982, PF4228
The portion of the term of this patent subsequent to May 19, 2004, has been disclaimed.
Int. Cl.⁴ A01N *33/00*
U.S. Cl. 71—121 **13 Claims**

1. A compound of the formula



wherein:
Z and Y are independently selected from the group consisting of fluorine, chlorine, bromine, methyl, and methoxy;
X, which may be the same or different if there is more than one X, is selected from the group consisting of fluorine, chlorine, bromine, methyl, ethyl and methoxy;
at least one of Z, Y and X is methyl and if Z and Y are both methyl then at least on of X is not methyl;
R^1 is selected from the group consisting of hydrogen, benzoyl, lithium, sodium and potassium;
R^2 is selected from the group consisting of; C_1 and C_6 alkyl; C_2 to C_6 alkenyl; C_3 to C_6 alkynyl; C_1 to C_6 haloalkyl; C_2 to C_6 haloalkenyl; and C_3 to C_6 haloalkynyl;
R^3 is selected from the group consisting of C_1 to C_6 alkyl;
m is selected from 0, 1 and 2.

7. A herbicidal composition comprising as active ingredient a herbicidally effective amount of a compound as defined according to claim 1 and a carrier therefor.

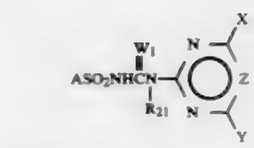
4,806,142

HERBICIDAL PYRIMIDINE SULFONYLUREAS

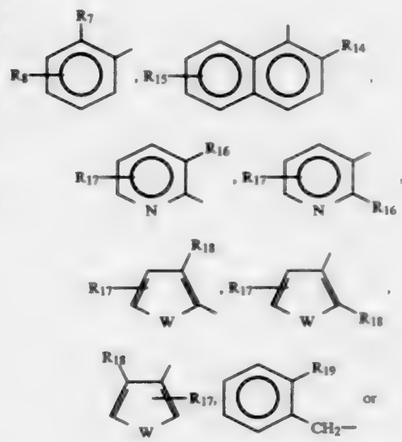
Rafael Shapiro, Wilmington, Del., assignor to E. I. DuPont De Nemours and Company, Wilmington, Del.

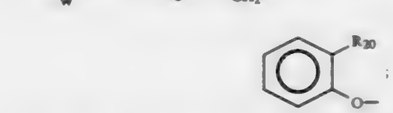
Division of Ser. No. 723,450, Apr. 15, 1985, Pat. No. 4,629,494, which is a continuation of Ser. No. 543,835, Oct. 20, 1983, abandoned, which is a continuation-in-part of Ser. No. 434,038, Oct. 20, 1982, abandoned, which is a continuation-in-part of Ser. No. 328,018, Dec. 7, 1981, abandoned. This application Aug. 13, 1986, Ser. No. 896,091
Int. Cl.⁴ A01N *43/54, 43/66*; C07D *251/46, 239/28*
U.S. Cl. 71—92 **3 Claims**

1. A compound of the formula:



wherein
X is CH_3, OCH_3, Cl, C_2H_5 or OC_2H_5;
Z is CH;
Y is $CH_2S(O)_mR_1$, or $R_1CHS(O)_mR_1$;
R_1 is C_1–C_2 alkyl;
m is 0, 1 or 2;
A is

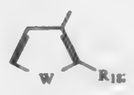




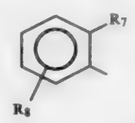
R_7 is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, F, Cl, I, Br, NO_2, CF_3, CO_2R_9, $SO_2NR_{10}R_{11}$, $SO_2N(OCH_3)CH_3$, OSO_2R_{12}, $S(O)_nR_{13}$, LCF_3, $LCHF_2$, LCF_2CF_2H, CH_2Cl, $CHCl_2$, CH_2OCH_3 or $CH_2OCH_2CH_3$;
R_8 is H, F, Cl, Br, CF_3, NO_2, C_1–C_3 alkyl C_1–C_3 alkoxy, OCF_2H or SCF_2H;
R_9 is C_1–C_4 alkyl, $CH_2CH_2OCH_3$, CH_2CH_2Cl or $CH_2CH{=}CH_2$;
R_{10} and R_{11} are independently C_1–C_3 alkyl;
R_{12} is C_1–C_4 alkyl, $CH_2CH_2OCH_3$, $CH_2CH_2CH_2OCH_3$ or C_1–C_4 alkyl substituted with 1–3 atoms of F, Cl or Br;
R_{13} is C_1–C_4 alkyl or $CH_2CH{=}CH_2$;
n is 0 or 2;
L is O, S or SO_2;
R_{14} is H, CH_3, OCH_3, F, Cl, Br, NO_2, $SO_2N(CH_3)_2$, OSO_2R_1 or $S(O)_aR_1$;
R_{15} is H, Cl, Br, CH_3, OCH_3 or NO_2;
R_{16} is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, F, Cl, Br, CF_3, CO_2R_9, $SO_2NR_{10}R_{11}$, $SO_2N(OCH_3)CH_3$ or $S(O)_aR_{13}$;
R_{17} is H, F, Cl, Br, CH_3 or OCH_3;
W is O or S;
W_1 is O or S;
R_{18} is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, F, Cl, Br, NO_2, CO_2R_9, $SO_2NR_{10}R_{11}$, $SO_2N(OCH_3)CH_3$ or $S(O)_aR_{13}$;
R_{19} is Cl, NO_2, CF_3, CO_2R_9, $SO_2N(OCH_3)CH_3$, $SO_2NR_{10}R_{11}$, OSO_2R_{12}, $S(O)_aR_{13}$, C_1–C_3 alkyl, or

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C_1–C_3 alkoxy optionally substituted with 1–5 atoms of Cl or F;
R_{20} is Cl, NO_2, CF_3, CO_2R_9, $SO_2N(OCH_3)CH_3$, C_1–C_3 alkyl, OSO_2R_{12} or C_1–C_3 alkoxy optionally substituted with 1–5 atoms of Cl or F;
R_{21} is H or CH_3;
and their agriculturally suitable salts; provided that
(1) the total number of carbon atoms of R_{10} and R_{11} is less than or equal to 4;
(2) when X is Cl, then Z is CH;
(3) when W is O, then R_{18} is H, Cl, Br, CH_3 or CO_2R_9;
(4) when W is O and R_{18} is H, Cl, Br, or CH_3, then A is



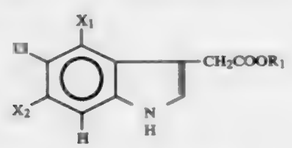
and
(5) when W_1 is S, then R_{21} is H and A is



4,806,143
INDOLEACETIC ACID DERIVATIVES AND APPLICATION THEREOF AS PLANT GROWTH REGULATORS
Shingo Marumo, Owariasahi; Masato Katayama, Nagoya; Fumio Futatsuya, Ouriya, and Mikio Saito, Ageo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan
PCT No. PCT/JP87/00010, § 371 Date Sep. 3, 1987, § 102(e) Date Sep. 3, 1987, PCT Pub. No. WO87/04157, PCT Pub. Date Jul. 16, 1987
PCT Filed Jan. 7, 1987, Ser. No. 103,584
Claims priority, application Japan, Jan. 8, 1986, 61-1850; Jul. 21, 1986, 61-169797
Int. Cl.[4] A01N *43/38;* **C07D** *209/18*
U.S. Cl. 71—96 **9 Claims**

1. An indole derivative represented by the formula:

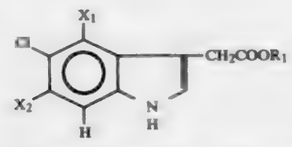
(I)



wherein each of X_1, and X_2 is a hydrogen or chlorine atom; X_2 is a chlorine atom in the case where X_1 is a hydrogen atom; X_2 is a hydrogen atom in the case where X_1 is a chlorine atom; and R_1 is a hydrogen atom, an alkali metal atom or a lower alkyl group.

8. A method of using, for regulating plant growth, an indole derivative represent by the formula:

(I)



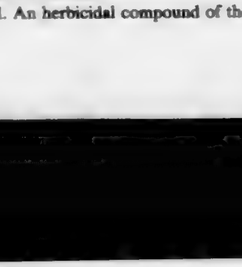
wherein each of X_1, and X_2 is a hydrogen or chlorine atom; X_2 is a chlorine atom in the case where X_1 is a hydrogen atom; X_2 is a hydrogen atom in the case where X_1 is a chlorine atom; and R_1 is a hydrogen atom, an alkali metal atom, or a lower alkyl group

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4,806,144
5-SULPHONAMIDO-1-ARYL-PYRAZOLES
Otto Schallner, Monheim; Reinhold Gehring; Jörg Stetter, both of Wuppertal; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Jan. 8, 1986, Ser. No. 817,181
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1985, 3503609
Int. Cl.[4] A01N *43/56;* **C07D** *231/1H*
U.S. Cl. 71—92 **15 Claims**

1. A 5-sulphonamido-1-aryl-pyrazole of the formula (I)

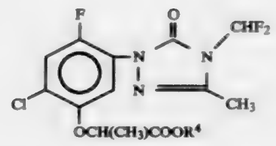
(I)



in which
R^1 represents nitro,
R^2 represents hydrogen, straight-chain or branched alkyl with 1 to 8 carbon atoms, a radical R^3—SO_2—, one equivalent of an alkali metal, alkaline earth metal or transition metal cation or an ammonium ion which is unsubstituted or mono-, di- or tri-substituted by identical or different substituents selected from the group consisting of methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl, s-butyl, t-butyl and phenyl,
R^3 represents in each case straight-chain or branched alkyl or halogenoalkyl, with in each case up to 4 carbon atoms and for said halogenoalkyl up to 9 identical or different halogen atoms,
R^4 and R^6 independently of one another represent halogen or straight-chain or branched halogenoalkyl with up to 4 carbon atoms and up to 9 identical or different halogen atoms, or a radical —$S(O)_n$—R^9 and
R^5, R^7 and R^8 independently of one another and independently of R^4 and R^6 represent hydrogen or halogen, wherein
R^9 represents halogenoalkyl with up to 4 carbon atoms and with up to 9 identical or different halogen atoms, and
n represents the number 2.

4,806,145
HERBICIDAL ARYL TRIAZOLINONES
Lester L. Maravetz, Westfield, N.J., assignor to FMC Corporation, Philadelphia, Pa.
PCT No. PCT/US85/02065, § 371 Date Oct. 21, 1985, § 102(e) Date Oct. 21, 1985, PCT Pub. No. WO86/02642, PCT Pub. Date May 9, 1986
Continuation-in-part of Ser. No. 666,933, Oct. 31, 1984, abandoned. This PCT application Oct. 21, 1985, Ser. No. 824,696
Int. Cl.[4] A01N *43/653;* **C07D** *249/12*
U.S. Cl. 71—92 **3 Claims**

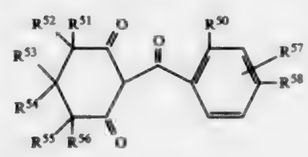
1. An herbicidal compound of the formula:



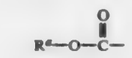
wherein R^4 is ethyl.

4,806,146
CERTAIN 2-(2-SUBSTITUTED BENZOYL)-1,3-CYCLOHEXANEDIONES
Charles G. Carter, Silver Spring, Md., assignor to Stauffer Chemical Company, Westport, Conn.
Division of Ser. No. 888,370, Jun. 30, 1986, Pat. No. 4,780,127, which is a continuation-in-part of Ser. No. 802,134, Nov. 29, 1985, abandoned, which is a continuation-in-part of Ser. No. 683,894, Dec. 20, 1984, abandoned. This application Feb. 8, 1988, Ser. No. 129,127
Int. Cl.[4] A01N *31/00, 41/00;* **C07C** *121/76, 149/40, 69/757, 49/225*
U.S. Cl. 71—98 **88 Claims**

1. A compound of the formula

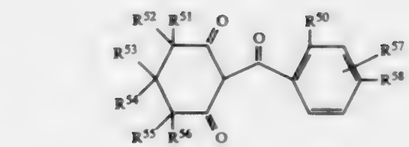


wherein
R^{50} is C_1–C_4 alkyl optionally substituted with halogen;
R^{51} is hydrogen or C_1–C_4 alkyl;
R^{52} is hydrogen, C_1–C_4 alkyl or

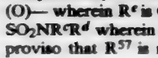


wherein R^a is C_1–C_4 alkyl; or
R^{51} and R^{52} together are alkylene having 3 to 6 carbon atoms;
R^{53} is hydrogen or C_1–C_4 alkyl;
R^{54} is hydrogen or C_1–C_4 alkyl;
R^{55} is hydrogen or C_1–C_4 alkyl;
R^{56} is hydrogen or C_1–C_4 alkyl; and
R^{57} and R^{58} independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) R^bSO_n— wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) —NR^cR^d wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) R^eC-(O)— wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) $SO_2NR^cR^d$ wherein R^c and R^d are as defined, with the proviso that R^{57} is not attached to the 6-position and their salts.

26. The method of controlling undesirable vegetation comprising applying to the area where control is desired, an herbicidally effective amount of a compound having the formula



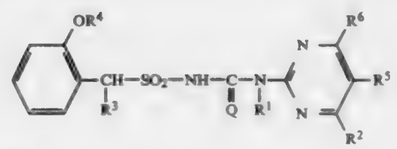
wherein
R^{50} is C_1–C_4 alkyl optionally substituted with halogen;
R^{51} is hydrogen or C_1–C_4 alkyl;
R^{52} is hydrogen, C_1–C_4 alkyl or



wherein R^a is C_1–C_4 alkyl; or
R^{51} and R^{52} together are alkylene having 3 to 6 carbon atoms;
R^{53} is hydrogen or C_1–C_4 alkyl;
R^{54} is hydrogen or C_1–C_4 alkyl;
R^{55} is hydrogen or C_1–C_4 alkyl;
R^{56} is hydrogen or C_1–C_4 alkyl; and
R^{57} and R^{58} independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) R^bSO_n— wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) —NR^cR^d wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) R^eC-(O)— wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) $SO_2NR^cR^d$ wherein R^c and R^d are as defined, with the proviso that R^{57} is not attached to the 6-position or its salts.

4,806,147
SUBSTITUTED 1-BENZYLSULPHONYL-3-HETEROARYL-(THIO)UREA HERBICIDES
Christa Fest, Wuppertal; Klaus-Helmut Müller, Duesseldorf; Theodor Pfister, Monheim; Hans-Jochem Riebel, Wuppertal; Ernst Kyseln, Bergisch-Gladbach; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch-Gladbach, and Robert H. Strang, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Dec. 9, 1987, Ser. No. 130,772
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1986, 3642824
Int. Cl.[4] C07D *239/69;* **A01N** *43/54*
U.S. Cl. 71—92 **6 Claims**

1. A substituted 1-benzylsulphonyl-3-pyrimidinyl-(thio)urea of the formula



in which
Q represents oxygen or sulphur,
R^1 represent hydrogen, or represents C_1–C_6-alkyl (which is optionally substituted by fluorine, cyano, C_1–C_4-alkoxy or C_1–C_4-alkylthio), or represents C_3–C_6-alkenyl or C_3–C_6-alkynyl (which are optionally substituted by fluorine or chlorine), or represents phenyl-C_1–C_2-alkyl (which is op-

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tionally substituted in the phenyl part by fluorine, chlorine, nitro, cyano, methyl, methoxy or C_1–C_2-alkoxycarbonyl),
R^2 represents hydrogen, fluorine, chlorine, bromine, methyl, ethyl, trifluoromethyl, methoxy, ethoxy, difluoromethoxy, methylthio, ethylthio, amino, methylamino, ethylamino, dimethylamino or diethylamino,
R^3 represents hydrogen or C_1–C_4-alkyl,
R^4 represents halogeno-C_1–C_4-alkyl wherein halogen represents fluorine and/or chlorine,
R^5 represents hydrogen, fluorine, chlorine, bromine, methyl, formyl, acetyl, methoxycarbonyl or ethoxycarbonyl, and
R^6 represents hydrogen, fluorine, chlorine, bromine, methyl, ethyl, trifluoromethyl, methoxy, ethoxy, propoxy, isopropoxy, difluoromethoxy, methylthio, ethylthio, methylamino, ethylamino, dimethylamino or diethylamino,
or a salt thereof with a metal or basic organic nitrogen compound.

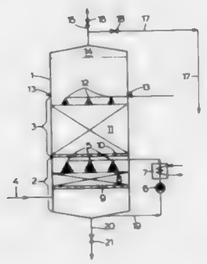
5. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound or salt thereof according to claim 1.

4,806,148

APPARATUS FOR BIOLOGICAL TREATMENT OF WASTE GASES

Simon P. P. Ottengraf, Stiphout, Netherlands, assignor to Clair Tech B.V., Netherlands

Continuation of Ser. No. 922,716, Oct. 24, 1986, abandoned, which is a continuation of Ser. No. 771,996, Sep. 3, 1985, Pat. No. 4,662,900, which is a continuation-in-part of Ser. No. 645,298, Aug. 24, 1984, abandoned. This application Dec. 21, 1987, Ser. No. 136,446
Claims priority, application Netherlands, Aug. 31, 1983, 8303031
Int. Cl.[4] B01D *53/14*
U.S. Cl. 55—223 18 Claims



1. Apparatus for biologically filtering gases containing pollutants, in particular industrial waste gases by a fixed bed type filter material containing a carrier material which has been provided with appropriate micro-organisms which are stationary within the fixed bed on the surface of the carrier material, wherein the gases are initially water saturated prior to their entrance into the filter material by bringing the gases into intimate contact with water in such a manner that the gases contain the quantity of water required for the micro-organism to optimally function the water saturated gases are then directed into the filter material and passed through it, whereby the pollutants in the water saturated gas come in direct contact with the micro-organism on the surface of the carrier material, the apparatus comprising a container including at least a biological fixed bed type filter unit including the fixed bed having a carrier material, a supply conduit for the gases to be treated at the lower side and a discharge for the treated gases at the upper side, characterized in that at least one filter unit is arranged in the container, means for moisturizing with water the gases prior to entry of the gases into the fixed bed including a pretreatment chamber, means for introducing gases to be treated into the pretreatment chamber, means for controlling the temperature of the water for moisturizing the gases, and the fixed bed located downstream of the moisturizing means, means for directing the pretreated gases to the filter unit.

4,806,149

METHOD FOR REGULATING PLANT GROWTH USING XANTHATES

Morris J. Danzig, Northbrook, and Alan M. Kinnersley, Bedford Park, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Oct. 8, 1987, Ser. No. 105,936
Int. Cl.[4] A01N *37/00*; C07C *154/02*
U.S. Cl. 71—100 8 Claims

1. A xanthate selected from the group consisting of dipropylene glycol xanthate, dipropylene glycol dixanthate, triethylene glycol xanthate, and triethylene glycol dixanthate.

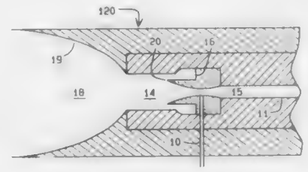
2. A process for increasing the rate of growth of a plant which comprises supplying to the plant an effective amount of one or more xanthates selected from the group consisting of dipropylene glycol xanthate, dipropylene glycol dixanthate, triethylene glycol xanthate, and triethylene glycol dixanthate.

4,806,150

DEVICE AND TECHNIQUE FOR IN-PROCESS SAMPLING AND ANALYSIS OF MOLTEN METALS AND OTHER LIQUIDS PRESENTING HARSH SAMPLING CONDITIONS

Joseph L. Alvarez, Idaho Falls, and Lloyd D. Watson, Rigby, both of Id., assignors to The United States Department of Energy, Washington, D.C.

Filed Jan. 21, 1988, Ser. No. 146,641
Int. Cl.[4] B22F *9/08*
U.S. Cl. 75—0.5 C 15 Claims



1. A method for delivering a liquid to a means for continuously analyzing the liquid comprising the steps of:
directing the liquid into a stream of a gas, nebulizing the liquid into discrete particles, forming a two phase spray of the gas and liquid particles, shaping and cooling the spray by directing a supplemental gas flow concentrically about the spray;
directing the shaped and cooled spray to a particle sizing means;
directing the sized particles to a conditioning means; and
analyzing the sized and conditioned particles.

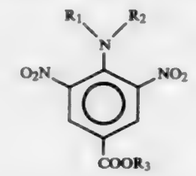
4,806,151

BENZOIC ACID DERIVATIVES

Péter Bohus; Ferenc Bihari; Marianna Kertész née Szabó; István Kilrnyis; Péter Berze; János Szalágyi; Jenő Mészáros, all of Budapest; Gyula Eifert, Dunakeszi; Agnes Mészáros née Szakrányes, Budapest; Ödön S. Jártos, Budapest, and László Gondos, Budapest, all of Hungary, assignors to Budapesti Vegyimüvek, Budapest, Hungary

Filed Nov. 19, 1985, Ser. No. 799,517
Claims priority, application Hungary, Nov. 19, 1984, 4285/84
Int. Cl.[4] A01N *37/44*
U.S. Cl. 71—111 13 Claims

1. Fungicidal and/or herbicidal composition comprising as active ingredient in an amount of 0.01–80% by weight a new benzoic acid derivative of the general Formula I



I

wherein
R_1 and R_2 stand for C_{1-8} alkyl, C_{2-8} alkenyl or benzyl;
R_3 represents C_{1-8} alkyl or C_{2-8} alkenyl;
R_1 and R_2 may be the same or different; and R_3 may be identical with or different from R_1 and/or R_2.

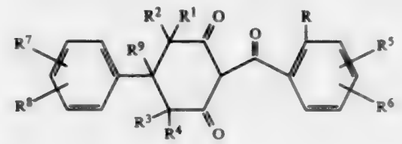
4,806,152

CERTAIN 2-(SUBSTITUTED BENZOYL)-5-(SUBSTITUTED OR UNSUBSTITUTED PHENYL)-1,3-CYCLOHEXANEDIONES AS HERBICIDES

David L. Lee, Martinez, and William J. Michaely, Richmond, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 906,461, Sep. 12, 1986. This application Feb. 19, 1988, Ser. No. 157,752
Int. Cl.[4] A01N *31/08*
U.S. Cl. 71—123 6 Claims

1. The method of controlling undesirable vegetation comprising applying to the area where control is desired, an herbicidally effective amount of a compound having the formula



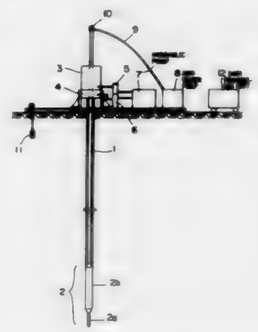
wherein
R is halogen; C_1–C_2 alkyl; C_1–C_2 alkoxy; trifluoromethoxy or difluoromethoxy; nitro; cyano; C_1–C_2 haloalkyl; R^aSO_n— wherein n is 0 or 2 and R^a is C_1–C_2 alkyl, trifluoromethyl or difluoromethyl;
R^1 is C_1–C_4 alkyl;
R^2 is hydrogen or C_1–C_4 alkyl; or
R^1 and R^2 together are C_2–C_5 alkylene;
R^3 is hydrogen or C_1–C_4 alkyl;
R^4 is hydrogen is C_1–C_4 alkyl; or
R^3 and R^4 together are C_2–C_5 alkylene;
R^5, R^6, R^7 and R^8 independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) R^bSO_n— wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) —NR^cR^d wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)$— wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) —$SO_2NR^cR^d$ wherein R^c and R^d are as defined; and (13) —$N(R^c)C(O)R^d$ wherein R^c and R^d are as defined; and
R^9 is hydrogen or C_1–C_4 alkyl, and their salts.

4,806,153

METHOD AND APPARATUS FOR INVESTIGATING SUBSURFACE CONDITIONS

Katsuo Sakai, Kawasaki; Tadahiko Maruyamachi, Kokubunji, and Yukio Sakai, Komae, all of Japan, assignors to Kisojiban Consultants Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 797,536, Nov. 13, 1985, abandoned, which is a continuation of Ser. No. 518,524, Jul. 29, 1983, abandoned, which is a continuation-in-part of Ser. No. 331,461, Dec. 16, 1981, abandoned. This application Feb. 25, 1987, Ser. No. 20,155
Claims priority, application Japan, Jan. 22, 1981, 56-8361
Int. Cl.[4] E21B *47/00*
U.S. Cl. 73—151 2 Claims



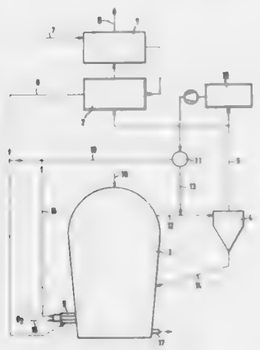
1. A method for investigating subsurface ground conditions and collecting data and information relating thereto comprising:
(a) lowering a recording and control unit of a down hole, in situ soil testing device having preselected individual sensors, data acquisition rates and activation times; said device comprising:
(1) a sensor unit comprising said sensors capable of continuously sensing a plurality of physical soil parameter including a measurement of the force resisting tip penetration, the lateral soil frictional force resisting penetration, and the pore water pressure in the soil at the depth of penetration;
(2) said recording and control unit which records in digital form the analog output of all the sensors in a preselected repetitive manner while the testing device is being penetrated into the ground; and
(3) a power unit which supplies power to the previous two units;
(b) penetrating said down hole device into the ground;
(c) retrieving said device to the surface of the ground and transferring said data and information to a second memory device for permanent storage;
(d) processing said data and information in a desired form by computation, tabulation, and charting of said data.

4,806,154

PROCESS FOR THE PRODUCTION OF PIG IRON FROM FINE ORE USING PLASMA BURNER

Rolf Hauk, Achern, Fed. Rep. of Germany, assignor to Korf Engineering GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 2, 1986, Ser. No. 914,373
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1985, 3535572
Int. Cl.[4] C21B *13/12, 23/00, 47/00*
U.S. Cl. 75—10.19 20 Claims



1. A method of producing pig iron, comprising the steps of: reducing fine ore to sponge iron in at least one reduction unit, feeding coal having a particle size of up to 50 millimeters into a top portion of a melt-down gasifier so that the coal falls into a lower portion of the melt-down gasifier and forms a fluidized bed of coke in the lower portion, feeding the sponge iron from the at least one reduction unit laterally directly into the lower portion of the melt-down gasifier, melting down and reducing the sponge iron to pig iron in said lower portion by the coke in the fluidized bed and by a plasma gas introduced into the lower portion by plasma burner means, removing the pig iron from the melt-down gasifier, and removing reaction gas produced in the melt-down gasifier at the top portion.

4,806,155

METHOD FOR PRODUCING DYSPROSIUM-IRON-BORON ALLOY POWDER

Floyd E. Camp, Trafford, Pa., and Stanley A. Wooden, Sonora, Ky., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

Filed Jul. 15, 1987, Ser. No. 73,727
Int. Cl.[4] B22F *9/22, 9/24*
U.S. Cl. 75—0.5 AA 20 Claims

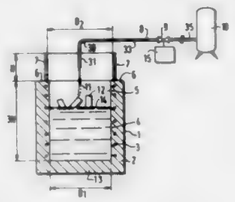
1. A method for producinq a dysprosium-iron alloy adapted for use in the manufacture of rare-earth element containing, iron-boron permanent magnets, said method including providing a particle mixture compriaing dysprosium oxide, iron and calcium, compacting said particle mixture to produce a consolidated article, heating said article for a time at temperature to form a metallic compound comprising dysprosium and iron and to form calcium oxide, producing a particle mass of −35 mesh from said compact, washing said particle mass with water at a temperature no greater than 10° C. to react said calcium and said calcium oxide therewith to form ca-lcium hydroxide, while preventing oxidation of said particle mass, and removing said calcium hydroxide from said particle mass.

4,806,156

PROCESS FOR THE PRODUCTION OF A BATH OF MOLTEN METAL OR ALLOYS

Sara H. Anderson, Westmont, and Noel F. Lutgen, Dowyers Grove, both of Ill., assignors to Liquid Air Corporation, Walnut Creek, Calif.

Filed Jul. 24, 1987, Ser. No. 77,168
Int. Cl.[4] C22B *9/00*
U.S. Cl. 75—96 7 Claims



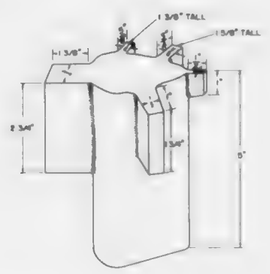
1. A process for the production of a bath of molten metal or alloy of metals in a furnace to substantially prevent hydrogen pick-up in said molten metal or alloy, said process comprising the steps of introducing pieces comprising at least one of said metals in said furnace, said pieces forming a charge, heating said charge, and discharging a gas above the charge, said gas being selected from the group consisting of carbon dioxide snow, liquefied nitrogen and liquefied argon, said discharging step starting at the beginning of the heating up of said charge, up the tapping of said molten metal or alloy, the flowrate of said gas discharged in the furnace being about between 0.025 and 0.060 lb/cu.in. of metal in the furnace, said bath being substantially free from hydrogen gas throughout the process.

4,806,157

PROCESS FOR PRODUCING COMPACTED GRAPHITE IRON CASTINGS

Sundaresa V. Subramanian, 84, Bowman Street, Hamilton, Ontario, Canada L8S 2T6

Continuation-in-part of Ser. No. 507,130, Jun. 23, 1983, abandoned. This application Dec. 19, 1984, Ser. No. 683,725
Int. Cl.[4] C21C *7/02*
U.S. Cl. 420—30 14 Claims



1. Method for producing compacted graphite cast iron exhibiting a uniform distribution of compacted graphite in shaped castings of varying cross sectional dimensions within the range of ¼ inch to 4 inch comprising:
(i) forming a near eutectic melt of cast iron having the chemistry of a ductile base metal and low sulfur content;
(ii) admixing sufficient graphite stabilizing agent with said melt to suppress carbide eutectic formation;
(iii) admixing at least one rare earth-containing reduce and

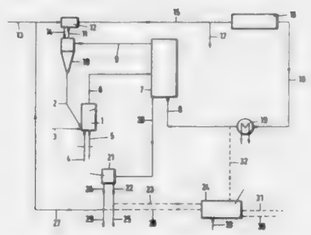
maintain the Henrian activity of residual oxygen in the melt within the range of from about 10^{-5} to 10^{-7};
(iv) innoculating the melt immediately prior to casting with a graded innoculant in an amount sufficient to permit interconnected compacted graphite growth; and
(v) casting the resulting melt.

4,806,158

PROCESS OF REDUCING FINE-GRAINED IRON-CONTAINING MATERIAL BY MEANS OF SOLID CARBONACEOUS REDUCING AGENTS

Martin Hirsch, Friedrichsdorf; Fritz Rose, Bad Homburg, and Harry Serbent, Hanau am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 31, 1987, Ser. No. 80,303
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1986, 3626027
Int. Cl.[4] C21B *13/14*
U.S. Cl. 75—26 16 Claims



1. A process for the direct reduction of iron oxide-containing materials, comprising:
introducing an iron oxide-containing material and a solid carbonaceous reducing agent into a first expanded fluidized bed;
introducing an oxygen containing gas into said first expanded fluidized bed as fluidizing gas;
maintaining weakly reducing conditions in said first expanded fluidized bed and adjusting the gas residence time therein so that reduction potential will result as a reduction of the iron oxide-containing material not in excess of the FeO state;
discharging a gas-solids suspension from the first expanded fluidized bed;
introducing the gas-solids suspension into a second expanded fluidized bed;
supplying a strongly reducing gas as fluidizing gas into said second expanded fluidized bed;
discharging at least a portion of the devolatilized material with the strongly reducing gas from an upper section of the second expanded fluidized bed;
and discharging the reduced material from the lower portion of the second expanded fluidized bed.

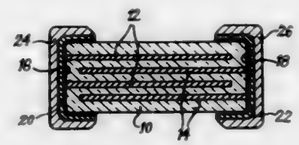
4,806,159

ELECTRO-NICKEL PLATING ACTIVATOR COMPOSITION, A METHOD FOR USING AND A CAPACITOR MADE THEREWITH

Andre De Keyser, Wichita Falls, Tex.; Lac Naessens, Nazareth, and Eddy Viaene, Lokeren, both of Belgium, assignors to Sprague Electric Company, North Adams, Mass.

Filed Jul. 16, 1987, Ser. No. 74,104
Int. Cl.[4] C23C *18/28*
U.S. Cl. 106—111 7 Claims

1. An electro-plating activator composition, for sensitizing a ceramic surface to be electro-plated with nickel, consisting essentially of the ingredients at least 85% silver, from 0.1% to 7% of the precious metal palladium and from 1% to 10% of an element selected from copper, silicon, bismuth, zinc, iron, nickel, tin, zirconium, niobium, antimony, manganese, and



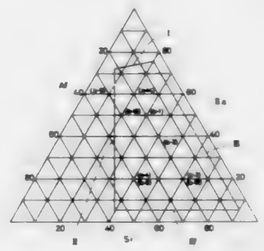
combinations thereof wherein said percentage quantities, are by weight relative to that of the sum of said ingredients.

4,806,160

METALLIZING COMPOSITION

Yoichi Hagiwara; Kenichi Shimizu, both of Kokubu, and Satoshi Tanaka, Hayato, all of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Nov. 29, 1985, Ser. No. 803,044
Claims priority, application Japan, Nov. 30, 1984, 59-254361
Int. Cl.[4] B05B *7/00*
U.S. Cl. 106—1.12 7 Claims



1. A metallizing composition comprising:
(A) 35 to 90% by volume of:
(i) an oxynitride glass of aluminum, silicon and at least one element selected from the group consisting of beryllium, magnesium, calcium, strontium and barium;
(ii) an oxynitride glass of aluminum, silicon and at least one element selected from the group consisting of scandium, yttrium, lanthanum, cerium, praseodymium, neodium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thalium, ytterbium and lutetium; or
(iii) a mixture of glasses (i) and (ii); wherein said oxynitride glass contains nitrogen in an amount of 2 to 19% by weight, based on the glass; and
(B) 65 to 10% by volume of a high-melting-point metal powder which comprises at least one metal in elemental form or a compound thereof, said at least one metal being selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, cromium, molybdenum and tungsten, and said compound being selected from the group consisting of silicides, carbides and borides.

VOL 1099 ISS 3 FE 21 1989 UMI

4,806,161

COATING COMPOSITIONS

William J. Fabiny, Harleysville, and Judith M. Shabrach, Boyertown, both of Pa., assignors to Teleflex Incorporated, Limerick, Pa.

Filed Dec. 4, 1987, Ser. No. 128,622
Int. Cl.[4] C09D *5/08*; C04B *9/02*
U.S. Cl. 106—14.12 31 Claims

2. A coating composition comprising: an acid binder aqueous solution which comprises phosphate ions and ions of the group of chromate or molybdate ions; thixotropic ingredient for forming a three dimensional, crosslinked network which renders said composition in a gel state when not subject to movement and in a liquid state when subject to movement; and surface tension modifying ingredients for reducing surface tension of said composition without loss of said three dimensional, crosslinked network, said surface tension modifying ingredients including the combination of an anionic surfactant and an anionic friction reducer.

4,806,162

FLAME RESISTANT POLYMERS

Michel Ladang, Herve, Belgium, assignor to Norton Company, Worcester, Mass.

Division of Ser. No. 125,036, Nov. 24, 1987. This application May 13, 1988, Ser. No. 193,468
Int. Cl.[4] C08L *1/18*; C08V *9/00*
U.S. Cl. 106—18.13 3 Claims

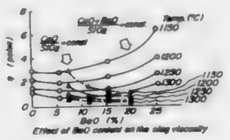
1. A non-foamed organic polymer including a flame retarding system for said polymer and said polymer's gaseous by-products, said flame retarding system comprising 20 to 120 parts by weight of an organo phosphate plasticizer 1 to 15 parts by weight of antimony trioxide, 5 to 60 parts by weight of aluminum hydroxide or hydrated alumina, 1 to 15 parts by weight of a borate, and 1 to 20 parts by weight of a brominated hydrocarbon, all per 100 parts by weight of said polymer.

4,806,163

MOLD ADDITIVES FOR USE IN CONTINUOUS CASTING

Hakaru Nakato; Tsutomu Nozaki; Yasuhiro Habu; Hiromu Oka; Tsunehiro Ueda; Takao Koshikawa, all of Chiba; Hideaki Kishimoto, and Fumitaka Shimokawa, both of Kobe, all of Japan, assignors to Kawasaki Steel Corporation and Sakai Chemical Industry Co., Ltd., both of Kobe, Japan

Continuation of Ser. No. 865,910, May 13, 1986, abandoned, which is a continuation of Ser. No. 655,928, Sep. 28, 1984, abandoned. This application Nov. 5, 1987, Ser. No. 122,498
Claims priority, application Japan, Sep. 30, 1983, 58-180704
Int. Cl.[4] B28B *7/36*; C03C *3/112*
U.S. Cl. 106—38.22 3 Claims



Effect of BaO content on the slag viscosity

1. A mold additive for use in a continuous casting under a high cycle mold oscillation, which comprises a base material having a chemical composition of CaO—BaO—SiO_2—F system, said base material being vitrified by a preliminary melting and having a weight ratio of (CaO + BaO)/SiO_2 of 0.6–2.5 and containing not less than 2% by weight of BaO, 2–15% by weight of F and not more than 10% of Al_2O_3; said mold additive consisting mainly of 20–40% by weight of SiO_2, 15–35% by weight of CaO and 5–20% by weight of BaO, and containing 2–15% by weight in total of at least one carbonate of alkali and alkaline earth metals, 2–30% by weight in total of at least one fluoride of alkali and alkaline earth metals, 2–10% by weight in total of at least one oxide of Fe, Mn, and Ni, and 0.5–5% by weight of carbon based on said base material, respectively, and having a solidification temperature of not more than 900° C. and a viscosity at 1300° C. of not more than 2 poises.

4,806,164

METHOD OF REDUCING FLUID LOSS IN CEMENT COMPOSITIONS

Lance E. Brothers, Ninnekah, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Mar. 27, 1987, Ser. No. 32,151
The portion of the term of this patent subsequent to Oct. 20, 2004, has been disclaimed.
Int. Cl.[4] C04B *7/35*; E21B *33/14*
U.S. Cl. 106—90 14 Claims

1. A method of cementing a conduit in a borehole penetrating an earthen formation by introducing a cementing composition into the space between said conduit and said formation, said cementing composition comprising:

hydraulic cement, an aqueous fluid, and a fluid-loss additive consisting essentially of a polymer reaction product of styrene with 2-acrylamido-2-methylpropanesulfonic acid and their salts, said styrene being present in said polymer in an amount of from about 15 to about 60 mole percent of said polymer.

4,806,165

PREPARATION OF ACTIVATORS FOR FAST-SETTING CEMENTS

Elliot I. Band, North Tarrytown, and Fawzy G. Sherif, Stony Point, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 15, 1985, Ser. No. 787,558
Int. Cl.[4] C04B *12/02*
U.S. Cl. 106—85 4 Claims

1. A process for preparing a particulate solid activator capable of reacting at ambient temperatures with a magnesium-containing component in the presence of an aqueous component to form a magnesium phosphate fast-setting cement comprising diatomaceous earth containing absorbed P_2O_5 values, said process comprises spray drying a slurry of an ammonium phosphate solution, phosphoric acid and the diatomaceous earth to obtain said particulate solid activator.

3. The product of the process of claim 1.

4,806,166

TALL OIL BASED AMINO ESTERS AS ANTI-STRIPPING AGENTS FOR ASPHALT

Peter Schilling, and Hans G. Schroeders, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Sep. 17, 1987, Ser. No. 97,687
Int. Cl.[4] C08L *95/00*; C09D *3/24*
U.S. Cl. 106—284.06 12 Claims

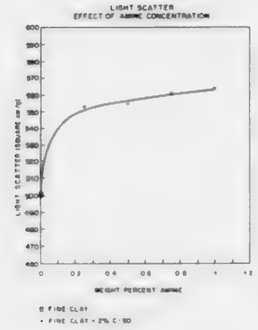
1. An asphalt composition having improved adhesion to aggregate comprising asphalt and an adhesion improving amount of an anti-stripping agent comprising an aminoester reaction product of a tall oil fatty acid and triethanolamine.

4,806,167

KAOLIN AGGREGATION USING COMBINATION OF ORGANIC AND INORGANIC BASES

Rasik H. Raythatha, Tenaille, Ga., assignor to E.C.C. America Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 918,632, Oct. 14, 1986, and a continuation-in-part of Ser. No. 1,889, Jan. 9, 1987. This application Apr. 27, 1987, Ser. No. 43,214
Int. Cl.[4] C04B *14/00, 33/04*; D21H *1/10*; C09C *3/00*
U.S. Cl. 106—465 13 Claims



1. A method for producing a kaolin pigment having enhanced light scattering and opacifying properties when incorporated in paper; said method comprising intermixing with a fine particle size kaolin, urea or an organic amine and an aggregation enhancing agent selected from one or more members of the group consisting of any alkali or alkaline earth metal carbonate or alkaline earth metal hydroxide, the enhancing agent being present in quantities to provide from about 5 to 120 millimoles of the enhancing agent metal ion species per 100 parts by weight of kaolin.

4,806,168

REFRACTORY MATERIAL AND ITS USE

Lennart Ivarsson, Hägnäs, and Rolf Lundqvist, Gothenburg, both of Sweden, assignors to Hägnäs AB, Hägnäs and Nordsec Security AB, Gothenburg, both of, Sweden

Continuation of Ser. No. 760,895, Jul. 31, 1985, abandoned. This application Jun. 30, 1987, Ser. No. 68,720
Claims priority, application Sweden, Aug. 7, 1984, 8404002; May 15, 1985, 8502429
Int. Cl.[4] C04B *7/32*
U.S. Cl. 106—104 14 Claims

1. Refractory material comprising (i) grog in the form of grains or particles selected from the group consisting of alumina, bauxite, kaolin, aluminum silicate, chromite, zircon, zirconia and olivine (ii) a hydraulic binder comprising calcium aluminate cement or chemical binder, (iii) substantially evenly distributed contents of a heat-resistant fibre reinforcement and (iv) a cutting-resistant material having a hardness of at least about 7 as measured according to the Mohs' scale in individual pieces, said pieces having a cross-dimension of at least about 5 mm.

4,806,169

PROCESS FOR THE REMOVAL OF SOLID DEPOSITS FROM WATER SUPPLY INSTALLATIONS

Rainer Spline, and Thomas Kötzsch, both of Rheinfelden, Fed. Rep. of Germany, assignors to R. Spane GmbH & Co. KG, Rheinfelden, Fed. Rep. of Germany

Filed Jun. 4, 1985, Ser. No. 741,245
Int. Cl.[4] C23G *1/02*
U.S. Cl. 134—3 7 Claims

1. A process for the treatment of interior surfaces of water supply installations to remove therefrom solid manganese-containing ocherous and sinter deposits formed by microorganisms known as iron and manganese bacteria from water that originates from natural sources, comprising the steps of applying to said interior surfaces of said installations an aqueous solution of hydrochloric acid and hydrogen peroxide, the concentration of said hydrochloric acid in said solution being between about 0.001 and about 6N and the hydrogen peroxide being present in an amount of between about 0.05 and about 20 percent by weight.

4,806,170

METHOD FOR PROVIDING ACCESS TO UNDERGROUND VALVE STEMS AND TOOL

John T. Doty, 2238 E. 21st St., Long Beach, Calif. 90806

Filed Nov. 10, 1986, Ser. No. 928,565
The portion of the term of this patent subsequent to Jul. 22, 2003, has been disclaimed.
Int. Cl.[4] B08B *7/00*
U.S. Cl. 134—9 9 Claims

1. A method of gaining access to a valve-operating stem, having an operating fitting at the end, of an underground value having a circular enclosure surrounding the operating end of the valve stem and extending to the surface, wherein the enclosure has become at least partially filled with a relatively solidfied material, the steps of inserting into the enclosure a tool having a rotatable blade capable of cutting into the partially solidified material and rotating the said blade so as to break up the solidified material in the enclosure; removing the said tool from the enclosure; inserting another tool into the enclosure and rotating the said other tool for collecting and holding the broken-up material in the enclosure; and the other tool having a cylindrical part having a bore of a size that it can come down over the fitting, the cylindrical part having on the outside and extending to the base thereof a helical rib for removing the dirt down below the end of said fitting withdrawing the said other tool and removing the collected and held broken-up material accumulated in the enclosure until access is had to the operating fitting at the end of the valve-operating stem, and inserting a tool engageable with the said operating fitting for turning the stem.

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4,806,171

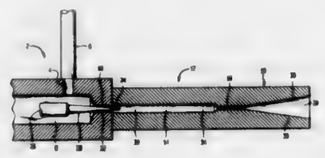
APPARATUS AND METHOD FOR REMOVING MINUTE PARTICLES FROM A SUBSTRATE

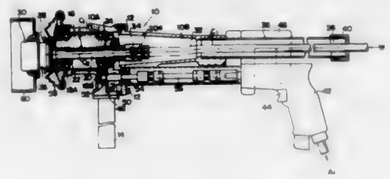
Walter H. Whitlock, Pompeck; William R. Weltmer, Jr., Murray Hill, and James D. Clark, Mountainside, all of N.J., assignors to The BOC Group, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 41,169, Apr. 22, 1987, abandoned. This application Nov. 3, 1987, Ser. No. 116,194

Int. Cl.[4] B08B 7/00

U.S. Cl. 134—7 **20 Claims**





1. Apparatus for removing small particles from a substrate comprising:

(a) A source of pure fluid carbon dioxide under pressure and having an enthalpy of below about 135 BTU per pound based on an enthalpy of zero at 150 psia for a saturated liquid, so that a solid fraction will form upon expansion of the fluid carbon dioxide to the ambient pressure of said substrate;

(b) a first expansion means for expanding a portion of the fluid carbon dioxide obtained from the source into a first mixture containing gaseous carbon dioxide and fine droplets of liquid carbon dioxide;

(c) a coalescing means operatively connected to the first expansion means for converting said first mixture into a second mixture containing gaseous carbon dioxide and larger liquid droplets of carbon dioxide;

(d) a second expansion means operatively connected to the coalescing means for converting said second mixture into a third mixture containing discrete, minute solid particles of carbon dioxide not normally resolvable by the human eye and gaseous carbon dioxide; and

(e) means connected to said second expansion means for directing said third mixture toward the substrate.

15. A method for removing particles from a substrate surface comprising:

(a) converting pure fluid carbon dioxide into a first mixture of fine droplets of liquid carbon dioxide and gaseous carbon dioxide;

(b) converting said first mixture into a second mixture containing larger droplets of liquid carbon dioxide and gaseous carbon dioxide;

(c) converting said second mixture into a third mixture containing discrete, minute solid carbon dioxide particles not normally resolvable by the human eye and gaseous carbon dioxide; and

(d) directing said third mixture toward the substrate whereby said third mixture removes said particles from the substrate.

4,806,172

METHOD AND APPARATUS FOR REMOVING SUBSTANCES ADHERING TO SURFACE

Takayuki Adaci, and Nobuo Nakmo, both of Tokyo, Japan, assignors to JSE Corporation, Tokyo, Japan and Katsuhiko Watanabe Holdings Ltd., Calgary, Canada

Filed Jul. 3, 1985, Ser. No. 752,206

Claims priority, application Japan, Apr. 2, 1985, 60-70561

Int. Cl.[4] B08B 3/00

U.S. Cl. 134—34 **5 Claims**

1. A method for removing substance adhering on a surface, utilizing an elongated holder having a central longitudinal axis, a front axial end and a rear axial end; a nozzle head mounted on said front axial end of said holder and extending frontwardly therefrom, said nozzle head having a central axis that is parallel with and laterally offset from said central longitudinal axis of said holder, means for continuously revolving said nozzle head about said central longitudinal axis of said holder, said nozzle head having a plurality of spaced-apart nozzles arranged in a pattern on the front face thereof so that said nozzles move through separat Ⓡcircular paths when said nozzl Ⓡh Ⓡad revolves around said central longitudinal axis of said holder, said nozzles having an orifice diameter of from 0.05 to 0.5 mm, which comprises the steps of: continuously undirectional revolving said nozzle head around said central longitudinal axis of said holder at a rate of 800 to 4000 rpm, simultaneously moving said nozzle head substantially in parallel with said surface, simultaneously supplying water at a pressure of 800 kg/cm^2 or higher and at a volumetric flow rate of 12 liters/min or less to said nozzles and thereby jetting said high pressure water from said nozzles against said surface, the loci of the streams of said high pressure water jetted from said nozzles overlapping each other as said nozzle head is moved substantially in parallel with said surface.

4,806,173

METHOD OF CLEANING DENTAL APPLIANCES ARTIFICIAL DENTURES

Sameeh S. Toukan, 856 E. Phillip Dr., Phoenixville, Pa. 19460

Filed Jan. 5, 1987, Ser. No. 735

Int. Cl.[4] B08B 3/08; C11D 7/28

U.S. Cl. 134—42 **5 Claims**

1. A method of removing tartar and other oral deposits from artificial dentures which comprises soaking the dentures overnight in an aqueous solution of a carboxylic acid selected from the group consisting of mandelic acid, lactic acid and chlorinated acetic acid, then rinsing them with water.

4,806,174

ALUMINUM-LITHIUM ALLOYS AND METHOD OF MAKING THE SAME

Chai W. Cho, Monroeville, and Ralph R. Sawtell, Pittsburgh, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 594,344, Mar. 29, 1984, Pat. No. 4,648,913. This application Nov. 19, 1985, Ser. No. 793,273

Int. Cl.[4] C22F 1/04

U.S. Cl. 148—12.7 A **55 Claims**

1. A method of making lithium containing aluminum base alloy products having improved properties in the 45° direction, the method comprising the steps of:

(a) providing a body of an aluminum base alloy consisting essentially of 0.5 to 4.0 wt. % Li, 0 to 5.0 wt. % Mg, up to 5.0 wt. % Cu, 0 to 2.0 wt. % Mn, 0 to 7.0 wt. % Zn, 0.5 wt. % max. Fe, 0.5 wt. % max. Si, and one of the elements selected from the group consisting of Zr, Cr, Ce and Sc, the balance aluminum, elements and incidental impurities;

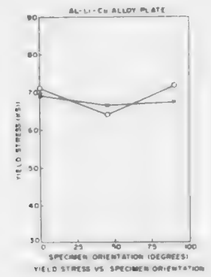
(b) heating the body to a temperature for a series of controlled low temperature hot working operations to put said body in a condition for recrystallization;

(c) subjecting said body to said series of controlled low temperature hot working operations to provide an intermediate product;

(d) recrystallizing said intermediate product;

(e) hot working the recrystallized product to a shaped product; and

(f) solution heat treating, quenching and aging said shaped product to provide a substantially non-recrystallized product having a metallurgical structure generally lacking intense work texture characteristics, said product having improved levels of properties in the 45° direction.



4,806,175

METHOD OF SURFACE HARDENING FERROUS WORKPIECES

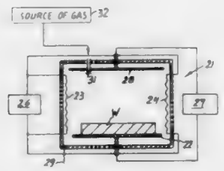
Ulrich Wendt, Reinbeck, Fed. Rep. of Germany, assignor to Körber AG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 622,777, Jun. 21, 1984, abandoned. This application Oct. 10, 1985, Ser. No. 786,350

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1983, 3322957

Int. Cl.[4] C21D 1/74

U.S. Cl. 148—16.5 **6 Claims**



1. A method of hardening the surface of a ferrous workpiece, comprising a first step of treating the surface of the workpiece with boron with attendant formation of iron boride having a hardness in excess of 1000 HV; and a second step of carburizing the thus treated surface, including positioninf the workpiece in the plasma of a glow discharge.

4,806,176

PROCESS FOR PRODUCING A GRAIN-ORIENTED ELECTROMAGNETIC STEEL SHEET HAVING A HIGH MAGNETIC FLUX DENSITY

Jiro Harase; Katsuro Kuroki; Toshiya Wada, and Shozaburo Nakashima, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Otemachi, Japan

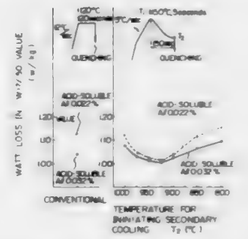
Filed May 25, 1982, Ser. No. 381,877

Claims priority, application Japan, May 30, 1981, 56-83071

Int. Cl.[4] H01E 1/04

U.S. Cl. 148—111 **7 Claims**

1. A process for producing a grain-oriented electromagnetic steel sheet or strip, wherien a silicon steel ingot or slab containing from 2.5 to 4.0% silicon, not more than 0.085% carbon, from 0.010 to 0.050% acid-soluble aluminum, from 0.03 to 0.15% manganese, and from 0.010 to 0.050% sulfur is successively hot-rolled, precipitation-annealed, reduced by cold-rolling at least once, decarburized, and subjected to final annealing, said reduction by said cold-rolling step being carried out so as to obtain a final thickness by reducing the thickness from 81 to 95%, characterized in that said precipitation annealing is carried out by first appreciably precipitating AlN by elevating the temperature to a holding temperature wherein during said elevating the rate of temperature wherein during said elevating the rate of temperature elevation from a temperature of 800° C. to said holding temperature is controlled within the range of from 2° to 10° C./second, by, second holding the temperature at said holding temperature ranging from 1080° to 1200° C. for less than 60 seconds, then carrying out cooling from said holding temperature in such a manner that the staying time during the cooling from said holding temperature to an intermediate temperature of from 900° to 980° C. ranges from 20 seconds to less than 500 seconds, and finally carrying out quenching form said intermediate temperature to room temperature at a cooling rate of at least 10° C./sec.



4,806,177

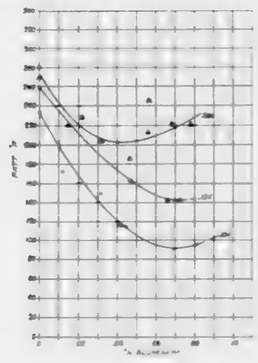
AS-HOT ROLLED BAR STEEL

John F. Held, Hudson, and Barry A. Lauer, Macedonia, both of Ohio, assignors to LTV Steel Company, Inc., Cleveland, Ohio

Filed Jul. 6, 1987, Ser. No. 69,869

Int. Cl.[4] C22C 38/12

U.S. Cl. 148—320 **7 Claims**



1. A forging grade, as-hot rolled bar steel characterized by an air-cooled hardness in a range of from about 225 to about 350 BHN, and further characterized by a composition consisting essentially of from about 0.30–0.50 percent carbon, 0.30–1.90 percent manganese, 0.04 percent maxiumum phosphorus, 0.08 percent maximum sulfur, 0.15–0.35 percent silicon, 0.007–0.019 percent nitrogen, 0.08–0.17 percent vanadium, 0.05–0.11 percent aluminum, and the balance iron.

4,806,178

NON-HEAT REFINED STEEL BAR HAVING IMPROVED TOUGHNESS

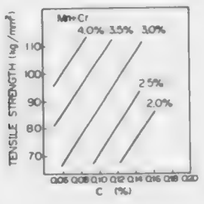
Yoshiro Koyasu; Yutaka Tanchida, and Nobukazu Suzuki, all of Muroran, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 751,193, Jul. 2, 1985, abandoned. This application Dec. 16, 1986, Ser. No. 942,960

Claims priority, application Japan, Jul. 4, 1984, 59-138276; Dec. 12, 1984, 59-260839

Int. Cl.[4] C22C *38/28*

U.S. Cl. 148—330 **2 Claims**



1. Non-heat treated steel bar consisting of, by weight percentage:

C: 0.05%–less than 0.15%,

Si: 0.10%–1.00%,

Mn: 0.50%–3.00%,

Cr: at least 0.67% Cr with Cr plus Mn being 1.60%–4.20%,

Ti: 0.010%–0.030%,

B: 0.0005%–0.0030%,

Al: 0.010%–0.05%,

N: not more than 0.0060%, and the balance consisting essentially of iron; and said steel bar has a tensile strength of from 70 to 100 kg/mm^2 and improved toughness in terms of 5 kg-m/cm^2 or more of impact value, as well as bainite matrix, said steel bar having been hot-forged and cooled in still air, without any subsequent step of being quenched and tempered.

4,806,179

FINE AMORPHOUS METAL WIRE

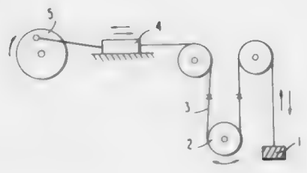
Michiaki Hagiwara; Akira Maejiu; Nomura Kobachi; Katsuka Masuru; Yamada Yoshinao, and Sasaki Miyuri, all of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Jul. 10, 1987, Ser. No. 71,823

Claims priority, application Japan, Jul. 11, 1986, 61-164310; May 27, 1987, 62-130870

Int. Cl.[4] C22C *19/07*

U.S. Cl. 148—403 **14 Claims**



1. A fine amorphous metal wire with a circular cross section having improved toughness comprising an amorphous metal having a composition represented by the formula:

$$Fe_aCo_bCr_cSi_xB_y$$

wherein

a+b is from about 53 to 80 atomic %;

c is from about 3 to 20 atomic %;

x is from about 5 to 15 atomic %; and

y is from about 5 to 15 atomic %;

provided that

$$\frac{(b)}{(a+b)}$$

is in a range from about c×0.025 +0.25 to c×0.0121+0.73; and x+y is from about 17 to 27 atomic %.

4,806,180

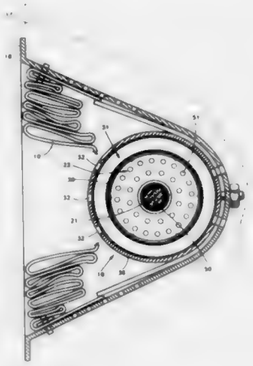
GAS GENERATING MATERIAL

George W. Goetz, Rochester Hills, Mich., and Brian K. Hamilton, Littleton, Colo., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Continuation-in-part of Ser. No. 131,407, Dec. 10, 1987, abandoned. This application May 12, 1988, Ser. No. 193,361

Int. Cl.[4] C06B *45/30*

U.S. Cl. 149—5 **10 Claims**



1. Structure for generating gas, said structure comprising:

a grain made of an azide based material which generates gas upon combustion;

said grain having an ignition enhancing coating thereon comprising; 30 to 50% by weight of an alkali metal azide, 40 to 60% by weight of an inorganic oxidizer, 5 to 15% by weight of boron, and 1 to 15% by weight of a metal silicate.

4,806,181

METHOD FOR MOULDING A THERMOPLASTICS MEMBER WITH A FUSION PAD

Alexander T. E. Ewen, Nazing, and David A. Hewitt, Welwyn Garden City, both of Great Britain, assignors to Glynwed Tubes & Fittings Limited, Great Britain

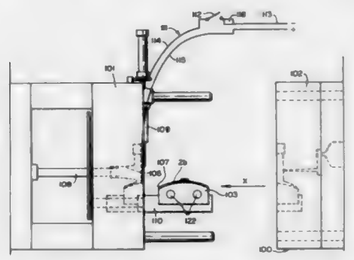
Filed Mar. 4, 1987, Ser. No. 21,446

Claims priority, application United Kingdom, Mar. 19, 1986, 8606790

Int. Cl.[4] B29C *65/02*

U.S. Cl. 156—64 **10 Claims**

1. A method of moulding a thermosplastics member to a fusion pad, said pad comprising an electrically heatable element enveloped in a thermoplastics material, said method comprising mounting the fusion pad in a mould in a plastics moulding machine; moulding the thermoplastics member over the fusion pad and, during the moulding of the thermoplastics member electrically heating the element to assist in bonding the thermoplastics material of the envelope to the material of the member.



4,806,182

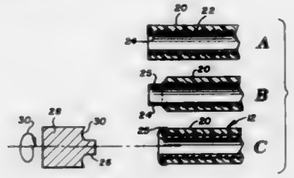
METHOD OF BONDING A HUB TO A TEFLON-LINED CATHETER BODY

Mark A. Rydell, Excelsior, and Rick L. Shockey, Roseville, both of Minn., assignors to Schneider-Shiley (U.S.A.) Inc., Minneapolis, Minn.

Filed Oct. 15, 1985, Ser. No. 787,736

Int. Cl.[4] B32B *31/28*

U.S. Cl. 156—211 **2 Claims**



1. A method of attaching a plastic hub to the proximal end of an elongated flexible tubular catheter of the type having an outer thermoplastic tube whose lumen is lined with a Teflon layer comprising the steps of:

(a) cutting a predetermined length of the Teflon-lined tubing from a continuous length of such materials;

(b) removing the outer thermoplastic layer from a short end portion of said catheter body to expose the underlying Teflon layer in said short end portion;

(c) rolling the exposed portion of said Teflon layer back over the end of said thermoplastic tube; and

(d) inserting said end portion of said catheter body into a bore formed in said hub such that the rolled end portion of the Teflon layer is trapped and precluded from unrolling; and

(e) bonding said catheter body to the interior wall of said counterbore in said hub.

4,806,183

METHOD OF AND APPARATUS FOR CONTROLLING APPLICATION OF GLUE TO DEFINED AREAS

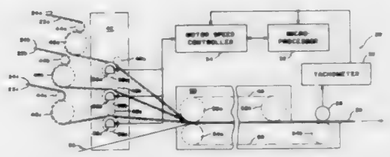
Donald H. Williams, Adams, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Continuation-in-part of Ser. No. 895,280, Aug. 11, 1986, abandoned. This application Sep. 18, 1987, Ser. No. 98,401

Int. Cl.[4] B05C *11/00*; B32B *31/08*

U.S. Cl. 156—64 **24 Claims**

19. A method of applying adhesive to flutes of a plurality of corrugated webs, comprising the steps of transferring adhesive to peripheries of a plurality of applicator rolls; moving the webs in unison and at the same speed of travel, such that each web moves across the periphery of an associated one of the applicator rolls with its flutes against the periphery to transfer adhesive from the periphery to the flutes; continuously sensing the actual speed of travel of the webs; and rotating each applicator roll, in accordance with the sensed actual speed of travel of the webs, at a rate of rotation that is independent of the rate of rotation of the other applicator rolls and that is varied as necessary to maintain constant an individually selected and adjustable relationship between the peripheral speed of the roll and the sensed actual speed of travel of the webs, despite any variations in the sensed actual speed of travel of the webs, to thereby control the amount and location of adhesive applied onto the flutes of each individual one of the webs.



4,806,184

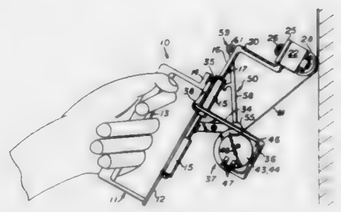
WALLPAPER APPLICATOR

Brian P. Shannon, 9800 Bissonnett, #304, Houston, Tex. 77074

Filed Aug. 31, 1987, Ser. No. 91,262

Int. Cl.[4] E04B *2/00*

U.S. Cl. 156—71 **18 Claims**



1. A method of applying adhesive or prepasted wallcovering material to a wall or other surface comprising the steps of:

(A) providing a hand-held wallpaper applicator having a hand grip portion and a flat generally rectangular base portion, with an elongate separable roller assembly rotatably and removably carried thereon which is adapted to receive and releasably secure one end of a strip of wallcovering material therein and to receive the remaining strip material thereon in a rolled condition, an elongate laterally adjustable tubular pressure contact member carried at the forward end of the applicator parallel with the roller assembly for contacting and applying pressure to the wallcovering material as it is scrolled off the roller assembly, and tensioning means on the applicator for applying resilient pressure to the material rolled on the roller assembly to maintain the remaining material in rolled condition as the material is being scrolled off the roller assembly, said tensioning means being selectively movable between a position into engagement with the rolled material and a position out of engagement therewith and remote from the roller assembly for allowing the roller assembly to be removed from the applicator, said applicator having level means for indicating the positioning of the sheet material upon the surface being covered and rotary means releasably and operatively connected to the roller assembly for rotating same to scroll said remaining strip material thereon in a rolled condition,

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(B) cutting a strip of wallcovering material to the required length sufficient to cover the surface to be covered,
(C) folding the bottom of the strip, placing the folded end within the separable roller assembly and securing the roller assembly to the folded end such that the fold is aligned with the longitudinal edge of the roller assembly,
(D) loosely rolling the remaining strip of material and submerging it in a trough of water or water and paste solution, including the end of the material upon which the roller assembly is secured, for a sufficient time to throughly wet the material and insure complete activation of the adhesive coating thereon,
(E) moving the applicator tension assembly to the remote position and lifting the roller assembly with the folded end secured thereon and placing it into the applicator with the pattern side of the material facing out relative to the roller assembly,
(F) installing the rotary means on the roller assembly and rotating it to scroll the remaining strip of material from the trough onto the roller assembly with the pattern side of the material facing out and thereafter removing the rotary means,
(G) moving the tensioning means into engagement against the rolled material to prevent the material from prematurely scrolling off of the roller assembly,
(H) pulling the free end of the material to scroll a short length of the material off the roller assembly,
(I) positioning the free end beneath the tubular pressure contact member at the front of the applicator such that the leading edge of the material is parallel to the longitudinal edge of pressure contact member,
(J) positioning the pressure contact member and leading edge of the material against the surface to be covered such that the adhesive side of the material is pressed against the surface by exerting pressure on the pressure contact member while observing the level means and manipulating the applicator to assure that the material is correctly aligned and the pressure contact member is level and properly aligned on the surface
(K) manually applying pressure while moving the applicator in the direction in which the material is to be applied and allowing the rolled material to scroll off the roller assembly under the tension of the tensioning means and to become adhered to the surface as it passes beneath the curved surface of the pressure contact member,
(L) continuing movement and constant pressure against the surface over the length of the surface until the strip of material is completely scrolled off the roller assembly, and
(M) thereafter cutting another strip and repeating previously recited steps 2 through 12.

4,806,185

METHOD OF MAKING COATED FIRE BARRIERS FOR UPHOLSTERED FURNISHINGS

Rick A. Porter, North Augusta, S.C., and Hans R. Hoernle, Augusta, Ga., assignors to Springs Industries, Inc., Fort Mill, S.C.

Filed Jul. 16, 1987, Ser. No. 74,074
Int. Cl.[4] B32B *31/12*
U.S. Cl. 156—78 **15 Claims**

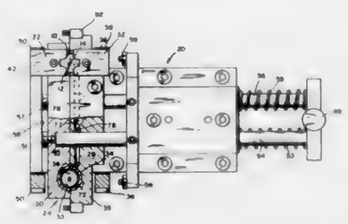
1. A method for forming a fire resistant upholstered article comprising an outer upholstery fabric that houses and contains filler materials, comprising interposing a fire barrier material between the outer upholstery fabric and the filler materials; wherein said fire barrier material is formed by coating a fibrous substance selected from the group consisting of glass, carbon, polyaramid, polybenzimidazole, polymeta-phenylene diamine isophthalate, and combinations thereof, with a latex of enhanced thermal conductivity containing a finely divided heat conductive metal selected from the group consisting of aluminum, copper, nickel, andmixtures thereof, and wherein said interposed fire barrier-upholstered fabric has a porosity rating of less than 10 cubic feet of air per minute per square foot measured at a pressure of ½ inch of water.

4,806,186

METHOD FOR PRODUCING A MASS PRODUCTION EAR PLUG

Robert Sirkin, Fullerton, and Norman D. Best, Duarte, both of Calif., assignors to Moldex Metric, Inc., Culver City, Calif.

Continuation-in-part of Ser. No. 921,365, Oct. 20, 1986, abandoned. This application Feb. 2, 1987, Ser. No. 9,695
Int. Cl.[4] B32B *31/18*
U.S. Cl. 156—80 **22 Claims**



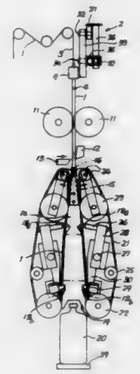
1. The method of inserting an end of a flexible interconnecting means, used to connect a pair of plug members composed of at least partially open cell foam material and which serve as ear plugs, into a respective plug member, comprising:
a. placing the plug member into an enclosed chamber which contains a multiplicity of blow holes in its surface and an opening in one transverse surface;
b. forcing pressurized gas through said blow holes which gas in turn flows into the open cells of the at least partially open cell foam material from which each plug member is made;
c. inserting a first piercing member through said opening in the lateral surface of said chamber and into one lateral surface of said plug member while it is being filled with pressurized gas and thereafter removing the piercing member to thereby create a first hairline slit within the lateral surface of said plug member;
d. inserting a second piercing member in a direction generally perpendicular to the direction of said first piercing member through said opening in the lateral surface of of said chamber and into the lateral surface of said plug member while it is being filled with pressurized gas and thereafter removing the second piercing member to thereby create a second hairline slit approximately perpendicular to and crossing the approximate centerline of said first hairline slit within the lateral surface of said plug member;
e. placing adhesive adjacent to the intersection of said first and second hairline slits;
f. selecting a given length of interconnecting member and cutting the interconnecting member to form two ends;
g. inserting one end of said interconnecting member into said plug member at the location of the intersection of said first and second hairline slits; and
h. removing said plug member from said chamber.

4,806,187

METHOD AND APPARATUS FOR SUCCESSIVELY APPLYING THERMOSHRINKABLE TUBULAR LABELS TO CONTAINERS

Shotaro Fujisawa, Uji, Japan, assignor to Fujiyama Giken Co., Ltd., Japan

PCT No. PCT/JP87/00379, § 371 Date Feb. 11, 1988, § 102(e) Date Feb. 11, 1988, PCT Pub. No. WO87/07878, PCT Pub. Date Dec. 30, 1987
PCT Filed Jun. 12, 1987, Ser. No. 176,648
Int. Cl.[4] B32B *31/00*
U.S. Cl. 156—86 **3 Claims**



1. A method of successively applying thermoshrinkable tubular labels to containers, comprising: a step of feeding a thermoshrinkable tubular web which has been paid out in a flat condition; a step of smoothing out the pleats at the opposite lateral edges of the web that has been fed and simultaneously forming spaces at opposite lateral edges thereof; a step of placing the thermoshrinkable tubular web having said spaces formed therein on a wedge-shaped upper portion of an insertion guide shaped to correspond to the shape of said spaces and having a lower portion of substantially the same shape in transverse section as that of a container; a step of cutting the thermoshrinkable tubular web covering the upper portion of the insertion guide into a tubular label of a predetermined length; a step of moving the thermoshrinkable tubular label cut to the predetermined length from the upper to the lower portion of the insertion guide by a pair of feed belts pressed against the side surfaces of the insertion guide; a step of feeding a container to a predetermined position below the insertion guide; and a step of moving by the feed belts the thermoshrinkable tubular label that has been moved to the lower portion of the insertion guide downwardly of the insertion guide and applying the tubular label to a predetermined position on the outer circumferential surface of the container that has been fed to the predetermined position below the insertion guide while simultaneously reforming the tubular label to substantially the same shape in transverse section as the container.

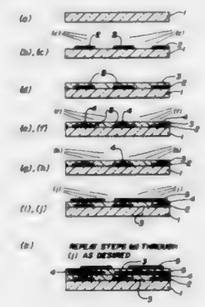
4,806,188

METHOD FOR FABRICATING MULTILAYER CIRCUITS

Joseph R. Rellick, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 4, 1988, Ser. No. 164,452
Int. Cl.[4] B32B *31/16*
U.S. Cl. 156—89 **8 Claims**

1. A method for the fabrication of multilayer circuits comprising the sequential steps of:
(a) providing a dimensionally stable electrically insulative substrate;
(b) applying to the substrate a patterned conductive layer;
(c) firing the patterned conductive layer;
(d) laminating to the fired patterned conductive layer and exposed areas of the substrate a layer of dielectric green tape;
(e) forming vias in selected positions through the layer of dielectric green tape in registration with the fired patterned conductive layer of step (c);
(f) firing the laminated dielectric green tape layer;
(g) filling the vias in the dielectric tape layer with a conductive metallization;



(h) firing the filled vias in the dielectric tape layer;
(i) applying a patterned conductive layer to the dielectric tape layer in registry with the vias therein;
(j) firing the patterned conductive layer; and
(k) in the event the multilayer circuit requires more than two layers having conductive patterns, repeating the sequence of steps (d) through (j) until the desired number of circuit layers has been obtained.

4,806,189

COMPOSITE FLUID SEPARATION MEMBRANES

Menahem A. Kraus, St. Louis, and Chinh N. Tran, St. Ann, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 13, 1984, Ser. No. 640,058
Int. Cl.[4] B32B *31/00*; B01D *53/22*
U.S. Cl. 156—155 **9 Claims**

1. A process for forming a composite fluid separation membrane comprising:
(a) impregnating a preformed porous support having pores extending there through with a volatile solvent;
(b) forming in situ a separating layer on one or both surfaces of the porous support from a solution of a polymer having fluid separation capabilities;
(c) evaporating the impregnation solvent while simultaneously evaporating the separating layer polymer solution solvent, the evaporation occurring before substantial diffusion of the separating layer polymer into the pores of the porous substrate; and
(d) achieving a composite fluid separation membrane having improved permeability rates.

4,806,190

METHOD AND APPARATUS FOR FORMING REINFORCED DRY LAID FIBROUS WEBS

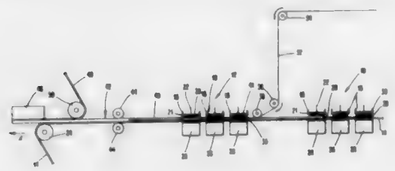
Wayne P. Sorenson, Appleton, Wis., assignor to James River-Norwalk, Inc., Richmond, Va.

Filed Apr. 16, 1985, Ser. No. 723,863
Int. Cl.[4] B65H *51/00*
U.S. Cl. 156—161 **14 Claims**

1. A method of making a reinforced, dry laid fibrous web comprising the steps of:
(a) laying a first layer of dry cellulosic fibers on a forming wire means;

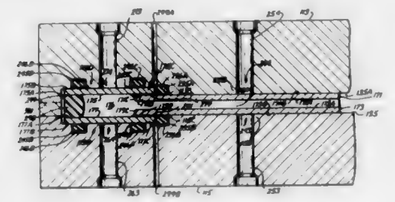
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(b) applying a plurality of yarns maintained under tension to the first layer of dry cellulosic fibers;
(c) releasing the tension on the yarns upon application to the first layer of dry cellulosic fibers to form relaxed, bulked yarns;



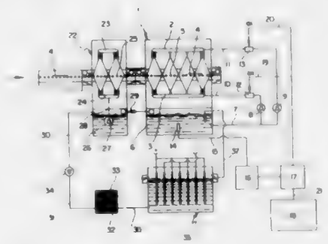
(d) laying a second layer of dry cellulosic fibers on the first layer of dry cellulosic fibers and relaxed, bulked yarns; and
(e) bonding together the first and second layers of dry cellulosic fibers.

4,806,191
GLASS LAMINATED STRUCTURE INJECTION MOLDING AND LAMINATING APPARATUS
Kurt E. Jochel, San Juan Capistrano, and Jerome C. Schutzler, Laguna Niguel, both of Calif., assignors to PDA Engineering, Costa Mesa, Calif.
Filed Feb. 26, 1987, Ser. No. 19,234
Int. Cl.[4] B32B *31/00, 31/20*
U.S. Cl. 156—382 **8 Claims**



1. An apparatus for use in making a laminated structure which includes first and second panels, said apparatus comprising:
first and second platens having first and second faces, respectively, and adapted to have the first and second panels respectively, retained thereon;
each of said platens having a vacuum path means for communicating vacuum pressure to said face thereof whereby the panels can be retained on the associated platens;
means for mounting the platens for pivotal movement between a first position in which the faces are exposed to facilitate the placement of the panels against the associated face and a second position in which the faces are in spaced generally parallel relationship;
first and second sealing means for sealing between the first platen and the first panel and between the second platen and the second panel respectively; and
first passage means in the first platen for providing communication between the first sealing means and ambient pressure.

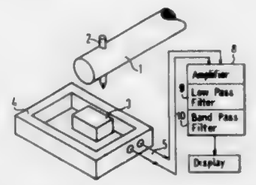
4,806,192
METHOD FOR ETCHING MATERIALS
Rainer D. Haas, Herrenberg, Fed. Rep. of Germany, assignor to Haas Hollmaller Maschinenbau GmbH & Co., Fed. Rep. of Germany
Division of Ser. No. 929,419, Nov. 12, 1986. This application Feb. 12, 1988, Ser. No. 155,542
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1985, 3539686
Int. Cl.[4] C23F *1/02*
U.S. Cl. 156—345 **6 Claims**



1. Apparatus for etching supports that have deposited thereon an etchable metal with an etching medium, which apparatus includes:
(a) an etching chamber including means to introduce an etching medium,
(b) means to convey supports with metal deposited thereon through said etching chamber,
(c) a plurality of nozzles which are positioned to spray etching medium containing acid on said supports as they move through said etching chamber,
(d) a sump for receiving residual etching medium withdrawn from said etching chamber,
(e) a first circulating system constructed and arranged for circulating residual etching medium from said sump back to said plurality of nozzles,
(f) a reservoir containing an oxidizing agent,
(g) a device for introducing and regulating the addition of oxidizing agent into the circulating system set forth in an amount which is stoichiometrically in excess of that required to remove metal from said supports,
(h) a chamber containing a metal which will react with said oxidizing agent,
(i) a second circulating system constructed and arranged for circulating residual etching medium from said sump set forth in (d) through said chamber set forth in (h),
(j) a regenerating chamber arranged to receive and regenerate the etching medium leaving the chamber set forth in (h), and
(k) means to convey the etching medium regenerated in said regenerating chamber back to the sump set forth in (d).

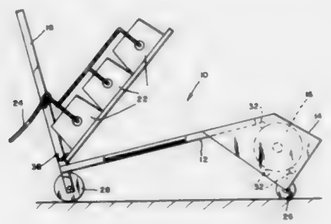
4,806,193
APPARATUS FOR MEASURING BONDING PARAMETERS
Klaus U. Von Raben, Baldham, and Rupert Ladwig, Alling, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jan. 27, 1988, Ser. No. 148,955
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1987, 3703943
Int. Cl.[4] B29C *65/08*
U.S. Cl. 156—378 **11 Claims**

1. An apparatus for measuring and monitoring force adjustment, ultrasound adjustment and bonding time of bonding machines, particularly bonders, which work with ultrasound and which are used for bonding terminal wires which lead from semiconductor bodies to interconnects of non-conductive substrates, comprising a mobile piezo-electric sensor independent of the bonding machine located on a table of the bonding machine under a tip of a bonding nozzle for measuring the bonding force and ultrasound amplitude, said piezo-electric



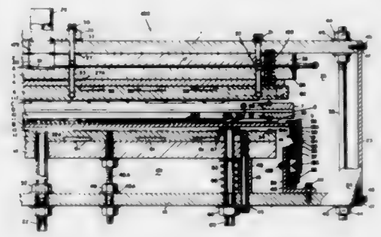
sensor providing a bonding force signal, an ultrasound signal for a bonding time and registering them during a simulated bonding process; and these two signals being supplied to an amplifier which electronically separates these two signals with filters and supplies them to an apparatus for display and evaluation.

4,806,194
ROOFING PAPER APPLICATOR
Richard D. Wald, 2326 Rutgers Dr., Costa Mesa, Calif. 92626
Filed Mar. 7, 1988, Ser. No. 165,258
Int. Cl.[4] B27G *11/02*; B32B *31/24*
U.S. Cl. 156—379.8 **9 Claims**



1. An applicator for heating and applying roofing paper to a roof comprising:
a substantially flat table bed for accepting a roll of roofing paper at a first end;
said table having a handle at a second end and a cradle at the first end for holding said roll of roofing paper;
at least one burner pivotally attached to said table at the second end for exposing the flat table bed when in the raised position and covering said flat table bed in a spaced apart relationship when in the lowered position;
said burner being supported over said table bed in a spaced apart relationship by suitable brackets to form an oven area over said table bed whereby said roofing paper passes unrestricted over said table bed and through said oven area; and
a pair of rollers located on the bottommost portion of said table with a first roller attached to the bottommost portion of said cradle and a second roller attached to the bottommost portion of said handle whereby said roofing paper is adapted to pass over the flat table bed, through the oven area, over and under the second roller and then under the first roller as the applicator is pulled by the handle.

4,806,195
PRINTED CIRCUIT BOARD LAMINATING MACHINE
Edmond Nassyal, 1907 Frederick, Placentia, Calif. 92670
Filed Sep. 28, 1987, Ser. No. 101,850
Int. Cl.[4] B32B *31/04, 31/20*
U.S. Cl. 156—382 **16 Claims**



1. A laminating apparatus comprising,
housing means,
a laminating platform for supporting elements to be laminated to each other,
first pressure plate means mounted below said laminating platform,
second pressure plate means mounted above said laminating platform,
an upper plate and a lower plate,
flexible bellows joined to each of said upper and lower plates to define a cavity inside said bellows and between said upper plate and said lower plate,
said lower plate connected to said second pressure plate means,
said upper plate connected to said housing means,
a vacuum means connected to communicate with said cavity,
thermal means disposed adjacent to said second pressure plate means to selectively apply heat to said second pressure plate means,
thermal insulator means disposed between said thermal means and said lower plate,
diaphragm means disposed between said laminating platform and one of said first and second pressure plate means,
first seal means disposed between said diaphragm means and said laminating platform to selectively provide an airtight seal therebetween,
second seal means disposed between said diaphragm means and said second pressure plate means to selectively provide an airtight seal therebetween,
third seal means disposed between said laminating platform and said first pressure plate means to selectively provide an airtight seal therebetween,
a plurality of channels connected to said vacuum means in order to permit vacuum to be selectively drawn on opposite sides of said laminating platform and in said bellows means, and
said vacuum means also connected for selectively producing a low pressure condition between said diaphragm means and one of said first and second pressure plate means thereby to position said diaphragm closely adjacent to said laminating platform, said first pressure plate means or said second pressure plate means as determined by the production of a low pressure condition.

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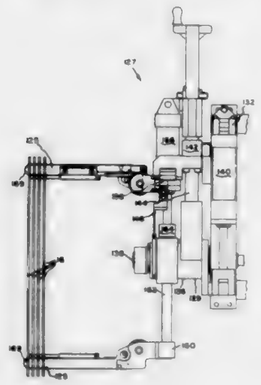
BEAD CRIMPING AND HANDLING SYSTEM

Michael W. Smith, Mogadore; Robert N. Steagall, deceased, late of Diamond, Ohio (by Betty C. Steagall, administratrix); Mark D. Beane, Cuyahoga Falls; Lawrence E. Chlebina, Akron; Brady G. Greenleese, Akron, and James D. Stokes, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 26,600, Mar. 17, 1987, Pat. No. 4,759,813, which is a continuation-in-part of Ser. No. 9,518, Jan. 30, 1987, abandoned. This application Feb. 29, 1988, Ser. No. 161,772

Int. Cl.[4] B29D *30/48*; B21C *47/06, 47/32*

U.S. Cl. 156—422 21 Claims



1. Apparatus for crimping and handling tire beads comprising means for wrapping a plurality of bead ribbons around a generally cylindrical former at predetermined spaced-apart positions to form a plurality of beads at said predetermined spaced-apart positions, means for crimping said beads, means to insert a plurality of unloading fingers into an unloading position inside said former and said beads and in engagement with the inner periphery of each of said beads without changing said predetermined spaced-apart positions, means for releasing said beads from said cylindrical former, and means for removing said unloading fingers and said beads thereon from said cylindrical former while maintaining said predetermined spaced-apart positions of said beads on said unloading fingers.

4,806,197

CONTINUOUS MOTION ROUND BOTTLE TURRET

Albert J. Harvey, Fairfield, Ohio, assignor to Dissographics, Inc., Cincinnati, Ohio

Filed Feb. 18, 1987, Ser. No. 15,887

Int. Cl.[4] B65C *9/04*; B32B *1/00*; B44C *1/00*

U.S. Cl. 156—449 19 Claims

1. An assembly for applying labels to cylindrical surfaces of articles comprising:

a stationary frame;

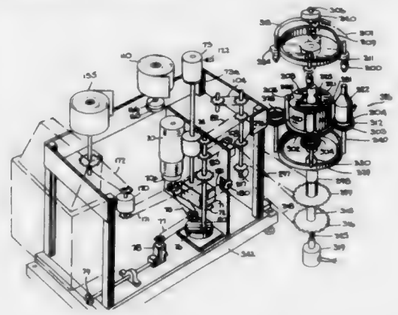
a supply reel disposed on said frame for supplying a continuous web, said web carrying a plurality of labels;

a take-up reel for winding said continuous web after said labels have been removed;

a turret disposed adjacent to said frame and having first and second vertical concentric shafts; a drum disposed on said first shaft for engaging said web;

article holding means attached to said first shaft for holding an article; roller means attached to said drum to form a press nip with said article for transferring a label from said web to a cylindrical surface of said article; and planetary means having a first member disposed on said article holding means and a second member attached to said second shaft, said planetary means and said shafts cooperating to turn said article holding means around a first axis and said article and label around a second axis parallel to said first axis as said label is applied to said article;

article feeding means for feeding articles without labels sequentially to said turret;



article discharge means for discharging labeled articles from said turret;

driving motor means; and coupling means driven by said motor and turning at least said first and second shafts.

4,806,198

PRODUCING ALPHA-ALUMINA WHISKERS

Sujata Jagota, and Rishi Raj, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Nov. 2, 1987, Ser. No. 115,928

Int. Cl.[4] C30B *5/00*

U.S. Cl. 156—623 R 15 Claims

1. Process for producing alpha-alumina whiskers, said process comprising the steps of

(a) providing a film of boehmite gel seeded with alpha-alumina seed material,

(b) heating the seeded gel at a temperature in the range of 900° C. to about 1200° C. for a time period ranging from about 5 minutes to about 2 hours to cause said alpha-alumina seed material to seed growth therefrom in said boehmite gel of alpha-alumina whiskers.

4,806,199

(RIE) PLASMA PROCESS FOR MAKING METAL-SEMICONDUCTOR OHMIC TYPE CONTACTS

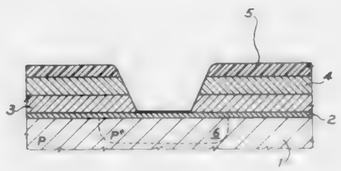
Fabio Gualandris, Bergamo, Italy, assignor to SGS Microelettronica S.p.A., Catania, Italy

Filed Sep. 15, 1986, Ser. No. 907,342

Claims priority, application Italy, Oct. 14, 1985, 22468 A/85

Int. Cl.[4] B44C *1/22*

U.S. Cl. 156—643 11 Claims



1. A process for exposing semiconductor material for the deposition thereon of a layer of a material showing metallic conduction for providing for ohmic type metal-semiconductor contacts which comprises a RIE plasma attack treatment for the formation of apertures in a layer of dielectric material covering the surface of a single crystal semiconductor material, corresponding to areas defined on the surface of said layer of a dielectric by masking, for exposing said underlying single crystal semiconductor material corresponding to said areas in preparation for depositing on said wafer a layer of a material showing metallic conduction for establishing metal-semiconductor contacts corresponding to said areas, wherein

(a) said RIE plasma attack utilizes a plasma in a reaction zone containing at least a polymerizable compound containing fluorine and oxygen, and is carried out on the layer of dielectric material until a depth short of exposing the underlying single crystal semiconductor material is achieved and then said RIE plasma attack is interrupted;

(b) purging the plasma gases of the preceding RIE plasma attack step in said reaction zone and introducing to said reaction zone a gas mixture of a non-polymerizable, hydrogen-free compound containing fluorine and oxygen while maintaining the atmosphere in said reaction zone free of hydrogen and free of polymerizing compounds;

(c) resuming and continuing to complete the RIE plasma attack of the residual layer of dielectric material to thereby expose the single crystal semiconductor material.

4,806,200

METHOD FOR MANUFACTURE OF PRINTED CIRCUIT BOARDS

Gary B. Larson, Cheshire; Ann S. Williams, Southbury, and Raymond A. Letize, West Haven, all of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Division of Ser. No. 875,640, Jun. 18, 1986, Pat. No. 4,732,649. This application Dec. 14, 1987, Ser. No. 132,761

The portion of the term of this patent subsequent to Aug. 18, 2004, has been disclaimed.

Int. Cl.[4] C23F *1/00*; B44C *1/22*; C03C *15/00*

U.S. Cl. 156—652 6 Claims

1. In a method for manufacturing printed circuit boards the steps comprising:

(a) providing a circuit board material containing through-holes and pads surrounding the surface openings of said through-holes, said board consisting of a non-conductive substrate material having copper foil laminated to each side thereof, the areas defined by said through-holes consisting of layered coatings extending radially inward toward the center of said holes, the layers being, sequentially from the wall of each electroless copper, electroplated copper and etch resistant electroplated tin-lead, the areas defined by said pads consisting of layered coatings, commencing from said copper foil on the non-conductive substrate surface, of electroless copper, electroplated copper and etch resistant electroplated tin-lead, and said non-conductive substrate having a trace pattern on at least one surface of said non-conductive substrate consisting of layered coatings, commencing from said substrate surface, of copper foil, electroless copper, electroplated copper and etch resistant electroplated tin-lead;

(b) etching away all copper from the areas of said circuit board not provided with said etch resistant tin-lead layer;

(c) subjecting said tin-lead etch resist to the actio of a first stripper composition comprising an oxidant for the tin and lead metals of said etch resist and an acid acceptor for the cations so oxidized to leave a thin film of tin smut on said trace pattern, through-holes and surrounding pad surfaces;

(d) subjecting said thin film of tin smut to the action of a second stripper composition comprising an aqueous solution containing a mixture comprising an alkali metal hydroxide and an alkali metal chlorite until said thin film of tin smut has been removed and replaced by a layer of copper oxide;

(e) applying a solder mask to the said trace pattern which has said layer of copper oxide on it, but not to said through-holes and surrounding pad surfaces;

(f) etching away said thin film of copper oxide from said through-holes and surrounding pad surfaces; and

(g) applying solder to said through-holes and pads.

4,806,201

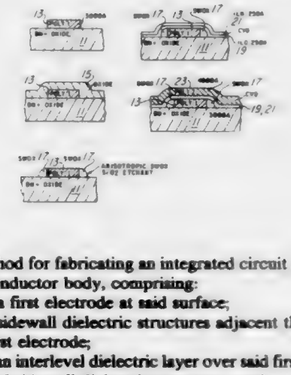
USE OF SIDEWALL OXIDE TO REDUCE FILAMENTS

Allan T. Mitchell, Dallas; Howard L. Tigelaar, Collin; Shayn G. Garg, Lubbock, and Kalipatnam V. Rao, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 937,758, Dec. 4, 1986, Pat. No. 4,749,443. This application Mar. 21, 1988, Ser. No. 170,528

Int. Cl.[4] H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—653 14 Claims



1. A method for fabricating an integrated circuit at a surface of a semiconductor body, comprising:

forming a first electrode at said surface;

forming sidewall dielectric structures adjacent the edges of said first electrode;

forming an interlevel dielectric layer over said first electrode and said sidewall dielectric structures; and

forming a second electrode over said dielectric layer and overlying a portion of said first electrode.

4,806,202

FIELD ENHANCED TUNNEL OXIDE ON TREATED SUBSTRATES

Daniel N. Tang, San Jose; Hiroyuki Chokai; Simon Wang, both of Sunnyvale, and Simon M. Tam, San Mateo, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 5, 1987, Ser. No. 104,837

Int. Cl.[4] H01L *21/312*

U.S. Cl. 156—657 11 Claims

1. A process for growing a tunnel oxide on a silicon substrate, comprising the steps of:

growing a first oxide layer on said silicon substrate;

depositing a second oxide layer on said first oxide layer;

plasma etching said second and said first oxide layers with an anisotropic oxide etcher utilizing high energy ion bombardment with a metal electrode, said etcher sputtering metal on said second oxide layer, said metal causing grass-type formation during said etching;

overetching through said first and second oxide layers and into said silicon substrate surface forming a pitted substrate surface.

removing residual first and second oxide layers;

growing a third oxide layer on said pitted substrate.

4,806,203

METHOD FOR ALKALINE DELIGNIFICATION OF LIGNOCELLULOSIC FIBROUS MATERIAL AT A CONSISTENCY WHICH IS RAISED DURING REACTION

Edward F. Elton, 1605 Treeridge Pkwy., Alpharetta, Ga. 30201

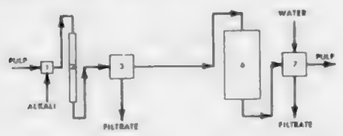
Continuation-in-part of Ser. No. 701,571, Feb. 14, 1985, abandoned. This application Feb. 12, 1986, Ser. No. 828,003

Int. Cl.[4] D21C *3/26, 9/12, 9/147, 9/18*

U.S. Cl. 162—19 26 Claims

1. In the process of manufacturing paper-making pulp in

which an alkaline solution is added to wood pulp to cause a reaction that delignifies the pulp, the improvement comprising mixing wood pulp with an alkaline solution containing from about 1.5% to 25% alkali based on oven dry pulp, partially reacting the mixture at a consistency from about 1% to 15% and a temperature from about 20 deg C. to 60 deg C. for about 0.5 to 7 minutes, with the partial reaction time being longer for lower temperatures in the range and shorter for the higher



temperatures in the range, withdrawing from about 30% to 90% of the liquid phase from the reacting mixture to raise the consistency of the pulp to about 10% to about 45% before the reaction has been completed, and continuing the reaction of the remaining alkali and pulp at the raised consistency of the pulp at a temperature from about 35 deg C. to 120 deg C. for about 30 to 120 minutes, wherein the withdrawal of liquid phase from the pulp enhances the delignification of the pulp.

4,806,204

ELECTRICALLY CONDUCTIVE FILTER PAPER AND FILTER USING SUCH A PAPER

Giovanni Mantré, and Giuseppe Mannone, both of Turin, Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed May 14, 1984, Ser. No. 610,164
Claims priority, application Italy, May 23, 1983, 67567 A/83
Int. Cl.⁴ D21H *5/18*
U.S. Cl. 162—106 **6 Claims**

1. Electrically conductive porous filter paper for allowing the heating of the fluid to be filtered by the Joule effect, wherein said paper contains cellulose fibers and electrically conductive carbon fibers which render the paper electrically conductive, said carbon fibers having a diameter of 6–7 microns and a length of 6–8 mm.

4,806,205

PROCESS FOR PREPARING SHEET COMPOSITES CONTAINING CRYSTALLINE PHOSPHATE FIBERS

Marvin M. Crutchfield, Creve Coeur, and John A. Hinkebein, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 24, 1984, Ser. No. 685,566
Int. Cl.⁴ D21H *5/18*
U.S. Cl. 162—145 **24 Claims**

1. A process for the preparation of sheet composites containing crystalline phosphate fibers which comprises:

(a) bringing together in aqueous media asbestiform calcium M phosphate fibers, wherein M is a metal cation selected from the group consisting of sodium and lithium, and mixtures thereof, and a cationic resin, the cationic resin being present in an amount sufficient to provide a nominal positive ionic charge to the phosphate fibers, to form a cationic resin-treated phosphate fibers aqueous slurry;

(b) mixing the cationic resin-treated phosphate fibers aqueous slurry from Step (a) with auxiliary fibers selected from the group consisting of cellulosic fibers, glass fibers, rayon fibers, graphite fibers, polyamide fibers, polyester fibers, polyolefin fibers, and poly(vinyl chloride) fibers and a water insoluble organic polymeric binder to form a fibrous material-polymeric binder aqueous dispersion;

(c) distributing and draining the fibrous material-polymeric binder aqueous dispersion on a porous substrate to form a wet sheet-like solid phase or wet web; and

(d) pressing and drying the wet web to yield the sheet composites containing, as a major fiber component, the cationic resin-treated phosphate fiber and, as a minor fiber component, the auxiliary fibers.

4,806,206

PROCESS FOR PREPARING CERAMIC MOLDING

Masayasu Kamijo; Shinichiro Katsuta, both of Fuji, and Takeo Wada, Kawanishi, all of Japan, assignors to Kojin Co., Ltd. and Takeda Chemical Industries Ltd., both of Osaka, Japan

Continuation of Ser. No. 634,736, Jul. 25, 1984, abandoned. This application Apr. 28, 1986, Ser. No. 859,198
Claims priority, application Japan, Jul. 28, 1983, 58-138372
Int. Cl.⁴ D21F *11/00*
U.S. Cl. 162—145 **7 Claims**

1. A process for preparing a ceramic molding comprising the steps of:

(1) dispersing in water a composition comprising 100 parts by weight of a ceramic component, 2 to 50 parts by weight of cellulose pulp and 3 to 200 parts by weight of mountain leather, said ceramic component comprising 100 to 20 parts by weight of ceramic fiber and 0 to 80 parts by weight of ceramic powder;

(2) forming a paper-like sheet from the resulting dispersion using a paper making machine;

(3) forming a ceramic molding by folding said paper-like sheet; and

(4) burning said ceramic molding at a temperature between 250° to 700° C. to burn-off said cellulose pulp, resulting in a ceramic molding which retains a pre-burned shape.

4,806,207

STRUCTURED LATEX PARTICLES HAVING REINFORCING AND OPACITY CHARACTERISTICS

Medardo Mouzon, Midland, Mich.; Michele R. Lock, Edgewater, N.J., and James G. Galloway, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 702,274, Feb. 15, 1985, abandoned. This application Sep. 23, 1987, Ser. No. 100,050
Int. Cl.⁴ D21D *3/00*; D21H *3/40*
U.S. Cl. 162—168.1 **9 Claims**

1. A light weight paper product containing a structured latex particle comprising:

(1) a core portion having a light scattering characteristic and a T_g of about 80° C. or greater;

(2) a shell portion having a T_g of about 25° C. or lower;

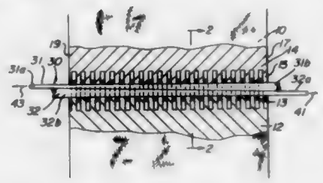
whereby the opacity and strength of said paper is increased over a paper product prepared in the absence of said structured latex particle.

4,806,208

METHOD OF SEAMING A SEAMED FELT ON A PAPERMAKING MACHINE WITH OPPOSITELY TAPERED PINTLE ELEMENTS

Patrick Peaves, Clinton, S.C., assignor to Astec Group, Inc., Charleston, S.C.

Filed Oct. 14, 1987, Ser. No. 108,376
Int. Cl.⁴ D06H *5/00*; F16G *3/02*
U.S. Cl. 162—199 **11 Claims**



1. A method of closing a pin typed seam formed from a series of intermeshing loops of a fabric having a first and a second

edge for use with papermaking equipment comprising the steps of:

(a) tapering each of at least two elongated pintle elements toward a respective first end of each pintle element, for a length at least the width of the seam, to form a tapered area on each pintle element;

(b) orienting said pintle elements in the intermeshing loops of said seam so that a first end of one of said pintle elements extends from the first edge of the seam and the first end of another one of said pintle elements extends from the second edge of the seam; and

(c) pulling said tapered pintle elements into the seam by their respective first ends such that the tapered areas of said pintle elements contact to lock the seam in a wedging interaction.

4,806,209

SEPARATION OF FORMIC ACID FROM DIOXANE BY EXTRACTIVE DISTILLATION

Lloyd Berg, and Rudolph J. Szabados, both of 1314 S. Third Ave., Bozeman, Mont. 59715

Filed Apr. 25, 1988, Ser. No. 185,419
The portion of the term of this patent subsequent to Jan. 31, 2006, has been disclaimed.
Int. Cl.⁴ B01D *3/40*; C07C *51/44*; C07D *319/12*
U.S. Cl. 203—51 **2 Claims**

1. A method for recovering dioxane from mixtures of dioxane and formic acid which comprises distilling a mixture of dioxane and formic acid in a rectification column if the presence of about one part of an extractive agent per part of dioxane - formic acid mixture, recovering dioxane as overhead product and obtaining the formic acid and the extractive agent from the stillpot, wherein said extractive agent comprises dimethylsulfoxide.

4,806,210

H_2S AND ALCOHOL RECOVERY PROCESS

Frank M. Van Lier, Lyndhurst, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Sep. 11, 1987, Ser. No. 95,963
Int. Cl.⁴ B01D *1/22*; C07F *9/165*
U.S. Cl. 203—89 **44 Claims**

1. A process for recovering alcohols from a mixture of the alcohol and a phosphorus compound, of the formula:

$$(R^1O)\,(R^2O)P(S)SH$$

where R^1 and R^2 are each aliphatic or aromatic, wherein the mixture is preheated to a temperature of about 20° C. to about 115° C., and thereafter rapidly adjusting the mixture to a temperature of about 80° C. to about 180° C. for a period of time sufficient to substantially separate the alcohol from the phosphorus compound without the substantial generation of hydrogen sulfide.

23. A process for removing hydrogen sulfide from a mixture of the hydrogen sulfide and a phosphorus compound of the formula:

$$(R^1O)(R^2O)P(S)SH$$

where R^1 and R^2 are each aliphatic groups containing from 1 to about 10 carbon atoms, wherein the mixture is pre-heated to a temperature of about 20° C. to about 115° C., and thereafter rapidly adjusting the mixture to a temperature of about 80° C. to about 180° C. for a period of time sufficient to substantially separate the hydrogen sulfide from the phosphorus compound without the substantial generation of additional hydrogen sulfide.

4,806,211

ALUMINUM ALLOY PRODUCT WITH UNIFORMLY GREY, LIGHT-FAST SURFACE AND PROCESS FOR ITS MANUFACTURE

Jürgen Timm, Steinfurt, Fed. Rep. of Germany; Jean-François Pralat, Sibligen, Switzerland, and Jürg Maier, Eugen, Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed May 12, 1987, Ser. No. 48,802
Claims priority, application Switzerland, May 14, 1986, 1956/86
Int. Cl.⁴ C25D *11/04, 5/44*; C22C *21/00*
U.S. Cl. 204—29 **8 Claims**

1. An anodized aluminum alloy product having a uniformly grey, light fast surface and a light reflectivity of no more than 50 percent prepared by anodizing an aluminum alloy which consists essentially of 1.20 to 1.60 wt. % iron and 0.25 to 0.55 wt. % manganese wherein the wt. ratio of iron to manganese is between 2.8 to 5.0, up to 0.20 wt. % silicon, up to 0.30 wt. % copper, up to 5.00 wt. % magnesium, up to 0.10 wt. % chromium, up to 2.00 wt. % zinc, up to 0.25 wt. % zirconium, up to 0.10 wt. % titanium, up to 0.50 wt. % other elements, balance aluminum wherein said anodized aluminum alloy product has an oxide thickness of 5 to 30 μm.

4,806,212

ELECTRODE AND THE USE THEREOF

Bernhard Wessling, Schleuestr. 17, D-2071 Tremsbüttel; Christian Fussler, Kurt-Fischer-Str. 4a, D-2070 Ahrensburg; Harald Volk, Jersbeker Str. 51a; Olaf Siemers, Lohe 1b, both of D-2072 Bargteheide; Holger Markle, Timm-Krüger-Weg 2, D-2070 Ahrensburg, and Manfred Hilleberg, Hauptstr. 1, D-8097 Zaisering, all of Fed. Rep. of Germany

Filed Mar. 27, 1987, Ser. No. 31,949
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1986, 3610388
Int. Cl.⁴ C25F *5/00*
U.S. Cl. 204—130 **13 Claims**

1. An electrode based on conductive materials and macromolecular materials as a binder, the electrode being stable under electrolysis conditions and particularly suitable for drying masonry, comprising

A. a thermoplastic polar polymer, thermoplastic polycondensate or thermoplastic polyadduct or a mixture thereof, which is wettable by an electrolysis medium and is stable with respect to an electrochemical process taking place on the electrode; and

B. A mixture in a weight ratio of 1:4 to 4:1 of

(a) conductive carbon black with a BET-surface of more than 600 m^2/g; and

(b) a material selected from the group consisting of carbon black with a BET-surface of less than 600 m^2/g, transition metal oxides, an intrinsically conductive polymer and mixtures thereof.

4,806,213

METHOD AND APPARATUS FOR STRIPPING ELECTROLYTIC PRECIPITATE FROM SUPPORTING STRUCTURES

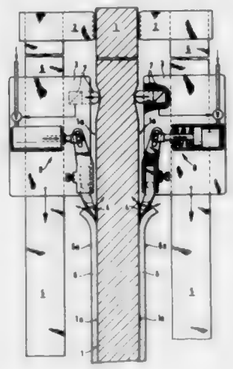
Matti O. Leiponen, Espoo; Seppo J. Erkamo; Pentti K. Kajanpää, both of Kokkola, and Olli R. Ylimäki, Espoo, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Nov. 17, 1987, Ser. No. 104,344
Int. Cl.⁴ C25D *1/04, 17/00*
U.S. Cl. 204—12 **10 Claims**

1. A method for stripping a thin, sheet-like layer of electrolytically accumulated metal precipitate from a supporting structure, comprising attaching the supporting structure to a stripping station by means of gripping members, using measuring and control members to determine a surface profile of the

VOL 1099 ISS 3 FEB 21 1989 UMI

supporting structure, orienting a peeling blade in accordance with the surface profile and moving the peeling blade in accordance with the surface profile toward an upper edge of said sheet-like layer.



4,806,214

METHOD OF PREPARING AN ASBESTOS DIAPHRAGM

Jerry N. Kinney, Painesville, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 813,326, Dec. 24, 1985, abandoned. This application Mar. 17, 1987, Ser. No. 26,810

Int. Cl.[4] C25G *1/14*

U.S. Cl. 204—98 **12 Claims**

1. A method of depositing a liquid permeable asbestos diaphragm on a formainous cathode structure by the steps of:

(a) providing an aqueous slurry containing from about 100 to about 200 grams per liter alkali metal hydroxide and from about 0.5 to about 3 weight percent, basis total weight of slurry, of asbestos and particulate thermoplastic polymeric material the particulate thermoplastic polymeric material being present in amount of from about 1 to about 30 weight percent basis total weight of asbestos and particulate thermoplastic polymeric material.

(b) contacting a foraminous cathode structure with the slurry so as to deposit on the foraminous cathode structure a mat containing alkali metal hydroxide, asbestos and particulate thermoplastic polymeric material;

(c) heating the foraminous cathode structure having the mat deposited thereon at temperature in the range of from about 110° C. to about 190° C. for at least two hours so as to react the alkali metal hydroxide with the asbestos, with theproviso that the heating temperature is below the melting point or sintering point of the particulate thermoplastic polymeric material.

4,806,215

COMBINED PROCESS FOR PRODUCTION OF CHLORINE DIOXIDE AND SODIUM HYDROXIDE

Zbigniew Twardowski, Mississauga, Canada, assignor to Tenneco Canada Inc., Islington, Canada

Filed Jul. 27, 1988, Ser. No. 224,756

Int. Cl.[4] C15B *1/14*

U.S. Cl. 204—98 **3 Claims**

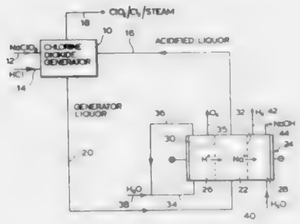
1. A method for the production of chlorine dioxide and sodium hydroxide, which comprises:

reacting sodium chlorate with hydrochloric acid in a reaction zone to form chlorine dioxide and an aqueous effluent containing sodium chloride,

recovering chlorine dioxide from said reaction zone,

passing said aqueous effluent to the central compartment of a three-compartment electrolytic cell divided into an anode compartment, said central compartment and a cathode compartment by two cation-exchange membranes located between the anode and cathode of said cell,

electrolytically forming hydrogen ions from an electrolyte in said anode compartment of said three-compartment electrolytic cell and transferring said electrolytically-formed hydrogen ions from said anode compartment to said central compartment of said three-compartment electrolytic cell across one of said cation-exchange membranes to form hydrochloric acid therein,



electrolytically forming hydroxyl ions from an electrolyte in said cathode compartment of said three-compartment electrolytic cell and transferring sodium ions from said central compartment to said cathode compartment across the other of said cation-exchange membranes to form sodium hydroxide therein,

forwarding effluent from said central compartment to said reaction zone to provide part of the hydrogen chloride required for said reaction with sodium chlorate, and

recovering sodium hydroxide solution from said cathode compartment.

4,806,216

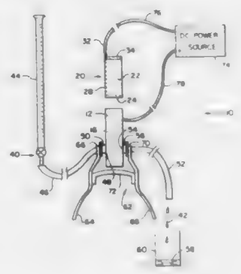
ELECTROCHEMICAL POLISHING OF NOTCHES

Alan R. Kephart, and Alfred H. Alberts, both of Scotia, N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 21, 1988, Ser. No. 146,639

Int. Cl.[4] C25F *3/16, 7/00*

U.S. Cl. 204—129.5 **9 Claims**



9. A method for the selective electrochemical polishing of a lateral tip of a deep longitudinal notch in a work piece comprising the steps of:

inserting an electrode and insulated body longitudinally in the notch, said inserting step including the steps of (a) locating an electrode laterally along a distal end of the insulated body and (b) sealing the lateral distal end of the insulated body adjacent the lateral tip but spaced from the lateral tip such that a lateral passage is formed between the distal end and the tip;

circulating an electrolyte through the passage such that the electrolyte only contacts the work piece adjacent the passage; and

connecting the electrode and work piece to a DC power source

wherein said circulating step includes the step of feeding the electrolyte from a reservoir by gravity through the passage.

4,806,217

BACK-FLUSHABLE FILTER AND PRESSURE-REGULATOR PARTICULARLY USEFUL THEREWITH

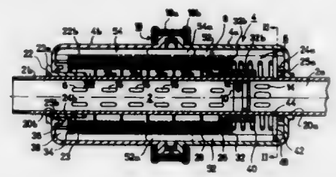
Peretz Rosenberg, Moshav Bait, Shamrin, Israel

Filed Oct. 6, 1987, Ser. No. 105,872

Claims priority, application Israel, Oct. 16, 1986, 80341

Int. Cl.[4] B01D *29/38*

U.S. Cl. 210—108 **22 Claims**



1. A filter device comprising: a central tube having an inlet end and an outlet end connectible into a fluid line for the fluid to be filtered;

a housing having an inlet end and an outlet end, enclosing said central tube and defining an internal chamber therewith;

and a filter body within said internal chamber;

said central tube including an inlet opening therethrough at the inlet end, an outlet opening therethrough at the outlet end, and a plug between said inlet and outlet openings directing the fluid to flow from said inlet opening through said filter body and out through said outlet opening;

said housing and filter body being mounted for sliding movement axially of said central tube from a normal filtering position wherein the central tube inlet opening communicates with the upstream side of the filter body, to a back-flushing position wherein the central tube inlet opening communicates with the downstream side of at least a portion of the filter body;

and wherein said housing is constructed to form a passageway at the outlet end of said housing permitting the outletting therethrough of the fluid when the housing has been moved to said back-flushing position.

12. A pressure-regulator device, comprising:

a central tube having an inlet end and an outlet end connectible into a fluid line whose pressure is to be regulated;

and a housing, having an inlet end and an outlet end, enclosing said central tube and defining an internal chamber therewith;

said central tube including an inlet opening therethrough at the inlet end, an outlet opening therethrough at the outlet end, and a plug between said inlet and outlet openings directing the fluid to flow from said inlet opening into said internal chamber and out through said outlet opening;

said housing being mounted for sliding movement axially of said central tube;

a valve member disposed within said housing and mounted for movment therewith toward and away from said inlet opening in the central tube to thereby restrict or enlarge said inlet opening;

said housing including surface areas exposed to the fluid pressure within the housing producing a differential pressure normally effective to move said housing in one direction with respect to said inlet opening in the central tube;

and a spring normally urging said housing and valve member carried thereby in the opposite direction with respect to said inlet opening in the central tube.

4,806,218

METHOD OF COATING CATHODE WIRES BY CATAPHORETIC COATING

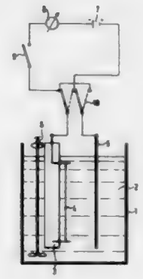
Herbert Hemminger, and Michael Schlipf, both of Schorndorf, Fed. Rep. of Germany, assignors to Nokia Graetz GmbH, Pforzheim, Fed. Rep. of Germany

Filed Sep. 4, 1987, Ser. No. 93,406

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1986, 3630224

Int. Cl.[4] C25D *13/02, 13/16, 13/18, 13/20*

U.S. Cl. 204—180.2 **12 Claims**



1. A method of coating cathode wires by cataphorectically coating wires with an emissive material suspended in an electrolyte, comprising the steps of:

suspending a wire in a suspension of emissive material in an electrolyte;

connecting the wire as an anode for about a fraction of a second to about a few seconds; and

thereafter connecting the wire as a cathode in the same suspension, whereby a uniform coating of the emissive material is cataphoretically coated on said wire.

4,806,219

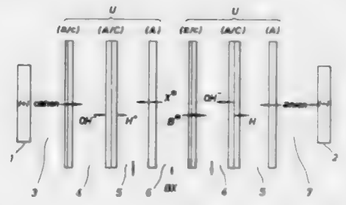
METHOD OF DOUBLE DECOMPOSITION OF NEUTRAL SALT

Yoshihisa Yamamoto, Kudamatsu, and Yasuhiro Kagiyama, Tokuyama, both of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Filed Apr. 28, 1988, Ser. No. 187,366

Int. Cl.[4] C02F *1/46*; C25B *7/00*; B01D *13/02*

U.S. Cl. 204—182.4 **3 Claims**



1. A method of double-decomposing a salt, which comprises using an electrodialysis cell comprising an anode and a

cathode and at least one unit disposed between the anode and the cathode, said unit being comprised of

(1) A high cation-exchange group-type bipolar membrane (membrane a/c) composed of a layer of a resin having an anion-exchange group bonded thereto (layer a) and a layer of a resin having a cation-exchange group bonded thereto (layer c), the thickness of the layer a being 100 Å to one-half of the total thickness of the membrane (a/c) and the equivalent ratio of the anion-exchange group to the cation-exchange group in the membrane (a/c) being from 0.01 to 0.5,

(2) a neutral bipolar membrane (membrane A/C) and a cation-exchange resin layer (layer C) and having a fixed ion concentration of at least 10 meq/g H_2O, the equivalent ratio of the anion-exchange group to the cation-exchange group in the membrane (A/C) being from 0.6:1 to 1:0.5, and

(3) an anion-exchange resin membrane (membrane A) having an amino group with a long hydrocarbon chain as an anion-exchange group,

said membranes a/c, A/C and A in said (1) to (3) being arranged in the order of the membrane a/c—the membrane A/C with its layer A facing the membrane a/c—the membrane A from the anode side to the cathode side to form a salt compartment, a base compartment, an acid compartment and a salt compartment;

causing an aqueous solution of a base to be present in the base compartment, an aqueous solution of an acid in the acid compartment and an aqueous solution of a salt in the salt compartments; and

applying a direct-current voltage across the anode and the cathode.

4,806,220

METHOD OF MAKING LOW EMISSIVITY FILM FOR HIGH TEMPERATURE PROCESSING

James J. Finley, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 29, 1986, Ser. No. 947,799

Int. Cl.[4] C23C *14/34*

U.S. Cl. 204—192.27 **9 Claims**

1. A method for making a high transmittance, high-temperature resistant film comprising the steps of:

a. sputtering a metal cathode target in a reactive atmosphere comprising oxygen thereby depositing a first metal oxide film on a surface of a substrate;

b. sputtering a metal-containing primer layer over said metal oxide layer;

c. sputtering a reflective metallic film over said metal-containing primer layer;

d. sputtering a second metal-containing primer layer over said reflective metallic film;

e. sputtering a second metal oxide film over said second primer layer thereby producing a coated article with a visible transmittance lower than the desired visible transmittance of the final product; and

f. heating said coated article to a sufficient temperature for a sufficient time to increase the visible transmittance of said high-temperature resistant film.

4,806,221

SPUTTERED FILMS OF BISMUTH/TIN OXIDE

Frank H. Gillery, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 26, 1987, Ser. No. 31,320

Int. Cl.[4] C23C *14/34, 14/08*

U.S. Cl. 204—192.29 **9 Claims**

1. A method for depositing an oxide film comprising bismuth and tin which comprises the steps of:

a. forming a cathode target comprising bismuth and tin;

b. placing a substrate to be coated in an evacuated chamber with said cathode target; and

c. sputtering said bismuth/tin cathode target in a reactive atmosphere comprising oxygen thereby depositing a metal oxide film comprising bismuth and tin on a surface of said substrate.

4,806,222

COUNTER-CURRENT ELECTROLYTE INJECTOR

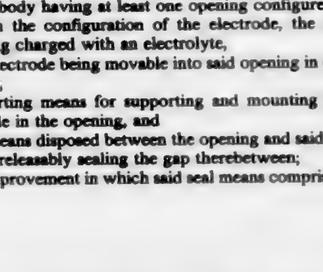
Gérard R. Colin, Plappeville; André Klein, Homecourt; Alain Leclercq, Moulins-les-Metz, and Patrick Mara, Talange, all of France, assignors to Société Anonyme: Société Lorraine de Laminage - SOLLAC, Florange Cedex, France

Filed Apr. 30, 1987, Ser. No. 44,403

Claims priority, application France, May 5, 1986, 86 06601

Int. Cl.[4] C25D *17/00*

U.S. Cl. 204—206 **4 Claims**



1. Counter-current fluid injector composed of a fluid inlet duct, a chamber and an injection nozzle, characterized by the fact that it comprises:

at least one fluid inlet duct (1),

a central fluid flow distribution chamber (2) extending along the whole length of the injector, into which emerges the inlet duct (1),

numerous openings (4) drilled through the internal wall (5) of the injector, in the lower part of the said central chamber (2),

a peripheral chamber (6), coaxial with the central chamber (2) and surrounding it along the whole of its length, which serves to homogenize the flow of fluid, and into which are inserted a sufficient number of centering pins (8),

a barrier (7) situated in the peripheral chamber (6) for directing the flow of fluid,

a nozzle (9) drilled with numerous holes (10),

numerous injection tubes (11) extending the holes (10) and allowing the electrolyte from the bath (12) to pass freely between the said tubes (11).

4,806,223

ELECTROLYTIC PROCESSING CELL

Shinjiro Murakami, Okayama, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Filed Nov. 30, 1987, Ser. No. 124,857

Claims priority, application Japan, Dec. 2, 1986, 61-287464

Int. Cl.[4] C25D *17/00*

U.S. Cl. 204—206 **6 Claims**

1. In an electrolytic processing cell comprising

a configured electrode,

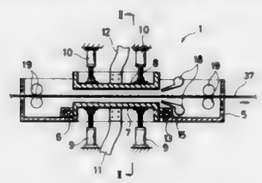
a cell body having at least one opening configured to mate with the configuration of the electrode, the cell body being charged with an electrolyte,

said electrode being movable into said opening in one direction,

supporting means for supporting and mounting said electrode in the opening, and

seal means disposed between the opening and said electrode for releasably sealing the gap therebetween;

the improvement in which said seal means comprises a tubular sealing member which is expandable and contractible under the influence of its internal pressure and in which there are marginal surfaces on said electrode and on said



cell body surrounding said opening, one of said marginal surfaces extending in said one direction and the other of said marginal surfaces carrying said tubular sealing member in a position to seal against said one marginal surface.

4,806,224

ELECTROLYTIC PROCESS

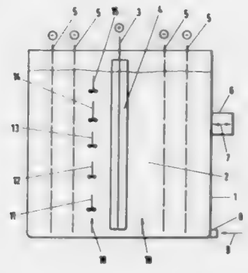
Dieter Bruns, Neu-Anspach; Wolfgang Dietz, Bruchkobel; Klaus-Jurgen Muller, Frankfurt, and Conrad H. H. Reyersaas, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Deutsche Carbone Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 2, 1987, Ser. No. 20,357

Claims priority, application European Pat. Off., Jul. 7, 1986, 86109265.9

Int. Cl.[4] C25D *21/10, 21/12*

U.S. Cl. 204—222 **7 Claims**



1. An electrolytic process in which an electrolyte (2) is passed through an electrolytic cell (1) thus increasing the material transport coefficient by relative movement of electrodes and electrolyte within said electrolytic cell such that said electrolyte is subjected to pressure waves and characterized in that the increase of the material transport coefficient is greater along the direction (10) of the electrolytic flow by increasing the mechanical energy introduced in this direction.

4,806,225

DESMEARING AND PLATED-THROUGH-HOLE APPARATUS

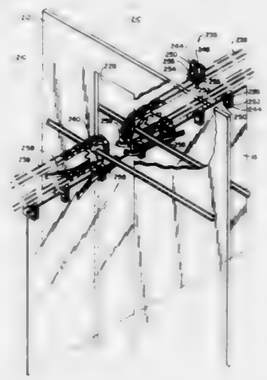
Fazal A. Fazlin, St. Petersburg, and Rex A. Lee, Tampa, both of Fla., assignors to Advanced Plasma Systems, Inc., St. Petersburg, Fla.

Continuation-in-part of Ser. No. 804,227, Dec. 2, 1985, abandoned, which is a continuation of Ser. No. 483,168, Apr. 8, 1983, abandoned, which is a continuation-in-part of Ser. No. 383,311, May 28, 1982, Pat. No. 4,474,659. This application Feb. 24, 1986, Ser. No. 832,862

Claims priority, application Japan, Feb. 27, 1985, 60-26326[U]

Int. Cl.[4] C23C *14/04, 14/02, 14/34, 14/56*

U.S. Cl. 204—298 **6 Claims**



1. An apparatus for desmearing holes in a printed circuit board and then plating a conductive material on the inside surfaces of such holes, comprising in combination:

a loading vacuum chamber;

a desmearing vacuum chamber;

a plating preparation vacuum chamber;

a plating vacuum chamber;

an unloading vacuum chamber;

means for interconnecting said chambers with one another in the specified order;

transport means positioned within each said chamber for transporting the printed circuit board through said chamber;

said desmearing vacuum chamber comprising means for desmearing the holes of the printed circuit board positioned therein;

said plating vacuum chamber comprising means for plating the material on the inside surfaces of the holes contained in the printed circuit board;

said interconnecting means comprising affixing adjacent said chambers together in said series to define a common wall therebetween, said common wall including an opening allowing the printed circuit board to be transported from a preceding said chamber into a succeeding, adjacent said chamber, said common wall further including an isolation door movable about said opening for selectively isolating said preceding said chamber from said succeeding, adjacent said chamber, and

said transport means comprising a plurality of clips and means for moving said clips along the longitudinal lenght of said chamber, said clips comprising means for engaging the printed circuit board upon entry into said chamber and then disengaging said clips from the printed circuit board as the printed circuit board exits said chamber such that the printed circuit board is engaged by successive said clips as the printed circuit board enters said chamber, is retained by said clips for transport along the longitudinal

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length of said chamber, and released by successive clips as the printed circuit board exits said chamber and is passed into the succeeding said chamber.

4,806,226

PROCESS FOR ELECTROLYTICALLY COLORING ALUMINUM MATERIAL

Tahei Asada, Tokyo, Japan, assignor to Corona Enterprises, Inc., Cerritos, Calif.

Filed Mar. 9, 1987, Ser. No. 23,494
Claims priority, application Japan, Dec. 17, 1984, 59-264494
Int. Cl.[4] C25D *11/22*
U.S. Cl. 204—37.6 **27 Claims**

1. A process for electrolytically coloring an aluminum material substrate comprising:

(a) anodizing an aluminum material substrate;

(b) introducing said anodized aluminum material into a bath comprising a nickel salt, a zinc salt, a chelating reagent for nickel ions and magnesium sulfate, at a pH of 4.5 or greater, and in which the compounding ratio of nickel salt to zinc salt is 1:0.1 to 0.5; and

(c) electrolyzing said substrate.

4,806,227

CARBON BLACK INHIBITION OF PITCH POLYMERIZATION

Alvin F. Beale, Jr., and Louis D. Hoblitt, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 597,317, Apr. 6, 1984, abandoned. This application Jan. 5, 1987, Ser. No. 59,152
Int. Cl.[4] C10C *1/00*
U.S. Cl. 208—22 **8 Claims**

1. A process for preparing a petroleum pitch for forming fibers consisting essentially of:

(a) adding from about 0.01 to less than 1 weight percent carbon black to a liquid petroleum residual oil to inhibit the formation of mesophase to from 0.2% to 1.4% quinoline insolubles and to inhibit fouling and coking during conversion of the residual oil to pitch,

(b) heating the residual oil containing carbon black at a temperature and pressure sufficient to crack and polymerize molecular weight species of the oil, and

(c) cooling the heated liquid mass to form a precursor composition for forming fibers.

4,806,228

PROCESS FOR PRODUCING PITCH RAW MATERIALS

Herbert Beneke, Castrop-Rauxel, and Siegfried Peter, Uttenreuth-Weiner, both of Fed. Rep. of Germany, assignors to Ruhrgerwerke AG, Fed. Rep. of Germany

Filed Jan. 7, 1987, Ser. No. 1,013
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1986, 3603883
Int. Cl.[4] C10C *1/20, 1/18*
U.S. Cl. 208—45 **20 Claims**

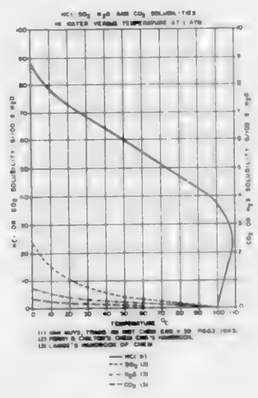
1. A process for the production of pitch raw materials comprising extracting coal-tar pitch free of solids with a mixture of a supercritical gas extracting agent and at least one entrainer at elevated temperatures and pressures, passing the extraction mixture free of solids to a plurality of separation steps where the supercritical gas and entrainer are removed by lowering the pressure and/or raising the temperature to gradually reduce the density of the extracting agent, recycling the mixture of extracting agent and entrainer to the extraction step and recovering from the separation step a quinoline-insoluble pitch fraction, a toluene insoluble-quinoline soluble pitch fraction and a toluene-soluble pitch fraction and an ash rich fraction from the extraction step.

4,806,229

VOLATILE AMINES FOR TREATING REFINERY OVERHEAD SYSTEMS

Sam Ferguson, Sugar Land; Kathryn G. Burns, and Russell C. Strong, both of Richmond, all of Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation of Ser. No. 768,266, Aug. 22, 1985, abandoned. This application Oct. 3, 1986, Ser. No. 915,953
Int. Cl.[4] C10G *7/10*
U.S. Cl. 208—47 **7 Claims**



3. A process for substantially neutralizing acidic components in the aqueous condensate of a distilling petroleum product which contains water, HCl, and SO_2 which comprises treating the distilling product prior to water condensation thereof with at least one amine having a boiling point below 95° C. in an amount sufficient to substantially neutralize all of the SO_2 present in said petroleum product and also treating said distilling product with at least one amine having a boiling point at or above 95° C. in an amount sufficient to substantially neutralize the HCl present in said petroleum product.

4,806,230

UPGRADING NAPHTHA WITH MATCHED CATALYST(S)

Andor L. Salusinszky, Burwood, Australia, assignor to Royal Melbourne Institute of Technology Limited, Melbourne, Australia

Filed Nov. 25, 1986, Ser. No. 934,863
Claims priority, application Australia, Nov. 29, 1985, PH3656
Int. Cl.[4] C10G *35/06*
U.S. Cl. 208—64 **20 Claims**

1. A process for the upgrading of a hydrocarbon feedstock which comprises:

providing a full naphtha hydrocarbon feedstock having an initial cycloparaffin content of less than approximately 10% by weight and

contacting the provided feedstock with a metal-containing Z SM-5 type zeolite catalyst at an elevated temperature at approximately 0.2 to 2 LHSV so as to convert said full naphtha feedstock into an upgraded hydrocarbon product.

9. A process for the upgrading of a hydrocarbon feedstock which comprises:

providing a full naphtha hydrocarbon feedstock having a cycloparaffin content of approximately 10% by weight or greater,

contacting the provided feedstock with a naphtha reforming catalyst which comprises a platinum group metal at an elevated temperature and at a LHSV of greater than approximately 5 so as to reduce the cycloparaffin content of the provided feedstock to less than approximately 10% by weight and

contacting the provided feedstock having the reduced cycloparaffin content with a metal-containing Z SM-5 type zeolite catalyst at an elevated temperature at approximately 0.5 to 2 LHSV so as to convert said full naphtha feedstock into an upgraded hydrocarbon product,

wherein the reduction of the naphtha reforming catalyst and the conversion with the zeolite catalyst is conducted in a tubular reactor.

4,806,231

METHOD FOR DESALTING CRUDE OIL

Maria L. Chirinos, Caracas, Venezuela; David E. Graham, Fleet, England; Ignacio Layrisse, Miranda, Venezuela, and Alan Stockwell, Woking, England, assignors to The British Petroleum Company p.l.c., London, England and Intevep S.A., Miranda, Venezuela

Continuation of Ser. No. 661,565, Oct. 16, 1984, abandoned. This application May 18, 1988, Ser. No. 195,410
Claims priority, application United Kingdom, Oct. 21, 1983, 83/28232
Int. Cl.[4] C10G *17/00*
U.S. Cl. 208—251 R **6 Claims**

1. A method for reducing the salt content of crude oil which method comprises washing crude oil containing residual salt water with wash water at elevated temperature and of lower salinity than the water present in the crude oil in amount greater than 7.5% by volume of the crude oil, settling the resultant mixture into a layer of crude oil of reduced salt water content and a layer of saline water, recycling the saline water to the washing step, removing a portion of saline water from the recycle stream, adding a corresponding quantity of water of lower salinity to the recycle stream and supplying heat only to the recycle stream.

4,806,232

METHOD FOR THE DESULPHURIZATION OF SULPHUR-CONTAINING FUELS AND FUEL DESULPHURIZED BY SAID METHOD

Rüdiger Schmidt, Munich, Fed. Rep. of Germany, assignor to Environment Protection Engineers Inc., Southfield, Mich.

Filed Oct. 4, 1985, Ser. No. 784,378
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1984, 3437074
Int. Cl.[4] C10G *19/00*
U.S. Cl. 208—226 **8 Claims**

1. A method for the desulphurization of sulphur containing fuels selected from the group consisting of heavy fuel oil, used oil, and mixtures thereof, comprising mixing the fuel with

(a) at least one solid basic additive selected from the group consisting of carbonate, hydrogen carbonate, hydroxides of alkali metals, hydroxides of alkaline earth metals, aluminium hydroxide, oxides of alkali metals, oxides of alkaline earth metals and aluminium oxide, employed in finely divided form; and

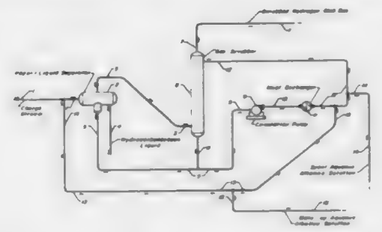
(b) at least one elemental metal in finely divided form selected from the group consisting of Mg, Ca, Fe, Co, Ni, Zn, Cd, Al, Sn and Pd; said metal being present in greater amount than said basic additive; and subjecting the mixture so formed to pyrolysis at a temperature between 500° and 1200° C. to produce hydrogen which reduces elemental sulphur and sulphur containing compounds to hydrogen sulphide, whereby said fuel yields a permanent gas portion, a condensate portion and a residue portion, said residue portion containing said reduced sulphur while said permanent gas portion and condensate portion are substantially sulphur free, and removing said residue sulphur containing portion from said condensate portion and said permanent gas portion.

4,806,233

METHOD OF SEPARATING A HOT HYDROCARBONACEOUS STREAM

Robert B. James, Jr., and Tom N. Kalnes, both of Des Plaines, Ill. assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 28, 1987, Ser. No. 90,276
Int. Cl.[4] C10G *9/16*; C07C *5/28*
U.S. Cl. 208—262.1 **22 Claims**



1. A method of separating a hot hydrocarbonaceous stream having a temperature above the dew point of water and comprising hydrogen, vaporous hydrocarbonaceous compounds and an acidic inorganic compound which method comprises:

(a) contacting said hot hydrocarbonaceous stream at a temperature above the dew point of water in a contacting zone with an aqueous alkaline solution in an amount sufficient to simultaneously neutralize said acidic inorganic compound and to cool said hot hydrocarbonaceous stream to a temperature below the dew point of water to produce a flowing stream comprising a hydrogen-rich gas, a liquid hydrocarbonaceous phase and an aqueous solution containing inorganic neutralization products; and

(b) introducing said flowing stream produced in step (a) into a separation zone to gravitationally produce an aqueous phase containing inorganic neutralization products, a hydrogen-rich gaseous phase and a hydrocarbonaceous liquid phase.

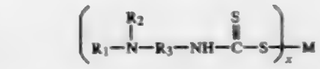
4,806,234

ORE FLOTATION

Clarence R. Bresson, and Harold W. Mark, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 2, 1987, Ser. No. 115,392
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—167 **19 Claims**

1. In a process for the recovery of first metal mineral values from an ore or concentrate containing said first metal mineral values and second metal minerals wherein certain said first mineral values are recovered in a froth from an aqueous slurry containing the ore or concentrate, and wherein a minerals depressant is employed in the aqueous slurry to reduce the amount of the second metal minerals in the froth, the improvement comprising employing as said minerals depressant in an amount effective to depress said second metal minerals a composition represented by the formula:



wherein R_1 and R_2 are each selected from the group consisting of an aminoethyl group, an aminohydrocarbyl group and a polyaminohydrocarbyl group, R_3 is selected from the group consisting of a hydrocarbyl group, an aminodihydrocarbyl group and a polyaminopolyhydrocarbyl group, M is selected from the group consisting of an alkali metal and an alkaline earth metal, and x is 1 or 2.

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APPARATUS FOR CLEANING GRAIN PRODUCTS

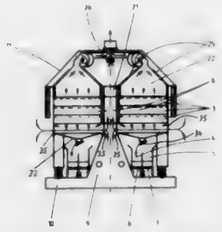
Roman Mueller, Niederuzwil, Switzerland, assignor to Gebruueder Buehler A.G., Switzerland

Continuation of Ser. No. 714,717, Mar. 21, 1985, Pat. No. 4,636,305. This application Jul. 1, 1986, Ser. No. 880,799

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3410573

Int. Cl.[4] B07B *1/28, 7/06*

U.S. Cl. 209—321 **6 Claims**



1. In an screening apparatus for separating grain products, the apparatus being of the type utilizing a generally upwardly flowing air stream to assist in the separation of grain particles of different sizes, the air flow being achieved through the action of at least one air distribution chamber extending along the length of the apparatus at the top thereof said air distribution chamber being in communication with a source of suction, the improvement comprising:

at least one of said at least one air distribution chamber having an upwardly tapering shape when viewed in lateral cross-section;

a plurality of laterally oriented bulkhead walls spaced along the length of said apparatus to divide said at least one air distribution chamber into a plurality of upwardly tapering air circulating chambers;

suction channel means extending along said at least one air distribution chamber exteriorly thereof and connected to each air circulating chamber for communicating suction thereto from said source of suction, said suction channel means being constructed to operate as a cyclone; and

means for controlling air flow disposed exteriorly of said air distribution chambers and interposed between each of said air circulating chambers and said suction channel means, said means for controlling cooperating with said suction channel means to achieve a circumferential air flow therein, whereby said cyclone operation occurs.

4,806,236

APPARATUS FOR UPFLOW ION EXCHANGE

Austin F. McCormack, 9424 Sherwood Glen, Dallas, Tex. 75228

Filed Aug. 13, 1987, Ser. No. 85,021

Int. Cl.[4] B01J *49/00*

U.S. Cl. 210—94 **18 Claims**

1. An apparatus for treating liquids by ion exchange, comprising:

(a) a sealed vessel of generally cylindrical shape having a lower portion including a bottom, a middle portion, and an upper portion including a top;

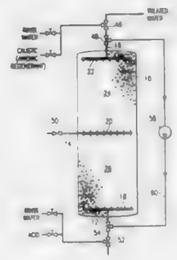
(b) a lower inlet conduit mounted on said lower portion of said vessel and extending from the exterior of said vessel to the interior;

(c) a middle outlet conduit mounted on said middle portion of said vessel and extending from the exterior of said vessel to the interior;

(d) an upper conduit mounted on said upper portion of said vessel and extending from the exterior of said vessel to the interior;

(e) a liquid distributor attached to said lower inlet conduit inside said vessel for introducing the liquid to be treated into the bottom of said vessel in the operation mode and for distributing cationic regenerant in the regeneration mode;

(f) a liquid distributor-collector attached to said upper conduit inside said vessel for removing treated liquid from the top of said vessel in the operational mode and for distributing anionic regenerant in the regeneration mode;



(g) a regenerant collector attached to said middle outlet conduit inside said vessel for removing said anionic and cationic regenerants from said vessel;

(h) a bed of cationic ion exchange resin filling the interior space of said vessel from the bottom of said vessel to approximately the location of said regenerant collector means; and

(i) a bed of anionic ion exchange resin resting directly on said bed of cationic ion exchange resin and completely filling the remaining interior space of said vessel from. approximately the location of said regenerant collector means to the top of said vessel.

4,806,237

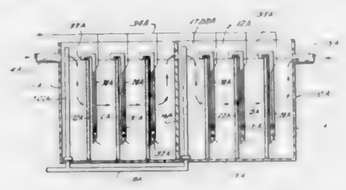
WASTE REMOVAL APPARATUS

Herbert J. Ewald, Jr., 615 Avenue A, Karnes City, Tex. 78118

Continuation-in-part of Ser. No. 856,231, Apr. 28, 1986, which is a continuation-in-part of Ser. No. 674,289, Nov. 23, 1984, abandoned. This application Sep. 22, 1987, Ser. No. 99,711

Int. Cl.[4] E04H *3/16*

U.S. Cl. 210—169 **11 Claims**



1. Apparatus for use in removing waste from a fish culture system, comprising a tank through which water from th system may be circulated and having an inlet thereto and outlet therefrom, a plurality of filters mounted in upright and spaced apart positions across the tank intermediate the inlet and outlet with their side and bottom edges conforming closely to the side and bottom walls of the tank so that the water circulates successibly through them, each filter including a relatively thin, porous layer of filtering media having a large surface area on which bacteria form dissolved organic substances in the water will grow, means for injecting air into a column of water on the upstream side of each filter so as to agitate the water and add oxygen thereto for promoting bacterial growth on the filter media, means for maintaining the water in the tank at substantially the level of the upper edges of the layers of filter media, and means providing for individual removal of each such layer of filter media from the tank for cleaning purposes indepenedently of the others, the means for injecting air on the upstream side of each filter including a tube individually mounted on the tank with an outlet on said upstream side and an inlet in its lower end on the downstream side of the filter near the bottom of the tank, and an air line extending into the tube for injecting air into the water near its lower end.

4,806,238

CHROMATOGRAPHY COLUMN

Günther Sättler, Reinheim, and Günter Hanke, Mühltal, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

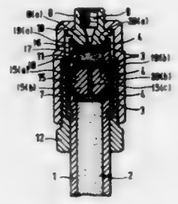
Continuation-in-part of Ser. No. 869,549, Jun. 2, 1986, Pat. No. 4,737,284. This application Nov. 19, 1987, Ser. No. 122,815

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1985, 3519725; Nov. 20, 1986, 3639692

The portion of the term of this patent subsequent to Apr. 12, 2005, has been disclaimed.

Int. Cl.[4] B01D *15/08*

U.S. Cl. 210—198.2 **4 Claims**



4. A chromatography column supply system wherein there are a plurality of chromatography columns containing sorbent and a lesser number of chromatography precolumns configured for use with some of the chromatography columns, the improvement comprising:

each chromatography column having first and second ends which are identical, the ends of each column including an external groove and having internal, outwardly facing shoulders;

two mirror image half-shells for each end of a column, each half-shell having first and second ends and having an internally projecting semicircular rib which is received in one half of the groove;

a first distribution element positioning in each column in abutment with one of the shoulders and in engagement with the sorbent in the column;

a pressure member for each column, the pressure member engaging the first distribution element if the column does not use a precolumn and engaging the precolumn directly if the column uses a precolumn;

a support nut surrounding the half-shells and having external threads and an internal shoulder abutting one of the ends of the half-shells;

union nuts for each column having internal threads for threadably engaging with the support nuts and shoulders for engaging the pressure members to urge the pressure members into abutment with the first distribution elements;

precolumns for use with some of the columns, each precolumn having a first end for abutment with the first seal means and first distribution element of a column and a second end with a second sealing means and second distribution element thereof, a portion of each of the precolumn being received between the half-shells;

rigid spacer elements for some of the columns, the rigid spacer element each having first and second ends, the first end abutting the second seal and the second distribution element and the second end abutting a third seal and a third distribution element positioned just inboard the end of a tube, whereby more than one type of chromatography column need not be stocked for use either with or without precolumns.

4,806,239

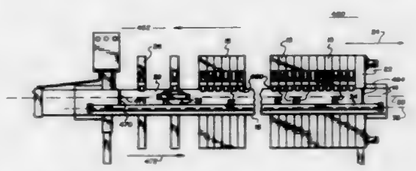
APPARATUS FOR SHIFTING FILTER PLATES IN A FILTER PRESS

Steven S. Davis, Farmington, Utah, assignor to Envirotech Corporation, Menlo Park, Calif.

Filed Nov. 28, 1986, Ser. No. 936,091

Int. Cl.[4] B01D *25/34*

U.S. Cl. 210—225 **18 Claims**



12. A filter press comprising:

an elongate frame;

a press head plate mounted on an end of said frame;

an upstanding follower slidably mounted on an opposing end of said frame;

a plurality of filter plates slidably supported on said frame between said press head plate and said follower, said filter plates being made longitudinally slidable along said frame;

an elongated hollow tubular member mounted on said frame having a sidewall, opposing end walls and a pair of spatially expandible pressure chambers defined therein, said pressure chambers include means for introduction of and venting of pressurized fluid into and out of said chambers;

a piston slidably and reciprocally mounted within said tubular

member between said pressure chambers said tubular member and said piston forming a rodless fluid pressure cylinder;

a carriage mounted on said tubular member to be reciprocally and slidably disposable along a length of said tubular member, said carriage being connected to said piston by an attachment means slidably displaceable;

connection means, mounted on said carriage, for effecting a releasable union of said carriage with at least one of said filter plates; and means for displacing filter plates

wherein an introduction of pressurized fluid into one of said pressure chambers effects a spatial expansion of said chamber and a corresponding displacement of said piston, thereby moving said carriage and connection means and resultingly displacing any filter plates releasably united with said connection means along said frame.

4,806,240

ADAPTER AND CARTRIDGE ASSEMBLY

Edward C. Giordano, Glastonbury, and Raymond M. Petrucci, Middlebury, both of Conn., assignors to Cuno, Incorporated, Meriden, Conn.

Filed Jun. 12, 1987, Ser. No. 62,299

Int. Cl.[4] B01D *27/08, 35/02*

U.S. Cl. 210—232 **8 Claims**

1. An adapter for connecting a filter cartridge to a filter head comprising:

an outer shell;

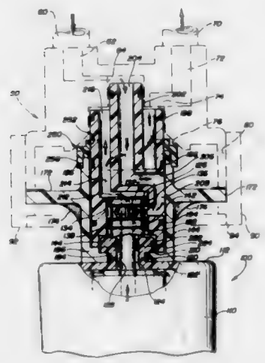
an inner core having a cylindrical section thereon;

receptacle means in said adapter to receive said filter cartridge;

lug means on said adapter to attach said adapter to a filter head;

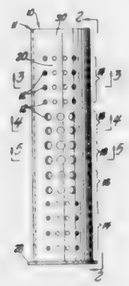
aligning means disposed on said cylindrical section of said inner core axially movable on said cylindrical section, said aligning means coacting with said outer shell to radially align said inner core with respect to said outer shell to maintain said filter cartridge in the receptacle means; and

axially slidable means to lock the cartridge in the adapter, said locking means constructed and arranged to coact



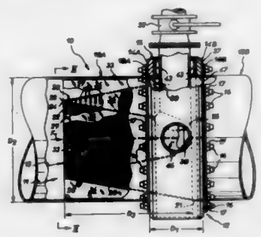
with the filter head to maintain the cartridge in the adapter.

4,806,241
OVERFLOW LINT STRAINER
Dwight H. Holien, 14351 Peterboro, Sterling Heights, Mich. 48078
Filed May 18, 1987, Ser. No. 50,857
Int. Cl.[4] B01D *35/02*
U.S. Cl. 210—248 **11 Claims**



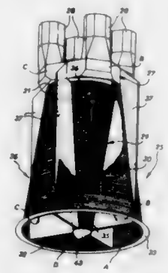
1. A filter assembly (10) compriaing: a tubular body portion (11) having a plurality of openings (12) having diameters, first and second ends and a middle portion, and a plane of symmetry defining front (20) and rear (22) faces, said openings (12) being arranged in a plurality of adjacent bands (14, 16, 18), said bands being coextensive with only a portion of said front (20) and rear (22) faces, said diameter of each of said openings (12) within each of said bands (14, 16, 18) being equal, said diameters of said openings (12) increasing from a relatively smaller dimension in said bands (14) adjacent said first and second ends to a relatively larger dimension in said bands (18) of said middle portion; an overflow opening (40, 40'); engagement means for engaging a waste drain (26, 26'); hold down means for securing said body portion (11) to the waste drain (26, 26'); and retaining means comprising a plurality of grooves (38, 38') at said first and said second ends of said body portion (11) for retaining said hold down means therein.

4,806,242
SELF-CLEANING FILTER
Philip Jackson, Paris, France, assignor to E. Beaudrey & Cie, Paris, France
Filed Feb. 10, 1987, Ser. No. 13,029
Claims priority, application France, Feb. 11, 1986, 86 01819
Int. Cl.[4] B01D *29/04*
U.S. Cl. 210—303 **19 Claims**



1. Filter without moving parts comprising a filter body adapted to be mounted in a conduit along a flow direction of fluid to be filtered, a filter screen having a frustoconical outer filter wall having small and large diameter ends an inner filter wall being arranged inside said outer filter wall, said outer filter wall being supported at its large diameter end inside said filter body, said inner filter wall extending axially lengthwise from the small diameter end of said outer filter wall into said filter body, said filter screen extending into the conduit substantially upstream beyond said filter body, said filter body having means defining a first collection space and means defining a second collection space inside said filter body, at least one offtake conduit being connected to said means defining a first collection space, said means defining a second collection space bing disposed at the end of the inner filter wall axially remote from the small diameter end of the outer filter wall and including a back wall at said last mentioned end of said inner filter wall, a second offtake conduit separate from the first offtake conduit being connected to said means defining a second collection space, said second offtake conduit extending substantially radially through the filter body from said means defining a second collection space and traversing said outer filter wall.

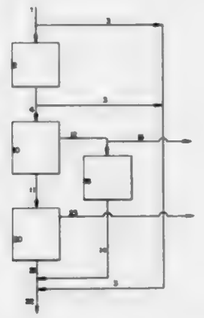
4,806,243
SELF-CLEANING FILTER AND STEAM CONDENSER INLET WATER BOX COMPRISING SAME
Philip Jackson, Paris, France, assignor to E. Beaudrey & Cie, Paris, France
Filed Feb. 4, 1987, Ser. No. 10,681
Claims priority, application France, Feb. 11, 1986, 86 01820
Int. Cl.[4] B01D *29/04*
U.S. Cl. 210—303 **20 Claims**



1. A self-cleaning fluid filter comprising a screen having a substantially conical axially extending inner wall having a

large diameter end and a small diameter end, a fluid inlet being located at the small diameter end, and a fluid outlet being located at the large diameter end, means defining a collection space for fluid entrained debris at the large diameter end, a frustoconical axially extending outer wall transversely spaced from and surrounding said inner wall, said outer wall having a smaller diameter end connected to said means defining a collection space and a large diamter end at said fluid inlet, at least one offtake conduit connected to said means defining a collection space for carrying away debris therefrom, and baffles extending through said inner wall and said outer wall and forming a support framework for said screen.

4,806,244
COMBINED MEMBRANE AND SORPTION PROCESS FOR SELECTIVE ION REMOVAL
Michel Gailhem, Strasbourg, France, assignor to The Dow Chemical Company, Midland, Mich.
Filed Jul. 14, 1987, Ser. No. 73,033
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1986, 3623796
Int. Cl.[4] B01D *13/00, 15/04*
U.S. Cl. 210—638 **8 Claims**



1. An improved sorption process for removal of a first ion from a liquid feed containing the first and a second ion, which process is characterized by the steps of:

(a) contacting a first side of an ion-selective, nanofiltration membrane having a chemical potential difference for the first and second ions across the membrane with the liquid feed so as to separate the liquid into first and second portions, the first portion comprising a lower concentration of the second ion than the liquid feed and a lower ratio of the second ion to the first ion than the liquid feed, and

(b) contacting the first portion of the liquid with a sorbant so as to sorb the first ion.

4,806,245
PERVAPORATION OF PHENOLS
Karl W. Böddeker, Breitenfelde, Fed. Rep. of Germany, assignor to Bend Research, Inc., Bend, Oreg.
Continuation of Ser. No. 918,533, Oct. 14, 1986. This application Mar. 21, 1988, Ser. No. 175,683
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—640 **14 Claims**

1. A pervaporation method of selectively enriching the phenolic content of the permeate of an aqueous phenolic feed solution without pH adjustment, said phenolic content enrichment of said permeate increasing with decreasing phenolic concentration of said feed solution so as to permit increasing said phenolic content of said permeate to a phenolic concentration at which natural phase separation spontaneously occurs, said method comprising at least one pervaporation step of forming a vaporized phenol-enriched permeate comprising both phenols and water in a vapor state by

(a) contacting the feed side of a nonporous polymeric membrane having a feed side and a permeate side with an aqueous phenol-containing feed stream, said membrane not being degraded by phenols and selected from the group consisting essentially of elastomeric polymers and anion exchange polymers, while



(b) maintaining on the permeate side of said membrane either a pressure of 10 mmHg or less or an inert gas sweep stream, whereby phenols in said feed stream preferentially permeate said membrane to form a vaporized phenol-enriched permeate comprising both phenols and water in a vapor state on the permeate side of said membrane, and leaving a phenol-depleted water retentate on the feed side of said membrane.

4,806,246
PORE SIZE CONTROL USING PLASMA POLYMERIZATION TECHNIQUES
Hiroshi Nomura, Minnetonka, Minn., assignor to Applied Membrane Technology, Inc., Minnetonka, Minn.
Filed Apr. 11, 1986, Ser. No. 850,953
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—651 **55 Claims**



1. A microporous ultrafiltration composite membrane of reduced pore size comprising:

a hydrophobic microporous substrate: and

a plasma polymerizate coating on the surface of the substrate,

the plasma polymerizate coating reducing the pore size of the microporous substrate to a size smaller than the original pore size, but not less than about 10 A, while allowing the body of the substrate to substantially retain the substrate's original properties of mechanical strength and chemical resitance.

39. A method for separating, concentrating or purifying particulate larger than about 10 A from aqueous or suitable solvent systems comprising:

positioning a microporous ultrafiltration composite membrane of reduced pore size according to claim 1 in a suitable separatory apparatus, and

contacting an aqueous or suitable solvent system containing particulate larger than about 10 A with said membrane,

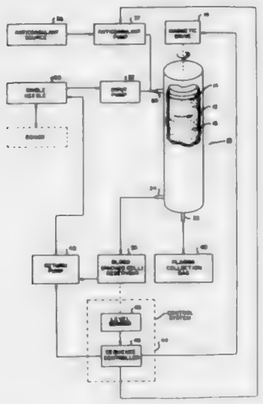
in order to effect the required separation, concentration or purification.

4,806,247
PLASMAPHERESIS SYSTEM AND METHOD
Donald W. Schoendorfer, and Lee E. Hansen, both of Santa Ana, Calif., assignors to Baxter International Inc., Deerfield, Ill.
Division of Ser. No. 722,800, Apr. 12, 1985, Pat. No. 4,713,176. This application Jul. 29, 1987, Ser. No. 79,108
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—321.18 **8 Claims**

1. A system for separating plasma filtrate from whole blood comprising:

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a filter system including a rotating vortex enhanced separator having a filter membrane, the filter system being coupled to receive a flow of anticoagulated whole blood, a source of anticoaguant fluid having a pH value range of 4.4 to 5.5; and output flows of packed cells and plasma filtrate in response thereto; and



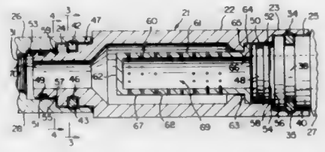
the anticoagulant pump coupled to pump an anticoagulant fluid into the flow of whole blood, the pump including means for operating the pump at a rate controlled to provide anticoagulated whole blood with a pH value in the range of 6.8 to 7.2.

4,806,248

HOSE CONSTRUCTION, COUPLING ARRANGEMENT THEREFOR AND METHOD OF MAKING THE SAME

Joseph S. Murken, Springfield, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

Continuation of Ser. No. 92,788, Sep. 2, 1987, abandoned, which is a division of Ser. No. 881,533, Jul. 2, 1986, Pat. No. 4,707,262. This application Apr. 25, 1988, Ser. No. 192,326
Int. Cl.[4] B01D *35/00*
U.S. Cl. 210—448 **11 Claims**



1. In a hose construction for conveying fluid therethrough and having a coupling arrangement therein, said coupling arrangement having a filter unit disposed therein to filter the fluid flow through said hose construction, the improvement wherein said coupling arrangement is a quick connect-disconnect coupling arrangement that comprises a first tubular coupling member having opposed open ends, a second tubular coupling member having opposed open ends one of which is telescopically disposed in one of said ends of said first coupling member, a removable fastening member securing said one ends of said coupling members together in the telescoping relation thereof, said filter unit having means that is held between said one ends of said coupling members when said one ends are in said secured telescoping relation thereof whereby said filter unit is secured in said coupling arrangement by said means thereof, and an annular flexible sealing member carried by said coupling arrangement and being in a compressed relation therein to provide a loading force on said filter unit and on said fastening member, said means of said filter unit comprising an outwardly directed annular flange, said one end of said first coupling member having an internal annular shoulder means, said one end of said second coupling member having an annular shoulder means, said annular flange of said filter unit being held in sandwiched relation between said shoulder means when said one ends are in said secured telescoping relation, one of said shoulder means carries said annular flexible sealing member in said compressed relation between said one shoulder means and said annular flange of said filter unit when said one ends are in said secured telescoping relation.

4,806,249

PROCESS FOR THE SEPARATION OF INDIUM FROM ANIDIC SOLUTIONS CONTAINING IT

Renato Guerriero, Mestre; Letizia Meregalli, Venice, and Italo Vittadini, Mestre, all of Italy, assignors to Samim Societa Azionaria Minero-Metallurgica S.p.A., Rome, Italy

Continuation of Ser. No. 754,537, Jul. 12, 1985, abandoned. This application Dec. 22, 1987, Ser. No. 136,539
Claims priority, application Italy, Apr. 12, 1985, 20313 A/85
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—638 **19 Claims**

1. A process for the separation of indium from acidic supply solutions containing other metals selected from copper, zinc, cadmium, iron, nickel, arsenic, antimony, cobalt, aluminum, or combinations thereof, comprising:

(a) contacting an indium-containing acidic supply solution with a liquid membrane containing one or more active components capable of complexing indium, thereby forming complexes of said active components with indium on the surface of said liquid membrane;

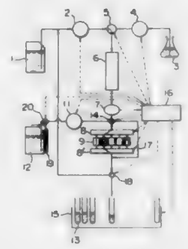
(b) contacting the surface of said liquid membrane with an aqueous stripping solution which is essentially more acidic than the supply solution, simultaneously extracting indium from the membrane surface into the stripping solution and regenerating the active components capable of complexing indium.

4,806,250

LIQUID CHROMATOGRAPHY AND APPARATUS USING THE SAME

Yoshinori Takata, Chiba; Mitsuo Ito, Ibaraki, and Junkichi Miura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 940,487, Dec. 10, 1986, abandoned. This application Feb. 26, 1988, Ser. No. 161,180
Claims priority, application Japan, Dec. 12, 1985, 60-280049
Int. Cl.[4] B01D *15/08*
U.S. Cl. 210—659 **6 Claims**



1. A liquid chromatography process for isolating a desired component from a sample solution using a liquid state eluting solution, which comprises passing the sample solution through a separation column, thereby separating components contained therein in the separation column, then selectively eluting a

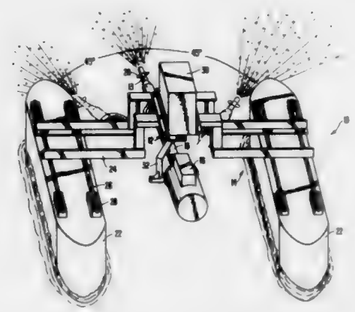
desired component of the components separated in the separation olumn using an eluting solution capable of eluting the esired component from the separating column and nabling the desired component to be retained in a trapping column, passing the eluate containing the desired component from the separation column through a trapping column, thereby trapping the desired component in the trapping column, while discarding or recycling the effluent eluate from the trapping column, and then passing another elution solution composed of a volatile substance when dried under reduced pressure through the trapping column, thereby recovering eluate containing the desired component from the trapping column, wherein the recovered eluate from the trapping column is d under reduced pressure, thereby obtaining the desired component pure form.

4,806,251

OSCILLATING PROPELLER TYPE AERATOR APPARATUS AND METHOD

Joseph A. Durda, Waxatta, Minn., assignor to Aeration Industries, Inc., Chaska, Minn.

Filed Sep. 16, 1986, Ser. No. 907,990
Int. Cl.[4] C02F *7/00*
U.S. Cl. 210—747 **8 Claims**



1. An oscillating propeller type aerator apparatus for aerating a substance comprisng a propeller type aerator including a tube, a propeller and means for rotating the propeller, wherein air is injected into the substance through said tube and is dispersed by said propeller; a support system for supporting the aerator with the tube and propeller at an acute angle below the surface of the substance to be aerated, said support system including means for supporting the tube and propeller for pivotal motion about an axis transverse to the surface of the substance to be aerated; and drive means for periodically pivoting the tube and propeller in an oscillatory pattern during aeration through an angle about an axis transverse to the surface of the substance to be aerated in order to disperse over an arc related to said oscillating angle air being injected through said tube into the substance.

5. A method for aerating a substance with a propeller type aerator including a tube for directing air below the surface of the substance being aerated, a propeller and means for rotating the propeller comprising the steps of:

supporting the tube and propeller of the aerator below the surface being aerated;

injecting air into the substance through the tube; and

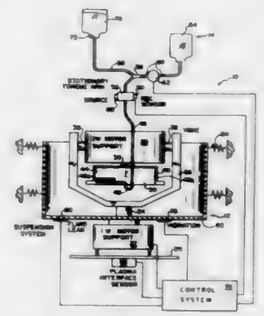
dispersing the injected air through the substance by moving the substance with the rotating propeller, and further dispersing the injected air over an arc by periodically oscillating the tube and the propeller through an angle about an axis transverse to the surface of the substance while the air is being injected into the substance through the tubes and being dispersed by the rotating propeller.

4,806,252

PLASMA COLLECTION SET AND METHOD

Richard I. Brown, Northbrook; David E. Cerny, Crystal Lake; John T. Foley, Wheeling, and Joseph C. West, Jr., Fox Lake, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Jan. 30, 1987, Ser. No. 8,718
Int. Cl.[4] B01D *21/26*
U.S. Cl. 210—744 **21 Claims**



1. A method of separating a selected component from a fluid within a sealed system, a collection container of which is rotated in a centrifuge while another portion of which remains stationary, the method comprising:

providing a centrifuge;

providing a sealed fluid collection system with a fluid filled collection container having an interior collection volume into which extends a selectively oriented barrier member;

inserting the fluid filled collection container into a receiving chamber of the centrifuge;

rotating the collection container at a predetermined rotational velocity thereby separating the selected component from the remaining fluid in the container by forcing the remaining fluid into an outer annular region adjacent a rotating peripheral wall of the chamber while simultaneously collecting the separated component in an inner, adjacent annular region thereby emptying a central region of the container;

reducing the rotational velocity of the collection container and fluid therein and blocking movement of the fluid in the container with respect thereto by means of the barrier member so as to minimize mixing of the separated selected component with the remaining fluid; and

withdrawing a selected portion of fluid from the rotating collection container and into the stationary portion of the system.

4,806,253

LAUNDRY COMPOSITIONS

James C. T. R. Burckett St. Laurent, Overijse, and Alfred Busch, Grimbergen, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 670,681, Nov. 13, 1984, abandoned. This application May 23, 1986, Ser. No. 868,176

Int. Cl.⁴ D06M *11/00*

U.S. Cl. 252—8.8 **9 Claims**

1. A detergent composition comprising detersive surfactant, builders and other conventional detersive ingredients, and "2–7 wt. %" clay fabric softener, characterized in that it contains 1–5 wt % of a water-soluble -di-C_1–C_4 di- C_6–C_{10} alkyl quaternary ammonium salt and not more than 3% by weight of alkoxylated nonionic detersive surfactant.

4,806,254

COMPOSITION AND METHOD FOR REMOVAL OF WRINKLES IN FABRICS

John A. Church, Princeton Junction, N.J., assignor to Colgate-Palmolive Co., Piscataway, N.J.

Filed May 26, 1987, Ser. No. 54,350

Int. Cl.⁴ D06M *1/00*

U.S. Cl. 252—8.6 **15 Claims**

1. An aqueous composition for removing wrinkles from a fabric comprising:

(a) from about 10 to 60%, by weight, of one or more alcohols selected from the group consisting of ethyl, propyl and isopropyl alcohols;

(b) from about 1 to 10%, by weight, of glycerine;

(c) a nonionic surfactant in an amount sufficient to enhance the wettability of the fabric, and;

(d) the balance water

4,806,255

TEXTILE TREATMENT COMPOSITIONS

Axel König, Wesemel, and Francesco de Buzzaccarini, Strombeek-Bever, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 10, 1986, Ser. No. 850,638

Claims priority, application United Kingdom, Aug. 20, 1985, 8520803

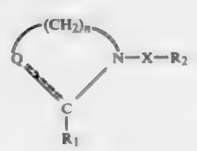
The portion of the term of this patent subsequent to Apr. 28, 2004, has been disclaimed.

Int. Cl.⁴ D06M *11/00*

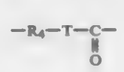
U.S. Cl. 252—8.8 **8 Claims**

1. A stable aqueous dispersion comprising:

(a) from 1% to 4% of an amine or mixture of amines selected from the group consisting of the di(higher alkyl) cyclic amines of the formula:



wherein n is 2, 3 or 4, R_1 and R_2 are, independently, a C_8–C_{30} alkyl or alkenyl radical, or mixtures of such radicals; Q is CH, CH_2, NH or N, X is



wherein T is NR_5, R_5 being H or C_1–C_4 alkyl, and R_4 is a divalent C_1–C_3 alkylene group or $(C_2H_4O)_m$, wherein m is a number of from 1 to 8; or X is R_4; and

(b) a compound selected from the group of conventional quaternary ammonium softening agents having two higher alkyl groups, each comprising from 8 to 30 carbon atoms; and

(c) from about 1% to about 50% by weight of the amine of a dispersing aid which is a Bronstedt acid having a pKa value of not greater than 6, the amount of said acid being such that the pH of the composition is 5 or less.

4,806,256

WATER-BASED HYDRAULIC FLUIDS

Gene D. Rose, and Arthur S. Teot, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 622,030, Jun. 18, 1984, abandoned. This application Jan. 13, 1987, Ser. No. 3,003

Int. Cl.⁴ C09K *5/00*

U.S. Cl. 252—71 **25 Claims**

1. A method of improving a water-based hydraulic fluid containing a lubricant and a corrosion inhibitor, comprising the step of contacting the fluid with:

(a) surfactant ions having an ionic, hydrophilic moiety chemically bonded to a hydrophobic moiety, and

(b) a stoichiometric amount of organic counterions,

so as to form an aqueous solution under suitable solution conditions whereby the surfactant ions and organic counterions associate in the hydraulic fluid thereby forming a viscoelastic surfactant; wherein the concentration of viscoelastic surfactant ranges from about 0.1 to about 10 weight percent of the hydraulic fluid.

4,806,257

SOLID FILM LUBRICANT COMPOSITIONS

Robert N. Clark, Sylvania, and Paul W. L. Graham, Toledo, both of Ohio, assignors to Owens-Illinois Glass Container Inc., Toledo, Ohio

Filed Nov. 12, 1985, Ser. No. 797,267

Int. Cl.⁴ C03C *39/00*

U.S. Cl. 252—29 **19 Claims**

1. A non-aqueous composition for coating hot glass contacting surfaces of hot glass handling and forming equipment with a solid film lubricant, the composition comprising:

A. a precured concentrated liquid siloxane partial condensation product, the condensation product being formed without gelling, by the hydrolysis of methyltriethoxysilane, phenyltriethoxysilane and dimethyldiethoxysilane and water in the presence of an acid hydrolysis catalyst,

B. finely divided graphite,

C. a solvent for the condensation product, and

D. NaOH, in an amount sufficient to prevent premature gelling, and the composition after application, as a coating to the hot glass contacting surface, being curable at room temperature.

4,806,258

STRAINING AND STOP VALVE

Ronnie J. Duncan, Leavenworth, Wash., assignor to Remco Research and Development, Inc., Bellevue, Wash.

Division of Ser. No. 4,722,794, Feb. 2, 1988. This application Sep. 4, 1987, Ser. No. 93,814

Int. Cl.⁴ B01D *35/04*

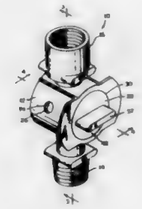
U.S. Cl. 210—423 **6 Claims**

1. A rotary fluid stop valve having a structure which facilitates its manufacture by well-known molding techniques, comprising:

a body having a cylindrical chamber with a circumferential interior cylindrical sidewall, said sidewall having an inlet port and an outlet port;

a substantially cylindrical plug member rotatably disposed in said chamber, said member having spaced-apart first and second substantially circular end plates connected to said plug member, said plates each having a peripheral seal engaging the interior sidewall of said chamber, said plug member having an arcuate sealing plate positioned between said end plates along a perimeter thereof, said sealing plate being loosely retained between said plates for movement into sealing engagement with said interior sidewall in response to fluid pressure in said chamber;

said plug member being rotatable between at least a first position wherein the ports are open to allow passage of fluid therebetween and a second position wherein at least one of said ports is blocked by said arcuate sealing plate;



said sealing plate being curved of the shape of the cylindrical sidewall, the curved sealing plate being smooth, uniform, non-point loaded, and larger than the port to be closed so that the sealing plate can slide over the port to be closed in a direction parallel to the curve of the cylindrical sidewall while exposed to fluid pressure in the direction perpendicular to the cylindrical sidewall.

4,806,259

MEMBRANE CLEANING COMPOSITIONS CONTAINING PHOSPHOROUS COMPOUNDS

Zahid Amjad, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 15, 1987, Ser. No. 61,936

Int. Cl.⁴ C02F *5/08, 5/10*; **C23F** *11/00, 11/10*

U.S. Cl. 252—80 **19 Claims**

1. Composition for cleaning or for preventing fouling of a semipermeable membrane comprising 20–60% by weight of a weak organic acid selected from the group consisting of citric acid, malic acid, tartaric acid, ascorbic acid, lactic acid, oxalic acid, sulfamic acid and mixtures thereof; and 2–40% by weight phosphorus compound selected from the group consisting of alkali metal salts of metaphosphoric acid, amino alkyl phoephonic acids, hydroxyalkyl diphosphonic acids, aminoalkyl and hydroxyalkyl phosphonic acids and phosphonates, phosphonoalkanepolycarboxylic acids and salts thereof, polyphosphoric acids and salts thereof, polyol phosphate esters, and mixtures thereof; the amounts are based on the weight of the entire composition.

4,806,260

BUILT NONAQUEOUS LIQUID NONIONIC LAUNDRY DETERGENT COMPOSITION CONTAINING ACID TERMINATED NONIONIC SURFACTANT AND QUARTERNARY AMMONIUM SOFTENER AND METHOD OF USE

Guy Broze, Grace-Hollogne, and Danielle Bastin, Soumagne, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Feb. 21, 1986, Ser. No. 831,752

The portion of the term of this patent subsequent to Nov. 11, 2003, has been disclaimed.

Int. Cl.⁴ D06M *9/00*; **C11D** *1/06*

U.S. Cl. 252—8.8 **22 Claims**

1. A nonaqueous nonionic liquid detergent composition for cleaning and imparting softness to fabrics which comprises 10 to 70% of a nonionic surfactant, and 2.5 to 35% of a macro salt complex of a polycarboxylic acid terminated nonionic surfactant and a cationic quaternary salt softener, where the polycarboxylic acid terminated nonionic surfactant is the reaction product of a nonionic surfactant which is a poly C_2 to C_3 alkoxylated fatty alcohol having a terminal OH group and a polycarboxylic acid or polycarboxylic acid anhydride, and the quaternary ammonium salt softener is a member selected from the group consisting of a mono-higher alkyl tri-lower alkyl quaternary amine salt (I), di-higher alkyl di-lower alkyl quaternary amine salt (II), mono-higher alkyl mono-lower alkyl diethoxylated quaternary ammonium salt (III), and di-higher alkyl diethoxylated quaternary ammonium salt (IV), wherein the ratio of the polycarboxylic acid terminated nonionic surfactant to the quaternary ammonium salt used to form the macro complex is about 1.3:1 to 1:1.3.

4,806,261

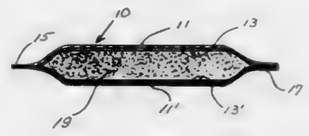
DETERSIVE ARTICLE

Loretta K. Ciallella, Hopelawn, and Charles Buda, Middlesex, both of N.J., assignors to Colgate-Palmolive Co., Piscataway, N.J.

Filed Apr. 11, 1988, Ser. No. 179,606

Int. Cl.⁴ C11D *17/00*

U.S. Cl. 252—90 **11 Claims**



1. A detersive article, for use in an automatic washing machine, for washing laundry, which comprises a particulate built synthetic organic detergent composition in a closed container, the walls of which container are composed of a readily water dispersible sheet or film of water soluble cellulose compound and cellulose fibers, covered with a water soluble polyvinyl alcohol on interior surfaces thereof.

4,806,262

NONLATHERING CLEANSING MOUSSE WITH SKIN CONDITIONING BENEFITS

William E. Snyder, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 914,395, Oct. 2, 1986, Pat. No. 4,708,813, which is a continuation-in-part of Ser. No. 765,901, Aug. 14, 1985, abandoned. This application Nov. 9, 1987, Ser. No. 118,687

The portion of the term of this patent subsequent to Nov. 24, 2004, has been disclaimed.

Int. Cl.⁴ A61K *7/50, 9/12*; **C11D** *1/66, 3/46*

U.S. Cl. 252—90 **11 Claims**

1. A mousse-forming pressurized aerosol skin cleansing composition comprising:

A. from about 95% to about 99.5% of a concentrate, containing by weight of the concentrate:

1. from about 1.5% to about 15% of one or more nonionic surfactants selected from the group consisting of ethoxylated nonionic surfactants, partially or wholly esterified polyols and mixtures thereof, said surfactant or mixture of surfactants having an HLB of from about 7 to about 18;

2. from about 0.2% to about 5% of a C_{12}–C_{22} saturated, straight chain fatty alcohol;

3. from about 5% to about 35% of an emollient which is a water-insoluble oily or waxy material other than C_{11}–C_{22} saturated, straight chain fatty alcohol;

4. from about 5% to about 20% of hygroscopic skin moisturizer;

5. the balance water; the weight ratio of surfactant: emolient plus C_{12}–C_{22} saturated, straight chain fatty alcohol being from about 0.1:1 to about 0.5:1; and

B. from about 0.5% to about 5% propellant gas, by weight of the total composition, the said propellant gas being

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selected from gases having a solubility in water of from about 15 ml to about 1000 ml per liter at one atmosphere pressure and 21.1° C., and having a vapor pressure equal to or greater than 8788 g per sq. cm. gauge at 21.1° C., said composition being substantially free of anionic surfactant, cationic surfactant, nonionic amine oxides and fatty amides which would give the mousse a foaming consistency, and water-insoluble propellants and said composition being contained in a pressurized aerosol dispenser.

4,806,263

FUNGICIDAL AND ALGICIDAL DETERGENT COMPOSITIONS

Amy Z. Leathers, Allison Park, and S. Thomas Greer, Oakmont, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 815,493, Jan. 2, 1986, abandoned. This application May 7, 1987, Ser. No. 46,748

Int. Cl.⁴ C11D *3/48, 7/54*

U.S. Cl. 252—106 **10 Claims**

1. A non-film forming, aqueous cleaning composition comprising:

(a) from 0.1 to 0.4 percent by weight of said composition of 3- iodo-2-propynyl butyl carbamate;

(b) from 1.0 to 6.0 percent by weight of said composition of a detergent;

(c) a thickener present at a level sufficient that said composition has a viscosity at 25 degrees C. of between about 200 and about 4,000 centipoise;

(d) an oxidizing agent which can provide an amount of chlorine to said composition, calculated as elemental Cl, in a range of from 0.17 to 0.50 percent by weight of said composition; and

(e) water.

4,806,264

METHOD OF SELECTIVELY REMOVING SELENIUM IONS FROM AN AQUEOUS SOLUTION

Andrew P. Murphy, Littleton, Colo., assignor to The United Sates of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sep. 1, 1987, Ser. No. 91,812

Int. Cl.⁴ C02F *1/48, 1/70*

U.S. Cl. 210—695 **14 Claims**

1. A method of selectively removing selenium ions from an aqueous solution, wherein said selenium ions are selected from the group consisting of selenite ions and selenate ions comprising contacting said solution at a pH of about 8 to 10 with an amount of ferrous ions effective to reduce said selenium ions to elemental selenium.

4,806,265

AMORPHOUS FERROMAGNETIC OXIDES

Kenji Suzuki, 12-11, Shogen 11-chome, Izumi-shi, Miyagi-ken; Tsuyoshi Masumoto, 8-22, Kamisugi 3-chome, Sendai-shi, Miyagi-ken; Nobuhiro Ota, 76-3, Aza-Matsushima; Kurosaki, Miya-cho, Naruto-shi, Tokushima-ken; Mika Okubo, Tokushima; Masao Mitera, 24-39, Yoshinari 1-chome, Miyagi-cho, Miyagi-gun, Miyagi-ken; Akira Matsumoto, 6-72, Shirosou-chi, Tokushima-cho, Tokushima-shi, Tokushima-ken, and Shuji Masuda, 27-8, Aza-Miyanomoto, Ejiri, Kitajima-cho, Itano-gun, Tokushima-ken, all of Japan, assignors to Research Development Corporation of Japan, Tokyo; Kenji Suzuki; Tsuyoshi Masumoto, both of Miyagi; Nobuhiro Ota, Tokushima; Masao Mitera, Miyagi; Akira Matsumoto and Shuji Masuda, both of Tokushima, all of, Japan

Continuation of Ser. No. 790,593, Oct. 23, 1985, abandoned. This application Sep. 14, 1987, Ser. No. 97,317

Claims priority, application Japan, Oct. 24, 1984, 59-224654

Int. Cl.⁴ C04B *35/26*

U.S. Cl. 252—62.63 **1 Claim**

1. An amorphous ferromagnetic oxide which is magnetically and optically isotropic, represented by the formula

$$A_x(M)_y(Fe_2O_3)_z$$

wherein A represents Bi_2O_3; M represents ZnO, MgO, CdO, CaO, or mixtures thereof $0x \leqq 80$, $0 < y \leqq 60$, $5 \leqq z \leqq 60$ and $x+y+z=100$; and wherein the oxide represented by said formula does not exhibit ferromagnetism when in a crystalline state.

4,806,266

DETERGENT FOAM CONTROL AGENTS CONTAINING A SILICONE ANTIFOAM AND A FATTY ALCOHOL

Peter M. Burrill, S. Glamorgan, Wales, assignor to Dow Corning Ltd., Barry, Wales

Continuation of Ser. No. 884,838, Jul. 11, 1986, abandoned. This application Feb. 18, 1988, Ser. No. 161,329

Claims priority, application United Kingdom, Jul. 25, 1985, 8518871

Int. Cl.⁴ B01D *19/04;* **C11D** *3/37, 9/36, 17/06*

U.S. Cl. 252—174.15 **20 Claims**

1. A particulate foam contorl agent in finely divided form for inclusion in a detergent composition in powder form, the agent comprising 1 part by weight of a silicone antifoam and from 1 to 10 parts by weight of an organic material which is selected from fatty alcohols having from 12 to 20 carbon atoms, said organic material having a melting point in the rang 45° to 80° C. and being insoluble in water, the foam control agent being produced by a process in which the silicone antifoam and the organic material are contacted in their liquid phase and wherein at least one said fatty alcohol present has at least 18 carbon atoms.

4,806,267

LIQUID AROMATIC BISOXAZOLINE AND BISOXAZINE MONOMER MIXTURES AND PROCESS FOR CROSSLINKING USING PHENOLICS

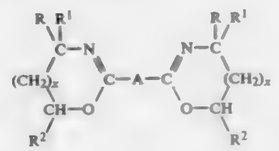
Billy M. Culbertson, Worthington, and Omar Tiba, Dublin, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Jan. 15, 1988, Ser. No. 144,142

Int. Cl.⁴ C08G *65/40, 69/44, 69/40*

U.S. Cl. 252—182.23 **3 Claims**

1. The composition having a melting point below 100° C. consisting of a mixture of two or more structurally dissimilar compounds having the formula



wherein

A represents a cyclic or acyclic aliphatic or substituted cyclic or acyclic aliphatic moiety having from 1 to 20 carbon atoms or an aromatic mono- or multi-nuclear or aliphatic substituted aryl residue having from 6 to 20 carbon atoms,

R independently represents H, CH_3, CH_2CH_3 or C_6H_5,

R^1 independently represents H or CH_3,

R^2 independently represents H or CH_3, and

x represents an integer of from 0 to 2.

4,806,268

LUMINESCING GLASSES

Akos Kiss, Aschaffenburg; Peter Kleinschmit, Hanau; Werner Volker, Bad Vilbel, and Günter Halbritter, Schollkrippen, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 677,350, Dec. 3, 1984, abandoned. This application Mar. 9, 1988, Ser. No. 170,091

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 3346686

Int. Cl.⁴ C09K *11/08;* **C03C** *8/10, 3/102, 3/105*

U.S. Cl. 252—331.4 F **5 Claims**

1. A luminescent glass consisting of the composition

(a)

2 to 45 mol % alkali metal oxide

0 to 20 mole % each pf magnesium oxide, calcium oxide, strontium oxide and barium oxide,

(b)

40 to 90 mole % silica

1 to 20 mole % boron oxide

1 to 10 mole % aluminum oxide, and

(c) 0.1 to 5 mole % lead oxide

1 to 5 mole % vanadium pentoxide.

4,806,269

WASTE OIL PROCESSING SUBSTANCE

Kazuo Shimizu, Kasukabe, Japan, assignor to 501 Minase Oil Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 2, 1987, Ser. No. 56,818

Claims priority, application Japan, Jan. 14, 1986, 61-138777

Int. Cl.⁴ C11D *13/30, 9/14*

U.S. Cl. 252—369 **4 Claims**

1. A process for the conversion of waste cooking oil to a soap or detergent comprising contacting waste cooking oil with a composition comprising

at least one of an alkali metal carbonate or an alkali metal silicate, wherein the alkali metal carbonate is present in amounts of 10% by weight or greater, and the alkali metal silicate is present in amounts of 5% by weight or greater,

at least 5 wt% of alkali metal-organic acid salt;

at least 5 wt% of a non-ionic surface-active agent;

1 to 20 wt% of alkali metal hydroxide; and

1 to 10 wt% water; and adding water and heating for an amount of time sufficient to form a soap or detergent composition.

4,806,270

STAIN-RESISTANT ANTIMONY ORGANIC SULFUR-CONTAINING COMPOUNDS AND VINYL HALIDE RESINS CONTAINING SAME

Ronald G. Hale, Grove, Okla.; Thomas R. Woodley, Concord, and Paul K. Tornstrom, Chagrin Falls, both of Ohio, assignors to Synthetic Products Company, Cleveland, Ohio

Filed Feb. 6, 1987, Ser. No. 11,640

Int. Cl.⁴ C09K *15/32*

U.S. Cl. 252—400.54 **32 Claims**

1. A stain-resistant antimony organic sulfur-containing composition consisting essentially of;

an antimony organic sulfur-containing compound have the formula:

$$R_nSbX_{3-n}$$

where R of the formula is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, cycloalkyl, cycloalkenyl, mixed aryl-alkyl, and subtituted groups thereof, where X of the formul,a is selected from the group consisting of sulfur, SR and SRCOOR′, where R of the group SR is selected from alkyl, aryl, mixed aryl-alkyl, and substituted groups thereof, where R of the group SRCOOR′ is selected from alkylene, arylene, aralkylene, and substituted groups thereof, wherein R′ of the group SRCOOR′ is selected from alkyl, aryl, mixed aryl-alkyl, and substituted groups thereof, where n is an integer of 0 to 2, and

as an anti-staining additive therefor in an effective amount an organic violet dye, with the proviso that said dye is other than the monosodium salt of 2-? (9,10-dihydro-4-hydroxy-9,10-dioxo-1-anthracenyl)amino? -5-methylbenzesulfonic acid.

4,806,271

PREPARATION OF BASE-TYPE CONDUCTING POLYMERS

Stuart I. Yaniger, Palmdale, Calif.; Alan G. MacDiarmid, Drexel Hill, Pa., and Marie Angelopoulos, Dover, N.J., assignors to Lockheed Corporation, Calabasas, Calif.

Filed Feb. 11, 1987, Ser. No. 13,305

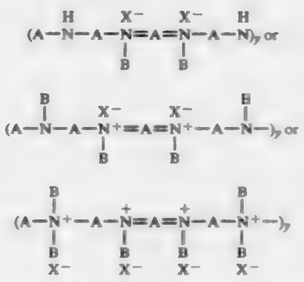
Int. Cl.⁴ H01B *1/00, 1/06*

U.S. Cl. 252—500 **15 Claims**

1. A process for producing a conductive polymer which comprises reacting a base-type non-conductive polymer having the general formula:



where A comprises an aryl group, with a compound selected from the group consisting of R_2SO_4, $R'SO_2Cl$ and $R_3''SiQ$, where R, R′ and R″ are each selected from the group consisting of alkyl containing 1 to 20 carbon atoms and aryl, Q is a halogen, and y is an integer ranging from about 1 to about 1,000, and forming an electrically conductive polymer having the general formula:



where B is a group selected from the class containing of R, SO_2R' and SiR_3'', and X is selected from the group consisting of RSO_4^- and a halogen, the molar proportion of said compound to said non-conductive polymer ranging from about 0.01 to about two R^+, $SO_2R'^+$ or $R_3''Si^+$ groups per nitrogen.

4,806,272

CONDUCTIVE CATHODIC PROTECTION COMPOSITIONS AND METHODS

Robert E. Wiley, Port Huron, Mich., assignor to Acheson Industries, Inc., Port Huron, Mich.

Filed Jul. 19, 1985, Ser. No. 757,084

Int. Cl.⁴ H01B *1/06*

U.S. Cl. 252—511 **16 Claims**

1. A conductive coating composition useful in the protection of concrete or other construction material reinforced with a ferrous-based low carbon steel element comprising:

(a) about 5 percent to about 75 percent total elemental carbon, by weight of the composition;

(b) about 5 percent to about 50 percent of a polymeric binder, by weight of the composition;

(c) about 5 percent to about 50 percent of a solvent, by weight of the composition; and

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(d) about 0 percent to about 5 percent of a surfactant, by weight of the composition;

wherein about 5 percent to about 75 percent of said total elemental carbon, by weight of the elemental carbon, is a ground coal-based, calcined coke, said coke demonstrating an E_c value of about 27 to about 80; and further wherein said polymeric binder, when cured, is moisture permeable.

4,806,273

BREAKAGE RESISTANT HIGHER FATTY ALCOHOL SULFATE DETERGENT LAUNDRY BARS

Patrizia Barone, Piscataway, and Pallassana N. Ramachandran, Robbinsville, both of N.J., assignors to Colgate-Palmolive Company, Piscataway, N.J.

Continuation of Ser. No. 836,890, Mar. 6, 1986, abandoned. This application Jul. 17, 1987, Ser. No. 74,587

Int. Cl.[4] C11D *17/00*

U.S. Cl. 252—544 **6 Claims**

1. A detergent laundry bar based on higher fatty alcohol sulfate detergent, which is of improved physical characteristics, including resistance to breakage on handling, which consists essentially of 10 to 35% of higher fatty alcohol sulfate detergent, 10 to 60% of builder for the detergent mixture, a bodying proportion, in the range of 10 to 60% of water insoluble powder, 1 to 10% of higher fatty lower alkanolamide, 0.2 to 5% of glycerol, with the ratio of alkanolamide to glycerol being in the range of 1:5 to 25:1, and 5 to 20% of water, which water includes water removable from any hydrate components of the detergent laundry bar when such bar is subjected to heating at 105° C. for two hours.

4,806,274

SCENTED CLEANER FOR GUNS

Robert H. Crouse, 264 Mt. Hope Rd., #9, Mansfield Center, Conn. 06250, and William J. Zlese, Jr., Sharon Springs, N.Y., assignors to Robert H. Crouse, Storrs, Conn.

Continuation of Ser. No. 946,897, Dec. 29, 1986, abandoned. This application Jul. 19, 1988, Ser. No. 220,906

Int. Cl.[4] C11D *3/50*

U.S. Cl. 252—548 **11 Claims**

1. A scented cleaning composition for use with outdoor sporting equipment, comprising:

from about 0.3 to about 20.0 weight percent diethanolamine linoleamide;

from about 0.1 to about 20.0 weight percent of a scent components extracted from live plants normally found in areas where game animals abound; and

from about 75.0 to about 94.9 weight percent of a carrier.

4,806,275

IONIC DERIVATIVES OF ALKYL MONO AND POLYGLYCOSIDES

Donald L. Johnson, Muscatine, Iowa; Kenneth B. Moser, Decatur, Ill., and Vivian Valenty, Tempe, Ariz., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 904,143, Sep. 5, 1986. This application Aug. 19, 1987, Ser. No. 86,990

Int. Cl.[4] B01F *17/02;* **C07H** *15/10*

U.S. Cl. 252—554 **21 Claims**

1. Compounds which have the formula:

$$RO(CHCH_2O)_x(G)_z[(CH_2CHO)_{t'}H]_{t''}Z_y$$
$$\quad\quad B \quad\quad\quad\quad B$$

wherein

G is a glycosyl moiety which is selected from the group consisting of fructose, glucose, mannose, galactose, talose, gulose, allose, altrose, idose, arabinose, xylose, lyxose, ribose or mixtures thereof,

R is bonded through an oxygen atom either directly or indirectly through one or more

$$-CHCH_2O-\text{groups}$$
$$\quad\quad |$$
$$\quad\quad B$$

to the reducing carbon of the reducing sugar from which the glycosyl moiety, G, is derived and is an alkyl group which is a straight chain or is branched having 8 to 18 carbon atoms,

x=1 to 10,

at least one of the hydroxyl groups of at least one of the glycosyl moieties or of a hydroxyalkyl group attached directly or indirectly to a hydroxyl group of said glycosyl moiety is substituted with a Z group in place thereof, $Z=O_2M$,

$$O$$
$$\|$$
$$OC-R_1,$$

$O(CH_2)_pCO_2M$, $O(CH_2)_pSO_3M$ and mixtures thereof and $R_1=(CH_2)_2CO_2M$ or $CH=CHCO_2M$; $Z=O_2M$ only when Z is in place of a primary hydroxyl group and in that event the primary hydroxyl-bearing carbon atoms, $-CH_2OH$, is oxidized to form a

$$O$$
$$\|$$
$$-C-OM \text{ group}$$

M=H+, an organic cation or inorganc cation,

B=H−, CH_3— or CH_3CH_2—,

t=0 to 10,

t'=0 to 10,

t''=0 to (3x+1),

p=1 to 10, and

y=1 to 3x+1.

18. A composition which comprises a mixture of an anionic glycoside surfactant in accordance with claim 1 in combination with one or more nonionic glycoside surfactants of the formula:

$$RO(CHCH_2O)_x(G)_z[(CH_2CHO)_{t'}H]_{t''}$$
$$\quad\quad B \quad\quad\quad\quad B$$

wherein R, B, t, G, x, t' and t'' are as defined in claim 1 and wherein the weight ratio of said anionic glycoside surfactant to said nonionic glycoside surfactant within said mixture is from about 20:1 to about 1:100.

4,806,276

ADDITIVE FOR TRANSFORMER OILS

Bruce R. Maier, 3000 Woodbine, Columbia, Mo. 65203

Filed Dec. 8, 1987, Ser. No. 130,014

Int. Cl.[4] H01B *3/24*

U.S. Cl. 252—570 **36 Claims**

8. An additive for a dielectric oil comprising:

a halogenated hydrocarbon of the formula C_nZ

where n is the number of carbons of the hydrocarbon and is between 1 and 3 inclusive, and

Z is any combination of hydrogen, bromine, fluorine, chlorine, iodine or astatine atoms sufficient to fill the bonding orbitals of the carbon molecules of the hydrocarbon; and a fluorosurfactant;

said halogenated hydrocarbon being a liquid up to at least 70° F.

28. A method of protecting a dielectric fluid from decomposition comprising the steps of adding to said fluid an effective quantity of a halogenated hydrocarbon and a surfactant, said halogenated hydrocarbon being a liquid at room temperature.

4,806,277

DECONTAMINATING SOLID SURFACES

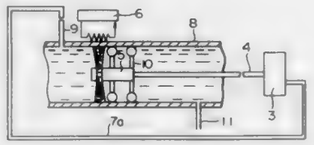
Mikio Sakurai, Mito; Tsutomu Hayashi, Hitachi; Masayuki Izumi, Hitachi; Hiroshi Sasaki, Hitachi; Thoru Satho, Hitachi, and Kazuo Owada, Hitachi, all of Japan, assignors to Hitachi Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Filed May 15, 1987, Ser. No. 49,942

Claims priority, application Japan, May 19, 1986, 61-112628

Int. Cl.[4] G21F *9/00;* **B08B** *3/12, 9/00*

U.S. Cl. 252—626 **8 Claims**



1. A method of decontaminating solid surfaces which are contaminated by substances including radioactive materials, comprising the steps of immersing an object to be decontaminated in a liquid, maintaining said liquid at its saturation temperature or less, producing bubbles in said liquid by blowing vapor therein, and causing said bubbles to burst on a solid surface which is brought into contact with said liquid and which constitutes said object to be decontaminated so that substances adhered to said solid surface are separated and removed by means of an impulsive force produced when said bubbles burst.

4,806,278

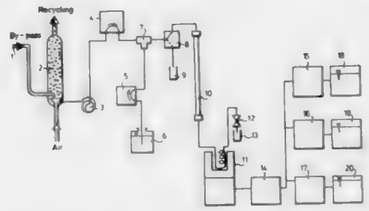
METHOD OF AND APPARATUS FOR SEGREGATING RADIOACTIVE IODINE ISOTOPES

Miklós Vodicska, Nagymaros; Nóra Vajda, Budapest; Péter Zagyvai, Budapest; József Solymosi, Budapest; Lajos G. Nagy, Budapest; Ernő Kulcsár, Budapest; Márta Takács, Budapest, and Péter Ambrus, Budapest, all of Hungary, assignors to Budapesti Muszaki Egyetem, Hungary, Hungary

Filed Aug. 25, 1987, Ser. No. 89,141

Int. Cl.[4] G21F *9/08*

U.S. Cl. 252—631 **9 Claims**



1. A method of segregating radioactive iodine isotopes present in fluid samples, especially in those taken from the primary coolant circuit of a pressurized water nuclear reactor comprising the steps of:

driving bubbles of a suitably chosen inert gas through a sample taken in a continuous process from a fluid medium to be investigated,

expelling thereby the dissolved gases and among them radioactive noble gases from said sample,

adding, if necessary, a reagent to said sample for adjusting its pH-value to neutral or an alkaline level,

transporting said sample to a column filled with a high active surface material in order to bind quantitatively the cations, fluoride anions and colloidal-state corrosion products from said sample,

letting said sample leaving said column to clear and permitting thereby the decay of short and very short half-period radioisotopes which may have remained in said sample during the previous steps,

making the effluent leaving said column—containing between radioactive isotopes in considerable percentage iodine isotopes only—pass in continuous flow through an energy-selective gamma detector and

continuously plotting the signals generated in said detector by the radioactive iodine isotopes.

4,806,279

METHOD OF PRODUCING IMPREGNATED SYNTHETIC ROCK PRECURSOR

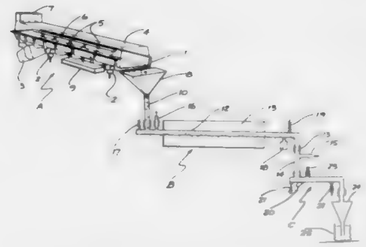
Eric J. Ramm, Lilli Pilli, Australia, assignor to Australian Atomic Energy Commission and Australian National University, both of, Australia

Filed Dec. 1, 1986, Ser. No. 936,235

Claims priority, application Australia, Nov. 29, 1985, PH3648

Int. Cl.[4] G21F *9/6, 9/16;* **B01F** *11/00;* **B29C** *67/00*

U.S. Cl. 252—633 **14 Claims**



1. A method of producing impregnated synthetic rock precursor comprising:

feeding particulate synthetic rock precursor into a vibratory conveying means having an elongated path along which the particulate material is progressively moved under vibration,

spraying the particulate material with a liquid comprising radioactive waste over an extended region of the elongated path such that the liquid is absorbed into the particulate material which continues to advance to the discharge end of the device,

applying heat over an extended region of said elongated path for maintaining the synthetic rock precursor in a substantially dry state and causing evaporation of water contained in said liquid, and discharging the impregnated synthetic rock precursor.

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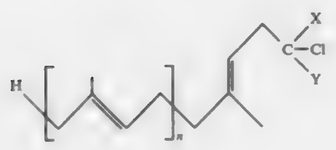
4,806,280

PROCESS FOR THE PREPARATION OF UNSATURATED COMPOUND α-CHLORINATED WITH RESPECT TO TWO ELECTRON-ATTRACTING GROUPS IN A β-POSITION

Gerard Mignani, Lyon, and Didier Morel, Villiers sur Orge, both of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

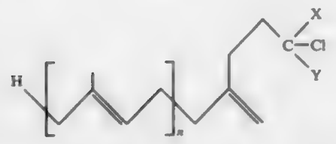
Continuation of Ser. No. 753,530, Jul. 10, 1985, abandoned. This application Aug. 3, 1987, Ser. No. 81,634
Claims priority, application France, Jul. 12, 1984, 84 11088
Int. Cl.⁴ C07C *69/60*; C11C *3/00*
U.S. Cl. 260—408 **6 Claims**

1. A process for the preparation of an unsaturated compound α-chlorinated with respect to two electron-attracting groups in a β-position, of the formula:



(Ia)

or



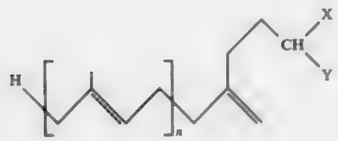
(Ib)

in which n denotes an integer from 1 to 10 and X and y, which are identical or different, each denote an electron-attracting group chosen from —CHO, —COR_1, —$COOR_2$, —$CONR_3R_4$, —CN, —SO_2R_5 and —NO_2, in which R_1, R_2, R_3, R_4 and R_5 each denote an alkyl radical of 1 to 4 carbon atoms, and R_5 may also denote a phenyl radical which is unsubstituted or substituted by methyl, which comprises reacting a halogenating agent selected from the class consisting of sulphuryl chloride, N-chlorosuccinimide, and hexachloroethane with a compound of formula:



(IIa)

or



(IIb)

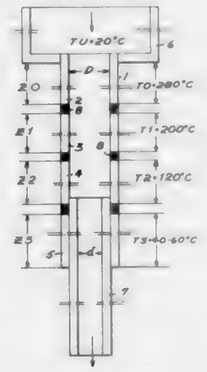
in which n, X and Y are as hereinbefore defined, at a temperature of 0°–120° C. and in the presence of a stoichiometric quantity of a base selected from the group consisting of hydrides, amides, hydroxides and carbonates of alkali and alkaline earth metals, and non-quaternizable amines.

4,806,281

LUBRICATING OIL ADDITIVE AND METHOD AND APPARATUS FOR MAKING SAME

Malte Huth, Pachorstrasse 5, 8133 Feldafing, Fed. Rep. of Germany

Filed May 12, 1987, Ser. No. 48,942
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1986, 3642617
Int. Cl.⁴ C10M *125/18*
U.S. Cl. 252—58 **9 Claims**



1. A method for producing a dispersion of polytetrafluoroethylene in oil which comprises forming a mixture comprising polytetrafluoroethylene powder dispersed in oil which also contains a non-ionic wetting agent, subjecting the mixture to a shock heat treatment in which the oil is transferred into a zone heated at a temperature above 200° C. up to the decomposition temperature of the non-ionic wetting agent, and then subjecting the mixture to one or more tempering treatments at progressively lower temperatures.

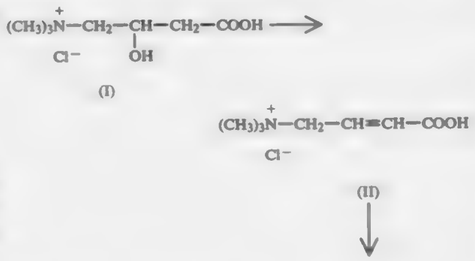
4,806,282

PROCESS FOR PREPARING GAMMA-BUTYROBETAINE

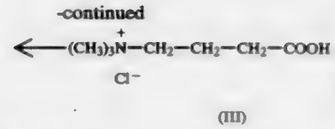
Maria O. Tinti, and Domenico Misiti, both of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Continuation-in-part of Ser. No. 040,498, Apr. 25, 1987, abandoned. This application Oct. 7, 1987, Ser. No. 106,057
Claims priority, application Italy, Apr. 24, 1986, 47929 A/86
Int. Cl.⁴ C07C *101/02*
U.S. Cl. 260—501.13 **3 Claims**

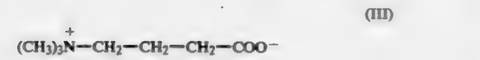
1. A process for preparing gamma-butyrobetaine according to the following reaction scheme:



-continued



(III)



(IV)

which comprises

(a) converting D-carnitine chloride (I) into crotonoylbetaine chloride (II);

(b) converting crotonoylbetaine chloride (II) into gamma-butylrobetaine chloride (III) by hydrogenating (II) in water or watersoluble solvent, at pH comprised between 1 and 4, at hydrogen pressure comprised between 15 and 60 psi (1.05-4.21 kg/cm2), at 10 to 50° C. in the presence of a hydrogenation catalyst; and

(c) converting (III) into (IV) by means of a strongly basis ion exchange resin activated in the OH^- form.

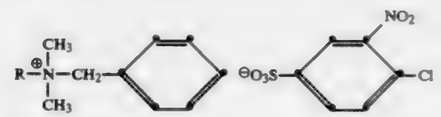
4,806,283

QUATERNARY AMMONIUM SALTS

Douglas E. Bugner, and Peter S. Alexandrovich, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1987, Ser. No. 134,427
Int. Cl.⁴ C07C *87/30*; G03G *9/00*
U.S. Cl. 260—501.15 **2 Claims**

1. A quaternary ammonium salt having the structure



wherein R is alkyl having 12 to 18 carbon atoms.

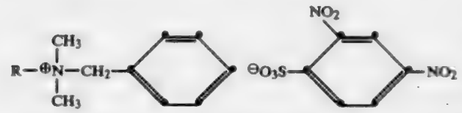
4,806,284

NEW QUATERNARY AMMONIUM SALTS

Douglas E. Bugner; Peter S. Alexandrovich; Lawrence P. De Mejo; Robert A. Guistina, and James H. Anderson, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1987, Ser. No. 134,479
Int. Cl.⁴ C07C *87/30*; G03G *9/0*
U.S. Cl. 260—501.15 **2 Claims**

1. A quaternary ammonium salt having the structure



wherein R is alkyl having 12 to 18 carbon atoms.

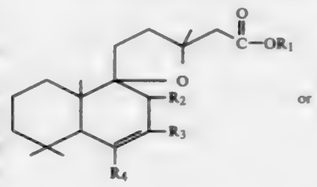
4,806,285

HYDROGENATED GRINDELIA ACIDS AND THEIR METHYL, GLYCEROL AND PENTAERYTHRITOL ESTERS

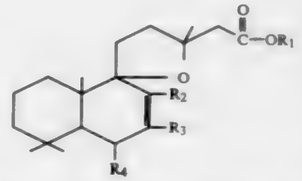
Joseph J. Hoffmann, and Louis K. Hutter, both of Tucson, Ariz., assignors to Arizona Technology Development Corp., Tucson, Ariz.

Filed Nov. 4, 1987, Ser. No. 116,641
Int. Cl.⁴ C09F *7/06, 1/04, 5/00*
U.S. Cl. 260—104 **20 Claims**

1. A compound of the general formula:



or



wherein R_1 is a branched or straight chain lower alkyl group having more than one carbon atom, or polyhydric salcohol residue;

R_2 is lower alkyl group, —CH_2OCH_3; —CH_2OH; —CH_2—O—C—R_5;

R_3 is H, —OH;

R_4 is H, =O or H, OH;

R_5 is lower alkyl group.

19. A resin composition produced by the process, comprising:

separating resin from dry biomass of Grindelia camporum; and

esterifying said resin to form esterified resin of improved oxidative stability.

4,806,286

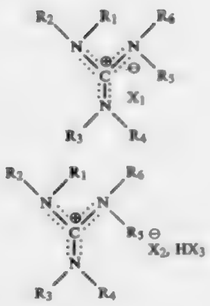
PROCESS FOR THE PREPARATION OF ACID CHLORIDES BY PHOSGENATION OF ACIDS, AND CATALYSTS FOR THIS PROCESS

Jean-Pierre Senet, La Chapelle La Reine; Patricia Gauthier, Cersy; Thierry Malfroot, Saintry Sur Seine, and Patrick Wolf, Vert Le Petit, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

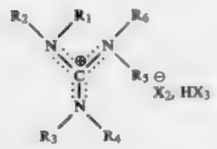
Filed Jul. 23, 1986, Ser. No. 888,208
Claims priority, application France, Jul. 23, 1985, 85 11248
Int. Cl.⁴ C07C *51/60*
U.S. Cl. 260—544 K **13 Claims**

1. Process for the preparation of carboxylic acid chlorides comprising reacting phosgene with a carboxylic acid in the presence of a catalyst, wherein said catalyst is chosen from the group consisting of hexasubstituted guanidinium salts or their complexes with acids containing hydrogen and a halogen, represented by the following formulae:

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(I)



(II)

in which R_1, R_2, R_3, R_4, R_5 and R_6, are identical or different and denote:

saturated or unsaturated linear or branched aliphatic radicals, no unsaturation being situated on the carbons of groups R_1 to R_6 that adjoin the nitrogen atom;

saturated or unsaturated alicyclic radicals, no unsaturation being situated on the carbons of groups R_1 to R_6 that adjoin the nitrogen atom;

araliphatic radicals;

aromatic radicals;

or form, with the nitrogen atom to which they are attached and with the other radical R_1 to R_6 attached to the same nitrogen atom, a saturated or unsaturated heterocyclic ring, no unsaturation being situated on the carbons of groups R_1 to R_6 that adjoin the nitrogen atom, and wherein said heterocyclic ring includes from 0 to 1 oxygen atoms;

or, at least one of the pairs R_1 and R_6, R_4 and R_5, and R_2 and R_3 form, with the nitrogen atoms to which each radical R_1 to R_6 are attached and the central carbon atom in formulae I and II, saturated or unsaturated heterocyclic ring, no unsaturation being situated on the carbons of groups R_1 to R_6 that adjoin the nitrogen atom;

X_1 denotes an anion chosen from the group consisting of Cl^-, Br^-, I^-, BF_4^-, CN^-, ClO_4^-, NO_3^-, NO_2^-, OCN^-, $CH_3SO_4^-$, and HSO_4^-; and

X_2 and X_3, which are identical or different, denote chlorine or bromine atoms.

4,806,287

METHOD FOR POLYMERIZATION CAST MOLDING OF LENSES FROM HYDROPHILIC GELS

Jiří Sulc; Zuzana Krcová, and Jiří Vacík, all of Praha, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Czechoslovakia

Filed Mar. 5, 1987, Ser. No. 22,074

Claims priority, application Czechoslovakia, Mar. 5, 1986, 1505-86

Int. Cl.⁴ B29D *11/00*

U.S. Cl. 264—1.1 **2 Claims**



1. A method for the polymerization cast molding of lenses from hydrophilic gels comprising introducing into a mold with a hydrophobic surface, a hydrophobic liquid which is immiscible with a hydrophilic monomer mixture, subsequently dosing into the mold the hydrophilic monomer mixture which forms a drop within the hydrophobic liquid, allowing the monomers as a drop within the hydrophobic liquid to polymerize while pressing the drop of polymerizing monomer mixture into a mold cavity with a punch which also has a hydrophobic molding surface, and maintaining the drop of polymerizing monomer mixture under the pressure from the punch until the polymerization is substantially complete, any overflow of the two liquids during the process being allowed to escape between the mold and the punch.

4,806,288

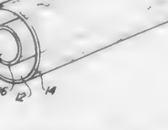
PACKING ELEMENTS

George B. Nowosielski, 3040 Killybrooke La.; Arthur Miller, 1602 Myrtlewood St., both of Costa Mesa, Calif. 92626, and Lech E. Czerniachowski, 2021 San Remo Dr., Laguna Beach, Calif. 92651

Filed Sep. 23, 1987, Ser. No. 100,295

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—94 **21 Claims**



1. A packing element comprising a peripheral sidewall defining an interior space having a central, longitudinal axis; a plurality of holes in said sidewall each having at least four sides, two opposing sides of each of said holes being slanted at substantially the same angle relative to said axis; and a flap extending from each of said top opposing sides into said interior space substantially toward the same point, the sides of each of said flaps extending into said interior space being substantially straight.

4,806,289

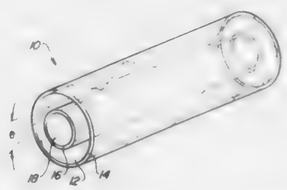
METHOD OF MAKING A HOLLOW LIGHT PIPE

Larry J. Laursen, Midland; Virgil W. Coomer, Shepherd, and Walter J. Schrenk, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 16, 1987, Ser. No. 3,777

Int. Cl.⁴ B29D *11/00*; **G02B** *6/20*

U.S. Cl. 264—1.5 **8 Claims**



1. A method of constructing a hollow light conductor, comprising the steps of:

heat plasticizing a core material which is capable of conducting light;

heat plasticizing a cladding material which has an index of refraction that is lower than the index of refraction of said core material;

coextruding said cladding material along the inner and outer surfaces of said core material to form a tri-layer hollow light conductor having smooth surfaces between said core material and said cladding material with said core material being formed in a predetermined shape; and

cooling said light conductor below the glass transition temperatures of said cladding and core materials so that said light conductor will maintain said predetermined shape.

4,806,290

LOW DENSITY MICROCELLULAR CARBON OR CATALYTICALLY IMPREGNATED CARBON FORMS AND PROCESS FOR THEIR PREPARATION

Robert W. Hopper, Danville, and Richard W. Pekala, Pleasant Hill, both of Calif., assignors to The United States of America as represented by the The United States Department of Energy, Washington, D.C.

Division of Ser. No. 44,253, Apr. 30, 1987, Pat. No. 4,756,898. This application Mar. 29, 1987, Ser. No. 174,923

Int. Cl.⁴ C01B *31/02*

U.S. Cl. 264—28 **2 Claims**

1. A process for producing a machinable, structurally stable, catalytically impregnated, low density microcellular carbon foam having a density of about 40 mg/cc and a median cell size of about 15 microns, the process comprising the steps of:

classifying a measure of pulverized sodium chloride particles, by passing the measure tnrough an air classification system, to remove both fines and large particles, to thereby provide a classified quantity of pulverized sodium chloride particles having a mean particle size in the approximate range from 10 to 20 microns;

mixing the classified quantity of pulverized sodium chloride particles with a sub-micron size powder of a catalyst material selected from the group consisting of platinum, palladium, and nickel, to thereby provide a quantity of pulverized sodium chloride and catalyst material particles;

cold pressing the quantity of pulverized sodium chloride and catalyst material particles, at a pressure in the approximate range from 2000 to 5000 pounds per square inch, and for a time of approximately 1 to 5 minutes, into a catalytically impregnated sodium chloride compact having internal pores;

sintering and thereby strengthening the catalytically impregnated sodium chloride compact, by heating the compact at the approximate rate of 1 degree centigrade per minute to a temperature in the approximate range from 650 to 725 degrees centigrade, then by maintaining the compact at that temperature for approximately 2 to 12 hours, and then by cooling the compact to ambient temperature;

preparing a solution comprised of a resale or novolac phenol-formaldehyde A-stage polymeric phenolic resin dissolved in a solvent selected from the group consisting of tetrahydrofuran, acetone, methyl ethyl ketone, and ethanol;

partially immersing the sintered catalytically impregnated sodium chloride compact in the solution so that capillary action forces the solution to completely fill the internal pores of the sintered compact without the entrapment of air bubbles, and then submerging the sintered compact in the solution until a uniform concentration of the phenolic resin has diffused throughout the sintered compact;

heating the sintered catalytically impregnated sodium chloride compact, through which the phenolic resin has uniformly diffused, to approximately 60 degrees centigrade in air for approximately 3 hours, and then further heating the compact in a purging atmosphere comprised of a mixture of inert gases selected from the group consisting of argon, nitrogen, and hydrogen, to a temperature in the approximate range from 600 to 700 degrees centigrade, then maintaining the sintered catalytically impregnated compact in the purging atmosphere and at that temperature for approximately 2 hours, so that the phenolic resin that is diffused throughout the sintered catalytically impregnated compact pyrolyzes essentially without shrinkage into a carbon foam that is impregnated with the catalyst and whose cell size is determined by the particle size distribution of the pulverized sodium chloride and catalyst material particles;

leaching away with water essentially all the sodium chloride from the sintered catalytically impregnated sodium chloride compact, so that the catalytically impregnated carbon foam in a water-wet condition remains; and

freeze drying the water-wet catalytically impregnated carbon foam, so that the water-wet catalytically impregnated carbon foam when dried becomes said machinable, structurally stable, catalytically impregnated, low density microcellular carbon foam.

4,806,291

PROCESS FOR PREPARING MICROPOROUS POLYVINYLIDENE FLUORIDE MEMBRANES

Thomas J. Sass, West Roxbury, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Division of Ser. No. 158,812, Feb. 22, 1988. This application Jan. 13, 1988, Ser. No. 205,691

Int. Cl.⁴ C08J *9/26*, *9/28*

U.S. Cl. 264—41 **11 Claims**

1. In a process for preparing an assymetric, microporous polymeric membrane, which process comprises preparing a membrane-casting solution, casting a thin film of the casting solution on a support base and contacting the cast film with a leaching liquid to provide the microporous membrane, the improvement which comprises:

providing a casting solution comprising a vinylidene fluoride polymer, a polar solvent capable of dissolving said polymer and a pore forming agent of an ammonium salt which is a nonsolvent for the casting solution and which does not precipitate out in said casting solution.

4,806,292

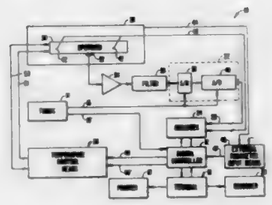
SYSTEM FOR STABILIZING DIMENSIONAL PROPERTIES OF CURED COMPOSITE STRUCTURES

Thomas J. DeLacy, Los Altos, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Jan. 21, 1986, Ser. No. 821,370

Int. Cl.⁴ G01N *29/04*; **B29C** *65/66*, *67/14*

U.S. Cl. 264—40.1 **15 Claims**



1. A method for post cure treatment of a previously cured heterogeneous anisotropic resin-based organic fiber composite structure for improving dimensional stability in said cured composite structure, said cured composite structure to be used in an operating environment charcterized by thermal stress, said method comprising the steps of:

imposing on said composite structure a controllable thermal load representative of said operating environment;

monitoring acoustic signals from said structure while imposing said controllable thermal load;

extracting from said acoustic signals a signature for said structure, said signature comprising a rate of stress relaxation events per unit time overtime;

comparing said signature with a signature template while imposing said controllable thermal load, said signature template being a record of at least selected benchmarks of rates of stress relaxation events, said signature template

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being derived from an observed response of an equivalent dimensionally stabilized structure exposed to said thermal load; and

removing said thermal load from said composite structure when the differences between said extracted signature and said selected benchmarks of said signature template are minimized,

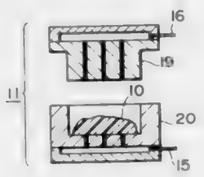
thereby assuring the relaxation of internal residual stresses in said composite structure prior to its use in said operating environment.

4,806,293

METHOD OF PRODUCING A FOAMED, MOLDED ARTICLE

Hiroyuki Akiyama, Hiratsuka; Yoshimi Sado, Chigasaki; Masahiko Kishida, and Mitsuru Nishida, both of Hiratsuka, all of Japan, assignors to Japan Styrene Paper Corporation, Tokyo, Japan

Filed Apr. 10, 1987, Ser. No. 37,172
Claims priority, application Japan, Apr. 15, 1986, 61-86730
Int. Cl.⁴ B29C *67/22*
U.S. Cl. 264—53 **5 Claims**



1. A method of producing a foamed, molded article, comprising the steps of:

(a) accumulating in an accumulator a molten mass of an expandable thermoplastic resin while maintaining said molten mass at a temperature and a pressure so that said molten mass is prevented from foaming;

(b) ejecting a predetermined quantity of the accumulated thermoplastic resin rapidly from said accumulator, into an atmosphere maintained at a pressure lower than the pressure within said accumulator so that the ejected thermoplastic resin commences foaming;

(c) placing the ejected, molten thermoplastic resin in a mold cavity before the expansion thereof has been completed, said cavity being defined by a mold having a male mold section and a female mold section movable relative to each other, said mold sections having complementary-shaped configurations defining the mold cavity, the volume of said cavity being changeable by changing the position of said mold sections relative to each other;

(d) compressing the molten thermoplastic resin placed in the mold cavity by changing the position of said mold sections relative to each other to change the volume of said cavity, the molten thermoplastic resin being compressed between said mold sections before the completion of the expansion to improve the expansion ratio of the resin; and

(e) completing the expansion and molding of the thermoplastic resin in the mold cavity while controlling the compression pressure by moving said mold sections relative to each other, thereby to obtain a foamed, molded article.

4,806,294

METHOD OF MAKING A FOAM INJECTION MOLDED ARTICLE

Robert M. Lapierre, Sterling, and Nicholas J. Leonardi, North Andover, both of Mass., assignors to Eaton Chemical Company, Cincinnati, Ohio

Division of Ser. No. 908,625, Sep. 18, 1986, Pat. No. 4,769,397. This application Jun. 15, 1988, Ser. No. 207,125
Int. Cl.⁴ C08J *9/06, 9/08*
U.S. Cl. 264—54 **28 Claims**

1. A method of making a foam injection molded article, said method comprising the steps of:

dispersing into a polymer resin (a) an effective amount of a primary chemical blowing agent comprising sodium borohydride and (b) an activation system comprising a first mixture of effective amounts of sodium bicarbonate and citric acid, to form a second mixture of said resin, primary chemical blowing agent and activation system, said sodium borohydride and said activation system being isolated from direct contact with each other until gas production is desired;

heating said second mixture whereby said activation system releases water and said sodium borohydride reacts with said water to produce hydrogen gas; and

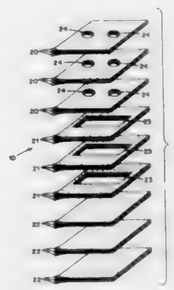
subsequently injecting said second mixture into a mold obtaining expansion of said polymer resin into a molded foam article.

4,806,295

CERAMIC MONOLITHIC STRUCTURE HAVING AN INTERNAL CAVITY CONTAINED THEREIN AND A METHOD OF PREPARING THE SAME

Elizabeth A. Trickett, Framingham, and Richard C. Assmus, Braintree, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 925,643, Oct. 31, 1986, abandoned. This application Mar. 2, 1988, Ser. No. 168,581
Int. Cl.⁴ C04B *35/64*
U.S. Cl. 264—59 **10 Claims**



1. A method for preparing a ceramic monolithic structure comprising the following steps:

Step 1—forming a layered structure having a surface and a cavity contained therein by stacking individual sheets of a ceramic material having apertures in predetermined said sheets; stacking said individual sheets in a predetermined sequence to form a layered structure having a passageway and a cavity therein; said layered structure formed by said stacking of said individual sheets having a surface and a cavity connected to said surface thereof by said passageway;

Step 2—filling said cavity and said passageway contained within said layered structure with a supporting media having a melting point greater than a pressing temperature obtained during a subsequent pressing step;

Step 3—pressing the product from step 2 sufficiently to form a layered structure;

Step 4—removing said supporting media from said cavity and said passageway of the product of step 3;

Step 5—sintering the product from step 4 at a temperature sufficient to form a monolithic structure having a surface, said monolithic structure having a cavity contained therein and a passageway connecting the cavity to the said surface of said monolithic structure.

4,806,296

PROCESS OF MODIFYING POLYMERS TO PRODUCE A MORE READILY PAINTABLE SURFACE

Steven L. Brewster, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 19, 1987, Ser. No. 87,017
Int. Cl.⁴ B29C *71/00;* **C08F** *8/30*
U.S. Cl. 264—83 **30 Claims**

1. A process of producing an article of a polymer which has a more readily paintable surface which comprises the steps of (a) nitrating the polymer, (b) heating and forming the polymer into an article, (c) cooling the article while the surface of said article is in contact with a polar material.

4,806,297

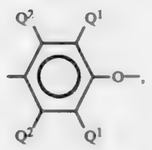
SOLVENT-RESISTANT, COMPATIBLE BLENDS OF POLYPHENYLENE ETHERS AND LINEAR POLYESTERS

Sterling B. Brown, Schenectady, and John B. Yates, III, Glenmont, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 891,457, Jul. 29, 1986, which is a continuation-in-part of Ser. No. 761,712, Aug. 2, 1985, abandoned, and a continuation-in-part of Ser. No. 828,410, Feb. 11, 1986, abandoned. This application Jan. 15, 1988, Ser. No. 144,218
Int. Cl.⁴ B29B *7/84*
U.S. Cl. 264—102 **7 Claims**

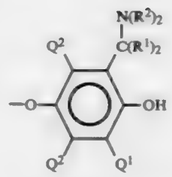
1. A method for reducing the unneutralized amino nitrogen content of a composition consisting of

a polyphenylene ether comprising structural units having the formula



(I)

wherein in each of said units independently, each Q^1 is independently halogen, primary or secondary lower alkyl, phenyl, haloalkyl, aminoalkyl, hydrocarbonoxy, or halohydrocarbonoxy wherein at least two carbon atoms separate the halogen and oxygen atoms; and each Q^2 is independently hydrogen, halogen, primary or secondary lower alkyl, phenyl, haloalkyl, hydrocarbonoxy or halohydrocarbonoxy as defined for Q^1; and containing a substantial proportion of molecules having end groups of the formula



(II)

wherein each R^1 is independently hydrogen or alkyl, with the proviso that the total number of carbon atoms in both R^1 radicals is 6 or less, and each R^2 is independently hydrogen or a C_{1-6} primary alkyl radical; or

a mixture of said polyphenylene ether and dienealkenylaromatic compound block copolymer;

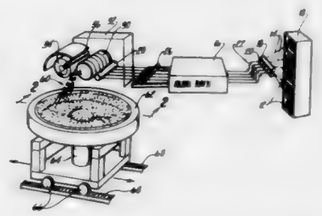
which comprises extruding said composition at a temperature in the range of about 230°–390° C. with vacuum venting.

4,806,298

A CUTTER FOR CUTTING RESIN IMPREGNATED STRANDS AND A METHOD AND APPARATUS FOR MAKING A CHARGE FOR MOLDING A FIBER REINFORCED PART

Robert E. Wilkinson, Birmingham, and Joseph N. Epel, Southfield, both of Mich., assignors to The Budd Company, Troy, Mich.

Continuation of Ser. No. 673,902, Nov. 21, 1984, abandoned. This application Feb. 10, 1987, Ser. No. 14,188
Int. Cl.⁴ B29B *11/02;* **B26D** *1/147*
U.S. Cl. 264—115 **21 Claims**



1. A method of making a fiber reinforced part comprising:

pulling continuous strands of raw fibers through a resin bath by a first rotating drum;

wetting and impregnating said strands with curable resin from said bath;

cutting the wet flaccid resin impregnated strands on the drum with a rotating cutter mechanism into segments of predetermined lengths before the resin cures, the cutter mechanism having a second counter rotating drum spaced from the first drum and carrying a radially extending spring member with a cutting head attached to the end thereof, the second drum being spaced from the first drum by a distance to permit the spring member to bend when the head strikes the wet strands on the first drum;

collecting the segments in a predetermined orientation so that the segments are piled together to form the charge; and

forming a fiber reinforced part from said charge.

11. Apparatus for making a charge to be used in molding a fiber reinforced part, said apparatus comprising:

a first rotating drum for pulling continuous strands of fibers through a resin bath to thereby impregnate the strands with wet curable resin;

a cutter mechanism having a second rotating drum in a spaced relationship adjacent said first drum such that a

gap is formed between said drums enabling passage of said cutter mechanism between said drums during rotation of said drums, said cutter mechanism including;

a spring means extending radially outwardly from said second rotating drum, and a cutting head affixed to an outer portion of said spring means for cutting the wet flaccid impregnated strands on the first drum into segments of predetermined lengths before the wet resin cures, the second drum being spaced from the first drum by a distance to permit the spring member to bend when the head strikes the wet strands on the first drum; and

receiving means for collecting the wet segments in a predetermined orientation so that the segments are piled together.

19. A cutter mechanism for cutting resin impregnated fiber strands pulled over a first rotating drum, said mechanism comprising:

a second drum disposed in a spaced relationship adjacent the first rotating drum forming a gap between said drums and having its major axis generally parallel to the axis of the first drum, said second drum rotating in an opposite direction than the first drum;

spring means in the form of a generally planar sheet of resilient material extending radially outwardly from the second drum; and

a cutting head affixed to an edge of said resilient sheet and adapted to cut the strands passing over the first drum into segments of predetermined lengths, the second drum being spaced from the first drum by a distance to permit the spring member to bend when the head strikes the wet strands on the first drum.

4,806,299

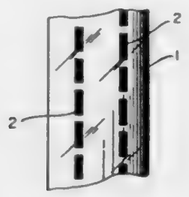
PROCESS OF PRODUCING DELUSTERED NYLON FIBER CONTAINING SEGMENTED STRIATIONS OF POLYPROPYLENE

John T. Burns, Sanford, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Division of Ser. No. 800,041, Nov. 25, 1985, Pat. No. 4,711,812, which is a continuation-in-part of Ser. No. 683,242, Dec. 18, 1984, abandoned. This application May 5, 1987, Ser. No. 46,092

Int. Cl.[4] D01F *1/10, 8/06, 8/12*

U.S. Cl. 264—171 **5 Claims**



1. A process for producing delustered nylon filaments containing polypropylene, said polypropylene being present in generally cylindrical segmented striations having an L'/D ratio of from 1 to 10 and running generally parallel to the filament axis, comprising the steps of combining a melt of nylon with from about 0.1 to 5% by weight of a melt of polypropylene having a melting point above 120° C., a softening point below said melting point, a molecular weight of 2000–40,000, and a viscosity of 200–10,000 cP at 190° C. to form a blend, melt-spinning the blend to form filaments, quenching the filaments, and drawing the filaments at a temperature not exceeding said softening point.

4,806,300

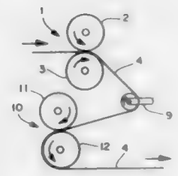
METHOD FOR SOFTENING A NONWOVEN WEB

Richard R. Walton, 10 W. Hill Pl., Boston, Mass. 02114, and George E. Muschbach, Norfolk County, Mass., assignors to Richard R. Walton, Boston, Mass.

Continuation of Ser. No. 806,590, Dec. 9, 1985, abandoned. This application May 29, 1987, Ser. No. 56,296

Int. Cl.[4] B29C *55/16, 55/18*

U.S. Cl. 264—288.8 **5 Claims**



1. A method of softening a nonwoven thermoplastic web wherein the web is passed through two nips, the first nip being formed between two rolls having noncontacting intermeshing circumferential lands and grooves and which are rotating at about the same speed and the second nip being formed between two rolls having resilient surfaces with circumferential ridges and valleys and rotating at different speeds relative to each other.

4,806,301

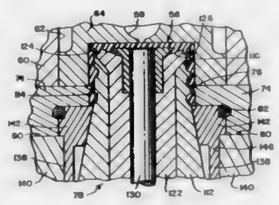
PROCESS OF REMOVING A PLASTIC CAP FROM A MOLD

Vincent N. Conti, West Hempstead, N.Y., assignor to American Safety Closure Corp., Farmingdale, N.Y.

Continuation of Ser. No. 856,626, Apr. 25, 1986, abandoned, which is a division of Ser. No. 640,899, Aug. 15, 1984, Pat. No. 4,618,121. This application Feb. 1, 1988, Ser. No. 150,686

Int. Cl.[4] B29C *33/02, 45/40, 45/44*

U.S. Cl. 264—334 **7 Claims**



1. A method of removing a plastic cap from a mold in which hot molten plastic has been cooled to form said cap, said cap having a top wall, downwardly depending cylindrical side wall with an outer surface and ring removably connected to the bottom of the side wall by frangible means disposed radially inwardly of the outer surface of said side wall, the mold comprising female and male members, the female member including an upper assembly forming an upper portion of a socket, and a plurality of cams forming a lower portion of the socket at the location of said frangible means, the male member axially extending into the socket to form a mold cavity between the male and female members in which the cap is formed with portions of the male and female members defining inner and outer side walls of said cavity, respectively, the male member further including a first annular recess in which a radially inwardly extending annular rib of the cap is formed on the ring, the method comprising the steps of:

(a) moving the upper assembly of the female member axially away from the cap while the cap remains stationary on said male member;

(b) moving the cams of the female member radially outwardly and at right angles to said axis movement of the upper assembly to a position disposed away from the cap and said frangible means while said cap remains stationary on said male member; and

(c) pushing a bottom edge of the cap axially upwardly away from said male member to push the annular rib out of and past the first annular recess and to remove the cap from the male member.

4,806,302

METHOD OF MANUFACTURING SAILBOARDS AND SURFBOARDS

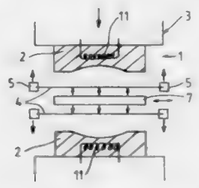
Wolfgang Frank, Bruckmühl, Fed. Rep. of Germany, assignor to TAA Technique and Administration AG, Basel, Switzerland

Division of Ser. No. 723,959, Apr. 12, 1985, Pat. No. 4,713,032. This application Aug. 27, 1987, Ser. No. 89,770

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1983, 3329230

Int. Cl.[4] B29C *51/10*

U.S. Cl. 264—46.7 **12 Claims**



1. A method of making a sailboard or surfboard having a laminated shell, in which a foam core is prefabricated and covered with fibrous mats or fabrics, liquid curable synthetic resin is then poured onto the fibrous material on both sides of the foam core to form a saturated fibrous material and the thus formed product is cured on the foam core in a closed matched metal mold already lined with a surface layer, wherein before insertion of the foam core covered with the saturated fibrous material into the mold, a thin thermoplastic film forming the surface layer of the board is heated to its converting temperature and is deep drawn into the mold halves by using vacuum, and in that the film is pressed with the synthetic resin layer reinforced by fibrous mats or fabric on closing the mold after insertion of the foam core resulting in an intimate composite of the synthetic resin layer reinforced by fibrous mats or fabric and the film on the one hand and the foam core on the other hand.

4,806,303

METHOD AND APPARATUS FOR THE PRODUCTION OF PERFORATED FILMS, PARTICULARLY PERFORATED FILMS OF PLASTICS MATERIAL FOR SANITARY ARTICLES

Carlo Bianco, and Pietro Susi, both of Pescara, Italy, assignors to Fameccanica S.p.A., Sambuceto, Italy

Filed May 7, 1987, Ser. No. 47,619

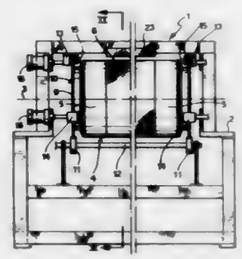
Claims priority, application Italy, May 7, 1986, 67374 A/86

Int. Cl.[4] B26F *1/26, 3/06;* **B29C** *59/06*

U.S. Cl. 264—5.04 **18 Claims**

1. In a method for the production of perforated films in which a softened unperforated film brought into contact with a perforated die which moves generally in a cylindrical manner and is exposed, in a predetermined region, to a pressure gradient which acts substantially radially of the die to cause the local penetration of the film into the holes in the die and the consequent perforation of the film, the improvement comprising the steps of:

supporting the die in a substantially rigid manner solely upstream and downstream of the predetermined region in



the common direction of movement of the film and of the die, and

subjecting the die to a pulling action along its generatrices, at least in proximity of the predetermined region.

4,806,304

FREE CUTTING STEEL

Atsuyoshi Kimura; Sadayuki Nakamura, and Makoto Saito, all of Aichi, Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 608,622, May 9, 1984, abandoned. This application Jan. 17, 1985, Ser. No. 744,907

Claims priority, application Japan, May 9, 1983, 58-80550; May 9, 1983, 58-80549

Int. Cl.[4] C22C *38/60*

U.S. Cl. 420—84 **3 Claims**

1. A free-cutting steel which consists essentially of C: up to 0.2%, Si: up to 0.2% and Mn: up to 2.0%; P: not higher than 0.1%, N: not higher than 0.02%, and Al: not higher than 0.002%; and further consists essentially of S: 0.04 to 0.50%, Te: 0.002 to 0.50%, Pb: 0.01 to 0.4% and Bi: 0.01 to 0.40%, Te+Pb+Bi being 0.20% or more; and O: 0.0040 to 0.030%, with the balance being Fe, or Fe and insubstantial amounts of materials which would not affect the properties of the free cutting steel; and containing MnS inclusion particles wherein at least 50% of all MnS inclusion particles having a length (L) of 5 micron or more, a width (W) of 2 micron or more and an aspect ratio (L/W) of 5 or less; and containing oxide inclusions wherein an average of 15% or less of the oxide inclusion being Al_2O_3 said free-cutting steel having a machinability index of at least about 195.

4,806,305

DUCTILE NICKEL-SILICON ALLOY

Warren C. Oliver, Knoxville, Tenn., assignor to Haynes International, Inc., Kokomo, Ind.

Filed May 1, 1987, Ser. No. 44,925

Int. Cl.[4] C22C *19/00*

U.S. Cl. 420—457 **8 Claims**

1. A ductile alloy with good hot working properties and capable of becoming superplastic consisting essentially of, in weight percent:

Silicon	7 to 14
Vanadium	0.5 to 6
Niobium	up to 6
Nb + Ta	up to 10
Cr + Mn + Fe	up to 30
Mo + W	up to 15
Nb + Ta + Cr + Mn + Fe + Mo + W	up to 30
Boron	up to 0.2

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-continued

Copper	0.5 to 5
Titanium	1 maximum
Nickel plus impurities	Balance.

4,806,306
ATTACHMENTS IN THE FIELD OF DENTAL TECHNOLOGY MADE OF NOBLE METAL ALLOYS WITH MELTING RANGES ABOVE 1500 DEGREE CELSIUS

Werner Groll, Alzenau-Hoerstein; Rudi Steinke, Hanau, and Harry Schiwiora, Pforzheim, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

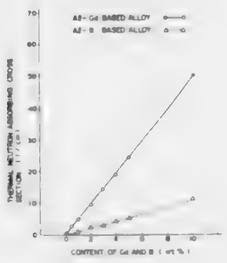
Continuation of Ser. No. 933,846, Nov. 24, 1986, abandoned. This application Mar. 9, 1988, Ser. No. 168,548
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1985, 3542641
Int. Cl.[4] C22C 5/04, 30/00
U.S. Cl. 420—467 3 Claims

1. An attachment in the form of a shaped body for use in the field of dental technology and adapted to connect to a dental prosthesis comprising a noble metal alloy that can be cast-on and has a melting range above 1500° C. comprising about 40–70% platinum, about 10–40% palladium, about 5–20% iridium, about 0.5–10% gold, about 0–3% silver, about 0–1% ruthenium and about 0–1% rhodium.

4,806,307
ALUMINUM ALLOY WITH SUPERIOR THERMAL NEUTRON ABSORPTIVITY

Yagoro Hirose, Saitama; Yoshimitsu Miyagi, Tochigi; Kiko Hirose, Kita; Mitsuo Hino, Tochigi; Masayuki Harada, Aichi; Takehiko Eto, Tochigi; Tetsunari Iida, Hyogo, and Masahiro Shimamura, Nagoya, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 27, 1986, Ser. No. 923,223
Claims priority, application Japan, Oct. 25, 1985, 60-238995; Jan. 30, 1986, 61-18859; Aug. 1, 1986, 61-182089
Int. Cl.[4] C22C 21/00
U.S. Cl. 420—528 3 Claims

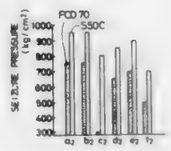


1. An aluminium alloy with superior thermal neutron absorptivity, consisting essentially of 0.2–30 wt.% of Gd, and at least one selected from the group consisting of 3 wt.% or less of B, 2 wt.% or less of Li, 6 wt.% or less of Mg, 15 wt.% or less of Si, 5 wt.% or less of Cu, 5 wt.% or less Zn, 2 wt.% or less of Mn, 1 wt.% or less of Cr, 1 wt.% or less of Zr, 1 wt.% or less of V, 1 wt.% or less of Ti, and 3 wt.% or less Ni.

4,806,308
ALUMINUM BEARING ALLOY

Soji Kamiya; Yuji Yokota; Tatsuhiko Fukuoka, and Yoshio Kumada, all of Aichi, Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

Division of Ser. No. 908,433, Sep. 17, 1986, abandoned. This application Oct. 8, 1987, Ser. No. 105,792
Claims priority, application Japan, Sep. 17, 1985, 60-204679
Int. Cl.[4] C22C 21/00
U.S. Cl. 420—530 4 Claims



1. An aluminum bearing alloy consisting essentially, by percentage by weight, of 3 to 20% of Sn, 0.1 to 1% of Zr, 1.5 to 8% Si, 0.2 to 2% of at least one of Cu and Mg, and the balance Al.

4,806,309
TIN BASE LEAD-FREE SOLDER COMPOSITION CONTAINING BISMUTH, SILVER AND ANTIMONY

Stanley Tahmaa, Charlotte, N.C., assignor to Willard Industries, Inc., Charlotte, N.C.

Filed Jan. 5, 1988, Ser. No. 141,057
Int. Cl.[4] C22C 13/02
U.S. Cl. 420—562 3 Claims

1. A lead-free solder composition consisting essentially of tin, antimony, bismuth and silver, wherein the percentage weight proportions are:
Tin—Approximately 90–95%,
Antimony—Approximately 3–5%,
Bismuth—Appoximately 1–4.5%,
Silver—Approximately 0.1–0.5%.

4,806,310
CORROSION INHIBITOR

Michael A. Mullins, Wayne, and Peter A. Thomas, Budd Lake, both of N.J., assignors to Drew Chemical Corporation, Boonton, N.J.

Continuation-in-part of Ser. No. 745,311, Jun. 14, 1985, Pat. No. 4,664,884. This application May 7, 1987, Ser. No. 47,338
The portion of the term of this patent subsequent to May 12, 2004, has been disclaimed.
Int. Cl.[4] C23F 11/12, 11/14, 11/167
U.S. Cl. 422—13 2 Claims

1. A composition for use in inhibiting corrosion of metallic surfaces including mild steel in an alkaline cooling water system in which the active components consist essentially of (a) 0.3–30% by wt. of nitrilotrimethylene phosphonic acid or a salt thereof; (b) 0.4–40% by wt. of 2-phosphonobutane tricarboxylic acid-1,2,4; (c) 0.4–40% by wt. of tolyltriazole; and (d) 0.5–50% by wt. of an alkali metal molybdate.

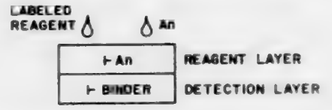
4,806,311
MULTIZONE ANALYTICAL ELEMENT HAVING LABELED REAGENT CONCENTRATION ZONE

Alfred C. Greenquist, Elkhart, Ind., assignor to Miles Inc., Elkhart, Ind.

Filed Aug. 28, 1985, Ser. No. 770,076
Int. Cl.[4] G01N 31/22, 33/53, 33/563
U.S. Cl. 422—56 33 Claims

1. A multizone test device for the specific binding assay

determination of an analyte in a liquid test medium involving binding among (i) the analyte, (ii) a labeled or immobilized form of the analyte or of a binding analog thereof, and (iii) an immobilized or labeled form, respectively, of a binding partner of the analyte; the labeled one of the analyte, analog thereof, or binding partner being a labeled reagent comprising a detectable chemical group having a detectable physical property, the test device comprising, in fluid flow contact,

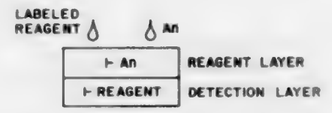


(1) a reagent zone comprising a solid, porous matrix incorporated with an immobilized one of the analyte, analog thereof, or binding partner, and
(2) a detection zone comprising a solid, porous matrix for receiving and measuring labeled reagent which migrates into said detection zone and incorporated with an immobilized form of a binding substance for the labeled reagent.

4,806,312
MULTIZONE ANALYTICAL ELEMENT HAVING DETECTABLE SIGNAL CONCENTRATING ZONE

Alfred C. Greenquist, Elkhart, Ind., assignor to Miles Inc., Elkhart, Ind.

Filed Aug. 28, 1985, Ser. No. 770,237
Int. Cl.[4] G01N 31/22, 33/53, 33/563
U.S. Cl. 422—56 29 Claims



1. A multizone test device for the specific binding assay determination of an analyte in a liquid test medium involving binding between (i) the analyte and a labeled or immobilized form of the analyte or of a binding analog thereof, and (ii) an immobilized or labeled form, respectively, of a binding partner of the analyte, the labeled one of the analyte, analog thereof, or binding partner being a labeled reagent comprising a detectable chemical group which interacts with a detectant composition to produce a detectable signal, the test device comprising, in fluid flow contact,
(1) a reagent zone comprising a solid, porous matrix incorporated with a immobilized one of the analyte, analog thereof, or binding partner, and
(2) a detection zone comprising a solid, porous matrix for receiving and measuring labeled reagent which migrates into such zone and incorporated with an immobilized form of at least one component of a detectant composition.

4,806,313
RAPID ASSAY PROCESSOR

Richard C. Ebersole, Wilmington, Del.; Jesse G. Forsythe, Jr., Media, Pa., and Frank T. Gelormini, Gibbstown, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 722,373, Apr. 12, 1985, Pat. No. 4,753,775. This application May 2, 1986, Ser. No. 858,628
Int. Cl.[4] G01N 33/551, 35/00; B01L 3/00
U.S. Cl. 422—61 5 Claims

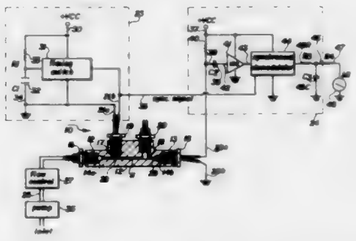
1. An article of manufacture for processing test liquids having analytes comprising
a closed, one piece container having an access port, the container being shaped to have a bulbous portion and an elongated passageway providing a path of two way liquid communication between the bulbous portion and the access port,
a first porous retainer positioned in the passageway adjacent the bulbous portion and occupying only a portion of the passageway such that the volume of the passageway between the retainer and the access port exceeds that of the test liquids,
a plurality of solid support beads, having a capture reagent for use in complexation reactions and affinity separations, immobilized on the surface thereof, disposed in the bulbous portion of the container, the passageway and the bulbous portion each defining volumes, the passageway volume being less than the bulbous portion volume, the porous retainer having pores large enough not to restrict the flow of liquids, cells, microorganisms, cellular fragments or particulates of interest for analysis and small enough to prevent the passage of the beads from the bulbous portion into the passageway, and
the bulbous portion of the container being collapsible, whereby test liquids may be passed back and forth through the retainer and about the support beads to achieve improved capture efficiency.



4,806,314
ORGANIC FLUID DETECTION SYSTEM AND APPARATUS

Glenn H. Fertig, Natrona Heights, and T. Lee Zias, Zelienople, both of Pa., assignors to Mine Safety Appliance Company, Pittsburgh, Pa.

Filed Jan. 16, 1987, Ser. No. 3,944
Int. Cl.[4] G01N 27/12
U.S. Cl. 422—78 12 Claims

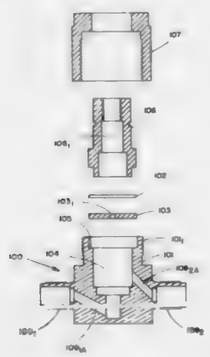


1. An entrained fluid detection instrument having great sensitivity to low concentrations of diatomic compound fluids in a fluid stream comprising:
(a) first conduit means adapted for the one-way flow therethrough of a mixture of a carrier fluid and an entrained diatomic fluid;

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(b) a first reaction element disposed in a portion of the said first conduit means supporting a material for promoting reactions of the entrained fluid of the mixture;
(c) a first sensing element also disposed in the first conduit means for detecting ambient changes in said first conduit and spaced apart from said first reaction element, comprising a material with an electrical resistivity that varies with its induced temperature, said first sensing element electrically isolated from said first reaction element;
(d) a first pair of electrical leads operatively connected to said first reaction element;
(e) a first AC voltage power circuit coupled to the first pair of leads and operable to intermittently heat the first reaction element sufficient to cause substantial degradation of organic compound fluids in the entrained fluid of the mixture Passing by said first reaction element, and to produce a synchronous signal;
(f) a second pair of electrical leads operatively connected to said first sensing element for sensing variations in the electrical resistance thereof caused by temperature changes occurring in said first sensing element, said electrical resistance thereof represented by a second output electrical signal; and
(g) measuring circuit means adapted to be operatively joined to said first and said second pairs of leads being activated by and for processing the synchronous signal and the second output signal respectively, whereby variations in the differential resistance of the first sensing element serve as a measure of the concentration of organic compound fluids in the fluid of the mixture.

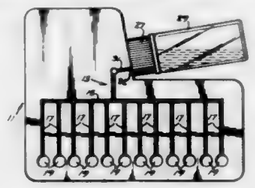
4,806,315
WATER VAPOR ADDITION FOR GAS CHROMATOGRAPHY, AND GAS CHROMATOGRAPHS
Emanuel L. Daigle, Gonzales, La., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jul. 2, 1987, Ser. No. 69,070
Int. Cl.[4] G01N *30/02*
U.S. Cl. 422—89 **9 Claims**



1. In a gas chromatograph for identifying moisture and determining the moisture content of a water-containing sample introduced therein wherein is included, in combination
carrier gas input means for the introduction and transport of carrier gas from a supply source through said gas chromatograph,
a first circuit having
sample injection means for intermittently introducing an accurately measured quantity of said water-containing sample into said first circuit for pick-up and transport by said carrier gas,
a column, located in said first circuit downstream of said sample injection means, filled with a substrate which is contacted with carrier gas input into said first circuit of the chromatograph, and sample introduced into said first circuit of said gas chromatograph for transport by said carrier gas from which moisture can be eluted on contact with said substrate, and passed downstream via said first circuit,
a thermal conductivity detector inclusive of housing means and a Wheatstone bridge housed therein, the bridge including
a measuring side constituted of a pair of filaments providing a first set of opposite arms of the bridge, each positioned in a first interconnected passageway of the housing into which can be passed a continuous flow of carrier gas, and carrier gas and eluting sample components, and
a reference side constituted of a second pair of filaments providing a second set of opposite arms of the bridge, each positioned in a second interconnected passageway of the housing into which can be passed a continuous flow of carrier gas,
a second circuit having
a flow path for conveying carrier gas from said carrier gas input means into the passageway of the housing of said detector connecting the pair of filaments constituting the reference side of said detector, and
a flow path for conveying carrier gas from said carrier gas input means into the passageway of the housing of said detector connecting the pair of filaments constituting the measuring side of said detector, such that carrier gas can be introduced simultaneously into the passageways providing the pairs of filaments constituting the reference side and the measuring side, respectively, of the detector to balance the bridge, and unbalanced on introduction of the sample eluted from the column and passed thereto via said first circuit to the measuring side of the bridge to produce a bridge-imbalance signal which can be processed as output data indicative of the moisture contained in the sample,
the improvement comprising
water vapor addition means for introduction of water vapor into the carrier gas input means, said water vapor transported through said first circuit to the measuring side of the detector sufficient to suppress a tendency of the moisture contained in the sample to wet and adhere to surfaces with which the injected sample is contacted prior to completion of the analysis whereby, on input of the moisture-containing sample via said sample injection means for pick-up and transport by the carrier gas to the measuring side of the detector the output signal for the water content of the sample can be easily read with precision and accuracy.

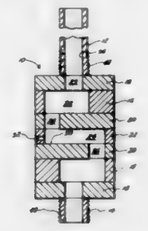
4,806,316
DISPOSABLE DEVICE FOR USE IN CHEMICAL, IMMUNOCHEMICAL AND MICROORGANISM ANALYSIS
Raymond Johnson, Mount Longstanton, England; Dwight Livingston; Robert C. Tite, both of Baltimore, Md., and Sheila J. Wood-Heile, Hampstead, Md., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Mar. 17, 1987, Ser. No. 27,280
Int. Cl.[4] G01N *1/28, 21/00, 31/22*
U.S. Cl. 422—100 **23 Claims**

1. A multi-well, self-pipetting device for use in chemical, immunochemical and microorganism analysis, said device comprising:
(1) a frame having in operational orientation a body and a periphery;
(2) a plurality of test wells disposed within said body;
(3) a filling manifold located within said frame, said filling manifold being in fluid communication with each of said plurality of test wells;
(4) a venting manifold located within said frame in a position above the filling manifold and above the plurality of test wells, said venting manifold being in fluid communication with each of said plurality of test wells; and
(5) a docking port for receiving a container holding a fluid



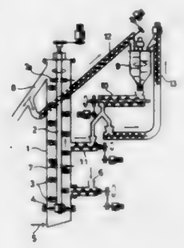
specimen, said docking port being located on the periphery of said frame, said docking port being in fluid communication with said filling manifold and with said venting manifold.

4,806,317
FLUIDIZED BED REACTOR
James E. Boone; David W. Owens; Robert E. Farritor, all of Baton Rouge, La., and Wesley D. Blank, Pasadena, Tex., assignors to Ethyl Corporation, Richmond, Va.
Division of Ser. No. 761,434, Aug. 1, 1985, abandoned. This application Jan. 8, 1987, Ser. No. 59,562
Int. Cl.[4] F27B *15/09*
U.S. Cl. 422—145 **4 Claims**



1. A high purity silicon fluid bed reactor comprising: a fluidized bed reactor having walls defining a reaction chamber;
means for heating said reaction chamber to decompose a silicon-containing gas entering said chamber;
seed particle entry means for introducing silicon seed particles into said reaction chamber;
means for introducing a silicon-containing gas into said reaction chamber to decompose said gas and form silicon product by growing silicon on said silicon seed particles;
means for exhausting decomposition gas and any unreacted silicon-containing gas from said reaction chamber; and
means for dispensing silicon product from said reactor, said dispensing means fluidly communicating with said reaction chamber which comprises:
an angle of repose valve for collecting and transferring said silicon product from said reaction chamber, and gastight valve means communicating with said angle of repose to receive granular product discharged from said reaction chamber and thereby dispense said silicon product form said reactor, said angle or repose valve comprising:
(a) a housing having a top inlet and a bottom outlet;
(b) an inlet tube sealingly disposed in said top inlet for receiving a flow of high purity solids from said protective environment, said inlet tube having a non-contaminating interior for contacting said solids;
(c) a series of plates, each plate having an aperture, said plates being vertically disposed to form a serpentine flow path through the apertures of said plates, and a horizontal blocking surface within said serpentine flow path; and
(d) motive gas means for moving the solids collected on said horizontal blocking surface to discharge said solids through the portion of said serpeentine flow path below said blocking surface.

4,806,318
APPARATUS FOR PURIFYING CRYSTALS
Shigeru Saitoh, and Masaki Shimada, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 13, 1987, Ser. No. 37,702
Claims priority, application Japan, Apr. 15, 1986, 61-86696
Int. Cl.[4] B01D *9/00*
U.S. Cl. 422—251 **7 Claims**



1. An apparatus for purifying crystals comprising:
a crystal purifying tower, the transverse cross-section of said tower taking the shape in which two circles partially overlap with each other;
a stirrer comprising a rotational shaft, one such stirrer extending through the center of each of said circles, and blade members disposed spirally on the circumference of each rotational shaft with the respective paths of movement of the blade members overlapping and with the centers as well as the respective blade members being spaced from each other so that the blade members on one rotational shaft do not interfere with the movement of blade members on the other rotational shaft;
said stirrers operating to move material upwardly in the apparatus;
a bottom portion of said tower;
a solid-liquid separation plate disposed in said bottom portion near above the tower bottom;
a liquid take out means disposed below said separation plate;
a starting crude crystal feed means disposed above said separation plate;
an upper portion of said tower;
a purified crystal take out means disposed in said upper portion;
an intermediate portion of said tower defined between said starting crude crystal feed means and said purified crystal take out means;
multiple heating means disposed in said tower along the vertical direction of the tower;
purified crystal circulation means for cooling a portion of purified crystals taken from said purified crystal take out means;
and means for feeding said cooled portion of purified crystals back to said tower at at least one location of said intermediate portion.

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4,806,319

REDUCTION OF SULFUR AND NITROGEN OXIDES USING PETROLEUM PITCHES

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715

Filed Jul. 11, 1988, Ser. No. 217,315

Int. Cl.[4] C01B *21/00, 17/00*; B01J *8/00*

U.S. Cl. 423—235 **5 Claims**

1. A method for removing sulfur dioxide and nitrogen oxides from admixtures with inert gases which comprises contacting the gaseous mixture with a molten low volatile carbonaceous material selected from the group consisting of residual petroleum fuel oil, petroleum asphalt, petroleum pitch and coal tar pitch at 400°–600° F. and allowing the inert gases to exit from the carbonaceous material.

4,806,320

PROCESS FOR NOX CONTROL

Sidney G. Nelson, Hudson, Ohio, assignor to Sanitech, Inc., Twinsburg, Ohio

Filed Apr. 21, 1988, Ser. No. 184,885

Int. Cl.[4] B01J *8/00*; C01B *17/00*

U.S. Cl. 423—239 **5 Claims**

1. A process for destroying nitrogen oxides in flue gases comprised of the following steps:

(A) Injecting a reactive gas selected from the group consisting of ammonia and methane into the flue gas stream;

(B) Passing the combination of flue gas and reaction gas through a bed of expanded vermiculite, whereby the nitrogen oxides are reduced to gaseous nitrogen.

4,806,321

USE OF INFRARED RADIATION AND AN ELLIPSOIDAL REFLECTION MIRROR

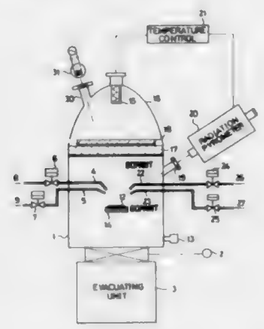
Junichi Nishizawa, 6-16, Komegafukuro 1-chome; Hitoshi Abe, 22-11, Midoriganka 1-chome, and Soubei Suzuki, 1-3, Otamayamahita, all of Sendai-shi, Miyagi-ken, Japan, assignors to Research Development Corporation of Japan; Junichi Nishizawa; Hitoshi Abe and Soubei Suzuki, all of, Japan

Filed Jul. 25, 1985, Ser. No. 759,098

Claims priority, application Japan, Jul. 26, 1984, 59-153979

Int. Cl.[4] C30B *35/00, 23/02, 25/14*

U.S. Cl. 422—245 **18 Claims**



1. An apparatus for forming a monocrystalline thin film of a compound or element semiconductor comprising;

(a) a growth vessel including a transmission window for allowing the transmission of electromagnetic radiation from outside of said vessel to inside said vessel, said vessel enclosing a support means for supporting a substrate;

(b) evacuating means for evacuating the interior of said growth vessel to an ultrahigh vacuum;

(c) means for alternately introducing into the vessel at least first and second gaseous molecules, at least one of said first and second gaseous molecules containing an element of the semiconductor to be formed;

(d) external infrared radiation emitting means for emitting infrared radiation toward and onto said substrate from outside said growth vessel through the transmission window;

(e) a first filter means for passing infrared radiation emitted from said emitting means which has wavelengths less than a pre-selected wavelength, said first filter means being interposed between said substrate and said emitting means;

(f) an external radiation pyrometer for detecting the temperature of said substrate from outside said growth vessel said pyrometer being along a direct line from the substrate to the outside of the vessel that avoids said first filter means;

(g) a second filter means for passing radiation which has wavelengths longer than the pre-selected wavelength and interposed between said substrate and said pyrometer; and

(h) substrate temperature control means for controlling the temperature of the substrate by controlling the output power of said external infrared radiation emitting means on the basis of a temperature feedback signal applied from said external pyrometer to said external infrared radiation emitting means.

4,806,322

PROCESS FOR THE PRODUCTION OF LINEAR POLYPHOSPHAZENES

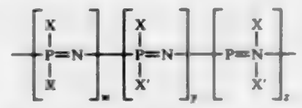
William L. Hergenrother, and James Oziomek, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 16, 1987, Ser. No. 122,311

Int. Cl.[4] C01B *25/10*

U.S. Cl. 423—300 **13 Claims**

1. A method for preparing linear polyphosphazene polymer containing units represented by the formula:



wherein X′ is Cl and w herein X is the same as X′ or is one or more substitutents selected from the group consisting of C_6H_5—, C_6H_4Cl—, C_6H_4F—, C_6H_{Br}—, $CH_6H_2Cl_3$—, C_6F_5—, $C_6H_4CF_3$—, $C_6H_4NO_2$—, Cl_3C—, F_3C—, F_5C_2—, F_7C_3— or HC_2F_4—, and $20<(W+Y+Z)=50{,}000$ which comprises the steps of:

(a) charging into a reactor an anhydrous mixture of NHCl and at least one chlorophosphorous compound selected from the group consisting of PCl, $XPCl_4$ and X_2PCl_3 in a ratio of chlorophosphorous compound to NHCl ranging from 0.90:1.10 to 1.10:0.90 in the presence of solvent in excess of Cl_2 in an amount ranging from about 1 percent to 500% by weight of final polymer content, said solvent being selected from the group consisting of PCl_3, $XPCl_2$ and X_2PCl;

(b) heating the reactor to a temperature ranging from about 100° C. to about 300° C., thereby producing by-product HCl;

(c) venting the reactor to move by-product HCl;

(d) discontinuing venting of the reactor when by-product HCl generation ceases;

(e) continuing to heat the reactor for a time sufficient to produce said linear polyphosphazene polymer of desired molecular weight and

(f) recovering said linear polyphosphazene polymer.

4,806,323

METHOD FOR THE REMOVAL OF CADMIUM FROM ACID PHOSPHATE-CONTAINING AQUEOUS MEDIA

Tjay T. Tjioe, Capelle aan de Ijssel; Simon Van Duijn, Noordwijk, and Paul Wey, Den Haag, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Apr. 29, 1987, Ser. No. 43,961

Claims priority, application Netherlands, Apr. 29, 1986, 8601101

Int. Cl.[4] C01B *25/235*; C01G *11/00*; C22B *17/04*

U.S. Cl. 423—321 R **7 Claims**

1. Method for the removal of cadmium from an acid, phosphate-containing aqueous medium which comprises contacting the acid, phosphate-containing aqueous medium containing cadmium with an anion exchanger characterized in that, during the contacting, iodide or bromide ions are present in a quantity of 100–6000 ppm in the acid-phosphate-containing medium.

4,806,324

PROCESS FOR MAKING PHOSPHORIC ACID FREE FROM TITANIUM

Günther Schimmel; Reinhard Grabl, both of Erftstadt, and Klaus Schröter, Cologne, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 5, 1988, Ser. No. 152,751

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1987, 3705069

Int. Cl.[4] C01B *25/16*

U.S. Cl. 423—321 S **3 Claims**

1. In the process for making phosphoric acid substantially free from titanium by subjecting crude phosphoric acid contaninit titanium to extractive purification with an organic solvent immiscible or only partially miscible with water, subjecting the organic extract phase separated from the aqueous raffinate to multi-stage scrubbing treatment, and re-extracting the purified phosphoric acid from the extract phase by means of water, the improvement which comprises; scrubbing the organic extract phase in a scrubbing zone with a stage number of $n>4$ by introducing the crude extract into stage 1 and scrubbing it countercurrently with an aqueous alkaline solution in one of stages 2 to $n-2$ and with pure scrubbing water in stage n, whereby the aqueous alkaline solution is used in a quantity of 0.5 to 2 wgt %, calculated as Na and based on the P_2O_5 contained in the extract.

4,806,325

PROCESS FOR RECOVERING ELEMENTAL PHOSPHORUS AND A METAL CONCENTRATE FROM FERROPHOS

Theodore F. Munday, Kendall Park, and Richard A. Mohr, Martinsville, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jul. 14, 1988, Ser. No. 219,963

Int. Cl.[4] C01B *25/01, 25/02, 25/04*

U.S. Cl. 423—322 **22 Claims**

1. A process for recovering elemental phosphorus and a metal concentrate from ferrophos comprising treating ferrophos in a plasma arc furnace by maintaining an electric arc between a first electrode and ferrophos which serves as a second electrode, introducing a plasma gas inert to phosphorus into the furnace to form a continuous plasma within the arc maintained between the first electrode and at least one point on the surface of the ferrophos, heating the ferrophos with a plasma arc to maintain the average temperature of the molten ferrophos at from about 2,000° C. to about 2,700° C., evolving gaseous phosphorus from the heated ferrophos, reducing the phosphorus concentration of the treated ferrophos to less than about 7% by weight, removing a purified phosphorus from the furnace as one product and recovering a metal concentrate having a reduced phosphorus content as a coproduct.

4,806,326

PHOSPHATE FEED MATERIAL FOR PHOSPHORUS ELECTRIC FURNACE

Joseph H. Finley, Metuchen, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Aug. 17, 1987, Ser. No. 86,016

Int. Cl.[4] C01B *25/01, 25/02, 25/04, 25/12*

U.S. Cl. 423—322 **8 Claims**

1. In the manufacture of elemental phosphorus by the electric furnace method in which comminuted phosphate shale ore is compacted into shapes and the shapes calcined to give a furnace feed material of calcined phosphate nodules, the improvement of utilizing nodule fines formed from abrasion of the phosphate nodules comprising mixing a stream of recycle nodule fines with the comminuted phosphate shale in the presence of sufficient phosphoric acid to overcome the loss in mechanical strength of the nodules resulting from mixing the phosphate shale with the nodule fines.

4,806,327

PROCESS FOR THE PREPARATION OF CRYSTALLINE SHEET-TYPE ALKALI METAL SILICATES

Hans-Peter Rieck, Hofheim am Taunus, and Martin Schott, Steinbach/Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 11, 1986, Ser. No. 872,942

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1985, 3521227; Jun. 29, 1985, 3523364

Int. Cl.[4] C01B *33/32*

U.S. Cl. 423—332 **10 Claims**

1. Process for the batchwise preparation of a crystalline layered alkali metal silicate, in which a batch comprising an aqueous solution of an alkali metal silicate or a suspension of an amorphous alkali metal silicate having a molar ratio $M_2O((unneutralized)/SiO_2$, where M represents an alkali metal, of 0.05:1 to 0.8:1 is kept at temperatures of 70° to 250° C., and this batch of reaction mixture is allowed to react until the alkali metal silicate crystallizes out, therein, after the beginning of crystallization an acidic compound is added in an amount such that an $M_2O(unneutralized)/SiO_2$ ratio of 0.05:1 to 0.8:1 is constantly maintained from the beginning of crystallization until the end of the reaction in the mother liquor of a filtered sample, but at least in an amount corresponding to 5 milliequivalents of H^+ per mole of SiO_2 in the alkali metal silicate employed.

4,806,328

METHOD OF MANUFACTURING MONOLITHIC GLASS MEMBERS

Joseph G. Van Lierop; Arnoldus B. M. Blijzemaan, both of Eindhoven; Willy J. B. Felder, Vijlen, and Albert Huizing, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 30, 1985, Ser. No. 781,427

Claims priority, application Netherlands, Dec. 3, 1984, 8403667

Int. Cl.[4] C01B *33/16, 33/12*

U.S. Cl. 423—338 **12 Claims**

1. A method of manufacturing monolithic glass members comprising the steps of

preparing a monolithic gel by

dissolving tetraethoxysilane ($(C_2H_5O)_4Si$) in an ethanol,

hydrolyzing said tetraethoxysilane in said ethanol by adding water and an acid to form a hydrolyzed solution,

adding water and a base material to said hydrolyzed solution, said base material being added in a quantity to neutralize said acid,

forming a neutralized compound from said acid and said base material, said neutralized compound being sufficiently volatile to subsequently escape,

drying said gel by

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placing said gel into a hermetically sealed container under a pre-pressure of a gas, wherein said pre-pressure is at least 50 bars,

heating said gel to a temperature above the critical temperature of said gel, said pre-pressure being sufficiently high to prevent boiling of the solvent of said gel at said temperature,

and then densifying said gel by said heating and removing said pre-pressure.

4,806,329

METHOD OF PRODUCING GRANULAR SYNTHETIC SILICA

Toshitsura Cho, Kawasaki, and Mamoru Yoshizako, Machida, both of Japan, assignors to Tama Chemicals Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1986, Ser. No. 903,547
Claims priority, application Japan, Sep. 9, 1985, 60-197562
Int. Cl.⁴ C01B *33/12*
U.S. Cl. 423—339 **6 Claims**

1. A method of producing granular synthetic silica comprising the steps of,

hydrolyzing a tetraalkoxysilane under a basic condition in the presence of an ammonium salt wherein said hydrolisis is carried out at a pH in the range of 8.5 to 11, to synthesize silica particles, and

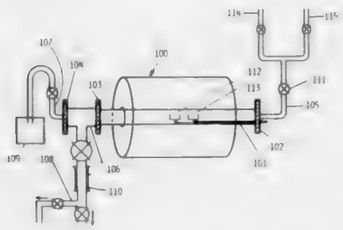
filtering said silica particles to produce granular synthetic silica.

4,806,330

PROCESS FOR PREPARING HIGH PURITY ALUMINUM NITRIDE

Peter J. Melling, Worthington; Beebhas C. Mutnuddy, Lancaster, both of Ohio, and Ibrahim Sekercioglu, Muskegon, Mich., assignors to Battelle Memorial Institute, Columbus, Ohio

Continuation-in-part of Ser. No. 843,473, Mar. 24, 1986, abandoned. This application Jun. 2, 1987, Ser. No. 57,579
Int. Cl.⁴ C01B *21/06*
U.S. Cl. 423—412 **12 Claims**



1. A process for producing high purity aluminum nitride powder comprising:

a. providing a supply of aluminum sulfide;

b. providing a supply of gaseous ammonia;

c. heating and reacting the aluminum sulfide with the gaseous ammonia at a temperature of 650 C. to 800 C. at about atmospheric pressure for a time period of 1 to 4 hours adapted to produce an intermediate; and

d. heating and further reacting the intermediate and gaseous ammonia at a temperature between 1100 to 1500 C., and at about atmospheric pressure for a time period of about 2 to 30 hours adapted to produce a powdered high purity aluminum nitride.

4,806,331

PROCESS OF SINTERING ALKALINE EARTH METAL CARBONATES

Charles Adams, Jr., and Jerry A. Cook, both of Cartersville, Ga., assignors to Chemical Products Corporation, Cartersville, Ga.

Filed Jan. 30, 1987, Ser. No. 8,657
Int. Cl.⁴ C01F *11/18*
U.S. Cl. 423—430 **15 Claims**

1. In a process of converting powdered barium or strontium carbonate into larger granules of barium or strontium carbonate by heating the carbonate to its sintering temperature in a refractory-lined kiln, the improvement wherein the refractory is fused amorphous silica.

4,806,332

METHOD FOR PREVENTING ANHYDROUS POTASSIUM FLUORIDE FROM SOLIDIFICATION

Nobuhiro Miki, Osaka, Japan, assignor to Hashimoto Chemical Industries Co., Ltd., Osaka, Japan

Filed Dec. 28, 1987, Ser. No. 138,577
Int. Cl.⁴ C01D *3/02*
U.S. Cl. 423—490 **3 Claims**

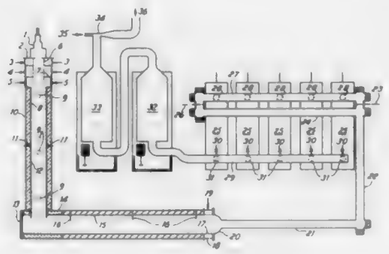
1. A method for preventing solidification of anhydrous potassium fluoride, said method comprising adsorbing carbon dioxide gas by the anhydrous potassium fluoride.

4,806,333

FINELY DIVIDED OXIDE AND ITS MANUFACTURE

Terence A. Egerton, Stockton on Tees, and Kevin A. Fothergill, Darlington, both of England, assignors to Tioxide Group PLC, London, England

Filed Oct. 22, 1986, Ser. No. 922,480
Claims priority, application United Kingdom, Nov. 9, 1985, 8527716
Int. Cl.⁴ C01F *7/02*
U.S. Cl. 423—625 **11 Claims**



1. In a ceramic material comprising a plurality of substantially non-aggregated spherical alumina particles having a geometric weight mean size between 0.02 and 0.5 microns, the improvement comprising:

each of the particles consisting essentially of crystalline delta alumina; and

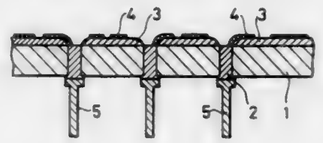
each of the particles having a highly spherical shape wherein greater than 95% of said particles have an aspect ratio of less than or equal to 1.1 and greater than 80% of said particles have an aspect ratio of less than or equal to 1.05.

4,806,334

GLAZED CERAMIC SUBSTRATE

Hiroshi Fujisaka, and Masami Terasawa, both of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Division of Ser. No. 834,888, Feb. 28, 1986, abandoned, which is a division of Ser. No. 775,859, Sep. 13, 1985, Pat. No. 4,632,846. This application Oct. 26, 1987, Ser. No. 114,227
Claims priority, application Japan, Sep. 17, 1984, 59-195333; Sep. 21, 1984, 59-199133; Sep. 21, 1984, 59-199134; Sep. 27, 1984, 59-203175
Int. Cl.⁴ B32B *17/06*
U.S. Cl. 428—631 **4 Claims**



1. A glazed ceramic substrate for electrical wiring, comprising:

a ceramic substrate having holes formed therethrough;

a metal composition embedded in the holes of the ceramic substrate, the metal composition providing an electrical connection to the electrical wiring; and

a glazing layer melt-bonded to a surface of the ceramic substrate exclusive of the metal composition, the glazing layer providing a surface on which the electrical wiring may be formed, the glazing being repellent to the metal composition when the glazing layer is melted, wherein the glazing layer is formed from a composition consisting essentially of 55 to 75% by weight of SiO_2, 6 to 20% by weight of BaO, 6 to 12% by weight of Al_2O_3, 8 to 20% by weight of CaO and 0.05 to 3% by weight of at least one oxide selected from the group consisting of MgO and SrO, said glazing layer composition is coated over the surface of said ceramic substrate inclusive of said metal composition, and said glazing layer composition is then melted under a reducing atmosphere, whereby said glazing layer is melt-bonded to said ceramic substrate but repelled from said metal composition.

4,806,335

PROCESS FOR PRODUCING ACICULAR IRON α-OXYHYDROXIDE PARTICLE POWDER

Masayoshi Saito, and Jiro I, both of Minamata, Japan, assignors to Chisso Corporation, Japan

Filed Nov. 12, 1987, Ser. No. 119,635
Claims priority, application Japan, Nov. 22, 1986, 61-279201
Int. Cl.⁴ C01G *45/02*
U.S. Cl. 423—632 **6 Claims**



1. A process for producing an iron α-oxyhydroxide particle powder, which comprises mixing with stirring an aqueous solution of a ferrous salt with an aqueous solution of an alkali in an equivalent ratio of said alkali to said ferrous salt of 1.5 or more, followed by subjecting the mixture to a first oxidation reaction with an oxygen-containing gas, heat-treating the resulting suspension of iron α-oxyhydroxide particle powder as it is, to a temperature of 60° to 100° C., further adding to the resulting suspension an aqueous solution of a ferrous salt in a proportion of atom to molecule of Fe(II)/α-FeOOH of 0.5 to 10% and subjecting the mixture to a second oxidation reaction with an oxygen-containing gas at a temperature of 35° to 55° C.

4,806,336

HUMAN INTESTINAL HORMONE AND ITS USE

Mats Carlquist; Hans Jörnvall, both of Sundbyberg, Sweden; Wolf-Georg Forssmann, Heidelberg, Fed. Rep. of Germany; Lars Thulin, Kristianstad, Sweden; Catja Johannesen, Danderyd, Sweden, and Viktor Mutt, Solna, Sweden, assignors to KabiGen AB and Skandigen AB, both of Stockholm, Sweden

PCT No. PCT/SE86/00099, § 371 Date Nov. 7, 1986, § 102(e) Date Nov. 7, 1986, PCT Pub. No. WO86/05494, PCT Pub. Date Sep. 25, 1986
PCT Filed Mar. 7, 1986, Ser. No. 933,524
Claims priority, application Sweden, Mar. 11, 1985, 8501202
Int. Cl.⁴ C07K *7/32*; A61K *49/00, 37/24*
U.S. Cl. 424—9 **4 Claims**

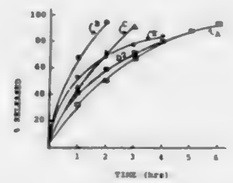
1. A human intestinal hormone in isolated form having the following peptide structure: His-Ser-Asp-Gly-Thr-Phe-Thr-Ser-Glu-Leu-Ser-Arg-Leu-Arg-Glu-Gly-Ala-Arg-Leu-Gln-Arg-Leu-Leu-Gln-Gly-Leu-Val-NH_2.

4,806,337

ERODIBLE MATRIX FOR SUSTAINED RELEASE BIOACTIVE COMPOSITION

Wallace C. Snipes, Pine Grove Mills, and Stephen J. Wagner, Pennsylvania Furnace, both of Pa., assignors to Zetachron, Inc., State College, Pa.

Continuation-in-part of Ser. No. 633,604, Jul. 23, 1984, Pat. No. 4,629,621. This application Oct. 14, 1986, Ser. No. 918,273
The portion of the term of this patent subsequent to Dec. 16, 2003, has been disclaimed.
Int. Cl.⁴ A61J *3/10*
U.S. Cl. 71—65 **98 Claims**



1. A composition erodible by an aqueous liquid comprising

(a.) 5% to 99.5% by weight of a solid water dispersible polyether dio having a molecular weight from about 1000 to about 20,000 selected from the group consisting of polyethylene glycols and polyethylene oxide-polypropylene oxide block copolymers, and

(b.) 95 to 0.5% by weight of an erosion rate modifier which is an amphiphilic compound insoluble in said aqueous liquid, the molecular structure of said amphiphilic compound having a lipophilic portion and a hydrophilic portion.

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4,806,338

ANTIPERSPIRANT AEROSOL COMPOSITIONS

Scott E. Smith, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 739,248, May 30, 1985, abandoned. This application Feb. 5, 1986, Ser. No. 826,409

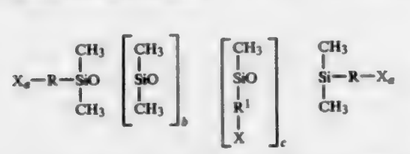
Int. Cl.[4] A61K *7/34, 7/36, 7/38, 9/12*

U.S. Cl. 424—47 **14 Claims**

1. An antiperspirant aerosol composition, comprising:

(a) from about 1% to about 40% of aparticulate antiperspirant material;

(b) from about 0.005% to about 6.0% of functionalized siloxane having the formula



wherein a is 0 or 1, b is from about 50 to about 2000, and c is from about 0 to about 300; X is selected from the group consisting of Cl, F, —COOH, and $-N(R^3)_2$; R is CH_3 (if a=0) or R^1 (if a=1); R^1 is straight or branched alkyl containing from 1 to 10 carbon atoms; R^2 is selected from the group consisting of H and R^1; R^3 is selected from the group consisting of R^2 and $R^1N(R^2)_2$; and wherein a+C>0 and the ratio of (a+c)/(b+c) is from about 0.01 to about 0.3; and

(c) from about 60% to about 95% of an aerosol propellant.

4,806,339

ORAL COMPOSITIONS

John J. Parran, Jr., Cincinnati, and Nabil Y. Sakkab, Loveland, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 839,111, Mar. 12, 1986, Pat. No. 4,684,518, which is a continuation of Ser. No. 702,708, Feb. 19, 1985, Pat. No. 4,590,066, which is a continuation of Ser. No. 591,228, Mar. 19, 1984, Pat. No. 4,515,772, which is a continuation of Ser. No. 391,040, Jun. 22, 1982, abandoned. This application Jun. 9, 1987, Ser. No. 59,909

The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.

Int. Cl.[4] A61K *7/16, 7/18*

U.S. Cl. 424—52 **7 Claims**

1. An oral composition in the form of a toothpaste comprising:

(a) from about 10% to about 70% of a dental abrasive which will allow for the pyrophosphate ion concentration specified herein below;

(b) an amount of a fluoride ion source capable of providing from about 50 ppm to 3500 ppm of fluoride ions;

(c) an amount of a pyrophosphate salt selected from the group consisting of dialkali metal and mixtures of dialkali metal and tetraalkali metal pyrophosphate salts sufficient to provide at least 1.5% $P_2O_7^{-4}$; and

(d) the remainder water;

wherein the pH of said composition is from about 6.0 to about 10.0

4,806,340

ANTICALCULUS ORAL COMPOSITION

Abdul Gaffar, Princeton; Thomas G. Polefka, Somerset; Robert J. Feriancto, Jr., Edison, and Rosemarie M. Crisafulli, East Windsor, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 775,851, Sep. 13, 1985, Pat. No. 4,627,977. This application Mar. 20, 1986, Ser. No. 842,101

The portion of the term of this patent subsequent to Dec. 9, 2003, has been disclaimed.

Int. Cl.[4] A61K *7/16, 7/18*

U.S. Cl. 424—52 **15 Claims**

1. In a method of inhibitng dental calculus by applying to the teeth a dentifrice composition in the form of a toothpaste, dental gel, toothpowder, dental tablet or lozenge and containing in an orally acceptable vehicle tetrapotassium pyrophosphate or mixtures of tetrapotassiuim and tetrasodium pyrophosphates as essential anticalculus agents, and an amount of a fluoride ion source sufficient to supply about 25 ppm to about 5,000 ppm of fluoride ion, the improvement whereby salivary hydrolysis of pyrophosphate by alkaline phosphatase is inhibited consisting essentially of including in said dentifrice composition an effective inhibiting amount therefor within the range of about 0.05 to about 3 wt. % of a syntehtic anionic polymeric polycarboxylate, said dentifrice composition being substantially free from solid gritty particles composed of undissolved tetrasodium pyrophosphate.

4,806,341

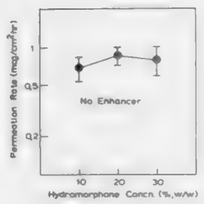
TRANSDERMAL ABSORPTION DOSAGE UNIT FOR NARCOTIC ANALGESICS AND ANTAGONISTS AND PROCESS FOR ADMINISTRATION

Yie W. Chien, North Brunswick; Chin-Chih Chiang, Piscataway, and Kabuji Tojo, Highland Park, all of N.J., assignors to Rutgers, The State University of New Jersey, New Brunswick, N.J.

Continuation-in-part of Ser. No. 705,194, Feb. 25, 1985, and a continuation-in-part of Ser. No. 770,968, Aug. 30, 1985. This application Sep. 3, 1986, Ser. No. 903,273

Int. Cl.[4] A61F *13/00*

U.S. Cl. 424—448 **25 Claims**



1. A transdermal morphinan narcotic analgesic or antagonist pharmaceutical polymer matrix dosage unit comprising:

(a) a backing layer which is substantially impervious to said pharmaceutical to be delivered transdermally; and

(b) a polymer matrix disc layer which is adhered to said backing layer and which has microdispersed therein effective dosage amounts of one or more pharmaceuticals selected from the group consisting of morphinan narcotic analgestic and antagonist pharmaceuticals, said polymer being bioacceptable and permitting said pharmaceuticals to be transmitted for transdermal absorption, said pharmaceuticals being stable in said polymer matrix and being transdermally absorbed simultaneously to provide at least minimum effective daily doses of said pharmaceuticals.

4,806,342

ANTICALCULUS ORAL COMPOSITION

Abdul Gaffar, Princeton, and Thomas G. Polefka, Somerset, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 775,851, Sep. 13, 1985, Pat. No. 4,627,177. This application Jun. 25, 1986, Ser. No. 911,607

The portion of the term of this patent subsequent to Dec. 9, 2003, has been disclaimed.

Int. Cl.[4] A61K *7/16, 7/18*

U.S. Cl. 424—52 **18 Claims**

1. In a method of inhibiting dental calculus by applying to the teeth a mouthwash composition containing in an orally acceptable vehicle one or a mixture of linear molecularly dehydrated polyphosphate salts selected from the group consisting of water soluble alkali metal pyrophosphates, tripolyphosphates and hexametaphosphates as essential anticalculus agents, and an amount of a fluoride ion source sufficient to supply about 25 ppm to about 2,000 ppm of fluoride ion, the improvement wherein salivary hydrolysis of P—O—P bonds in said polyphosphate salt by phosphatase enzymes is inhibited consisting essentially of including in said composition an effective inhibiting amount therefor within the range of about 0.05 to about 3 wt. % of a water soluble alkali metal or ammonium synthetic anionic linear polymeric polycarboxylate.

4,806,343

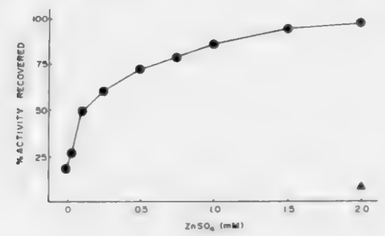
CRYOGENIC PROTECTANT FOR PROTEINS

John F. Carpenter, Davis, Calif.; Steven C. Hand, Lafayette, La.; John H. Crowe, and Lois M. Crowe, both of Davis, Calif., assignors to University of Southwestern Louisiana, Lafayette, La.

Filed Mar. 13, 1986, Ser. No. 839,330

Int. Cl.[4] A61K *37/22, 9/64, 31/40;* **B01J** *13/02*

U.S. Cl. 424—450 **4 Claims**



1. A method of inhibiting loss of biological activity due to freezing of artificial red blood cells comprised of a liposome encapsulating hemoglobin, the method comprising the steps of:

exposing the artificial red blood cell to effective amounts of a cryoprotectant comprising trehalose and a transition metal ion, said effective amounts being sufficient to inhibit loss of biological activity due to freezing; and

freezing the artificial red blood cell.

2. A composition comprising the product of claim 1.

4,806,344

SUN PROTECTANT COMPOSITION AND METHOD

Frances C. Geskin, 298 State St., Albany, N.Y. 12210

Filed Jan. 5, 1987, Ser. No. 635

Int. Cl.[4] A61K *7/40, 7/42, 7/44, 9/07*

U.S. Cl. 424—59 **36 Claims**

1. A composition for protecting the skin against ultraviolet rays, comprising:

a cosmetic base in the form of an oil, cream or ointment;

effective amounts of melanin, ferric chloride and triethanolamine; and

at least one sunscreen singly or in combination to provide up to 15 sun protective factor.

4,806,345

CROSS-LINKED CATIONIC POLYMERS FOR USE IN PERSONAL CARE PRODUCTS

Bhupati R. Bhattacharyya, Downers Grove, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Nov. 21, 1985, Ser. No. 800,471

Int. Cl.[4] A61K *7/06, 7/08, 7/48*

U.S. Cl. 424—70 **16 Claims**

1. A personal care composition including:

a water base;

at least one cosmetically-active agent; and

up to about 1.0 weight percent of a thickening agent consisting essentially of a lightly cross-linked cationic vinyl polymer derived from the polymerization of from 5 to 100 mole percent of a cationic vinyl addition monomer, from 0 to 90 mole percent of acyrlamide, and from 0.005 to 0.05 weight percent of a difuncitional vinyl addition monomer, wherein said cationic vinyl addition monomer is a quaternary ammonium salt of dimethylaminoethylmethacrylate.

4,806,346

METHOD FOR ISOLATION OF ANTIGEN SPECIFIC IMMUNOGLOBULIN

Wah-tang Hum, Jeffersonville, and Shaw-gaung Lee, Villanova, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Dec. 16, 1986, Ser. No. 942,313

Int. Cl.[4] A61K *39/395;* **C12P** *21/00;* **C07K** *3/22, 3/28*

U.S. Cl. 424—85.8 **16 Claims**

1. A process for preparing the purified $F(ab)_2$ fragment of equine Ig(T) from horses hyperimmunized with snake venom which comprises:

(a) passing crude diluted hyperimmune equine serum containing snake venom antigen specific Ig(T) buffered to an acidic pH through a strong base anion exchange polymer;

(b) passing the resultant pass-through solution to which is added sodium chloride to a concentration of 0.05–0.125M through a strong acid cation exchange polymer;

(c) adjusting the pH of the pass-through of step (b) to 3.3, and digesting said pass-through with pepsin; and

(d) ultrafiltering said pepsin-digested pass-through to obtain purified $F(ab)_2$ fragment of the snake venom antigen specific equine Ig(T).

4,806,347

INTERFERON COMBINATIONS

Paul J. Leibowitz, Hackensack, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Dec. 11, 1985, Ser. No. 807,887

Int. Cl.[4] A61K *45/02*

U.S. Cl. 424—85.5 **10 Claims**

1. A pharmaceutical composition comprising a combination of gamma interferon in a pharmaceutically pure mixture with a second interferon which is delta-4 alpha-2 (Bgl-II-1/Bgl-II) alpha-1 hybrid interferon and a pharmaceutically acceptable carrier.

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4,806,348

METHOD FOR INDUCING ANTIBODY FORMATION

Roland Hartl, Muenster-Altheim, and Dieter Kraemer, Mainz, both of Fed. Rep. of Germany, assignors to Riker GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jun. 22, 1987, Ser. No. 65,326
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1986, 3621719
Int. Cl.[4] A61K *39/00, 45/02, 39/42, 39/40*
U.S. Cl. 424—85 9 Claims

1. A method for inducing antibody formation in the living body of a vertebrate, which method comprises immobilizing a soluble antigenic substance containing amino and/or carboxyl groups by covalently binding it with oxirane groups present on a particulate carrier which is not decomposable in the vertebrate body, whereby a particulate antigen is formed wherein the amino and/or carboxyl groups of said antigenic substance are preserved, and then introducing said antigen into a vertebrate body.

4,806,349

HYBRID CELL LINE FOR PRODUCING MONOCLONAL ANTIBODY TO A HUMAN PROTHYMOCYTE ANTIGEN, ANTIBODY, AND METHODS

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 432,461, Oct. 4, 1982, abandoned, which is a division of Ser. No. 100,072, Dec. 4, 1979, Pat. No. 4,364,935.
This application Sep. 4, 1984, Ser. No. 646,545
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.[4] A61K *39/00*; G01N *33/53*; C12N *15/00, 5/00*
U.S. Cl. 424—85.8 4 Claims

2. A monoclonal antibody produced by a hybridoma formed by fusion of cells from a mouse myeloma line and spleen cells from a mouse previously immunized with human T-ALL cells which reacts with approximately 5% of normal human peripheral T cells and with approximately 95% of normal human thymocytes.

4,806,350

VACCINE FORMULATION

Jay D. Gerber, Lincoln, Nebr., assignor to Norden Laboratories, Inc., Lincoln, Nebr.

Filed Apr. 18, 1986, Ser. No. 853,797
Int. Cl.[4] A61K *39/00*
U.S. Cl. 424—88 11 Claims

1. A vaccine for stimulating an immune response in an animal which comprises an effective, non-toxic amount of an immunostimulating antigen and an immunostimulating, non-toxic amount of a saponin in an oil and water emulsion.

4,806,351

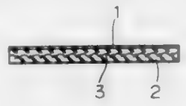
RUBBER LAMINATE

Masatoshi Sugimoto, Nagoya, and Toshiki Kurosaki, Aichi, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 853,765, Apr. 18, 1986, abandoned.
This application Sep. 1, 1987, Ser. No. 93,162
Claims priority, application Japan, Apr. 19, 1985, 60-85244; Apr. 23, 1985, 60-87102
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—421 8 Claims

1. A rubber laminate which comprises a FKM layer of the following compound (A) and a NBR layer of the following compound (B), said layers being bonded together through vulcanization, wherein

(A) is a FKM compound containing a polyol vulcanization system in which the polymer is vinylidene fluoride-propylene hexafluoride copolymer, the vulcanization agent is an aromatic polyol in an amount of 1.3 to 2 PHR and the vulcanization accelerator is an organic phosphonium salt or quaternary ammonium salt, said vulcanization accelerator being present in an amount of 0.5 to 2.2 PHR, and



(B) is a NBR compound having incorporated therein calcium hydroxide in an amount of 5 to 30 PHR.

4,806,352

IMMUNOLOGICAL LIPID EMULSION ADJUVANT

John L. Cantrell, Corvallis, Mont., assignor to Ribi Immuno-Chem Research Inc., Hamilton, Mont.

Filed Apr. 15, 1986, Ser. No. 852,120
The portion of the term of this patent subsequent to Feb. 7, 2006, has been disclaimed.
Int. Cl.[4] A61K *39/00*
U.S. Cl. 424—92 20 Claims

1. An immunological adjuvant useful for enhancing the immune response against antigens, in a host, comprised of:

(1) a lipid emulsion system containing,

(a) a metabolizable oil,

(b) a low molecular weight polyol,

(c) lecithin, and

(2) a refined, detoxified bacterial adjuvant.

4,806,353

MOLD INHIBITING PRODUCT

Richard D. Thomas, 812 N. Euclid St., Fullerton, Calif. 92632

Continuation-in-part of Ser. No. 536,262, Sep. 27, 1983, abandoned. This application May 2, 1984, Ser. No. 606,150
Int. Cl.[4] A01N *37/00, 59/20*
U.S. Cl. 424—141 20 Claims

1. A mold inhibitor composition which comprises, in aqueous solution:

at least one salt of propionic acid from the group consisting of sodium propionate, potassium propionate and ammonium propionate;

at least one deliquescent substance from the group consisting of ammonium citrate, calcium chlorate, calcium chloride, calcium iodide, calcium nitrite, cobaltous ammonium chloride, cobaltous iodide, cupric chlorate, cupric nitrate, ferric chloride, ferric lactate, ferric nitrate, ferrous iodide, magnesium ammonium chloride, magnesium chlorate, magnesium chloride, magnesium iodide, magnesium nitrate, magnesium potassium chloride, manganese chloride, manganese oxide, manganese sulphate, phosphoric acid, phophorus oxide, potassium acetate, potassium carbonate, potassium iodide, potassium phosphate, sodium bisulphate, stannic sulphate, and zinc chloride; and

at least one humectant from the group consisting of glycerol, potassium polymetaphosphate, propylene glycol, sorbitol, triacetin, and mannitol.

4,806,354

HEALTH FOOD COMPOSITION

James P. Green, 176 Beckford Dr., Henderson, N.C. 27536

Continuation-in-part of Ser. No. 597,591, Apr. 6, 1984, abandoned. This application Nov. 21, 1986, Ser. No. 933,562
Int. Cl.[4] A61K *33/86, 31/70, 35/525, 31/51*
U.S. Cl. 424—154 8 Claims

1. An improved health food composition for alleviating the side effects experienced after alcohol ingestion, said composition comprising:

a. B complex vitamins, said B complex vitamins further comprising: vitamin B1 in the amount of about 100 to 200 mg; vitamin B2 in the amount of about 100 to 200 mg; pantothenic acid in the amount of about 100 to 200 mg; vitamin B6 in the amount of about 100 to 200 mg; and vitamin B12 in the amount of about 800 to 1000 micrograms;

b. a prostaglandin E-1 precursor being selected from the group consisting of: safflower oil, peanut oil, sunflower seed oil, and mixtures thereof; said precursor being in the amount of about 15 cc for each 1200 mg of said B complex vitamins; and said precursor being in the amount of up to about 30 cc for each 1800 mg of said B complex vitamins;

c. an analgesic comprising acetaminophen, said analgesic being in the amount of about 300 mg for each 15 cc of said prostaglandin E-1 precursor; and

d. an antacid comprising calcium carbonate, said antacid being in the amount of about 840 mg for each 15 cc of said prostaglandin E-1 precursor.

4,806,355

MICROENCAPSULATION OF LIVING TISSUE AND CELLS

Matthew F. A. Goosen; Geraldine M. O'Shea, both of Toronto, and Anthony M. F. Sun, Willowdale, all of Canada, assignors to Connaught Laboratories Limited, Willowdale, Canada

Continuation of Ser. No. 677,985, Dec. 4, 1985, Pat. No. 4,689,293, which is a continuation of Ser. No. 501,445, Jun. 6, 1983, abandoned. This application Jun. 8, 1987, Ser. No. 59,513
The portion of the term of this patent subsequent to Jun. 16, 2004, has been disclaimed.
Int. Cl.[4] A61K *9/44*
U.S. Cl. 424—424 18 Claims

1. A biocompatible in microcapsule, suitable for implantation into an animal body and having a diameter of about 50 to about 2000 μm, comprising:

a macromolecular spherical core containing living tissue or individual cells thereof, said core being surrounded by of interpenetrating layers of ionically-interacted biocompatible materials defining a membrane thickness of about 5 to about 20 μm, said biocompatible materials compriaing a biocompatible polyamino acid polymer normally having a positively-charged surface and a non-toxic biocompatible water-soluble polymeric material which is capable of ionic interaction with free amino groups in said polyamino acid to provide an outer biocompatible negatively-charged surface, said biocompatible semi-permeable membrane being in the form of a hydrogel having an overall water content within the membrane structure of at least about 20 wt. %,

said biocompatible semi-permeable membrane being permeable to and permitting nutrients and oxygen to flow from a body in which the microcapsule is implanted to said living tissue of individual cells thereof and permitting metabolic products of said living tissue to flow therefrom to the body in which the microcapsule is implanted and being impermeable to said living tissue to retain the living tissue within the microcapsule, said microcapsule being capable of resisting degradation and remaining permeable in vivo for at least two months.

6. A method of encapsulating a core material within a semi-permeable membrane which is a hydrogel having an overall water content within the membrane structure of at least about 20 wt. %, which method comprises:

(a) placing the material in an aqueous solution of a water-soluble polymeric substance that can be reversibly gelled and which has free acid groups,

(b) forming the solution into droplets,

(c) gelling the droplets to produce discrete shape-retaining temporary capsules,

(d) forming biocompatible semi-permeable membranes about the temporary capsules by contact between the temporary capsules and a biocompatible polyamino acid polymer containing free amino groups to cause ionic reaction with the acid groups in a surface layer of the capsule to provide a positively-charged surface, and

(e) contacting said microcapsules formed in step (d) with a non-toxic biocompatible water soluble polymeric material which contains free negatively-charged groups capable of ionic reaction with the free amino groups of said polyamino acid polymer in surface layer of the microcapsule, thereby to form an outer coating of said biocompatible polymeric material on said microcapsules having a negatively-charged surface,

said semi-permeable membrane formation and said contact thereof with biocompatible polymeric material being such as to form microcapsules having a diameter of about 50 to about 2000 μm and a semi-permeable membrane thickness of about 5 to about 20 μm, and being such as to produce microcapsules capable of resisting degradation and remaining permeable in vivo for at least two months.

4,806,356

TOBACCO PRODUCT

Alec S. W. Shaw, Birch House, Off Crimbles Lane, Cockerham, Lancashire, England

Continuation of Ser. No. 873,141, Jun. 6, 1986, abandoned, which is a continuation of Ser. No. 792,201, Oct. 28, 1985, abandoned, which is a continuation of Ser. No. 625,544, Jun. 28, 1984, abandoned. This application Apr. 3, 1987, Ser. No. 35,274
Claims priority, application United Kingdom, Jun. 29, 1983, 8317576
Int. Cl.[4] A61K *9/20, 31/465*
U.S. Cl. 424—440 4 Claims

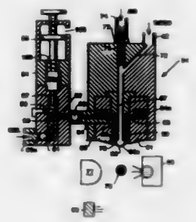
1. A method for satisfying a craving for tobacco by releasing a measured dose of nicotine gradually for absorption into the buccal cavity from a cold-compressed nicotine-containing lozenge tablet prepared by a method for the production of a nicotine-containing lozenge tablet comprising the steps of thoroughly mixing together an inert filler, a binder and pure nicotine dissolved in alcohol and forming measured doses of the mixture by a cold-compression tablet forming process wherein the lozenge tablet is compressed and shaped between movable dies.

4,806,357

APPARATUS AND METHOD FOR ENCAPSULATING SEEDS AND THE LIKE

Roger E. Garrett; Nelson E. Smith, Jr., and James J. Mehlschau, all of Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Nov. 25, 1987, Ser. No. 125,397
Int. Cl.[4] A01C *1/06*
U.S. Cl. 427—4 27 Claims



1. A device for encapsulating seeds in a gel, including in combination:

a nozzle having dual vertical, rectilinear, concentric tubes, namely an inner tube having an outlet and an inlet and an outer tube,

gel feeding means for feeding gel into said outer tube and

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down said outer tube to the outlet from said inner tube, so that a meniscus of gel is stretched across said outlet,

seed feeding means for feeding singulated seeds, one at a time, into the inlet of said inner tube, so that each seed drops down upon a said meniscus of gel,

puff means for causing a slight puff of air to pass down said inner tube and slightly inflate said meniscus after said seed has drppped thereon,

said gel feeding means including means for causing a flow of gel to cause said meniscus to separate from said outlet and form a drop of gel with a seed inside, and

fixative bath means, below said outlet into which each said drop of gel, with the seed inside, falls, for causing said gel to set.

20. A method for encapsulating seeds in a gel with the aid of a nozzle having dual vertical, rectilinear, concentric tubes, namely an inner tube having an outlet and an outer tube, comprising the steps of:

feeding gel into said outer tube and down said outer tube to the outlet from said inner tube, so that a meniscus of gel is stretched across said outlet,

feeding singulated seeds, one at a time, into the inner tube, so that each seed drops down upon a said meniscus of gel,

causing a slight puff of air to pass down said inner tube and slightly inflate said meniscus after said seed has dropped thereon,

pumping gel to said outer tube in pulses and at an amount sufficient to cause each said meniscus after being supplied with a seed to separate from said outlet and form a drop of gel with a seed inside and to fall down, and

fixing each said fallen seed-containing drop of gel and causing it to set after separating from said outlet.

4,806,358

THERAPEUTIC COMPOSITIONS

Karrar A. Khan, and John F. Lamperd, both of Nottingham, England, assignors to The Boots Company plc, England

Filed Oct. 31, 1986, Ser. No. 925,564

Claims priority, application United Kingdom, Nov. 15, 1985, 8528195

Int. Cl.[4] A61K *9/46*

U.S. Cl. 424—466 **14 Claims**

1. A pharmaceutical composition in powder or tablet form comprising

(a) a granular component comprising an intimate mixture of

(i) 100 parts of ibuprofen or a pharmaceutically acceptable salt thereof;

(ii) 5–100 parts of a pharmaceutically acceptable water-insoluble hydrophilic polymer; and

(iii) a pharmaceutically acceptable solid acid forming a first part of an effervescent couple that produces carbon dioxide in the presence of water;

(b) 0.01 to 20 parts of a pharmaceutically acceptable anionic or non-ionic surfactant;

(c) a second part of the effervescent couple selected from the group consisting of sodium carbonate, sodium bicarbonate, potassium carbonate, potassium bicarbonate and mixtures thereof, the amounts of the first and second parts of the effervescent couple being such that when the pharmaceutical composition is added to water, the resulting pH is below 7, and

(d) 400 to 700 parts of a saccharide selected from the group consisting of sucrose and lactose.

4,806,359

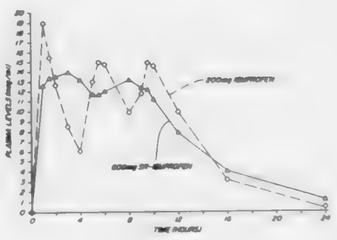
IBURPROFEN SUSTAINED RELEASE MATRIX AND PROCESS

Galen W. Radebaugh, Maple Glen; Robert Glinecke, Glenside, and Thomas N. Julian, Horsham, all of Pa., assignors to McNeilab, Inc., Spring House, Pa.

Filed Apr. 22, 1987, Ser. No. 41,164

Int. Cl.[4] A61K *9/26*

U.S. Cl. 424—470 **19 Claims**



1. The process of preparing an ibuprofen-sustained release shaped and compressed tablet characterized by a long-lasting slow and relatively regular incremental release of the ibuprofen upon administration comprising the following steps:

(A) forming a granulating agent by dissolving 5–30 parts by weight of the total composition of Povidone in alcohol or an alcohol-water mixture;

(B) blending together the following parts by weight of the total composition of ingredients with sufficient ibuprofen to comprise 73 to 93 percent by weight of the total composition in dry powder form:

Ingredient	Parts by Weight
Ethylcellulose	3–12
wicking agent	10–35
erosion promoter	5–25

(C) adding the granulating agent from Step A to the blended powders from Step B, and forming a wet granulation;

(D) drying the wet granulation of Step C;

(E) milling the dried granulation from Step D;

(F) thoroughly blending the milled dried granulation from Step E with the following parts by weight of the total composition of ingredients in dry powder form:

Ingredient	Parts by Weight
Erosion Promoter	1–20
wicking agent	3–20
lubricant	0–10
glidant	2–10; and

(G) compressing the final granulation from step F into a tablet or tablet layer.

6. A shaped and compressed sustained release therapeutic composition comprising ibuprofen and a granulating agent and excipients combined into a matrix, characterized by a long-lasting, slow and relatively regular incremental release of the ibuprofen upon administration, wherein the granulating agent and excipients include ethylcellulose and povidone, and wherein the total amount of granulating agent and excipients is effective to bind the ibuprofen in a sustained release solid matrix but is less than about 20 percent of the weight of said shaped and compressed composition.

4,806,360

SYNTHETIC MELANIN AGGREGATES

Helen Leong, Atherton; Martin Katz, Menlo Park; Anne Delk, Kensington; David Berliner, Atherton, and Sergio Nacht, Los Altos, all of Calif., assignors to Advanced Polymer Systems, Redwood City, Calif.

Filed Oct. 23, 1987, Ser. No. 112,971

Int. Cl.[4] A61K *9/14, 7/42*

U.S. Cl. 424—487 **29 Claims**

1. A composition comprising substantially non-collapsible particles each defining a network of internal pores and having melanin pigment entrapped within said network of pores, wherein said particles are polymers having a cross-linking density of at least about 10% and said melanin pigment has been introduced to said pores by absorption of melanin pigment or by in situ conversion of a melanin precursor within said pores.

4,806,361

MEDICAMENTS IN SUSTAINED RELEASE UNIT DOSE FORM

Paul J. Harrison; John R. Longridge, and Christopher J. Potter, all of Alnwick, United Kingdom, assignors to Sterling Drug Inc., New York, N.Y.

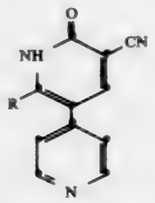
Filed May 24, 1985, Ser. No. 738,133

Claims priority, application United Kingdom, Jun. 4, 1984, 84-14220

Int. Cl.[4] A61K *9/16, 9/50, 31/44*

U.S. Cl. 424—495 **14 Claims**

1. A sustained release pharmaceutical composition for oral administration containing, as the active ingredient, a medicament of the formula:



where R is lower-alkyl having from 1 to 4 carbon atoms which comprises a plurality of beads each composed of an inert particulate core having adhered thereto a coating comprising particles of said medicament and further coated with a sustaining coating comprising three admixed polymers, the first said polymer being soluble at all pH values of 1.5 and above, the second said polymer being insoluble in gastric juices at pH values below about 5 but soluble therein at pH values of about 5 and above and the third said polymer being insoluble in the contents of the gastrointestinal tract at all pH values normally encountered therein, and wherein the ratio of the weight of the third polymer to the combined weight of the other two polymers is about 1.5:1 to about 2:1.

4,806,362

AQUEOUS POLYETHYLENE DISPERSIONS, THEIR PRODUCTION AND METHODS FOR FINISHING GLASS SURFACES WITH THE DISPERSIONS

Erich Raf, Essen, Fed. Rep. of Germany, assignor to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jul. 6, 1987, Ser. No. 69,657

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1986, 3624546

Int. Cl.[4] B05D *3/02*

U.S. Cl. 427—389.7 **16 Claims**

1. An aqueous dispersion of polyethylene, comprising 40 to 100 percent by weight, based on the amount of polyethylene, of a mixture of

(a) an amine oxide or an amine oxide mixture of the general formula

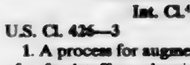


wherein

R^1 is alkyl with 7 to 17 carbon atoms;

n is 2 or 3, and

(b) the salt of an amine of the general formula



with a physiological safe carboxylic acid, wherein

R^2 is alkyl with 8 to 18 carbon atoms and

the sum of the units m is 20 to 100,

the components (a) and (b) being present in a ratio by weight of 4:1 to 1:1.

4,806,363

FLAVORING WITH SCHIF BASE REACTION PRODUCTS OF ALKYL ANTHRANILATES

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Point Pleasant, both of N.J.; Nicholas Calderone, Laurel Hollow, N.Y., and Keith P. Sands, Marlboro, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

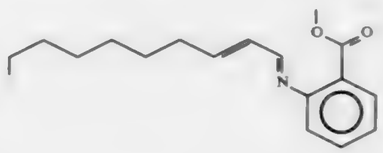
Filed Mar. 22, 1988, Ser. No. 171,778

Int. Cl.[4] A23L *1/226, 1/235*

U.S. Cl. 426—3 **2 Claims**

1. A process for augmenting or enhancing the aroma or taste of a foodstuff or chewing gum comprising the step of intimately admixing with said foofstuff or chewing gum from about 0.1 ppm up to about 100 ppm of a schiff base reaction product produced according to the process of reacting methyl anthranilate with 2-decenal.

2. A foodstuff having intimately admixed therewith from about 0.1 ppm up to about 100 ppm of a schiff base reaction product having the structure:



4,806,364

METHOD OF MAKING CHEWING GUM

Robin M. Kubota, Woodridge; Sharon M. Thomas, Chicago; Albert H. Chapdelaine, Naperville, and Steven B. Courtright, Evanston, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Apr. 22, 1987, Ser. No. 41,030

Int. Cl.[4] A23G *3/30*

U.S. Cl. 426—5 **26 Claims**

1. A method of making chewing gum comprising the steps of:

providing a sweetener matrix in a mixing means, said matrix comprising a powdered sweetener;

adding to the sweetener matrix in the mixing means a quantity of discrete particles of unmelted gum base; and

beginning the mixing of the sweetener matrix and the unmelted gum base particles and continuing to mix until the discrete particles of gum base become blended into a homogenous mass with the sweetener matrix.

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4,806,365

HEALTH VINEGAR

Todomu Nakashima, 7-go, 2-ban, Kazuga 4-chome, Kumamoto-shi, Kumamoto-ken, Japan, assignor to Todomu Nakashima, Kumamoto and Kishuyakushitsu Kabushiki Kaisha, Wakayama, both of, Japan

Filed Sep. 1, 1987, Ser. No. 92,404
Int. Cl.[4] C12J *1/00, 1/04*
U.S. Cl. 426—17 15 Claims

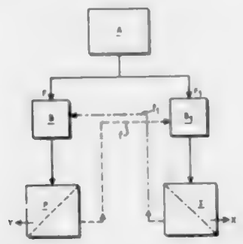
1. A process for producing a vitamin C-enriched cooking vinegar comprising the step of adding acerola to cooking vinegar in an amount of from 1 to 100% based on the weight of the cooking vinegar.

4,806,366

PROCESS FOR ADJUSTING THE ALCOHOL CONTENT OF WINES OR ALCOHOLIC BEVERAGES AND INSTALLATION FOR ITS IMPLEMENTATION

Richard Dick, Paris; Guy Moulin, Saint Gely du Fesc, and Pierre Galzy, Montpellier, all of France, assignors to Institut National de Recherche Chemique Appliquee, Paris, France

Filed Jun. 20, 1986, Ser. No. 878,528
Claims priority, application France, Jul. 5, 1985, 85 10316
Int. Cl.[4] C12G *1/00;* C12C *11/04*
U.S. Cl. 426—15 8 Claims



1. A process for adjusting the degree of alcohol of wines or alcoholic beverages by passing the wine or alcoholic beverages through two coupled reverse osmosis cells (P) and (I), said process comprising:
providing a first cell (P) with at least one membrane permeable to ethanol and a second cell (I) with at least one membrane impermeable or with low permeability to ethanol;
passing a first alcoholic beverage through said first cell (P) and a second alcoholic beverage through said second cell (I);
withdrawing a first permeate from said first cell (P) and feeding said first permeate to a first supply reservoir upstream of said second cell (I) and mixing said first permeate with said second alcoholic beverage;
withdrawing a second permeate from said second cell (I) and sending it to a second supply tank upstream of said first cell (P) and mixing said second permeate with said first alcoholic beverage; and
recovering concentrates (X and Y) which have not permeated through said membranes in the form of alcoholic beverages from said cells (P) and (I).

4,806,367

PROCESS FOR THE PRODUCTION OF A FOOD MATERIAL

Hiroshi Kiuchi, Saitama; Katsumi Murata; Kazuo Murakami, both of Ibaraki; Isao Kuwakabe, Chiba, and Hideyuki Kobayashi, Ibaraki, all of Japan, assignors to Kabushikikaisha Kiban and Kabushikikaisha Kiban Foodchemifa, both of Tokyo, Japan

Filed May 29, 1987, Ser. No. 55,523
Claims priority, application Japan, Jun. 20, 1986, 61-142765
Int. Cl.[4] A23L *1/20;* A23J *1/14*
U.S. Cl. 426—46 6 Claims

1. A process for flocculating protein in soybean milk by treating said soybean milk, at a pH higher than 5.8, in the presence of 0.1 to 15 mM of magnesium in the form of a magnesium salt, with an amount of protease effective to flocculate said soybean protein, the concentration of said magnesium salt also being below that necessary to effect magnesium coagulation.

4,806,368

SHELF LIFE AND SUBSEQUENT GROWTH OF *LACTOBACILLUS ACIDOPHILUS, PROPIONIBACTERIUM SHERMANII* AND *LEUCONOSTOC CITROVORUM* IN DIETARY FIBER BASED SUPPLEMENT PREPARATION

Malireddy S. Reddy, 6983 S. Telluride St., Aurora, Colo. 80016

Filed Sep. 16, 1987, Ser. No. 97,061
Int. Cl.[4] A23C *9/12*
U.S. Cl. 426—61 19 Claims

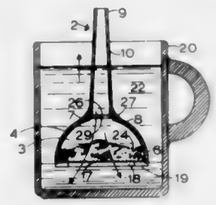
1. A dietary fiber based vitamin, mineral, and beneficial bacteria tablet with enhanced bacterial viability, comprising:
apple fiber including insoluble fiber elements;
lyophilized live bacteria;
a vitamin having antioxidant properties;
an amino acid having reducing properties;
an alkaline mineral salt; and
means for stimulating bacterial growth.

4,806,369

METHOD AND APPARATUS FOR MAKING AN INFUSION

Owen E. Thompson, 9702 Hedin Dr., Silver Spring, Md. 20903

Filed Nov. 7, 1986, Ser. No. 928,322
Int. Cl.[4] A23F *5/26, 3/18;* B65D *85/00*
U.S. Cl. 426—82 11 Claims



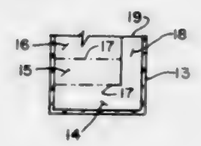
1. A device for preparing an infusion comprising:
an elongated device having a chamber portion containing a potable infusion making substance, and an upper hand held pressure head portion capable of producing a pressure head when the device is immersed in and then lifted out of a body of liquid wherein the entire side walls of the device are rigid and imperforate to infusing liquid, and wherein the walls of the device define two horizontal openings, one at each end, the lower end and the upper end when the device is held vertically in a cup or vessel of infusing liquid, said chamber portion formed in a non-cylindrical shape such that the cross section of the chamber substantially varies along its vertical length when the device is held upright in a vessel, sufficient such that said variable cross section can prevent compaction of the infusion making substance when said device is moved in an upward and downward direction through said infusing liquid, said upper hand held pressure head portion being of sufficient height to extend above the level of infusing liquid in said vessel so as to be in free communication with air above;
first filter means covering said lower opening to allow the free flow of infusing liquid while preventing passage of said infusable substance through said lower opening; and
second filter means above said substance and at or below said upper opening to allow the free passage of infusing liquid or air while preventing passage of said infusable substance through said upper opening.
6. A device for preparing an infusion comprising:
an elongated device having a chamber portion containing a potable infusion making substance and an upper hand held pressure head portion capable of producing a pressure head when the device is immersed in and then lifted out of a body of liquid wherein the entire side walls of the device are rigid and imperforate to an infusing liquid, and wherein the walls of the device define two horizontal openings, one at each end, the lower end and the upper end when the device is held vertically in a cup or vessel infusing liquid, said chamber incorporating a series of projections filaments on the inside of said chamber which projections or filaments act to break up compactions of said infusion making substance and promote efficient mixing of the substance with the liquid when said device is moved in an upward and downward direction through said infusing liquid, said upper hand held pressure head portion being of sufficient height to extend above the level of said infusing liquid in said vessel so as to be in free communication with air above
first filter means covering said lower opening to allow the free flow of infusing liquid while preventing passage of said infusable substance through said lower opening; and
second filter means above said substance and at or below said upper opening to allow the free passage of infusing liquid or air while preventing passage of said infusable substance through said upper opening.

4,806,371

MICROWAVABLE PACKAGE FOR PACKAGING COMBINATION OF PRODUCTS AND INGREDIENTS

Abraham H. Mendenhall, Mendham, N.J., assignor to Packaging Concepts, Inc., St. Louis, Mo.

Filed Nov. 10, 1986, Ser. No. 928,557
Int. Cl.[4] B65D *81/32, 81/34*
U.S. Cl. 426—113 4 Claims



1. A microwave package for packaging a combination of products and ingredients, comprising, a package formed as a bag and constructed of a material selected from the group consisting of paper, polymer film, and polymer or adhesive lined paper, said bag having side walls, each side wall formed of a collapsible gusset, and said bag having front and back walls, each integrally formed with said side walls, and a bottom wall provided at the lower end of the bag and integrally formed with the said front, back, and side walls, and said bag having an open top, a first product chamber formed internally at a lower location of the bag and containing a product to be heated by microwave energy therein, a pair of ingredient chambers provided upwardly within the the bag and above the said product chamber, said pair of ingredient chambers being arranged vertically aligned, and one above the other, with said ingredient chambers provided to be sequentially broken to selectively deposit their respective ingredients onto the cooking product during microwaving, the lowermost ingredient chamber containing a material selected from the group consisting of oil, lard, vegetable oil, and butter, with the upper vertically arranged ingredient chamber containing a material selected from the group consisting of seasoning powder, salt, and flavoring ingredient, said ingredient chambers being defined and formed through a series of seals between select walls of the bag, one seal formed between the front and back walls and extending from one side wall of the bag toward the other side wall of the bag, said one seal being formed between said pair of vertically aligned and transversely located ingredient chambers, a second seal being located between the lower ingredient chamber and the formed bag product chamber and extending from one side wall of the bag toward the other side wall of the bag, and an upper transverse extending third seal disposed across the open top of the formed microwave package, to provide closure therefore, and a vertically oriented fourth seal for the ingredient chambers formed in the microwave package and extending downwardly to meet said one, second, and upper seals to define said chambers, said fourth seal being proximate but spaced from said other side wall of the bag thereof, a vent chamber provided adjacent the ingredient chambers and disposed for venting the accumulated pressure during microwaving of the product contained within the product chamber, with said vent chamber extending from the product chamber into the upper seal of the said bag, said vent chamber defined by the space in the bag between the fourth seal and said proximate side wall, said seals being provided to furnish their controlled rupture during microwaving of a product under the exertion of the pressure generated within the product chamber during microwaving, wherein the seals forming the ingredient chambers are sequentially broken to selectively deposit the material from the lowermost ingredient chamber and then the material from the ingredient chamber arranged thereabove, onto the cooked product during microwaving, and allowing for the venting of any generated steam and pressure within the product chamber during product cooking to provide for venting of the generated steam

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4,806,370

5'-NUCLEOTIDE SEASONING COMPOSITION AND PRODUCTION THEREOF

Takeshi Toyota, Kyoto; Toshihiko Kanemaru, Nagaokakyo, and Hiroshi Kasai, Kawabe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 2, 1987, Ser. No. 103,823
Claims priority, application Japan, Jul. 8, 1987, 62-170751
Int. Cl.[4] A23L *1/229, 1/221*
U.S. Cl. 426—99 13 Claims

1. A seasoning composition containing 5'-ribonucleotide salts having a water solubility less than about 1 g/100 g of water at 25° C. which are produced by coating fine particles of sparingly water-soluble 5'-ribonucleotide salts having a water solubility less than about 1 g/100 g water at 25° C. and having a total water content of 12 to 20 weight % and a particle diameter not exceeding about 150 μm with a member selected from the group consisting of oil, fat, wax or a mixture thereof melting at a temperature between about 55° C. to about 90° C.

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through the vent chamber and rupturing of the proximate upper seal to provide for venting of said steam and pressure to exteriorly of the said bag, while said ingredients are sequentially deposited into the product chamber and upon its contained product during performance of a microwave cooking procedure.

4,806,372

NITRITE-FREE-CURING OF BACON AND PRODUCT THEREOF

Louis Strumskis, Ocala, Fla., assignor to Georgia Oil & Gas Co., Inc., New Port Richey, Fla.

Continuation of Ser. No. 702,158, Feb. 15, 1985, abandoned, which is a continuation of Ser. No. 599,369, Apr. 12, 1984, abandoned, which is a continuation of Ser. No. 493,488, May 11, 1983, abandoned, which is a continuation of Ser. No. 375,594, May 5, 1982, abandoned, which is a continuation-in-part of Ser. No. 227,310, Jan. 22, 1981, abandoned. This application Nov. 13, 1985, Ser. No. 797,537

Int. Cl.[4] A23B *4/02, 4/14;* **A23L** *1/314*

U.S. Cl. 426—129 **20 Claims**

1. Vacuum packaged substantially nitrite-free smoke cured bacon which is resistant to *C. botulinum* growth at room temperature, comprising an amount of acetic acid effective to maintain the pH thereof at from 4 to 5 and an amount from about 0.5% to 2% by weight thereof of glycerine, effective to render the bacon substantially more resistant to *C. botulinum* growth than achieved by the acetic acid alone.

10. A process for producing substantially nitrite-free vacuum packaged smoke cured bacon, which is resistant to *C. botulinum* growth when stored at ambient temperature, by impregnating fresh meat with an aqueous pickling solution, heating the meat until cured while imparting a smoke flavor thereto, and then vacuum packaging the cured meat which comprises impregnating the fresh meat with a nitrite-free pickling solution containing salt, glycerine and acetic acid which imparts about 2–5%, 0.5–1% acetic acid, and 0.5–2% glycerine contents by weight to the fresh meat and heating the impregnated meat until about 80–90% of the acetic acid is removed from the meat and the cured meat has a pH of about 4–5, the amount of glycerine being effective to render the cured meat substantially more resistant to *C. botulinum* growth than is achieved with the acetic acid alone.

4,806,373

PROCESS FOR CURING MEAT WITH FRUIT JUICE

Robert E. Stumpf, Columbia Station, Ohio, and Robert W. Stumpf, 16309 Boone Rd., Columbia Station, Ohio 44028, assignors to Robert W. Stumpf and Rebecca Fitch, both of Columbiana Station, Ohio, a part interest

Continuation-in-part of Ser. No. 893,216, Aug. 1, 1986, abandoned. This application Feb. 1, 1988, Ser. No. 150,914

Int. Cl.[4] A23B *4/00*

U.S. Cl. 426—266 **14 Claims**

1. A process for curing meat comprising:

contacting said meat with a curing compcsition comprising at least one juice selected from the class consisting of apple juice, pear juice, cherry juice, strawberry juice, pineapple juice, and/or peach juice, said apple juice being other than vinegar, said contact occurring for a sufficient period of time for said curing composition to be absorbed by said meat and to provide a cured meat product having enhanced taste.

4,806,374

FAT PRODUCT WITH IMPROVED PROPERTIES

Jules M. Willemse, Rijswijk, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Aug. 12, 1987, Ser. No. 85,042

Claims priority, application Netherlands, Aug. 19, 1986, 8602110

Int. Cl.[4] C11B *5/00*

U.S. Cl. 426—330.6 **9 Claims**

1. Fat product to be subjected to prolonged heating at temperatures above 120° C. which fat product comprises an effective amount to reduce unpleasant odor and smoke of a combination of (a) silicones selected from the group consisting of polydimethyl and polydiethyl siloxanes, and (b) a component selected from the group consisting of linalool, linalyl acetate and mixtures thereof.

4,806,375

METHOD FOR THE EXTRACTION OF SEALED CARTRIDGES FOR THE PREPARATION OF BEVERAGES

Eric Favre, Saint-Barthelemy, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Filed May 19, 1987, Ser. No. 52,604

Claims priority, application Switzerland, Jun. 27, 1986, 2607/86

Int. Cl.[4] A23F *5/26*

U.S. Cl. 426—433 **2 Claims**

1. A process for obtaining extracts from roast and ground coffee contained in sealed cartridges which have a body which includes a top portion capable of being pierced by an injector and a base portion having a membrane provided with a line of weakness a filter member within the cartridge adjacent the membrane which separates the membrane and the coffee to be extracted, comprising piercing the cartridge top portion with an injector, injecting water into the coffee in the cartridge via the injector at a pressure of between 2 kg/cm^2 and 3 kg/cm^2 for from 2 seconds to 4 seconds, for prewetting the coffee so that it occupies the entire volume available and for providing resistance to passage of air through the coffee, injecting air into the prewetted coffee at a pressure of between 3 kg/cm^2 and 6 kg/cm^2 for approximately 1 second, for opening up irrigation channel pathways in the prewetted coffee and for applying a force to the cartridge membrane greater than the breaking resistance of the line of weakness for tearing the membrane along the line of weakness, and injecting water into the coffee in the cartridge via the injector at a pressure of between 8 kg/cm^2 and 16 kg/cm^2 for less than 20 seconds for extracting the substance.

4,806,376

PROCESS FOR PRODUCING A TASTE-ENRICHING SEASONING FROM BEER YEAST

Toshinori Saeki; Tadashi Mizutani, and Susumu Tsujimoto, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed May 21, 1987, Ser. No. 52,413

Claims priority, application Japan, May 22, 1986, 61-118224

Int. Cl.[4] A23L *1/228, 1/229*

U.S. Cl. 426—537 **19 Claims**

1. A process for producing a taste-enriching or a food possessing augmented richness in taste, which comprises the steps of:

(i) preparing an extract of beer yeast, said beer yeast being obtained as a by-product in the production of beer, said preparing step comprising the steps of:

(a) extracting an aqueous suspension of beer yeast cells with water under conditions wherein no substantial decomposition of said cells takes place,

(b) separating the solid and liquid components of said suspension,

(c) sterilizing said liquid component,

(d) adjusting the pH of said liquid component to about 2–4, wherein said adjusting step occurs before said sterilizing step, and

(e) condensing and neutralizing said sterilized liquid component to a pH of about 4.5–7.0 to obtain said extract of beer yeast; and

(ii) adding said extract of beer yeast to a seasoning or food containing at least one flavoring agent selected from the group consisting of glutamic acid, salts of glutamic acid and nucleic acid flavoring agents.

4,806,377

WAXY CORN MASA BASED PRODUCTS AND METHODS OF MAKING

Eugene B. Ellis; Pete D. Friedemann, both of Grapevine, and Richard W. Glass, College Station, all of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Oct. 8, 1987, Ser. No. 106,672

Int. Cl.[4] A21D *10/00*

U.S. Cl. 426—549 **52 Claims**

1. A cooked food product comprising waxy corn masa.

4,806,378

PRODUCTION OF FROZEN SURIMI

Ryuzo Ueno, and Yasuaka Fujita, both of Nishinomiya, Japan, assignors to Ueno Seiyaku Kabushiki Kaisya, Japan

Filed Nov. 14, 1986, Ser. No. 930,743

Claims priority, application Japan, Nov. 20, 1985, 60-261917

Int. Cl.[4] A23L *1/325*

U.S. Cl. 426—643 **5 Claims**

1. A method of producing frozen surimi comprising:

washing minced fish meat with a water solution, said solution containing one salt selected from the group consisting of calcium salts, magnesium salts and any combination thereof;

dehydrating the washed minced fish meat;

adding surface active agents to the dehydrated minced fish meat; and then

freezing the resultant surimi.

4,806,379

PROCESS FOR PRODUCING A GREEN LEAF ESSENCE

Steven K. Goers, Ossining; Parviz Ghosai, Tarrytown; John T. Patterson, North Tarrytown, and Cynthia L. Young, Brewster, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jun. 5, 1987, Ser. No. 58,427

Int. Cl.[4] A23L *1/221*

U.S. Cl. 426—650 **11 Claims**

1. A process for producing a natural flavorant containing leaf aldehyde, leaf alcohol and at least 10% cis-3-hexenal which comprises:

(a) homogenizing strawberry leaves with or without stems attached thereto in water to form a slurry containing a strawberry leaf/stem solids concentration not exceeding 10%;

(b) prior to step (a) or concurrently therewith adding from 1 to 10 mM of linolenic acid in the free fatty acid form;

(c) feeding the homogenate containing said strawberry leaf/-stem solids within a period of 24 hours after addition of linolenic acid and homogenization to a scraped or wiped surface evaporator under a vacuum of at least 20 inches Hg up to a maximum of 28.5 inches Hg, said vacuum corresponding to a homogenate temperature of from 90° F. to 160° F. and maintaining said homogenate within the evaporator for a residence time varying from 15 seconds to 3 minutes and condensing the evaporate to form a condensate; and

(d) passing the condensate over an adsorbent and eluting to recover the natural flavorant.

4,806,380

FINGERPRINT DEVELOPER

Mitsuyoshi Sato; Akihiko Hiraiwa, and Kaoru Kimura, all of Nagoya, Japan, assignors to Tengasel Chemical Industry Co., Tokyo, Japan

Continuation of Ser. No. 886,669, Jul. 16, 1986, abandoned. This application Jan. 20, 1988, Ser. No. 147,083

Claims priority, application Japan, Aug. 28, 1985, 60-187321

Int. Cl.[4] A61B *5/10;* **B41K** *1/00*

U.S. Cl. 427—1 **8 Claims**

1. A fingerprint developer system which comprises woven or nonwoven fabric of hydrophobic synthetic fibers impregnated with a composition, the major proportion of which is a 2-cyanoacrylate, said fibers being substantially insoluble in the 2-cyanoacrylate.

8. A fingerprint development package comprising woven or nonwoven fabric of hydrophobic synthetic fibers impregnated with a composition, the major proportion of which is a 2-cyanoacrylate in a sealed package, said fibers being substantially insoluble in the 2-cyanoacrylate.

4,806,381

POLYMERIZABLE COMPOUNDS CONTAINING ACID AND ACID DERIVATIVES, MIXTURES CONTAINING THE SAME, AND USE THEREOF

Jürgen Engelbrecht, Hamburg; Helmut von Wallis, Henstedt-Ulzburg, and Michael Günther, Hamburg, all of Fed. Rep. of Germany, assignors to Ernst Mühlbauer KG, Hamburg, Fed. Rep. of Germany

Filed Oct. 8, 1986, Ser. No. 916,588

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1985, 3536077

Int. Cl.[4] A01N *1/02;* **B05D** *3/02;* **A61K** *6/08, 5/01*

U.S. Cl. 427—2 **32 Claims**

1. An oligomeric or prepolymeric organic compound that contains (a) several polymerizable unsaturated groups and (b) several acid radicals, their salts, or their reactive derivatives bonded to (c) an oligomeric or prepolymeric backbone.

22. A polymerizable mixture comprising at least one compound according to claim 1.

27. A method for repairing, filling, veneering or lining oxidic, mineral, vitreous, ceramic, metallic, or biological substrates, applying to said substrates a mixture of claim 22, and causing that mixture to harden.

29. A method according to claim 27, wherein said biological substrate is hard dental tissue or bone.

4,806,382

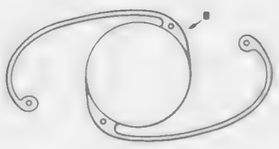
OCULAR IMPLANTS AND METHODS FOR THEIR MANUFACTURE

Eugene P. Goldberg, Gainesville, Fla.; Jim Burns, Natick, Mass.; John W. Sheets; Jeffrey A. Larsen, both of Pasadena, Calif.; Sudesh Kumar, New Bombay, India, and David Osborn, Stamford, Conn., assignors to University of Florida, Gainesville, Fla.

Filed Apr. 10, 1987, Ser. No. 37,153

Int. Cl.[4] A01N *1/02;* **B05D** *3/06*

U.S. Cl. 427—2 **14 Claims**



1. In a method for modifying the surface of an ocular implant material, said surface consisting essentially of polymethylmeth-

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acrylate (PMMA), by the one-step, gamma-irradiation induced polymerized, chemically grafted coating thereon of N-vinylpyrrolidone (NVP), 2-hydroxyethylmethacrylate (HEMA) or a mixture of (NVP) and (HEMA) so as to form a thin, hydrophilic coating of (1) poly-N-vinylpyrrolidone (PVP), (2) poly-2-hydroxyethylmethacrylate (PHEMA), or (3) a copolymer of NVP and HEMA on said surface, the improvement consisting essentially of conducting said one-step, gamma-irradiation induced graft polymerization in a substantially aqueous solution under the following conditions:

(a) monomer concentration in the range of from about 0.5% to about 50%, by weight;

(b) total gamma dose in the range of from about 0.01 to less than about 0.50 Mrad;

(c) gamma dose rate in the range of from about 10 to about 2500 rads/minute; and

(d) maintaining the molecular weight of the polymer in solution in the range of from about 250,000 to about 5,000,000.

4,806,383

METHOD OF APPLYING OPAQUE DENTAL CERMIC MATERIAL TO A METAL STRUCTURE

H. Poltz, Erlangen, Fed. Rep. of Germany, assignor to Dentsply GmbH, Dreieich, Fed. Rep. of Germany

Filed Feb. 24, 1987, Ser. No. 18,211

Int. Cl.[4] A61C *13/00, 13/09;* **A61K** *6/02;* **B05D** *1/36*

U.S. Cl. 427—2 **9 Claims**

1. A method for coating a metal structure for a dental appliance consisting essentially of the steps of: preparing an opaque ceramic paste by mixing an opaque ceramic powder with an organic liquid having a boiling point below about 300° C., coating said metal structure with said opaque ceramic paste to prepare a coating of opaque ceramic paste on said metal structure, dusting said coating with a coarse ceramic powder having an average grain size of from about 40 μm to about 100 μm said powder having thermal stability such that at least a substantial part of grain structure of said powder is maintained under conditions of firing said dental appliance, applying at least one additional layer of ceramic opaque paste, and firing said dental appliance.

4,806,384

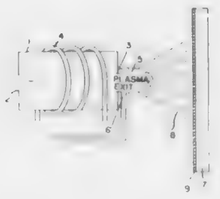
PROCESS FOR FORMING EXOERGIC STRUCTURES WITH THE USE OF A PLASMA

Michael D. Kelly, West Alexandria, Ohio, assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 29, 1987, Ser. No. 55,219

Int. Cl.[4] B05D *3/06;* **B32B** *9/00, 19/00*

U.S. Cl. 427—34 **19 Claims**



1. A method of shaping a reactive exoergic material, comprising:

(a) introducing an oxygen-free plasma-forming gas into a plasma spray;

(b) introducing said reactive exoergic material in finely divided particulate form into said plasma spray directed toward, but not impinging on, a substrate;

(c) melting, without chemically reacting, said reactive exoergic material in the plasma; and

(d) impinging said molten reactive exoergic material on said substrate to form a reactive exoergic shape which corresponds to the shape of said substrate.

4,806,385

METHOD OF PRODUCING OXIDATION RESISTANT COATINGS FOR MOLYBDENUM

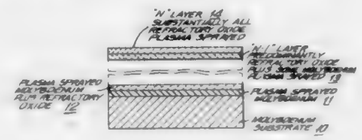
George A. Timmons, Ann Arbor, Mich., assignor to Amax Inc., New York, N.Y.

Division of Ser. No. 29,691, Mar. 24, 1987, Pat. No. 4,745,033.

This application Dec. 21, 1987, Ser. No. 135,387

Int. Cl.[4] B05D *1/00*

U.S. Cl. 427—34 **3 Claims**



1. A method for producing a molybdenum element having adherently bonded thereto a thermally self-healing plasma-sprayed coating consisting essentially of a composite of molybdenum and a refractory oxide material capable of reacting with molybdenum oxide under oxidizing conditions to form a substantially thermally stable refractory compound of molybdenum, said method comprising:

plasma-spraying a coating formed by the step-wise application of a plurality of interbonded plasma-sprayed layers of a composite of molybdenum/refractory oxide material produced from a particulate mixture thereof, and thereby provide a multi-layered coating,

said plurality of bonded layers being produced by plasma-spraying a first layer adjacent to said substrate and successive layers thereafter to an Nth or last layer, said layers including:

(a) a first layer of molybdenum plasma-sprayed bonded to the substrate of said molybdenum element,

(b) a second layer of plasma-sprayed mixture of particulate molybdenum/refractory oxide consisting essentially of predominantly molybdenum bonded to said first layer,

(c) followed by succeeding layers of said molybdenum/refractory oxide mixture and thereby provide from layer to layer a descending concentration gradient of molybdenum and a corresponding ascending concentration gradient of the refractory oxide material,

said concentration gradient continuing to an N—1 layer in which the refractory oxide concentration of the mixture predominates and terminates at the Nth layer,

(d) said Nth layer consisting essentially of said refractory oxide material plasma sprayed bonded to said N—1 layer,

and thereafter heating said coated molybdenum element under oxidizing conditions to an elevated temperature sufficient to cause oxygen to diffuse into the surface of said multi-layered coating to react with dispersed molybdenum therein to form molybdenum oxide and effect healing of said coating by reaction of said molybdenum oxide with the contained refractory oxide and thereby protect the substrate of said molybdenum element against oxidation.

4,806,386

METHOD FOR FORMING DEPOSITED FILM

Shunichi Ishihara, Ebina, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

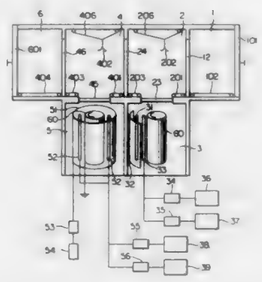
Division of Ser. No. 751,423, Jul. 3, 1985, Pat. No. 4,674,434.

This application Apr. 2, 1987, Ser. No. 33,463

Claims priority, application Japan, Jul. 9, 1984, 59-140469

Int. Cl.[4] B05D *3/06*

U.S. Cl. 427—39 **9 Claims**



1. A method for forming a multi-layer structure deposited film having a plurality of layers on a substrate, which comprises forming at least one layer (A) of said multi-layer structure deposited film including silicon and carbon atoms by decomposition or polymerization of a first starting gas by heat, said first starting gas containing $(CH_3)_3Si_2H_3$, and forming a layer (B) of said multi-layer structure deposited film including silicon atoms by decomposition or polymerization of a second starting gas by discharge energy, said second starting gas being the same or different from said first starting gas.

4,806,387

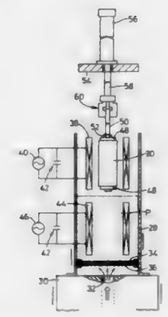
METHOD FOR COATING METAL PART WITH SYNTHETIC RESIN

Shigesori Tanaki, Toyota; Hiroyuki Machizuki, Aichi; Nobuo Kobayashi, Toyota; Takahiro Iwase, Anjyo, and Naofumi Masuda, Nayoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 5, 1986, Ser. No. 893,143

Int. Cl.[4] B05D *1/24*

U.S. Cl. 427—46 **8 Claims**



1. A method of applying a synthetic resin layer to an outer surface of a metal part, comprising the steps of:

positioning said metal part in a stationary position within a powdered mass of a thermally fusible synthetic resin;

induction-heating said metal part within said powdered mass to a temperature between a melting point and a thermal decomposition point of said synthetic resin, thereby melting a portion of said powdered mass surrounding said outer surface of the heated metal part and coating the molten portion of said powdered mass on said outer surface of said heated metal part as said synthetic resin layer;

using mechanical pushing means for pushing down said metal part to move downwardly said metal part by a predetermined distance within said powdered mass while said powdered mass is maintained in a non-fluidized and non-aerated state, said pushing down of said metal part being effected at least once and at a point of time after an end of said step of positioning said metal part within said powdered mass and before an end of said step of induction-heating said metal part; and

removing said metal part, coated with said synthetic resin layer, from said powdered mass.

4,806,388

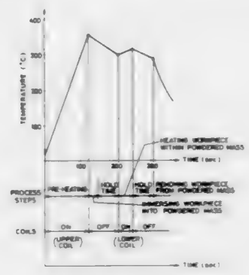
METHOD AND APPARATUS FOR COATING METAL PART WITH SYNTHETIC RESIN

Hiroyuki Mochizuki, Aichi; Nobuo Kobayashi; Shigesori Tanaki, both of Toyota; Takahiro Iwase, Anjyo; Naofumi Masuda, and Yoshio Taguchi, both of Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 17, 1986, Ser. No. 886,392

Int. Cl.[4] B05D *3/14*

U.S. Cl. 427—46 **13 Claims**



1. A method of applying a synthetic resin layer to an outer surface of a metal part, comprising the steps of:

effecting a preliminary heating of said metal part to a temperature between a melting point and a thermal decomposition point of a thermally fusible synthetic resin;

placing said metal part subjected to said preliminary heating, within a powdered mass of said thermally fusible synthetic resin;

induction-heating said metal part within said powdered mass to a temperature between said melting point and said thermal decomposition point of said synthetic resin, thereby melting a portion of said powdered mass surrounding said outer surface of the heated metal part, and depositing the molten portion of said powdered mass on said outer surface of said heated metal part, as said synthetic resin layer having a predetermined thickness; and

removing said metal part, coated with said synthetic resin layer, from said powdered mass.

4,806,389

METHOD OF TREATING A COATED PHOSPHOR

Thomas E. Peters, Chelmsford, and Roger B. Hunt, Jr., Medfield, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 2, 1987, Ser. No. 20,972

Int. Cl.[4] B05D *5/12*

U.S. Cl. 427—67 **2 Claims**

1. A phosphor process comprising the following steps:

Step 1 - coating phosphor particles having a continuous

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alumina coating with a continuous hydrophobic coating, said continuous hydrophobic coating consisting essentially of an acrylic polymer;

Step 2 - heating the product from step 1 at a temperature and for a period sufficient to cure said continuous hydrophobic coating;

Step 3 - adding the product from step 2 to a water based suspension, said water based suspension comprising water and a polyethylene-oxide as a binder;

Step 4 - coating an inside surface of a lamp with the product of step 3;

Step 5 - lehring the product from step 4 at a temperature sufficient to remove said hydrophobic coating from said phosphor particles having a continuous alumina coating; and

Step 6 - processing the product from step 5 into a lamp.

4,806,390

MASKING COMPOSITIONS FOR CHEMICAL MILLING AND METHOD FOR APPLYING THE SAME

Fred D. Hawker, Villa Park; Victor E. Pietryga, Berwyn, and Robert W. Byrd, Algonquin, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Oct. 14, 1987, Ser. No. 108,430
Int. Cl.[4] B65B *33/00*; B05D *1/18, 1/36, 3/02*
U.S. Cl. 427—156 **20 Claims**

1. A method of coating a metal part with a peelable mask which is resistant to attack by the strong acid and strong base etchants used in chemical milling comprising surfacing said metal part with a layer of polyvalent metal salt, immersing said salt-surfaced metal part in a high solids content anionic emulsion of coalescent rubbery particles heavily pigmented to contain at least about 45% total solids content and at least 20% pigment, the pigment to binder ratio being from 0.75:1 to 1:0.57, holding said salt-surfaced metal part in said anionic emulsion until the desired coating thickness has been anodically deposited thereon, and then removing and baking the coated part to complete the formation of the mask.

4,806,391

SILICONE-BASED, CURABLE, PRINTABLE, HYDROPHOBIC COATING COMPOSITIONS AND PROCESSES FOR USING THE SAME

Philip Shorin, 27 W. 55th St., New York, N.Y. 10019

Continuation-in-part of Ser. No. 748,128, Jun. 24, 1985, abandoned, which is a continuation of Ser. No. 376,494, May 10, 1982, abandoned. This application Dec. 22, 1986, Ser. No. 944,196
Int. Cl.[4] B05D *3/02, 5/00*; C08G *77/06, 77/12*
U.S. Cl. 427—288 **28 Claims**

1. A process for applying a printable paste ink or paste varnish composition to a substrate comprising:

charging into a printing device compatible with oil-based inks an effective amount of an uncured composition including a vehicle comprising:

(a) a major amount of a vinyl or hydroxyl chainstopped diorganopolysiloxane or mixtures thereof;

(b) 0 to 45% by weight of a vinyl or hydroxyl chainstopped organopolysiloxane resin or mixtures thereof;

(c) an organophydrogen polysiloxane in an amount sufficient to achieve a desired degree of curing; and

(d) a curing catalyst;

printing the uncured composition onto a print product substrate; and

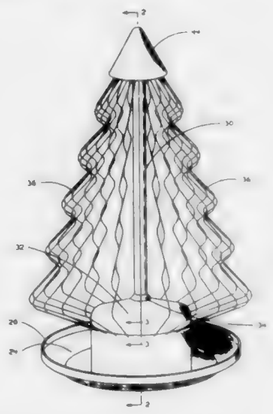
applying heat to the printed composition to cure the composition to a desired degree to produce a printed product.

4,806,392

LIQUID LIGHT TREE

Kenneth Dixon, 1462 Petty Rd., Graham, N.C. 27253

Filed Mar. 7, 1988, Ser. No. 165,081
Int. Cl.[4] A47G *33/06*
U.S. Cl. 428—18 **12 Claims**



1. An artificial Christmas tree comprising:

a. a plurality of colorful rigid strands which bend in and out in order to duplicate the outline of a traditional Christmas tree,

b. a skeleton-like structure of said strands which are pivoted around a center to form said tree,

c. a structural means for supporting said tree,

d. a distribution means for feeding a flow of viscous fluid at the top of each said strand in order to flow quickly down the said strands of the said tree,

e. a collection means for holding said fluid in a reservoir at the bottom of said tree,

f. a recycling means for pumping said fluid from said reservoir to the said distribution means at the top of said strands.

4,806,393

PREVENTION OF PLASTICIZER MIGRATION FROM PVC PRODUCTS

Gideon Levin, Rehovot, Israel, assignor to Yeda Research and Development Company Limited, Rehovot, Israel

Filed Mar. 25, 1987, Ser. No. 29,582
Claims priority, application Israel, Mar. 30, 1986, 78339
Int. Cl.[4] C08F *8/34*
U.S. Cl. 427—384 **12 Claims**

1. Cross-linkable PVC, wherein a portion of chlorine atoms are substituted by dithiocarbamate groups by reaction between PVC and an N,N di-substituted dithiocarbamate.

4,806,394

METHOD FOR PRODUCING A WEAR-RESISTANT, TITANIUM-CARBIDE CONTAINING LAYER ON A METAL BASE

Hans-Theo Steine, Chavannes, Switzerland, assignor to Castolin S.A., Saint-Sulpice, Switzerland

PCT No. PCT/CH87/00016, § 371 Date Sep. 30, 1987, § 102(e) Date Sep. 30, 1987, PCT Pub. No. WO87/04732, PCT Pub. Date Aug. 13, 1987
PCT Filed Feb. 4, 1987, Ser. No. 112,832
Claims priority, application Switzerland, Feb. 4, 1986, 425/86
Int. Cl.[4] B05D *1/10*
U.S. Cl. 427—423 **10 Claims**

1. A method for producing a wear-resistant layer on a metal base which comprises:

providing particulate material comprised of a matrix metal selected from the group consisting of iron, nickel and cobalt alloys,

said matrix metal having contained therein about 10 to 50 percent by weight of TiC,

said particulate material having a grain size rangrng from about −150 to 37 μm,

applying a layer of said material on a metal base by autogenous flame spraying to provide a bonded layer of at least about 1 mm thickness,

and then subjecting said sprayed-on layer to heat treatment at a temperature of about 400° C. to 650° C. to harden said layer by the precipitation of TiC from said matrix metal in the form of uniformly distributed fine grains.

4,806,395

TEXTURED POLYIMIDE FILM

Daniel P. Walsh, Peabody, Mass., assignor to Polyonics Corporation, Newburyport, Mass.

Filed Feb. 24, 1987, Ser. No. 18,342
Int. Cl.[4] B05D *3/10*; C25D *5/56*
U.S. Cl. 427—444 **10 Claims**

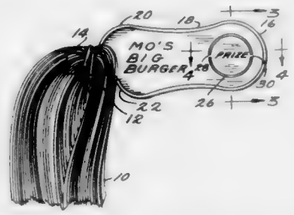
1. The process of texturing a surface of a polyimide sheet which comprises contacting said sheet with a one-phase solution comprising between about 3 and 15 percent by weight of an amine of the formula $H_2N(CH_2)_nNH_2$ wherein n is an integer from 2 to 6, 15 and 40 percent by weight of an alkali metal hydroxide, between about 10 and 50 percent by weight of a water miscible alcohol, with the remainder of the mixture being water at a temperature and for a time sufficient to render said surface uniformly and substantially completely textured.

4,806,396

POMPON PRIZE DEVICE

Richard J. Pratt, and James C. King, both of Deerfield, Ill., assignors to SG II, Inc., Deerfield, Ill.

Filed Jul. 29, 1985, Ser. No. 760,262
Int. Cl.[4] D04D *7/06*
U.S. Cl. 428—4 **11 Claims**



1. A pompon assembly comprising a thin, plate-like handle portion of generally uniform thickness adapted to be grasped by a users hand, the handle portion having an opening therethrough in the thickness direction, a severable piece having indicia thereon located in the opening, the severable piece having a thickness generally equal to the thickness of the handle portion and being connected to the handle portion by breakable strip means; a flexible pompon portion of greater surface area than the handle portion; and means connecting the pompon portion to the handle portion at a a location spaced such that the severable piece is visible to the user of the assembly.

4,806,397

FILE FOLDER-TYPE PLACE MAT AND METHOD OF USING SAME

Michelle Horwitz, 68-09 Burns St., Forest Hills, N.Y. 11375

Filed Dec. 24, 1987, Ser. No. 137,883
Int. Cl.[4] A47G *1/12*; A01N *1/00*; B32B *23/02*
U.S. Cl. 428—14 **18 Claims**



1. A place mat comprising:

a thin, substantially flat member having opposite surfaces, at least one of said surfaces serving as an operative surface;

at least said operative surface of said member being liquid impervious;

a tab formed on one edge of said member; and

a fold line formed in said member to permit folding of said member thereabout into a configuration of a file folder such that said tab extends beyond at least one of respective edges of said member:

wherein said folded member can be stored in a file cabinet or the like with said tab visible in the file cabinet or the like for easy retrieval of said place mat.

4,806,398

PAPER LAMINATE AND METHOD FOR PRODUCING THE LAMINATE AND PAPERBOARD CONTAINERS

Leslie L. Martin, Jr., Saginaw, Miss., assignor to Potlatch Corporation, San Francisco, Calif.

Filed May 29, 1987, Ser. No. 56,489
Int. Cl.[4] B65D *15/22*; B32B *27/00*; B31B *1/64*
U.S. Cl. 428—34.2 **19 Claims**



1. A paperboard container, the container being constructed from a laminate comprising:

a paper substrate having opposed first and second surfaces;

a layer of preformed biaxially oriented polyethylene terephthalate film having one surface bonded to the first surface of the paper substrate and its remaining surface being exposed, the remaining surface of the film having the property of being heat sealable to itself; and

a layer of polyolefinic resin covering the second surface of the paper substrate;

the container having at least one seam formed by overlapping activated areas of the polyethylene terephthalate film and polyolefinic resin activated and bonded to one another by flame heat sealing techniques without interposition of an adhesive.

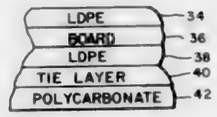
VOL 1099 ISS 3 FE 21 1989 UMI

4,806,399

FLAVOR/AROMA POLYCARBONATE BARRIER LAMINATES FOR PAPERBOARD CARTONS

Charles E. Gibbons; Joe L. Kinsey, Jr., and Allen A. Whitlock, all of Mobile, Ala., assignors to International Paper Company, Purchase, N.Y.

Filed May 29, 1987, Ser. No. 55,628
The portion of the term of this patent subsequent to Oct. 6, 2004, has been disclaimed.
Int. Cl.[4] B27N 5/08
U.S. Cl. 428—34.2 6 Claims



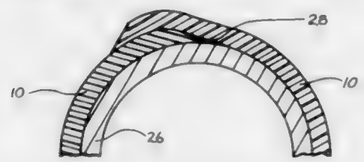
1. A container for liquids containing essential oils and/or flavors, said container constructed from a laminate comprising:
(a) a paperboard substrate;
(b) an outer layer of a heat-sealable low density polyethylene polymer coated on said outer surface of said paperboard substrate;
(c) an inner layer of a low density polyethylene polymer coated on said inner surface of said paperboard substrate; and
(d) a liquid contact layer comprised of a tie layer and a heat-sealable polycarbonate polymer layer which can be heat-sealed with the outside layer of low density polyethylene of the laminate on conventional equipment at temperatures ranging from 250° F.–500° F. coextruded on said outer surface of said inner layer of a low density polyethylene polymer, acting as a barrier to the loss of essential oils/flavors therethrough.

4,806,400

TAPERED ADHESIVE TAPE

Erol Sancaktar, Potsdam, N.Y., assignor to The Kendall Company, Boston, Mass.

Filed May 23, 1986, Ser. No. 867,110
Int. Cl.[4] B32B 23/02
U.S. Cl. 428—35.9 13 Claims



1. An adhesive tape for wrapping metal objects comprising a substantially rectangular polyolefinic sheet material having opposed lateral edges and leading and trailing ends, said sheet material carrying a rubber-based pressure-sensitive adhesive coating on one surface thereof, said lateral edges being tapered from the surface of said adhesive coating inwardly towards the opposed surface of said sheet material.

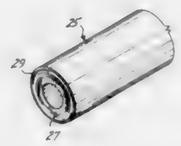
11. An adhesive tape for wrapping metal pipes which is substantially rectangular in configuration having leading and trailing ends and opposed lateral edges extending between said ends said tape comprising a water-impermeable polyolefinic sheet material carrying on one surface thereof a rubber-based adhesive coating adapted to adhere to said pipe directly or through an intermediate layer, each of said edges being tapered from the surface of said coating inwardly toward the opposed surface of said sheet material, the degree of tapering along each said edge being sufficient to lower the frictional resistance between said tape and the surrounding soil when said pipe is laid in the ground when wound spirally around said pipe from the frictional resistance obtained when a like tape having perpendicular edges is spirally wound around said pipe.

4,806,401

DUPLEX CURED ELASTOMER HOSES AND METHOD OF MANUFACTURE

George E. Trepus, Jr., Enumclaw; Barry D. Matia, Kent, and Preston L. Rider, Kirkland, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 843,127, Mar. 24, 1986, Pat. No. 4,707,206.
This application Jul. 31, 1987, Ser. No. 79,945
Int. Cl.[4] F16L 11/00; B32B 27/34
U.S. Cl. 428—36.1 18 Claims



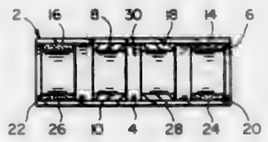
1. A fiber reinforced silicone elastomer product comprising:
(a) an inner element formed of an unreinforced silicone elastomer containing two vulcanizing agents activated at different temperatures; and,
(b) an outer wrapping formed of a fabric reinforced silicone elastomer containg a vulcanizing agent, the silicone elastomer forming said inner element and the silicone elastomer forming said outer wrapping being joined by the vulcanizing agent of the outer wrapping and the higher temperature vulcanizing agent of the inner element to create a homogenous mass.

4,806,402

HEAT RECOVERABLE TERMINATION DEVICE

Lajos J. Vidakovits, Mountain View, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 738,623, May 28, 1985, Pat. No. 4,696,841. This application Jul. 6, 1987, Ser. No. 69,907
Int. Cl.[4] H01R 4/00
U.S. Cl. 428—35.1 11 Claims



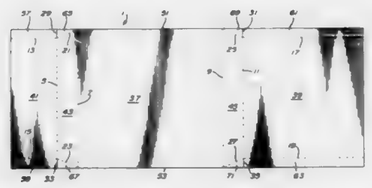
1. A device for forming a connection between two objects, comprising:
(a) a dimensionally heat-recoverable sleeve within which the objects can be positioned, the sleeve being capable of recovering inwardly when heated; and
(b) a dimensionally heat-recoverable insert positioned within the sleeve in contact with the internal wall thereof, the insert being capable of recovering inwardly when heated so as to force objects positioned within the sleeve towards one another;
the recovery force exerted by the insert when it recovers being greater than that exerted by the sleeve when it recovers.

4,806,403

DECORATIVE MODULE HAVING A CONCAVE FACE

Gilbert Lemire, 1565, rue Victoria, Suite 209, St-Lambert, Quebec, Canada J4R 1R6, and Anastase Destippe, 11A Rang St-Grégoire, Saint-Philippe, Quebec, Canada J0L 2K0

Filed Dec. 23, 1987, Ser. No. 136,946
Int. Cl.[4] B65D 5/26
U.S. Cl. 428—34.1 12 Claims



1. A decorative module made of a single sheet of material, which comprises:
a rectangularly shaped concave face derived from an intermediate portion of said sheet of material,
rearwardly and inwardly angled borders formed along two opposite sides of said concave face, and
means enabling remaining portions of said sheet of material to fold at the rear of said concave face and to engage into one another to form a rigid structure,
said concave face forming an arc of circle whose height is at least 1/25th the length of the chord of said arc of circle, so constructed and arranged that said module is self-supporting.

4,806,404

SELF-ADHERENT SPACER FOR FRAGILE OBJECTS

Lawrence A. Cascino, South Bend, Ind., assignor to Geska Tape, Inc., Elkhart, Ind.

Filed Mar. 17, 1987, Ser. No. 26,956
Int. Cl.[4] A61L 15/00; B32B 1/08, 7/06, 7/12
U.S. Cl. 428—40 10 Claims



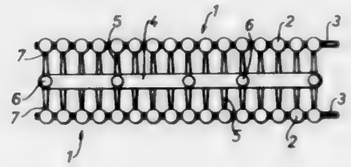
1. A spacer member adapted to be positioned between fragile objects during shipment, said spacer member comprising a base cushion layer having first and second opposite contacting surfaces, a tack layer bonded to one of said base cushion layer contact surfaces, said tack layer formed of a soft material normally non-adherent to a smooth surface, said tack layer being modified to possess adhesive properties sufficient to adhere to a surface of said fragile object without leaving an appreciable adhesive residue when the spacer is removed, said tack layer formed of a soft plasticized polymeric material having organic plasticizer incorporated therein in amounts exceeding the normal quantity of plasticizer needed to soften said polymeric material.

4,806,405

METHOD AND INJECTION MOLDING TOOL FOR PRODUCING LINK BELTS

Rudolf Liebi, Altstaetten, Switzerland, assignor to EgoKiefer AG, Altstaetten, Switzerland

Filed Dec. 2, 1986, Ser. No. 936,821
Claims priority, application Switzerland, Dec. 5, 1985, 5185/85
Int. Cl.[4] B29C 33/42
U.S. Cl. 428—52 5 Claims



1. A method for simultaneously injection molding two link chains, each link chain having an elongated flexible member and a series of synthetic material link elements having a given cross-sectional dimension and being molded at equal spacings from one another to their respective elongated flexible member, comprising the following steps:
(a) using an injection mold having two rows of mold cavities, each row including a series of equally spaced cavities for simultaneously forming said series of link elements on each link chain as a row along each link chain, grooves for said elongated flexible member interconnecting said cavities to form said two rows of cavities, and molten material supply channels including a main channel located between said two rows of cavities and individual branching channels leading individually from said main channel to each cavity in both rows,
(b) providing each individual branching channel with a throat of reduced cross-sectional dimension corresponding to less than about 10% of said given cross-sectional dimension of said link elements,
(c) locating said reduced throat directly at the respective link forming cavity,
(d) inserting one elongated flexible member into each row of cavities and grooves and closing the mold,
(e) introducing molten material into said cavities through said main channel and said individual channels, and
(f) restricting a cross-sectional dimension of a land, formed in said individual channel by said throat of reduced cross-sectional dimension, to such an extent that forces components resulting from material shrinking during the cooling of the synthetic material in said main channel, are substantially prevented from displacing said link elements along the respective elongated flexible member, whereby said equal spacings between neighboring link elements are assured even if the chain is removed from the mold before complete solidification of said link elements.

4,806,406

SANITARY TOILET SEAT COVER

Marina J. Akerman, and David Akerman, both of 8417 Hidden Trail La., Spring, Tex. 773790

Filed Aug. 6, 1987, Ser. No. 82,201
Int. Cl.[4] A47K 13/14
U.S. Cl. 428—65 5 Claims

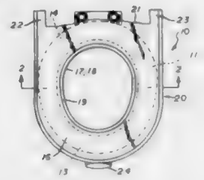
1. A sanitary cover for toilet seats comprising;
two superposed plies of thin flexible plastic film material having a generally flat ended oval shaped configuration conforming to the generally oval outline of a toilet seat shape and the superposed outer edges of the plies sealed

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together leaving the straight edges at the flat end unsealed to form an envelope having an opening at said flat end,

a pair of pull tabs integrally formed on opposite sides of the opening at the flat open end of said envelope for pulling said envelope onto the toilet seat,

a centrally disposed generally oval opening in each ply conforming to the outline of the toilet seat opening and slightly smaller than the seat opening, said openings being parallel and coaxial one with the other,



said envelope being adapted to be slidably received on and substantially surround a toilet seat with said openings being disposed at the center of the toilet seat opening in the installed position, and

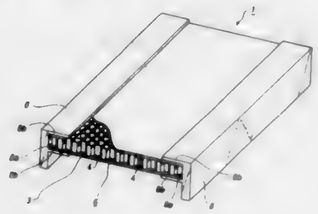
a small pouch integrally formed on the outer edge of said envelope at the approximate center of the oval end of the cover for slidably pulling said envelope off the toilet seat and configured to receive and contain said envelope in a rolled or folded condition.

4,806,407

MONOFILAMENTS, FABRICS THEREOF AND RELATED PROCESS

David B. Skinner, Irmo, and Larry Ballard, Columbia, both of S.C., assignors to Shakespeare Company, Columbia, S.C.

Division of Ser. No. 51,868, May 19, 1987, Pat. No. 4,748,077.
This application Apr. 11, 1988, Ser. No. 180,223
Int. Cl.[4] B05D *3/08*; C08L *81/00*; D02G *3/00*
U.S. Cl. 428—224 8 Claims



1. A monofilament formed by a blend of two resins comprising:

from about 50 to 99 parts by weight of a linear polyphenylene sulfide; and

from about 1 to 50 parts by weight of a melt extrudable polymer selected from the group consisting of aromatic aliphatic polyamide resins and aliphatic aromatic polyamide resins.

5. A fabric at least partially containing a monofilament formed by a blend of two resins comprising:

from about 50 to 99 parts by weight of a linear, melt extrudable polyphenylene sulfide; and

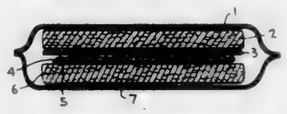
from about 1 to 50 parts by weight of a melt extrudable polymer selected from the group consisting of aromatic aliphatic polyamide resins and aliphatic aromatic polyamide resins.

4,806,408

ABSORBENT STRUCTURE FOR DISPOSABLE ARTICLES

Michel Pierre, Mulhouse; Rémy Ruppel, Horbourg, and Jean Brellmann, Colmar, all of France, assignors to Beghin-Say SA, Thumeries, France

PCT No. PCT/FR86/00033, § 371 Date Nov. 3, 1986, § 102(e) Date Nov. 3, 1986, PCT Pub. No. WO86/05089, PCT Pub. Date Sep. 12, 1986
PCT Filed Feb. 6, 1986, Ser. No. 932,478
Claims priority, application France, Mar. 1, 1985, 85 03016
Int. Cl.[4] A61F *3/16, 3/18*
U.S. Cl. 428—76 8 Claims



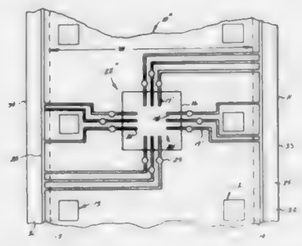
1. An absorbent structure for hygienic disposable articles comprising a permeable sheet, an impermeable sheet, and a pad between said permeable and impermeable sheets, said pad comprising successively at least a first layer of fluffed cellulosic material that does not contain improved retention additive; an internal reinforcement layer permeable to liquids made of a non-woven material resistant to moisture and liquid, and an absorbent layer provided with improved liquid-retention additive particles, said internal reinforcement sheet being glued to said absorbent layer.

4,806,409

PROCESS FOR PROVIDING AN IMPROVED ELECTROPLATED TAPE AUTOMATED BONDING TAPE AND THE PRODUCT PRODUCED THEREBY

Jackie A. Walter, Sunnyvale; Brett Sharenow, Mt. View; Robert Walker, Saratoga, and Scott V. Voss, Portola Valley, all of Calif., assignors to Olin Corporation, New Haven, Conn.

Filed May 20, 1987, Ser. No. 51,783
Int. Cl.[4] B32B *3/10*; H01R *43/00*
U.S. Cl. 428—138 16 Claims



1. A flexible tape having a desired metal foil circuit pattern thereon comprising:

an indexing means;

a non-metallic flexible substrate having at least one metal foil layer adhered thereto;

said foil layer being patterned to form a first desired circuit pattern and a second pattern comprising bussing means for electrical connection to said circuit pattern during electrodeposition, said bussing means including at least one longitudinally extending foil buss, said longitudinally extending buss being located between said indexing means and an outer longitudinally extending edge of said substrate.

9. A process for manufacturing a flexible tape having a desired metal foil circuit pattern thereon;

providing a starting tape comprising a non-metallic flexible substrate having at least one metal foil layer adhered thereto, said tape having a transverse width greater than a desired width;

providing said tape with an indexing means;

patterning said foil layer to form a desired circuit pattern and a pattern comprising bussing means for electrical connection to said circuit pattern, said bussing means including at least one longitudinally extending buss being located between said indexing means and a longitudinally extending edges of said substrate;

electroplating said patterned foil layer with a desired metal, said electroplating step including electrical connection to said buss means; and

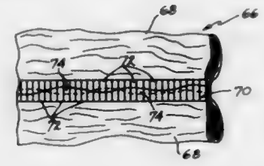
reducing the width of said tape to said desired width by removing an excess portion of said tape containing said longitudinally extending foil buss, said indexing means remaining essentially intact.

4,806,410

PROCESSES FOR THE PRODUCTION OF ANTISTATIC OR STATIC DISSIPATIVE PAPER, AND THE PAPER PRODUCTS THUS PRODUCED, AND APPARATUS UTILIZED

Steven E. Armington, Kirtland, Ohio; Stephen A. Halperin, Elmhurst, Ill.; Gordon E. Pickett, Reynoldsburg, and Barbara A. Metz, Baltimore, both of Ohio, assignors to Ranpak Corp., Willoughby, Ohio

Filed Sep. 18, 1986, Ser. No. 908,607
Int. Cl.[4] B05D *3/02, 5/12*; B32B *3/04*
U.S. Cl. 428—126 45 Claims



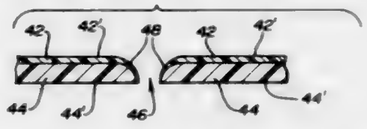
13. Paper dunnage product comprising a pad-like article for use in packaging, formed from paper web or the like with the lateral edges of the web having been generally loosely rolled inwardly and forming crumpled pillow-like portions defining the lateral extremities of said packaging article, and means connecting the rolled confronting edges of the pillow-like portions together along the generally central portion of the pad-like article, lengthwise thereof, the last mentioned means comprising transversely extending stitched portions of said confronting edges, the latter being in generally overlapped relation at said central portion, said laterally arranged pillow-like portions of said article possessing considerable resiliency, each being of a substantially greater thickness than said central connecting portion, and said web having been impregnated on at least one surface thereof with antistatic liquid material which is subsequently dried thereon and is operable to facilitate the dissipation of static charge, thus providing said product with electrical charge protection, as well as cushioning characteristics, said web before being treated with said antistatic material possessing a porosity in the range of approximately 5 to approximately 25 sec./100 ml as measured on a Gurley densitometer, and wherein said antistatic material utilizes a solution of a water soluble, non-cross linking antistatic polymer forming said antistatic material, said antistatic polymer being dried on said web prior to the formation thereof into said product and providing said product with a surface resistivity in the range of approximately 1×10^5 ohms per square to 1×10^{12} ohms per square at a relative humidity of no greater than approximately 15% or less, and a maximum voltage decay time of approximately two seconds or less at no greater than approximately 15% or less relative humidity for approximately 5,000 applied volts to technical zero volts, upon grounding of said product.

4,806,411

COEXTRUDED APERTURED FILM SANITARY NAPKIN COVER

William B. Mattingly, III, 30 Kingsbridge Rd., Somerset, N.J. 08873; Alex W. Cabe, Jr., Muirfield La. R.D. 3, Lebanon, N.J. 08833; Richard B. Chapas, 2 Stanford Ct., E. Windsor, N.J. 08520, and Arthur J. Sampson, Jr., R.D. 1, Blackwells Mills Rd., Belle Mead, N.J. 08502

Division of Ser. No. 840,298, Mar. 14, 1986, Pat. No. 4,690,679.
This application Apr. 2, 1987, Ser. No. 33,552
Int. Cl.[4] B32B *3/24*
U.S. Cl. 428—139 9 Claims



1. A body fluid pervious polymeric film having a multiplicity of small apertures and comprising an upper layer and a lower layer, said upper layer comprising at least 80% by weight of a first polymeric material and said second layer comprising at least 80% by weight of a second polymeric material, said first polymeric material having a melting point which is higher than the melting point of said second polymeric material, said body fluid pervious polymeric film having an open area ranging from about 20% to about 70%, a weight ranging from about 0.5 oz/yd^2 to about 2.0 oz/yd^2 and a thickness ranging from about 1 mil to about 10 mils, said apertures having an average equivalent circular diameter ranging from about 0.01 inch to about 0.03 inch and being defined by interiorly located walls which are a continuation of said upper layer.

4,806,412

LAMINATES

Joachim Wank, Dormagen; Werner Waldenrath, Cologne, and Rudolf Hombach, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 13, 1988, Ser. No. 181,061
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1987, 3713673; Jan. 28, 1988, 3802471
Int. Cl.[4] B32B *9/00, 15/00, 21/00, 27/38*
U.S. Cl. 428—203 3 Claims

1. Laminates from 5 to 100 mm thick consisting of

1. a 0.1 to 0.8 mm thick film of a highly transparent thermoplastic plastic,
2. a polyurethane layer tack-free at room temperature,
3. a decorative layer,
4. an epoxy resin layer and
5. a substrate or core material of rigid polyurethane foam, wood or aluminium.

4,806,413

PAPERMAKER'S FELT CONTAINING SCRIM MATERIAL

Patrick H. Peaves, Clinton, S.C., assignor to Astex Group, Inc., Charleston, S.C.

Continuation of Ser. No. 844,088, Mar. 26, 1986, abandoned.
This application Sep. 4, 1987, Ser. No. 92,958
Int. Cl.[4] B32B *7/02*
U.S. Cl. 428—222 5 Claims

1. An improved papermaker's felt of the type having an under layer and a moisture absorbing and air permeable batt layer joined into a single fabric, wherein the improvement

comprises a batt layer including fibrous batt material and scrim material, the scrim material having a melting point lower than the melting point of the fibrous batt material, which were repeatedly needled to substantially establish the final batt den-



sity, moisture absorption and air permeability through said batt layer prior to joining with said under layer, said scrim material tested to adhere the fibrous batt material while maintaining the moisture absorption and air permeability thorugh said batt layer.

4,806,414

COMPOSITE MATERIAL

Anton H. J. Brouwer, Oosterbeek, Netherlands, assignor to Akzo nv, Arnhem, Netherlands

Filed Sep. 2, 1986, Ser. No. 902,650

Claims priority, application Netherlands, Sep. 4, 1985, 8502418

Int. Cl.⁴ B32B *27/04, 27/12*

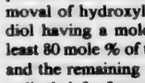
U.S. Cl. 428—260 **6 Claims**

1. A comosite consisting of a thermoplastic or thermosetting polymer or a vulcanized or non-vulcanized rubber containing yarns, cords and/or fabrics provided with an adhesive, characterized in that the adhesive is a polyester-ester urethane built up of polyester-ester units which are linked together by low molecular weight structural units of the formula



wherein R_1 represents a polyfunctional organic group having not more than 30 carbon atoms, and p is an integer of 2 or 3, which polyester units are composed of two types of polyester-ester units which are each built up of blocks comprising

(1) a multiple of ester units of the formula



, and

(2) a multiple of other ester units which may form a bifunctional polyester or polyester amide having a melting point not higher than 100° C., which two types of polyester units are linked together by ester bonds, with the proviso that at least 80 mole % of the G groups in the latter formula are tetramethylene groups and the remaining proportion thereof consists of divalent groups left after removal of hydroxyl groups from a low molecular weight diol having a molecular weight not higher than 250; at least 80 mole % of the R_2 groups are 1,4-phenylene groups and the remaining proportion thereof consists of divalent radicals left after removal of carboxyl groups from a low molecular weight dicarboxylic acid having a molecular weight not higher than 300; the sum of the percentages of G groups which are not tetramethylene groups and the percentages of R_2 groups which are not 1,4-phenylene groups does not exceed 20; the ester units of the formula



form 30 to 80% by weight of the polyester-ester, and that blocks of ester units of the formula



and the blocks of the other ester units are present in amounts such that the melting point of the polyester-ester urethane is at least 160° C.

4,806,415

METHOD AND SYSTEM FOR DETERMINING THE PRESENCE OF ADENOSINE TRIPHOSPHATE OR FLAVIN MONONUCLEOTIDE

Piero Fossati, Baonarroti, Italy, assignor to Miles Inc., Elkhart, Ind.

Filed Sep. 13, 1984, Ser. No. 649,933

Claims priority, application Italy, Dec. 21, 1983, 49555 A/83

Int. Cl.⁴ C12Q *1/54*

U.S. Cl. 435—14 **12 Claims**

3. An analytical method for determining adenosine triphosphate ("ATP") in picomole concentrations, said method comprising the steps of:

combining a liquid sample with a reagent system, said system comprising in a single solution:

flavin mononucleotide ("FMN");

flavin adenine dinucleotide ("FAD") synthetase;

apo(glucose oxidase);

a peroxidatively active substance;

glucose;

a metal cation; and

a photogen, whereby said photogen provides a detectable optical response in the presence of hydrogen peroxide and the peroxidatively active substance, and

detecting the optical response said response being an indication of the amount of ATP down to picomole concentrations in said liquid sample.

4,806,416

INSULATING COATING

Joseph P. Puzo, Montmirail, France, assignor to Axon' Cable S.A., France

Continuation of Ser. No. 540,832, Oct. 11, 1983, abandoned. This application Jan. 8, 1986, Ser. No. 816,699

Claims priority, application France, Oct. 15, 1982, 82 17435

Int. Cl.⁴ B32B *15/00, 17/00, 27/00;* **H01B** *7/00*

U.S. Cl. 428—285 **7 Claims**

1. An insulating coating comprising a first layer comprising a layer of glass fabric impregnated with a binding agent supporting particles of mica, and superimposed on said first layer a layer of polytetrafluoroethylene and a layer of glass fabric, said layer of polytetrafluoroethylene and said layer of glass fabric readily adhering to each other, said polytetrafluoroethylene decomposing at temperatures of about 1,000° C. at which temperature said glass fabric melts so as to convert said coating into a glass coated mica, whereby said coating can maintain its insulating properties at such high temperatures and upon cooling from such high temperatures.

4,806,417

MAGNETIC RECORDING MEDIUM

Shinji Saito; Hiroaki Araki; Kiyomi Ejiri; Hiroshi Ogawa, and Chiaki Mizuno, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 20, 1987, Ser. No. 110,291

Claims priority, application Japan, Oct. 20, 1986, 61-248863

Int. Cl.⁴ G11B *5/70*

U.S. Cl. 428—323 **8 Claims**

1. A magnetic recording medium comprising a non-magnetic support and a magnetic recording layer provided on the support which comprises a binder having a number average molecular weight in the range of 10,000 to 200,000 and a ferromagnetic powder dispersed therein, wherein said binder contains a resin component having a metal sulfonate group and said ferromagnetic powder contains water in an amount corresponding to moles of 20–80 times as much as the number of moles of the metal sulfonate group contained in the binder.

4,806,418

LOTIONED TISSUE PLY

Wayne C. Sigl, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 895,074, Aug. 11, 1986, abandoned. This application Nov. 24, 1987, Ser. No. 124,635

Int. Cl.⁴ B05D *5/10*

U.S. Cl. 428—284 **3 Claims**

1. A tissue comprising two lotion-containing plies bonded together where lotion is present by a melted thermoplastic, said thermoplastic being present in an amount less than about 0.0025 grams per square inch of bonded surface.

4,806,419

BISIMIDE/POLYHYDANTOIN CURABLE RESINS

Horst Steuzenberger, Schriesheim, Fed. Rep. of Germany, assignor to The Boots Company plc, England

Continuation of Ser. No. 856,689, Apr. 25, 1986, abandoned, which is a continuation of Ser. No. 600,058, Oct. 12, 1984, abandoned. This application Mar. 6, 1987, Ser. No. 23,656

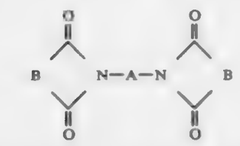
Claims priority, application United Kingdom, Nov. 4, 1983, 8329530

Int. Cl.⁴ B32B *27/34;* **C08F** *283/00*

U.S. Cl. 428—287 **30 Claims**

1. Curable bisimide resins comprising a mixture of

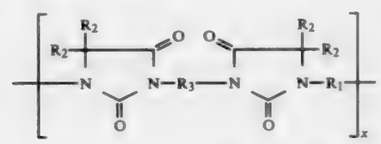
(a) a mixture of at least two bisimides of the general formula I



I

in which B reporesenus a divalent radical containing a carbon-carbon double bond and A is a divalent radical containing at least two carbon atoms; and

(b) a polyhydantoin polymer of formula II



II

wherein R_1 represents an aromatic hydrocarbon radical, R_2 represents hydrogen or an alkyl group having 1 to 6 carbon atoms, R_3 represents an aromatic hydrocarbon, an alkyl radical having 4 to 10 carbon atoms or an alkyl radical having 4 to 10 carbon atoms interrupted by one or more oxygen or sulphur atoms, and x is an integer from 20 to 5000; and

wherein the ratio of bisimide (I) and polyhydantoin (II) is between 95:5 and 40:60.

4,806,420

UNGLAZED CERAMIC TILE-SHAPED ARTICLE

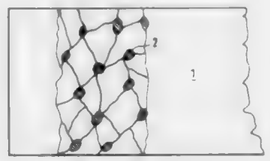
Martin Bard, Amberg, Fed. Rep. of Germany, assignor to Bachtal Gesellschaft mit beschraukter Haftung, Fed. Rep. of Germany

Filed Feb. 9, 1988, Ser. No. 154,147

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1987, 3704095

Int. Cl.⁴ B32B *3/26*

U.S. Cl. 428—320.2 **6 Claims**



1. An unglazed ceramic tile-shaped article for wall and floor coverings, which is capable of conducting away electrical potential that reaches it into an electrically conductive substrate, characterized in that the article consists of a body having open communicating pores which are filled with an emulsifier which behaves similarly to a metal in terms of its electrical conductivity.

4,806,421

THERMAL TRANSFER RECORDING SHEET

Sadao Morishita, Ushiku; Toshihiko Matsushita, Tokyo, and Takeo Sugiyama, Takasago, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jan. 8, 1987, Ser. No. 59,776

Claims priority, application Japan, Jan. 9, 1986, 61-134478

Int. Cl.⁴ B41M *5/26*

U.S. Cl. 428—324 **7 Claims**

1. A thermal transfer recording sheet comprising a support, and a thermal transfer coloring ink layer formed on one side of the support, said support containing plate-like or lamellar inorganic fine particles derived from plate-like or lamellar crystal forms as a major component.

4,806,422

THERMAL TRANSFER (PRINTING) FILM

Ken Ohno, Nagahama; Mitsuo Yoshimoto, Hikone, and Yoshihide Ozaki, Nagahama, all of Japan, assignors to Diafoil Company, Limited, Tokyo, Japan

Filed Jan. 10, 1987, Ser. No. 62,083

Claims priority, application Japan, Jan. 11, 1986, 61-135810

Int. Cl.⁴ B41M *5/26*

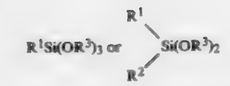
U.S. Cl. 428—336 **9 Claims**

1. A thermal transfer printing film comprising:

(a) a base film,

(b) a stick-preventing layer provided on one side of said base film, said stick-preventing layer being provided at a rate of 0.01 to 1.9 g/m^2 on one side of said base film, the center line average roughness of the surface of said stick-preventing layer being 0.03 to 0.15 μm, the coefficient of parallel slipping of said stick preventive layer against a glass surface being not more than 1.0, the tensile strength of the film formed with said stick-preventing layer on one side thereof bering not less than 8 kgf/mm^2 when said film was elongated by 5% in the longitudinal direction, and said stick-preventing layer being a cured or dried coating film mainly composed of one or more alkoxysilane hydrolyzates produced by hydrolyzing an alkoxysilane represented by the following formula:

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wherein R^1 and R^2 each represent substituted or unsubstituted monovalent hydrocarbon groups of an alkyl group, cycloalkyl group, alkenyl group, aryl group, aralkyl group or those groups in which hydrogen atoms thereof are partly substituted with other substituents being a mercapto group, glycidoxyl group, methacryloxyl group, amino group; and R^3 represents an alkyl group, and

(c) a heat-melting ink layer provided on the other side of said base film.

4,806,423

AGENTS AND PROCESS FOR THE DETECTION OF ESTEROLYTIC AND/OR PROTEOLYTIC ENZYMES

Herbert Hugl, Bergisch Gladbach, and Eugen Schnabel, Wuppertal, both of Fed. Rep. of Germany, assignors to Miles Inc., Elkhart, Ind.

Division of Ser. No. 710,623, Mar. 11, 1985, Pat. No. 4,723,020. This application Aug. 27, 1987, Ser. No. 90,009

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1984, 3413077

Int. Cl.⁴ C12Q *1/44, 1/38, 1/02*

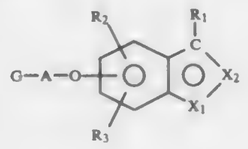
U.S. Cl. 435—19 **4 Claims**

1. Agents for the detection of esterolytic and/or proteolytic enzymes containing:

(a) a chromogenic enzyme substrate and

(b) a diazonium salt,

wherein the chromogenic enzyme substrate is a compound of the general formula:



in which

X_1 and X_2 are identical or different and are nitrogen or sulphur, with the proviso thaqt X_1 and X_2 are not simultaneously sulphur;

R_1 is hydrogen or a branched alkyl group which has 1 to 6 carbon atome which can be substituted by halogen or hydroxyl;

R_2 and R_3 are identical or different and are hydrogen, C_1–C_6-alkyl groups, C_1–C_6-alkoxy groups, C_1–C_6-acyl groups, halogen, trifluoromethyl, nitro, SO_3H, cyano, C_1–C_8-acylamino groups, C_1–C_6-dialkylamino groups or C_6–C_{10}-aryl groups, which can in turn be further substituted by C_1–C_6-alkyl groups, C_1–C_6-alkoxy group, halogen, cyano, nitro, trifluoromethyl, SO_3H, C_1–C_6-acyl groups or C_1–C_6-dialkylamino groups, or

R_2 and R_3 together form a fused-on aromatic ring which can in turn be substituted by 1 to 2 radicals R_2;

A is a naturally occurring amino acid radical or a peptide radical of 2 to 8 naturally occurring amino acids; and

G is hydrogen or a nitrogen-protective group which is usual in peptide chemistry or derived from such a group.

4,806,424

ELECTRICAL CONDUCTOR INSULATED WITH INSULATING AND JACKETING MATERIAL HAVING IMPROVED RESISTANCE TO HOT FLUIDS AND GASES

Robert E. Schultz, Lawrence, Kans., assignor to Cameo, Incorporated, Houston, Tex.

Continuation of Ser. No. 638,151, Aug. 6, 1984, abandoned. This application Oct. 30, 1986, Ser. No. 924,884

Int. Cl.⁴ B32B *9/00, 15/00, 27/00;* **H01B** *7/00*

U.S. Cl. 428—372 **6 Claims**

1. An insulated electric conductor comprising:

a. a metallic conductor;

b. an insulating layer enclosing at least a part of said conductor comprising a polymeric constituent selected from the group consisting of copolymers of ethylene and propylene, polymers of the same with other polymerizable materals, and mixtures of the foregoing, said constituent being in intimate mixture with from about 1 to about 150 parts by weight of processing oil per 100 parts by weight of polymeric constituent, and with calcined aluminum silicate clay filler containing less than about 0.5 percent by weight of water and having an average particle size less than 1 micron with at least 80 weight percent of the particles having a size finer than 2 microns and with at least about 10 weight percent of the particles being more finely divided than 0.5 micron, virtually all of said clay filler particles being more finely divided than about 20 microns with above about 60 weight percent being finer than 1 micron; and,

c. a tough outer wear layer enclosing at least a part of said insulating layer.

4,806,425

ISULATED ELECTRICAL PRODUCTS AND PROCESSES OF FORMING SUCH PRODUCTS

Cao Chu-Ba, Plano, Tex., assignor to Capital Wire & Cable Corporation, Plano, Tex.

Continuation of Ser. No. 708,594, Mar. 6, 1985, abandoned. This application Jun. 22, 1988, Ser. No. 209,912

Int. Cl.⁴ B32B *15/00;* **H01B** *7/00*

U.S. Cl. 428—379 **13 Claims**

1. In an insulated electrical wiring product having a service temperature classification of at least 90° C., the combination comprising:

(a) an electrical conductor;

(b) an insulation covering on said conductor having a UL -83 service temperature classification of at least 90° C. formulated of a polyvinyl chloride resin having an inherent viscosity within the range of 1.0–1.1, a polybasic aromatic ester plasticizing system 10 containing at least 80 weight percent of di- (R,R') phthalate ester wherein R and R' are each independently an alkyl group containing at least eleven carbon atoms, and an effective amount of an antioxidant to prevent oxidation of said di-alkyl phthalate ester at 136° C.

4,806,426

MUTANT MICROORGANISMS CONTAINING RECOMBINANT DNA AND THEIR USE IN THE PRODUCTION OF AMYLASES

Charles A. Colson, Dion-Valmont; Philippe Lejeune, Verviers; Coriane Walon, Wavre, and Karine Willemot, Charleroi, all of Belgium, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed May 23, 1985, Ser. No. 737,311

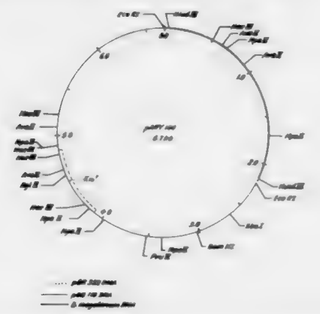
Claims priority, application United Kingdom, Jun. 5, 1984, 8414271

Int. Cl.⁴ C12N *1/20, 15/00, 9/28;* **C12R** *1/125*

U.S. Cl. 435—252.31 **2 Claims**

1. A kanamycin-resistant mutant of a genetically-engineered *Bacillus subtilis* microorganism containing recombinant DNA wherein the recombinant DNA comprises plasmid pAMY100

having a molecular weight of approximately 6.7 kb and a restriction endonuclease cleavage map as shown in FIG. 1, said



microorganism being capable of growing in a nutrient medium containing at least 250 micrograms kanamycin/ml and having the Deposit No. *Bacillus subtilis* NCIB 11984 (BAS 72).

4,806,427

PROCESS FOR THE PRODUCTION OF CATALYSTS FOR THE REDUCTION OF NITROGEN OXIDES FROM EXHAUST GASES AND SIMILAR CHEMICAL AIR CLEANING PROCESSES

Hermann Stein, Bad Dürkheim; Hartmut Kaiser, Wiesbaden, and Daniel Grimm, Schlangenbad, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Continuation of Ser. No. 887,366, Jul. 17, 1986, abandoned. This application Sep. 4, 1987, Ser. No. 94,081

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1985, 3526383

Int. Cl.⁴ B01J *29/04, 37/00, 35/00*

U.S. Cl. 502—60 **21 Claims**

1. Process for production of a catalytic member having a catalytically active material deposited on carrier means, said process comprising the steps of:

applying binder for binding said catalytically active material to said carrier means, said binder comprising an acid etchant binder;

coating said carrier means with said catalytically active material while said binder is in a wetted state; and

treating said catalytic member to stabilize said coating.

2. The process according to claim 1 wherein said carrier means is made of metal.

9. The process according to claim 1 wherein said catalytical active material is chosen from a member of the group consisting essentially of: iron ore, chromium ore, zeolite and combinations thereof.

4,806,428

COMPOSITE CERAMIC ARTICLE AND METHOD FOR MAKING IT

Reid F. Cooper, Middleton, Wis., and Kishor P. Gadkaree, Big Flats, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 19, 1986, Ser. No. 943,426

Int. Cl.⁴ B32B *5/16, 9/00*

U.S. Cl. 428—403 **4 Claims**

1. Oxide-coated whisker wherein said coated whiskers have the form of a dried particulate material, said material comprising individual inorganic whiskers encapsulated in an oxide coating material, the oxide coating material consisting of an inorganic oxide or mixture of oxides selected from the group consisting of SiO_2, Al_2O_3, CaO, BaO, ZrO_2, TiO_2, and P_2O_5,



said oxides being present in unreacted form and forming a continuous oxide coating on the whiskers.

4,806,429

PLATE-LIKE BARIUM FERRITE PARTICLES SUITABLE FOR USE IN MAGNETIC RECORDING AND PROCESS FOR PRODUCING THE SAME

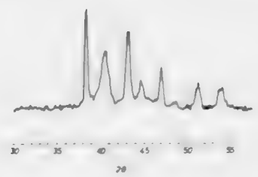
Norimichi Nagai; Akihiko Hirayama; Norio Sugita, all of Hiroshima; Masao Kiyama; Toshio Takada, both of Kyoto; Katsunori Fujimoto, Hiroshima, and Yasutaka Ota, Saeki, all of Japan, assignors to Toda Kogyo Corporation, Hiroshima, Japan

Filed Jan. 29, 1987, Ser. No. 8,466

Claims priority, application Japan, Jan. 29, 1986, 61-18834; May 9, 1986, 61-107457

Int. Cl.⁴ B32B *5/16*

U.S. Cl. 428—403 **3 Claims**



1. Plate-like barium ferrite particles with a solid solution of zinc on the surface thereof, which have an average particle diameter of 0.05 to 0.3 μm, a coercive force of 300 to 1,500 Oe and a magnetization of not less than 55 emu/g in magnetic field of 10 KOe, and which are represented by the following formula (1)

$$BaO \cdot n[(Fe_{1-2x}Co_xTi_x)_2O_3] \quad (1)$$

wherein x is 0 to 0.1 and n is from 4 to 11, the molar ratio of Ti to Co being 1.

4,806,430

FILM-FORMING SILICONE COMPOSITIONS HAVING LUBRICATING PROPERTIES

David E. Spielvogel, Springboro, and Richard J. Zdrahala, Dayton, both of Ohio, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 804,209, Dec. 3, 1985, Pat. No. 4,720,521. This application Nov. 16, 1987, Ser. No. 120,901

Int. Cl.⁴ B32B *9/06*

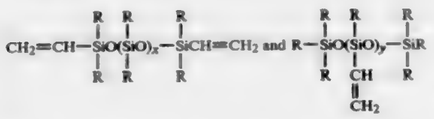
U.S. Cl. 428—450 **9 Claims**

1. An article comprising a substrate having a composition coated onto a surface thereof, said composition adhering to said surface and lubricating said surface, said composition comprising:

(a) a reactive component for providing adhesion, said reactive component comprising

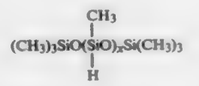
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(1) a first siloxane polymer having the formula selected from the group consisting of



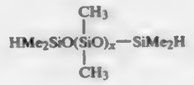
wherein R is selected from the group consisting of alkyl C_{1-20}, haloalkyl, aryl, haloaryl, cycloalkyl, silacyclopentyl, aralkyl and mixtures thereof; x is about 60 to about 1000; and y is about 3 to about 25;

(2) a second siloxane crosslinking polymer of the formula



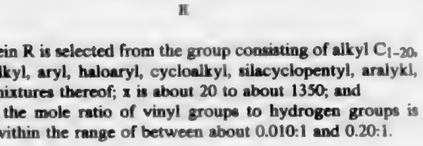
wherein x is about 8 to about 12; and

(3) a third siloxane chain-extending polymer having the formula



wherein x is about 140 to about 160;

(b) a non-reactive lubricating siloxane polymer component of the formula



wherein R is selected from the group consisting of alkyl C_{1-20}, haloalkyl, aryl, haloaryl, cycloalkyl, silacyclopentyl, aralykl, and mixtures thereof; x is about 20 to about 1350; and

(c) the mole ratio of vinyl groups to hydrogen groups is within the range of between about 0.010:1 and 0.20:1.

4,806,431

COMPOSITES COATED WITH BORON-SILICON-OXIDE FILMS

Henry W. Lavendel, Palo Alto, and John C. Robinson, Cupertino, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Division of Ser. No. 747,635, Jun. 24, 1985, Pat. No. 4,689,104. This application Mar. 23, 1987, Ser. No. 28,995

Int. Cl.⁴ B32B *15/04*

U.S. Cl. 428—450 **1 Claim**

1. A metal substrate having a solid boron-silicon oxide film on at least one surface thereof, said film protecting said surface against deterioration by the effects of the recombination of dissociated oxygen and nitrogen.

4,806,432

COPPER-FOILED LAMINATED SHEET FOR FLEXIBLE PRINTED CIRCUIT BOARD

Yoshitugu Eguchi, Ibaraki; Masaru Miyashita, Tokyo; Hitoshi Arai, Ibaraki, and Yoshimi Ogushi, Saitama, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1986, Ser. No. 928,396

Claims priority, application Japan, Nov. 21, 1985, 60-261647; Nov. 21, 1985, 60-261648

Int. Cl.⁴ B32B *15/08, 27/36*

U.S. Cl. 428—457 **2 Claims**

1. A copper-foiled laminated sheet for flexible printed circuit sheet which comprises a flexible and transparent base film of an electrically insulating plastic resin, a layer of an adhesive and a rolled copper foil adhesively bonded to the base film with the layer of the adhesive intervening therebetween, the surface of the copper foil adhesively bonded to the base film having a surface that has been subjected to a treatment with low temperature plasma of an inorganic gas prior to adhesive bonding with the copper foil and having a surface roughness in the range from 1.5 to 5 according to the standard specified in JIS B 0601 and the laminated sheet, after the copper foil has been removed by etching, having at least a 60% parallel light beam transmission.

4,806,433

PROCESS FOR PRODUCING OLEFIN POLYMER

Toshio Sasaki; Takeshi Ebera, both of Ichihara; Kiyoshi Kawai, Chiba, and Akinobu Shiga, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 11, 1987, Ser. No. 48,615

Claims priority, application Japan, May 15, 1986, 61-111680

The portion of the term of this patent subsequent to Jun. 9, 2004, has been disclaimed.

Int. Cl.⁴ C08F *4/64*

U.S. Cl. 502—115 **23 Claims**

16. A catalyst system for olefin polymerization comprising:

(A) a solid catalyst component containing a trivalent titanium compound, obtained by reducing a titanium compound represent by the general formula $Ti(OR^1)_nX_{4-n}$ (wherein R^1 is a hydrocarbon group of 1 to 20 carbon atoms, X is a halogen atom, and n is a number satisfying $0<n\leq 4$) with an organomagnesium compound in the presence of an alcohol of 2 to 15 carbon atoms and/or a phenol of 6 to 15 carbon atoms to obtain a solid product and then treating the solid product with a mixture of a dialkyl ether and titanium tetrachloride, and

(B) an organoaluminum compound.

4,806,434

MEDIUM FOR ELECTROPHORESIS

Masashi Ogawa, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

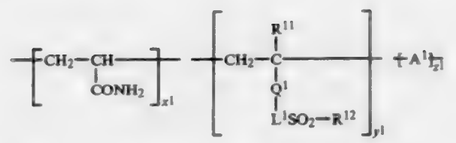
Filed Jul. 8, 1985, Ser. No. 752,938

Claims priority, application Japan, Jul. 6, 1984, 59-140915; Jul. 6, 1984, 59-140916

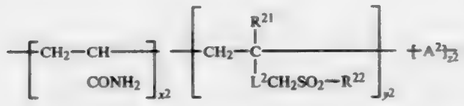
Int. Cl.⁴ B32B *27/08*

U.S. Cl. 428—474.4 **10 Claims**

1. A medium for electrophoresis comprising an aqueous acrylamide gel formed by the reaction of an monofunctional acrylamide compound, an acrylamide copolymer and a polyfunctional cross-linking agent in the presence of water, wherein said acrylamide copolymer is employed in an amount of 1 to 50 wt. % based on the amount of said acrylamide compound, and said acrylamide copolymer has at least one set of repeating units selected from the group consisting of repeating units having the formula:



in which R^{11} is the hydrogen atom or an alkyl group containing 1-6 carbon atoms; Q^1 is —COO—, —CON(R^{11})—, or an arylene hydrocarbon group of 6-10 carbon atoms; L^1 is a divalent group containing at least one linkage selected from the group consisting of —COO— and —CON(R^{11})— and containing 3-15 carbon atoms, or divalent group containing at least one linkage selected from the group consisting of —O—, —N(R^{11})—, —CO—, —SO—, —SO_2—, —SO_3—, —SO_2N(R^{11})—, —N(R^{11})CON(R^{11})— and —N(R^{11})COO— and containing 1-12 carbon atoms, in which R^{11} has the same meaning as defined above; R^{12} is —CH=CH_2 or —$CH_2CH_2X^1$, in which X^1 is a substituent replaceable with a nucleophilic group or releasable in the form of HX^1 by a base; A^1 is a divalent group derived from an ethylenic unsaturated monomer copolymerizable with monomers forming other unit portions; and x^1 and y^1 both represent a molar percents range from 50 to 99, and from 1 to 50, respectively, and z^1 represents the remaining molar percent including O; and



in which R^{21} is the hydrogen atom or an alkyl group containing 1-6 carbon atoms; R^{22} is —CH=CH_2 or —$CH_2CH_2X^2$, in which X^2 is a substituent replaceable with a nucleophilic group or releasable in the form of HX^2 by a base; L^2 is a divalent group selected from the group consisting of an alkylene group containing 1-6 carbon atoms, an arylene group containing 6-12 carbon atoms, —COZ^2—, and —COZ^2R^{23}—, in which R^{23} is an alkylene group containing 1-6 carbon atoms, or an arylene group containing 6-12 carbon atoms, and Z^2 is the oxygen atom or NH; A^2 is a divalent group derived from an ethylenic unsaturated monomer copolymerizable with monomers forming other unit portions; and x^2 and y^2 both representing molar percents range from 50 to 99, and from 1 to 50, respectively, and z^2 represents the remaining molar percent including O.

2. The medium for electrophoresis as claimed in claim 1, in which said aqueous acrylamide gel is formed by crosslinking polymerization of said acrylamide compound and said acrylamide copolymer in the presence of water and a crosslinking agent selected from the group consisting of bifunctional compounds and trifunctional compounds.

9. The medium for electrophoresis as claimed in claim 1 or 2, in which said medium is provided on a plastic material support.

4,806,435

SEAM FOR INPENETRABLE MATERIAL

Robert D. Athey, P.O. Drawer 1459, El Cerrito, Calif. 94530

Filed Jan. 4, 1988, Ser. No. 140,383

Int. Cl.⁴ B32B *3/10*

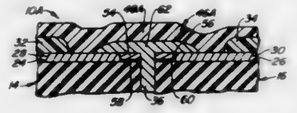
U.S. Cl. 428—594 **3 Claims**

1. A seal for connecting abutting first and second sheets each having an elastomeric portion and an elastomeric surface on one side and an overlying metallic portion on the other side thereof comprising:

a. an elastomeric stip;

b. adhesive for attaching said elastomeric strip to said elastomeric portions of the one sides of the first and second sheets;

c. a metallic plug attached to the overlying metallic portions of the other sides of the abutting sheets; and



d. a layer of flexible and abrasion resistant, material attached to overlying metallic portions of the abutting sheets and said metallic plug attached to said overlying metallic portions of the abutting sheets.

4,806,436

SUBSTRATE FOR AMORPHOUS SILICON SOLAR CELLS

Kiyoshi Tada; Kenji Tsukamoto, and Tatsuo Otsuka, all of Sakai, Japan, assignors to Showa Aluminum Corporation, Osaka, Japan

Continuation of Ser. No. 760,379, Jul. 30, 1985, abandoned. This application Apr. 27, 1987, Ser. No. 47,559

Claims priority, application Japan, Aug. 6, 1984, 59-165534; Dec. 3, 1984, 59-256301; Dec. 3, 1984, 59-256302

Int. Cl.⁴ B32B *15/04*

U.S. Cl. 428—629 **9 Claims**



1. A substrate which is suitable for forming thereon amorphous silicon solar cells, the substrate comprising an aluminum or aluminum alloy plate formed on at least one surface thereof with an oxalic acid anodized film in an unsealed state and having a thickness of 1 to 20 μm.

4,806,437

VIBRATION ISOLATING MOUNT

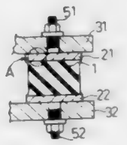
Hiroshi Yokoi; Yoshihiro Ogawa, both of Nagoya, and Hideyuki Imai, Minokamo, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Apr. 19, 1988, Ser. No. 183,702

Claims priority, application Japan, Aug. 28, 1987, 62-215878

Int. Cl.⁴ F16F *7/00*

U.S. Cl. 428—623 **6 Claims**



1. A vibration isolating mount comprising:

a vibration isolating rubber body;

two retaining members for retaining said vibration isolating rubber body, each of said two retaining members being made of iron and bonded to each of two opposed surfaces of said rubber body;

a bracket for connecting at least one of said retaining mem-

VOL 1099 ISS 3 FEB 21 1989 UMI

bers to a vibrating body, said bracket being made of non-ferrous metal; and

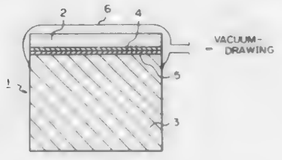
a chemical conversion coating layer formed in a surface of one portion of said at least one of retaining members, which portion is bonded to said rubber body, said chemical conversion coating layer being made of one of zinc phosphate and calcium zinc phosphate.

4,806,438

TITANIUM-CLAD STEEL AND METHOD FOR THE MANUFACTURE THEREOF

Shigeharu Hinotani, Sakai, Japan, assignor to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Nov. 25, 1987, Ser. No. 125,158
Claims priority, application Japan, Nov. 26, 1986, 61-281232; Dec. 24, 1986, 61-314729; Feb. 18, 1987, 62-35372
Int. Cl.[4] B32B *15/18*
U.S. Cl. 428—660 14 Claims



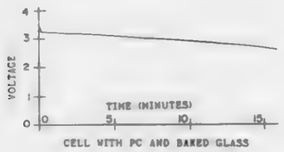
1. A titanium-clad steel with improved bonding properties, comprising a Ti-cladding, a base metal steel, an insert between them, and an intermediate layer between said base metal steel and said insert, said insert being an alloy consisting essentially of, in % by weight, 0.05% or less of carbon, 3 to 20% by weight of at least one of niobium (Mb) and vanadium (V), and a balance or iron, said intermediate layer being of nickel or a nickel alloy.

4,806,439

TEMPORARY BARRIER LAYER IN BATTERIES

Ritchie A. Wessling, and Jang-hi Im, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 4, 1988, Ser. No. 152,125
Int. Cl.[4] H01M *2/16*
U.S. Cl. 429—48 41 Claims



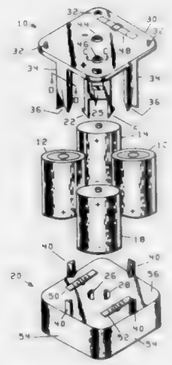
1. A fluid-activatable battery comprising an anode and cathode separated by a nonporous film comprising a glassy amorphous hydrophobic polymer having a glass transition temperature above 25° C., a thickness not greater than 5 microns and which is soluble in a Lewis acid electrolyte solution to be added to said battery to activate same.

4,806,440

LANTERN BATTERY SUBSTITUTE

Charles A. Hahs, Jr., Delray Beach, and Victor V. Zaderej, Boca Raton, both of Fla., assignors to CNI, Boca Raton, Fla.

Filed Feb. 5, 1987, Ser. No. 11,149
Int. Cl.[4] H01M *2/10, 6/42;* H01R *11/00*
U.S. Cl. 429—100 22 Claims



1. An improved lantern battery pack, comprising in combination:

an upper assembly including an approximately square upper plate with rounded corners and four edges and having a resilient snap latch means situated at approximately the center of said upper plate projecting downward normal to the plane of said upper plate;

four battery retaining legs projecting downward normal to said plane of said upper plate, one at approximately a center of each of said four edges, said legs being wide enough and situated at a suitable distance from one another so that a standard D-sized battery cell will not readily pass between any two legs situated on adjacent edges;

a lower assembly including a lower plate which is parallel to said upper plate when coupled to said upper assembly, and also including a base for supporting said lower plate, said base having depth adequate to cause the battery pack to have an overall height approximating that of a lantern size battery;

latch receiving means, situated on said lower plate, for receiving and engaging said latch means for securing said upper and lower assemblies together;

leg engaging means for releasably receiving and engaging a portion of said leg near said lower plate to resist outward movement of said legs;

bridging means, situated at said upper and lower plates, for connecting four D size batteries in a series electrical circuit having positive and negative electrodes; and

terminal means, situated on said upper plate, for providing access to said positive and negative electrodes at said upper plate.

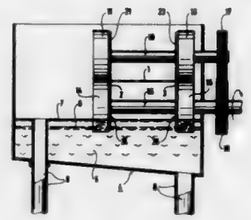
4,806,441

METHOD OF MANUFACTURING PLASTIFIED ELECTRODES FOR STORAGE BATTERIES

Jean L. Bréaillon, Parempuyre, France, assignor to Saft, S.A., Romainville, France

Filed Nov. 24, 1987, Ser. No. 124,590
Claims priority, application France, Dec. 4, 1986, 86 16984
Int. Cl.[4] H01M *4/74, 4/62, 6/00;* B23P *19/00*
U.S. Cl. 429—241 6 Claims

1. A plastified electrode for an alkaline storage battery, the electrode comprising a perforated metal sheet covered on both faces with a plastified electrochemically active mass, the electrode having at least one cut edge, the cut edge being coated with a polyolefin over a width of 1 mm to 2 mm, which polyolefin penetrates into said active mass so as to mechanically strengthen the cut edge of the active mass and to reduce disintegration of the cut edge of the active mass.

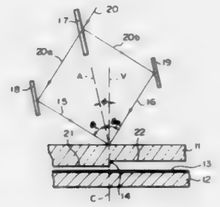


4,806,442

SPATIAL PHASE MODULATING MASKS AND PRODUCTION PROCESSES THEREOF, AND PROCESSES FOR THE FORMATION OF PHASE-SHIFTED DIFFRACTION GRATINGS

Masatoka Shiraishi, and Hirochika Nakajima, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 20, 1986, Ser. No. 841,801
Claims priority, application Japan, Mar. 20, 1985, 60-057455; Jul. 17, 1985, 60-158743; Jul. 17, 1985, 60-158744; Jul. 17, 1985, 60-158745; Jul. 17, 1985, 60-158746
Int. Cl.[4] G03F *9/00*
U.S. Cl. 430—4 25 Claims



1. A spatial phase modulating mask for use in the formation of diffraction gratings using two-beam interference exposure, including:

a material transparent to radiation used in an exposure step in the formation of diffraction gratings, said material comprising first and second portions providing two different optical paths being positioned adjacent an oscillation center , each portion being structured so that when two asymmetrical fluxes of radiation are irradiated at different angles to the oscillation center such that a bisection of said fluxes is inclined with respect to a normal of the mask, a phase-shifted pattern of interference fringes, that is phase-shifted about the oscillation center, exits the mask.

4,806,443

POLYARYLAMINE COMPOUNDS AND SYSTEMS UTILIZING POLYARYLAMINE COMPOUNDS

John F. Yanus; John W. Spiewak; Dale S. Renfer, all of Webster, and William W. Limburg, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 10, 1987, Ser. No. 61,248
Int. Cl.[4] G03G *5/087, 5/14*
U.S. Cl. 430—56 11 Claims

1. An electrostatographic imaging member comprising a support layer and at least one electrophotoconductive layer, said imaging member comprising an arylamine compound represented by the formula:



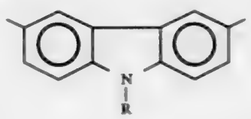
wherein:

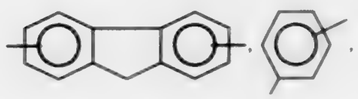
n is between about 5 and about 5,000,

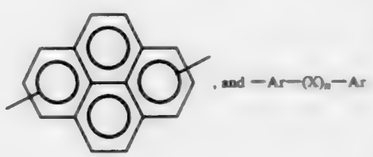
m is 0 or 1,

y is 1, 2 or 3

Z is selected from the group consisting of:



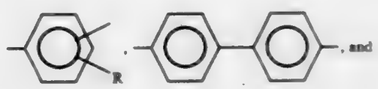


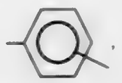


, and —Ar—$(X)_n$—Ar

n is 0 or 1,

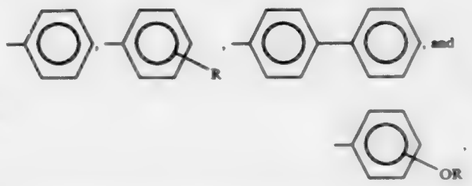
Ar is selected from the group consisting of:



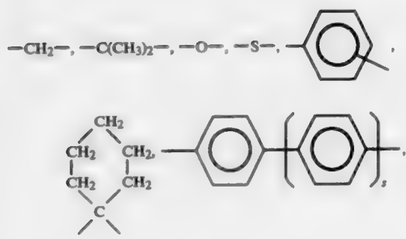


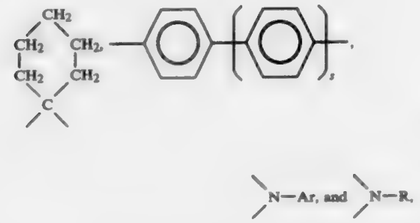
R is an alkylene radical selected from the group consisting of alkylene and iso-alkylene groups containing 2 to 10 carbon atoms,

Ar' is selected from the group consisting of:



X is selected from the group consisting of:





s is 0, 1 or 2, and
X' is alkylene radical selected from the group consisting of alkylene and isoalkylene groups containing 2 to 10 carbon atoms.

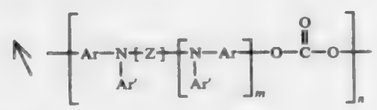
4,806,444

ARYLAMINE POLYMERS AND SYSTEMS UTILIZING ARYLAMINE POLYMERS

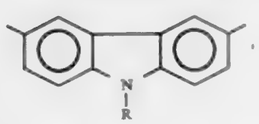
John F. Yanus; John W. Spiewak; Dale S. Renfer, all of Webster, and William W. Limburg, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

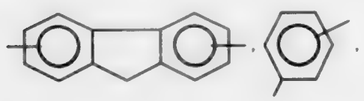
Filed Jun. 10, 1987, Ser. No. 61,052
Int. Cl.[4] G03G *5/087, 5/14*
U.S. Cl. 430—56 **12 Claims**

1. An electrostatographic imaging member comprising a support layer and at least one electrophotoconductive layer, said imaging member comprising an arylamine compound represented by the formula:

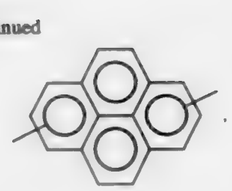


wherein:
n is between 5 and about 5,000,
Z is selected from the group consisting of:

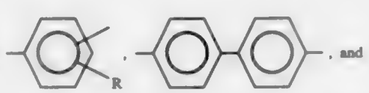


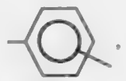


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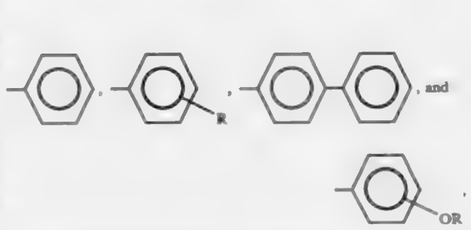


and —Ar—(X)$_s$—Ar—
m is 0 or 1,
s is 0, 1, 2 or 3
Ar is selected from the group consisting of:





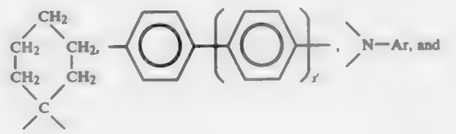
R is selected from the group consisting of —CH_3, —C_2H_5, —C_3H_7, and —C_4H_9,
Ar' is selected from the group consisting of:





X is selected from the group consisting of:







s' is 0, 1 or 2.

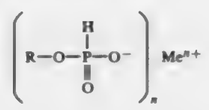
4,806,445

FUNGICIDAL COMPOSITIONS BASED ON ALKYL PHOSPHITES

Daniel Horriere, Fontaines s/Saone, and Maurice Chazalet, Anse, both of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

Continuation of Ser. No. 897,156, Aug. 18, 1986, abandoned, which is a division of Ser. No. 357,567, Mar. 12, 1982, Pat. No. 4,698,334, which is a continuation-in-part of Ser. No. 133,143, Mar. 24, 1980, abandoned, which is a continuation of Ser. No. 869,234, Jan. 13, 1978, abandoned. This application May 17, 1988, Ser. No. 196,759
Claims priority, application France, Jan. 14, 1977, 77 01639
Int. Cl.[4] A01N *47/10, 57/18*
U.S. Cl. 514—141 **19 Claims**

1. A fungicidal composition for the protection of plants against fungus diseases, which comprises as the active material a mixture of
1 part by weight of a monester salt of a phosphorous acid of the formula



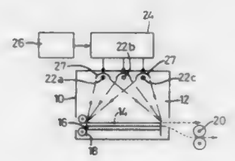
in which
R is an alkyl radical having 2 to 4 carbon atoms,
Me is an alkali metal, alkaline earth, or aluminum atom and
n is a whole number from 1 to 3 equal to the valence of Me
and from about 0.5 to 1 part by weight of at least one ethylene bisdithiocarbamate contact fungicide selected from the group consisting of manganese ethylene bisdithiocarbamate and manganese-zinc ethylene bisdithiocarbamate.

4,806,446

PHOTOSENSITIVE RECORDING MEDIUM CAPABLE OF IMAGE CONTRAST ADJUSTMENT

Naoyuki Hatta, Gamagori, and Satoshi Furukawa, Suzuka, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 6, 1987, Ser. No. 34,681
Claims priority, application Japan, Apr. 9, 1986, 61-81579; Apr. 10, 1986, 61-82481
Int. Cl.[4] G03C *1/40, 1/00, 1/46, 1/72*
U.S. Cl. 430—138 **2 Claims**



1. A photosenitive recording medium comprising a substrate, a multiplicity of microcapsules on one surface of said substrate, and a developer material, each of the microcapsules including a photosenitive resin and a normally colorless chromogenic material corresponding to one color, wherein images are formed by image-wise selectively exposing said multiplicity of microcapsules to a radiation, rupturing microcapsules in image areas and releasing chromogenic matierial from the ruptured microcapsules, so that an image-forming reaction between the released chromogenic material and the developer material occurs to produce said color,
said multiplicity of microcapsules comprising a plurality of microcapsule groups for said color, said multiplicity of microcapsules of said plurality of microcapsule groups being substantially evenly distributed over said one surface of said substrate,
said plurality of microcapsule groups being sensitive to a respective plurality of radiations having respective different wavelength bands, such that when said plurality of microcapsule groups is image-wise exposed to a number of said plurality of radiations, said number being between one of and all of said plurality of radiations, a contrast between formed images on the medium and non-imaged areas on the medium can be adjusted by varying said number.

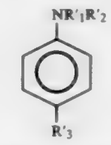
4,806,447

METHOD OF CHEMICALLY BONDING ANTIOXIDANTS INTO POLYMERIC MATERIALS

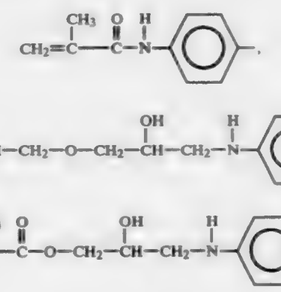
Dane K. Parker, Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 474,841, Mar. 14, 1983, Pat. No. 4,739,014, which is a continuation of Ser. No. 277,302, Jun. 25, 1981, abandoned, which is a continuation of Ser. No. 106,208, Dec. 21, 1979, abandoned, which is a continuation of Ser. No. 494,130, Aug. 2, 1974, abandoned. This application Mar. 28, 1988, Ser. No. 150,573
The portion of the term of this patent subsequent to Apr. 19, 2005, has been disclaimed.
Int. Cl.[4] C08F *8/30*
U.S. Cl. 525—263 **9 Claims**

1. A process for preparing an oxidatively stable polymer which comprises reacting the polymer with an antioxidant containing aliphatic unsaturation, said antioxidant rendering the polymer less susceptible to oxidative attack by chemically interrupting the autoxidation process by which the polymer is oxidatively degraded, the reaction between the polymer and the antioxidant being carried out in the presence of a free radical, said free radical being generated by a peroxide, said peroxide producing said free radicals at a temperature of 20° C. to 160° C.; wherein the antioxidant is a compound of the formula:

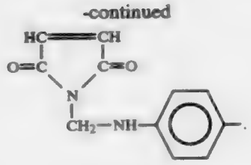


in which R'_1 and R'_3 represent hydrogen atoms and in which R'_2 is an aryl radical having a structural formula selected from the group consisting of:



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-continued



4,806,448

CYCLIC ACETALS OR KETALS OF β-KETO ESTERS OR AMIDES

Martin Roth, Giffers, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

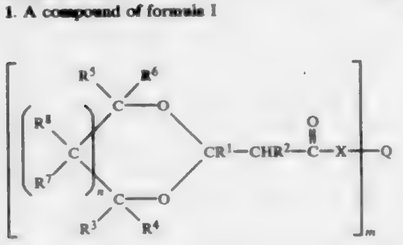
Division of Ser. No. 859,683, May 5, 1986, Pat. No. 4,737,426. This application Nov. 27, 1987, Ser. No. 125,668

Claims priority, application Switzerland, May 15, 1985, 2089/85

Int. Cl.[4] G03C *1/495*; **C07D** *405/14, 407/12, 407/14*

U.S. Cl. 430—270 **11 Claims**

1. A compound of formula I



(I)

wherein

R^1 and R^2 are each independently of the other hydrogen, C_1–C_8alkyl, phenyl, naphthyl, C_5–C_7cycloalkyl, C_7–C_{14}aralkyl or C_7–C_{14}alkaryl, which organic radicals are substituted by zero to three members selected from the group consisting of halogen, hydroxy, alkoxy, nitro, cyano and amino,

R^3, R^4, R^5, R^6, R^7 and R^8 are each independently hydrogen or C_1–C_4alkyl,

X is —O— or —NR^9—, where R^9 is hydrogen or C_1–C_4alkyl,

n is 0 or 1, m is 2, 3 or 4, and

Q is an aliphatic, cycloaliphatic, aromatic, araliphatic or 5- or 6-membered heterocyclic radical of valency m, with the proviso that where several ester or amide radicals are present in the molecule, the groups R^1 to R^9 within the scope of the above definitions are the same or different different and, where n is 0, both carbon atoms are linked direct to each other to form a 5-membered heterocyclic radical.

10. A composition comprising

(a) a compound of formula I according to claim 1, and

(b) a compound that releases acid when exposed to actinic radiation.

4,806,449

PHOTOSENSITIVE PHOTOPOLYMERIZABLE RECORDING ELEMENT CONTAINING A TERPOLYMER BINDER

Reiner Hofmann, Neustadt, and Axel Sanner, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 28, 1987, Ser. No. 54,992

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1986, 3619129

Int. Cl.[4] G03C *1/76*

U.S. Cl. 430—281 **4 Claims**

1. A photosensitive recording element for the production of printing plates and resist images comprising

(a) a dimensionally stable base and

(B) a photopolymerizable recording layer consisting essentially of the following components:

(B1) at least one film-forming copolymer having a mean weight average molecular weight greater than about 10,000, possessing carboxyl groups and being soluble or dispersable in aqueous alkaline solution, said carboxyl groups being 10 to 60% esterified by reaction with glycidyl acrylate, glycidyl methacrylate or mixture thereof, the polymer main chain of said copolymer consisting of the following copolymerized units:

(a) from 10 to 50% by weight, based on the sum of all the copolymerized units present, of at least one N-vinylamide selected from the group consisting of the N-vinyl derivatives of the aliphatic carboxamides and of the N-vinyllactams,

(b) from 8 to 30% weight, based on the sum of all copolymerized units present, of acrylic acid, methacrylic acid, or mixture thereof, and

(c) from 30 to 80% by weight, based on the sum of all copolymerized units present, of vinyl aromatics, vinylacetate, esters of acrylic acid or methacrylic acid or mixtures thereof,

(B2) at least one ethylenically unsaturated photopolymerizable compound compatible with the said copolymer (B1) and selected from the group consisting of non-gaseous, ethylenically unsaturated, photopolymerizable monomers of a molecular weight of less than 1,000 and photopolymerizable oligomers having a mean number average molecular weight of about 1,000 to 10,000, and

(B3) at least one photoinitiator.

4,806,450

PHOTOSENSITIVE PHOTOPOLYMERIZABLE RECORDING ELEMENT HAVING A TERPOLYMER BINDER IN THE PHOTOPOLYMERIZABLE LAYER

Reiner Hofmann, Neustadt, and Axel Sanner, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 28, 1987, Ser. No. 54,993

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1986, 3619130

Int. Cl.[4] G03C *1/76*

U.S. Cl. 430—281 **9 Claims**

1. A photosensitive recording element for the production of printing plates and resist images comprising

(A) a dimensionally stable base and

(B) a photopolymerizable recording layer consisting essentially of the following components:

(B1) at least one film-forming copolymer having a mean weight average molecular weight greater than about 10,000 possessing carboxyl groups and being soluble or dispersable in aqueous alkaline solution, said carboxyl groups being 10 to 60% esterified by reaction with glycidyl acrylate, glycidyl methacrylate or mixture thereof, the polymer main chain of said copolymer consisting of the following copolymerized units:

(a) from 10 to 50% by weight, based on the sum of all the copolymerized units present, of at least one comonomer selected from the group consisting of hydroxyalkyl acrylates and hydroxyalkyl methacrylates,

(b) from 8 to 30% by weight, based on the sum of all copolymerized units present, of acrylic acid, methacrylic acid, or mixture thereof, and

(c) from 30 to 80% by weight, based on the sum of all copolymerized units present, of at least one copolymer selected from the group consisting of the alkyl acrylates and the alkyl methacrylates,

(B2) at least one ethylenically unsaturated, photopolymeriable compound compatible with the said copolymer (B1) and selected from the group consisting of low molecular weight, ethylenically unsaturated, photopolymerizable monomers and photopolymerizable oligomers having a molecular weight of up to about 5,000, and

(B3) at least one photoinitiator.

4,806,451

PROCESS FOR THE PRODUCTION OF MULTICOLOR PROOFS USING PRECOLORED TONING FILMS

Helmut H. Fröhlich, Hemsenstamm, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 24, 1987, Ser. No. 66,125

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1986, 3625014

Int. Cl.[4] G03C *5/00*

U.S. Cl. 430—291 **9 Claims**

1. In a process for producing an image on a tonable light-sensitive layer comprising the steps of:

(A) exposing the light-sensitive layer imagewise to produce imagewise tacky and complementary non-tacky areas;

(B) bringing the imagewise-exposed layer into surface-to-surface contact with a supported non-photosensitive transfer layer containing at least one finely divided powder and/or a dissolved dye in a binder; and

(C) separating the transfer layer from the light-sensitive layer, whereby the transfer layer adheres selectively to the imagewise tacky areas,

the improvement wherein, the binder of the transfer layer consists essentially of

(a) about 55–97 wt.% of at least one polymer in the form of a powder having a minimum film-forming temperature of above 50° C., and

(b) about 3–45 wt.% of at least one thermoplastic and/or one thermoplastic-elastomeric polymer, having a minimum film-forming temperature when used as a latex, or, a glass transition temperature when used as a dissolved polymer, which is at least 10° C. lower than the minimum film-forming temperature of polymer (a), whereby polymer phases (a) and (b) are incompatible and wherein the transfer layer is prepared by mixing said finely divided powder and/or dissolved dye, together with polymer (a), and polymer (b), to form a uniform composition, which is then coated on a support, and dried to form the transfer layer.

9. In a process for the production of a multi-colored image comprising the steps of:

(A) applying a tonable light-sensitive layer to a support;

(B) exposing said light-sensitive layer imagewise to produce imagewise tacky and complementary nontacky image areas;

(C) bringing into contact with said exposed light-sensitive layer a nonphotosensitive supported transfer layer containing a finely divided pigment and/or a dissolved dye in a binder, whereby the transfer layer adheres selectively to the tacky image areas;

(D) removing the transfer layer with the nonadhering areas of the transfer layer;

(E) applying another light-sensitive layer onto the image formed; and

(F) repeating steps (B)–(E) several times, wherein each light-sensitive layer is exposed in register using a different color-separation transparency and contacted with a correspondingly colored transfer layer; the improvement wherein the binder of the transfer layer consists essentially of

(a) about 55–97 wt.% of at least one polymer in the form of a powder having a minimum film-forming temperature of above 50° C., and

(b) about 3–45 wt.% of at least one thermoplastic and/or one thermoplastic/elastomeric polymer, having a minimum film-forming temperature when used as a latex, or, a glass transition temperature when used as a dissolved polymer, which is at least 10° C. lower than the minimum film-forming temperature of polymer (a), whereby polymer phases (a) and (b) are incompatible.

4,806,452

PRODUCTION OF FLEXOGRAPHIC RELIEF PLATES BY PHOTOPOLYMERIZATION AND DEVELOPMENT WITH A MONOTERPENE DEVELOPER

Gerhard Hoffmann, Ottarstadt, and Karl-Rudolf Kurtz, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 5, 1987, Ser. No. 425

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1986, 3600116

Int. Cl.[4] G03F *7/02*

U.S. Cl. 430—306 **5 Claims**

1. An improved process for preparing a photopolymerized flexographic relief printing plate from a photosentitive element comprising a photopolymerizable layer consisting essentially of

(A) at least one elastomeric polymer as the binder.

(B) at least one photopolymerizable monomer compatible with said binder (A) and

(C) at least one photoinitiator, by

(i) image-wise exposing said photopolymerizable layer of said element to actinic light and

(ii) washing out the unexposed, nonphotopolymerized parts of said layer with a developer, thereby obtaining a photopolymerized flexographic relief plate,

the improvement comprising: washing out the nonphotopolymerized parts of the irradiated photopolymerizable layer with a developer consisting essentially of at least one monoterpene and 0 to 40% by weight of an additonal solvent.

4,806,453

POSITIVE ACTING BILAYER PHOTORESIST DEVELOPMENT

David A. Vidusek, Natick; Michael Legenza, Bellingham, and Jeffery L. Vincent, Hudson, all of Mass., assignors to Shipley Company Inc., Newton, Mass.

Filed May 7, 1986, Ser. No. 860,421

Int. Cl.[4] G03F *7/26*

U.S. Cl. 430—312 **8 Claims**

1. A process for the exposure and development of a positive acting bilayer photoresist film comprising a bottom planarizing layer of a polyglutarimide photoresist and a top layer of a diazo sensitized novolak photoresist film, said process comprising the steps of

i. exposing the top novolak resist layer to activating radiation at a wavelength that does not activate the bottom resist layer to form a latent image in said top layer;

ii. developing the top resist layer with a developer that does not dissolve the bottom resist layer to form a conformable mask over the bottom resist layer;

iii. exposing the bottom resist layer through the developed top resist layer to a source of activating radiation at a wavelength that does not activate the top resist layer to form a latent image in said bottom layer; and

iv. developing the bottom resist layer with an aqueous alkaline solution comprising tetra ethyl ammonium hydroxide solution in a concentration of from 0.5 to 20 weight per-

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cent and a quaternary ammonium hydroxide surfactant whereby the botto resist layer is developed within aggressive attack on the top resist layer.

5. A process for the exposure and development of a positive acting bilayer photoresist film comprising a bottom planarizing layer of a polyglutarimide photoresist over a substrate and a top layer of a diazo sensitized novolak photoresist film over the layer of the polyglutarimide resist, said process comprising the steps of

i. exposing the top novolak resist layer to activating radiation at a wavelength above 3000 angstroms to form a latent image in said top layer;

ii. developing the top resist layer with an aqueous solution of a tetra alkyl ammonium hydroxide developer that does not dissolve the bottom resist layer to form a conformable mask over the bottom resist layer;

iii. exposing the bottom resist layer through the developed top resist layer to a source of activating radiation at a wavelength below 3000 angstroms to form a latent image in said bottom layer; and

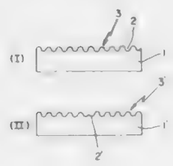
iv. developing the bottom resist layer with an aqueous alkaline solution comprising tetra ethyl ammonium hydroxide solution in a concentration of from 0.5 to 20 weight percent and a quaternary ammonium hydroxide surfactant whereby the bottom resist layer is developed without aggressive attack on the top resist layer.

4,806,454

METHOD FOR THE FORMATION OF A DIFFRACTION GRATING

Toshihiko Yoshida, Tenri; Haruhisa Takiguchi, Osaka; Shinji Kaneiwa, Nara, and Sadayoshi Matsui, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 812,784, Dec. 23, 1985, abandoned.
This application Jan. 24, 1987, Ser. No. 65,145
Claims priority, application Japan, Dec. 27, 1984, 59-278999
Int. Cl.[4] G03C *5/00*
U.S. Cl. 430—321 4 Claims



1. A method for the formation of a diffraction grating on a substrate using a holographic technique and an etching technique, the method comprising the steps of:

coating a photoresist on said substrate;

forming interference fringes on said photoresist by superposing two light fluxes from a holographic exposing system on said photoresist, wherein a transparent board of uneven thickness is placed in the path of one of said two light fluxes;

developing said photoresist to eliminate photosensitive areas thereon;

etching said substrate using remaining photoresist as an etching mask; and

removing said etching mask from said substrate, thus providing a diffraction grating on said substrate, wherein

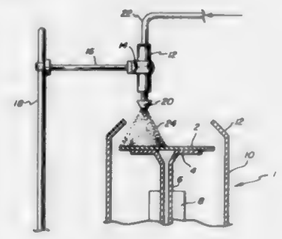
a phase shift is introduced at a discrete point within the diffraction grating by making a difference in light path length between one portion and the remaining portion of said one light flux of said two light fluxes in the holographic exposing system, the difference in light path length being caused by said transparent board wherein the difference in light path length of one of the two light fluxes from the holographic exposing system is achieved by passing said one light flux through said transparent board of uneven thickness.

4,806,455

THERMAL STABILIZATION OF PHOTORESIST IMAGES

Nancy C. LaBianca, Yalesville, Conn., assignor to MacDermid, Incorporated, Waterbury, Conn.

Filed Apr. 3, 1987, Ser. No. 34,344
Int. Cl.[4] G03C *5/00*
U.S. Cl. 430—325 5 Claims



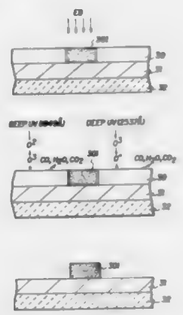
1. In a process for thermally stabilizing a resist image supported on a substrate by coating said image with a film of a thermally stabilizing material comprising an aqueous solution of gelatin or non-gelling hydrolyzed gelatin the improvement which comprises applying said stabilizing material in a predetermined amount in the form of a pattern of atomized droplets generated using an ultrasonic nozzle and falling under gravity from said nozzle.

4,806,456

DRY DEVELOPMENT METHOD FOR A RESIST FILM AND AN APPARATUS THEREFOR

Shinya Katoh, Tokyo, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 843,350, Mar. 24, 1986, abandoned.
This application Jan. 21, 1988, Ser. No. 147,590
Claims priority, application Japan, Mar. 29, 1985, 60-68286
Int. Cl.[4] G03C *5/16*
U.S. Cl. 430—296 9 Claims



1. A dry development method for a resist film, comprising the steps of:

forming a negative type resist film on a substrate, said resist film being sensitive to an electron beam;

selectively exposing said resist film to said electron beam such that a latent image of a desired pattern is formed therein, and wherein the portion of the resist film irradiated by the electron beam has a lower etching rate than that of the unexposed portion wqhen subjected to deep ultraviolet radiation; and

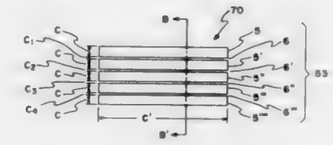
irradiating deep ultraviolet radiation on said resist film in an oxidizing gas at substantially atmospheric pressure, after said resist film has been selectively exposed to said electron beam, whereby a portion of said resist film not exposed to said electron beam is removed to form said desired pattern therein corresponding to said latent image.

4,806,457

METHOD OF MANUFACTURING INTEGRATED CIRCUIT SEMICONDUCTOR DEVICE

Masayuki Yanagisawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 9, 1987, Ser. No. 36,076
Claims priority, application Japan, Apr. 10, 1986, 61-83480
Int. Cl.[4] G03C *5/00*
U.S. Cl. 430—311 6 Claims



1. A method of manufacturing an integrated circuit semiconductor device comprising a step of patterning a resist film by photolithographic technique to form an element-forming resist pattern and a check pattern for monitoring a state of said element-forming resist pattern, said check pattern being designed such that at least three resist stripes are arranged in parallel with interposing intervals, said intervals having different widths of 1μm or less, and each of said resist stripes having a width of three times or more the maximum width of said intervals and a length of ten times or more the maximum width of said intervals.

4,806,458

COMPOSITION CONTAINING A MIXTURE OF HEXA-ALKYL DISILAZANE AND PROPYLENE GLYCOL ALKYL ETHER AND/OR PROPYLENE GLYCOL ALKYL ETHER ACETATE

Dana Durham, Bloomsbury, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 791,876, Oct. 28, 1985, Pat. No. 4,692,398.
This application Aug. 27, 1987, Ser. No. 64,969
Int. Cl.[4] G03C *5/00*
U.S. Cl. 430—331 10 Claims

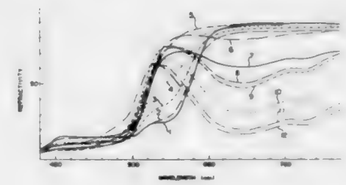
1. A composition suitable for stripping, thinning, cleaning or promoting the adhesion of cured and uncured photoresist compositions on substrates covered with such resists which consists essentially of in admixture from about 3 to about 50% by weight of the composition of a hexa-alkyl disilazane and from about 50 to about 97% by weight of the composition of a solvent composition which comprises one or more compounds selected form the group consisting of a propylene glycol monoalkyl ether and a propylene glycol mono-alkyl ether acetate.

4,806,459

COLOR PHOTOGRAPHIC MATERIAL YELLOW AND CYAN DYE FORMING COUPLERS AND COMPOUND WHICH PRODUCES A DIFFUSIBLE DEVELOPMENT INHIBITOR OR A PRECURSOR IN A BLUE SENSITIVE LAYER

Katsumi Makino; Nobuo Suzuki, and Koji Takahashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 849,657, Apr. 9, 1986, abandoned. This application May 6, 1987, Ser. No. 47,517
Claims priority, application Japan, Apr. 9, 1985, 60-77488
Int. Cl.[4] G03C *1/08, 1/46, 7/26, 7/32*
U.S. Cl. 430—544 15 Claims



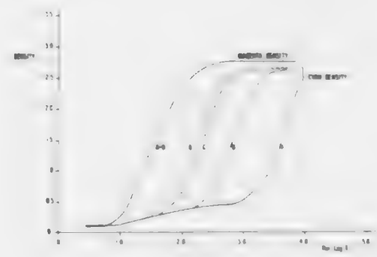
1. A color photographic material comprising a support having provided thereon a blue-sensitive silver halide emulsion layer containing at least one coupler capable of reacting with an oxidation product of an aromatic primary amine developing agent to form a yellow dye, at least one coupler capable of reacting with said oxidation product to form a cyan dye and not to produce a diffusible development inhibitor or a precursor thereof, and at least one compound capable of reacting with said oxidation product to produce a diffusible development inhibitor or a precursor thereof, wherein the at least one coupler forming the yellow dye, the at least one coupler forming the cyan dye and the at least one compound producing a diffusible development inhibitor or a precursor thereof are present in the same blue-sensitive silver halide emulsion layer.

4,806,460

MULTILAYER SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Tadashi Ogawa; Koji Takahashi, and Seiichi Taguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 786,396, Oct. 10, 1985, abandoned.
This application Oct. 26, 1987, Ser. No. 113,353
Claims priority, application Japan, Oct. 11, 1984, 59-212915
Int. Cl.[4] G03C *7/18, 7/20*
U.S. Cl. 430—504 29 Claims



1. A multilayer silver halide color photographic material comprising a reflective support having thereon at least two light-sensitive silver halide emulsion layers (A) and (B), each of the emulsion layers (A) and (B) having a different spectral

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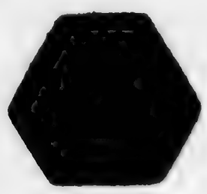
sensitivity and each of the emulsion layers (A) and (B) containing at lest one dye-forming agent which forms an imaging dye of a different hue in the emulsion layer (A) and (B) on processing; wherein when at least one of said emulsion layers (A) and (B) yields a dye image by processing after image wise exposure, at least one another dye-forming agent (C), on the processing, yields a dye of a hue substantially different from at least one of the hue of the layers (A) and (B) in which the dye formed by the dye-forming agent (C) is present in the region where the image density of the at least one imaging dye is over a definite density value in the range of 1.3 to 2.0, whereby said at least one dye-forming agent (C) provides gradation to the region over the definite density value of from 1.3 to 2.0, the different hue due to the dye-forming agent (C) not being added to a density region in which the density is not more than the definite value, wherein any dye-forming agent is not a development inhibitor releasing coupler and not a colored coupler.

4,806,461

SILVER HALIDE EMULSION AND PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL USING TABULAR GRAINS HAVING TEN OR MORE DISLOCATIONS PER GRAIN

Hideo Ikeda; Munehisa Fujita; Shingo Ishimaru; Hiroshi Ayato, and Shigeharu Urabe, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Mar. 7, 1988, Ser. No. 165,085
Claims priority, application Japan, Mar. 10, 1987, 61-54640
Int. Cl.[4] G03C *1/02*
U.S. Cl. 430—567 4 Claims



1. A silver halide emulsion comprising a dispersion medium and silver halide grains, the silver halide emulsion containing tabular silver halide grains having a thickness of 0.5 μm or less, a diameter of 0.3 μm or more, and a mean diameter-to-thickness ratio of 2 or more, wherein said tabular grains occupy at least 50% of a projected area of all the silver halide grains, and 50% (number) or more of said tabular grains include 10 or more dislocations per grain.

4,806,462

SILVER HALIDE PHOTOGRAPHIC MATERIAL COMPRISING DOPED DIVALENT METAL

Seiji Yamashita; Naoto Ohshima, and Shunji Takada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 1, 1987, Ser. No. 44,857
Claims priority, application Japan, May 2, 1986, 61-102284
Int. Cl.[4] G03C *1/06*
U.S. Cl. 430—604 13 Claims

1. A silver halide photographic material comprising a support having thereon at least one photographic silver halide emulsion layer containing silver halide grains dispersed in a dispersing medium, wherein in said silver halide grains, a total weight of the portion where at least one polyvalent metal ion is doped in an amount of not less than 1×10^{-4} mol per mol of the doped silver halide, is at least 10% based on the total weight of said silver halide grains, wherein said at least one polyvalent metal ion is selected from divalent metal ions.

4,806,463

INHIBITION OF HTLV-III BY EXOGENOUS OLIGONUCLEOTIDES

John Goodchild, Worcester, and Paul C. Zamecnik, Shrewsbury, both of Mass., assignors to Worcester Foundation for Experimental Biology, Shrewsbury, Mass.

Filed May 23, 1986, Ser. No. 867,231
Int. Cl.[4] C12Q *1/70, 1/02*; A61K *39/12*
U.S. Cl. 435—5 12 Claims

8. A method of detecting the presence of HTLV-III virus in a sample by demonstrating inhibition of replication of said virus in cells which are normally killed by the HTLV-III virus after the cells have been (a) combined with said sample and an oligonucleotide complementary to at least one highly conserved region of the HTLV-III genome necessary for HTLV-III replication and capable of hybridizing with at least the highly conserved region, said highly conserved region of the HTLV-III genome being a nucleotide sequence present in the genomes of HTLV-III isolates and said oligonucleotide complementary to at least one highly conserved region of the HTLV-III genome necessary for HTLV-III replication being complementary to a region of the HTLV-III genome selected from the group consisting of:

(a) the $tRNA^{lys}$ primer binding site;
(b) regions of the HTLV-III genome vicinal in the 5′ direction to the $tRNA^{lys}$ primer binding site;
(c) the $tRNA^{lys}$ primer binding site and regions of the HTLV-III genome vicinal in the 5′ direction to the $tRNA^{lys}$ primer binding site;
(d) the mRNA donor splice sites;
(e) the mRNA acceptor splice sites;
(f) the initiator codon fot the gag gene;
(g) the initiator codon for the env gene;
(h) the initiator codon for the tat gene;
(i) the initiator codon for the sor gene;
(j) the initiator codon for the 3′ orf gene;
(k) the cap nucleotide of the HTLV-III genome;
(l) the art gene or portions thereof;
(m) the region of the HTLV-III genome encoding a frameshift; and
(n) equivalents thereof, said equivalents being nucleotide sequences which are sufficiently similar in sequence to the complementary nucleotide sequences to be capable of hybridizing with a conserved region of the HTLV-III genome and inhibiting its activity and (b) maintained under conditions appropriate for cell growth.

4,806,464

NUCLEAR BINDING ASSAY FOR STEROID RECEPTOR FUNCTIONALITY IN CANCEROUS CELLS

Thomas C. Spelsberg, Rochester, Minn., assignor to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Continuation-in-part of Ser. No. 652,295, Sep. 19, 1984, Pat. No. 4,711,856. This application Feb. 11, 1987, Ser. No. 13,569
Int. Cl.[4] C12Q *1/68, 1/20*; G01N *33/566, 33/567*
U.S. Cl. 435—6 37 Claims

1. A method for rapidly assaying a tissue sample for nuclear antisteroid binding comprising:

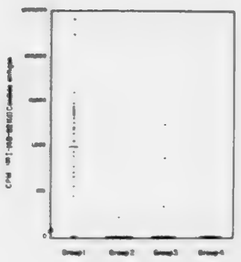
(a) fragmenting said tissue sample;
(b) digesting said fragmented tissue with collagenase;
(c) isolating the cells from said digested tissue;
(d) incubating said cells with an amount of a radiolabelled antisteroid capable of complexing with and saturating the steroid receptors in said cells;
(e) isolating the cellular nuclei;
(f) measuring the bound radioactivity and the total DNA of said nuclei; and
(g) comparing the amount of bound radioactivity and the total DNA to determine a measure of the total nuclear bound steroid receptors.

4,806,465

CYTOPLASMIC ANTIGENS OF CANDIDA ALBICANS AND METHODS OF USING THE SAME

Helen R. Buckley; Michael T. Largen, both of Philadelphia, Pa., and Nancy A. Streckfuss, Bethesda, Md., assignors to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Division of Ser. No. 571,129, Jan. 16, 1984, Pat. No. 4,670,382, which is a continuation-in-part of Ser. No. 557,296, Dec. 3, 1983, abandoned. This application Mar. 30, 1987, Ser. No. 32,111
Int. Cl.[4] G01N *53/00*; A61K *45/00, 35/72*; C07K *15/04*
U.S. Cl. 435—7 7 Claims



1. A diagnostic method for disseminated or invasive candidiasis comprising:

a. contacting blood serum with a composition containing a substantially biochemically pure preparation of a cytoplasmic antigen of *C. albicans*, said antigen having an apparent molecular weight selected from the group consisting of 48–52 Kd, 35–38 Kd and 120–135 Kd, said antigen being detectable in humans during disseminated candidiasis but not during non-invasive *C. albicans* infections; and
b. detecting antibody bound by the antigen of said preparation.

4,806,466

CELL AGGLUTINATION REAGENT COMPRISING CONJUGATES OF ANTIBODY COVALENTLY BOUND TO LIPOSOMES

Demetrios P. Papahadjopoulos, Lafayette, and Timothy D. Heath, San Francisco, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 316,126, Oct. 29, 1981, Pat. No. 4,598,051, which is a continuation-in-part of Ser. No. 129,654, Mar. 12, 1980, abandoned. This application Mar. 17, 1986, Ser. No. 840,054
Int. Cl.[4] G01N *33/554, 33/555, 33/563, 33/577*
U.S. Cl. 435—7 14 Claims

8. A reagent, useful for cell agglutination assays, comprising: conjugates comprising (a) liposomes and (b) antibody covalently bound to the liposomes, the liposomes having lipid molecules, the covalently bound antibody having an antigen binding capacity for cells, said cells bearing a cell surface antigen for which the covalently bound antibody is specific, to mediate agglutination via antigen-antibody interaction, the covalently bound antibody being in an amount of at least about 40 micrograms per micromole of lipid molecules, the conjugates having an enhanced agglutinating activity with respect to the agglutinating activity of antibody from which the conjugates are derived.

4,806,467

METHOD FOR THE DETECTION OF EQUINE INFECTIOUS ANEMIA AND OTHER RETROVIRUS INFECTIONS USING A COMPETITIVE ENZYME-LINKED IMMUNOABSORBENT ASSAY AND REAGENTS USEFUL IN THE SAME

James P. Porter, Oakland, Calif.; Tatsuo Matsushita, and Lyndal K. Hesterberg, both of Fort Collins, Colo., assignors to Fermenta Animal Health Company, Kansas City, Mo.

Filed Oct. 21, 1985, Ser. No. 789,910
Int. Cl.[4] G01N *33/53, 33/543*
U.S. Cl. 435—7 29 Claims

1. A competition immunoassay for detecting the presence of antibody to Equine Infectious Anemia virus core antigen p26 and also the presence of Equine Infectious Anemia virus or Equine Infectious Anemia virus core antigen p26 comprising:

(A) binding a monoclonal antibody specific to Equine Infectious Anemia virus core antigen p26 to a solid support,
(B) reacting the bound monoclonal antibody simultaneously with a labeled Equine Infectious Anemia virus core antigen p26 and a test sample.
(C) removing the unbound test sample and the unbound labeled Equine Infectious Anemia virus core antigen p26, and
(D) measuring the amount of bound labeled Equine Infectious Anemia virus core antigen p26, thereby determining the amount of antibody specific to the Equine Infectious Anemia virus core antigen p26 in the test sample and also the amount of Equine Infectious Anemia virus or Equine Infectious Anemia virus core antigen p26 in the test sample.

26. An immunoassay reagent comprising a solid support coated with Equine Infectious Anemia virus core antigen, p26.

4,806,468

MEASUREMENT OF GLYCOSYLATED HEMOGLOBIN BY IMMUNOASSAY

Daniel B. Wagner, Raleigh, and Ashoke Sinha, Durham, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Feb. 5, 1987, Ser. No. 11,663
Int. Cl.[4] G01N *53/00, 33/72, 1/00*; C12Q *1/28*
U.S. Cl. 435—7 18 Claims

1. A method for determining the percentage of glycosylated hemoglobin fraction HbAlc in the total hemoglobin for a blood sample comprising:

(a) preparing a mixture by contacting a blood smaple in a diluent with a monoclonal antibody specific for the glycoside portion of HbAlc and an antibody specific for the here portion of total hemoglobin whereby HbAlc in said sample binds to said monoclonal antibody to give a first bound fraction and nonglycosylated hemoglobin in said sample binds to said antibody to give a second bound fraction;
(b) passing a first beam of light having a wavelength maximum of about 416 nm through said mixture, whereby said first and second bound fractions absorb said ligth to give a first absorbance due to said total hemoglobin;
(c) measuring said first absorbance;
(d) adding to said mixture a source of peroxide and a peroxidase substrate whereby peroxide from said source reacts with said substrate to give a product, said reaction being catalyzed by HbAlc in said first bound fraction but not by nonglycosylated hemoglobin in said second bound fraction;
(e) passing a second beam of light through said mixture, said second beam having a wavelength maximum whereby it is absorbed by said product to give a second absorbance due to said HbAlc;
(f) measuring said second absorbance; and
(g) determining the percentage of HbAlc in said blood sample from the magnitude of said first and second absorbances.

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4,806,469

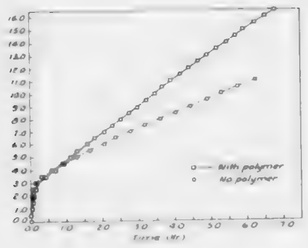
PROCESS FOR THE DETERMINATION OF LIPASE ACTIVITY

Daniel H. Haigh, Sanford, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 420,453, Sep. 20, 1982, abandoned. This application Mar. 20, 1985, Ser. No. 714,140

Int. Cl.⁴ C12Q *1/44;* C12N *9/20*

U.S. Cl. 435—19 **15 Claims**



1. In a method for the determination of lipase activity wherein a triglyceride is dispersed as a plurality of particles in an aqueous dispersion medium, a lipase is added to the aqueous dispersion medium, the lipase attacking the triglyceride and generating acyl acids, and the aqueous dispersion is titrated to determine the rate of generation of acyl acids, the improvement which comprises disposing the triglyceride within a plurality of particles of a triglyceride-swellable, triglyceride-insoluble crosslinked synthetic resin prior to dispersing the triglyceride in the aqueous solution.

4,806,470

ANALYTICAL ELEMENT AND METHOD FOR THEOPHYLLINE DETERMINATION HAVING INCREASED ALKALINE PHOSPHATASE ISOENZYME

Paul H. Frickey, and Gary E. Norton, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 25, 1986, Ser. No. 900,068

The portion of the term of this patent subsequent to Nov. 1, 2005, has been disclaimed.

Int. Cl.⁴ C12Q *1/42;* C12N *9/99*

U.S. Cl. 435—21 **18 Claims**

1. A dry analytical element for the determination of theophylline comprising an absorbent carrier material, a buffer which maintains the pH at 9 or less during the determination and, in fluid contact, first and second zones, said first zone containing at least about 100 I.U./m^2 of an isoenzyme of alkaline phosphatase which is capable of acting on a substrate for said isoenzyme at a pH of 9 or less, and said second zone containing a substrate for said isoenzyme.

4,806,471

PLASMIDS WITH CONDITIONAL UNCONTROLLED REPLICATION BEHAVIOR

Soren Molin, Holte, Denmark; Janice A. Light, Henley-on-Thames, United Kingdom, and Jens E. L. Larsen, Jordlose, Denmark, assignors to A/S Alfred Benzon, Copenhagen, Denmark

Continuation of PCT DK83/00084, Sep. 9, 1983, published as WD84/01171, Mar. 29, 1984. May 16, 1984, Ser. No. 610,765

Int. Cl.⁴ C12N *15/00, 1/20;* C12P *21/00, 19/34*

U.S. Cl. 435—68 **65 Claims**

1. A plasmid requiring transcription from a promoter for replication, and which carries an inserted regulatable promoter at a position and in an orientation so that transcription from the promoter regulates plasmid replication, increased transcription from the promoter leading to a substantial increased or uncontrolled plasmid copy number.

4,806,472

CLONING AND EXPRESSION VECTOR, YEAST TRANSFORMED BY SUCH VECTOR AND APPLICATIONS THEREOF

Laurence de Louvencourt, Levallois Perret; Hiroshi Fukuhara, Gif-sur-Yvette; Henri Heslot, and Micheline Wesolowski, both of Paris, all of France, assignors to Societe Nationale Elf Aquitaine, France

Continuation of Ser. No. 576,382 filed as PCT FR 83/00106 on June 1, 1983, published as W083/04261 on Dec. 8, 1983, abandoned. This application Dec. 22, 1986, Ser. No. 945,164

Claims priority, application France, Jun. 2, 1982, 82 09564; Jun. 6, 1982, 82 15114

Int. Cl.⁴ C12P *21/00;* C12N *15/00, 5/00*

U.S. Cl. 435—68 **3 Claims**

1. A yeast from the genus Kluyveromyces transformed by a plasmid vector for expression of a heterologous protein in said yeast in which said vector is a circular plasmid comprising a portion of the DNA of the plasmid k_1 containing at least the replication sequence, a DNA sequence encoding a heterologous gene, and a DNA sequence which insures expression of the said gene in the yeast.

4,806,473

PROCESS FOR ENZYMATIC PRODUCTION OF PEPTIDES

Jack T. Johansen, Rungsted Kyst, and Fred Widmer, Valby, both of Denmark, assignors to De Forenede Bryggeier A/S, Copenhagen, Denmark

Continuation of Ser. No. 333,292, Dec. 22, 1981, abandoned, which is a division of Ser. No. 136,661, Apr. 2, 1980, Pat. No. 4,339,534. This application Jun. 13, 1985, Ser. No. 744,308

Claims priority, application Denmark, Apr. 6, 1979, 1443/79

Int. Cl.⁴ C12P *21/04, 21/02*

U.S. Cl. 435—71 **12 Claims**

1. A process for producing a peptide of the general formula

A—B

wherein A represents an N-terminal protected amino acid residue or an optionally N-terminal protected peptide residue and B represents an optionally C-terminal protected L-amino acid residue, which comprises:

reacting a substrate component selected from the group consisting of

optionally N-terminal protected peptides of the formula

A—X

wherein A is as defined above and X represents an amino acid

with an amine component selected from the group consisting of

(a) optionally N-substituted amino acid amides of the formula

H—B—NHR^3

wherein B is an L-amino acid residue and R^3 represents hydrogen, hydroxy, amino or alkyl, aryl or aralkyl, and

(b) amino acid esters of the formula

H—B—OR^4

wherein B is an L-amino acid residue and R^4 represents alkyl, aryl and aralkyl,

in the presence of an L-specific serine or thiol carboxypeptidase enzyme from yeast or of animal, vegetable, or microbial origin in an aqueous solution or dispersion having a pH from 5 to 10.5.

4,806,474

PREPARATION OF MYCELIAL CHITOSAN AND GLUCAN FRACTIONS FROM MICROBIAL BIOMASS

Donald F. Hershberger, Elkhart, Ind., assignor to Miles Inc., Elkhart, Ind.

Filed Jun. 10, 1985, Ser. No. 743,108

Int. Cl.⁴ C12P *19/04, 1/02;* C12R *1/685;* C08B *37/08*

U.S. Cl. 435—101 **9 Claims**

1. A method for recovering chitosan from chitin containing biomass which comprises the steps of:

(a) contacting damp biomass with a concentrated aqueous solution of a strong alkali wherein the amount of alkali is from 200% to 500% of the amount of biomass on a dry weight basis;

(b) maintaining the biomass in contact with the alkali solution for a period of at least 10 hours while maintaining the mixture's temperature in the range of from 60° to 90° C. to convert the chitin in the biomass to chitosan;

(c) separating the chitosan from the alkali solution and washing it; and

(d) recovering the chitosan from undissolved residue from step c by dissolution in dilute acid.

4,806,475

ALKALINE PEROXIDE TREATMENT OF AGRICULTURAL BYPRODUCTS

John M. Gould, Brimfield, Ill., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 566,380, Dec. 28, 1983, Pat. No. 4,649,113. This application Sep. 29, 1986, Ser. No. 912,296

The portion of the term of this patent subsequent to Mar. 10, 2004, has been disclaimed.

Int. Cl.⁴ C12P *7/10;* C13K *1/02;* D21C *3/00;* D01C *1/00*

U.S. Cl. 435—165 **18 Claims**

1. A method for treating a substrate to yield a cellulosic product wherein said substrate is a nonwoody lignocellulosic portion of a fruit, root, or tuber, said method comprising treating said substrate in a reaction medium comprising an aqueous solution of strong alkali and hydrogen peroxide so as to solubilize at least a portion of the lignin and to enhance the water-binding capacity of the cellulose, thereby producing a water-soluble lignin-containing fraction and a water-insoluble cellulose-containing fraction, and recovering the water-insoluble fraction from the reaction medium as said cellulosic product.

4,806,476

EFFICIENT CELL FUSION PROCESS

Teresa Coons, Albuquerque, N. Mex., and Barry Avner, Franklin, Tenn., assignors to Lovelace Medical Foundation, Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 521,196, Sep. 8, 1983, abandoned, which is a continuation-in-part of Ser. No. 406,823, Aug. 10, 1982, abandoned. This application Aug. 13, 1985, Ser. No. 765,866

Int. Cl.⁴ C12N *15/00, 5/02, 5/00;* C12R *1/91*

U.S. Cl. 435—172.2 **11 Claims**

1. A process for the preparation of monoclonal antibody-producing hybridomas which comprises:

mixing together in vitro

(a) tumor cells from a WIL2-NS human lymphoblastoid cell line, Accession No. ATCC-CRL 8155, which do not secrete immunoglobulin or infectious virus; and

(b) peripheral blood lymphocytes obtained from a donor suffering from systemic lupus erythematosis, cultured in vitro with rabbit thymus extract and a polyclonal lymphocyte activator selected from the group consisting of pokeweed mitogen and lipopolysaccharides;

substantially removing at least calcium ions from the cell environment, whereby to destabilize the membranes of said cells;

adding a fusogen selected from the group consisting of phosphoglycerides and sterols to said destabilized cells;

diluting the mixture of fusogen and destabilized cells with tissue culturer medium containing polyvalent cations;

whereby to obtain said hybridomas by fusion of said tumor cells and said lymphocytes; and

separating and reproducing said hybridomas.

4,806,477

PROCESS FOR REACTING SUBSTRATES WITH BIOCATALYSTS IN A 2-PHASE LIQUID SYSTEM

Reinhardt Rothert, Niederhausen Taunus, and Dieter Wallbrandt, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 29, 1987, Ser. No. 55,541

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1986, 3618465

Int. Cl.⁴ C12N *11/02;* C12P *41/00*

U.S. Cl. 435—177 **1 Claim**

1. A process for reacting substrates with biocatalysts in a 2-phase liquid system disposed in a fluidized bed reactor vessel having a height to diameter ratio of between 40:1 to 20:1, a top portion with an exit opening and first filter means disposed therein, a bottom portion with an entrance opening and second filter means disposed therein, a feed line connecting the exit and entrance openings, and pump means disposed in the feed line, comprising the steps of:

stirring the 2-phase liquid in the vessel with a stirrer disposed in the top portion thereof to accelerate sedimentation and minimize accumulation of the biocatalysts in the top portion of the vessel;

selectively controlling the temperature of the 2-phase liquid within the vessel with a cooling/heating jacket surrounding a portion of the vessel;

drawing, with the pump means, a portion of the 2-phase liquid through the exit opening and first filter means; and

recirculating the drawn-off portion of the 2-phase liquid through the feed line and through the entrance opening and second filter means to enhance miscibility of the individual phases of the 2-phase liquid within the vessel.

4,806,478

DRY ENZYME FORMULATIONS CONTAINING D-AMINO ACID OXIDASE

Julie B. Stahl, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 17, 1984, Ser. No. 661,662

Int. Cl.⁴ C12N *11/08, 9/96;* C12Q *1/26*

U.S. Cl. 435—180 **9 Claims**

1. A stable enzyme formulation comprised of a non-cellulosic fibrous carrier having coated and dried thereon D-amino acid oxidase, wherein said enzyme is substantially solubilized when said formulation is rehydrated.

4,806,479

USE OF STABILIZING AGENTS IN CULTURE MEDIA FOR GROWING ACID PRODUCING BACTERIA

Mary A. Kegel, Sun Prairie, and Donald L. Wallace, Madison, both of Wis., assignors to Miles Inc., Elkhart, Ind.

Filed May 13, 1985, Ser. No. 733,328

Int. Cl.⁴ C12N *1/38, 1/20;* A23C *9/123, 19/032*

U.S. Cl. 435—244 **13 Claims**

1. In combination with the method of propagating a mother culture of an acid producing bacteria which involves inoculating an aqueous bulk starter medium containing a nutrient base, a growth stimulant, a phage control agent and an essentially insoluble or temporarily insolubilized particulate neutralizing agent, the improvement which comprises incorporating into the starter medium before propagation of the mother culture a food-grade protective hydrocolloid as stabilizer in sufficient amount to prevent separation of the particulate neutralizing

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agent from the medium during such propagation of the mother culture in the absence of agitation.

4,806,480

NOVEL E. COLI HYBRID PLASMID VECTOR CONFERRING SUCROSE FERMENTING CAPACITY

José L. G. Lopez, Madrid, Spain, assignor to Antibioticos, S.A., Madrid, Spain

Filed Feb. 19, 1985, Ser. No. 702,587

Claims priority, application United Kingdom, Feb. 16, 1984, 8404057

Int. Cl.⁴ C12N *1/20, 1/00, 15/00*

U.S. Cl. 435—252.33 **3 Claims**



3. Plasmid vector which comprises RSF1010 plasmid and a DNA insert consisting essentially of the 4.85 fragment of plasmid pSPI shown in FIG. 1.

4,806,481

STREPTOCOCCUS SOJALACTIS

Huang Y. Yan, and Wang D. Peng, both of Beijing, China assignors to Taishi Foods Company Ltd., Aomori, Japan

Division of Ser. No. 687,238, Dec. 28, 1984, Pat. No. 4,664,919. This application Feb. 10, 1987, Ser. No. 13,293

Int. Cl.⁴ C12N *1/20, 1/46*

U.S. Cl. 435—253.4 **2 Claims**

1. A bacterium culture wherein consisting of *Streptococcus sojalactis*, Budapest Treaty Deposit No. FERM B.P. 1597.

4,806,482

MICROBIAL DEGRADATION OF HYDROCARBONS

Amikam Horowitz, Shaker Heights, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.

Division of Ser. No. 842,528, Mar. 21, 1986. This application Jun. 6, 1988, Ser. No. 203,188

Int. Cl.⁴ C02F *3/00;* **C12N** *1/26, 1/30;* **C12R** *1/05*

U.S. Cl. 435—262 **7 Claims**

1. A process for degrading chloroaliphatic organic compounds which comprises growing a microbe hosting plasmid pEDC, alone or in mixture with other microbes, in the presence of the organic compounds to be degraded.

4,806,483

PROCESS FOR REGENERATING CORN

Andrew S. Wang, Palo Alto, Calif., assignor to Sungene Technologies Corporation, San Jose, Calif.

Filed Aug. 18, 1986, Ser. No. 897,422

Int. Cl.⁴ C12N *5/00, 5/02*

U.S. Cl. 435—240.49 **18 Claims**

1. A process for regenerating corn plants from cell or tissue culture which comprises the steps of:

(a) culturing tissue obtained from a mature corn embryo on a callus induction medium comprising mineral salts, vitamins, sucrose, and a hormone selected from the group consisting of (A) 2,4-dichlorophenoxyacetic acid (2,4-D); (B) dicamba, (C) chloramben, (D) a mixture of 2,4-D, α-naphthalene acetic acid (NAA), indole acetic acid (IAA) and zeatin, (E) a mixture of dicamba, NAA, IAA, and zeatin. (F) a mixture of chloramben, NAA, IAA and zeatin, (G) a mixture of dicamba and 2,4-D, and (H) a mixture of chloramben and 2,4-D in the dark at 24°–30° C. for callus formation;

(b) subculturing said callus on a maintenance medium comprising mineral salts, vitamins, sucrose, L-proline, casamino acids and a hormone selected from the group consisting of (A) 2,4-D, (B) dicamba, (C) chloramben, (D) a mixture of dicamba and 2,4-D, and (E) a mixture of chloramben and 2,4-D in the dark at 24°–30° C. for callus maintenance; and

(c) subculturing said callus on a regeneration medium comprising mineral salts, vitamins and sucrose in the light at 24°–30° C. for plant formation.

4,806,484

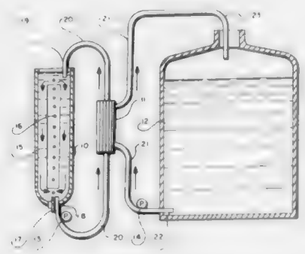
PERFUSION AIRLIFT BIOREACTOR

Ashot Petrossian, San Leandro, and Andy DeGiovanni, Berkeley, both of Calif., assignors to IGB Products, Ltd., San Leandro, Calif.

Filed Aug. 7, 1987, Ser. No. 82,536

Int. Cl.⁴ C12M *1/12*

U.S. Cl. 435—311 **1 Claim**



1. An apparatus for growing eukaryotic cells consisting essentially of:

(a) a two liter airlift bioreactor accomaditing eukaryotic cells in suspension, encapsulated or on microcarriers in a medium supporting cell growth,

(b) a 19 square foot 30,000 molecular weight cutoff hollow fiber bundle filter, positioned between said bioreactor and said media reservoir,

(c) pump means operably connected to said bioreactor and said filter for circulating said medium into the filter and returning said medium to the bioreactor,

(d) pump means operably connected to said filter and a 50 liter medium reservoir for circulating said medium from said reservoir to said filter and returning said medium to said medium reservoir,

(e) pump means operably connected to said bioreactor for admitting air into said airlift bioreactor for stirring the suspension of cells and medium whereby,

(f) the spent bioreactor medium containing product/s is dialyzed against a fresh reservoir medium through said hollow fiber filter.

4,806,485

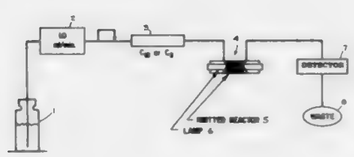
METHOD OF IMPROVING THE DETECTION LIMITS OF UV-VIS ABSORBING COMPOUNDS IN HPLC BY THE USE OF A SINGLET OXYGEN TRAP

John W. Birks, and Curtis L. Shelbum, both of Boulder, Colo., assignors to Cooperative Institute for Research in Environmental Sciences Univers. of Colorado, Boulder, Colo.

Filed Feb. 27, 1987, Ser. No. 19,890

Int. Cl.⁴ G01N *30/14*

U.S. Cl. 436—140 **20 Claims**



1. A method of improving the detection limit of aromatic compounds in HPLC comprising:

(A) Modifying a conventional HPLC apparatus having an injection port, an analytical column and a spectrophotometric detector by inserting between the analytical column and the spectrophotometric detector a photochemical reactor comprising:

(i) at least one lamp which emits radiation in the range of from about 190 nm to 800 nm;

(ii) a photochemical reaction chamber having two open ends with one open end connected to the analytical column and the other end to the spectrophotometric detector; and

(iii) a filter device interposed between the lamp and the reaction chamber to selectively transmit a desired excitation wavelength;

(B) Dissolving a sample containing an anlyte to be detected in a solvent suitable for dissolving the analyte to form a sample solution, the analyte being selected from the group of conjugated compounds comprising aromatic compounds, non-aromatic compound and derivatives thereof which is excitable by radiation of a selected wavelength of greater than 240 nm to produce triplet state molecules with a quantum yield greater than about 0.05, with an average life time greater than 10^{-6} seconds and having a transferable excitation energy of at least about 22.5 kcal/-mole;

(C) Selecting a mobile phase suitable for separating each of the compounds in the analyte and from the sample;

(D) Adding a singlet oxygen trap selected from the group consisting of substituted furans, bilirubin, chlorophylls, substituted pyrroles, substituted imidazoles, and substituted olefins to the mobile phase at a concentration in the range of 10^{-5} to 10^{-2}M;

(E) Injecting the sample solution into the injection port and allowing the sample solution to pass through the analytical column and the photochemcial reactor; and

(F) Monitoring the signal generated in the spectrophotometric detector at a predetermined wavelength thereby detecting aromatic compounds contained in the sample.

4,806,486

CALIBRATION LIQUID FOR ION-SPECIFIC ELECTRODES, PROCESS FOR PREPARING THEM AND THEIR APPLICATION

Ronald Sprokholt, Amsterdam; Alphons B. T. J. Boink, Zeist, and Antonius H. J. Maas, Utrecht, all of Netherlands, assignors to Stichting Gastransport, Utrecht, Netherlands

Filed Jan. 28, 1986, Ser. No. 823,325

Claims priority, application Netherlands, Jan. 31, 1985, 8500266

Int. Cl.⁴ G01N *31/00*

U.S. Cl. 436—19 **17 Claims**

1. A calibration liquid for use in calibrating apparatus used in analyzing blood components, said calibration liquid consisting essentially of an aqueous solution of sodium ion, potassium ion, calcium ion, chloride ion, albumin in a concentration of from 20 to 200 g/liter, and a partially neutralized nitrogen-containing organic sulfonic acid, said calibration liquid having a pH of 7.2 to 7.6.

4,806,487

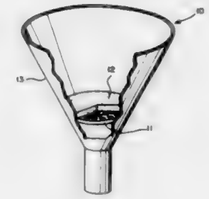
BASIC DRUG DETECTION METHOD

Susan Akers, Mantua, and Raymond F. Akers, Jr., Cherry Hill, both of N.J., assignors to Analytical Innovations, Inc., Cherry Hill, N.J.

Filed May 29, 1987, Ser. No. 55,437

Int. Cl.⁴ G01N *21/78, 33/94*

U.S. Cl. 436—93 **9 Claims**



1. A method for analyzing a sample of a body fluid for the presence of a basic drug which comprises:

filtering a sample of a body fluid through a cellulosic filtering means which has been treated with a binding agent for said filtering means and a basic drug so that any of said basic drug in said sample binds to said filtering means, said binding agent being a compound having the formula

HOOC—R—COOH

wherein R is selected from the group consisting of a cycloalkyl group having 4 to 6 carbon atoms, an alkyl group having 2 to 12 carbon atoms, an alkylene group having 2 to 12 carbon atoms, a heterocyclic group having five or six carbon atoms, and a phenyl group;

contacting said filtering means with a color indicator for said basic drug; and

observing the filtering means for any color change, wherein any color change is indicative of the presence of said basic drug in said sample.

4,806,488

LIGAND-RECEPTOR ASSAYS EMPLOYING SQUARATE DYE COMPOSITIONS

Donald E. Berger, Jr., San Jose; Thomas L. Tarnowski, So. San Francisco, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Sep. 6, 1985, Ser. No. 773,401
Int. Cl.[4] G01N *33/536*
U.S. Cl. 436—536 82 Claims

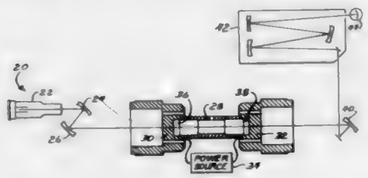
44. In an assay for an analyte in a sample suspected to containing said analyte, which analyte is a member of a specific binding pair (sbp member), said method involving the steps of (1) combining in an assay medium said sample and an sbp member conjugated to a dye and (2) determining the effect of said sample on the fluorescene of said dye, the effect thereof being related to the presence of analyte in said sample, the improvement which comprises employing as said dye a squarate dye.

4,806,489

MATRIX MODIFIER AND METHOD FOR MODIFYING A MATRIX TO IMPROVE ANALYSIS OF METAL CONSTITUENTS DURING GRAPHITE FURNACE ATOMIC ABSORPTION SPECTROSCOPY

Lucinda M. Beach, Glendale Heights, Ill., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 6, 1987, Ser. No. 22,966
Int. Cl.[4] G01N *21/74;* G01J *3/42*
U.S. Cl. 436—82 11 Claims



1. A method of quantitative analysis of metal constituents in samples using atomic absorption spectroscopy, the sample being vaporized by use of a graphite furnace, the method comprising the steps of:
- introducing the sampling, palladium and a surfactant into the graphite furnace;
- reducing the palladium to a metallic, finely-divided state dispersed among and in contact with the metal constituent in the sample by providing a hydrogen gas atmosphere in the graphite furnace during heating to at least 300° C.

4,806,490

PROCEDURE FOR THE DETECTION OF ALLERGEN-CONTAINING HOUSE DUST

Edelbert Bischoff, Kirchheim-Bolanden, and Wolfgang Schirmacher, Mainz, both of Fed. Rep. of Germany, assignors to Werner & Mertz GmbH, Mainz, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 698,114, Feb. 4, 1985, abandoned, which is a continuation-in-part of Ser. No. 673,948, Nov. 21, 1984, abandoned, and a continuation-in-part of Ser. No. 767,479, Aug. 20, 1985, abandoned. This application Feb. 19, 1987, Ser. No. 16,623
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1983, 3344087; Feb. 10, 1984, 3404821; Aug. 22, 1984, 3430896
Int. Cl.[4] G01N *21/78*
U.S. Cl. 436—98 23 Claims

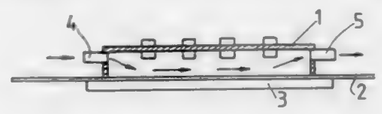
1. A process for establishing whether a sample of housedust contains allergens resulting from an occurrence of housedust mites which comprises suspending a sample of housedust from a building in an aqueous-alcoholic alkali metal hydroxide solution to form an extract, contacting the extract with an aromatic diazo compound, and detecting any housedust mite residues in the housedust sample as an indication of whether the housedust sample contains allergens by observing any color change in the extract subsequent to the contacting step, wherein the alkali metal hydroxide content in the aqueous-alcoholic alkali metal hydroxide solution is about 0.1 to about 50% by weight.

4,806,491

METHOD AND APPARATUS FOR MEASURING THE REACTION OF AN INDICATOR TO THE PRESENCE OF VARIOUS GASES

Ulrich Heim, Reinfeld, Fed. Rep. of Germany, assignor to Dragerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 1, 1986, Ser. No. 936,182
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1985, 3543324
Int. Cl.[4] G01N *31/22*
U.S. Cl. 436—165 3 Claims



1. A method for measuring the reaction of an indicator to various gases, comprising: positioning an indicator strip in a longitudinally elongated measuring chamber, the indicator including flat areas of discoloration reaction zones and being provided on a movable indicator substrate said step of positioning comprising transporting said substrate to a measuring position within the chamber; directing a gas to be measured into one end of the measuring chamber and withdrawing the gas at the opposite end thereof; employing a plurality of indicator sensors along the length of the chamber to electro-optically measure the reaction by the changes in color of said reaction zones of the indicator strip to the gas flow along the length of the chamber; measuring said reaction in a measuring cycle using an electronic evaluating instrument connected to the sensors, by creating a surface measuring flow of the test gas medium along the surface of a section of the indicator substrate while the indicator is held firmly in a measuring position staggering several optical control zones in a selected direction of the measuring flow; providing and connecting the zones with electronic evaluating instruments for the performance of the measurement which measures discolorations of the indicative substrate along the controlled zones; and, measuring the length of the discoloration zone.

4,806,492

POLYPEPTIDE TUMOR INHIBITORS AND ANTIBODIES THERETO

Mohammed Shoyab, Seattle; Hans Marquardt, Mercer Island, and George J. Todaro, Seattle, all of Wash., assignors to Oncogen, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 694,712, Jan. 25, 1985, Pat. No. 4,714,683. This application Aug. 15, 1985, Ser. No. 766,864
The portion of the term of this patent subsequent to Dec. 22, 2004, has been disclaimed.
Int. Cl.[4] G01N *33/53, 33/534*
U.S. Cl. 436—547 9 Claims

1. A method for retarding the growth of neoplastic cells which comprises:
- applying to neoplastic cells a growth retarding amount of a polypeptide of at least about 15 amino acids having a sequence substantially the same as a sequence of a neoplastic cell retarding polypeptide found in mammalian brain, wherein said sequence includes at least one of the following sequences:

a. Y aa^c aa^a Ar K Q A T aa^b
b. K W A W

c. aa^b M aa^c aa^b Y $(X)_x$ V E E
d. T aa^g P aa^d aa^e E E M L F I Y aa^c H Y K wherein:
aa^a is an aromatic amino acid;
aa^b and aa^c are any amino acids;
aa^d and aa^e are aliphatic neutral amino acids;
aa^f is an aliphatic amino acid;
Ar is an aromatic amino acid; and
aa^g is an aliphatic amino acid.

4,806,493

STABILIZERS FOR USE IN SERUM FOLATE ASSAYS

Albert Yuan, Glenside, Pa., assignor to ICN Micromedic Systems, Inc., Costa Mesa, Calif.

Continuation of Ser. No. 591,147, Mar. 19, 1984, abandoned. This application Sep. 21, 1987, Ser. No. 99,663
Int. Cl.[4] G01N *33/567;* B65D *69/00*
U.S. Cl. 436—505 12 Claims

6. In a method for assaying for the presence of serum folate in a sample, said method including the steps of
- performing an inactivation reaction on said sample to inactivate endogenous serum folate binding protein, wherein a serum folate stabilizer is present during the inactivation reaction,
- combining a measured amount of the sample with a measured amount of serum folate tracer material to form a combined serum folate material,
- binding a portion of the combined measured sample and measured serum folate tracer material to a specific binder for serum folate,
- separating the bound portion of the combined serum folate and serum folate tracer material from the unbound portion of the combined serum folate and serum folate tracer material, and
- measuring the presence of serum folate tracer in at least one of the bound or unbound portions of the combined serum folate and serum folate tracer material,

the improvement comprising using a serum folate stabilizer in the combined serum folate material selected from the group consisting of dimercaptosuccinic acid and thioctic acid.

4,806,494

MONOCLONAL ANTIBODY AGAINST OVARIAN CANCER CELLS (OVB-3)

Ira Pastan, Potomac; David J. Fitzgerald, and Mark Willingham, both of Bethesda, all of Md., assignors to The United States of America as represented by the Department of Health & Human Services, Washington, D.C.

Filed Jul. 24, 1986, Ser. No. 888,960
Int. Cl.[4] G01N *33/53, 33/543;* A61K *39/00, 45/02*
U.S. Cl. 424—85.91 5 Claims

2. An immunotoxin conjugate for the chemotherapeutic alleviation of human ovarian cancer comprising a monoclonal antibody OVB-3 which specifically binds to ovarian cancer cells bonded to Pseudomonas exotoxin.

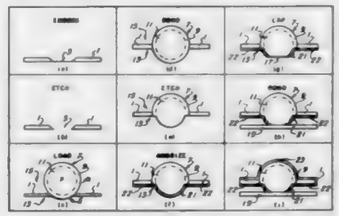
4,806,495

METHOD OF MAKING SOLAR ARRAY WITH ALUMINUM FOIL MATRIX

Jules D. Levine, Dallas; Millard J. Jensen, Balch Springs, and Ronald E. Haney, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 136,433, Dec. 17, 1987, abandoned, which is a continuation of Ser. No. 874,829, Jul. 17, 1987, abandoned, which is a division of Ser. No. 937,473, Dec. 2, 1986, Pat. No. 4,691,076, which is a continuation of Ser. No. 820,904, Jan. 19, 1986, abandoned, which is a continuation of Ser. No. 647,942, Sep. 4, 1984, abandoned. This application Jun. 15, 1988, Ser. No. 211,101
Int. Cl.[4] H01L *31/18, 27/14*
U.S. Cl. 437—2 9 Claims

1. A method of forming a solar array comprising the steps of:
(a) providing a first aluminum foil,
(b) forming apertures of a first diameter in said foil at predetermined locations thereon,
(c) providing a spheroid shaped semiconductor particle having a first conductively skin over a second conductivity type opposite said first type center in each of said apertures, each of said particles having a second diameter slightly larger than said first diameter, whereby said particles protrude from both sides of said foil,
(d) bonding said foil to said first conductivity type regions in said apertures,



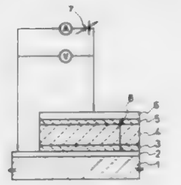
(e) removing the first conductivity type skin on one side of said first foil,
(f) forming an insulating layer on the said one side of said first foil and on the surface of said particles, from which the first conductivity type layer was removed,
(g) removing a portion of the second conductivity type centers of said particles and the insulating layer thereover, and
(h) bonding a second aluminum foil to the regions from which said portions of the second conductivity type centers were removed.

4,806,496

METHOD FOR MANUFACTURING PHOTOELECTRIC CONVERSION DEVICES

Kunio Suzuki, Tokyo; Ippei Kobayashi, Atsugi; Katsuhiko Shibata, Atsugi; Mamio Suzukida, Atsugi; Mikio Kishi, Atsugi; Takeshi Fukada, Ebina; Susumu Nagayama, Tokyo; Masayoshi Abe, Tokyo, and Shunpei Yamazaki, Tokyo, all of Japan, assignors to Semiconductor Energy Laboratory Co. Ltd., Kanagawa, Japan

Filed Jan. 28, 1987, Ser. No. 7,780
Claims priority, application Japan, Jan. 29, 1986, 61-17427; Jan. 29, 1986, 61-17428; Jan. 29, 1986, 61-17429
Int. Cl.[4] H01L *31/18, 21/322*
U.S. Cl. 437—4 9 Claims



1. A method for curing defects of a photoelectric conversion device having first and second electrodes and a semiconductor layer inbetween incorporating a pin junction therein, said method comprising:
- connecting a voltage source and an ammeter in series between said first and second electrodes; and
- applying a reverse bias voltage less than the breakdown voltage across said semiconductor layer by said voltage source through said first and second electrodes, while the current passing through said semiconductor layer is monitored for the purpose of confirming the drop of said cur-

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rent which indicates burning out of the defects of said semiconductor layer.

4,806,497

METHOD FOR PRODUCING LARGE-AREA POWER SEMICONDUCTOR COMPONENTS

Bruno Adam, Humsenschwil; André Jaecklin, Ennetbaden, and Thomas Vlasak, Birr, all of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Sep. 11, 1987, Ser. No. 95,118
Claims priority, application Switzerland, Sep. 17, 1986, 3727/86
Int. Cl.⁴ H01L *21/423, 21/425, 21/428, 29/74*
U.S. Cl. 437—006 **4 Claims**

1. A method for producing a large-area power gate turn-off thyristor, comprising the following steps:

(a) irradiating a substrate with neutrons to perform neutron transmutation doping and thereby derive a basic doping of said substrate;

(b) ion-implanting a deep-lying pn junction in the semiconductor substrate by ion implanting dopant atoms in the semiconductor substrate and subsequently driving the dopant atoms into the semiconductor substrate; and

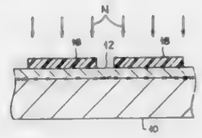
(c) irradiating the substrate with electron, γ or proton irradiation to introduce recombination centers into the semiconductor substrate and thereby adjust the carrier lifetime.

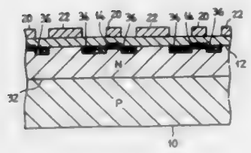
4,806,498

SEMICONDUCTOR CHARGE-COUPLED DEVICE AND PROCESS OF FABRICATION THEREOF

Ichiro Fujii, Miho, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 863,674, May 15, 1986, Pat. No. 4,742,381. This application Oct. 22, 1987, Ser. No. 112,354
Claims priority, application Japan, Jun. 21, 1985, 60-136509
Int. Cl.⁴ H01L *29/78, 27/14, 31/00, 29/167*
U.S. Cl. 437—24 **10 Claims**





1. A process of fabricating a semiconductor charge-coupled device, comprising

(a) preparing a layer of a doped semiconductor having an insulator layer thereon,

(b) introducing dopant ions into said doped semiconductor layer so that the projected range of the ions introduced into the semiconductor layer is located substantially at the interface between said doped semiconductor layer and said insulator layer for forming an interlevel layer providing an increased surface state at said interface, and

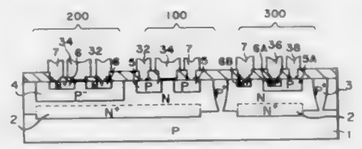
(c) forming a plurality of transfer electrodes on said insulator layer.

4,806,499

METHOD OF MANUFACTURING BI-CMOS SEMICONDUCTOR IC DEVICES USING DOPANT REDIFFUSION

Masaru Shinohara, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 873,403, Jun. 12, 1986. This application Jul. 31, 1987, Ser. No. 79,804
Claims priority, application Japan, Jun. 13, 1985, 60-127234
Int. Cl.⁴ H01L *21/22, 21/26, 21/265*
U.S. Cl. 437—31 **4 Claims**



1. A method of manufacturing a Bi-CMOS semiconductors integrated circuit device including a bipolar transistor region in a silicon semiconductor substrate, comprising the steps of:

(a) preparing a silicon substrate having a P-type base region formed in an N-type collector region;

(b) forming a thick silicon oxide layer over the surface of said bipolar transistor region;

(c) selectively removing said silicon oxide layer to form a first window exposing a part of said collector region and a second window exposing a part of said base region;

(d) diffusing phosphorous atoms into said base region and said collector region through said first and second windows under a temperature of from 900° C. to 1000° C. to form an emitter region in said base region and a collector contact in said collector region;

(e) subjecting the structure obtained by the step (d) to an oxidation process in a wet oxygen atmosphere of 940° C.±20° C. to form thin silicon oxide films in said windows, whereby said thin oxide film on said emitter region invades said emitter region to accommodate said phosphorous atoms;

(f) selecting removing a portion of said thin oxide film to form a third window exposing a surface of said emitter region before a gate oxide layer is formed on said silicon substrate; and

(g) subjecting the structure obtained by the step (f) to an impurity drive-in process to rediffuse said phosphorous atoms contained in the remaining thin oxide film into said emitter region, whereby the PN junction plane between said base and emitter regions is flattened.

4,806,500

METHOD OF PRODUCING A LARGE-SCALE INTEGRATED MOS FIELD-EFFECT TRANSISTOR CIRCUIT

Adolf Scheibe, Ottobrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 713,471, Mar. 19, 1985, abandoned. This application Apr. 21, 1987, Ser. No. 40,617
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1984, 3410378
Int. Cl.⁴ H01L *21/70, 21/316*
U.S. Cl. 437—57 **9 Claims**

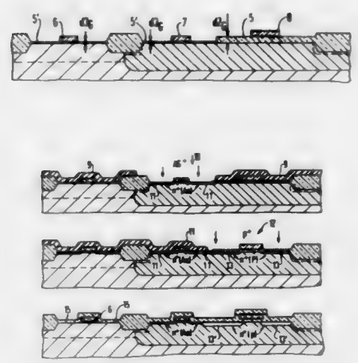
1. In a method for producing a large-scale integrated MOS field-effect transistor circuit which includes forming p and

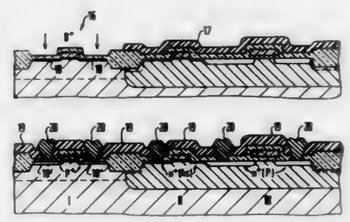
n-doped troughs, respectively, in a silicon substrate for forming respective n and p-channel transistors, introducing appropriate dopant atoms into the troughs by repeated ion implantations to adjust various transistor cutoff voltages, and masking the various ion implantations with photo resist structures and/or with silicon oxide and silicon nitrime structures, respectively, and which includes forming source/drain and gate areas as well as forming intermediate and insulation oxide and strip conductor plane in accordance with conventional MOS technology methods, the steps which comprise:

(a) applying a total-area oxide film having a first film thickness ($d1_G$);

(b) removing the oxide in a given area (II) associated with an n-channel transistor and in an additional area (I) associated with a p-channel transistor;

(c) applying another, total-area oxide film in such a manner that, in another area (III) associated with another n-channel transistor, the oxide film attains a final thickness (d_G) which is greater than the first film thickness ($d1_G$);





(d) applying a mask to a gate oxide with a window in a give area (II);

(e) implanting with a first dopant of atoms of given diffusivity to produce n+ source/drain areas of a first n-channel transistor, dosage and implantation energy thereof being adapted to a second film thickness ($d3_G$) of the gate oxide;

(f) applying a mask to a gate oxide with a window in another area (III);

(g) implanting with second dopant atoms to produce an n+ source/drain area of a second n-channel transistor, the dosage and implantation energy thereof being adapted to a final thickness (d_G);

(h) removing that part of the gate oxide which is contaminated; and

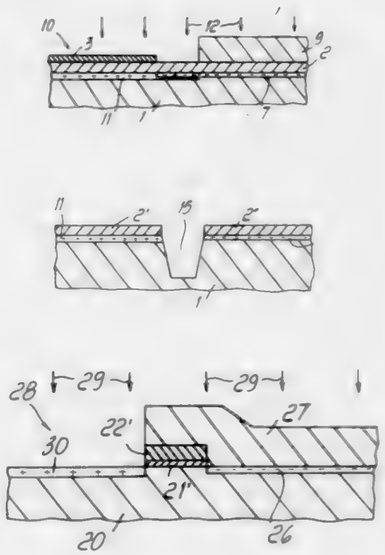
(i) driving the implanted dopant atoms into the give area (II) and the other area (III).

4,806,501

METHOD FOR MAKING TWIN TUB CMOS DEVICES

Livio Baldi, Agrate Brianza, and Paolo G. Cappelletti, Seveso, both of Italy, assignors to SGS Microelettronica S.p.A., Catania, Italy

Filed Jul. 20, 1987, Ser. No. 75,718
Claims priority, application Italy, Jul. 23, 1986, 21235 A/86
Int. Cl.⁴ H01L *21/314*
U.S. Cl. 437—67 **9 Claims**



1. Method for making twin tub integrated devices, in particular of twin tub CMOS devices, comprising:

forming a first masking layer on the substrate, for masking said substrate;

forming a second masking layer on said first masking layer for masking said first masking layer;

patterning said second masking layer to obtain a first window at a first tub region and at a trench region;

introducing conductivity determining impurities into said substrate through said first window to form a first tub at said first tub region;

forming of a further masking layer, on said first masking layer, to obtain a mask having a second window at a second tub region and at said trench region;

introducing further conductivity determining impurities into said substrate through said second window to form a second tub at said second tub region;

removing exposed portions of said first masking layer to obtain a third window in said first masking layer at said trench region;

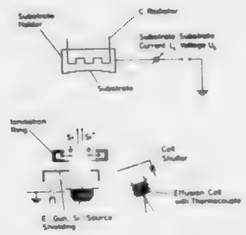
forming the trench at said third window.

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4,806,502
METHOD FOR DOPING SEMI-CONDUCTOR MATERIAL DURING EPITAXIAL GROWTH

Helmut Jerke, Gerstetten, and Horst Klöbel, Erbach, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 800,414, Nov. 21, 1985, abandoned. This application Dec. 9, 1987, Ser. No. 133,252
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1984, 3442460
Int. Cl.[4] H01L *21/36*
U.S. Cl. 437—106 **31 Claims**



1. A method for producing a doped semiconductor layer on a semiconductor substrate employing particle radiation, the method comprising:
(a) initially applying an adsorbed layer containing a doping substance of a desired concentration to the semiconductor substrate;
(b) controlling the concentration of the doping substance in the adsorbed layer;
(c) epitaxially growing a semiconductor layer having a crystal lattice structure on said semiconductor substrate;
(d) during step (c), causing a secondary implantation operation for incorporating said doping substance into the crystal lattice structure of said semiconductor layer; and
(e) performing a heat treatment for removing crystal lattice imperfections and incorporating the doping substance into crystal lattice positions of said semiconductor layer.

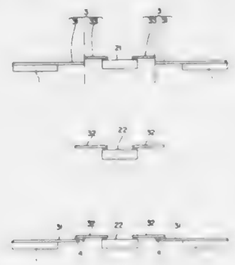
4,806,503
METHOD FOR THE REPLACEMENT OF SEMICONDUCTOR DEVICES

Hirokazu Yoshida, Osaka; Hiroshi Nakatani, Tenri, and Keiji Yamamura, Sakurai, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 23, 1986, Ser. No. 922,322
Claims priority, application Japan, Oct. 25, 1985, 60-239695
Int. Cl.[4] H01L *21/60*
U.S. Cl. 437—206 **2 Claims**

1. A method for the replacement of semiconductor devices in a multi-chip module that is constructed by mounting semiconductor devices on a tape carrier used as an electrical wiring substrate, wherein when at least one of said semiconductor devices develops a flaw, it is cut away at the finger sections that connect said defective semiconductor device to the tape, and then a different and non-defective semiconductor device having finger sections longer than those of said defective semiconductor device that has been removed is connected to said tape in such a manner that the finger sections of said different and non-defective semiconductor device are joined and connected to the corresponding finger sections retained on said tape.

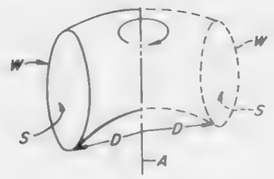
2. A method according to claim 1, wherein said different and non-defective semiconductor device having the finger sections longer than those of the defective semiconductor device that has been removed is a semiconductor device which has been cut away from a different multi-chip module in which semiconductor devices are mounted on a tape carrier used as an electrical wiring substrate.



4,806,504
PLANARIZATION METHOD

James M. Cleeves, Redwood City, Calif., assignor to Fairchild Semiconductor Corporation, Cupertino, Calif.

Filed Sep. 11, 1986, Ser. No. 906,344
Int. Cl.[4] B05D *5/12, 2/12*
U.S. Cl. 437—228 **11 Claims**

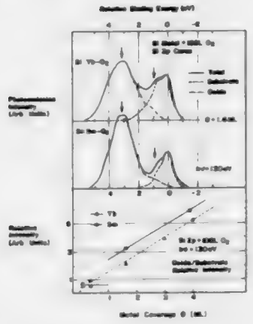


1. A method for applying a planarization layer to a planar silicon semiconductor wafer substrate having an irregular surface, said method comprising:
applying a liquid resin to the surface of the substrate in an amount sufficient to cover all irregularities said liquid resin being selected from the group consisting of photoresists, polyimides, silicones, polymethacrylates, and polysiloxanes;
spinning the substrate about an axis normal to the plane of the substrate to spread the resin over the surface; and
rotating the substrate about an axis parallel to and spaced-apart from the plane with the surface facing the axis, so that the liquid resin is leveled, forming the planarization layer.

4,806,505
SAMARIUM- AND YTTERBIUM-PROMOTED OXIDATION OF SILICON AND GALLIUM ARSENIDE SURFACES

Alfonso Franciosi, Eden Prairie, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Oct. 30, 1987, Ser. No. 114,773
Int. Cl.[4] H01L *21/302, 21/469, 21/461*
U.S. Cl. 437—225 **4 Claims**



1. A method for promoting oxidation of a silicon or gallium arsenide surface comprising: depositing a ytterbium overlayer on said silicon or gallium arsenide surface prior to the oxidation of said surface.

4,806,506
PROCESS FOR DETACKIFYING PHOTOPOLYMER FLEXOGRAPHIC PRINTING PLATES

Joseph W. Gibson, Jr., Wilmington, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Sep. 14, 1987, Ser. No. 96,694
Int. Cl.[4] G03F *7/00*
U.S. Cl. 430—309 **10 Claims**

1. In a process for detackifying an imagewise exposed and solvent-developed photopolymeric flexographic relief printing plate prepared from a photosensitive elastomeric composition containing an ethylenically unsaturated photopolymerizable monomer or oligomer having at least one terminal ethylenically unsaturated group; a photoinitiator or photoinitiator system; and a solvent-soluble elastomeric binder comprising polymerized conjugated diene monomers; comprising the steps of:
(a) drying the plate after development,
(b) exposing the printing surface to radiation from a source emitting wavelengths in the range of 200 to 300 nm, and,
(c) subsequently, simultaneously, or prior to exposure step (b) exposing the printing surface to actinic radiation from a different source having a wavelength longer than 300 nm,
the improvement comprising:
applying an aprotic organic solvent to the surface of the plate, after step (a) and before step (b) above.

4,806,507
METHOD OF PREVENTING GLAZE DEFECTS

John K. Olby, Wembley, United Kingdom, assignor to Cookson Group PLC, London, England

Filed Sep. 16, 1987, Ser. No. 97,201
Claims priority, application United Kingdom, Sep. 19, 1986, 8622569; Dec. 22, 1986, 8630585
Int. Cl.[4] C03C *8/14*
U.S. Cl. 501—17 **15 Claims**

1. A method of preventing glaze defects in a composition consisting essentially of a glaze and a sulphide or sulphide/selenide pigment which is protected by the inclusion of the pigment in zirconium silicate, which method is chosen from the group consisting of
(i) when the glaze is a sanitary glaze or a tile glaze incorporating into the composition an additive which is selected from the group consisting of particles of zirconium oxide, the particles having a primary particle size of up to 0.3 micrometers or zirconium silicate, or a mixture thereof or precursors therefor in an amount effective to reduce or prevent glaze defects; or
(ii) when the glaze is a tile glaze incorporating into the composition an additive which is selected from the group consisting of arsenic trioxide and precursors therefor in an amount effective to reduce or prevent glaze defects; or
(iii) when the glaze is a tile glaze and the pigment is selected from the group consisting of a zirconium silicate/cadmium sulphide and a zirconium silicate/cadmium sulphide/selenide pigment incorporating into the composition an additive which is selected from the group consisting of antimony trioxide, ceric oxide, a mixture thereof and precursors therefor in an amount effective to reduce or prevent glaze defects.

4,806,508
MODIFIED CERAMIC STRUCTURES AND METHODS OF MAKING THE SAME

Ratnesh K. Dwivedi, Wilmington, and Christopher R. Kennedy, Newark, both of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Filed Sep. 17, 1986, Ser. No. 908,458
Int. Cl.[4] C04B *35/10*
U.S. Cl. 501—94 **12 Claims**

1. A method of producing a self-supporting ceramic composite product comprising the steps of:
(a) forming a self-supporting ceramic composite body comprising a ceramic matrix of an oxidation reaction product embedding at least one filler material, said self-supporting ceramic composite body exhibiting at least some interconnected porosity and being formed by melting a parent metal and reacting the molten parent metal with an oxidant to form oxidation reaction product and progressively drawing molten metal through the oxidation reaction product toward the oxidant and said at least one filler material so that oxidation reaction product continues to form within said mass of filler material at an interface between the oxidant and previously formed oxidation reaction product and continuing said reaction for a time sufficient to infiltrate at least a portion of said mass of filler material; and
(b) disposing a second polycrystalline ceramic component in at least a portion of said porosity to form a ceramic composite product containing said second polycrystalline ceramic component.

4,806,509
ALUMINUM RESISTANT REFRACTORY COMPOSITION

Andrew D. Porterfield, Redondo Beach, Calif., assignor to VFR, Inc., King of Prussia, Pa.

Filed Dec. 7, 1987, Ser. No. 129,213
Int. Cl.[4] C04B *35/66*
U.S. Cl. 501—127 **11 Claims**

1. A refractory composition resistant to attack by molten aluminum alloys consisting essentially of;
a. from about 75 to 99 weight percent of refractory particles;
b. a refractory binde rin a quantity at least sufficient to bind said refractory composition together said binder selected from the group consisting of aluminum sulfate, sodium silicate, calcium aluminate, and phosphate acid base binders; and
c. at least 0.5 weight percent of an additive effective to impart a non-wetting characteristic with respect to molten

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aluminum to the refractory composition, said additive consisting essentially of a synthetic fused aluminate borate aggregate containing calcium fluoride dispersed within the fused aluminum borate, said synthetic fused aluminate borate aggregate consisting essentially of a blend of 10 to 50 percent by weigh boron oxide, 10 to 50 percent by weight aluminum oxide, and 25 to 75 percent by weight calcium fluoride, said blend fired at a temperature of at least 800° C for a time sufficient to form a fused aluminum borate aggregate.

4,806,510

SILICON NITRIDE SINTERED BODY AND METHOD FOR PRODUCING SAME

Tsuneyuki Kasai, and Tadahiko Miyoshi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 30, 1987, Ser. No. 44,203
Claims priority, application Japan, Apr. 30, 1986, 61-98282
Int. Cl.⁴ C04B *35/58*
U.S. Cl. 501—97 **18 Claims**



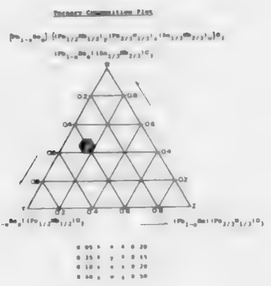
1. A silicon nitride sintered body consisting essentially of silicon nitride crystal grains and a grain boundary phase of crystals represented by $Yb_2Si_2O_7$ and $Zr_3Yb_4O_{12}$, said silicon nitride sintered body being produced by sintering an admixture consisting essentially of silicon nitride, zirconium oxide and ytterbium oxide, wherein a molar ratio of ZrO_2/Yb_2O_3 in terms of the total amount of ZrO_2 and Yb_2O_3 is 2/98 to 75/25 and said total amount of ZrO_2 and Yb_2O_3 is 1–40% by weight of said admixture.

4,806,511

DIELECTRIC CERAMIC COMPOSITION

Mitsunobu Hayashi, Soma, Japan, assignor to Alps Electric Co., Ltd., Japan

Continuation of Ser. No. 27,809, Mar. 19, 1987, abandoned. This application Apr. 29, 1988, Ser. No. 188,725
Claims priority, application Japan, Jul. 24, 1986, 61-172856
Int. Cl.⁴ C04B *35/26*
U.S. Cl. 501—135 **1 Claim**



1. A dielectric ceramic composition comprising adding CuO of 0.5–2 parts by weight to a composite of 100 parts by weight, said composite being expressed by

$$[Pb_{1-x}Ba_x][(Fe_{\frac{1}{2}}W_{\frac{1}{2}})_Y(Fe_{\frac{1}{2}}Nb_{\frac{1}{2}})_Z(Zn_{\frac{1}{3}}Nb_{\frac{2}{3}})_W]O_3 \quad (1)$$

wherein $0.05 \leqq X \leqq 0.20$, $0.10 \leqq Y \leqq 0.20$, $0.35 \leqq Z \leqq 0.45$ $0.40 \leqq W \leqq 0.50$, and $Y+Z+W=1$, and having a dielectric constant greater than 5,000.

4,806,512

VIRGIN CATALYST TREATMENT

Frank J. Elvin, Kenner, La., assignor to ChemCat Corporation, New Orleans, La.

Filed May 18, 1987, Ser. No. 50,875
Int. Cl.⁴ B01J *29/06, 37/22, 37/28*
U.S. Cl. 502—65 **14 Claims**

1. A process for treating a virgin catalyst useful to promote hydrocarbon conversion at hydrocarbon conversion conditions comprising:

(a) contacting said virgin catalyst with a liquid reductive wash medium; and

(b) contacting said reductively washed virgin catalyst with a liquid oxidative wash medium, thereby producing a washed virgin catalyst with at least one improved catalytic property.

2. The process of claim 1 wherein said virgin catalyst contains a catalytically effective amount of at least one synthetic crystalline material.

4. The process of claim 1 which further comprises at least one of the following:

(1) contacting said washed virgin catalyst with at least one ammonium ion-containing component to increase the the ammonium ion content of said washed virgin catalyst; and

(2) contacting said washed virgin catalyst with at least one rare earth metal ion-containing component to increase the rare earth metal ion content of said washed virgin catalyst.

4,806,513

SILICON AND FLUORINE-TREATED ALUMINA CONTAINING A CHROMIUM CATALYST AND METHOD OF PRODUCING SAME

Max P. McDaniel; Paul D. Smith, and Donald D. Norwood, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 29, 1984, Ser. No. 615,001
Int. Cl.⁴ B01J *21/04, 21/08, 27/12, 27/132*
U.S. Cl. 502—107 **31 Claims**

1. A method of producing a surface silicated and fluorided alumina catalyst composition comprising contacting said alumina with a silicating agent in solution or in vaporous form and thereafter converting said silicating agent to silica on the surface of said alumina, said alumina also being subjected to a treatment with a fluoriding agent, said fluoriding agent being present in an amount to give 0.5 to 3 weight percent fluorine on said alumina based on the weight of said alumina, introducing a chromium component onto said alumina to produce said catalyst, and combining said catalyst with a cocatalyst selected from organoboron compounds and organoaluminum compounds.

4,806,514

COMPOSITE PHOTOCATALYST FOR REFRACTORY WASTE DEGRADATION

Cooper H. Langford, Lac Guindon, Canada; Mark K. S. Mak, Kowloon, Hong Kong, and Andrew M. Crouch, Cape Town, South Africa, assignors to Canadian Patents and Development Limited -Societe Canadienne des Brevets et D'Exploitation Limitee, Canada

Filed Sep. 30, 1987, Ser. No. 103,024
Claims priority, application Canada, Oct. 2, 1986, 519650
Int. Cl.⁴ B01J *31/22*
U.S. Cl. 502—159 **9 Claims**

1. A composite photocatalyst for refractory waster treatment, comprising platinum-free particles of a wide band gap semiconductor material selected from the group consisting of titanium dioxide, cadmium sulfide and cadmium selenide, said particles being coated with a polymer film capable of absorbing a refractory waste substance to be treated and comprising a pyridine-containing polymer and a divalent metal porphyrin or metal phthalocyanine-based dye, said dye being molecularly dispersed throughout said film and chemically bonded to said pyridine-containing polymer, with the proviso that when said semiconductor material is titanium dioxide, said pyridine-containing polymer is polyvinylpyridine or a copolymer of vinylpyridine with styrene and said dye is zinc tetraphenylporphyrin, the zinc tetraphenylporphyrin and polyvinylpyridine or copolymer of vinylpyridine with styrene are present in a zinc to pyridine mole ratio greater than 1:8, whereby upon mixing of said photocatalyst with said refractory waste substrate and irradiation with light having a wavelength of about 300 to about 400 nm, said photocatalyst generates in the polymer film thereof reactive species which are sufficiently oxidizing to degrade the refractory waste substrate absorbed in said polymer film.

4,806,515

TERNARY FUEL CELL CATALYST CONTAINING PLATINUM AND GALLIUM

Francis J. Luczak, Glastonbury, and Douglas A. Landsman, Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 16, 1987, Ser. No. 121,009
Int. Cl.⁴ B01J *23/42, 23/62, 23/64, 23/89*
U.S. Cl. 502—185 **4 Claims**

1. A supported ternary metal catalyst comprising a catalytically active metallic composition consisting essentially of at least about 50 atomic percent platinum, gallium and at least one material selected from the group consisting of chromium, cobalt, nickel and mixtures thereof, said catalytically active composition being supported on a carbonaceous material and displaying at least 30 meters^2 surface area per gram of catalytically active material.

4,806,516

PROCESS FOR PRODUCING FLUIDIZED CATALYST FOR SYNTHESIS OF METHANOL

Minoru Osugi; Tadasi Nakamura, and Yoriko Obata, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jul. 24, 1987, Ser. No. 77,641
Claims priority, application Japan, Jul. 24, 1986, 61-172870
Int. Cl.⁴ B01J *21/02, 21/06, 23/06, 23/72*
U.S. Cl. 502—202 **9 Claims**

1. A process for producing a fluidized catalyst for synthesis of methanol, which comprises molding a composition comprising

(A) 10 to 55% by weight of a mixture composed of water-insoluble copper, zinc and zirconium compounds convertible respectively to copper, zinc and zirconium oxides under calcination conditions, said mixture optionally containing a boron compound,

(B) 45 to 90% by weight of water, and

(C) 0.01 to 1% by weight of ammonia into fine particles, and calcining the fine particles.

4,806,517

METHOD FOR MAKING PELLETED PHOSPHATED CATALYSTS DERIVED FROM GROUP IVB TRANSITION METAL OXIDES AND CATALYSTS THUS PREPARED

Steven H. Vanderpool, New Braunfels; Lewis W. Watts, Jr., Austin; John M. Larkin, Austin, and Terry L. Renken, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 821,090, Jan. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 455,160, Jan. 3, 1983, abandoned, which is a continuation-in-part of Ser. No. 455,158, Jan. 3, 1983, abandoned, which is a continuation-in-part of Ser. No. 455,159, Jan. 3, 1983, abandoned, which is a continuation-in-part of Ser. No. 455,156, Jan. 3, 1983, abandoned, which is a continuation-in-part of Ser. No. 455,155, Jan. 3, 1983, abandoned, which is a continuation-in-part of Ser. No. 455,153, Jan. 3, 1983, abandoned. This application Mar. 12, 1987, Ser. No. 24,932
Int. Cl.⁴ B01J *27/18*
U.S. Cl. 502—208 **43 Claims**

1. A method for preparing a catalytically active composition consisting essentially of a pelleted group IVb transition metal oxide having about 0.5 to about 5 wt. % of phosphorus thermally chemically bonded to at least the surface thereof in the form of hydroxy-containing phosphate groups, said method comprising the steps of impregnating pellets of a group IVb transition metal oxide with an aqueous solution of a water soluble phosphorus compound containing phosphorus-oxygen bonds at a temperature of about 20° to about 150° C., whereby from about 0.5 to about 6 wt. % of phosphorus is bonded to at least the surface of said pellets, removing unabsorbed liquid from said thus-impregnated pellets, and then stabilizing said pellets by calcination at a temperature within the range of about 200° to about 900° C. sufficient to thermally chemically bond said 0.5 to 6 wt. % of phosphorus to said pellets in the form of hydroxy-containing phosphate groups.

4,806,518

PROCESS FOR THE PREPARATION OF A SILVER-CONTAINING ETHYLENE OXIDE CATALYST AND THE CATALYST PREPARED BY THE PROCESS

Goose Boxhoorn; Peter J. Schoenmakers, and Otto M. Velthuis, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 15, 1987, Ser. No. 49,901
Claims priority, application United Kingdom, May 28, 1986, 8612951
Int. Cl.⁴ B01J *23/04, 23/50, 27/10, 27/12*
U.S. Cl. 502—231 **23 Claims**

1. A process for the preparation of a silver-containing catalyst suitable for the oxidation of ethylene to ethylene oxide which comprises:

(a) mixing an aluminum oxide with water and with a salt of an alkali metal and with aluminum fluoride and/or aluminum chloride,

(b) calcining the mixture to obtain an alkali enriched aluminum carrier,

(c) applying a solution of a silver compound to the alkali enriched alumina carrier and converting said silver compound to metallic silver.

4,806,519

CATALYST FOR PURIFYING MOTOR VEHICLE EXHAUST GASES AND PROCESS FOR PRODUCING THE CATALYST

Tadao Chiba, Chiba; Masaki Funabiki, and Tsuneo Watanabe, both of Shizuoka, all of Japan, assignors to Engelhard Corporation, Menlo Park, N.J.

Filed Sep. 29, 1987, Ser. No. 102,505
Claims priority, application Japan, Sep. 30, 1986, 61-230026
Int. Cl.⁴ B01J *21/06, 23/10, 23/42, 23/46*
U.S. Cl. 502—252 **23 Claims**

1. A catalyst for purifying exhaust gases essentially compris-

ing a substantially catalytically inert, refractory monolithic support, an inside layer containing a catalytically active refractory oxide formed on the support, and an outside layer containing a catalytically active refractory oxide formed on the inside layer, characterized in that

the support has continuous longitudinal unobstructed flow channels each extending through the support and defined by a thin wall,

the inside layer is deposited on the walls of the channels, contains cerium oxide and platinum and has a weight of 10 to 200 g per liter of the catalyst,

the outside layer is deposited on the inside layer, contains a zirconium compound and rhodium and has a weight of 5 to 60 g per liter of the catalyst, and

the catalytically active refractory oxide is finely divided and has a specific surface area of at least about 10 m^2/g.

4,806,520

DECOLORIZATION OF AQUEOUS SACCHARIDE SOLUTIONS AND SORBENTS THEREFOR

Dieter Frank, Naperville; Lincoln D. Metcalfe, LaGrange, and John Y. Park, Naperville, all of Ill., assignors to Akzo America Inc., New York, N.Y.

Division of Ser. No. 834,941, Feb. 28, 1986, Pat. No. 4,746,368. This application Mar. 23, 1988, Ser. No. 171,988
Int. Cl.[4] B01J 20/26
U.S. Cl. 502—402 13 Claims

1. A sorbent suitable for the removal of impurities comprising phenolics, dextrans and amino nitrogen from an aqueous saccharide solution comprising a cellular or isotropic microporous hydrophobic polymeric support having pores from about 0.1 to about 50.0 micron average pore diameter and comprising a synthetic hydrophobic thermoplastic polymer selected from the group consisting of aliphatic olefinic polymers on the surface of which support a cationic nitrogenous surfactant has been deposited, the molecules of which surfactant contain at least one alkyl group of at least 8 carbon atoms, the depositing of said surfactant on said support having been effected by contacting said support with a solution of said surfactant in a solvent which is completely miscible with said aqueous saccharide solution, the solution of said surfactant in said solvent having a sorbent wetting rate of at least 100 g/m^2.min., and a sorbent bed retention of at least 140% based on the bed interstitial volume, and the partitioning coefficient of said impurities in said surfactant deposited on said support, as compared to in water, being at least 20.

4,806,521

COLOR-DEVELOPING AGENT FOR PRESSURE-SENSITIVE RECORDING SHEET AND COLOR-DEVELOPING SHEET THEREOF

Hiroaki Umeda; Mamoru Suzuki; Akira Hasegawa, and Kunio Hata, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Division of Ser. No. 122,078, Nov. 18, 1987. This application Mar. 17, 1988, Ser. No. 169,371
Claims priority, application Japan, Dec. 10, 1986, 61-294509
Int. Cl.[4] B41M 5/16
U.S. Cl. 503—216 4 Claims

1. A color-developing sheet for pressure-sensitive recording sheet which comprises a color-developing layer on a support, said color-developing layer comprising a reaction product of carboxylated terpenephenol resin, aromatic carboxylic acid and polyvalent metal compound.

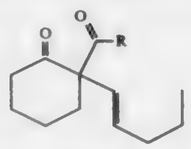
4,806,522

2-ALKANOYL-2-(1-PENTEN-1-YL)CYCLOHEXANONES, PROCESS FOR PREPARING SAME, AND ORGANOLEPTIC USES THEREOF AND INTERMEDIATES USEFUL IN SAID PROCESS

Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 149,657, Jan. 28, 1988. This application Jun. 3, 1988, Ser. No. 201,934
Int. Cl.[4] A61K 7/46
U.S. Cl. 512—23 5 Claims

1. A process for augmenting or enhancing the aroma of a perfume composition, cologne or perfumed article comprising the step of adding to said perfume composition, cologne or perfumed article, an aroma augmenting or enhancing quantity of at least one 2-alkanoyl-2-(1-penten-1-yl) cyclohexanone defined according to the structure:



wherein R represents methyl or ethyl.

4,806,523

METHOD OF TREATING INFLAMMATION

Hanne Bentz, Palo Alto; Larry Ellingsworth, San Jose, and Rose Armstrong, Palo Alto, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 763,337, Aug. 6, 1985, abandoned. This application Mar. 6, 1986, Ser. No. 836,672
Int. Cl.[4] A61K 37/02, 35/32
U.S. Cl. 514—2 22 Claims

1. A method of treating a patient for inflammation comprising administering an anti-inflammatorily effective amount of a CIF to the patient, wherein said CIF is a homodimer whose chains each have

(a) the following partial N-terminal amino acid sequence: Ala-Leu-ASp-Thr-Asn-Tyr-Cys-Phe-Ser-Ser-Thr-Glu-Lys-Asn-Cys-Cys-Val-Arg-Gln-Leu-Tyr-Ile-Asp-Phe-Arg-Lys-Asp-Leu-Gly-Trp-, or

(b) the following partial N-terminal amino acid sequence: Ala-Leu-Asp-Ala-Ala-Tyr-Cys-Phe-ARg-Asn-Val-Gln-Asp-Asn-Cys-Cys-Leu-Arg-Pro-Leu-Tyr-Ile-Asp-Phe-Lys-Arg-Asp-Leu-Gly-Trp.

4,806,524

STABLE ERYTHROPOIETIN PREPARATION AND PROCESS FOR FORMULATING THE SAME

Tsutomu Kawaguchi, and Naoto Shimoda, both of Saitama, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1985, Ser. No. 784,256
Claims priority, application Japan, Oct. 18, 1984, 59-219000
Int. Cl.[4] A61K 37/02
U.S. Cl. 514—8 2 Claims

1. An erythropoietin preparation containing one or more protein stabilizers selected from the group consisting of bovine serum albumin, human serum albumin and gelatin.

4,806,525

FORMULATION COMPRISING GELATIN AND GLYCINE FOR TREATING THE DRYNESS OF SKIN

Pier F. Morganti, Rome, Italy, assignor to Mavi S.r.l., Rome, Italy

Filed Jun. 18, 1987, Ser. No. 65,043
Int. Cl.[4] A61K 37/02
U.S. Cl. 514—21 14 Claims

1. A pharmaceutical formulation for the treatment of skin dryness, characterized by the content, as active substances, of a composition of soft gelatin and glycine in a proportion of about 2:1 to 3:1 parts by weight.

4,806,526

ANTIALLERGENIC AGENT

Wesley F. Green, Valley Heights, Australia, assignor to University of Sydney, Sydney, Australia

Continuation of Ser. No. 753,215, Jul. 9, 1985, abandoned. This application Oct. 22, 1986, Ser. No. 921,911
Claims priority, application Australia, Jul. 11, 1984, PG5962
Int. Cl.[4] A01N 43/04
U.S. Cl. 514—23 12 Claims

1. A method of removing allergens from an environment which comprises treating said environment with an antiallergenically effective amount of tannic acid in conjunction with a miticidally effective amount of miticide such as to remove said allergens from said environment, wherrein the allergens are selected from the group consisting of house dust mite allergens selected from the group consisting of *D. farinae* and *D. Pteronyssinus*.

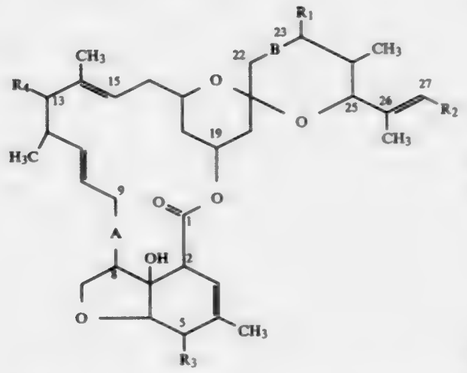
4,806,527

AVERMECTIN DERIVATIVES

Burton G. Christensen, Cliffside; Helmut Mrozik, Matawan, and Michael H. Fisher, Ringoes, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 16, 1987, Ser. No. 26,409
Int. Cl.[4] A61K 31/70; C07H 17/04; C07D 313/06
U.S. Cl. 514—30 9 Claims

1. A compound having the formula:



wherein

A is a double bond or an epoxide linkage at the 8,9-position;

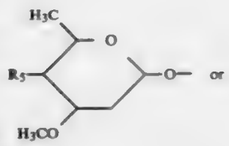
B indicates a single bond or a double bond at the 22,23-position;

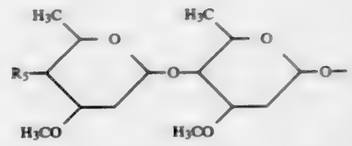
R_1 is hydrogen, hydroxy, fluoro or ketone provided that R_1 is present only when B represents a single bond;

R_2 is methyl, ethyl or isopropyl;

R_3 is hydroxy, loweralkoxy or loweralkanoyloxy; and

R_4 is hydroxy, loweralkoxy, loweralkanoyloxy,





where R_5 is hydroxy, ketone, amino, loweralkylamino, diloweralkylamino, lower alkanoylamino loweralkoxy, loweralkanoyloxy, loweralkoxycarbonyloxy, carbamoyloxy, N-loweralkylcarbamoyloxy or N,N-diloweralkylcarbamoyloxy.

8. A method for the treatment of parasite, helminth, insect, acarid and pest infections of an animal host which comprises administering to such animal hosts infected with such parasite, helminth, insect, acarid or pest infections, an effective amount of a compound of claim 1.

9. A method for the treatment of parasite, insect and pest infections of plants which comprises administering or applying to such plants or the soil in which they grow, an effective amount of a compound of claim 1.

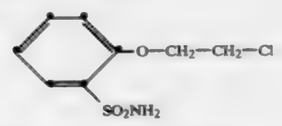
4,806,528

PROCESS FOR THE PREPARATION OF 2-(2-CHLOROETHOXY)-BENZENESULFONAMIDE

Reinhard G. Haureich, Stöberstrasse 14, 4055 Basle, Switzerland

Filed Sep. 4, 1987, Ser. No. 93,436
Int. Cl.[4] C07C 143/78
U.S. Cl. 564—89 11 Claims

1. A process for the preparation of 2-(2-chloroethoxy)-benzenesulfonamide of formula I



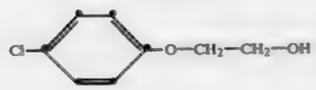
(I)

which process comprises the etherification of 4-chlorophenol of formula II



(II)

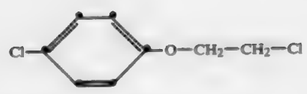
with ethylene carbonate at a temperature between +130° C. and +150° C. and chlorination of the resulting 2-(2-hydroxyethoxy)-chlorobenzene of formula III



(III)

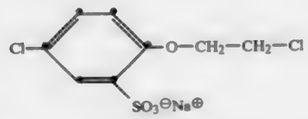
with phosgene at a temperature between +70° C. and +90° C. to give 2-(2-chloroethoxy)-chlorobenzene of formula IV

(IV)



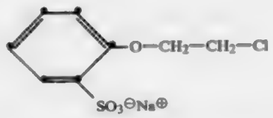
which is converted with chlorosulfonic acid, at a temperature between +20° C. and +60° C. and subsequent neutralization with sodium hydroxide to the sulfonic acid sodium salt of formula V

(V)



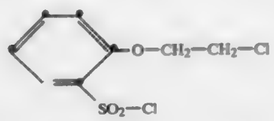
which is hydrogenated at a temperature between +20° C. and +70° C. to the compound formula VI

(VI)



which is subsequently reacted with phosgene at a temperature between +60° C. and +120° C. to the sulfonic acid chloride of formula VII

(VII)



which is reacted with ammonia at a temperature between 0° C. and +100° C. to the sulfonamide of formula I.

4,806,529

TETRACYCLINE ACTIVITY ENHANCEMENT

Stuart B. Levy, Boston, Mass., assignor to Trustees of Tufts College, Tufts University, Medford, Mass.

Filed Nov. 18, 1982, Ser. No. 442,688
Int. Cl.⁴ A61K *31/65, 35/00*
U.S. Cl. 514—154 **2 Claims**

1. A method of overcoming the resistance of tetracycline resistant bacteria comprising contacting the bacteria with a composition consisting essentially of:

(a) a subinhibitory amount of a blocking agent selected from the group consisting of minocycline and thiatetracycline;

(b) tetracycline; and

(c) a pharmaceutically acceptable carrier, wherein the blocking agent is employed in an amount which is sufficient to make the bacteria susceptible to a pharmaceutically acceptable amount of tetracycline, and wherein the blocking agent is employed in a molar ratio of blocking agent to tetracycline of from about 0.01 to 100.

4,806,530

PHARMACEUTICAL COMPOSITIONS BASED ON DILTIAZEM AND LYSINE ACETYLSALICYLATE

Salomon Laeger, Paris, France, assignor to Synthelabo, France

Continuation of Ser. No. 888,078, Jul. 22, 1986, abandoned. This application Oct. 21, 1987, Ser. No. 111,151
Claims priority, application France, Jul. 30, 1985, 85 11603
Int. Cl.⁴ A61K *31/62*
U.S. Cl. 514—161 **1 Claim**

1. A pharmaceutical composition which contains from 3 to 60 mg of diltiazem and from 10 to 300 mg of lysine acetylsalicylate per unit dose.

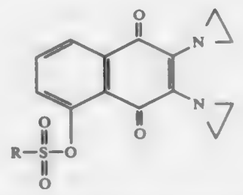
4,806,531

2,3-BIS(AZIRIDINYL)-1,4-NAPHTHOQUINONE SULFONATE DERIVATIVES HAVING ANTINEOPLASTIC ACTIVITY

Alan C. Sartorelli, Woodbridge, and Tai-Shun Lin, North Haven, both of Conn., assignors to Yale University, New Haven, Conn.

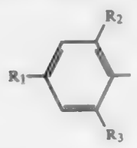
Filed Feb. 20, 1986, Ser. No. 832,465
Int. Cl.⁴ A61K *31/47;* **C07D** *471/00*
U.S. Cl. 514—183 **26 Claims**

1. A compound of the formula:



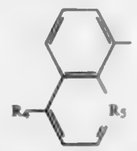
wherein R is selected from the group consisting of:

(a) a substituent of the formula:



wherein R_1, R_2 and R_3 are each independently selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen and $—NO_2$,

(b) a substituent of the formula:



wherein R is hydrogen or an $N(R')_2$ substituent, wherein R' is an alkyl of 1 to 4 carbon atoms, and R_5 is CH or N,

(c) alkyl of 1 to 18 carbon atoms,

(d) halo substituent alkyl of 1 to 6 carbon atoms,

(e) styrenyl,

(f) toluenyl, or

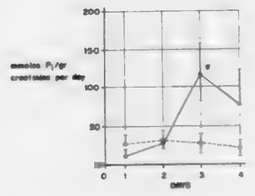
(g) camphoryl.

4,806,532

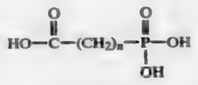
INHIBITION OF EPITHELIAL PHOSPHATE TRANSPORT

Thomas P. Dousa, Rochester, Minn., assignor to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Filed Oct. 8, 1985, Ser. No. 785,485
Int. Cl.⁴ A61K *31/66;* **C12N** *5/00*
U.S. Cl. 514—120 **7 Claims**



1. A method of decreasing the accumulation of phosphate in an animal or man comprising administering to an animal or man in need of such treatment an effective amount of a compound of the formula;



wherein n is 0 or 1, or a physiologically acceptable salt thereof.

4,806,533

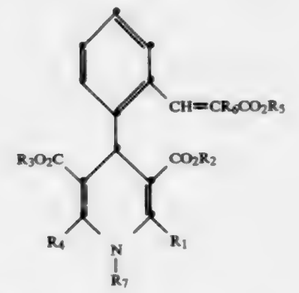
1,4-DIHYDRO PYRIDINE 3,5 DICARBOXYLIC ACID DERIVATIVES AND COMPOSITIONS

Claudio Somenaro, Brenno; Dino Micheli, Carpi; Daniele Pieraccioli; Giovanni Gavinaghi, both of Verona, all of Italy, and Alan D. Borthwick, London, England, assignors to Glaxo, s.p.a., Verona, Italy

Filed Feb. 19, 1987, Ser. No. 16,590
Claims priority, application Italy, Feb. 20, 1986, 19486 A/86
Int. Cl.⁴ A61K *31/455, 31/535;* **C07D** *401/06, 413/06*
U.S. Cl. 514—211 **19 Claims**

1. Compound of the general formula (I)

(I)



in which

R_1 and R_4 independently represent a C_{1-4} alkyl group;

R_2 and R_3 independently represent a C_{1-6} straight or branched chain alkyl or alkoxyalkyl group;

R_5 represents a C_{1-13} straight or branched chain alkyl group or a C_{5-8} cycloalkyl group which may be substituted by a C_{1-3} alkyl group;

R_6 represents a hydrogen or halogen atom or a straight or branched C_{1-3} alkyl group; and

R_7 represents a C_{1-4} alkyl group substituted by a group $—NR_8R_9$ where NR_8R_9 forms a saturated 5 to 7 membered ring optionally containing one additional heteroatom which is oxygen.

18. Pharmaceutical compositions comprising a compound as claimed in claim 1 in association with a pharmaceutically acceptable carrier or diluent.

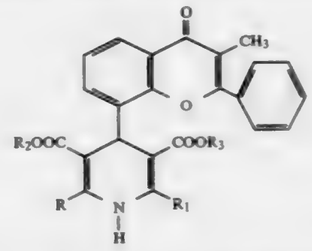
4,806,534

THERAPEUTICALLY ACTIVE FLAVONYL-1,4-DIHYDROPHYRIDINES

Amedeo Leonardi; Renzo Pessina; Pietro Cazzulani, and Dante Nardi, all of Milan, Italy, assignors to Recordati S.A., Chemical & Pharmaceutical Company, Chiasso, Switzerland

Filed Oct. 22, 1986, Ser. No. 921,397
Claims priority, application Italy, Oct. 22, 1985, 22578 A/85
Int. Cl.⁴ A61K *31/445;* **C07D** *407/02*
U.S. Cl. 514—233.5 **61 Claims**

1. A flavonyl-1,4-dihydropyridine having the formula:



in which: R and R_1 are each independently selected from the group consisting of alkyl having from 1 to 4 carbon atoms, hydroxyalkyl having from 1 to 4 carbon atoms, formylalkyl and cyanoalkyl; and R_2 and R_3 are each independently selected from the group consisting of straight or branched chain alkyl having from 1 to 6 carbon atoms, straight or branched chain alkenyl having from 2 to 6 carbon atoms, alkynyl having from 2 to 6 carbon atoms, cycloalkyl having from 5 to 7 carbon atoms, phenylalkyl, phenyl, cyanoalkyl, haloalkyl, mono- or polyhydroxyalkyl, monoalkoxyalkyl, alkylthioalkyl, alkylsulfonylalkyl, monoalkanoyloxyalkyl, alkanoylalkyl, and R_4R_5N-straight or branched chain alkyl; wherein R_4 and R_5 are each independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, phenylalkyl, phenyl, and 3,3-diphenylpropyl, or wherein R_4 and R_5 form together with their common nitrogen atom a 5- or 6-membered heterocycle optionally containing one other member selected from the group consisting of O, S, N and NR_6, in which R_6 is alkyl; or an optical isomer, a diasteromer or a pharmaceutically acceptable salt thereof.

4,806,535

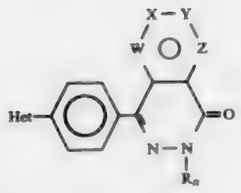
IMIDAZOLYLPHENYL AND 1,2,4-TRIAZOLYLPHENYL BENZOPYRIDAZINONE AND PYRIDOPYRIDAZINONE COMPOUNDS AND THEIR USE FOR INCREASING CARDIATONIC CONTRACTILITY

William C. Faith, Ambler; Henry F. Campbell, Lansdale; Donald E. Kuhla, Doylestown; William L. Strädt, Harleysville, and James L. Barnes, Glenside, all of Pa., assignors to Rorer Pharmaceutical Corporation, Fort Washington, Pa.

Filed Jul. 22, 1987, Ser. No. 76,461
Int. Cl.⁴ C07D *401/14, 403/10;* **A61K** *31/50*
U.S. Cl. 514—248 **13 Claims**

1. A compound of formula:

VOL 1099 ISS 3 FE 21 1989 UMI



wherein:
Het is imidazol-1-yl or 1,2,4-triazol-1-yl;
W, X, Y and Z are C or not more than one is a N atom;
R_n is hydrogen,
alkyl,
benzyl,
phenethyl,
acetyl,
propionyl,
benzoyl,
carbalkoxy,
carbamyl,
carbalkoxyalkyl,
hydroxyalkyl,
alkoxyalkyl or
amidino;
where alkyl has 1 to 6 carbon atoms and alkoxy has 1 to 4 carbon atoms; or
a pharmaceutically acceptable salt thereof.

4,806,536

PIPERAZINYL-SUBSTITUTED PYRIDINE AND IMIDAZOLE ANTI-ARRHYTHMIC AGENTS

Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, both of England, assignors to Pfizer, Inc., New York, N.Y.

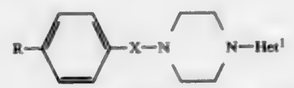
Filed Feb. 2, 1987, Ser. No. 10,077

Claims priority, application United Kingdom, Feb. 7, 1986, 8603120

Int. Cl.[4] A61K *31/495*; **C07D** *401/04, 403/04*

U.S. Cl. 514—252 **28 Claims**

1. A piperazinyl-substituted pyridine or imidazole compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein
"Het[1]" is selected from (a) a 3- or 4-pyridinyl group optionally substituted by one or two substituents each independently selected from C_1–C_4 alkyl and amino, (b) a 2-pyridinyl group substituted by an amino group and (c) a 2-imidazolyl group optionally substituted by one or two C_1–C_4 alkyl groups;
R is selected from (a) $—NHSO_2R^3$ where R^3 is C_1–C_4 alkyl, C_3–C_7 cycloalkyl or $—NR^1R^2$ wherein R^1 and R^2 are each independently hydrogen or C_1–C_4 alkyl, (b) $—SO_2NR^1R^2$ where R^1 and R^2 are each independently hydrogen or C_1–C_4 alkyl, (c) nitro, (d) amino and (e) acetamido; and
X is a group of the formula $—(CH_2)_m—$ where m is an integer of from one to four, inclusive, or it is $—CO(CH_2)_n—$ or $—CH(OH)(CH_2)_n—$ where n is one, two or three.

24. A method for preventing or reducing cardiac arrythmias in the treatment of a subject afflicted with an impaired cardiac pump function, which comprises administering to said subject an effective anti-arrhythmic amount of a compound as claimed in claim 1.

4,806,537

USE OF AMODIAQUIN AND RELATED COMPOUNDS IN TREATMENT OF NERVOUS SYSTEM DEGENERATION

Eugene Roberts, Monrovia, Calif., assignor to City of Hope, Duarte, Calif.

Continuation-in-part of Ser. No. 39,017, Apr. 16, 1987, abandoned, which is a continuation of Ser. No. 946,068, Dec. 24, 1986, abandoned. This application Mar. 21, 1988, Ser. No. 171,371

Int. Cl.[4] A61K *31/50, 31/495*

U.S. Cl. 514—253 **10 Claims**

1. A method for the treatment of a degenerative disease of the central nervous system of a human which comprises administering to a human affected with such disease a therapeutically effective amount of a compound selected from the group consisting of amodiaquin and a therapeutically effective salt thereof.

4,806,538

PIPERAZINE COMPOUND AS PAF-ANTAGONIST

Noriliko Shimazaki; Keiji Hemmi, both of Ibaraki; Osamu Nakagaiti, Toyonaka; Yoshio Miyazaki, Itami, and Masashi Hashimoto, Ibaraki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

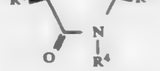
Continuation-in-part of Ser. No. 790,082, Oct. 22, 1985, abandoned. This application Mar. 30, 1987, Ser. No. 31,577

Claims priority, application United Kingdom, Nov. 2, 1984, 8427735; Apr. 23, 1986, 8609908; Dec. 31, 1986, 8631082

Int. Cl.[4] A61K *31/495*; **C07D** *401/14, 417/14*

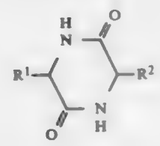
U.S. Cl. 514—253 **16 Claims**

1. A compound of the formula:



wherein
R^1 is pyridyl(lower)alkyl or thiazolyl(lower)alkyl,
R^2 is N-lower alkylindolyl(lower)alkyl which may have lower alkyl or halogen on the indole ring, and
R^3 and R^4 are each hydrogen or lower alkyl; or pharmaceutically acceptable salt thereof.

2. A compound of the formula:



wherein
R^1 is pyridyl(lower)alkyl or thiazolyl(lower)alkyl, and
R^2 is N-lower alkylindolyl(lower)alkyl which may have lower alkyl or halogen on the indole ring,
or pharmaceutically acceptable salt thereof.

16. A method of treating a disease caused by PAF which comprises treating a subject in need of said treatment with an effective amount of the compound of claim 1.

4,806,539

1-CYCLOPROPYL-6-FLUORO-1,4-DIHYDRO-4-OXO-7-(1-PIPERAZINYL)-3-QUINOLINECARBOXYLIC ACIDS AND ANTIBACTERIAL AGENTS CONTAINING THEM

Uwe Petersen, Leverkusen; Klaus Grohe, Odenthal; Hans-Joachim Zeiler, Velbert, and Karl G. Metzger, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

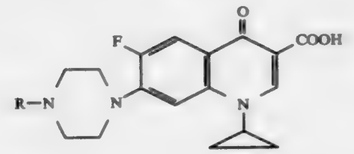
Filed Nov. 17, 1986, Ser. No. 931,575

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1985, 3542002

Int. Cl.[4] A61K *31/505*; **C07D** *401/10*

U.S. Cl. 514—254 **5 Claims**

1. A 1-Cyclopropyl-6-fluoro-1,4-dihydro-4-oxo-7-(1-pierazinyl)-3-quinolinecarboxylic acid of the formula



in which
R represents unsubstituted tert.-butyl, or furthermore represents 2-methylthioethyl, trifluoromethylthiomethyl, 2-trifluoromethylthioethyl, cycloalkyl with 3 to 6 carbon atoms, cycloalkenyl which has 5 or 6 carbon atoms and is alkenyl which has 5 or 6 carbon atoms and is optionally substituted by hydroxyl, 1,1-dioxidotetrahydrothiophen-3-yl, cyclopropylmethyl, 1-phenethyl or furylmethyl, or represents allyl or propargyl which is optionally substituted by phenyl,
and pharmaceutically usable hydrates, acid addition salts and alkali metal, alkaline earth metal, silver and guanidinium salts thereof, and the esters thereof.

5. A method of treating a bacterial infection in an animal or a human comprising administering to said animal or human antibacterial effective amount of 1-cyclopropyl-6-fluoro-1,4-dihydro-4-oxo-7-(1-piperazinyl)-3-quinolinecarboxylic acid according to claim 1.

4,806,540

1-HETEROARYL-4-ARYL-PYRAZOLE MICROBICIDES

Klaus Sasse, Bergisch-Gladbach; Gerd Hänssler, Leverkusen; Hans-Georg Schmitt, and Wilfried Paulus, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

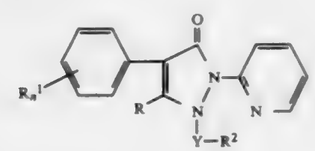
Division of Ser. No. 886,284, Jul. 15, 1986. This application Sep. 23, 1987, Ser. No. 99,928

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1985, 3527157

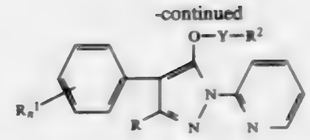
Int. Cl.[4] C07D *401/04, 215/38, 215/20, 215/36*; **A61K** *31/44, 31/47, 31/505*

U.S. Cl. 514—236.5 **7 Claims**

1. A 1-heteroaryl-4-aryl-pyrazole derivative of the formula (I) or (IA)



(I)



(IA)

in which
R represents hydrogen or represents alkyl with 1 to 3 carbon atoms,
R^1 represents fluorine, chlorine, bromine, hydroxyl, methyl, ethyl, n-propyl, iso-propyl, tert.-butyl, trifluoromethyl, tetrachloroethyl, dichlorofluoromethyl, alkoxy with 1 to 4 carbon atoms, trifluoromethoxy, dichlorofluoromethoxy, methoxymethoxy, ethoxymethoxy, 2-methoxyethoxy, 2-ethoxyethoxy, methylthiomethoxy, 2-methylthioethoxy, 2-ethylthioethoxy, phenoxymethoxy, 2-phenoxyethoxy, alkylthio with 1 to 4 carbon atoms, trifluoromethylthio, dichlorofluoromethylthio, methoxymethylthio, 2-methoxyethylthio, ethoxymethylthio, 2-ethoxyethylthio, methylthiomethylthio, methylsulphinyl, ethylsulphinyl, trifluoromethylsulphinyl, methoxymethylsulphinyl, methylsulphonyl, ethylsulphonyl, trifluoromethylsulphonyl, methoxymethylsulphonyl, methylthiomethylsulphonyl, nitro, amino, cyano, dimethylamino, diethylamino, monomethylamino, monoethylamino or acetylamino, or represents a fused-on benzene ring or a furan, dioxolene, dioxene, thioxolene, thiophene, pyridine, oxazole or thiazole radical,
Y represents CO or SO_2,
n represents an integer from 0 to 5 and
R^2 represents hydrogen or represents alkyl or alkenyl with 1 to 12 carbon atoms or halogenoalkyl with 1 to 4 carbon atoms and 1 to 3 identical or different fluorine, bromine, or chlorine atoms, or represents hydroxyalkyl with 1 to 3 carbon atoms, or represents alkoxyalkyl or alkylthioalkyl with in each case 1 to 4 carbon atoms in the alkyl radicals, or represents cycloalkyl which has 3 to 7 carbon atoms and can optionally be mono-, di-, tri- or tetrasubstituted by methyl, or represents phenyl which is optionally mono-, di- or trisubstituted by identical or different substituents from the group consisting of alkyl with 1 to 4 carbon atoms, fluorine, chlorine, bromine, nitro, trifluoromethyl, dichlorofluoromethyl, cyano, methoxy, ethoxy, dimethylamino, diethylamino, acetylamino, phenyl, carboxyl or a carboxylic acid amide group, or furthermore represents a furan, tetrahydrofuran, thiophene, benzofuran, pyridine, quinoline, imidazole, benzimidazole, benzoxazole or benzothiazole radical and can optionally be substituted by methyl, ethyl, fluorine, chlorine, cyano, phenyl, an unsubstituted amino or amino substituted by C_1–C_4-alkyl or cyano or carboxyl, or represents OR^3 or also represents SR^3, if Y = CO,
wherein
R^3 represents alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 3 carbon atoms and 1 to 5 identical or different fluorine and chlorine atoms, nitro- or cyanoalkyl with 1 to 4 carbon atoms in the alkyl part or phenyl, which is optionally mono-, di- or trisubstituted by identical or different substituents from the group consisting of methyl, ethyl, fluorine, chlorine, bromine, C_1–C_4-alkoxy, C_1–C_4-dialkylamino, nitro or cyano group, or
R^2 represents



wherein

R^4 represents hydrogen or alkyl with 1 to 4 carbon atoms and

R^5 represents hydrogen or alkyl with 1 to 6 carbon atoms, or R^4 and R^5 together with the nitrogen atom on which they are located, form a piperidino or morpholino ring.

6. A method of combating microorganisms which comprises applying to such microorganisms or a habitat thereof a microbicidally effective amount of a compound according to claim 1.

4,806,541

QUINOLINE DERIVATIVES

Synèse Jelidon, Therwil; Rita Locher, Basel; Ivan Kompis, Oberwil, all of Switzerland; Ekkehard Weiss, Inzlingen, Fed. Rep. of Germany, and Pierre-Charles Wyss, Mutttenz, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

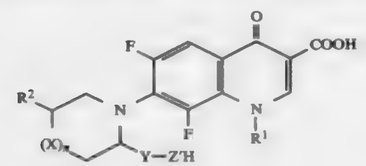
Filed Sep. 22, 1986, Ser. No. 910,566

Claims priority, application Switzerland, Sep. 24, 1985, 4120/85; Aug. 7, 1986, 3177/86

Int. Cl.⁴ A61K *31/495;* **C07D** *401/02*

U.S. Cl. 514—254 **11 Claims**

7. A method of treating bacterial infections which comprises administering to a host requiring such treatment an antibacterially effective amount of a compound of the formula



III

wherein Z' is oxygen or sulfur

n is the integer 1 or 0,

X is a group N—R,

R is hydrogen, C_{1-4}-alkyl, C_{2-4}-alkylene-$N(R^a,R^b)$, benzyl or benzyl independently ring-substituted with up to 3 substituents selected from the group consisting of hydroxy, halogen, C_{1-4}alkyl, C_{1-4}alkoxy or nitro,

Y is methylene or ethylene,

R^1 is C_{3-6}-cycloalkyl, $N(R^c,R^d)$, phenyl, phenyl independently substituted with up to 3 substituents selected from the group consisting of hydroxy, halogen, C_{1-4}alkyl, C_{1-4}alkoxy or nitro, or optionally fluorinated C_{1-4}-alkyl or C_{2-4}-alkenyl,

R^2 is hydrogen, C_{1-4}-alkyl or, when n is 0, it can also be OH or $N(R^e,R^f)$, and

R^a to R^g are hydrogen or C_{1-4}-alkyl, or $N(R^a,R^b)$ is a 5- or 6-membered saturated ring optionally containing an additional heteroatom selected from 0 or N—R^g,

an enantiomer or diastereomer thereof.

4,806,542

ISOHEXIDE PYRIMIDINES TRIAZINES, TRIAZOLES AND IMIDAZOLES USEFUL AS CYTOSTATIC

Peter Stoss, and Elmar Kaes, both of Illertissen, Fed. Rep. of Germany, assignors to Heinrich Mack Nachf., Illertissen, Fed. Rep. of Germany

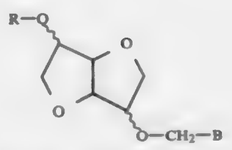
Filed Feb. 26, 1987, Ser. No. 19,110

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1986, 3606634

Int. Cl.⁴ A61K *31/495, 31/53;* **C07D** *405/14*

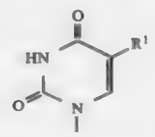
U.S. Cl. 514—274 **15 Claims**

1. An isohexide nucleoside of formula I:



or a pharmaceutically accceptable acid-addition salt thereof; wherein the bond between the ring system and the substituents can be either endocyclic or exocyclic; R is hydrogen; straight-chain or branched aliphatic acyl with 2 to 5 carbon atoms; benzyl or toluyl each optionally substituted by halogen, lower alkyl or nitro; benzyl; or phosphate, and B is a heterocyclic group selected from the group consisting of

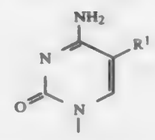
(a) a uracil of the formula II:



II

wherein R^1 is hydrogen; halogen; or alkyl, alkenyl or alkynyl having 1 to 6 carbon atoms, each optionally substituted by hydroxyl or halogen,

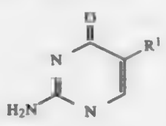
(b) a cytosine of the formula III:



III

in which R^1 has the abovementioned meaning,

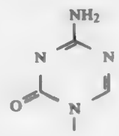
(c) an isocytosine of the formula IV:



IV

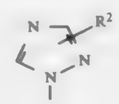
in which R^1 has the abovementioned meaning,

(d) a 5-azacytosine of hte formula V:



V

(e) a triazole of the formula VI:



VI

in which R^2 occupies either the 3- or the 5-position and has the following meaning:

hydrogen, alkoxycarbonyl $COOR^3$, in which R^3 is alkyl with 1 to 5 carbon atoms, carboxamide, thiocarboxamide or cyano, or

(f) an imidazole of the formula VII:



VII

in which R^4 and R^5 are identical or different and are hydrogen, amino, carboxamide, thiocarboxamide or cyano; or a pharamaceutically acceptable acid addition salt thereof.

8. A method for achieving cytostatic effect in a subject in need of such treatment which comprises administering to a subject in need of such treatment a compound of formula I as defined in claim 1 in an amount sufficient for achieving such effect.

4,806,543

METHOD AND COMPOSITIONS FOR REDUCING NEUROTOXIC INJURY

Dennis W. Choi, Stanford, Calif., assignor to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Nov. 25, 1986, Ser. No. 934,733

Int. Cl.⁴ A61K *31/36*

U.S. Cl. 514—464 **17 Claims**

1. A method for reducing adverse effects of toxic injury to central neurons, which comprises:

administering to a patient susceptible to toxic injury an amount, sufficient to reduce said effects, of a compound which is a mirror-image enantiomer of an analgesic opioid agonist or antagonist.

4,806,544

ASYMMETRICAL ESTER DERIVATIVES OF 1,4-DIHYDROPHYRIDINE-3,5-DICARBOXYLIC ACID

Jacques Robin; Didier Prunenn, both of Dijon, and Francois Bellamy, Saulon La Rue, all of France, assignors to Fournier Innovation et Synergie, Paris, France

Filed Mar. 18, 1987, Ser. No. 27,262

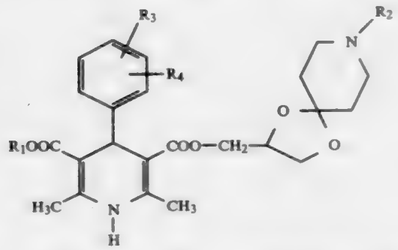
Claims priority, application France, Apr. 2, 1986, 86 04685

Int. Cl.⁴ A61K *31/445;* **C07D** *491/20*

U.S. Cl. 514—278 **10 Claims**

1. An asymmetrical heterocyclic ester derivative of 1,4-dihydropyridine-3,5-dicarboxylic acid, which is selected from the group comprising:

(i) the esters corresponding to the formula:



(I)

in which: R_1 represents a C_1–C_4 alkyl group, R_2 represents a C_1–C_4 alkyl group, a benzyl group, a benzoyl group or a phenyl group optionally substituted by one or more C_1–C_4 alkoxy, C_1–C_4 alkyl, cyano, nitro, hydroxyl or trifluoromethyl groups or by one or more halogen atoms, and R_3 and R_4, which are identical or different, each represent a hydrogen atom, a nitro group or a chlorine atom;

(ii) their optical isomers and diastereoisomers; and

(iii) the corresponding addition salts.

10. A method of treatment of hypertension and cardiac insufficiency, which comprises administering to a human being in need of such a treatment an effective antihypertensive amount of a compound selected from the group consisting of

(i) 1,4-dihydro-2,6-dimethylpyridine-3,5-dicarboxylic acid esters of the formula I according to claim 1;

(ii) optical isomers and diastereoisomers thereof; and

(iii) non-toxic addition salts thereof.

4,806,545

(−)-1β-ETHYL-1α-HYDROXYMETHYL-1,2,3,4,6,7,12,12Bα-OCTAHYDROINDOLO(2,3-A)QUINOLIZINE, PROCESS FOR ITS PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Csaba Szántay, Budapest; Lajos Szabó, Budapest; György Kalasz, Budapest; Zsolt Szombathelyi, Budapest; Egon Kárpáti, Budapest; Béla Kiss, Vecses; Katalin Csomor, Budapest; István Laszlovszky, Budapest; Erzsébet Lapis, Budapest; László Szporny, Budapest; Lilla Forgács, Budapest; Csaba Kuthi, Budapest, and Anikó Gere, Budapest, all of, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

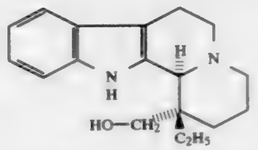
Filed Apr. 14, 1986, Ser. No. 851,327

Claims priority, application Hungary, Apr. 19, 1985, 1519/85

Int. Cl.⁴ C07D *455/00*

U.S. Cl. 514—285 **7 Claims**

1. (−)-1β-Ethyl-1α-hydroxymethyl-1,2,3,4,6,7,12,12bα-octahydroindolo[2,3-a]quinolizine of the formula (I)



(I)

and pharmaceutically acceptable acid addition salts thereof.

4,806,546

IMMOBILIZATION OF NUCLEIC ACIDS ON DERIVATIZED NYLON SUPPORTS

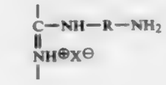
Robert J. Carrico, and William L. Patterson, both of Elkhart, Ind., assignors to Miles Inc., Elkhart, Ind.

Filed Sep. 30, 1985, Ser. No. 781,332

Int. Cl.⁴ C07H *21/00;* **C12Q** *1/68*

U.S. Cl. 536—27 **7 Claims**

1. A method for immobilizing a nucleic acid consisting essentially of the step of contacting the nucleic acid with a solid support consisting essentially of nylon having amide groups which have been derivatized to amidine residues of the formula:



wherein R is alkylene, pheylene, alkyphenylene, or phenalkylene, and X is a counteranion, whereby said nucleic acid becomes bound to the solid support by noncovalent bonds.

VOL 1099 ISS 3 FE 21 1989 UMI

4,806,547

ISOQUINOLINE DERIVATIVES, ANALGESIC COMPOUNDS THEREOF AND METHOD OF TREATING PAIN

Giuseppe Giardina, and Vittorio Vecchietti, both of Milan, Italy, assignors to Dr. Lo. Zambeletti SPA, Italy

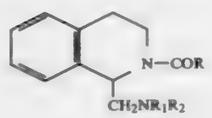
Filed Jan. 22, 1987, Ser. No. 6,068

Claims priority, application United Kingdom, Jan. 24, 1986, 8601796

Int. Cl.[4] A61K *31/47*; C07D *401/06, 217/16*

U.S. Cl. 514—307 **9 Claims**

1. A compound of formula 1, or a solvate or salt thereof:



I

in which:

R is a group of formula —$(CH_2)n$—X——Ar——$(R_3)m$

in which n is 0, 1 or 2,

m is 0, 1 or 2,

X is a direct bond, or O, S or NR_4 in which R_4 is hydrogen or C_{1-6} alkyl,

Ar is phenyl or thienyl, R_3 is an electron withdrawing substituent selected from the group consisting of halogen, —CF_3, —NO_2, —CN, —SO_3H, —$SO_2NR_5R_6$, —CO_2R_7, —COR_8 and —$CONR_9R_{10}$ wherein R_5 to R_{10} represent hydrogen or C_{1-6} alkyl, or R_3 is an alkyl, aryl, aralkyl, hydroxy or alkoxy group, or together with another R_3 group forms a carbocyclic ring; and R_1 and R_2 are independently C_{1-6} alkyl groups or together form a C_{3-6} polymethylene or alkenylene group.

9. A method of treating pain in mammals which comprises administering an effective, non-toxic amount of a compound according to claim 1 to a mammalian sufferer.

4,806,548

ANTI-ULCER COMPOSITION

Nedyalka S. Ivanova; Tahavder B. Ivanov; Margarita D. Dryanska; Orhideya B. Zahanova; Lilyana D. Dalleva; Milka P. Nikolova; Nikolina D. Berova; Rosalina S. Rakovska; Maria S. Stoyanova; Sascha R. Mihaylova; Milka A. Luna; Josif N. Nissimov; Snejana G. Vitkova; Vladimir K. Matev; Boris K. Dimitrov, and Grigor M. Metshkov, all of Sofia, Bulgaria, assignors to T P O Pharmachim, Sofia, Bulgaria

Continuation-in-part of Ser. No. 722,313, Apr. 11, 1985. This application Aug. 4, 1987, Ser. No. 81,096

Claims priority, application Bulgaria, Apr. 13, 1984, 65090

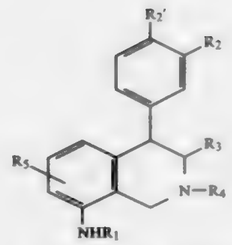
Int. Cl.[4] A61K *31/47*

U.S. Cl. 514—310 **9 Claims**

1. An anti-ulceric composition comprising

a histamine H_2 antagonist wherein the antagonist is a guanidine derivative selected from the group consisting of cimetidine or ranitidine and their pharmaceutically acceptable salts; and

at least one 4-phenyl-tetrahydroisoquinoline antidepressant of the formula:



wherein R_1, R_3, and R_4 are each selected from the group consisting of hydrogen, a lower alkyl, and an aralkyl group; R_2 and R'_2 are each selected from the group consisting of hydrogen, a halogen atom, trifluormethyl, an alkyl, an alkoxy, and an aralkoxy group; and R_5 is selected from the group consisting of hydrogen, a halogen atom, a hydroxyl group, trifluormethyl, a nitro group, a lower alkyl, an alkoxy, and an aralkoxy group,

in a ratio of histamine antagonist to antidepressant of from 2:1 to 60:1.

4,806,549

4-AMINO-3-CARBONYL SUBSTITUTED QUINOLINES

Robert J. Ife, Stevenage; Thomas H. Brown, Tewin, and Colin A. Leach, Stevenage, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, Great Britain

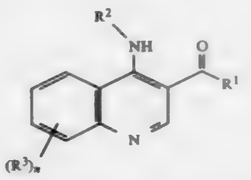
Filed Sep. 3, 1987, Ser. No. 92,749

Claims priority, application United Kingdom, Sep. 5, 1986, 8621425

Int. Cl.[4] A61K *31/47*; C07D *215/42, 215/44*

U.S. Cl. 514—313 **22 Claims**

1. A compound of structure (I):



(I)

in which

R^1 is hydrogen, C_{1-6}alkyl, C_{1-6}alkoxylC_{1-6}alkyl, C_{3-6}cycloalkyl, C_{3-6}cycloalkylC_{1-6} alkyl, phenyl, phenylC_{1-6}alkyl, phenyl substituted by 1 to 3 radicals selected from C_{1-6}alkyl, C_{1-6}alkoxy, amino, C_{1-6}alkylthio or halogen, or phenyl C_{1-6}alkyl substituted by 1 to 3 radicals selected from C_{1-6}alkyl, C_{1-6}alkoxy, amino, C_{1-6}alkylthio, or halogen;

R^2 is C_{1-6}alkyl, C_{3-6}cycloalkyl, C_{3-6}cycloalkyl-C_{1-6}alkyl, phenyl, phenyl C_{1-6}alkyl or phenyl substituted by 1–3 radicals selected from C_{1-6}alkyl, C_{1-6}alkoxy, amino, C_{1-6}alkylthio, halogen, or hydroxy;

R^3 is C_{1-6}alkyl, C_{1-6}alkoxy, C_{1-6}alkylthio, C_{1-6}alkanoyl, amino, C_{1-6}alkylamino, di-C_{1-6}alkylamino, or halogen; and

n is 0, 1 or 2,

provided that when n is 2 and R^3 has 4 to 6 carbon atoms, the R^3 groups are para or meta to each other;

or a pharmaceutically acceptable salt thereof.

4,806,550

4-AMINO-3-CARBONYL SUBSTITUTED QUINOLINES AS INHIBITORS OF GASTRIC ACID SECRETION

Robert J. Ife, Stevenage; Thomas H. Brown, Tewin, and Colin A. Leach, Stevenage, all of England, assignors to SmithKline & French Laboratories Limited, Welwyn Garden City, United Kingdom

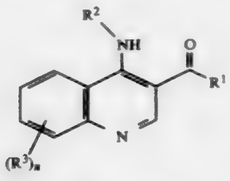
Continuation of Ser. No. 92,749, Sep. 3, 1987. This application May 12, 1988, Ser. No. 192,996

Claims priority, application United Kingdom, Sep. 5, 1986, 8621425

Int. Cl.[4] A61K *31/47*

U.S. Cl. 514—313 **4 Claims**

1. A method of inhibiting gastric acid secretion which comprises administering to a mammal in need thereof an effective amount of a compound of structure (I):



in which

R^1 is hydrogen, C_{1-6}alkyl, C_{1-6}alkoxyl C_{1-6}alkyl, C_{3-6}cycloalkyl, C_{3-6}cycloalkyl C_{1-6}alkyl, phenyl, phenyl C_{1-6}alkyl, the phenyl groups being unsubstituted or substituted by 1 to 3 radicals selected from C_{1-6}alkyl, C_{1-6}alkoxy, amino, C_{1-6}alkylthio, or halogen;

R^2 is C_{1-6}alkyl, C_{3-6}cycloalkyl, C_{3-6}cycloalkyl-C_{1-6}alkyl, phenyl, phenyl C_{1-6}alkyl or phenyl substituted by 1-3 radicals selected from C_{1-6}alkyl, C_{1-6}alkoxy, amino, C_{1-6}alkylthio, halogen, or hydroxy;

R^3 is C_{1-6}alkyl, C_{1-6}alkoxy, C_{1-6}alkylthio, C_{1-6}alkanoyl, amino, C_{1-6}alkylamino, di-C_{1-6}alkylamino, or halogen; and

n is 0, 1 or 2, provided that when n is 2 and R^3 has 4 to 6 carbon atoms, the R^3 groups are para or meta to each other;

or a pharmaceutically acceptable salt thereof.

4,806,551

N-DIHYDROINDOLYLETHYL-SULPHONAMIDES

Horst Blohagen, Haan; Ulrich Rosentreter, Wuppertal; Volker Lieb, Leverkusen; Hermann Oediger, Cologne; Volker-Bernd Fiedler, Leverkusen; Elisabeth Perzborn, and Friedel Sester, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

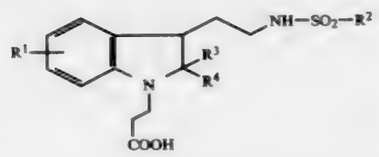
Filed Apr. 16, 1987, Ser. No. 39,395

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1986, 3613623

Int. Cl.[4] C07D *209/34, 209/16, 209/14*; **A61K** *31/40*

U.S. Cl. 514—415 **7 Claims**

1. An N-dihydroindolylethyl-sulphonamide of the formula



in which

R^1 represents hydrogen, halogen, carboxyl or alkoxycarbonyl, or represents a group of the formula —$S(O)_mR^5$, wherein

R^5 denotes alkyl or aryl and

m denotes one of the numbers 0, 1 or 2, or

R^1 represents a group of the formula



wherein

R^6 and R^7 are identical or different and denote hydrogen, alkyl, aryl, aralkyl or acetyl, or

R^1 represents a group of the formula —OR^8,

wherein

R^8 denotes hydrogen, alkyl, aryl, aralkyl, alkylsulphonyl, arylsulphonyl, aralkylsulphonyl or trifluoromethyl, or

R^1 represents alkyl, alkenyl or cycloalkyl, optionally substituted by carboxyl, alkoxycarbonyl, halogen, hydroxyl, alkoxy, alkylthio or cyano,

R^2 represents aryl, which is optionally substituted by up to 5 substituents selected from the group consisting of halogen, cyano, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, alkyl, carboxyalkyl, alkoxycarbonylalkyl, alkoxy, alkylthio, hydroxyl, carboxyl, alkoxycarbonyl, phenyl, phenoxy, benzyloxy and benzylthio or by a group of the formula



in which

R^6 and R^7 have the abovementioned meaning,

R^3 represents hydrogen or alkyl and

R^4 represents hydrogen, or

R^3 and R^4 together bond a carbonyl oxygen,

and salts thereof.

6. A method of treating thromboses, thromboembolisms and ischaemias comprising administering to a patient requiring such treatment an effective amount of an N-dihydroindolylethyl-sulphonamide according to claim 1 or a physiologically acceptable salt thereof.

7. A method of combating asthma or allergy comprising administering to a patient requiring such treatment an effective amount of an N-dihydroindolylethyl-sulphonamide according to claim 1 or a physiologically acceptable salt thereof.

4,806,552

PYRIDYL- AND/OR PYRIDOYL-(PIPERID-4-YL) UREAS AND ANALOGUES THEREOF

John L. Archibald, Pershore Royal, and Terence J. Ward, Maidenhead, both of United Kingdom, assignors to John Wyeth & Brother, Limited, Maidenhead, England

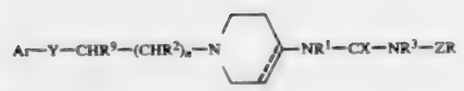
Continuation-in-part of Ser. No. 781,832, Sep., 1985, Pat. No. 4,722,930, which is a division of Ser. No. 545,802, Oct., 1983, Pat. No. 4,563,466, which is a continuation-in-part of Ser. No. 366,266, Apr., 1982, Pat. No. 4,426,387, which is a continuation of Ser. No. 238,381, Feb., 1981, abandoned. This application Nov. 12, 1986, Ser. No. 929,964

Claims priority, application United Kingdom, Mar. 1, 1980, 8007048; Aug. 22, 1980, 8027435; Nov. 15, 1985, 8528235

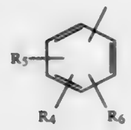
Int. Cl.[4] A61K *31/445, 31/50*; **C07D** *211/72, 213/89*

U.S. Cl. 514—318 **22 Claims**

1. A compound of the formula



wherein
n is 0 or 1;
R^1, R^2, R^3 and R^9 are, independently, hydrogen or a lower alkyl group;
X is =O or =S,
Y is —O— or a direct bond;
Z is —CO— or —CH_2—;
R is pyridyl or pyridyl substituted by one or two of the same substituents selected from loweralkyl, lower alkenyl, lower alkoxy, hydroxy, monohydroxyloweralkyl, fluoro, bromo, chloro, chloroloweralkyl, fluoroloweralkyl, amino, monoaminoloweralkyl, loweralkylamino, dialoweralkylamino, loweralkylcarbonylamino, uriedo, mono- or di-loweralkylsulphonylamino, loweralkoxycarbonyl, nitro, cyano, or —$CONH_2$; and
Ar is



in which
R_4, R_5 and R_6, when present, independently, are hydrogen, loweralkyl, lower alkenyl, lower alkoxy, hydroxy, monohydroxyloweralkyl, fluoro, bromo, chloro, chloroloweralkyl, fluoroloweralkyl, amino, monoaminoloweralkyl, loweralkylamino, di-loweralkylamino, loweralkylcarbonylamino, uriedo, mono- or di-loweralkylsulphonylamino, loweralkoxycarbonyl, nitro, cyano, or —$CONH_2$, or
R_4 and R_5, when adjacent, together with the carbon atoms to which they are attached also are a fused five or six member carbocyclic ring with 0–2 double bonds and optionally carrying one or two substituents as defined above for said R_4 and R_5, or

a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof, in which the dotted line represents an optional double bond and lower refers to an alkyl group of 1 to 6 carbon atoms or to an alkenyl group of 2 to 6 carbon atoms.

10. A method for alleviating depression in a mammal afflicted with depression which comprises administering to said mammal an amount effective to alleviate depression of a compound of claim 1 or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

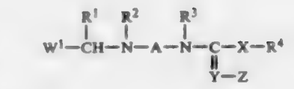
4,806,553

PYRIDYL ALKYLENEDIAMINE COMPOUNDS INSECTICIDAL

Kozo Shiokawa, Kawasaki; Shinichi Tsuboi, Hino; Shizuo Kagabu, Gifu; Shoko Sasaki, Hino; Koichi Moriya, Tokyo, and Yumi Hattori, Hachioji, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed Jan. 18, 1987, Ser. No. 64,267
Claims priority, application Japan, Jal. 1, 1986, 61-152763
Int. Cl.[4] A61K *31/44*; C07D *213/26, 212/26, 218/28*
U.S. Cl. 514—332 5 Claims

1. An alkylenediamino of the formula



wherein
R^1, R^2 and R^3 represents hydrogen or C_{1-4} alkyl,
R^4 represents hydrogen, C_{1-4} alkyl, C_{6-10} aryl, benzyl, phenethyl, C_{1-4} alkoxy, dialkylamino having 2 to 6 carbon atoms in total, alkoxyalkyl having 2 to 6 carbon atoms in total, alkylthioalkyl having 2 to 4 carbon atoms in total or a group of the formula —CH_2—W^2 in which W^2 has the same meaning as W^1
X represents S or a single bond,
Y represents N or



in which R^6 represents hydrogen, C_{1-4}alkyl, C_{6-10}aryl, C_{1-4}alkylcarbonyl, alkoxycarbonyl having C_{1-4}alkoxy or cyano,
Z represents cyano or nitro,
W^1 represents pyridyl, the group W^1 being unsubstituted or substituted by at least one substituent selected from halogen, C_{1-4}alkyl, C_{1-4}alkoxy, C_{1-4}alkylthio, C_{1-4}haloalkyl and C_{1-4}haloalkoxy, and
A represents ethylene which may be unsubstituted or substituted by methyl or trimethylene which may optionally be substituted by methyl.

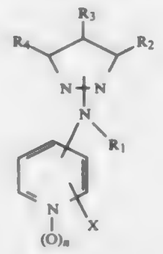
4,806,554

PYRAZOL AND INDAZOLPYRIDINAMINES

Richard C. Effland, and Joseph T. Klein, both of Bridgewater, N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Filed Jan. 11, 1988, Ser. No. 141,852
Int. Cl.[4] C07D *401/04*; A61K *31/415*
U.S. Cl. 514—338 25 Claims

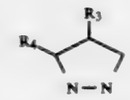
1. A compound of the formula



(I)

where n is 0 or 1; R_1 is independently hydrogen, loweralkyl, loweralkenyl, loweralkynyl, loweralkoxycarbonylloweralkyl, loweralkylaminocarbonylloweralkyl, aminocarbonylloweralkyl, arylloweralkyl, phenyl, nitrophenyl, cyanophenyl, trifluoromethylphenyl, aminophenyl, loweralkanoylaminophenyl, loweralkoxycarbonyl, arylloweralkoxycarbonyl, aryloxycarbonyl, loweralkylaminocarbonyl, arylloweralkylaminocarbonyl, arylaminocarbonyl, alkanoyl, aryllowerakanoyl, aroyl, alkenoyl, alkynoyl or —R_5—NR′R″ where R_5 is loweralkylene, loweralkenylene or loweralkynylene and R′ and R″ are each independently loweralkyl or alternatively the group —NR′R″ as a whole is 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 4-loweralkyl-1-piperazinyl or 4-aryl-1-piperazinyl;
R_2 is hydrogen or loweralkyl;

R_3 and R_4 are each independently hydrogen or loweralkyl, or alternatively R_3 and R_4 taken together form —CH=CH—CH=CH— so that the moiety



becomes an indazole ring; and
X is hydrogen, nitro, amino, halogen, loweralkanoylamino, arylloweralkanoylamino, aroylamino, alkylamino, arylloweralkylamino, loweralkyl, and cyano; the term aryl denotes a phenyl group having zero, one, two or three substituents each of which being independently lower alkyl, loweralkyl, halogen, CF_3, NO_2 or CN; the terms alkyl, alkenyl, alkynyl denote a chain of 1 to 20 carbon atoms or a pharmaceutically acceptable acid addition salt thereof.

4,806,555

1-ARYLOXY-4-AMINO-2-BUTANOLS

Carl D. Lunsford, and Ying-Ho Chen, both of Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Continuation of Ser. No. 904,113, Sep. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 683,765, Dec. 19, 1984, abandoned, which is a division of Ser. No. 418,939, Sep. 16, 1982, abandoned, which is a division of Ser. No. 813,056, Jul. 5, 1977, Pat. No. 4,379,167, which is a continuation-in-part of Ser. No. 730,498, Oct. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 618,984, Oct. 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 518,122, Oct. 25, 1974, abandoned. This application Feb. 17, 1987, Ser. No. 15,406
Int. Cl.[4] A61K *31/135*; C07C *93/06*
U.S. Cl. 514—652 6 Claims

1. A compound selected from 4-cyclohexylamino-1-(orthomethoxyphenoxy)-2-butanol or a pharmaceutically acceptable acid addition salt thereof.

5. A method of inhibiting cardiac arrhythmia with minimal beta-adrenergic blocking activity which comprises administering internally to an animal in need of said treatment an effective cardiac arrhythmia inhibiting amount of a compound selected from the group consisting of 4-cyclohexylamino-1-(ortho-methoxyphenoxy)-2-butanol or a pharmaceutially acceptable acid addition salt thereof.

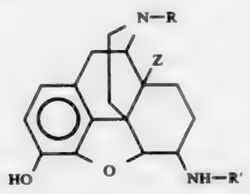
4,806,556

GUT-SELECTIVE OPIATES

Philip S. Portoghese, Falcon Heights, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Division of Ser. No. 809,851, Dec. 12, 1985, Pat. No. 4,730,048. This application Dec. 24, 1987, Ser. No. 137,593
Int. Cl.[4] C07D *489/00, 489/06*; A61K *31/485*
U.S. Cl. 546—44 5 Claims

1. A composition of matter of the formula:



where R is (C_1–C_5)alkyl, C_3–C_6(cycloalkyl)alkyl, aryl, aralkyl or trans-(C_2–C_5)alkenyl, Z is H or OH, and R′ is (C=O-)—A(B)(C), wherein A is selected from the group consisting of (C_1–C_5)alkyl, (C_2–C_5)alkenyl and (C_2–C_6)alkoxy(alkyl); B is selected from the group consisting of H, and a (C_1–C_5)alkyl group optionally substituted with CO_2H, OH or phenyl and C is CO_2H, SO_3H, amino or guanidino; and the pharmaceutically-acceptable salts thereof.

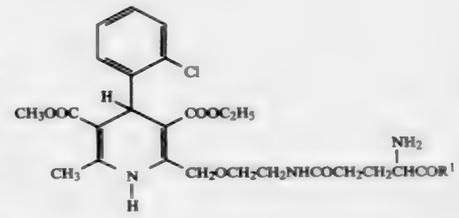
4,806,557

DIHYDROPYRIDINES AND USE THEREOF IN TREATING HYPERTENSION AND ISCHAEMIA

Simon F. Campbell, Kingsdown; Michael J. Humphrey, Sandwich, and Alan Stobie, Hambrook, all of England, assignors to Pfizer Inc., New York, N.Y.

Filed Apr. 28, 1988, Ser. No. 187,116
Claims priority, application United Kingdom, May 2, 1987, 8710493
Int. Cl.[4] A61K *31/44*; C07D *211/90*
U.S. Cl. 514—356 6 Claims

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein R^1 is amino, alkoxy of one to six carbon atoms, hydroxy, phenoxy or benzyloxy.

4. A method of treating hypertension in a mammal comprising the step of administering to said mammal an antihypertensive effective amount of a compound according to claim 1.

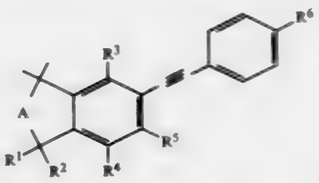
4,806,558

DIARYLACETYLENES AND THEIR USE IN TREATING ACNE

Hans-Heiner Wenst, Donnersheim; Fritz-Frieder Frickel, Deidesheim, and Axel Nuerrenbach, Gruenstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 20, 1985, Ser. No. 778,256
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1984, 3434946
Int. Cl.[4] C07D *257/04*; C07C *63/331*; A61K *31/41, 31/195*
U.S. Cl. 514—381 8 Claims

1. A diarylacetylene of the formula I



I

where R^1 and R^2 are each hydrogen or methyl, R^3 and R^4 are hydrogen or methoxy, R^5 is hydrogen, halogen, methoxy or C_1–C_4-alkyl, A is a methylene or ethylene radical which is unsubstituted or substituted by C_1–C_4-alkyl and R^6 is tetrazolyl or —COOH and its physiologically tolerated salts.

5. The method of treating acne in a patient suffering there-

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from which comprises administering to said patient an effective amount of a compound I as defined in claim 1.

4,806,559

NOVEL SUBSTITUTED HYDROXYALKYL-AZOLE ANTIMYCOTIC AGENTS

Hans-Ludwig Elbe; Jörg Stetter, both of Wuppertal; Karl H. Büchel, Burscheid; Klaus Schaller, Wuppertal, and Manfred Plempel, Hann, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

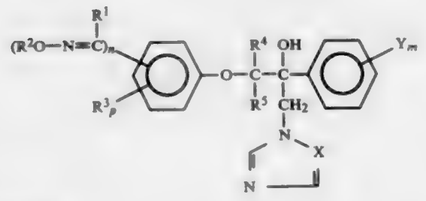
Filed Jul. 18, 1985, Ser. No. 757,033

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1984, 3427844

Int. Cl.[4] A01N *43/64;* **C07D** *249/08*

U.S. Cl. 514—383 **13 Claims**

1. A substituted hydroxy-alkylazole of the formula



in which

R^1 is hydrogen or alkyl with 1 to 10 carbon atoms, or is phenyl or benzyl each of which is optionally substituted by Y_m,

R^2 is hydrogen or alkyl with 1 to 10 carbon atoms or alkenyl or alkynyl with in each case 3 to 10 carbon atoms, or represents phenyl or benzyl each of which is optionally substituted by Y_m,

R^3 and Y each independently is halogen, alkyl with 1 to 4 carbon atoms, cycloalkyl with 5–7 carbon atoms, alkoxy or alkylthio with in each case 1 to 4 carbon atoms or halogenoalkyl, halogenoalkoxy or halogenoalkylthio with in each case 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms; and

R^4 and R^5 each independently is alkyl with 1 to 4 carbon atoms,

X is a nitrogen atom,

m is 0, 1, 2 or 3,

n is 1 or 2, and

p is 0, 1 or 2,

or a pharmaceutically acceptable acid addition salt thereof.

4,806,560

IMIDAZO[4,5-B]PYRIDIN-2-ONE DERIVATIVES

Philippe Masoury, Verrieres le Buisson; Jean Binet, Breuillet, and Elisabeth Dewitte, St. Gratien, all of France, assignors to Synthelabo, France

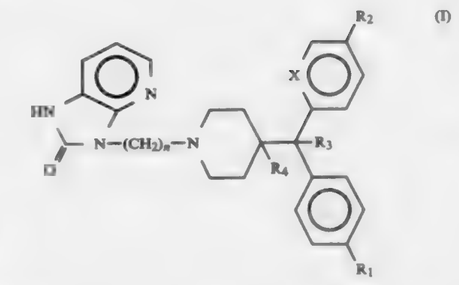
Filed Oct. 7, 1987, Ser. No. 105,243

Claims priority, application France, Oct. 8, 1986, 86 13995

Int. Cl.[4] C07D *471/04*

U.S. Cl. 546—118 **2 Claims**

1. A compound which is an imidazo[4,5-b]pyridin-2-one derivative of formula (I)



(I)

wherein n is 2, 3 or 4, X is =CH— or =N—, R_1 and R_2, which may be the same or different, each represent hydrogen, halogen or (C_{1-4})alkoxy and either R_3 is hydrogen or hydroxy and R_4 is hydrogen, or R_3 and R_4 together form a direct bond, an enantiomer thereof or an addition salt with a pharmaceutically acceptable acid.

4,806,561

METHOD OF TREATMENT OF SOLID CANCER TUMOR OF THE COLON OR BREAST USING PYRROLE DERIVATIVE

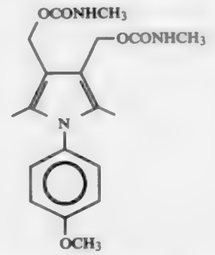
Wayne K. Anderson, Williamsville, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Continuation of Ser. No. 378,276, May 14, 1982, abandoned. This application Dec. 3, 1985, Ser. No. 804,239

Int. Cl.[4] A61K *31/40*

U.S. Cl. 514—427 **9 Claims**

1. A method of inhibiting the growth, in a warm blooded animal, of a solid cancer tumor of the colon, lung, or breast susceptible to a pyrrole of the formula:



comprising parenterally administering to said warm blooded animal, in vivo, an effective solid cancer tumor inhibiting amount of said pyrrole.

4,806,562

SUBSTITUTED THIENO[2,3-B]THIOPHENE-2-SULFONAMIDES AS ANTIGLAUCOMA AGENTS

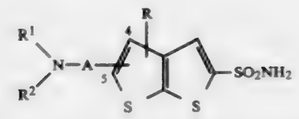
George D. Hartman, Lansdale, and John D. Prugh, Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 162,532, Mar. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 80,851, Aug. 3, 1987, abandoned. This application May 4, 1988, Ser. No. 191,085

Int. Cl.[4] A61K *31/38;* **C07D** *495/02*

U.S. Cl. 514—443 **9 Claims**

1. A compound of structural formula:



or ophthalmologically acceptable salt thereof wherein

A is C_{1-8} alkylene, either straight or branched chain and either unsubstituted or substituted with C_{1-3} alkoxy or hydroxy;

R is hydrogen or C_{1-6}alkyl, either straight or branched chain; and

R^1 and R^2 are independently:

(1) hydrogen,

(2) C_{1-6} alkyl, either unsubstituted or substituted with one or more of

(a) C_{3-6}-cycloalkyl,

(b) C_{1-3} alkoxy,

(c) C_{1-3}alkoxy-(C_{2-4}-alkoxy,)$_n$ wherein n is 1-6

(d) hydroxy,

(e) halo

(f) C_{1-3}alkyl-S(O)$_n$-wherein n is 0–2,

(g) phenyl, or

(h) -NR^3R^4 wherein R^3 and R^4 are independently selected from

(i) hydrogen and

(ii) C_{1-6} alkyl, either unsubstituted or substituted with one or more of C_{1-3} alkoxy, hydroxy or phenyl;

(3)



wherein R^5 is C_{1-4} alkyl, either straight or branched chain and either unsubstituted or substituted with one or more of C_{1-3} alkoxy, or hydroxy; or

(4) taken together with the nitrogen atom to which they are attached form a 5 to 7-membered heterocycle.

4,806,563

N-[4-O-HYDROXYPHENYL-1,3-DIOXAN-5-YLHEXENOYL]SULPHONAMIDES

Michael J. Smithers, Macclesfield, United Kingdom, assignor to Imperial Chemical Industries PLC, London, England

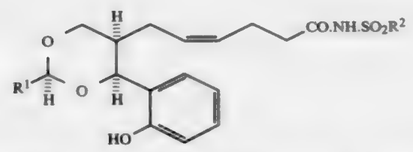
Filed Nov. 10, 1986, Ser. No. 928,454

Claims priority, application United Kingdom, Nov. 12, 1985, 8527862; May 8, 1986, 8611174

Int. Cl.[4] A61K *31/335;* **C07D** *319/06*

U.S. Cl. 514—452 **11 Claims**

1. A sulphonamide derivative of the formula I set out below



I

wherein R^1 is a group of the formula $R^3O.CR^4R^5$— in which R^3 is (1–6C)alkyl or phenyl, the latter optionally bearing a substituent selected from halogeno, cyano, nitro, trifluoromethyl and (1–4C)alkoxy, and R^4 and R^5 are independently (1–4C)alkyl; and R^2 is (1–6C)alkyl, benzyl or phenyl, the latter two of which may optionally bear a halogeno, (1–4C)alkyl, (1–4C)alkoxy, trifluoromethyl, cyano or nitro substituent; and the substituents at positions 4 and 5 of the dioxane ring in formula I and the substituent R^1 have cis-relative stereochemistry; or a pharmaceutically acceptable salt thereof.

4,806,564

ANTIHYPERCHOLESTEROLEMIC BETA-LACTONES

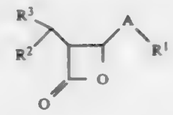
John C. Chabala, Westfield; Yuan-Ching P. Chiang, Piscataway; Michael N. Chang, Westfield; Donald W. Graham, Mountainside; James V. Heck, Scotch Plains, and Shu S. Yang, Bridgewater, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 26, 1987, Ser. No. 53,774

Int. Cl.[4] A61K *31/365;* **C07D** *305/08*

U.S. Cl. 514—449 **22 Claims**

1. A compound represented by the following structural formula (I):



(I)

wherein:

R^1 is selected from

(1) hydrogen,

(2) hydroxy,

(3) C_{1-6} alkoxy

(4) phenyl,

(5) carboxy,

(6) C_{1-6} alkoxycarbonyl,

(7) substituted C_{1-6} alkoxycarbonyl in which the substituent is a phenyl group,

(8) aminocarbonyl,

(9) C_{1-6} alkylaminocarbonyl,

(10) substituted C_{1-6} alkylaminocarbonyl in which the substituent is a hydroxy group,

(11) phenylaminocarbonyl,

R^2 is selected from

(1) hydrogen,

(2) C_{1-6} alkyl,

(3) C_{1-6} alkyloxy,

(4) C_{2-6} alkenyloxy,

(5) formyloxy,

(6) C_{1-6} alkylcarbonyloxy,

(7) carboxy C_{1-6} alkylcarbonyloxy,

(8) anisyldiphenylmethyloxy,

(9) C_{1-6} alkylsulfonyloxy,

(10) aminocarbonyloxy, and

(11) C_{1-6} alkylaminocarbonyloxy;

R^3 is selected from

(1) hydrogen,

(2) C_{1-6} alkyl,

(3) C_{2-6} alkenyl,

(4) phenyl, or

R^2 and R^3 when taken together with the carbon atom to which the are attached form C_{3-6} carbocyclic ring;

A is selected from

(1) C_{6-17} alkylene,

(2) substituted C_{6-17} alkylene in which the one or wwo substituents are

(a) oxo,

(b) epoxy,

(c) geminal dihydroxy,

(d) C_{1-6} alkoxy, and

(e) 4-bromophenylhydrazono;

(3) monounsaturated C_{6-17} alkylene, and

(4) substituted monounsaturated C_{6-17} alkylene in which the one or two substituents are

(a) oxo,

(b) epoxy,

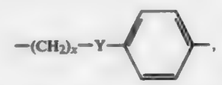
(c) geminal dihydroxy,

(d) C_{1-6} alkoxy, and

(e) 4-bromophenylhydrazono;

(5) C_{7-16} aralkylene, wherein the alkyl chain is interupted by a 1,2-, 1,3-, or 1,4-phenylene moiety,

(6) C_{6-18} alkylene, straight or branched chain, interupted by an oxygen, sulfur or sulfoxide moiety,
(7) a group of the structure



where x is 1–4 and Y is O, S, or SO; or a pharmaceutically acceptable salt thereof.

22. A method of inhibiting cholesterol biosynthesis which comprises the administration to a subject in need of such treatment a non-toxic therapeutically effective amount of a compound of claim 1.

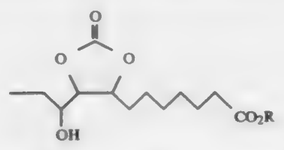
4,806,565

ANTIFUGAL TRI-YNE CARBONATES

Otto D. Hensens, Red Bank, N.J.; August J. Kempf, Staten Island, N.Y.; Robert E. Schwartz, Westfield, N.J.; Ruth S. Sykes, Edison, N.J.; Carol F. Wichmann, Westfield, N.J.; Kenneth E. Wilson, Westfield, N.J.; Sheldon B. Zimmerman, Springfield, N.J., and Deborah L. Zink, Manalapan, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 26, 1987, Ser. No. 53,920
Int. Cl.[4] A61K *31/335;* **C07D** *317/30*
U.S. Cl. 514—467 **12 Claims**

1. A compound having the structural formula:



wherein R is hydrogen or a pharmaceutically acceptable salt.

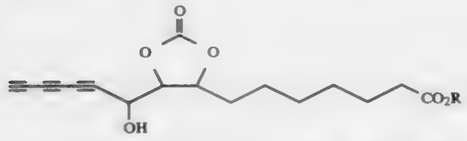
4,806,566

ANTI-GRAM POSITIVE BACTERIA TRI-YNE CARBONATES

Sheldon B. Zimmerman, Springfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed May 26, 1987, Ser. No. 53,921
Int. Cl.[4] A61K *31/335*
U.S. Cl. 514—467 **4 Claims**

1. A method of treating gram positive bacterial infections in mammals which comprises administering there to a therapeutically effective amount of a compound represented by the structural formula:



wherein R is hydrogen or a pharmaceutically acceptable salt thereof.

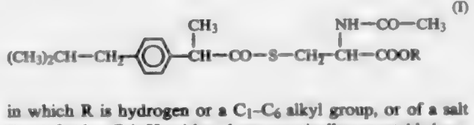
4,806,567

METHOD FOR THE TREATMENT OF ISCHEMIA AND REPERFUSION SYNDROMES

Vittorio Ferrari, Milan; Angelo Carenzi, Busto Arsizio, and Davide Della Bella, Milan, all of Italy, assignors to Zambon S.p.A., Milan, Italy

Filed Jul. 13, 1987, Ser. No. 72,714
Claims priority, application Italy, Jul. 14, 1986, 21111 A/86
Int. Cl.[4] A61K *31/265;* **C07C** *153/11*
U.S. Cl. 514—513 **1 Claim**

1. A method for the treatment of ischemia and reperfusion syndromes consisting in administering to a patient in need thereof a therapeutically effective amount of a compound of the formula:



(I)

in which R is hydrogen or a C_1–C_6 alkyl group, or of a salt thereof, when R is H, with a pharmaceutically acceptable base.

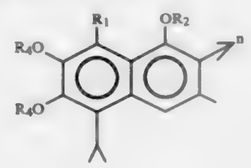
4,806,568

GOSSYPOL DERIVATIVES

David L. Vander Jagt, Albuquerque, and Robert E. Royer, Bosque Farms, both of N. Mex., assignors to Research Corporation, New York, N.Y.

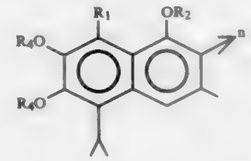
Filed Sep. 12, 1985, Ser. No. 775,196
Int. Cl.[4] C07C *121/64;* **A61K** *31/275*
U.S. Cl. 514—522 **10 Claims**

1. A compound of the formula:



wherein
R_1 is C═N;
and R_2 is C_1 to C_6 acyl;
R_4 is hydrogen;
and n is the integer 1 or 2.

6. A therapeutic compositon comprising a compound of the formula



wherein
R_1 is C═N;
and R_2 is C_1 to C_6 acyl;
R_4 is hydrogen;
and n is the integer 1 or 2; in combination with a pharmaceutically acceptable carrier.

4,806,569

PHARMACEUTICAL AND DIETARY COMPOSITION

David F. Horrobin, Montreal, Canada, assignor to Efamol, Ltd., Surrey, England

Division of Ser. No. 575,744, Jan. 31, 1984, Pat. No. 4,681,896. This application May 4, 1987, Ser. No. 45,545
Claims priority, application United Kingdom, Feb. 1, 1983, 8302708
Int. Cl.[4] A61K *31/23*
U.S. Cl. 514—552 **5 Claims**

1. A method of treating diabetes wherein
(1) an effective amount of 50 mg to 5 g daily of a metabolite of linoleic acid selected from the group consisting of GLA, DGLA, AA, a 22:4 n-6 essential fatty acid and a 22:5 n-6 essential fatty acid, and
(2) an effective amount of 50 mg to 5 g daily of a metabolite of alpha-linolenic acid selected from the group consisting of 18:4 n-3, 20:4 n-3, 20:5 n-3, 22:5 n-3 and 22:6 n-3 essential fatty acids
are administered alone or in an acceptable pharmaceutical carrier or diluent to a person suffering from diabetes.

4,806,570

THERAPEUTIC AGENTS

James E. Jeffery; Antonin Kozlik, and Eric C. Wilmhurst, all of Nottingham, United Kingdom, assignors to The Boots Company plc, England

Continuation of Ser. No. 725,206, Apr. 19, 1985, Pat. No. 4,746,680, which is a continuation of Ser. No. 365,285, Apr. 5, 1982, Pat. No. 4,522,828. This application Dec. 23, 1985, Ser. No. 812,730
Claims priority, application United Kingdom, Apr. 6, 1981, 8110709
The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.
Int. Cl.[4] A01N *33/02*
U.S. Cl. 514—646 **29 Claims**

1. A compound of the formula I:



I

or a pharmaceutically acceptable salt thereof in which R_1 is propyl or butyl; R_2 is selected from the group consisting of H and alkyl groups containing 1 to 3 carbon atoms; in which R_3 and R_4, which are the same or different, are selected from the group consisting of H, straight or branched chain alkyl groups containing 1 to 4 carbon atoms, alkenyl groups having 3 to 6 carbon atoms, alkynyl groups having 3 to 6 carbon atoms, cycloalkyl groups in which the ring contains 3 to 7 carbon atoms, and a group of formula CHO; and R_5 and R_6, which are the same or different, are selected from the group consisting of H, halo, trifluormethyl, alkyl groups containing 1 to 3 carbon atoms, alkoxy groups containing 1 to 3 carbon atoms, alkylthio groups containing 1 to 3 carbon atoms, and phenyl or R_5 and R_6, together with the carbon atoms to which they are attached, form a second benzene ring optionally substituted by at least one halo, alkyl or alkoxy group containing 1 to 4 carbon atoms or the substituents of the second benzene ring together with the two carbon atoms to which they are attached form a further benzene ring.

4,806,571

ORGANIC COMPOSITION CONTAINING A FLUOROALKYL SULFONIC ACID SALT

Thomas M. Knobel; Mary K. Walker, and Donald M. Maschmeyer, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 6, 1988, Ser. No. 191,293
Int. Cl.[4] C08G *18/14*
U.S. Cl. 521—107 **40 Claims**

1. An organic polymer composition compriting an organic polymer having dispersed therein
(a) at least one ionizable metal salt of a fluoroalkyl sulfonic acid and
(b) an enhancer which increases the conductivity of said organic polymer in the presence of said salt of a fluoroalkyl sulfonic acid, but does not substantially increase the conductivity of said organic polymer in the absence of said salt.

4,806,572

HYDROPHILIC FOAM PAD FOR MAKEUP REMOVAL

George W. Kellett, Cranford, N.J., assignor to Creative Products Resource Asociates, Ltd., Clifton, N.J.

Filed May 4, 1987, Ser. No. 46,847
Int. Cl.[4] C08G *18/30;* **C08K** *9/06*
U.S. Cl. 521—112 **20 Claims**

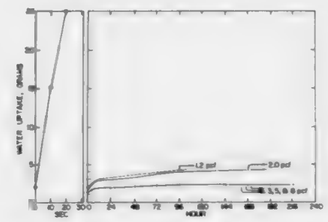
1. A makeup remover pad comprising a resilient, open-celled, hydrophilic polyurethane foam matrix, wherein said matrix integrally incorporates an aqueous phase incorporating about 25–75% water, about 15–70% of a water-insoluble liquid emollient oil, and an amount of surfactant effective to stabilize the aqueous phase so that it is released from the foam matrix as a homogenous emulsion when the pad is applied to skin, and wherein said aqueous phase contains no natural or synthetic wax.

4,806,573

POLYIMIDE FOAM PRECURSOR AND ITS USE IN REINFORCING OPEN-CELL MATERIALS

Kyu W. Lee, Danville, Calif., assignor to Hexcel Corporation, San Francisco, Calif.

Division of Ser. No. 905,718, Sep. 9, 1986, abandoned. This application Jun. 22, 1988, Ser. No. 209,760
Int. Cl.[4] C08J *9/00*
U.S. Cl. 521—157 **15 Claims**



1. A solid phase polyimide foam precursor comprising:
(a) the reaction product of an excess of an organic polyisocyanate and a member selected from the group consisting of furfuryl alcohol and condensation products thereof; and
(b) an organic polycarboxylic compound containing two carboxylic anhydride groups.

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4,806,574

ULTRAVIOLET CURABLE COATINGS FOR OPTICAL GLASS FIBER BASED ON A POLYFUNCTIONAL CORE

John J. Krajewski, Wheeling; Timothy E. Bishop, Algonquin; Clive J. Coady, Hanover Park; John M. Zimmerman, Schaumburg; Gerry K. Noren, Hoffman Estates, and Christopher E. Fisher, LaGrange, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jul. 22, 1985, Ser. No. 757,249
Int. Cl.[4] C08F 2/50, 20/60, 20/58; G02B 6/16
U.S. Cl. 522—96 9 Claims

1. A volatile solvent-free ultraviolet curing liquid coating composition which, when cured with ultraviolet light, provides a coating adapted for the buffer coating of optical glass fiber, said coating composition consisting essentially of a photoinitiator, sufficient acrylate-functional liquid having a glass transition temperature below about 0° C. to provide the liquidity needed for coating application, and an acrylate-terminated polyurethane oligomer based on a polyfunctional core, said oligomer being the reaction product of organic diisocyanate with compound having a plurality of isocyanate-reactive functional groups, a high molecular weight trifunctional triamine providing said core and to supporting one branch for each functionality in said core, and any remainder of isocyanate-reactive compound being difunctional, each of said branches leading to an acrylate-functional terminal group bound to each branch by a urethane group or a urea group, there being from about 1000 to about 2500 units of molecular weight in each branch between said core and said acrylate-functional terminal group.

4,806,575

PREVENTION OF OUTGASSING IN POLYVINYLSILOXANE ELASTOMERS BY THE USE OF FINELY DIVIDED PLATINUM BLACK

Duncan E. Waller, Ypsilanti, and Laurie D. Lovshe, Plymouth, both of Mich., assignors to Kerr Manufacturing Company, Romulus, Mich.

Filed Nov. 19, 1986, Ser. No. 932,246
The portion of the term of this patent subsequent to Nov. 1, 2005, has been disclaimed.
Int. Cl.[4] A61K 6/00
U.S. Cl. 523—120 4 Claims

1. A vinyl polydimethylsiloxane catalyst paste which consists of about 0.2 to 20,000 ppm of finely divided platinum black having a surface area of about 24M^2/gram and a size range of about 18 to 24 Angstrom-Units, which functions to adsorb hydrogen gas generated in the reaction of said catalyst paste with a hydrofunctional polydimethylsiloxane containing base paste.

4,806,576

CURABLE EPOXY RESIN COMPOSITIONS AND USE IN PREPARING FORMED, SHAPED, FILLED BODIES

Wayne D. Woodson, Danville, Ill., assignor to Ashland Oil, Inc., Russell, Ky.

Division of Ser. No. 703,090, Mar. 29, 1985, abandoned, which is a division of Ser. No. 436,031, Oct. 22, 1982, Pat. No. 4,518,723, which is a continuation-in-part of Ser. No. 405,420, Aug. 5, 1982, abandoned. This application Sep. 11, 1987, Ser. No. 95,802
Int. Cl.[4] C08K 3/36; C08L 63/02; B22C 9/00, 33/40
U.S. Cl. 523—139 33 Claims

1. A curable binder composition comprising a mixture of
(a) a major amount of a free radical curable ethylenically unsaturated binder material,
(b) from 30 percent to 50 percent by weight of an epoxy resin, and
(c) an oxidizing agent capable of reacting with sulfur dioxide to form a catalyst for curing said resin mixture, said percent by weight of (b) being based upon the total weight of (a) and (b).

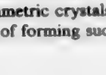
4,806,577

ADHESIVE COMPOSITION

Kazutomo Takahashi; Kazuo Kodama, both of Yokohama, and Minoru Saotome, Ebina, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Nov. 14, 1986, Ser. No. 931,413
Int. Cl.[4] C08L 33/14, 63/00; C08K 3/00
U.S. Cl. 523—445 20 Claims

1. An adhesive composition, consisting essentially of
(A) 10 to 80% by weight of a binder composed of
(a) an acrylic copolymer containing an aminoalkyl ester group obtained by reaction of
(i) a monomer component formed of at least one (meth)acrylate selected from the group consisting of methyl methacrylate, alkyl methacrylates possessing an alkyl group of 2 to 12 carbon atoms, and alkyl acrylates possessing an alkyl group of 2 to 12 carbon atoms and
(ii) a copolymerizable unsaturated carboxylic acid, to form a resultant acrylic copolymer; and
(iii) with 0.5 to 5 equivalents of an alkylene imine of formula R═NH per mole of carboxyl groups on said resultant acrylic copolymer to form pendant aminoallryl ester groups of the following formula:



(I)

wherein R is an alkylene group of 2 or 3 carbon atoms, said copolymer (a), having a number average molecular weight approximately in the range of 1500 to 100,000 as measured by gas permeation chromatography using polystyrene as a standard specimen, and
(b) an epoxy resin selected from the group consisting of beta methyl epichloro- and novolac-epoxy resins,
(B) 90 to 20% by weight of an organic solvent, and
(C) 0.1 to 40% by weight of at least one rust-proofing pigment selected from the group consisting of a phosphate, strontium chromate, zinc molybdate, plumbates, a borate, an iron oxide and a tungstate, based on said binder.

4,806,578

PROCESS FOR PRODUCING HIGHLY ABSORPTIVE RESIN

Takatoshi Kobayashi, and Takahiro Ohya, both of Wakayama, Japan, assignors to KAO Corporation, Tokyo, Japan

Filed Aug. 15, 1986, Ser. No. 896,720
Claims priority, application Japan, Aug. 30, 1985, 60-191100
Int. Cl.[4] C08K 3/20
U.S. Cl. 523—402 7 Claims

1. A process for producing a highly absorptive resin, which comprises the step of crosslinking a hydrous hydrophilic starting polymer, having a carboxylic acid group or a carboxylate group thereof, and having a water content of 10 to 40 percent by weight, with a water soluble polyglycidyl ether having at least 4 expoxy groups.

4,806,579

POLYMER COMPOSITES

Paul D. Calvert, Lewes; Raymond M. Elial, Blackboys, and Brian D. Moyle, Lewes, all of England, assignors to The British Petroleum Co. p.l.c., London, England

Filed Jan. 23, 1987, Ser. No. 7,002
Claims priority, application United Kingdom, Jan. 30, 1986, 8602318; May 20, 1986, 8612283
Int. Cl.[4] C08K 5/34, 5/21, 3/10, 3/32
U.S. Cl. 524—99 7 Claims

1. A polymer matrix having grown therein in vitro and in situ, non-centrosymmetric crystals of an organic or inorganic compound capable of forming such crystals.

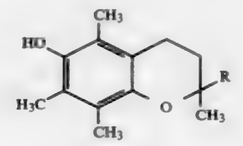
4,806,580

STABILIZER MIXTURES FOR PLASTICS

Gustav Bock, Neustadt; Hubert Trauth, Dudenhofen; Wilhelm Weber, Neustadt, and Peter Lechtken, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

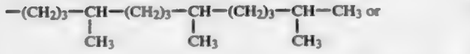
Filed Oct. 9, 1987, Ser. No. 107,461
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1986, 3634531
Int. Cl.[4] C08K 5/52, 5/15
U.S. Cl. 524—110 6 Claims

1. A stabilizer mixture for stabilizing a plastic material, comprising
(a) one part by weight of a chroman derivative (I) of the formula

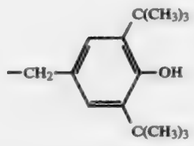


I

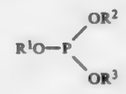
where R=



where Z=C$_7$–C$_{30}$-alkyl, —CH$_2$CH$_2$—S—[C$_1$–C$_{30}$-alkyl] or

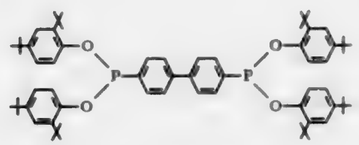


and
(b) from 5 to 14 parts by weight of an organic phosphite of the formula (II)



II

where R^1, R^2 and R^3 are identical or different alkyl and/or aryl or of an organic phosphonite of the formula (III)



III

where + is C(CH$_3$)$_3$.

4,806,581

GRAFT POLYMERS OF POLYMERIZABLE MONOMERS AND OLEFIN POLYMERS

Leigh E. Walker, Macungie, Pa., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 541,191, Oct. 12, 1983, Pat. No. 4,661,549. This application Mar. 10, 1987, Ser. No. 24,197
Int. Cl.[4] C08F 255/02, 255/04, 255/06, 255/08
U.S. Cl. 524—178 61 Claims

1. A vinyl halide polyolefin graft polymer wherein the vinyl halide alone or in combination with up to 50 percent by weight based on the total weight of monomer of an ethylenically unsaturated compound copolymerizable therewith, and in the liquid state, is polymerized with a single polymer of an aliphatic hydrocarbon monoolefin of 2 to about 8 carbon atoms which is in the solid state in particulate form and is substantially insoluble in the monomer but absorbs a substantial amount of the monomer, and remains as a free flowing particle that does not agglomerate or fuse, wherein the proportion of monoolefin polymer in said graft polymer is about 20 to about 80 weight percent based on the weight of said monomer.

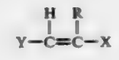
4,806,582

ADHESIVE COMPOSITIONS

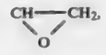
Jacques Boutillier, Bernay, and Serge Nawrot, Serquigny, both of France, assignors to Atochem, France

Filed Feb. 4, 1987, Ser. No. 10,689
Claims priority, application France, Feb. 12, 1986, 86 01916; Jul. 8, 1986, 86 09929
Int. Cl.[4] C08K 5/58, 5/57, 5/09
U.S. Cl. 524—178 6 Claims

1. An adhesive composition comprising:
a. a copolymer resulting from the copolymerization of about 66% to about 99.5% by weight of ethylene or a mixture of ethylene and another ethylenically saturated polymerizable monomer with correspondingly about 0.5% to 40% by weight of a hydroxyalkyl ester or an epoxyalkyl ester of the formula:



in which:
(a) R is hydrogen or a methyl group;
(b) X is a —COO—(CHR′)$_m$—(CH$_2$)$_n$—Z, in which
(i) Z is OH or



(ii) m is a whole number from 0 to 5,
(iii) n is a whole number from 1 to 6; with m and n being a number from 1 to 6, and
(iv) R′ is a hydrocarbon radical, possibly halogenated; and
(c) Y is hydrogen, X or —COO—CH$_2$—R′; X and R′ being defined as above, and
b. a compound of lead or tin selected from the mercaptides, sulfides, or carboxylates thereof, in an amount from about 0.05 to 5% by weight with respect to the weight of said copolymer.

4,806,583

ANTIGLARE COATING

Charles R. Battaglia, 725 NE. 7th St., Pompano Beach, Fla. 33060

Filed Jun. 19, 1987, Ser. No. 64,165
Int. Cl.[4] C08K 5/10
U.S. Cl. 524—315 3 Claims

1. A coating composition for reducing the glare and reflec-

tive properties associated with a cathode ray tube (CRT) screen, comprising:
30% to 75% by weight lacquer;
10% to 50% by weight propellant;
0.01% to 7% flatting agent;
0.01% to 4% anti-foaming agent; and
0.01% to 3% by weight of a polymeric, thermoplastic hardening component which provides equal coating thickness distribution across the CRT screen.

4,806,584

PHASE TRANSFER COMPOUNDS AS ACCELERATORS OF SOAP/SULFUR VULCANIZATION

John M. Hoyt, Cincinnati, and Steven D. Binsey, Akron, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Dec. 5, 1986, Ser. No. 938,668
Int. Cl.[4] C08K 5/05
U.S. Cl. 524—376 **20 Claims**

1. A composition of matter comprising
(a) a saturated elastomer having active halogen-containing cure sites;
(b) a soap/sulfur cure system consisting of 0.5 to 7 phr alkali metal or ammonium soap of a mono- or dicarboxylic acid having from 5 to 22 carbon atoms and 0.05 to 2.5 phr sulfur; and
(c) 0.5 to 4 phr phase transfer compound selected from the group consisting of quaternary ammonium or phosphonium salts of mineral acids corresponding to the formula

wherein Y is nitrogen or phosphorus, R_1, R_2, R_3, and R_4 are hydrocarbon radicals having from 1 to 18 carbon atoms, and X^- is Cl^-, Br^-, I^-, HSO_4^-, or $H_2PO_4^-$ and polyalkylene oxide containing repeating oxyalkylene moieties of the formula

$$-R-O]_n$$

where R is an alkylene group having from 2 to 4 carbon atoms, n is an integer from 3 to 1000, and terminated with hydroxyl or lower alkoxy groups having from 1 to 5 carbon atoms.

4,806,585

ONE-CAN RESIN COMPOSITIONS

Takeo Nakayama, Ibaraki, and Takaroo Sakamoto, Kawanishi, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 15, 1987, Ser. No. 96,406
Claims priority, application Japan, Sep. 16, 1986, 61-218913
Int. Cl.[4] C08K 5/05, 5/06; C08L 65/04, 75/06
U.S. Cl. 524—376 **12 Claims**

1. A one-can resin composition which contains:
(1) a blocked polyisocyanate produced by blocking, with an oxime type blocking agent, α,α,α′α′-tetra-methylxylene diisocyanate or a terminal NCO-containing prepolymer formed by reaction of said diisocyanate with an active hydrogen-containing compound,
(2) a polyol compound selected from the group consisting of polyester polyols, acrylic polyols, epoxy resins, polyether polyols, polyetherester polyols and mixtures thereof, and
(3) as a solvent, a monoalcohol, a glycol ether or a halo alcohol;
wherein the ratio between the blocked polyisocyanate (1) and the polyol compound (2) is adjusted such that the equivalent ratio between the regenerated isocyanate group from said blocked polyisocyanate and the hydroxyl group amounts to about 0.5–2.0, said solvent (3) being used as a solvent for the blocked polyisocyanate and the polyol compound, and wherein the solvent (3) is used in an amount of about 1–50% by weight, based on the mixture of the blocked polyisocyanate (1) and the polyol compound (2).

4,806,586

REINFORCED MOLDING RESIN COMPOSITION

Mikio Nakai, Fuji, Japan, assignor to Polyplastics Co., Ltd., Osaka, Japan

Filed Mar. 23, 1988, Ser. No. 172,111
Claims priority, application Japan, Mar. 25, 1987, 62-71068
Int. Cl.[4] C08K 7/14, 7/08, 3/34
U.S. Cl. 524—413 **3 Claims**

1. A reinforced molding resin composition comprising:
(A) a polyacetal resin or aromatic polyester resin, and in mixture therewith,
(B) one or more kinds of reinforcing materials selected from glass fibers, carbon fibers, and potassium titanates, in an amount of 2~57% by weight based on the total weight of the composition, and
(C) a mica having a mean particle diameter of 0.5~20 μm and an aspect ratio of more than 10, in an amount of 3~58% by weight based on the total weight of the composition,
in such a way that the total amount of the ingredients (B) and (C) is not more than 60% by weight based on the total weight of the composition.

4,806,587

HIGH-IMPACT POLYAMIDE MOULDING COMPOSITIONS

Ludwig Trabert, Krefeld; Christian Lindner, Cologne; Josef Merten, Korschenbroich, and Heinrich Haupt, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 13, 1985, Ser. No. 775,590
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1984, 3434821
Int. Cl.[4] C08L 77/00
U.S. Cl. 524—504 **11 Claims**

1. A thermoplastic moulding composition which comprises
(A) from 40 to 97%, by weight of polyamide; and
(B) from 3 to 60% by weight, of olefinically-unsaturated monomer-based polymer comprising: (B1) from 95 to 70% by weight, based on (B), of a graft rubber based on at least partially cross-linked, particulate rubber having a rubber content of from 50 to 95%, by weight, and a glass transition temperature below 20° C.; and
(B2) from 5 to 30%, by weight, based on (B), of a methylmethacrylate homopolymer having a Staudinger Index of from 0.1 to 0.45 dl/g, as measured in DMF at 25° C.; (B) being obtained in a multistage process comprising a first stage wherein (B1) produced by emulsion polymerization and present in latex form is coagulated at temperatures above 20° C. by pH reduction, by electrolyte addition and by combinations thereof; a second stage wherein (B2) is introduced in latex form into the polymer suspension resulting from the first stage to give a weight ratio of (B1):(B2) of from 95:5 to 70:30, more coagulating solution optionally being added simultaneously or subsequently to give a weight ratio of solids:water of from 1:3 to 1:15, and a third stage wherein the resulting polymer is separated from the aqueous phase and worked-up to give a powder having an average particle size of from 0.05 to 5 mm.

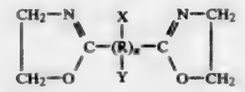
4,806,588

POLYESTER RESIN COMPOSITION

Susumu Fujimoto, and Shigeo Kobayashi, both of Ohtsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Apr. 6, 1987, Ser. No. 34,445
Claims priority, application Japan, Apr. 15, 1986, 61-86662; Dec. 27, 1986, 61-315217
Int. Cl.[4] C08L 67/02
U.S. Cl. 524—505 **3 Claims**

1. A polyester resin composition which comprises
(A) polyethylene terephthalate or a copolyester containing at least 80 mol % of ethylene terephthalate repeating unit;
(B) metal salt of a copolymer of ethylene and unsaturated carboxylic acid selected from the group consisting of acrylic acid and methacrylic acid;
(C) polyvalent oxazoline compound of the formula:



wherein R(X)(Y) is phenylene or methylene and n is 1;
(D) polyester elastomer selected from the group consisting of polyether ester block copolymers, polyester ester block copolymers and polyetherester ester block copolymers composed of aromatic polyesters as hard segments and poly (alkyleneoxide)glycols and/or aliphatic polyesters as soft segments; and
(E) glass fiber;
wherein the composition contains 100 parts by weight of the total amounts of (A) and (D) and the weight ratio of (A):(D) ranges from about 55:45 to 99.9:0.1, the amount of (B) is from 3 to 20 parts by weight per 100 parts by weight of the total amount of (A) and (D), the amount of (C) is from 0.1 to 5 parts by weight per 100 parts by weight of the total amount of (A) and (D), and (E) is present in a reinforcing amount.

4,806,589

POLY(ALKYLENE TEREPHTHALATE) COMPOSITIONS HAVING IMPROVED CRYSTALLIZATION RATE AND PROPERTIES

Augustin T. Chen, Cheshire, and Kemal Onder, North Haven, both of Conn., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 10, 1987, Ser. No. 83,350
Int. Cl.[4] C08L 67/02, 77/00
U.S. Cl. 524—539 **11 Claims**

1. A fluxed homogeneous polymer blend comprising (a) a poly(alkylene terephthalate) and (b) a sufficient amount of a crystalline polyamide to impart enhanced crystallization velocity to said polyalkylene terephthalate said (b) being a linear polyamide selected from the group consisting of poly(4,4′-methylenediphenylene azelamide), poly(4,4′-methylenediphenylene sebacamide), poly(4,4′-methylenediphenylene undecanediamide), poly(4,4′-methylenediphenylene dodecanediamide), and mixtures thereof and being further characterized in that it has been prepared by the reaction of monomers consisting essentially of 4,4′-methylenebis(phenyl isocyanate) and the corresponding dicarboxylic acid.

4,806,590

AQUEOUS-BASED SEALANT COMPOSITIONS

John C. Padget, Prodsham, and Donald H. McIlrath, Liverpool, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed May 20, 1987, Ser. No. 52,002
Claims priority, application United Kingdom, May 27, 1986, 8612776; Jul. 2, 1986, 8616187
Int. Cl.[4] C08J 27/00
U.S. Cl. 524—568 **30 Claims**

1. An aqueous-based sealant composition comprising:
(A) at least one vinylidene chloride copolymer which copolymer comprises polymerised units of vinylidene chloride and has a modal molecular weight Mp of at least 200,000; and
(B) at least one filler material present in an amount of 100 to 500 weight % based on the weight of said at least one vinylidene chloride copolymer;
and wherein said aqueous-based sealant composition (after drying) has a Tg below 0° C.

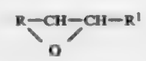
4,806,591

CATIONIC SIZING AGENTS FOR PAPER

Joachim Probst; Heinz Blumgen, both of Leverkusen; Bruno Bilmer, Bergisch Gladbach; Joachim Klaig, Odenthal, and Renke Mettweller, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 20, 1986, Ser. No. 921,173
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1985, 3537824
The portion of the term of this patent subsequent to Apr. 21, 2004, has been disclaimed.
Int. Cl.[4] C08L 33/20
U.S. Cl. 524—820 **8 Claims**

1. Cationic sizing agents for paper, obtainable by a process in which a water-soluble cationic terpolymer compound, built up in a chemically uniform manner, of (a) 7 to 40% by weight of N,N-dimethylaminoethyl acrylate and/or methacrylate, (b) 40 to 80% by weight of styrene and (c) 4 to 50% by weight of acrylonitrile, the sum of components (a) to (c) always being 100% by weight and at least 10% of the dimethylamino groups of the terpolymer being quaternized with monoepoxides of the formula



wherein
R and R^1 represent identical or different radicals and denote hydrogen, an alkyl group with 1 to 16 carbon atoms, a cycloalkyl group with 5 to 12 carbon atoms or an aryl group with 6 to 12 carbon atoms,
with the exception of epihalogenohydrins, and the remainder protonated, is dissolved in an aqueous medium and, in the presence of 10 to 70% by weight—based on the following monomer mixture—of this emulsifier, (d) 5 to 95% by weight of acrylonitrile, methacrylonitrile or styrene or mixtures thereof and (e) 5 to 95% by weight of acrylic acid ester and/or methacrylic acid ester with 1 to 12 C atoms in the alcohol radical—the sum of components (d) and (e) always being 100% by weight—are emulsified and the emulsion thus obtained is subjected to emulsion polymerization, initiated by free radicals, at temperatures of 20° to 150° C.

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4,806,592

STORAGE-STABLE LIQUID SILICONE RUBBER COMPOSITION CONTAINING A PLATINUM-ALKENYSILOXANE COMPLEX CATALYST

Toshio Saruyama, Chiba, Japan, assignor to Toray Silicone Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 56,821, Jun. 2, 1987. This application Aug. 31, 1987, Ser. No. 91,463
Claims priority, application Japan, Sep. 16, 1986, 61-221189
Int. Cl.[4] C08L *83/04*
U.S. Cl. 524—860 **11 Claims**

1. In an improved liquid silicone rubber composition comprising the product obtained by blending to homogeniety

(A) an organopolysiloxane containing at least 2 silicon-bonded alkenyl radicals in each molecule and having a viscosity of from 100 to 300,000 centipoise (0.1–300 Pa.s) at 25° C.

(B) a microparticulate hydrophilic silica, and

(C) an amount of a platinum-alkenylsiloxane complex sufficient to promote curing of said composition in the presence of an organohydrogensiloxane,

the improvement characterized by the pK_a value exhibited by a dispersion in a nonpolar solvent of 100 parts by weight of said silica and from 10 to 100 weight parts of said complex as atomic platinum, where said value is within the range of from 2.0 to 9.0, inclusive.

4,806,593

THERMOPLASTIC MOULDING MATERIALS HAVING GOOD RESISTANCE TO AGEING AND GOOD LOW-TEMPERATURE IMPACT STRENGTH

Hans-Jürgen Kress, Pittsburgh, Pa.; Christian Lindner; Wolfgang Grape, both of Cologne; Horst Peters, Leverkusen; Jochen Schoops, and Dieter Wittmann, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 16, 1987, Ser. No. 97,533
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1986, 3631540
Int. Cl.[4] C08L *51/09*; C08F *283/02*
U.S. Cl. 525—63 **8 Claims**

1. A thermoplastic moulding material containing

A. 5 to 98 parts by weight of one or more thermoplastic polycarbonates,

B. 2 to 70 parts by weight of one or more graft polymers formed from

(1) 5 to 90 parts by weight of a mixture of

(i) 50 to 95 parts by weight of styrene, α-methylstyrene, styrene substituted in the nucleus, methyl methacrylate or a mixture thereof and

(ii) 50 to 5 parts by weight of acrylonitrile, methacrylonitrile, maleic anhydride, N-substituted maleimide or a mixture thereof, grafted onto

(2) 95 to 10 parts by weight of a silicone rubber having an average particle diameter (d_{50} value) of 0.09 to 1.0 μm, and a gel content greater than 50% by weight containing, essentially, units of the general formulae

R_2SiO, $RSiO_{3/2}$, $R_2R^3SiO_{1/2}$ a.

and

$R^1CH{=}CH{-}(R^2)-$ b.

and

$H{-}S-$ c.

in which

R denotes a monovalent hydrocarbon radical

R^1 denotes hydrogen or a C_1–C_6-alkyl radical, R^2 denotes a single bond or a C_1–C_4-alkylene radical, and

R^3 has any of those meanings given for R or denoes a hydroxyl group, wherein 0 to 0.5 molar unit of $R_2R^3SiO_{1/2}$, 0 to 10 molar units of the formula $RSiO_{3/2}$ and 0 to 3 molar units of the formula SiO_{4-2} are present per 100 molar units of formula R_2SiO, the amount of the groups b and c is 2 to 10 mol %, relative to the sum of a+b+c, and the molar ratio of the groups b:c is between 3:1 and 1:3,

C. 0 to 80 parts by weight of a thermoplastic copolymer formed from

(1) 50 to 95 parts by weight of styrene, α-methylstyrene, styrene substituted in the nucleus, methyl methacrylate or a mixture thereof and

(2) 50 to 5 parts by weight of acrylonitrile, methacrylonitrile, maleic anhydride, N-substituted maleimide or a mixture thereof.

4,806,594

WATER CURABLE COMPOSITIONS OF SILANE CONTAINING OLE36IN POLYMERS

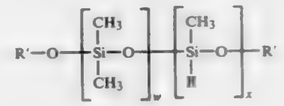
Laurence H. Gross, Bridgewater; Robert L. Silverman, Kendall Park, and Jeffrey D. Umpleby, Princeton, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 17, 1987, Ser. No. 63,074
Int. Cl.[4] C08L *51/06, 23/08, 43/04*
U.S. Cl. 525—64 **9 Claims**

1. A water curable composition comprising:

(a) at least one polymer selected from the group consisting of silane grafted homopolymers of ethylene, propylene, or 1-butene; silane grafted copolymers wherein a major proportion thereof is attributed to an ethylene, propylene, or 1-butene monomer; and a copolymer wherein a major proportion thereof is attributed to an ethylene, propylene, or 1-butene monomer and a minor proportion thereof is attributed to silane, each polymer having at least one silane moiety containing at least one hydrolyzable group;

(b) at least one polysiloxane having the following formula:



wherein

$R{=}C_3H_6(OC_3H_6)_y(OC_2H_4)_zOR'$

R'=a radical selected from the group consisting of hydrogen, an alkyl radical having 1 to 4 carbon atoms, an alkyl acetate ester radical wherein the alkyl group has 1 to 4 carbon atoms, and a trimethyl silyl radical, and each R' can be alike or different

w=about 20 to 120

x=1 to about 24

y=0 to about 10

z=about 4 to 25

y+z=about 5 to 30; and

(c) at least one silanol condensation catalyst.

4,806,595

METHOD OF PREPARING ANTITHROMBOGENIC MEDICAL MATERIALS

Yasuharu Noishiki, Tottori; Kazuhiko Kodaira, Mitaka; Masayasu Furuse, Sagamihara, and Teruo Miyata, Tokyo, all of Japan, assignors to Kokeu Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1986, Ser. No. 891,915
Claims priority, application Japan, Aug. 12, 1985, 60-177450
Int. Cl.[4] A61F *2/04*; A61M *1/03*
U.S. Cl. 525—54.2 **16 Claims**

1. A method of preparing an antithrombogenic medical material comprising a heparinized collagen as an antithrombogenic component, which comprises the steps of fixing a protamine to a collagen through a polyepoxy compound, and heparinizing said collagen by fixing heparin to said protamine.

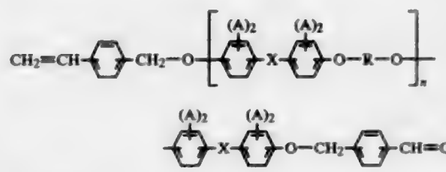
4,806,596

HOMOGENEOUS THERMOSET COPOLYMERS

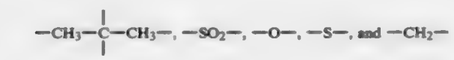
William D. Varnell, Stoddard; Thomas D. Newton, Onalaska, and Mark D. Holte, La Crosse, all of Wis., assignors to Allied-Signal, Inc., Morris Township, Morris County, N.J.

Filed Jun. 9, 1986, Ser. No. 871,965
Int. Cl.[4] C08F *261/06*
U.S. Cl. 525—312 **12 Claims**

1. A homogeneous thermoset copolymer of a poly(vinyl benzyl ether) of a polyphenol having the structure:



in which X is selected from the group consisting of



radicals, R is selected from the group consisting of —CH-$_2$—C_6H_4—CH_2—, $(CH_2)_b$ in which b ranges from 1 to about 6, —CH_2—CH=CH—CH_2— and —CH_2—C≡C—CH_2— radicals, A is independently selected from the group consisting of hydrogen, chlorine, bromine, fluorine, alkyl, alkoxy and phenyl radicals and n has an average value in the range of from about 0 to about 20, and a polyalkadiene in which the alkadiene monomer contains from 3 to about 8 carbon atoms.

4,806,597

COMPOSITION COMPRISING AROMATIC POLYCARBONATE, POLYOLEFIN, ETHYLENE VINYL ALCOHOL COPOLYMER, AND A MODIFIED HYDROGENATED ALKYLIDENE VINYL AROMATIC BLOCK COPOLYMER

Robert R. Gallucci, Mt. Vernon, Ind., and Dana C. Bookbinder, Pittsfield, Mass., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Oct. 29, 1987, Ser. No. 113,858
Int. Cl.[4] C08L *29/04*
U.S. Cl. 525—57 **9 Claims**

1. A composition which comprises an admixture of

a. an aromatic polycarbonate,

b. a polyolefin,

c. an ethylene vinyl alcohol copolymer,

d. a hydrogenated alkylidene vinyl aromatic block copolymer graft modified with an unsaturated dicarboxylic acid or unsaturated dicarboxylic acid anhydride.

4,806,598

THERMOPLASTIC POLYMER BLENDS AND NONWOVEN WEBS PREPARED THEREFROM

Michael T. Morman, Alpharetta, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 22, 1986, Ser. No. 945,753
Int. Cl.[4] C08L *71/02, 77/00*
U.S. Cl. 525—63 **17 Claims**

1. A stable, non-reactive, thermoplastic polymer blend comprising (a) from about 10 to about 95 percent by weight of superabsorbent, thermoplastic polymeric composition characterized by a poly(oxyethylene) group-containing, functional group-terminated soft segment covalently bonded to a hard segment through reaction with a third segment which may be monomeric or polymeric, and (b) from about 90 to about 5 percent by weight of at least one thermoplastic polymer.

4,806,599

POLYOLEFIN/POLYCARBONATE/POLYOLEFIN TRIBLOCK COPOLYMERS

Duane B. Priddy, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 21, 1987, Ser. No. 135,207
Int. Cl.[4] C08L *69/00*
U.S. Cl. 525—146 **17 Claims**

1. A triblock copolymer of the ABA type wherein the A segments comprise polyolefins and the B segments comprise polycarbonates.

4,806,600

METHYL METHACRYLATE SYRUP COMPOSITION

Takeshi Kaso, Yokohama; Nobuki Kobayashi, and Yoshisobe Ichihara, both of Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 852,176, Apr. 15, 1986, abandoned. This application Aug. 7, 1987, Ser. No. 82,559
The portion of the term of this patent subsequent to Oct. 14, 2003, has been disclaimed.
Int. Cl.[4] C08F *8/00*; C08L *37/00*
U.S. Cl. 525—206 **9 Claims**

1. Methyl methacrylate syrup composition comprising an intimate mixture of 1 to 99 parts by weight of a first polymer-in-monomer syrup (A) and 99 to 1 parts by weight of a second polymer-in-monomer syrup (B), the sum of said first syrup (A) and said second syrup (B) being 100 parts by weight, wherein said syrups (A) and (B) are as follows:

(A) a polymer-in-monomer syrup comprising 90 to 40 weight percent of a mixture of monomers which comprises (a) 2 to 95 weight percent of methyl methacrylate monomer, (b) 95 to 1 weight percent of one or more monomers having reactivity with glycidyl groups, containing at least one ethylenically-unsaturated bond, being copolymerizable with methyl methacrylate and being selected from the group consisting of carboxyl-containing monomer, hydroxyl-containing monomer, phosphorus-containing monomer and amino-containing monomer, and (c) 0 to 94 weight percent of one or more monomers not having reactivity with glycidyl groups, containing at least one ethylenically-unsaturated bond, being copolymerizable with methyl methacrylate and selected from the group consisting of acrylate, polyacrylate, polymethacrylate, styrene or its derivatives, fumaric ester and methacrylate except for methyl methacrylate, the sum of said monomers (a), (b) and (c) being 100 weight percent, and 10 to 60 weight percent of a copolymer of said monomers (a), (b) and (c); and

(B) a polymer-in-monomer syrup comprising (d) 5 to 95 weight percent of a copolymer of 3 to 97 weight percent of one or more monomers containing at least one glycidyl group and 97 to 3 weight percent of one or more monomers copolymerizable with glycidyl-containing monomers and selected from the group consisting of fumaric ester, maleic ester, styrene, α-methylstyrene, vinyl acetate, methacrylic ester, acrylic ester, methacrylic acid, acrylic acid, methacrylamide, acrylamide, methacrylonitrile and acrylonitrile, having a number average molecular weight of 1,500 to 50,000 and containing unreacted glycidyl groups, and (e) 95 to 5 weight percent of a mixture of monomers comprising (i) 80 to 99.9 weight of one or more monomers selected from the group consisting of methyl methacrylate and the monomers defined in subparagraph (c) in paragraph (A) above, and (ii) 0.1 to 20 weight percent of one or more monomers selected from the monomers defined in subparagraph (b) in paragraph (A) above, said copolymer (d) in said monomer mixture (e) forming a solution, and having said solution react at a temperature

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between room temperature and 108° C. until 1 to 99 percent of the glycidyl group contained in said copolymer (d) are reacted to provide said syrup (B).

4,806,601

POLYARYLENE POLYETHERS WITH PENDANT VINYL AND ETHYNYL GROUPS AND PROCESS FOR PREPARATION THEREOF

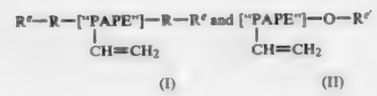
Virgil Percec, Pepper Pike, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 669,641, Nov. 8, 1984, Pat. No. 4,634,742. This application Dec. 31, 1986, Ser. No. 948,245

Int. Cl.⁴ C08F *283/08*

U.S. Cl. 525—391 **55 Claims**

1. A polyfunctionalized substantially linear crosslinkable thermoplastic polyarylene polyether oligomer, or polyarylene polythioether (PAPE) oligomer having at least two pendant vinyl groups in said oligomer represented by a formula selected from:



(I) (II)

wherein,

R represents O or S in an ether linkage with R^e or $R^{e'}$;

R^e represents the residuum of a terminal dihydric phenol or dihydric thiophenol DH(T)P monomer having a terminal phenol, thiophenol or halophenyl group;

$R^{e'}$ represents the residuum of a terminal monohydric phenol MHP monomer having a terminal substituted phenol group;

"PAPE" represents the residuum of the PAPE oligomer which is selected from the group consisting of an oligomer of a monohydric 2,6-disubstituted phenol, and an oligomer of at least one mononuclear or polynuclear DH(T)P monomer in which oligomer each phenyl ring is connected to another through an O, Si, C or S atom; and,

the vinyl group (—CH=CH_2) is connected to an electron-rich phenyl ring in the backbone of said PAPE.

4,806,602

ANHYDRIDE CAPPING POLYPHENYLENE ETHER WITH CARBOXYLIC ACID

Dwain M. White, Schenectady, and Laura A. Socha, Troy, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 21, 1988, Ser. No. 171,316

Int. Cl.⁴ C08G *65/48*

U.S. Cl. 525—397 **20 Claims**

1. A method for capping a polyphenylene ether which comprises contacting said polyphenylene ether with at least one carboxylic acid anhydride at a temperature in the range of about 175°–350° C. in the presence of a catalytic amount of at least one tertiary amine having a boiling point of at least about 180° C., the basic nitrogen atoms in said tertiary amine being directly bonded to at least two alkyl groups or being part of a six-membered aromatic ring.

4,806,603

POLYESTER RESIN COMPOSITIONS WHICH CAN BE HARDENED WITH LITTLE SHRINKAGE

Bernhard Hess, Moers; Bert Brassat, and Oskar Walter, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 13, 1987, Ser. No. 72,432

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1986, 3625184

Int. Cl.⁴ C08L *67/06*

U.S. Cl. 525—445 **6 Claims**

1. Polyester resin-based compositions which can be hardened with little shrinkage, comprising

(A) 20 to 70% by weight of an α,β-ethylenically unsaturated polyester with 0.4 to 0.7 equivalent of a α,β-ethylenically unsaturated double bonds per 100 g of polyester A,

(B) 20 to 55% by weight of vinyl or vinylidene compounds which can be copolymerized with the polyester A,

(C) 8 to 25% by weight of a shrinkage-reducing polymer, the percentage data in each case relating to the sum of A+B+C, characterized in that the polyester A has an acid number of less than 28, and contains 0.5 to 10% by weight, based on the polyester A, of cocondensed radicals of monohydric aliphatic C_4—C_{18}-alcohols and/or aliphatic C_4–C_{18}-monocarboxylic acids.

4,806,604

PHOTOSENSITIVE CALCIUM CHELATORS

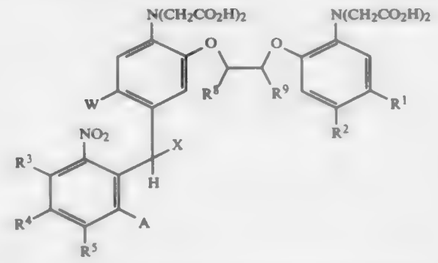
Roger Yonchien Tsien, Berkeley, and Stephen R. Adams, Walnut Creek, both of Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed May 13, 1987, Ser. No. 49,658

Int. Cl.⁴ C07D *407/02, 317/48, 307/20, 309/10, 207/12, 211/40, 333/32, 335/02*

U.S. Cl. 549—439 **8 Claims**

1. A chemical compound having the general formula:



and the pharmaceutically acceptable non-toxic salts and esters thereof wherein:

A is $—NO_2$ or —H;

R^1 is selected from the group consisting of —H (unless R^2 is also H), $—CH_3$, —F, —Cl, Br, alkyl, $—C_1$–C_4 alkoxy, and NHR^6

R^2 is selected from the group consisting of —H (unless R^1 is also H), $—CH_3$, —F, —Cl, —Br, and C_1–C_4 alkoxy;

R^3, R^4 and R^5 are independently —H, OH, NR^6R^7, or alkoxy, or

R^3 and R^4 together are $—OCH_2O—$ or $—OCH_2CH_2O—$ and R^5 is —H, OH, NR^6R^7, or alkoxy, or

R^4 and R^5 together are $—OCH_2O—$ or $OCH_2CH_2O—$ and R^3 is —H, OH, NR^6R^7, or alkoxy;

X is selected from the group consisting of —OH, alkoxy, —Cl, —Br, $—NR^6R^7$, $—OCOCH_3$, $—OCOCF_3$, $—O-COCH_2NH_2$, $—OPO_3H$, and $—OSO_2CH_3$;

R^6 and R^7 are independently —H, methyl or ethyl; and

R^8 and R^9 are independently —H, CH_3, $—C_2H_5$, or $—CH_2OH$ except that both may not be —H simultaneously; or R^8 and R^9 together are $—(CH_2)_m—Y—(CH_2)_n—$wherein m and n are independently 1 or 2 and Y is selected from the group consisting of $—CH_2—$, —O—, $—NR^6—$, —S—, and —S—S—; and

W is —H, —OH, or $—NHR^6$.

4,806,605

MONOMERS AND INITIATORS FOR GROUP TRANSFER POLYMERIZATION

Walter R. Hertler, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 27, 1987, Ser. No. 7,758

Int. Cl.⁴ C08F *4/44*

U.S. Cl. 526—190 **23 Claims**

1. Group Transfer Polymerization process comprising contacting under polymerizing conditions at least one acrylic monomer with (i) a tetracoordinate organosilicon, organotin or organogermanium polymerization initiator having at least one initiating site and (ii) a co-catalyst which is a source of bifluoride, fluoride, cyanide or azide ions or a suitable Lewis acid, Lewis base or selected (bi)oxyanion, the process further characterized in that:

(i) the monomer comprises one or more polyenoate compounds of the formula $CH(R^2)=C(R^3)[C(R^4)=C(R^5)]_n—C(O)X$; or

(ii) the initiator comprises one or more polyenolates of the formula $Q^2[C(R^3)=C(R^4)]_nQ^1$ or C-silylated keto isomers thereof; or

(iii) the monomer comprises one or more polyenoate compounds of the formula $CH(R^2)=C(R^3)[C(R^4)=C(R^5)]_n—C(O)X$ and the initiator comprises one or more polyenolates of the formula $Q^2[C(R^3)=C(R^4)]_nQ^1$ or C-silylated keto isomers thereof

wherein:

R^2 is:

(a) —H or —C(O)X;

(b) a hydrocarbyl radical which is an aliphatic, alicylic, aromatic or mixed aliphatic-aromatic radical containing up to 20 carbon atoms;

(c) a polymeric hydrocarbyl radical containing at least 20 carbon atoms;

(d) a radical of (b) or (c) containing one or more ether oxygen atoms within aliphatic segments thereof; or

(e) a radical of (b), (c) or (d) containing one or more functional substituents that are inert under polymerizing conditions;

each of R^3, R^4 and R^5, independently, is —H or a radical as defined in (b), (c), (d) and (e) for R^2;

X is —OR or $—NR'R''$;

R is a radical as defined in (b), (c), (d) and (e) for R^2; or R and the closest R^5 taken together, form a 5- to 8-membered lactone ring;

each of R' and R'', independently, is C_{1-4} alkyl; and

n is an integer and is at least 1; provided, however:

(i) when n is 1, at least one of R^2, R^4 and R^5 is hydrocarbyl;

(ii) the number of R^{2-5} hydrocarbyl substituents does not exceed the number of —C=C— double bonds; and

(iii) a carbon atom substituted with R^{2-5} hydrocarbyl is not adjacent to more than one other carbon atom substituted with R^{2-5} hydrocarbyl,

hydrocarbyl in (i), (ii) and (iii) being as defined above in (b), (d) and (e) for R^2;

Q^1 is $—C(R^5)=C(OM[R^1]_3)X'$;

Q^2 is $—C(R^2)=C(X')OM[R^1]_3$ or $—R^2$;

X' is $—OSi(R^1)_3$, —R, —OR or $—NR'R''$;

each R^1, independently, is a hydrocarbyl radical which is an aliphatic, alicyclic, aromatic, or mixed aliphatic-aromatic radical containing up to 20 carbon atoms; and

M is Si, Sn or Ge;

provided, however, in the initiator of the formula $Q^2[C(R^3)=C(R^4)]_nQ^1$ or C-silylated keto isomers thereof not more than one of R^5 and the closest R^4 is hydrocarbyl; and when Q^2 is $—C(R^2)=C(X')OM[R^1]_3$, not more than one of R^2 and the adjacent R^3 is hydrocarbyl, to produce "living" polymer comprising:

(i) at least three repeat units of the formula $—CH(R^2)—C(R^3)=C(R^4)]_nC(R^5)(C(O)X)—$; or

(ii) at least three repeat units of a Group Transfer Polymerization acrylic monomer; or

(iii) a mixture of at least three repeat units of (i) and (ii); each of (i), (ii) and (iii) containing

(a) $—M(R^1)_3$ moieties at "living" ends of the polymer chains; and

(b) at non-living ends of the polymer chains, a saturated hydrocarbyl radical, or the unsaturated moiety $R^2[C(R^3)=C(R^4)]_nC(R^5)(C(O)X')—$,

provided, however, only the unsaturated moiety when the "living" polymer contains only repeat units (ii), and provided further, however:

(i) when n is 1, at least one of R^2, R^4 and R^5 is hydrocarbyl;

(ii) the number of R^{2-5} hydrocarbyl substituents does not exceed the number of —C=C— double bonds; and

(iii) a carbon atom substituted with R^{2-5} hydrocarbyl is not adjacent to more than one other carbon atom sustituted with R^{2-5} hydrocarbyl,

hydrocarbyl and all other symbols being as defined above.

4,806,606

THERMOSET POLYMER FROM NADIMIDO-SUBSTITUTED CYCLOPHOSPHAZENES

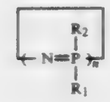
Alexander Lukacs, III, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 906,000, Sep. 10, 1986. This application Feb. 16, 1988, Ser. No. 155,673

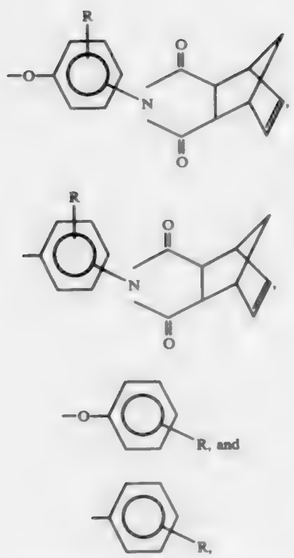
Int. Cl.⁴ C08F *26/00*

U.S. Cl. 526—259 **9 Claims**

1. A thermoset of a cycophosphazene derivative having the formula



where n is 3 or 4; R_1 and R_2 are the same or different, are the same or different from one phosphorous atom to the next on the same cyclophosphazene ring and are selected from the group consisting of



where R is selected from the group consisting of H or a nonreactive moiety; and an average of at least two of the radicals R_1 and R_2 per cyclophosphazene ring contain a nadimido group.

4,806,607

NADIMIDO-SUBSTITUTED CYCLOPHOSPHAZENES

Alexander Lakacs, III, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 906,000, Sep. 10, 1986. This application Feb. 11, 1988, Ser. No. 154,769

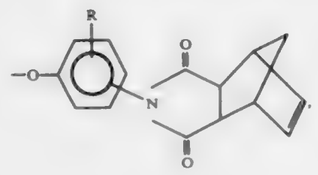
Int. Cl.[4] C08F 26/00

U.S. Cl. 526—259 **3 Claims**

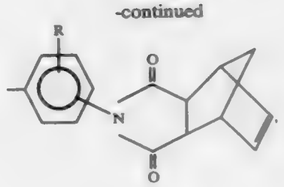
1. A mixture of phosphazene derivatives comprising at least 50% by weight of a cyclophosphazene derivative having the formula

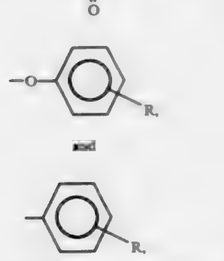


where R_1 and R_2 are the same or different, are the same or different from one phosphorus atom to the next on the same cyclophosphazene ring and are selected from the group consisting of



-continued





where R is selected from the group consisting of H or a nonreactive moiety; and an average of at least two of the radicals R_1 and R_2 per cyclophosphazene ring contain a nadimido group.

4,806,608

CURABLE SILOXANE MALEIMIDE COMPOSITION

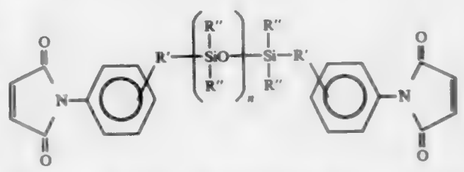
Philip Klemarczyk, Collinsville, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed Mar. 16, 1987, Ser. No. 26,535

Int. Cl.[4] C08F 122/40

U.S. Cl. 526—262 **8 Claims**

1. a free radically curable adhesive or sealant formulation comprising between 1% and 95% of a compound of the formula:



where R' is an alkylene or alkenylene group; the R'' groups are independently selected from hydrocarbon or halohydrocarbon groups; and n is an interger of at least one; and between 5% and 99% of a second free radically curable compound.

4,806,609

PYRROLIDONYL ACRYLATE BLOCK POLYMERS

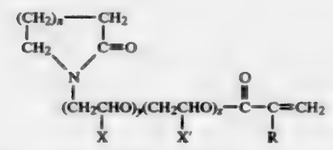
David J. Tracy, Lincoln Park; Mohamed M. Hashem, Wayne, and Fulvio J. Vara, Chester, all of N.J., assignors to GAF Corporation, Wayne, N.J.

Division of Ser. No. 020,840, Mar. 2, 1987, Pat. No. 4,760,152. This application Apr. 18, 1988, Ser. No. 182,611

Int. Cl.[4] C08L 71/02, 79/04

U.S. Cl. 526—264 **9 Claims**

1. The process which comprises adding an effective emulsifying amount of the compound having the formula



wherein n is an integer having a value of from 1 to 3; X and X' are dissimilar and each of X, X' and R is selected from the group consisting of hydrogen and methyl and y and z are integers each having a value of from 1 to 40, except, when X is methyl, y has a value greater than one and, when X' is methyl, z has a value greater than one, to a water insoluble monomer in an emulsion polymerization mixture containing said monomer, a dispersing medium and polymerization initiator for said monomer.

4,806,610

METHOD FOR MAKING LATICES

David E. Erickson, Stow, Ohio, assignor to GenCorp Inc., Akron, Ohio

Filed May 15, 1987, Ser. No. 49,893

Int. Cl.[4] C08H 1/00

U.S. Cl. 527—201 **8 Claims**

1. The method which comprises graft copolymerizing or over copolymerizing on a solubilized protein at least one copolymerizable unsaturated monomer having not over 14 carbon atoms and being selected from the group consisting of conjugated dienes, nitriles, amides, acrylates, alkacrylates, vinyl aryl monomers and vinyl pyridines in aqueous alkaline media using a free radical azo catalyst while continuously homogenizing the aqueous alkaline media during the course of the copolymerization to provide a latex of reduced viscosity, where on a dry weight basis

(a) said unsaturated monomer is used in an amount of from about 90 to 70 parts by weight and

(b) said protein is used in an amount of from 10 to 30 parts by weight, the sum of (a) and (b) being 100 parts by weight.

4,806,611

AMINOURETHANES, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Michael Hönel; Peter Ziegler, both of Mainz; Gerd Walz, Wiesbaden; Rüdiger Lenz, Frankfurt am Main; Hartmut Feedde, Taunusstein, and Gerhard Brindöpke, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 22, 1987, Ser. No. 136,903

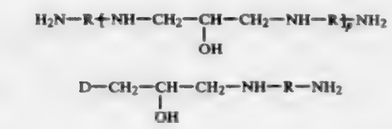
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1986, 3644370

Int. Cl.[4] C08G 18/80

U.S. Cl. 528—45 **22 Claims**

1. An aminourethane composed essentially of structural units derived from

(A) polyamines of the formula (I) and/or (II)



in which

R denotes $-(CR^1R^2)_nZ^1-CR^3R^4)_mZ^2-CR^5R^6)_l]_k$,

Z^1 and Z^2 denote O, S, NH, N-alkyl having up to 8 carbon atoms, N-phenyl, N-monoalkylphenyl, N-dialkylphenyl or N-trialkylphenyl having 1 to 4 carbon atoms per alkyl group, a divalent phenylene radical which is optionally substituted and/or a chemical bond,

R^1 to R^6 denote H, CH_3, C_2H_5, phenyl or monoalkylphenyl, dialkylphenyl or trialkylphenyl having 1 to 4 carbon atoms per alkyl group,

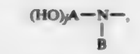
n, m and l denote 0 to 12, the sum of n+m+l being ≧2,

k denotes 1 to 6;

p denotes 1 to 5; and

D denotes

(1)



in which A represents an aliphatic radical having 2 to 5 carbon atoms, j represents 1 to 5, and B represents H, (C_1-C_4)-alkyl or $(HO)_jA$-,

(2)



in which G represents (C_1-C_{18})-alkyl, or (C_5-C_9)-cycloalkyl which can be substituted by (C_1-C_3)-alkyl groups and E represents H or G, or denotes

(3) L which represents (C_2-C_8)-alkoxy, or (C_5-C_{15})-acyloxy,

(B) if appropriate, further polyamines,

(C) compounds containing on average at least one terminal 2-oxo-1,3-dioxolane group per molecule, and

(D) if appropriate, compounds having a monofunctional reaction, as chain-stoppers.

4,806,612

PRECERAMIC ACETYLENIC POLYSILANES

Grish Chandra, and Gregg A. Zank, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 10, 1987, Ser. No. 83,121

Int. Cl.[4] C08G 77/00

U.S. Cl. 528—10 **43 Claims**

1. An acetylenic polysilane composed of [RSi] and optional $[R_2Si]$ units where there are present 0 to 60 mole percent $[R_2Si]$ units and 40 to 100 mole percent [RSi] units, where R is an alkyl radical containing 1 to 8 carbon atoms, and where the remaining bonds on silicon are attached to other silicon atoms and acetylenic groups of the formula $-(CH_2)_wC{\equiv}CR'$ where w is an integer from 0 to 3 and where R' is hydrogen, an alkyl radical containing 1 to 6 carbon atoms, a phenyl radical, or an $-SiR'''_3$ radical wherein R''' is an alkyl radical containing 1 to 4 carbon atoms.

4,806,613

METHOD OF PRODUCING THERMOPLASTIC ELASTOMERS HAVING ALTERNATE CRYSTALLINE STRUCTURE FOR USE AS BINDERS IN HIGH-ENERGY COMPOSITIONS

Robert B. Wardle, Logan, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.

Filed Mar. 29, 1988, Ser. No. 174,665

Int. Cl.[4] C08G 18/12

U.S. Cl. 528—59 **16 Claims**

1. A method of preparing a thermoplastic elastomer having A blocks and at least one B block, wherein said A blocks are crystalline at temperatures below about 60° C. and said B block(s) is amorphous at temperatures above about −20° C., said A blocks each being polyethers derived from monomers of oxetane and its derivatives and/or tetrahydrofuran and its derivatives, the method comprising

providing hydroxyl terminated A blocks which are crystalline at temperatures below about 60° C. and separately providing

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hydroxyl terminated B blocks which are amorphous at temperatures above about −20° C.,

end-capping said A blocks and said B blocks by separately reacting each of said A blocks and B blocks with a diisocyanate in which one isocyanate moiety is at least about five times as reactive with the terminal hydroxyl groups of each of the blocks as the other isocyanate moiety, whereby the more reactive isocyanate moiety tends to react with terminal hydroxyl groups of the blocks, leaving the less reactive isocyanate moiety free and unreacted,

mixing said end-capped A blocks and said end-capped B blocks together at approximately the stoichiometric ratios that they are intended to be present in the thermoplastic elastomer, and

reacting said mixture with a linking compound having two isocyanate-reactive groups which are sufficiently unhindered to react with the free isocyanate groups of said end-capped polymer.

4,806,614

SURGICAL ADHESIVE

Takehisa Matsuda, Mino; Hiroo Iwata, Saita, and Tetsuo Itoh, Shiga, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Division of Ser. No. 898,710, Aug. 21, 1986, Pat. No. 4,740,534. This application Nov. 23, 1987, Ser. No. 124,259

Claims priority, application Japan, Aug. 30, 1985, 61-192366; Aug. 30, 1985, 60-192367; Jan. 9, 1986, 60-134696

Int. Cl.⁴ C08G *75/00*

U.S. Cl. 528—59 **23 Claims**

1. A method for surgical bonding of tissue, which comprises applying thereto a surgical adhesive consisting essentially of at least one NCO-terminated hydrophilic urethane prepolymer, derived from at least one organic polyisocyanate and a polyol component comprising at least one hydrophilic polyether polyol having an oxyethylene content of at least 30%.

4,806,615

REACTION INJECTION MOLDED ELASTOMERS PREPARED FROM AMINE TERMINATED POLYETHERS, A BLEND OF AN AROMATIC AMINE TERMINATED CHAIN EXTENDER, A SUBSTITUTED ACYCLIC ALIPHATIC AMINE TERMINATED CHAIN EXTENDER AND AN AROMATIC POLYISOCYANATE

Doris M. Rice, Austin; Robert A. Grigsby, Jr., Georgetown, and Richard J. G. Dominguez, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 1, 1987, Ser. No. 56,036

Int. Cl.⁴ C08G *18/10, 18/32, 18/30*

U.S. Cl. 528—68 **16 Claims**

1. A reaction injection molded elastomer made by reacting in a closed mold amine terminated polyethers of at least 1,500 molecular weight and having a functionality of from about 2 to 3, having greater than 50% of their active hydrogens in the form of amine hydrogens, a blend of an unsubstituted aromatic amine terminated chain extender and a N/N'-dialkylated aliphatic amine chain extender, and an aromatic polyisocyanate.

4,806,616

N-N'-DIALKYLPHENYLENEDIAMINES AS CURING AGENTS IN POLYURETHANE AND POLYUREA MANUFACTURE BY REACTION INJECTION MOLDING

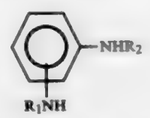
William M. Baumann, Downers Grove; Ray V. Scott, Jr., Addison; David W. House, Arlington Heights, and Donna J. Engel, Des Plaines, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 9, 1987, Ser. No. 130,838

Int. Cl.⁴ C08G *18/32, 18/30, 18/34*

U.S. Cl. 528—68 **15 Claims**

1. A reaction injection molded elastomer made by reacting in a closed mold a first stream comprising one or more polyisocyanates with a second stream comprising from about 0.7 to about 1.3 equivalents of a blend of compounds having isocyanate reactive hydrogens said blend consisting essentially of a backbone polyamine (B_A) or a backbone polyol (B_O) and a chain extender diamine (D) which is at least one N,N'-disubstituted phenylenediamine of the structure,



where R_1 and R_2 are independently selected from the group consisting of monovalent alkyl or alkenyl moieties containing from 1 to about 20 carbon atoms or a monovalent aryl moiety, and where the chain extender diamine constitutes from about 20 to about 80 equivalents percent of the blend.

4,806,617

POLY(DINAPHTHYL ARYLENE ETHER) AND PREPARATION THEREOF

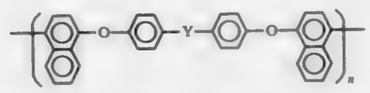
Virgil Percec, Pepper Pike, and Paul P. Nicholas, Broadview heights, both of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

Filed Mar. 13, 1987, Ser. No. 25,544

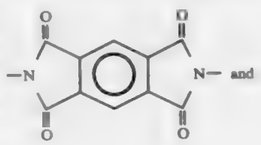
Int. Cl.⁴ C08G *65/00*

U.S. Cl. 528—86 **4 Claims**

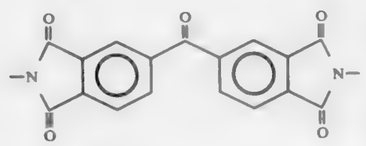
1. A substantially linear thermoplastic polyarylene polyether polymer having a repeating unit represented by the structure:



wherein, Y represents a divalent connecting radical selected from the group consisting of SO_2, C=O,



and



R represents C_1–C_{12} alkyl, C_6–C_{10} aryl or C_7–C_{18} aralkyl, and,

n is an integer in the range from above 2 to abut 500, the polymer having a minimum Tg of about 200° C. and a weight average molecular weight Mw in the range from about 10,000 to about 200,000.

4,806,618

AROMATIC POLYETHERS HAVING BIPHENYLFLUORENE GROUP

Yoshio Imai, Tokyo; Masaaki Kakimoto, Yokohama; Yutaka Maruyama, Kamifukuoka, and Toshio Kotshi, Sakae, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

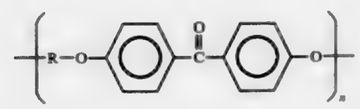
Filed Nov. 2, 1987, Ser. No. 115,914

Claims priority, application Japan, Nov. 11, 1986, 61-266614; Nov. 11, 1986, 61-266615

Int. Cl.⁴ C08G *63/18*

U.S. Cl. 528—125 **2 Claims**

1. An aromatic polyether represented by the general formula (1):



(1)

wherein R represents one 9,9-biphenylfluorene group or at least two divalent aromatic groups including at least one 9,9-biphenylfluorene group, and n is an integer from 1 to 200.

4,806,619

THERMOTROPIC AROMATIC POLYESTERS HAVING A HIGH DEFLECTION TEMPERATURE UNDER LOAD AND EXCELLENT MECHANICAL PROPERTIES, A PROCESS FOR THEIR PREPARATION AND THEIR USE FOR THE PRODUCTION OF MOLDINGS, FILAMENTS, FIBRES AND FILMS

Volker Eckhardt; Hans-Rudolf Dicke, both of Krefeld; Erich Hammerschmidt, Bergisch Gladbach, and Dieter Freitag, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

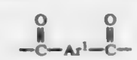
Filed Oct. 2, 1986, Ser. No. 914,669

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1985, 3535452

Int. Cl.⁴ C08G *8/02*

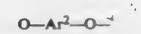
U.S. Cl. 528—128 **8 Claims**

1. Thermotropic polyesters containing recurring units of the formulae



(I)

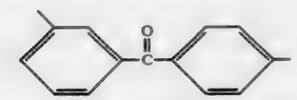
and



(II)

wherein

Ar^1 consists to the extent of 80 to 100 mol% of radicals of the formula



(III)

and to the extent of 20 to 0 mol% of other divalent aromatic radicals which contain 6 to 18 C atoms and in which the chain-lengthening bonds are opposed coaxially or in parallel, and

Ar^2 consists to the extent of 0 to 90 mol% of a 1,4-phenylene radical and to the extent of 100 to 10 mol% of other divalent aromatic radicals which contain 6 to 18 C atoms and in which the chain-lengthening bonds are opposed coaxially or in parallel to the extent of at least 80 mol% and are at an angle to the extent of not more than 20 mol %,

subject to the proviso that the I/II molar ratio is 0.95 to 1.05.

4,806,620

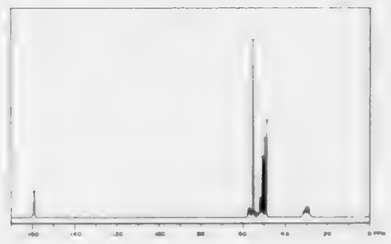
POLYMERIC COMPOSITIONS HAVING FLAME RETARDANT PROPERTIES

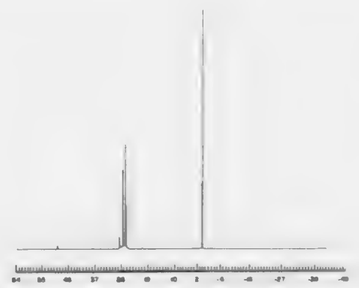
Michael W. Klett, and Balbhadra Das, both of Allison Park, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 30, 1987, Ser. No. 31,631

Int. Cl.⁴ C08G *79/02*

U.S. Cl. 528—244 **19 Claims**





1. A curable resinous solution for forming a flame retardant coating, comprising:

an interaction polymer of:

(A) methylol-containing quaternary phosphonium compound having radicals selected from the group consisting of methylol and hydroxyl or a mixture thereof,

(B) divalent, nitrogen-containing compound having at least 2 active radicals selected from the group consisting of: hydrogen and methylol groups and mixtures thereof wherein said radicals are affiliated with a trivalent nitrogen, and

(C) heteroatom-containing compound capable of reaction with radicals selected from the group consisting of methylol and hydroxyl, wherein the mole ratio of the components is 1:1.5 to around 5 for Component A to Component B and around 1:0.5 to around 4 for Component A to Component C.

4,806,621

BIOCOMPATIBLE, BIOERODIBLE, HYDROPHOBIC, IMPLANTABLE POLYIMINO CARBONATE ARTICLE

Joachim Kohn, Brookline, and Robert S. Langer, Somerville, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 21, 1986, Ser. No. 820,351

Int. Cl.⁴ C08G *63/62*

U.S. Cl. 528—211 **8 Claims**

1. An article useful for implantation in an animal comprising

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a mixture of (a) a solid biocompatible, bioerodible, hydrophobic polyiminocarbonate composition having the recurring structrual unit:



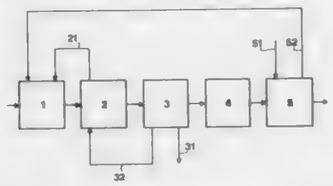
wherein R is a divalent aromatic group comprising a non-fused ring and n is at least 2, said article degrading into non-toxic residues after introduction in vivo and (b) a pharmacologically active composition.

4,806,622

PROCESS FOR THE MANUFACTURE OF POLYACETALS

Nicolas Hardy, Jemeppe-sur-Sambre, Belgium, assignor to Solvay & Cie (Societe Anonyme), Brussels, Belgium

Filed Jun. 5, 1987, Ser. No. 58,933
Claims priority, application France, Jun. 6, 1986, 86 08330
Int. Cl.⁴ C08L *59/04*
U.S. Cl. 528—249 **5 Claims**



1. Process for the manufacture of polyacetals by the polymerization of trioxane, which comprises the following successive main stages:

(a) trimerization of formaldehyde into trioxane in an acid aqueous phase under a partial vacuum;
(b) separation of the trioxane from the said aqueous phase;
(c) purification of the trioxane;
(d) polymerization of the purified trioxane in the presence of a cationic initiator and a comonomer chosen from amongst cyclic ethers containing at least two adjacent carbon atoms;
(e) stabilization of the end groups of the macromolecular chains of the polymer by hydrolysis, in the heated state, under pressure;
(f) separation, by depressurization, of the mixture resulting from state (e), into an aqueous suspension of the stabilized polymer and a vapour phase containing the unpolymerized trioxane, water and the formaldehyde produced by the hydrolysis;
(g) recycling the vapour phase obtained in stage (f) directly into the formaldehyde trimerization stage (a); and
(h) recovery of the stabilized polymer from the aqueous suspension resulting from stage (f).

4,806,623

POLY(P-PHENYLENE-2,5-FURANDICARBONAMIDE), ANISOTROPIC SOLUTION, FILAMENT, FILM THEREOF

Anastassios Mitiakoudis, and Alessandro Gandini, both of St. Martin-d'Hères, France, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Aug. 20, 1987, Ser. No. 87,224
Claims priority, application Netherlands, Aug. 20, 1986, 8602116
Int. Cl.⁴ C08G *69/26*
U.S. Cl. 528—341 **4 Claims**

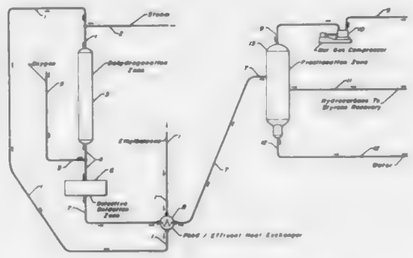
1. Poly(p-phenylene-2,5-furandicarbonamide)having an inherent viscosity of at least 1.5 dL/g measured at 30° C. on a 0.5 g/dL-solution in 98% sulphuric acid.

4,806,624

DEHYDROGENATION OF DEHYDROGENATABLE HYDROCARBONS

Raymond R. Herber, Medinah, and Gregory J. Thompson, Park Ridge, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jun. 17, 1987, Ser. No. 63,058
Int. Cl.⁴ C07C *4/02, 2/64, 5/327*
U.S. Cl. 585—440 **24 Claims**



1. A process for the catalytic dehydrogenation of a dehydrogenatable C_2-plus feed hydrocarbon which comprises the steps of:

(a) passing a feed stream comprising said C_2-plus feed hydrocarbon into a dehydrogenation zone and through at least one bed of dehydrogenation catalyst maintained at dehydrogenation conditions and producing a dehydrogenation zone effluent stream comprising hydrogen, the C_2-plus feed hydrocarbon and a C_2-plus product hydrocarbon;
(b) forming an oxidation catalyst bed feed stream by admixing an oxygen-containing stream with said dehydrogenation zone effluent stream;
(c) passing the oxidation catalyst bed feed stream through a bed of hydrogen selective oxidation catalyst maintained at selective oxidation conditions and producing an oxidation zone effluent stream having a reduced concentration of hydrogen; and
(d) recovering the product hydrocarbon from said oxidation zone effluent stream without contacting said oxidation zone effluent stream with dehydrogenation catalyst.

4,806,625

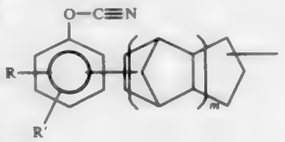
FLAME RESISTANT POLYAROMATIC CYANATE RESINS WITH IMPROVED THERMAL STABILITY

Gary W. Bogan, and Georgia A. Moanerat, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

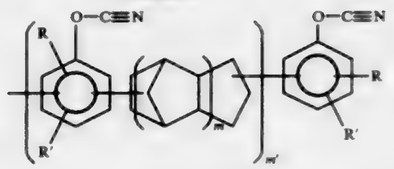
Filed Jan. 12, 1988, Ser. No. 142,983
Int. Cl.⁴ C08G *73/00*
U.S. Cl. 528—422 **56 Claims**

1. A hydrocarbon phenol cyanate resin represented by the following formula I

FORMULA I

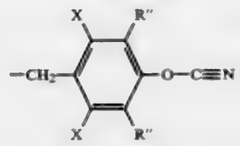


-continued



wherein each R is independently hydrogen or an alkyl group having from 1 to about 10 carbon atoms; each m independently has a value from 1 to about 6; m' has an average value from zero to about 4; each R' is independently hydrogen or a group represented by the following formula II

FORMULA II



wherein each R'' is independently an alkyl group having from 1 to about 4 carbon atoms; each X is a halogen; with the proviso that at least one R' group is a group represented by formula II.

4,806,626

α-AMYLASE INHIBITOR

Koji Maeda, Tokorozawa, and Osamu Oka, Kawagoe, both of Japan, assignors to Nisshin Flour Milling Co., Ltd. and Oriental Yeast Co., Ltd., both of, Japan

Continuation of Ser. No. 918,520, Oct. 14, 1986, abandoned, which is a continuation of Ser. No. 578,189, Feb. 8, 1984, abandoned, which is a continuation of Ser. No. 347,261, Feb. 9, 1982, abandoned. This application Jun. 15, 1987, Ser. No. 63,697
Claims priority, application Japan, Feb. 10, 1981, 56-18549
Int. Cl.⁴ C07K *3/02, 15/10;* **C12P** *21/00;* **C12Q** *1/40*
U.S. Cl. 530—375 **4 Claims**

1. An α-amylase inhibitor, WAI-53, from wheat having the following properties:

(a) being soluble in water or dilute salt solutions and insoluble in methanol, ethanol, acetone, chloroform and hexane;
(b) having ultraviolet absorption maximum at 279 nm with $E_1\%$ 279 being 12.8 in water (1 cm);
(c) having molecular weight of 23,000–23,000 according to ultracentrifugation or 24,000 according to gel filtration;
(d) giving a single band at an electrophoretic mobility of 0.53 on polyacrylamide disc gel electrophoresis;
(e) giving a single band at an electrophoretic mobility of 0.60 when, after reduction with 2-mercaptoethanol in 6 M urea and then carboxymethylation with mono-iodo-acetic acid, subjected to disc gel electrophoresis using 6 M urea-containing medium;
(f) giving a single band on SDS polyacrylamide gel electrophoresis at the location corresponding to M.W. 13,000;
(g) having serine at the N-terminus indicating the existence of two identical subunits;
(h) being protein in nature with the amino acid composition:

Lysine 4.55
Histidine 1.11
Arginine 7.66
Aspartic acid 6.97
Threonine 3.42
Serine 6.94
Glutamic acid 11.48
Proline 7.71
Glycine 9.41
Alanine 12.08
Valine 7.95
Isoleucine 2.33
Leucine 8.18
Tyrosine 4.10
Phenylalanine 1.61

and

(i) producing saturation curves of WAI-53 with human salivery α-amylase and of WAI-53 with human pancreatic α-amylase with a ratio of the amount of WAI-53 required to produce 50% inhibition of human salivary α-amylase to that of human pancreatic amylase above 1:250.

4,806,627

HYBRID CELL LINES PRODUCING MONOCLONAL ANTIBODIES DIRCTED AGAINST SCRAPIE-ASSOCIATED FIBRIL PROTEINS

Henryk M. Wisniewski, Staten Island, N.Y.; Richard J. Kascsak, Middletown, N.J.; Richard Rubenstein, Staten Island, N.Y.; Patricia A. Merz, Staten Island, N.Y., and Maria Tosa-DeMasi, Staten Island, N.Y., assignors to Research Foundation of Mental Hygiene Inc., Albany, N.Y.

Filed May 29, 1987, Ser. No. 55,708
Int. Cl.⁴ A61K *39/395;* **C07K** *15/14*
U.S. Cl. 530—387 **2 Claims**

1. A monoclonal antibody, 263K 3F4, produced by hybridoma cell line, ATCC HB 9222, and capable of specific binding to scrapie-associated fibril proteins in an antigen-antibody complex.

4,806,628

MONOCLONAL ANTIBODIES AGAINST MELANOCYTES

Anthony Albino, New York, N.Y.; J. Gregory Cairncross, London, Canada; Magdalena Elsinger, Demarest, N.J.; Alan N. Houghton, and Lloyd Old, both of New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 445,561, Nov. 30, 1982, abandoned. This application Mar. 17, 1986, Ser. No. 840,632
Int. Cl.⁴ C07K *15/00;* **C12N** *5/00*
U.S. Cl. 530—387 **3 Claims**

1. A hybridoma cell line which produces a monoclonal antibody capable of specifically binding to melanocytes, the cell line being selected from the group consisting of hybridoma M-4 (ATCC No. HB 8438) and hybridoma M-10 (ATCC No. HB 8440).

4,806,629

MONOCLONAL ANTIBODY TO A HUMAN THYMOCYTE ANTIGEN

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation of Ser. No. 644,185, Aug. 27, 1984, abandoned, which is a division of Ser. No. 432,454, Oct. 4, 1982, abandoned, which is a division of Ser. No. 99,970, Dec. 4, 1979, Pat. No. 4,364,933. This application Mar. 23, 1987, Ser. No. 30,284
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.⁴ C07K *15/04;* **H61K** *39/395;* **C12N** *15/00, 5/00*
U.S. Cl. 530—387 **3 Claims**

1. Mouse monoclonal antibody which reacts with an antigen found on approxmiately 70% of normal human thymocytes.

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4,806,630

CATALYTIC POLYMERIZATION OF CARBON MONOXIDE AND OLEFIN, WITH ORGANO NITRO OR ORGANO NITRITE COMPOUND ADDITIVE

Eit Drent, and Richard L. Wife, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 21, 1987, Ser. No. 99,263

Claims priority, application Netherlands, Dec. 1, 1986, 8603062

Int. Cl.[4] C08G *67/02*

U.S. Cl. 528—392 10 Claims

1. In the process of producing linear alternating polymers of carbon monoxide and at least one ethylenically unsaturated hydrocarbon by contacting the carbon monoxide and unsaturated hydrocarbon under polymerization conditions in the presence of a catalyst composition formed from a mixture of a palladium compound, the anion of a non-hydrohalogenic acid having a pKa below about 6 and a bidentate phosphorus ligand, the improvement wherein the mixture from which said catalyst composition is formed additionally contains an organic nitro compound or an organic nitrite compound.

4,806,631

IMMOBILIZATION OF NUCLEIC ACIDS ON SOLVOLYZED NYLON SUPPORTS

Robert J. Carrico; Robert P. Hatch, and William L. Patterson, all of Elkhart, Ind., assignors to Miles Inc., Elkhart, Ind.

Filed Sep. 30, 1985, Ser. No. 781,514

Int. Cl.[4] C07H *21/00;* C12Q *1/68*

U.S. Cl. 536—27 7 Claims

1. A method for immobilizing a nucleic acid consisting essentially of the step of contacting the nucleic acid with a solid support consisting essentially of nylon whose amide groups have been partially solvolyzed whereby said nucleic acid becomes bound to the solid support by noncovalent bonds.

4,806,632

PROCESS FOR THE POST-HYDROGENATION OF SUCROSE POLYESTERS

Stephen A. McCoy, Villa Hills, Ky.; David J. Weisgerber, and Richard L. Ingle, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 29, 1986, Ser. No. 947,062

Int. Cl.[4] C07H *13/06, 1/00;* C08B *37/00*

U.S. Cl. 536—124 10 Claims

1. A process for post-hydrogenating sucrose polyesters comprising contacting sucrose polyesters having at least one unsaturated fatty acid with hydrogen gas in the presence of a catalytically effective amount of hydrogenation catalyst, at a temperature of from about 250° F. (121° C.) to about 450° F. (232° C.) to hydrogenate the unsaturated fatty acids of the sucrose polyesters.

4,806,633

METHOD OF MANUFACTURING MORANOLINE DERIVATIVES

Yoji Ezure, Otsu; Masashi Yamamoto, Kyoto; Shigeaki Maruo, Ibaraki, and Makoto Sugiyama, Kyoto, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Kyoto, Japan

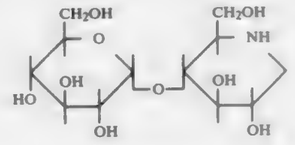
Filed Apr. 15, 1987, Ser. No. 39,012

Claims priority, application Japan, Apr. 15, 1986, 61-087509

Int. Cl.[4] C07H *17/02, 5/06;* C08B *37/16;* A61K *31/73*

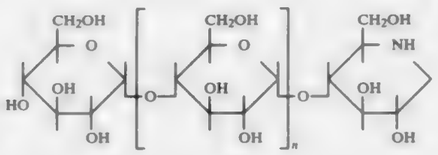
U.S. Cl. 536—18.5 5 Claims

1. A method of preparing a molecular compound of glucosylmoranoline represented by the formula (I)



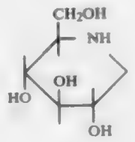
(I)

with methanol, which comprises admixing an aqueous solution of glucosylmoranoline (I), oligoglucosylmoranoline represented by the formula (II)



(II)

(wherein n is an integer of 1 to 5), and moranoline represented by formula (III)



(III)

with methanol and stirring the admixture to form crystals of the molecular compound of methanol and (I).

4,806,634

Patent Not Issued For This Number

4,806,635

NEW CROSS-LINKING SYSTEM FOR MAKING TONERS THAT ARE USEFUL IN ELECTROPHOTOGRAPHY USING POLYFUNCTIONAL AZIDE

Francis L. Chupka, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

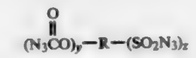
Continuation of Ser. No. 021,930, Mar. 5, 1987, which is a division of Ser. No. 912,033, Sep. 26, 1986, abandoned. This application Jul. 21, 1988, Ser. No. 222,319

Int. Cl.[4] G03G *9/08*

U.S. Cl. 430—109 2 Claims

1. A toner composition useful for electrophotography consisting essentially of

(1) the reaction product of (a) a cross-linkable toner resin selected from the group consisting of a copolymer of a styrene material and an acrylate or methacrylate, and a polyester that is the reaction product of a dicarboxylic acid and a dihydric alcohol, and (b) from about 0.1% to about 10%, based on the weight of the resin, of a polyfunctional azide having the formula



where R is an organic radical, y and z are integers from 0 to 10, and the sum of y and z is an integer from 2 to 10, and (2) from about 2% to about 20%, based on the total weight of the composition, of a colorant.

4,806,636

HETEROPOLYSACCHARIDE PRODUCED BY *ENTEROBACTER SAKAZAKII*

L. Scott Harris, and Patrick J. Oriel, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 20, 1985, Ser. No. 714,147

Int. Cl.[4] C08B *37/00;* C12P *19/04;* C12N *1/20;* C12R *1/01*

U.S. Cl. 536—123 11 Claims

1. Tea polysaccharide, a heteropolysaccharide which comprises from about 13 to about 22% by weight of L-fucose, from about 19 to about 24% by weight of D-galactose, from about 23 to about 30% by weight of D-glucose, from about 0 to about 8% by weight of D-mannose, from about 29 to about 32% by weight of glucuronic acid, said percent ranges being based on total carbohydrate; said heteropolysaccharide further comprising about 1 to about 1.5 equivalents of ester per equivalent of neutral sugar.

4,806,637

6-(HYDROXYETHYL)-2-(HETEROCYCLYLTHIO)-PENEM-3-CARBOXYLATES

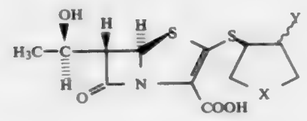
Michael P. Kirkup, Somerset, N.J., and Amy S. Boland, Pittsburgh, Pa., assignors to Schering Corporation, Kenilworth, N.J.

Filed Mar. 17, 1986, Ser. No. 840,305

Int. Cl.[4] C07D *499/00;* A61K *31/425*

U.S. Cl. 540—310 29 Claims

1. A compound represented by the formula:



I

and pharmaceutically acceptable salts or pharmaceutically acceptable esters thereof,

wherein:

X represents oxygen, or

wherein R is hydrogen, loweralkyl, acetyl or methoxycarbonyl;

Y is cis, trans or mixtures thereof and is selected from hydroxy, lower alkoxy, amino, carbamoyloxy, methoxycarbonylamino, lower alkylcarbonyloxy, lower alkylcarbonylamino and loweralkylsulfonylamino; and

the wavy lines indicate cis, trans or mixtures thereof.

4,806,638

NEUTRALIZATION OF REACTION MIXTURES OBTAINED BY BECKMAN REARRANGEMENT OF CYCLOHEXANONE OXIME

Uwe Brand, Lampertheim; Roediger Schmitz, Lambsheim; Ernst Denker, Gruenstadt, and Hugo Fuchs, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 19, 1987, Ser. No. 109,405

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1986, 3635363

Int. Cl.[4] C07D *201/16;* C01B *1/242*

U.S. Cl. 540—540 8 Claims

1. A process for the neutralization of a reaction mixture obtained by Beckmann rearrangement of cyclohexanone oxime with sulfuric acid or oleum, which comprises the following steps:

(a) mixing the reaction mixture with recycled ammonium sulfate mother liquor whose concentration is chosen so that no solid ammonium sulfate is precipitated during the neutralization,

(b) neutralization by feeding gaseous ammonia which contains water or an aqueous ammonium sulfate solution in finely divided liquid form through a plurality of nozzle orifices into the solution of the reaction mixture in the ammonium sulfate mother liquor at elevated temperatures,

(c) separation of crude lactam from the aqueous ammonium sulfate solution,

(d) evaporation of the ammonium sulfate solution under reduced pressure and with separation of the crystalline ammonium sulfate from the ammonium sulfate mother liquor and

(e) recycling of the ammonium sulfate mother liquor to stage (a).

4,806,639

PROCESS FOR THE PREPARATION OF 6-METHYL-3,4-DIHYDRO-1,2,3-OXATHIAZIN-4-ONE 2,2-DIOXIDE AND FOR THE PURIFICATION THEREOF

Dieter Reuschling, Butzbach; Adolf Linkies, Frankfurt am Main; Walter Reimann, Hofheim am Taunus; Otto E. Schweikert, Kelkheim, and Karl E. Mack, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 29, 1986, Ser. No. 902,206

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1985, 3531359

Int. Cl.[4] C07D *291/06*

U.S. Cl. 544—2 9 Claims

1. A process for the preparation of 6-methyl-3,4-dihydro-1,2,3-oxathiazine-4-one 2,2-dioxide by cyclizing an acetoacetamide derivative, which comprises using acetoacetamide-N-sulfonic acid or its salts—dissolved in a water-immiscible, inert, organic solvent—as the acetoacetamide derivative, carrying out the cyclization by treatment with an excess of up to 20-fold molar amount of SO_3, hydrolyzing the 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-one 2,2-dioxide obtained in the form of the SO_3-adduct after the cyclization reaction, removing the inert, organic solvent from the resulting multi-phase mixture by

distillation, and isolating the 6-methyl-3,4-dihydro-1,2,3-oxathiazin-4-one 2,2-dioxide by crystallization from the remaining aqueous sulfuric acid phase.

4,806,640

TRIPHENDIOXAZINE REACTIVE DYESTUFFS

Wolfgang Harms, and Klaus Wunderlich, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

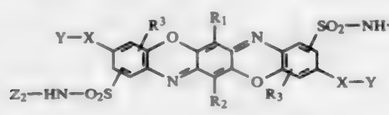
Continuation of Ser. No. 868,961, May 30, 1986, abandoned. This application Jul. 27, 1987, Ser. No. 77,939

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1985, 3520391

Int. Cl.[4] C07D *498/02;* **C09B** *19/02*

U.S. Cl. 544—76 **3 Claims**

1. A dyestuff of the formula



wherein

R_1, R_2=H, Cl, Br, C_1–C_4-alkoxy, C_1–C_4-alkyl, phenoxy, carboxamide, mono- or di-C_1–C_4-alkyl carboxamide, carboxy, C_1–C_4-alkylcarbonylamino or phenylcarbonylamino

R_3=H, C_1–C_4-alkyl, C_1–C_4-alkoxy, Cl or Br

X=



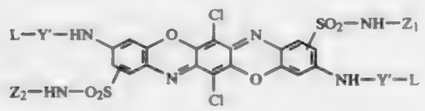
or O

R_4=H or C_1–C_4-alkyl opt. substituted by OH, SO_3H, OSO_3H, OPO_3H_2, COOH or Cl

Y=C_1–C_6-alkyl, opt. substituted by sulpho, sulphato, phosphate, carboxy, thiosulphato, hydroxy or alkoxy and opt. interrupted by NH, O or SO_2

Z_1, Z_2=heterocyclic fibre-reactive radical.

2. A dyestuff of the formula



wherein

Y'=C_1–C_6-alkylene or Ar-(C_1–C_4)-alkylene,

L=SO_3H, OSO_3H, OPO_3H_2 or COOH, and

Ar=arylene; Z_1, Z_2=heterocyclic fibre-reactive radical.

4,806,641

SALTS OF 3-HYDROXY-4-OXO-3,4-DIHYDRO-1,2,3-BENZOTRIAZINE AND AMINO COMPOUNDS

Alexander Volk, Eppstein/Taunus and Wolfgang König, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 6, 1985, Ser. No. 741,866

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421303

Int. Cl.[4] C07D *253/08;* **C07K** *5/06, 5/08*

U.S. Cl. 544—183 **8 Claims**

1. A salt of

(a) 3-hydroxy-4-oxo-3,4-dihydro-1,2,3-benzotriazine and

(b) a primary monoamino compound containing a primary amino group capable of forming a salt with said 3-hydroxy-4-oxo-3,4-dihydro-1,2,3-benzotriazine, wherein the primary monoamino compound is selected from the group consisting of (C_1–C_6)-alkyl esters of naturally occurring α-amino acids; (C_1–C_6)-alkyl esters of 4-amino-butyric acid; naturally occurring α-amino acids and 4-amino-butyric acid in which the carboxyl group has been reduced to —CH_2OH; dipeptides and tripeptides consisting of naturally occurring α-amino acids and/or 4-amino-butyric acid bearing a (C_1–C_6)-alkyl ester function; and dipeptides and tripeptides consisting of naturally occurring α-amino acids and/or 4-aminobutyric acid in which the C-terminal carboxyl group has been reduced to —CH_2OH, said naturally occurring α-amino acids being selected from alanine, arginine, asparagine, aspartic acid, cysteine, glutamine, glutamic acid, glycine, histidine, isoleucine, lysine, leucine, methionine, ornithine, phenylalanine, proline, serine, threonine, tryptophan, tyrosine and valine,

in which salt the molar ratio 3-hydroxy-4-oxo-3,4-dihydro-1,2,3-benzotriazine: primary monoamino compound is 1:1 to 2:1.

4,806,642

PURINE DERIVATIVES

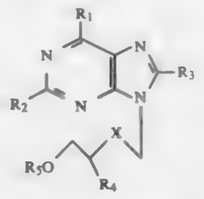
Jagadish C. Sircar, Ann Arbor, Mich.; Charles F. Schwender, Gladstone, N.J., and Mark J. Suto, Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 657,211, Oct. 5, 1984, abandoned, which is a continuation-in-part of Ser. No. 547,297, Oct. 31, 1983, abandoned. This application Mar. 6, 1987, Ser. No. 22,467

Int. Cl.[4] C07D *473/18, 473/24, 473/30, 473/38*

U.S. Cl. 544—244 **13 Claims**

1. A compound of the formula



wherein R_1 is OH or SH; R_2 is hydrogen, NHR in which R is hydrogen or COR_6 where R_6 is alkyl of one to four carbon atoms, phenyl, phenyl substituted by (i) fluoro, (ii) chloro, (iii) bromo, (iv) trifluoromethyl, (v) alkyl of one to four carbon atoms, (vi) hydroxy, or (vii) alkoxy of one to four carbon atoms, or arylalkyl wherein alkyl is of one to four carbon atoms and aryl is phenyl or phenyl substituted by (i) fluoro, (ii) chloro, (iii) bromo, (iv) alkyl of one to four carbon atoms, (v) trifluoromethyl, (vi) hydroxy, (vii) alkoxy of one to four carbon atoms; R_3 is bromine or NHR where R is hydrogen or COR_6, wherein R_6 is as defined above; X is O or S; R_4 is hydrogen or CH_2OR_5 in which R_5 is hydrogen, alkyl of one to eight carbon atoms, phenyl, phenyl substituted by (i) fluoro, (ii) chloro, (iii) bromo, (iv) trifluoromethyl, (v) alkyl of one to four carbon atoms, (vi) hydroxy, or (vii) alkoxy of one to four carbon atoms, or arylalkyl wherein alkyl is of one to four carbon atoms, and aryl is phenyl or phenyl substituted by (i) fluoro, (ii) chloro, (iii) bromo, (iv) alkyl of one to four carbon atoms, (v) trifluoromethyl, (vi) hydroxy, or (vii) alkoxy of one to four carbon atoms, COR_6 or



and R_6 is as defined above; with the proviso that when R_1 is OH, R_2 is NH_2, R_3 is bromine, and R_5 is hydrogen or COR_6, then R_4 is not a hydrogen or CH_2OR_5 wherein R_5 is the same COR_6 as is defined above or a pharmaceutically acceptable base salt or acid addition salt.

12. 2-amino-9-[[2-(heptyloxy)-1-(hydroxymethyl)ethoxy]-methyl]-1,9-dihydro-6H-purin-6-one.

13. 2-amino-1,9-dihydro-9-[[1-(hydroxymethyl)-2-phenoxyethoxy]methyl]-6H-purin-6-one.

4,806,643

PREPARATION OF RIBOFLAVIN

Johannes Grimmer, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

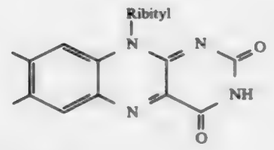
Filed Nov. 19, 1986, Ser. No. 932,312

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1985, 3542837

Int. Cl.[4] C07D *475/14*

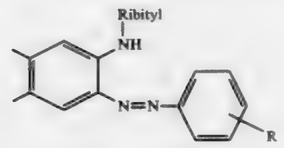
U.S. Cl. 544—251 **20 Claims**

2. A process for the preparation of riboflavin of formula (I)

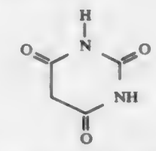


said process comprising:

condensing a 4,5-dimethyl-N-(D)-ribityl-2-phenylazoaniline of formula (II)



wherein R is hydrogen, chlorine, nitro, methyl or methoxy and R is situated at the ortho- or paraposition, with barbituric acid of formula (III)



in the presence of an acid condensing agent of formula (IV)

$(R^1)(R^2)CH—COOH$

wherein R^1 is methyl or ethyl, and R^2 is a C_{3-4} alkyl group or a linear C_5 alkyl group.

4,806,644

PROCESS FOR THE PREPARATION OF 5-ACYLPYRIMIDINES

Hans-Ludwig Elbe, and Graham Holmwood, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

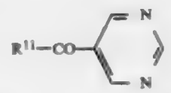
Division of Ser. No. 769,639, Aug. 26, 1985, Pat. No. 4,713,456. This application Apr. 1, 1987, Ser. No. 33,433

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1984, 3431689

Int. Cl.[4] C07D *239/26*

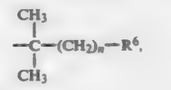
U.S. Cl. 544—335 **1 Claim**

1. A 5-acyl-pyrimidine of the formula



in which

R^{11} represents phenyl which is mono-or di-substituted by fluorine, chlorine, methyl, ethyl, isopropyl, tert.-butyl, methoxy, methylthio, trifluoromethyl, trifluoromethoxy and/or trifluoromethylthio; or represents the grouping



in which

R^6 represents phenyl which is optionally mono-or di-substituted by fluorine, chlorine and/or bromine; or represents the grouping —XR^7;

R^7 represents alkyl with 1 to 4 carbon atoms or phenyl which is optionally mono- or di-substituted by chlorine;

X represents oxygen or sulphur, and

n represents the number 0 or 1.

4,806,645

BORIC ANHYDRIDES OF 6-FLUORO-7-CHLORO-1-METHYLAMINO-4-OXO-1,4-DIHYDRO-QUINOLINE-3-CARBOXYLIC ACID

István Hermecz; Géza Keresztúri; Lelle Vasvári; Ágnes Horváth, all of Budapest; Mária Balogh, Dunakeszi; Gábor Kovács, Budapest; Zoltán Mészáros, deceased, late of Budapest (by Márta Mészáros, Meszaros née Márta Bölöni, heirs); Péter Ritli, Budapest; Judit Sipos, Budapest, and Anikó Pajor, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

PCT No. PCT/HU86/00066, § 371 Date Aug. 7, 1987, § 102(e) Date Aug. 7, 1987, PCT Pub. No. WO87/03594, PCT Pub. Date Jun. 18, 1987

PCT Filed Dec. 9, 1986, Ser. No. 105,295

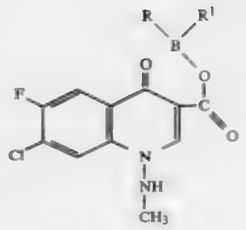
Claims priority, application Hungary, Dec. 9, 1985, 4690

Int. Cl.[4] C07F *5/02, 5/04;* **C07D** *215/56*

U.S. Cl. 546—13 **6 Claims**

1. A compound of the Formula I

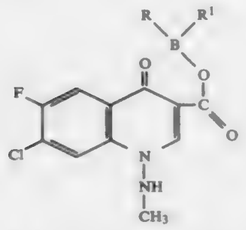
VOL 1099 ISS 3 FE 21 1989 UMI



wherein R and R^1 stand for halogen; C_2 to C_6 alkanoyloxy or benzoyloxy.

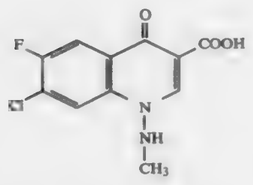
4. A process for preparing a compound of the Formula (I)

(I)



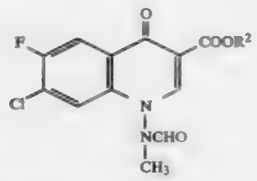
wherein R and R^1 are each bromine, chlorine or fluorine, which comprises halogenating a compound of the Formula (II)

(II)



or a compound of the Formula (III)

(III)



wherein R^2 is C_1 to C_4 alkyl

(a) with hydrogen fluoro borate of the formula (IV)

HBF_4

to yield the compound of the Formula (I) where R and R^1 are each fluorine; or

(b) with a boron trihalide of the Formula (V)

BX_3

where X is bromine, chlorine or fluorine, or a complex thereof formed with an ether or an alcohol, to yield the compound of the Formula (I) where R and R^1 are each bromine, chlorine or fluorine.

4,806,646

SUBSTITUTED 9-AMINO-SPIRO[CYCLOALKYL[B]QUINOLINE-2,1'CYCLOALKANES]

Gregory M. Shutske, Somerset, N.J., assignor to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

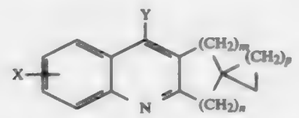
Division of Ser. No. 31,825, Mar. 30, 1987, Pat. No. 4,762,841. This application May 9, 1988, Ser. No. 192,037

Int. Cl.[4] C07D *221/20*; A61K *31/435*

U.S. Cl. 546—15 1 Claim

1. A compound having the formula

(I)



wherein m is 1 or 2; n is 1 or 2; p is 1–5; X is hydrogen, loweralkyl, cycloalkyl, loweralkoxy, halogen, hydroxy, nitro, trifluoromethyl, formyl, loweralkylcarbonyl, arylcarbonyl, —SH, loweralkylthio, $—NHCOR_2$ or $—NR_3R_4$ where R_2 is hydrogen or loweralkyl, and R_3 and R_4 are independently hydrogen, loweralkyl or cycloalkyl; and Y is halogen, hydroxy or loweralkoxy.

4,806,647

PROCESS FOR THE DIMERIZATION OF OLEFINS

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 17, 1988, Ser. No. 156,674

Claims priority, application United Kingdom, Feb. 24, 1987, 8704338

Int. Cl.[4] C07C *2/26*

U.S. Cl. 585—511 18 Claims

1. A process for the dimerization in the liquid phase of an alpha-alkene which comprises contacting an alpha-alkene having in the range of from 2 to 12 carbon atoms per molecule with an alkanediol solvent in the presence of a catalytic system formed by combining:

(a) a palladium(II) compound,

(b) a chelate ligand comprising a compound containing as coordinating atoms at least two nitrogen atoms which are connected through a chain comprising two carbon atoms, wherein more than about 2.0 mol of said chelate ligand per gram-atom of palladium(II) is used,

(c) a protonic acid, with the exception of a hydrohalogenic acid, and

(d) a salt of a protonic acid selected from the group consisting of copper, iron, zinc, tin, manganese, vanadium, aluminum, a metal of Group VIB of the Periodic Table of the Elements and mixtures thereof, with the exception of a halide.

4,806,648

EFFICIENT SYNTHESIS OF CYCLIC CIS-VICINAL TERITIARY DIAMINES

Howard Rosenzweig, N. Massapequa, N.Y., and Gideon Fraenkel, Columbus, Ohio, assignors to Ohio State University Research Foundation, Columbus, Ohio

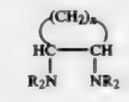
Filed Dec. 18, 1986, Ser. No. 943,663

Int. Cl.[4] C07D *401/08*

U.S. Cl. 546—191 6 Claims

1. A process for preparing a cyclic cis-vicinal diamine compound of formula 1, wherein NR_2 is selected from the group including N-piperidino, N-pyrrolidino, dialkylamino containing C_1–C_{12} straight or branched alkyl groups optionally substituted by C_3–C_7 cycloalkyl groups, and n is from 2–8

1

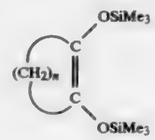


n = 2–8

which comprises:

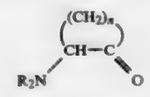
(a) reacting a compound of formula 2,

2



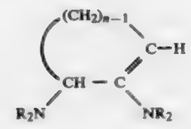
with methanol and R_2NH wherein the substituent R_2N— is selected from one of the following substituent groups: N-piperidino, N-pyrrolidino, dialkylamino containing C_1–C_{12} straight or branched alkyl groups optionally substituted by C_3–C_7 cycloalkyl groups, whereby the 1,2-siloxycycloalkene, 2, is converted to an aminoketone of formula 3,

3



(b) reacting the compound of formula 3 in benzene with R_2NH and an acid catalyst, under Dean-Stark conditions, whereby a compound of formula 4 is obtained; and,

4



(c) reacting the compound of formula 4 with hydrogen and a catalyst whereby such compound of formula 1 is obtained.

2. The process of claim 1 for making the cyclic cis-vicinal diamine compound of formula 1 wherein NR_2 is a N-piperidino group.

4,806,649

3-(PIPERIDINYL)- AND 3-(PYRROLIDINYL)-1H-INDAZOLES

Joseph T. Strupczewski, Flemington, N.J., assignor to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

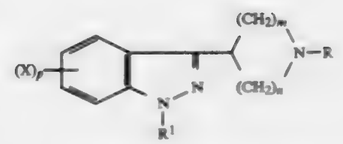
Division of Ser. No. 181,960, Apr. 15, 1988, Pat. No. 4,775,761, which is a division of Ser. No. 102,684, Sep. 30, 1987, Pat. No. 4,758,668, which is a division of Ser. No. 37,194, Mar. 19, 1987, Pat. No. 4,710,573, which is a division of Ser. No. 811,090, Dec. 19, 1985, Pat. No. 4,670,447, which is a continuation-in-part of Ser. No. 694,198, Jan. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 679,662, Dec. 7, 1984, abandoned, which is a continuation-in-part of Ser. No. 525,088, Aug. 22, 1983, abandoned. This application Aug. 4, 1988, Ser. No. 228,201

Int. Cl.[4] C07D *401/14*

U.S. Cl. 546—193 7 Claims

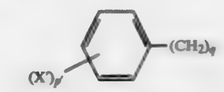
1. A compound having the formula

1

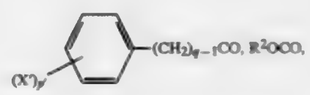


wherein R is hydrogen, loweralkyl, loweralkenyl, lowercycloalkylloweralkyl,

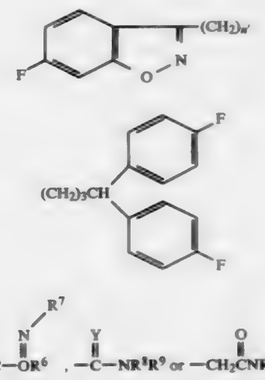
2

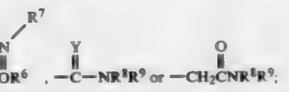


cyano, cyanomethyl, formyl, loweralkanoyl, diloweralkylphosphinomethyl,



3

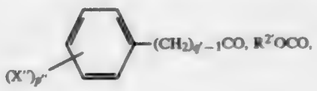


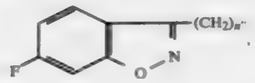


R^1 is hydrogen, loweralkyl, loweralkenyl, lowercycloalkyloweralkyl,

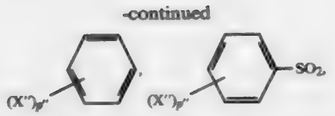


diloweralkylaminoloweralkyl, cyano, cyanomethyl, formyl, loweralkanoyl, hydroxymethyl, hydroxyloweralkyl, lowercycloalkylloweralkanoyl, loweralkoxycarbonylloweralkyl,

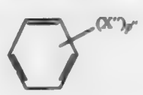




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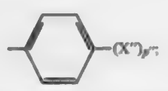
2- or 4-pyridinyl or 2-pyrimidinyl; R^2 and $R^{2'}$ are independently loweralkyl, 2,2,2-trichloroethyl, phenyl or



X, X' and X'' are independently hydrogen, halogen, loweralkyl, loweralkoxy, loweralkanoyl, loweralkylthio, cyano, carbamoyl, hydroxy, nitro, amino or trifluoromethyl; Y is oxygen or sulfur, m is 2 or 3, n is 1 or 2, and the sum of m and n is 3 or 4; n' and n'' are independently 2 or 3; p, p' and p'' are independently 1 or 2 except when X'' is halogen, p'' is 1 through 5; q and q' are independently 1,2, 3, or 4; R^6 is loweralkyl,



cycloalkylloweralkyl, where the cycloalkyl group contains 3 to 10 carbon atoms, a lower alkyl substituted with an amino, loweralkylamino, diloweralkylamino; R^7, R^8, and R^9 are independently hydrogen, loweralkyl or



with the proviso that at least one of R and R^1 is a heterocyclic group as specified above; the optical antipode thereof; or the pharmaceutically acceptable salt thereof.

4,806,650

PROCESS FOR PREPARING 1-DEOXYNOJIRIMYCIN AND N-DERIVATIVES THEREOF

Theo Schröder, Elkhart, Ind., and Mathias Stubbe, Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

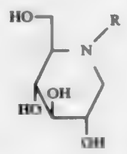
Filed Apr. 2, 1987, Ser. No. 34,466

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1986, 3611841

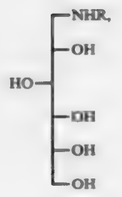
Int. Cl.[4] C12P *19/26*; C07D *211/46*

U.S. Cl. 546—242 **6 Claims**

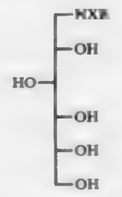
1. A process for preparing a 1-deoxynojirimycin of the formula



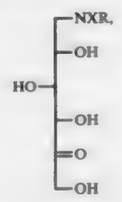
in which R is hydrogen, alkyl, carbocyclic aryl or carbocyclic aralkyl, which comprises converting D-glucose to an aminosorbitol of the formula



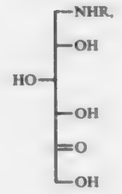
protecting the amino group of the aminosorbitol with an alkalinically detachable group to form the protected compound of the formula



in which X is an alkalinically detachable protective group, microbiologically oxidizing the protected compound to an oxidation product of the formula



alkalinically splitting off the protective group X to form an aminosorbose of the formula



and reducing the aminosorbose thereby to obtain the 1-deoxynojirimycin.

4,806,651

PROCESS FOR PREPARING 3,3-DISUBSTITUTED INDOLINES

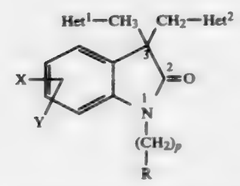
Walter M. Bryant, III, Elkton, Md., and George F. Hahn, New Castle, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 7, 1987, Ser. No. 105,330

Int. Cl.[4] C07D *401/14*

U.S. Cl. 546—256 **10 Claims**

1. A process for preparing a 3,3-disubstituted indoline of the formula:

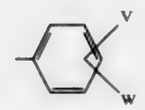


(I)

or a pharmaceutically suitable salt thereof wherein:

p is 0 or 1;

R is alkyl of 1–10 carbon atoms, cycloalkyl or 3–8 carbon atoms, 2-, 3- or 4-pyridyl, or



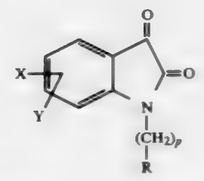
V, W, X and Y independently are H, halo, alkyl of 1–3 carbon atoms, OR^1, NO_2, CF_3, CN or NR^1R^2;

R^1 and R^2 independently are H or alkyl of 1–3 carbon atoms;

Het^1 and Het^2 independently are 2- or 4-pyridyl, 2-, 4- or 6-pyrimidinyl, or 2-pyrazinyl, optionally substituted with an alkyl group of 1–3 carbon atoms,

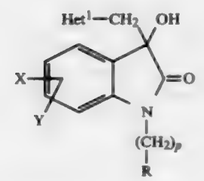
which comprises:

(1) contacting at a temperature of between 100° and 150° C. compound of Formula (II) in a solution with at least one equivalent weight of $Het^1—CH_3$, said compound of Formula (II) having the formula:



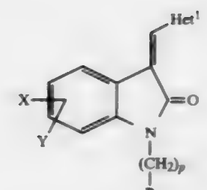
(II)

where X, Y, p and R are defined above, for a time sufficient to obtain a compound of the formula:



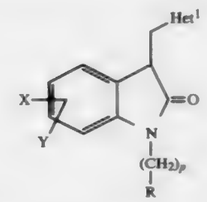
(III)

(2) dehydrating the compound of Formula (III) prepared in step (1) to obtain a compound of the formula:



(IV)

(3) reducing the compound of Formula (IV) in solution with a boron hydride or by catalytic hydrogenation under conditions such that there is no reduction of C=O or of a double bond in Het^1, to obtain a compound of the formula:



(V)

aml

(4) contacting the compound of Formula (V) obtained in step (4), or a salt formed therefrom, in a basic solution with a compound of the formula

$$D—CH_2—Het^2$$

where Het^2 is defined above, and

D is a nucleophilic displaceable group.

4,806,652

INBRED CORN LINE PHR25

Vladimir Puskaric, Ontario, Canada, assignor to Pioneer Hi-Bred International, Inc., Johnston, Iowa

Filed Jan. 27, 1988, Ser. No. 148,891

Int. Cl.[4] A01H *1/06*

U.S. Cl. 800—1 **12 Claims**

1. An inbred corn line designated PHR25.

4,806,653

PROCESS FOR PREPARATION OF IMINOOXAZOLIDINES

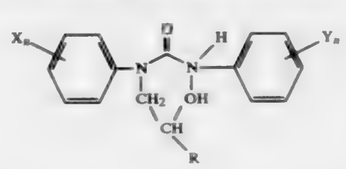
Raymond A. Feliz, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 17, 1986, Ser. No. 920,345

Int. Cl.[4] 01N *43/76*; C07D *263/08*

U.S. Cl. 548—234 **11 Claims**

1. A process for the preparation of iminooxazolidines which consists of (a) reacting a urea alcohol of the formula



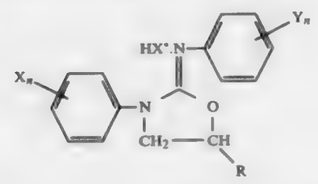
wherein

X and Y are the same or different and are selected from the group consisting of hydrogen, cyano, halogen, acyl, alkyl,

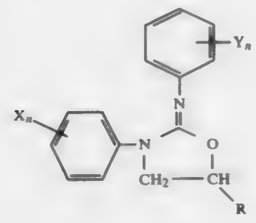
alkylthio, haloalkyl, haloalkylthio, alkylsulfinyl, alkoxy, carboalkoxy and haloalkoxy wherein the alkyl groups have from 1 to 5 carbon atoms;

n is the integer 1 or 2; provided that when Y is hydrogen, at least one X is other than hydrogen; and

R is hydrogen or a lower alkyl group having from 1 to 3 carbon atoms, with a dehydrating agent selected from the group consisting of thionyl chloride, phosgene, phosphorous chlorides and phosphorous pentoxide, to form an intermediate salt compound of the formula;



wherein X, Y, n and R are as defined above and X° is halogen or other salt forming anion from the dehydrating agent and (b) reacting said salt compound with a base to form a compound of the formula



wherein n, X, Y and R are as previously defined.

4,806,654

PROCESSES FOR THE PREPARATION OF BENZO(CHALCOGENO)(4,3,2-CD)INDAZOLES AND INTERMEDIATES THEREOF

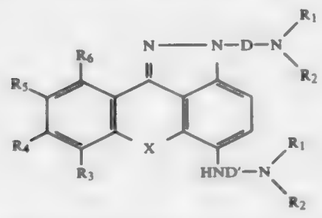
Vladimir G. Beylin; Om P. Goel; Anthony D. Sercel, and Howard D. H. Showalter, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 29,021, Mar. 23, 1987, abandoned. This application Feb. 11, 1988, Ser. No. 149,103

Int. Cl.[4] **C07D** *491/06, 495/06*

U.S. Cl. 548—370 **21 Claims**

1. A process for the preparation of a substituted benzo(chalcogeno)[4,3,2-cd]indazole of the formula



or a pharmaceutically acceptable salt thereof, wherein

X is oxygen, sulfur, or selenium;

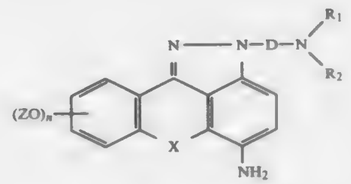
D is a straight or branched alkylene group of from two to eight carbon atoms;

D' is ethylene;

R_1 and R_2 may be the same or different and are hydrogen or an alkyl group of from two to eight carbon atoms which may be substituted by hydroxy; and

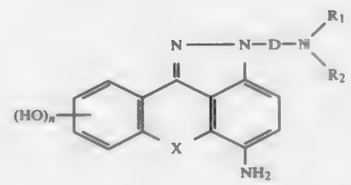
R_3, R_4, R_5, and R_6 may be the same or different and are hydrogen or hydroxy which comprises:

(a) reacting an alkyl-substituted compound of the formula



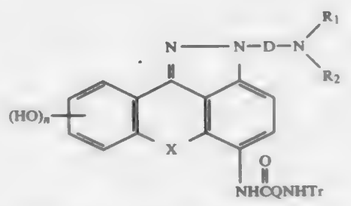
wherein X, R_1, R_2, and D are as described above, Z is an alkyl of from one to four carbon atoms, and n is an integer of from one to four;

with excess boron tribromide in a suitable organic solvent then with methanol to give a hydroxylated compound of the Formula



wherein X, n, D, R_1, and R_2 are as described above;

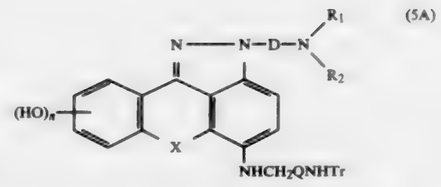
(b) reacting a compound of Formula 3 with the N-acylimidazole derived from the reaction of 1,1'-carbonyldiimazole and N-trityl glycine, or N-trityl alanine in N,N-dimethylformamide to give a salt of the corresponding trityl-protected amino acid compound of Formula



wherein X_1, R_1, R_2, D, and n are as described above, Q is a methylene group, and Tr is $C(C_6H_5)_3$;

(c) precipitating a salt of a compound of Formula 4A above and recovering a compound of Formula 4A;

(d) reducing the carbonyl portion of a compound of Formula 4A to the corresponding methylene-containing compound of Formula 5A



(e) purifying a compound of Formula 5A by recrystallization;

(f) removing the trityl-protecting group from a compound of Formula 5A by reaction with an acid to produce a compound of the instant invention of Formula 1 above.

18. A compound named N-[2[2-(diethylamino)ethyl]8-hydroxy-2H-[1]benzothiopyrano[4,3,2-cd]indazol-5-yl-2-[(triphenylmethyl)amino]acetamide.

4,806,655

PROCESS FOR THE STEREOSPECIFIC SYNTHESIS OF INDOLE DERIVATIVES

Jean Wagnon, Montpellier; Claude Plouzane, Saint Georges d'Orques; Bernard Tonnerre, Vaillauques, and Dino Nisato, Saint Georges d'Orques, all of France, assignors to Societe Anonyme: Sanofi, Paris, France

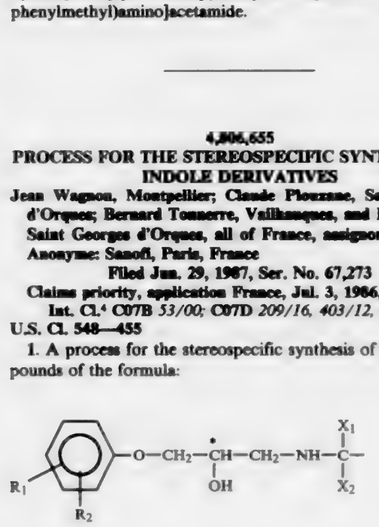
Filed Jun. 29, 1987, Ser. No. 67,273

Claims priority, application France, Jul. 3, 1986, 86 09680

Int. Cl.[4] **C07B** *53/00;* **C07D** *209/16, 403/12, 405/12*

U.S. Cl. 548—455 **11 Claims**

1. A process for the stereospecific synthesis of indole compounds of the formula:

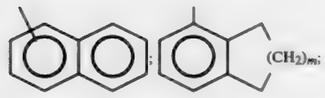


in which:

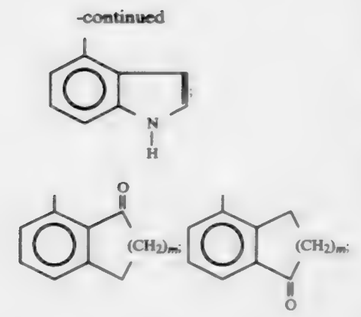
the configuration of chemical groups attached to the C* atom is (R) or (S);

X_1 and X_2 each independently denotes a hydrogen atom or a lower alkyl;

R_1 and R_2 each independently denotes a hydrogen atom, a halogen atom, a lower alkyl, a lower alkoxy or a formyl, or R_1 and R_2, taken together with the benzene nucleus to which they are bonded, form an optionally substituted bicyclic nucleus selected from the group consisting of:



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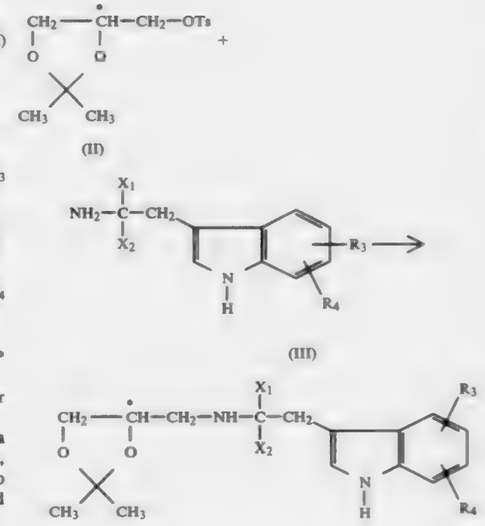


and

R_3 and R_4 each independently denotes a hydrogen atom, a halogen atom, a lower alkyl or a lower alkoxy;

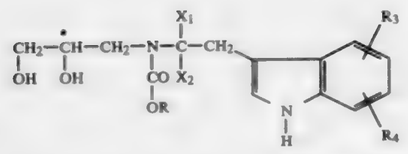
m represents an integer between 1 and 3, and their pharmaceutically acceptable salts with organic or mineral acids, comprising the steps of:

(a) heating 3-tosyloxy-1,2-O-isopropylidenepropane-1,2-diol of formula (II) in an optically pure form with a primary amine of formula (III), in an inert solvent, to give the compound of formula (IV):



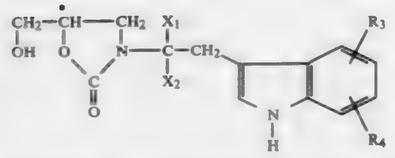
(b) hydrolyzing the dioxolan ring of the compound of formula (IV) in an acid medium and substituting the amine functional group of the said compound with an oxycarbonyl group ROCO, in which R represents a lower alkyl group or a benzyl, to form the compound of formula (VI):

VOL 1099 ISS 3 FE 21 1989 UMI



(VI)

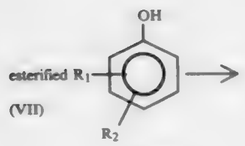
(c) heating compound (IV) in a basic medium in order to prepare the oxazolidinone of formula (VII):



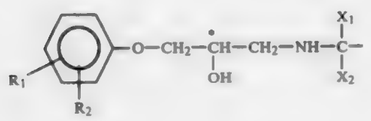
(VII)

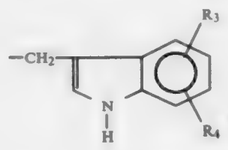
(d) esterifying an alcohol functional group of the compound of formula (VII) with tosyl chloride or mesyl chloride in pyridine;

(e) reacting the compound of formula (VII) esterified in step (d), in the presence of an alkaline agent and in an appropriate solvent, with a phenol of formula (VIII) in order to prepare the compound of formula (IX):



(VIII)





(IX)

and

(f) heating the compound of formula (IX) under reflux in a basic medium, in the presence of water and a solvent, and isolating the resulting compound of formula (I).

4,806,656

PREPARATION OF N-THIENYL-CHLOROACETAMIDES AND TETRAHYDRO-THIEN-3-YLIDENIMINES

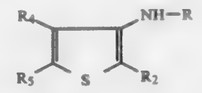
Hermann Schneider, Grenzach-Wyhlen, Fed. Rep. of Germany, assignor to Sandoz Ltd., Basel, Switzerland

Filed Aug. 5, 1985, Ser. No. 762,333

Int. Cl.[4] C07D *333/36, 333/42*

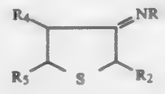
U.S. Cl. 549—69 **4 Claims**

1. The process for the preparation of a compound of the formula II



II

in hydrochloride acid addition salt form, wherein R is C_{1-4}alkoxy-C_{2-4}alkyl of which the C_{1-4}alkoxy group is separated by at least 2 carbon atoms from the N-atom to which R is bound, each of R_2 and R_4 independently is CH_3 or C_2H_5 and R_5 is H or Ch_3, comprising reacting a compound of the formula I



I

wherein R, R_2, R_4 and R_5 are as above defined, with thionyl-chloride in an inert solvent at a temperature in the range of from minus 30° C. to plus 80° C.

4,806,657

PROCESS FOR THE PREPARATION OF FLUORAN COMPOUNDS WHICH ARE SUBSTITUTED BY BASIC GROUPS

Rudolf Zink, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

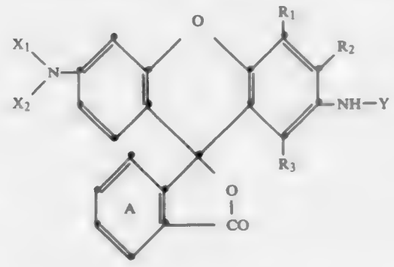
Continuation of Ser. No. 651,389, Sep. 17, 1984, abandoned. This application May 5, 1986, Ser. No. 860,706

Claims priority, application Switzerland, Sep. 26, 1983, 5199/83

Int. Cl.[4] C07D *311/88*

U.S. Cl. 549—226 **14 Claims**

1. A process for the preparation of a fluoran which is substituted by basic groups and has the formula



(1)

wherein

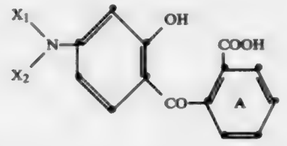
R_1, R_2 and R_3 are each independently hydrogen, halogen or lower alkyl, or R_1 and R_2, together with the carbon atoms to which they are attached, form a fused benzene nucleus,

X_1 and X_2 are each independently hydrogen, alkyl containing not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxy, cyano or lower alkoxy, or are cycloalkyl, aryl or aralkyl; or X_1 and X_2, together with the nitrogen atom to which they are attached, form a 5- or 6-membered heterocyclic ring selected from pyrrolidino, piperidino, pipecolino, morpholino, thiomorpholino, piperazino and methylpiperazino, and

Y is alkyl containing not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxy, cyano or lower alkoxy, or is cycloalkyl, aryl or aralkyl, and

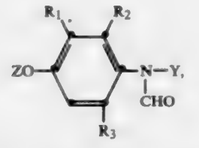
the ring A is unsubstituted or substituted by nitro, amino, mono-lower alkylamino, di-lower alkylamino or halogen, which process comprises

(1), reacting a ketonic acid of the formula



(2)

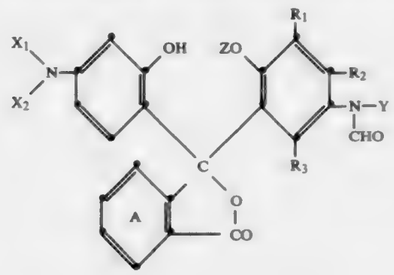
with a substituted 4-formylaminophenol derivative of the formula



(3)

wherein A, R_1, R_2, R_3, X_1, X_2 and Y have the meanings assigned to them and Z is hydrogen, lower alkyl, formyl or lower alkanoyl,

(2), deformylating the resultant phthalide of the formula



(4)

by heating in dilute sulfuric acid at 80° to 100° C. for 15 to 90 minutes and

(3), cyclising the deformylated phthalide by intramolecular condensation to give the fluoran of the formula (1).

4,806,658

CLEAVAGE OF POLYETHYLENE GLYCOL ETHERS BY HYDROLYSIS

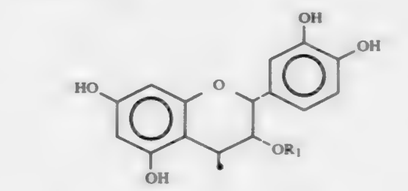
Kuo Y. Chang, Midland, Mich.; Iwao Kohatsu, Lexington, and Philip E. Garrou, Holliston, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 15, 1982, Ser. No. 441,347

Int. Cl.[4] C07D *319/12, 323/06;* **C07C** *43/11*

U.S. Cl. 549—368 **10 Claims**

1. A process for preparing a compound selected from the group consisting of (poly)ethylene glycols, (poly)ethylene glycol monoethers, cyclic ethers and mixtures thereof by hydrolytically cleaving a polyethylene glycol monoether corresponding to the formula:



wherein

n is a number from 3 to about 10; and

R is lower alkyl

comprising

(1) forming a mixture comprising the polyethylene glycol monoether and water in a weight ratio of monoether:water of from about 1:1 to about 6:1; and

(2) contacting the mixture with a hydrolytic cleavage catalyst comprising a solid, porous metal oxide selected from the group consisting of metal oxides of transition metals and metals of Group IIIA of the Periodic Table, at an elevated temperature from about 170° C. to about 320° C.

4,806,659

TANNIN COMPOUNDS

Nishioka Itsuo; Nonaka Genichiro; Fujiwara Michihiro, and Ueki Showa, all of Fukuoka, Japan, assignors to Kabushiki Kaisha Tsumura Juntendo, Tokyo, Japan

PCT No. PCT/JP86/00116, § 371 Date Nov. 7, 1986, § 102(e) Date Nov. 7, 1986, PCT Pub. No. WO86/05180, PCT Pub. Date Sep. 12, 1986

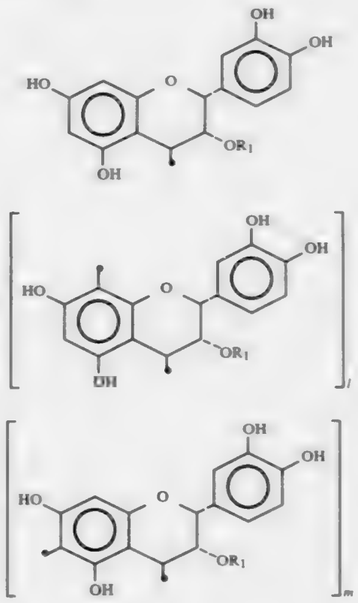
PCT Filed Mar. 7, 1986, Ser. No. 935,230

Claims priority, application Japan, Mar. 8, 1985, 60-44625

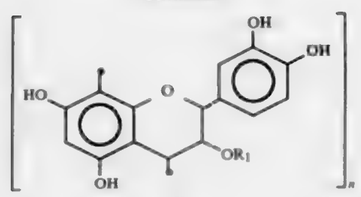
Int. Cl.[4] C07D *311/62*

U.S. Cl. 549—399 **1 Claim**

1. A tannin represented by the following general octameric structural formula:



-continued

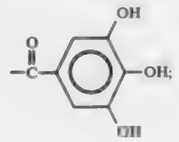


X

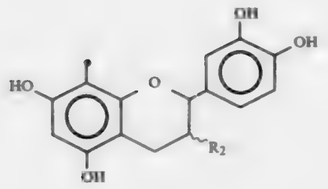
wherein

l is an integer from 0 to 6, m is 0 or 1, n is an integer from 0 to 6, and l+m+n=6;

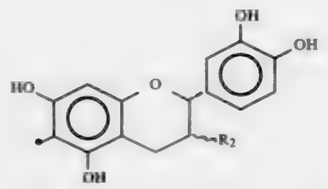
R_1 is hydrogen or G, G representing galloyl group



X is



or



R_2 is OH, . . . OG, or . . . OH; and filled dots mean bonding sites, and there is no possibility to bond between the mutual fourth positions in each unit, and there is only one bonding between the fourth position and the sixth position; there being a total of three galloyl groups in the tannin.

4,806,660

AURONE OXYPROPANOLAMINES

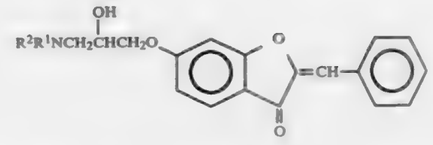
Edwin S. Wu, Rochester, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 118,385, Nov. 6, 1987, abandoned. This application Jan. 21, 1988, Ser. No. 211,116

Int. Cl.⁴ C07D *307/83*

U.S. Cl. 549—466 **4 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein

R^1 is hydrogen or C_1–C_4 alkyl, and

R^2 is C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_7–C_9 phenylalkyl, or C_7–C_9 phenylalkyl mono- or disubstituted with a substituent selected from the group consisting of halogen, C_1–C_3 alkyl, C_1–C_3 alkoxy and hydroxy.

4,806,661

CHROMANEMELONATE ESTERS

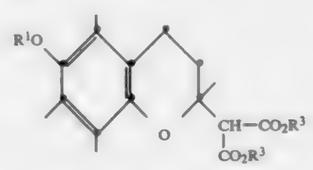
Noal Cohen, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 932,970, Nov. 2, 1986, Pat. No. 4,752,646, Continuation-in-part of Ser. No. 821,590, Jan. 23, 1986, abandoned. This application Jan. 21, 1988, Ser. No. 146,551

Int. Cl.⁴ C07D *311/72*

U.S. Cl. 549—407 **3 Claims**

1. A compound of the formula:



wherein R^3 is lower alkyl; and R^1 is methyl or a hydroxy protecting group removable by basic hydrolysis or hydrogenolysis.

4,806,662

FLUIDS HAVING AN OXETANE STRUCTURE AND IMPROVED CHARACTERISTICS FOR SPECIAL APPLICATIONS

Gianangelo Bargigia; Gerardo Caporiccio; Claudio Tonelli, and Luciano Flabbi, all of Milan, Italy, assignors to Ausimont S.p.A., Milan, Italy

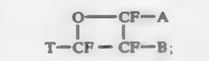
Filed Feb. 12, 1986, Ser. No. 828,682

Claims priority, application Italy, Feb. 13, 1985, 19496 A/85

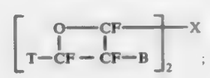
Int. Cl.⁴ C07D *305/08*

U.S. Cl. 549—511 **2 Claims**

1. Fluids having an oxetane structure, liquid up to a temperature of at least −70° C., having a boiling temperature of at least +50° C. and defined over a range of at maximum 4° C., and having a formula selected from amongst the following classes of compounds:

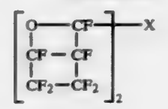


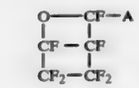
(1)



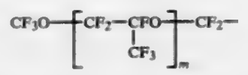
(2)

-continued

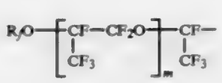




wherein A=F, or a perfluoroalkyl radical R_f having 1 to 8 carbon atoms, or a group OR_f, or a group:



in which m is an integer from 0 to 5, or a group:

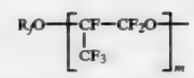


in which

R_f and m have the same meanings as defined hereinabove;

B and T either like or unlike each other are:

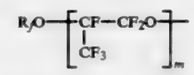
F, a perfluoroalkyl radical with 1 to 7 carbon atoms, a group



in which m and R_f have the same meanings as defined hereinbefore, X is a group:

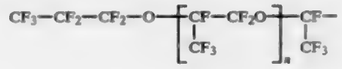
$$—CF_2O(CF_2O)_p(C_2F_4O)_q—CF_2—$$

in which p and q, either like or unlike each other, are integers from 0 to 5, and where the sum p+q is at least 1, or X is a group $—(CF_2)_r—$, in which r is an integer from 1 to 8; and being characterized in that at least one of the groups A, B, T in Class 1, or B and T in Class 2, or group A in Class 4, is different from fluorine and in that at least one of the groups A, B, T in Class 1, or B, T and X in Class 2, or X in Class 3, or A in class 4, contains one or more oxygen atoms; and furthermore characterized in that when one of the radicals B or T is equal to the group:



then the other is equal to F.

2. Fluids having an oxetane structure according to claim 1, of Class (1), in which A=CF_3—CF_2—, $CF_3(CF_2)_6$—, or

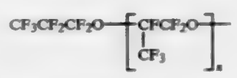


in which

n=0, 1, 2;

B and T, either like or unlike each other, are selected from: —F, $—CF_3$, $CF_3(CF_2)_4$—, or one of B and T is

(3)



(4) wherein n=0, 1, 2, the other being F.

4,806,663

CERTAIN 3-SUBSTITUTED 2-ALKYL BENZOFURAN DERIVATIVES

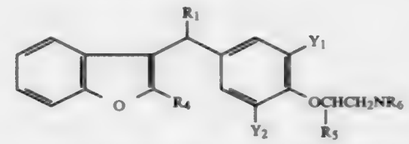
Thomas P. Kennedy, Memphis, and George W. Kabalka, Knoxville, both of Tenn., assignors to The University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Apr. 6, 1987, Ser. No. 35,049

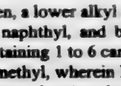
Int. Cl.⁴ C07D *307/81*

U.S. Cl. 549—471 **9 Claims**

1. A compound of the formula:



and pharmaceutically acceptable addition salts thereof wherein R_1 is selcted from the class consisting of hydrogen, a group having the formula $—OR_2$ in which R_2 is a lower alkyl group or an aryl group consisting of phenyl, naphthyl, and benzyl, and a group having the formula



in which R_3 is hydrogen, a lower alkyl group, or an aryl group consisting of phenyl, naphthyl, and benzyl wherein R_4 is a lower aklyl group containing 1 to 6 carbon atoms, wherein R_5 is either hydrogen or methyl, wherein NR_6 is a group selected from the class consisting of amino, lower mono and dialkylamino, piperidino, pyrrolidino, and morpholino groups and wherein Y_1 and Y_2 are identical and are selected from the class consisting of hydrogen and halogen.

4,806,664

NOVEL TETRAPHENYLDITHIOLENE COMPLEXES, ASYMMETRICALLY SUBSTITUTED BENZOINS, AND OPTICAL RECORDING MATERIALS CONTAINING THE NOVEL COMPLEXES

Wolfgang Schrott, Ludwigshafen; Peter Neumann, Wiesloch; Bernhard Albert, Maxdorf; Michael Thomas, Weisenheim am Berg; Helmut Berzynski, Bad Durkheim; Klaus-Dieter Schomann, Ludwigshafen, and Harald Kappelmeier, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

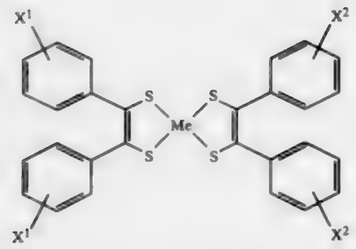
Continuation of Ser. No. 831,414, Feb. 20, 1986, abandoned. This application Jan. 8, 1987, Ser. No. 57,640

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1985, 3505751

Int. Cl.⁴ G03C *1/50, 1/72;* **C07F** *17/02*

U.S. Cl. 556—136 **6 Claims**

1. A tetraphenyldithiolene complex of the formula



where one radical X^1 and one radical X^2 are each straight-chain or branched C_{5-30} alkyl in the 4-position, the other radical X^1 and the other radical X^2 are each fluorine, chlorine or bromine in the 2-, 3- or 4-position, and Me is nickel, palladium or platinum.

4,806,665

PREPARATION OF SILICA SOL

Robert D. Jones, Naperville, and Carran M. Simpson, St. Charles, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Nov. 5, 1987, Ser. No. 118,371
Int. Cl.⁴ C07F 7/08, 7/10
U.S. Cl. 556—413 **7 Claims**

1. A low sodium aqueous silica sol containing no more than 150 ppm of an alkali metal, and having a silica concentration of 5–55 weight % SiO_2; said colloidal silica having a particle size greater than 2 nm; produced by a method comprising the steps of:

A. providing a 0.1%–5% aqueous solution of a lower alkanol amine;

B. heating the aqueous solution of the lower alkanol amine to at least 80° C., but less than reflux temperatures;

C. adding to the heated aqueous solution of the lower alkanol amine a 2 to 10% by weight aqueous solution of silicic acid in a volume ratio of from 2:1 to 15:1, the mole ratio of SiO_2 to lower alkanol amine being in the range of 1:1 to 150:1; and

D. concentrating the dilute aqueous sol by either distillation or ultrafiltration so as to recover an aqueous colloidal silica sol which contains 5–55% by weight SiO_2 having pH of 8–10.5 and containing less than 150 ppm alkali metal.

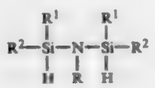
4,806,666

FUNCTIONAL 1,3-DIHYDROGENO DISILAZANES

Jean-Paul Pillot, Castas; Eric Bacque, Talence; Jacques Dunogues, Talence; Claude Biran, Talence, and Pierre Oiry, Bordeaux, all of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Filed May 26, 1987, Ser. No. 54,300
Claims priority, application France, May 26, 1986, 86 07479
Int. Cl.⁴ C07F 7/10
U.S. Cl. 556—412 **12 Claims**

1. A compound having the formula:



wherein,

R is selected from the group consisting of hydrogen, a hydrocarbon radical, a hydrocarbon radical substituted with a functional group and a group of the formula:



R^1 is selected from the group consisting of a hydrocarbon radical and a hydrocarbon radical substituted with a functional group;

R^2 is a halogen;

R^2 may also be OR when R is a hydrocarbon radical; and

R^2 may be NRR^1 when R and R^1 are both hydrocarbon radicals.

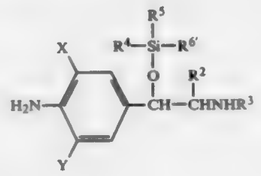
4,806,667

PROMOTING PRODUCTION OF USEFUL LIVESTOCK WITH SILYLATED AMINOPHENYLETHYLAMINE DERIVATIVES

Horst Böshagen; Jürgen Stoltefuss, both of Haan; Friedrich Berschauer, Wuppertal; Anno de Jong, Wuppertal, and Martin Scheer, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 709,624, Mar. 8, 1985, Pat. No. 4,670,423. This application Dec. 4, 1986, Ser. No. 937,759
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1985, 3543636; Dec. 11, 1985, 3543637; Mar. 22, 1986, 3609812
The portion of the term of this patent subsequent to Jun. 2, 2004, has been disclaimed.
Int. Cl.⁴ C07F 7/10
U.S. Cl. 556—424 **13 Claims**

1. A method for modifying the growth of useful livestock comprising administering to such livestock an amount effective therefor of a monosilylated aminophenylethylamine derivative of the formula



in which

X and Y are identical or different and represent hydrogen or CN,

R^2 represents hydrogen or methyl,

R^3 represents t-butyl, isopropyl, monofluoro-t-butyl or 1-cyclohexyl-ethyl, and

R^4, R^5 and R^6 denote a straight-chain or branched alkyl radical,

or a physiologically tolerated salt thereof.

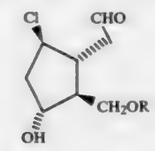
4,806,668

PROCESS FOR THE PRODUCTION OF 9BETA-CHLOROPROSTAGLANDINS

Bernd Radüchel; Werner Skuballa, and Helmut Vorbrueggen, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

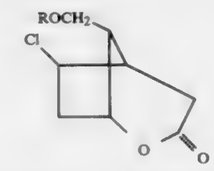
PCT No. PCT/DE86/00483, § 371 Date Aug. 7, 1987, § 102(e) Date Aug. 7, 1987, PCT Pub. No. WO87/03582, PCT Pub. Date Jun. 18, 1987
PCT Filed Nov. 28, 1986, Ser. No. 110,745
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1985, 3543991
Int. Cl.⁴ C07F 7/08, 7/18
U.S. Cl. 556—436 **2 Claims**

1. Process for the production of (5-chloro-3-hydroxycyclopentyl)acetaldehydes of formula II



II

in which R signifies a benzyl radical, a tert-butyldimethylsilyl radical or a tert-butyldiphenylsilyl radical, characterized in that a compound of formula I



I

in which R has the meanings already mentioned, is reduced in the presence of a reduction agent.

4,806,669

INBRED CORN LINE PHK05

Vladimir Puskaric, Woodstock, Canada, assignor to Pioneer Hi-Bred International, Inc., Johnston, Iowa

Filed Jan. 27, 1988, Ser. No. 148,894
Int. Cl.⁴ A01H 1/06
U.S. Cl. 800—1 **12 Claims**

1. An inbred corn line designated PHK05.

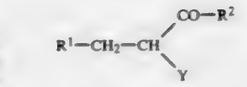
4,806,670

PREPARATION OF α-SUBSTITUTED β-DICARBONYL AND β-CYANOCARBONYL COMPOUNDS

Walter Grasslich, Edingen-Neckarhausen; Klaus Halbritter, Mannheim, and Gerd Heilen, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 782,615, Oct. 1, 1985, Pat. No. 4,684,743, which is a continuation of Ser. No. 666,477, Oct. 30, 1984, abandoned, which is a continuation-in-part of Ser. No. 515,880, Jul. 21, 1983, abandoned. This application May 4, 1987, Ser. No. 45,420
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1982, 3227388
The portion of the term of this patent subsequent to Aug. 4, 2004, has been disclaimed.
Int. Cl.⁴ C07C 120/00, 69/38
U.S. Cl. 558—371 **4 Claims**

1. A process for the preparation of an α-substituted compound of the formula I

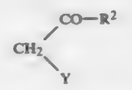


I

where R^1 is alkyl of 1–20 carbons, Y is —$COOR^3$, —CO—R^3 or —CN, where R^2 and R^3 are each C_1–C_{10}-alkyl, which process comprises: reacting an aldehyde II

R^1—CHO II

wth a compound III



III

where R^1, R^2 and Y have the meanings set forth above, in the liquid phase at a temperature of 25° to 180° C. in the presence of hydrogen, a noble metal hydrogenation catalyst and a condensation catalyst consisting essentially of an oxide or phosphate of magnesium, aluminum, titanium, zinc or a rare earth metal, said reaction taking place in the essential absence of a homogeneous catalyst component.

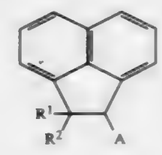
4,806,671

SUBSTITUTED ACENAPHTHENES AND THEIR USE AS INHIBITORS OF PHOSPHOLIPASE A_2

William C. Ripka, Wilmington, Del., and William J. Sipio, Linderwold, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 7, 1986, Ser. No. 860,428
Int. Cl.⁴ C07C 121/52, 45/00
U.S. Cl. 558—411 **13 Claims**

1. A substituted acenaphthene phospholipase A_2 inhibitor of the following formula:



wherein

R^1 is H or C_1–C_3 alkyl;

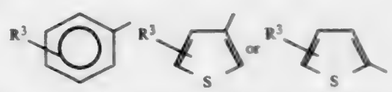
R^2 is C_3–C_{10} alkyl, C_4–C_{10} cycloalkyl, or aryl$(CH_2)_n$; and

R^1 and R^2, taken together, may be aryl—CH═;

where

n=1–4, and

aryl is



R^3 is H, CN, NO_2, CO-phenyl, $S(O)_eR^5$, halogen, $NHCOR^4$, CO_2R^4, OR^4, $SO_2N(R^4)_2$, or NR^6R^7, wherein e=0, 1 or 2;

R^4 is H, C_1–C_6 alkyl, or phenyl;

R^5 is C_1–C_6 alkyl, phenyl;

R^6 and R^7, independently are H or C_1–C_4 alkyl;

and wherein

A is ═O, ═CHR^8,

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$=NOR^8$

R^8 is H, C_1–C_6 alkyl, or $(CH_2)_mW$;

R^9 is C_1–C_6 alkyl, $(CH_2)_mW$, or $-X(CH_2)_mW$;

where

m=1–6, X is O, S,

W is $-OR^{10}$, $-COR^{10}$, $-OCOR^{10}$, $-OCOOR^{10}$, $NR^{11}R^{12}$, or $CONR^{11}R^{12}$;

R^{10} is C_1–C_6 alkyl;

R^{11}, R^{12}, independently are H, C_1–C_6 alkyl;

provided that:

1. when A=0, R^1 and R^2, taken together, are not aryl —CH=, and R^2 is not C_3–C_{10} alkyl;
2. where A is $=NOR^8$, R^8 is not H;
3. when R^8 is hydrogen, then R^2 is not C_3–C_{10} alkyl or C_4–C_{10} cycloalkyl;
4. when R^2 is 4—$FC_6H_4CH_2$, 3—$CH_3CONHC_6H_4CH_2$, or 4—$NO_2C_6H_4CH_2$, then A is not $=CH_2$;
5. when A is $CH_2NR^{11}R^{12}$, R^2 is not alkyl.

13. The compound of claim **1** which is 1,2-Dihydro-1-[(3-cyanophenyl)methyl)]-1-methyl-2-methylene acenaphthene.

4,806,672

PROCESS FOR THE CONTINUOUS PRODUCTION OF ISOPHTHALODINITRILE

Enrico Postoglio, Brescia; Sandro Parodi, Nuvolento; Giordano Donelli, and Giancarlo Caretti, both of Brescia, all of Italy, assignors to Caffaro S.p.A. Societa Per l'Industria Chimica ed Electtrochimica, Milan, Italy

Filed Jan. 26, 1988, Ser. No. 148,544

Claims priority, application Italy, Feb. 25, 1987, 19490 A/87

Int. Cl.⁴ C07C *120/00, 120/08*

U.S. Cl. 558—311 **7 Claims**

1. A process for the preparation of isophthalodinitrile by amidation and simultaneous dehydration of a dialkyl ester of isphthalic acid in vapor phase on a fixed bed of a dehydration catalyst, wherein the dimethyl ester of isophthalic acid is caused to vaporize continuously in a flow of inert gas or of preheated recycling gas, and sent, separately or together with a preheated flow of ammonia in excess with respect to the theoretical required amount, into a fixed bed of a dehydration catalyst kept at a thermal condition regime variable between the temperature of the base, lower than 310° C., and that of the head at temperature comprised between 350° and 450° C.

4,806,673

PREPARATION OF CYANOALKYLPHENOLS FROM BISPHENOLS

Ted A. Morgan, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 10, 1986, Ser. No. 940,302

Int. Cl.⁴ C07C *121/52*

U.S. Cl. 558—332 **19 Claims**

18. A process wherein a solventless mixture of Bisphenol A and cyanide ion in the form of sodium cyanide is heated in a closed vessel to about 185° C. and maintained at that temperature for about 20 hours to produce 4-(1-cyano-1-methylethyl)-phenol with a conversion of about 100 percent and a selectivity of about 80 percent based on Bisphenol A.

4,806,674

PREPARATION OF URETHANES BY OXIDATIVE CARBONYLATION OF AMINES USING COPPER CARBOXYLATES AS OXIDANTS

Francis J. Waller, Wilmington, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 703,425, Feb. 20, 1985, abandoned. This application Jan. 27, 1986, Ser. No. 821,324

Int. Cl.⁴ C07C *125/06*

U.S. Cl. 560—024 **34 Claims**

1. A process for preparing urethane which comprises reacting a primary or secondary amine, an alcohol and carbon monoxide at a temperature of about 50° to 120° C. and a pressure of about 0.1 to 10.0 MPa and in the presence of a catalytic amount of a compound or complex of a metal selected from palladium, platinum, and rhodium and a stoichiometric amount of a copper(II) salt of a monocarboxylic acid having from 1 to 20 carbon atoms, the metal compound or complex being rhodium trichloride, platinum (II) chloride, or a compound or complex of palladium when the amine is an aromatic or aromatic heterocyclic amine; with the proviso that, when the organic moiety of the amine is substituted, the substituent is an alkyl, alkoxy, halo or aryl group and the number of substituents is 1 or 2.

4,806,675

METHOD OF MAKING MIXED PENTAERYTHRITOL ESTERS HAVING UP TO 75 PERCENT THIO-CONTAINING SIDE CHAINS

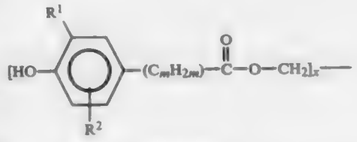
Neil Dunski, Creve Coeur, and Ali A. Bazzi, Chesterfield, both of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

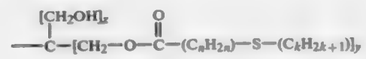
Continuation of Ser. No. 871,007, Jun. 5, 1986, Pat. No. 4,734,519. This application Oct. 19, 1987, Ser. No. 111,470

Int. Cl.⁴ C07C *149/20*

U.S. Cl. 560—75 **13 Claims**

1. A method for making the compound of the formula:





wherein

R^1 is methyl, ethyl, an alpha-branched acyclic alkyl group having from 3 to 10 carbon atoms, or a cycloalkyl group having from 5 to 12 carbon atoms;

R^2 is hydrogen, methyl, ethyl, an alpha-branched acyclic alkyl group having from 3 to 10 carbon atoms, or a cycloalkyl group having from 5 to 12 carbon atoms and R^2 is meta or para to R^1;

n is an integer from 1 to about 10;

k is an integer from 1 to about 30;

x is 1, 2 or 3;

y is 1, 2 or 3; and

z is zero, 1 or 2;

subject to the provisos that

(a) the sum of x, y and z is 4;

(b) when z is zero, y is 1, 2 or 3 and x is 4-y;

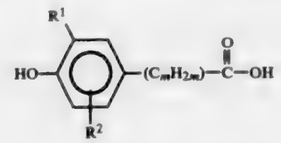
(c) when z is 2, each of x and y is 1;

(d) when x is 2 or 3, each R^1 is selected independently of each other R^1, each R^2 is selected independently of each other R^2 and each m is selected independently of each other m; and

(e) when y is 2 or 3, each n is selected independently of each other n and each k is selected independently of each other k

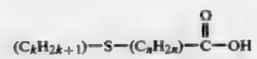
comprising esterification of pentaerythritol by reacting it with

(a) at least one mono- or dialkyl -4-hydroxyphenyl-alkanoic acid having the formula



wherein R^1, R^2 and m are as defined above and

(b) at least one member selected from the group consisting of alkylthioalkanoic acids, acid chlorides thereof, and lower alkyl esters thereof wherein said alkylthioalkanoic acids have the formula



wherein k and n are as defined above.

4,806,676

CARBONYLATION PROCESS FOR PREPARATION OF AROMATIC CARBOXYLIC ESTERS AND AN ALKYL IODIDE

Guy R. Steinmetz, and Mark Rule, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 20, 1988, Ser. No. 209,120

Int. Cl.⁴ C07C *67/37, 17/00*

U.S. Cl. 560—80 **13 Claims**

1. A process comprising preparing an aromatic carboxylic ester and an alkyl iodide by carbonylating an aromatic iodide under aromatic carboxylic ester and an alkyl iodide-forming conditions of temperature and pressure in the presence of an ether, a catalytic amount of a transition metal selected from the group consisting of palladium, rhodium, nickel, ruthenium, and iridium and a strong acid promoter which does not contain strongly nucleophilic conjugate bases.

4,806,677

HARDENING COMPONENT FOR SYNTHETIC RESINS WHICH CONTAIN GROUPS WHICH ARE CAPABLE OF FORMING AMIDES OR ESTERS WITH CARBOXYLIC ACIDS

Gerd Walz, Wiesbaden, and Helmut Pfaus, Taunusstein, both of Fed. Rep. of Germany, assignors to Hoechst AG, Fed. Rep. of Germany

Filed Jan. 29, 1987, Ser. No. 8,286

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1986, 3602981

Int. Cl.⁴ C07C *69/00*

U.S. Cl. 560—125 **18 Claims**

1. A hardening component for synthetic resins which contain groups which are capable of forming at least one of the group consisting of esters and amides with carboxylic acids, the hardening component comprising the produce (A) of the Michael addition of a compound (B), containing Michael addition-capable groups and ester groups, to a compound (C), which contains at least two Michael addition-capable double bonds, wherein the product (A) has an average of at least one polymerization-capable of double bond and at least two transesterification- or transamidation-capable ester groups per molecule and wherein the compound (B) represents a product of the reaction of (b1) CH-active alkyl esters of the formula X—CH_2—COOR wherein X is —COOR, —CN or CH_3CO— and R is alkyl of 1 to 8 carbon atoms and (b2) polyisocyanates with at least one mole of (b1) per isocyanate group and at least one (b1) per mole of compound (C).

4,806,678

PROCESS FOR THE HYDROFORMYLATION OF ALLYLIC ESTERS USING A COBALT CATALYST

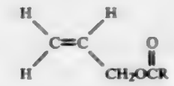
Jiang-Jen Lin, Round Rock, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 13, 1983, Ser. No. 541,619

Int. Cl.⁴ C07C *67/38, 69/67*

U.S. Cl. 560—266 **5 Claims**

1. A process for preparing 4-acyloxybutyraldehydes which comprises hydroformylating an allylic ester of the formula



where R is selected form the group consisting of hydrogen and an alkyl radical containing 1 to 6 carbon atoms, by reaction with carbon monoxide and hydrogen in the presence of a cobalt carbonyl compound and a promoter selected from the group consisting of triphenyl germane, tetraphenyl germane, phenyl sulfide and succinonitrile in a polar solvent from the group consisting of methyl isobutyl ketone, 2-undecanone and phenyl ether at a temperature in the range from about 25° C. to 125° C. and at a pressure in the range from about 500 to 1000 psig.

4,806,679

ISOMERIZATION OF DIACYLOXYBUTENES

Wolfgang Hoelderich, Frankenthal; Rolf Fischer, Heidelberg; Otto Hertel, Ludwigshafen; Wolf D. Mross, Frankenthal, and Hans-Martin Weitz, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

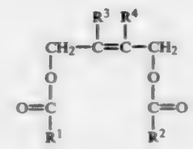
Filed Jul. 23, 1984, Ser. No. 633,279

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1983, 3326648

Int. Cl.⁴ C07C *67/293, 69/16, 69/28*

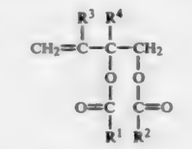
U.S. Cl. 560—262 **5 Claims**

1. A process for converting diacyloxybutenes into one another in the gas phase or liquid phase at from 100° to 350° C. under atmospheric or superatmospheric pressure in the presence of a catalyst, wherein a 1,4-diacyloxybut-2-ene of the formula I



I

and a 3,4-diacyloxybut-1-ene of the formula II



II

where R^1 and R^2 can be identical or different and are each hydrogen or alkyl of 1 to 3 carbon atoms, and R^3 and R^4 can be identical or different and are each hydrogen or methyl, are converted into one another in the presence of a zeolite catalyst.

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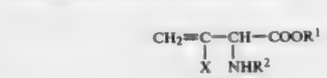
4,806,680

3-HALOVINYLGLYCINE ANTIBACTERIAL AGENTS

David Taub, Metuchen, N.J.; Robert H. Abeles, Newton Centre, Mass., and Arthur A. Patchett, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 840,254, Mar. 17, 1986. This application Nov. 12, 1987, Ser. No. 119,527
Int. Cl.[4] C07C *101/06*
U.S. Cl. 562—574 2 Claims

1. A process for preparing D-, L- or DL-3-halovinylglycine compounds of the following formulas:



where X is halo, R^1=H, R^2=H comprising the steps of contacting an N-protected D-, L- or DL-vinylglycine ester with an arylselenenyl halide, oxidizing the adduct to the corresponding selenenyl oxide, thermolyzing the latter to yield the corresponding-N-protected 3-halovinylglycine ester, deprotecting the latter by treatment with mineral acid to yield the corresponding 3-halovinylglycine, as the acid salt, and converting to the free amino having the above formula by treatment with propylene oxide in methanol.

4,806,681

PROCESS FOR PRODUCING CINNAMIC ACID FROM 1,1,1,3-TETRACHLORO-3-PHENYLPROPANE

Milan Hájek, Prague, and Premysl Silhav , Ricany, both of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Czechoslovakia

Continuation of Ser. No. 752,975, Jul. 8, 1985, abandoned. This application Jun. 4, 1987, Ser. No. 58,610
Claims priority, application Czechoslovakia, Jul. 12, 1984, 5410-84
Int. Cl.[4] C07C *51/093*
U.S. Cl. 562—422 2 Claims

1. A process for preparing cinnamic acid by hydrolyzing 1,1,1,3-tetrachloro-3-phenylpropane consisting essentially of heating the 1,1,1,3-tetrachloro-3-phenylpropane in the presence of an acidic composition consisting essentially of from 0.1 to 5 parts by weight of acetic acid having a concentration of 80% to 100% and a strong acid having a concentration of 50 to 100%, which is present in an amount up to one part by weight, said strong acid being selected from the group consisting of sulfuric, phosphoric, and para-toluenesulphonic acid, said heating being at a temperature in the range from 80° to 150° C., causing evolution of hydrogen chloride, gradually adding water to the reaction mixture, in an amount up to 10 parts by weight, during the period of hydrogen chloride evolution, and subsequently separating the cinnamic acid.

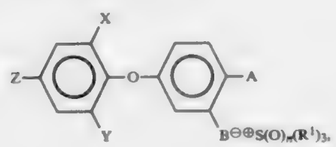
4,806,682

SULFONIUM SALTS OF DIPHENYL ETHERS

Roy Y. Yih, Doylestown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 419,360, Sep. 17, 1982, abandoned. This application Dec. 22, 1986, Ser. No. 945,171
Int. Cl.[4] C07C *65/00*
U.S. Cl. 562—474 32 Claims

1. A compound of the formula



wherein:
X and Y are independently a hydrogen atom, a halogen atom, a trifluoromethyl group, an alkyl group or a cyano group;
Z is a halogen atom, a trifluoromethyl group, an alkyl group, a cyano group or $—S(O)_mR$ wherein m is 0, 1 or 2 and R is an alkyl group;
A is a halogen atom, a nitro group or a cyano group;
B is a negatively charged organic radical selected from the group consisting of a carboxy group, $—COO\ominus$, a sulfonamide group, $C(O)N\ominus SO_2R^3$, and a R^3 organic moiety substituted with a carboxy group, $—R^3CO_2\ominus$, or a sulfonamide group, $—R^3\text{-}C(0)NSO_2R^3$, wherein R^3 is an organic radical containing an alkyl group, alkenyl group, alkynyl group, alkylamino group, alkoxy group, aryl group, carbalkyl group, hydroxyalkyl group, alkoxyalkyl group, haloalkyl group, aryl group, alkylaryl group, a substituted aryl group or a substituted alkylaryl group having up to two substitutions wherein the substitution is selected from the group consisting of a halogen atom, a trifluoromethyl group, a cyano group, a nitro group, a carboxyalkyl group, an alkoxy group, an alkyl group, an alkenyl group, an alkynyl group, a thioalkyl group, a phosphite group and an amino group;
S is sulfur;
O is oxygen;
n is 0 or 1; and
R^1 is an alkyl group, an aryl group or $—N(R^2)_2$ wherein R^2 is an alkyl group or an aryl group.

4,806,683

PREPARATION PROCESS OF CINNAMIC ACIDS

Katsuharu Miyata, Yokohama; Usaji Takaki, Fujisawa, and Toshio Matsuhisa, Shimonoseki, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Feb. 20, 1987, Ser. No. 16,736
Claims priority, application Japan, Feb. 28, 1986, 61-41977
Int. Cl.[4] C07C *63/64*
U.S. Cl. 562—495 4 Claims

1. In a process of preparing a cinnamic acid by the hydrolysis of a cinnamate ester with an alkali, the improvement which comprises starting the hydrolysis reaction of the cinnamate ester with the alkali by use of water as a solvent in a heterogeneous binary-phase liquid system to obtain an aqueous alkaline solution of an alkali cinnamate said hydrolysis reaction being conducted in the absence of any organic solvent, and the concentration of said alkali cinnamate being 1 to 20 weight percent in the aqueous solution, and precipitating the cinnamic acid by conducting an acidifying reaction of said aqueous alkaline solution with a mineral acid so as to keep a pH value of not more than 4 in a resulting liquid, the concentration of the cinnamic acid being 12 to 20 weight percent in the suspension.

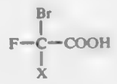
4,806,684

PROCESS FOR THE PREPARATION OF BROMOFLUOROACETIC ACIDS

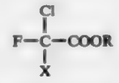
Gilles Drivon, Saint-Martin-en-Haut, and Bernard Gurtner, Grenoble, both of France, assignors to Atochem, Puteaux, France

Filed Sep. 3, 1986, Ser. No. 903,550
Claims priority, application France, Sep. 13, 1985, 85 13611
Int. Cl.[4] C07C *51/00*
U.S. Cl. 562—605 19 Claims

1. A process for preparing bromofluoroacetic acid of formula:



wherein X is hydrogen, which comprises reacting a compound of the formula (I):



wherein R is group, with gaseous hydrogen bromide in a concentrated hydrobromic acid medium at a sufficient temperature and pressure and for a sufficient time to obtain bromofluoroacetic acid.

4,806,685

1,1,2-TRIPHENYLPROPANE AND -PROPENE DERIVATIVES

Gisella Abraham, Szeged; Tibor Horvath, Budapest; Lajos Toldy, Budapest; Janos Borvendeg, Budapest; Endre Csanyi, Budapest; Eva Kiss, Budapest; Ilona S. nee Hermann, Budapest, and Kalman Tory, Budapest, all of Hungary, assignors to Gyogyszerkutato Intezet/Pharmaceutical Research Institute, Budapest, Hungary

Continuation of Ser. No. 763,078, Aug. 5, 1985, abandoned, which is a continuation of Ser. No. 490,734, May 4, 1983, abandoned, which is a continuation of Ser. No. 185,679, Sep. 10, 1980, abandoned. This application Jan. 31, 1986, Ser. No. 825,777
Int. Cl.[4] C07C *93/06*
U.S. Cl. 564—324 1 Claim

1. (E)-1,2-diphenyl-3,3,3-trifluoro-1-[4-(2-/2-hydroxyethylamino/-ethoxy)-phenyl]-propene.

4,806,686

PREPARATION OF RIBITYLXYLIDINE

Hansgeorg Ernst, Ludwigshafen; Hartmut Leininger, Groenaa, Denmark, and Joachim Paust, Neuhofen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 27, 1987, Ser. No. 42,823
Claims priority, application Fed. Rep. of Germany, May 10, 1986, 3615834
Int. Cl.[4] C07C *85/02*
U.S. Cl. 564—398 6 Claims

1. A process for preparing N-(D)-ribitylxylidine, which comprises reacting D-ribose with 3,4-dimethylaniline or 3,4-dimethyl-1-nitrobenzene in aqueous or aqueous/organic solution or in solution in a water-soluble organic solvent under a hydrogen pressure of about 2 to 9 bar and a temperature of from about 40° to 80° C., and in the presence of a hydrogenation catalyst and a boric acid compound; and wherein said boric acid compound is used in a catalytic amount of from about 6–35 mmol, per mole of ribose.

4,806,687

CATALYTIC HYDRODESULFURIZATION OF ORTHO-AMINOBENZYLSULFIDES

Terry M. Balthazor, University City, and Samuel J. Tremont, Manchester, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 848,323, Apr. 2, 1986, abandoned, which is a continuation of Ser. No. 745,992, Jun. 17, 1985, abandoned, which is a continuation of Ser. No. 496,749, May 20, 1983, abandoned. This application Sep. 30, 1987, Ser. No. 104,593
Int. Cl.[4] C07C *85/24*
U.S. Cl. 564—442 14 Claims

1. A process for preparing 2-trifluoromethyl-6-alkylanilines which comprises reacting a 3-trifluoromethyl-2-aminobenzyl sulfide with hydrogen in the presence of an unsupported cobalt molybdenum oxide catalyst at a temperature and hydrogen pressure sufficient to effect cleavage of the sulfur-containing moiety from the benzyl moiety producing a 2-trifluoromethyl-6-alkylaniline.

4,806,688

PREPARATION OF DIAMINO- AND DIALKYLAMINOBENZENEDIOLS

Muthiah N. Inbasekaran, and Robert M. Strom, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 16, 1986, Ser. No. 864,063
Int. Cl.[4] C07C *85/24*
U.S. Cl. 564—443 25 Claims

1. A process for the preparation of diamino- and dialkylaminobenzenediols comprising contacting a diaminodihalo- or dialkylaminodihalobenzoquinone with a hydrogenating agent in the presence of a solvent and a noble metal-containing catalyst under conditions such that the amine groups on the benzoquinone are not protonated when the reaction commences but the amine groups capture hydrogen halide produced as the reaction proceeds such that the corresponding benzenediol is produced.

4,806,689

ZEOLITE RHO AS CATALYST FOR CONVERSION OF METHANOL AND AMMONIA TO DIMETHYLAMINE

Thurman E. Gier; Robert D. Shannon, both of Chadds Ford, Pa.; George C. Sonnichsen, Wilmington, Del.; David R. Corbin, West Chester, Pa., and Michael Keane, Jr., Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 672,489, Nov. 16, 1984, abandoned. This application Oct. 3, 1985, Ser. No. 782,269
Int. Cl.[4] C07C *85/02, 85/06*
U.S. Cl. 564—474 26 Claims

1. A process for producing dimethylamine comprising reacting methanol and/or dimethylether and ammonia, in amounts sufficient to provide a carbon/nitrogen (C/N) ratio from about 0.2 to about 1.5, at a temperature from about 250° C. to about 450° C., in the presence of a catalytic amount of an acidic zeolite rho, provided that the zeolite rho has not been modified by treatment with one or more compounds containing at least one element selected from the group consisting of silicon, aluminum, phosphorus, and boron, to deposit thereon at least 0.05 weight percent of the element.

4,806,690

METHOD OF PRODUCING AMINES

Robert G. Bowman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 13, 1985, Ser. No. 732,978
Int. Cl.[4] C07C *85/06*
U.S. Cl. 564—480 9 Claims

1. In a method of preparing amines, the method comprising contacting at reactive conditions at least one alcohol, aldehyde or ketone, or a mixture thereof, with an aminating agent in the presence of a catalyst, the improvement wherein the catalyst comprises, calculated in mole percent and on an oxide-free basis:
(1) from about 6 to about 17 percent cobalt;
(2) from about 75 to about 95 percent copper; and
(3) from about 1 to about 16 percent of a third component selected from the group consisting of iron, zinc, zirconium and mixtures thereof.

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4,806,691

PROCESS FOR THE PREPARATION OF TERTIARY PHOSPHINE OXIDES

Erwin Weiss, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 756,323, Jul. 18, 1985, Pat. No. 4,675,446. This application Sep. 9, 1986, Ser. No. 905,170

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1985, 3532360

The portion of the term of this patent subsequent to Jun. 23, 2004, has been disclaimed.

Int. Cl.⁴ C07F *9/53*

U.S. Cl. 568—14 **19 Claims**

1. A process for the preparation of tertiary phosphine oxides which comprises treating a tertiary phosphine sulfide using hydrogen peroxide in a solvent which contains about 2 to 20% by weight, of at least one lower aliphatic carboxylic acid, and the remainder of at least one mono- or polyhydric aliphatic or cycloaliphatic alcohol.

4,806,692

PROCESS FOR PRODUCING AN OXYGEN-CONTAINING ORGANIC COMPOUND FROM OLEFINS

Mutsuo Yamada; Taiji Kamiguchi; Hirotoshi Tanimoto, all of Kure; Yoshijiro Arikawa, Yokohama; Hiroyuki Kaku, Hiroshima, and Shigehito Takamoto, Kure, all of Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1986, Ser. No. 820,004

Claims priority, application Japan, Jan. 21, 1985, 60-8862; Feb. 13, 1985, 60-24430

The portion of the term of this patent subsequent to Aug. 12, 2003, has been disclaimed.

Int. Cl.⁴ C07C *45/33*

U.S. Cl. 568—401 **21 Claims**

1. In the process for producing an oxygen-containing organic compound by oxidizing an olefin in the presence of a metallic complex catalyst, the improvement which comprises utilizing as said metallic complex catalyst, a composite catalyst comprising a metallic complex (MmXnLl) capable of forming an oxygen complex by corrdination thereof with oxygen, a metallic complex (M'M'Xn'L'l') capable of forming an olefin complex by coordination thereof with an olefin, and water, adding an olefin to said metallic complex catalyst mixture to produce an olefin complex by the coordination of said olefin with said metallic complex (M'm'Xn'L'l'), wherein said olefin complex is then oxidized by water to produce an oxygen-containing organic compound, M' and L', and adding an oxygen-containing gas to the metallic complex catalyst mixture to form an oxygen complex by the coordination of said oxygen-containing gas wih said metallic complex (MmXnLl), wherein said oxygen complex is then reacted with M' and L', to produce the metallic complex (M'm'Xn'L'l') utilized in the oxidation reaction, wherein M represents at least one transition metal selected from the group consisting of Cu(1), Ag, Ti(3), Zr, Nb, Cr, Mo, and W; X represents at least one anion selected from the group consisting of Cl^-, Br^-, I^-, BF_4^-, PF_4^-, CH_3COO^-, and SO_4^{2-}; L represents at least one compound selected from the group consisting of a nitrile and an organic phosphrous compound; L' represents a nitrile; M' represents a transition metal belonging to platinum group VIII of the Periodic Table; m, m', n, and n' represent a number of atoms of said transition metals M and M' and said anions X and X'; respectiely; l and l' represent a number of said ligands L and L' respectively.

4,806,693

PROCESS FOR THE PREPARATION OF UNSATURATED KETONES

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 899,182, Aug. 22, 1986, Pat. No. 4,727,195. This application Oct. 5, 1987, Ser. No. 104,147

Claims priority, application United Kingdom, Sep. 27, 1985, 8523858

Int. Cl.⁴ C07C *49/21*

U.S. Cl. 568—417 **1 Claim**

1. 2-Methyl-1-hexene-3-one-4-yne.

4,806,694

POLYOLS

Richard L. Powell, Tarporley, and Brian Young, Winsford, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Sep. 10, 1987, Ser. No. 98,970

Claims priority, application United Kingdom, Sep. 10, 1986, 8621794

Int. Cl.⁴ C07C *43/11*

U.S. Cl. 568—615 **3 Claims**

1. A fluorine-containing polyol obtained by the addition, at a temperature of up to 200° C. and in the presence of a free radical generator, of a fluoro-olefin having the general formula:



wherein Y represents F and Z represents Cl or $F(CF_2)n$— wherein n is an integer from 0 to 10 or Y and Z together form a $—(CF_2)m—$ chain wherein m represents an integer from 2 to 4 to a polytetramethylene glycol having a molecular weight in the range from 162 to 5000.

4,806,695

PROCESS FOR ETHERIFICATION OF A DEHYDROGENATION ZONE EFFLUENT

Bipin V. Vora, Darien, and Norman H. Scott, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 30, 1987, Ser. No. 114,965

Int. Cl.⁴ L07C *41/06*

U.S. Cl. 568—697 **13 Claims**

1. A process for producing ethers comprising:

(a) passing the effluent from a dehydrogenation zone to an etherification zone, the deydrogenation zone effluent comprising isoolefins and isoalkanes having four or five carbon atoms and including C_3 hyrdocarbons and hydrocarbons having less than three carbon atoms;

(b) combining the dehydrogenation zone effluent with a C_1–C_5 monohydroxy alcohol in said etherification zone at etherification conditions to obtain essentially complete conversion of said isoolefins and an etherifidation zone effluent comprising isoalkanes, alcohol, ether and C_3 and lignrer hydrocarbons;

(c) passing said etherification zone effluent to a first separation zone and recovering at least a first stream comprising an ether product and a second stream comprising isoalkanes, alcohol and including C_3 hydrocarbons and hydrocarbons having less than three carbon atoms;

(d) recovering alcohol from said second stream in an alcohol recovery zone and returning at least a portion of the recovered alcohol to said etherification zone;

(e) passing said second stream from said alcohol recovery zone to a second separation zone to separate isoalkanes from said second stream and obtain a recycle stream consisting essentially of isoalkanes; and,

(f) recycling said recycle stream to said dehydrogenation zone.

4,806,696

PROCESS FOR STABLE PREPARATION OF ALKOXYMAGNESIUM COMPOUNDS

Robert C. Job, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 875,845, Jun. 18, 1986, Pat. No. 4,710,482. This application Nov. 24, 1987, Ser. No. 124,642

Int. Cl.⁴ C07C *31/30*

U.S. Cl. 568—851 **18 Claims**

1. A process for preparing an alkoxymagnesium compound which is stabilized to avoid decomposition to undesirable polymeric materials which comprises contacting the alkoxymagnesium compound with a buffer compound.

4,806,697

SELECTIVE LIQUID PHASE DISPROPORTIONATION CATALYSTS FOR IODOAROMATICS

Mark Rule, and Gerald C. Tustin, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 25, 1987, Ser. No. 29,949

Int. Cl.⁴ C07C *17/12, 25/00*

U.S. Cl. 570—202 **22 Claims**

1. A process of isomerizing an iodoaromatic compound, said process comprising the step of:

contacting a mono-, di-, or tri-iodoaromatic compound selected from the group consisting of benzene, biphenyl, naphthalene, anthracene, thiophene, benzothiophene, furan and benzofuran with a non-acidic zeolite catalyst in the liquid or gas phase in the presence of iodine, whereby the iodine present in said iodoaromatic compound is redistributed among the molecules of said iodoaromatic compound to form an isomerized product.

4,806,698

LIQUID PHASE ISOMERIZATION OF IODOAROMATIC COMPOUNDS

Mark Rule, and Gerald C. Tustin, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 25, 1987, Ser. No. 29,956

Int. Cl.⁴ C07C *17/12, 25/00*

U.S. Cl. 570—202 **13 Claims**

1. A process of isomerizing a liquid mono-, di- or triiodoaromatic compound selected from the group consisting of benzene, biphenyl, naphthalene, anthracene, thiophene, benzothiophene, furan and benzofuran comprising contacting said liquid iodoaromatic compound with an acidic zeolite or silica-alumina solid catalyst, wherein the iodine present in said iodoaromatic compound is redistributed among the molecules of said iodoaromatic compound to form an isomerized product.

4,806,699

PROCESS FOR THE PRODUCTION OF AROMATIC HYDROCARBONS INCORPORATING BY-PRODUCT UTILIZATION

David J. H. Smith, Camberley, and William T. Woodfin, Hook, both of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Nov. 5, 1987, Ser. No. 117,237

Claims priority, application United Kingdom, Nov. 6, 1986, 8626532

Int. Cl.⁴ C07C *2/84*

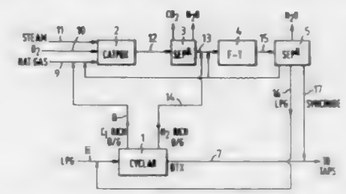
U.S. Cl. 585—314 **16 Claims**

1. A process for the production of aromatic hydrocarbons from a feedstock comprising ethane and/or propane and/or butane which process comprises the steps of:

(A) reacting the feedstock in the presence of a dehydrocyclodimerisation catalyst to produce a product comprising aromatic hydrocarbons, hydrogen and methane,

(B) separating the product of step (A) into an aromatic hydrocarbon fraction, a methane-rich gaseous fraction and a hydrogen-rich gaseous fraction,

(C) feeding all or part of the methane-rich gaseous fraction separated in step (B) to a synthesis gas production unit, thereby to produce synthesis gas comprising hydrogen



and carbon monoxide in a ratio less than or equal to 2:1, and

(D) contacting the synthesis gas from step (C) together with all or part of the hydrogen-rich gaseous fraction separated in step (B), thereby increasing the hydrogen to carbon monoxide ratio of the synthesis gas to a value greater than 2:1, with a Fischer-Tropsch conversion catalyst to produce a hydrocarbon product.

4,806,700

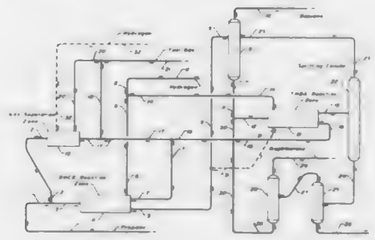
PRODUCTION OF BENZENE FROM LIGHT HYDROCARBONS

David C. Martindale, Roselle, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 22, 1986, Ser. No. 921,307

Int. Cl.⁴ C07C *12/02, 4/12*

U.S. Cl. 585—322 **13 Claims**



1. A hydrocarbon conversion process which comprises the steps of:

(a) passing a feed stream comprising a C_2–C_5 aliphatic hydrocarbon into a dehydrocyclodimerization zone maintained at dehydrocyclodimerization conditions;

(b) concentrating, in a first separation zone comprising a first fractionation column, at least 90 mole percent of the toluene produced in the dehydrocyclodimerization zone into a first process stream and benzene into a benzene-rich first product stream;

(c) passing the first process stream and a hydrogen-rich gas stream directly into a hydrodealkylation zone operated at hydrodealkylation conditions and producing a second process stream, which stream comprises benzene and toluene; and,

(d) passing the second process stream directly into a second separation zone comprising a second fractionation column, passing a third process stream, comprising benzene, from the second fractionation column to the first fraction-

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ation column, and recovering benzene from the second process stream as a portion of a first product stream.

4,806,701

PROCESS FOR UPGRADING LIGHT PARAFFINS

Victor K. Shum, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Aug. 5, 1987, Ser. No. 82,083
Int. Cl.[4] C07C *4/52*
U.S. Cl. 585—417 **16 Claims**

1. A process for converting a gaseous hydrocarbon feed containing paraffinic hydrocarbons to aromatic hydrocarbons which comprises contacting the feed under conversion conditions with a catalyst composition comprising a gallosilicate molecular sieve having the x-ray diffraction lines of Table 1 of the specification, a Group VIII metal component, and a Group IB metal component.

4,806,702

PROCESS FOR THE PREPARATION OF THE PARYLENE DIMER

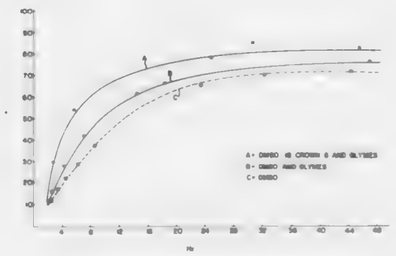
Chinsoo Lee, and David R. Bassett, both of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed May 26, 1987, Ser. No. 53,732
Int. Cl.[4] C07C *2/72*
U.S. Cl. 585—429 **14 Claims**

1. An improved process for the preparation of the 2,2-paracyclophane dimer used in the preparation of parylene, which comprises contacting an aqueous solution of p-methylbenzyltrimethylammonium halide with an alkaline hydroxide in the presence of dimethylsulfoxide and at least one reaction promoter selected from the group consisting of:

(a) a methyl alkyleheoxy ether of the formula:

$$CH_3—(—O—CH_2—CH_2—)_n—O—(CH_2—CH-2—O)_m—CH_3$$



wherein n has a value of from 1 to 18, and and m is 0 or 1 to 4, and

(b) a crown ether having from 4 to 6 oxygen atoms and from 12 to 18 carbon atoms, and

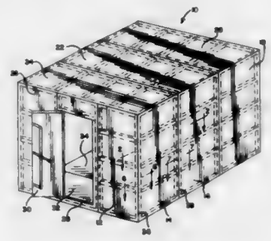
thereafter recovering said 2,2-paracyclophane.

4,806,703

PANEL SYSTEM FOR EMI SHIELDED ENCLOSURES

Richard E. Sims, Arlington Hgts., Ill., assignor to The Curran Company, Addison, Ill.

Filed Jan. 11, 1988, Ser. No. 142,666
Int. Cl.[4] H05K *9/00*
U.S. Cl. 174—35 MS **23 Claims**



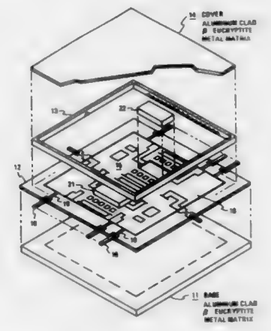
1. A panel for an EMI shielded enclosure comprising:
a panel frame including edge frame elements located at the periphery of the panel and an internal frame element extending between a pair of said edge frame elements;
a substantially rigid shield support member overlying said panel frame at one face of the panel;
a flexible layer of metal shield material overlying said shield support member and extending around at least said pair of said edge frame elements;
said flexible layer being attached to said shield support member and said shield support member being attached to said internal frame element; and
a floating attachment structure joining said internal frame element to said edge frame elements for permitting said edge frame elements to assume an edge configuration independent of said shield support member and said internal frame element.

4,806,704

METAL MATRIX COMPOSITE AND STRUCTURE USING METAL MATRIX COMPOSITES FOR ELECTRONIC APPLICATIONS

Robert E. Belke, Jr., Clay; George F. Trojanowski, Baldwinsville, and Louis Zakraysek, Cicero, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Jun. 8, 1987, Ser. No. 59,030
Int. Cl.[4] H01L *23/06*
U.S. Cl. 174—52.4 **9 Claims**



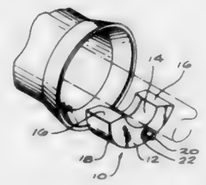
2. In combination:
a substrate of a metal matrix composite material of low density, high thermal and electrical conductivity and a coefficient of thermal expansion in the range of from approximately 4.5 to 8.5 parts per million per degree centigrade consisting of a matrix of aluminum to which Beta-Eucryptite has been added in a range from 60 to 45 percent by volume, and
an electronic semiconductor bonded thereto.
3. The configuration set forth in claim 2 wherein:
the surface of said substrate is clad with a thin aluminum layer to seal the surface, said layer providing an electrically conductive bond to said electronic semiconductor.

4,806,705

HOLDER FOR USE IN CABLE CONDUITS

Chung-Fang Chen, Taipei, Taiwan, assignor to Jack Moon Co., Ltd., Bell Gardens, Calif.

Filed Aug. 21, 1987, Ser. No. 88,913
Int. Cl.[4] H02G *1/00*
U.S. Cl. 174—135 **3 Claims**



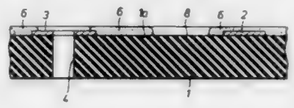
1. A cable holder for use in supporting a single cable within a conduit which comprises a weight-supporting, lightweight arc-shaped element having a substantially planar front surface, a rear surface broken by a cavity extending substantially the thickness of the arc-shaped element, an arcuate concave upper surface and an arcuate convex bottom surface, both arcuate surfaces constituting approximately 120 degree arcs of circles, a stud being provided on said substantially planar front surface, and said cavity containing a rib which provides support for said substantially planar front surface at the point where the stud is located.

4,806,706

PRINTED WIRING BOARD

Hideo Mackida; Shin Kawakami; Satoshi Haruyama; Hirotaka Okonogi; Katsutomo Nikaido, and Norito Makai, all of Saitama, Japan, assignors to Nippon CMK Corp., Saitama, Japan

Filed Oct. 21, 1987, Ser. No. 112,095
Claims priority, application Japan, Apr. 8, 1987, 62-86604; Apr. 8, 1987, 62-86605; Apr. 8, 1987, 62-86606; Apr. 8, 1987, 62-86607; Apr. 8, 1987, 62-86608; Apr. 17, 1987, 62-96034; Apr. 17, 1987, 62-96035; Apr. 17, 1987, 62-96036; Apr. 17, 1987, 62-96038
Int. Cl.[4] H05K *1/00*
U.S. Cl. 174—68.5 **16 Claims**

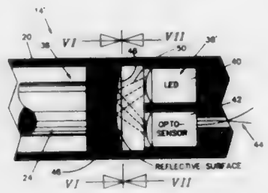


1. A printed wiring board including a dielectric base plate, a circuit pattern at least on one surface of the base plate, and a solder resist film containing silicon series resin and/or fluorine series resin and covering the base plate except a desired soldering area of the circuit pattern, the improvement comprising:
at least one flux accumulating means formed on the one

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surface of the base plate adjacent to the solder resist film to accumulate flux repelled by the solder resist film.

4,806,707
3-DIMENSIONAL DIGITIZER PEN
Waldo L. Landmeier, Scottsdale, Ariz., assignor to Calcomp Inc., Anaheim, Calif.
Filed Feb. 12, 1988, Ser. No. 155,500
Int. Cl.[4] G08C *21/00*
U.S. Cl. 178—18 **19 Claims**



10. In an electronic pen for a digitizer capable of providing signals to a computer having a hollow, pen-shaped body member having a writing tip end; sensing means disposed in the body member adjacent the writing tip end and having wires thereof connectable to the computer for use in developing X- and Y-axis positional signals relative to movement of the writing tip end over the surface of the tablet; and, a pen member disposed in the body member for longitudinal slidable movement within the body member, the pen member having a writing tip passing out through the body member at the writing tip end and an opposite inner end, the improvement for providing for pen movement signals in three dimensions relative to a planar tablet comprising linear position transducer means disposed within the body member for producing on output wires therefrom connected to the computer Z-axis positional signals as a function of longitudinal movement of the pen member created by the pressing of the writing tip end against the surface of the tablet wherein said linear position transducer means comprises:

(a) a source of a light beam;

(b) opto-sensor means for developing a signal at an output thereof proportional to light impinging on an input surface thereof; and,

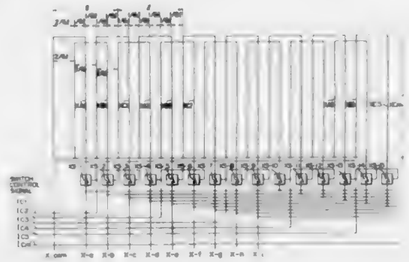
(c) reflector means operably connected to the inner end of the pen member for reflecting said light beam onto said input surface proportionally to the linear position of the pen member within the body member.

4,806,708
COORDINATE DETERMINING DEVICE AND METHOD OF DETERMINING X-Y COORDINATE POSITION
Hiroshi Yahagi, Zama, Japan, assignor to Graphtec Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 25, 1988, Ser. No. 148,353
Claims priority, application Japan, Feb. 4, 1987, 62-23850
Int. Cl.[4] G09C *21/00*
U.S. Cl. 178—18 **45 Claims**

1. A coordinate determining tablet comprising: at least one rectangular insulating plate; a plurality of conductive wires mounted on one surface of said rectangular insulating plate, said conductive wires being insulated from each other and each conductive wire being made of an elongated conductive wire formed of a shape having a pair of parallel sections and an end turn section therebetween; and a plurality of analog switches mounted near one end portion of said rectangular insulating plate and provided in correspondence with said plurality of conductive wires, respectively; wherein

said plurality of conductive wires are disposed such that between said pair of first and second parallel sections of one conductive wire, one of said parallel sections of an advancing conductive wire and another of said parallel sections of a succeeding conductive wire are juxtaposed at equal intervals, said end turn sections of said conductive wires are aligned substantially on a straight line, and said conductive wires are displaced from each other by 1/n pitch (where n is 3, 5, 7 . . .) to form as a whole a returned parallel winding pattern;

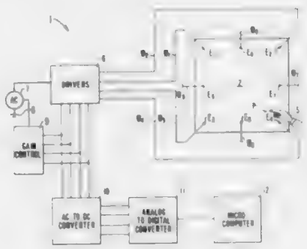
ones of said parallel sections of said plurality of conductive wires are all connected to a common bus, the others of



said parallel sections each are connected to one end terminal of an associated one of said plurality of analog switches; and the other end terminals of said plurality of analog switches are sequentially and cyclically connected to 3n common output lines; and

said plurality of analog switches are grouped in units of n analog switches, and the analog switches belonging to each group are controlled to be turned on and off at a same time at the timing of one cycle of said returned parallel winding pattern, i.e., at the timing in units of n conductive wires.

4,806,709
METHOD OF AND APPARATUS FOR SENSING THE LOCATION, SUCH AS COORDINATES, OF DESIGNATED POINTS ON AN ELECTRICALLY SENSITIVE TOUCH-SCREEN SURFACE
Blair Evans, Idlewild, Mich., assignor to Microtouch Systems, Inc., Woburn, Mass.
Filed May 26, 1987, Ser. No. 53,849
Int. Cl.[4] G08C *21/00*
U.S. Cl. 178—19 **36 Claims**



1. A capacitive touch-screen sensor apparatus for providing high resolution sensing of a designated point on a touch-screen surface having, in combination:

a rigid uniformly electrically conductive surface;

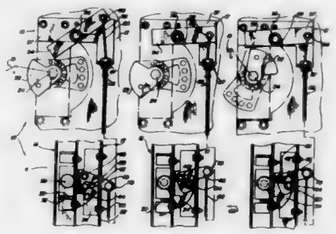
a plurality of discrete point electrodes widely separate from one another on the surface;

alternating current driver means connected to the point electrodes for driving the electrodes with matched drive signals to produce a regular electric field over the surface;

first circuit means for separately sensing the respective currents drawn through the point electrodes in response to the capacitive touching of a designated point on the surface and producing in accordance with each sensed current a signal representing the distance from the designated point to the corresponding electrode; and

second circuit means for determining from the distance-representing signals the location of the designated point on the surface.

4,806,710
MECHANICAL DOOR INTERLOCK FOR ELECTRICAL EQUIPMENT ENCLOSURE
Arvydas J. Kalvaitis, Northbrook; Edmund S. Dixon, and Kenneth K. Tao, both of Chicago, all of Ill., assignors to S&C Electric Company, Chicago, Ill.
Filed Sep. 10, 1987, Ser. No. 95,280
Int. Cl.[4] H01H *9/20*
U.S. Cl. 200—50 A **17 Claims**



16. A door interlock for an enclosure comprising:

condition-indicating means being selectively operable between a first position and a second position;

blocking means being biased to a first position so as to block said condition-indicating means from moving from said first position to said second position, said blocking means in a second position allowing said condition-indicating means to move from said first position to said second position, said condition-indicating means in said second position holding said blocking means in said second position;

locking means carried by the enclosure being movable between first and second positions;

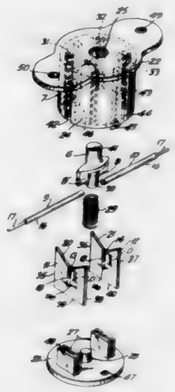
means for interconnecting said blocking means and said locking means including means responsive to movement of said locking means from said first position to said second position for moving said blocking means from said first position to said second position, said moving means also moving said locking means to said first position when said blocking means is moved to said first position;

drive/latch means being carried by the door and being biased in a first position and being movable to a second position, said drive/latch means when moving from said first position to said second position engaging said locking means and moving said locking means into said second position;

drive cam means being disengagable from said drive/latch member and being movable to engage said drive/latch means to move said drive/latch means from said first position to said second position; and

means operative when said drive/latch means is in said second position for holding said drive/latch means from being returned to said first position and for preventing movement of said drive/latch means relative to said locking means and the enclosure, said drive cam means being movable from said second position to said first position while said drive/latch means is held in said second position and prevented from returning to said first position.

4,806,711
DOOR JAMB BUTTON
Ira Eckhaus, 3221 Skillman Ave., Oceanside, N.Y. 11572
Filed May 18, 1988, Ser. No. 195,716
Int. Cl.[4] H01H *3/16*
U.S. Cl. 200—61.62 **17 Claims**



6. A switch comprising in combination:

a housing, said housing having a relatively planar face portion with means for retention against the face of a supporting member to which said switch is to be attached; said housing further having a body portion essentially perpendicular to said face portion and adapted for providing switch mechanism travel direction, and limits and insertion capability for at least two electrical wires, each wire having a conductor diameter and an insulation diameter;

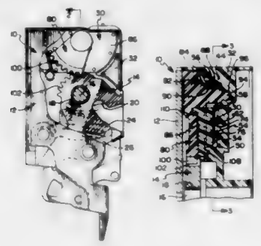
an actuator member, said actuator member having a first force receiving portion extending through an opening in said face portion of said housing positioned essentially centrally of said body portion; said actuator member further having a bridging portion narrower than said insulation diameter of said wires and adapted for forcing down the wires and making electrical contact thereto;

spring means biasing said actuator at one said travel limit,

first and second wire support members, said wire support members being positioned in said body parallel to said travel direction with one wire support member on each side of said opening in said face portion; said wire support members being separated a distance less than said bridging portion of said actuator; said wire support members each having on a side thereof adjacent said face portion of said housing a guiding region from the edge thereof to a central wire retaining and contacting location slot, each said slot having a width and depth dimension, said width dimension being less than said insulation diameter of said wires; and said wire support members being rigidly positioned in said body at a location with respect to said travel limits such that said depth dimension position of said slot operates to enable bridging electrical contact between said second portion of said actuator and each said wire.

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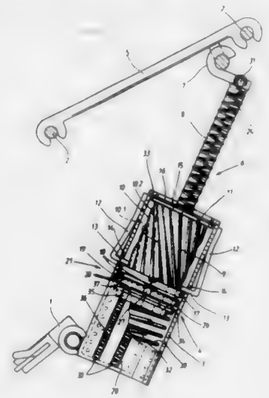
4,806,712
ELECTRICAL SWITCH FOR DOOR LATCH
Marcos Hoffman, Warren; Jeffrey K. Joyner, Ann Arbor, and Jiri Paulik, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 2, 1988, Ser. No. 162,990
Int. Cl.[4] H01H *3/16, 27/06;* **B60R** *25/00;* **E05B** *65/12*
U.S. Cl. 200—61.62 **4 Claims**



4. In combination with a vehicle door latch having a latch bolt rotatably mounted upon a latch housing for rotary movement to selectively latch and unlatch a door, an electrical switch mechanism associated with the door latch comprising:
- a switch housing of molded plastic mounted on the latch housing and having a switch cavity therein;
- a first plurality of switch contacts mounted on the switch housing in the switch cavity thereof;
- a switch rotor;
- a second plurality of switch contacts mounted on switch rotor;
- means rotatably mounting the switch rotor on the switch housing so that rotary movement of the rotor electrically connects and disconnects the first plurality of switch contacts with the second plurality of switch contacts;
- a plurality of gear teeth provided on the latch bolt;
- a gear sector having gear teeth thereon;
- means rotatably mounting the gear sector on the switch housing with the gear teeth of the gear sector meshing with the gear teeth of the latch bolt whereby rotary movement of the latch bolt rotates the gear sector;
- drive means connecting the rotor and the gear sector whereby rotary movement of the latch bolt induces corresponding rotary movement of the rotor and thereby enables the switch mechanism to provide electrical signals corresponding to the positions of the latch bolt; and
- a molded plastic cover mounted upon the plastic housing to seal the switch cavity against the entry of foreign matter therein.

4,806,713
SEAT-CONTACT SWITCH
Martin Krug, Holzgerlingen; Horst Dahm, Ostelsheim, and Götz Mötting, Böblingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Mar. 30, 1988, Ser. No. 175,339
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1987, 3711677
Int. Cl.[4] H01H *21/26*
U.S. Cl. 200—85 A **20 Claims**

1. A seat-contact switch for generating a "seat occupied" signal when a seat suspension approaches a seat frame as a result of seat loading, utilizing an actuating device which has a moveable means articulatable on the seat suspension and a base part fastenable to the seat frame and which, as a result of relative movement between the moveable part and its base part, brings switch contacts into and out of conductive contact and which is self-adjusting to compensate both for elastic and permanent deformations of the seat suspension in order to prevent continuous actuation of the seat-contact switch when the seat suspension undergoes permanent deformation, comprising:
- that said moveable means of said actuating device is connected to its base part to be coaxially displaceable;
- said moveable means being prestressed by a spring means extending from the base part towards the seat suspension against a stop means on said base part;
- said actuating device including an adjusting means whose unloaded natural length is adjusted by means of a mechanically driveable adjusting screw means comprising an adjusting nut and a threaded bolt, one of which is non-

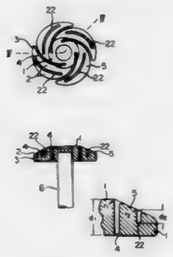


rotatably connected while the other is rotatably connected to a free-wheel and which exerts a blocking effect on the rotatable one of the nut or bolt to prohibit rotation in a return direction; and
- wherein a difference in length between the distance from the seat suspension to the seat frame caused by deformation of the seat suspension and said unloaded natural length of the actuating device are compensated up to a maximum value by insertion of a deformation elastic member means on said adjusting nut and acting on said adjusting bolt; and
- wherein after the maximum value is reached, the elastic member means is moved at least partially into a changed position along the threaded bolt, when the seat suspension is relieved of its seat loading.

4,806,714
ELECTRODE STRUCTURE FOR VACUUM CIRCUIT BREAKER
Shin-ichi Aoki, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Sep. 28, 1987, Ser. No. 101,433
Claims priority, application Japan, Sep. 30, 1986, 61-233577
Int. Cl.[4] H01H *33/66*
U.S. Cl. 200—144 B **4 Claims**

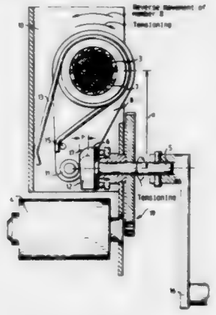
1. An electrode structure for a vacuum circuit breaker having a pair of separable spiral-formed electrodes, said electrode structure including an electrode rod, a contact fixed to said electrode rod, and a plurality of arc runners extending radially outward from said electrode rod in a spiral fashion, each of said arc runners having an arc surface which is separated from arc surfaces of adjacent arc runners by first channels and at least one second channel separate from said first channels and drawing a leg of an electric arc on each of said first channels onto

said second channel, said first channels having a first depth and each of said second channels having a depth which is smaller



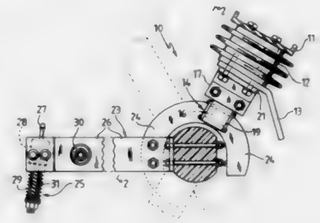
than the depth of said first channels at radial locations which are the same distance from said electrode rod.

4,806,715
TENSIONING DEVICE FOR THE DRIVING SPRING OF AN ENERGY STORE FOR ELECTRICAL SWITCHES
Gerhard Harz, Regensburg, and Erwin Reichl, Tegernheim, both of Fed. Rep. of Germany, assignors to Sachsenwerk Aktiengesellschaft, Regensburg, Fed. Rep. of Germany
Filed Jul. 10, 1987, Ser. No. 71,828
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1986, 3623247
Int. Cl.[4] H01H *3/02*
U.S. Cl. 200—400 **18 Claims**



1. Tensioning device for a driving spring of an energy store for an electrical switch, said device comprising:
- a housing;
- a drive shaft rotatably mounted to said housing and carrying a rank articulated to the driving spring;
- a tensioning shaft rotatably mounted to said housing;
- means connected for rotating said tensioning shaft;
- an overrunning clutch coupled to said drive shaft;
- transmission means connected between said tensioning shaft and said overrunning clutch for imparting at least one unidirectional step-wise rotational advance to said drive shaft with each revolution of said tensioning shaft, said transmission means imparting rotation to said drive shaft through said clutch, said transmission means comprising a cam mechanism including a cam member including a camming track and a follower member including a driver lever engaging said camming track; said cam member being connected to said tensioning shaft and said follower member being connected to said overrunning clutch, whereby rotation of said tensioning shaft causes rotation of said cam member and oscillation of said follower member for moving said overrunning clutch thereby imparting unidirectional step-wise rotation to said drive shaft; and
- wherein said tensioning shaft and said drive shaft are mounted to said housing so as to have respective axes of rotation which are nonparallel to one another.

4,806,716
HIGH VOLTAGE CONTACT ASSEMBLY
Victor Golowash, Birmingham, Ala., assignor to Electrical Equipment, Inc., Birmingham, Ala.
Filed May 26, 1987, Ser. No. 54,229
Int. Cl.[4] H01H *1/22*
U.S. Cl. 200—244 **4 Claims**



1. A contact assembly for use in a high voltage switchgear comprising
(a) a sickle-shaped blade assembly, having a curved portion with a center of curvature and an elongated blade member with a linear end, mounted for rotation about the center of curvature of the curved portion thereof, having its linear end adapted for engagement with a circuit component upon rotation in either direction; and
(b) a fixed contact assembly engaging said curved position of said sickle-shaped blade assembly providing constant electrical contact with another circuit component during rotation of said sickle-shaped blade assembly.

4,806,717
DRIVE FOR A LAUNDRY MACHINE
Doran D. Hershberger, Sycamore, Ill., assignor to General Electric Company, Fort Wayne, Ind.
Division of Ser. No. 304,536, Sep. 22, 1981, Pat. No. 4,434,546, which is a division of Ser. No. 077,784, Sep. 21, 1979, Pat. No. 4,327,302. This application Apr. 22, 1983, Ser. No. 487,921
Int. Cl.[4] H02K *29/00*
U.S. Cl. 318—138 **11 Claims**



1. A drive for a laundry machine comprising:
- an electronically commutated motor having a ferromagnetic stator with a bore therein, a plurality of winding receiving slots in said stator and intersecting with said bore, a multi-stage winding arrangement associated with said slots of said plurality thereof and including at least three winding

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stages adapted to be commutated in at least one preselected sequence and in at least a pair of preselected different sequences, each of said winding stages of said at least three thereof having a plurality of coils, each of said coils of said coil plurality in said each winding stage having at least one conductor turn and a pair of opposite sides turn portions, respectively, some of said coils in said each winding stage having at least one of said opposite side turn portions thereof disposed in individual ones of said slots with thereof disposed in individual ones of said slots with one of said opposite side turn portions of another of said coils in a same winding stage, respectively, one of said coils of two winding stages of said at least three thereof each having one of said opposite side turn portions thereof disposed in one slot of a first pair thereof and another of said coils of said two winding stages each having one of said opposite side turn portions thereof disposed in the other slot of said first slot pair respectively, a third coil in one of said two winding stages and one coil in a third winding stage of said at least three winding stages each having one of said opposite side turn portions thereof disposed in one slot of a second pair thereof and a fourth coil in said one of said two winding stages and another coil in said third winding stage each having one of said opposite side turn portions thereof disposed in the other slot of said second slot pair, and two coils of said coil plurality in the other of said two winding stages each having one of said opposite sides thereof disposed in a third pair of slots, respectively, a rotor disposed at least in part within said stator bore in magnetic coupling relation with said at least three winding stages so as to be unidirectionally rotatable when said at least three winding stages are commutated in the at least one preselected sequence and also oscillatable when said at least three winding stages are commutated in the at least preselected different sequence pairs, said rotor including a peripheral portion interposed between a pair of opposite end faces and arranged generally in coaxial relation with said stator bore, a shaft receiving opening extending through said rotor and intersecting with said opposite end faces, a plurality of discrete first pole sections integrally interconnected with each other and arranged in spaced relation generally about said rotor between said opposite end faces thereof, respectively, a plurality of other slots intersecting said peripheral portion between said opposite end faces and interposed between adjacent ones of said first pole sections of said plurality thereof, respectively, said other slots of said plurality thereof each having a pair of opposed sidewalls converging generally toward each other in a direction from said peripheral portion toward said shaft receiving opening with a base wall adjacent thereto interposed between said opposed sidewalls, and a plurality of pairs of opposed flanges extending between said opposite end faces at least adjacent said peripheral portion with said opposed flanges of said plurality thereof arranged so as to protrude into said other slots past said opposed sidewalls thereof, respectively, a plurality of discrete second pole sections arranged in said other slots between said opposed sidewalls thereof, respectively, said second pole sections of said plurality thereof each including another peripheral portion arranged so as to be at least generally coextensive with said first named peripheral portion, a pair of opposite sidewalls converging generally toward each other in a direction from said another peripheral portion toward said shaft receiving opening so as to be arranged generally in facing relation with said opposed sidewalls of said other slots and said opposed flanges, an end wall interposed between said opposite sidewalls and arranged generally in facing relation with said base wall, and a pair of opposite seats integral with said opposite sidewalls at least generally adjacent said end wall and extending generally toward said opposed sidewalls of said other slots, respectively, a plurality of pairs of magnetic material elements arranged in abutting engagement between said opposed sidewalls of said other slots and said opposite sidewalls of said second pole sections and with parts of said magnetic material element pairs of said plurality thereof engaged with said seats on said second pole sections, respectively, a hardenable non-magnetic material solidified in place within said other slots generally filling them and disposed between said flanges, said magnetic material element pairs, said first pole sections and said second pole sections so as to not only retain said second pole sections against displacement from said other slots but also to magnetically define the polarity of said first pole sections from that of said second pole sections, respectively, and a shaft received in said shaft receiving opening of said rotor is as to be conjointly unidirectionally rotatable and oscillatable therewith;

a transmission mechanism arranged in mounting association with said electronically commutated motor and having a housing with a plurality of wall means defining a chamber therein, said wall means of said plurality thereof including a pair of opposite end walls, and a sidewall interposed between said opposite end walls, a supporting structure seated on one of said opposite end walls within said chamber and including a pair of spaced apart supports disposed generally between said opposite end walls, respectively, said rotor shaft of said electronically commutated motor extending through said one opposite end wall into said chamber, an input gear on said rotor shaft within said chamber, a tubular output shaft extending through one of said supports and journaled in the other of said opposite end walls and the other of said supports, another bore through, said tubular output shaft, a first free end on said tubular shaft extending through said other opposite end wall exteriorly of said chamber, a first output gear on said tubular output shaft within said chamber and between said one and other supports, another output shaft extending though said chamber and said bore of said tubular output shaft so as to be journaled at least in said one opposite end wall, a second free end on said another output shaft and extending exteriorly of said chamber, or second output gear on said another output shaft within said chamber between said other support and said one opposite end wall, a drive shaft and a driving shaft within said chamber extending through said other support and having opposite ends thereof journaled in said one opposite end wall and said one support, respectively, said driving shaft having a plurality of splines arranged between ends thereof, a first pinion gear on said driving shaft and meshed with said input gear, a second pinion gear and a third pinion gear on said driven shaft and respectively arranged thereon between said one opposite end wall and said other support, said second pinion gear being meshed with said second output gear on said another output shaft, means selectively movable on said driven shaft between at least a pair of axially spaced positions thereon for effecting the transmission of the rotation of said rotor shaft to said tubular output shaft and said another output shaft, respectively, said transmission effecting means including a a pair of interconnected stepped shifting gears, a splined bore extending through said stepped shifting gears and receiving said splines of said plurality thereof on said driving shaft so as to be both conjointly rotatable therewith and selectively axially movable thereon between the positions of said at least pair thereof, the larger of said stepped shifting gears being meshed with said first output gear on said tubular output shaft when said stepped shifting gears are in one position of the at least pair thereof and the smaller of said shifting gears being meshed with said second output gear on said another shaft when said stepped shifting gears are in another position of the at least pair thereof.

4,806,718

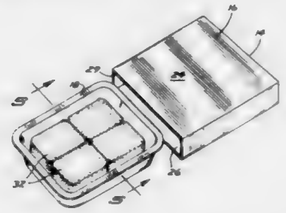
CERAMIC GELS WITH SALT FOR MICROWAVE HEATING SUSCEPTOR

Jonathan Seaborne, Concorus, and James R. Borek, Barnsville, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 110,247, Oct. 19, 1987, and Ser. No. 94,972, Sep. 10, 1987, which is a continuation-in-part of Ser. No. 66,376, Jun. 25, 1987, said Ser. No. 110,247, is a continuation-in-part of Ser. No. 56,201, Jun. 1, 1987. This application Mar. 23, 1988, Ser. No. 172,098

Int. Cl.[4] H05B 6/80

U.S. Cl. 219—10.55 E **20 Claims**



1. A package article for food to be heated by microwave energy in a microwave oven comprising:

a tray fabricated form dielectric material for holding a food item having a top and bottom surface,

a substantially planar microwave heating susceptor disposed within said tray, said microwave heating susceptor fabricated from a ceramic composition, comprising:

(a) a first ceramic gel susceptor material, said ceramic gel susceptor material having about 17% to 35% by weight of the gel of bound water (wet basis);

(b) a ceramic binder in amounts sufficient to bind the ceramic gel susceptor material;

(c) about 0.01% to about 12% by weight of the composition of common salt, wherein the ceramic composition is unvitrified, and wherein the susceptor is in intimate physical contact with the food item and ranges in thickness from about 0.3 to 8 mm.

4,806,719

METHOD AND DEVICE FOR MONITORING A SPARK-ERODING PROCESS IN A SPARE-ERODING MACHINE

Karl Seerieder, Groebenzell, and Eckhard Wellner, Reisbach, both of Fed. Rep. of Germany, assignors to Friedrich Deckel Aktiengellschaft, Munich, Fed. Rep. of Germany

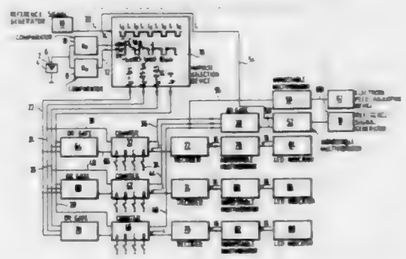
Filed Aug. 30, 1987, Ser. No. 68,449

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1986, 3622520

Int. Cl.[4] B23H 7/20

U.S. Cl. 219—69 C **18 Claims**

8. In a device for controlling a spark-eroding process in a spark-eroding machine, including means for measuring an impulse voltage curve of each voltage impulse applied across a working gap between a workpiece and electrode and, in response to a deviation of the measured voltage curve from a desired voltage curve, producing a control command which changes the spark-eroding process of the eroding machine, the improvement comprising wherein said means for measuring includes: an impulse selection device responsive to the impulse voltage curves from the working gap of the eroding machine and having several outputs which each correspond to one of a plurality of impulse groups, said selection device classifying each said impulse voltage curve into a respective said impulse group and then producing on said output associated with such group a counting impulse; a plurality of counters which each have a count input connected to a respective one of said outputs of said impulse selection device and which each emit a control command impulse upon counting a pregiven limit number of successive counting impulses from such output, each said counter including means for resetting it in response to the occurrence of a counting impulse on one of said outputs of



said selection device other than the output connected to the count input of such counter; and a device which is connected to said counters and produces said control command for controlling the spark-eroding machine in response to each said control command impulse.

4,806,720

METHOD AND APPARATUS FOR WIRE-CUT ELECTRICAL DISCHARGE MACHINING

Obara Haruki, Sagamihara, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan

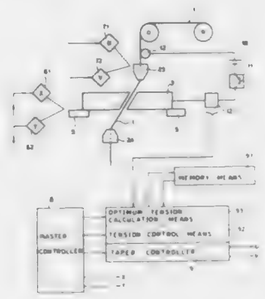
PCT No. PCT/JP86/00584, § 371 Date Sep. 21, 1987, § 102(e) Date Sep. 21, 1987, PCT Pub. No. WO87/03232, PCT Pub. Date Jun. 4, 1987

PCT Filed Nov. 17, 1986, Ser. No. 71,269

Claims priority, application Japan, Nov. 20, 1985, 60-258744

Int. Cl.[4] B23H 7/06, 7/04

U.S. Cl. 219—69 W **4 Claims**



1. A method for wire electrode type electrical discharge machining, wherein the angle between the direction in which a wire electrode extends and a workpiece is allowed to be changed, said method comprising the steps of:

controlling tension applied to said wire electrode in proportion to a change in Young's modulus of said wire electrode; and

decreasing electric current supplied to said wire electrode, said controlling and decreasing steps being implemented whenever the direction in which said wire electrode proceeds along the surface of a workpiece is changed at a corner while a taper machining operation is being conducted.

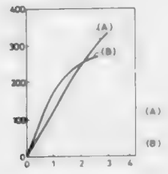
VOL 1099 ISS 3 FEB 21 1989 UMI

4,806,721

WIRE ELECTRODE FOR WIRE-CUT ELECTRICAL DISCHARGE MACHINING

Haruhiko Ito; Yoshio Shibata, and Masato Benzai, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1984, Ser. No. 629,383
Claims priority, application Japan, Jul. 11, 1983, 58-125715
Int. Cl.⁴ B23H *1/06, 7/08*
U.S. Cl. 219—69 W **24 Claims**



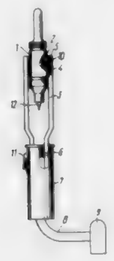
1. In an electrical discharge machining (EDM) apparatus for machining a workpiece, said apparatus comprising a pulsed voltage source and an EDM electrode, said pulsed voltage source applying a pulsed voltage between said EDM electrode and said workpiece to machine said workpiece, the improvement wherein said EDM electrode comprises: a wire composed of a core consisting of an amorphous alloy, said amorphous alloy containing at least two of iron, aluminum, magnesium, copper, cobalt and niobium, and a thin crystalline surface layer around said core.

4,806,722

SWIVEL-HEAD WELDING TORCH FOR GAS-SHIELDED NONCONSUMABLE-ELECTRODE ARC WELDING

Alfred V. Ivannikov, Leningrad, U.S.S.R., assignor to Vsesojuzny Nauchno-Issledovatelsky Proektno-konstruktorsky I Tekhnologichesky Institut Elektrosvarochnogo Oborudovania, Leningrad, U.S.S.R.

PCT No. PCT/SU86/00093, § 371 Date Oct. 28, 1987, § 102(e) Date Oct. 28, 1987, PCT Pub. No. WO88/02295, PCT Pub. Date Apr. 7, 1988
PCT Filed Sep. 29, 1986, Ser. No. 167,142
Int. Cl.⁴ B23K *9/24*
U.S. Cl. 219—75 **1 Claim**



1. A swivel-head welding torch for gas-shielded nonconsumable-electrode arc welding, comprising a head (1) two current-supply conduits (3) provided with external electric insulation (4) and held with one of their ends to the torch body (7), while the other ends of the conduits are connected to the head (1), characterized in that the current-supply conduits (3) are connected to the head (1) through connectors (5) held at the ends of the current-supply conduits (3) and facing each other, and holes (2) adapted to accept the connectors (5), said holes being provided in the head (1) and shaped so as to suit the shape of the external surface of the connectors (5) and besides that the current-supply conduits (3) communicate with a gas source (9), while the connectors (5) have through ducts (10) which establish communication between the interior space of the head (1) and that of the current-supply conduits (3) which adjoin tightly the head (1) and are mounted longitudinally transversable and turnable with respect to the torch body (7).

4,806,723

WELD MONITORING

Thomas G. R. Beynon, and Ian H. Ridley, both of Sheffield, England, assignors to Land Infrared Limited, Sheffield, England

Filed Jun. 16, 1987, Ser. No. 62,629
Claims priority, application France, Jun. 18, 1986, 86 14790
Int. Cl.⁴ B23K *11/24*
U.S. Cl. 219—109 **7 Claims**



1. A method of monitoring the quality of a weld performed with the assistance of an automatically controlled electrode support arm which moves periodically from a rest position to a series of spaced operative positions in each of which a weld operation is performed that forms a weld zone, said support arm being coupled with radiation guide means, the method comprising:

a. causing a radiation detector to receive radiation via said guide means from an electrode supported by said support arm when said electrode is at a first, cold temperature and at regular intervals different from the times of occurrence of a weld operation whereby said detector generates a first signal;

b. causing said detector to receive via said guide means radiation from each weld zone as it cools after a welding operation whereby said detector generates a second signal;

c. causing said detector to receive radiation via said guide means from a reference source at a second temperature, higher than said first temperature, when said arm is in said rest position whereby said detector generates a third signal; and

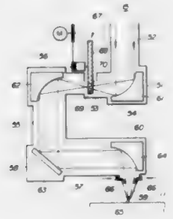
d. monitoring the relationship between said first, second and third signals.

4,806,724

LASER BEAM MACHINING DEVICE

Yoshito Kawai; Akira Kishida, both of Chiba; Shiroh Yokoama, Saitama; Ichiku Yokoyama, Saitama, and Gondai Yokoyama, Saitama, all of Japan, assignors to Kawasaki Steel Corp., Hyogo and Miyama & Co., Ltd., Saitama, both of, Japan

Filed Aug. 11, 1987, Ser. No. 84,283
Claims priority, application Japan, Aug. 15, 1986, 61-191212; Oct. 31, 1986, 61-260430
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121.68 **19 Claims**



1. A laser beam machining device comprising:
a laser beam source generating a laser beam;
means for defining a laser beam path;
an optical primary condenser disposed within the laser beam for condensing the laser beam to irradiate onto a predetermined point on a work object;
an assist gas discharge means for discharging an assist gas toward said predetermined point on the work object;
a mechanical chopper having a rotary chopper disc disposed in said laser beam path and oriented upstream of said optical condenser for intermittently establishing and blocking said laser beam path so that the laser beam may be intermittently irradiated onto the predetermined point on said work object;
an auxiliary condenser provided in said laser beam path upstream of said chopper, which auxiliary condenser has a focal distance approximately corresponding to the distance to said chopper disc,
a diffuser provided in said laser beam path and downstream of said chopper, which diffuser passes a parallel beam to said primary condenser; and
wherein said primary condenser comprises a condenser mirror.

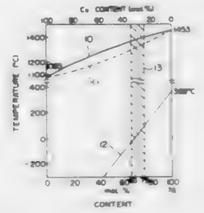
4,806,725

CIRCUIT SUBSTRATE AND THERMAL PRINTING HEAD USING THE SAME

Yasunori Narizuka, Yokohama; Keiji Mori, Yamato; Akira Yabushita, Yokohama; Tsuneaki Kamei, Kanagawa, and Mamoru Morita, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 9, 1987, Ser. No. 71,325
Claims priority, application Japan, Jul. 11, 1986, 61-161823; Jul. 23, 1986, 61-171537
Int. Cl.⁴ H05B *1/00*
U.S. Cl. 219—216 **10 Claims**

1. A circuit substrate having an electrical circuit, which comprises at least a part of an electrode to be soldered being composed of an alloy of Ni and Cu, whose composition ranges from 65 mol % Ni—35 mol % Cu to 75 mol % Ni—25 mol % Cu so that diffusion of solder into said electrode can be substantially avoided while a protective inorganic material layer,



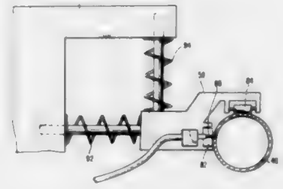
and the solder, have sufficient adhesion to the electrode to be soldered.

4,806,726

APPARATUS FOR MACHINING A BENT ELONGATED MEMBER OF VARIABLE CONFIGURATION

Bruno A. Ross; Jon W. Harwood; Walter G. Moring, III, all of Toledo, Ohio, and Peter L. Reneggan, Goldsboro, N.C., assignors to AP Industries, Inc., Toledo, Ohio

Division of Ser. No. 790,737, Oct. 24, 1985. This application Feb. 19, 1987, Ser. No. 16,648
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121.67 **9 Claims**



1. An apparatus for machining a bent elongated workpiece at at least one predetermined location thereon despite variations in the actual bent shape of the elongated workpiece from an intended bent shape thereof, said apparatus comprising:
a support;
means for moving said support relative to said bent elongated workpiece;
a head movably mounted to said support;
a first spring means mounted to said support and said head for urging said head in a first direction away from said support and towards said bent elongated workpiece;
a first follower mounted to said head and being urged into contact with said bent elongated workpiece by said first spring means;
a second spring means mounted to said support and said head for urging said head in a second direction away from said support and toward said bent elongated workpiece, said second direction being angularly aligned to said first direction;
a second follower mounted to said head and being urged into contact with said bent elongated workpiece by said second spring means; and
machining means for performing a selected machining operation on said bent elongated workpiece, said machining means being mounted to said head and in fixed spaced relationship to said followers, said fixed spaced relationship between said machining means and said followers being such that said machining means is aligned with the preselected location on said bent elongated workpiece

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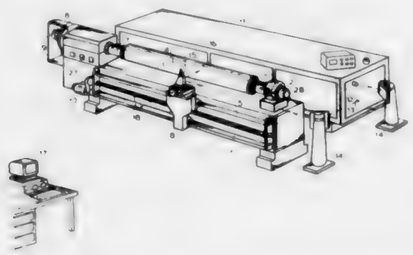
when the followers are urged into contact with said bent elongated workpiece.

4,806,727

APPARATUS FOR PRODUCING A SCREEN PRINTING STENCIL

Siegfried Rückl, Kufstein, Austria, assignor to Schablonentechnik Kufstein Gesellschaft M.B.H., Kufstein-Schaftenau, Austria

PCT No. PCT/AT86/00009, § 371 Date Oct. 10, 1986, § 102(e) Date Oct. 10, 1986, PCT Pub. No. WO86/04549, PCT Pub. Date Aug. 14, 1986
PCT Filed Jan. 27, 1986, Ser. No. 923,154
Claims priority, application Austria, Feb. 12, 1985, 406/85
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121.68 **6 Claims**



1. An apparatus for producing a screen-printing stencil comprising:

means for mounting a foil perforated in a regular pattern and provided with a stencil-stretching arrangement, said foil being coated with a coating material blocking the perforations of said foil;

means including said stencil-stretching arrangement for stretching said foil thereon; and

means for training a laser beam selectively at locations of said coating for removing said coating in a predetermined pattern to unblock perforations where the coating is removed, said means for training said laser beam comprising;

a guide extending parallel to said stencil-stretching arrangement and to a foil mounted thereon;

a carriage displaceable along said guide parallel to said foil and said stencil-stretching arrangement;

a head on said carriage for training said laser beam against said coating on said foil;

a laser source for generating said laser beam and provided with optics delivering said laser beam to said head; and

a control unit operatively connected to said carriage and with said laser source for effecting control of said laser beam in accordance with said predetermined pattern,

said stencil-stretching arrangement comprises bearings and a stretcher drum receiving said foil and journaled in said bearings.

4,806,728

LASER PROCESS APPARATUS

Thomas E. Salzer, Bedford, and David R. Whiteiavas, Weston, both of Mass., assignors to Raytheon Company, Lexington, Mass.

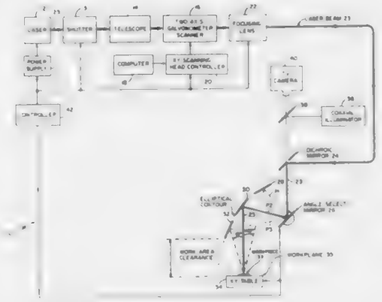
Filed Feb. 1, 1988, Ser. No. 150,804
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121.63 **26 Claims**

1. A laser apparatus comprising:

means for generating a laser beam having a divergence in accordance with a desired impinging spot size of said laser beam on a workpiece;

means for adjusting said impinging spot size; and

means for selecting one of a plurality of angles of incidence



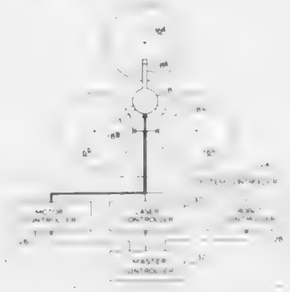
of said laser beam at said workpiece, said laser beam having a constant pathlength for each of said angles of incidence selected.

4,806,729

LASER WAX JOINERY METHOD AND APPARATUS

J. Fred Holmes; John M. Hunt; Douglas C. Draper, all of Portland, Oreg.; Todd L. Cloninger, Dallas, N.C.; Tom R. Mersereau, Gladstone, and Michael J. Hosler, Molalla, both of Oreg., assignors to Oregon Graduate Center, Beaverton, Oreg.

Filed Jan. 4, 1988, Ser. No. 141,468
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121.63 **19 Claims**



1. In the field of plural-wax-segment pattern manufacture of mold beds for investment casting, a wax joinery apparatus comprising:

means for immobilizing, in abutted relationship with one another, substantially conforming marginal edges of a pair of wax segments, and

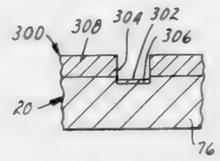
laser means for welding such edges to produce a pattern of joined wax segments.

4,806,730

METHOD OF FORMING CRISP WHITE INDICIA IN ALUMINUM

Charles E. Alexson, Blackbrook Township, Polk County, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 847,483, Apr. 3, 1986, Pat. No. 4,736,742. This application Nov. 9, 1987, Ser. No. 118,046
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121.69 **3 Claims**



1. A method for forming crisp white indicia on an aluminum housing comprising the steps of:

forming a dark colored hard anodized layer defining a surface of the housing;

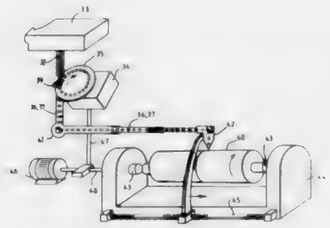
removing with a laser precise predetermined portions of the anodized layer in the shape of the indicia and forming by the removal a white aluminum oxide coating on a surface exposed by the laser-induced removal, the oxide coating forming crisp white indicia visible through the remainder of the anodized layer.

4,806,731

PROCESS FOR MARKING THE SURFACE OF A ROLLING MILL

Adolphe Bragard, 76, Chemin des Crêtes, B 4050 Esneux; Jacques Halleux, 29, rue Sur la Carrière, B 4546 Richelle; Frédéric Terreur, 21, rue Reine Astrid, B 4620 Fleron, and Jacques Defourny, 224, rue Voie des Vaux, 4320 St-Nicolas, all of Belgium

Filed Feb. 23, 1988, Ser. No. 159,138
Claims priority, application Luxembourg, Feb. 23, 1987, 86784; Belgium, May 19, 1987, 08700560; Jul. 14, 1987, 08700874; Dec. 24, 1987, 08701485; Jan. 11, 1988, 08800027; Jan. 13, 1988, 08800034
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121.69 **12 Claims**



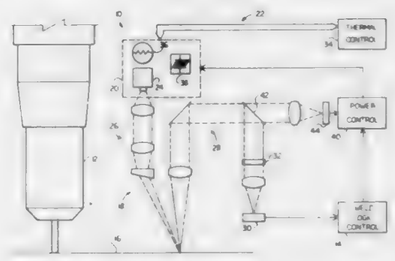
1. A process for marking the surface of a rolling mill roll having a longitudinal axis, comprising the steps of rotating the roll about its longitudinal axis and forming a multitude of microscopic dents are formed in the surface of the said roll by means of an intermittent laser beam in the presence of a gas jet directed at an impact zone of the said laser beam, each microscopic dent giving rise to a ridge, and controlling the output and the angle of incidence of the gas jet, whereby microscopic dents are formed with a ridge on only a part of their periphery.

4,806,732

MULTI-POWER LASER SEAM TRACKING SYSTEM

James B. Abshire, Laurel, and Peter L. Fuhr, Greenbelt, both of Md., assignors to Caterpillar Inc., Peoria, Ill.

Filed May 14, 1987, Ser. No. 49,495
Int. Cl.⁴ B23K *9/12*
U.S. Cl. 219—124.34 **5 Claims**



1. A scanning apparatus for use with an adaptive welding system, said adaptive welding system including a welding torch adapted to produce an arc and a welding torch logic control for controllably operating said welding torch, comprising:

detector means for sensing radiant energy produced by said arc and producing first and second status signals in response to the respective absence and presence of said arc produced radiant energy;

logic means for producing a first power command signal in response to receiving said first status signal and a second power command signal in response to receiving said second status signal; and

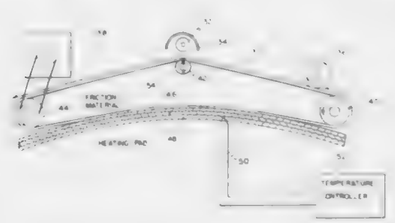
emitter means for controllably producing radiant energy having a first power level in response to receiving said first power command signal and a second power level in response to receiving said second power command signal.

4,806,733

RADIANT GLOSSING APPARATUS FOR GLOSSING DEVELOPER SHEETS AND A PROCESS FOR USING THE SAME

Benjamin C. Stone, Waynesville, and D. Scott Prochl, Miamisburg, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Feb. 19, 1987, Ser. No. 16,311
Int. Cl.⁴ H05B *3/22*
U.S. Cl. 219—216 **5 Claims**



1. A radiant glossing apparatus for glossing a developer sheet having a thermoplastic developer resin on the surface thereof, said thermoplastic developer resin being capable of forming a film which imparts gloss upon the application of heat, comprising:

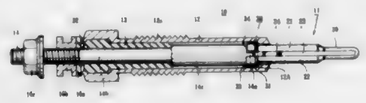
a source of radiant energy;

reflector means for focusing said radiant energy directly on

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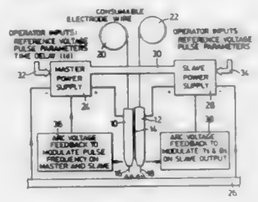
said developer sheet to soften said thermoplastic developer resin, said source of radiant energy being disposed within said reflector means;
a continuous heated belt for transporting said developer sheet under said source of radiant energy and said reflector means, said belt being disposed entirely beneath said source of radiant energy and said reflector means;
roller means around which said belt is placed;
means for driving said belt relative to said source of radiant energy and said reflector means;
a heated arched plate situated entirely beneath said belt and adapted to engage on the convex side thereof said belt, said belt being held snugly against said convex surface of said plate and being heated by said plate; and
insulating frictional material on said convex surface of said arched plate such that a charge is induced in said belt so that even thermal contact by electrostatic attraction is maintained between said developer sheet and said belt.

4,806,734
DIESEL ENGINE GLOW PLUG
Mitsuake Masaka, and Koji Hatanaka, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan
Filed Sep. 30, 1987, Ser. No. 103,075
Claims priority, application Japan, Oct. 9, 1986, 61-154473[U]
Int. Cl.[4] F23Q *7/22*; **F02P** *19/02*; **H05B** *3/00*
U.S. Cl. 219—270 **9 Claims**



1. A diesel engine glow plug comprising:
an electrically conductive hollow holder;
an elongated ceramic heater, a rear end portion of which is mechanically fixed at a distal end portion of said hollow holder;
an electrically conductive annular member interposed between said rear end portion of said ceramic heater and said distal end portion of said hollow holder to provide mechanical and electrical connections therebetween;
an external electrical connection terminal engaging with the rear end portion of said ceramic heater from a rear end portion of said holder through an interior of said holder; and
an electrically insulating sleeve, housed in said hollow holder, electrically insulating said external electrical connection terminal from said hollow holder,
said ceramic heater comprising an exposed foward U-shaped heating portion and a pair of parallel lead portions extending backward from both ends of said heating portion and terminating in an enlarged diameter portion defining said rear end portion of said heater, one of said lead portions being electrically connected to said holder through said annular member but insulated from said external electrical connection terminal by an insulating member, the remaining one of said lead portions being engaged with and electrically connected to said external electrical connection terminal but electrically insulated from said annular member and said holder, and the rear end portion of said hollow holder being provided with a fixing structure mechanically fixing said ceramic heater, said external connecting terminal, and said insulating sleeve, all of which are housed in said holder,
said annular member comprising a cylindrical portion surrounding said rear end portion of said heater and a tapered portion electrically connecting said distal end portion of said holder with said one of said lead portions.

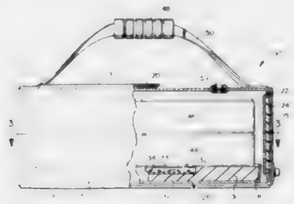
4,806,735
TWIN PULSED ARC WELDING SYSTEM
Arthur Ditschun, Brampton, and Boleslaw Zajaczkowski, Etobicoke, both of Canada, assignors to Welding Institute of Canada, Oakville, Canada
Filed Jan. 6, 1988, Ser. No. 141,243
Int. Cl.[4] B23K *9/09*
U.S. Cl. 219—130.51 **10 Claims**



1. A pulsed arc welding system comprising:
a first master welding electrode and at least one second slave welding electrode electrically insulated from one another;
respective master and slave power sources for connection respectively to the first master and second slave welding electrodes for supplying respective master and slave welding currents to the said electrodes to produce respective master and slave welding arcs between them and a workpiece;
said power sources each providing its respective welding current consisting of a respective master or slave continuous background current component and a respective master or slave superimposed pulse current component;
means for detecting the magnitude of the arc voltage of the master welding arc, for obtaining therefrom a master pulse frequency control signal, and for feeding the said control signal to the power sources to control the frequency of the master and slave pulse current components, the control of the master pulse frequency being such as to maintain the master welding arc stable, the master and slave pulse current components thereby being maintained in synchronism with one another;
means for providing a phase difference of the master and slave current components relative to one another for operation of the respective master and slave arcs with the said phase difference to reduce magnetic interference between them; and
means of detecting the magnitude of the arc voltage of the slave welding arc, for obtaining therefrom a slave pulse control signal, and for feeding the last-mentioned signal to the slave power source to control the duration of the slave pulse current component and/or the amplitude of the slave continuous background current component so as to maintain the slave arc stable.

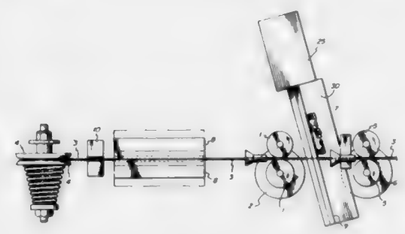
4,806,736
HEATED DELIVERY BAG
John P. Schirico, Elmwood Park, Ill., assignor to Jeno F. Paulucci, Sanford, Fla.
Filed Oct. 5, 1987, Ser. No. 104,659
Int. Cl.[4] H05B *3/26*
U.S. Cl. 219—386 **27 Claims**

27. A portable container for heating and storing pizza comprising:
(a) a fabric box about 20 inches long, about 20 inches wide, and about 8 inches high;
(b) plexiglass strips for supporting said fabric box positioned at the four vertical corners of said fabric box and connected to said fabric box;
(c) a heating unit inside said fabric box comprising an aluminum pan about 17 inches long, 17 inches wide, and 1¼ inches deep, and a block of fiberglass insulation positioned inside said pan having a depression formed about one-half inch deep in its upper surface;
(d) a heating element positioned in said depression comprising a sheet of silicone rubber about one eighth inch thick, about eight inches long, and about 10 inches wide, and a flexible resistor embedded within said silicone rubber sheet having resistance of about three watts per square inch;



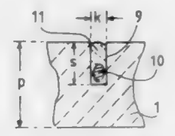
(e) means for activating said heating unit when the temperature at a selected point inside said portable container falls below 165° F. and for deactivating said heating unit when said temperature rises above 180° F.;
(f) an approximately 20 inch by 20 inch lower rigid panel at the bottom of said fabric box adapted to support said heating unit;
(g) an approximately 20 inch by 20 inch upper rigid panel at the top of said fabric box defining a compartment with the top of said heating unit and the sides of said fabric box adapted to contain two pizzas packaged in delivery box containers; and
(h) means for carrying said portable container with one hand.

4,806,737
APPARATUS FOR MANUFACTURING A SURGICAL SUTURE
Peter A. Coates, Salisbury Green, England, assignor to American Cyanamid Company, Stamford, Conn.
Filed Jul. 30, 1987, Ser. No. 79,619
Int. Cl.[4] H05B *3/62*
U.S. Cl. 219—390 **18 Claims**



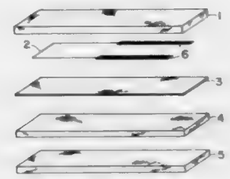
1. An apparatus for melt fusing a suitable controlled length of a multifilament thermoplastic material comprising a radiant heater having a two part cylindrical tunnel, the tunnel having a longitudinal axis parallel to a direction of advance of a multifilament material, said tunnel being divided along the longitudinal axis; means for advancing a suitable controlled length of said multifilament material into the two part cylindrical tunnel; means for maintaining said suitable controlled length in a stationary position in said tunnel; and means for tensioning said suitable controlled length being fused.

4,806,738
ELECTRIC PLATE
Erkki Telamo, Viitatentie, SF-01810 Lahtajoki, Finland
Filed Sep. 9, 1987, Ser. No. 94,569
Claims priority, application Finland, Mar. 12, 1987, 871077
Int. Cl.[4] H05B *3/74*
U.S. Cl. 219—457 **3 Claims**



1. An electric plate comprising a soapstone plate having a thickness and a top flat cooking surface, a resistance element groove formed in a continuous path in said soapstone plate with portions which are spaced apart from each other and from the edges of said plate, said groove being at a depth of at least half the thickness of said plate and being located in a lower surface of said plate an electric heating resistance in said groove, a refractory material covering said heating resistance, and a straining strap extending around said plate.

4,806,739
PLATE-LIKE CERAMIC HEATER
Takao Kojima; Hiroyuki Ishigure; Yoshiki Kawachi, and Tetsuryo Yamada, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan
Continuation of Ser. No. 805,908, Dec. 6, 1985, abandoned. This application Dec. 17, 1987, Ser. No. 136,438
Claims priority, application Japan, Dec. 11, 1984, 59-260069
Int. Cl.[4] H05B *3/26*
U.S. Cl. 219—543 **12 Claims**



1. A heater, comprising a partially and/or entirely stabilized ZrO_2-base substrate, an Al_2O_3-base insulating layer disposed on a surface of the substrate and having insulating properties at high temperature, and an electron-conductive pattern to generate heat disposed on said Al_2O_3-base layer, said substrate and insulating layer having been formed by simultaneous sintering, and wherein the A_2O_3 layer has a thickness of at least 20 microns.

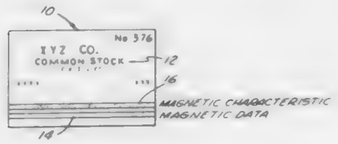
VOL 1099 ISS 3 FEB 21 1989 UMI

4,806,740

MAGNETIC CHARACTERISTIC IDENTIFICATION SYSTEM

David G. Gold, Santa Monica, and Frank D. Tucker, Valencia, both of Calif., assignors to Light Signatures, Inc., Los Angeles, Calif.

Filed Sep. 19, 1986, Ser. No. 909,145
Int. Cl.[4] G06K 7/06
U.S. Cl. 235—449 **17 Claims**



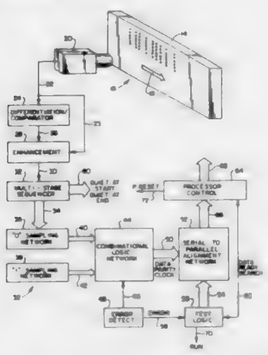
1. An authenticator device of verifiable authenticity comprising:
- a base member having a support substrate defining a surface;
- a layer of magnetic substance disposed on said support substrate surface in at least one area to possess a repeatably magnetically-sensible, random, variable density characteristic to identify said authenticator device; and
- a machine-readable record on said base member positioned at a location displaced from said area of said layer of magnetic substance and representative of said repeatably magnetically-sensible, random, variable density characteristic to verify authenticity of said device by comparison with said repeatably magnetically-sensible, random variable density characteristic.

4,806,741

ELECTRONIC CODE ENHANCEMENT FOR CODE READERS

John A. Robertson, Chillicothe, Ohio, assignor to Telesis Controls Corporation, Chillicothe, Ohio

Filed Jul. 16, 1986, Ser. No. 886,878
Int. Cl.[4] G06K 7/10
U.S. Cl. 235—462 **22 Claims**



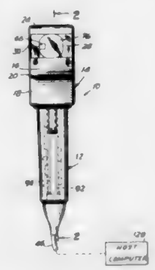
1. In a code reading system wherein imaging means for imaging at least a portion of a code carrying object and generating a sequence of line scan defined image output signals of given scan duration which include image transition signals occurring in a time spaced sequence corresponding with said code and which further includes line scan synchronization signals, the code signal enhancement circuit improvement comprising:
- oscillator means actuable for producing a timed sequence of pulsed signals;
- counter means actuable to assume a clear condition and responsive to said pulsed signals for deriving a sequence of address signals from first to last;
- memory means having a binary word access terminal and a sequence of address locations for selectively retaining arithmetic values, responsive to said address signals for providing at said access terminal arithmetic signals corresponding with said values at said address locations, and further responsive to said address signals and said arithmetic signals at said access terminal in the presence of a write enable condition to effect said retention of said arithmetic values corresponding with said arithmetic signals at said access terminal;
- signal treatment means responsive to said image output signals for deriving presentment signals representing the state of said occurrence of said image transition signals;
- means for deriving select arithmetic adjustment signals;
- logic circuit means responsive to said arithmetic signals at said access terminal, to said arithmetic adjustment signals and said presentment signals for varying the value of said arithmetic signals by the amount of said arithmetic adjustment signals selected with respect to said presentment signals to derive adjusted arithmetic signals at an output;
- comparator means responsive to a select arithmetic threshold value and to said adjusted arithmetic signals for deriving an enhanced said transition signal when said adjusted arithmetic signals exhibit a value at least as great as said threshold value; and
- distribution means for selectively conveying said adjusted arithmetic signals to said comparator means and said memory means.

4,806,742

PORTABLE LASER DIODE SCANNING HEAD

Jerome Swartz, Setauket; Howard M. Shepard, Great River, both of N.Y.; Eric F. Barkan, San Francisco, Calif.; Mark J. Krichever; Boris Metlitsky, both of Hauppauge, N.Y.; Edward Barkan, South Setauket, and Alexander M. Adelson, Peekskill, both of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Division of Ser. No. 706,502, Feb. 28, 1985, abandoned. This application Jan. 26, 1988, Ser. No. 148,438
Int. Cl.[4] G06K 7/10
U.S. Cl. 235—472 **6 Claims**



1. In a laser scanning system for reading symbols, a laser scanning head comprising:
- (a) a generally gun-shaped housing including a hollow barrel portion, and means for detachably and interchangeably mounting one of a set of hollow handle portions to the barrel portion;
- (b) means including an actuatable laser light source mounted in the barrel portion and operative, when actuated, for generating an incident laser beam;

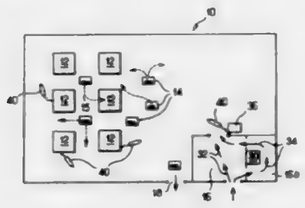
- (c) optic means mounted in the barrel portion for optically forming and directing said incident laser beam toward a reference plane located exteriorly of the housing, and to a symbol located in a working distance range in the vicinity of the reference plane, thereby reflecting off the symbol reflected laser light, at least a returning portion of which travels away from the symbol back toward the head;
- (d) scanning means mounted in the barrel portion for scanning the symbol in a scan across the symbol, said returning portion of said reflected laser light having a variable intensity over the scan;
- (e) sensor means mounted in the barrel portion for detecting the variable intensity of said returning portion of said reflected laser light over a field of view, and for generating an electrical analog signal indicative of the detected variable light intensity;
- (f) said scanning means being operative for scanning at least one of said incident laser beam and said field of view;
- (g) signal processing means mounted in the barrel portion for processing the analog electrical signal, and for generating a digitized signal indicative of the symbol;
- (h) decode means mounted in said one handle portion and operative for decoding the digitized signal to data descriptive of the symbol being read;
- (i) manually-actuatable trigger means on the housing and operatively connected to, and operative for actuating, the laser beam generating means, optic means, scanning means, sensor means and decode means to initiate a reading of the symbol upon manual actuation of the trigger means by the user, said trigger means being actuatable for each symbol to be read, each symbol in its respective turn; and
- (j) an electrical interlock between the barrel portion and said one handle portion and operative for electrically connecting the decode means in said one handle portion to the signal processing means in the barrel portion when said one handle portion is mounted on the latter.

4,806,743

INSTALLATION FOR MANAGING THE "VISITOR" RESOURCE AT A TRADE SHOW, OR FAIR, OR THE LIKE

Jean-Jacques Thenery, 4 rue de l'Amandier, 78400 Chatou, France

Filed Nov. 16, 1987, Ser. No. 120,828
Claims priority, application France, Nov. 17, 1986, 86 15948
Int. Cl.[4] G06K 7/10
U.S. Cl. 235—472 **10 Claims**



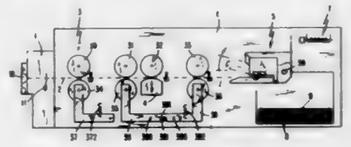
1. In an organization comprising a plurality of serving entities and a plurality of persons liable to come into contact with said serving entities, an installation for making a plurality of subfiles taken from a global file containing information relating to each person, each subfile being associated with a corresponding serving entity and being based on contacts made between said people and said serving entities, the installation comprising:
- input means for making the individual records of said global file using information provided by each person;
- association and delivery means for associating an identification number with each record and for delivering to each person personal badge including a medium on which said identification number is encoded;
- a plurality of read and data transfer units respectively associated with each of the serving entities and suitable for recording in respective memory units the identification numbers read from the badges of each of the persons making contact with the respective serving entities; and
- means for making said plurality of subfiles on the basis of the contents of said memory units and of said global file.

4,806,744

IDENTIFICATION CARD READER ENCODER

Alain Brisse, Paris; Michel Chevalier, Chevreuse, and Joël Bouzaix, Ris Orangis, all of, France, assignors to Bull, S.A., Paris, France

Filed Sep. 12, 1986, Ser. No. 906,695
Claims priority, application France, Sep. 12, 1985, 85 13558
Int. Cl.[4] G06K 13/00
U.S. Cl. 235—477 **10 Claims**



1. An identification card reader encoder comprising a card admission chamber, a read station for a magnetic track on a card supplied to the reader encoder via the card admission chamber, a fixed guide path including means for feeding cards from the admission chamber to the read station, the read station including a read head and drive rollers on opposite sides of the guide path to form a nip through which the card traverses, the magnetic track read head having first and second units, each having a magnetic head mounted to turn about parallel axes extending in the direction of card movement through the guide path, said axes being located proximate the ends of swing arms located on opposite sides of the head, means for mounting said swing arms to turn about another axis extending in the same direction as the card moves through the guide path, said mounting means including a bifurcated bracket mounted to turn about a further axis extending in the same direction as the card moves through the guide path, and elastic means mounted to apply tension on said bifurcated bracket for urging the head in abutting relation with the card during the course of the card travel.

4,806,745

IC CARD WITH FEWER INPUT KEYS

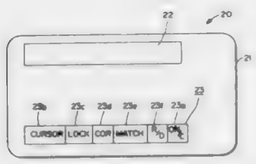
Yoshinori Oogita, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 16, 1987, Ser. No. 39,087
Claims priority, application Japan, Apr. 18, 1986, 61-59122[U]; Jun. 9, 1986, 61-134476; Jun. 17, 1986, 61-92800[U]
Int. Cl.[4] G06K 19/06
U.S. Cl. 235—492 **9 Claims**

1. An IC card comprising
- a display means,
- a display control means for causing symbols and a cursor to be displayed in said display means,
- a cursor motion input means for specifying motion of said cursor displayed in said display means,
- a cursor moving means for causing said cursor to move to a position corresponding to a specified symbol in response to an input through said cursor motion input means,
- a lock input means for specifying one of said symbols displayed in said display means, and

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a locking means for keeping said cursor at a position corresponding to said one of said symbols specified by said lock



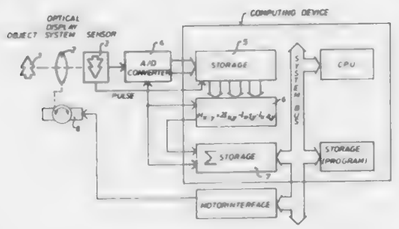
input means in response to an input through said lock input means.

4,806,746

APPARATUS AND PROCESS FOR FOCUSSING OF AN OPTICAL DISPLAY SYSTEM

Erich Will, Sonnenweg 1, D-6330 Wetzlar 21/OT Naunborn; Harry Harms, Johannitер Weg 30, D-8700 Wurzburg 30; Johannes Lilleman, Waller Strasse 24, D-2800 Bremen 1; Edgar Iligen, Moistinger Allee 108, D-2400 Lübeck; Siegfried Boseck, Heideweg 40, D-2804 Lilienthal-Klostermoor; Georg Schmidbauer, Burgblick 18, D-6551 Gutenberg, and Horst Kreitlow, Hollige 42, D-3030 Walsrode 23, all of Fed. Rep. of Germany

Filed Apr. 17, 1987, Ser. No. 39,214
Int. Cl.[4] G01V *1/20*
U.S. Cl. 250—201 5 Claims



1. An apparatus for focussing of an optical display system comprising a sensing means in a image plane of an object for sensing the brightness differences between one picture element of the object and two adjacent picture elements, means connected to said sensing means for adding up the positive values of the sensed brightness differences $H_{x,y}$, said adding means comprising a computing device operating on an electronic basis to determine the total

$$S = \sum_{y=1}^{N} \sum_{x=2}^{M-1} (k_{x,y})(H_{x,y})$$

with $H_{x,y} = 2\,I_{x,y} - I_{x-1,y} - I_{x+1,y}$ and

$$k_{x,y} = \begin{cases} 0, \text{ if } H_{x,y} \leq 0 \\ 1, \text{ if } H_{x,y} > 0 \end{cases}$$

in which
$k_{x,y}$ the evaluating factor for pixel x,y
y the column number of the actual pixel in the sensor plane
x the line number of the actual pixel in the sensor plane,
$I_{x,y}$ the brightness value of the pixel x,y,
N the number of columns in the sensor plane,
M the number of picture elements of a line.
$H_{x,y}$ the brightness differences between the pixel x,y and the two adjacent pixels x−1,y and x+1,y

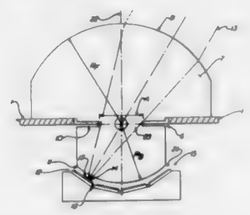
such that said total S is calculated for each focussing position and from these totals a focussing position is selected at which the total S is a maximum.

4,806,747

OPTICAL DIRECTION OF ARRIVAL SENSOR WITH CYLINDRICAL LENS

David S. Dunavan, Norwalk, and Richard Babiak, Wilton, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 28, 1988, Ser. No. 157,779
Int. Cl.[4] G01J *1/20*
U.S. Cl. 250—203 R 11 Claims



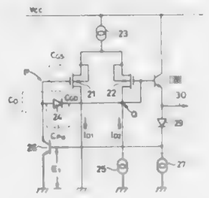
1. An improved direction of arrival sensor which, in combination, comprises:
an opaque top mask with a rectangular slit therethrough;
a cylindrical lens fixedly disposed in the rectangular slit having a front half into which incoming radiation passes and a back half from which radiation emanates;
detector means disposed on an arc concentric with said cylindrical lens and in spaced relation to said back portion such that radiation emanating from said back half of said cylindrical lens forms a rectangular bar of radiation on said detector means;
said detector means embodying an encoding means which generates a position signal indicative of the position of the rectangular bar of radiation on said detector means; and
processing means to process the position signal to determine the angle of incidence the incoming radiation makes with said opaque top mask.

4,806,748

PHOTO-ELECTRIC CONVERSION CIRCUIT

Satoshi Takami, and Yutaka Ohsawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1987, Ser. No. 65,436
Claims priority, application Japan, Jun. 23, 1986, 61-144798
Int. Cl.[4] H01V *40/14*
U.S. Cl. 250—214 R 10 Claims



1. A photoelectric conversion circuit, comprising:
first transistor means;

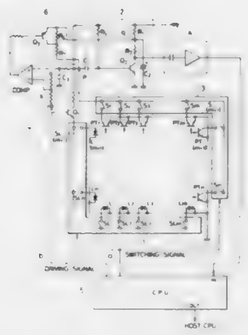
self-biased second transistor means;
photodiode means connected between gates of said first and second transistor means by having an anode connected to a gate electrode of said first transistor means and a cathode connected to a gate electrode of said second transistor means; and
means for controlling a drain current of said second transistor means to a predetermined value, whereby said predetermined value of drain current causes said photodiode mans to be biased in one of a first and second state, wherein in a first state said photodiode means is based slightly in a reverse direction, and in a second state said photodiode means is biased in a short-circuit state.

4,806,749

OPTICAL COORDINATE SYSTEM INPUT DEVICE

Junichi Ohuchi; Kazuo Hasegawa, and Hiroaki Sasaki, all of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Sep. 29, 1987, Ser. No. 102,424
Claims priority, application Japan, Dec. 22, 1986, 61-197863
Int. Cl.[4] G01V *9/04*
U.S. Cl. 250—221 4 Claims



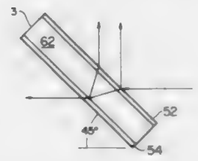
1. An optical coordinate system input device comprising:
multiple opposed pairs of light emitting elements and light receptor elements;
selection means associated with respective said pairs of light emitting elements and light receptor elements to sequentially activate same;
an impedance detection circuit for detecting an impedance of a selected one of said light receptor elements, said impedance being related to a level of ambient light; and
a variable impedance circuit, coupled in series with a selected light receptor element, whose impedance is controlled in response to an output signal from said impedance detection circuit, wherein a predetermined level of ambient light, reducing said impedance of said selected light receptor element, causes said impedance detection circuit to control said variable impedance circuit to reduce the series impedance of said selected light receptor element and said variable impedance circuit.

4,806,750

COLOR IMAGER UTILIZING NOVEL TRICHROMATIC BEAMSPLITTER AND PHOTOSENSOR

Kent D. Vincent, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 847,382, Apr. 2, 1986, Pat. No. 4,709,144. This application Nov. 23, 1987, Ser. No. 124,225
The portion of the term of this patent subsequent to Nov. 24, 2004, has been disclaimed.
Int. Cl.[4] G01J *3/50*; H01J *5/16*
U.S. Cl. 250—226 22 Claims



1. An apparatus for separating electromagnetic waves according to wavelength comprising:
a first transparent layer;
a first dichroic coating contiguous with the first side of said first transparent layer for reflecting said electromagnetic waves having said wavelength within a first range; and
a second dichroic coating contiguous with the second side of said first transparent layer for reflecting said electromagnetic waves having said wavelength within a second range.

4,806,751

CODE WHEEL FOR A REFLECTIVE TYPE OPTICAL ROTARY ENCODER

Hiraku Abe; Yoshihiro Takahashi, and Yoji Shimojima, all of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Continuation of Ser. No. 911,237, Sep. 24, 1986, abandoned. This application Jan. 29, 1988, Ser. No. 213,468
Claims priority, application Japan, Sep. 30, 1985, 60-148089[U]
Int. Cl.[4] G01D *5/34*
U.S. Cl. 250—231 SE 1 Claim



1. In a code wheel for a reflective type optical rotary encoder in which information such as rotational speed and direction of rotation is determined using a beam of light of a light emitting and detecting means which is irradiated upon and reflected from reflective portions and absorbed by nonreflective portions provided on one side of the code wheel,
the improvement wherein said code wheel comprises:
a nonreflective plate having a light absorbing function;
a reflective plate of a predetermined thickness having a reflective surface on one side thereof and a plurality of notches formed though the thickness of said reflective plate circumferentially along a periphery thereof, said reflective plate being mounted overlappingly on said nonreflective plate, wherein said reflective portions are

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formed by portions of the reflective surface of said reflective plate between adjacent ones of said notches, while said nonreflective portions are formed by portions of said nonreflective plate exposed through said notches in said reflective plate, and wherein said nonreflective plate has formed around a center axis thereof a protrusion of a predetermined height on which said reflective plate is mounted so that a gap is formed between said nonreflective plate and said reflective plate, and said reflective portions have their light reflective surfaces lying in one plane closer to the light emitting and detecting means which is spaced by a selected spacing from said nonreflective portions in an axial direction of said code wheel, said selected spacing being formed by the thickness of said reflective plate added to the height of said protrusion,

whereby any light nominally reflected from said nonreflective portions is reduced due to said selected spacing in the axial direction provided between said reflective portions and said nonreflective portions, and the difference in light reflectivity between said portions is enhanced and the detecting sensitivity of the optical rotary encoder is improved.

4,806,752

INCREMENTAL OR ABSOLUTE ROTATION ENCODER WITH A CLAMPING DEVICE

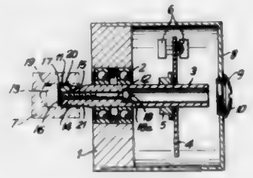
Roland Fischer, St. Georgen, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH

Filed Nov. 25, 1987, Ser. No. 125,321

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1986, 3642230

Int. Cl.⁴ G01D *5/34*

U.S. Cl. 250—231 SE **8 Claims**



1. A rotation encoder with a clamping device for connecting a encoder shaft for rotation with a drive shaft of a drive unit by means of radial clamping action of the clamping device, the encoder shaft having an axis and an end facing the connection with the drive shaft, the clamping surface extending inclined relative to the axis of the encoder shaft, the end of the encoder shaft defining a corresponding second inclined sliding surface, wherein the first and second sliding surfaces rest slidingly against each other, an actuating element capable of acting on the clamping element in axial direction, so that the clamping element and the end of the encoder shaft are moved radially in opposite directions and the clamping element and the end of the encoder shaft are pressed against the drive shaft.

4,806,753

LIGHT SCANNING DEVICE WITH A SHORT-PATH SYNCHRONIZING GRID

Masaru Noguchi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 9, 1987, Ser. No. 36,513

Claims priority, application Japan, Apr. 9, 1986, 61-81827

Int. Cl.⁴ H01J *3/14*

U.S. Cl. 250—235 **6 Claims**

1. A light scanning device for two-dimensionally scanning an object surface which moves in a subscanning direction, comprising:

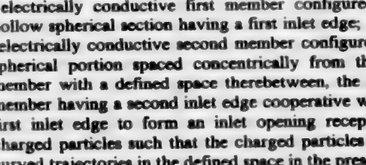
(i) a first light source for emitting a scanning light beam;

(ii) a light deflector for reflectively deflecting the scanning light beam in a main scanning direction substantially perpendicular to the subscanning direction;

(iii) a scanning lens for converging the deflected scanning light beam to scan the object surface in the main scanning direction;

(iv) a second light source for applying a synchronizing light beam to said light deflector at a position where the scanning light beam is reflected thereby, in a direction allowing the synchronizing light beam that is reflectively deflected by said light deflector to be applied to said scanning lens;

(v) a converging lens disposed on the optical path of said synchronizing light beam prior to application to said light deflector for converging said synchronizing light beam at



an optical length from said light deflector shorter than the optical length between the light deflector and the object surface whereby the scanning length of the synchronizing light beam is shorter than the scanning length of the scanning light beam in the main scanning direction;

(vi) a grid shorter than the scanning length of the scanning light beam in the beam scanning direction disposed in a position where said synchronizing light beam is converged by said scanning lens and said converging lens and extending in said main scanning direction; and

(vii) light detecting means disposed behind said grid for detecting the synchronizing light beam of shorter scanning length than that of the scanning light beam that has passed through said grid.

4,806,754

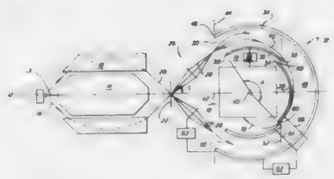
HIGH LUMINOSITY SPHERICAL ANALYZER FOR CHARGED PARTICLES

Robert L. Gerlach, Minnetonka, Minn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jun. 19, 1987, Ser. No. 64,283

Int. Cl.⁴ H01J *40/00, 47/00*

U.S. Cl. 250—305 **11 Claims**



1. A spherical capacitor energy analyzer for charged particles, comprising:

an electrically conductive first member configured as a hollow spherical section having a first inlet edge;

an electrically conductive second member configured as a spherical portion spaced concentrically from the first member with a defined space therebetween, the second member having a second inlet edge cooperative with the first inlet edge to form an inlet opening receptive of charged particles such that the charged particles follow curved trajectories in the defined space in the presence of a first voltage applied to the second member relative to the first member, the second member further having a first outlet edge;

an electrically conductive third member configured as a spherical segment spaced concentrically from the first member offset from the second member and having a second outlet edge cooperative with the first outlet edge to define an exit slot for egress of charged particles having selected trajectories in the defined space in the presence of a second voltage applied to the third member relative to the first member; and

detector means for detecting the egressed charged particles.

4,806,755

MICROMECHANICAL ATOMIC FORCE SENSOR HEAD

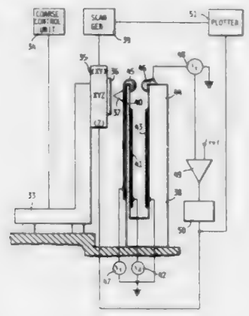
Urs T. Duerig, Rüschlikon; James K. Gimzewski, Zürich, both of Switzerland; Johann Greschner, Pfinztalen, Fed. Rep. of Germany; Wolfgang D. Pohl, Adliswil, Switzerland, and Olaf Wolter, Schoenaich, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1987, Ser. No. 103,993

Claims priority, application European Pat. Off., Oct. 3, 1986, 86.113669.5

Int. Cl.⁴ H01J *37/26*

U.S. Cl. 250—306 **21 Claims**



1. A micromechanical atomic force sensor head comprising at least one cantilever beam fixed at one end and carrying a sharp point at a location distant from said fixed end for interaction with a surface of a sample to be investigated, and detection means for detecting the deflection of said cantilever beam as it interacts with said investigated surface, said cantilever beam and said detection means forming one integral part micromechanically manufactured from one piece of material.

said detection means extending in parallel with said cantilever beam from a common base, there being a gap between said cantilever beam and said detection means,

a pair of tunnel electrodes attached to facing surfaces of said cantilever beam and said detection means, the distance between said tunnel electrodes being adjustable, and

a pair of electrostatic electrodes across which a potential is applied to adjust the distance between said electrostatic electrodes, said electrostatic electrodes being located with respect to said cantilever beam and said detection means that a potential applied across said electrostatic electrodes varies said adjustable distance between said tunneling electrodes thereby adjusting the tunnel current there between.

4,806,756

METHOD OF ADJUSTING RADIATION IMAGE READ-OUT CONDITIONS

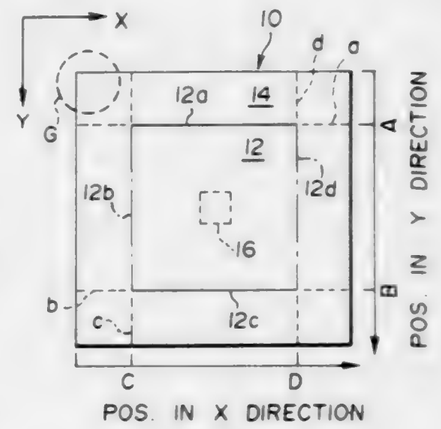
Nobuyoshi Nakajima, Kanagawa, Japan, assignor to Fuji Photo Film CO., Ltd., Kanagawa, Japan

Filed Sep. 29, 1986, Ser. No. 912,036

Claims priority, application Japan, Sep. 27, 1985, 60-213897

Int. Cl.⁴ G01N *23/04;* **H04N** *5/30*

U.S. Cl. 250—327.2 **7 Claims**



1. A method of adjusting radiation image read-out conditions in which preliminary read-out conducted by exposing a stimulable phosphor sheet carrying a radiation image of an object stored thereon by limitation of an irradiation field in a rectangular form to stimulating rays of a level lower than the level of stimulating rays used in final read-out and detecting the radiation image stored on the stimulable phosphor sheet is carried out prior to the final read-out wherein the stimulable phosphor sheet is exposed to stimulating rays which cause the stimulable phosphor sheet to emit light in proportion to the stored radiation energy and the emitted light is photoelectrically detected to obtain electric image signals used for reproducing a visible image, and read-out conditions in the final read-out are adjusted on the basis of the image information obtained by the preliminary read-out,

wherein the improvement comprises the steps of:

(i) detecting digital image signals at respective positions on said stimulable phosphor sheet on the basis of the image information obtained by said preliminary read-out,

(ii) setting an X axis and a Y axis along two adjacent sides of a contour of said rectangular irradiation field on said stimulable phosphor sheet,

(iii) adding up said digital image signals in said X axis direction and in said Y axis direction, detecting positions on said Y axis at which the levels of the added-up signals in said X axis direction are equal to a predetermined threshold value Th, and detecting positions on said X axis at which the levels of the added-up signals in said Y axis direction are equal to the predetermined threshold value Th,

(iv) determining a region, which is surrounded by straight lines in said X axis direction at said positions on said Y axis and straight lines in said Y axis direction at said positions on said X axis on said stimulable phosphor sheet, as the irradiation field, and

(v) adjusting said read-out conditions in said final read-out on the basis of the image information obtained within said irradiation field by said preliminary read-out.

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4,806,757

INFORMATION READING APPARATUS FOR RADIATION IMAGE

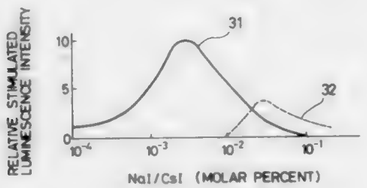
Tsuyoshi Kano, Higashiyamato; Tetsuhiko Takahashi, Tokyo; Kenichi Okajima, Hohya; Kenji Umetani, Kokubunji; Saburo Ataka; Hisataka Yokouchi, both of Tokyo, and Ryuichi Suzuki, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 30, 1986, Ser. No. 924,735

Claims priority, application Japan, Nov. 7, 1985, 60-248027; Feb. 28, 1986, 61-41772

Int. Cl.⁴ G02B *26/10*

U.S. Cl. 250—327.2 **20 Claims**



5. An information reading apparatus for radiation image which reads radiation image information by optically scanning a laser-stimulable phosphor plate using a light beam, said laser-stimulable phosphor plate having a radiation image recorded thereon to emit laser-stimulated luminescence corresponding to said image from said phosphor plate and converting said laser-stimulated luminescence into electric signals, said apparatus comprising a fluoroscopic plate for converting laser-stimulated luminescence emitted from said laser-stimulable phosphor plate into fluorescence having wavelengths different from those of said laser-stimulated luminescence, said fluoroscopic plate being transparent to said light beam for optically scanning said laser-stimulable phosphor plate, and a photodetector for detecting said fluorescence emitted from said fluoroscopic plate.

4,806,758

RADIATION IMAGE READ-OUT APPARATUS

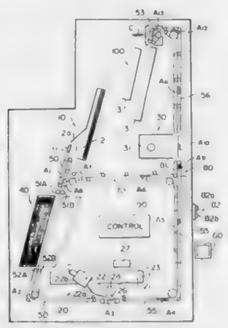
Ryoichi Yoshimura, and Tsutomu Kimura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 1, 1987, Ser. No. 32,696

Claims priority, application Japan, Apr. 1, 1986, 61-75075

Int. Cl.⁴ B65H *5/00, 7/00*

U.S. Cl. 250—327.2 **5 Claims**



1. A radiation image read-out apparatus comprising:

(i) a read-out section for reading out a radiation image stored on a stimulable phosphor sheet,

(ii) a monitor for reproducing said radiation image read out at said read-out section into a visible image,

(iii) an erasing section for erasing radiation energy remaining on said stimulable phosphor sheet after image read-out from said stimulable phosphor sheet is finished,

(iv) a sheet housing means holding section for releasably holding a sheet housing means capable of housing said stimulable phosphor sheet or stimulable phosphor sheets therein, and provided with a take-out means for taking said stimulable phosphor sheets one by one out of said sheet housing means,

(v) a first conveyance means for conveying said stimulable phosphor sheet fed out of said sheet housing means holding section to said read-out section,

(vi) a stacker for housing a plurality of said stimulable phosphor sheets and transferring said housed stimulable phosphor sheets one by one to said first conveyance means, said stacker being disposed at a part of said first conveyance means between said sheet housing means holding section and said read-out section,

(vii) a second conveyance means for conveying said stimulable phosphor sheet, which has passed through said read-out section, to said erasing section,

(viii) a third conveyance means for returning said stimulable phosphor sheet, which has passed through said read-out section, to said stacker, and

(ix) a distribution means for distributing said stimulable phosphor sheet, which has passed through said read-out section, either to said second conveyance means or to said third conveyance means.

4,806,759

METHOD OF ADJUSTING RADIATION IMAGE READ-OUT CONDITIONS

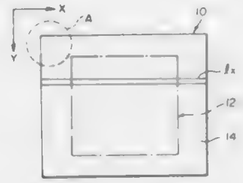
Takeshi Funahashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 9, 1986, Ser. No. 917,120

Claims priority, application Japan, Oct. 9, 1985, 60-225868; Oct. 18, 1985, 60-232511

Int. Cl.⁴ G01N *23/04;* **H04N** *5/30*

U.S. Cl. 250—327.2 **6 Claims**



1. A method of adjusting radiation image read-out conditions in which preliminary read-out conducted by exposing a stimulable phosphor sheet carrying a radiation image of an object stored thereon by limitation of an irradiation field to stimulating rays of a level lower than the level of stimulating rays used in final read-out and detecting the radiation image stored on the stimulable phosphor sheet is carried out prior to the final read-out wherein the stimulable phosphor sheet is exposed to stimulating rays which cause the stimulable phosphor sheet to emit light in proportion to the stored radiation energy and the emitted light is photoelectrically detected to obtain electric image signals used for reproducing a visible image, and read-out conditions in the final read-out are adjusted on the basis of the image information obtained by the preliminary read-out, wherein the improvement comprises the steps of:

(i) detecting digital image signals at respective positions on said stimulable phosphor sheet on the basis of the image information obtained by said preliminary read-out,

(ii) subjecting said digital image signals to a difference processing for calculating differences between said digital image signals, and creating a difference image constituted by the difference values,

(iii) preparing a predetermined threshold value Th, scanning said difference image or a processed difference image, which is obtained by subjecting said difference image to a predetermined processing, in a single scanning direction, thereby detecting a predetermined section intercepted between a position where a difference value equal to or larger than +Th is present and a position where a difference value equal to or smaller than −Th is present on each scanning line, and

(iv) adjusting said read-out conditions in said final read-out on the basis of the image information obtained within said predetermined section on each scanning line by said preliminary read-out.

4,806,760

RADIATION DETECTORS HAVING MECHANICAL RESONATION

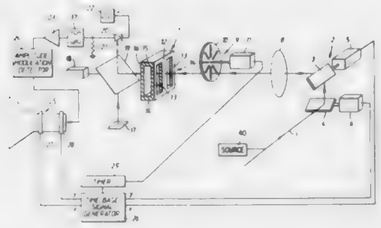
Stuart M. McGlade, Chelmsford, United Kingdom, assignor to The General Electric Company p.l.c., London, United Kingdom

Filed Mar. 3, 1987, Ser. No. 22,061

Claims priority, application United Kingdom, Mar. 4, 1986, 8605255

Int. Cl.⁴ G02F *1/01;* **G01N** *21/00*

U.S. Cl. 250—330 **12 Claims**



1. Apparatus for inspecting a field of view comprising: focussing means for producing an image of the field of view or part of it; a radiation detector having a particular resonant frequency; means for causing the detector to be exposed periodically to the image of a frequency, the frequency of the periodic exposure being such that the exposure causes mechanical resonation of the detector; and means for producing a signal in response to resonation of the detector, said signal being indicative of the brightness of a source or reflector in the field of view.

4,806,761

THERMAL IMAGER INCORPORATING ELECTRONICS MODULE HAVING FOCAL PLANE SENSOR MOSAIC

John C. Carson, Corona del Mar, and Stewart A. Clark, Irvine, both of Calif., assignors to Irvine Sensors Corporation, Costa Mesa, Calif.

Continuation-in-part of Ser. No. 721,840, Apr. 8, 1985, abandoned. This application Mar. 9, 1987, Ser. No. 23,644

Int. Cl.⁴ H01L *31/04*

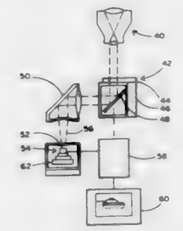
U.S. Cl. 250—332 **2 Claims**

1. A thermal imaging unit, for use in detecting objects in an observed area by means of infrared radiation at ambient temperature levels, comprising:

a staring array of separate photodetectors which are formed of lead selenide material, which substantially fill a two-dimensional focal plane, and which convert incoming infrared radiation into a multiplicity of separate electronic signals;

the photodetectors operating in the photoconductive mode, and detecting signals in the approximate wavelength range of 3.0 to 5.0 microns;

a unitary three-dimensional electronics package supporting the photodetector array on one end thereof, and having embedded therein means for first amplifying the separate electronic signals, means for then filtering the separate electronic signals, and means for multiplexing those signals to output the separate photodetector signals serially;



cooling means for maintaining the photodetectors at a temperature in the vicinity of 200K.;

optical means for receiving infrared radiation from the observed area, and for directing such radiation toward the staring array of photodetector; and

signal frequency controlling means between the incident radiation and the photodetectors, such means providing an a.c. signal frequency at the photo-detectors much greater than that which the photodetectors would receive in their staring mode.

4,806,762

THERMAL RADIATION DETECTOR

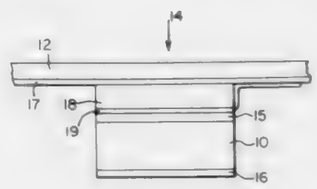
Andrew A. Turnbull, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1987, Ser. No. 121,368

Claims priority, application United Kingdom, Dec. 5, 1986, 8629109

Int. Cl.⁴ G01J *5/20*

U.S. Cl. 250—338.3 **14 Claims**



1. A thermal radiation detector for detecting radiation in a given wavelength range, comprising detecting means having a temperature-dependent characteristic for detecting thermal energy, and, with respect to the direction of incidence of thermal radiation to be detected, a first dielectric layer and an electrically resistive layer preceding the detecting means, wherein the electrically resistive layer is disposed immediately adjacent the dielectric layer and has a substantial net effective resistance per square such that the resistive layer absorbs a substantial proportion of incident radiation in said wavelength range and wherein the optical thickness of the dielectric layer is substantially one quarter of a selected wavelength in the wavelength range, characterised in that detector includes a

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second dielectric layer on the same side of the detecting means as, and optically in series with, the first dielectric layer with the resistive layer between the first and second dielectric layers and in that the second dielectric layer has an optical thickness substantially equal to one quarter of the selected wavelength.

4,806,763

INFRARED RADIATION DETECTION DEVICE

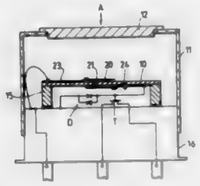
Andrew A. Turnbull, Reigate, England, assignor to U.S. Philips Corp., New York, N.Y.

Filed Nov. 2, 1987, Ser. No. 115,329

Claims priority, application United Kingdom, Nov. 12, 1986, 8626969

Int. Cl.⁴ G01J *5/20*

U.S. Cl. 250—338.3 **9 Claims**



1. An infrared radiation detection device for detecting radiation in a given wavelength range comprising a flexible film of polymer material having pyroelectric properties on opposite sides of which electrodes are disposed, characterised in that the electrode facing the incoming radiation comprises a resistive layer having, in operation, a substantial effective resistance per square such that said layer absorbs a substantial proportion of incident radiation in said wavelength range, and in that the polymer film has an optical thickness which is substantially one quarter of a selected wavelength in said wavelength range at which wavelength it is desired that the absorption of incident radiation by the electrode facing the incoming radiation should be substantially a maximum.

4,806,764

APPARATUS FOR EVALUATING THE QUALITY OF RICE GRAINS

Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

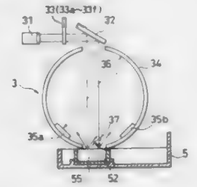
Continuation of Ser. No. 24,139, Mar. 15, 1987, Pat. No. 4,752,689. This application Apr. 22, 1988, Ser. No. 190,134

Claims priority, application Japan, Mar. 20, 1986, 61-62785; Mar. 20, 1986, 61-62786

The portion of the term of this patent subsequent to Jun. 21, 2005, has been disclaimed.

Int. Cl.⁴ G01N *21/35, 21/47*

U.S. Cl. 250—339 **14 Claims**



1. An apparatus for evaluating the quality of rice grains based on the measured values obtained by measuring content percentages of a pre-selected constituent or constituents of rice grains comprising:

a near infrared spectrometer having a light source, a band-pass filter allowing the passage of only such specific wavelengths of the light from said light source that are useful for the measurement of content percentages of the constituents of the sample rice grains and producing near infrared monochromatic light to be incident on the sample rice at a measuring portion, and detecting means for detecting the intensity of reflected light from said sample rice at said measuring portion and producing detection signals;

control means having a memory device for storing content conversion coefficients for the calculation of the content percentages established correspondingly to said pre-selected constituents and specific powers for the calculation of the quality evaluation values of the sample rice established correspondingly to said pre-selected constitutents of said sample rice, and calculation device for calculating the content percentages and the quality evaluation values of the sample rice grains based on said content conversion coefficients and said specific powers stored in said memory device as well as said detection signals from said detecting means;

indicating means, connected to said control means, for visually displaying or printing said quality evaluation values of said sample rice grains calculated in said calculation device; and

a sample case to be filled with said sample rice and disposed at said measuring portion of said near infrared spectrometer.

4,806,765

METHOD AND APPARATUS FOR CHECKING THE SIGNAL PATH OF A MEASURING SYSTEM

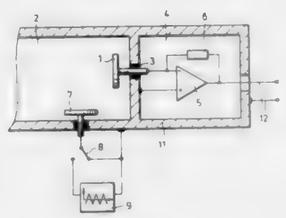
Raymond Heinen, Cologne, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 9, 1986, Ser. No. 916,822

Claims priority, application European Pat. Off., Oct. 12, 1985, 85112978.3

Int. Cl.⁴ G01T *1/185;* **B01D** *59/44*

U.S. Cl. 250—389 **11 Claims**



1. A method for checking the signal path in a measuring system having a collector for charged particles and an amplifier, said amplifier being electrically connected to said collector and producing an output signal repreaentative of the rate at which charged particles impinge on said collector, said method comprising the steps of:

producing a triangular voltage signal;

applying said voltage signal to an influencing electrode situated in the vicinity of said collector, wherein said voltage signal produces a defined change in said output signal; and

determining the difference between the positive and negative peak values of said output signal as a result of the application of said triangular voltage signal to evaluate the sensitivity of said measuring system.

4,806,766

MAGNETIC LENS SYSTEM

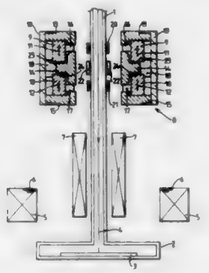
Thomas Chisholm, Best, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 23, 1987, Ser. No. 65,536

Claims priority, application United Kingdom, Jun. 25, 1986, 8615466

Int. Cl.⁴ H01J *37/10*

U.S. Cl. 250—396 ML **8 Claims**



1. A magnetic lens system for a beam of charged particles, comprising a focus correction lens including a pair of ring-shaped permanent magnets through which the beam passes, the axes of the rings lying coaxially along the beam direction, and the two rings being axially separated and axially oppositely magnetised, characterised in that a pair of separated conducting focus coils are provided, one for each ring, the axes of the focus coils lying coaxially along the beam direction, each focus coil lying within its associated ring, and the focus coils being connected in series opposition, said plus coils comprising means for carrying an adjustable direct electric current for fine focusing of the beam by the lens without rotation of the focused beam.

4,806,767

ELECTRON LENS ASSEMBLY

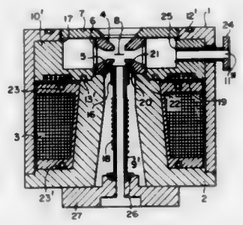
Morioki Kabozoe, and Hisasi Sato, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 11, 1987, Ser. No. 68,834

Claims priority, application Japan, Jun. 12, 1986, 61-136482

Int. Cl.⁴ G21K *1/08;* **H01J** *3/14*

U.S. Cl. 250—396 ML **7 Claims**



1. An electron lens assembly, comprising:

at least two magnetic pole pieces disposed in opposition to each other and each having a bore for allowing an electron beam to pass therethrough, said magnetic pole pieces defining a space therebetween;

an exciting coil for generating a magnetic field between said magnetic pole pieces;

a yoke constituted by at least two divided yoke members so as to be capable of accommodating said exciting coil and coupled to said magnetic pole pieces, at least one of said divided yoke members being coupled detachably to one of said magnetic pole pieces;

a metal O-ring disposed on a surface of said detachable yoke member so as to prevent the air from penetrating into the space defined between said magnetic pole pieces along said surface of said detachable yoke member from a space accommodating said exciting coil therein; and

an electron beam passage defining pipe disposed along an electron beam path except for said space defined by said magnetic pole pieces, said pipe being integrally coupled to said detachable yoke member at an end portion near to the magnetic pole piece located close to said pipe.

4,806,768

INFRA-RED AND ULTRA-VIOLET AIR PURIFYING APPARATUS

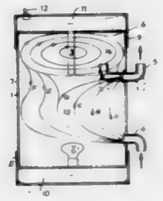
Ubirajara Kestenedjian, Rua Austria, 95, Sao Paulo, Brazil

Continuation-in-part of Ser. No. 917,411, Oct. 10, 1986, abandoned. This application Oct. 8, 1987, Ser. No. 106,188

Claims priority, application Brazil, Oct. 14, 1985, PI 8505258; Oct. 29, 1985, PI 8505540

Int. Cl.⁴ A61L *9/00*

U.S. Cl. 250—436 **3 Claims**



1. Apparatus for the degradation and modification of germs, bacteria, viruses and other substances existing in the air, comprising a vertical casing (1) infra-red lamps (2) located in the lower part of said casing, ultra-violet lamps (3) located in the upper part of said casing an air inlet (4) provided in a wall of the casing substantially at the level of the infra-red lamps, an air outlet (5) provided in the casing wall above said air inlet, said air inlet and air outlet being positioned at one side of said casing, and bottom and top covers (10,11) respectively closing bottom and top portions of said casing said air outlet being located at an intermediate part of said casing so that a heated air accumulating chamber (6) is defined inside the upper portion of said casing above said ai. outlet.

4,806,769

DISK EXCHANGEABLE TARGET MECHANISM WITH EFFECTIVE COOLING MEANS, FOR ION IMPLANTATION SYSTEM

Haruhisa Mori, and Motoo Nakano, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 19, 1987, Ser. No. 51,397

Claims priority, application Japan, May 20, 1986, 61-113616

Int. Cl.⁴ G21K *5/08*

U.S. Cl. 250—443.1 **20 Claims**

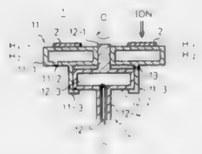
1. A disk exchangeable target mechanism of an ion implantation system including an exposure chamber into which the disk exchangeable target mechanism is inserted and in which accelerated ion beams are directed onto semiconductor wafers mounted on the disk exchangeable target mechanism, comprising:

a metal target disk on which a semiconductor wafer(s) to be ion-implanted is mounted on a first face thereof;

a support including a metal base upon which said target disk is mounted, and a shaft incorporated with said base, said

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support being rotatable in said exposure chamber by a force applied to said shaft during an ion-implantation process, said target disk being detachable from said support when taken out of said exposure chamber, and



said metal base being provided with a cavity through which a coolant is passed; and

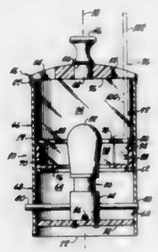
means, provided between a second face of said target disk opposite to said first face and said base, for providing thermal contact therebetween.

4,806,770

GERMICIDAL TOOTHBRUSH HOLDER

William M. Hylton, 12871 Brittany Woods Dr., Santa Ana, Calif. 92705; John M. Zabsky, and Virgil E. Littleton, both of Santa Ana, Calif., assignors to William M. Hylton, Santa Ana, Calif.

Filed Feb. 2, 1987, Ser. No. 10,183
Int. Cl.[4] G01N *23/00*
U.S. Cl. 250—455.1 **9 Claims**



1. A germicidal toothbrush holder for receiving and holding a plurality of toothbrushes of the common type having an elongated handle with bristles disposed at the distal end of the handle, said germicidal toothbrush holder comprising:

(a) a substantially hollow, upright, cylindrical housing having a vertical axis;

(b) said housing comprising bottom and side walls and a detachable top lid, all approximately centered on the vertical axis and together encompassing an interior volume of space including an upper space volume for receiving at least the bristled ends of said toothbrushes, and a lower space volume;

(c) means disposed in said upper space volume for defining a cylindrical interior surface within the housing, which surface immediately encompasses said upper space volume, and is reflective of radiation in the 200–300 nanometer wavelength spectrum;

(d) an electric lamp having a bulb for emitting ultraviolet light which includes substantial radiation in the 200 to 300 nanometer wavelength spectrum;

(e) means for mounting the lamp operably within the housing adjacent the bottom wall thereof, with the lamp bulb extending upwardly to within said upper space volume;

(f) said lamp bulb being disposed approximately coaxially with the housing, and being spaced apart from said cylindrical interior surface so as to define an annular portion of said upper space volume therebetween; and,

(g) means for supporting the toothbrushes in vertical orientation, with the bristled ends downward and disposed at spaced apart locations surrounding said lamp within the annular portion of said upper space volume;

(h) said supporting means comprising:

means defining a first inwardly extending annular ledge disposed in said upper space volume for abutting the bristled ends of said toothbrushes; and,

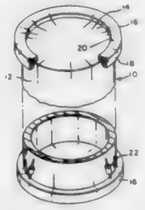
means defining a second inwardly extending annular ledge disposed in said upper space volume at a location spaced above said first annular ledge, said second annular ledge having a plurality of openings therein disposed at spaced apart locations through which the bristled ends of said toothbrushes may be inserted respectively to rest upon said first annular ledge.

4,806,771

SOLID, SOFT, LIGHT METAL IMPACT SKIRTS FOR RADIOACTIVE WASTE AND OTHER SHIPPING CONTAINERS

Charles W. Mallory, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 831,970, Feb. 21, 1986. This application Aug. 7, 1987, Ser. No. 82,928
Int. Cl.[4] G21F *5/00*
U.S. Cl. 250—506.1 **2 Claims**



1. An impact skirt for each end of a radioactive waste material cask of generally tubular form having a side and opposite ends, each impact skirt comprising:

a monolithic ring having a generally L-shaped cross-sectional area with legs disposed at right angles with respect to each other and registering with and extending over a portion of the end and the adjacent side of the cask;

said leg portion registering with and extending over the side portion of the cask being generally the same length as the leg portion registering with and extending over the end portion of the cask;

the thickness of the leg portions being sufficient to absorb the impact of the cask being dropped from a predetermined height irrespective of how the cask lands;

said monolithic ring being made of a soft light metal having a dynamic flow pressure generally in the range of 15,000 pounds per square inch or less;

the monolithic rings have an apex portion thereof removed around the circumference thereof, the material removed being about 20% by weight of each monolithic ring to minimize the weight added to the cask while maintaining sufficient deceleration; and

means for securely attaching the rings to the cask so that the monolithic ring is directly interposed between the cask and any surface upon which the cask is dropped to prevent the cask from rupturing when it is inadvertently dropped.

4,806,772

INFRARED SENSING DEVICE OUTPUTTING ORANGE LIGHT AND A PROCESS FOR MAKING THE SAME

Joseph Lindmayer, Potomac, Md., assignor to Quantex Corporation, Rockville, Md.

Continuation of Ser. No. 870,809, Jun. 6, 1986, which is a continuation-in-part of Ser. No. 786,095, Oct. 10, 1985. This application Apr. 3, 1987, Ser. No. 34,334
Int. Cl.[4] H05B *33/00*; C09K *11/08*; B05D *5/06*
U.S. Cl. 250—484.1 **10 Claims**



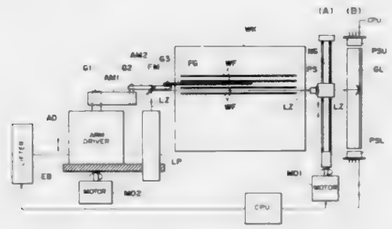
1. An infrared sensing device, comprising: a substrate; and a photoluminescent material disposed on said substrate, said photoluminescent material comprising: a base material of substantially strontium sulfide, a first dopant of samarium in a quantity of about 100 ppm by weight, and a second dopant selected from the group of europium oxide, europium floride, europium chloride and europium sulfide, said second dopant being provided in a quantity of about 500 ppm by weight.

4,806,773

WAFER POSITION DETECTING METHOD AND APPARATUS

Ryozo Hiraga, Yokohama, and Hiroshi Echizen, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 787,179, Oct. 15, 1985, abandoned. This application Sep. 4, 1987, Ser. No. 94,076
Claims priority, application Japan, Oct. 18, 1984, 59-219087; Oct. 19, 1984, 59-220984; Oct. 19, 1984, 59-220985
Int. Cl.[4] G01N *21/80*
U.S. Cl. 250—548 **8 Claims**



1. A sheet-like member conveying apparatus for sheet-like members stacked with clearances between adjacent ones in a cassette, comprising:

carrying means for carrying the sheet-like members;

driving means for moving said carrying means in a stacking direction of the sheet-like members, said stacking direction being substantially perpendicular to the surfaces of the sheet-like members;

means for directing a beam toward one edge side of the sheet-like members, said beam directing means being movable together with movement of said carrying means by said driving means;

means for detecting the beam coming through the clearances to produce an output signal representative of presence or absence of the sheet-like member, said detecting means being disposed at another edge side of the sheet-like members which is opposite to said one edge side; and

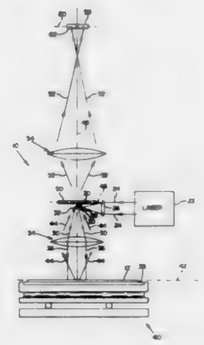
means, responsive to the output signal of said directing means, for controlling said driving means to determine the position of said carrying means in the stacking direction upon an operation of said carrying means.

4,806,774

INSPECTION SYSTEM FOR ARRAY OF MICROCIRCUIT DIES HAVING REDUNDANT CIRCUIT PATTERNS

Lawrence H. Lin, Alamo; Daniel L. Cavan, Woodside, and Robert B. Howe, San Jose, all of Calif., assignors to Insystems, Inc., San Jose, Calif.

Filed Jan. 8, 1987, Ser. No. 60,090
Int. Cl.[4] G02B *27/42*
U.S. Cl. 250—550 **39 Claims**



1. In an imaging system that includes first and second lenses positioned along an optic axis, the first lens producing from a specimen a spatial frequency spectrum whose frequency components can be selectively filtered and the second lens producing an image of defects present in the specimen, a method of detecting defects in a specimen that includes an array of normally substantially identical dies, each of the dies having many redundant circuit patterns, comprising:

illuminating plural die circuit patterns;

generating a light pattern representing substantially the Fourier transform pattern of the illuminated die circuit patterns, the light pattern including intra-die interference pattern information;

positioning an optical filter to receive the light pattern and to block spatial frequency components thereof, the optical filter having relatively transparent and relatively nontransparent portions, the relatively nontransparent portion conforming to the Fourier transform pattern of an error-free reference pattern corresponding to the die circuit patterns;

collecting spatial frequency components not blocked by the optical filter to form an image of the defects, the collected spatial frequency components corresponding to a small number of die circuit patterns relative to the number of die circuit patterns in the array of dies and residing in a spatial region intercepting the optic axis; and

processing unblocked intra-die spatial frequency components to determine the location and size of a possible defect in the die.

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4,806,775

IMAGE READING SYSTEM USING AN LED ARRAY

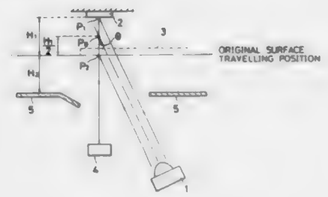
Satoru Uchida, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 14, 1988, Ser. No. 143,664

Claims priority, application Japan, Jan. 14, 1987, 62-2818[U]; Feb. 24, 1987, 62-40690

Int. Cl.[4] H01J 40/14

U.S. Cl. 250—578 **12 Claims**



1. An image reading system, comprising:
an original transporting passage for transporting an original to be read along a predetermined path;
a light source disposed at a first side of said predetermined path for emitting light in an irradiation direction, said light having a light intensity distribution decreasing in level in a transverse direction from said irradiation axis;
a white level reference having a white surface, said white level reference being provided fixed in position at a second side, which is opposite to said first side, of said predetermined path;
an image sensor for converting light information into an electrical signal, said image sensor being disposed at said second side for receiving light emitted from said light source and reflecting from said white level reference and/or said original being transported along said predetermined path; and
whereby said irradiation axis of said light source passes between a first hypothetical point on said white surface of said white level reference and a second hypothetical point which is defined as an intersection between said predetermined path and a straight line extending between said first hypothetical point and said image sensor.

4,806,776

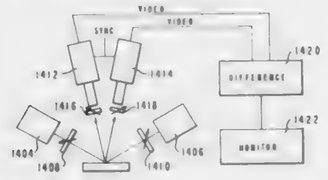
ELECTRICAL ILLUMINATION AND DETECTING APPARATUS

Victor B. Kley, 1119 Park Hill Rd., Berkeley, Calif. 94708

Division of Ser. No. 644,116, Aug. 24, 1984, Pat. No. 4,561,731, which is a continuation-in-part of Ser. No. 319,993, Nov. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 128,891, Mar. 10, 1980, abandoned. This application Aug. 5, 1985, Ser. No. 762,635

Int. Cl.[4] G01B 11/00, 11/02

U.S. Cl. 250—560 **21 Claims**



1. An electrical illumination and detecting apparatus for indicating a property of an object, comprising
light source means including light control means for illuminating at least a portion of the object with at least two different illumination conditions;
image detector means responsive to light reflected from the object for generating at least two electrical image signals of the object corresponding to the different illumination conditions; and
means responsive to differences between the two electrical image signals for indicating a property of the object.

4,806,777

DEVICE FOR SCANNING THE CONTOUR OF A SURFACE OF A WORKPIECE

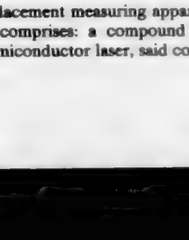
Gerd Ulbers, Weilerbach, and Karl Hutter, Mahlhausen, both of Fed. Rep. of Germany, assignors to Hommelwerke GmbH, Schwenningen, Fed. Rep. of Germany

Filed Nov. 13, 1987, Ser. No. 119,975

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1986, 3643500; Jun. 11, 1987, 3719422

Int. Cl.[4] G01V 9/04

U.S. Cl. 250—560 **9 Claims**



1. Device for the contact-free measurement of a distance from a surface, particularly for scanning the contour of a surface of a workpiece along a given measuring path, comprising a measuring body enclosing optoelectronic means for transmitting light to the surface to be measured and converting the light reflected by such surface into an electric signal proportional to the distance from the surface, characterized in that
the measuring body is slidably supported on a stand for movement in the direction of measurement,
the optoelectronic means comprise a focus position measuring system and an optoelectronic position scanning unit for scanning the position of the measuring body relative to the stand, and includes
an adder connected to indicating or recording means for adding the electric output signal of the focus position measuring system to the electric output signal of the position scanning means to produce a summation signal which corresponds to the distance of the measuring body from the surface being measured at any position of the measuring body on the stand.

4,806,778

MICRO-DISPLACEMENT MEASURING APPARATUS USING A SEMICONDUCTOR LASER

Osamu Yamamoto, Nara; Hiroshi Hayashi, Kyoto; Sadayoshi Matsui, Tenri; Haruhisa Takiguchi, Nara, and Nobuyuki Miyauchi, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 26, 1986, Ser. No. 832,885

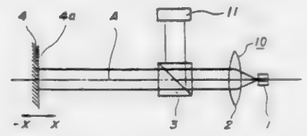
Claims priority, application Japan, Feb. 28, 1985, 60-41754

The portion of the term of this patent subsequent to Apr. 7, 2004, has been disclaimed.

Int. Cl.[4] G01B 11/00

U.S. Cl. 250—561 **4 Claims**

1. A micro-displacement measuring apparatus using a semiconductor laser, comprises: a compound resonator system containing said semiconductor laser, said compound resonator system being constructed such that a light from said semiconductor laser irradiates an object to be measured and the reflected light therefrom returns to said semiconductor laser, and a light detector for receiving a light from said semiconductor laser, wherein said light detector detects the level of the optical output of said semiconductor laser to determine the direction of displacement of said object, and the relationship between the reflectivity R*f* at the front facet of said semiconductor laser



from which a laser light irradiates said object, and the reflectivity Rr at the rear facet of said semiconductor laser which is opposite the front facet is as follows:

$$0.1<R_f/R_r<1$$

and said light detector includes means to detect both fluctuation of the optical output and level change in the optical output.

4,806,779

SOLID-STATE IMAGE PICKUP APPARATUS USING STATIC INDUCTION TRANSISTORS FOR PERFORMING NON-DESTRUCTIVE READOUT

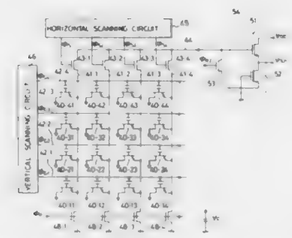
Junichi Nakamura, Isa, and Toyokazu Mizoguchi, Tatsunomachi, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1987, Ser. No. 66,424

Claims priority, application Japan, Jul. 26, 1986, 61-176290

Int. Cl.[4] H04N 3/14

U.S. Cl. 250—578 **1 Claim**



1. A solid-state image pickup apparatus, comprising:
a plurality of row lines to which a row selection control signal is applied;
a plurality of column lines to which a column selection control signal is applied;
a plurality of static induction transistors whose source electrodes are connected to said column lines;
capacitors which connect the gate electrodes of said static induction transistors to the row lines;
transistors having gates connected to said column lines with or without switch intermediaries; and
resetting transistors connected to said column lines, wherein, to perform non-destructive readout, said row selection control signal is set to low level when said resetting transistors operate.

4,806,780

IMAGE CORRECTION METHOD AND APPARATUS WITH PARTIAL DETECTOR ARRAY SAMPLING

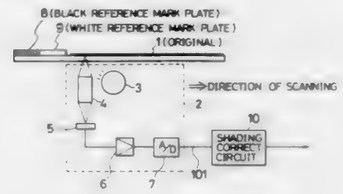
Naofumi Yamamoto, Setagaya; Tutomu Saito, and Hidekazu Sekizawa, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 9, 1987, Ser. No. 59,814

Claims priority, application Japan, Jun. 11, 1986, 61-135238

Int. Cl.[4] H01J 40/14

U.S. Cl. 250—578 **7 Claims**



1. An image correction method which comprises the steps of:
reading at least one reference mark plate so as to obtain at least one reference signal;
sampling n picture elements out of every p picture elements (p>n) in the reference signal;
calculating a correction signal by adding cumulatively the sampled n picture elements of the reference signal a plurality of times for every equal picture element; and
correcting an image signal in accordance with the calculated correction signal.

4,806,781

WATER-DRIVEN MACHINE SET WITH THE SPEED REFERENCE VALUE SET FOR OPTIMUM EFFICIENCY

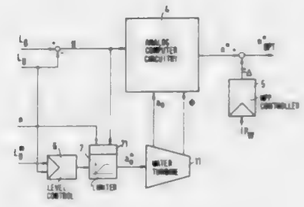
Werner Hochstetter, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 2, 1987, Ser. No. 197

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1986, 3601288

Int. Cl.[4] F03B 15/02

U.S. Cl. 290—43 **10 Claims**



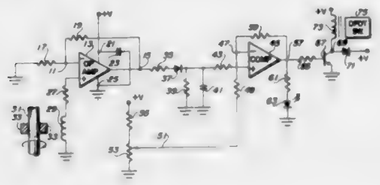
1. A machine set comprising:
a water turbine;
a generator permanently coupled to the water turbine;
a frequency controlled converter for feeding power from the generator to an electrical network; and
control means which simulate turbine characteristics and preset a speed reference value as a function of an actual water drop and of turbine characteristics to adjust the speed of the machine set to provide optimum power at maximum efficiency, wherein said turbine characteristics include an aperture at the turbine guide wheels and the rotary blade group.

4,806,782

AUXILIARY BRAKE LIGHT CONTROL SYSTEM

Patrick J. Bernal, 613 N. Drew St., Mesa, Ariz. 85202

Filed Dec. 14, 1987, Ser. No. 132,216
Int. Cl.[4] H02G 3/00
U.S. Cl. 307—10 R 20 Claims



1. An improved brake light control system for use in a motor vehicle equipped with either a standard or an automatic transmission, at least one shaft which rotates at a speed proportional to the speed of the motor vehicle, a brake system, a brake pedal responsive to the manual application of pressure thereto for operating said brake system, a pair of brake lights including a left and a right brake light, a pressure-sensitive switching means responsive to said manual application of pressure to said brake pedal for activating said brake lights and to the termination of said manual application of pressure on said brake pedal for deactivating said brake lights, the improvement comprising an auxiliary brake light control system comprising:

sensing means responsive to the rotation of said at least one shaft for generating a first signal in response to the rotation of said shaft at a speed above a predetermined speed and for generating a second signal in response to the rotation of said at least one shaft at a speed below said predetermined speed; and

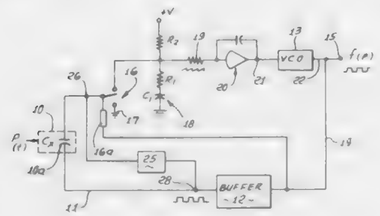
brake light control means responsive to said first signal for maintaining said brake lights off unless pressure has been a manual application of pressure to said brake pedal and responsive to said second signal for turning said brake lights on even if said manual application of pressure has ceased to be applied to said brake pedal.

4,806,783

TRANSDUCER CIRCUIT

Richard S. Anderson, Chatsworth, Calif., assignor to Transducer Technologies Inc., Pasadena, Calif.

Filed Feb. 25, 1988, Ser. No. 160,256
Int. Cl.[4] H01G 7/00
U.S. Cl. 307—118 9 Claims



1. Apparatus for producing output signal changes corresponding to fluid pressure changes, comprising:

(a) transducer means responsive to applied input pressure changes to produce capacitance changes at a variable capacitor,

(b) first circuit means to produce a cyclic wave, and connected with the variable capacitor,

(c) second circuit means including a switch to connect the variable capacitor to ground when the cyclic wave is at a first level, thereby to charge the variable capacitor, and to connect the variable capacitor to a second capacitor when the cyclic wave is at a second level, whereby the charge becomes distributed on the variable and second capacitors, and whereby a sawtooth signal is produced at a junction associated with said capacitors,

(d) an operational amplifier electrically coupled with said junction for integrating said sawtooth signal to produce a first output voltage,

(e) said first circuit means including a voltage controlled oscillator having an input side coupled with the output side of the operational amplifier thereby to produce said output signal in the form of a frequency which varies as a function of the first output voltage, said frequency corresponding to said cyclic wave,

(f) stray capacitance being introduced by electrical connections associated with said transducer means and said second circuit means, and including third circuit means operatively connected with said second circuit means for masking the effect of said stray capacitance,

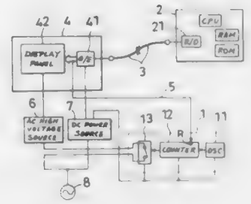
(g) the second circuit means including resistance connected between a source of DC voltage and said junction.

4,806,784

REMOTE CONTROL SYSTEM FOR A DISPLAY APPARATUS

Shigeru Goda, Kakogawa, Japan, assignor to Daiwa Shinku Corporation, Hyogo, Japan

Filed Oct. 16, 1987, Ser. No. 109,477
Claims priority, application Japan, Oct. 17, 1986, 61-248127
Int. Cl.[4] H01H 47/00; G09G 3/00
U.S. Cl. 307—125 3 Claims



1. A remote control system for use in a display apparatus which comprises a display section and a display data control located remotely from said display data control section, said display section functioning in accordance with display data signals outputted from said display data control section together with clock signals, said remote control system comprising:

a relay switch for switching an electric power supply provided near said display section to energize the same; and

a timer to be reset by said clock signals, said timer outputting in the laps of a predetermined period of time after being reset a switching signal to keep said relay switch open.

4,806,785

HALF CURRENT SWITCH WITH FEEDBACK

Michel S. Michail, Wappingers Falls, and James L. Walsh, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 17, 1988, Ser. No. 156,761
Int. Cl.[4] H03K 19/08
U.S. Cl. 307—131 13 Claims

1. A half current switch comprising:

at least one input terminal;

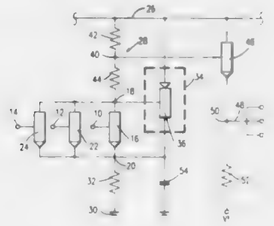
at least one input transistor having a first and a second terminals for driving a main current therethrough, and a control terminal connected to said at least one input terminal for controlling said main current;

a first voltage reference;

load resistance means connected between said first voltage reference and said first terminal of said at least one input transistor;

a second voltage reference;

constant-current resistance means connected between said second terminal of said at least one input transistor and said second voltage reference; and



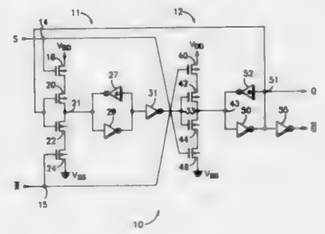
feedback means including at least one feedback transistor connected to said constant-current resistance means for driving a current through said constant-current resistance means which, when flowing, increases with an increasing main current and decreases with a decreasing main current through said at least one input transistor to thereby stabilize said main current drawn by said at least one input transistor.

4,806,786

EDGE SET/RESET LATCH CIRCUIT HAVING LOW DEVICE COUNT

William R. Valentine, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 2, 1987, Ser. No. 115,953
Int. Cl.[4] H03K 3/26, 3/284, 17/16
U.S. Cl. 307—279 8 Claims



1. A latch circuit using only two storage devices for setting an output signal to a predetermined logic state in response to an edge transition of a set signal and resetting the output signal to an opposite logic state in response to an edge transition of a reset signal, comprising:

first means for receiving the set and reset signals and providing a control signal having a signal level which transitions in response to an edge transition of a predetermined one of the set or reset signals depending upon a logic level of the output signal, and having a first storage device to maintain the control signal at a predetermined logic state in response to an edge transition of either the set or reset signal; and

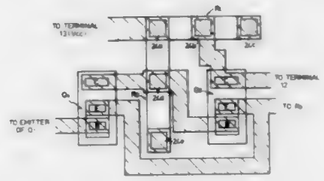
second means coupled to the first means and also receiving the set and reset signals, said second means providing the output signal in response to a combination of the set and reset signals and the control signal, and having a second storage device to maintain the output signal at a predetermined logic state until an edge transition of either the set or reset signal.

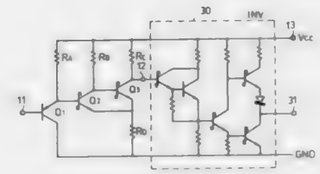
4,806,787

SCHMITT CIRCUIT FOR SEMICONDUCTOR INTEGRATED CIRCUIT

Takahiro Kato, Yokohama; Katsuji Hirochi, Kawasaki, and Takanori Sugihara, Isogi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 10, 1987, Ser. No. 36,998
Claims priority, application Japan, Apr. 30, 1986, 61-100115
Int. Cl.[4] H03K 3/288, 3/295, 3/017; H01L 27/02
U.S. Cl. 307—290 7 Claims





1. A Schmitt circuit for a semiconductor integrated circuit, comprising:

an input terminal for receiving an input voltage;

a power source terminal for receiving a power source voltage;

a first transistor having a base coupled to said input terminal, having a collector coupled to ground, and having an emitter;

a second transistor having a base coupled to said emitter of said first transistor, having a collector, and having an emitter;

a third transistor having a base coupled to said collector of said second transistor, having a collector and having an emitter;

an output terminal coupled to said collector of said third transistor;

a first resistor coupled between said power source terminal and said emitter of said first transistor, said first resistor having a constant resistance;

a second resistor comprising a plurality of first resistor regions which are selectively connected between said power source terminal and said collector of said second transistor for determining a resistance of said second resistor;

a third resistor comprising a plurality of second resistor regions which are selectively connected between said power source terminal and said collector of said third transistor for determining a resistance of said third resistor;

a fourth resistor coupled between ground and said emitters of said second and third transistors, said fourth resistor having a constant resistance; and

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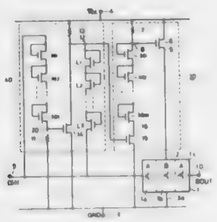
wiring means for selectively connecting a selected first resistor region to the power source terminal and the collector of said second transistor, and for selectively connecting a selected second resistor region to the power source terminal and the collector of said third transistor, said first and second resistor regions being selected depending on threshold voltages to be obtained in said Schmitt circuit.

4,806,788

SEMICONDUCTOR INTEGRATED CIRCUIT WITH DECREASED BURN-IN TIME

Yoichi Tobita, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1987, Ser. No. 70,254
Claims priority, application Japan, Sep. 11, 1986, 61-216710
Int. Cl.[4] H03K *17/687*
U.S. Cl. 307—296 R **7 Claims**



1. A semiconductor integrated circuit comprising a main circuit operative in first and second modes of operation and having an external power terminal for receiving an externally supplied voltage source, at least one external input terminal connected to said main circuit for receiving an externally supplied master signal, said semiconductor integrated circuit further comprising:

an internal voltage source, said internal voltage source supplying a voltage that is lower than said external source voltage supplied to said external power terminal;

a control circuit activated in response to said master signal to generate a control signal, said control signal having first and second states corresponding, respectively, to said first and second modes of operation of said main circuit; and

an internal power circuit connected to said external power terminal and to said internal voltage source and responsive to said control signal, said internal power circuit supplying a first voltage lower than said external source voltage to said main circuit in response to said control signal in said first state, and supplying a second voltage higher than said first voltage to said main circuit in response to said control signal in said second state.

4,806,789

POWER SELECT CIRCUIT

Kazuhisa Sakihama, and Takuya Fujimoto, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 29, 1988, Ser. No. 174,857
Claims priority, application Japan, Mar. 31, 1987, 62-78611
Int. Cl.[4] H03K *3/01, 5/22, 5/08;* **H03F** *3/45*
U.S. Cl. 307—297 **10 Claims**

1. A power source select circuit comprising:

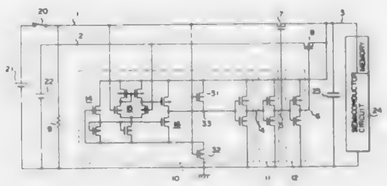
first MOSFET whose source is connected to a first power voltage input terminal, and drain and back gate are connected to a power voltage output terminal;

second MOSFET whose source is connected to a second power voltage input terminal, and drain and back gate are connected to said power voltage output terminal;

a voltage comparator for comparing the potentials at said first and second power voltage input terminals, and for determining the output value on the basis of the comparison result;

a first means, connected to said first MOSFET and said voltage comparator for rendering said first MOSFET conductive when a potential difference between said first power voltage input terminal and ground, is larger than that between said second power voltage input terminal and ground,

a second means, connected to said second MOSFET and said voltage comparator, for rendering said second MOSFET conductive when a potential difference between said



first power voltage input terminal and ground is smaller than that between said second power voltage input terminal and ground wherein said voltage comparator further comprises:

a third MOSFET for blocking the flow of a constant current in said voltage comparator when said first power voltage input terminal is at a potential near ground potential; and

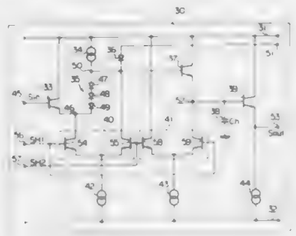
a fourth MOSFET connected to said first power voltage input terminal and the output of said voltage comparator for stabilizing the output voltage of said voltage comparator when said first power voltage input terminal is at a potential near ground potential.

4,806,790

SAMPLE-AND-HOLD CIRCUIT

Kazuya Sone, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 12, 1988, Ser. No. 155,251
Claims priority, application Japan, Feb. 16, 1987, 62-33001; Apr. 21, 1987, 62-99404
Int. Cl.[4] G11C *27/02*
U.S. Cl. 307—353 **18 Claims**



1. A sample-and-hold circuit having a sample mode and a hold mode, comprising:

(a) first and second voltage lines capable of supplying voltage levels different from each other;

(b) a signal input node where an input signal is supplied in said sample mode;

(c) a signal output node where an output signal is supplied;

(d) first, second and third nodes;

(e) a first transistor having a control node coupled to said signal input node and capable of providing a conduction path between said first voltage line and said first node in said sample mode;

(f) a series combination of a first constant current source and a level shifting circuit coupled between said first voltage line and said first node, said second node being provided between said first constant current source and said level shifting circuit;

(g) a second transistor having a control node coupled to said second node and a capable of providing a conduction path between said first voltage line and said third node;

(h) a hold-capacitor having two electrodes one of which is coupled to said third node and the other of which is coupled to a constant voltage source, said hold-capacitor being charged up to a certain voltage level in proportion to a voltage level of said input signal for producing said output signal;

(i) second and third constant current sources each having an output node coupled to said second voltage line;

(j) a first switching circuit responsive to a control signal and capable of providing a conductive path between said first node and said second constant current source in said sample mode, said first switching circuit being capable of providing a conduction path between said second node and said second constant current source in said hold mode;

(k) a second switching circuit responsive to said control signal and capable of providing a conduction path between said third node and said third constant current source, said second switching circuit being capable of providing a conduction path between said first voltage line and said third constant current source; and

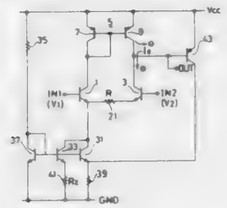
(l) voltage clamping means operative to cause said second node to have a predetermined voltage level at which said second transistor blocks said conduction path between said first voltage line and said third node in so far as said hold-capacitor keeps said certain voltage level.

4,806,791

DIFFERENTIAL COMPARATOR

Yasuo Mizuide, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 10, 1987, Ser. No. 119,080
Claims priority, application Japan, Nov. 28, 1986, 61-282132
Int. Cl.[4] H03K *5/24, 5/12*
U.S. Cl. 307—355 **6 Claims**



1. A differential comparator of hysteresis type, which comprises:

(a) a first switching element having a first input terminal to which a first input signal is applied;

(b) a second switching element having a second input terminal to which a second input signal is applied and an output terminal from which an output signal is outputted;

(c) a hysteresis resistor connected between the first and second switching elements;

(d) current source means, for determining bias currents, connected to one switching element directly and to the other switching element via said hysteresis resistor; and

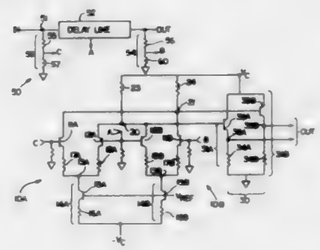
(e) means for increasing/decreasing the bias current in response to said output signal from the output terminal in such a way that when a voltage difference between the first input terminal and the second input terminal reaches a balanced hysteresis voltage value, and therefore no output current flows, the output current is sharply increased in a direction opposite to a preceding direction.

4,806,792

DIFFERENTIAL AMPLIFIER CIRCUIT

Elmer Simmons, Whitman, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 1, 1987, Ser. No. 69,407
Int. Cl.[4] H03K *5/22*
U.S. Cl. 307—357 **9 Claims**



1. An apparatus for pulse slimming a read signal from a transducer head on a mass storage device comprising:

A. circuitry for delaying said read signal by different delays to establish predetermined time differences between a peak of an expected read signal and predetermined positions in the leading and trailing edges, respectively, of the expected read signal to produce first, second, and third intermediate signals corresponding respectively to said predetermined leading edge position, said peak, and said predetermined trailing edge position, said first and second intermediate signals being delayed by different delays with respect to said third intermediate signal; and

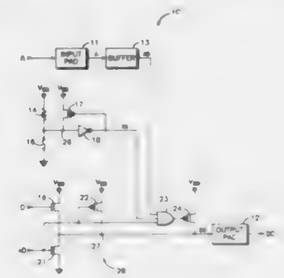
B. circuitry for differentially amplifying said intermediate signals to produce an output difference signal proportional to the second intermediate signal minus the sum of portions of the first and third intermediate signals.

4,806,793

SIGNATURE CIRCUIT RESPONSIVE TO AN INPUT SIGNAL

James S. Golab, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 2, 1987, Ser. No. 104,007
Int. Cl.[4] H03K *19/003*
U.S. Cl. 307—443 **18 Claims**



1. In an integrated circuit having an input terminal for re-

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ceiving an input signal and an output terminal at which is provided an output signal, an identity circuit, comprising:

programmable means for selectively being in one of a first state and a second state;

detection means, coupled to the programmable means, for providing a control signal at a logic state which is indicative of the state of the programmable means;

output means, coupled to the output terminal, for providing the output signal to the output terminal at one of a first logic state and a second logic state in response to an internal signal generated internally to the integrated circuit, said first logic state characterized as being provided by coupling a first power supply terminal to the output terminal through a first load;

load means, coupled to the output terminal, for providing a second load between the output terminal and the first power supply terminal in response to a signature signal; and

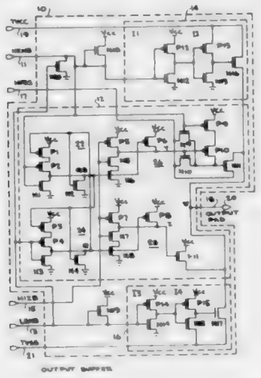
logic means, coupled to the detection means, the input terminal, and the output means, for providing the signature signal responsive to the input signal when the output circuit provides the output signal at the first logic state and the control signal is in the logic state which indicates that the programmable means is in the first state.

4,806,794

FAST, LOW-NOISE CMOS OUTPUT BUFFER

Donald M. Walters, Jr., Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 22, 1987, Ser. No. 76,566
Int. Cl.⁴ H03K *19/094, 17/16, 19/20*
U.S. Cl. 307—451 **19 Claims**



1. An improved CMOS output buffer comprising:

transient pull-up circuit means responsive to a high drive enable pulse signal for generating a transition from a low logic level to a high logic level at an output node;

said pull-up circuit means including a transient pull-up output driver transistor having one of its main electrodes connected to a high transient supply voltage, its other main electrode connected to the output node, and its control electrode coupled to receive the high drive enable pulse signal;

transient pull-down circuit means responsive to a low drive enable pulse signal for generating a transition from the high logic level to the low logic level at the output node;

said pull-down circuit means including a transient pull-down output driver transistor having one of its main electrodes connected to a low transient supply voltage, its other main electrode connected to the output node, and its control electrode coupled to receive the low drive enable pulse signal;

keeper circuit means being responsive to the high and low drive enable pulse signals for maintaining the output node at the high logic level after the output node has made the low-to-high transition and for maintaining the output node at the low logic level after the output node has made the high-to-low transition;

said keeper circuit means including a P-channel output driver MOS transistor and an N-channel output driver MOS transistor;

said keeper circuit means further including delay means responsive to the high and low drive enable pulse signals and having first and second outputs for delaying the turning on of the N-channel output drive transistor until after the output node has completed the high-to-low transition;

said P-channel output driver transistor having its source connected to a supply potential, its drain connected to the output node, and its gate coupled to the first output of said delay means;

said N-channel output driver transistor having its drain connected to the output node, its source connected to a holding low supply voltage, and its gate coupled to the second output of said delay means;

said keeper circuit means further including speed-up means responsive to the high drive enable pulse signal for quickly turning off the N-channel output drive transistor when the output node is making the low-to-high transition;

said P-channel and N-channel output driver transistors being sized so as to be relatively smaller than said transient pull-up and pull-down output driver transistors;

the turning on of the N-channel output drive transistor being delayed relative to the turning on of said transient pull-down output drive transistor during the high-to-low transition so that noise generated on the low transient supply voltage will be isolated from the holding low supply voltage; and

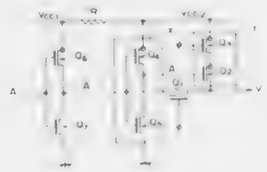
said N-channel output drive transistor being quickly turned off when said transient pull-up output drive transistor is turned on so that noise generated on the high transient supply voltage during the low-to-high transition will be isolated from the holding low supply voltage.

4,806,795

TRANSFER GATE CIRCUIT PROTECTED FROM LATCH UP

Masao Nakano, Kasugai; Tsuyoshi Ohira, Kawasaki, and Hidenori Nomura, Yokohama, all of Japan, assignors to Fujitsu Limited, Kanagawa and Fujitsu Vlsi Limited, Aichi, both of, Japan

Filed Sep. 16, 1987, Ser. No. 97,557
Claims priority, application Japan, Sep. 19, 1986, 61-219837
Int. Cl.⁴ H03K *17/16, 19/096, 17/687*
U.S. Cl. 307—452 **10 Claims**



1. A transfer gate circuit comprising:

an inverter circuit connected between power supply lines, said inverter circuit having an input signal input thereto, said inverter circuit inverting a potential of said input signal and outputting said inverted input signal at an output thereof;

a first MIS transistor having an input, an output and a gate, said input thereof being connected to an input of said inverter circuit, said first MIS transistor transmitting said input signal from said input thereof to said output thereof according to a control signal supplied to said gate; and

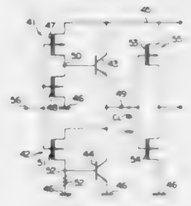
an output level guarantee circuit, said output level guarantee circuit including second and third MIS transistors of a conductivity type opposite to said first MIS transistor, said second and third MIS transistors being connected in series between said power supply lines and said output of said first MIS transistor, said output of said inverter circuit being supplied to a gate of said second MIS transistor, and an inverted signal of said control signal, supplied to the gate of said first MIS transistor, being supplied to a gate of said third MIS transistor.

4,806,797

BI-CMOS BUFFER CASCADED TO CMOS DRIVER HAVING PMOS PULL-UP TRANSISTOR WITH THRESHOLD VOLTAGE GREATER THAN VBE OF BI-CMOS BIPOLAR PULL-UP TRANSISTOR

Toru Yamazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 2, 1987, Ser. No. 92,262
Claims priority, application Japan, Sep. 2, 1986, 61-207112
Int. Cl.⁴ H03K *17/16, 17/56*
U.S. Cl. 307—446 **9 Claims**



1. A buffer circuit for a subsequent stage having a series combination of first and second field-effect transistors different in channel conductivity type from each other and coupled between first and second sources of voltage, said first field-effect transistor having a preselected threshold voltage, comprising:

(a) an input node to which an input signal is applied;

(b) an output node coupled to respective gate electrodes of said first and second field-effect transistors;

(c) a bipolar transistor having a base electrode coupled to said input node, an emitter electrode coupled to said output node and a collector electrode coupled to said first source of voltage, said bipolar transistor providing a conduction path from said first source of voltage to said output node when the bipolar transistor is turned on; and

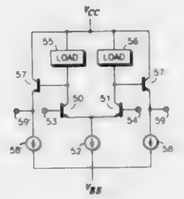
(d) switch means coupled between said output node and said second source of voltage to receive said input signal from said input node, said switch means electrically connecting said output node to said second source voltage when said bipolar transistor is turned off, wherein said bipolar transistor turns on in the presence of a preselected difference voltage between the emitter electrode and the base electrode, said preselected difference voltage being smaller in value than said preselected threshold voltage.

4,806,796

ACTIVE LOAD FOR EMITTER COUPLED LOGIC GATE

Thomas P. Bushey, Phoenix, and Bor-Yuan Hwang, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 28, 1988, Ser. No. 174,269
Int. Cl.⁴ H03K *19/086*
U.S. Cl. 307—455 **11 Claims**



1. An improved logic gate having first and second voltage terminals, first and second input terminals, a first output terminal, a first current source, a first transistor having a base coupled to said first input terminal, an emitter coupled to said first voltage terminal by said first current source, and a collector coupled to said first output terminal, and a second transistor having a base coupled to said second input terminal, an emitter coupled to said first voltage terminal by said first current source, and having a collector, said improvement comprising:

a first resistor;

a second resistor;

a third resistor;

a fourth resistor;

a third transistor having its base coupled to its collector by said first resistor, and its collector-emitter path coupled in series with said second resistor between said collector of said first transistor and said second voltage terminal; and

a fourth transistor having its base coupled to its collector by said third resistor, and its collector-emitter path coupled in series with said fourth resistor between said collector of said second transistor and said second voltage terminal.

4,806,798

OUTPUT CIRCUIT HAVING A BROAD DYNAMIC RANGE

Shushi Kanaeehi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 14, 1987, Ser. No. 73,130
Claims priority, application Japan, Jul. 14, 1986, 61-165907
Int. Cl.⁴ H03K *19/017, 17/16;* **G06G** *7/10*
U.S. Cl. 307—448 **14 Claims**

1. A buffer circuit comprising:

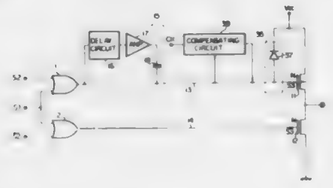
(a) a series combination of first and second transistors connected between a source of voltage and a ground, each of the first and second transistors having control electrodes respectively said first transistor being identical in conductivity type with said second transistor;

(b) an output node provided between said first and second transistors;

(c) a first logic gate responsive to an input signal and a high-impedance state requesting signal and producing a first drive signal applied to the control electrode of said first transistor, said first logic gate causing said first transistor to forcibly turn off in the presence of said high-impedance state requesting signal;

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(d) a second logic gate responsive to a complementary signal of said input signal and said high-impedance state requesting signal and producing a second drive signal applied to the control electrode of said second transistor, said second logic gate causing said second transistor to forcibly turn off in the presence of said high-impedance state requesting signal;



(e) booster means coupled to the control electrode of said first transistor and operative to boost up the voltage level of said first drive signal to a voltage level higher than that of said source of voltage, thereby allowing said first transistor to turn-on in a non-saturated region; and

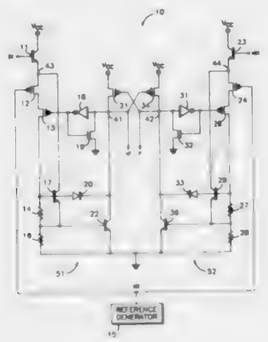
(f) clamping means coupled to the control electrode of said first transistor and operative to limit the voltage level of said first drive signal at a preselected value larger than that of a voltage level suppled from said source of voltage.

4,806,799

ECL TO CMOS TRANSLATOR

Perry H. Pelley, III; Ruey J. Yu, and Scott G. Nogle, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1988, Ser. No. 160,885
Int. Cl.[4] H03K *19/092, 19/086, 19/003, 17/10*
U.S. Cl. 307—475 **18 Claims**



1. An ECL to CMOS translator for receiving first and second complementary ECL input signals and providing a first output signal at CMOS levels, comprising:

first control means for coupling the first ECL input signal to a first node if said first ECL input signal is in a first logic state and for preventing said first ECL input signal from being coupled to the first node if said first ECL input signal is in a second logic state;

first coupling means, coupled to a second node and the first control means, for coupling the first node to a third node in response to the second node being at the first logic state;

a first transistor having a control electrode coupled to the third node, a first current electrode coupled to a first power supply terminal, and a second current electrode coupled to the second node, said first transistor for providing said first output signal on said second node at the second logic state in response to the third node receiving said first ECL input signal at said first logic state;

second control means for coupling the second ECL input signal to a fourth node if said second ECL input signal is in a first logic state and for preventing said second ECL input signal from being coupled to the fourth node if said second ECL input signal is in a second logic state;

second coupling means, coupled to a fifth node and the second control means, for coupling the fourth node to a sixth node in response to the fifth node being at the first logic state;

a second transistor having a control electrode coupled to the sixth node, a first current electrode coupled to the first power supply terminal, and a second current electrode coupled to the fifth node; and

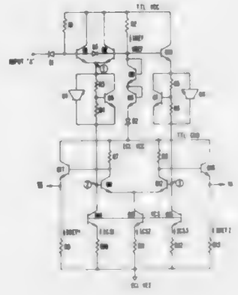
a third transistor having a control electrode coupled to the fifth node, a first current electrode coupled to a second power supply terminal, and a second current electrode coupled to the second node, said third transistor providing said output signal at the second logic state on said second node in response to receiving the first logic state on said fifth node.

4,806,800

TTL-TO-ECL INPUT TRANSLATOR/DRIVER CIRCUIT

Aurangzeb K. Khan, San Bruno, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Filed Nov. 20, 1987, Ser. No. 123,507
Int. Cl.[4] H03K *19/092*
U.S. Cl. 307—475 **7 Claims**



1. A high speed low power voltage translation circuit for translating input signals that vary between relatively large first and second positive voltages into output signals that vary between relatively small third and fourth negative voltage levels comprising:

means for providing a first positive voltage threshold reference having a value between said first and second voltages;

a circuit node;

means, responsive to the input signals, for generating an intermediate voltage at said circuit node, said intermediate voltage being positive and having a relatively small voltage swing;

a self-centering reference translator means for translating said first positive voltage threshold reference into a second voltage threshold having a value between said third and fourth voltage levels; and

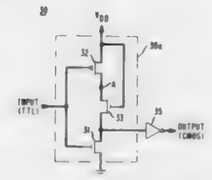
buffer driver means responsive to the voltages at said circuit node and to said second voltage threshold for generating said output signals.

4,806,801

TTL COMPATIBLE CMOS INPUT BUFFER HAVING A PREDETERMINED THRESHOLD VOLTAGE AND METHOD OF DESIGNING SAME

Pramod V. Argade, Allentown, and Arupratan Gupta, Philadelphia, both of Pa., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 27, 1987, Ser. No. 90,270
Int. Cl.[4] H03K *19/094*
U.S. Cl. 307—475 **9 Claims**



1. A TTL compatible CMOS input buffer in an integrated circuit for converting TTL input signals to CMOS logic output signals, having:

a first transistor (32) of a first conductivity type, having a control terminal responsive to the TTL input signal, a first output terminal coupled to a first voltage supply (Vdd) and a second output terminal;

a second transistor (31) of a second conductivity type, having a control terminal responsive to the TTL input signal, a first output terminal coupled to an output node and a second output terminal coupled to a second voltage supply, a predetermined threshold voltage (V31) and a predetermined channel width-to-length ratio (W31/L31); and,

a CMOS logic stage (35), having an predetermined threshold voltage (Vb) and responsive to the output node, for providing the CMOS logic output signal;

characterized by a third transistor (33) of a second conductivity type, having a control terminal coupled to control voltage source, a first output terminal coupled to the second terminal of the first transistor and a second output terminal coupled to the output node, a predetermined threshold voltage (V33) and a predetermined channel width-to-length ratio (W33/L33);

wherein the input threshold voltage (Vth) of the input buffer is substantially determined by the equation:

$$Vth=\gamma(Vdd-Vb-V33)+V31$$

where

$$\gamma^2=\frac{W33/L33}{W31/L31}$$

4,806,802

CMOS CIRCUIT HAVING SHOOT THROUGH CURRENT CONTROL

Takenori Okitaka, and Yukio Miyazaki, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1987, Ser. No. 91,132
Claims priority, application Japan, Aug. 29, 1986, 61-204262; Oct. 1, 1986, 61-235047
Int. Cl.[4] H03K *17/16, 17/26, 17/687, 19/003*
U.S. Cl. 307—542 **4 Claims**

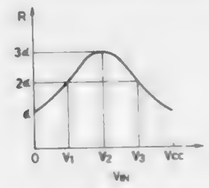
1. A complementary MOS integrated circuit for suppressing a penetration current, comprising:

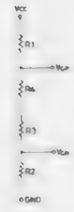
a data input terminal;

an output circuit including a first P-channel MOS transistor and a first N-channel MOS transistor connected in series with each other, said output circuit being coupled between first and second power source terminals and an output signal being produced from a common coupling point of said first P-channel and N-channel MOS transistors; and

a pre-output circuit connected to drive said output circuit, said pre-output circuit being coupled between said first and second power source terminals and being in parallel with said output circuit, said pre-output circuit including a second P-channel MOS transistor, a second N-channel MOS transistor and a resistance means connected between said second P-channel and N-channel MOS transistors,

said second P-channel MOS transistor having its drain terminal connected to the gate terminal of said first P-channel





MOS transistor, and said second N-channel MOS transistor having its drain terminal connected to the gate terminal of said first N-channel MOS transistor,

said resistance means including a third P-channel MOS transistor and a third N-channel MOS transistor connected in parallel with each other to constitute an analog switch, gate terminals of said third P-channels MOS transistor and said third N-channel MOS transistor each being connected to said data input terminal, and said resistance means being connected between the drain terminals of said second N-channel and P-channel MOS transistors such that the penetration current is suppressed from flowing in said output circuit.

4,806,803

CURRENT SWITCHING CIRCUIT

Kiichi Yamashita, Kanagawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 28, 1986, Ser. No. 867,552
Claims priority, application Japan, May 29, 1985, 60-114058
Int. Cl.[4] H03K *17/687, 5/22, 5/00, 5/08*
U.S. Cl. 307—571 **10 Claims**

1. A current switching circuit comprising:

first and second FETs, each having a source, a drain and a gate, wherein first and second input signals are connected to the gates of said first and second FETs, respectively;

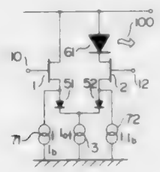
first and second diodes, whose anodes are connected with the sources of said first and said second FETs, respectively;

a constant current source, with which the cathodes of said first and said second diodes are connected in common; and

a load circuit connected with the drain of at least one of said first and second FETs;

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wherein current flowing through said load circuit is switched, depending on said first and said second input signals, and further wherein an output signal for the current switching circuit is taken out from said each load circuit so that the output for said current switching circuit is provided on the drain side of said first and second FETs.

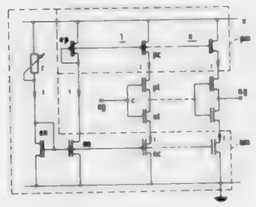


4,806,804

MOSFET INTEGRATED DELAY LINE FOR DIGITAL SIGNALS

Paul O'Leary, Gundelfingen, Fed. Rep. of Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Mar. 9, 1987, Ser. No. 23,211
Claims priority, application European Pat. Off., Mar. 12, 1986, 86 103301.7
Int. Cl.[4] H03K *17/28, 19/00*
U.S. Cl. 307—605 2 Claims



1. A MOSFET integrated delay line for digital signals comprising stages of inverters connected in series with respect to the signal flow, characterized in that:

each inverter in said stages is a conventional type of CMOS inverter formed by the series connection of the controlled current paths of an N-channel transistor and of a P- channel transistor:

toward each CMOS inverter there is connected on the side of the N-channel transistor an N-channel constant-current transistor and, on the side of the P-channel transistor a P-channel constant-current transistor in series to the respective pole of the source of supply voltage;

all of the N-channel constant-current transistors form part of an N-channel multiple current mirror;

all of the P-channel constant-current transistors form part of a P-channel multiple current mirror; and

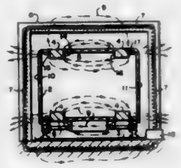
all transistors of the N-channel multiple current mirror and the P-channel multiple current mirror are so dimensioned as to be capable of conducting currents which are equal in terms of magnitude and equal in relation to an adjustable reference current.

4,806,805

ELECTRICAL ENERGY GENERATING SYSTEM UTILIZING A MOVING VEHICLE

Barry Pinchefsky, 240 W. 73rd St., Apt. 1201, New York, N.Y. 10023

Filed Jul. 20, 1987, Ser. No. 75,769
Int. Cl.[4] H02K *41/00*
U.S. Cl. 310—112 4 Claims



1. An electrical energy generating system connected to a moving vehicle comprising:

(a) magnet means affixed to a side portion and a top of the moving vehicle for producing a magnetic field, said magnet means having a bar magnet;

(b) coil means positioned within the magnetic field of said magnet means, whereby the magnetic means moves along said coil means to produce electrical energy in said coil means; and

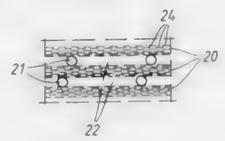
(c) storage means electrically connected to said coil means for storing electrical energy produced in said coil means.

4,806,806

COIL FOR ARRANGEMENT IN SLOTS IN A STATOR OR ROTOR OF AN ELECTRICAL MACHINE

Arne Hjortzberg; Göran Holmström, both of Västeras, and Thommy Karlsson, Bålinge, all of Sweden, assignors to Asea Aktiebolag, Västeras, Sweden

Filed Sep. 25, 1987, Ser. No. 101,366
Int. Cl.[4] H02K *15/12*
U.S. Cl. 310—45 5 Claims



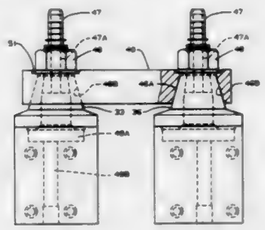
1. A coil for arrangement in a slot for a coil in an electrical machine comprising a bundle of a plurality of conductors arranged adjacent to each other and provided with a conductor insulation for insulation of the conductors from each other as well as a main insulation surrounding the bundle for insulation of the bundle against said slot, said main insulation comprising a wrapping of a flat insulating material which is wound in several layers around the bundle and which comprises a layer with small mica flakes, said wrapping including spaces between said layers with small mica flakes, said layers with small mica flakes and said spaces containing a cured impregnating resin, and wherein at least the impregnating resin located in said spaces contains particles of a filler having an intrinsic thermal conductivity of at least 5 W/mK and a particulate grain size of 0.1–15 μm in at least 90 per cent by weight thereof.

4,806,807

METHOD AND APPARATUS FOR BOLTED SERIES/PHASE GENERATOR CONNECTIONS

Andre J. Levino, Irwin, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1987, Ser. No. 2,063
Int. Cl.[4] H02K *3/46*
U.S. Cl. 310—71 4 Claims



1. An electrical generator comprising connectors which connect coil ends, said coil ends having a spacing therebetween and respective axes of projection, each of said connectors being characterized by:

first and second header caps having a predetermined geometry on respective ends of a pair of coil sections,

a respective water hose nipple integrally connected to each of said header caps, each said nipple having a threaded portion extending upward therefrom,

a solid connector bar of a conductive material, said bar having two receiving openings of a geometry complementary to said predetermined geometry and a spacing equal to said coil end spacing, said openings having respective axes corresponding to said axes of projection, and

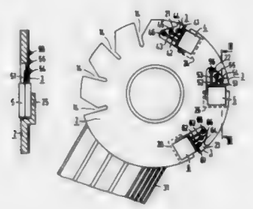
clamping means for clamping said bar so that said header caps are tightly received in said openings, wherein said clamping means comprises a nut screwed onto said threaded portion of each said water hose nipple.

4,806,808

PRINTED CIRCUIT BOARD FOR EXTERNAL ROTOR MOTOR WITH RECESS FOR HALL TRANSDUCERS

Ernst Grechsch, Estenfeld, and Helmut Schmidt, Reichenberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 11, 1987, Ser. No. 96,164
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1986, 3631106
Int. Cl.[4] H02K *29/08, 3/26, 5/22*
U.S. Cl. 310—71 7 Claims



1. In a printed circuit board mounted on the stator of a radial flow external rotor motor including Hall transducers held in recesses formed on one surface of the printed circuit board at close frontal axial distances to the rotor magnets of the external rotor motor and contacting conductor paths, each of said Hall transducers having corresponding connection legs, an improvement, which comprises:

(a) said printed circuit board including at least one supporting board having a recess in the region of each of said Hall transducers and the corresponding connection legs;

(b) a conductive foil fastened to the surface of the supporting board; said conductive foil being arranged to cover each recess;

(c) a plurality of lands for the electrical connection of said connection legs to said conductive foil; and

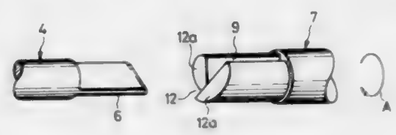
(d) each of said Hall transducers and the corresponding connection legs being arranged in one of said recesses; said corresponding connection legs extending within said one of said recesses to reduce the axial height of the printed circuit board and including angle-bent ends connected to said lands.

4,806,809

ROTARY SHAFT COUPLING DEVICE

Kazuhisa Kabota; Hisashi Hirose; Takao Sakakibara; Yasuo Miyake, and Sinzi Mizutani, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Jan. 8, 1987, Ser. No. 59,612
Claims priority, application Japan, Jan. 12, 1986, 61-089960[U]; Jul. 29, 1986, 61-116460[U]
Int. Cl.[4] H02K *7/00;* **F16D** *1/10*
U.S. Cl. 310—75 D 9 Claims



1. A rotary shaft coupling device comprising:

a first rotary shaft having a coupling end and a coupling protrusion extending from the coupling end;

a second rotary shaft having a coupling end and a coupling recess in the coupling end therefor into which said coupling protrusion is fitted;

a fitting ring member adjacent the coupling end of said second rotary shaft, said ring member being adapted for being threadedly mounted into a transmission of a vehicle; and

a V-shaped guide means on the coupling end of said second rotary shaft where said coupling recess is formed, said guide means having opposing inner faces disposed at an angle relative to the axis of said second rotary shaft to guide the coupling protusion into said coupling recess when said shafts are fitted and coupled together.

4,806,810

FASTENER SEALING SYSTEM FOR FASTENERS EXPOSED TO HIGH AMBIENT TEMPERATURES

Michael R. Herndon, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 16, 1987, Ser. No. 26,016
Int. Cl.[4] H02K *5/00*
U.S. Cl. 310—89 23 Claims

1. A sealing system for fastener means extending through a generator housing, comprising:

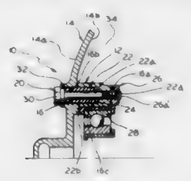
a boss integrally associated with said generator housing, said boss extending from a point adjacent an external surface of said generator housing to a point inwardly of an internal surface of said generator housing and including a fastener-receiving opening having a major diameter portion and a minor diameter portion defining an inwardly projecting

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shoulder therebetween, said boss being exposed to cooling means internally of said generator housing;

said fastener means including a shank having a major diameter portion and a minor diameter portion, said major and minor diameter portions of said fastener means being of substantially the same diameters as said major and minor diameter portions of said fastener-receiving opening, respectively, and including means internally of said generator housing for releasably retaining said fastener means therewithin; and

resilient seal means adapted to be disposed about said minor diameter portion of said fastener means, and being compressed between said major diameter portion of said fastener means and said inwardly projecting shoulder of said boss, when said fastener means is retained by said releasable retaining means.



4,806,811

MINIATURE MOTOR

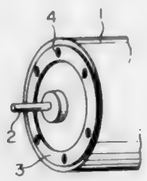
Etsuo Mayumi; Michio Hoshino, and Mitsu Kase, all of Chiba, Japan, assignors to Mabuchi Motor Co. Ltd., Japan

Filed Jan. 8, 1987, Ser. No. 1,372

Claims priority, application Japan, Sep. 1, 1986, 61-2770

Int. Cl.[4] H02K *5/00*

U.S. Cl. 310—89 **4 Claims**



1. A miniature motor comprising: a cylindrical motor case having a closed end face with a plurality of motor mounting holes formed therein and an open end face; at least one permanent magnet supported on an inner surface of the cylindrical motor case; a first bearing provided on an end of said motor case; a case cover covering an open end of said cylindrical motor case; a second bearing provided at said case cover; a rotor shaft supported by said first and second bearings, said rotor shaft protruding through said motor case closed end face; a commutator supported on said rotor shaft; a rotor supported on said rotor shaft; an electrical contact supported by said case cover; a contact brush supported by said case cover, said contact brush connected to said electrical contact and positioned so as to be in electrical contact with said commutator; and, motor mounting means formed integral with said motor case, said motor mounting means having a surface raised from said motor case closed end face, said motor mounting means surface having a machined plane which is at an angle to said shaft of substantially 90° said mounting means includes one of a plurality of motor mounting portions, each portion being isolated in an island fashion, a position of which corresponding to the motor mounting holes; and motor mounting means includes a continuous ring-shaped portion positioned so as to overlie each of said motor mounting holes.

4,806,812

ALTERNATING-CURRENT ELECTRICAL GENERATOR

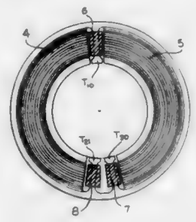
John M. Masterman, Cheltenham, England, assignor to Dowty Fuel Systems Limited, England

Filed Nov. 6, 1984, Ser. No. 668,757

Claims priority, application United Kingdom, Nov. 18, 1983, 8330896

Int. Cl.[4] H02K *3/00*

U.S. Cl. 310—182 **2 Claims**



1. An alternating-current electrical generator including a permanent magnet rotor, a stator having a plurality of teeth, and at least two similar but independent windings associated with the teeth of the stator; each winding has an end which is separated from an adjacent end of an adjacent winding by at least one non wound tooth wherein each non wound tooth is provided with at least one metallic short-circuited winding, independent from the windings of the generator, for reducing the iron losses.

4,806,813

MOTOR

Akiyasu Sumi, Kanagawa; Shigeru Yoshida, Saitama; Akira Kurosawa, Saitama; Tohru Takahashi, Saitama; Yoshitaka Kondoh, and Tatsuo Chigira, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Saitama, both of, Japan

Filed Mar. 17, 1987, Ser. No. 27,173

Claims priority, application Japan, Mar. 20, 1986, 61-063460; Apr. 17, 1986, 61-088613; Apr. 17, 1986, 61-088614; Apr. 17, 1986, 61-088615; Jun. 30, 1986, 61-152963; Jun. 30, 1986, 61-152964; Dec. 27, 1986, 61-203286[U]; Dec. 27, 1986, 61-203287[U]; Jan. 14, 1987, 62-004269[U]

Int. Cl.[4] H02K *1/12*

U.S. Cl. 310—254 **3 Claims**

1. A motor comprising:

a rotor including a two pole permanent magnet and a rotating shaft;

a stator including:

a first pair of yokes comprising a first yoke member having a bearing part at one end and rotatably supporting one end of the rotating shaft and also having at said one end a first magnetic pole part which extends along an outer circumference of said rotor, and a second yoke member which is provided at one end with a second magnetic pole part arranged to face said first magnetic pole part from across said rotor, said second yoke member also being provided with a first exciting coil would thereon:

a second pair of yokes comprising a third yoke member having a third magnetic pole part which extends along an outer circumference of said rotor and a fourth yoke member provided at one end thereof with a fourth magnetic pole part arranged to face said third magnetic pole part from across said rotor, said fourth yoke member also being provided with a second exciting coil wound thereon; and

a position detecting element constructed and arranged to detect the magnetic poles of said rotor and to generate a coil power supply reversing signal,



said position detecting element being mounted on a circuit board having a circuit for supplying power to said coil and a circuit for said position detecting element.

4,806,814

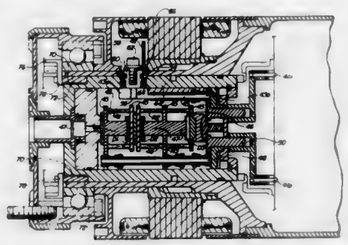
HALF-WAVE ROTARY RECTIFIER ASSEMBLY

Robert D. Nold, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 16, 1987, Ser. No. 121,127

Int. Cl.[4] H02K *11/00*

U.S. Cl. 310—68 D **5 Claims**



1. A rotary rectifier assembly for a brushless synchronous generator including,

a three phase, WYE connected exciter armature having exciter output leads comprising three power output leads and a neutral output lead and,

a main generator field having positive and negative input leads, said rotary rectifier assembly comprising:

a rotating housing;

three diodes;

three resistors; and

means interconnecting said diodes and resistors for forming a three phase half-wave rectifier bridge within said rotating housing, said interconnecting means including a neutral conductor coupled between said neutral output lead and said negative input lead and carried within said rotating housing.

4,806,815

LINEAR MOTION ACTUATOR UTILIZING EXTENDED SHAPE MEMORY ALLOY MEMBER

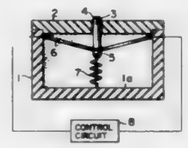
Dai Houma, Tokyo, Japan, assignor to Naomitsu Tokieda, Tokyo, Japan

Division of Ser. No. 769,465, Aug. 26, 1985, abandoned. This application Apr. 27, 1987, Ser. No. 42,676

Claims priority, application Japan, Apr. 3, 1985, 60-69079

Int. Cl.[4] H02N *7/00;* **H01H** *71/18*

U.S. Cl. 310—307 **7 Claims**



1. A linear motion actuator, comprising:

(a) a body;

(b) a member which is movable in a linear direction with respect to said body;

(c) an element made of shape memory alloy material, extended in a direction transverse to said linear direction so as to intersect said linear direction, attached to said body at its ends, and coupled substantially at its intermediate portion to said movable member, for remembering a length in said transverse direction less than or equal to the distance in said transverse direction between its fixed ends, so that upon being heated said extended shape memory alloy element tends to revert to said length to form a substantially straight line;

(d) a linear elastic means for biasing said movable member and said intermediate portion of said extended shape memory alloy element in said linear direction so as to apply an elongation deformation to said extended shape memory alloy element; and

(e) a transverse bar member extending across a central space of said body and having a hole formed therein extending in the longitudinal direction of said body for permitting said movable member to be fitted therethrough.

4,806,816

HIGH-PRESSURE DISCHARGE LAMP

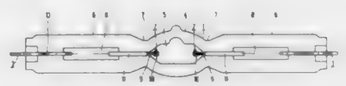
Bertus de Vrijer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 16, 1987, Ser. No. 109,801

Claims priority, application Netherlands, Oct. 20, 1986, 8602625

Int. Cl.[4] H01J *61/36*

U.S. Cl. 313—331 **6 Claims**



1. A high-pressure discharge lamp comprising:

a quartz discharge vessel which is filled with an ionizable gas and in which electrodes are arranged opposite to each other,

current-supply conductors which are connected to a respective electrode and are passed from the discharge vessel to the exterior,

said discharge vessel having a first part which surrounds a discharge space, seals arranged opposite to each other and

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a respective neck portion of reduced width adjoining the first part and a respective seal,

said current-supply conductors having in the respective seal a flat portion adjoined by the glass of the seal a flat portion adjoined by the glass of the seal in a vacuum-tight manner, and

said electrodes having an electrode pin, which carries at its free end an electrode head whose largest diameter is larger than the diameter of the electrode pin,

characterized in that the electrode pins have within the neck portion of reduced width a transverse dimension which is larger than their diameter at their free end.

4,806,817

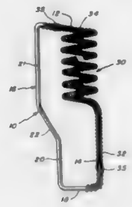
FILAMENT SUPPORTING MULTI-PLANAR WIRE INSERT FOR ELECTRIC INCANDESCENT LAMP

Owtis J. Ragland, Jr., deceased, late of Winchester, Ky. (by Susan Ragland, administratrix); Arnold E. Westlund, Jr., Winchester, Ky.; Paul B. Reynolds, and Stuart K. Denham, both of Waldoboro, Me., assignors to GTE Products Corporation, Danvers, Mass.

Continuation of Ser. No. 904,422, Sep. 8, 1986, abandoned. This application Jun. 22, 1988, Ser. No. 211,143

Int. Cl.[4] H01K *1/88*

U.S. Cl. 313—279 **19 Claims**



1. A wire insert for supporting a coil filament body secured thereto and said coil filament having a central axis and opposite upper and lower coil ends, the combination of wire insert and coil filament body adapted for use in an electric incandescent lamp, said wire insert having a top leg and bottom leg intercoupled by an intermediate portion extending substantially in parallel to said central axis of said coil filament body, said bottom leg of said wire insert, along with said intermediate portion, in a first plane, said top leg of said wire insert supporting said lower coil end and disposed, along with said intermediate portion in said first plane, said top leg of said wire insert suporting said upper coil end and disposed in a second plane extending at an acute angle to said first plane such that said wire insert supports said coil filament body ends without deformation of said coil filament body, said wire insert being formed of a single piece of wire to constitute a one-piece construction and having said coil filament body secured thereto prior to positioning and use within said incandescent lamp.

4,806,818

METHOD OF PROVIDING ELECTRICAL CONTACT TO A SEMICONDUCTOR CATHODE, CATHODE SO PRODUCED, AND ELECTRON TUBE PROVIDED WITH SUCH CATHODE

Johannes van Esdonk; Jacobus Stoffels, and Petrus J. M. Peters, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

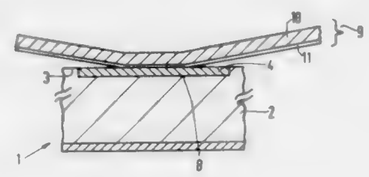
Filed Sep. 14, 1987, Ser. No. 95,694

Claims priority, application Netherlands, Sep. 15, 1986, 8602330

Int. Cl.[4] H01J *9/02*

U.S. Cl. 313—346 R **11 Claims**

1. A method of providing electrical leads for a semiconductor cathode having a surface zone of a first conductivity type in a semiconductor region at least partially surrounding the surface zone, the method comprising providing electrical contact between the surface zone and the leads, characterized in that the leads comprise at least one layer of a first metal from



the group of tantalum, titanium, and vanadium and one layer of a second metal from the group of gold, silver, and copper, and further characterized in that the contact is obtained by means of a thermal treatment.

4,806,819

SHADOW MASK MOUNTING APPARATUS IN A COLOR PICTURE TUBE

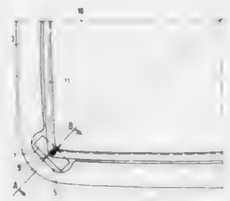
Eberhard Nill, Esslingen, Fed. Rep. of Germany, assignor to Nokia Graetz GmbH, Pforzheim, Fed. Rep. of Germany

Filed Oct. 13, 1987, Ser. No. 108,133

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1986, 3635187

Int. Cl.[4] H01J *29/07*

U.S. Cl. 313—404 **20 Claims**



1. A shadow-mask color picture tube, comprising:

a quadrangular glass panel having an outwardly extending peripheral flange;

a glass funnel having an outwardly extending peripheral flange, said panel and funnel being joined together via said flange portions to form said picture tube;

holding plates fastened between said flanges and extending inwardly inside the picture tube; and

a shadow mask mounted to said holding plates.

4,806,820

MASK-FRAME ASSEMBLY AND METHOD OF MANUFACTURING THE SAME

Dietrich Berner, Uhingen; Rolf Reidinger, Deizisau, and Rainer Vollath, Esslingen, all of Fed. Rep. of Germany, assignors to Alcatel NV, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 364,178, Apr. 1, 1982, abandoned

Filed Jan. 25, 1988, Ser. No. 147,523

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115799

Int. Cl.[4] H01J *29/07*

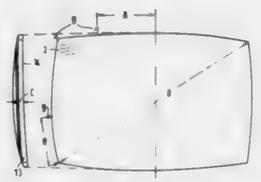
U.S. Cl. 313—404 **7 Claims**

1. A mask-frame assembly for a screen of a color television tube, comprising:

a mask in the form of a thin sheet of metal which contains a plurality of apertures;

a bent flange formed about the periphery of the mask;

a frame to which the mask flange is welded, wherein the nearest weld to the center of a long side of the mask is at a distance A from the center of the side where A is chosen so that $(D/4.5) \leqq A \leqq (D/2.4)$, and on a short side of the mask, a distance B between a weld and the nearest corner of the mask is chosen so that $(D/8.4) \leqq B \leqq (D/3.0)$, that a width C of the flange



near an edge where the welds are located is chosen to be $C \geqq (1.6D/100)$, where D is the length of the screen diagonal;

welds also being disposed at the corners of the mask;

stress-relief means disposed on both sides of the corner welds for relief of mechanical stress; and

connecting members consisting of bimetallic-spring holders and mounting springs welded to said frame.

4,806,821

CATHODE RAY TUBE HAVING AN ELECTRON GUN WITH BIPOTENTIAL FOCUSING LENS

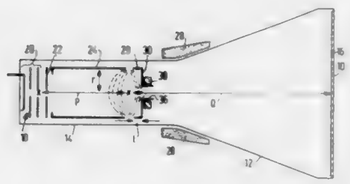
Aart A. van Gorkum, Tokyo, Japan, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 17, 1987, Ser. No. 40,009

Claims priority, application United Kingdom, May 30, 1986, 8613170

Int. Cl.[4] H01J *29/62, 29/94*

U.S. Cl. 313—449 **10 Claims**



1. A cathode ray tube including an envelope containing a luminescent screen and an electron gun for producing and focusing an electron beam directed at said screen along a longitudinal axis of the envelope, said electron gun including:

a. a triode portion for producing the electron beam and focusing said electron beam at an object point; and

b. first and second adjacent bipotential focusing lens electrodes for producing therebetween a lens for focusing the electron beam onto the screen;

said first electrode being disposed between the triode portion and the screen and comprising a cylindrical electrode having a radius at an end thereof adjacent the second electrode which is maximized within the confines of the envelope and having a predetermined axial length;

said second electrode being disposed between the first electrode and the screen, having a predetermined axial length, and comprising a diaphragm extending transversely of the axis and including an aperture for passing the electron beam, said aperture having a cross-sectional area which is smaller than one-half of said first electrode's cross-sectional area;

said predetermined axial lengths being dimensioned to optimize the quality C of the lens in accordance with the formula:

$$C^1 = K \cdot \frac{Q}{P^1 D^4}$$

where K is approximately equal to 1.5, Q is the lens-to-screen distance, P is the lens-to-object-point distance, and D is the lens diameter.

4,806,822

CATHODE RAY TUBE CONTAINING ZINC SILICATE PHOSPHOR

Takeshi Takahara, Yokosuka; Tsutomu Ishii, Kawasaki, and Mitsuhiro Oikawa, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 899,326, Aug. 22, 1986, abandoned. This application Nov. 23, 1987, Ser. No. 124,364

Claims priority, application Japan, Aug. 29, 1985, 60-188658

Int. Cl.[4] C09K *11/59*

U.S. Cl. 313—467 **4 Claims**

1. A cathode ray tube comprising an evacuated envelope, an electron excitation source and a screen containing a zinc silicate phosphor thereon, which consists essentially of a composition of the stoichiometric formula:

$$aZnO.SiO_2:Mn_x, In_y$$

which composition is substantially free of arsenic and wherein a is a number of from about 1.5 to about 2, x is a number of from about 5×10^{-5} to about 3×10^{-2}, and y is a number of from about 1×10^{-5} to about 1×10^{-2}.

4,806,823

METHOD OF MANUFACTURING AN ELECTRON BEAM TUBE AND ELECTRON BEAM TUBE THUS MANUFACTURED

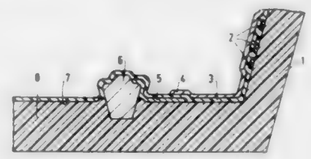
Johannes M. A. A. Compen, and Wilhelmus M. P. Van Kemenade, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 16, 1987, Ser. No. 109,789

Claims priority, application Netherlands, Oct. 29, 1986, 8602717

Int. Cl.[4] H01J *9/20, 29/28*

U.S. Cl. 313—479 **3 Claims**



2. An electron beam tube for displaying television pictures, which tube is provided with a glass envelope having a substantially rectangular display window on which a pattern of phosphor elements is present, and a colour selection electrode facing the pattern, the pattern and the colour selection electrode being connected together in an electrically conducting manner by an aluminium layer and a strip-shaped electrically conducting graphite layer,

characterized in that the graphite layer is substantially free from alkali metal ions and comprises at least 5% by weight of colloidal silicon oxide, and is present at the area of the

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aluminium layer between the glass envelope and the aluminium layer.

4,806,824

FLUORESCENT LAMP USING MULTI-LAYER PHOSPHOR COATING

John Paynter, Painesville; George R. Gillooly, Cleveland Heights; Thomas F. Soules, Richmond Heights, and Mary V. Hoffman, South Euclid, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 849,081, Apr. 4, 1986, abandoned. This application Mar. 2, 1988, Ser. No. 166,739

Int. Cl.[4] H01J *63/04*

U.S. Cl. 313—496 **14 Claims**



1. In a fluorescent lamp comprising a glass envelope having electrodes at its ends, a mercury and inert gas filling within said glass envelope which produces ultraviolet radiation, and a phosphor coating which converts a substantial portion of said ultraviolet radiation to visible illumination having a white color, the improvement wherein said coating comprises a dual layer of a first phosphor layer deposited on the inner glass surface and a second phosphor layer deposited on the first phosphor layer, said second phosphor layer comprising a blend of narrow bandwith emitting phosphors, said first phosphor layer comprising phosphor particles having a particle size range extending from about 4 microns average diameter up to about 8 microns average diameter having been deposited at a dry coating weight in the range of from about 1.3 milligrams per square centimeter up to about 3.5 milligrams per square centimeter at said particle size range and said phosphor being essentially a single phase material substantially devoid of secondary diluting or deleterious phases wherein the individual phosphor particles are predominantly single crystals substantially devoid of agglomerated smaller size crystals and have the general formula:

$$Ca_{10-a-w-x}Cd_wMn_xSb_a(PO_4)_6F_{2-a-y}Cl_yO_a$$

wherein
- a is in the approximate range of 0.1–0.2
- w is in the approximate range of 0–0.2
- x is in the approximate range of 0.15–0.5, and
- y is in the approximate range of 0.03–0.3

wherein the total metal ion content in the phosphor is maintained equal to at least 9.97, whereby said lamp provides efficient lumen output at a substantially reduced total phosphor coating weight.

4,806,825

INFRA-RED PHOSPHORS

Colin L. R. Catherall, Enfield, and Martin J. Fuller, Greenford, both of England, assignors to Thorn EMI plc, London, England

Filed May 19, 1988, Ser. No. 196,031

Claims priority, application United Kingdom, May 20, 1987, 8711920

Int. Cl.[4] C09K *11/64*

U.S. Cl. 313—486 **14 Claims**

1. A trivalent chromium activated alkaline earth aluminate phosphor having a hexagonal crystal structure and divalent europium and optionally one or more of divalent manganese and zinc incorporated therein, and emitting in the region of the electromagnetic spectrum between 650 and 800 nm, having a composition represented by:

$$(A_{(w-y)}B_zEu_yCr_2)O_{(w+x+3z/2)}Al_2O_3$$

where
- A is barium, strontium or a combination thereof,
- B is magnesium which is replaceable partly or wholly by zinc and/or divalent manganese,
- w is in the range of from 0.01 to 0.6,
- x is in the range of from 0.01 to 0.98,
- y is in the range of from 0.005 w to 0.70 w, and
- z is in the range of from 0.0001 to 0.06, the divalent europium functioning as a sensitizer by absorbing ultraviolet radiation incident thereon and converting said radiation to energies that are absorbed by trivalent chromium and converted to infra-red radiation.

4,806,826

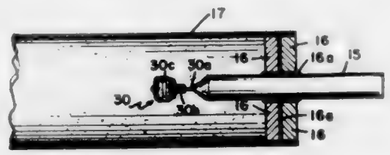
HIGH PRESSURE SODIUM VAPOR DISCHARGE DEVICE

Philip J. White, Georgetown, and David A. Goodman, Salem, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 16, 1986, Ser. No. 942,331

Int. Cl.[4] H01J *17/04, 17/24*

U.S. Cl. 313—631 **20 Claims**



1. A high intensity sodium vapor discharge device comprising:
- an arc tube having a fill including sodium and mercury;
- a pair of electrodes sealed through opposite ends of said arc tube;
- means to connect current to each of said electrode; and
- an emissive material comprising an admixture of an oxygen getter and thorium dioxide coated on at least one of said electrodes.

4,806,827

MULTIPLIER ELEMENT OF THE APERTURE PLATE TYPE, AND METHOD OF MANUFACTURE

Gilbert Eschard, Brive, France, assignor to U.S. Philips Corporation, New York, N.Y.

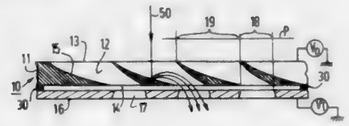
Filed Oct. 3, 1986, Ser. No. 914,848

Claims priority, application France, Dec. 31, 1985, 85 19482

The portion of the term of this patent subsequent to Mar. 10, 2004, has been disclaimed.

Int. Cl.[4] H01J *43/00*

U.S. Cl. 313—533 **9 Claims**



1. An electron multiplier element of the apertured plate type for secondary emission, comprising

a first metal plate having a plurality of multiplier holes, each said hole having an input aperture, an output aperture, and a wall of emissive power extending therebetween, said input aperture having a cross sectional area that is larger than the cross sectional area of said output aperture, a perpendicular projection of said output aperture onto a plane parallel to said plate being entirely outside the corresponding projection of the input aperture,

a second metal plate in parallel with the first plate, said second plate having a like plurality of auxiliary holes, each said auxiliary hole being disposed opposite a respective output aperture, the second plate being brought to an electric potential which is higher than the electric potential of the first plate.

4,806,828

HIGH PRESSURE SODIUM DISCHARGE LAMPS WITH HYDROGEN GETTER

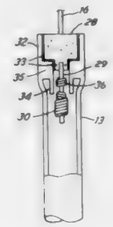
Derek P. Hurst, Leicestershire, England, assignor to Thorn EMI plc, London, England

Filed May 8, 1987, Ser. No. 47,274

Claims priority, application United Kingdom, Jul. 2, 1986, 8616148

Int. Cl.[4] H01J *61/26*

U.S. Cl. 313—558 **21 Claims**



1. An arc tube of light transmitting ceramic material for a high pressure sodium discharge lamp, the arc tube including spaced electrodes for supporting a discharge therebetween and a quantity of getter material comprising an alloy of titanium and niobium metal held captive within the arc tube.

4,806,829

APPARATUS UTILIZING CHARGED PARTICLES

Shuji Nakao, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jul. 27, 1987, Ser. No. 78,086

Claims priority, application Japan, Jul. 28, 1986, 61-178435

Int. Cl.[4] H01J *37/256, 37/317*

U.S. Cl. 315—111.81 **35 Claims**



1. An apparatus utilizing charged particles comprising:

charged particle generating means for generating electrically charged particles for irradiating the surface of a material whereby an electrical charge accumulates on the material; and

plasma generating means for generating a plasma containing electrically charged particles in the neighborhood of the surface of the material wherein the electrically charged particles in the plasma are attracted by and neutralize the accumulated electrical charge at the surface of the material.

4,806,830

DEVICE AND PROCESS FOR LIGHTING A FLUORESCENT DISCHARGE LAMP

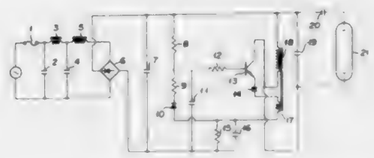
Tadao Ueki, Kanagawa, Japan, assignor to Kabushiki Kaisha Denkosha, Tokyo, Japan

Filed Jul. 10, 1986, Ser. No. 883,972

Claims priority, application Japan, Oct. 29, 1985, 60-240493

Int. Cl.[4] H05B *41/232*

U.S. Cl. 315—244 **18 Claims**



1. A device for lighting a fluorescent discharge lamp which lamp requires a relatively high exciting voltage to initiate fluorescence and a relatively low maintenance voltage to maintain fluorescence, which device comprises:

a generating means comprising a resonating circuit including a transistor for generating a high-frequency initializing pulse having relativley sharp peaks which reach a voltage above the exciting voltage when current through the transistor decays;

circuitry for applying said initializing pulse to the terminals of said fluorescent discharge lamp; and

a voltage-reducing means for reducing the voltage of the peaks of said initializing pulse to a maintenance pulse at said maintenance voltage once the lamp has been lit;

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said resonating circuit comprising transformer means including a resonating coil as the sole primary winding thereon having a capacitor connected in parallel therewith, the collector of said transistor being connected to one end of said resonating coil and the base thereof being connected to the other end of said resonating coil, and with a resistance connected in series between said base and said coil;

said generating means and said voltage-reducing means comprising a feedback-signaling coil mounted on said transformer means as the sole secondary winding thereon and magnetically coupled with said resonating coil and connected with the emitter of said transistor through anti-feedback means and to the base of said transistor through serially connected capacitors;

said circuitry for applying said initializing pulse and said maintenance voltage to said flourescent discharge lamp comprising solely two terminals, said terminals being adapted to be connected to the lamp terminals one at each end of said lamp, one of the terminals of said circuitry being connected to one end of said resonating coil and having a capacitor connected in series therebetween to prevent flow of direct current into said lamp, and the other terminal of said circuitry being connected to the other end of said resonating coil;

said device being activated by a power source having one output terminal connected to one end of said resonating coil and the other output terminal connected between said serially connected capacitors, and through a serially connected resistor to one end of said feedback signalling coil.

4,806,831

COIL WITH MAGNETIZABLE ROD CORE

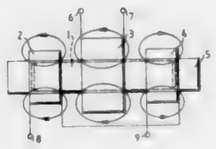
Walter Goeseberg, and Alfred Pollack, both of Hanover, Fed. Rep. of Germany, assignors to TELEFUNKEN Fernseh und Rundfunk, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 06/765,967, Aug. 15, 1985. This application Jan. 15, 1987, Ser. No. 62,186

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3429976

Int. Cl.⁴ H01J *29/70, 29/76;* **H01F** *27/28*

U.S. Cl. 315—399 **13 Claims**



1. A coil arrangement comprising a magnetizable rod core and at least first, second and third adjacent coaxially positioned windings arranged approximately symmetrically with respect to said rod core, with said first and third windings being the outer of said adjacent windings and having approximately the same number of turns; and wherein: said first and third windings are connected in series opposition so that their respective magnetic fields act opposite one another in said rod core; said rod core is fixedly positioned so that it extends fully through said second winding and at least partially into each of said first and third windings, and so that said first and third windings have approximately equal inductances, whereby said series connected first and third windings are electromagnetically decoupled from said second winding; and said second winding is electrically isolated from said first and third windings, whereby said second winding and said series connected first and third windings can be connected in respectively separate circuits which may have different operating frequencies.

4,806,832

FAN WITH TEMPERATURE CONTROLLED ROTATION SPEED

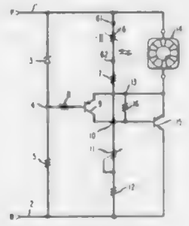
Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst Motoren KG, St. Georgen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 554,064, Nov. 21, 1983, abandoned. This application Aug. 29, 1985, Ser. No. 770,843

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1982, 3243163

Int. Cl.⁴ G05B *5/00*

U.S. Cl. 318—334 **41 Claims**



1. A circuit for controlling the speed of a D.C. electric motor comprising

a direct current voltage supply;

a first electrical power input terminal of a motor power control circuit to be connected to the direct current voltage supply;

a second electrical power input terminal of the motor power control circuit to be connected to the direct current voltage supply;

a D.C. motor having a winding;

a first electrical output terminal of the motor power control circuit to be connected to an input of the D.C. electric motor;

a second electrical output terminal of the motor power control circuit to be connected to an input of the D.C. electric motor;

a first connection line connecting the first electrical input terminal to the first electrical output terminal;

a analog controllable amplifying means controlled by a bias voltage and connected to and disposed between the second electrical input terminal and the second electrical output terminal;

a voltage divider circuit disposed between the first electric input terminal and the second electrical input terminal and comprising two branches wherein a temperature sensitive element is disposed in one branch causing a voltage drop depending on temperature and wherein a resistive element is disposed in the other branch and where an intermediate point of the two branches is connected to the analog controllable amplifying means for providing a voltage;

a comparator connected to the motor for comparing the voltage drop of the motor with a preset voltage drop.

4,806,833

SYSTEM FOR CONDITIONING AIR, METHOD OF OPERATING SUCH, AND CIRCUIT

Glen C. Young, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sep. 22, 1986, Ser. No. 909,547

Int. Cl.⁴ G05D *16/20*

U.S. Cl. 318—335 **21 Claims**

7. A method of operating a system for conditioning air, the system having a static pressure adapted to be varied and the system including a variable speed blower means rotatably operable for flowing the conditioned air through at least a part of the system, the method comprising the steps of:

setting the speed of the blower means to effect a preselected flow rate of the conditioned air through the at least part of the system at an existing static pressure therein;

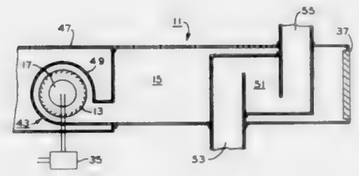
altering the speed of the blower means only in response to a variation in the static pressure and in following relation with the static pressure variation;

sensing the alteration in the speed of the blower means; and

adjusting the speed of the blower means in following relation to the static pressure variation in response to the sensing step to effect a variation in the flow rate in following relation with the static pressure variation and establishing thereby the preselected flow rate of the conditioned air through the at least part of the system at the varied static pressure.

17. A system for conditioning air and for maintaining a preselected flow rate of the conditioned air through a contained space with respect to a static pressure therein, the system comprising:

blower means rotatable at a speed against an existing static pressure in the contained space for establishing the preselected flow rate therethrough of the conditioned air;



means for varying the static pressure in the contained space, said blower means being responsive only to the static pressure variation to effect an alteration in the speed of said blower means in following relation with the static pressure variation;

a variable speed dynamoelectric machine energized to rotatably drive said blower means;

means for sensing the speed alteration of said blower means; and

control means operable generally for regulating the energization of said dynamoelectric machine, said control means being responsive to said sensing means to adjust the energization of said dynamoelectric machine in following relation with the sensed speed alteration of said blower means thereby to vary the flow rate of the conditioned air through the contained space and reestablish the preselected flow rate of the conditioned air in the contained space at the varied static pressure acting on said blower means.

4,806,834

ELECTRICAL CIRCUIT FOR INDUCTANCE CONDUCTORS, TRANSFORMERS AND MOTORS

Earl Koenig, Averill Park, N.Y., assignor to Donald Goodman, Fort Lee, N.J., a part interest

Filed Apr. 16, 1987, Ser. No. 39,081

Int. Cl.⁴ H02P *8/00*

U.S. Cl. 318—523 **16 Claims**

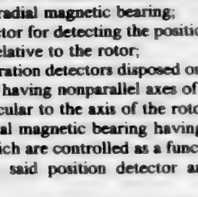
1. An inductance conductor comprising

a bar of magnetizable material;

a first coil of electrically conductive wire coiled about said bar;

a second coil of electrically conductive wire of equal resistance to said first coil coiled about said bar in mirror image symmetrical relation to said first coil;

a first common tap means connected to one end of said coils to conduct an electrical current sumultaneously thereto to magnetize said bar; and



a second common tap means connected to a second end of each of said coils to conduct an electrical current sumultaneouly therefrom.

4,806,835

ELECTROMAGNETIC DEVICE FOR REDUCING VIBRATION IN A ROTARY MACHINE FITTED WITH FLUID BEARINGS

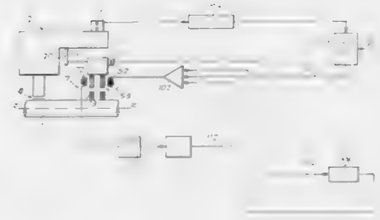
Helmut Habermann, Veraon, France, assignor to Societe Anonyme: Societe De Mecanique Magnetique, Saint-Marcel, France

Filed Dec. 21, 1987, Ser. No. 136,147

Claims priority, application France, Dec. 31, 1986, 86 18440

Int. Cl.⁴ G05B *1/01*

U.S. Cl. 318—607 **9 Claims**



1. An electromagentic device for reducing vibration in a rotary machine comprising a rotor mounted in a casing via at least one fluid bearing, the device comprising:

at least one compensation ring disposed in the vicinity of the fluid bearing and mounted relative to the rotor by means of an active radial magnetic bearing;

a position detector for detecting the position of the compensation ring relative to the rotor;

at least two vibration detectors disposed on the casing of the machine and having nonparallel axes of sensitivity which are perpendicular to the axis of the rotor;

said active radial magnetic bearing having electromagnetic windings which are controlled as a function of the signals delivered by said position detector and said vibration detectors;

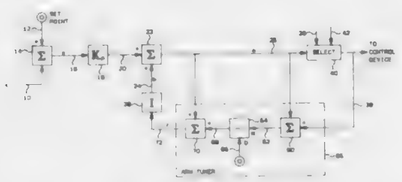
wherein the signals delivered by the vibration detectors are applied to a high-gain narrow-band selective feedback circuit having a central frequency synchronized with a reference frequency and including means for integrating the signals from the vibration detectors, and filter means for eliminating transient signals at frequencies unrelated to the reference frequency, thereby causing the compensation ring to exert a rotary compensation force on the rotor via the radial magnetic bearing, said compensation force being equal to the centrifugal force due to the out-of-balance mass of the rotor but being phase-shifted by 180° relative thereto.

4,806,836

ANTI-RESET WINDUP FOR CONTROLLERS IN SELECTIVE CONTROL LOOPS

Don W. Webb, Bartlesville, Okla., assignor to Applied Automation, Inc., Bartlesville, Okla.

Filed Jan. 14, 1988, Ser. No. 143,784
Int. Cl.[4] G05B *11/36*
U.S. Cl. 318—609 **14 Claims**



1. Apparatus comprising:

controller means for automatically generating an output signal in response to an error signal representative of the deviation of a process variable signal from a set point and of the time integral of said error signal, wherein said output signal includes an integral part and a proportional part and wherein said controller means includes an external reset signal input;

means for selecting a signal from a group of signals, which includes said output signal, to establish a selected signal wherein said selected signal is provided to a control element for said process variable;

means for establishing an anti-reset-windup (ARW) tuning signal representative of a desired tuning factor;

means for modifying said selected signal responsive to said ARW tuning signal to establish an adjustable reset feedback signal, wherein said selected signal provided to said control element is unaffected by said means for modifying said selected signal; and

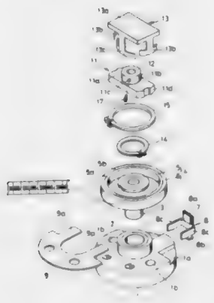
means for providing said adjustable reset feedback signal to said external feedback input of said controller means, wherein said integral part of said output signal responds to said adjustable reset feedback signal in addition to responding to said error signal.

4,806,837

ROTARY ENCODER

Eiji Ito, Furukawa-shi, Japan, assignor to Alps Electric Co., Ltd, Japan

Filed Jan. 7, 1988, Ser. No. 142,139
Claims priority, application Japan, May 1, 1987, 62-65201[U]
Int. Cl.[4] G05B *1/06*
U.S. Cl. 318—653 **5 Claims**



1. A rotary encoder including a recording medium having positional information arranged in a circumferential direction, a sensor disposed opposing said positional information, and a driving shaft linked with a central position of said recording medium for detecting, based on a change in outputs from said sensor, the positional information of said recording medium rotated by means of said driving shaft wherein

a link body is formed by effecting a bending work on an elastic plate such that there are formed two pairs of opposing bent leg pieces,

one of said two pairs of the opposing bent leg pieces is fixedly secured on said recording medium and the other one thereof is fixedly secured on a coupling body disposed in the proximity of said recording medium, and

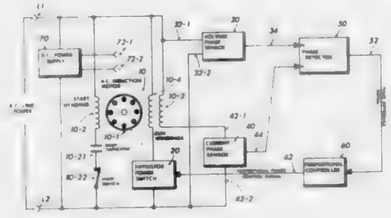
said driving shaft is inserted into and fixed on a shaft inserting hole formed in said coupling body.

4,806,838

A.C. INDUCTION MOTOR ENERGY CONSERVING POWER CONTROL METHOD AND APPARATUS

Harold J. Weber, 313 Washington St., P.O. Box 6161, Holliston, Mass. 01746

Filed May 23, 1988, Ser. No. 197,566
Int. Cl.[4] H02P *5/40*
U.S. Cl. 318—729 **20 Claims**



1. Power control method for use with an electric induction motor,

comprising the steps of:

providing a source of alternating current electric power;

providing the motor with plural RUN winding means;

coupling a first RUN winding means with the source;

variably coupling a second RUN winding means with the source;

sensing reactive power factor of the electric power drawn from the source by the RUN winding means;

increasing the variable coupling when an increase in the power factor is sensed; and,

decreasing the variable coupling when a decrease in the power factor is sensed.

4,806,839

DEVICE FOR ENERGIZING A HERMETIC MOTOR USING INVERTER

Yuichiro Nagato; Hiroshi Hujii; Osamu Matsumoto, all of Chiba, and Katsuhiko Saito, Funabashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

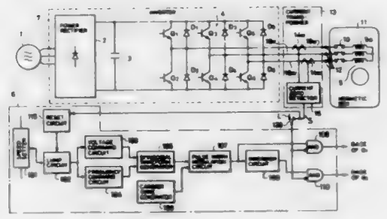
Filed Jan. 18, 1987, Ser. No. 63,478
Claims priority, application Japan, Jun. 25, 1986, 61-146857
Int. Cl.[4] H02H *7/08*
U.S. Cl. 318—798 **6 Claims**

1. In a device for energizing a hermetic motor using an inverter, in which lead wires that connect to the motor are drawn from a hermetic box, said hermetic box contains said motor and a self reset type protecting means which interrupts the supply of electric power to said motor when an abnormally heated condition takes place in said hermetic box, and which automatically supplies again the electric power when the abnormally heated condition continues no more, an said motor is energized by the inverter outside said box through AC output terminals connected to said lead wires outside said hermetic box, the improvement which comprises:

current detecting means provided on the output side of said inverter outside of said hermetic box and for detecting that no current is flowing into said motor due to operation of said protecting means interrupting power to said motor;

speed setting means outside said hermetic box for setting the speed of said motor;

lump circuit means responsive to the output of said speed setting means for producing a correlated control output;



inverter output control means for controlling said inverter so to produce an output voltage and an output frequency that correspond to the output of said lump circuit; and

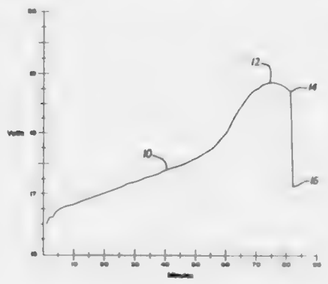
reset means for causing said lump circuit means to decrease its output in response to said current detecting means detecting that no current is flowing into said motor and thereby producing a corresponding control of said control means to decrease inverter power output when said protecting means resets.

4,806,840

METHOD AND APPARATUS FOR CHARGING A NICKEL-CADMIUM BATTERY

Richard B. Alexander, Clear Lake, and Dennis P. Kindschuh, Mason City, both of Iowa, assignors to Alexander Manufacturing Company, Mason City, Iowa

Continuation of Ser. No. 567,262, Dec. 30, 1983, abandoned.
This application Dec. 15, 1986, Ser. No. 941,592
Int. Cl.[4] H02J *7/10*
U.S. Cl. 320—20 **19 Claims**



1. A method for charging a nickel-cadmium battery comprising the steps of:

a. supplying a constant charging current to said battery;

b. measuring the battery voltage, while said battery is receiving said charging current, at intervals not greater than 30 seconds;

c. comparing the current measured voltage with the next previous measured voltage to determine the voltage change during the last interval; and,

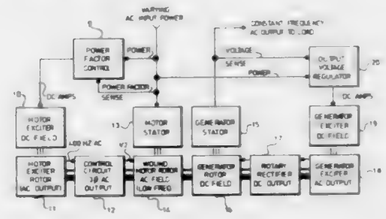
d. terminating said charging current when the individual voltage changes during two successive intervals each exceed a predetermined negative value.

4,806,841

CONSTANT SPEED AND FREQUENCY GENERATING SYSTEM

Robert H. Lee, Fullerton, and Alexander Levran, Los Angeles, both of Calif., assignors to Teledyne Inet, Torrance, Calif.

Filed Feb. 29, 1988, Ser. No. 162,025
Int. Cl.[4] H02P *9/30, 9/42;* **H02K** *7/10*
U.S. Cl. 322—29 **4 Claims**



1. In a motor generator system for generating output power controlled to a desired frequency and having a variable AC input power and frequency, the system including a generator and motor, both with rotors connected by a shaft, the system also including a power factor control, a shaft-mounted frequency control circuit, an output voltage regulator, generator and motor exciter DC fields; the power factor control sensing the input power that is supplied to the motor stator and outputting a DC control signal to the motor exciter DC field; said motor having an exciter rotor developing an AC output voltage that is related to the speed of said shaft and outputting this AC output voltage signal to said shaft-mounted frequency control circuit; said frequency control circuit producing a difference (Δf) low frequency signal that is applied to the motor rotating AC field, to add or subtract from the speed of said motor rotating AC field, causing the motor speed to remain constant and the generator output frequency to remain constant within ± 0.1 Hz; said frequency control circuit comprising:

a crystal clock oscillator and counting circuit that delivers a precise square wave voltage signal;

a feedback loop connected to said generator output and transmitting a signal corresponding to said

a frequency and phase discriminator to which said feedback frequency signal and a reference setting frequency signal and said crystal clock signal is connected, and producing a DC error signal; a voltage controlled oscillator and frequency dependent circuit that processes said DC error signal, producing a high frequency pulse train that is proportional to said input DC error signal;

a converter means coupled to the output of said voltage controlled oscillator and frequency dependent circuit, that converts the pulse train signal to a difference low frequency signal for application to the motor, controlling the speed of the rotating magnetic flux and thereby also the generator speed and AC frequency output, producing a constant frequency output irrespective of variations in the input AC power frequency to the motor.

4,806,842

SOFT START FOR FIVE PIN SWITCHING REGULATORS

Harry J. Bittner, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 9, 1988, Ser. No. 191,463
Int. Cl.[4] H02M *3/155*
U.S. Cl. 323—222 **5 Claims**

1. A switching regulator including a switch, means for driv-

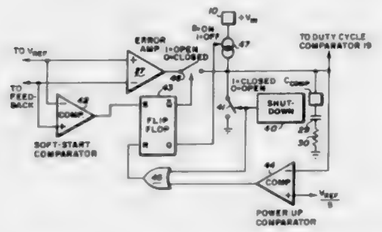
VOL 1099 ISS 3 FE 21 1989 UMI

ing said switch in a controlled duty cycle fashion in response to the output of a duty cycle comparator, an error amplifier driving said duty cycle comparator, a compensation capacitor and means for developing a reference potential against which said error amplifier operates, a soft start circuit comprising:

R-S flip flop means having set, reset and output terminals;

means for resetting said R-S flip flop when said compensation capacitor is discharged;

a soft start comparator having an output coupled to said set terminal of said flip flop, an inverting input coupled to said



reference potential, a noninverting input coupled to said error amplifier input whereby said R-S flip flop is set when said error amplifier input exceeds said reference potential;

switch means coupled in series with the output of said error amplifier and responsive to said output to said R-S flip flop for disconnecting said error amplifier when said R-S flip flop is reset; and

a current source coupled to charge said compensation capacitor at a controlled rate controlled by said output of said R-S flip flop to be one when said R-S flip flop is reset.

4,806,843

D.C. VOLTAGE SUPPLY CIRCUIT

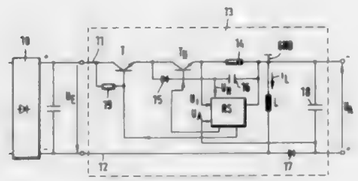
Ferdinand Mertens; Fred Hasemann, and Norbert Wittig, all of Arnsberg, Fed. Rep. of Germany, assignors to Trilux-Lenze GmbH & Co. KG, Arnsberg, Fed. Rep. of Germany

Filed Apr. 27, 1988, Ser. No. 186,601

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1987, 3721075

Int. Cl.[4] G05F *1/46*

U.S. Cl. 323—271 **5 Claims**



1. A voltage supply circuit including a switch-mode power supply unit for generating a d.c. voltage of constant amplitude from a supply voltage, comprising:

a first series circuit connected to the supply voltage, the first series circuit including an inductor, a first switch and a second switch,

detection means for detecting a current or voltage in the first series circuit and for generating a signal in response thereto,

a regulator circuit, responsive to the signal generated by the detection means, for switching the first switch between conductive and nonconductive states and for switching the second switch between conductive and nonconductive states,

a second series circuit connected in parallel to the second switch, the second series circuit including a diode and a capacitor,

means for drawing from the capacitor an auxiliary voltage and for supplying the auxiliary voltage as a supply voltage to the regulator circuit,

means for maintaining the second switch in the nonconductive state for a portion of the time during which the first switch is in the conductive state,

whereby the capacitor is charged up to the auxiliary voltage.

4,806,844

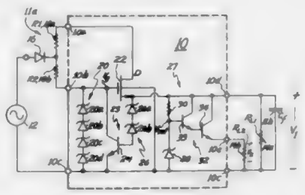
CIRCUIT FOR PROVIDING ON-CHIP DC POWER SUPPLY IN AN INTEGRATED CIRCUIT

Glenn S. Claydon, Wynantskill; Robert P. Alley, Clifton Park, and William J. Laughton, Syracuse, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 17, 1988, Ser. No. 207,844

Int. Cl.[4] G05F *3/08*

U.S. Cl. 323—311 **9 Claims**



1. In a semiconductor circuit chip having circuitry requiring at least one DC operating potential, a power supply integratable upon said chip and, in conjunction with an external charge-storage element, acting upon the potential of an external source to provide the at least one required operating potential, comprising:

a series-pass element having a control input and a controlled circuit enabled for conduction responsive to a gating signal at said control input and cooperating with the external charge-storage element to maintain an output voltage;

first means for clamping a sample of the source potential to obtain said gating signal with a preselected polarity and maximum amplitude; and

second means for clamping said output voltage to a predetermined maximum amplitude not less than a largest one of the at least one required operating potential.

4,806,845

SYSTEM FOR MEASURING AND GENERATING ELECTRIC NOISE

Jiro Nakano, Okazaki, and Takashi Ogawa, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 5, 1986, Ser. No. 859,991

Claims priority, application Japan, May 7, 1985, 60-96267; Jul. 18, 1985, 60-158629

Int. Cl.[4] G01R *27/00*

U.S. Cl. 324—57 N **6 Claims**

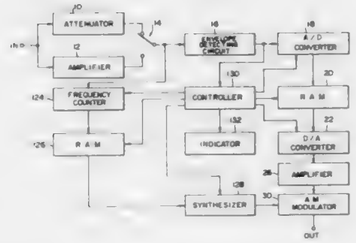
1. An electric noise measuring and reproducing system for measuring electric noise to be applied to an electronic component from a noise generating source and reproducing said electric noise, said system comprising:

means for envelope-detecting said electric noise and producing an envelope-detected waveform;

means for analog-todigital converting said envelope-detected waveform and for storing said analog-to-digital converter envelope-detected waveform;

means for digital-to-analog converting the stored analog-to-digital value and for reproducing the envelope-detected waveform as an analog signal;

means for generating a carrier signal having a center frequency of said electric noise; and



means for amplitude-modulating said carrier signal by said analog signal and for producing a noise waveform.

4,806,846

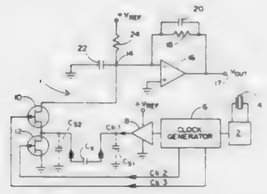
HIGH ACCURACY DIRECT READING CAPACITANCE-TO-VOLTAGE CONVERTER

George L. Kerber, 4611 Lisann St., San Diego, Calif. 92117

Filed Jul. 6, 1987, Ser. No. 70,342

Int. Cl.[4] G01R *11/52, 27/26*

U.S. Cl. 324—60 CD **18 Claims**



1. A circuit for providing an accurate measurement of the capacitance of a capacitor, said circuit comprising:

clock signal generator means for providing a signal which alternates between relatively high and low signal levels, said signal generator means interconnected with a first plate of said capacitor to supply said clock signal thereto;

operatonal amplifier means having first input terminal means connected to a summing node, second input terminal meas connected to ground, and output terminal means providing an output voltage signal, said capacitor being discharged into said summing node at the first input terminal means of said operational amplifier means; and

means for successively charging and discharging said capacitor as said clock signal alternates between relatively high and low signal levels, said charging and discharging means including switch means connected between the second plate of said capacitor and said summing node;

the magnitude of the voltage signal at the output terminal means of said operational amplifier means providing a measurement of the capacitance of said capacitor.

4,806,847

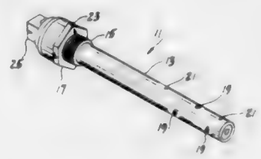
DIELECTRIC LIQUID LEVEL SENSOR AND METHOD

Kim W. Atherton, Kirkland; Charles R. Clow, Bothell, and Patrick H. Mawet, Everett, all of Wash., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 9, 1986, Ser. No. 939,534

Int. Cl.[4] G01R *27/26; G01F 23/26*

U.S. Cl. 324—61 P **53 Claims**



1. A sensor for sensing the level of a dielectric liquid in a vessel such as oil, transmission fluid or the like comprising:

a sensor body adapted to be mounted with respect to the vessel containing the dielectric liquid whose level is to be measured;

a probe including first and second electrodes forming a level detecting capacitor, said probe being secured to the sensor body and being adapted to be at least partially immersed in the liquid, when liquid is present, to detect the level of the liquid, the capacitance of the level detecting capacitor being a function of the level of the dielectric liquid in which said level detecting capacitor is immersed;

a reference capacitor disposed in said sensor body such that its capacitance is not affected by the presence or absence of the dielectric liquid, the capacitance of said reference capacitor being substantially the same as the capacitance of the level detecting capacitor when no dielectric liquid is present between the electrodes of the level detecting capacitor;

an oscillator mounted in the sensor body for providing a rectangular waveform having a charging portion and a second portion, and means for directly applying the waveform to each of said capacitors to charge the capacitors during the charging portion of each cycle of the waveform and to allow the capacitors to discharge during the second portion of each cycle;

capacitance measuring means for measuring the capacitance of each capacitor whose capacitance is to be measured, said measuring means providing an output signal having a parameter proportional to the measured capacitance of each capacitor and which signal is unaffected by the charge on each such capacitor during the charging portion of the rectangular waveform provided by the oscillator; and

subtracting means for effectively subtracting the signal parameter representing the capacitance of said reference capacitor with respect to the signal parameter representing the capacitance of the level detecting capacitor to give a resulting signal representative of the level of the dielectric liquid at the sensor.

4,806,848

COMPRESSOR BLADE CLEARANCE MEASUREMENT SYSTEM

Rosario N. Demers, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 11, 1987, Ser. No. 24,490

Int. Cl.[4] G01B *7/14*

U.S. Cl. 324—61 R **9 Claims**

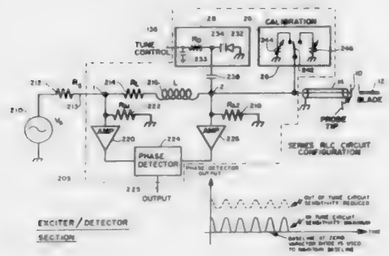
1. A compressor blade clearance measurement system for measuring the gap between a turbine engine compressor blade tip and a compressor case, the measurement being accom-

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pliabed while the engine is running, said measurement system comprising a probe and an exciter/detector module, the probe being coupled to the exciter/detector module via a cable to form a cable probe assembly, said probe having a tip used as a capacitor sensor, whereby the component electronics are not part of a probe assembly but are included in the exciter/detector module away from the probe;

wherein the exciter/detector module comprises a tuned circuit coupled between an input point and an output point, the input point being coupled to a high-frequency source for excitation, the output point being coupled via said cable and probe to the probe tip, the tuned circuit being tuned to the high frequency, in which the blade to sensor capacitance provides a phase change in the tuned circuit response, phase detector means coupled to the tuned circuit at said input and output points for detecting said phase change, the phase detector means having an output for a signal, with an output baseline, supplied to processing means to determine the value of said gap;

wherein said exciter/detector module further includes a calibration circuit coupled to said output point for calibrating the system, and a tuning control circuit comprising a high Q varactor diode also coupled to said output point, and wherein the system includes tune control means



coupled to the varactor diode via a resistor for supplying an adjustable direct-current bias to maintain the phase detector output baseline at zero, whereby the the instrument can be electronically calibrated, even while the engine is operating;

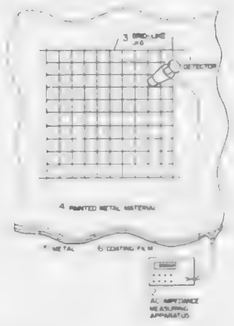
wherein said calibration circuit comprises first and second variable capacitors, switching means having first and second settings for respectively connecting the first or second capacitor to said output point, the calibration set-up being accomplished with the switching means at its first setting by adjusting the first capacitor to fine tune the cable probe assembly, whereas the second capacitor when selected by operating the switching means to its second setting is adjusted to a predetermined baseline shift, the varactor diode control voltage being held at a nominal value during these procedures, the probe to blade calibration being done while there is assurance that the sensitivity of the system has not changed, so that during any subsequent test operation, the switching means can be operated to its second setting and the baseline shift noted, the varactor diode control voltage being held constant while the switching means is at its second setting, so that any change in baseline value from that taken during calibration may be used to adjust the data accordingly.

4,806,849

METHOD AND APPARATUS FOR DIAGNOSING DEGRADATION OF COATING FILM ON METAL MATERIAL

Hiroshi Kihira; Satoshi Ito; Tomomi Murata, all of Kawasaki; Shunji Sakamoto, Kitakyushu, and Kazuo Yamamoto, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 27, 1987, Ser. No. 30,515
Claims priority, application Japan, Mar. 31, 1986, 61-73758
Int. Cl.[4] G01N *27/26*; G01R *27/02*
U.S. Cl. 324—65 CR **8 Claims**



3. An apparatus for diagnosing degree of degradation of a coating film on a metal material, comprising:

a grid-like jig for dividing a surface of the coating film to be measured into a plurality of small area zones of substantially same size;

a detector having an open mouth portion in close contact with said surface of the coating film at each of said zones, when pushed against said surface, a liquid electrolyte holding chamber communication with said open mouth portion and holding the liquid electrolyte and an electrode for electrolysis disposed within said liquid electrolyte holding chamber; and

AC impedance measuring means connected to said detector for measuring impedance indicative of ion transmission resistance of the coating film at the zones with which said open mouth portion of said detector is in close contact energizing said detector by an AC source voltage of a controlled frequency.

4,806,850

METHOD AND APPARATUS FOR ANALYZING THE CORROSIVE EFFECT OF THE SOIL AND ITS ENVIRONMENT ON A BURIED METALLIC STRUCTURE AND THEIR APPLICATION TO THE LOCATING OF SAID EFFECT

Frank Saumade, Plaisir, and Guy Fontaine, Paris, both of France, assignors to Compagnie de Raffinage et de Distribution Total France, Paris, France

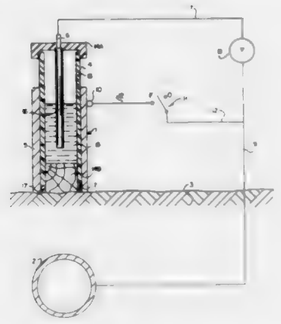
Filed Dec. 31, 1986, Ser. No. 948,026
Claims priority, application France, Dec. 31, 1985, 85 19501
Int. Cl.[4] G01R *27/02*; G01N *27/00*
U.S. Cl. 324—71.1 **20 Claims**

1. A method of analyzing the corrosive effect of soil and environment on a buried metallic structure, which method comprises:

(A) measuring at least two potential differences by means of at least one known reference-potential electrode placed in contact with the surface of the soil, the latter then forming the electrolyte and the buried structure forming a first metallic electrode, these potential differences being:

a potential difference V1 between the at least one known reference-potential electrode on the soil surface and the buried structure that is equal to the sum of the potentials of the known reference-potential electrode, the buried-structure electrode, and a potential difference generated by electric cell formation occurring between the structure and the soil; and

a potential difference V2 between the at least one known reference-potential electrode on the soil surface and the buried structure when the potential of that structure is returned to the soil surface by means of an electrical connection from the buried structure to a second metallic electrode resting on the soil surface in proximity to said



known reference-potential electrode, this difference being equal to the sum of the potentials of the known reference-potential electrode and the second metallic electrode;

(B) displaying and recording the potential differences with a data display and acquisition unit;

(C) processing the data by means of a data-processing system for computing the difference (V1−V2) which is indicative of a corrosive effect of the soil and the environment on the buried structure; and

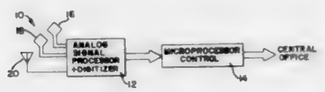
(D) repeating said measuring at a plurality of locations on the soil surface to provide a plan of relatively corroded areas of said buried structure.

4,806,851

THUNDERSTORM SENSOR AND METHOD OF IDENTIFYING AND LOCATING THUNDERSTORMS

E. Philip Krider; Albert E. Pifer, and Leon G. Byerley, III, all of Tucson, Ariz., assignors to Lightning Location and Protection, Inc., Tucson, Ariz.

Filed Sep. 3, 1987, Ser. No. 92,670
Int. Cl.[4] G01N *31/02*
U.S. Cl. 324—72 **23 Claims**



1. A thunderstorm sensor comprising:

means for determining the amplitude of a radiated field produced by a lightning discharge to ground;

means for determining the relative electric field change of said lightning discharge to ground; and

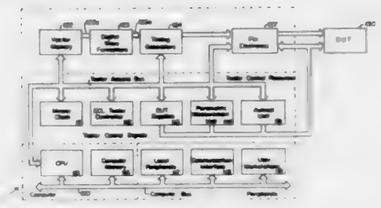
means responsive to the field amplitude and to the relative electric field change for identifying thunderstorm activity within a range of the sensor.

4,806,852

AUTOMATIC TEST SYSTEM WITH ENHANCED PERFORMANCE OF TIMING GENERATORS

Richard Swan, San Jose; Mike Catalano, Tahoe City, and Richard Feldman, Sunnyvale, all of Calif., assignors to Megatest Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 648,870, Sep. 7, 1984, abandoned. This application Jan. 28, 1987, Ser. No. 8,030
Int. Cl.[4] G01R *19/00, 19/25*
U.S. Cl. 324—73 R **13 Claims**



10. In an automatic test system for electrically testing a device under test having at least one lead, having a central processing unit, vector memory for storing a plurality of test vectors, a pin electronics unit associated with said lead of said device under test for providing electrical test signals to said lead, and a timing generator associated with said pin electronics unit for providing timing signals for control of said pin electronics unit in response to digital data provided by said vector memory, the method of testing said device under test comprising the steps of:

providing a digital test vector from said vector memory defining a waveform to be applied to said lead of said device under test, including the logical state of said waveform, and the position of the edges of said waveform relative to the start of a test period;

providing to said timing generator a digital word defining when said timing generator is to produce said edges of said waveform, said digital word being provided as a function of the desired position of said edges of said waveform and the error caused by all sources; and delay provided between said timing generator and said lead of said device under test, said timing generator comprising a plurality of edge generators under control of the digital data.

4,806,853

HIGH ACCURACY FREQUENCY MODULATION WAVEFORM TESTER

Herman J. Fleischer, Plainview, and John C. Bracken, Kings Park, both of N.Y., assignors to Unisys Corporation, Blue Bell, Pa.

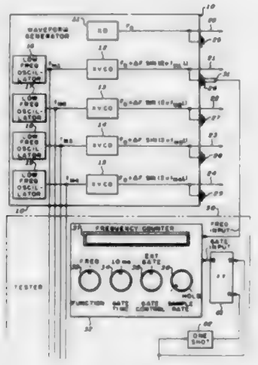
Filed Jan. 25, 1988, Ser. No. 148,244
Int. Cl.[4] G01R *23/14*
U.S. Cl. 324—79 R **6 Claims**

1. Apparatus for measuring the depth of modulation of a carrier signal, said carrier signal being frequency modulated by a modulating signal, said modulating signal having a maximum amplitude, said depth of modulation being the maximum frequency deviation of said carrier signal as a result of said frequency modulation, comprising

trigger generator means responsive to said modulating signal for generating a gate signal in accordance with said maximum amplitude of said modulating signal, said gate signal having a duration, and

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frequency measuring counter means responsive to said frequency modulated carrier signal and said gate signal for

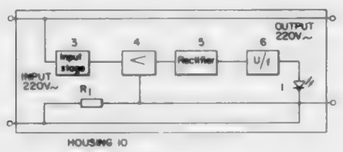


measuring the frequency of said frequency modulated carrier signal during said duration of said gate signal.

4,806,854
CURRENT DRAW AND POWER CONSUMPTION DISPLAY CIRCUIT

Hans-Dietrich Mayer, Baltmannsweiler, and Klaus Hirrlinger, Esslingen a.N., both of Fed. Rep. of Germany, assignors to Richard Hirschmann Radiotechnisches Werk, Fed. Rep. of Germany

Filed Sep. 23, 1986, Ser. No. 910,462
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1985, 3533862
Int. Cl.[4] G01R *19/26*
U.S. Cl. 324—96 **10 Claims**

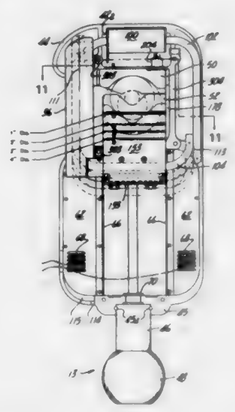


1. A circuit for continuous display of electrical draw comprising:
a continuous connection circuit input;
means for generating voltage pulses exhibiting a frequency below an upper flashing frequency normally resolvable by a human eye for a predetermined anticipated electrical draw range and corresponding to current flow to said circuit input, connected to said circuit input;
means for displaying said frequency as light pulses, connected to said means for generating voltage pulses
wherein said means for generating voltage pulses further generates pulses exhibiting a frequency above an upper flashing frequency normally resolvable by a human eye for an electrical draw above said predetermined anticipated electrical draw range.

4,806,855
SYSTEM FOR RATING ELECTRIC POWER TRANSMISSION LINES AND EQUIPMENT

Murray W. Davis, 19790 Eastwood, Harper Woods, Mich. 48236

Division of Ser. No. 623,842, Jun. 22, 1984, Pat. No. 4,728,887. This application Jun. 12, 1987, Ser. No. 61,342
Int. Cl.[4] G01R *1/22*
U.S. Cl. 324—127 **82 Claims**



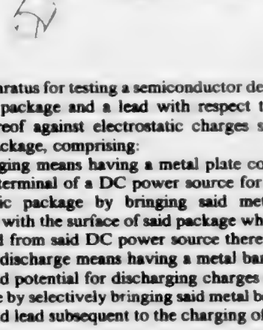
1. A sensing device adapted to be clamped to an electrically energized overhead electric power line, said sensing device comprising: a housing; first and second jaws carried by said housing, said jaws being shiftable relative to each other from a closed position clamping said overhead electric power line therebetween and an open position releasing said overhead electric power line from said jaws; sensing means associated with said housing for directly sensing at said device at least one of the following parameters; current in said overhead electric power line, temperature of said power line, ambient temperature, and solar radiation impinging on said power line; power supply means carried by said housing for supplying electrical power to said sensing means, said power supply means including an electrical transformer for supplying electrical power to said sensing means, said transformer including a magnetic core for magnetically coupling said overhead electric power line with said transformer when said jaws are in said closed position; second means for sensing the other parameters from said parameters and means for determining from said at least one directly sensed parameter and said other sensed parameters a final parameter defining the maximum current carrying capacity of said power line.

4,806,856
ADJUSTABLE QUICK-MOUNT TEST PROBE ASSEMBLY

Jaroslav M. Hvezda, Nepean, and Richard J. Middlehurst, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 2, 1987, Ser. No. 127,312
Int. Cl.[4] G01R *1/06*
U.S. Cl. 324—158 P **12 Claims**

1. An adjustable quick-mount test probe assembly comprising:
a conductor means for electrically connecting to an electric circuit;
a first positioning means, electrically isolated from said conductor means, for horizontally adjusting said conductor means;
a second positioning means, electrically isolated from said conductor means, for vertically adjusting said conductor means;
a stud for mounting said test probe assembly, said stud having a pin perpendicularly connected thereto, whereby said stud and said pin interact with a cam lock fastener to

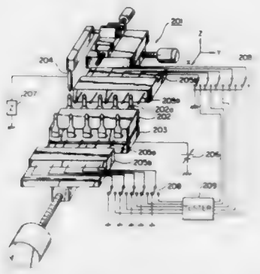


support said test probe assembly, said stud being part of a holding device for holding said first positioning means;
an attachment means for electrically connecting a test clip to said conductor means; and
a means for securing a test lead extending from said test clip.

4,806,857
APPARATUS FOR TESTING SEMICONDUCTOR DEVICES

Kazuhiko Inamura, and Yoji Tashita, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1987, Ser. No. 33,495
Claims priority, application Japan, Apr. 11, 1986, 61-82394; Apr. 11, 1986, 61-53610[U]
Int. Cl.[4] G01R *31/26, 1/04*
U.S. Cl. 324—158 R **2 Claims**

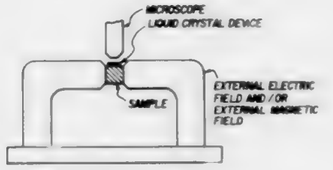


1. An apparatus for testing a semiconductor device including a dielectric package and a lead with respect to a discharge voltage thereof against electrostatic charges stored on said dielectric package, comprising:
(a) a charging means having a metal plate connected to an output terminal of a DC power source for charging said dielectric package by bringing said metal plate into contact with the surface of said package when a voltage is supplied from said DC power source thereto;
(b) a first discharge means having a metal bar connected to a ground potential for discharging charges stored on said package by selectively bringing said metal bar into contact with said lead subsequent to the charging of said package; and
(c) a second discharge means having a terminal connected to the ground potential for discharging charges remaining within a circuit of said semiconductor device by bringing said terminal into contact with said lead after stopping the supplying of the voltage from said DC power source subsequent to said discharging of said charges by said first discharge means.

4,806,858
LIQUID CRYSTAL NONDESTRUCTIVE INSPECTION OF MAGNETIZATION AND VARIATIONS IN MAGNETIZATION OF HIGH ENERGY MAGNETS

James M. Elbicki, 1764 Rose St., Lower Burrell, Pa. 15068

Filed Jul. 21, 1987, Ser. No. 76,039
Int. Cl.[4] G01N *27/74;* **G01R** *33/12;* **G02F** *1/13*
U.S. Cl. 324—205 **8 Claims**

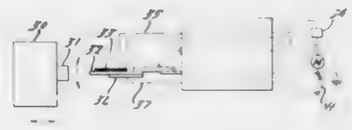


1. A method of detecting variations in magnetization in a high energy magnet which comprises subjecting the magnet to be studied and liquid crystals held in close proximity to said magnet to an electric and/or magnetic field applied perpendicular or antiparallel to the field of said magnet whereby the liquid crystals are reoriented and observing variations in said field strength of said magnet.

4,806,859
RESONANT VIBRATING STRUCTURES WITH DRIVING SENSING MEANS FOR NONCONTACTING POSITION AND PICK UP SENSING

Robert E. Hetrick, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 27, 1987, Ser. No. 7,033
Int. Cl.[4] G01B *7/14;* **G01R** *33/02;* **H01L** *41/08;* **H02N** *2/00*
U.S. Cl. 324—207 **6 Claims**



1. A resonant vibrating structure including:
driving means to electrically excite vibrations of said structure;
an adjacent external magnet;
wire coil means coupled to said vibrating structure and responsive to vibration of said vibrating structure, said wire coil means being positioned so that when the magnetic field from said external magnet is perturbed an electromagnetic force, emf, is induced in said wire coil means by electromagnetic induction;
said wire coil means being appropriately sized and positioned with respect to said magnet so that the induced emf changes in a predetermined desired manner as the magnetic field is present so that the emf can serve as a sensor of relative position between an object perturbing the magnetic field and said wire coil means;
electrical circuit means coupled to said wire coil means to

detect the emf and to generate an output signal as a function of the emf;

a sensing means for feedback control coupled to said vibrating structure means for generating an electrical signal in proportion to the vibration of said structure;

feedback means coupled to said driving means and to said sensing means for feedback control, said feedback means providing an output which drives the driving means for exciting the vibration and keeping said resonant vibrating structure vibrating at its resonant frequency and at constant amplitude even though the resonant frequency may be changing with the external ambient conditions such as temperature;

a shield of high magnetic permeability attached to the object whose position is to be sensed, said shield of high magnetic permeability being appropriately shaped and placed so that as the object moves, said shield distorting the magnetic field near said wire coil means and causing the induced emf to vary in a desired manner, such as linearly, with the position of the object;

said vibrating wire coil means and said magnet being fixed and positioned with respect to each other so that the passage of an object of high magnetic permeability distorts the field at said wire coil means and varies the emf thereby sensing the passage of the object; and wherein said resonant vibrating structure includes:

a planar cantilever blade which vibrates in its first resonant cantilever mode;

said driving means coupled to said cantilever blade and electrically excited at a frequency to cause the blade to vibrate at its first resonant cantilever mode; and

said wire coil means being attached to said blade in a largely coplanar fashion so that a portion of the coil exists at the base of the blade where there is reduced vibrational amplitude while another portion of said coil exists at the extremity where the amplitude has its maximum value.

4,806,860

OVERLAPPED MAGNETORESISTIVE DISPLACEMENT DETECTING TRANSDUCERS HAVING CLOSELY SPACED LONGITUDINAL CENTERS

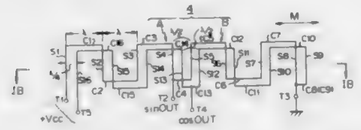
Kazaburou Iijima; Yoshinori Hayashi; Terumoto Nonaka; Katsuyuki Yokoi, and Seiya Nishimura, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jun. 9, 1987, Ser. No. 59,941

Claims priority, application Japan, Jun. 10, 1986, 61-134462; Jun. 10, 1986, 61-134463; Jun. 10, 1986, 61-134464; Oct. 17, 1986, 61-247062

Int. Cl.[4] G01B *7/14;* **G01R** *33/02;* **H03K** *17/90, 19/18*

U.S. Cl. 324—208 **7 Claims**



1. A relative-displacement detection system, comprising:

a detection head spaced from a magnetic medium having a periodic magnetic pattern of a wave length λ on the magnetic medium;

means for producing relative displacement along a predetermined direction between the dectection head and the magnetic medium in a manner enabling said detection head to scan the magnetic patterns;

said detection head including:

a. first means for generating a sine wave comprising a first plurality of spaced magnetoresistive elements and an output taken at a first predetermined location relative to said sine wave generator, and

b. second means for generating a cosine wave including a second plurality of spaced magnetoresistive elements, the second means having an output taken at a second predetermined location relative to said second plurality of magnetoresistive elements, said elements of said first and second pluralities of magnetoresistive elements being overlapped along said predetermined direction and the first and second predetermined locations being spaced from one another by a fixed spacing of less than said wave length λ.

4,806,861

METHOD AND SYSTEM FOR DETECTING TAPE DEFECTS BY TRANSPORTING A TAPE IN TWO DIRECTIONS

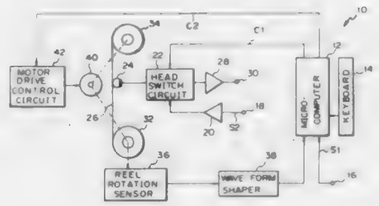
Yuji Urayama; Kuniharu Kondo, both of Maebashi, and Takeshi Nakatsukasa, Shibukawa, all of Japan, assignors to Victor Company of Japan, Limited, Kanagawa, Japan

Filed Feb. 24, 1987, Ser. No. 17,667

Claims priority, application Japan, Feb. 24, 1986, 61-38925

Int. Cl.[4] G01R *33/12;* **G11B** *15/48;* **G03B** *1/04;* **B65H** *59/38*

U.S. Cl. 324—212 **6 Claims**



1. A tape defect detecting system for detecting a defect in a magnetic tape comprising:

a dictating machine into which a magnetic tape is loaded and having first and second reels which are respectively fastened to each end of said tape for recording and reproducing dictation;

a microcomputer having a counter for controlling operation of said machine; and

rotation sensing means associated with said first reel for sensing the rotation thereof and operable to generate pulses in response to said rotation, said rotation sensing means being cooperable with said microcomputer to put said machine into a stop mode when said pulses are not generated and, when a normal tape is loaded into said machine, to transport said tape toward said first reel in a first mode and toward said second reel in a second mode;

said microcomputer being operable to put said machine into said first mode for a predetermined period of time in the event of initialization in which said tape is to be erased of dictation previously recorded thereon, to load said counter with an initial value, and then, to put said machine into said second mode and cause said counter to count said pulses so as to decrement said initial value, said microcomputer further being operable to detect the presence of said pulses generated by said rotation sensing means, and when said pulses are absent, to put said machine into a stop mode and determine that said tape is defective when the count of said counter indicates more than a predetermined value.

4,806,862

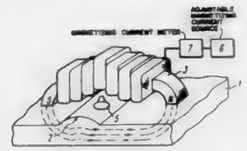
METHOD OF MAGNETOGRAPHIC INSPECTION OF QUALITY OF MATERIALS

Valery S. Kozlov; Elena A. Polyakova; Alexei E. Novikov, all of Minsk, and Mikhail T. Krupko, Kolomna, all of U.S.S.R., assignors to Belorussky Politeknichesky Institute, Minsk, U.S.S.R.

Filed Aug. 11, 1986, Ser. No. 895,192

Int. Cl.[4] G01N *27/85;* **G01R** *33/12*

U.S. Cl. 324—213 **2 Claims**



1. A method of magnetographic quality inspection of a material, comprising the steps of:

applying, in advance, at least one drop of a magnetic fluid on an area of the surface of said material to be inspected;

producing a magnetizing field proximate to the area of said material to be inspected to cause at least some magnetic lines to pass through the area of the material to be tested;

changing the intensity of the magnetizing field and watching the curvature of a surface of said magnetic fluid;

registering the intensity of the magnetizing field, at which said surface of the drop of the magnetic fluid has the maximum curvature;

applying a magnetic substance onto the surface of said material to be inspected until the surface of said material is smoothed out;

applying a magnetic-recording medium on said material to be inspected;

magnetizing said material to be inspected, said magnetic substance, and said magnetic-recording medium by means of said magnetizing field having the registered intensity;

obtaining a magnetogram on said magnetic-recording medium; and

assessing the quality of said material on the basis of said magnetogram.

4,806,863

EDDY CURRENT APPARATUS INCLUDING CYLINDRICAL COIL WITH FLUX CONCENTRATOR FOR HIGH RESOLUTION DETECTION OF FLAWS IN CONDUCTIVE OBJECTS

John K. White, Bethel Park, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 17, 1986, Ser. No. 919,944

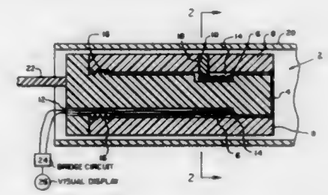
Int. Cl.[4] G01N *27/82;* **H01F** *3/00, 17/04*

U.S. Cl. 324—238 **13 Claims**

1. A sensor for detecting flaws in conductive objects comprising:

a single cylindrical coil of electrically conducting wire which generates a magnetic flux in response to a coil current applied thereto, and

flux concentrator means comprising a piece of electromagnetically active material disposed in close proximity to and extending only radially from the cylindrical surface of said coil to the conductive object to provide close coupling for said magnetic flux between only a portion of said coil and the object, and to space the remainder of the cylindrical coil from the object such that flaws in the object adjacent the flux concentrator produce a change in the flux and hence a change in coil current indicative of flaw detection, said flux concentrator being dimensionally small in relation to the longitudinal length of the cylindrical coil and being sized and shaped to provide a desired resolution of flaw detection.



4,806,864

LASER-PUMPED HELIUM MAGNETOMETER

Laird Schearer, Rolla, Mo.; Michèle Leduc, Ablon Sur Seine, France; Franck Laloe, Paris, and Joseph M. Hamel, Bretteville Sur Odon, both of France, assignors to Centre National De La Recherche Scientifique, Paris, France

Filed Apr. 23, 1987, Ser. No. 41,571

Claims priority, application France, May 12, 1986, 86 06776

Int. Cl.[4] G01R *33/24*

U.S. Cl. 324—301 **16 Claims**

1. A helium magnetometer of the type comprising:

a sensing photocell (1) comprising an enclosure at least partly transparent and containing helium,

a source of excitation light (2) directed toward the sensing photocell,

wherein the magnetic induction prevailing in the photocell is measured on the basis of the magnetic resonance characteristics of any energy level of helium, and wherein the source of excitation light (2) is a narrow-band tunable laser tuned to a selected one energy level of the helium.

4,806,865

DEVICE FOR MEASURING THE EARTH'S MAGNETIC FIELD DISTURBED BY ANOMALIES

Robert Oury, Valence, France, assignor to Crouzet-Société Anonyme Francaise, Paris, France

Filed Nov. 17, 1987, Ser. No. 121,910

Claims priority, application France, Nov. 18, 1986, 86 16130

Int. Cl.[4] G01R *33/24*

U.S. Cl. 324—301 **6 Claims**

1. A device for measuring the earth's magnetic field disturbed by anomalies, including a magnetometric probe and compensation means mounted on a single frame so that their reference trihedrons have their axes respectively parallel, wherein the magnetometric probe is a nuclear magnetic resonance probe coupled to a loop amplifier for forming a nuclear

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oscillator, wherein said compensation means includes a static triaxial magnetometer and a two axis gyrometric block,

wherein the device is mounted on a carrier having a longitudinal axis, the magnetometric probe, the loop amplifier, the magnetometer and the gyrometric block are mounted



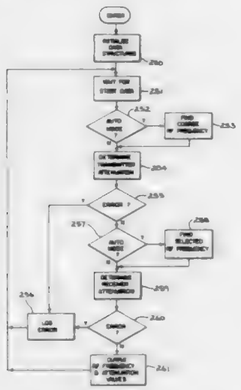
in a cylindrical pole extending substantially along the longitudinal axis of the carrier with the magnetometric probe at the end of the pole, the loop amplifier and the gyrometric block at the opposite end of the pole and the magnetometer in a substantially middle zone.

4,806,866

AUTOMATIC RF FREQUENCY ADJUSTMENT FOR MAGNETIC RESONANCE SCANNER

Joseph K. Maier, Milwaukee, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Apr. 29, 1987, Ser. No. 43,862
Int. Cl.[4] G01R *33/08*
U.S. Cl. 324—313 **13 Claims**



1. A method for automatically adjusting the RF frequency of a transceiver in an MR scanner system, which comprises:

performing a first MR measurement in which an MR signal is produced and acquired;

transforming the acquired MR signal to the frequency domain;

determining the frequency CF_1 at which the transformed MR signal reaches its maximum value;

performing a second MR measurement with an RF excitation pulse having a frequency substantially equal to CF_1 to produce a second MR signal;

acquiring the second MR signal;

transforming the second MR signal to the frequency domain;

analyzing the second transformed MR signal to determine the Larmor frequencies for FAT and WATER as indicated by a pair of peaks therein; and

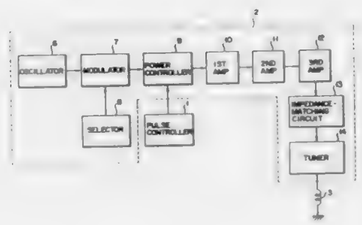
outputting to the transceiver on the MR scanner system an RF frequency command CF_2 which is based on the determined WATER or FAT Larmor frequency.

4,806,867

MAGNETIC RESONANCE IMAGING SYSTEM

Masatoshi Hasawa, and Hiroshi Hayakawa, both of Ootawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 829,486, Feb. 14, 1986, Pat. No. 4,675,608. This application May 22, 1987, Ser. No. 52,874
Claims priority, application Japan, Feb. 19, 1985, 60-32283
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—314 **13 Claims**



1. A magnetic resonance imaging system comprising:

magnetic field generating means for generating a static magnetic field and a gradient magnetic field which are applied to an object;

means for applying an excitation magnetic field to cause a magnetic resonance to occur in said object to which said static magnetic field and said gradient magnetic field have been applied, said excitation field applying means including power control means for controlling a power of the excitation magnetic field;

means for receiving a magnetic resonance signal due to the magnetic resonance which is caused from the object under applications of said static magnetic field, said gradient magnetic field, and said excitation magnetic field; and

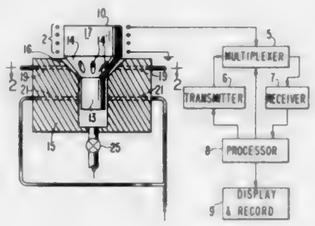
said power control means responsive to the magnetic resonance signal which is received by said receiving means so, to control the power of said excitation magnetic field to rotate an angle of inclination of a spin of nuclei of said object to a predetermined value less than 90° when said object is placed in a combined field of said static, gradient and excitation magnetic fields.

4,806,868

NMR SPINNER SPEED CONTROL

George F. Schulke, Sunnyvale, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Nov. 13, 1987, Ser. No. 120,574
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—321 **4 Claims**



1. In an NMR spectrometer, spinner apparatus for rotating a sample under study, comprising

a rotor for holding said sample,

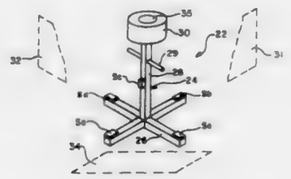
a stator surrounding said rotor, said stator forming a gas bearing in which said rotor is levitated by pressurized gas means incorporated in said stator, said stator comprising first torque means for imparting rotating in a first sense to said rotor, and second torque means for selectively imparting rotational torque to said rotor in a sense opposite said first sense, said first torque means comprising at least one first gas jet disposed to direct a stream of pressurized gas substantially tangential to the periphery of said rotor in a first direction whereby said rotor is caused to rotate in a first sense, said torque means comprising at least one second gas jet disposed to direct a stream of pressurized gas substantially tangential to the periphery of said rotor in a direction substantially opposite said first direction, whereby said second torque means opposes rotation of said rotor induced by said first torque means.

4,806,869

AN ABOVE-GROUND ARRANGEMENT FOR AND METHOD OF LOCATING A DISCRETE IN GROUND BORING DEVICE

Albert W. Chau, Redmond, and John E. Mercer, Kent, both of Wash., assignors to Flow Industries, Inc., Kent, Wash.

Filed May 22, 1986, Ser. No. 866,242
Int. Cl.[4] G01V *3/165;* **G01S** *5/00;* **G01B** *7/14*
U.S. Cl. 324—326 **19 Claims**



18. An arrangement for monitoring the position of a boring device within the ground with respect to a particular point, said boring device including means for emitting a predetermined electromagnetic field, said arrangement comprising:

(a) a self-contained, portable housing capable of being carried above-ground by an operator along an above-ground path;

(b) first means including sensor means within a first vertical plane perpendicular to a second vertical plane for sensing said electromagnetic field, said first means being carried by said housing for determining when the second plane contains said boring device and therefore when the housing is directly over or in lateral alignment with said boring device as the housing is carried along said above-ground path; and

(c) second means including sensor means located within said second plane for sensing said electromagnetic field, said second means being carried by said housing for determining the depth and lateral distance of said boring device with respect to said housing and with respect to said particular point when said second plane contains said boring device and therefore when said housing is located directly over or laterally to one side of said boring device.

4,806,870

PHASE COMPARATOR AND DATA SEPARATOR

P. Karl Scheller, Rochester, N.H., assignor to Data General Corporation, Westboro, Mass.

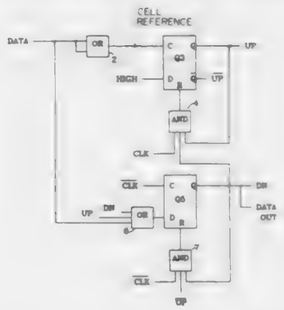
Filed Jan. 11, 1988, Ser. No. 142,042
Int. Cl.[4] H03K *3/02, 9/06*
U.S. Cl. 328—109 **4 Claims**

1. A phase comparator responsive to an input pulse stream and a cyclic clock signal for producing, after each input pulse occurrence, a first and a second command having a difference in duration proportional to a phase difference between the input pulse occurrence and the clock signal, the phase comparator comprising:

a first bistable device, the true state of whose output is the first command;

a second bistable device, the true state of whose output is the second command;

first setting means for setting the first bistable device in response to a high-transition of the input pulse;



second setting means for setting the second bistable device in response to the next low-transition of the clock signal;

first resetting means for resetting the first bistable device in response to the next high-transition of the clock signal; and

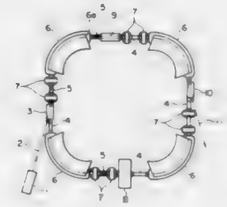
second resetting means for resetting the second bistable device in response to the next low-transition of the clock signal.

4,806,871

SYNCHROTRON

Kazunori Ikegami; Souitirou Okuda; Tadatoshi Yamada; Shunji Yamamoto, and Tetsuya Matsuda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1987, Ser. No. 54,700
Claims priority, application Japan, May 27, 1986, 61-124022; Aug. 1, 1986, 61-117469[U]; Sep. 25, 1986, 61-228737; Oct. 13, 1986, 61-241297
Int. Cl.[4] H05H *13/04*
U.S. Cl. 328—235 **10 Claims**



1. A synchrotron, comprising:

a tubular vacuum chamber forming a closed orbit; means for moving charged particles around said orbit;

less than five bipolar magnets installed at substantially equal intervals along said vacuum chamber for deflecting said charged particles, said magnets causing a converging action on said charged particles and wherein said magnets are connected along a pipe axis; and

means for easing the converging action on said charged particles in the horizontal direction, characterized by each

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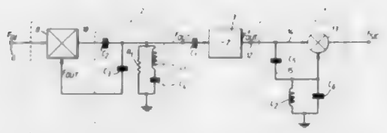
end face of each of said bipolar magnets being oriented such that a line perpendicular to each of said end faces is directed to the exterior of said closed orbit formed along said pipe axis in said vacuum chamber.

4,806,872

FREQUENCY MODULATION RECEIVER EMPLOYING FREQUENCY DIVIDER

Nicholas P. Cowley, Wroughton, England, assignor to Plessey Overseas Limited, Ilford, England

Filed May 29, 1986, Ser. No. 868,908
Int. Cl.[4] H04B 1/16
U.S. Cl. 329—103 8 Claims



1. A frequency dividing arrangement comprising an injection-locked divider arranged for receiving an incoming signal and for providing a frequency divided signal in response thereto, and a frequency divider coupled to the injection-locked divider, which frequency divider comprises logical circuits for providing a further frequency divided signal in response to the frequency divided signal provided by the injection-locked divider;

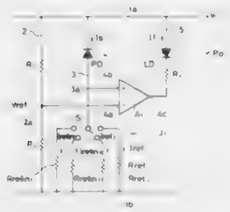
wherein the injection-locked divider comprises a non-linear amplifying means, and a tuning circuit comprising a direct current blocking means, an alternating current coupling means and a resonance circuit, wherein the non-linear amplifying means is arranged to provide the frequency divided signal, via the direct current blocking means, in dependence upon the incoming signal and the frequency divided signal fed to a second input of the non-linear amplifying means via the direct current blocking means and the alternating current coupling means, and the resonance circuit couples a point between the direct current blocking means and the alternating current coupling means to ground.

4,806,873

LASER DIODE DRIVING CIRCUIT

Katsumi Nagano, Setagaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 932,208, Nov. 18, 1986, abandoned. This application Apr. 14, 1988, Ser. No. 183,495
Claims priority, application Japan, Nov. 19, 1985, 60-257634; Nov. 19, 1985, 60-257635
Int. Cl.[4] H04B 9/00
U.S. Cl. 330—4.3 27 Claims



1. A laser diode driving circuit comprising:

generating means for monitoring light output from a laser diode and having a photodiode for generating a photovoltaic current that is proportional to the level of the light output;

a plurality of reference current sources respectively set to separate reference current values;

current selecting means, disposed corresponding to the plurality of reference current sources, for selecting a required reference current proportional to the level of the light output by switching the plurality of reference current sources; and

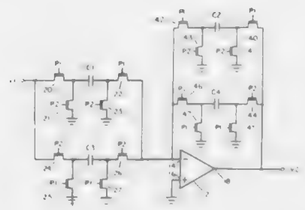
control means for inputting a signal that corresponds to the photovoltaic current and for controlling the forward current of the laser diode so as to set the photovoltaic current to be equal to a selected reference current, said control means having a first input terminal for inputting a signal based on the operation of the photodiode and the current selecting means, a second input terminal having a substantially constant potential, and an output terminal for outputting to the laser diode a signal based on the input signals of the first and second input terminals.

4,806,874

SWITCHED CAPACITOR AMPLIFIER CIRCUIT

Jean-Yves Michel, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 1, 1988, Ser. No. 176,535
Int. Cl.[4] H03F 1/02
U.S. Cl. 330—9 2 Claims



1. An amplifier circuit including an input node and output node, said circuit comprising:

an operational amplifier with an inverting input terminal, a non-inverting input terminal connected to a reference voltage, and an output terminal connected to said output node;

first and second input capacitors each with an input plate and output plate;

a first switch means connecting said input plate of said first input capacitor to said input node during a first time period, and connecting said input plate of said first input capacitor to a reference voltage during a second time period;

a second switch means connecting said output plate of said first input capacitor to said inverting input terminal of said operational amplifier during a first time period, and connecting said output plate of said first input capacitor to a reference voltage during a second time period;

a third switch means connecting said input plate of said second input capacitor to a reference voltage during a first time period, and connecting said input plate of said second input capacitor to said input node during a second time period;

a fourth switch means connecting said output plate of said second input capacitor to a reference voltage during a first time period, and connecting said output plate of said second input capacitor to said inverting input terminal of said operational amplifier during a second time period;

first and second feedback capacitors each with an input plate and output plate;

said input plate of said first feedback capacitor connected to said output plate of said first input capacitor;

fifth switch means connecting said output plate of first feedback capacitor to said output terminal of said operational amplifier during a first time period, and connecting said output plate of first feedback capacitor to a reference voltage during a second time period;

said input plate of said second feedback capacitor connected to said output plate of said second input capacitor;

sixth switch means connecting said output plate of said second feedback capacitor to a reference voltage during a first time period, and connecting said output plate of said second feedback capacitor to said output terminal of said operational amplifier during a second time period;

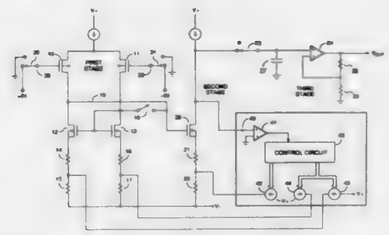
whereby input and feedback paths for the operational amplifier are through first input and first feedback capacitor during a first time period, and through second input and second feedback capacitor during a second time period.

4,806,875

PRECISION OPERATIONAL AMPLIFIER

Gregory L. Schaffer, Sunnyvale, Calif., assignor to Maxim Integrated Products, Sunnyvale, Calif.

Filed May 11, 1988, Ser. No. 193,258
Int. Cl.[4] H03F 3/45
U.S. Cl. 330—9 4 Claims



1. A precision operational amplifier comprising:

a first input differential stage;

a second high gain stage having its input coupled to the output of said first stage;

a digital control circuit coupled to the output of said second stage, said circuit supplying a first correction signal to said first stage and a second independent correction signal to said second stage, said first and second correction signals to being calculated to compensate for the offset voltages of said first and second stages, respectively;

means for storing a digital representation of said first and said second correction signals so that they may continuously be applied to said first and second stages, respectively, whereby the offset voltages of said first and second stages are substantially reduced and such reductions can be maintained for long periods of time.

4,806,876

HIGH FREQUENCY AMPLIFIER CIRCUIT

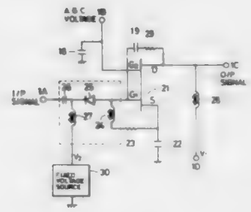
Akira Usui, Osaka; Seiji Sakashita, Kyoto; Kiyotake Fukui, and Hiroyuki Nagai, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 21, 1987, Ser. No. 99,001
Claims priority, application Japan, Sep. 19, 1986, 61-223094
Int. Cl.[4] H03G 3/10
U.S. Cl. 330—279 6 Claims

1. A high frequency amplifier circuit comprising:

a transistor having an input electrode and having a gain control electrode which is coupled to receive a gain control DC voltage for controlling a DC operating current of said transistor to thereby control a degree of gain of said transistor in accordance with the level of said DC operating current;

a diode coupled between said input electrode of said transistor and a source of an input high frequency signal, for transferring said input signal to said transistor input electrode while applying a degree of attenuation to said input signal during said transfer which is determined in accordance with a level of a DC operating current of said diode; and



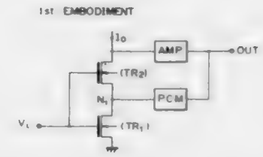
high frequency blocking means coupled to pass at least a part of said DC operating current of said transistor through said diode as said DC operating current of said diode.

4,806,877

AMPLIFIER HAVING A CASCADE CIRCUIT

Osamu Kobayashi, Yokohama, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 3, 1987, Ser. No. 57,194
Claims priority, application Japan, Jun. 10, 1986, 61-134473
Int. Cl.[4] H03F 3/45
U.S. Cl. 330—253 22 Claims



1. An amplifier having a cascade circuit, comprising:

an input terminal for receiving an input signal

an output terminal,

an output stage circuit,

a phase compensation means,

a first transistor (TR1) having a first electrode and a second electrode for forming a current path therebetween, and a control electrode for controlling said current path, and

a second transistor (TR2) having a first electrode and a second electrode for forming a current path therebetween, and a control electrode for controlling said current path,

said first transistor and said second transistor constituting said cascade circuit,

said control electrodes of said first and second transistors being commonly connected to said input terminal,

said first electrode of said first tranaistor being connected to said secod electrode of said second transistor through a common connecting node,

said first electrode of said second transistor being connected to an output signal current terminal of said cascade circuit and to the input of said output stage circuit,

said phase compensation means being connected between the output of said output stage circuit and said common connecting node, said output of said output stage circuit being connected to said output terminal.

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4,806,878

PHASE COMPARATOR LOCK DETECT CIRCUIT AND A SYNTHESIZER USING SAME

Nicholas P. Cowley, Wroughton, England, assignor to Plessey Overseas Limited, Essex, England

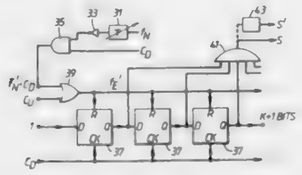
PCT No. PCT/GB86/00555, § 371 Date Jul. 17, 1987, § 102(e) Date Jul. 17, 1987, PCT Pub. No. WO87/01885, PCT Pub. Date Mar. 26, 1987

PCT Filed Sep. 18, 1986, Ser. No. 56,476

Claims priority, application United Kingdom, Sep. 18, 1985, 8522998

Int. Cl.[4] H03L *7/00, 7/06*

U.S. Cl. 331—1 A 9 Claims



1. A phase comparator lock detect circuit for use in a digital phase-lock-loop synthesiser of the kind which comprises:

a phase comparator, responsive to a reference frequency signal and to a divided down signal from a variable divider and a variable frequency oscillator, for providing frequency 'up' and frequency 'down' error signals; and,

a loop amplifier responsive to said error signals and by which means a control signal is fed to the variable frequency oscillator to control the frequency thereof;

said lock detect circuit having a plurality of logic gates responsive to the frequency 'up' and frequency 'down' error signals during a predetermined period that is derived in dependence upon the divided down signal, the gates being arranged for generating an 'in-lock' indication signal when frequency 'up' or frequency 'down' signals exclusively are detected for said predetermined period.

4,806,879

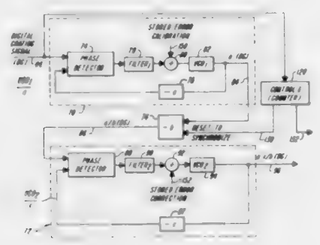
METHOD AND APPARATUS FOR SYNCHRONIZING TO A PULSE TRAIN PACKET SIGNAL

Donald E. Troxel, Belmont, Mass., assignor to ECRM Incorporated, Tewksbury, Mass.

Filed May 1, 1987, Ser. No. 44,982

Int. Cl.[4] H03L *7/00*

U.S. Cl. 331—2 15 Claims



1. Apparatus for generating a first pulse sequence synchronized to a time limited second pulse sequence, said second sequence having a varying pulse repetition rate, DG, less than a desired pulse repetition rate for the first sequence, said apparatus comprising

a first phase locked loop for synchronizing to said second pulse sequence for providing an output signal having a pulse repetition rate equal to DG*a,

a divider counter circuitry responsive to said output signal for providing a divider output signal having a pulse repetition rate equal to DG*a/b,

a second phase locked loop for synchronizing to said divider output signal for providing a final output signal having a pulse repetition rate equal to DG*a*c/b,

where "a," "b," and "c" are positive integers,

means for setting said counter circuitry to a selected counter value, and

control means for enabling said setting means when said first phase locked loop is sufficiently synchronized to said second pulse sequence.

4,806,880

HIGH SPEED INTEGRATOR FOR DATA RECOVERY AND A COSTAS PHASE-LOCKED-LOOP CIRCUIT INCORPORATING SAME

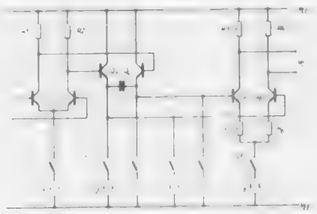
Peter G. Laws, Swindon, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Feb. 27, 1987, Ser. No. 19,901

Claims priority, application United Kingdom, Feb. 28, 1986, 8605002

Int. Cl.[4] H03L *7/00*; G06G *7/18*

U.S. Cl. 331—8 10 Claims



1. An integrate circuit comprising:

a first stage, a differential transistor input stage, which first stage has complementary outputs and includes a switch means to enable and disable the same to set a period of time during which integration shall be performed;

a second stage, a signal store and integrate stage, which second stage includes:

a pair of like transistors, these being arranged in parallel, the control electrodes of which transistors are connected to respective complementary outputs of said first-stage;

a pair of current sources connected respectively to said transistors, and,

a capacitor, connected between said pair of transistors, across said pair of current sources; and,

a third stage, a differential transistor output stage, the inputs to which third stage are connected to each side respectively of said capacitor, which third stage includes a switch means to enable and disable the same to set a consecutive period of time during which the voltage across said capacitor is read and an output signal produced in response thereto.

4,806,881

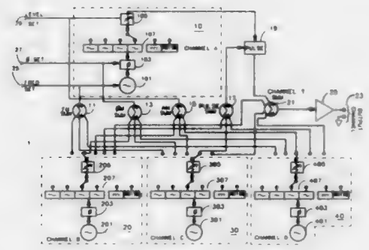
MULTI-CHANNEL MODULATED NUMERICAL FREQUENCY SYNTHESIZER

Fred H. Ives, Veradale, Wash.; Robert T. Dickerson; William J. Dickerson, both of Paso Robles, Calif.; Michael D. McNamee, Spokane, and Mark D. Talbot, Liberty Way, both of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 28, 1987, Ser. No. 90,318

Int. Cl.[4] H03B *19/00*

U.S. Cl. 332—22 13 Claims



1. A digital frequency synthesizer comprising:

frequency input means for setting a predetermined output frequency and for generating first digital signals representing said predetermined output frequency;

frequency modulation input means for inputting a frequency modulation signal;

waveform selection input means for generating a waveform selection signal for selecting a predetermined output waveform;

first summing means coupled to said frequency input means and said frequency modulation input means for summing said first digital signals and said frequency modulation signal and generating second digital signals representing said predetermined output frequency modulated by said frequency modulation signal;

phase accumulator means coupled to said first summing means for receiving said second digital signals and responsive to a first clock signal for generating a cyclic progression of digital binary numbers representative of an output signal having said predetermined output frequency;

phase modulation input means for inputting a phase modulation signal;

second summing means coupled to said phase modulation input means and to said phase accumulator means for summing said phase modulation signal with said digital binary numbers output by said phase accumulator means and outputting third digital signals representative of said digital binary numbers modulated by said phase modulation signal; and

waveform generation means coupled to said waveform selection input means and to said second summing means for generating a plurality of selectable waveforms and responsive to said third digital signals and to a control signal for generating digital output signals representative of said selected waveform modulated by said frequency modulation signal and said phase modulation signal and having said predetermined output frequency.

4,806,882

OSCILLATOR/DEMODULATOR CIRCUIT FOR AN INDUCTIVE PROXIMITY SWITCH

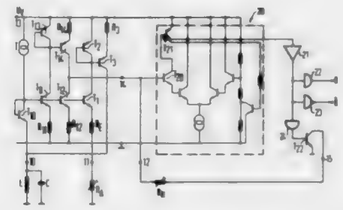
Gerhard Gehring, Unterhaching, and Franz Hillmayr, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 19, 1986, Ser. No. 876,376

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1985, 3522120

Int. Cl.[4] G01V *3/11*; H03B *5/12*

U.S. Cl. 331—65 5 Claims



1. Oscillator/demodulator circuit for an inductive proximity switch, comprising a transistor amplifier stage having an input circuit and an output circuit, a resonant circuit connected in said input circuit of said transistor amplifier stage, means for damping said resonant circuit, means for providing positive feedback from said output circuit to said input circuit of said transistor amplifier stage, a limiter branch connected in said input circuit of said transistor amplifier stage, a dual current mirror active in said input circuit of said transistor amplifier stage having first and second interconnected current mirrors including transistors, a circuit output connected to said current mirrors for receiving currents supplied by said current mirrors being subtracted from each other said transistors in said second current mirror having a larger emitter area ratio than said transistors in said first current mirror, and a variable resistance network connected to said oscillator/demodulator circuit output being variable for providing an adjustable hysteresis.

4,806,883

MULTIFREQUENCY OSCILLATOR CIRCUIT

Takahiko Tamura, Tokyo, and Hiroyuki Suzuki, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 24, 1987, Ser. No. 124,594

Claims priority, application Japan, Nov. 27, 1986, 61-282672

Int. Cl.[4] H03K *3/26*

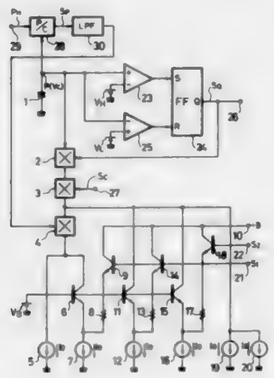
U.S. Cl. 331—111 6 Claims

1. An oscillation circuit for generating an oscillation signal by charging and discharging a capacitor between two reference voltages, comprising:

a plurality of constant current sources each having the same current value; and

switching circuits connected between said plurality of constant current sources and said capacitor, wherein said

switching circuits selectively change the number of said constant current sources connected to said capacitor,



thereby to step-wise change the frequency of said oscillation signal.

4,806,884

HIGH FREQUENCY GENERATOR

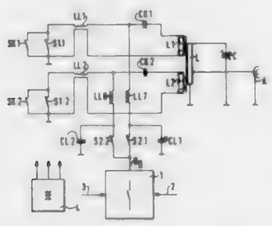
Winfried P. Rütt, Büttelborn, Fed. Rep. of Germany, assignor to Elan Elektronische Anlagen GmbH, Büttelborn, Fed. Rep. of Germany

Filed Mar. 12, 1987, Ser. No. 25,162

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1986, 3608871

Int. Cl.⁴ H03B *5/18*

U.S. Cl. 332—31 R **28 Claims**



1. Modulatable, externally excited high frequency generator for sinusoidal output power, containing a LC-parallel resonant circuit as an output circuit; first switching means coupled to said output circuit by a first λ/4-line and a coupling condenser; and a direct voltage supply with a coupling circuit means blocking alternating voltages, characterized in that a plurality of first switching means are coupled to the output circuit by respectively λ/4-lines, and the direct voltage supply is a timed power supply unit of high efficiency.

4,806,885

MAGNET-ELECTRO-OPTIC EFFECT LIGHT MODULATOR

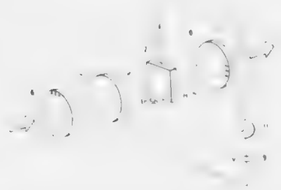
Takeshi Morimoto, Kyoto, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 5, 1987, Ser. No. 81,672

Claims priority, application Japan, Aug. 8, 1986, 61-186660

Int. Cl.⁴ G02F *1/09*; H04B *9/00*

U.S. Cl. 332—7.51 **6 Claims**



1. A magneto-electro-optic effect light modulator for effecting a desired phase and an intensity modulation of infrared light incident upon a semiconductor having an energy gap transparent for the incident light, said modulator utilizing the population inversion caused by an action of the Lorentz force comprising:

a rectangular solid-like semiconductor element made of one member selected from the group consisting of an n-type semiconductor, a p-type semiconductor and an intrinsic semiconductor, said semiconductor element having no pn-junction and having a band-gap being related to the energy of the incident infrared-light;

a magnet for applying a magnetic field H to said semiconductor element;

electrodes for passing an electric current in said semiconductor element across the magnetic field;

a power source for passing an electric current proportional to the modulation desired through said electrodes said current effecting a phase and intensity modulation of the incident infrared light;

an entrance polarizer disposed in front of said semiconductor element for linearly polarizing infrared-light passing through said entrance polarizer; and

an exit polarizer disposed behind said semiconductor element for linearly polarizing the transmitted infrared-light, passing through said exit polarizer, said exit polarizer having a polarization plane different from said entrance polarizer.

4,806,886

MICROSTRIP RESONANCE ISOLATOR

Richard A. Stern, Allenwood, and Richard W. Babbitt, Fairhaven, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 1, 1988, Ser. No. 162,723

Int. Cl.⁴ H01P *1/365*

U.S. Cl. 333—24.2 **5 Claims**

1. A microstrip resonance isolator comprising

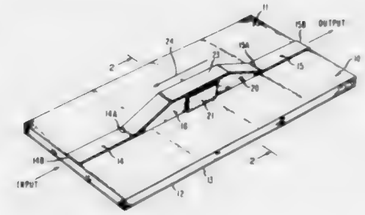
a length of microstrip transmission line dielectric substrate having top and bottom planar surfaces;

an electrically conductive ground plane mounted on the bottom surface of said substrate;

first and second lengths of electrically conductive microstrip conductor mounted on the top surface of said substrate in longitudinal alignment with each other and spaced a distance apart by a longitudinally-extending gap so that one end of each of said lengths of microstrip conductor defines a different end of said gap;

a dielectric waveguide element having a rectangular cross-section, two planar sides and a length substantially the same as the length of said gap mounted on said substrate in said gap in longitudinal alignment with said lengths of microstrip conductor, said waveguide element having a planar bottom surface abutting the top surface of said substrate and a top surface having a central planar section and two mutually oppositely-inclined ramp sections at the ends of said central section, the dielectric constant of said waveguide element being substantially greater than the dielectric constant of said substrate;

a third length of electrically conductive microstrip conductor mounted on the top surface of said waveguide element and extending between the ends of said gap, said third length of microstrip conductor having the ends thereof electrically connected to said one end of said first and second lengths of microstrip conductor so that said third length of microstrip conductor is serially interconnected with said first and second lengths of microstrip conductor



and the other ends of said first and second lengths of microstrip conductor form the input and output terminals of the microstrip resonance isolator; and

a thin rectangular substrate of hexagonal grain-oriented ferrite material mounted on one of said sides of said dielectric waveguide element and extending along a portion of the length of said waveguide element top surface central section, said ferrite material having a unidirectional magnetic orientation in a direction which is parallel to the plane of said one side of said waveguide element and substantially perpendicular to the plane of said microstrip dielectric substrate top surface and which provides low loss transmission of electromagnetic wave energy traveling from the input terminal of the isolator to the output terminal thereof and high attenuation of said energy traveling from the output terminal of the isolator to the input terminal thereof.

4,806,887

R-SWITCH WITH TRANSFORMERS

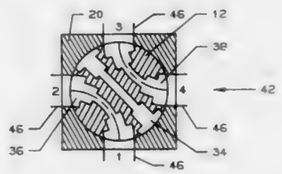
Henry Y. M. Au-Yeung, Kitchener, Canada, assignor to Com Dev Ltd., Cambridge, Canada

Filed May 27, 1987, Ser. No. 54,524

Claims priority, application Canada, Jan. 12, 1987, 527164

Int. Cl.⁴ H01P *1/10*

U.S. Cl. 333—106 **19 Claims**



1. A waveguide R-switch for use with an actuator, said R-switch comprising a rotor rotatably mounted within a housing, said rotor having at least three rectangular waveguide paths, each path having an 'a' dimension representing height and a 'b' dimension representing width, said dimensions determining a size of a path at a particular location, said housing having ports suitably located therein to correspond with one or more of said paths when said R-switch is in a particular position, with a transformer located within at least one of said paths, said transformer being any step reduction in the size of a waveguide path, said actuator being means to rotate said rotor within said housing to a plurality of predetermined positions.

4,806,888

MONOLITHIC VECTOR MODULATOR/COMPLEX WEIGHT USING ALL-PASS NETWORK

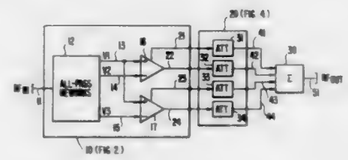
Seward T. Salvage, Palm Bay, and Edward E. Messer, Jr., Palm Bay N.W., both of Fla., assignors to Harris Corp., Melbourne, Fla.

Filed Apr. 14, 1986, Ser. No. 851,726

The portion of the term of this patent subsequent to Oct. 13, 2004, has been disclaimed.

Int. Cl.⁴ H03H *7/18*

U.S. Cl. 333—138 **16 Claims**



1. A signal coupling network comprising:

first means for receiving an input signal and for producing at a plurality of outputs thereof a respective plurality of first output signals shifted in phase with respect to each other;

second means, coupled to the plurality of outputs of said first means, for combining selected ones of said plurality of first output signals and producing therefrom a plurality of second output signals, shifted in phase with respect to each other, at respective outputs thereof, said second means comprising a multiple differential amplifier circuit producing at complementary outputs thereof respective ones of said plurality of second output signals; and

a plurality of third means, coupled to the respective outputs of said second means, for controllably modifying respective ones of said second output signals; and

fourth means coupled to said coupled to said third means, for combining said controllably modified second output signals to produce a third output signal having a prescribed phase relative to the phase of said input signal.

4,806,889

CERAMIC FILTER

Fumihito Nakano, Narita; Kiyoshi Hagawa, Chiba; Kenji Endo, Narita; Kohei Wada, Osaka, and Katsuya Jindou, Kanagawa, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Apr. 28, 1988, Ser. No. 187,430

Claims priority, application Japan, Dec. 28, 1987, 62-336653

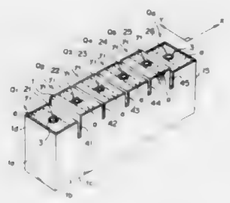
Int. Cl.⁴ H01P *1/205*, *1/208*

U.S. Cl. 333—202 **15 Claims**

1. A dielectric ceramic body for a ceramic filter, said body being of a cuboidal configuration having first side surface and a second side surface which is opposite to said first side surface, a plurality of holes arranged in series along a length of said body to extend from said first side surface to said second side surface add opening at the opposite ends to said first and second side surfaces, a plurality of slits formed at one of said first and second side surfaces and located one between each two

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adjacent pair of said holes, a first conductive layer provided at least on one of said first and second surfaces, a second conductive layer provided on an interior wall of each hole, said slits



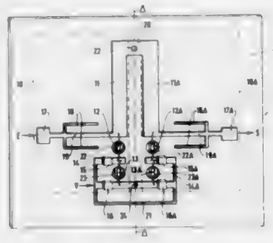
having depths which change so that the depth of the slit closer to an end portion of the ceramic body is greater than the depth of the slit closer to a center portion of the ceramic body.

4,806,890

TUNEABLE MICROWAVE FILTER

Mustafa Gurcan, Osny, and Maurice Bernaud, Asnieres, both of France, assignors to Alcatel Thomson Faisceaux Hertziens, Cedex, France

Filed Feb. 10, 1988, Ser. No. 154,409
Claims priority, application France, Feb. 11, 1987, 87 01718
Int. Cl.[4] H01P 1/203
U.S. Cl. 333—205 6 Claims



1. A tuneable microwave filter comprising a plane substrate having first and second faces and two similar filter branches disposed on said first face, each of said first and second branches comprising:

a first end connected to ground;

a second end connected to ground;

a first variable capacitance diode and a second variable capacitance diode connected in series between said first and second ends;

a microwave-strip transmission line disposed in series between said second diode and said first end; and

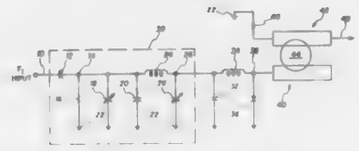
a symmetrical impedance matcher for coupling microwave inputs and outputs to and from a common connection point between said second variable capacitance diode and said micro-strip transmission line.

4,806,891

BROADBAND SIGNAL FREQUENCY MULTIPLIER APPARATUS USING DIELECTRIC RESONATOR MEANS

Pramode C. Kandpal, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 11, 1988, Ser. No. 166,860
Int. Cl.[4] H01P 1/20
U.S. Cl. 333—218 7 Claims



1. Signal frequency multiplier apparatus comprising, in combination:

circuit mounting means;

first and second transmission line means attached to said circuit mounting means and spaced Y units apart;

dielectric resonator means, having a diameter of at least Y attached to said mounting means, juxtaposed both said first and second transmission line means;

signal input means, connected to said first transmission line means, for supplying a signal having a plurality of frequencies; and

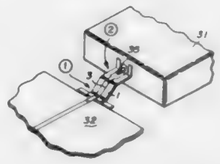
signal output means, connected to said second transmission line means, for providing an output signal of substantially only one of said plurality of frequencies.

4,806,892

INCLINED RF CONNECTING STRIP

J. Carlton Thorpe, Poway, and Francis X. Konsevich, Carlsbad, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 9, 1987, Ser. No. 118,820
Int. Cl.[4] H01P 1/04
U.S. Cl. 333—246 9 Claims



2. In an RF system containing a first RF device and a second RF device, said first device being of the type containing an electrically conductive shielded case and having an electrical lead means of predetermined width extending along a predetermined axis through an opening in said case for carrying RF through the walls of said case; said second RF device being of the type having a relatively thin flat insulator surface and containing thereon attached a flat conductor forming an RF path on at least one side of said flat insulator surface; said lead means of said first RF device and said flat conductor of said second RF device being spaced apart vertically between a first vertical level and a second vertical level, respectively; and RF connector means connected therebetween to place said electrical lead means and said flat conductor in electrical series circuit to provide a transmission path for propagation of RF therebetween, the improvement wherein said RF connector means comprises;

a thin wide dielectric strip of dielectric material having front and back ends, said strip being of a predetermined width

that is greater in width than said lead means of said first RF device and being of a predetermined length;

a first thin narrow flat electrical conductor having a length, said length of said first conductor being greater than said length of said dielectric strip to define a tab portion to said first conductor extending beyond the front end of said dielectric strip;

said first conductor having a width that is substantially less than the width of said dielectric strip;

said first conductor having an enlarged portion located adjacent the back end of said dielectric strip, said enlarged portion having a width that is greater than the width of said tab portion of said first conductor;

a second thin wide electrical conductor having a first portion covering the underside of said dielectric strip, said second electrical conductor being of a predetermined length, said predetermined length being greater than said length of said dielectric strip to define first an second tab end portions, said tab end portions extending beyond the end of said dielectric strip;

said first and second conductors being attached to said dielectric strip;

said first and second conductors and dielectric strip forming a sandwich with said dielectric strip positioned in between said first and second conductors, said sandwich having:

a first bend, said first bend being located at a position between the front and back ends of said dielelctric strip, to form a first straight portion extending essentially parallel to the axis of said lead means and a second straight portion forming an incline between said first vertical level and said second vertical level; and, further containing, a second bend, said second bend being located proximate the front end of said dielectric strip, to form a straight portion extending parallel essentially to said first portion thereof;

said first bend between the two portions being positioned at a predetermined position between the front and back ends of said dielectric strip;

said first extending tab portion of said second conductor extending in a direction perpendicular to the axis of said lead means of said first RF device and having a surface thereof in electrical contact with said case of said first RF device;

said tab portion of said first conductor having a third bend located at the front end of said dielectric strip to place at least one surface of said tab portion in essentially coplanar relationship with an adjacent portion of said second conductor;

said enlarged end portion of said first conductor being in electrical contact with a cylindrical conductor of said electrical lead means;

said tab portion of said first conductor being in contact with said flat conductor of said second RF device;

said materials of said first and second conductors and said dielectric strip being flexible so as to maintain essentially the same electrical RF characteristics despite changes in the spacing between said flat conductor on said flat surface of said second RF device and said case of said first RF device resulting from thermal expansion or contraction of any of said components; whereby said conductors form a microstrip transmission line.

4,806,893

MOLDED CASE CIRCUIT BREAKER ACTUATOR-ACCESSORY UNIT

Roger N. Castonguay, Terryville; Robert A. Morris, Burlington; Richard A. Dziura, Plainville; Graham A. Scott, Avon, and Gregory T. DiVincenzo, Plainville, all of Conn., assignors to General Electric Company, New York, N.Y.

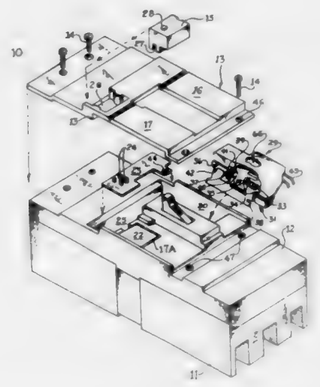
Filed Mar. 3, 1988, Ser. No. 163,589
Int. Cl.[4] H01H 73/06
U.S. Cl. 335—20 29 Claims

1. A molded case circuit breaker having a combined trip actuator and accessory unit comprising:

a molded case circuit breaker case and cover;

a circuit breaker operating mechanism arranged for separating a pair of contacts to interrupt circuit current through said contacts;

a trip actuator-accessory unit within a recess in said circuit breaker cover proximate said operating mechanism for articulating said operating mechanism to separate said contacts automatically upon overcurrent conditions through said contacts and also to articulate said operating mechanism upon receipt of a remote trip signal;



an operating lever within said case proximate said operating mechanism and interfacing with said actuator-accessory unit through a latch support arm, said latch suport arm including means for retaining a trip actuator latch; and

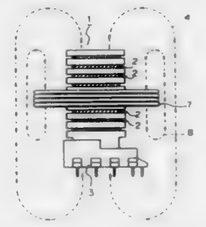
an electromagnetic coil and a spring-biased plunger within said actuator-accessory unit, said plunger being restrained from moving said trip actuator latch away from said latch support arm when said electromagnetic coil is energized.

4,806,894

APPARATUS FOR CANCELLING LEAKAGE MAGNETIC FIELD

Shingo Koto, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1987, Ser. No. 127,217
Claims priority, application Japan, Dec. 9, 1986, 61-291550
Int. Cl.[4] H01F 5/00
U.S. Cl. 335—214 1 Claim



1. Flyback transformer apparatus for use with video display monitors comprising

a magnetically permeable core;

a primary winding surrounding at least a part of said core, said winding being electrically driven by an alternating

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current to generate a fluctuating magnetic field having an average D.C. value;

a secondary winding surrounding at least a part of said core, said secondary winding being responsive to said fluctuating magnetic field for developing a voltage for use in said video display monitor;

a leakage cancelling winding surrounding said primary winding, said secondary winding and said core; and

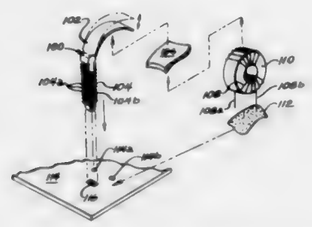
means for causing a direct current to flow through said leakage cancelling winding to generate a leakage cancelling magnetic field in a direction opposite to said average D.C. value of said fluctuating magnetic field so that said leakage cancelling magnetic field substantially cancels said average D.C. component of said fluctuating magnetic field.

4,806,895

TOROIDAL COIL MOUNT

William M. Petrow, Prospect Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Oct. 8, 1987, Ser. No. 107,089
Int. Cl.[4] H01F 15/02
U.S. Cl. 336—65 21 Claims



1. An apparatus mounting a toroidal coil/core combination to a support structure having an aperture therein comprising:

first engaging means adapted for insertion in the support structure's aperture securely engaging the support structure, wherein said first engaging means includes keying means for permitting said apparatus to be attached to said support structure only in a given, predetermined orientation; and

second engaging means coupled to said first engaging means engaging and urging the toroidal coil/core combination in intimate contact with the support structure when said first engaging means is inserted in the support structure's aperture.

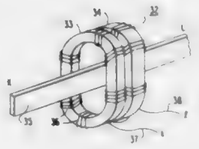
4,806,896

ELECTROMAGNETIC SHIELD FOR ELECTROMAGNETIC APPARATUS

Yoshiroo Shikano, and Shinichiroo Hayashi, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 2,365, Nov. 12, 1987, abandoned. This application Jul. 13, 1988, Ser. No. 218,002
Claims priority, application Japan, Jan. 17, 1986, 61-8317
Int. Cl.[4] H01F 15/04, 27/28
U.S. Cl. 336—73 3 Claims

1. An electromagnetic shield in an electromagnetic apparatus comprising a DC current transformer having two looped magnetic cores which are interlinked with a primary conductor and secondary windings wound on the cores individually, a plurality of shield coils wound at circumferentially, equally spaced positions on said looped magnetic cores in which a main flux of said electromagnetic apparatus flows, a first short circuit means for short-circuiting the plus polarity terminals of said shield coils to each other, and a second short circuit means



for short-circuiting the minus polarity terminals of said shield coils to each other.

4,806,897

OVERLOAD RELAY HAVING ADAPTIVE DIFFERENTIAL MECHANISM

Michael J. Fajnor, Bayside; Edward A. Mallonee, New Berlin, and John J. Slobodnik, Milwaukee, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 17, 1987, Ser. No. 134,811
Int. Cl.[4] H01H 61/06, 71/16
U.S. Cl. 337—49 17 Claims



1. A plural phase overload relay comprising a switch, a plurality of current responsive deflectors, one for each phase, which deflect in response to current in the respective phase, an ambient compensator deflector which deflects in response to ambient temperature, a pivot lever mounted on said ambient compensator deflector and pivotable to trip said switch, transfer actuator means responsive to said current responsive deflectors and driven thereby to engage said pivot lever on said ambient compensator deflector and pivot said lever to trip said switch, wherein said transfer actuator means comprises a second pivot lever movable into engagement with said first mentioned pivot lever, wherein said transfer actuator means comprises a pair of slide bars, and wherein said second pivot lever is translated into engagement with said first pivot lever to pivot the latter, and such that when one of said slide bars is held back

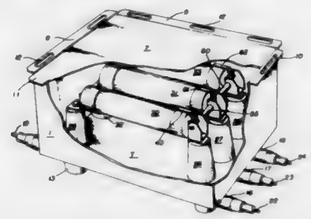
by one of said current responsive deflectors and the other of said slide bars moves, said second pivot lever is driven by said other slide bar and pivots about said one slide bar into engagement with said first pivot lever to pivot the latter.

4,806,898

POLYPHASE INTERRUPTER RESPONSIVE TO SINGLE PHASE FAULT

Anthony Osborne, Duluth, Ga., assignor to Kearney-National, Inc., Atlanta, Ga.

Filed May 16, 1988, Ser. No. 194,269
Int. Cl.[4] H01H 71/20, 73/24
U.S. Cl. 337—146 10 Claims



1. A system for interrupting the flow of electric current in all phases of a polyphase circuit in response to interruption of the flow of current in one phase, said system comprising a current interrupter in series with each phase, a phase grounding conductor electrically connected with each phase and movably mounted adjacent each of said current interrupters, biasing means in engagement with each of said phase grounding conductors and arranged to impart grounding movement thereto, latch means normally in engagement with each of said phase grounding conductors for preventing grounding movement thereof, actuating means associated with each of said current interrupters and movable into releasing engagement with the associated latch means in response to a current interrupting operation of the associated current interrupter, and coupling means interconnecting all of said latch means for imparting simultaneous releasing movement thereto thereby to effect grounding and interruption of all phases.

4,806,899

THERMAL CIRCUIT BREAKER

Donald K. Merchant, Cambridge, Md., assignor to Airpax Corporation, Cambridge, Md.

Filed Apr. 20, 1987, Ser. No. 39,299
Int. Cl.[4] H01H 37/10, 37/52
U.S. Cl. 337—378 39 Claims

1. A thermal circuit breaker, comprising:

a casing;

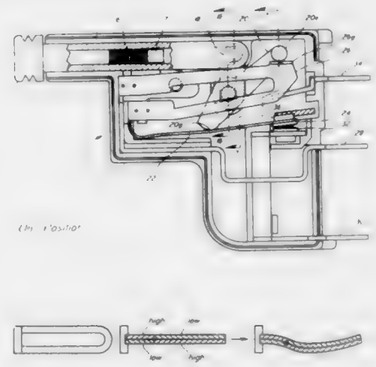
line and load terminals mounted in said casing;

fixed and movable contacts connected to said load and line terminals;

a contact arm carrying said movable contact for movement between contacts open and contacts closed positions; and

a temperature compensated bimetallic element electrically coupled between said movable contact and one of said terminals, and adapted to control the movement of said movable contact arm in response to an electrical current flowing through said element, wherein the control provided by said element is substantially unaffected by variations in ambient temperature;

wherein said bimetallic element is formed of a generally planar sheet of laminated bimetallic material, and is generally of U-shape comprising two legs and a bight portion connecting said legs, the relative orientation of the bimetallic material of the legs of said element changing along



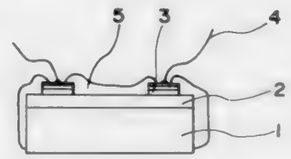
their length, to substantially compensate for flexure of said legs due to variations in ambient temperature.

4,806,900

THERMISTOR AND METHOD FOR PRODUCING THE SAME

Naoji Fujimori, and Takahiro Imai, both of c/o Itami Works of Sumitomo Electric Industries, Ltd., 1-1, Koyakita 1-chome, Itami-shi, Hyogo-ken, Japan

Filed Sep. 25, 1987, Ser. No. 101,243
Claims priority, application Japan, Sep. 26, 1986, 61-226212
Int. Cl.[4] H01C 7/10
U.S. Cl. 338—22 R 5 Claims



1. A thermistor comprising a substrate and a heat sensitive element consisting of a thin film comprised of diamond deposited on said substrate.

4,806,901

MOTION TRANSDUCER

Alfred H. Glover, Decatur, Ala., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Aug. 21, 1986, Ser. No. 898,669
Int. Cl.[4] H01C 10/10
U.S. Cl. 338—42 4 Claims

1. A fluid pressure transducer device with means for transmitting linear motion into rotary motion and finally for generating a corresponding electrical output proportional to the motion transmittal, comprising:

the pressure transducer including a hollow first housing member with aperture means for receiving pressurized fluid within its interior;

a second hollow housing member attached to the first housing member.

a flexible diaphragm assembly extending between the first and second housing members and with a midpoint thereof movable in the axial direction of the housing members in

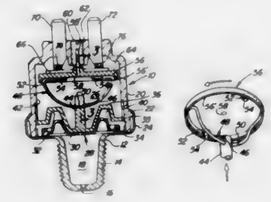
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response to pressure differentials, one surface of the movable diaphragm member being exposed to pressurized fluid within the first housing member;

a diaphragm back-up member responsive to movements of the midportion of the diaphragm and supported within the second housing member in a manner permitting only rotary motion and no substantial axial motion thereof;

a rotary table member supported within the second housing member in a manner permitting only rotary motion and no substantial axial motion thereof, the rotary table member having an underside facing the back-up member and with a circumferential peripheral edge thereabout;

spring means between the axially moving back-up member and the rotary moving table member, the spring means having opposite end portions overlying a peripheral edge of the rotary table member and attached thereto at the extreme end portions;



the spring having a curved midportion engaged by the linearly movable back-up member whereby axial movements of the back-up member toward the rotatable table forces the end portions of the spring to progressively overlie greater peripheral edge portions of the rotary table causing the rotary table to rotate in response thereto;

the rotary table member having an overside opposite the underside;

an electrical resistance grid supported on the overside of the rotary table;

electrical contact means supported by the second housing member adjacent to the resistance grid and adapted to slidingly engage portions of the resistance grid as the rotary table moves with respect to the second housing member.

4,806,902

FLUID LEVEL MONITOR AND FILLER ASSEMBLY

John W. Gana, 5077 Landisville Rd., Doylestown, Pa. 18901

Filed Dec. 21, 1987, Ser. No. 136,011
Int. Cl.[4] B60Q *1/00*; G01F *23/00*
U.S. Cl. 340—59 **17 Claims**

1. A combination for monitoring and filling a reservoir with fluid comprising:

(a) a circular filler assembly having distal and proximal ends permanently connected to said reservoir through said distal end;

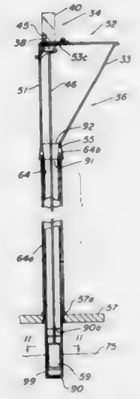
(b) mean for semi-permanent insertion at said proximal end of said filler into said assembly for forming a passageway to allow fluid to be transferred into said reservoir;

(c) movable and flexible means located within said passageway to monitor the fluid level within said reservoir, said movable and flexible means further including means for floating upon the surface of said fluid;

(d) indicator means utilizing contrasting first and second colors for displaying an amount of fluid to maintain said reservoir in a filled level;

(e) said indicator means being located for easy viewing comprising first and second member: wherein said first member is attached to said movable and flexible means, and said second member being positioned concentrically upon said insertion means for slidable engagement with said first member;

(f) said indicator means displaying said first color only by means of said first member when said reservoir is in a filled condition, and said indicator means displaying said first color in contrasting arrangement with said second color by means of the slidable engagement of said second mem-



ber with respect to said first member to indicate a partial depletion of fluid from said reservoir; and

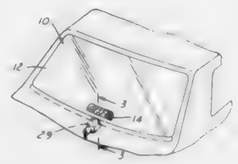
(g) the length of travel of said movable means through said floating means corresponding to an amount of display of said second color with respect to said first color in accordance with a level/volume ratio of said reservoir, and a greater first and second color contrast indicating a greater depletion of said fluid.

4,806,903

BACKLITE ASSEMBLY FOR AN AUTOMOTIVE VEHICLE

John L. Rust, Belleville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 15, 1986, Ser. No. 90,877
Int. Cl.[4] B60Q *1/44*
U.S. Cl. 340—97 **10 Claims**



1. A backlite for an automotive vehicle with a signaling system, said backlite comprising:

at least one backlite panel;

illumination means positioned at one edge of said panel for selectively introducing light into the interior of said panel whenever said signaling system is energized; and

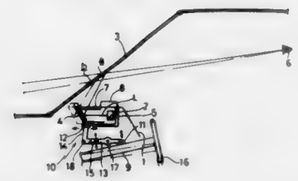
refraction means integrated with said panel for refracting said light so that said light will be emitted from said backlite in a pattern recognizable as a signal.

4,806,904

HEAD-UP DISPLAY DEVICE

Hitoshi Watanuki, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 19, 1988, Ser. No. 145,321
Claims priority, application Japan, Feb. 23, 1987, 62-26099[U]
Int. Cl.[4] B60Q *1/00*; G09G *3/02*
U.S. Cl. 340—103 **3 Claims**



1. A head-up display device for a vehicle comprising:

a light-emitting display body provided in an instrument panel;

a reflecting mirror which reflects the display light from the light-emitting display body onto a reflection section; a housing which encloses the light-emitting display body and the reflecting mirror; and

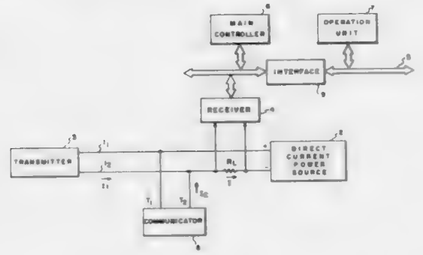
a linkage member for connecting the housing to a steering member, so that the housing can slide forwards and backwards of the vehicle in correspondence with upward and downward motions of the steering member.

4,806,905

TRANSMITTER FOR TRANSMITTING ON A TWO-WIRE TRANSMITTING LINE

David L. McGowan, III, Waraminster, and Steven M. Oxenberg, Richboro, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 1, 1986, Ser. No. 914,031
Int. Cl.[4] H04M *11/04*; G08C *19/16*
U.S. Cl. 340—310 R **15 Claims**



1. A transmitter for transmitting a measured value of a process variable in the form of a digital signal through a two-wire transmission line by a change in a current in the two-wire transmission line comprising

means for receiving a digital command signal supplied through said two-wire transmission line and

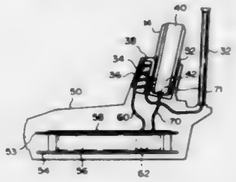
control means for adding the measured value to a digital response signal generated in response to the digital command signal and for transmitting a resultant digital signal so as to transmit on the two-wire transmission line at least one measured value within a predetermined time period.

4,806,906

DATA TERMINAL

Takashi Oda, Tokyo, and Masayoshi Yamashita, Saitama, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 29, 1987, Ser. No. 8,681
Claims priority, application Japan, Jan. 29, 1986, 61-12110[U]
Int. Cl.[4] H04Q *1/00*
U.S. Cl. 340—311.1 **4 Claims**



1. A data terminal for receiving data from a paging receiver, said data terminal comprising:

a plurality of circuit elements, including a ground therefor;

a whip antenna attached to said data terminal;

a resonance circuit connected to said whip antenna and having a ground; and

a receiver accommodating portion for accommodating said paging receiver such that an antenna built in said paging receiver is coupled with said resonance circuit;

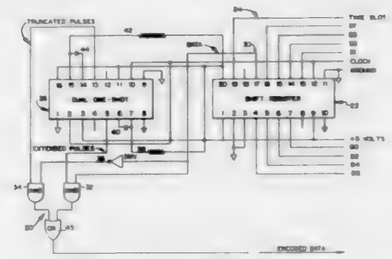
said ground of said resonance circuit and said ground of said circuit elements which are mounted in said data terminal being joined with each other so that said ground of said circuit elements serves as a reflector of said whip antenna.

4,806,907

APPARATUS AND METHOD FOR DIGITAL DATA TRANSMISSION

Leon M. Furgason, P.O. Box AK, Harlowton, Mont. 59036

Filed Aug. 4, 1986, Ser. No. 892,422
Int. Cl.[4] H03M *7/00*
U.S. Cl. 341—50 **6 Claims**



1. An electronic circuit for encoding a digital signal containing data information and consisting of the string of pulses of two different states, the pulse of the first state representing a digital "1" and the pulse of the second state representing a digital "0" comprising:

shift register means for receiving the digital signal to be encoded from an external source which digital signal is clocked into the shift register means under control of a clock signal consisting of a square wave and a clock frequency;

means for generating pulses of truncated length, the truncated pulses having a leading edge corresponding to a leading edge of the clock pulse and appearing at the clock

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frequency, and having a pulse width less than the pulse width of the clock signal;

means for generating pulses of extended length, the extended pulses having a leading edge corresponding to a leading edge of the clock pulse and occurring at the clock frequency and having a pulse greater than the pulse width of the clock signal;

logic gating means for permitting a truncated pulse to pass when the digital signal pulse corresponds to a digital "0" and for permitting an extended pulse to pass when the data pulse corresponds to a digital "1";

the logic gating means including means for creating an inverted digital signal, a first AND gate means having a first input terminal, a second input terminal, a pulse of truncated length being transmitted to the first input terminal, and the inverted digital signal being transmitted to the second input terminal;

the logic gating means further including a second AND gate having a first input terminal and second input terminal and an output terminal, the digital signal being transmitted to the first input terminal and a pulse of extended length being transmitted to the second input terminal;

the logic gating means further including an OR gate having a first input terminal and a second input terminal and an output terminal, the first input terminal being connected to the output terminal of the first AND gate, and the second input terminal being connected to the output terminal of the second AND gate;

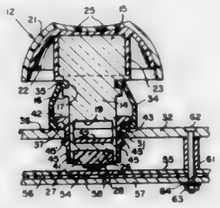
whereby the output of the OR gate is an encoded signal where the leading edges of each pulse contains information as to the clock frequency and the trailing edge of each pulse contains the data information of the digital signal being encoded.

4,806,908

LOW PROFILE BACKLIGHTED KEYBOARD

Elliot Krupnik, Gloucester, Mass., assignor to Astronics Corporation, Orchard Park, N.Y.

Filed May 14, 1987, Ser. No. 49,371
Int. Cl.⁴ G06F *3/00*
U.S. Cl. 341—22 **12 Claims**



1. A keyboard, compriaing

a board having a printed circuit on its face,

means for supporting a keyholder panel on said board above and in spaced relation to said printed circuit,

a plurality of keys,

means for mounting said keys to reciprocate each in a different one of a like plurality of openings formed in said panel in spaced columns,

each of said keys comprising a light transmissive core having a conductor on its lower end engagable with said circuit upon depression of a respective key, having a light transmissive legend on its upper end to identify the key, and having a transverse opening therethrough intermediate its ends,

said keys being mounted in said panel so that the cores thereof in each column of keys having their transverse openings registering with each other, and

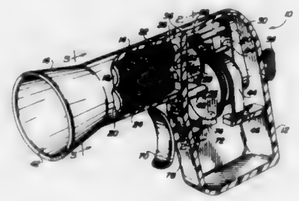
an elongated electroluminescent strip extending through the registering openings in the cores of each column of keys to simultaneously illuminate the legends on the upper ends of the associated key cores.

4,806,905

SIMULATED STATIC NOISE GENERATOR

Thomas W. Arcand, 11601 Gilmore, #2, North Hollywood, Calif. 91606

Filed Feb. 22, 1988, Ser. No. 158,784
Int. Cl.⁴ G08B *3/00*
U.S. Cl. 340—384 R **12 Claims**



1. An apparatus for generating static-like noise, comprising:

a housing;

a drive roller rotatably mounted in said housing, said drive roller having a major surface;

a driven roller rotatably mounted in said housing and in rolling engagement with said drive roller, said driven roller having a major surface;

first means mounted in said housing and coupled to said drive roller for imparting rotation to said drive roller in a first direction causing said driven roller to rotate in an opposite direction;

a first plurality of flexible male connection members disposed on the major surface of one of said drive and driven rollers; and

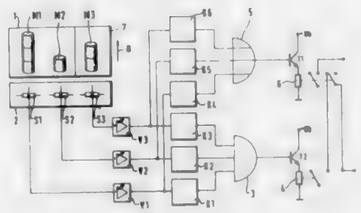
a second plurality of flexible female connection members disposed on the major surface of the other of said drive and driven rollers, said first and second plurality of members continuously engaging and disengaging as said drive and driven rollers turn to produce said static-like noise.

4,806,910

ARRANGEMENT FOR REMOTE MONITORING OF THE POSITION AND/OR MOVEMENT OF A CLOSURE MECHANISM

Heinrich Sälzer, Industriestr. 4, D-3550 Marburg-Wehrda, Fed. Rep. of Germany

Filed Sep. 14, 1987, Ser. No. 96,714
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1986, 3632367
Int. Cl.⁴ G08B *13/08*
U.S. Cl. 340—547 **9 Claims**



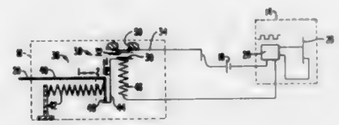
1. An arrangement for remote monitoring of the position and/or movement of a closure mechanism with respect to a frame which surrounds same in its closed position, said arrangement consisting of several signal transmitters associated with the closure mechanism and signal pick-ups associated with the frame, in which respect the signal transmitters associated with the closure mechanism are positioned on or adjacent a surface of the closure mechanism which lies in a plane perpendicular to a plane of movement of the closure mechanism and the signal pick-ups associated with the frame are positioned in a corresponding manner on or adjacent a surface of the frame which lies opposite the relevant surface of the closure mechanism in the closed position of same so that signal transmission may be triggered in the closed position of the closure mechanism characterized in that the signal transmitters consist of mutually different permanent magnets having dissimilar field intensities and the signal pick-ups consist of sensors which are capable of being influenced by said magnets.

4,806,911

KEY-RING-MOUNTABLE ALARM DEVICE

Dan A. Petri, 4602 Scotts Valley Dr., Scotts Valley, Calif. 95066

Filed Nov. 23, 1987, Ser. No. 123,734
Int. Cl.⁴ G08B *15/00*
U.S. Cl. 340—574 **4 Claims**



1. A key-ring-mountable portable alarm device comprising:

a housing;

a piezo-electric loudspeaker mounted within said housing:

a square-wave oscillator mounted within said housing and coupled to said loudspeaker for driving said loudspeaker, said square-wave oscillator operative with a fundamental frequency in the range of peak hearing of a human and with a minimum power output to said loudspeaker sufficient to cause pain in the ear of a human;

a battery mounted within said housing and having a normally-broken continuity; and

a triggering means having a first mode of operation, a second mode of operation and a third mode of operation, said first mode of operation coupling said battery to said square-wave oscillator for extended operation of said square-wave oscillator, said second mode of operation for momentary operation of said battery, square-wave oscillator and said loudspeaker, and said third mode of operation for terminating said first mode of operation, said triggering means comprising a first activation means mechanically coupled to a key ring and a second activation means incorporating an electrical switch for proving continuity in a battery circuit through said battery and said oscillator, said second activation means being normally mechanically held by said first activation means in a normally open contact position, said second activation means including means for terminating first mode of operation.

4,806,912

MONITORING SYSTEM FOR A LIQUID PURIFICATION SYSTEM

Robert A. Clack, 6409 Bridge Rd., Madison, Wis. 53713

Filed Jun. 19, 1987, Ser. No. 64,881
Int. Cl.⁴ B01D *31/00*; G01N *27/00*
U.S. Cl. 340—603 **5 Claims**

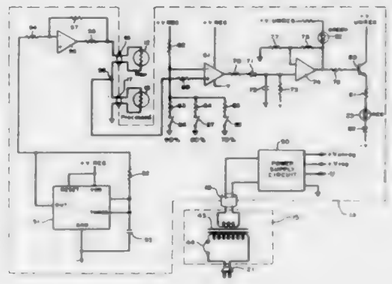
1. A monitoring system for a liquid purification system of the type having an inline membrane, comprising:

a first conductivity cell comprising first and second electrodes disposed in spaced relationship in the liquid at a first location upstream of the membrane;

a second conductivity cell comprising third and fourth electrodes disposed in spaced relationship in the liquid at a second location downstream of the membrane;

oscillator means having a pair of output terminals and providing across said terminals a symmetrical AC signal, one of said output terminals being connected to ground;

said second electrode being connected to said third electrode, and said first electrode and said fourth electrode being connected to respective ones of said output terminals, whereby said first and second conductivity cells are



connected in series across the output of said oscillator means;

amplifier circuit means having first and second input terminals, one of said input terminals being connected to said second and third electrodes, and the other of said input terminals being connected to a reference potential relative to ground, for developing an output signal indicative of the difference between liquid conductivities in said first and second conductivity cells; and

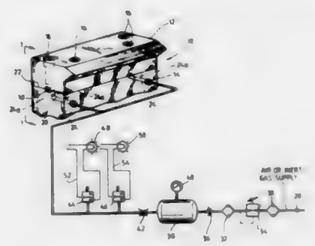
output circuit means responsive to said amplifier output signal for producing a user-discernible indication of said conductivity difference exceeding a predetermined threshold level.

4,806,913

GAS DETECTOR FOR MEASURING COACTING SURFACES

Charles J. Schmidt, P.O. Box 757, Diboll, Tex. 75941

Continuation of Ser. No. 1,777, Jan. 9, 1987, abandoned. This application May 5, 1988, Ser. No. 190,329
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—679 **7 Claims**



1. An apparatus for detecting when bolts, holding coacting surfaces of a chipper anvil to a chipper base, become loose, comprising,

a gas passageway in the base extending to the said coacting surfaces,

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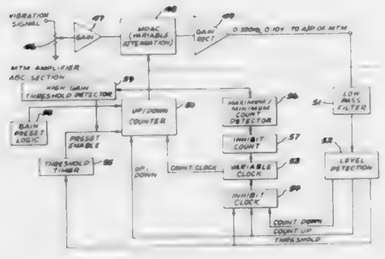
a gas supply connection connected to the gas passageway,
a gas reservoir connected to and positioned downstream of the gas connection,
a flow orifice connected to the reservoir and positioned downstream of the reservoir,
a pressure switch connected to the gas passageway downstream of the orifice, said switch actuated upon a drop of the gas pressure to a predetermined value, and
alarm means connected to and actuated by the switch for providing an indication of the separation of the coacting surfaces.

4,806,914

DETECTION BY AUTOMATIC GAIN CONTROL FEATURES OF GRADUAL CUTTING TOOL BREAKAGE

Charles E. Thomas, Scotia; James F. Bedard, Schenectady; Lawson P. Harris, Scotia; Douglas G. Wildes, Ballston Lake, and Steven R. Hayashi, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 7, 1987, Ser. No. 46,812
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—680 **20 Claims**



6. A machine tool monitor to detect both abrupt and gradual cutting tool breakage comprising:
a vibration sensor to provide a signal representative of vibrations generated by the interaction of a tool and workpiece during the cutting process;
an analog signal processing channel which conditions the cutting vibration signal to a unipolar output voltage in a restricted frequency range and has a digitally programmable attenuator to control channel gain;
a digital processor to sample and digitize said analog output voltage and analyze signal samples in break detection logic to recognize an abrupt tool break vibration signature having a rapid change in signal level that persists for a given confirmation period, and generate an alarm;
said digital processor further comprising automatic gain control logic to determine a gain command for said attenuator to hold said channel output voltage at a chosen average level, with an AGC time constant long enough that said abrupt tool break signature is detected; and
gradual break logic to monitor said gain command and issue a tool break alarm as said gain rises and crosses a high gain threshold due to a crumbly-type tool break that causes said cutting vibration signal to slowly decrease.

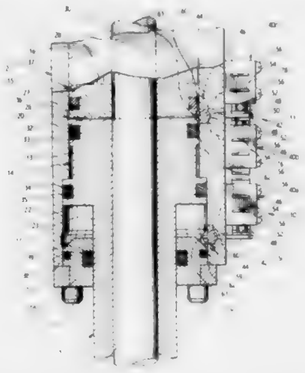
4,806,915

APPARATUS FOR INDICATING POSITION OF A PISTON WITHIN A CYLINDER

Robert Rasmussen, Buffalo, Minn., assignor to Progressive Assembly Machine Co., Inc., Plymouth, Minn.

Filed Sep. 3, 1987, Ser. No. 92,484
Int. Cl.[4] G05B *21/00*
U.S. Cl. 340—686 **8 Claims**

1. A piston sensing apparatus for sensing the position of a piston carried within a cylinder, said cylinder having a cylinder body, an inner cylinder wall and a cylinder outer surface, comprising:
a signalling device mounted externally of said inner cylinder wall; and
a cam at least partially received within said inner cylinder wall for operable abutting contact with said piston for movement in a first direction when said piston operably



engages said cam and movement in a second direction when said piston operably disengages said cam, said cam including means extending outwardly beyond said inner cylinder wall for operable coupling with said signalling device, said cam further including means for forming a fluid tight seal within said cylinder body along said cam and between said inner cylinder wall and said cylinder outer surface.

4,806,916

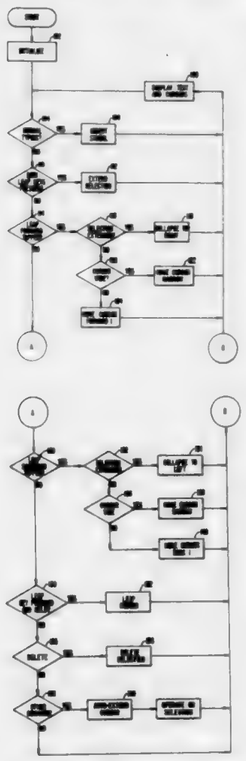
COMPUTER DISPLAY WITH TWO-PART CURSOR FOR INDICATING LOCI OF OPERATION

Jef Raskin, Cupertino; James Winter, Los Angeles, and Renwick Curry, Palo Alto, all of Calif., assignors to Information Appliance, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 902,339, Aug. 29, 1986, abandoned. This application Dec. 2, 1986, Ser. No. 937,157
Int. Cl.[4] G09G *3/02*; G06F *3/14*
U.S. Cl. 340—709 **9 Claims**

1. In a computer system having a display device, a memory device, an entry device and processing means for displaying symbols and a cursor on the display device in response to signals from the entry device, a method for creating and modifying a string of symbols, in response to signals from the entry device, the method comprising the steps of:
displaying on the display device a string of symbols;
displaying on the display device a cursor, said cursor occupying a display region and having a first cursor part occupying a first part of the display region and a second cursor part occupying a second part of the display region adjacent the first part of the display region, the first part of the display region including a symbol in the string of symbols;
in response to signals of a first type from the entry device, said first type of signals including signals representing an entered symbol, inserting the entered symbol into the string of symbols at the second part of the display region; and
in response to signals of a second type from the entry device,

said second type of signals designating a deletion operation, performing the designated deletion operation by



deleting the symbol included in the first part of the display region.

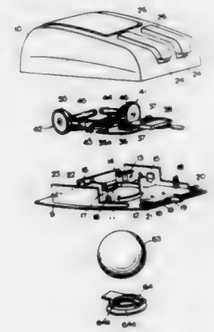
4,806,917

X-Y DIRECTION INPUT DEVICE

Junichi Hosogoe, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Japan

Continuation of Ser. No. 904,471, Aug. 29, 1986, abandoned. This application Jan. 13, 1988, Ser. No. 206,915
Claims priority, application Japan, Sep. 5, 1985, 60-135040[U]; Sep. 5, 1985, 60-135041[U]; Sep. 5, 1985, 60-135042[U]; Sep. 5, 1985, 60-135043[U]
Int. Cl.[4] G09G *1/00*
U.S. Cl. 340—710 **3 Claims**

1. In an X-Y direction input device comprising a rotary ball, a first follower roller contacting the rotary ball for axial rotation therewith to indicate a first input direction, a second follower roller contacting the rotary ball for axial rotation therewith disposed in an axial direction perpendicular to that of the first follower roller to indicate a second input direction, a first rotary-type electrical member axially connected to the first follower roller for detecting the axial rotation thereof, a second rotary-type electrical member axially connected to the second follower roller for detecting the axial rotation thereof, a switch board having push switches thereon provided for controlling certain functions of the input device, and switch actuating members for actuating the push switches, and a casing for holding the rotary ball, first and second follower rollers, first and second rotary-type electrical members, and switch board in respective defined positions therein,
the improvement comprising:
each said rotary-type electrical member including a code plate having pattern areas which is secured to the corresponding follower roller for rotation, sliders contactable with said pattern areas of said code plate, and a holder supporting respective ends of said sliders having electrical junctions thereof at one end remote from said code plate, wherein said first and second rotary-type electrical members are positioned such that said one ends of their respective holders extend toward each other;
a flexible printed circuit board having a first side which is electrically and mechanically connected to said electrical junctions on said one end of said holder of said first rotary-



type electrical member, a second side which is electrically and mechanically connected to said electrical junctions on said one end of said holder of said second rotary-type electrical member, and a third side which is electrically and mechanically connected to said switch board, wherein said first and second follower rollers, first and second rotary-type electrical members, and switch board are conjoined in a single assemblage with said flexible printed circuit board such that they are positioned relative to each other in a unitary structure in the same positions as their respective defined positions in the casing;
said casing having a plurality of position defining means for receiving said single assemblage as a unit and holding each of said conjoined first and second follower rollers, first and second rotary-type electrical members, and switch board in their respective defined positions.

4,806,918

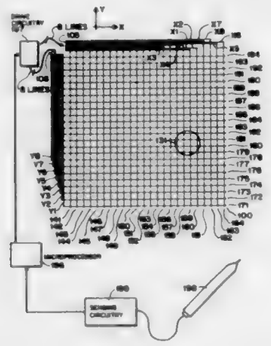
GRAPHICS TABLET USING A PERMUTED TRACE ORDERING SCHEME

W. Mike Berke, and Thomas Mahlbender, both of Sunnyvale, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 718,928, Apr. 1, 1985, abandoned. This application Apr. 24, 1987, Ser. No. 42,544
Int. Cl.[4] G09G *3/00*
U.S. Cl. 340—712 **7 Claims**

1. An apparatus useful in the detection of a location of an object on a tablet, the apparatus comprising:
a first plurality of wire systems, each wire system including a driver wire and at least two traces coupled to the driver wire, the traces being laid out on the tablet;
detecting means for detecting a first wire system from the first plurality of wire systems which has a trace which is closest to the object, for detecting a second wire system from the first plurality of wire systems which has a trace which is second closest to the object and for detecting a

third wire system from the first plurality of wire systems which has a trace which is third closest to the object; and,



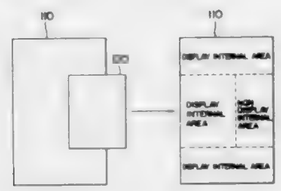
first determining means for determining an address of the location based on the identity of the first, second, and third wire systems.

4,806,919

MULTI-WINDOW DISPLAY SYSTEM WITH MODIFICATION OR MANIPULATION CAPABILITY

Yoshiyuki Nakayama, Kawasaki; Kunihiro Yamagi, Sagamihara, and Kenjiro Mori, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 2, 1985, Ser. No. 729,753
Claims priority, application Japan, May 2, 1984, 59-87686
Int. Cl.[4] G09G 1/00
U.S. Cl. 340—721 **6 Claims**



1. A manipulative multi-window display method wherein display data rae selectively transferred from a plurality of segment memory means corresponding to windows to a bit map memory for a display screen in which a plurality of overlapping windows are displayed on the display screen so that only those portions of each of the windows which are not covered by any other window are displayed, the method comprising:

a first step, in response to a command to display a new window on said display screen, for making a first management record containing therein information as to the position to be assumed by said new window and as to a segment memory means corresponding to the new window and a second management record defining those internal areas in said new window which are to be displayed on said display screen and transferring to said bit map memory data read out from that segment memory which is specified by said first management record, said data being within that internal area which is defined by said second management record;

a second step, in response to a command to display said new window as a second window on said display screen in a display state in which a first window has already been displayed on said screen, for checking the positional relation between a display internal area defined by a second management record concerning said first window and said second window to determine whether or not there exist any overlapping partial areas therebetween;

and upon determination that there does exist an overlapping partial area in said second step,

a third step, after dividing the display internal area defined by a second management record concerning said first window into said overlapping partial area and the remaining partial area, for making a third management record including defining said overlapping partial area as a non-display internal area related to said second window and making a new second management record defining said remaining partial area as a display internal area;

a fourth step in response to a command to reverse the order of display priority between a first window being displayed on said display screen and a second window having higher display priority than said first window, for finding any of the third management records which is related to said second window; and

upon finding of such a third management record as being related to said second window in said fourth step,

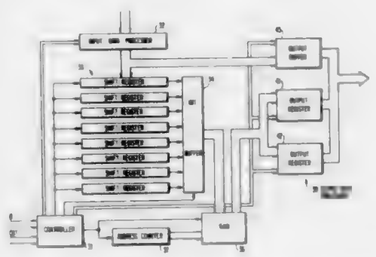
a fifth step for transferring to said bit map memory data read out from that segment memory means which is specified by the first management record concerning said first window, said data to be transferred being within a display internal area which is newly defined, by a new second management record, in place of non display internal area defined by said third management record.

4,806,920

DEVICE FOR PRODUCING AN OUTPUT IMAGE WHILE GIVING AN ORIGINAL IMAGE A ROTATION OF 90, 180, OR 270

Hachiro Sawada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 30, 1987, Ser. No. 31,623
Claims priority, application Japan, Mar. 28, 1986, 61-68756; Aug. 29, 1986, 61-201230; Feb. 21, 1987, 62-36895
Int. Cl.[4] G09G 1/06
U.S. Cl. 340—727 **6 Claims**



1. A device responsive to an angle signal indicative of a preselected angle selected from 90°, 180°, and 270° for processing an input signal representative of an original image into an output signal representative of an output image which corresponds to the original image rotated by said preselected angle, said device comprising:

a controller responsive to said angle signal for producing a control signal and a timing signal;

an input data processing circuit responsive to said control and said timing signals for processing said input signal into a processed signal;

shift register means responsive to said timing signal for shifting said processed signal to produce a first rotated signal;

memory means responsive to said timing signal for memorizing said first rotated signal and for producing a second rotated signal; and

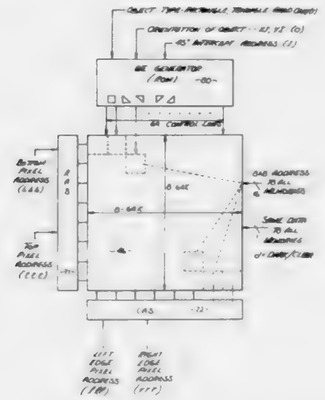
an output data processing circuit responsive to said control and said timing signals for processing one of said processed signal and said second rotated signal into said output signal, output signal being said second rotated signal when said preselected angle is one of 90° and 270°, said output signal being said processed signal when said preselected angle is 180°.

4,806,921

RASTERIZER FOR PATTERN GENERATOR

Allan L. Goodman, Hillsboro; Morris H. Green, Milwaukie; Matthew J. Jolley, Hillsboro; Robin L. Teitzel, Portland, and John L. Wipfli, Hillsboro, all of Oreg., assignors to ATEQ Corporation, Beaverton, Oreg.

Filed Oct. 4, 1985, Ser. No. 784,856
Int. Cl.[4] G09G 1/16
U.S. Cl. 340—747 **25 Claims**



1. An apparatus for generating a rasterized pattern from data representing geometric objects, said data including said objects position, type and dimensions, comprising:

a first and second bus;

at least one image generator, comprising:

(a) a first memory system for storing said data coupled to said first bus;

(b) a second memory system coupled to said second bus for storing pixel representations of said objects, said second memory system comprising m by n individual memories;

(c) circuit means for generating said pixel representations of said objects based on said data and for providing said pixel representations to said second memory system, said circuit means being coupled to said first and said second memory systems;

(d) scanning means for reading said second memory system in a raster scan on to said second bus, said scanning means being coupled to said second memory system;

first decoder means for providing signals to said individual memories, said first decoder means receiving a first address and a second address, said first decoder means providing signals to each of said individual memories falling within said first and said second addresses;

second decoder means for providing signals to said individual memories, said second decoder means receiving a third and a fourth address, said second decoder means providing signals to each of said individual memories falling with said third end said forth addresses;

memory means for loading said data into one of said first memory systems of one of said image generators from said bus while simultaneouly activating said scanning means of one of said second memory systems of another one of said image generators;

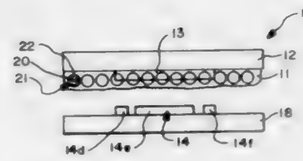
whereby rasterized representations of said objects are provided on said second bus.

4,806,922

DISPLAY DEVICE UTILIZING A PLURALITY OF NCAP LIQUID CRYSTAL MODULES

Charles W. McLaughlin, Portola Valley; James L. Ferguson, Atherton, and Robert Fuker, Alamo, all of Calif., assignors to Taliq Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 102,825, Sep. 23, 1987, abandoned, which is a continuation of Ser. No. 620,376, Jun. 12, 1984, abandoned. This application Jun. 23, 1988, Ser. No. 212,039
Int. Cl.[4] G09G 3/36
U.S. Cl. 340—784 **24 Claims**



1. A liquid crystal display comprising a plurality of liquid crystal modules comprising part of an overall larger display and each module including a display medium comprising the combination of a liquid crystal material and containment means for inducing a distorted alignment of said liquid crystal material which in response to such alignment at least one of which scatters and absorbs light and which in response to a prescribed input reduces the amount of such scattering or absorption wherein said display medium is adhered to a substrate having a substantially uninterrupted surface such that said display medium of one module is positionable in abutting relationship to said display medium of another module such that at least two of said modules are abutting one another to effect said overall larger display that appears to a viewer to be continuous and uninterrupted.

4,806,923

MINIATURIZED ELECTRONIC APPARATUS

Tsuguo Yanai; Yukio Inagaki; Shoji Matsuo, and Hidetaka Fujinawa, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1986, Ser. No. 841,988
Claims priority, application Japan, Mar. 27, 1985, 60-62333; Nov. 22, 1985, 60-263026
Int. Cl.[4] G06F 3/14
U.S. Cl. 340—784 **10 Claims**

1. A liquid crystal display apparatus for providing a visible display in accordance with display data, comprising:

a liquid crystal display panel having at least one plural digit liquid crystal display unit, said at least one liquid crystal display unit including column electrodes arranged in a plurality of separate signal lines for each digit, and common electrodes arranged in a plurality of separate signal lines which are common for all of said digits;

means for applying common signals to said common electrodes, said common signals having two different voltage levels and a cyclic waveform having first and second half cycles, the first half of each cycle of said common signal being opposite in phase to the second half of the same cycle of said cyclic waveform; and

means for applying column signals to said column electrodes in correspondence to display data to provide a display thereof, said column signals having two different voltage levels and a cyclic waveform having first and second half cycles, the first half of each cycle of said column signal

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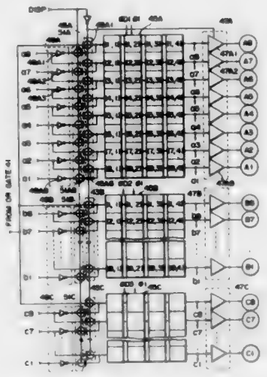
being opposite in phase to the second half of the same cycle of the cyclic waveform of said column signals, said column signals determining a lighting pattern of segments of said column electrodes on the basis of the display data;

said means for applying said column signals including:

memory means for storing said display data;

transforming means for transforming said display data into digital data corresponding to an "on-off" display pattern of segments on said column lines;

storing means for storing said digital data, said storing means comprising shift registers, each of which have a



number of bits corresponding to half of the cycle of said column signal and which are each provided for a respective one of said column electrodes, said shift registers each storing waveform data of the column signal to be applied to the corresponding column electrode;

means for inverting data read out from said storing means;

means for re-entering said inverted data into said storing means; and

means for generating voltages for reading out digital data from said storing means and for supplying voltages having two different levels corresponding to said digital data to said column electrodes.

4,806,924

METHOD AND SYSTEM FOR DISPLAYING INFORMATION

Daniel Giraud, 6 rue Coste, 78000 Versailles; Régis Dufresne, 9 rue Antoine St. Exupéry, and Jean Charron, 2 rue Louise-Michel, both of 78360 Montesson, all of France

Filed Jan. 21, 1985, Ser. No. 747,278

Claims priority, application France, Jan. 29, 1984, 84 10404

Int. Cl.⁴ G09G *3/22*

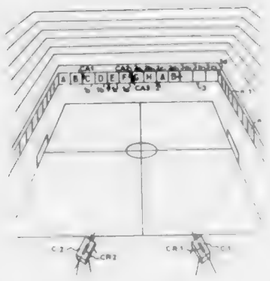
U.S. Cl. 340—792 **21 Claims**

1. A method of displaying information, such as for example advertising messages on a certain number of panels with display elements arranged such that a message may be made to run bidirectionally across said display elements at a place intended to be televised to at least one television receiving means from television cameras, at least one of the display panels appearing at said television receiving means when said display panels are in a shooting field of one of the cameras in operation, comprising the steps of

emitting a signal from a camera position and detecting said signal at one of said panels, said signal being related to the shooting field of said camera,

starting the display of an advertising message each time at least one of the panels is located in the shooting field of an operating one of the cameras responsive to said detection, and

controlling the displacement of the message on the panels according to the movements of the camera in such a manner as to cause said message to continuously appear at approximately the same position within said television receiving means,



whereby said message continually appears at said television receiving means.

4,806,925

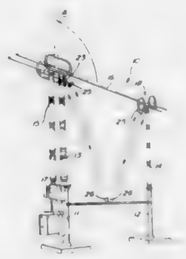
INFRARED SIGNALING SYSTEM FOR DETECTING A PREDETERMINED STATE OF A HIGH VOLTAGE DEVICE

Julien Simard, Brossard; Raymond Lessard, Charny, and Yves Bélanger, Montmagny, all of Canada, assignors to Hydro-Quebec, Montreal, Canada

Filed Apr. 24, 1987, Ser. No. 42,441

Int. Cl.⁴ G08B *5/14*

U.S. Cl. 340—815.25 **10 Claims**



1. A semaphore for use in a detection system for a high voltage (HV) device and for signaling a predetermined state of said device, said semaphore comprising a housing supporting therein a retroreflector element, said housing having an aperture, said retroreflector having a reflective surface supported in alignment with said aperture, said retroreflector being pivotally mounted in said housing and actuable by a toggle linkage for displacing said reflective surface from a first nonreflective position to a second reflective position, means for mounting said housing in close proximity to said device, said toggle linkage being connected to a cable which is actuated upon the displacement of a movable switch contact upon the occurence of said predetermined condition whereby to expose said reflective surface in said housing for reflection of light signals through said aperture, and a remote scanning device continuously generating infrared signals in the direction of said aperture and detecting reflective infrared signals from said reflective surface when positioned in a reflective position.

4,806,926

ANTITHEFT DEVICE FOR AN AUDIO DEVICE

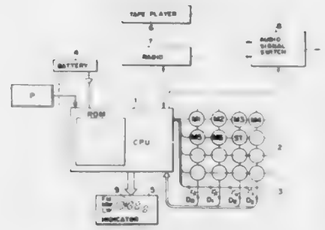
Takayuki Nakamura, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1986, Ser. No. 923,296

Claims priority, application Japan, Nov. 1, 1985, 60-245360

Int. Cl.⁴ G06F *7/04*

U.S. Cl. 340—825.31 **2 Claims**



1. An antitheft apparatus for an audio signal processing apparatus comprising:

a microprocessor operating according to an antitheft program stored therein and including volatile memory storage;

disabling means operable between an enabling and a disabling condition and responsive to enabling and disabling signal conditions from said microprocessor for enabling and disabling audio output from said audio signal processing apparatus;

power supply means for providing power to said audio signal processing apparatus and including a power supply remote from said microprocessor and connected thereto by interconnection cabling for providing continuous power to said microprocessor so long as said interconnection is not broken;

code setting means external to and connected to said microprocessor and containing a non-volatile stored digital antitheft code for providing said antitheft code to said microprocessor;

user-operated code inputting means for providing to said microprocessor a user-entered digital code;

said antitheft program including the steps of reading said antitheft code from said code setting means into said volatile memory and comparing said code in volatile memory with a subsequently received user-entered code, operating and maintaining said disabling means to said enabling condition responsively to a match between said user-entered code and said code stored in volatile memory, said microprocessor having associated therewith means responsive to disconnection of said power supply from said microprocessor for operating said disabling means to said disabled condition during the period subsequent to reconnection of said power supply and until re-entry through said code inputting means of a code matching said antitheft code.

4,806,927

COMMUNICATION CONTROL METHOD

Hiroshi Arai, Tokyo, Japan, assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 4, 1987, Ser. No. 10,928

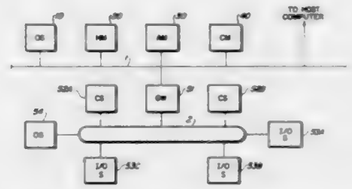
Claims priority, application Japan, Feb. 28, 1986, 61-43794

Int. Cl.⁴ H04Q *9/00*; H03J *3/00*

U.S. Cl. 340—825.050 **3 Claims**

1. In a control system, having at least one controller for communicating with at least one station within the control system, the controllers and the stations being operatively connected to a ring utilizing a token ring passing system, whereby the controllers require control of a token for initiating the communications, and further wherein said stations cannot obtain control of said token, a method of communicating between said controllers and said stations, said method comprising the steps of:

(a) sending an instruction to a predetermined station by a controller which has obtained control of the token and which desires to communicate with the predetermined station, and further wherein the instruction is of a predetermined type which includes a response request;



(b) receiving index data from the predetermined station, the index data indicating a store position of status information after the execution of th®instruction by the predetermined station;

(c) releasing control of said token; and

(d) the controller, upon subsequently gaining control of the token, retrieving the status information from the predetermined station indicated by the index data of step (b), thereby permitting the controller to verify the execution of the instruction without requiring the predetermined station to obtain control of the token.

4,806,928

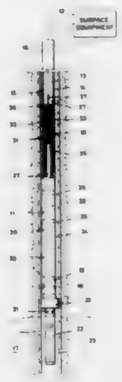
APPARATUS FOR ELECTROMAGNETICALLY COUPLING POWER AND DATA SIGNALS BETWEEN WELL BORE APPARATUS AND THE SURFACE

Anthony F. Veneruso, Richmond, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jul. 16, 1987, Ser. No. 74,445

Int. Cl.⁴ G01V *1/00*

U.S. Cl. 340—856 **44 Claims**



1. Well bore apparatus comprising:

a sub-surface tool including a selectively-operable means which includes at least one electrical device;

coupling means including inner and outer telescopically-interfitting coil assemblies, said coil assemblies further including,

inner and outer cores formed substantially of ferrite mate-

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rials having a DC bulk resistivity greater than ten thousand ohm-meters and cooperatively arranged so that said coil assemblies can be telescopically interfitted together, said ferrite material being selected from the group of metal ions consisting of manganese, nickel, zinc, magnesium, cadmium, cobalt, and cooper and having a curie temperature point greater than the maximum anticipated well bore temperature to which said coil assemblies will be exposed, said ferrite materials further including an additive of no more than about ten percent by weight of zirconia in a crystalline or uncrystalline form, and

inner and outer coils, disposed within said inner and outer cores, respectively wound around said inner and outer cores and electromagnetically intercoupled to one another whenever said coil assemblies are telescopically interfitted together,

means on said tool for retaining one of said coil assemblies in a position in a well bore where it can be telescopically interfitted with the other of said coil assemblies, and means for connecting said coil of said one coil assembly to said electrical device; and

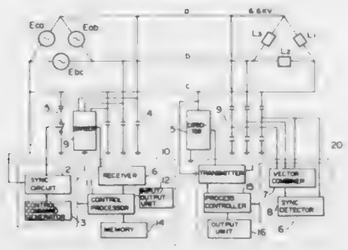
means on said other coil assembly for connecting its said coil to the conductors in a suspension cable supporting said other coil assembly for movement in a well bore to said position where said coil assemblies are telescopically interfitted.

4,806,929

REMOTE MONITOR CONTROL SYSTEM

Kazuo Nishijima, Hitachi; Terunobu Miyazaki, Ibaraki, and Eisaburo Sakou, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 31, 1987, Ser. No. 32,446
Claims priority, application Japan, Mar. 31, 1986, 61-73718
Int. Cl.⁴ H04Q *9/00*; **G05B** *23/02*
U.S. Cl. 340—825.060 **14 Claims**



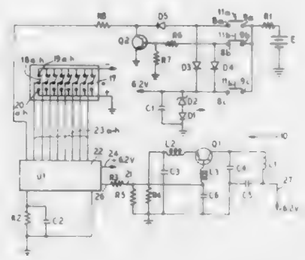
1. A remote monitor control system comprising a master station having means for communicating in synchronism with system communication clock signals for generating various commands required for monitor and control; a plurality of terminal stations having means for communication in synchronism with the system communication clock signals for receiving data relating to the conditions of objects being monitored and controlling objects to be controlled; and means for interconnecting said master station and said terminal stations by means of at least one communication line on which a signal establishing said system communication clock signals is obtained; wherein each of the terminal stations includes means responsive to receipt of a command from said master station for transmitting response data on said communication line at a respectively different time point form that of other terminal stations following the transmission of said command by the master station when the terminal station has response data to send, and means for shifting said time point for transmission of response data when said terminal station fails to detect transmission of response data from another terminal station which is to transmit response data at an earlier time point following transmission of said command by said master station.

4,806,930

RADIO CONTROL TRANSMITTER WHICH SUPPRESSES HARMONIC RADIATION

Bernard J. Wojciak, Jr., Woodridge, Ill., assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.

Continuation of Ser. No. 891,956, Aug. 1, 1986, abandoned. This application May 2, 1988, Ser. No. 188,645
Int. Cl.⁴ H04Q *7/00*; **H04B** *1/04*
U.S. Cl. 340—825.69 **4 Claims**



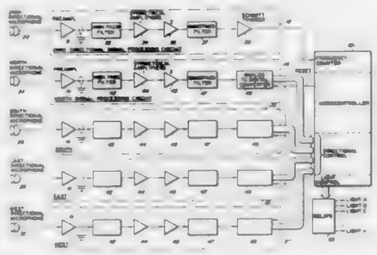
1. A coded radio frequency transmitter for remote control comprising, a transmit switch, an encoder connected to said transmit switch, code selector switches connected to said encoder, a radio frequency oscillator which oscillates at the desired radiation frequency connected to the output of said encoder and including a transistor amplifier and a first inductor connected in the emitter, collector or base circuit of said transistor so as to produce a high impedance to harmonics of said desired radiation frequency, wherein said first inductor is in the emitter circuit of said transistor amplifier, and including a second inductor which causes a high impedance to harmonics of said desired radiation frequency connected in the base circuit of said transistor.

4,806,931

SOUND PATTERN DISCRIMINATION SYSTEM

Thomas M. Nelson, Scotts Valley, Calif., assignor to Richard W. Clark, Phoenix, Ariz.

Filed Jan. 25, 1988, Ser. No. 147,900
Int. Cl.⁴ G08G *1/095*
U.S. Cl. 340—907 **18 Claims**



1. A sound discrimination and control system including in combination:

a first omni-directional sound pickup means;

trigger circuit means for producing a substantially square wave signal at the output thereof in response to an analog signal input;

first band-pass amplifier circuit means coupled between said first sound pickup means and the input of said trigger circuit means for supplying analog signals in a predetermined frequency band to said trigger circuit means from said sound pickup means;

second and third directional sound pickup means responsive to sounds from different directions;

first and second analog-to-digital converter means for producing a digital signal on the outputs thereof corresponding to the amplitude of analog signals on the inputs thereof;

second band-pass amplifier circuit means coupled between said second sound pickup means and the input of said first analog-to-digital converter means;

third band-pass amplifier circuit means coupled between said third sound pickup means and said second analog-to-digital converter means;

counter means coupled with the output of said trigger circuit means;

timer means coupled with said counter means for enabling operation of said counter means for predetermined time intervals;

pattern recognition comparator means coupled with said counter means for producing output signals indicative of recognition of a predetermined sound pattern;

control means coupled with the outputs of said first and second analog-to-digital signal converters for providing an output indicative of the relative magnitude of the amplitude of signals provided thereto; and

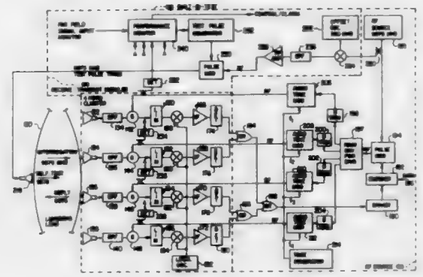
means coupled with said sound pattern recognition means and said control means for providing an output signal indicative of the presence of a predetermined sound pattern and of the direction of such predetermined sound pattern.

4,806,932

RADAR-OPTICAL TRANSPONDING SYSTEM

Bartow Bechtel, Richardson, Tex., assignor to Estropy, Inc., San Antonio, Tex.

Filed Mar. 11, 1986, Ser. No. 838,468
Int. Cl.⁴ G01S *13/80*
U.S. Cl. 342—33 **18 Claims**



1. An improved instrument landing and takeoff system comprising:

a. an airborne RF energy transmitter/receiver for transmitting RF interrogator signals along a path and receiving returns containing landing information back along the same path;

b. a stationary transponder including a stationary RF energy focusing means for focusing the RF interrogator signals, an array of active receive module means arranged in rows and columns each active receive module means of the array including means responsive to impinging focused RF energy signals for modulating signals with information pertinent to landing operations and returning the modulated RF interrogator signals through the focusing means for retransmission along the path from which they cam to the receiver of the airborne transmitter/receiver; and

c. wherein each of the receive module means of the array of active receive modules includes a receive module having an energy receptor for receiving the focused RF energy interrogator signals, and an amplifier responsive to the RF energy interrogator signals for amplifying said RF signals, and said means for modulating said RF signals includes a transmit module having an audio generator and data encoder, an audio frequency modulator responsive to the amplified RF signals, and audio frequency generator and data encoder output for producing an audio frequency amplitude modulated pulse train with identifying tone frequency according to locations and function in the array which corresponds to the beam position the module generates in space, and an energy feed means for transmission of the audio frequency amplitude modulated pulse train into the focusing means for retransmission back along the same path to the receiver of the transmitter/ receiver means.

4,806,933

CW AND PULSE CAPABLE CRYSTAL VIDEO RECEIVER

James D. Halsey, Charlottesville, and Ernest S. Gauser, Earlysville, both of Va., assignors to Sperry Marine Inc., Charlottesville, Va.

Filed Aug. 22, 1986, Ser. No. 899,262
Int. Cl.⁴ G01S *13/00*
U.S. Cl. 342—91 **7 Claims**

1. An apparatus including:

first means for receiving CW signals, video signals, and noise;

first threshold signal means coupled to said first receiving means for selectively providing first fixed threshold signals having amplitudes fixed at preselected levels and first variable threshold signals having amplitudes variable with noise and CW signal levels at said first receiving means;

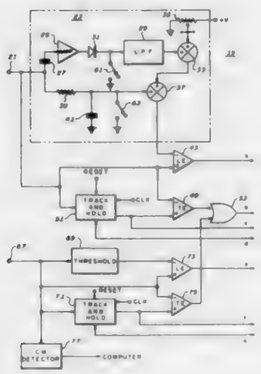
first comparator means coupled to said first receiving means and said first signal threshold means for providing signal detection indications when signals coupled from said first receiving means exceed threshold signals coupled from said first threshold signal means;

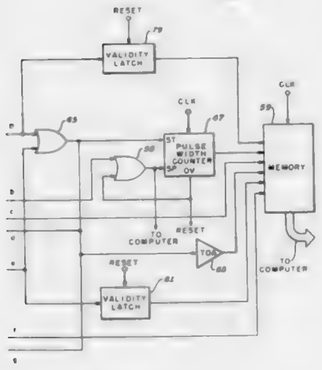
said first threshold signal means and said first first comparator means constructed and arranged to prevent CW signal detection when said first variable threshold is selected;

first signal level detecting means coupled to said first receiving means for providing signals at first predetermined levels below peak levels of signals coupled to said receiving means and holding said first predetermined levels for durations of said signals at said receiving means; and

second comparator means coupled to said first receiving means and said signal level detecting means for providing signals in accordance with signal levels at said first receiving means and said first predetermined levels;

said first signal level detection means and said second comparator means constructed and arranged to prevent detection of signals maintaining peak levels at said receiving means.



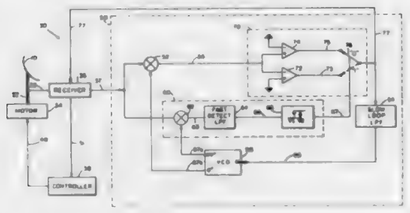


4,806,934

TRACKING CIRCUIT FOR FOLLOWING OBJECTS THROUGH ANTENNA NULLS

John E. Magoon, assignor to Raytheon Company, Lexington, Mass. Maynard, Mass.

Filed Apr. 20, 1987, Ser. No. 40,399
Int. Cl.[4] G01S *13/68*; H03L *7/10*; H03D *3/18*
U.S. Cl. 342—103 **7 Claims**



1. An improved phase locked loop comprising:

(a) oscillator means for producing a reference signal having a phase which varies in response to a control input;

(b) detection means, fed by an input signal and the reference signal, for providing an input reversal detection signal, such as input reversal detection signal having a first value when the phase of the input signal has reversed and a second value when the phase of the input signal has not reversed;

(c) phase reversing means, coupled to said detection means fed by the input signal, for providing a stabilized signal, the stabilized signal having a magnitude substantially proportional to the difference between the phase of the input signal and the phase of the reference signal when said detection means indicates the phase of the input signal has not reversed and substantially proportional to the opposite of the difference between the phase of the input signal and the phase of the reference signal when said detection means indicates the phase of the input signal has reversed, said phase reversing means comprising switching means, responsive to the input reversal detection signal, for deriving the stabilized signal from a first circuit when the input reversal detection signal has the first value and deriving the stabilized signal from a second circuit when the input reversal detection signal has the second value; and

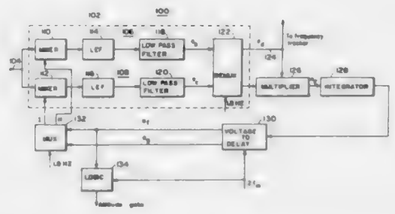
(d) means, coupled to said phase reversal means, for providing the control input of the oscillator means.

4,806,935

CLOSED LOOP VELOCITY/ALTITUDE SENSOR FOR FM-CW DOPPLER RADARS

Timothy G. Foxket, 209 Comly Rd., Apt. J27, Lincoln Park, N.J. 07035, and James R. Drake, 615 Madison Ct., Yorktown Heights, N.Y. 10598

Filed Sep. 17, 1987, Ser. No. 97,772
Int. Cl.[4] G01S *13/36*
U.S. Cl. 342—120 **11 Claims**



1. In a Doppler radar navigational system, the improvement comprising:

a closed loop altitude measuring circuit, including:

controlled delay means for establishing a loop phase shift within said closed loop circuit,

control means for controlling said controlled delay means to establish a loop phase shift corresponding to a relative phase shift between a modulated signal transmitted by the navigational system and a reflected signal received thereby, and

logic means for providing an output signal representative of said loop phase shift established by said controlled delay means

said closed loop circuit further including first and second channels for processing first and second quadrature signals, and

multiplying means for multiplying said first and second quadrature signals processed by said first and second channels and for providing an output signal corresponding to the product obtained thereby, and

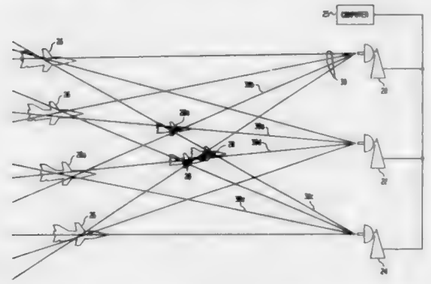
said control means including processing means for processing said output signal of said multiplying means to provide a control voltage to said controlled delay means for establishing said loop phase shift.

4,806,936

METHOD OF DETERMINING THE POSITION OF MULTIPLE TARGETS USING BEARING-ONLY SENSORS

Patrick R. Williams, Costa Mesa, and Henry A. Heldary, Anaheim, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 20, 1986, Ser. No. 876,948
Int. Cl.[4] G01S *13/06*
U.S. Cl. 342—126 **16 Claims**



1. A method of determining the positions of a plurality of targets using only the bearings of the targets and in which true targets are distinguished from false targets, comprising the steps of:

(A) viewing the targets with at least three bearing sensors, each of the sensors receiving a strobe from a true target along a line indicating the bearing of the true target, the bearing lines intersecting to form triangles indicating the positions of the true targets and of the false targets;

(B) comparing the size and position of each of the triangles with preselected values to distinguish one set of triangles indicating true targets from another set of triangles indicating false targets including eliminating by integer programming those triangles in excess of one which lie along a single bearing line; and

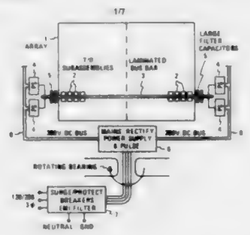
(C) calculating the positions of said one set of triangles using the bearing lines which define the triangles in said one set.

4,806,937

POWER DISTRIBUTION SYSTEM FOR A PHASED ARRAY RADAR

William Pell, North Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Dec. 31, 1987, Ser. No. 140,292
Int. Cl.[4] G01S *13/00*
U.S. Cl. 342—175 **11 Claims**



1. A power distribution system for an array of transmitting sub-assemblies containing transmitting power amplifiers arranged in rows and columns behind the antenna elements in a phased array radar system, the power amplifiers in said sub-assemblies simultaneously demanding high current low voltage dc power in pulses whose duration may vary, said system comprising

(A) a plurality of subassembly connectors, each for supplying low voltage dc power to an associated subassembly, said connectors being disposed in rows and columns at said subassembly positions,

(B) a first plurality of energy storage capacitors, each disposed at a subassembly position and connected to the proximate subassembly power connector, each capacitor having adequate capacity and an adequately low series resistance for providing the peak power required by the associated subassembly during a first short period embracing the beginning of each pulse while maintaining the voltage at said subassembly power connector within a predetermined difference from the no load value acceptable for operation of said power amplifiers, and

(C) a plurality of high current, low voltage, high power dc supplies, the supplies being disposed at the ends of said rows of subassemblies with adequate average power capacity for operating the associated transmitting sub-assemblies in the associated row,

(D) a second plurality of large, energy storage capacitors, one capacitor being disposed at at least one end of each row of subassemblies, and having adequate energy storage capacity and an adequately low series resistance for providing the peak power required by the subassemblies in the associated row for a second longer period commencing before the end of said first period and embracing the final portions of said pulses, and

(E) a plurality of laminated bus bars, one for each row of sub-assemblies, in which each power transmission path consists of an ungrounded conductor of rectangular cross section disposed between a pair of grounded conductors and separated by dielectric to double the effective width of the path for efficient high frequency transmission, said large storage capacitors and said high power supplies being connected at the ends of said conductors and said subassembly power connectors being connected at said subassembly positions along said conductors,

said laminated bus bar being dimensioned with adequate width to exhibit an adequately low high frequency series inductance and an adequately low high frequency series resistance and said large energy storage capacitors having an adequately low series resistance to maintain the voltage at the subassembly connectors within said predetermined difference from the no load value from the end of the first period through said second period.

4,806,938

INTEGRATED SELF-ADAPTIVE ARRAY REPEATER AND ELECTRONICALLY STEERED DIRECTIONAL TRANSPONDER

Lee A. Meadows, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

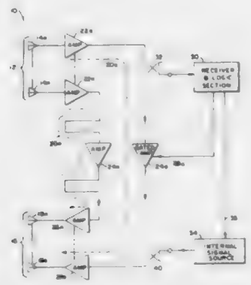
Continuation of Ser. No. 930,029, Nov. 10, 1986, abandoned, which is a continuation of Ser. No. 673,446, Nov. 20, 1984, abandoned. This application Sep. 3, 1987, Ser. No. 94,060
Int. Cl.[4] H01Q *1/00*
U.S. Cl. 342—370 **11 Claims**

1. A radio frequency antenna system, comprising:

(a) an antenna system having an array of transmitting antenna elements and an array of receiving antenna elements, corresponding individual transmitting antenna elements being coupled to corresponding individual receiving antenna elements through a set of electrically isolated electrical paths;

(b) a beam forming network having a plurality of input ports and a plurality of output ports;

(c) means for coupling radio frequency energy to a selected one of the input ports; and



(d) means for coupling the output ports of the beam forming network to the antenna elements in the transmitting array of antenna elements.

4,806,939

OPTIMIZATION OF CONVERGENCE OF SEQUENTIAL DECORRELATOR

Christopher R. Ward, Bishops Stortford, and Anthony J. Robson, Water Beach, both of England, assignors to STC, PLC, London, England

Filed Dec. 31, 1985, Ser. No. 815,046

Claims priority, application United Kingdom, Jan. 4, 1985, 8500147

Int. Cl.[4] G01S *3/28*

U.S. Cl. 342—378 **2 Claims**



1. A sequential decorrelator arrangement for an adaptive antenna array comprising a plurality of antenna elements the outputs of which feed a cascaded beamforming network having a succession of stages, each stage including a group of signal decorrelation internal cells, the group in each stage having one less internal cell than the group of the preceding stage and the first stage group having one less internal cell than the number of antenna elements, each internal cell of the first stage having as one input the output of a respective antenna element and as a second input the output of the remaining antenna element to produce an output signal and each internal cell of each subsequent stage having as one input the output of a respective internal cell of the preceding stage and as a second input the output from the remaining internal cell of the preceding stage to produce an output signal, the whole arrangement including means for applying weighting to the signals applied as inputs to the internal cells of at least the first stage, wherein the decorrelation cells in each stage comprise means for applying simple transforms to the input data in accordance with a weighting factor common to all the internal cells in a stage, each stage further including a boundary cell for deriving said weighting factor from the weighting factor deriving boundary cell of the previous stage and the output of one internal cells of the preceding stage, and each stage including means for scaling the output of each internal cell in the deriving stage by a scaling factor calculated from the weighting factor boundary cell of the stage such that the network forms an exact least squares residual of the input signals.

4,806,940

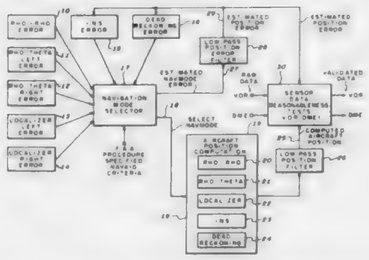
NAVIGATION MODE SELECTION APPARATUS

Blake G. Harral, Scottsdale, Ariz., and Michael D. Reed, Marlboro, Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 30, 1986, Ser. No. 858,410

Int. Cl.[4] G01S *3/02*; G01C *21/00*; H04B *11/16*

U.S. Cl. 342—451 **5 Claims**



1. A navigation mode selection apparatus for utilization in a navigation system of the type having a plurality of navigation modes, each mode providing a position signal generated by a respective one of a plurality of navigation mode position determining procedures, comprising:

error estimator means for providing mode error signals representative of position error estimates for each of said plurality of navigation modes; and

navigation mode selector means responsive to said mode error signals for selecting from said plurality of navigation modes one navigation mode having a mode error signal representative of a position error estimate which is less than position error estimates represented by mode error signals from other navigation modes of said plurality of navigation modes and for providing said mode error signal of said one navigation mode;

low pass position filter means having a predetermined time constant and coupled to receive said position signal for providing said position signal with a slow-in function, thereby eliminating abrupt position signal changes when switching between navigation modes;

low pass position error filter means having a time constant equal to said predetermined time constant and coupled to receive said mode error signals of said one navigation mode from said navigation mode selector means for providing a position error signal representative of estimated position error to said one navigation mode; and

validation means coupled to said low pass position filter means and said low pass position error filter means for validating input navigation data presented by said one navigation mode by comparing said position signal to a threshold set in accordance with said position error signal, whereby an unfavorable comparison of said position signal to said threshold causes said navigation mode selector means to select a navigation mode other than said one navigation mode.

4,806,941

MICROWAVE COMPONENT

Reinhard Knöchel, Elmshorn, and Jürgen Köhler, Halstenbek, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 11, 1987, Ser. No. 48,192

Claims priority, application Fed. Rep. of Germany, May 17, 1986, 3616723

Int. Cl.[4] H01Q *00/00*

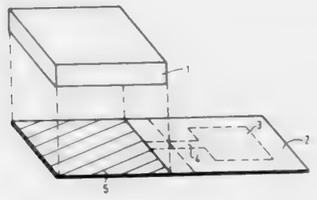
U.S. Cl. 343—700 MS **4 Claims**

1. A microwave component for supporting and electrically connecting a planar, electrically-conductive aerial and a microwave circuit, said component comprising:

(a) a dielectric substrate having opposing first and second sides and a transverse side extending between the first and second sides;

(b) a flexible dielectric film wrapped around the dielectric substrate and covering at least part of each of the first side, the second side, and the transverse side; and

(c) an electrically conductive layer serving as a ground plane disposed between the first side and the flexible dielectric film;



said flexible dielectric film having a continuous surface including a portion overlying the second side for supporting the aerial, a portion overlying the electrically-conductive layer for supporting the microwave circuit, and a portion overlying the transverse side for supporting a feeder line for electrically connecting the aerial to the microwave circuit.

4,806,942

AUTOMOBILE TV ANTENNA SYSTEM

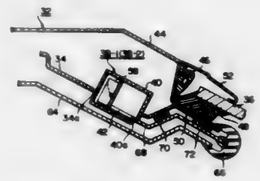
Junso Ohe, Toyota, and Hiroshi Kondo, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 10, 1986, Ser. No. 872,409

Claims priority, application Japan, Jan. 10, 1985, 60-126574; Jun. 21, 1985, 60-136609; Jun. 21, 1985, 60-136690; Jun. 28, 1985, 60-143091; Jun. 28, 1985, 60-143092

Int. Cl.[4] H01Q *1/32*

U.S. Cl. 343—713 **16 Claims**



1. An automobile TV antenna system comprising: pickup means

a plurality of high-frequency disposed on a vehicle body at a plurality of positions spaced from each other in a concealed state without any external exposure; and

diversity circuit means for automatically selecting from among said plurality of pickups the pickup that exhibits the optimum reception at any give time;

each of said high-frequency pickup means including: an antenna disposed in close proximity to a marginal edge portion of said vehicle body in order to pick up the high-frequency surface currents which flow concentratedly on said marginal edge portion of said vehicle body; and a casing having an opening through which said antenna is disposed in close proximity to the marginal edge portion of the vehicle body.

4,806,943

SET OF TRANSMIT/RECEIVE ANTENNAS SITUATED AT A FIXED STATION FOR A TWO-WAY RADIO LINK WITH A VEHICLE

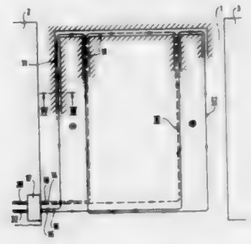
Miguel Doucet, Evry, France, assignor to Compagnie Generale d'Automatisme, Paris, France

Filed Nov. 24, 1987, Ser. No. 124,523

Claims priority, application France, Nov. 25, 1986, 86 16397

Int. Cl.[4] H01Q *11/12*

U.S. Cl. 343—742 **1 Claim**



1. A set of transmit/receive antennas situated at a fixed station for a two-way radio link with a vehicle, said vehicle being provided with a self-contained transmitter/receiver device fixed to the bottom of the vehicle and including a transmit antenna in the form of a vertical axis coil so as to generate a vertical electromagnetic field and a receive antenna in the form of a horizontal axis coil disposed transversely relative to the vehicle, wherein the set of transmit/receive antennas at the fixed station comprises a receive antenna constituted by a first cable comprising a first plurality of conductors and a rectangular loop whose long dimension runs parallel to the direction of vehicle displacement, and a transmit antenna constituted by a second cable comprising a second plurality of conductors and forming two narrow elongate rectangular loops parallel to each other and extending in the direction of vehicle displacement so as to create a horizontal electromagnetic field extending perpendicularly to the direction of vehicle displacement, said first and second cables being placed in slots formed in the roadway where the vehicle passes, and subsequently closed; the ends of the two cables being brought together to the side of the roadway in a junction box for enabling various connections to be performed, said junction box also receiving two screened cables, one of which serves to feed the transmit antenna, and the other of which serves to receive current picked up by the receive antenna.

4,806,944

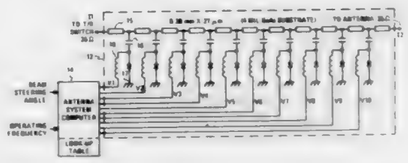
SWITCHABLE MATCHING NETWORK FOR AN ELEMENT OF A STEERABLE ANTENNA ARRAY

Anthony W. Jacomb-Hood, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Sep. 14, 1987, Ser. No. 95,927

Int. Cl.[4] H01Q *3/00*

U.S. Cl. 343—745 **13 Claims**



1. In an antenna system, the combination comprising;

(a) an electronically steerable array comprising an n-fold plurality of like antenna elements, each antenna element exhibiting a given purely resistive impedance at a given

frequency and beam steering angle, said parameters of frequency and beam steering angle jointly and severally affecting said impedance,

(b) an n-fold plurality of like, switchable matching networks, each matching network being serially connected between an antenna utilization device such as a transmitter element, a receiver element, or both at one connection point and a corresponding antenna element at the other connection point and providing a bidirectional transmission path between said connection points, and

each network comprising a plurality of serially connected transmission line elements with a serial and a shunt portion and having a characteristic impedance matched to said given impedance, successive transmission line elements producing a delay which accumulates stepwise as a function of serial position in said matching network;

the shunt portion of each transmission line element comprising a switchable reactance element, which in one state preserves said characteristic impedance, and in the other state introduces a reactive mismatch comparable to that introduced by said antenna element when at least one of said parameters varies, and

(c) control means set in accordance with at least one of said parameters for switching one reactance element to said other state in a selected (i^{th}) transmission line element in each of said n-fold switchable matching networks to produce a reactive mismatch at a phase shift selected to offset said antenna mismatch and transform said antenna impedance to a value approximating said given impedance in each element of said steerable array.

4,806,945

RECEIVING HEAD END FOR POLARIZED MICROWAVES, PARABOLIC AERIAL AND RECEIVING STATION EQUIPPED WITH SUCH A RECEIVING HEAD END

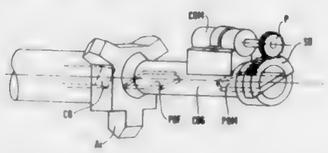
Jean-Pierre M. Cormier, Louviers, and Philippe N. Horvat, Saint Pierre du Vauvray, both of France, assignors to U.S. Philips Corp., New York, N.Y.

Filed Sep. 18, 1987, Ser. No. 98,354

Claims priority, application France, Sep. 19, 1986, 86 13139

Int. Cl.⁴ H01Q *19/00, 19/12*

U.S. Cl. 343—756 **5 Claims**



1. A head end for selectively receiving microwaves of different polarizations, said head end comprising, in order along an axis of propagation:

a. a movable depolarizer which is rotatable around the axis of propagation, through an angle of ninety degrees, to either:

(1) a position P for effecting the conversion of incident microwaves having polarizations Di, Gi, Xi, Yi to output microwaves having polarizations Y, X, D, G, respectively,

(2) a position P' for effecting the conversion of incident microwaves having said polarizations Di, Gi, Xi, Yi to output microwaves having said polarizations X, Y G, D, respectively,

where D represents a right-hand circularly-polarized microwave, G represents a left-hand circularly-polarized microwave, and where X and Y represent respective mutually-orthogonal rectilinearly-polarized microwaves;

b. a waveguide collector modifiable to either a first or second configuration, said first configuration effecting propagation of microwaves having the polarizations X, Y without converting said microwaves to a different polarization, said second configuration effecting propagation of microwaves having the polarizations D, G and conversion thereof to microwaves having the polarizations X, Y, respectively;

c. a mode selector for providing from the microwaves propagated by the waveguide collector selectively-available microwaves having either the X or Y polarization; and

d. a converter for converting the microwaves provided by the mode selector to electrical signals representative thereof.

4,806,946

LIGHT BEAM SCANNING RECORDING METHOD

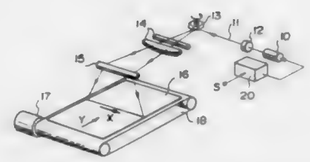
Masahiro Ohnishi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 23, 1987, Ser. No. 137,288

Claims priority, application Japan, Dec. 29, 1986, 61-310247

Int. Cl.⁴ G01D *9/00, 9/42*

U.S. Cl. 346—1.1 **4 Claims**



1. A light beam scanning recording method for recording a continuous tone image on a photosensitive material by scanning a light beam deflected by a rotating polygon mirror on the photosensitive material and carrying out pulse number modulation or pulse width modulation of the light beam in accordance with image signals,

wherein the improvement comprises the steps of:

(i) scanning a single picture element string by said light beam a plural number of times which is equal to integral multiples of the number of mirror surfaces of said rotating polygon mirror, and

(ii) distributing the number of pulses per picture element or the pulse width per picture element among said plural number of times of scanning so that the total number of pulses per picture element or the total pulse width per picture element in said plural number of times of scanning coincides with a predetermined value.

4,806,947

SERIES TYPE THERMAL WRITING-HEAD FOR PRINTER

Patrick Vegeais, Saint Germain en Laye, and Michel Bergougnoux, Francoville, both of France, assignors to Societe D'Applications Generales D'Electricite, Paris, France

Filed Feb. 17, 1987, Ser. No. 15,385

Claims priority, application France, Feb. 21, 1986, 86 02392

Int. Cl.⁴ G01D *15/10*

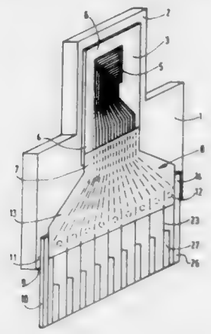
U.S. Cl. 346—76 PH **6 Claims**

1. A thermal writing head for a printer comprising:

a substrate supporting on only one face thereof a plurality of resistive writing elements and associated conductors;

a flexible film having a plurality of conductive tracks printed on only one face thereof, said film having a first end portion secured to said substrate such that the conducting tracks of said film are facing and electrically connected to corresponding conductors of said substrate; and

a connection support having conductors printed on two opposite faces thereof, a conductor on one of the opposite faces of said connection support being electrically connected to an associated conductor on the other opposite face of said connection support, said connection support



being secured to a second end portion of said flexible film such that the conducting tracks of said film are facing and electrically connected to respective conductors on one of the opposite faces of said connection support.

4,806,948

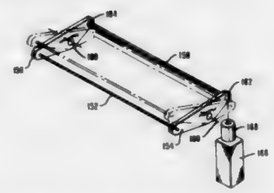
RIBBON SEPARATING MECHANISM FOR THERMAL PRINTER

Richard G. Bangs, Ithaca, N.Y.; Michael O. Grey, Winter Springs, Fla., and Sik-Pin Kwan, Ithaca, N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 17, 1987, Ser. No. 15,657

Int. Cl.⁴ E01D *15/10*

U.S. Cl. 346—76 PH **25 Claims**



1. Apparatus for separating a thermal transfer medium from a record medium subsequent to a printing operation in a thermal printer, said apparatus comprising

stripping means,

means supporting said stripping means from said printer in a first position between and engageable with the facing surfaces of the transfer medium and the record medium, and

means for actuating said stripping means from said first position to a second position wherein the stripping means is in contact with the facing surfaces of said transfer medium and said record medium for separating said transfer medium from said record medium upon advancement of said record medium.

4,806,949

MULTITONE THERMAL TRANSFER RECORDING METHOD AND APPARATUS

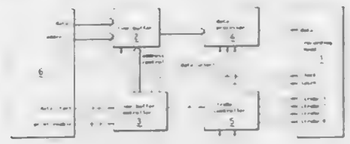
Akihiko Onuma, Hirotsuka, and Iwao Fujii, Sagamihara, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 22, 1987, Ser. No. 111,252

Claims priority, application Japan, Oct. 24, 1986, 61-254447; Nov. 10, 1986, 61-268329

Int. Cl.⁴ G01D *9/00*

U.S. Cl. 346—76 PH **12 Claims**



1. A thermal transfer recording method for printing a multitone tone image by applying energy to a recording head in synchronism with a strobe signal for a period of time corresponding to digital tone data which represent the levels of tones as binary digits, comprising the steps of:

outputting a least significant digit of the digital tone data as a first signal;

outputting second signals repeatedly the number of times being equal to the digital tone data of binary form except the least significant digit data; and

driving the recording head in response to said first and second signals so as to electrify the recording head for the unit time according to the first signal and for a period of twice as long as the unit time according to the second signal.

3. A thermal transfer multitone recording apparatus for printing a multiple tone image by applying energy to a recording head in synchronism with a strobe signal for a period of time corresponding to digital tone data which represent the levels of tones as binary digit, comprising:

means for generating a least significant digit of the digital tone data as a first signal;

means for generating second signals repeatedly the number of times being equal to the digital tone data of binary form except the least significant digit data;

means for driving the recording head in response to said first and second signals so as to electrify the recording head for the unit time according to the first signal and for a period of twice as long as the unit time according to the second signal.

4,806,950

IMAGE RECORDING APPARATUS FOR HEAT GENERATION TYPE

Kiyoshi Sekine, Koshigaya, and Akio Ohtani, Hino, both of Japan, assignors to Kowa Company, Ltd., Nagoya, Japan

Filed Jun. 17, 1987, Ser. No. 63,873

Claims priority, application Japan, Jun. 23, 1986, 61-144957

Int. Cl.⁴ G01D *15/10*

U.S. Cl. 346—76 PH **8 Claims**

1. A heat generating image recording apparatus comprising:

a thermal head having a plurality of heat generating resistors arranged in a line extending in a width direction of a record medium, said resistors recording respective image dots in a dot line on said recording medium;

a means for feeding the record medium in a direction perpendicular to the width direction of the record paper past said head;

a means for generating pre-heat pulses, said pre-heat pulses having pulse characteristics which determine a background level of an image to be recorded;

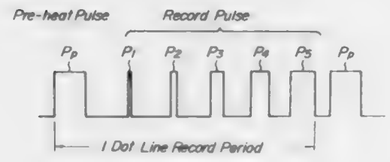
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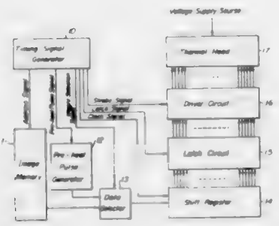
a means for generating a record signal for each of said resistors, each of said record signals determining a gray level of a respective image dot in a dot line, a plurality of the record signals being produced corresponding to each dot line in accordance with an image signal to be recorded; and

a means for supplying heating currents to respective heat generating resistors in a parallel manner for recording image dots in a dot line, each said image dot being recorded in accordance with a combination of a pre-heat pulse and a record signal.

8. A heat generation image recording apparatus comprising:

a thermal head having a plurality of heat generating resistors arranged in a line extending in a width direction of a record medium, said resistors recording respective image dots in a dot line on said recording medium;





a means for feeding the record medium in a direction perpendicular to the width direction of the record paper past said head;

a means for generating a record signal for each of said resistors, each of said record signals being composed of one, or a combination of more than one, of a plurality of record pulses the number of which is equal to the number of digits composing a binary number representing a gray level of a dot to be recorded and whose pulse widths are related to binary weights of said digits; and

a means for supplying to respective heat generating resistors heating currents in a parallel manner in accordance with an associated record signal.

4,806,951

OPTICAL PRINTER

Akira Arimoto, Kodaira; Susumu Saito, Hachiouji, and Takeshi Mochizuki, Mito, all of Japan, assignors to Hitachi Koki Co., Ltd. and Hitachi Ltd., both of Tokyo, Japan

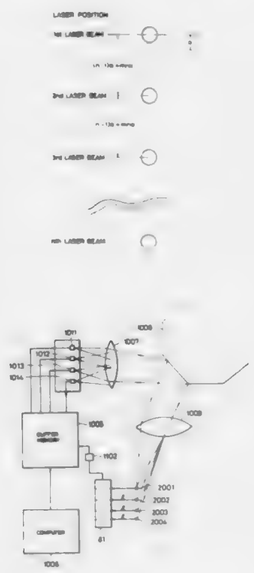
Filed Feb. 8, 1988, Ser. No. 153,005

Claims priority, application Japan, Mar. 6, 1987, 62-50096

Int. Cl.[4] G01D *9/42, 15/14;* **H04N** *1/23*

U.S. Cl. 346—108 **4 Claims**

1. An optical printer wherein a plurality of laser beams are used simultaneously for a scanning operation using a single optical deflector, characterized in that the distance between the adjacent laser beams in the sub-scanning direction on a photosensitive body is set in accordance with the equation $l=(n-1)a+m\cdot na$, wherein a is the distance between adjacent



printing scanning lines; n the number of said laser beams; and m a positive integer.

4,806,952

INFORMATION RECORDING APPARATUS FOR RECORDING/REPRODUCING INFORMATION BY IRRADIATING AN INFORMATION RECORDING MEDIUM WITH AN ENERGY BEAM

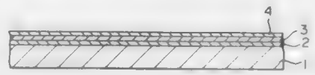
Tetsuya Nishida, Koganei; Motoyasu Terao, Tokyo; Yasushi Miyauchi, Hachioji; Shinkichi Horigome, Tachikawa; Kazuo Shigematsu, Saitama; Norio Ohta, Sayama; Toshimitsu Kaku, Sagamihara, and Masahiro Ojima, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 2, 1987, Ser. No. 69,177

Claims priority, application Japan, Jul. 4, 1986, 61-156101

Int. Cl.[4] G01D *9/42*

U.S. Cl. 346—108 **7 Claims**



1. An information recording apparatus comprising:

information recording medium; and

means for at least one of recording and reproducing information by irradiating said information recording medium with an energy beam pulse,

whereby a condition represented by

$$\alpha < \tau < \beta, \alpha = A\frac{arl}{v}, \beta = B\frac{arl}{v}$$

is satisfied so that an amplitude of the reproduced signal obtained from an area on said medium, where the energy

supplied from said energy beam pulse changes rapidly, changes to one direction immediately after changing to an opposite direction, where

τ: time necessary for the phase change in the recording medium,

α: time during which the temperature of a portion of the recording medium where the falling part of the energy beam pulse is irradiated passes through a phase-change temperature area,

β: time during which the temperature of a portion of the recording medium where the continuous part of the energy beam pulse is irradiated passes through the phase-change temperature area,

a: amount of thermal diffusion of the recording medium including a recording film and a protective layer,

A: constant, B: constant, $A<B$,

r: radius of the projected energy beam,

v: linear velocity of the recording medium,

l: pulse width of the beam pulse, and

$a \propto$ (thermal conductivity) (specific heat)$^{-1}$ (density)$^{-1}$ (film thickness).

4,806,953

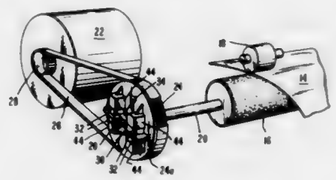
ACOUSTIC ISOLATION TIMING BELT PULLEY FOR DRAFTING PLOTTERS

Kenneth A. Regas, Poway; Erich E. Coiner, San Diego, and Frederick W. Bellicke, Escondido, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 26, 1987, Ser. No. 19,405

Int. Cl.[4] G01D *15/24*

U.S. Cl. 346—136 **19 Claims**



3. An acoustic isolation device for large format drafting plotters including a paper drive motor, a drive roller for moving a plot medium and a drive shaft for coupling said motor to said drive roller, comprising components inserted in a drive train between a positioning servo motor associated with said paper drive motor and said plot medium being positioned, which components increase the compliance of the drive train and add internal damping such that the thus-modified drive train remains stiff enough to transmit position changes at desired frequencies but rolling off to damp undesired frequencies between said paper drive motor and said plot medium, whereby transmission of acoustic noise from motor to medium is attenuated and resonance of said drive shaft and said drive roller is reduced.

4,806,954

PEN CARRIAGE SUSPENSION FOR GRAPHIC RECORDER

Robert H. Niemeyer, III, Martinez, Calif., assignor to AM International Corporation, Chicago, Ill.

Filed Jul. 20, 1987, Ser. No. 75,421

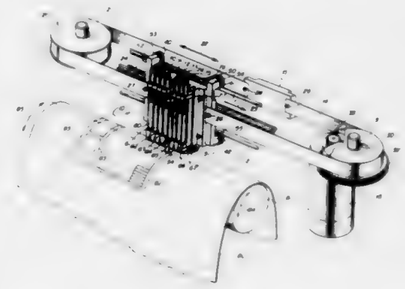
Int. Cl.[4] G01D *15/16*

U.S. Cl. 346—139 R **13 Claims**

9. For use in supporting a pen carriage in rolling engagement with a pair of opposed spaced carriage tracks in a predetermined angular relationship with the tracks, pen carriage suspension means comprising:

a quartet of wheels configured to engage the pen carriage tracks;

a pair of carriage supports rigidly coupled to the pen carriage at spaced-apart positions thereon, each defining a rigid wheel support supporting one of said wheels in rigid engagement with one of the pen carriage tracks and each



defining moveable wheel supports supporting one of said wheels in flexible engagement with the other carriage track,

said moveable wheel supports flexing to accommodate spacing variations between the tracks without disturbing the angular relationship between the pen carriage and the pen carriage tracks.

4,806,955

INK JET PRINTER OF THE INK-ON-DEMAND TYPE

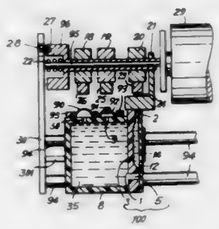
Haruhiko Koto; Junichi Okada; Hiroshi Ishii, and Kenji Sawada, all of Shiojiri, Japan, assignors to Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 906,686, Sep. 10, 1986, abandoned, which is a continuation of Ser. No. 764,698, Aug. 12, 1985, abandoned, which is a continuation of Ser. No. 541,628, Oct. 13, 1983, abandoned. This application Mar. 11, 1988, Ser. No. 170,615

Claims priority, application Japan, Oct. 14, 1982, 57-180176; Dec. 7, 1982, 57-215263; Jan. 17, 1983, 58-5501; Jul. 12, 1983, 58-126668; Jul. 20, 1983, 58-132162; Aug. 23, 1983, 58-153660

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—140 R **7 Claims**



1. An ink-on-demand type ink jet printer comprising a printer head, said printer head including at least one nozzle, pressure chamber, and means for pressurizing an ink in said pressure chamber so as to effect ejection of an ink droplet from a nozzle, a pump means for pressurizing an ink in said printer head, a pump driving means for driving said pump means continuously for a predetermined period of time during which a small amount of ink is partially ejected from said nozzle, and a nozzle cover means for selectively covering said nozzle, said nozzle cover means moving to cover said nozzle during said

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predetermined period of time when said pump driving means is operating while ink is being ejected from said nozzle, further comprising first, second and third coaxial cams, an ink container having a pump hole and a vent hole, a pump lever drivable by said first cam for pushing said pump means towards said pump hole, a vent hole cover, a vent hole lever drivable by said second cam for pushing said vent hole cover toward said vent hole, and a cover lever having said nozzle cover means drivable by said third cam for closing said nozzle.

4,806,956

RECORDING ELECTRODE FOR INK DOT PRINTER

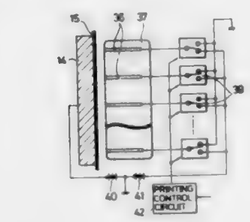
Hisashi Nishikawa, Suntoh, and Mitsuharu Endo, Shizuoka, both of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

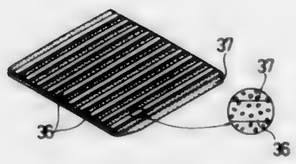
Continuation-in-part of Ser. No. 838,754, Mar. 12, 1986, abandoned. This application Apr. 8, 1988, Ser. No. 180,689

Claims priority, application Japan, Mar. 20, 1985, 60-56582; Jul. 5, 1985, 60-204846

Int. Cl.⁴ G01D *15/16*

U.S. Cl. 346—140 R **6 Claims**





1. An ink dot printer wherein a recording electrode fed with ink at the fore end thereof is disposed opposite to an opposed electrode through a recording medium, and a picture is drawn with the ink sputtered from the fore end of said recording electrode toward the recording medium by generating a potential difference between said opposed electrode and said recording electrode, said ink dot printer characterized in that said recording electrode is composed of a conductive material formed on an ink supply member by a thin-film technique; wherein said ink supply member has both an insulation property and an ink-impregnation property.

4,806,957

ELECTROSTATIC PRINTHEAD AND METHOD OF MANUFACTURE

David T. Beegan, Newport Beach, Calif., assignor to Calcomp Inc., Anaheim, Calif.

Filed Mar. 21, 1988, Ser. No. 170,439

Int. Cl.⁴ G01D *15/06*

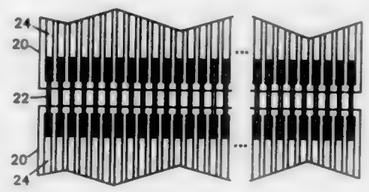
U.S. Cl. 346—155 **4 Claims**

1. The method of manufacturing electrostatic printhead portions having a row of dot-producing conducting printwire ends at a planar print face comprising:

(a) disposing a pair of printed circuit boards containing a plurality of parallel, spaced, flat, conductor strip ends along edges thereof in a common plane with the conductor strip ends disposed opposite one another in pairs;

(b) wire bonding connecting wires between the pairs of strip ends;

(c) embedding the connecting wires in an insulating material which will adhesively bond to the printed circuit boards along the edges thereof and cure into a hard material forming the body of the resultant printhead elements; and,



(d) cutting the cured insulating material between the edges of the printed circuit boards to form a pair of planar print face surfaces with the ends of the connecting wires exposed, thus producing two printhead portions each attached to a printed circuit board and having a single row of printwires at the print face thereof.

4,806,958

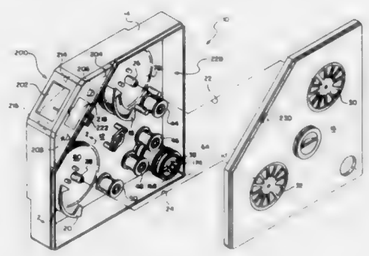
CASSETTE/MACHINE OPTICALLY COUPLED INTERFACE

David Momot, and Easley E. Townsend, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 11, 1988, Ser. No. 142,576

Int. Cl.⁴ G03B *17/24*

U.S. Cl. 354—21 **6 Claims**



1. In the combination of a photographic device and a film cassette, said photographic device having a cassette chamber for receiving said cassette in an operative position, said cassette having a housing including supply and takeup means within said housing, the improvement comprising:

electronic memory means carried by said housing, said memory means including semi-conductor memory circuits for recording information regarding the cassette or film contained therein;

optically coupled interface means carried by said cassette and associated with similar means of said photographic device for allowing two-way communication between said cassette and said device when said cassette is operatively inserted in said cassette chamber; and

a power source carried by said housing for operating said memory means and said interface means carried by said cassette.

4,806,959

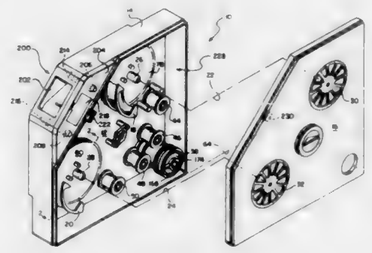
CASSETTE ORIENTATION DETECTION APPARATUS

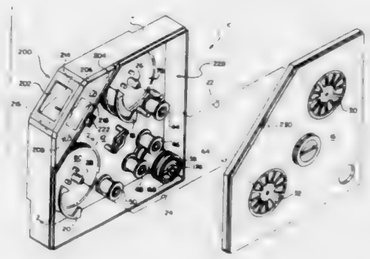
Easley E. Townsend, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 11, 1988, Ser. No. 142,577

Int. Cl.⁴ G03B *17/26, 17/28*

U.S. Cl. 354—21 **6 Claims**





1. In a reversible film cassette adapted to be loaded in either of two positions into a photographic device having means for advancing film in said cassette in one direction relative to said photographic device to expose successive areas of said film in said cassette, said cassette including, a housing, a film supply reel and take-up reel, a film strip connected to said reels at opposite ends thereof with the major portion of said film initially wound upon supply reel, the proper exposure of said film being effected by first loading said cassette into said photographic device in a first orientation in which the film therein is transferred by said film advancing means from said supply reel to said take-up reel and, after substantially all of said film has been so transferred, reloading said cassette into said photographic device in a second orientation in which the film therein is then transferred from said take-up reel back to said supply reel, the improvement comprising:

electronic means including a source of electrical power in said cassette for receiving and generating communication signals; and

interface means on opposite sides of said cassette for establishing a first communication mode between said cassette and said device when said cassette is loaded into said device in said first orientation and for establishing a second communication mode between said cassette and said device when said cassette is loaded into said device in said second orientation, whereby the communication mode by which signals are communicated to said device is established by the orientation of the cassette.

4,806,960

CASSETTE INFORMATION CONTROLLER AND MEMORY

David Momot; Easley E. Townsend, and Michael W. LaCourt, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 11, 1988, Ser. No. 142,578

Int. Cl.⁴ G03B *17/18, 17/26*

U.S. Cl. 354—21 **9 Claims**

1. In the combination of a photographic device and a film cassette, said cassette having a housing including supply and take-up means within said housing, the improvement comprising:

electronic memory means carried by said housing, said memory means including semi-conductor memory circuits wherein information as to the cassette or film contained thereinis represented by the state of said circuits;

display means carried by said housing to present information from said memory means relating to said cassette and said film;

a power source carried by said housing to operate said memory means and said display means when said cassette is removed from said photographing device;

interface means for establishing a two-way communications path between said memory means and said photographing device when said cassette is operatively positioned in said device;

recording-reproducing means associated with said photographic device for renewing a portion of the data recorded in said memory means via said interface means; and

reproducing means associated with said photographic device for reproducing the data previously stored in said memory means for use in said photographic device.

4,806,961

PHOTOGRAPHIC CAMERA

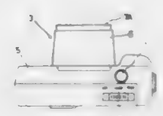
Mamitoshi Kasaltani, Osaka; Masaiko Isawa; Motohiro Nakanishi, both of Kobe; Hiroshi Ootsuka, Sakai; Yoshinobu Kudo, both of Sakai, and Yoshiaki Hata, Toyonaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 106,586, Oct. 9, 1987, abandoned. This application May 18, 1988, Ser. No. 196,809

Claims priority, application Japan, Oct. 11, 1986, 61-241644

Int. Cl.⁴ G03B *3/10, 17/04*

U.S. Cl. 354—195.1 **14 Claims**





1. A photographic camera comprising:

a photographic lens system freely settable to various focal lengths;

an openable and closable lens cover disposed in front of said photographic lens system;

opening and closing means for said lens cover;

motor means for providing kinetic energy for the focal length changeover operations of said photographic lens system and also for the opening and closing operations of said lens cover; and

linking means capable of transmitting the kinetic energy from said motor means to said photographic lens system and to said opening and closing means in the form of a mechanical displacement;

wherein said opening and closing means operates:

to open said lens cover by utilizing a mechanical displacement from a home position to an intermediate position of said linking means,

to close said lens cover by utilizing a mechanical displacement from the intermediate position to the home position of said linking means, and

to change over a focal position by utilizing mechanical displacements reversibly between the intermediate position and an end position of said linking means.

4,806,962

AUTOMATIC DEVELOPING APPARATUS

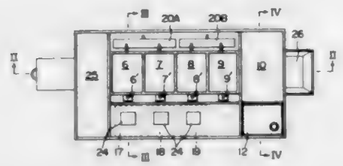
Makoto Uchida, Hachioji; Hiroyuki Kakuhari, Hino; Wataru Isogawa, and Tadashi Amano, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 715,534, Mar. 25, 1985, abandoned. This application Nov. 12, 1987, Ser. No. 122,535

Claims priority, application Japan, Mar. 27, 1984, 59-42751[U]; Mar. 27, 1984, 59-42752[U]; Jun. 1, 1984, 59-80513[U]; Jun. 13, 1984, 59-88672[U]

Int. Cl.[4] G03D *3/06*

U.S. Cl. 354—324 **16 Claims**



1. An apparatus for processing photosensitive material having a plurality of elements including processing tanks and a drying portion, said processing tanks comprising a developing tank; a bleaching tank and a fixing tank, or a bleach/fix tank; and a rinsing tank; there being a replenishing tank for each of said processing tanks on one side of its corresponding processing tank, a space on the same side of said drying portion as said replenishing tanks, a water supply tank in said space, said water supply tank holding water for dilution and/or dissolving solutions used for processing said material.

4,806,963

APERTURE DECISION SYSTEM FOR FLASH PHOTOGRAPHING

Ryuichi Kobayashi; Yoshihito Harada; Masaharu Kawamura, all of Kanagawa; Hiroyuki Katsuka, Tokyo, and Toshiyuki Kumakura, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 944,878, Dec. 22, 1986, abandoned. This application Mar. 16, 1988, Ser. No. 171,142

Claims priority, application Japan, Dec. 26, 1985, 60-291933; Dec. 26, 1985, 60-291934

Int. Cl.[4] G03B *7/095, 7/16, 15/05*

U.S. Cl. 354—415 **14 Claims**

1. An aperture decision system for flash photographing on the light reflected from an object which is preemitted by flash means, comprising:

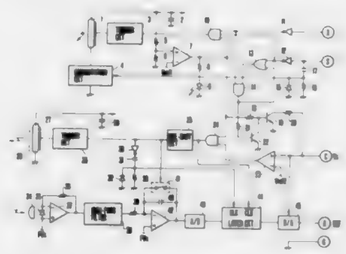
(a) means for detecting an aperture value based on said reflected light and generating an output signal indicative of such aperture value;

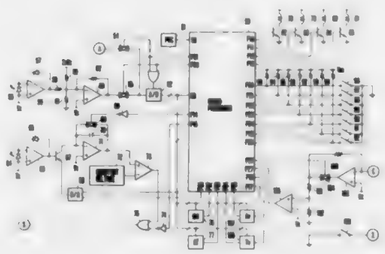
(b) computing means for

(1) receiving said detecting means output signal,

(2) receiving input as to a predetermined aperture value and generating a signal indicative thereof,

(3) comparing said detecting means output signal and said signal indicative of said predetermined aperture value and generating a comparison output signal, and





(4) deciding an aperture value shifted to the open side of said aperture value indicated in said detecting means output signal to be a flash aperture value when said comparison output signal indicates that said aperture value indicated in said detecting means output signal is an aperture value on the side stopped down from said predetermined aperture value.

4,806,964

METHOD OF CONTROLLING DIAPHRAGM DRIVING IN ELECTRONIC STILL CAMERA AND DEVICE THEREFOR

Kazukiyo Tanada, Tokyo; Motohiko Horio, Omiya, and Kiyotaka Sato, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 17, 1987, Ser. No. 134,115

Claims priority, application Japan, Dec. 26, 1986, 61-311118

Int. Cl.[4] G03B *7/095*

U.S. Cl. 354—452 **6 Claims**

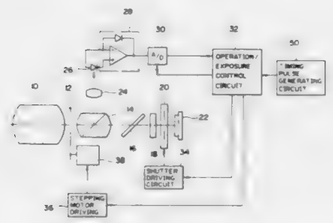
1. A method of controlling diaphragm driving in an electronic still camera, wherein a diaphragm is controlled such that an exposure value of a subject on an image forming screen can be a proper exposure value, said method comprising the steps of:

(i) performing photometry on an incident ray and obtaining a photometric value accordingly;

(ii) determining whether said obtained photometric value is higher or lower than the power exposure value;

(iii) performing said steps i) and ii) repeatedly, at regular time intervals until a number of consecutive ones of said photometric values, all of which are greater or all of which are lower than said proper exposure value, equals a predetermined number;

(iv) if said consecutive ones of said photometric values are higher than said proper exposure value, closing the diaphragm incrementally until said photometric values are lower than the proper exposure value; and



(v) if said consecutive ones of said photometric values are lower than said proper exposure value, opening the diaphragm incrementally until said photometric values are higher than the proper exposure value.

4,806,965

APPARATUS FOR WRITING DATA ONTO PHOTOSENSITIVE FILM

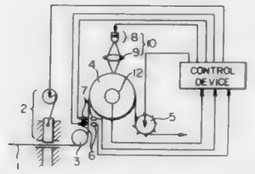
Kenji Yamazonchi, Kokubunji; Yutaka Terooka, Sagamihara; Makoto Ikeda, Hachioji; Mamo Nakamura, Machida, and Satoshi Kawai, Hino, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 19, 1987, Ser. No. 109,395

Claims priority, application Japan, Oct. 21, 1986, 61-248508; Oct. 23, 1986, 61-250696; Nov. 17, 1986, 61-271720; Nov. 20, 1986, 61-275209; Nov. 21, 1986, 61-276488

Int. Cl.[4] G03B *27/00*

U.S. Cl. 355—1 **17 Claims**



1. An apparatus for optically writing data as a latent image on film coated with a photosensitive material while the film is moving in a predetermined direction, the apparatus comprising;

exposure means including two or more groups of light emitting sources, each of said groups of light emitting sources including a plurality of contiguous light emitting subsources, said light emitting sources being disposed along substantially parallel lines, said substantially parallel lines being substantially perpendicular to the predetermined direction in which the film is moving, said light emitting subsources in each light emitting source being staggered relative to the light emitting subsources in adjacent light emitting sources; and

control means for selecting the light emitting subsources to be illuminated in accordance with the data to be written, said control means controlling the emitting timing of each of said plural groups of light emitting sources to superimpose a side of the latent image corresponding to one light emitting source onto a side of the latent image corresponding to another light emitting source to that said latent images along said substantially parallel lines are staggered and partially superimposed.

4,806,966

TONER IMAGE FIXING DEVICE

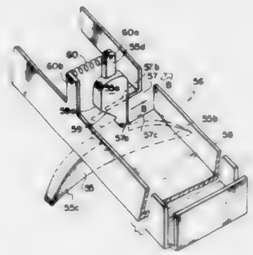
Takayuki Saga, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

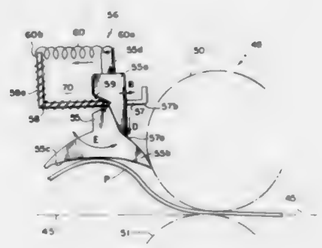
Filed Nov. 25, 1987, Ser. No. 125,265

Claims priority, application Japan, Nov. 29, 1986, 61-284567

Int. Cl.[4] G03G *21/00*

U.S. Cl. 355—3 SH **3 Claims**





1. A toner image fixing device comprising:

means for fixing a toner image on an image forming medium;

means for separating the image forming medium from said fixing means, said separating means having a separating portion which is in contact, with said fixing means, a biasing portion and an engaging portion provided between said separating portion and said biasing portion, said engaging portion having a first contact portion at an outer edge of said separating means;

means, provided in the vicinity of said fixing means, for engaging said engaging portion, said engaging means having a second contact portion at an outer edge of said engaging means, said first contact portion, removably resting against said second contact portion; and

means, connected to said biasing portion of said separating means, for exerting a force in a direction so that said separating means touches said fixing means and contact between said first contact portion and said second contact portion causes said engaging means to rotatably support said separating means.

4,806,967

ELECTROSTATOGRAPHIC REPRODUCING MACHINE AND PROCESS UNIT THEREFOR

David M. Newbury, Welwyn Garden City, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 10, 1987, Ser. No. 130,920

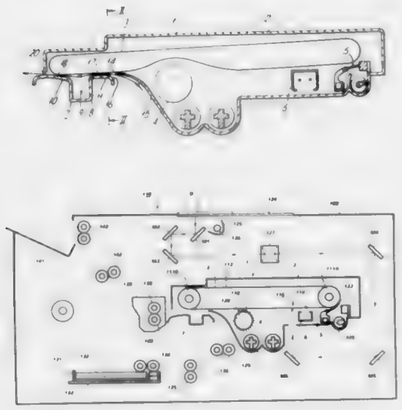
Claims priority, application United Kingdom, Dec. 15, 1986, 8629944

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 SH **13 Claims**

1. Electrostatographic reproducing apparatus comprising a

transfer corotron for transferring a developed electrostatic latent image from an imaging member onto a copy sheet, and an electrically conductive guide member for guiding copy



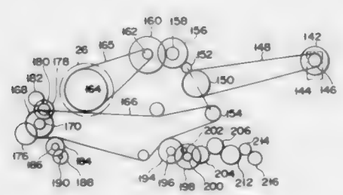
sheets in the vicinity of the transfer corotron said guide member being integral with the shield of the transfer corotron and comprising an upwardly inclined ramp having a convex configuration as seen by the copy sheet.

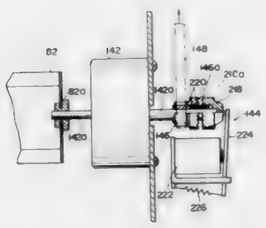
4,806,968

DRIVE UNIT FOR A COPYING MACHINE

Junji Watanabe, Yokohama, and Takeshi Eguchi, Oomiya, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 24, 1988, Ser. No. 159,950
Claims priority, application Japan, Feb. 27, 1987, 62-44527
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 R **11 Claims**





1. A drive unit for a copying apparatus, comprising:

an image carrier rotatable in both forward and reverse directions and carrying a latent image thereon;

visualizing means rotatable in both forward and reverse directions and adapted to visualize the latent image;

cooling means for cooling the inside of the copying machine;

drive means rotatable in both forward and reverse directions and adapted to drive the image carrier, the visualizing means, and the cooling means;

first driving force transmission means for transmitting the driving force of the drive means to the image carrier, to rotate the image carrier in the forward and reverse directions as the drive means rotates in the forward and reverse directions, respectively;

second driving force transmission means adapted to transmit the driving force of the drive means to the visualizing means, to rotate the visualizing means in the forward direction when the drive means rotates in the forward direction, and not to transmit the driving force of the drive means to the visualizing means when the drive means rotates in the reverse direction;

intermittent driving force transmission means for intermittently allowing the first driving force transmission means to transmit the driving force to the image carrier and second driving force transmission means to transmit the driving force to the visualizing means; and

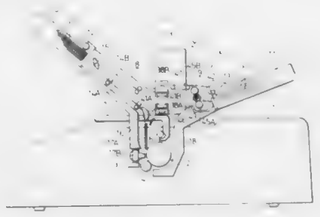
third driving force transmission means for transmitting the driving force of the drive means directly to the cooling means.

4,806,969

FIXING DEVICE

Makoto Tomoyori, and Sunao Hatanaka, both of Iwate, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Sep. 21, 1987, Ser. No. 98,937
Claims priority, application Japan, Nov. 28, 1986, 61-181799[U]
Int. Cl.[4] G03G *15/20*
U.S. Cl. 355—3 FU **3 Claims**



1. Image fixing apparatus for electrophotographic or magnetic printing on a sheet of print-receiving material that has two opposing sides that are adapted to receive images thereon, the apparatus comprising:

a heat roll, having a longitudinal axis about which the heat roll rotates, and having a source of heat that is sufficient to fix an image on a portion of one surface of a sheet of print-receiving material that is in contact with the heat roll;

a first rotatable pressure roll, positioned to contact the heat roll along a line of contact that is substantially parallel to the longitudinal axis of the heat roll;

a second rotatable pressure roll, positioned to contact the heat roll along a second line of contact that is substantially parallel to the longitudinal axis of the heat roll;

first image transfer means, positioned to transfer an image to a surface of a sheet of print-receiving material;

storage means to receive a sheet from the first image transfer means;

first sheet transport means to transport a sheet of print-receiving material to the first image transfer means, then

to transport the sheet to a position between the heat roll and the first pressure roll, then to transport the sheet to the storage means;

second image transfer means, positioned to transfer an image to a surface of a sheet of print-receiving material; and

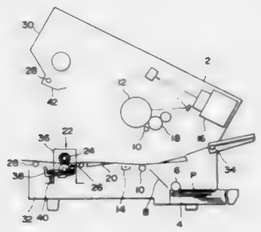
second sheet transport means to transport a sheet of print-receiving material from the storage means to the second image transfer means, then to transport a sheet to a position between the heat roll and the second pressure roll, where the second image transfer means the the second transport means are positioned so that the second image transfer means transfers an image to a surface of the sheet that is opposite to the surface that receives an image from the first image transfer means.

4,806,970

RECORDING APPARATUS HAVING AN ACCESSIBLE HOUSING

Yoshitsugu Nakatomi, Yokosuka; Goro Oda, Sagamihara, and Hidetoshi Aoki, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 9, 1987, Ser. No. 130,544
Claims priority, application Japan, Dec. 10, 1986, 61-292493
Int. Cl.[4] G03G *15/20*
U.S. Cl. 355—3 FU **3 Claims**



1. A recording apparatus comprising:

a housing having an opening in an upper surface thereof;

image-fixing means in the form of a unit, for fixing an image on an image recording medium;

mounting means arranged at a position facing the opening of the housing, for detachably mounting thereon said image-fixing means; and

door means for selectively exposing or closing said opening;

wherein said image-fixing means includes a pair of image-fixing rollers in contact with each other, a cover means movable between a first position, where it covers the upper portions of the pair image-fixing rollers, and a second position, where it exposes said upper region, and an interlocking means for bringing the image-fixing rollers into tight contact with each other when the cover means is in the first position and separating the image-fixing rollers from each other when the cover means is in the second position.

4,806,971

MAGNET FOR USE IN A MAGNETIC BRUSH DEVELOPMENT APPARATUS

Roger D. Masham, Hertfordshire, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 21, 1988, Ser. No. 146,457
Claims priority, application United Kingdom, Jan. 30, 1987, 8702050
Int. Cl.[4] G03G *15/09, 15/08*
U.S. Cl. 355—3 DD **7 Claims**

1. A magnet for a magnetic brush developer unit, including:

a monolithic self-supporting body of molded magnetic material having a plurality of magnetic poles formed thereon with the magnetic poles extending in a longitudinal direction and being spaced-apart angularly to produce outwardly extending magnetic fields said body having a partially cylindrical outer surface; and



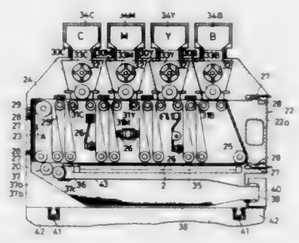
a pair of support members, one of said support members being positioned at one end of said body and the other of said support members being positioned at the other end of said body with said pair of support members and said body being made from different materials.

4,806,972

PRINTER

Makoto Tomoyori, Iwate, and Sunao Hatanaka, Takizawa, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Aug. 24, 1987, Ser. No. 88,688
Claims priority, application Japan, Nov. 26, 1986, 61-279797
Int. Cl.[4] G03G *15/01*
U.S. Cl. 355—4 **2 Claims**



1. A printer comprising:

a latent image supporter of an endless belt shape which travels at a right angle to a direction toward which a recording medium is fed, and

a developing unit for applying a toner onto a latent image formed on said latent image supporter to form a visible image, said visible image being intermittently transferred onto said recording medium;

wherein said developing unit is capable of independently supplying toners of different colors, and said latent image supporter is independently provided with image-forming regions in which latent images and toner images for the respective colors are formed.

VOL 1099 ISS 3 FEB 21 1989 UMI

4,806,973

COLOR IMAGE-FORMING APPARATUS FOR PRODUCING OVERLAPPED MONOCHROME IMAGES

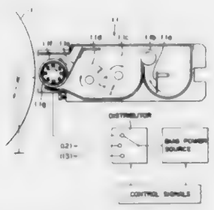
Tadao Kishimoto; Toshifumi Isobe; Hiroyuki Maruyama, and Jun Yokobori, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 934,112, Nov. 24, 1986, abandoned. This application Jul. 19, 1988, Ser. No. 220,907

Claims priority, application Japan, Dec. 24, 1985, 60-296337; Dec. 24, 1985, 60-296340

Int. Cl.[4] G03G *15/01*

U.S. Cl. 355—4 **17 Claims**



1. In an image forming apparatus for conducting writing and developing operations several times on an image retainer to transfer the developed images to a transfer material, comprising: means for writing an image signal in an image retainer; a plurality of developing means each for developing the image retainer having said image signal written thereon with a developer; a developing bias power source; means for distributing the output of said developing bias power source to said plural developing means; means for transferring a toner image on a transfer material; and means for cleaning a residual toner on the image retainer, the improvement characterized in that the output of said developing bias power source is sequentially distributed to said developing means in the order in which said image retainer moves from said image signal writing means and that the beginning of the abutment of a cleaning member against said image retainer and the beginning of the release from said abutment fall at timing other than at least said image writing timing.

4,806,974

APPARATUS FOR REPRODUCING A COPY IMAGE ACCORDING TO EITHER A POSITIVE ORIGINAL IMAGE OR A NEGATIVE ORIGINAL IMAGE

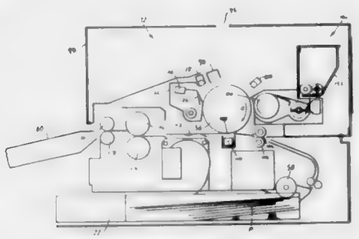
Takashi Shimazaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 29, 1987, Ser. No. 114,064

Claims priority, application Japan, Nov. 12, 1986, 61-268982

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—5 **12 Claims**



1. An apparatus for forming a positive copy image on an image carrier from one of a negative and positive original images, comprising:

means for uniformly charging the image carrier;

means for exposing one of the negative and positive original images to the image carrier so as to form an electrostatic latent image thereon;

means for reversely developing the electrostatic latent image by applying developers so as to reproduce a visible image;

means for uniformly recharging the image carrier having the visible image corresponding to the positive original image and developed by said reversely developing means;

means for uniformly discharging the image carrier recharged by said uniformly recharging means; and

means for removing the developers on the visible image developed by said reversely developing means and for depositing the developer onto the image carrier so as to produce the positive copy image corresponding to the positive original image.

4,806,975

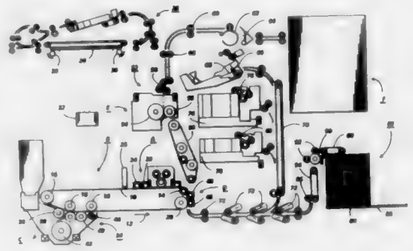
ERASE LAMP WITH PLURAL ELECTRODES

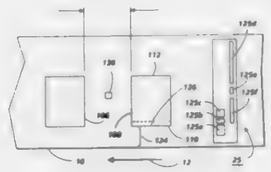
Ronald E. Godlove, Bergen; Robert L. Thompson, and Charles J. Urso, Jr., both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1987, Ser. No. 88,365

Int. Cl.[4] G03G *15/00*; G03B *27/54*; H01J *1/46, 17/00*

U.S. Cl. 355—7 **13 Claims**





1. A lamp system for erasing selected portions of an electrically charged photoconductive member, including:

a substantially transparent housing defining a chamber;

a gaseous medium disposed in the chamber of said housing;

a pair of spaced electrodes disposed in the chamber of said housing, said pair of electrodes comprising a continuous electrode and a segmented electrode spaced from said continuous electrode with at least a portion of the gaseous medium being interposed therebetween;

a DC voltage source; and

circuit means, coupled to said DC voltage source and said pair of spaced electrodes, for inducing a series of pulsed discharges between at least one of said segments of said segmented electrode and said continuous electrode to ionize said gaseous medium in a selected region causing said gaseous medium medium to emit light thereat so as to illuminate the electrically charged photoconductive member in the selected region to discharge the charge thereat.

4,806,976

COPY APPARATUS WITH PATTERN WRITING CAPABILITY

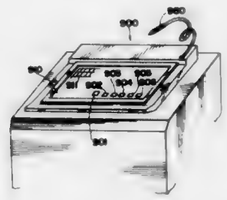
Akio Kato; Keiji Nakatani, both of Toyokawa; Kenji Wada; Kaoru Hashimoto, both of Aichi; Kadotaro Nishimori, and Masahiro Higaki, both of Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 24, 1987, Ser. No. 77,731

Claims priority, application Japan, Jul. 25, 1986, 61-175890; Aug. 14, 1986, 61-190935; Aug. 14, 1986, 61-190936

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—7 **11 Claims**



1. A copying apparatus comprising:

means for supporting an original document thereon;

a photosensitive member;

first image forming means for forming an image of the original document on said photosensitive member;

means for manually inputting a plurality of subjectively determined coordinate data to define positions on said photosensitive member;

second image forming means for forming a dot image at each of the defined positions on said photosensitive member without operating said first image forming means, the aggregation of each of said dot images on the defined positions resulting in a pattern image; and

means for transferring said original document image and said pattern image onto the same surface of a single copy sheet.

4,806,977

IMAGE FORMING APPARATUS WITH DISCONNECTABLE CARRIAGE DRIVE

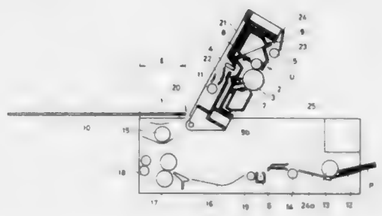
Morikazu Mizutani, Tokyo; Shigeyoshi Onoda, Yokohama; Isao Ikemoto, Kawasaki; Shinji Kanemitsu, Tokyo, and Hajime Kitajima, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1987, Ser. No. 61,166

Claims priority, application Japan, Jun. 18, 1986, 61-143927; Jun. 24, 1986, 61-096081[U]; Jun. 24, 1986, 096082[U]

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—8 **14 Claims**



1. An image forming apparatus of the type in which a carriage for carrying an original image is moved reciprocally over an optical system and in which a body of the apparatus is divided into a first body portion and a second body portion with different internal components supported by each portion, the second body portion being mounted to swing out from the first body portion to provide access to said internal components, said optical system being mounted on said second body portion, means mounting said carriage on said first body portion and a drive mechanism arranged to move said carriage reciprocally across said optical system when said second body portion is swung into said first body portion, said drive mechanism being disconnectable to enable said carriage to be moved away from said optical system and allow said second body portion to swing out from said first body portion.

4,806,978

IMAGE EDITING SYSTEM

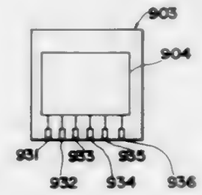
Keiji Nakatani, Toyokawa, and Kenji Shibazaki, Aichi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

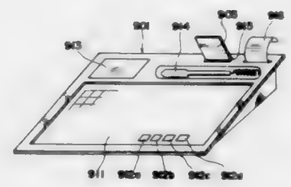
Filed Sep. 25, 1987, Ser. No. 101,255

Claims priority, application Japan, Sep. 27, 1986, 61-229067

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 R **12 Claims**





1. An image editing system comprising:

a copy device including a document support table for supporting an original document to be copied and image forming means capable of copying an arbitrary area of the original document;

an input device separate from said copy device for inputting area data which define an area of the original document;

a memory device which is attachable to and detachable from said copy device and said input device and is capable of storing the input area data therein and feeding out the stored data therefrom;

said memory device storing the input area data when said memory device is attached to said input device;

said memory device feeding out the stored data therefrom to said copy device when said memory device is attached to said copy device; and

a control device for controlling said copy device so as to copy the area of original document defined by the data fed from said memory device.

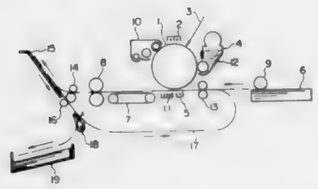
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4,806,979

DUPLEX PRINTING MACHINE

Hiroyoshi Tokoro; Tsuneki Kobayashi; Kensei Hosoya; Shogo Nobumori, and Mitsuaki Hayakawa, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Jan. 1, 1987, Ser. No. 56,016
Claims priority, application Japan, May 30, 1986, 61-124991
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 SH **3 Claims**



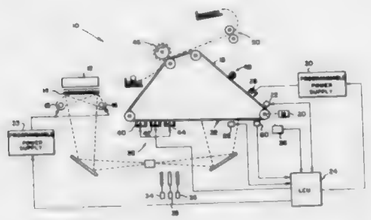
1. A duplex printing machine which comprises:
a printing section for printing both sides of a sheet;
sheet delivering means for delivering said sheet from said printing section which is printed by the printing section;
a switch-back mechanism having reverse roller means for moving backwardly said sheet which has been delivered out of said printing section by said sheet delivering means;
a stacker section for stacking said printed sheets; and
a switching gate disposed after said switch-back mechanism and said reverse roller means in a path extending from said switch-back mechanism, said switching gate selecting a first sheet path along which each sheet whose only one side has been printed is returned to said printing section so that the other side thereof is printed, said sheet having been reversed by said switch-back mechanism, and a second sheet path along which said sheet whose both sides have been printed is delivered to said stacker section after being moved backwardly again by said switch-back mechanism.

4,806,980

DYNAMIC FEEDFORWARD PROCESS CONTROL FOR ELECTROGRAPHIC MACHINES

Fereidoon S. Jamzadeh, Fairport, and Michael D. Stoudt, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 6, 1986, Ser. No. 927,639
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 E **2 Claims**



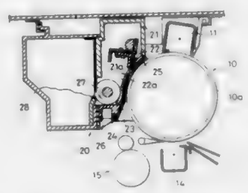
1. In an electrographic machine for reproducing originals and having (1) means for substantially uniformly charging a recording member, (2) means for imagewise exposing the charged recording member at a nominal exposure level to produce a latent charge image (3) developing means, including an electrode, for depositing toner on the latent charge image, and (4) means for electrically biasing the electrode at a nominal bias voltage level; the improvement comprising:
means for producing a signal having a value characteristic of the exposure level associated with a latent charge image;
means, operatively coupled to said signal producing means for storing the produced signal value and the nominal bias voltage level which cooperate to produce a first reproduction of an original, said first reproduction having a desired quality;
means for producing a comparison signal by comparing the signal value of the sensed exposure level associated with a subsequent latent charge image with the corresponding stored signal value for the corresponding latent charge image of the same original; and
means responsive to said comparison signal for varying the bias voltage level associated with the latent charge image to thereby produce a developed image having substantially the same reproduction quality as that produced by the stored signal values.

4,806,981

CLEANING UNIT IN ELECTROPHOTOGRAPHIC COPIER

Yasuyuki Ishiguro, and Tadakazu Ogiri, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 21, 1987, Ser. No. 98,959
Claims priority, application Japan, Sep. 22, 1986, 61-145569[U]
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—15 **7 Claims**



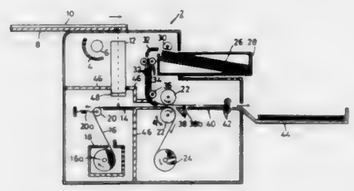
1. A cleaning unit in an electrophotographic copier adapted to remove toner and developer material from a photo-sensitive drum having photo-sensitive material disposed thereon from which a developed image has been transferred, said cleaning unit comprising:
a housing having an opening facing said photo-sensitive material;
a cleaning member provided in said housing, said cleaning member having an end portion which abuts against said photo-sensitive material through said opening of said housing to scrape the toner and developing material off said photo-sensitive material;
a receiving blade covering the lower portion of said opening and having an upper end portion abutted against said photo-sensitive material to allow said toner and developing materials scraped off by said cleaning member to fall into the opening; and
a film-shaped reinforcing member bonded to the surface of said receiving blade facing the inside of said housing, an upper end portion of said reinforcing member abutting against an image-forming region of said photo-sensitive material and being separated from said receiving blade, said reinforcing member being arranged on a rear surface of said receiving blade at a portion of said receiving blade where said receiving blade abuts against a non-image-forming region of said photo-sensitive material.

4,806,982

IMAGING DEVICE

Takemi Yamamoto, Nagoya; Kenji Sakakibara, Ichinomiya, and Masashi Ueda, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1987, Ser. No. 131,893
Claims priority, application Japan, Dec. 15, 1986, 61-192779[U]; Dec. 15, 1986, 61-192780[U]; Dec. 26, 1986, 61-199622[U]
Int. Cl.[4] G03B *27/32, 27/52*
U.S. Cl. 355—27 **16 Claims**



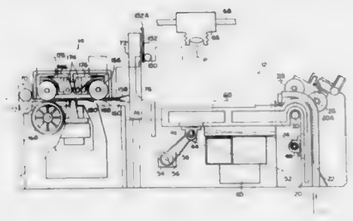
1. An imaging device wherein a latent image is formed by projecting a photo-image on a photosensitive member before developing a visible image wherein said photosensitive member is coated with a plurality of microcapsules enveloping therein a dye precursor and a photo-curable resin, said device comprising
a housing having a support adapted to support a manuscript thereon;
light exposure means provided in said housing for duplicating a photo-image of said manuscript placed on said support on said photosensitive member;
conveying means for conveying said photosensitive member through said housing;
light shielding means for protecting said photosensitive member against ambient light other than the light impinged thereon by said light exposure means, while travelling through said housing, and
pressure applying means provided in said housing for applying pressure to said photosensitive member after exposed to light by said light exposure means.

4,806,983

MASKING DEVICE FOR USE IN PHOTOGRAPHIC PRINTING

Hiroyuki Satou, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 20, 1987, Ser. No. 123,455
Claims priority, application Japan, Dec. 1, 1986, 61-286354; Dec. 1, 1986, 61-286355; Dec. 1, 1986, 61-286356
Int. Cl.[4] G03B *29/00*
U.S. Cl. 355—129 **15 Claims**



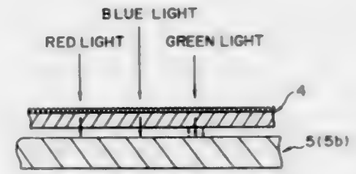
1. A masking device for use in photographic printing, disposed between a photographic printing light source and a lengthwise sheet of photosensitive medium and adapted to define the printing area on said photosensitive medium, said masking device comprising:
a pair of moving bases capable of moving in a first direction generally perpendicular to a second direction corresponding to the direction of the longitudinal axis of said photosensitive medium, said moving bases being capable of moving toward or away from each other; and
first mask members disposed on said pair of moving bases and adapted to define said printing area in said first direction, said first mask members being capable of moving in said first direction so as to increase or decrease said printing area to a predetermined degree in said first direction.

4,806,984

COLOR-TONE CONTROLLING METHOD AND APPARATUS THEREFOR

Yuji Asano, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Feb. 10, 1988, Ser. No. 154,235
Claims priority, application Japan, Feb. 13, 1987, 62-32085
Int. Cl.[4] G03B *27/32, 27/52*
U.S. Cl. 355—32 **6 Claims**



1. In a system for making a color duplicate by exposing a color photosensitive medium to light carrying an original image, a color-tone controlling method comprising the steps of:
preparing a plurality of color-tone plates of various colors such as red, green, blue, and so on;
putting a desirably selected one of said color-tone plates onto a back surface of said color photosensitive medium; and
exposing a front surface of said color photosensitive medium to said original image carrying light, a part of light transmitted through said color photosensitive medium of the same color as that of said color-tone plate being reflected on said color-tone plates so as to re-expose said color photosensitive medium.

4,806,985

STRIPPER FINGERS

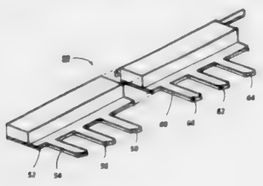
Geoffrey M. T. Foley, Fairport; Richard L. Schaak, Pittsford, and Kenneth A. Kemp, Walworth, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 884,578, Jul. 11, 1986, abandoned. This application Apr. 2, 1987, Ser. No. 31,125
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 SH **8 Claims**

1. In an electrostatographic imaging apparatus comprising a frame, a member having a movable surface adapted to receive a receiving sheet, and a sheet stripping means for separating said receiving sheet from said movable surface, said sheet stripping means comprising a support element and a stripping element, said stripping element having a leading edge adapted to contact said movable surface and strip said sheet from said movable surface, said leading edge comprising a metal substrate, a film forming primer coating on said substrate, and an electrically conductive coating on said film forming primer coating, said electrically conductive coating having a volume resistivity of less than about 10^{13} ohm centimeters, a thickness

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of at least about 0.5 micrometer, and comprising a film forming polymer and an electrically conductive additive, said film forming polymer selected from the group consisting of a cross-linked siloxanol-colloidal silica hybrid material, a polyimide



and poly(amide-imide), and said electrically conductive additive having a volume resistivity of less than about 10^{10} ohm centimeters and an average particle size of less than about 0.1 micrometer.

4,806,986

METHOD OF AND APPARATUS FOR PRODUCING REPRINT

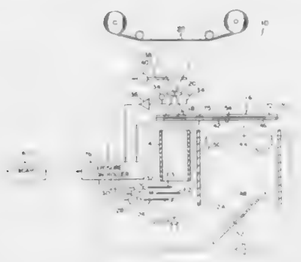
Kanji Tokuda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 2, 1988, Ser. No. 151,671

Claims priority, application Japan, Mar. 11, 1987, 62-55504

Int. Cl.⁴ G03B *27/80, 27/32*

U.S. Cl. 355—38 **20 Claims**



1. A method of producing a reprint, comprising the steps of:
(a) performing arithmetic operations upon the amount of exposure required for printing an image on photographic paper from an original-image film on the basis of a set of data (a first set of data) relative to said image on said original-image film, another set of data (a second set of data) relative to an image printed on a printed sheet of photographic paper from said original-image film, and another set of correction data (a third set of data) representative of desired corrections to be made with respect to the color characteristics of said image printed on said printed sheet; and
(b) performing exposure control on the basis of the results of said arithmetic operations to finish the color characteristics of said image to be reprinted on said photographic paper so that said color characteristics includes said desired corrections applied to said color characteristics of said image printed on said printed sheet.

4,806,987

PROJECTION-EXPOSING APPARATUS

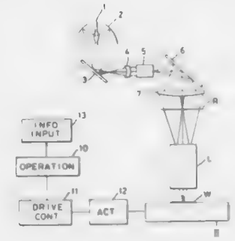
Takashi Mori, Kawasaki; Koichi Matsumoto, Tokyo; Tsutomu Takai, Tokyo; Masaichi Murakami, Tokyo, and Kyoichi Suwa, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Dec. 21, 1987, Ser. No. 135,377

Claims priority, application Japan, Dec. 24, 1986, 61-313853

Int. Cl.⁴ G03B *27/42*

U.S. Cl. 355—53 **2 Claims**



1. A projection exposing apparatus comprising a projecting optical system for projecting an image of a reticle having a predetermined pattern onto a wafer, and a stage for causing a relative shifting movement between a position of the wafer and a position of the reticle, and capable of effecting a first exposure for projecting and exposing the pattern image of the reticle from said projecting optical system in a first area on said wafer, and a second exposure for projecting and exposing the pattern image of the reticle in a second area adjacent to said first area upon shifting said stage by a predetermined amount, characterized in that:
said stage causes the relative shifting movement between said reticle and said wafer in such a manner that the pattern image of the reticle in said first exposure and the pattern image of the reticle in said second exposure are overlapped with each other on said wafer by a predetermined amount.

4,806,988

PROCESS AND AN ARRANGEMENT FOR THE AUTOMATIC FOCUSING IN A PHOTOGRAPHIC ENLARGING OR COPYING APPARATUS WITH A VARIABLE ENLARGING SCALE

Delueg Verner, Varna, Italy, assignor to Durst Phototecnik GmbH, Bozen, Italy

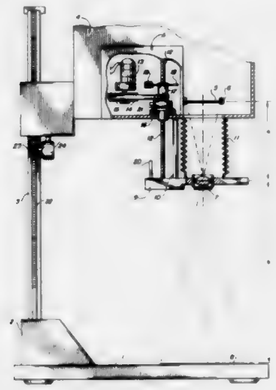
Filed Aug. 24, 1987, Ser. No. 88,893

Claims priority, application Italy, Aug. 29, 1986, 4840 A/86

Int. Cl.⁴ G03B *27/52*

U.S. Cl. 355—55 **17 Claims**

1. A process for the automatic focusing in a photographic enlarging or copying apparatus with a variable enlarging scale, wherein
in a calibrating stage, a number of different enlarging ratios are set successively, the corresponding respective focusing positions are found manually and their position values are stored,
in the automatic focusing stage, the focusing position that is assigned to any arbitrary enlarging ratio is computed continuously by interpolation from the number of stored



positions, and the determined position is approached in a motor-driven way.

4,806,989

OPTICAL CORRECTION DEVICE

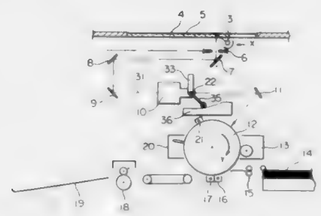
Taku Saito, and Yozo Fujii, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 6, 1987, Ser. No. 46,624

Claims priority, application Japan, May 14, 1986, 61-108543; Jan. 23, 1987, 62-14498

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—55 **16 Claims**



1. An image projecting device comprising:
an optical path regulating means having a slit introducing an image light therethrough, so that the image light has an optical path of which a sectional plane corresponds with a shape of the slit;
a projecting means having a lens for projecting the introduced image light;
an image forming plane for forming an optical image corresponding to the projected image light;
wherein there is further provided a light distribution correction means comprising an optical cut off plate for cutting off luminous fluxes of the image light, said optical cut off plate is located within the optical path of the image light and has a curved side shaped so as to make the light distribution on said image projection plate to be flat;
an image-irradiating means for scanning an original image with a light source having a light distribution in a lenght-wise direction of the slit wherein the dimension of said optical cut off plate is determined in accordance with the light distribution of said light source;
wherein said projecting means can change a projecting magnification of the optical image in accordance with a magnification input; and
wherein said optical cut off plate is turned within the optical path in accordance with the inputted magnification.

4,806,990

PHOTOGRAPHIC PRINTING METHOD

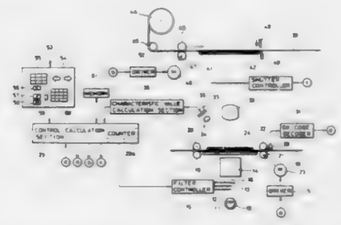
Syuji Tahara, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 15, 1987, Ser. No. 108,620

Claims priority, application Japan, Oct. 15, 1986, 61-244357; Oct. 15, 1986, 61-244358

Int. Cl.⁴ G03B *27/32*

U.S. Cl. 355—77 **4 Claims**



1. A photographic printing method for making prints from an original film having a plurality of image frames, said method comprising a negative inspection stage wherein said original film is intermittently advanced in one direction to place said image frames in a printing station in order to inspect said image frame, frame by frame, and a printing stage wherein said image frames are printed on a photographic paper, frame by frame, including the steps of:
automatically placing each of said image frames in at least close proximity to said printing position for said negative inspection;
manually correcting any positional error of said each image frame with respect to said printing position to locate said each image frame in a corrected position and storing data of said corrected position of said each image frame;
measuring said each image frame to detect image information thereof; and
intermittently advancing said negative film to automatically place said image frames in said printing station with references to said data of said corrected position in order to effect said printing stage.

4,806,991

MECHANISM FOR LOCATING A FLEXIBLE PHOTOCONDUCTOR RELATIVE TO A DEVELOPMENT STATION

Vladimir S. Gaalitz, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 21, 1987, Ser. No. 135,860

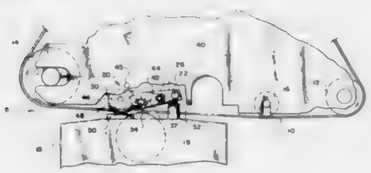
Int. Cl.⁴ G03G *15/08*

U.S. Cl. 355—3 DD **6 Claims**

1. In a reproduction apparatus having a flexible photoconductor trained about a plurality of rollers for movement along a path, the photoconductor having first and second surfaces, and a development station positioned along the path adjacent the first surface for developing latent images on the first surface of the photoconductor, an improved mechanism for locating the photoconductor relative to the station comprising:
means defining two spaced stops on the station,
a back-up roller,
means mounting the back-up roller adjacent the second surface of the photoconductor for movement toward and away from the development station, the roller being effec-

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tive when moved toward the development station to deflect the photoconductor toward the development station, and



means associated with the mounting means and engageable with the stops for limiting movement of the back-up roller and thus the photoconductor toward the development station, thereby establishing the location of the photoconductor relative to the station.

4,806,992

DEVELOPING APPARATUS

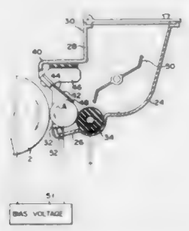
Sachiko Yasuda; Minoru Yoshida, both of Tokyo; Tomoyuki Asada, and Hideo Mukai, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 24, 1987, Ser. No. 18,208

Claims priority, application Japan, Aug. 22, 1986, 61-196606

Int. Cl.[4] G03G *15/08*

U.S. Cl. 355—3 DD **5 Claims**



1. A developing apparatus for developing a latent image by applying a developer to the latent image formed on a surface of an image carrier at a developing position opposing said image carrier, comprising:

a housing for containing a developer;

a developer carrier for carrying the developer from said housing to a developing position, said developer carrier having a surface which is roughened to a predetermined surface roughness;

developer supply means, positioned on one side of said developer carrier and urged against said developer carrier, for supplying charged developer to said developer carrier, said developer supply means having a metal shaft and a conductive rubber material coated on the metal shaft, said rubber material comprising powder or carbon powder mixed with rubber, whereby said developer supply means moves the developer in said housing while electrostatically holding it, thereby triboeletrically charging the developer;

means for grounding said developer supply means through said metal shaft; and

a blade which is urged against said developer carrier in a region adjacent an upper portion of said developer carrier to form a thin layer of developer on said developer carrier.

4,806,993

METHOD AND DEVICE FOR RAPID PHOTO-DETECTION BY MEANS OF A SUPER-LATTICE

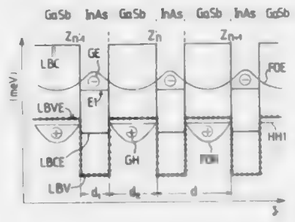
Paul Voisin, and Jose A. Brum, both of Paris, France, assignors to Centre National de la Recherche Scientifique (C.N.R.S.), Paris, France

Filed Sep. 2, 1986, Ser. No. 902,926

Claims priority, application France, Aug. 30, 1985, 85 12970

Int. Cl.[4] H01L *27/12*

U.S. Cl. 357—4 **19 Claims**



1. A method for detecting a very short temporal variation in a beam of electromagnetic radiation, including the steps of:

(a) applying said beam to a super-lattice of type II in a direction along its axis of growth, said super-lattice responding to said temporal variation by a photovoltaic effect thereby generating a voltage difference within said super-lattice along said axis of growth thereof; and

(b) sensing variations of said voltage difference between opposite sides of the super-lattice along said axis of growth.

4,806,994

SEMICONDUCTOR DEVICE

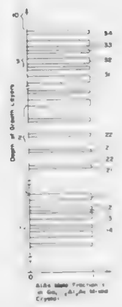
Toshiro Hayakawa, Nara; Takahiro Suyama; Kohsei Takahashi, both of Tenri, and Saburo Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 801,777, Nov. 26, 1985, abandoned. This application Jul. 14, 1987, Ser. No. 73,854

Claims priority, application Japan, Nov. 29, 1984, 59-253885

Int. Cl.[4] H01L *27/12, 29/161*

U.S. Cl. 357—4 **14 Claims**



1. A semiconductor device having a superlattice structure which comprises a plurality of cladding and active lattice units, wherein each of said cladding and each of said active lattice units have a uniform thickness and each of said lattice units includes a plurality of laminated lattice layers formed from two different semiconductor materials, said laminated lattice layers varying from each other within each of said lattice units with

respect to the combination of semiconductor materials and thickness.

4,806,995

OPTICAL AND ELECTRICAL SWITCHING DEVICES AND A POLYMER COMPOSITION CONTAINING PENDANT ORGANIC CHARGE TRANSFER SALT MOIETIES USEFUL IN SWITCHING DEVICES

Roger W. Day, Cheshire, and Michael J. Morgan, Northford, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

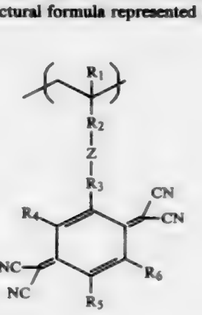
Filed Feb. 2, 1987, Ser. No. 9,854

Int. Cl.[4] H01L *29/28*

U.S. Cl. 357—8 **5 Claims**

1. A switching device responsive to an electrical field comprising:

(a) a polymer containing an organic charge transfer salt, wherein the salt comprises a polymer-bound organic electron acceptor and an electrostatically-bound electron donor said salt having a switching capability in response to an electrical field, and wherein said polymer has an empirical structural formula represented by:

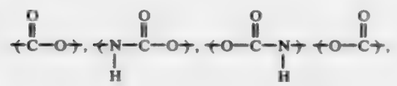


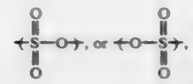
wherein

R_1=H or CH_3,

R_2 and R_3 are the same or different organic radical or substituted organic radical linking groups having up to 6 carbon atoms, and

Z=





and wherein R_4, R_5, and R_6 are the same or different groups selected from the group consisting of hydrogen, bromine, iodine, chlorine, fluorine, alkyl, and alkoxy groups having up to 6 carbon atoms, and

(b) a source of an electrical field to cooperate with said salt to activate said switching capability.

4,806,996

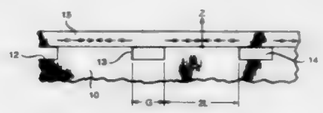
DISLOCATION-FREE EPITAXIAL LAYER ON A LATTICE-MISMATCHED POROUS OR OTHERWISE SUBMICRON PATTERNED SINGLE CRYSTAL SUBSTRATE

Sergey Luryi, Millington, N.J., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 850,483, Apr. 10, 1986, abandoned. This application Apr. 25, 1988, Ser. No. 186,739

Int. Cl.[4] H01L *29/161, 29/06, 29/34*

U.S. Cl. 357—16 **17 Claims**



1. A device comprising an epitaxial layer located upon a patterned surface of an essentially single crystal body, the epitaxial layer and the body being significantly lattice-mismatched, the patterned surface characterized by a plurality of flat plateaus with gaps formed by grooves situated between the plateaus, each of the plateaus having a maximum lateral extent of less than a micron with respect to any direction along the top surface of the plateau.

4,806,997

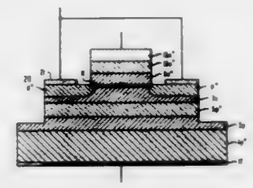
DOUBLE HETEROSTRUCTURE OPTOELECTRONIC SWITCH

John G. Simmons, St. Annes-On-Sea, England, and Geoffrey W. Taylor, Berkeley Heights, N.J., assignors to AT&T Laboratories American Telephone and Telegraph Company, Murry Hill, N.J.

Continuation of Ser. No. 745,398, Jun. 14, 1985, abandoned. This application Jan. 22, 1988, Ser. No. 147,052

Int. Cl.[4] H01L *29/161*

U.S. Cl. 357—16 **10 Claims**



1. A switch comprising first and second regions having a first conductivity type and first and second bandgaps; said regions having an interface adapted to the formation of an inversion layer, a third region, said third region having a second conductivity type and a third bandgap, said second bandgap being less than said first and third bandgaps, said second and third regions having an interface; said first, second and third regions comprising semiconductors selected from the group consisting of Group II–VI and Group III–V semiconductors, electrical contacts to said first and at least one of said second and third regions; and means for optically illuminating said second region.

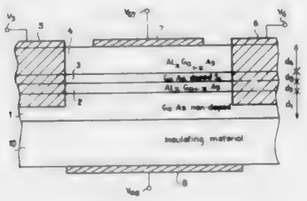
VOL 1099 ISS 3 FE 21 1989 UMI

4,806,998

HETEROJUNCTION AND DUAL CHANNEL SEMICONDUCTOR FIELD EFFECT TRANSISTOR OR NEGATIVE TRANSCONDUCTIVE DEVICE

Borge Vinter, Paris, and Armand Tardella, Montigny, both of France, assignors to Thomson-CSF, Paris, France

Filed Jan. 25, 1987, Ser. No. 67,109
Claims priority, application France, Jan. 30, 1986, 86 09441
Int. Cl.[4] H01L *29/80*
U.S. Cl. 357—22 **9 Claims**



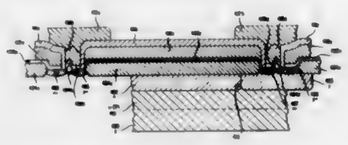
1. A heterojunction semiconductor device comprising an insulating substrate, a heterojunction along which a conductive channel extends between two electrodes, and an upper layer with a first forbidden gap, wherein said channel comprises between the substrate and the upper layer: a first layer of semiconductive material, a barrier layer, and a second layer of semiconductive material; said first and second layers having a second forbidden gap smaller than the forbidden gap of the upper layer, and said barrier layer having a forbidden gap of the same order as the forbidden gap of the upper layer; said first and second layers having different electrical mobilities, respectively low and high mobility, and said barrier layer being thin enough for the carriers to pass from the first to the second layer and from the second to the first layer by tunnel effect according to variations of a polarization electrical field applied to said channel causing variations in conduction of said channel.

4,806,999

AREA EFFICIENT INPUT PROTECTION

Mark S. Strauss, Allentown, Pa., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 782,014, Sep. 30, 1985, abandoned. This application Sep. 14, 1987, Ser. No. 96,290
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.13 **16 Claims**



1. An integrated circuit comprising a conductor pad coupled to input circuitry of said integrated circuit, and with said pad adapted to being connected to an external terminal,

characterized in that

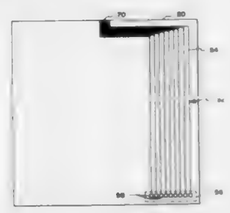
said conductor pad contacts a p-type first region of a first diode along a first portion of the periphery of said pad, and contacts a n-type second region of a second diode along a second portion of the periphery of said pad, and wherein said first diode is formed in a n-type third region connected to a positive power supply means of said integrated circuit, and said second diode is formed in a p-type fourth region connected to a negative power supply means of said integrated circuit, wherein said conductor pad has an outer portion covered with an insulator and a central portion free of said insulator, with said central portion overlying a single one of the regions so that the semiconductor junction formed by the boundary between said third and fourth regions is not overlaid by said central portion.

4,807,000

HIGH DENSITY SMALL ELEMENT OPTICAL MOSAIC DETECTOR

Mark N. Gurnee, Framingham, and William J. White, Chelmsford, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 2, 1987, Ser. No. 20,618
Int. Cl.[4] H01L *27/14*
U.S. Cl. 357—30 **7 Claims**



1. A high density optical detector mosaic array assembly having a plurality of interconnect locations comprised of IC readout pads in a pattern suitable for interconnecting a plurality of integrated circuit devices comprising:

A. a substrate:

B. a plurality of metallization layers alternating with a plurality of dielectric layers thicker than said metallization layers wherein the first of the metallization layers is deposited directly on the substrate and is delineated to form a plurality of interconnect lines disposed in a pattern suitable to form a first row of the detector mosaic interconnect lines at a first edge of the assembly, the metallization layer terminating at an interconnect location whereon terminal pads are applied to each such interconnect line, and wherein the first dielectric layer is deposited over the interconnect lines such that only the terminal pads are left exposed and wherein each alternating layer of dielectric and metallization layers are similarly disposed to form a complete interconnect pattern suitable for interconnecting with the integrated circuit devices at a plurality of interconnect locations and to also form a plurality of detector rows forming the detector mosaic interconnect lines at the first edge of the assembly; and

C. means for bonding detectors to the detector mosaic.

4,807,001

HETEROJUNCTION FIELD-EFFECT DEVICE

Hikaru Hida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 21, 1987, Ser. No. 52,308
Claims priority, application Japan, May 23, 1986, 61-119458
Int. Cl.[4] H01L *29/80*
U.S. Cl. 357—22 **7 Claims**

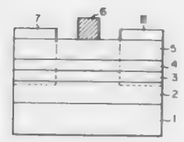
1. A heterojunction field-effect device comprising:

(1) a first layer of a first semiconductor material having a relatively high donor impurity concentration greater than 1×10^{18} cm^{-3} but equal to or less than about 5×10^{18} cm^{-3}, said first layer having a thickness equal to or less than 200 angstroms;

(2) a second layer of a second semiconductor material formed on said first layer and having a relatively low donor impurity concentration and a relatively large electron affinity;

(3) a third layer of high-purity semiconductor material formed on said second layer and having a relatively small electron affinity;

(4) a gate electrode formed on said third layer;



(5) a source electrode formed on one side of said gate electrode and electrically connected to said first and second layers; and

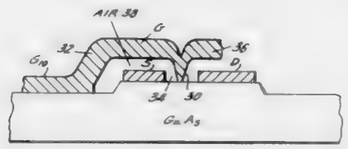
(6) a drain electrode formed on the other side of said gate electrode and electrically connected to said first and second layers, in which said first, second and third layers are formed of a gallium arsenide, an indium gallium arsenide and an aluminum gallium arsenide, respectively.

4,807,002

MESFET TRANSISTOR WITH GATE SPACED ABOVE SOURCE ELECTRODE BY LAYER OF AIR OR THE LIKE METHOD OF FABRICATING SAME

Giampiero Donzelli, Milan, Italy, assignor to Telettra Telefonia Elettronica e Radio S.p.A., Italy

Continuation of Ser. No. 822,909, Jan. 27, 1986, abandoned. This application May 26, 1988, Ser. No. 201,353
Claims priority, application Italy, Jan. 28, 1985, 19262
Int. Cl.[4] H01L *23/48, 21/76, 29/44*
U.S. Cl. 357—23.1 **12 Claims**



1. A metal-semiconductor field effect transistor comprising:

(a) a semiconductor substrate;

(b) elongated first and second electrodes contacting the substrate and spaced from each other by a first area of the substrate which has a length in the direction of elongation of said first and second electrodes; and

(c) a control electrode in sheet form, comprising:

(i) an elongated gate portion contacting the first area along at least a portion of the length of the first area;

(ii) a bonding pad portion contacting a second area of the substrate situated adjacent to the first electrode, and on the opposite side of the first electrode from the first area; and

(iii) a bridge portion bridging over the first electrode and having a first side adjoining the bonding pad portion and a second side adjoining the gate portion along substantially the entire portion of the length of the first area;

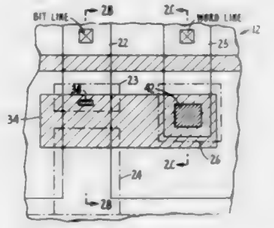
(d) whereby resistance of the control electrode is minimized.

4,807,003

HIGH-RELIABLITY SINGLE-POLY EEPROM CELL

Farrokh Mohammadi, Mountain View, and Chan S. Pang, Sunnyvale, both of Calif., assignors to National Semiconductor Corp., Santa Clara, Calif.

Continuation of Ser. No. 944,378, Dec. 19, 1986, abandoned. This application Jul. 15, 1988, Ser. No. 220,927
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.5 **9 Claims**



1. A memory device of the type used in an electrically erasable programmable read only memory array comprising a matrix of intersection bit lines and word lines having a memory device formed at intersections of the bit lines and word lines, the memory device comprising:

a semiconductor substrate (20) of a first conductivity type;

a first field effect transistor comprising first and second regions (22, 23) of a second conductivity type, opposite to that of the first conductivity type, formed in the substrate, the first and second regions (22, 23) being separated by a first channel region (43) formed by the substrate, and a first conductive portion (32) formed over the first channel region and separated from the first channel region by a dielectric layer (30) to provide the gate of the first field effect transistor, the first region (22) being connected to the bit line, the first conductive portion (32) being connected to the word line;

a second field effect transistor comprising third and fourth regions (25,26) of the second conductivity type formed in the substrate, the third and fourth regions (25,26) being separated by a second channel region (44) formed by the substrate, the first conductive region (44) formed by the substrate, the first conductive portion (32) extending over the second channel region (44) and separated from the second channel region (44) by the dielectric layer (30) to provide the gate of the second field effect transistor; and

a third field effect transistor comprising the second region (23) and a fifth region (24) of the second conductivity type formed in the substrate, the second and fifth regions (23, 24) being separated by a third channel region (45) formed by the substrate, and a second conductive portion (34) formed over the third channel region (45) to provide the gate of the third field effect transistor and extending to overlap both the second region (23) and the fourth region (26), the second conductive portion (34) being separated from the second region (23), the fourth region (26) and the third channel region (45) by the dielectric layer (30), the second conductive portion (34) including a first downwardly extending portion (36) which defines a first layer (38) of thin tunneling dielectric material between the second conductive portion (34) and the second region (23) and a second downwardly extending portion (40) which defines a second layer (42) of thin tunneling dielectric material between the second conductive portion (34) and the fourth region (26).

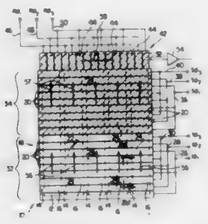
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4,807,004

TIN OXIDE CCD IMAGER

Chang-Feng Wan, Dallas; Yingsheng Tung, Plano, and Steven N. Frank, McKinney, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 26, 1986, Ser. No. 935,664
Int. Cl.[4] H01L 29/78
U.S. Cl. 357—24 **44 Claims**



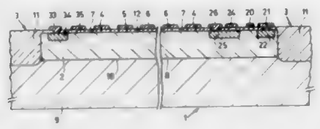
1. A charge coupled device array, comprising
a semiconductor layer;
a gate insulator layer formed on said semiconductor layer;
a normally insulative layer formed on said gate insulator layer;
a plurality of conductive electrodes defining at least one row of charge-coupled devices, all of said electrodes formed in said normally insulative layer and horizontally spaced by predetermined electrode gaps having a width between electrodes of no greater than about one micron, said electrodes and said gaps formed by selectively doping said normally insulative layer after said normally insulative layer is formed on said gate insulator layer.

4,807,005

SEMICONDUCTOR DEVICE

Leonard J. M. Esser, and Gijsbert Lock, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 866,004, Dec. 30, 1977, abandoned, which is a continuation of Ser. No. 504,372, Sep. 9, 1974, abandoned, which is a continuation of Ser. No. 299,748, Oct. 24, 1972, abandoned. This application Apr. 16, 1981, Ser. No. 254,672
Claims priority, application Netherlands, Oct. 27, 1971, 7114770
Int. Cl.[4] H01L 29/078, 27/04
U.S. Cl. 357—24 **15 Claims**



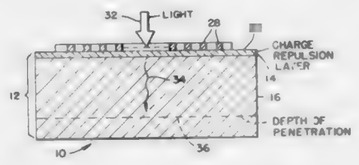
1. A charge coupled device comprising:
(a) a semiconductor body having a semiconductor layer of one conductivity type adjoining a surface of said body at one side and forming a pn junction with a substrate portion of said body of the second conductivity type, said semiconductor layer having a thickness and doping concentration adapted to permit an electric field to be applied transversely to said layer with substantial freedom from avalanche multiplication and with a depletion zone being formed throughout the thickness of said semiconductor layer;
(b) first means for locally introducing into said semiconductor layer at a first part thereof an electric charge embodying information;
(c) second means for reading said charge at a second part of said layer;
(d) third means for completely isolating at least during operation said semiconductor layer from any surroundings except at said first and second means, and at least during operation for laterally bounding said layer within said body;
(e) fourth means being present at said one side of said semiconductor layer for receiving voltages and generating electric fields in said semiconductor layer for storing and transporting charges in said semiconductor layer from said first part to said second part of the semiconductor layer in a direction parallel to said layer, said fourth means comprising a plurality of electrode layer areas and respective barrier layer areas between said semiconductor layer and each of said electrode layer areas, said electrode layer areas and said barrier layer areas extending over at least the entire width of said semiconductor layer in a direction transverse to the direction of charge transport and parallel to the surface of said semiconductor layer; and
(f) fifth means comprising clock voltage means connected to said electrode layer areas for applying respective clock voltages to said electrode layer areas thereby temporarily producing local depletion zones throughout the thickness of said semiconductor layer and which bound at least one of the regions of said semiconductor layer in which information is stored near the surface of the layer at a relatively small distance from said electrode layer areas, and said fifth means laterally transporting said information-forming charge through the bulk of said semiconductor layer by producing an electric field in said region whereby said charge is repelled from said region to a subsequent region mainly through the bulk of said semiconductor layer at a relatively large distance from the surface.

4,807,006

HETEROJUNCTION INTERDIGITATED SCHOTTKY BARRIER PHOTODETECTOR

Dennis L. Rogers, Croton-On-Hudson; Jerry M. Woodall, Bedford Hills; George D. Pettit, Mahopac, and David T. McInturff, Croton-On-Hudson, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 19, 1987, Ser. No. 64,186
Int. Cl.[4] H01L 27/14
U.S. Cl. 357—30 **45 Claims**



1. A semiconductor photoconductive device comprising:
means including a substantially undoped first layer of semiconducting material for converting radiation incident upon the photoconductive device into electric charge carriers within said layer, said semiconducting material having a characteristic lattice constant and a characteristic energy band gap;
a first electrode having an electrically conductive element extending upon a surface of said photoconductive device;
a second electrode having an electrically conductive element extending upon said surface of said photoconductive device alongside of said element of said first electrode and spaced apart therefrom;
each of said elements forming a Schottky barrier with said

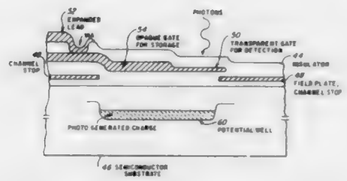
first semiconductor layer for development of an electric current in the presence of incident radiation and upon connection of a source of bias voltage between said first and said second electrodes, said photoconductive device further comprising:
means including a second layer of semiconducting material having a characteristic lattice constant which is lattice mismatched to the lattice constant characteristic of the first layer and a characteristic energy band gap which is wider than the characteristic energy band gap of the first layer, said second layer being interposed between the surface of said photoconductive device and said first layer for deflecting both electrons and holes away from said surface, thereby to reduce entrapment of both electrons and holes along said surface and inhibit tunneling of both electrons and holes under a Schottky barrier.

4,807,007

MIS INFRARED DETECTOR HAVING A STORAGE AREA

Sebastian R. Borrello, Dallas, and Charles G. Roberts, McKinney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 538,292, Oct. 3, 1983. This application Jan. 16, 1986, Ser. No. 820,872
Int. Cl.[4] H01L 29/78, 27/14
U.S. Cl. 357—30 **10 Claims**



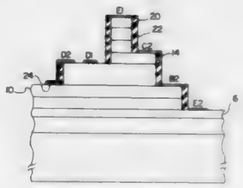
1. An infrared radiation detection device comprising:
(a) a semiconductor substrate,
(b) an insulating member on said semiconductor substrate,
(c) an electrically conductive gate layer on said insulating member spaced from said substrate and defining a potential well thereunder in said substrate, said gate having an infrared light transmissive portion and an infrared light opaque portion contiguous thereto, and
(d) means for defining said potential well region in said substrate comprising channel stop means in said insulating member disposed beyond said electrically conductive gate layer, whereby said light transmissive portion and said light opaque portion of said electrically conductive gate layer are disposed over said substrate without intervening channel stop means,
(e) said electrically conductive gate layer forming a gate whereby the voltage on said gate determines the amount of charge storable in the potential well region formed, and
(f) the area of said infrared light transmissive portion determining the amount of charge stored in said potential well, said potential well including a first region of said substrate directly below the infrared light transmissive portion of said gate layer and an additional region in said substrate continuous to said first region and directly below the infrared light opaque portion of said gate layer.

4,807,008

STATIC MEMORY CELL USING A HETEROSTRUCTURE COMPLEMENTARY TRANSISTOR SWITCH

Man-Chang F. Chang, Thousand Oaks; Peter M. Asbeck, Newbury Park; Keh-Chung Wang, and David L. Miller, both of Thousand Oaks, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 14, 1987, Ser. No. 95,974
Int. Cl.[4] H01L 29/72
U.S. Cl. 357—34 **7 Claims**



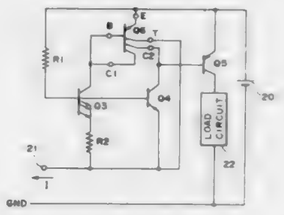
1. A heterostructure complementary transistor switch (HCTS) comprising:
a semi-insulating substrate;
a first semiconducting layer of a one-type conductivity on the substrate;
an emitter contact on the first semiconducting layer of one-type conductivity forming an emitter of a first heterojunction bipolar transistor (HBT);
a second semiconducting layer of opposite-type conductivity on the first semiconducting layer forming a heterojunction between the first and second layers;
a contact on the second semiconducting layer forming the base of the first HBT and a collector of a second HBT;
a third semiconducting layer of the one-type conductivity on the second semiconducting layer forming a heterojunction between the second and third layers;
a contact on the third semiconducting layer forming a collector of the first HBT and a base of the second HBT;
a fourth semiconducting layer of the opposite-type conductivity on the third semiconducting layer forming a heterojunction between the third and fourth layers; and
an emitter contact on the fourth semiconducting layer forming an emitter of the second HBT.

4,807,009

LATERAL TRANSISTOR

Ikuo Fushimi, Ebina, and Takamasa Sakuragi, Hiratsuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 47,519, May 6, 1987, abandoned, which is a continuation of Ser. No. 827,152, Feb. 7, 1986, abandoned. This application Jul. 13, 1988, Ser. No. 219,857
Claims priority, application Japan, Feb. 12, 1985, 60-023653
Int. Cl.[4] H01L 29/78, 29/72; H03K 17/60
U.S. Cl. 357—35 **1 Claim**



1. A switching device, comprising:
(1) a first transistor of the PNP structure comprising: a base region, an emitter region, a first collector region and a

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second collector region each having the same conductivity type as that of the emitter region, and a semiconductor region (A) disposed outside the first and second collector regions with respect to the emitter region and having the same conductivity type as that of the collector regions;

(2) a second transistor of the NPN structure, the collector of the second transistor being connected to the base and the first collector of the first transistor;

(3) a third transistor of the NPN structure having an emitter area 1/n times that of the second transistor, the collector of the third transistor being connected to the second collector of the first transistor;

(4) a fourth transistor of the PNP structure, the base of the fourth transistor being connected to the second collector of the first transistor and the collector of the third transistor;

load circuit means being connected to the collector of the fourth transistor;

a power supply terminal being connected respectively to the emitter of the first transistor, to the bases of the second and third transistors respectively through a first resistor of a high resistance, and to the emitter of the fourth transistor;

an input current terminal being connected respectively to the semiconductor region (A) of the first transistor, to the emitter of the second transistor through a second resistor, and to the emitter of the third transistor.

4,807,010

INTEGRATED CIRCUIT IN COMPLEMENTARY CIRCUIT TECHNOLOGY COMPRISING A SUBSTRATE BIAS VOLTAGE GENERATOR AND A SCHOTTKY DIODE

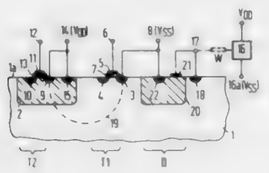
Josef Winnerl, Landshut, and Dezső Takacs, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 11, 1986, Ser. No. 895,313

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1985, 3530428

Int. Cl.⁴ H01L *29/48, 29/78, 27/02, 23/48*

U.S. Cl. 357—42 **6 Claims**



1. An integrated circuit in complementary circuit technology, comprising:

field effect transistors of different channel types and wherein at least a first field effect transistor thereof is arranged in a p-conductive semiconductor substrate and at least a second field effect transistor thereof is arranged in an n-conductive, semiconductor zone provided in said semiconductor substrate;

said semiconductor zone being connected to a supply voltage;

one region of said first field effect transistor being connected to a reference potential;

said semiconductor substrate being connected to an output of a substrate bias voltage generator for generating a negative substrate bias voltage and to which said reference potential and said supply voltage are supplied;

an n-conductive semiconductor region inserted into said semiconductor substrate and which is provided with a metal contact which forms a Schottky diode together with said n-conductive semiconductor region;

said metal contact being connected to said output of said substrate bias voltage generator; and

said semiconductor region being connected to said reference potential.

4,807,011

SEMICONDUCTOR INTEGRATED CIRCUIT INCORPORATING SITS

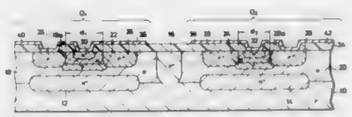
Terumoto Nosaka, and Tadahiko Hotta, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 767,708, Apr. 25, 1985, abandoned, which is a continuation of Ser. No. 368,968, Apr. 16, 1982, abandoned. This application Mar. 10, 1987, Ser. No. 24,930

Claims priority, application Japan, Apr. 21, 1981, 56-60061

Int. Cl.⁴ H01L *29/68, 27/04*

U.S. Cl. 357—45 **2 Claims**



1. A semiconductor device having an integrated circuit which respectively provides high speed internal logic operations and high-voltage peripheral circuit control operations, said integrated circuit being formed in a series of process steps and comprising:

a semiconductor substrate including an internal logic region and a peripheral circuit control region formed in substantially the same process step for respectively providing said internal logic and peripheral circuit control operations; and

at least two vertical transistors formed in said substrate, each transistor having main current contact regions of a first conductivity type comprising source and drain regions which are separated by a lightly doped semiconductor channel region, the lightly doped semiconductor channel region being surrounded by a region of a second conductivity type and having a doping concentration sufficiently small as to be fully depleted in the absence of a bias voltage applied thereto by the built-in voltages due to the regions of the first conductivity type and the second conductivity type, at least a first one of said transistors having a larger lateral width for its channel region thereby to permit high-speed operation and lower power dissipation at low drive voltage for said internal logic operations, and at least another one of said transistors having a relatively smaller lateral width for its channel region to thereby have a higher breakdown voltage for said peripheral circuit control operations.

4,807,012

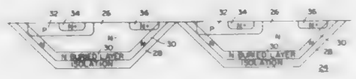
IC WHICH ELIMINATES SUPPORT BIAS INFLUENCE ON DIELECTRICALLY ISOLATED COMPONENTS

James D. Beason, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 18, 1985, Ser. No. 777,269

Int. Cl.⁴ H01L *27/12*

U.S. Cl. 357—49 **17 Claims**



1. In an integrated circuit including a plurality of semiconductor islands of a first conductivity type, each island having bottom and sides separated from a semiconductor support by a dielectric layer, the improvement for each island comprising a shield layer of said first conductivity type and having an impurity concentration throughout the shield layer greater than the impurity concentration of said island and a total impurity concentration less than 1×10^{13} ions/cm^2 along at least said sides of said island at an interface between said island and said dielectric layer for eliminating support bias influence on said island.

4,807,013

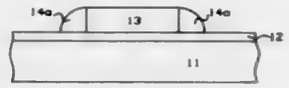
POLYSILICON FILLET

Ajit S. Manocha, Allentown, Pa., assignor to American Telephone and Telegraph Company AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 661,776, Oct. 17, 1984, abandoned. This application Apr. 8, 1987, Ser. No. 37,090

Int. Cl.⁴ H01L *29/78, 29/04, 23/48*

U.S. Cl. 357—59 **8 Claims**



2. Device comprising:

a silicon substrate,

a dielectric layer covering at least portions of the substrate,

a polysilicon conductor formed on the dielectric layer, said polysilicon conductor having at least one essentially vertical sidewall,

a polysilicon fillet having a rounded surface and an interface with said conductor in the corner formed by the essentially vertical sidewall and the underlying dielectric layer.

4,807,014

THREE TUBE COLOR PROJECTION TELEVISION SYSTEM HAVING MULTISPOT BLUE TUBE AND SINGLE-SPOT RED AND GREEN TUBES

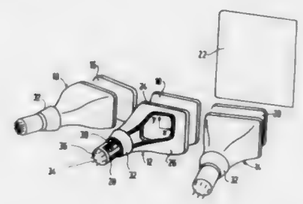
Aart A. Van Gorkum, Tokyo, Japan; Leendert Vriens, Eindhoven, Netherlands; Arne L. Duwaer, Ossining, N.Y.; Johannes H. M. Spruit, and Alexander R. H. Van Schoonhoven, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 3, 1987, Ser. No. 35,539

Claims priority, application United Kingdom, Apr. 11, 1986, 8609925

Int. Cl.⁴ H04N *9/31, 9/20*

U.S. Cl. 358—65 **12 Claims**



1. A projection colour television system comprising a red light emitting display tube, a green light emitting display tube and a blue light emitting display tube, each tube comprising: a glass envelope including a display window, a cone and a neck; a cathodoluminescent phosphor screen on the inside of the display window; and an electron gun located in the neck; the red and green light emitting display tubes each including a short wave pass interference filter disposed between the phosphor and the faceplate; and each tube further comprising a system of deflection coils around the neck of the tube envelope to deflect the electron beams in two mutually perpendicular directions, x, y;

characterized in that the electron gun of only the blue light emitting display tube comprises means for producing at least two focused, vertically separated and independently adjustable electron beams.

4,807,015

SEMICONDUCTOR DEVICE HAVING ELECTRODES AND OR INTERCONNECTIONS OF REFRACTORY METAL FILM CONTAINING SILICON OXIDE

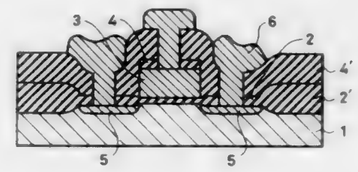
Nobuyoshi Kobayashi, Hachioji; Nobuo Hara, Kokubunji; Seiichi Iwata, Sayama, and Naoki Yamamoto, Kawaguchi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 810,188, Dec. 18, 1985, abandoned. This application May 13, 1987, Ser. No. 48,968

Claims priority, application Japan, Dec. 24, 1984, 59-270834

Int. Cl.⁴ H01L *23/48, 29/78*

U.S. Cl. 357—67 **24 Claims**



1. A semiconductor device comprising:

an insulator film formed on a substrate; and

an electrode and/or an interconnection made of refractory metal film, of a refractory metal selected from the group consisting of W, Mo, Ti and Ta, having a desired shape formed on said insulator film,

wherein said refractory metal film contains silicon oxide, the content of the silicon oxide being not less than 1 ppm and not more than 40 weight percent, so as to provide increased adhesion between the refractory metal film and the insulator film as compared to the adhesion between the refractory metal film and the insulator film without silicon oxide being contained in the refractory metal film.

4,807,016

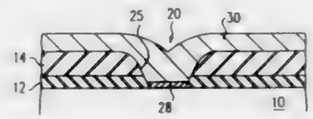
DRY ETCH OF PHOSPHOSILICATE GLASS WITH SELECTIVITY TO UNDOPED OXIDE

Monte A. Douglas, Coppell, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 755,140, Jul. 15, 1985, Pat. No. 4,711,698. This application Nov. 20, 1987, Ser. No. 123,099

Int. Cl.⁴ B44C *1/22;* **C03C** *15/00, 25/06;* **C23F** *1/02*

U.S. Cl. 357—67 **26 Claims**



17. A conductor contact for an integrated circuit device, comprising:

a semiconductor layer;

a phosphorus-resistant silicon dioxide layer formed on said semiconductor layer;

a glass layer selected from the group consisting of phospho-

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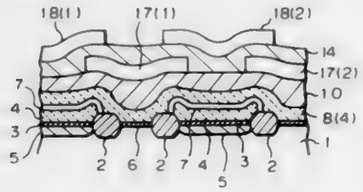
silicate glass and borophosphosilicate glass and formed on said silicon dioxide layer;
an orifice formed at least through said glass layer, sloped sidewalls of said orifice formed by etching the glass layer to the oxide layer with selectivity to the oxide and then reflowing said glass layer; and
a conductor formed in said orifice having good conformity to said sloped sidewalls.

4,807,017

SEMICONDUCTOR MEMORY DEVICE WITH WIRINGS HAVING ENSURED CROSS-SECTIONS

Taiji Ema, Kawasaki, and Takashi Yabu, Yokohama, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 802,100, Nov. 25, 1985. This application Jun. 6, 1988, Ser. No. 203,634
Claims priority, application Japan, Nov. 26, 1984, 59-248946
Int. Cl.[4] H01L *23/48, 27/02, 27/10, 29/04*
U.S. Cl. 357—68 **4 Claims**



1. A semiconductor memory device comprising:
a semiconductor substrate;
a plurality of memory cell structures formed on said semiconductor substrate, each memory cell having a transistor which has a drain region;
a plurality of wiring groups formed above said memory cell structures, said wiring groups forming data line wirings, which extend parallel along a first predetermined direction, an forming word line wirings, which extend in parallel along a second predetermined direction; and
insulating layers provided between said wirings of said wiring groups, said data line wirings being distributed between an upper layer and a lower layer, said upper layer and said lower layer being separated by one of said insulating layers, said upper and lower layers being formed from the same material, said data line wirings distributed in said upper layer being arranged in an overlapping relationship with regard to said data line wirings distributed in said lower layer, wherein said data line wirings contact said drain regions of said transistors of associated memory cells, respectively.

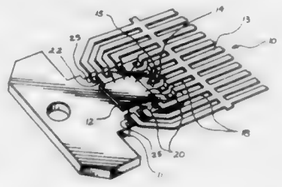
4,807,018

METHOD AND PACKAGE FOR DISSIPATING HEAT GENERATED BY AN INTEGRATED CIRCUIT CHIP

Marino Cellai, Agrate Brianza, Italy, assignor to SGS Microelettronica S.p.A., Italy

Continuation of Ser. No. 888,049, Jul. 18, 1986, abandoned. This application Oct. 26, 1987, Ser. No. 113,408
Claims priority, application Italy, Oct. 10, 1985, 22428 A/85
Int. Cl.[4] H01L *23/02*
U.S. Cl. 357—70 **5 Claims**

1. A package for a semiconductor chip comprising:
a metallic heat sink;
a semiconductor chip mounted on said heat sink;
lead frame means for enabling electrical connection to said chip, said lead frame means comprising a plurality of inner conductive end portions each having one surface facing said heat sink; and
thin coating means located on said lead frame means for providing electrical isolation between said lead frame means and said heat sink, said coating means being coextensive with each of said plurality of inner conductive end



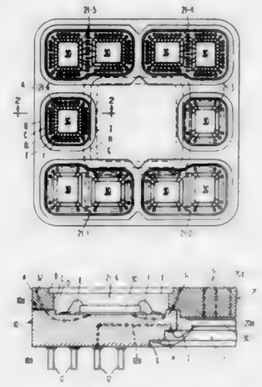
portions only on the one surface of each of said plurality of inner conductive end portions facing said heat sink.

4,807,019

CAVITY-UP-CAVITY-DOWN MULTICHIP INTEGRATED CIRCUIT PACKAGE

Jerry I. Tustaniwskyj, Mission Viejo, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 41,964, Apr. 24, 1987. This application Jun. 6, 1988, Ser. No. 203,511
Int. Cl.[4] H01L *23/02, 23/08, 23/10, 23/12*
U.S. Cl. 357—74 **17 Claims**



1. A cavity-up-cavity-down integrated circuit package, comprising:
top and bottom thin planar members; each of said thin planar members having an upward-facing major surface and a downward-facing major surface, and having at least one aperture which penetrates both of its major surfaces;
said downward-facing major surface of said top planar member being permanently joined via a single material and a single interface to said upward-facing major surface of said bottom planar member;
each aperture in said top planar member being located such that it is blocked by said upward-facing major surface of said bottom planar member, and each aperture in said bottom planar member being located such that it is blocked by said downward-facing surface of said top planar member;
a low power integrated circuit chip on said upward-facing surface fo said bottom member within each aperture of said top member, and a high power integrated circuit chip on said downward-facing surface of said top member within each aperture of said bottom member; and
conductors, integrated into said bottom member but not said top member, for carrying electrical signals from said

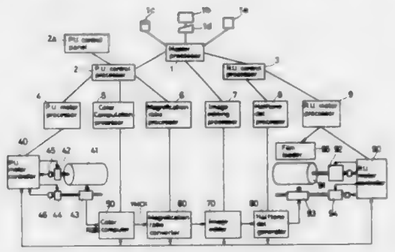
downward-facing surface of said bottom member to all of said chips; whereby
each high power chip has a thermal conduction path which goes directly through said thin top planar member; each low power chip has a thermal conduction path which goes from said bottom planar member through said single interface to said top planar member; and every chip has short signal paths that go through just said bottom member.

4,807,020

IMAGE REPRODUCING SYSTEM HAVING MULTIPLE PROCESSING LEVELS

Makoto Hiroswa, Kyoto, and Susumu Yamada, Osaka, both of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jul. 13, 1984, Ser. No. 630,391
Claims priority, application Japan, Sep. 13, 1983, 58-168861
Int. Cl.[4] H04N *1/46, 1/387, 1/40;* **G03F** *3/08*
U.S. Cl. 358—75 **25 Claims**



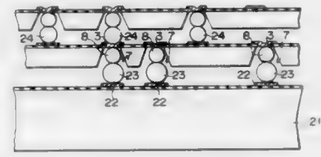
1. An image reproducing system in which image data obtained by scanning an original are processed and then used for causing a recording beam to record a reproduction image on a photosensitive material, comprising:
(a) a main processor for controlling programmable subordinate processors in order to record a plurality of reproduction images of plural originals mounted on an input scanning drum; and
(b) programmable subordinate processors, respectively programmed for directly controlling, under the control of the main processor, a plurality of respective implement circuits, at least some of which are operable for carrying out respective processes on the image data.

4,807,021

SEMICONDUCTOR DEVICE HAVING STACKING STRUCTURE

Katsuya Okumura, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 5, 1987, Ser. No. 22,371
Claims priority, application Japan, Mar. 10, 1986, 61-51870; Jan. 12, 1986, 61-136840; Jun. 12, 1986, 61-136841
Int. Cl.[4] H01L *23/16, 23/48, 29/46*
U.S. Cl. 357—75 **14 Claims**



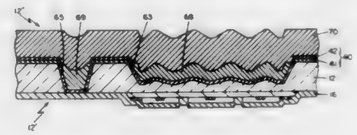
1. A semiconductor device comprising:
a base semiconductor structure having a flat main surface and including semiconductor elements, interelement wiring layers formed on said flat main surface for connecting said semiconductor elements together, and conductive pads provided on said main surface and connected to the interelement wiring layers;
at least one stacking semiconductor structure stacked on said base semiconductor structure, the stacking semiconductor structure having a flat main surface and a rear surface and including semiconductor elements, interelement wiring layers formed on said flat main surface for connecting said semiconductor elements together, conductive pads provided on said main surface for connection to the interelement wiring layer, and holes selectively formed at said rear surface of said stacking semiconductor structure to expose portions of rear surfaces of said conductive pads;
first conductive elements fixed in said holes of said stacking semiconductor structure for direct connection to the exposed rear surface portions of said conductive pads; and
second conductive elements fixed on said conductive pads of said base semiconductor structure and fixed on said first conductive elements to produce a gap between said base and said at least one stacking semiconductor structure.

4,807,022

SIMULTANEOUS FORMATION OF VIA HOLE AND TUB STRUCTURES FOR GAAS MONOLITHIC MICROWAVE INTEGRATED CIRCUITS

Thomas E. Kazior, Sudbury, and Mark S. Durschlag, Natick, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 1, 1987, Ser. No. 44,684
Int. Cl.[4] H01L *23/34, 27/04, 21/302*
U.S. Cl. 357—81 **6 Claims**



1. A semiconductor circuit comprises:
a semiconductor substrate supporting a heat dissipating device formed over a first surface thereof;
a conductive backplane formed over a second opposite surface of said semiconductor substrate;
a conductive contact disposed through said semiconductor substrate provided to make electrical contact between a conductor disposed over the first surface of said semiconductor substrate and the conductive backplane disposed over the second surface of said semiconductor substrate; and
a thermally conductive region disposed in a recess provided partially into said semiconductor substrate in a region thereof underlying said heat dissipating element, with said recess having an irregular, nonplanar surface adjacent said heat dissipating element, and said thermally conductive material being disposed in thermal contact with said heat dissipating element and the conductive backplane disposed on the semiconductor substrate.

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4,807,023

MAPPING METHOD FOR IMPULSE PAY PER VIEW SYSTEM

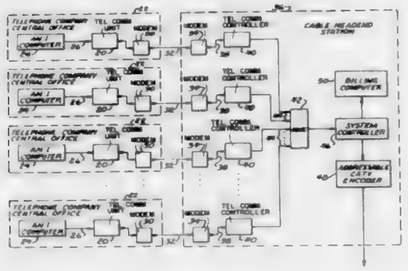
Charles B. Bentler, Oak Park; Gordon E. Reichard, Jr., Rolling Meadows, and Samir Sirazi, Chicago, all of Ill., assignors to Zenith Electrics Corporation, Glenview, Ill.

Filed Jul. 29, 1985, Ser. No. 760,219

The portion of the term of this patent subsequent to Jul. 5, 2005, has been disclaimed.

Int. Cl.[4] H04M *11/08, 15/00*; H04N *7/10*; H04H *9/00*

U.S. Cl. 358—86 **28 Claims**



1. In a system including subscribers with one-way addressable access terminal units, a method for processing calling line data messages received from a telephone company serving subscribers, said calling line data messages representing subscriber requests for pay per view service, each of said calling line data messages including a subscriber's telephone number and selection data determined by a subscriber to choose a pay per view event, the method comprising the steps of:

compressing said calling line data messages; then

electronically mapping the telephone number portions of said calling line data messages into address codes for the access terminal units, including reorganizing at least a portion of the subscriber telephone number by reading a look-up table for a first portion of said telephone number to provide a first binary number, converting a second portion of said telephone number into a second binary number, and combining said first and second binary numbers; and

electronically mapping the selection data portions of said calling line data messages into authorization codes for said access terminal units representative of said pay per view events.

12. In a system including subscribers with one-way access terminal units, a method for processing calling line data messages received from a telephone company serving subscribers, said calling line data messages representing subscriber requests for pay per view service, each of said calling line messages including a subscriber's telephone number and selection data determined by a subscriber to choose a pay per view event, the method comprising the steps of processing each of said calling line data messages to form:

a first number group comprising four digits of the telephone number;

a second number group comprising three other digits of the telephone number;

a third number group comprising the area code of the telephone number; and

a fourth number group comprising the selection data and electronically mapping said four number groups into address codes and authorization codes for said access terminal units, so that said units can be addressed and authorized to permit said pay per view event to be exhibited.

4,807,024

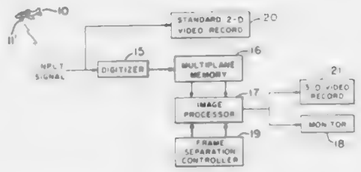
THREE-DIMENSIONAL DISPLAY METHODS AND APPARATUS

A. Porter McLaurin, Chapin; LeConte Cathey, and Edwin R. Jones, Jr., both of Columbia, all of S.C., assignors to The University of South Carolina, Columbia, S.C.

Filed Jun. 8, 1987, Ser. No. 59,759

Int. Cl.[4] H04N *13/00, 7/8*

U.S. Cl. 358—88 **14 Claims**



1. A method for producing a three-dimensional illusion of a subject comprising the steps of:

generating at a predetermined frame rate a single sequence of images of said subject as viewed by a camera carried by a moving vehicle spaced from said subject as said vehicle is moved at constant velocity and constant spacing with respect to said subject, and

presenting for viewing on a viewing surface alternately at a rate in the range of about four to thirty per second selected successive sets of images in said sequence that have a frame separation therebetween depending on the velocity and spacing of said camera with respect to said subject so as to differ in parallax in the direction of movement of said vehicle by an amount sufficient to create a resultant image which as viewed by an observer is perceived as having depth.

4,807,025

ELECTRONIC ENDOSCOPE APPARATUS

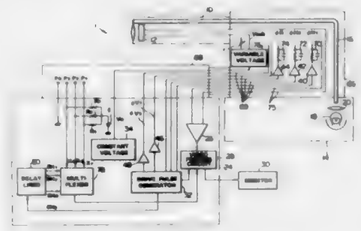
Teruo Eino, No. 5-16-1-126, Sanda-cho, Hachioji-shi, Tokyo, Japan, and Tohru Takei, No. 560-11, Kitano-cho, Hachioji-shi, Tokyo, Japan

Filed Oct. 16, 1987, Ser. No. 109,799

Claims priority, application Japan, Oct. 23, 1986, 61-252576; Nov. 4, 1986, 61-263000; Mar. 23, 1987, 62-068577

Int. Cl.[4] H04N *7/18*

U.S. Cl. 358—98 **20 Claims**



1. An electronic endoscope apparatus comprising:

an endoscope having a solid state imaging device in a tip part;

a light source means for generating an illuminating light;

a light guide means inserted through said endoscope and transmitting the illuminating light;

a light source connector provided on an incident end surface side of said light guide means;

a control device generating a plurality of driving pulses to said solid state imaging device and processing a signal obtained from said solid state imaging device; and

a waveform compensating means provided within said light source connector and compensating in advance a distortion of a waveform when at least one driving pulse among said plurality of driving pulses is transmitted to said solid state imaging device.

4,807,026

ELECTRONIC IMAGE PICKUP DEVICE FOR ENDOSCOPES

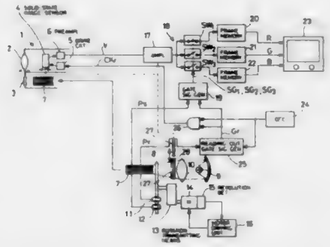
Kimihiko Nishioka, and Hisao Yabe, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1987, Ser. No. 28,195

Claims priority, application Japan, Mar. 19, 1986, 61-61462

Int. Cl.[4] H04N *7/18*; A61B *1/06*

U.S. Cl. 358—98 **39 Claims**



1. An electronic image pickup device for endoscopes, comprising:

an illuminating system including:

light source means,

light-transmitting means having a light-incidence end face abutting said light source means and a light-emitting end face directed to an object under observation to irradiate a light coming from said light source means onto said object,

a first filter disc rotatably disposed between said light source means and said light-incidence end face of said light-transmitting means and having light-transmitting areas arranged on a same circumference of said disc via a light-removing area intervening between the respective light-transmitting areas for removing the light coming from said light source means for transmitting at least three different color lights one after another in succession through said light-transmitting areas as said first filter disc is rotated; and

an image pickup system disposed in association with said illuminating system and including:

an objective lens,

image pickup means for receiving an image of said object formed by said objective lens, and

color image display means connected to said image pickup means for producing a color image of said object based on an electric signal supplied from said image pickup means, wherein:

a plurality of filters having mutually different transmitting wavelength ranges are disposed for alternative insertion into an optical path of either one of said illuminating system and said image pickup system, thereby making it possible to obtain a color image by rays of a plurality of wavelength ranges.

4,807,027

STATION PLATFORM OBSERVATION METHOD

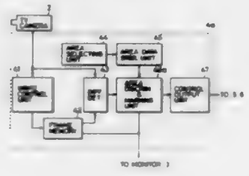
Takao Muto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

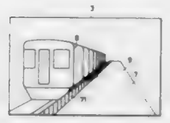
Continuation of Ser. No. 832,625, Feb. 25, 1986, abandoned. This application Jan. 7, 1988, Ser. No. 143,235

Claims priority, application Japan, Feb. 27, 1985, 60-40351

Int. Cl.[4] H04N *7/18*

U.S. Cl. 358—108 **2 Claims**





1. A station platform observation method in which a single television camera photographs the platform of a train station at which a train arrives and from which the train departs to produce scenery data of the platform and displays the scenery data on the screen of a television monitor, comprising:

displaying first scenery data of the area between the platform and the train supplied by said television camera at the arrival and departure of said train on said monitor and storing said first scenery data in a memory for a predetermined period of time;

comparing second scenery data supplied by said television camera later than said first scenery data with said first scenery data in a difference detection unit to detect differences between said first and second scenery data and provide a difference indicating signal;

selecting a monitored area within said first scenery data and inputting area data indicative of the monitored area in an area storing unit;

applying the difference indicating signal and said area data from said area storing unit to an area discriminating unit;

determining whether the variation in scenery occurs within the monitored area and is greater than a predetermined value; and

providing an indication to an operator that a dangerous condition exists and producing a signal for stopping said train.

4,807,028

DECODING DEVICE CAPABLE OF PRODUCING A DECODED VIDEO SIGNAL WITH A REDUCED DELAY

Yoshinori Hatori, Kanagawa; Mitsuo Nishiwaki, Tokyo, and Naoki Mukawa, Kanagawa, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd.; Nippon Telegraph & Telephone Corp. and Nec Corp., all of Tokyo, Japan

Filed Nov. 10, 1987, Ser. No. 118,922

Claims priority, application Japan, Nov. 10, 1986, 61-265581

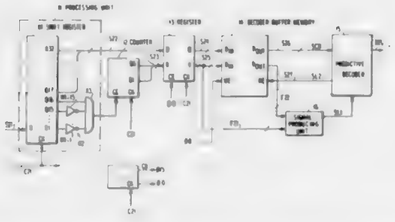
Int. Cl.[4] H04N *7/137*

U.S. Cl. 358—133 **5 Claims**

1. A decoding device for use as a counterpart of an encoding device for compression encoding an encoder input video signal comprising successive frames into an encoded video signal, said decoding device being for decoding said encoded video signal into a decoded video signal and comprising a decoder

buffer memory for carrying out speed conversion between write-in data given by said encoded video signal and read-out data read out of said decoder buffer memory and a decoder for decoding said read-out data into said decoded video signal, wherein the improvement comprises:

signal producing means responsive to said write-in data and said read-out data for producing a decoder control signal when said write-in data and said read-out data are in one of said frames;



first supplying means for supplying said decoder with said read-out data; and

second supplying means for supplying said decoder with said decoder control signal;

said decoder being responsive to the decoder control signal for producing a supply control signal;

said decoding device further comprising third supplying means for supplying said supply control signal to stop supply of said read-out data to said decoder.

4,807,029

METHOD OF RECONSTRUCTING IMAGE FROM COMPRESSION-PROCESSED IMAGE SIGNALS

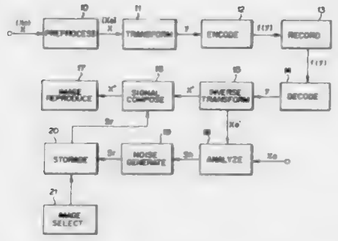
Nobuyuki Tanaka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 16, 1987, Ser. No. 62,799

Claims priority, application Japan, Jun. 16, 1986, 61-139720

Int. Cl.⁴ H04N *7/12*

U.S. Cl. 358—133 **7 Claims**



1. A method of reconstructing an image from compression-processed image signals, in which an image signal presented for reconstruction is comprised of transform image signals obtained by carrying out irreversible compression encoding processing of input image signals, and then carrying out decoding processing.

wherein the improvement comprises the steps of:

(i) carrying out said irreversible compression encoding processing and said decoding processing on input training image signals representing a predetermined training image, to obtain transformed training image signals prior to image reconstruction, comparing said transformed training image signals with said input training image signals, and calculating differences between said transformed training image signals and said input training image signals at respective picture elements,

(ii) generating noise signals having a signal value distribution in accordance with the distribution of said differences, and

(iii) reconstructing said input image by randomly adding said noise signals to said transform image signals.

4,807,030

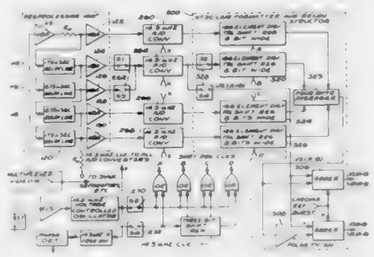
METHOD AND APPARATUS FOR MULTIPLEXING TELEVISION SIGNALS

Jack Sacks, Thousand Oaks, Calif., assignor to Multilink Group, Calabasas, Calif.

Continuation-in-part of Ser. No. 808,908, Dec. 13, 1985. This application Jun. 13, 1986, Ser. No. 874,042

Int. Cl.⁴ H04N *7/04*

U.S. Cl. 358—141 **23 Claims**



1. A decoder for separating an encoded television frame representing odd and even field lines of an unencoded television frame, the decoder comprising:

(a) means for receiving an input signal containing the encoded television frame comprising a plurality of sum and difference signal pairs,

wherein each of said signal pairs comprises a sum signal indicative of the sum of respective pair of field lines of the unencoded television frame,

and a time-compressed difference signal indicative of the time-compressed bandlimited difference between a respective pair of field lines of the unencoded television frame;

(b) first means for sampling and holding the sum signals of the signal pairs at a first effective rate;

(c) second means for effectively sampling and holding the time-compressed difference signals of the signal pairs at a second effective rate which is a non-unity multiple of said first effective rate to produce respective time-expanded difference signals;

(d) means for adding the sampled and held sum signals to the time-expanded difference signals to substantially recover one of the paired field lines of each of the field line pairs; and

(e) means for differencing the sampled and held sum signals and the time-expanded difference signals to substantially recover the other of the field lines of each of the field line pairs.

4,807,031

INTERACTIVE VIDEO METHOD AND APPARATUS

Robert S. Broughton, Beaverton, Oreg., and William C. Lanmeister, San Jose, Calif., assignors to Interactive Systems, Incorporated, Beaverton, Oreg.

Filed Oct. 20, 1987, Ser. No. 112,713

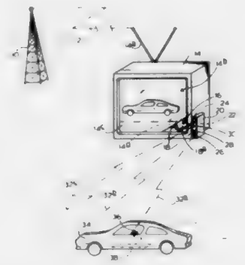
Int. Cl.⁴ H04N *7/08;* **A63F** *9/22*

U.S. Cl. 358—142 **52 Claims**

1. In conjunction with a method for producing a composite video signal containing video program material and control data, and displaying the signal on a television and decoding

such control data for ancillary use, an improvement comprising:

modulating at least one video field within the viewing area of a television in such manner that the modulation produc-



ing a video subcarrier component of the signal, the component containing the data; and

detecting the component to reproduce the data for the ancillary use.

4,807,032

METHOD OF CORRECTING IMAGE ERRORS

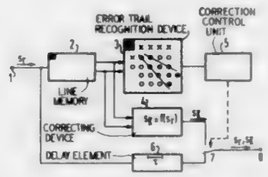
Herbert Strehl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 820,788, Jan. 22, 1986, abandoned. This application Jul. 12, 1988, Ser. No. 218,468

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1985, 3502315

Int. Cl.⁴ H04N *5/14, 5/21*

U.S. Cl. 358—166 **13 Claims**



1. A method of correcting image errors in a transmission system in which pulse code modulated image signals are transformed at a transmitting side into difference pulse code modulated image signal values which are transmitted to receiving side, and at the receiving side regained pulse code modulated image signal values, corresponding to said pulse code modulated image signal values, are reconstructed from said difference pulse code modulated image signal values, comprising the steps of:

intermediately storing at a receiver said regained pulse code modulated image signal values of a small number of television lines;

analyzing the image structure of a television image/television half image from said stored regained pulse code modulated image signal values in order to recognize error trails consisting of adulterated ones of said regained pulse code modulated image signal values caused by adulteration of ones of the transmitted difference pulse code modulated image signal values; and

correcting the adulterated ones of the regained pulse code modulated image signal values in said image trail with respective correction values obtained from the transmitted difference pulse code modulated image signal values.

4,807,033

METHOD FOR CORRECTING TELEVISION SIGNALS

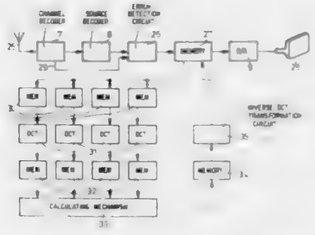
Werner Keesen, Hanover; Wolfgang Hartnack, Hemmingen, and Dietrich Westerkamp, Hanover, all of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Oct. 1, 1986, Ser. No. 914,732

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1985, 3535178; Mar. 18, 1986, 3608917

Int. Cl.⁴ H04N *7/13, 7/133*

U.S. Cl. 358—167 **18 Claims**



1. In a method of correcting television signals transmitted in frames each having a plurality of fields composed of block wherein each block is constituted by a matrix of pixels defining gray or chromaticity values, some of which values are in error, rendering the block defective, the method including: detecting a defective block by means of an error detection circuit; and reducing the effect of errors in a defective block with an error concealment circuit which is activated by the error detection circuit when a defective block is detected, the improvement wherein:

said reducing step includes calculating, for a block detected to be defective, substituted information from one of information contained in blocks in an environment of the defective block and information from a signal preceding in time the signal containing the defective block; and

replacing the defective block with the calculated substitute information, wherein said calculating step includes calculating the substitute information recursively from pixels at the borders of the defective block to the interior of such block.

4,807,034

NOISE REDUCTION CIRCUIT FOR VIDEO SIGNAL HAVING FIELD MEMORY

Motohiko Takeuchi, Yokohama, and Masaaki Kisou, Ichikawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 3, 1988, Ser. No. 163,605

Claims priority, application Japan, Mar. 12, 1987, 62-55350

Int. Cl.⁴ H04N *5/21, 7/18*

U.S. Cl. 358—167 **13 Claims**

1. A noise reduction circuit for a video signal, said circuit comprising:

an A/D converter for converting an input video signal into a digital signal;

first subtracting circuit means for reducing a noise component included in said input video signal of said digital signal from said A/D converter by subtracting a noise component signal corresponding to said noise component from said digital signal;

field memory means for storing at least 1-field data of an output from said first subtracting circuit means and allowing said stored data to be read out with a predetermined delay time;

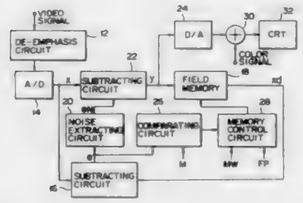
second subtracting circuit means for subtracting said data read out from said field memory means from said digital

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signal supplied from said A/D converter and outputting a subtraction result as a field difference signal;

noise extracting circuit means for selecting said noise component signal corresponding to said noise component in accordance with said field difference signal from said second subtracting circuit means and outputting said selected noise component signal to said first subtracting circuit means;

comparing circuit means for comparing said field difference signal from said second subtracting circuit means with a predetermined reference value, detecting said input video signal as a signal representing a motion picture when said field difference signal is larger than said reference value, and outputting a detection signal corresponding to said



motion picture, and detecting said input video signal as a signal representing a motionless picture when said field difference signal is smaller than said reference value, and outputting a detection signal corresponding to said motionless picture;

memory control circuit means for controlling whether to write a video signal supplied from said first subtracting circuit means to said field memory means in accordance with said detection signal output from said comparing circuit means; and

a D/A converter for converting said digital signal from which said noise component is removed by said first subtracting circuit means into an analog signal and outputting a resultant signal.

4,807,035

SIGNAL MEASUREMENT

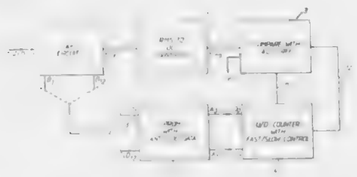
Leigh S. Sayliss, Lemsford, United Kingdom, assignor to Marconi Instruments Limited, St. Albans, United Kingdom

Filed Jul. 13, 1987, Ser. No. 72,366

Claims priority, application United Kingdom, Jul. 12, 1986, 8617024

Int. Cl.⁴ H04N *5/52*

U.S. Cl. 358—174 **13 Claims**



1. Signal measurement apparatus comprising: means for applying gain to an input signal to produce a resulting signal having a gained signal level; means for comparing the resulting signal with a known reference signal having a reference level and for producing an output indicative of the difference between them; and a feedback loop for altering the gain applied to the input signal, the feedback loop including (a) a counter receiving the output of the comparing means adapted to count up or down when the gained signal level is respectively lower or higher than the reference level and (b) a memory element for storing data indicative of values of a chosen transfer function, wherein a value is selected from the memory element according to the current count of the counter and the gain is altered by an amount related to the selected value; the apparatus being adapted to provide an output signal indicative of the count of the counter.

4,807,036

COMPLEX CIRCUIT COMPONENT FOR A VIDEO SIGNAL CIRCUIT IN A TELEVISION RECEIVER SET

Hisashi Onada; Hideaki Fujioka, both of Akita; Ikuo Kato, and Yoshinari Yamashita, both of Chiba, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 16, 1987, Ser. No. 74,003

Claims priority, application Japan, Jul. 18, 1986, 61-110506[U]; Oct. 9, 1986, 61-155536[U]

Int. Cl.⁴ H04N *5/62, 9/64*

U.S. Cl. 358—196 **5 Claims**

1. A complex circuit component for a video signal in a color television receiver set comprising;

a single substrate, with front conductive patterns and rear conductive patterns deposited on the substrate,

a first trap portion for receiving said video signal and having a ceramic trap with a ceramic filter, and an inductor coupled with said ceramic trap, for removing speech carrier wave, mounted on said substrate,

a second trap portion having a parallel circuit of an inductor and a capacitor, coupled with an output of said first trap portion, for removing color subcarrier wave, mounted on said substrate,

a delay circuit portion coupled with an output of said second trap portion, having at least one inductor and at least one capacitor, and

lead terminals including an input terminal connected to said first trap portion, and output terminal connected to said delay circuit portion and a ground terminal for each of said portions.

4,807,037

LOW NOISE CCD IMAGE SENSOR HAVING A PLURALITY OF HORIZONTAL CCD REGISTERS

Mamoru Iesaka, Kawasaki; Yoshiyuki Matsunaga, Kamakura; Sohei Manabe, and Nozomu Harada, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 6, 1987, Ser. No. 117,614

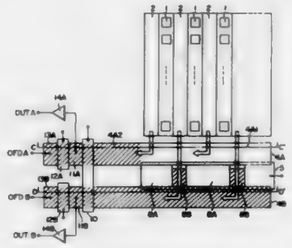
Claims priority, application Japan, Mar. 6, 1987, 62-50260; Mar. 6, 1987, 62-50261

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213.31 **16 Claims**

1. A CCD image sensor having a plurality of horizontal CCD registers for reading out the signal charges which are stored in the image sensing area having matrix arrayed image sensing cells, the reading out of the signal charges being performed for every horizontal line, in which said plurality of horizontal CCD registers are so arranged that the further a register is located away from said image sensing area, the

higher is the impurity concentration of its buried channel, and under the transfer gate between said horizontal CCD registers, a collector layer is selectively formed in the region where the signal charges are transferred to the horizontal CCD register



located away from the image sensing area, after crossing the channel of the horizontal CCD registers located closer to said image sensing area, said collector layer having the same impurity concentration as that of the channel of the horizontal CCD register located away from said image sensing area.

4,807,038

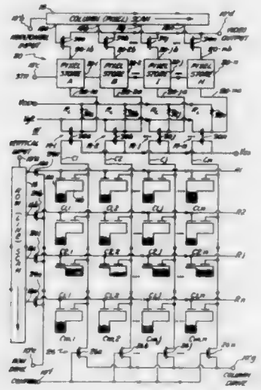
CID IMAGE SENSOR WITH PARALLEL READING OF ALL CELLS IN EACH SENSING ARRAY ROW

Gerald J. Michon, Waterford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 14, 1988, Ser. No. 167,809

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213.31 **17 Claims**



1. A charge-injection-device (CID) image sensor having increased incident-photon-flux sensitivity and dynamic range, comprising:

a two-dimensional array of cells, each for temporarily storing electrical charge generated responsive to the magnitude of photon flux incident upon that cell, the array arranged in a plurality m of rows each having a plurality n of cells arranged in n columns;

peripheral electronics means for cyclically sequentially (a) resetting all cells along all of the plurality n of columns, and (b) for then sequentially scanning each of the plurality m of rows to cause all of the plurality n of cells along that row then selected to in parallel and substantially simultaneously generate a signal voltage, on an associated column line, responsive to the intensity of photon flux received by that cell after being reset;

a plurality n of voltage preamplifier means each for amplifying the signal voltage on one associated column line;

a plurality n of storage means each for storing the amplified signal from an associated preamplifier means; and

means for sequentially reading out the amplified signal voltage stored in sequential ones of all of the storage means, to provide at least one video signal representative of the pattern of light incident upon the array.

4,807,039

MOTION PICTURE FILM TRANSPORT

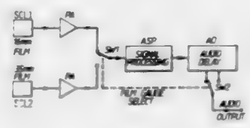
Roger W. Fenton, Chelmsford, United Kingdom, assignor to The Marconi Company Limited, Stanmore, England

Filed May 21, 1987, Ser. No. 52,332

Claims priority, application United Kingdom, Mar. 25, 1987, 8707126

Int. Cl.⁴ H04N *5/253*

U.S. Cl. 358—214 **6 Claims**



1. A motion picture film transport comprising means for passing a film between a sound gate and a picture gate, both said gates being capable of handling films of at least two different gauges and the films of different gauges being arranged to follow a common lacing path between the two gates; and delay means for selectably delaying an audio signal generated at the sound gate and which delays the audio signal by a selected amount for each film gauge so that the audio signal is made available in synchroniam with a video signal generated at the picture gate.

4,807,040

SIGNAL PROCESSING FILTER FOR AN IMAGE PROJECTION DEVICE UTILIZING AN OIL FILM

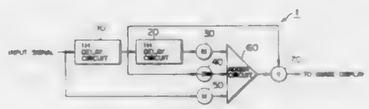
Tatsuhiko Kondo, Machida; Kenzo Seo, Tokyo; Shinetsu Itoh, Tokyo; Masaru Kanazawa, Tokyo, and Kiyotaka Okada, Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Sep. 1, 1987, Ser. No. 91,757

Claims priority, application Japan, Sep. 2, 1986, 61-205108

Int. Cl.⁴ H04N *5/74*

U.S. Cl. 358—233 **4 Claims**



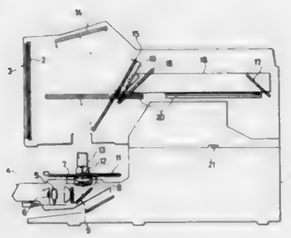
1. A signal processing filter for an image projection device utilizing an oil film in which a vertical direction response waveform relative to a vertical direction stepwise waveform input image signal has an incline at least one of equal to and smaller than an incline of a tangent line of the function

$$f(x)=[1+\sin(\pi \cdot x/D_0)]2$$

at $x=0$, which is satisfied within a range of $-D_0/2<X$-

$<+D_0/2$, where X represents a vertical direction scanning line position of the image projection device and D_0 represents a minimum scanning line interval of the image projection device which is free from an influence derived from adjacent scanning lines.

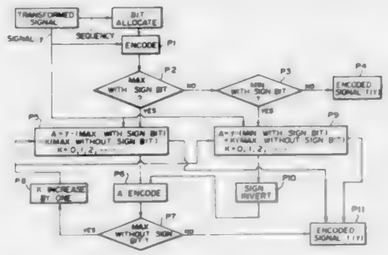
4,807,041
MICROFILM READER SCANNER CAPABLE OF EDITING IMAGE
Masamichi Kishi, and Hiroya Segawa, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 13, 1988, Ser. No. 181,303
Claims priority, application Japan, Apr. 20, 1987, 62-95185
Int. Cl.[4] H04N *1/22*
U.S. Cl. 358—256 **18 Claims**



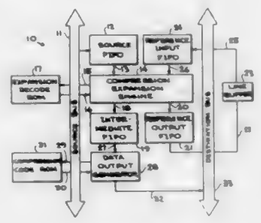
1. A microfilm reader scanner which projects an image on a microfilm onto a screen for observing and onto an image sensor for obtaining image data, comprising:
an area specifying member in the form of a transparent sheet attached on said screen for specifying a desired area out of the projected image, said area specifying member producing signals corresponding to the positions where sheet is pressed;
an area judgement means to produce an area data based on the signals produced by area specifying member;
an attribute data input means for signifying an attribute of area specified by said area specifying member;
a memory means for storing said attribute data; and
an editing means for editing the image data obtained by said image sensor based on said attribute data stored in said memory means and said area data produced by said area judgement means.

4,807,042
METHOD OF IMAGE SIGNAL ENCODING BY ORTHOGONAL TRANSFORMATION
Nobuyuki Tanaka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jan. 27, 1987, Ser. No. 6,844
Claims priority, application Japan, Jan. 27, 1986, 61-15264
Int. Cl.[4] H04N *1/419*
U.S. Cl. 358—260 **2 Claims**

1. A method of image signal encoding by orthogonal transformation wherein transformed signals are obtained by conducting orthogonal transformation on two-dimensional image signals based on a predetermined orthogonal function, and each of the transformed signals is encoded with an intrinsic allocated code length selected to have a value sufficient to encode a transformed signal within a range between a maximum and a minimum value,
wherein the improvement comprises the step of: encoding the transformed signal with a code length obtained by adding an extension code length to said allocated code length when said transformed signal attains a value not smaller than the maximum value within the range encodeable with said allocated code length or a value not larger than the minimum value within said encodeable range.

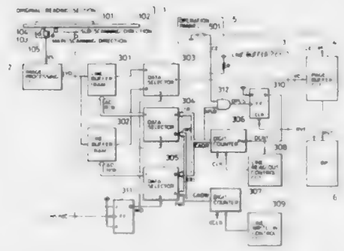


4,807,043
TWO-DIMENSIONAL FACSIMILE ENCODING APPARATUS WITH CODING AND REFERENCE LINE WINDOWING MEANS AND COLOR CHANGE DETECTORS
Shinkyo Kaku, Los Gatos, and Chung-Li Yu, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Mar. 24, 1987, Ser. No. 29,832
Int. Cl.[4] H04N *1/413*
U.S. Cl. 358—261.3 **20 Claims**



1. An apparatus for encoding a facsimile of a graphic image, the facsimile being represented by a plurality of scan lines, each scan line being represented by a plurality of picture elements, each picture element being characterized by pixel data indicating a color of the picture element, comprising:
windowing means, connected to receive pixel data characterizing picture elements from a coding line and from a reference line of the facsimile and responsive to window control signals, for selecting a window of pixel data;
means, coupled to the windowing means and responsive to the selected window of pixel data, for generating intermediate codes and the window control signals; and
coding means, coupled to the means for generating and responsive to the intermediate codes, for supplying codes that encode the facsimile.

4,807,044
IMAGE PROCESSING APPARATUS
Yutaka Kikuchi, Kawasaki; Nao Nagashima, and Junko Kiso, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 24, 1986, Ser. No. 945,897
Claims priority, application Japan, Dec. 27, 1985, 60-293288; Dec. 27, 1985, 60-293289
Int. Cl.[4] H04N *1/40*
U.S. Cl. 358—280 **23 Claims**



1. An image processing apparatus comprising:
input means for entering image data representing an original image on a line by line basis;
memory means for storing the image data entered from said input means on a line unit basis, said memory means permitting the stored image date to be read out from an arbitrary memory location;
means for designating an arbitrary reference position of the original image;
means for reading out the image data from said memory means on a line unit basis; and
means for controlling the reading out operation of said reading out means such that the image data stored in said memory means on a line unit basis in a first order is read out in a second order opposite to the first order from a memory location correponding to the reference position designated by said designating means.

4,807,045
IMAGE DATA PROCESSING METHOD AND APPARATUS THEREFOR
Noriyuki Shimano, Uji, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan
Filed Jul. 17, 1987, Ser. No. 75,835
Claims priority, application Japan, Jul. 18, 1986, 61-170504; Jul. 28, 1986, 61-178295
Int. Cl.[4] H04N *1/40*
U.S. Cl. 358—282 **11 Claims**

1. An image data processing method for processing first image data obtained by optically reading the image of an original having gradation thereby to obtain second image data correctly reflecting said gradation of said original, said image data processing method comprising the steps of:
(a) preparing a reference density plane having a known optical density;
(b) reading the optical density of said reference density plane with a photoelectric converter while detecting an output level of said photoelectric converter to obtain a reference level data expressing said output level;
(c) reading said image of said original by said photoelectric converter thereby to obtain the first image data; and
(d) removing a background component from said first image data on the basis of said reference level data, thereby to obtain the second image data, said background component being outputted from said photoelectric converter independently of said image of said original including the step of obtaining a difference between said first image data and said reference level data whereby said background components included in both of said first image data and said reference level data cancel each other;
wherein said reference density plane includes a white reference density plane and a black reference density plane respectively having known optical density,
said reference level data include white reference level data and black reference level data,
step (b) includes the steps of:
(b-1) reading the optical density of said white reference density plane by said photoelectric converter to obtain said white reference level data; and



(b-2) reading the optical density of said black density reference plane by said photoelectric converter to obtain said black reference level data, and
step (d) includes the steps of:
(d-1) obtaining a first difference between said first image data and said black reference level data;
(d-2) obtaining a second difference between said white reference level data and said black reference level data; and
(d-3) dividing said first difference by said second difference.

4,807,046
COPIER
Munehiro Nakatani, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Feb. 25, 1988, Ser. No. 160,345
Claims priority, application Japan, Feb. 26, 1987, 62-41429
Int. Cl.[4] H04N *1/393*
U.S. Cl. 358—287 **10 Claims**



1. A copier comprising:
an image reading means to read an original image by linearly arrayed multiple image pickup elements, of which arrayed direction is the main scanning direction and the direction crossing the arrayed direction is subscanning direction, and to generate image signals corresponding to said original image;
a reduction clock pulse generating means to divide a base

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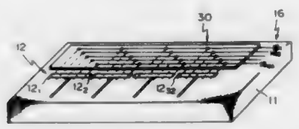
clock pulse into reduction clock pulses according to a preset reduction rate;
a reduction image signal generating means to sample image signals from said image reading means corresponding to said reduction clock pulses, and to generate reduction image signals;
an image memory to store said reduction image signals from said reduction image signal generating means;
a write address calculating means to calculate a write address of the reduction image signals in said image memory in accordance with said reduction rate and copying paper size;
a writing means to write the reduction image signals in said image memory corresponding to the calculated write address;
a read-out means to sequentially read out the reduction image signals written in said image memory from the specified address; and
an image forming means to form the reduced image on the copying paper corresponding to the reduction image signals read out by said read-out means.

4,807,047

ELECTRO LUMINESCENCE DEVICE AND ELECTROPHOTOGRAPHIC PRINTING SYSTEM USING THE SAME

Seli Sato, Atsugi; Masayuki Wakitani, Kawasaki; Tadashi Hasegawa, Atsugi; Shoshin Miura, Kawasaki; Shizuo Andoh, Kawasaki; Hideaki Takizawa, Kawasaki; Tetsuya Kobayashi, Hadano; Kazuhiro Takahara, Kawasaki; Toyoshi Kawada; Takayuki Hoshiya, both of Atsugi, and Shintaro Kisumi, Zama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 2, 1986, Ser. No. 914,238
Claims priority, application Japan, Oct. 4, 1985, 60-220262; Nov. 6, 1985, 60-247264; Feb. 7, 1986, 61-023971; Apr. 18, 1986, 61-090354; May 13, 1986, 61-109799
Int. Cl.[4] H04N 1/23
U.S. Cl. 358—300 **39 Claims**



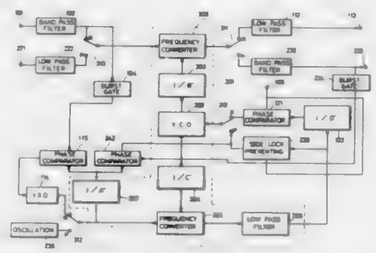
1. An electrophotographic printing system comprising:
means movable along a predetermined path and coated with a light sensitive medium,
means for precharging said light sensitive medium,
means for forming a latent image on said light sensitive medium,
means for attaching a printing medium at said latent image formed portions on said light sensitive medium,
means for transferring said attached printing medium from said light sensitive medium, and
means for discharging said light sensitive medium,
said latent image forming means comprising an EL device, means for focusing light emitting from said EL device onto said light sensitive medium and means for controlling the energization of said EL device, said EL device comprising:
a light emitting layer;
a plurality of first electrodes, each comprising a plurality of spaced, electrically connected electrode segments;
a plurality of spaced second electrodes, each comprising a plurality of spaced, electrically connected electrode portions,
said first and second electrodes being arranged on respective opposite sides of said light emitting layer, with each first electrode segment disposed in electro luminescing relationship with respect to a corresponding second electrode portion to form an EL element therebetween, and with each first electrode forming such an EL element with each second electrode, said EL elements being disposed in a single line extending transversely of said path,
whereby an AC energizing pulse supplied by said controlling means between a given first electrode and a given second electrode causes the EL element formed therebetween to emit light to said focusing means.

4,807,048

FREQUENCY CONVERTER FOR VIDEO TAPE RECORDER

Yuzo Yasuda, Ohta, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jul. 8, 1987, Ser. No. 72,202
Claims priority, application Japan, Jul. 17, 1986, 61-168449; Jul. 18, 1986, 61-170633
Int. Cl.[4] H04N 9/79, 9/89
U.S. Cl. 358—310 **17 Claims**



11. A frequency converter for a video tape recorder, comprising:
means (102) for extracting a carrier chrominance signal having a first frequency from a video signal, said carrier chrominance signal including a burst signal,
means (222) for extracting a low-frequency converted chrominance signal recorded on a tape having a second frequency which is lower than said first frequency, said second frequency being predetermined times a frequency of a horizontal synchronizing signal in the video signal,
first selecting means (310) for selecting the carrier chrominance signal having said first frequency at the time of recording and selecting the low-frequency converted chrominance signal having said second frequency at the time of reproduction,
voltage controlled oscillator means (302) for supplying a signal having a third frequency which is the sum of said first frequency and said second frequency,
first frequency converting means (308) responsive to the chrominance signal selected by said first selecting means and the signal having the third frequency supplied from said voltage controlled oscillator means for supplying the chrominance signal low-frequency converted into said second frequency at the time of recording and supplying the carrier chrominance signal as frequency-converted into the first frequency at the time of reproduction,
first oscillator means (114) for generating a signal having a predetermined frequency which is in synchronization with the burst signal having said first frequency,
second oscillator means (236) for supplying a signal having a predetermined frequency associated with said first frequency,
second selecting means (312) for selecting an output of said first oscillator means at the time of recording and selecting an output of said second oscillator means at the time of reproduction,

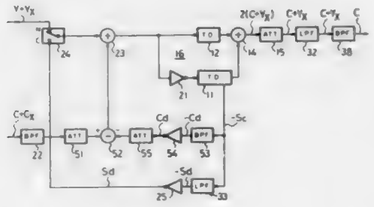
second frequency converting means (305) responsive to the signal having the third frequency supplied from said voltage controlled oscillator means and a signal selected by said second selecting means for supplying a signal including a signal component having said second frequency,
first phase comparing means (121) for comparing an output of said second frequency converting means and the horizontal synchronizing signal in said video signal and supplying an output to control said voltage controlled oscillator means so that the phases coincide with each other,
second phase comparing means (242) for comparing phases of the burst signal in the carrier chrominance signal having the first frequency supplied from said first frequency converting means at the time of reproduction and the signal having a predetermined frequency supplied from said second oscillator means and supplying an output to control said voltage controlled oscillator means so that the phases coincide with each other,
frequency controlling means (239) for comparing frequencies of an output of said second frequency converting means and said horizontal synchronizing signal and supplying the output to control said voltage controlled oscillator means based on the difference, and
third selecting means (313) for applying the output of said first phase comparing means to said voltage controlled oscillator means at the time of recording and applying the outputs of said second phase comparing means and said frequency controlling means to said voltage controlled oscillator means at the time of reproduction.

4,807,049

C-TYPE COMB FILTER WITH NEGATIVE FEEDBACK

Tokuya Fukuda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 27, 1988, Ser. No. 148,997
Claims priority, application Japan, Feb. 3, 1987, 62-23300
Int. Cl.[4] H04N 9/79
U.S. Cl. 358—328 **9 Claims**



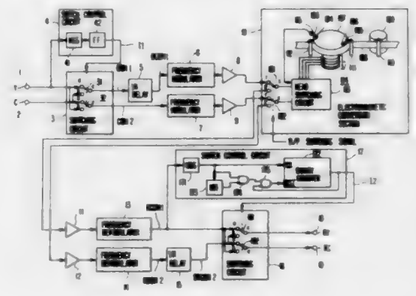
1. A C-type comb filter circuit for use with a reproduced color video signal formed of a luminance signal and a color carrier signal and each including respective cross talk components, the filter comprising:
(a) an input terminal;
(b) first delay circuit means, formed of a charge-coupled device (CCD), and connected to the input terminal for delaying a signal supplied thereto and outputting it with a predetermined delay time of ΔD;
(c) second delay circuit means, formed of a charge-coupled device, and connected to the input terminal for delaying a signal supplied thereto and outputting it with a delay time of an integral multiple of one horizontal period + ΔD, and further including intermediate tap means;
(d) adding means connected to the first and second delay circuit means for adding their outputs;
(e) means for deriving a delayed signal from said intermediate tap means; and
(f) negative feeding back means for subtracting the derived delayed signal from the signal applied to the input terminal of said comb filter circuit to thereby provide a feedback type comb filter characteristic.

4,807,050

VIDEO SIGNAL RECORDING/REPRODUCING APPARATUS

Akihiro Takeuchi, Ikoma; Masaaki Kobayashi, Kawanishi; Kazuhiro Yamanishi, Kashiwara, and Atsuo Ochi, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 29, 1986, Ser. No. 948,143
Claims priority, application Japan, Dec. 26, 1985, 60-293820
Int. Cl.[4] H04N 9/79
U.S. Cl. 358—328 **9 Claims**



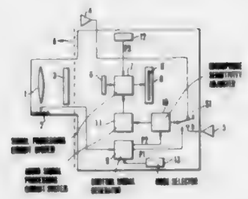
1. A video signal recording/reproducing apparatus for recording two-channel component signals of a video signal on a recording medium and reproducing the recorded signals, comprising:
a first switching means for exchanging a first component signal of said 2-channel component signals and a second component signal of said 2-channel component signals at intervals of nH (n: any integer, H: horizontal scanning period of said video signal) to obtain first and second combined signals each containing said first and second component signals which appear alternately at periods of nH;
a first delay means for delaying said first combined signal by nH to obtain a delayed first combined signal;
a recording signal processing means for converting said delayed first combined signal and said second combined signal to first and second recordable signals, respectively;
a recording and reproducing means for recording said first and second recordable signals on said recording medium and reproducing the recorded first and second recordable signals from said recording medium;
a reproduced signal processing means for converting said first and second recordable signals reproduced from said recording medium to said delayed first combined signal and said second combined signal, respectively;
a second delay means for delaying said second combined signal from said reproduced signal processing means by nH to obtain a delayed second combined signal; and
a second switching means for exchanging said delayed first combined signal from said reproduced signal processing means and said delayed second combined signal at intervals of nH to obtain said first and second component signals.

4,807,051

IMAGE PICK-UP APPARATUS WITH SOUND RECORDING FUNCTION

Tokihiko Ogura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1986, Ser. No. 941,199
Claims priority, application Japan, Dec. 23, 1985, 60-291170
Int. Cl.[4] H04N *5/91;* **H04B** *1/20*
U.S. Cl. 358—335 **22 Claims**



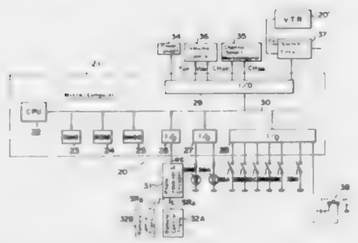
1. An apparatus for recording a sound from an object, comprising:
(a) means for generating information on a distance from said object to said apparatus;
(b) first converting means for converting said sound into an electrical signal;
(c) second converting means for converting said sound into an electrical signal, the characteristic of said second converting means being different from that of said first converting means; and
(d) means for selecting said first converting means or said second converting means according to said information generated by said generating means.

4,807,052

REMOTELY CONTROLLABLE ELECTRONIC APPARATUS

Toshio Amano, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 5, 1987, Ser. No. 104,100
Claims priority, application Japan, Oct. 24, 1986, 61-253135
Int. Cl.[4] H04N *5/44;* **H04B** *1/16*
U.S. Cl. 358—194.1 **12 Claims**



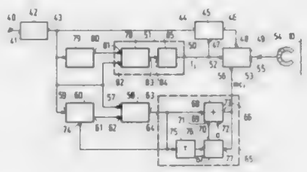
1. In an electronic apparatus having means for establishing a remote control mode, means operable in said remote control mode for providing first remote control codes in response to corresponding control signals from a first remote control transmitter intended for use with said apparatus, and means receiving said first remote control codes for controlling respective operations of the apparatus; a combination, as an integral component of said apparatus, comprising non-volatile memory means, means for establishing a learning mode of said apparatus, means operative in said learning mode for writing said first remote control codes at respective addresses in said nonvolatile memory means, means operative in said learning mode for providing second remote control codes which correspond to respective ones of said first remote control codes for controlling the same operations as said respective first remote control codes and which are generated in response to corresponding control signals from a second remote control transmitter intended for use with a different electronic apparatus, means operative in said learning mode for writing said second remote control codes in said nonvolatile memory means at addresses of the latter which correspond to said address at which said respective first remote control codes have been written, and means operative in said remote control mode after said second remote control codes have been written in said nonvolatile memory means and responding to one of said control signals from said second remote control transmitter for reading out from said nonvolatile memory means one of said first remote control codes from an address in said memory means corresponding to the address of the second remote control code which corresponds to said one control signal from said second remote control transmitter for controlling the operation of the electronic apparatus in accordance with the read-out first remote control code.

4,807,053

METHOD AND APPARATUS FOR RECORDING AND/OR REPRODUCING VIDEO INFORMATION IN/FOR A RECORD CARRIER, AND RECORD CARRIER OBTAINED BY MEANS OF THE METHOD

Werner A. L. Heijnemans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1986, Ser. No. 924,547
Claims priority, application Netherlands, Jun. 5, 1986, 8601447
Int. Cl.[4] H04N *5/76*
U.S. Cl. 358—335 **15 Claims**



1. A method of recording video information in a record carrier comprising the steps of, dividing each picture of a sequence of pictures comprising N×M picture elements into subpictures of n×m picture elements, encoding the video information of each subpicture in accordance with a transform coding and recording the encoded information of the subpicture on the record carrier, during recording, assigning a motion code to all subpictures, said motion code being derived by the steps of comparing the video information of corresponding subpictures of a specific picture and of a previous picture with each other, assigning a first motion code to the subpicture of the first-mentioned picture if the difference between the video information of the two subpictures is smaller than or equal to a specific first value, assigning a second motion code to the subpicture of the first-mentioned picture is the difference between the video information of the two subpictures exceeds the first value, and recording the motion codes together with the encoded video information of the associated subpictures on the record carrier, and further comprising the steps of encoding a subpicture of a specific picture in accordance with a first transform coding, encoding the corresponding subpicture of the next picture in accordance with the same transform coding if the difference between the video information of the two subpictures exceeds a specific second value, encoding the corresponding subpicture of the next picture in accordance with a second transform coding if the difference between the video information of the two subpictures is smaller than or equal to the second value, wherein utilizing the results of the first transform coding applied to the first-mentioned subpicture, the second tranform coding provides a more accurate coding of the video information of the subpicture of the next picture, and recording together with the encoded video information of the subpicture of the next picture, the information about the transform coding applied to the video information of the subpicture of the next picture on the record carrier.

4,807,054

TRANSDUCER SUPPORT ASSEMBLY HAVING LATERALLY OFFSET FLEXURES

Scott Sorensen, Louisville, and Michael S. Roblidart, Pinewood Springs, both of Colo., assignors to MiniScribe Corporation, Longmont, Colo.

Continuation of Ser. No. 765,713, Aug. 14, 1985, abandoned. This application Nov. 13, 1987, Ser. No. 125,743
Int. Cl.[4] G11B *5/48*
U.S. Cl. 360—104 **12 Claims**



1. Transducer support assembly for supporting at least two transducers for playing/recording information from a magnetic disk, comprising:
a support leg;
a pair of flexure elements mounted in common to said support leg and each having first and second surfaces, the flexure elements exhibiting a substantially overlying relation such that said first surfaces face each other, the pair of flexure elements extending outwardly from said support leg and being of substantially the same size and shape and formed of flexible material, each flexure element having longitudinal edge members on opposite edges thereof, said edge members imparting stiffening to the flexure element, each said edge member of one flexure element being adjacent to one of the longitudinal edge members of the other flexure element, and each flexure element having a central axis;
a transducer supported on the distal end of each flexure element remote from said support leg and disposed on said central axis;
and the flexure elements of said common-mounted pair being offset from each other such that their central axes are displaced sideways from each other in a direction substantially parallel to the principal plane of said disk to avoid interference between the longitudinal edge members of one flexure element with the longitudinal edge members of the other.

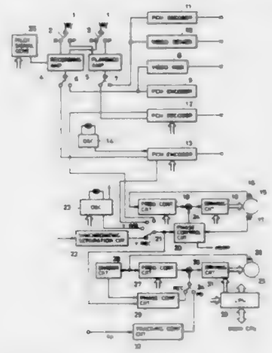
4,807,055

MULTI-SPEED MAGNETIC RECORDING PLAYBACK

Taiji Tsunoda, and Takashi Iwasawa, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 11, 1986, Ser. No. 906,006
Claims priority, application Japan, Sep. 11, 1985, 60-201996; Oct. 2, 1985, 60-219678
Int. Cl.[4] G11B *5/08*
U.S. Cl. 360—32 **11 Claims**

1. A magnetic recording playback, comprising:
a rotary magnetic head;
a magnetic tape wound at an angle on said rotary magnetic head wherein said rotary magnetic head records on said tape tape tracks tilted in a longitudinal direction of said tape; and
means for switching a rotation of said rotary magnetic head between a first speed and a second speed;
wherein each said track formed by said magnetic head rotating at said first speed comprises a first section and a second section and at least said first section compriaes a first portion for recording a clock signal, a second portion for recording a first digital audio signal, a third portion being a margin for after-recording and a fourth portion being a video overlap for continuously recording video signals in an immediately preceding field;
wherein each said track formed by said magnetic head rotating at said second speed higher than said first speed comprises a third section for recording a first code signal, a fourth section for recording a tracking control signal, a fifth section for recording a second digital audio signal, a sixth section for recording a tracking control signal, a seventh section for recording a second code signal, an eighth section for recording a third code signal having



blocks equal in number to a number of blocks in said third section corresponding to another system for recording and playing back data having a fixed number of blocks in and form said third through seventh sections, a ninth section for recording blocks equal in number to said fifth section and a tenth section for recording a fourth code signal having blocks equal in number to said seventh section; and
wherein each said track composed of said first and second sections is divided into four areas;
said playback further comprising:
means for recording or playing back said first digital audio signal in said first section nor said video signal in said third section by frequency-superposing a tracking pilot signal on said first or second section respectively; and
means for frequency-superposing first data of said eighth, ninth and tenth sections on said pilot signal and recording and playing back said first data in and from said four areas.

4,807,056

METHOD AND APPARATUS FOR VIDEO SIGNAL RECORDING AND PLAYBACK SIGNAL LEVEL COMPENSATION BASED ON RECORDED REFERENCE SIGNAL

Seishi Sasaki, Kobe; Mitsuo Chiba, Osaka; Tatsushi Banzai, Osaka, and Shigeru Awamoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

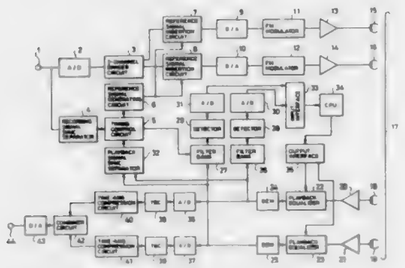
Filed Apr. 2, 1987, Ser. No. 33,469
Claims priority, application Japan, Apr. 3, 1986, 61-77116
Int. Cl.[4] H04N *9/491;* **G11B** *5/45*
U.S. Cl. 360—27 **6 Claims**

1. A method of video signal recording and playback, comprising steps of:
inserting a reference signal into blanking intervals of a video

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signal which is to be recorded, and performing frequency modulation recording of said reference signal together with said video signal on a recording medium, said reference signal comprising a combination of a plurality of respectively different signal bursts each having a specific frequency and each being superimpose upon a DC level of specific value, with a plurality of said signal bursts of said reference signal being combined within one horizontal scanning interval of said video signal;

executing playback of said recording medium to obtain a frequency modulated playback signal, transferring said frequency modulated playback signal through a playback



equalizer, performing demodulation of said frequency modulated playback signal after transfer through said playback equalizer to obtain a demodulated playback signal, extracting a playback reference signal from said demodulated playback signal, and performing detection of respective amplitudes of said signal bursts in said playback reference signal, and;

executing control of said playback equalizer such as to render mutual relationshipe between said signal burst amplitudes of said playback reference signal substantially identical to mutual relationships between amplitudes of said signal bursts of said reference signal prior to recording on said medium.

4,807,057

DATA RECORDING APPARATUS

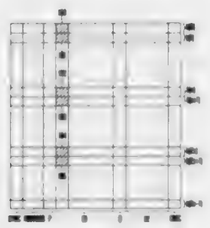
Motokazu Kashida, Tokyo; Masahiro Takei, Kanagawa; Kouji Takahashi, Kanagawa; Toshiyuki Masui, Kanagawa; Tsutomu Fukatsu, Kanagawa, and Kenichi Nagasawa, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Continuation of Ser. No. 826,793, Feb. 6, 1986, abandoned. This application May 23, 1988, Ser. No. 203,538

Claims priority, application Japan, Feb. 13, 1985, 60-025714; Feb. 25, 1985, 60-035609

Int. Cl.[4] G11B *5/00, 5/09, 15/18*

U.S. Cl. 360—32 **13 Claims**



1. A data recording apparatus comprising:

(a) designation means for designating one of an l number of parallel areas, said areas extending in the longitudinal direction of a tape-shaped recording medium, respectively:

(b) data recording means including a rotary head arranged to obliquely trace said recording medium, said recording means being arranged to record data while forming many parallel recording tracks in one of said "l" number of areas designated by said designation means;

(c) means for forming, by sampling a main information signal, first binary data of an "n" number of bits, where "n" is an integer;

(d) means for forming second binary data of the "n" number of bits including binary data of an "m" number of bits where $2^m>l$, which indicates one of said "l" number of areas designated by said designation means, said "m" number of bits of binary data never simultaneously becoming "0"; and

(e) means for forming a data sequence including said first and second binary data and for supplying said data sequence to said recording means.

4,807,058

TAPE RECORDER INCLUDING DEVICE TO PREVENT IMPROPER OPERATION OF RECORDING OPERATION

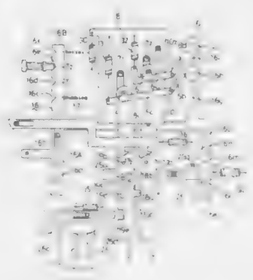
Satoru Koizumi; Daisuke Teshima, and Yoshio Katayama, all of HigashiHiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 18, 1986, Ser. No. 908,718

Claims priority, application Japan, Sep. 20, 1985, 60-209855

Int. Cl.[4] G11B *15/02*

U.S. Cl. 360—60 **5 Claims**



3. A tape recorder comprising:

a cassette tape compartment for detachably housing a first and a second cassette tape;

capstan for driving said first and second cassette tapes coaxially mounted thereon;

a movable mode selector member for selecting a driving mode from among modes including a first cassette tape-driving mode and a second cassette tape-driving mode by being moved to particular positions;

operation means for causing said second cassette tape to perform a first or a second function and causing said first cassette tape to perform the first function; means for allowing said second cassette tape to achieve the first or second function, in response to operation of the operation means corresponding to the first or second function, when said second cassette tape-driving mode has been selected by said mode selector member; means for allowing said first cassette tape to achieve the first function, in response to operation of the operation means corresponding to the first function, when said first cassette tape-driving mode has been selected by said mode selector member; and

function blocking means operable in response to movement of said movable mode selector and before operation of said operation means for hindering said first cassette tape from achieving the second function when the operation means corresponding to the second function is operated in said first cassette tape-driving mode selected by said mode selector member.

4,807,059

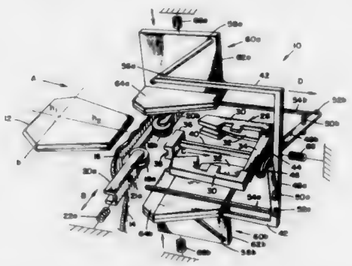
APPARATUS FOR RECEIVING AND SECURELY RETAINING A DEVICE

Paul C. Talmadge, Ansonia, and David H. Brooks, Wilton, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 5, 1987, Ser. No. 104,129

Int. Cl.[4] G11B *15/04*

U.S. Cl. 360—60 **25 Claims**



1. Apparatus for receiving and securely retaining a device having a front surface, opposing side surfaces, and a horizontal planar surface, when the cartridge is inserted through an opening provided therein, comprising:

means for engaging a front surface of said device as said cartridge is inserted, said front surface engaging means being movable, in response to said insertion of said device, between at least a first position and a second position;

means responsive to the insertion of said device for continuously engaging the opposing side surface of said device as said device is inserted, said side surface engaging means being operable for movement along an axis substantially perpendicular to a longitudinal centerline of said device,

means for engaging at least one horizontal planar surface of said cartridge; and

means for activating said planar surface engaging means, said means for activating being coupled to said front surface engaging means and responsive to said movement thereof for causing said planar surface engaging means to securely engage the device planar surface in response to said front surface engaging means moving to said second position.

4,807,060

MILTI-CHANNEL RECORDING APPARATUS FOR A PLURALITY OF PROGRAMS

Koji Takahashi, and Toshiyuki Masui, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1986, Ser. No. 944,876

Claims priority, application Japan, Dec. 27, 1985, 60-292536; May 15, 1986, 61-109686

Int. Cl.[4] G11B *15/18/5/02;* **H04N** *5/78*

U.S. Cl. 360—72.2 **25 Claims**

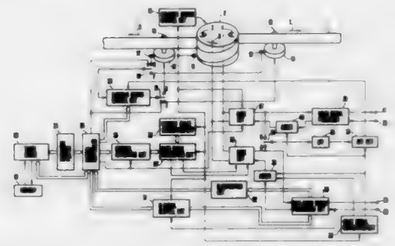
1. An information signal recording apparatus arranged to record first and second programs each of which respectively includes a series of information signals, comprising:

(a) recording means capable of recording the information signals in each of a plurality of channels on a recording medium;

(b) setting means for setting the time of completion of recording and the channel of recording for each of said first and second programs to be recorded;

(c) memory means for storing, for each of said first and second programs, a first information indicating the recording channel and a second information indicating the time of completion of recording;

(d) selecting means for selecting, among said plurality of channels, the channels in which information signals are to be recorded by said recording means, said selecting means being adapted to select, in accordance with said first information, the channels in which the information signals corresponding to said first and second programs are to be recorded; and



(e) causing means for causing, while said recording means is recording the information signals corresponding to said first program, said recording means to record, together with the information signals, said first information pertaining to said second program stored in said memory means for a predetermined period in accordance with said second information pertaining to said first program.

4,807,061

RAPID REEL BRAKING DEVICE FOR A VIDEO CASSETTE TAPE RECORDER

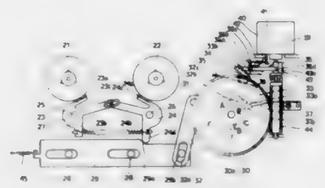
Jong Y. Yoon, Kyunggi, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 31, 1987, Ser. No. 140,163

Claims priority, application Rep. of Korea, Dec. 31, 1986, 22328/1986

Int. Cl.[4] G11B *15/48*

U.S. Cl. 360—74.1 **2 Claims**



1. A rapid reel braking device for a video cassette tape recorder which includes a supply reel and a take-up reel rotatably mounted on a base plate thereof and spaced from each other, and a drive motor fixedly mounted on said base plate, said drive motor having a pulley, said device comprising:

a pair of brakes pivotably mounted on the base plate of said recorder and adapted to apply a braking force to said supply and take-up reels, respectively, each brake having at one end thereof a brake shoe;

a spring connected between the other ends of said brakes to urge said brakes toward said supply and take-up reels;

a function plate having a pair of slots each receiving a guide pin fixed on said base plate of the recorder, so as to laterally slide on said base plate, said function plate also provided at one side of one end thereof with an inclined

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228-660 O.G.-89-20

surface adapted to engage with and push said other end of the brake for the take-up reel, so as to pivot said brakes away from said supply and take-up reels against the force of said spring;

a function pin fixed on the other side of said one end of the function plate;

a cam gear rotatably mounted on said base plate of the recorder, said cam gear having at the lower surface thereof a cam groove;

a connecting lever pivotably mounted, at the middle portion thereof, on said base plate of the recorder under said cam gear and adapted to operatively connect said function plate and said cam gear, said connecting lever having at one end thereof a slot receiving said function pin and at the other end thereof a connecting pin engaged in said cam groove of the cam gear, a hook-shaped extension being formed on said other end of the connecting lever;

a hook lever pivotably mounted, at the middle portion thereof, on said base plate of the recorder under said cam gear, said hook lever having at one end thereof a hook-shaped extension engageable with said hook-shaped extension of the connecting lever and at the other end thereof a stop member;

a locker fixedly mounted on said base plate of the recorder and provided at the free end thereof with a locking member engageable with said hook-shaped extension of the hook lever, so as to lock the hook lever during the rapid braking operation of the braking device;

a torsion spring adapted to urge said hook lever to pivot in the direction that said hook-shaped extension of the hook lever is engaged with said hook-shaped extension of the connecting lever;

a hit lever having a slot receiving a pin fixed on said base plate of the recorder, so as to laterally slide and pivot about said pin, said hit lever having at one end thereof a protrusion engageable with said stop member of the hook lever and at the other end thereof an extension engageable with a shoulder formed on said pulley of the drive motor, which pulley can not rotate in one direction when said shoulder is engaged with said extension of the hit lever;

a spring adapted to urge said hit lever to pivot in the direction that said extension of the hit lever is engaged with said shoulder of the pulley; and

a worm connected to said pulley of the drive motor and engaged with said cam gear to transmit the drive power of the drive motor.

4,807,062

MULTIPLE FORCE RETRACT CIRCUIT FOR A MAGNETIC DISK DRIVE

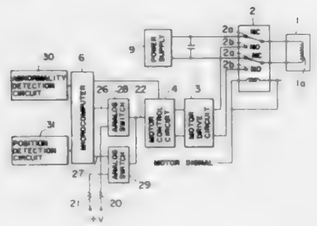
Masako Onodera, Fussa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 30, 1986, Ser. No. 913,396

Claims priority, application Japan, Sep. 30, 1985, 60-216812

Int. Cl.[4] G11B *5/54*; G05B *9/02*

U.S. Cl. 360—75 6 Claims



3. A disk drive including a recording head for recording data on a recording disk, said disk drive comprising:

(a) a control unit that receives an abnormality signal from an abnormality detection circuit and a recording head position signal from a recording head position detection circuit, said control unit generating a first retract signal on receipt of said disk abnormality signal, and generating a second retract signal, after the generation of said first retract signal, when said position signal indicates said recording head is not positioned within a predetermined landing zone on a said recording disk; and

(b) a motor control and drive circuit coupled to said control unit, that receives said first and second retract signals generated by said control unit and drives said recording head toward said landing zone with a first force on receipt of said first retract signal, and a second driving force on receipt of said second retract driving signal.

4,807,063

HEAD POSITION CONTROL SYSTEM WITH MULTIPLE SERVO AREAS STAGGERED ON VARIOUS DISKS

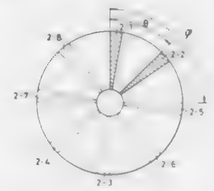
Eiji Moteki, Kawasaki, Japan, assignor to Fuji Electric Company Ltd., Kawasaki, Japan

Filed May 26, 1987, Ser. No. 53,824

Claims priority, application Japan, May 27, 1986, 61-121468

Int. Cl.[4] G11B *5/596*

U.S. Cl. 360—77.07 4 Claims



1. A head position control system for a disc storage unit comprising:

a plurality of rotating discs as recording media;

a plurality of transducer heads, a position of each of which is controllable, for writing and/or reading out data in and/or from the corresponding major surface of each disc;

a plurality of tracks on each major surface of each of said discs for storing data;

two reference information storage regions extending radially and intersecting circumferentially said plurality of tracks so that two portions of each of said tracks are allotted to said reference information storage region to store reference information for detecting a position of each of said head in said reference information storage regions, said two reference information storage regions being arranged on each major surface of said plurality of rotating discs and being angularly displaced from each other by 360°/4N (where N is the number of said discs); positions of said reference information storage regions of one of said plurality of discs are equiangularly displaced from positions of said reference information storage regions of the other of said plurality of discs;

means for reading out reference information from said reference information regions which are angularly displaced from each other during one rotation of each of said discs;

means for detecting a deviation of one head from its normal position; and

means for correcting a deviation of said one head in response to said detected deviation.

4,807,064

TAPE LOADING SYSTEM FOR WRAPPING A TAPE OF A TAPE CASSETTE AROUND A GUIDE DRUM

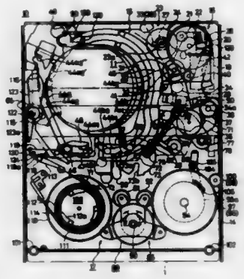
Ritsu Miyamoto; Eiichi Tanchiya, both of Yokohama; Kazuhiko Shishido, Tokyo; Toshiaki Shimizu, Kamakura, and Atsushi Hosoya, Sagamihara, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 1, 1987, Ser. No. 32,807

Claims priority, application Japan, Apr. 2, 1986, 61-76336

Int. Cl.[4] G11B *15/66*

U.S. Cl. 360—85 3 Claims



1. A recording/reproducing apparatus comprising:

a guide drum having at least one recording or reproducing head for recording or reproducing information on or from a tape of a tape cassette mounted on said apparatus; and

a loading mechanism for loading said tape of said tape cassette into said apparatus by pulling said tape therefrom and wrapping the pulled tape around said guide drum so as to form a predetermined recording or reproducing tape path, said loading mechanism including first and second loading means each having a vertical pole and an inclined pole for supporting said tape on the tape loading mechanism, said first and second loading means being engaged with first and second channels defined on a chassis of said apparatus so as to be guided along said first and second channels from loading start positions where said tape is pulled therefrom up to loading termination positions where said tape is completely wrapped therearound, respectively, said vertical pole of each of said first and second loading means preceding with respect to said inclined pole thereof so that said tape is supported by means of only said vertical poles during the tape loading from said loading start positions to said loading termination positions, said inclined pole of at least said first loading means being angularly displaced by a predetermined angle with respect to said vertical pole when said vertical pole of said first loading means paired with said inclined pole to be angularly displaced reaches said loading termination position so that the angularly displaced inclined pole is brought into contact with said tape and supports said tape to result in the formation of said predetermined tape path.

4,807,065

APPARATUS FOR DRIVING LOADING GEARS IN A VIDEO CASSETTE-TAPE RECORDER

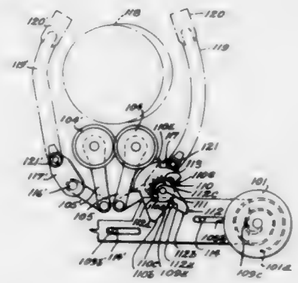
Sung T. Kwon, Suwon, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 17, 1986, Ser. No. 908,334

Claims priority, application D.P.R. of Korea, Sep. 17, 1985, 11907/1985

Int. Cl.[4] G11B *15/665*

U.S. Cl. 360—85 1 Claim



1. A loading gear driving apparatus of a video cassette tape recorder comprising:

a cam including a spiral cam slot on its lower surface;

an activating plate having a first engaging pin adapted to engage said cam slot, and guiding slots and to enable said activating plate to slidably move on guiding pins fixed on a base plate;

a sector gear including a gear portion along one end of said sector gear and a rectilinear contact portion and curved engaging portion at a second end of said sector gear, interlocked with a loading gear and mounted on an axial pin fixed on the base plate;

an auxiliary plate mounted on said axial pin upon said sector gear and having a curved engaging portion, rectilinear contact portion , and protrusion along its peripheral surface; and

means for interconnecting said auxiliary plate protrusion and a protrusion fixed on said sector gear with a biasing force, said auxiliary plate having an arcuate slot adapted to enable said plate to slidably move on a guiding pin fixed on said sector gear with said axial pin in the center, said activating plate having a second engaging pin adapted to engage between said sector gear and said auxiliary plate engaging portions and to move along said sector gear and said auxiliary plate rectilinear contact portions, whereby said activating plate first engaging pin moves along said cam slot and causes said activating plate second engaging pin to engage either said sector gear curved engaging portion for rotating a loading gear in a first direction or said auxiliary plate curved engaging portion for rotating a loading gear in a second direction.

4,807,066

CASSETTE CHANGER FOR MAGNETIC RECORDING-REPRODUCTION APPARATUS

Mikiharu Imazaike, Osaka, Japan, assignor to Matsushita Denki Sangyo Kabushiki Kaisha and Imazaike Seiko Kabushiki Kaisha, both of Osaka, Japan

Filed Mar. 23, 1987, Ser. No. 29,288

Claims priority, application Japan, Mar. 31, 1986, 61-75107

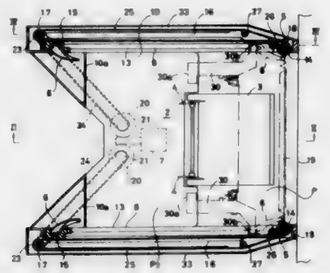
Int. Cl.[4] G11B *17/68*

U.S. Cl. 360—92 13 Claims

1. A cassette changer mountable on a magnetic recording-reproduction apparatus, said recording-reproduction appara-

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tus having a front formed with a cassette inlet-outlet opening, the cassette changer comprising discharge path means for slidably guiding a cassette down a slope when the cassette is delivered from said inlet-outlet opening after recording or reproduction, cassette delivery means for transferring the cassette from said inlet-outlet opening into said discharge path means after recording or reproduction, a cassette insertion path means positioned above said discharge path means for guiding a cassette along a horizontal path to said inlet-outlet opening for recording or reproduction, cassette insertion



means for transporting the cassette to said inlet-outlet opening along said insertion path means for recording or reproduction, said insertion path means intersecting said discharge path means in front of said inlet-outlet opening, and a separator means disposed at said intersection of said insertion path means and said discharge path means, said separator means being movable between a cassette insertion position where said separator means obstructs said discharge path means while being clear of said insertion path means and a cassette discharge position where said separator means obstructs said insertion path means while being clear of said discharge path means.

4,807,067

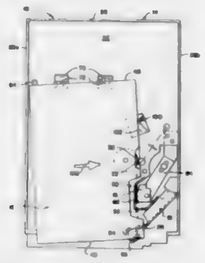
CARTRIDGE TAPE DRIVE

Wolfgang Spiegelstein, Glendale, Calif., assignor to Irwin Magnetic Systems, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 628,110, Jul. 6, 1984, Pat. No. 4,673,995. This application Feb. 2, 1987, Ser. No. 9,448

Int. Cl.⁴ G11B *5/008, 15/00, 17/00*

U.S. Cl. 360—93 **10 Claims**



1. A tape drive for a digital magnetic cartridge of the type having a generally flat rectangular body comprising a pair of mutually spaced ends interconnecting a pair of elongated sides, a longitudinal axis intersecting said ends, and a tape access opening in one of said sides; said drive including:

a housing adapted to receive said cartridge by manual loading;

means defining a generally rectilinear loading path of travel within said housing for said cartridge;

a magnetic head mounted in said housing adjacent said path;

said housing having a loading slot configured to permit only endwise insertion of the cartridge into the housing thereby requiring lengthwise movement of the cartridge to follow along said loading path of travel,

means for shifting said transversely of said generally rectilinear loading path to and from engagement with said magnetic head after the cartridge has been inserted endwise into said housing and has traversed at least a portion of said rectilinear loading path,

said shifting means including a cartridge carriage pivotally mounted within said housing for swinging said cartridge transversely of said loading path toward and away from a position wherein said cartridge is in operable engagement with said head and the longitudinal axis of the cartridge is skewed relative to said generally rectilinear loading path.

4,807,068

EJECT MECHANISM OF DISK RECORDING/REPRODUCING APPARATUS HAVING MECHANISM FOR PREVENTING ACCIDENTAL HEAD LOWERING

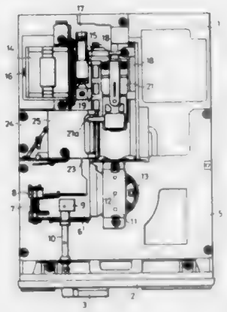
Yukiya Shiraishi, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Continuation of Ser. No. 847,749, Apr. 3, 1986, abandoned. This application Apr. 7, 1988, Ser. No. 183,329

Claims priority, application Japan, Mar. 4, 1985, 60-49545[U]

Int. Cl.⁴ G11G *5/012*

U.S. Cl. 360—99.06 **1 Claim**



1. An eject mechanism for insertion and ejection of a disk in a recording and reproducing apparatus having a housing, a front insertion slot for inserting a disk in the housing, a disk insertion path defined in the housing for inserting a disk up to a drive position therein, a clamping mechanism for clamping an inserted disk on a rotatable turntable, and a head support arm supporting a head element above the disk for lowering and raising the head element toward or away from the disk for recording and reproducing operations thereon, said eject mechanism comprising:

an ejector (**29**) biased by biasing means (**30**) toward a front position in said housing for ejecting a disk from the drive position toward the front position out through said front insertion slot, said ejector being movable by abutment with an inserted disk along an axis that is parallel to and in the direction of said disk insertion path and also being pivotable about said axis, and having an abutment portion (*29a*) disposed toward the rear of said housing and an engaging portion (*29b*) disposed toward the front of said housing, said abutment portion extending across said disk insertion path for abutting the leading edge of an inserted disk for moving said ejector axially against the force of said biasing means to the drive position when a disk is

inserted in said housing, and said engaging portion being engaged by a retaining member (*24f*) fixed in said housing when said ejector is at said front position for preventing said ejector from pivoting movement above said axis, said engaging portion being remote from said retaining member at said drive position thereby allowing pivoting movement of said ejector;

a lock mechanism, including a lower pawl (**29c**) of said ejector engaging a stepped part (*24e*) of a mounting plate (**24**) in said housing, for locking said ejector in place when the disk is inserted to the drive position, said lock mechanism being released by disengagement of said lower pawl (**29c**) of said ejector during operation of said clamping mechanism to unclamp the disk, thereby allowing said ejector to be pulled by said biasing means toward the front position to eject the disk;

an arm lever (**23**) forming a part of said clamping mechanism which is moved toward the disk when the clamping mechanism is operated to clamp the disk on the turntable, said arm lever having one end engaging said head support arm (**21**, *21a*) for allowing said head support arm to be lowered when said arm lever is lowered toward the disk, and for raising said head support arm when said arm lever is raised upward from the disk; and

an eject lever (**25**) pivotably mounted along said axis with one end (*25a*) extending in one transverse direction perpendicular to the disk insertion direction so as to be engageable with said head support arm, said eject lever being biased by a second biasing means (**27**) so as to bear against said arm lever downwardly toward the disk and having a plate (*25d*) extending in an opposite transverse direction which bears upwardly against said engaging portion of said ejector;

wherein when said ejector is moved to said drive position by abutment of an inserted disk against said abutment portion in the disk insertion direction and said engaging portion becomes remote from said fixed retaining member to allow pivoting movement of said ejector at the drive position, and when said arm lever is lowered with said clamping mechanism to allow lowering of said head support arm, said plate of said eject lever is rotated upwardly along with the pivoting movement of said ejector and said engaging portion thereof so that said one end of said eject lever is pivoted downwardly to allow lowering of said head support arm, whereas when said ejector is in the front position when a disk has not been inserted, said engaging portion of said ejector is engaged with said fixed retaining member which prevents said ejector from pivoting element, and said plate of said eject lever is abutted with said engaging portion of said ejector which prevents said eject lever from pivoting movement, thereby said one end of said eject lever holds said head support arm with said head element from moving downward even if said arm lever is operated so as to be lowered.

4,807,069

APPARATUS USING DISC-SHAPED RECORD BEARING MEDIUM

Shigeki Okauchi, and Tsukasa Uehara, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 637,392, Aug. 3, 1984, abandoned. This application Aug. 5, 1987, Ser. No. 83,011

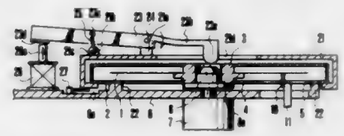
Int. Cl.⁴ G11B *5/012, 25/04*

U.S. Cl. 360—99.06 **13 Claims**

1. An apparatus arranged to handle a disc having an engaging portion, said apparatus comprising:

(A) rotating means for rotating said disc, said rotating means having an engageable portion engageable with said engaging portion of the disc and a receiving surface for receiving thereon the engaging portion of the disc;

(B) pressing means for pressing said engaging portion of the disc against said receiving surface of the rotating means; said pressing means being movable between a contact position and a remote position, while in said contact position said pressing means engages and presses said engaging portion and while in said remote position said pressing means is in noncontacting relationship with said engaging portion; and



(C) control means for causing said pressing means o automatically move to said contact position and retaining said pressing means at said contact position for a predetermined period, and subsequently causing said pressing means to move to said remote position in advance of disc rotation.

4,807,070

SUPPORTING STRUCTURE FOR DUAL MAGNETIC HEAD

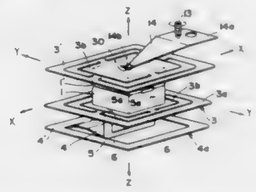
Shin Isozaki, Kamakura, and Michio Yagi, Hachioji, both of Japan, assignors to Konishiroku Photo Industries Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1987, Ser. No. 71,418

Claims priority, application Japan, Jul. 11, 1986, 61-163267

Int. Cl.⁴ G11B *5/48*

U.S. Cl. 360—104 **8 Claims**



1. A supporting structure for a dual magnetic head for use with a disk drive system for a double sided flexible disk comprising:

a. a first magnetic core head and a second magnetic core head, said first head being disposed on a first side of said flexible disk and said second head being disposed on a second side of said flexible disk;

b. a first leaf spring gimbal for supporting said first magnetic core head, said first leaf spring gimbal allowing said first magnetic core head to pitch and to roll as well as to move normally to a data storage surface on said flexible disk;

c. a second leaf spring gimbal for supporting said second magnetic core head, said second leaf spring gimbal allowing said second magnetic core head to pitch and to move normally to a data storage surface on said flexible disk; and

d. a cantilever leaf spring connected to said second leaf spring gimbal, said cantilever leaf spring for preventing rolling of said second magnetic core head.

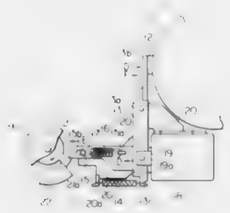
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4,807,071

MECHANISM FOR PREVENTING DAMAGE TO THE MAGNETIC HEAD AND MEDIUM OF A MAGNETIC RECORDING/REPRODUCING APPARATUS DURING TRANSPORT

Norifumi Konaka, and Hiroshi Kobayashi, both of Iwate, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 710,909, Mar. 12, 1985, abandoned. This application Oct. 13, 1987, Ser. No. 110,026
Claims priority, application Japan, Mar. 12, 1984, 59-47456; Mar. 14, 1984, 59-49550
Int. Cl.[4] G11B 5/54
U.S. Cl. 360—105 3 Claims



1. A magnetic recording/reproducing apparatus for use with a magnetic medium having a data zone subjected to data recording and reproduction and a shipping zone which is not subjected to data recording or reproduction, said apparatus comprising:

magnetic medium driving means for rotating the magnetic medium;

a magnetic head;

magnetic head moving means for moving the magnetic head along the magnetic medium upon rotation of a motor;

control means for controlling the magnetic head moving means to move the magnetic head to the shipping zone when the apparatus is powered and is not performing data recording or reproduction;

lock means for locking the magnetic head moving means in the shipping zone upon deenergization of the apparatus;

brake means for braking and locking the magnetic medium driving means upon deenergization of the apparatus;

said lock means includes a lock lever for locking movement of a rotary member coupled to the motor of the magnetic head moving means and having a hole, and spring means for biasing said lock lever to lock movement of said rotary member;

said brake means includes a brake lever for braking movement of the magnetic medium driving means and having a hole, and spring means for biasing said brake lever to brake movement of said rotating means; and

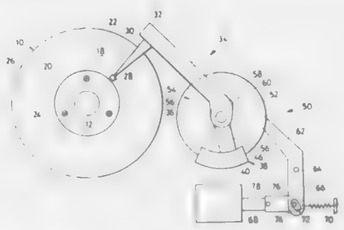
said apparatus further includes a plunger having a projection selectively engaged at different positions within at least one of the holes, and a solenoid which is energized to attract the plunger upon energization of the apparatus and which is deenergized to release the plunger upon deenergization of the apparatus, one of the holes being formed to be tightly fitted with the projection of the plunger, the other of the holes being formed to be loosely fitted with the projection of the plunger, whereby the lock lever and the brake lever are started to move at different timings by the plunger when the plunger is attracted by the solenoid.

4,807,072

HEAD POSITION CONTROL MECHANISM FOR A MAGNETIC DISK APPARATUS WITH HEAD LOCKING

Mamoru Ono, Achikawa, and Kenji Takeuchi, Kawasaki, both of Japan, assignors to Teac Corporation, Tokyo, Japan

Filed Aug. 25, 1986, Ser. No. 899,940
Claims priority, application Japan, Sep. 10, 1985, 60-200191
Int. Cl.[4] G11B 5/54, 21/02
U.S. Cl. 360—105 1 Claim



1. A head position control mechanism for an apparatus for data transfer with a dislike recording medium having arranged in a radial direction thereon both an effective surface region capable of storing data and a noneffective surface region where no data is to be stored, the head position control mechanism comprising:

(a) disk drive means for imparting rotation to the recording medium;

(b) a transducer head for data transfer with the effective surface region of the recording medium;

(c) head transport means including a pivotal head arm for supporting the transducer head and for transporting the same substantially radially of the recording medium, the head transport means permitting the transducer head to contact the recording medium at least when the latter is held out of rotation by the disk drive means;

(d) a rotary member pivotable jointly with the head arm of the head transport means about a common axis, said rotary member having a contact surface, with a notch defined therein, disposed in a plane parallel to the common axis of the rotary member and the head arm;

(e) a locking lever pivotable in a plane normal to the common axis of the head arm and the rotary member into and out of relatively movable contact with the contact surface of the rotary member and further into and out of locking engagement in the notch in the contact surface, wherein the locking lever has a roller rotatably mounted thereon for rolling over the contact surface of the rotary member into and out of locking engagement in the notch;

(f) a linear actuator coupled to the locking lever and energized at least during a data transfer operation of the apparatus for holding the locking lever out of contact with the rotary member in order to allow the head arm to transport the transducer head over the recording medium; and

(g) a spring coupled to the locking lever and acting upon deenergization of the linear actuator for moving the locking lever into relatively movable contact with the contact surface of the rotary member at such a point thereon that the rotary member is pivoted with the head arm with the consequent movement of the transducer head to the noneffective surface region of the recording medium under the force of the spring, the locking lever moving into locking engagement in the notch in the contact surface upon movement of the transducer head to the noneffective surface region of the recording medium;

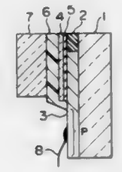
(h) whereby the transducer head is locked on the noneffective surface region of the recording medium as long as the linear actuator remains unenergized.

4,807,073

MAGNETORESISTANCE TYPE MAGNETIC HEAD AND METHOD FOR FABRICATING SAME

Tooru Takeura, Odawara, and Kazuhiro Momata, Chigasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 20, 1987, Ser. No. 40,127
Claims priority, application Japan, Apr. 18, 1986, 61-87906
Int. Cl.[4] G11B 5/12, 5/30
U.S. Cl. 360—113 23 Claims



1. A magnetoresistance type magnetic head comprising:

a first substrate comprising a soft magnetic material;

a first insulating layer provided on one surface of said first substrate;

a magnetoresistance film layer provided over said first insulating layer;

conductor leads provided between said first substrate and said magnetoresistance film layer, at least a portion of said conductor leads contacting said magnetoresistance film layer for leading out a signal from said magnetoresistance film layer;

a second insulating layer provided over said magnetoresistance film layer; and

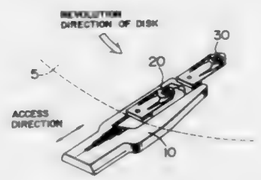
a second substrate comprising a soft magnetic material provided over said second insulating layer.

4,807,074

MAGNETORESISTIVE HEAD FOR MAGNETIC DISK

Yoshihisa Kamo, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 1, 1987, Ser. No. 127,162
Claims priority, application Japan, Dec. 1, 1986, 61-284328
Int. Cl.[4] G11B 5/30
U.S. Cl. 360—113 7 Claims



1. A plurality of magnetoresistive heads for reading information from respective regions obtained by dividing a disk-shaped recording medium into concentric circles, wherein

predetermined magnetoresistive heads are respectively assigned to said regions; and

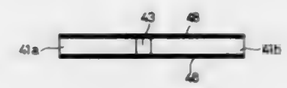
thickness of a magnetoresistive film included in a magnetoresistive head for reading information from one of said regions located at outer side of said disk-shaped recording medium is larger than thickness of a magnetoresistive film included in a magnetoresistive head for reading information from another one of said regions located at inner side of said disk-shaped recording medium.

4,807,075

MAGNETIC HEAD

Yoshihiko Kawai, Tsuzuki; Kazuaki Koyama, and Isao Yasuda, both of Katano, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 709,732, Mar. 8, 1985. This application Sep. 14, 1987, Ser. No. 97,316
Claims priority, application Japan, Mar. 16, 1984, 59-51323; Mar. 19, 1984, 59-52722
Int. Cl.[4] G11B 5/12, 5/16
U.S. Cl. 360—125 11 Claims



1. A magnetic head, comprising:

a main core including a pair of core halves made of a metal material and affixed to one another at opposing faces thereof and forming a gap therebetween, and presenting said gap formed between the core halves;

a pair of reinforcing cores sandwiching said main core therebetween for reinforcing said main core,

wherein each of said opposing faces has a surface layer of a transition metal, and said main core has a surface layer of a transition metal on both sides thereof; and

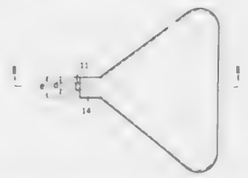
a glass material disposed between said opposing faces of said core halves, and a glass material also being disposed between said reinforcing cores and said main core, and cooperating with said transition metal surface layer, for bonding said core halves together and said reinforcing cores to said main core, respectively.

4,807,076

THIN FILM MAGNETIC HEAD FOR USE IN VERTICAL MAGNETIC RECORDING

Keishi Nakashima, Nagaoka, and Naohiro Ishibashi, Yoita, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Mar. 10, 1987, Ser. No. 24,352
Claims priority, application Japan, Jul. 22, 1986, 61-172542
Int. Cl.[4] G11B 5/147
U.S. Cl. 360—126 3 Claims



1. A thin film magnetic head for use in vertical magnetic recording on a recording medium moving in a horizontal, tracking direction, comprising:

a main magnetic pole for recording and reproducing on and from the recording medium which is oriented in a vertical direction to the recording medium, has an end portion of a first thickness dimension in the tracking direction, and is disposed in a vertical position in close proximity of to the recording medium; and

an auxiliary magnetic pole for cooperating with said main magnetic pole to form a closed magnetic circuit which is oriented in the vertical direction, has an end portion of a second thickness dimension in the tracking direction, and the end portion is disposed facing the recording medium at a vertical position retracted from the recording medium

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by a predetermined distance from the position of the end portion of said main magnetic pole;

wherein the predetermined distance said end portion of said auxiliary magnetic pole is retracted is in the range of 1–5 μm.

4,807,077

SHORT TIME RECORDING TAPE CASSETTE HAVING A LARGER OPEN SPACE THAN THAT OF A LONG TIME RECORDING TAPE CASSETTE

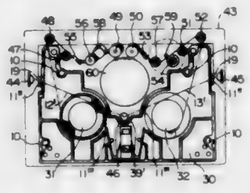
Osamu Zaitsu, Neyagawa, and Satoshi Kikuya, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 700,466, Feb. 11, 1985, abandoned. This application Aug. 28, 1987, Ser. No. 90,409

Claims priority, application Japan, Feb. 16, 1984, 59-27535; May 7, 1984, 59-66290[U]

Int. Cl.⁴ G11B *23/02, 5/008, 15/00, 17/00*

U.S. Cl. 360—132 **2 Claims**



1. A short-time recording tape cassette for use in a video tape recorder including at least one post for establishing a tape path, a tape guide drum, a capstan and a pinch roller, said short-time cassette comprising:

a housing having upper and lower surfaces and front, rear and two side surfaces;

a pair of short-time tape reels mounted in said housing; and

a magnetic tape having a predetermined short-time length and having leading and terminal ends anchored respectively to said pair of tape reels;

said housing defining a boundary adjacent said front side surface thereof, said boundary defining an opening space within said housing sufficiently large to accommodate the post, the tape guide drum, the capstan, the pinch roller and substantially the entire tape path when the short-time cassette is loaded in the video tape recorder.

4,807,078

FLEXIBLE DISK JACKET COLORED WITHIN SPECIFIC MUNSELL RANGES

Masakazu Iwasa, and Kazuhiko Morita, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 669,320, Nov. 7, 1984, abandoned. This application Jan. 4, 1988, Ser. No. 143,247

Claims priority, application Japan, Nov. 11, 1983, 58-212219

Int. Cl.⁴ G11B *23/03*

U.S. Cl. 360—133 **3 Claims**

1. A flexible disk jacket for accommodating therein a magnetic recording medium to form a flexible disk formed by folding a plastic sheet into a bag-like shape characterized in that at least substantially the entire outer surface of the plastic sheet itself is colored in a chromatic color having a Munsell chroma in the range of 4–10, a Munsell hue in the range of 2.5–5 and a Munsell value in the range of 4–8.

4,807,079

DISK CARTRIDGE

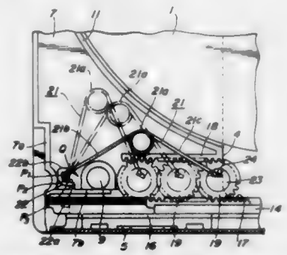
Kenji Takahashi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 25, 1987, Ser. No. 89,603

Claims priority, application Japan, Sep. 1, 1986, 61-205454

Int. Cl.⁴ G11B *23/03*

U.S. Cl. 360—133 **7 Claims**



1. An improved disk cartridge of the type having a main body for containing a revolvable disk therein and having an aperture for exposing a portion of the disk to the outside and a shutter slidably mounted on the main body for opening and closing the aperture, and a two ended torsion spring provided in the main body for urging the shutter in a direction which closes the aperture, the torsion spring having two ends, wherein the improvement comprises:

a spring and guide support for one end of the torsion spring, the spring end guide support being provided on the inner surface of the main body of the cartridge and having a supporting point which is variable with movement of the shutter wherein the one end of the torsion spring is moved in an arcuate trajectory when the shutter is moved and further wherein the spring end guide support has a concave guide portion substantially coinciding with the trajectory of the one end of the torsion spring that is moved with movement of the shutter.

4,807,080

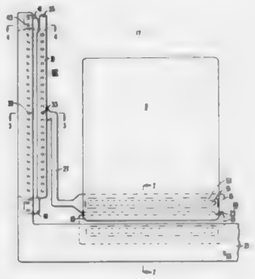
INTEGRATED CIRCUIT ELECTROSTATIC DISCHARGE INPUT PROTECTION

Stephen E. Clark, San Jose, Calif., assignor to Zilog, Inc., Campbell, Calif.

Filed Jun. 15, 1987, Ser. No. 62,211

Int. Cl.⁴ H02H *9/04*

U.S. Cl. 361—56 **10 Claims**



1. As part of an integrated circuit chip formed on a semiconductor substrate that includes a generally rectangularly shaped wire bonding pad and an active circuit to be protected from high electrostatic voltage spikes introduced through said pad, a protection circuit, comprising:

a first transistor formed on said semiconductor substrate, said first transistor having elongated source and drain regions formed in said substrate with a channel separation therebetween and positioned adjacent to an edge of only one side of said pad such that said pad edge extends over said channel with one of the source and drain regions being positioned under said pad and the other of the source and drain regions extending outside said pad,

a first layer of electrically conductive polycrystalline silicon having one side thereof physically and electrically contacting said one of said source and drain regions along substantially its entire length,

a second layer of electrically conductive polycrystalline silicon having one side thereof physically and electrically contacting said other of said source and drain regions along substantially its entire length,

a first metal conductor attached to another side of the first polycrystalline silicon layer and extending directly upward to said pad, said first conductor extending continuously along substantially the entire length of the first layer and having corners that are rounded,

a second metal conductor attached to another side of the second polycrystalline silicon layer and extending upward to a voltage supply bus conductor that is laterally separated from said one side of the pad, said second conductor extending continuously along substantially the entire length of the second layer and having corners that are rounded, and

means connected to the source or drain region that is positioned under the pad for providing a signal path from said pad to said active circuit.

4,807,081

CIRCUIT PROTECTION ARRANGEMENT

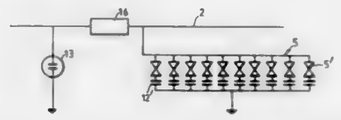
David Crofts, Somerford Keynes, and Martin A. Wright, Swindon, both of England, assignors to Raychem Limited, United Kingdom

Filed Sep. 3, 1987, Ser. No. 92,832

Claims priority, application United Kingdom, Sep. 5, 1986, 8621431

Int. Cl.⁴ H02H *3/20*

U.S. Cl. 361—56 **17 Claims**



1. An arrangement for protecting an electrical circuit from a voltage transient having a fast rise time, which comprises a plurality of semiconductor threshold foldback switching elements that are connected, in parallel with one another between a current carrying line of the circuit and earth, and a capacitor connected in series with each switching element, the capacitor being connected between the switching element and the current carrying line.

4,807,082

CURRENT SURGE PROTECTOR FOR POWER FUSES

Radhakrishnan Ranjan, Hickory, and William E. Lazenby, Statesville, both of N.C., assignors to General Electric Corporation, King of Prussia, Pa.

Filed May 14, 1987, Ser. No. 50,250

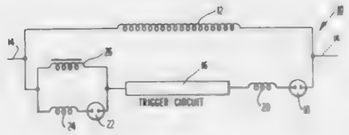
Int. Cl.⁴ H02H *5/04*

U.S. Cl. 361—104 **18 Claims**

1. In a full range power fuse having a main fuse element electrically connectable in series with a protected electrical power system, and a current actuated trigger circuit for effecting a break in said main fuse element thereby interrupting current flow in said protected electrical power system, the trigger circuit having trigger inductance, means for preventing operation of said fuse due to induced current surges, and said means comprising:

(a) first means for turning on and conducting current to a first terminal of said trigger circuit through a first low inductance device to provide trigger current when the voltage across said first conducting means exceeds a first level of magnitude;

(b) second means for turning on and conducting said trigger current from a second terminal of said trigger circuit through a second low inductance device when the voltage



across said second conducting means exceeds a second level of magnitude;

(c) a high inductance device electrically connected in parallel across said second conducting means and said second low inductance device; and

(d) said high inductance device including means for applying said second voltage level to said second conductor means during said induced surges and turning on said second conductor to apply the combined inductances of said first and second low inductance devices and said trigger circuit to said trigger current during said surges and inductively limit said trigger current during said surges.

4,807,083

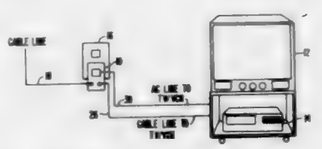
SURGE SUPPRESSOR FOR COAX CABLE AND AC POWER LINES

Kirk Austin, San Rafael, Calif., assignor to Panamax, Inc., San Rafael, Calif.

Filed Mar. 12, 1987, Ser. No. 25,263

Int. Cl.⁴ H02H *9/04*

U.S. Cl. 361—111 **12 Claims**



1. A surge suppressing apparatus for connecting an AC power line and a coaxial antenna source line to equipment having an AC power plug and an antenna input connector, said apparatus comprising:

a housing;

a first surge suppression circuit mounted within said housing and adapted for connection in series between the coaxial antenna source line and the antenna input connector of the equipment, said first surge suppression circuit being operable for suppressing unwanted voltage transients and surges occurring in the coaxial antenna source line, said first surge suppression circuit comprising an input terminal adapted for connection to the coaxial antenna source line, an output terminal adapted for connection to the antenna input connector of the equipment, a conductive path disposed between said input and output terminals, a ferrite bead coupled at a first end thereof to said conductive path, and a varistor and a diode coupled in parallel between a second end of said ferrite bead and ground; and said housing and adapted for connection in series between a second surge suppression circuit mounted within

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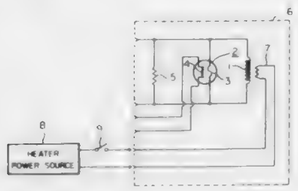
the AC power line and the power plug of the equipment, said second surge suppression circuit being operable for suppressing unwanted voltage transients and surges occurring in the AC power line.

4,807,084

SUPERCONDUCTING MAGNET APPARATUS WITH EMERGENCY RUN DOWN UNIT

Moriaki Takechi, Ako, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Sep. 3, 1987, Ser. No. 92,589
Claims priority, application Japan, Sep. 9, 1986, 61-210844
Int. Cl.⁴ H02H *9/00*
U.S. Cl. 361—141 **5 Claims**



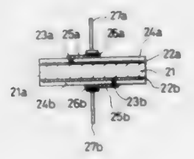
1. A superconducting magnet apparatus comprising a superconducting coil, a persistent current switch, and a protective element respectively connected in parallel with said superconducting coil and an emergency run down unit including a heater circuit having a heater power source, a heater element disposed in proximity to said superconducting coil, and a heater circuit switch means connected in series with said heater element and actuable to provide current to said heater element to warm said superconducting coil and initiate a quench to cause said superconducting coil to revert to a normal state.

4,807,085

NONLINEAR CAPACITOR FOR GENERATING HIGH-VOLTAGE PULSES

Minoru Yasukawa, Saitama, and Takenobu Iida, Urawa, both of Japan, assignors to Iwasaki Electric Co., Ltd., Tokyo, Japan

Filed May 20, 1988, Ser. No. 196,391
Claims priority, application Japan, May 28, 1987, 62-129746; May 28, 1987, 62-129747
Int. Cl.⁴ H01G *1/13*
U.S. Cl. 361—321 **15 Claims**



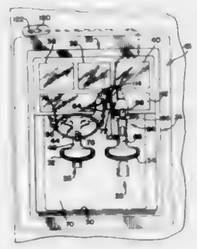
1. A nonlinear capacitor for generating high-voltage pulses, comprising a ferroelectric ceramic substrate, electrode layers formed on both sides of said substrate, a mineral glass coating covering the entire surface of the capacitor except for connector portions for said electrode layers and for the outer peripheral surface of said substrate, and lead terminals electrically connected to said electrode layers through said connector portions.

4,807,086

STATIC DISCHARGER FOR REFRIGERATOR EXTERNAL ACTUATOR LEVER

Patricia C. Chambliss, Perry Township, Vanderburgh County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jul. 6, 1987, Ser. No. 69,648
Int. Cl.⁴ H02H *3/22*
U.S. Cl. 361—212 **9 Claims**



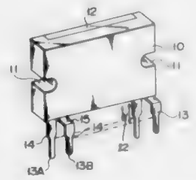
1. A refrigeration device comprising
an external door,
dispensing means disposed in said door for dispensing pieces of ice and/or water, said dispensing means including pivotally mounted actuating means for dispensing said pieces of ice and/or water,
electronic means disposed in said door adjacent said dispensing means and
means for electrically grounding said actuating means thereby to direct static electric charges to an electrical ground and for electrically projecting said electronic means from overvoltage conditions resulting from static electric charges, said grounding means comprising an at least partially electrically conductive bearing disposed adjacent said actuating means for pivotally mounting said actuating means relative to said door and conductive means for electrically connecting said bearing to an electrical ground, said bearing being made of an insulating material having a conductive filler.

4,807,087

SINGLE-IN-LINE TYPE SEMICONDUCTOR DEVICE

Hiromichi Sawaya, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 18, 1987, Ser. No. 121,955
Claims priority, application Japan, Nov. 20, 1986, 61-277329
Int. Cl.⁴ H05K *1/16*
U.S. Cl. 361—405 **4 Claims**



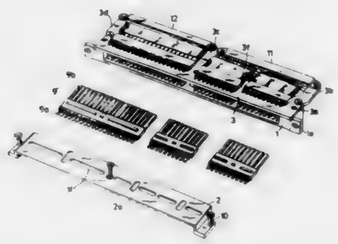
1. A single in-line type semiconductor device comprising:
a package;
a plurality of first external leads, each having an upper portion and a distal end portion, drawn vertically from one edge portion of the package and arranged in a row;
a plurality of second external leads, each having an upper portion and a distal end portion, drawn out vertically from said one edge portion, said second external leads being bent at respective upper portions thereof such that said distal end portion of each said second external lead is offset from a plane formed by said row of first external leads, said first and second external leads extending alternately from said one edge portion; and
said upper portions of each said first and second external leads having a first width, and said distal end portions of each said first and second external leads having a second width less than said first width, each of said first and second external leads having a positioning portion at the transition between said upper portion and said distal end portion, said positioning portions of said first and second external leads being formed at a first linear distance from said one edge portion of said package.

4,807,088

MULTI-POLAR CONTACTORS

Roger Wistling, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Karlskoga, Sweden

PCT No. PCT/SE86/00442, § 371 Date May 20, 1987, § 102(e) Date May 20, 1987, PCT Pub. No. WO87/02195, PCT Pub. Date Apr. 9, 1987
PCT Filed Oct. 2, 1986, Ser. No. 54,180
Claims priority, application Sweden, Oct. 3, 1985, 8504569
Int. Cl.⁴ H05K *9/00*
U.S. Cl. 361—424 **10 Claims**



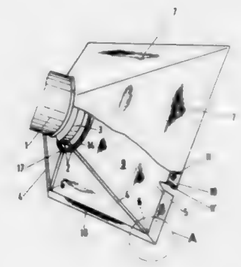
1. A multipolar contactor device comprising:
a body member including first and second side sections and a partition wall extending therebetween;
a first compartment defined between said first side section and said partition wall;
a second compartment defined between said second side section and said partition wall;
said first or second compartments providing spaces for contactor wafers;
a plurality of adjacent contactor wafers disposed in said spaces in said compartments, said contactor wafers being interconnectable at one end with individual conductors and at a second end interconnectable with a coupling member; and
at least one of said side sections being removably connected to said body member, such as to be detachable when said contactor wafers are coupled with said coupling member, thereby exposing said contactor wafers in one compartment while permitting one or more of said contactor wafers to remain connected to said coupling member.

4,807,089

REFLECTOR FOR PHOTOGRAPHIC SOURCES OF LIGHT

Armin Nüssli, Roderadorf, Switzerland, assignor to Bron Elektronik AG, Allschwil, Switzerland

Filed Feb. 19, 1988, Ser. No. 157,966
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1987, 8702694[U]
Int. Cl.⁴ G03B *15/02*
U.S. Cl. 362—17 **8 Claims**



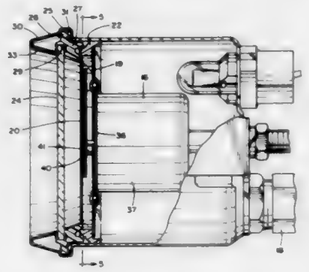
1. A reflector for photograghic sources of light, whereby an umbrella-like frame that includes struts can be placed on a mounting for a light source, with each of said struts having an end remote from said mounting; said reflector further comprising:
a connection element provided on said ends of said struts;
a flexible reflector sheathing that is disposed on said frame and has a light-discharge opening remote from said mounting, with said reflector sheathing having an edge region around said light-discharge opening; and
a first closure member provided along said edge region of said reflector sheathing, with said first closure member being adapted to cooperate with said connection element in such a way as to provide a detachable connection of said reflector sheathing to said connection element and hence to said frame.

4,807,090

INSTRUMENT ILLUMINATION SYSTEM

Panagiotis K. Mandelios, Skokie, and Renzo N. Rutili, Evanston, both of Ill., assignors to Stewart Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 939,358, Dec. 8, 1986, abandoned. This application Feb. 11, 1988, Ser. No. 153,499
Int. Cl.⁴ G01D *11/28*
U.S. Cl. 362—26 **10 Claims**



1. An illuminated instrument comprising: a housing, an instrument movement mounted in the housing, an opaque indica-

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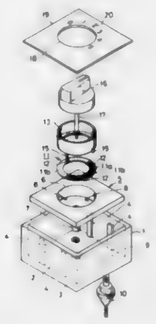
tor member with a forward face mounted toward the front of the housing having a peripheral edge, a source of light in the housing positioned rearwardly of the indicator member, a transparent illumination ring surrounding the indicator member for directing light from the source around the edge of the indicator member to the forward face thereof including an annular peripheral portion having inner and outer annular surfaces, said inner annular surface being positioned to receive light directly from the source, and a radially inwardly directed portion connected to the peripheral portion having a flat radial rear surface joining the peripheral portion inner wall, a flat radial forward wall, and a beveled wall joining the peripheral portion outer wall and its forward wall, said inner wall of the peripheral portion being radially spaced from the peripheral edge of the indicator member so the rear surface of the radial portion of the ring receives light directly from the source and not through the peripheral portion of the ring to increase light flow through the ring, said indicator member being radially free of the illumination ring to permit easier assembly of the movement and ring, a substantial portion of the beveled wall being positioned radially inwardly of the peripheral portion of the ring.

4,807,091

ILLUMINATING DEVICE FOR AN ELECTRIC PART

Kosei Obata, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Apr. 29, 1988, Ser. No. 187,826
Claims priority, application Japan, May 19, 1987, 61-73600[U]
Int. Cl.⁴ G01D *11/28*
U.S. Cl. 362—30 **8 Claims**



1. An illuminating device for an electric part, comprising an operation panel, a knob mounted for manual rotation relative to said operation panel, a cylindrical light conducting member located around said knob, a light source located below said light conducting member, said light conducting member transmitting light emitted from said light source to an upper face of said operation panel, and an annular filter located on a lower face of said light conducting member and having thereon a positioning means for positioning said filter in a circumferential direction relative to said light conducting member, said filter having a light passing zone and a light absorbing zone formed at different circumferential portions thereof.

4,807,092

OPTICAL DECORATION SYSTEM

Yasuo Hasegawa, c/o Koken Co., Ltd., 215-1, Shimomagari, Ritto-cho, Kurita-gun, Shiga-Pref., Japan

Filed Jul. 2, 1987, Ser. No. 69,050
Int. Cl.⁴ G09F *9/30*
U.S. Cl. 362—32 **11 Claims**



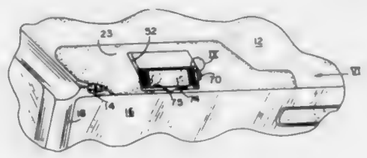
1. An optical decoration system comprising:
a source of light;
a plurality of optical fibers arranged to receive light from the light source at one end of each fiber and to project light at the other end;
means for mounting at least a portion of the projecting light ends of the fibers at spaced apart locations to project light;
a substantially transparent panel positioned apart from the ends of the projecting light fibers to receive the projected light on a rear surface of the panel, the panel being positioned sufficiently away from the mounted fiber ends to receive a substantially larger pattern of light than the diameter of the fiber wherein a plurality of pattern of lights are realized on the rear surface, and
means for diffusing each of the projected incident light patterns on the rear surface to provide a substantially diffused uniform illumination of a front surface of the panel.

4,807,093

TWO-WAY VANITY MIRROR VISOR

Bruce W. Cisler, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Nov. 16, 1987, Ser. No. 121,033
Int. Cl.⁴ F21V *33/00*
U.S. Cl. 362—74 **14 Claims**



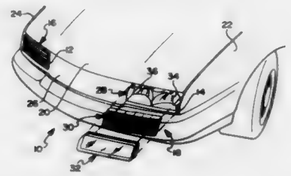
1. A vehicle visor comprising:
a visor body having forwardly and rearwardly facing major surfaces and an aperture extending through said visor body and through said surfaces to define an opening through said visor; and
a vanity mirror assembly including a mirror, said assembly pivotally mounted to said visor body to be movable from a position substantially parallel with said facing surfaces of said visor and facing rearwardly when said visor is in a lowered use position such that said mirror is exposed through said opening, and wherein said assembly can be pivoted through an angle of at least 90 in a forward direction from said visor body such that the mirror can be used as a vanity mirror when the visor is in a raised stored position against the vehicle headliner.

4,807,094

HEADLAMP ASSEMBLY

Luis A. Mateos, and Lawrence M. Rice, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 21, 1987, Ser. No. 135,942
Int. Cl.⁴ B60Q *1/00*
U.S. Cl. 362—80 **9 Claims**



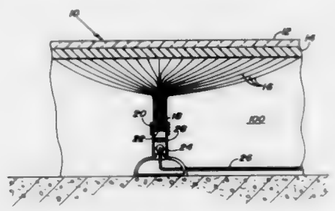
1. In combination with the front end of a motor vehicle having a pair of laterally spaced openings defined by the outer panel portions of the motor vehicle, each of said openings having a headlamp assembly located therein that includes a housing closed by a colorless lens, said lens having optical flutes formed thereon, a pair of side by side first and second reflector cavities formed in said housing with said first cavity adapted to project a low beam light along a first axis and said second cavity adapted to project a high beam light along a second axis which is inclined upwardly relatively to said first axis, a plurality of blade-like louvres the top portions of which are the same color as the color of said panel portions and being located in said headlamp assembly between said first and second reflector cavities and said lens, the louvres located forwardly of said first cavity being positioned in planes parallel to said first axis and the louvres located forwardly of said second cavity being positioned in planes parallel to said second axis, and the outer surface of said lens being contiguous with the adjacent panel portions of the motor vehicle so when the headlamp assembly is not lighted the color of the louvres causes the lens to appear to the observer to be the same color as the panel portions.

4,807,095

FIBEROPTICALLY ILLUMINATED TABLE

Gerald Bell, 1541 W. Broadway, Anaheim, Calif. 92802

Filed Apr. 11, 1988, Ser. No. 180,127
Int. Cl.⁴ F21V *33/00*
U.S. Cl. 362—127 **7 Claims**



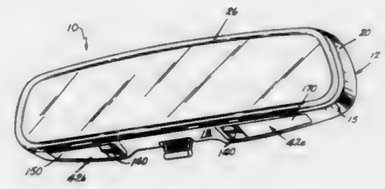
1. A counter comprising, in combination:
a generally planar top which comprises one or more transparent portions;
a light source;
a multiplicity of optical fibers;
means for coupling light from the light source to a proximal end of the optical fibers; and
means optically coupling light from the distal end of the optical fibers to the transparent portions for lighting said transparent portion.

4,807,096

INTERIOR LIGHT/CARRIER MODULE FOR VEHICLES

Brian I. Skogler, Spring Lake; Kenneth Schofield; William P. Lantz, both of Holland; Eldon J. Nyhof, Zeeland; Dorothy J. Helder, and Charles M. Flowerday, both of Holland, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation of Ser. No. 879,158, Jun. 26, 1986, Pat. No. 4,733,336. This application Dec. 11, 1987, Ser. No. 132,004
Int. Cl.⁴ F21F *33/00*
U.S. Cl. 362—142 **41 Claims**



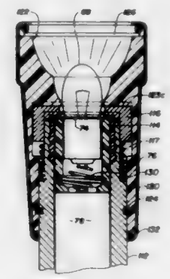
1. A carrier module for interior vehicular use, said module comprising:
a rigid body having light support means for holding a light source, a lens supported adjacent said light support means, and second support means adjacent said light support means for supporting at least one of a second light, a switch, a control unit and an instrument;
mounting means independent of said light support means and second support means for mounting said body on a support on a vehicle such that one side of said body is exposed, said mounting means including removal means accessible from said exposed side of said body for allowing removal of said body with said light support means, lens, and second support means from the vehicle support without disassembling other parts of the vehicle support.

4,807,097

MINIATURE FLASHLIGHT

Richard J. Gammache, 1564 Mission Rd., Lancaster, Pa. 17601

Division of Ser. No. 863,111, May 14, 1986, Pat. No. 4,725,932. This application Feb. 11, 1988, Ser. No. 154,895
Int. Cl.⁴ F21L *7/00*
U.S. Cl. 362—202 **6 Claims**



1. A flashlight comprising:
a casing containing at least one battery;

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a bulb disposed in said casing, said bulb having a first terminal connected to said battery and a second terminal, said bulb having a cylindrical metallic base with an annular flange formed thereon, said flange comprising said second terminal;

nonconductive means on said casing for contacting the second terminal of said bulb to thereby open an electrical circuit for extinguishing said bulb;

a shuttle formed of conductive material, said shuttle being operable for contacting the second terminal of said bulb to thereby close said electrical circuit for illuminating said bulb, said shuttle being generally ring shaped and including a plurality of lugs for engaging the annular flange of said bulb; and

a head assembly movably mounted on said casing for operating said shuttle, said head assembly having a wavy cam surface with ramps formed thereon for engaging tabs formed on the lugs of said shuttle.

4,807,098

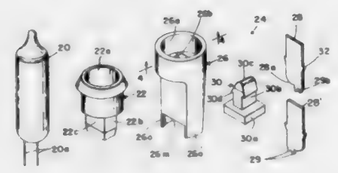
LAMPHOLDERS FOR MINIATURE LIGHT SETS

Joseph M. Ahroni, 2701 W. Mano Pl., #204, Seattle, Wash. 98199

Continuation-in-part of Ser. No. 945,602, Dec. 22, 1986, which is a continuation-in-part of Ser. No. 664,153, Oct. 24, 1984, Pat. No. 4,631,650. This application Dec. 10, 1987, Ser. No. 131,027

Int. Cl.[4] F21V *21/00*

U.S. Cl. 362—249 **10 Claims**



1. A lampholder comprising:

a housing having a socket at one end to receive a lamp unit, and having a wireway at the opposite end to receive three side-by-side insulated wires occupying a central portion and first and second opposite side portions of the wireway;

said socket having two recessed portions at opposite sides thereof, one of said recessed portions intersecting said central portion and said first opposite side portion of the wireway and the other of said recessed portions intersecting said central portion and said second opposite side portion of the wireway; and

a pair of like contact members lodged in respective of said recessed portions to be engaged by wire leads from said lamp unit, said contact members each having an insulation-severing contact element projecting into said wireway, each of said contact members being reversible before being lodged in said recessed portions to have its said contact element projecting either into said central portion of the wireway or into one of said opposite side portions of the wireway.

4,807,099

LIGHTING FIXTURES

Asher A. Zelin, Bronxville, N.Y., assignor to ECP Energy Conservation Products, New York, N.Y.

Filed Mar. 11, 1987, Ser. No. 24,614

Int. Cl.[4] F21S *3/00*

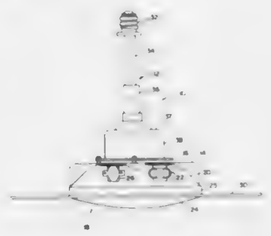
U.S. Cl. 362—225 **19 Claims**

1. A fluorescent lamp lighting fixture which exhibits an increased amount of illumination which comprises:

(a) an elongatec connector stem means adapted for insertion in an incandescent lamp socket;

(b) lamp housing means mounted on said connector stem means;

(c) at least one twin-tube type fluorescent lamp bulb horizontally mounted in a socket at one end thereof within said lamp housing;



(d) a reflector assembly within said lamp housing means mounted between said lamp housing means and said fluorescent lamp bulb configured for increasing the light illumination of said fluorescent lamp from said lamp housing; and

(e) electrical connector means within said connector stem means for activating said twin-tube type fluorescent lamp.

4,807,100

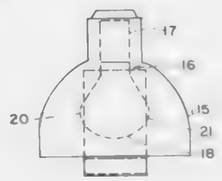
LIGHT DIRECTOR

George S. Hudimac, Jr., Allentown, Pa., assignor to Mechanical Service Company, Allentown, Pa.

Filed Mar. 20, 1987, Ser. No. 28,395

Int. Cl.[4] F21M *3/14*

U.S. Cl. 362—255 **14 Claims**



1. In combination:

a light bulb comprising a glass housing and a base;

an elongated, hollow, opaque shield at least one end of which is open, the shield being slidably mounted on said glass housing with the inside of the shield slidingly engaging the glass housing and the sliding engagement allowing the shield to be moved on the housing to a plurality of positions;

a plurality of flat, spaced apart slats connected to the shield adjacent to and inside of said open end spaced from said light bulb and extending parallel to one another across the open end and also extending inside the shield in a direction toward said glass housing; and

the flat slats the amount of slat inside extension, and parallel slats cooperating to cause light from said glass housing to pass through said open end in generally parallel beams.

4,807,101

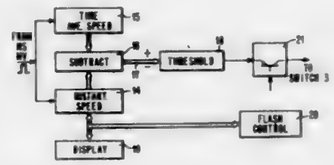
AUTOMATIC HAZARD LIGHT FOR A MOTOR VEHICLE

Karl F. Milde, Jr., Mahopac, N.Y., assignor to V-Tronics Corp., Mahopac, N.Y.

Continuation-in-part of Ser. No. 832,437, Feb. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 670,901, Nov. 13, 1984, abandoned. This application Aug. 10, 1987, Ser. No. 83,042

Int. Cl.[4] F21V *23/00*; **B60Q** *1/00*

U.S. Cl. 362—276 **22 Claims**



1. Apparatus for controlling a tail light of a motor vehicle, said apparatus comprising, in combination:

(a) a source of voltage;

(b) switch means for selectively connecting said voltage source with said tail light; and

(c) control means, coupled to said switch means, for automatically closing said switch means, thereby connecting said tail light with said voltage source, after the speed of said vehicle falls below a prescribed speed threshold for a prescribed period of time.

4,807,102

ALTERNATING CURRENT ELECTRICAL POWER SUPPLY CIRCUIT

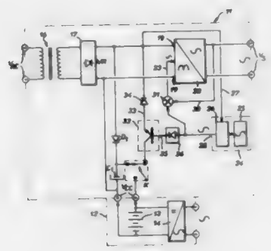
Edouard Serras-Paulet, 38 bis Boulevard d'Argenson, 92200 Neuilly sur Seine, France

Filed Feb. 4, 1987, Ser. No. 10,852

Claims priority, application France, Feb. 6, 1986, 86 01623; Apr. 15, 1986, 86 05345

Int. Cl.[4] H02M *5/453*

U.S. Cl. 363—37 **21 Claims**



1. Alternating current electrical power supply circuit comprising a rectifier adapted to be connected to an AC mains supply and to produce a rectified output voltage including ripple, an amplifier-inverter having power supply terminals connected to the output of said rectifier and a control input, and means for generating a voltage including ripple synchronous and in phase with the voltage of said AC mains supply connected to said control input of said amplifier-inverter.

4,807,103

APPARATUS FOR CONTROLLING A PWM CONTROLLED INVERTER

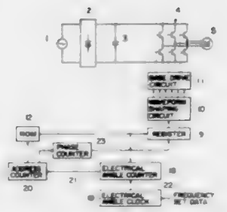
Michika Uesugi, Fuji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 26, 1988, Ser. No. 161,191

Claims priority, application Japan, May 26, 1987, 62-128825

Int. Cl.[4] H02M *7/5387*

U.S. Cl. 363—41 **3 Claims**



1. An apparatus for controlling a pulse width modulation (PWM) controlled inverter comprising:

a read only memory (ROM) in which instantaneous output voltage data and duration data every respective voltage outputs thereof in the PWM control are memorized, and in which the number of addresses within a section of a predetermined electrical angle is set to a fixed value irrespective of the number of switching times within said section of the electrical angle;

an electrical angle counter in which duration corresponding to the duration data read from said ROM is set;

an address counter responding to the count-up of said electrical angle counter to advance the read address of said ROM; and

means for controlling an output voltage of the inverter in accordance with an instantaneous output voltage corresponding to the instantaneous output voltage data read from said ROM.

4,807,104

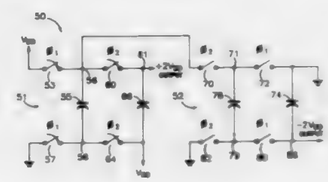
VOLTAGE MULTIPLYING AND INVERTING CHARGE PUMP

Michael D. Floyd, Austin, and Jeffrey D. Stump, Elgin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 15, 1988, Ser. No. 182,010

Int. Cl.[4] H02M *3/18*

U.S. Cl. 363—59 **5 Claims**



1. A voltage doubling and inverting charge pump circuit, comprising:

a first switch having a first terminal coupled to a power supply terminal for receiving a power supply voltage, a second terminal, and a control terminal for receiving a first control signal;

a first capacitor having a first electrode coupled to the second terminal of the first switch, and having a second electrode;

a second switch having a first terminal coupled to the second electrode of the first capacitor, having a second terminal

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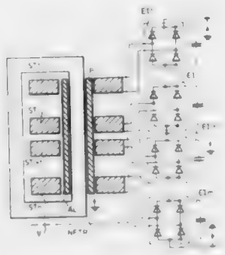
coupled to a reference voltage terminal, and having a control terminal for receiving the first control signal;
a third switch having a first terminal coupled to the first electrode of the first capacitor, a second terminal coupled to a first output terminal which provides an output voltage of a first polarity and substantially twice the power supply voltage, and a control terminal for receiving a second control signal;
a second capacitor having a first electrode coupled to the first output terminal, and having a second electrode coupled to the power supply terminal;
a fourth switch having a first terminal coupled to the power supply terminal, a second terminal coupled to the second electrode of the first capacitor, and a control terminal for receiving the second control terminal;
a fifth switch having a first terminal coupled to the first electrode of the first capacitor, a second terminal, and a control terminal for receiving the second control signal;
a third capacitor having a first electrode coupled to the second terminal of the fifth switch, and having a second electrode;
a sixth switch having a first terminal coupled to the second electrode of the third capacitor, a second terminal coupled to the reference voltage terminal, and a control terminal for receiving the second control signal;
a seventh switch having a first terminal coupled to the first electrode of the third capacitor, a second terminal coupled to the reference voltage terminal, and a control terminal for receiving the first control signal;
a fourth capacitor having a first electrode coupled to the second terminal of the seventh switch, and having a second electrode coupled to a second output terminal which provides an output voltage of a second polarity substantially twice the power supply voltage; and
an eighth switch having a first terminal coupled to the second output terminal, a second terminal coupled to the second electrode of the third capacitor, and a control terminal coupled to the first control signal.

4,807,105

CIRCUIT ARRANGEMENT FOR PRODUCING HIGH DC VOLTAGE FROM MEDIUM-FREQUENCY AC VOLTAGE

Istvan Varjasi, Budapest; Gyorgy Areldt, Monor, and Zoltan Gajnas, Budaors, all of Hungary, assignors to Budapesti Muszaki Egyetem, Budapest, Hungary

PCT No. PCT/HU86/00024, § 371 Date Feb. 27, 1987, § 102(e) Date Feb. 27, 1987, PCT Pub. No. WO86/06892, PCT Pub. Date Nov. 20, 1986
PCT Filed May 4, 1986, Ser. No. 13,828
Claims priority, application Hungary, May 3, 1985, 1689/85
Int. Cl.[4] H02M *7/10*
U.S. Cl. 363—68 **3 Claims**



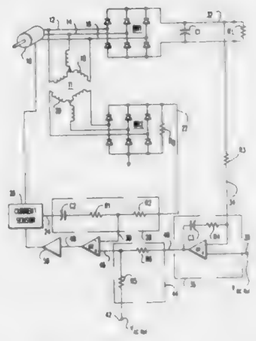
1. A circuit arrangement for producing high DC voltage from medium frequency AC voltage, comprising a high voltage transformer and a rectifier system, said high voltage transformer having a primary winding and n secondary flat windings electrically separated from the primary winding, said primary and secondary windings being arranged on a common shell-type iron core, said secondary windings forming m electrically coupled winding systems, said primary winding being arranged in a cylindrical configuration and a concentric shielding panel being provided above the cylindrically configured primary winding, said panel being surrounded by said n secondary flat windings arranged side-by-side along the shell and forming said m electrically connected winding systems, each said electrically connected winding system having an output terminal connected to respectively one input of an uncontrolled component single-phase half-bridge rectifier comprised by said rectifier system, each said component rectifier having an output connected in series to provide added rectified voltages, said rectifier system having a positive output, a negative output, and an output intermediate said positive and negative outputs, one of said positive, negative and intermediate outputs being grounded, said outputs of said rectifier system being joined to filter means.

4,807,106

METHOD AND CIRCUIT FOR VOLTAGE REGULATION OF DC POWER SOURCES

Donal E. Baker, American Twp., Allen County; David A. Fox, Shawnee Twp., Allen County, and Roger D. Thornton, St. Marys, all of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 12, 1988, Ser. No. 193,870
Int. Cl.[4] H02P *9/00*
U.S. Cl. 363—84 **5 Claims**



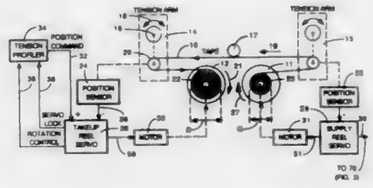
1. A voltage regulator circuit for a DC electrical power source including a generator having an exciter field winding, and means for rectifying an AC output voltage of said generator to produce a DC output voltage, said circuit comprising:
means for producing a first signal proportional to the AC output voltage of said generator;
means for sensing current in said exciter field winding of said generator and for producing a second signal proportional to said exciter field current;
means for combining said first and second signals to produce a third signal;
means for producing a fourth signal proportional to the DC output voltage of said power source;
means for comparing said fourth signal to a DC reference signal to produce a trim error signal;
means for combining said trim error signal with an AC reference signal to produce a fifth signal;
means for comparing said third signal with said fifth signal to produce a sixth signal; and
means for controlling current in said exciter field winding in response to said sixth signal.

4,807,107

APPARATUS FOR PROVIDING A PROFILED TAPE TENSION WITHOUT UTILIZING A TAPE PACK DIAMETER SENSOR

Jeffrey L. Fischer, San Bruno, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Aug. 25, 1987, Ser. No. 89,273
Int. Cl.[4] G11B *15/43, 15/28*; B65H *77/00*
U.S. Cl. 364—148 **12 Claims**



1. An apparatus for providing a desired tape tension for winding a tape on a reel, said desired tape tension varying with a changing diameter of a tape pack on said reel in accordance with a tape tension profile, comprising:
a tension arm arranged in contact with said tape and coupled to provide said desired tape tension in accordance with a tension arm adjustment command;
control means coupled to receive a position command signal indicating a desired position of said tension arm and a signal indicating an actual position of said tension arm, said control means providing responsively a control signal coupled to control rotation of said reel to thereby control said position of said tension arm, said control signal having a known relationship to said diameter of the tape pack on said reel; and
tape tension profiler means having memory means for storing desired tape tension values in accordance with said tape tension profile, said tape tension profiler means coupled to said control means to receive therefrom said control signal and to apply responsively a corresponding stored tape tension value as said tension arm adjustment command.

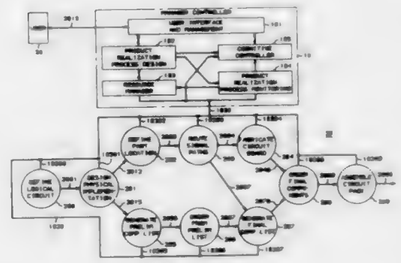
4,807,108

PRODUCT REALIZATION METHOD

David Ben-Arieh, Columbus; Charles A. Fritsch, New Albany; Kostia Mandel, Columbus, all of Ohio; Albert F. Starzinski, Long Branch, N.J., and Raghunath Venugopal, Columbus, Ohio, assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 10, 1987, Ser. No. 83,329
Int. Cl.[4] G05B *13/02*; G06F *15/46*
U.S. Cl. 364—148 **12 Claims**

12. A method for managing a process of realizing a product comprising the steps of:
generating directed data flows defining activities interconnected in a precedence relationship to form the product realization process,
simulating operation of the generated activity directed data flows,
allocating resources to and scheduling the defined activities of each activity,
determining status of each activity,
estimating time required to perform each activity,
receiving status of an initiation and completion of activities and of the allocation of the resources,
deriving solutions in response to operation of the activities for enabling reconfiguration of the product realization process and assigning classification codes to each derived solution identifying resulting design and manufacture changes of the product,
selecting ones of the derived solutions in accordance with the assigned classification codes, and



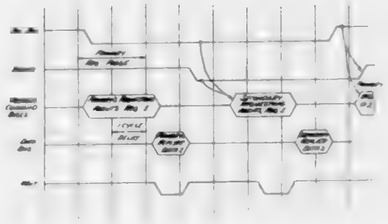
modifying ones of the activities in accordance with the selected solutions to maintain optimal design and manufacture of the product.

4,807,109

HIGH SPEED SYNCHRONOUS/ASYNCHRONOUS LOCAL BUS AND DATA TRANSFER METHOD

Robert L. Farrell, Portland; Alireza Sarshi, Hillsboro, and Raymond S. Tetrick, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 555,028, Nov. 25, 1983, abandoned. This application Jan. 14, 1987, Ser. No. 4,353
Int. Cl.[4] G06F *13/40*
U.S. Cl. 364—200 **16 Claims**



1. A high speed synchronous local bus for transferring data between a plurality of data processing devices comprising:
at least one requesting processor connected to said high speed synchronous local bus and operating at a first predetermined clocking rate;
at least one replying processor connected to said high speed synchronous local bus;
priority arbitration means whereby each of said at least one requesting processor is automatically assigned an arbitration number wherein priority arbitration can be modified based upon a desired hierarchy;
high speed synchronous local bus address lines coupled to said at least one requesting processor and said at least one replying processor for transmitting address information therebetween;
high speed synchronous local bus command lines coupled to said at least one requesting processor and said at least one replying processor for transmitting command data therebetween;
high speed synchronous local bus data lines coupled to said at least one requesting processor and said at least one replying processor for transmitting data therebetween;
high speed synchronous local bus control lines coupled to said at least one requesting processor and said at least one

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replying processor for transmitting control data therebetween;

high speed synchronous local bus clock lines coupled to said at least one requesting processor and to said at least one replying processor and to other data processing devices connected to said high speed synchronous local bus, such that all events on the local bus are clocked at a percentage of the predetermined clocking rate of said at least one requesting processor;

WAIT signal asserting/deasserting means coupled to said at least one replying processor for asserting and deasserting a WAIT signal on said high speed synchronous local bus control lines to data processing devices coupled to said high speed synchronous local bus;

WAIT signal timing means for asserting said WAIT signal during a first clock cycle of application of address and command information by said requesting processor on said high speed synchronous local bus address and command lines respectively;

WAIT driving means for driving said address and command information until said WAIT signal is deasserted by said replying processor;

operations delaying means whereby the assertion of said WAIT signal after said first clock cycle of application of address and command information by said requesting processor results in a delay of all further high speed synchronous local bus operations except the completion of said application of address and command information by said requesting processor; and

operations initiating means wherein said deassertion of said WAIT signal by said replying processor permits further local synchronous bus operations to occur on said high speed synchronous local bus in accordance with said desired priority hierarchy and beginning during a clock cycle of said requesting processor occurring at the time of deassertion such that data is transferred in accordance with requesting processor priority along said high speed synchronous local bus irrespective of differences in the speed of operation of said replying processor and said requesting processor.

4,807,110

PREFETCHING SYSTEM FOR A CACHE HAVING A SECOND DIRECTORY FOR SEQUENTIALLY ACCESSED BLOCKS

James H. Pomerene, Chappaqua; Thomas R. Puzak, Yorktown Heights; Rudolph N. Rechtschaffen, Scarsdale, all of N.Y., and Frank J. Sparacio, North Bergen, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1984, Ser. No. 597,801

Int. Cl.[4] G06F *9/38, 12/12*

U.S. Cl. 364—200 **17 Claims**

1. A method for prefetching blocks of information from main storage to a high speed buffer store in a data processing system, in which main storage addresses of said information blocks contained in said high speed buffer store are stored in a directory, wherein the following steps are executed for each access of at least a subset of accesses to high speed buffer stored information blocks by a processor of said data processing system:

determining for each access to an information block in the high speed buffer store, whether the respective information block is the most-recently used;

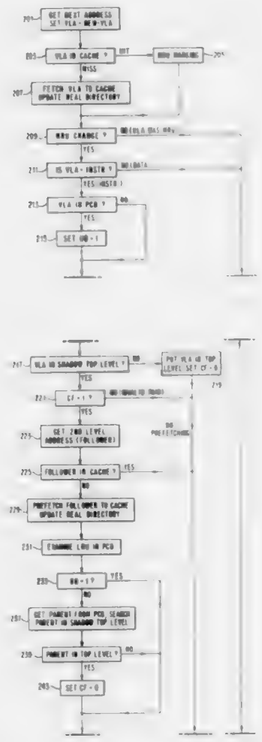
updating an additional shadow directory having first and second level entry positions and prefetching an information block into said high speed buffer store if said access is not to said most recently used information block; and

not performing said updating and prefetching in case of access to a most-recently used information block;

storing a parent identifier which is derived from the respective current-access block address, in said first-level position of said additional shadow directory if it is not stored therein already, and the address of a subsequently accessed block as a descendant address in said second-level position of said shadow directory, associated with said first-level position, or

determining if a valid parent identifier/descendant address pair is available having said parent identifier in said first level, wherein said validity is determined according to whether on a subsequent access cycle said block address was followed by said described address, and

if a parent identifier derived from the respective current-access block address is already stored in a first-level position of said shadow directory, obtaining from a respective associated second-level position a descendant address if validly stored therein, and prefetching the information block identified by said obtained descendant address from main storage into said high speed buffer store if it is not resident therein already, and not obtaining said descendant address if not validly stored therein and not prefetching said descendant address if it is already in said high speed buffer store.



4,807,111

DYNAMIC QUEUEING METHOD

Edward I. Cohen, Poughkeepsie, and Bernard R. Pierce, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 19, 1987, Ser. No. 64,911

Int. Cl.[4] G06F *13/00*

U.S. Cl. 364—200 **36 Claims**

1. A queue coordinating method for a multiprocessing system used by a plurality of requestors, the queue having an anchor element and anywhere from zero to a large plurality of control elements in the memory of the system, the anchor element having a pointer to any first control element of the queue, each element having a pointer to any other element of the queue, the method controlling coordination among the plurality of requestors for element insertion into and deletion from the queue, comprising:

providing a queue status for each element to indicate if the element is in or out of the queue, and to indicate if a current requestor of service represented by the element has an exclusive capability to change the element pointer or if the element pointer is changeable for any requestor accessing the element,

providing a queue-order indicator for each element to indicate the position of each element when in the queue relative to each other element in the queue,

while the queue status of a deleted element indicates that any requestor may change the element pointer, atomically setting the queue status of the element to indicate that a current requestor is given the exclusive capability to change the element's pointer for an attempt to insert the element into the queue,

searching the queue for an insertion location for the deleted element using the queue-order indicator of the deleted element and of each element searched in the queue, and determining the immediately preceding element to the insertion location and any immediately following element after the insertion location,

preparing the deleted element for its insertion into the queue at the insertion location found by the searching operation by setting the element pointer to affect address any following element found by the searching operation or to indicate there is no following element in the queue,

accessing the preceding element to the insertion location in the queue determined by the searching operation,

atomically testing the preceding element to determine if no other requestor is indicated by its queue status to have an exclusive capability to change the pointer of the preceding element, and if the pointer of the preceding element has not changed since the searching operation,

on the atomic testing operation finding the stated conditions, continuing the atomic operation to insert the element in the queue at the insertion location by changing the pointer in the preceding element to address the deleted element being inserted,

releasing the exclusive capability to change the pointer of the deleted element which has become an inserted element.



4,807,112

MICROCOMPUTER WITH A BUS ACCESSIBLE FROM AN EXTERNAL APPARATUS

Keiji Hamasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 11, 1985, Ser. No. 786,519

Claims priority, application Japan, Oct. 11, 1984, 59-212851

Int. Cl.[4] G06F *13/28, 9/00*

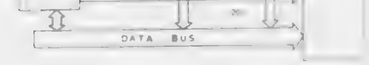
U.S. Cl. 364—200 **3 Claims**

1. A microcomputer which includes a central processing unit (CPU) and an external memory which are coupled to an external bus, and a direct memory access (DMA) controller operative in response to a DMA request from an external apparatus to cause the CPU to be isolated from the external bus and also to permit the external apparatus to access the external memory via the external bus, the CPU including at least a CPU timing controller, an address computation section and an address but output buffer coupled to receive an output of an address bus of the external bus, comprising:

an address latch circuit connected between the output of the address computation and the address bus output buffer to temporarily hold the address output from the address computation section so that the address output can be supplied to the address bus output buffer immediately after a DMA operation is terminated;

an auxiliary timing controller operative, in response to a hold request from the DMA controller, to output a HOLD acknowledge signal to the DMA controller and to reset a BUS ENABLE signal to the address bus output buffer, so that the CPU is isolated from the address bus of the external bus, the auxiliary timing controller also operating to output a WAIT signal through an AND gat to the CPU timing controller when it generates the HOLD acknowledge signal; and

a detector monitoring CPU requests to access the external bus, and operating to maintain the AND gate in a closed condition to prevent the WAIT signal from being inputted to the CPU timing controller until the CPU actually requests an external bus access so that the CPU continues operation and the address computation section can compute a real address for a next instruction in the condition isolated from the address bus of the external bus, and to put the AND gate in a passable condition when the CPU actually requests an external bus access in the course of the CPU operation in the condition isolated from the address but of the external bus, whereby the CPU is maintained in an operating condition until the external bus access is requested by the CPU, and the address temporarily held in the address latch circuit is outputted to the external bus through the address bus output buffer immediately after the CPU is released from the WAIT condition.



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4,807,113

MICROPROGRAMMED CONTROL DATA PROCESSING APPARATUS IN WHICH OPERAND SOURCE AND/OR OPERAND DESTINATION IS DETERMINED INDEPENDENT OF MICROPROGRAM CONTROL

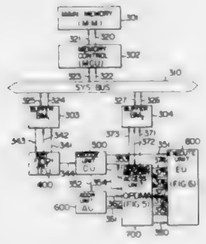
Hidekazu Matsumoto, Hitachi; Tadaaki Bandoh, Ibaraki; Ryosei Hiraoka, Hitachi; Takayuki Morioka, Hitachi, and Yoshihiro Miyazaki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 469,803, Feb. 25, 1983, abandoned. This application Nov. 14, 1986, Ser. No. 930,532

Claims priority, application Japan, Feb. 26, 1982, 57-28808

Int. Cl.[4] G06F *9/42, 9/34, 9/36*

U.S. Cl. 364—200 **13 Claims**



1. A microprogram controlled data processing apparatus for executing multiple-operand instructions in which one or more operand specifiers for specifying the source or destination address of an operand are provided independently from the operation code in these instructions, comprising:

(a) memory means for storing instructions and operands;

(b) instruction fetch means connected to said memory means for prefetching and holding instructions;

(c) decoding means connected to said instruction fetch means for decoding an operation code and all operand specifiers in an instruction fetched by said instruction fetch means;

(d) address calculation means connected to said decoding means for calculating the address of a memory location for an operand based on information received from said decoding means;

(e) register file means for holding data including operands;

(f) operand access means connected to said memory means, said decoding means, said address calculating means and said register file means, and for storing an operand, and including,

(i) memory fetch means for fetching an operand from said memory means when an operand location signal from said decoding means indicates that the operand is in said memory means;

(ii) register fetch means for fetching an operand from said register file means when said operand location signal indicates that the operand is in said register file means;

(iii) source operand selection means connected to said memory fetch means and said register fetch means for selecting outputs of either said memory fetch means or said register fetch means in accordance with said operand location signal;

(iv) memory write means for storing write data into said memory means when an operand location signal from said decoding means indicates that the operand is to be stored in said memory means; and

(v) register write means connected to said register file means for storing write data into said register file means when said operand location signal from said decoding means indicates that the operand is to be stored in said register file means;

(g) arithmetic means connected to said operand access means for performing arithmetic and logical operations on operands received from said source operand selection means, said arithmetic means supplying said write data to said memory write means and said register write means; and

(h) microprogram control means connected to said decoding means and said operand access means, for controlling said operand access means, and connected to said arithmetic means for controlling the execution of microprograms stored in said microprogram control means.

4,807,114

MICROCOMPUTER WITH INTERNALLY AND EXTERNALLY PROGRAMMED EPROM

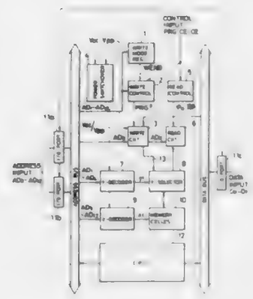
Sakae Itoh, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1986, Ser. No. 923,239

Claims priority, application Japan, Oct. 25, 1985, 60-240094

Int. Cl.[4] G06F *1/00*

U.S. Cl. 364—200 **4 Claims**



1. A microcomputer system, comprising:

a central processing unit;

electrically-programmable read-only memory means;

a data bus connected to said central processing unit, and to an externally connected data port for externally applied data information;

an address bus connected to said central processing unit, to said memory means and to an externally connected address port for externally applied address information;

means for selectively applying a programming voltage higher than a reading voltage to a location in said memory means addressed by said address bus for programming data from said data bus;

a writing mode register for containing control information as to whether voltage programming of said memory means is to be performed by said central processing unit or by signals externally applied to said data and address ports;

first control means responsive to externally applied control signals for applying control signals to said address and data ports and to said applying means to enable said data and address ports and said applying means for externally applied address and data information;

second control means responsive to control signals from said central processing unit for applying control signals to said applying means and for disabling said data and address ports to externally applied address and data information,

wherein said writing mode register selectively enables one or the other of said first and second control means,

wherein said central processing unit outputs on said address bus one of a read out signal and a write signal to said writing mode register for reading out of and writing into the EPROM, respectively, and

wherein said second control means receives an output of said write mode register, address information from said data bus and a read/write signal, said second control means disabling said data and address ports to externally applied data and address information when enabled by said writing mode register output signal.

4,807,115

INSTRUCTION ISSUING MECHANISM FOR PROCESSORS WITH MULTIPLE FUNCTIONAL UNITS

Hwa C. Torng, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithica, N.Y.

Continuation of Ser. No. 539,854, Oct. 7, 1983, abandoned. This application Oct. 14, 1987, Ser. No. 112,020

Int. Cl.[4] G06F *13/00*

U.S. Cl. 364—200 **19 Claims**



1. An instruction issuing system for a processor including an execution unit having multiple functional units comprising:

an instruction issuing unit receiving instructions from a memory, operating on instructions and forwarding instructions to said execution unit, said instruction issuing unit including means for detecting the existence of concurrencies in said instructions received from said memory; and

said instruction issuing unit further including means for issuing multiple instructions and non-sequential instructions to said execution unit within a single processor cycle when a concurrency is detected by said means for detecting the existence of concurrencies in said instructions.

4,807,116

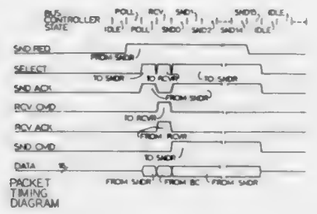
INTERPROCESSOR COMMUNICATION

James A. Katzman, San Jose; Joel F. Bartlett, Palo Alto; Richard M. Bixler, Sunnyvale; William H. Davidow, Atherton; John A. Despotakis, Pleasanton; Peter J. Graziano; Michael D. Green, both of Los Altos; David A. Greig; Steven J. Hayashi, both of Cupertino; David R. Mackie, Ben Lomond; Dennis L. McEvoy, Scotts Valley; James G. Treybig, and Steven W. Wierenga, both of Sunnyvale, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Division of Ser. No. 727,614, Apr. 29, 1985, Pat. No. 4,672,537, which is a continuation of Ser. No. 147,123, May 6, 1980, abandoned, which is a division of Ser. No. 721,043, Sep. 7, 1976, Pat. No. 4,228,496. This application May 18, 1987, Ser. No. 52,095

Int. Cl.[4] G06F *13/36, 13/42*

U.S. Cl. 364—200 **4 Claims**



1. A multiprocessor system comprising:

a plurality of separate processor modules, each of said plurality of separate processor modules being capable of conducting data processing operations, including transmitting information to or receiving information from any of said separate processor modules, a processor module transmitting information being identified as a sender processor module and a module receiving information being identified as a receiver processor module;

bus means coupling the plurality of separate processor modules to one another for enabling communication therebetween, the bus means including bus controller means operable to enable processor module to processor module communication on the bus means;

request means included in said sender processor module for generating a send request signal on said bus means when said sender processor module is ready to transmit;

polling means included in said bus controller means and responsive to said send request signal for sequentially polling said plurality of separate processor modules to identify said sender processor module by its place in the sequence;

identification means included in said sender processor module and responsive to said poll for generating an identify signal for identifying one of said plurality of separate processor modules as a receiver processor module;

interrogation means included in said bus controller means and responsive to said identify signal for interrogating through the bus means said receiver processor module to determine whether said receive processor module is ready to receive a transmission;

acknowledgment means in said receiver processor module responsive to said interrogating means for generating a ready signal to indicate that said receiver processor module is ready to receive a transmission; and

transmit means included in said bus controller means and responsive to said ready signal for enabling said sender processor module to transmit to said receiver processor module.

4,807,117

INTERRUPTION CONTROL APPARATUS

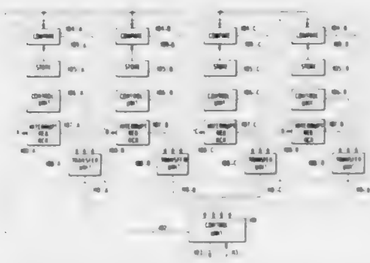
Osamu Itoku; Yukio Machashi, and Yukihiro Nishiguchi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 19, 1984, Ser. No. 632,190

Claims priority, application Japan, Jul. 19, 1983, 58-131417; Feb. 21, 1984, 59-30662; Feb. 21, 1984, 59-30663

Int. Cl.[4] G06F *13/00*

U.S. Cl. 364—200 **5 Claims**



1. An interruption control apparatus comprising a plurality of interruption priority detecting units having different levels of priority of interruption, and means for scanning said plurality of interruption priority detecting units with different signals successively and periodically in a time-divisional manner, said interruption priority detecting units having first storing means storing priority data representing the respective priority levels of those units, second storing means storing an interruption signal applied to the respective units, detecting means coupled

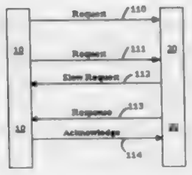
to the respective first storing means and said scanning means for detecting that the scanned signal coincides with the priority data and outputting a detection signal, and means coupled to the respective detecting means and the respective second storing means for requesting interruption in response to said detection signal outputted from said detecting means and to said interruption signal stored in said second storing means, and said scanning means including a counter generating counting signals as said different signals.

4,807,118

METHOD FOR HANDLING SLOT REQUESTS OVER A NETWORK

Chyuan-Shiun Lin; Joel Tesler, and Ching-Fa Hwang, all of Cupertino, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 14, 1987, Ser. No. 3,154
Int. Cl.[4] G06F *15/16*
U.S. Cl. 364—200 **2 Claims**



1. A method for transferring idempotent or non-idempotent requests over a network having a first computer system and a second computer system which are active, said network being an asynchronous link for messages between said first computer system and said second computer system and wherein said messages are subject to loss on said network, in order to reduce the number of request messages sent over the network, the method comprising:

sending a request in the form of a request message from the first computer system to the second computer system and thereafter retransmitting the request as a duplicate request message after a first prescribed period of time until a response message or a slow request message is received by the first computer system from the second computer system;

receiving the request message from the first computer system by the second computer system;

processing the request in the second computer system, unless the request is a duplicate non-idempotent request;

sending a low request message from the second computer system to the first computer system for each duplicate request message received from the first computer system during the step of processing the request;

receiving the slow request message from the second computer system by the first computer system and in response suspending the step of retransmitting a duplicate request message by the first computer system;

sending a response message from the second computer system to the first computer system containing the results of the request and, only if the slow request message has been sent by the second computer system or if the request from the first computer system was non-idempotent, retransmitting the response message after a second prescribed period of time; until an acknowledge message is received;

receiving the response message by the first computer system and upon receipt of the response message, terminating the sending of request messages; and thereafter

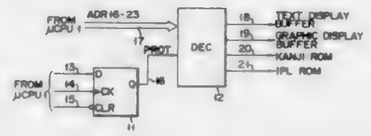
sending an acknowledge message from the first computer system to the second computer system to acknowledge the receipt of the response message only in the event the slow request message was sent or the request was non-idempotent.

4,807,119

MEMORY ADDRESS MAPPING MECHANISM

Masao Saga, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 24, 1986, Ser. No. 889,121
Claims priority, application Japan, Jul. 31, 1985, 60-168943
Int. Cl.[4] G06F *12/08*
U.S. Cl. 364—200 **1 Claim**



1. A memory address mapping mechanism in a computer system comprising a microprocessor and a memory system, the microprocessor generating address signals and an address mode signal, and having at least two address modes whose address spaces have different sizes, wherein each of the address spaces is divided into at least two sub-spaces, each having a specified, preliminarily-fixed use, the memory system having predetermined locations selected in response to memory address selection signals, the memory address mapping mechanism comprising:

address mode-selecting means for latching the address mode signal from the microprocessor; and

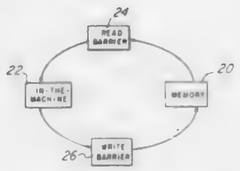
address decoding means connected to the address mode-selecting means for receiving the address signals from the microprocessor and the address mode signal from the address mode-selecting means, for decoding the address signals in accordance with the address mode signal, for producing memory address selection signals from the decoded address signals to specify a logical continuous-address space consisting of at least two sub-spaces having the same use, and for outputting the memory address selection signals to the memory system.

4,807,120

TEMPORAL GARBAGE COLLECTOR WITH INDIRECTION CELLS

Howard R. Courts, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 30, 1987, Ser. No. 44,383
Int. Cl.[4] G06F *12/12, 12/08*
U.S. Cl. 364—200 **7 Claims**



1. A memory management system for a digital computer, comprising:

a virtual memory conceptually divided into regions, wherein each region has an associated generation and volatility, wherein the volatility associated with a region indicates the youngest generation to which objects in that region may contain pointers, and wherein regions are classified as oldspace, newspace, or scavenge space:

a central processor having a set of registers:

a read barrier coupled to said central processor and to said virtual memory, wherein all data moved from said virtual memory to said central processor passes through said read barrier, and wherein said read barrier prevents pointers into regions classified as oldspace from being placed into said central processor; and

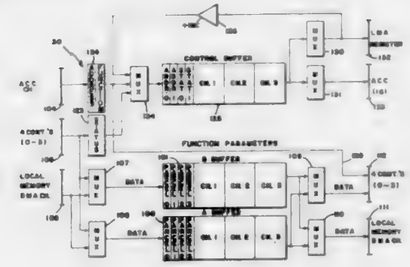
a write barrier coupled to said central processor and to said virtual memory, wherein all data moved from said central processor to said virtual memory passes through said write barrier, and wherein said write barrier prevents pointers from being stored into addresses having an associated inconsistant with the generation of the address pointed to by the pointer.

4,807,121

PERIPHERAL INTERFACE SYSTEM

Robert J. Halford, Chippewa Falls, Wis., assignor to Cray Research, Inc., Chippewa Falls, Wis.

Continuation of Ser. No. 622,786, Jun. 21, 1984, abandoned.
This application Jun. 10, 1988, Ser. No. 205,533
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—200 **10 Claims**



1. A peripheral interfacing system for a data processing system including a central processor having a central memory and a plurality of peripheral devices, said peripheral interfacing system comprising:

I/O processor means including a local memory having at least one DMA port for transmitting and receiving data and including accumulator means for transmitting and receiving control information;

channel multiplexer means communicating with said DMA port and said accumulator means and providing a plurality of data and control information channels for data flow between said DMA port and accumulator means and a corresponding number of peripheral devices, said channel multiplexer means including:

(a) address-status buffer means including a plurality of registers for holding a local memory address parcel and a plurality of registers for holding a peripheral device status parcel, said registers functionwise divided into groups, one group for each of said channels;

(b) first and second data buffers each including a plurality of registers for holding data parcels, said registers functionwise divided into groups, one group for each of said channels;

(c) first multiplexing means communicating with said accumulator means and said peripheral devices for multiplexing address and status parcels into and out of said address-status buffer means and peripheral device control information from said accumulator means to said peripheral devices;

(d) second multiplexing means communicating with said DMA port and said peripheral devices for multiplexing data parcels into and out of either of said first and second data buffer means from and to either said DMA port or said peripheral devices; and

(e) control logic means divided functionally into a plurality of channel sets, each one of said sets controlling the data flow through a corresponding channel, one set functionally active at a time on a revolving time multiplexed basis for controlling said first and second multiplexing means and addressing said buffer means to cause different ones of corresponding channel groups of registers of said first and second data buffer means to fill and empty alternately so that during an active period of a channel logic set one channel data buffer group may be filling while the corresponding channel data buffer group may be emptying, said filling and empyting occurring betwwen different ones of said local memory DMA port and one of said peripheral devices, and to permit said accumulator means and said peripheral devices to reference said address-status buffer means.

4,807,122

INFORMATION STORAGE SYSTEM

Kazuyuki Baba, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1986, Ser. No. 856,070
Claims priority, application Japan, Apr. 23, 1985, 60-86965/85
Int. Cl.[4] G06F *12/02*
U.S. Cl. 364—200 **6 Claims**



1. An information storage system comprising:

(a) an information storage part including a plurality of information storage areas which each store a piece of information and which each have associated therewith a respective one of plurality of different identification codes;

(b) an indexed part including a plurality of key elements which are each associated with a respective one of said identification codes which are arranged in a predetermined sequence, and which are divided into a plurality of mutually exclusive blocks which each contain a prescribed number of successive said key elements;

(c) a memory including a plurality of information storage areas;

(d) a controller having forward and backward read setting parts; and

(e) a front stage block specifying part associated with each said block, each said front stage block specifying part identifying a block which is different from the block associated therewith and which contains the key elements which in said predetermined sequence immediately precede the key elements in the block associated with such front stage block specifying part, said controller including means responsive to said backward read setting part for retrieving from said indexed part all of said key elements in a reverse order opposite to said predetermined sequence by carrying out for each said block, beginning with the block containing the last key elements in said predetermined sequence, a retrieval of the key elements in such block and then a retrieval of said front stage block specifying part which is associated with such block and

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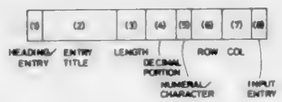
which identifies the next said block to be handled, for using the identification code for each said retrieved key element to retrieve from said information storage areas in said information storage part the piece of information associated with such identification code, and for storing said retrieved pieces of information respectively corresponding to respective said key elements in successive said information storage areas of said memory in an order corresponding to said reverse order of said key elements.

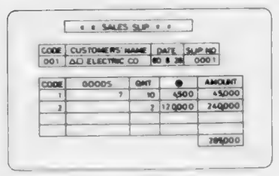
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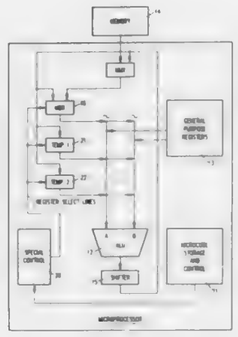
PROGRAMMABLE SYSTEM FOR INPUTTING & PROCESSING DATA USING VISUALLY PERCEPTIBLE DATA ENTRY FRAMES

Junichi Komatsu, Nara; Toshiaki Fujikawa, Higashiosaka, and Koji Mizuno, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 19, 1981, Ser. No. 312,899
Claims priority, application Japan, Oct. 20, 1980, 55-147358
Int. Cl.[4] G06F *3/14, 3/153, 3/023, 15/21*
U.S. Cl. 364—200 **4 Claims**







4. A method for inputting data and programming a data processing device comprising the steps of:

inputting first data for defining a plurality of visually perceptible entry frames and displaying said visually perceptible entry frames on a display means of the device;

inputting second data into at least one of said entry frames and displaying said second data in said at least one frame;

inputting third data representing operational instructions for the device into at least one additional frame;

decoding said third data for developing a data processing program;

processing said second data in accordance with said program for generating fourth data; and

displaying said fourth data in said at least one additional frame.

4,807,124

REGISTER ADDRESSING SYSTEM FOR EFFICIENT MICROROUTINE SHARING AND OPTIMIZATION

Yeshayahu Mor; Leonardo Sandman, both of Cupertino, Calif., and Yeshayahu Schatzberger, Haifa, Israel, assignors to Performance Semiconductor Corporation, Sunnyvale, Calif.

Filed Sep. 26, 1986, Ser. No. 912,310
Int. Cl.[4] G06F *9/00, 12/00*
U.S. Cl. 364—200 **9 Claims**

1. In a microcoded data processing system, said system providing for register-to-register operations and for memory-to-register operations,

said system permitting common microcode execution routines to be employed in processing means operating on memory operands and register operands after effective address calculations for said operands; said system including:

memory means for storing memory operands to be used in said memory-to-register operations;

a plurality of separately addressable general purpose registers for storing register operands to be utilized in said register-to-register operations;

first address register means for generating the address of a first of said general purpose registers containing one of said operands for one of said register-to-register operations;

second address register means for generating the address of a second of said general purpose registers containing another of said operands for said one of said register-to-register operations;

a memory data register for storing one of said memory operands for use in one of said memory-to-register operations, said memory data register having its own address designation;

means responsive to initiation of a register-to-register operation for utilizing the addresses generated by said first and said second address register means to select those of said general purpose registers whose operands are to be utilized in said register-to-register operation;

means for supplying said operands from said selected registers to said processing means;

means responsive to initiation of a memory-to-register operation for causing said address designation of said memory address register to be generated by said second address generating means;

means responsive to generating of said memory data register address designation for supplying one of said memory operands from said memory means to said memory data register; and

means for supplying operands from said memory data register and the one of said general purpose registers selected by said first address generating means to said processing means;

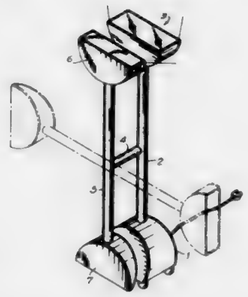
whereby said register-to-register operations and said memory-to-register operations can share common microcode execution routines.

4,807,125

MULTI-PURPOSE LAMP

Bruce Miller, 421 Hudson St., New York, N.Y. 10014

Continuation of Ser. No. 919,875, Oct. 16, 1986, abandoned. This application Mar. 10, 1988, Ser. No. 170,610
Int. Cl.[4] F21V *21/14, 21/32*
U.S. Cl. 362—250 **11 Claims**



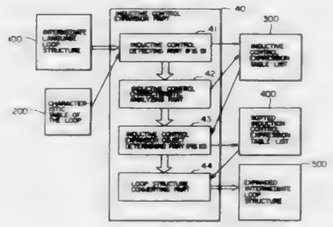
1. A lamp for providing both general space and task lighting, which comprises: a support base; an upwardly extending rod mounted on said support base; a general illuminating member comprising a first lighting means, said general illuminating member being attached to said upwardly extending rod for directing light in a direction away from said lamp to provide general illumination of the space; a second rod; means for mounting said second rod in said upwardly extending rod for pivotal movement relative to said upwardly extending rod within a plane substantially parallel to said upwardly extending rod; and a task illuminating member comprising a second lighting means, said task illuminating member being attached to said second rod for providing illumination adjustably directed essentially in a limited area by movement of said second rod relative to said first upwardly extending rod.

4,807,126

METHOD FOR CONVERTING A SOURCE PROGRAM HAVING A LOOP INCLUDING A CONTROL STATEMENT INTO AN OBJECT PROGRAM

Shizuo Getou, Hachioji; Yasusi Kanada, and Kyoko Iwasawa, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 10, 1987, Ser. No. 12,991
Claims priority, application Japan, Mar. 3, 1986, 61-43958
Int. Cl.[4] G06F *1/00*
U.S. Cl. 364—300 **3 Claims**



1. A method executed by a machine for inverting a source program having a first loop including a plurality of statements which are written in a high level language and are repetitiously executed into an object program for a digital computer comprising the following steps of:

(a) detecting from said statements of said first loop of said source program a control statemen: (an inductive control statement) having a control expression specifying variables constituted from a linear function C_1n+C_2 of a loop iteration count n, said variables being to be judged for a branch, where C_1 and C_2 are constants, loop invariant variables, or functions thereof;

(b) detecting based on said control expression a turning form indicating whether a change of a turning number representing a loop iteration count for which a variable of said control expression of said detect ed control statement and a change of a value of said control expression indicates changes from values for a successful branch to values for an unsuccessful branch or vice verse and a turning point type indicating whether said turning number is an initial iteration count, a final iteration count, or an intermediate iteration count of said first loop;

(c) generating a string of statements having a loop not including said control statement and generating an execution result identical to an execution result of said first loop based on said first loop and said turning number, said turning form, and said turning point type detected on said control statement; and

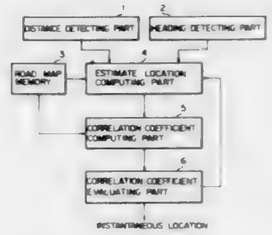
(d) converting said generated string of statements into an object code.

4,807,127

VEHICLE LOCATION DETECTING SYSTEM

Kenji Tsumeka; Osamu Shimizu; Toshiyuki Shimizu, and Kunihiko Mitoh, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Nov. 20, 1987, Ser. No. 123,362
Claims priority, application Japan, Dec. 10, 1986, 61-294215; May 11, 1987, 62-113985
Int. Cl.[4] G06F *15/14*
U.S. Cl. 364—424.01 **33 Claims**



1. A vehicle location detecting method for detecting the location of a vehicle within a predetermined area, comprising the steps of:

a. outputting distance data at every predetermined interval, the distance data being representative of the distance that a vehicle has travelled,

b. outputting heading angle data at every predetermined interval, the heading angle data being representative of the heading angle change of vehicle travel,

c. storing road map data representative of roadways,

d. computing a present location data from said distance data and said heading angle data, and a limit error of said present location data which is determined by errors in said distance data, in said heading angle data and in said road map data, and registering locations on the roadways, which roadways are located within said limit error of said present location data, as estimate locations,

e. computing correlation coefficients corresponding to said registered estimate locations, and

f. selecting a correlation coefficient whose error is smallest with respect to the roadway from said computed correlation coefficients and outputting the registered estimate

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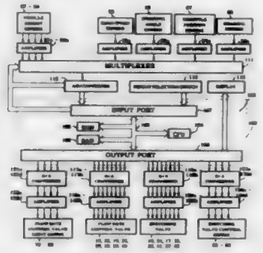
location corresponding to said selected correlation coefficient as a present location.

4,807,128

SYSTEM FOR VEHICLE BODY ROLL CONTROL DETECTING AND COMPENSATING FOR RAPID RATE OF CHANGE OF STEERING ANGLE AS DURING EMERGENCY STEERING

Hiroyuki Ikamoto; Nobutaka Owa, both of Toyota; Yasutaka Hayashi, and Shunichi Doi, both of Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 20, 1987, Ser. No. 16,944
Claims priority, application Japan, Feb. 21, 1986, 61-36705
Int. Cl.[4] B60G *11/26*
U.S. Cl. 364—424.05 **14 Claims**



8. For a vehicle comprising a body and a plurality of wheels upon which said vehicle runs, a vehicle roll control system of vehicle height adjustment type, comprising:

a plurality of actuator assemblies, each corresponding to one of said vehicle wheels and resiliently suspending said corresponding vehicle wheel from the vehicle body, each one of said actuator assemblies being adapted to increase or decrease vehicle height at a location corresponding to said corresponding vehicle wheel in accordance with control signals supplied thereto;

a plurality of control means, each corresponding to one of said actuator assemblies and serving to supply control signals to said corresponding actuator assembly;

a plurality of vehicle height detecting means, each corresponding to one of said vehicle wheels and serving for sensing a parameter Hi representative of the height of the vehicle body over said corresponding vehicle wheel;

a vehicle speed detecting means for sensing a road speed of the vehicle;

a steering angle detecting means for sensing a steering angle of the vehicle;

a steering angle change rate detecting means for detecting the rate of change of said steering angle of the vehicle;

a means for detecting an actual roll angle ϕ_f of the body of the vehicle; and

a means for computing and control adapted to compute the differences ΔHi between the actual vehicle wheel heights over said vehicle wheels as sensed by said plurality of vehicle height detecting means and reference vehicle heights; to compute a steady state roll angle ϕ_∞ of the vehicle body based upon the vehicle speed sensed by said vehicle speed detecting means and the steering angle sensed by said steering angle detecting means; to advance a phase of a signal representative of said steady state roll angle ϕ_∞ to thereby compute a compensating value ϕ_∞ for roll angle control; to compute an amendment value ϕ_x for roll angle control in accordance with the rate of change of steering angle as determined by said steering angle change rate detecting means; to compute a difference $\hat{\phi}$ based upon a desired roll angle ϕ_α of said vehicle body, said compensating value ϕ_∞, said amendment value ϕ_x, and said actual roll angle ϕ_f following the equation:

$$\hat{\phi}=\phi_\alpha-(k1\phi_\infty+k2\phi_f+k3\phi_x)$$

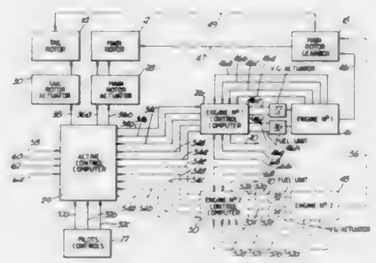
where k1, k2 and k3 are positive constants; and, when the absolute value of said difference $\hat{\phi}$ is larger than a predetermined value, to control said plurality of actuator assemblies, via said plurality of control means, in accordance with said difference $\hat{\phi}$; while said computing and control means, when the absolute value of said difference $\hat{\phi}$ is less than said predetermined value, controls said plurality of actuator assemblies, via said plurality of control means, in accordance with said vehicle height differences ΔHi, so as to keep said vehicle height differences ΔHi within determinate ranges.

4,807,129

HELICOPTER ROTOR AND ENGINE CONTROL

Malcolm Perks, Hertfordshire, England, assignor to Rolls-Royce plc, London, England

Filed Jan. 28, 1987, Ser. No. 7,665
Claims priority, application United Kingdom, Feb. 4, 1986, 8602749
Int. Cl.[4] G06F *15/16*
U.S. Cl. 364—424.01 **3 Claims**



1. A control system for a helicopter having a main rotor, a torque reaction device such as a tail rotor, an engine and a rotor gearbox, the control system compriaing a set of pilot controls, an Active Control Computer and Engine Control Computer, a main rotor actuator and a tail rotor actuator, in which:

the Active Control Computer is linked to receive data from the pilot's controls:

the main rotor actuator and tail rotor actuator are linked to exchange data with the Active Control Computer;

the main rotor actuator and tail rotor actuator act on their respective rotors to control the pitch of the rotor blades;

the engine is linked to exchange data with the Engine Control Computer and linked to drive the rotor gearbox

the rotor gearbox is linked to drive both the main rotor and the tail rotor; and

the Active Control Computer is linked to exchange data with the Engine Control Computer.

4,807,130

SERVO CONTROL SYSTEM FOR TRANSMISSION SHAFT SPEED CONTROL

Robert W. Deutsch, Sugar Grove, and Frank Karim, Hanover Park, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1986, Ser. No. 946,736
Int. Cl.[4] F16H *3/00*; B60K *20/00*
U.S. Cl. 364—424.1 **10 Claims**

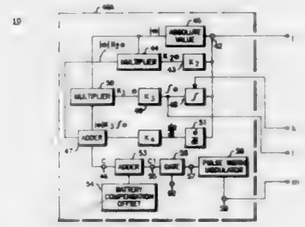
1. An electronic shaft synchronization system comprising:

input shaft means for providing an input shaft driven at an angular speed w_1;

output shaft means comprising an output shaft capable of being selectively driven by said input shaft means at an angular speed of w_2;

electronic transmission means selectively coupling said input shaft to said output shaft in accordance with a plurality of predetermined selectable angular speed ratios between said speeds of w_2 and w_1;

said electronic transmission means including transmission control means for monitoring said input shaft speed w_1 and said output shaft speed w_2 and controlling at least one thereof, said control means implementing one of said selectable speed ratios by providing a predetermined coupling between said input shaft and said output shaft in response to the monitored angular speeds of said shafts having a predetermined relationship therebetween;



said transmission control means including a servo control loop having subtraction means for receiving electrical signals related to said shaft speed w_1 and said output shaft speed w_2, error means for providing an error difference signal e in response thereto, integrator means for integrating the error signal and means for developing at least one control-signal in response to said error signal e for controlling the speed of said one of said shafts so as to minimize said error signal;

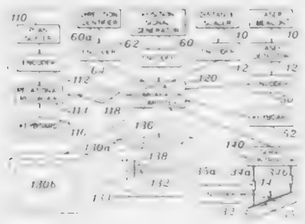
said transmission control means including error measuring means for determining the status of the error signal and means for initializing the integrator means to a predetermined value, which is at least in part determined from previous integrations, in response to said error measuring means indicating that said error signal exceeds a first predetermined quality threshold.

4,807,131

GRADING SYSTEM

Philip M. Clegg, San Juan Capistrano, Calif., assignor to Clegg Engineering, Inc., Orange, Calif.

Filed Apr. 28, 1987, Ser. No. 43,306
Int. Cl.[4] E02F *3/76*
U.S. Cl. 364—424.01 **40 Claims**



1. An earth grading system for grading a tract of land, comprising, in combination:

(a) a power driven earth grading machine which comprises a frame, an earth grading too, and means for adjusting the earth grading tool relative to the frame;

(b) a laser beam generator remote from said earth grading machine for projectiag a laser beam in a predetermined pattern relative to the earth to be graded;

(c) a laser detector carried on the grading machine for receiving the laser beam;

(d) distance scaling means for accurately scaling the distance of the grading tool from a predetermined northing and easting point on the tract to be graded;

(e) data storage means defining a multiplicity of predetermined points on the tract of land to be graded by the northing and easting of the point and by the target elevation of such point;

(f) reference data signal generating means for deriving a data signal from the data storage means which defines the desired final graded configuration of a continuous portion of the tract by a continuum computed with reference to at least two of the aforesiad predetermined points, all locations on the continuum being defined as to target elevation;

(g) elevation data signal generating means for deriving a data signal from the laser detector which defines the actual elevation of the grading tool;

(h) location data signal generating means for deriving a data signal from the scaling means which defines the actual location of the grading tool relative to the continuum computed by the reference data signal generating means; and

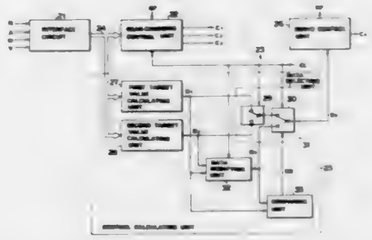
(i) comparator means for receiving the aforessid data signals and for deriving at least one output signal which defines the elevational relationship of the grading tool relative to target elevation at the actual location of the grading tool on the continuum.

4,807,132

APPARATUS FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE FOR VEHICLES

Kenji Arai; Kazumasa Kurihara, and Hidekazu Oshizawa, all of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1986, Ser. No. 883,784
Claims priority, application Japan, Jul. 15, 1985, 60-154287
Int. Cl.[4] B60K *41/18, 41/10*
U.S. Cl. 364—424.1 **11 Claims**



1. An apparatus for controlling an internal combustion engine for a vehicle provided with an electronically controlled automatic transmission system including a friction-type clutch and a gear-type transmission, said apparatus comprising:

means for producing condition data representing the operating condition of the vehicle;

means responsive to the condition data for calculating first target data representing the amount of fuel injection necessary for operating the internal combustion engine in accordance with the amount of operation of an accelerator pedal in a predetermined normal speed control mode;

means for generating second target data representing the amount of fuel injection necessary for operating the inter-

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nal combustion engine at a required fixed speed in a predetermined specific speed control mode when said clutch is in its disengaged state;

a detecting means for producing a detection signal indicating the engaged/disengaged condition of the friction type clutch;

a first means responsive to the first and second target data and the detection signal for producing third target data representing a target amount of fuel injection which changes from the fuel quantity represented by the second target data to the fuel quantity represented by the first target data, with the passage of time, in response to the condition where the friction-type clutch is changed from a disengaged state to anengaged state;

a second means responsive to the first and third target data for discriminating whether or not the third target data is equal to the first target data;

a selecting means responsive to said second means and the detection signal for selecting one data from amongst the first, second and third target data according to the operating condition of the friction-type clutch, the second target data being selected when said clutch is in its disengaged state, the third target data being selected from a time said clutch is changing from its disengaged state to its engaged state to a time the third target data has reached the first target data, and the first data being selected after the third target data has reached the first target data in the case where said clutch is in its engaged state; and

a third means for controlling the amount of fuel supplied to the internal combustion engine in accordance with the target selected by said selecting means so as to substantially reduce mechanical shock during the time of clutch engagement.

4,807,133

ANTI-SKID CONTROL SYSTEM FOR MOTOR VEHICLES

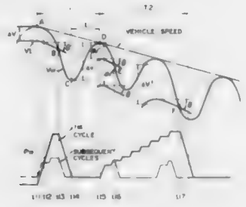
Haruki Shimazuki, Kasukabe; Hideo Akima, Yokohama, and Akira Hoashi, Kawasaki, all of Japan, assignors to Akebono Brake Industry Co., Ltd. and Fujitsu Limited, both of Japan

Filed May 8, 1987, Ser. No. 47,613

Claims priority, application Japan, May 9, 1986, 61-104734

Int. Cl.[4] B60T *8/58*

U.S. Cl. 364—426.02 3 Claims



1. An anti-skid control system for motor vehicles, wherein a reference wheel speed is set up which is lower by a predetermined amount than wheel speed decelerated through buildup of brake hydraulic pressure and follows the wheel speed with a first speed difference corresponding to said predetermined amount, said reference wheel speed being decelerated, from a point of time when the deceleration of said wheel speed reaches a predetermined deceleration level onward, with a predetermined deceleration gradient to hold said predetermined deceleration level; and at a point of time when said reference wheel speed becomes equal to said wheel speed, reduction of the brake hydraulic pressure is started so that said wheel speed is changed from deceleration to acceleration, comprising:

a first means for measuring a first time period which is the time period from a first point of time when a first high peak of the wheel speed occurs to a second point of time when a subsequent high peak of the wheel speed occurs;

a second means for measuring a second time period which is the time period from a third point of time when low peak of the wheel speed occurs within said first time period to said second point of time when said subsequent high peak of the wheel speed occurs;

a third means for measuring a second speed difference which is the difference between the wheel speed at said second point of time and the wheel speed at said third point of time;

a fourth means for making judgment as to whether said first and second time periods occur within a first and a second preset time period respectively;

a fifth means for making judgment as to whether said second speed difference is greater than a preset speed difference; and

a sixth means adapted, when the results of said judgments are positive; to change said first speed difference to a greater preset speed difference, thereby preventing reduction of the brake hydraulic pressure from being started early.

4,807,134

DC TORQUE MOTOR ACTUATED ANTI-LOCK BRAKE CONTROLLER

Paul D. Agarwal, Troy, and Alexander Kade, Grosse Pointe Woods, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 9, 1987, Ser. No. 71,434

Int. Cl.[4] B60T *8/58*

U.S. Cl. 364—426.02 3 Claims



1. A wheel lock control system for limiting the brake pressure applied to the brake of a vehicle wheel traveling over a road surface, the system comprising:

an actuator for controlling the brake pressure to the brake of the wheel, the actuator including a torque motor for generating a motor torque in response to motor current to control the applied brake pressure in accordance with the value of the motor torque, the motor torque having a value proportional to the value of the motor current;

means for determining the tire torque tending to accelerate the wheel during the application of brake pressure;

means for storing the value of motor current corresponding to the maximum determined value of tire torque;

means for detecting an incipient wheel lockup condition; and

means for establishing the motor current following a detected incipient wheel lockup condition at a value having a predetermined relationship to the stored value of motor current to control the brake pressure at a predetermined braking condition.

4,807,135

POWER SUPPLY CONTROL DEVICE FOR AUTOMOTIVE ELECTRONIC CONTROL SYSTEM

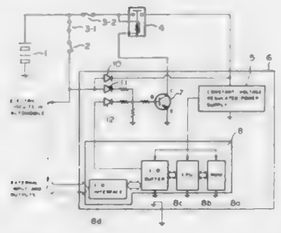
Hidefumi Tamai, Ebina, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Nov. 21, 1986, Ser. No. 933,130

Claims priority, application Japan, Nov. 22, 1986, 60-263460

Int. Cl.[4] B60K *28/10*

U.S. Cl. 364—424.05 21 Claims



1. A power supply control device for supplying electric power to an electronic control system for controlling an engine and a transmission in an automobile, comprising:

(a) main supply means for supplying electric power from a power supply in the automobile to at least the electronic control system;

(b) self-holding means, separate from said main supply means, for continuously supplying electric power to the electronic control system when the electric power supplied by said main supply means to the electronic control system is cut off;

(c) an engine rotation sensor for detecting rotation of the engine in the automobile and for emitting a rotation signal in dependence upon the rotation of the engine; and

(d) power cutoff means for cutting off the electric power supplied, by said self-holding means, to the electronic control system when a job executed by the electronic control system is finished and the rotation signal from said engine rotation sensor indicates non-rotation of the engine, after the electric power supplied by said main supply means to the electronic control system has been cut off.

4,807,136

DRAFT LOAD MEASUREMENT AND CONTROL

David J. Rutkowski, and Douglas H. McLean, both of Grosse Ile, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 26, 1987, Ser. No. 112,788

Int. Cl.[4] G06F *15/20*; **A01B** *63/112*

U.S. Cl. 364—424.07 12 Claims

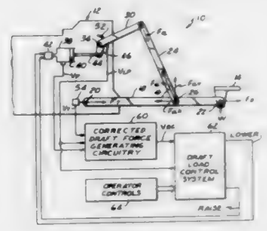
1. An apparatus for providing a measurement of draft force exerted by a draft implement coupled to a tractor through at least one link arm of a hydraulic lift assembly having at least one lift rod coupled between each link arm and a hydraulic cylinder for lifting or lowering the draft implement, comprising:

a force transducer coupled to the link arm for providing a total force signal related to the total force applied against the link arm;

a pressure sensor coupled to the cylinder for providing a pressure signal related to cylinder pressure;

position means coupled to the lift rod for providing a lift position signal related to the position of the lift rod;

processing means responsive to both said pressure signal and said lift position signal for providing a component lift force signal related to the component of lift force transmitted to the link arm through the lift rod; and



means for adding said component lift force signal to said total force signal to provide a corrected draft force signal proportional to the draft force exerted by the implement.

4,807,137

ARRANGEMENT FOR THE GENERATION OF A TRIGGER PULSE

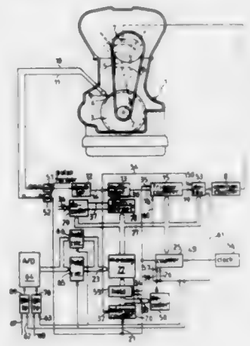
Klemens Klüppel, Neuenrade, and Albert Stilbs, Lüdenscheid, both of Fed. Rep. of Germany, assignors to Atlas Fahrzeugtechnik GmbH, Werdohl, Fed. Rep. of Germany

Filed Oct. 1, 1985, Ser. No. 782,410

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1984, 3436907

Int. Cl.[4] F02P *5/04, 5/15*

U.S. Cl. 364—431.04 5 Claims



5. An ignition timing control system for an internal combustion engine which includes a crankshaft comprising:

means for generating signals representative of the angular position of the crankshaft with respect to the engine;

means for generating signals representative of the angular speed of the crankshaft;

means for generating signals representative of a plurality of engine parameters;

means responsive to said crankshaft angular position signal generating means for generating an ignition signal;

means responsive to said angular position generating signal for generating a signal representative of a determined time period which is initiated when the crankshaft is at a predetermine angular position;

first altering means responsive to said engine parameter signals generating means and effective during said time period for altering the time at which said ignition signal is generated as a function of one or more engine parameters; and

second altering means responsive to said engine parameter

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signals generating means and effective after said predetermined time period has expired for altering the time at which said ignition signal is generated as a function of one or more engine parameters.

4,807,138

DEVICE FOR DETERMINING THE NORTH DIRECTION

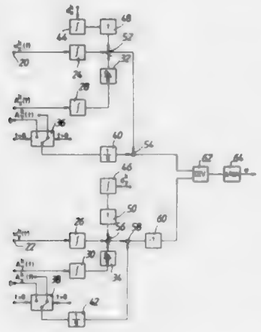
Uwe Krogmann, Überlingen-Nussdorf, Fed. Rep. of Germany, assignor to Bodenseewerk Geratetechnik GmbH, Uberlingen/Bodensee, Fed. Rep. of Germany

Filed Nov. 4, 1986, Ser. No. 926,976

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1985, 3541259

Int. Cl.⁴ G05G *7/78*; G01C *19/38*

U.S. Cl. 364—453 **6 Claims**



1. A device for determining the north direction comprising:

(a) two-axis rotary speed sensor means, which are arranged carrier-fixed and have a first input axis and a second input axis, said second input axis being perpendicular to said first input axis, said two input axes defining a plane which in operation is at least approximately horizontal, said rotary speed sensor means providing first and second output signals indicative of rotary speed about said first and second input axes, respectively,

(b) first accelerometer means which respond to acceleration parallel to said first input axis and provide a first acceleration signal indicative of the acceleration sensed by said first accelerometer means along said first input axis,

(c) second accelerometer means which respond to acceleration parallel to said second input axis an provide a second acceleration signal indicative of the acceleration sensed by said second accelerometer means along said second input axis,

(d) means for forming from said first acceleration signal a first correction signal indicative of the component, effective about said first input axis due to the inclination of said first input axis, of the vertical component of the rotary speed of the earth,

(e) means for forming from said second acceleration signal a second correction signal indicative of the component, effective about said second input axis due to the inclination of said second input axis, of the vertical component of the rotary speed of the earth,

(f) means for forming from said first acceleration signal a third correction signal indicative of the angular motion of said carrier relative to earth about said first input axis,

(g) means for forming from said second acceleration signal a fourth correction signal indicative of the angular motion of said carrier relative to earth about said second input axis,

(h) means for subtracting said first and third correction signal from said first output signal of said rotary speed sensor means to provide a first corrected output signal,

(i) means for subtracting said second and fourth correction signals from said second output signal of said rotary speed sensor means to provide a second corrected output signal, and

(j) means for forming the quotient of said first and second corrected output signals to provide a signal indicative of the deviation of said first input axis from North.

4,807,139

SYSTEM FOR RELEASE AND CONTROL OF PRESET STORAGE OF A POSTAGE METER MACHINE

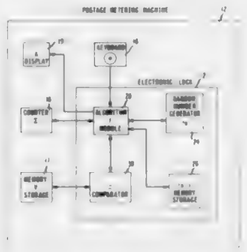
Hans-Peter Liechti, Lanzenblissern, Switzerland, assignor to Ascom Hasler AG, Bern, Switzerland

Continuation-in-part of PCT CH86/00031, filed Mar. 6, 1986, published as WO86/05611 on Sept. 25, 1986. This application Jul. 25, 1986, Ser. No. 889,227

Claims priority, application Switzerland, Mar. 15, 1985, 01168/85

Int. Cl.⁴ G06F *15/20*

U.S. Cl. 364—464.02 **20 Claims**



1. An apparatus for controlled storage and release of desired predetermined values at a postage metering machine disposed at an arbitrary location in cooperation with a release apparatus wherein said postage metering machine comprises

a first algorithmic module section provided in the postage metering machine for forming a first key code word and including an electronic, program controlled logic unit;

a random number generator disposed in the postage metering machine and connected to the first algorithmic module section;

a first storage memory associated with the first algorithm module section for storing data values; and

a comparator for comparing a second key code word from said release apparatus to a first key code word within the postage metering machine furnishing an electronic lock which releases a predetermined value for storage in a preset storage memory as soon as the second key code word determined in the release apparatus is entered into the postage metering machine; and

wherein the release apparatus comprises

a second algorithmic module section provided in a release station for forming a second key code word; and

a visually readable function table disposed in the release station; and

a second storage memory associated with the second algorithm module section for storing data values;

and further comprising means for the exchange of data between the postage metering machine and the release apparatus.

4,807,140

ELECTRONIC LABEL INFORMATION EXCHANGE SYSTEM

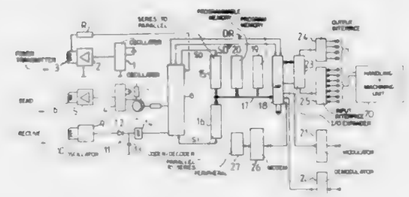
Dominique C. Saulnier, 37-39, allée du Closeau, 93160 Noisy Le Grand, France

Filed Nov. 9, 1984, Ser. No. 670,377

Claims priority, application France, Nov. 10, 1983, 83 17867

Int. Cl.⁴ G05B *19/00*

U.S. Cl. 364—468 **7 Claims**



1. An electronic data exchange system for use with objects moving along a processing path having a plurality of work posts including handling and machining means thereat, the data exchange system comprising:

fixed data transmission means disposed at the work posts;

electronic labels on the objects, the electronic labels each having a non-volatile memory which can be cleared and written into by the fixed data transmission means;

each fixed data transmission means having a modulator-demodulator for connecting the data transmission means to a remote control center, a coder-decoder connected to a receiving circuit and to a transmission circuit;

each electronic label having a reception circuit, a transmission circuit and said non-volatile memory;

a local data exploitation circuit connected to each fixed transmission means; and,

a programmable memory and program memory in the fixed data transmission means, in which are stored a plurality of elementary instructions required for a plurality of procedures to be selectively effected by the data exploitation circuit, and the data exploitation circuit being operable responsive to the electronic labels and the remote control center to select and execute a sequence of instructions from said elementary instructions, specific to a particular situation.

4,807,141

POSTAGE METER WITH MICROPROCESSOR CONTROLLED RESET INHIBITING MEANS

Arno Muller, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 16, 1985, Ser. No. 809,593

Int. Cl.⁴ G06F *13/00*

U.S. Cl. 364—464.02 **7 Claims**

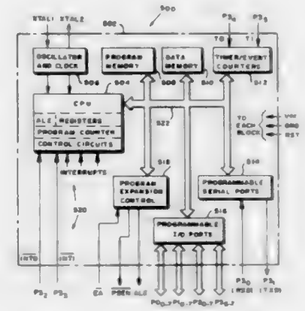
1. In a postage meter including computer means, a power supply for energizing the computer means, a non-volatile memory for storing postage meter operating data, and the computer means including a microprocessor adapted for processing the operating data, an improvement for protecting the operating data, the improvement comprising:

(a) the computer means including means for detecting respective high level and low level output voltage signals from the power supply;

(b) the computer means including first switching means coupled to the detection means and operable in response to the detection of a high level output voltage signal for providing a power-up signal to the microprocessor and of a low level output voltage signal for providing a power-down signal to the microprocessor;

(c) the computer means including second switching means coupled to the detection means and operable in response to the detection of a high level output voltage signal for providing a not-reset signal to said microprocessor and of a low level output voltage signal for providing a reset signal to said microprocessor;

(d) the computer means including means for enabling operation of the non-volatile memory after the microprocessor has been provided with the power-up and not-reset signals, the non-volatile memory enabling means including gate means operable in response to timely receiving at least two respectively predetermined input signals for enabling the microprocessor to transfer operating data between the microprocessor and the nonvolatile memory, the non-volatile memory enabling means including buffer



means timely operable by the microprocessor for providing one of said two signals, and the microprocessor including means programmed for timely operating said buffer means and timely providing another of said two signals; and

(e) the computer means including third switching means operable in response to operation of the buffer means for inhibiting the operation of the second switching means to prevent the provision thereby of a reset signal to the microprocessor after the microprocessor is provided with a power-down signal and until the microprocessor has transferred the operating data from the microprocessor to the non-volatile memory.

4,807,142

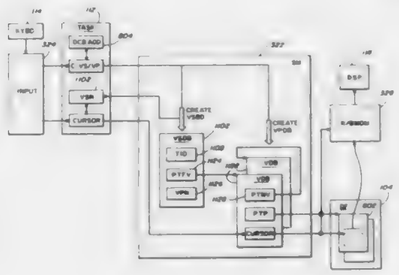
SCREEN MANAGER MULTIPLE VIEWPORT FOR A MULTI-TASKING DATA PROCESSING SYSTEM

Arun K. Agarwal, Chelmsford, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Filed Oct. 9, 1984, Ser. No. 659,203

Int. Cl.⁴ G06F *3/153*; G09G *1/06*

U.S. Cl. 364—200 **9 Claims**



1. In a multi-tasking data processing system including mem-

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ory means for storing data residing in document structures and active tasks, including a foreground task and one or more background tasks, each of said tasks being operable for directing operations to be performed on data and CPU means responsive to the tasks for operating on the data, screen manager means for creating visual display screens upon a display screen, the visual display screens representing data residing in a corresponding document structure to be displayed in association with corresponding active tasks, comprising:

means responsive to active tasks for creating a screen manager control structure within the memory means,

the screen manager control structure including

information relating each screen to a corresponding task, and

for each screen,

information expressive at least of formatting information relative to the screen, and

information relating the screen to the data residing in the document structure to be displayed therein, and

means responsive to the corresponding tasks and corresponding screen manager control structures to access and display the corresponding data associated with the foreground task.

4,807,143

SYSTEM FOR FORMING DESIGN PATTERN DATA

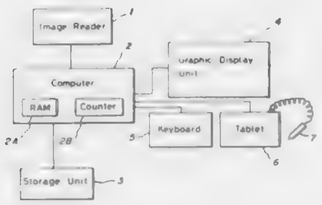
Susumu Matsuura, Tokyo, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 6, 1987, Ser. No. 70,878

Claims priority, application Japan, Jul. 7, 1986, 61-159313; Jul. 8, 1986, 61-160625

Int. Cl.⁴ G06F *3/14;* **G06K** *9/00;* **H04N** *1/00*

U.S. Cl. 364—468 **12 Claims**



1. A method for forming apparel design pattern data comprising the steps of:

scanning with an image scanner an apparel design pattern that has predetermined marks by which feature points can be discriminated in X and Y directions perpendicular to each other to generate binary representations of picture elements representing the apparel design pattern;

preparing X-Y point series data associated with X and Y direction addresses in an X-Y point series formed by discriminating central picture elements located substantially centrally within the apparel design pattern, and profile picture elements which correspond to picture elements located in a profile portion of the apparel design pattern;

extracting from said X-Y point series data positional data corresponding to feature points in the apparel design pattern;

dividing and storing X-Y point series data between respective adjacent feature points as line data, each of said X-Y point series consisting of X and Y direction addresses with respect to an origin point of each line data, intermediate points of each line data, and an end point of each line data, the origin and end points corresponding to feature points;

arranging the line data to define one complete trace of an outer profile line arond the apparel design pattern and preparing X-Y point series data in which feature point codes represent contents with respect to feature points corresponding to the start and end points of each line data; and

storing the prepared X-Y point series data;

wherein the step of dividing the X-Y point series data between adjacent feature points includes the step of deleting intermediate points when the line data represents a straight line, and further includes:

when the line data represents a curved line, the steps of defining a first cone having a center line coinciding with a line interconnecting successive first and second points and starting from one of the adjacent feature points, and has a predetermined angle defined around the first point and of determining whether or not a succeeding third point is contained in the first cone; and

when the third point is contained in the first cone, deleting the second point and defining a second cone having a center line coinciding with a line interconnecting the first and third points and which includes a predetermined angle defined around the first point to determine whether or not a succeeding fourth point is contained in a cone common with the first and second cones; and

when a fourth point is not contained in the common cone, selecting the fourth point as the intermediate point; and

wherein the step of preparing the X-Y point series data with respect to a run consisting of successive profile picture elements corresponding to a profile portion of the apparel design pattern for each line in the Y direction includes the steps of selecting a mode of interconnection of the profile picture elements in each run based upon an interconnection relationship of runs between three successive lines in the Y-direction and extracting interconnecting picture elements to narrow the runs.

4,807,144

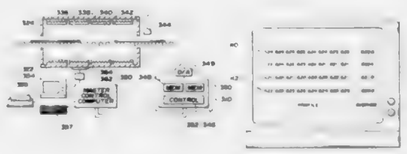
TEMPERATURE CONTROL SYSTEM FOR GLASS SHEET FURNACE

Stanley W. Joehlin, Curtice, and Jeffrey N. Klopping, Toledo, both of Ohio, assignors to Glasstech International L.P., Dover, Del.

Filed Dec. 2, 1986, Ser. No. 936,804

Int. Cl.⁴ G06F *15/46;* **C03B** *29/04*

U.S. Cl. 364—473 **19 Claims**



1. In a glass processing system including a furnace and a conveyor for transporting glass sheets along a longitudinal path within the furnace, an automatic temperature monitoring and control system comprising:

a temperature sensor mounted at a preselected location within the glass processing system for determining the temperature on the surface of glass sheets moving along the conveyor past the preselected location;

an input device;

a display; and

a computer connected to the display, connected to the input device to receive data and command input from the operator, and connected to the temperature sensor for periodically receiving a series of temperature values transmitted by the temperature sensor, the computer including

memory for storing certain of the temperature values received from the temperature sensor,

memory for storing one or more preselected threshold values including a programmable threshold temperatures, and

control logic for (a) comparing the received temperature values with one or more of the preselected threshold values including a programmable Threshold Temperature to determine whether the temperature values satisfy a predetermined criteria, (b) storing in memory a temperature profile composed of a set of the temperature values which satisfy the predetermined criteria, the set of temperature values representing temperatures taken along the surface of a glass sheet, the predetermined criteria including comparing each of the temperature values to the Threshold Temperature to insure that only those temperature values following the first received temperature value greater than the threshold temperature are stored, and (c) displaying the stored temperature profile.

4,807,145

METHOD AND APPARATUS FOR MEASURING THE SHAPE, SIZE, ETC., OF A ROTARY TOOL

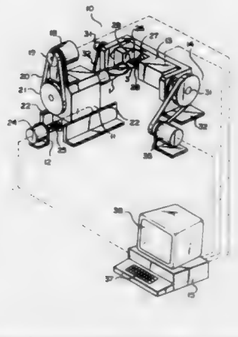
Motoshi Takahashi, Sagamihara; Kazuya Hemmi, Hadano; Hiroshi Chiba, Yamato, and Yasunobu Maegaki, Kawasaki, all of Japan, assignors to Topre Corporation, Tokyo, Japan

Filed Oct. 7, 1987, Ser. No. 105,729

Claims priority, application Japan, Oct. 15, 1986, 61-244788; Jan. 26, 1987, 62-15420

Int. Cl.⁴ G05B *19/27;* **G06F** *15/46*

U.S. Cl. 364—474.17 **6 Claims**



1. An apparatus for measuring the shape and size of a rotary tool, comprising:

a tool rotation unit including means for chucking the tool and adapted to rotate the tool around a tool shaft;

tool moving means for reciprocably moving the tool rotation unit in an axial direction of the tool;

a measuring head adapted to be rotated around a lateral shaft located in a direction perpendicular to the axis of the tool and including a line sensor having line projecting and receiving units located opposite to each other in the direction perpendicular to the axis of the tool;

measuring head driving means for rotating the measuring head, at a rate of a predetermined angle, around the lateral shaft with one end of a measuring area as a center to allow the measurement to be made through the line sensor; and

control calculation means capable of controlling the tool rotation unit, tool moving means and measuring head driving means and adapted to enter measured values output from the line sensor and to evaluate the measured values in accordance with a programmed processing procedure.

4,807,146

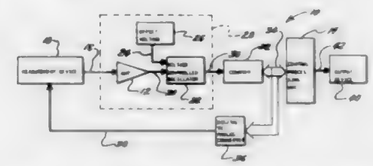
DIGITAL LOCK-IN AMPLIFIER

Roy G. Goodrich, Baton Rouge, La.; P. A. Probst, Grandvaux, and B. Collet, Lausanne, both of Switzerland, assignors to Louisiana State University, Baton Rouge, La.

Filed Feb. 19, 1986, Ser. No. 831,719

Int. Cl.⁴ G06F *15/20*

U.S. Cl. 364—481 **13 Claims**



1. A digital lock-in amplifier which comprises (a) a digital-to-analog converter serially connected between (b) a central processing unit and a source of a signal to be measured and detected whereby said signal is modulated by a reference signal output by said digital-to-analog converter, and (c) an integrating analog-to-digital converter serially connected between said source of a signal to be measured and detected and said central processing unit, whereby said modulated signal is transformed into a digital number proportional to said modulated signal over a set time period, and said central processing unit reads, resets and restarts said converter of (c), analyzes said digital number according to a predetermined program and outputs digital information proportional to said signal to be measured and detected, reads a function table calculated by said program and outputs said reference signal to said digital-to-analog converter.

4,807,147

SAMPLING WAVE-FORM DIGITIZER FOR DYNAMIC TESTING OF HIGH SPEED DATA CONVERSION COMPONENTS

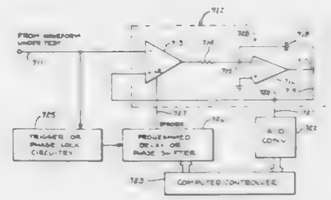
Joel M. Halbert, and Myron J. Koen, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

Continuation of Ser. No. 543,853, Oct. 20, 1983, Pat. No. 4,641,246. This application Nov. 27, 1985, Ser. No. 804,224

The portion of the term of this patent subsequent to Feb. 3, 2004, has been disclaimed.

Int. Cl.⁴ G06F *15/31;* **G01R** *23/16*

U.S. Cl. 364—487 **22 Claims**



1. A sampling waveform digitizer for testing waveforms generated by electronic devices, the digitizer comprising:

a latching comparator having an inverting input (−), a noninverting input (+), a strobe input (LE), and an output;

an integrator having an input coupled to the output of the latching comparator and having an output coupled to the noninverting input of the latching comparator;

a test signal generator having an output for coupling a test stimulus to a Device Under Test (DUT);

a programmable delay element having an input coupled to

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an output of the test signal generator and an output coupled to the LE input of the latching comparator, said programmable delay element for supplying strobe pulses to the LE input of the latching comparator for establishing times at which a waveform under test, developed by the DUT in response to the test stimulus, is sampled so that an integrated version of the comparator output assumes a predetermined relationship with respect to the waveform under test at the times that the waveform under test is sampled; and

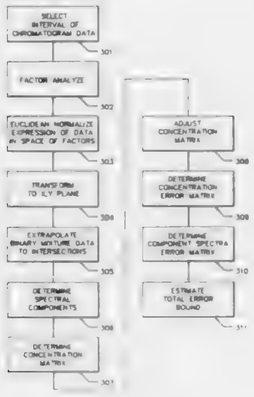
control means coupled to the programmable delay element for controlling the time at which strobe pulses are supplied by the programmable delay element to the LE input of the latching comparator.

4,807,148

DECONVOLVING CHROMATOGRAPHIC PEAKS

Richard F. Lacey, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 29, 1987, Ser. No. 57,077
Int. Cl.[4] G01N *31/08*
U.S. Cl. 364—498 **13 Claims**



1. A method comprising the steps of:

obtaining a mixture including plural components;

chromatographically processing said mixture to obtain an elution in which said components are at least partially separated chronologically;

spectrally analyzing said elution to obtain a series of data spectra;

constructing a chromatogram from said series of data spectra;

factor analyzing said chromatogram so as to determine three principal factors;

expressing each data spectrum as a Euclidean-normalized linear sum of said three principal factors so that each data spectrum can be represented as a point on the surface of a sphere with unit radius;

performing a coordinate transformation on said data spectra, said coordinate transformation being selected to map great circles onto straight lines in a plane; and

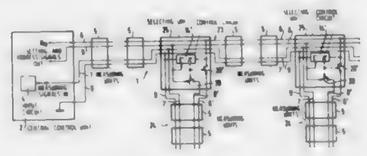
deriving component spectra for said components of said mixture from said data spectra as expressed in said plane.

4,807,149

MEASURING ARRANGEMENT WITH A PLURALITY OF MEASURING UNITS

Walter Mehnert, Ottobrunn, Fed. Rep. of Germany, assignor to MITEC Moderne Industrietechnik GmbH, Ottobrunn, Fed. Rep. of Germany

Filed Jul. 24, 1986, Ser. No. 889,065
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1985, 3526839
Int. Cl.[4] H04Q *9/14*
U.S. Cl. 364—505 **6 Claims**



1. A measuring system comprising

a central control unit which is adapted to control measuring cycles by generating and emitting encoded setting signals and encoded address signals, and by receiving and processing measuring signals,

several measuring unit groups, each measuring unit group comprising a selecting unit and a plurality of measuring units, which, in an activated state, generate said measuring signals, and

a cable connecting said central control unit with said selecting units and said measuring units and comprising a system voltage supply wire which is adapted to connect a power supply provided in said central control unit with electric and electronic components provided in said selecting units and said measuring units,

a system ground wire connecting ground terminals of said selecting units and said measuring units with a system ground provided in said central control unit, command line wires on which said setting signals and said address signals are transmitted from said central control unit to said selecting units and said measuring units, and

a system measurment line wire on which said measuring signals are transmitted from said measuring units back to said central control unit,

wherein said central control unit is adapted to generate two different kinds of encoded address signals, namely encoded selecting unit address signals and encoded measuring unit address signals, and two different kinds of encoded setting signals, namely encoded selecting unit setting signals and encoded measuring unit setting signals, wherein said command line wires of said cable comprise at least two wires, namely a system command line wire on which said encoded address signals and said encoded setting signals are transmitted from said central control unit to all of said selecting units, and a group command line wire which is subdivided into a plurality of lengths, each of which is associated with a respective one of said measuring unit groups by connecting the selecting unit of the measuring unit group with all measuring units of this measuring unit group.

wherein each of said selecting units is arranged remote from said central control unit, is integrated into said cable and comprises

a selecting unit signal decoder having an input terminal which is connected with said system command line wire and receives therefrom said encoded address signals and said encoded setting signals, said selecting unit signal decoder being adapted to decode said encoded address signals and said encoded setting signals so that it generates decoded selecting unit address signals and decoded selecting unit setting signals upon receipt of the respective encoded signals, and that it discards said encoded measuring unit address signals and said encoded measuring unit setting signals,

a first programmable selecting unit address recognition circuit which has a set input receiving said decoded selecting unit setting signals and an address input receiving said decoded selecting unit address signals, said first programmable selecting unit address recognition circuit being programmed to store a unique selecting unit address which is different from all other selecting unit addresses in said system, and being adapted to be set by said decoded selecting unit setting signals to an initial state starting from which it compares decoded selecting unit address signals received from said selecting unit signal decoder with its stored selecting unit address in order to generate a first selecting unit activation signal when a decoded selecting unit address signal coincides with its stored selecting unit address, and in order to terminate generation of said first selecting unit activation signal upon receipt of a further decoded selecting unit address signal which does not coincide with its stored selecting unit address,

a first selecting unit switch arrangement comprising at least one controllable ON/OFF switch which is closed only when said first selecting unit activation signal is applied to its control input terminal, and which, in its closed state, connects a length of said group command line wire, which length is associated with the measuring unit group of the selecting unit, with said system command line wire,

and wherein each of said measuring units is arranged remote from said central control unit, is integrated into said cable and comprises

a measuring unit signal decoder having an input terminal which is connected with a length of said group command line wire being associated with the respective measuring unit group and receives therefrom said encoded address signals and said encoded setting signals when said ON/OFF switch of said first selecting unit switch arrangement in the selecting unit of the respective measuring unit group is closed, said measuring unit signal decoder being adapted to decode said encoded address signals and said encoded setting signals so that it generates decoded measuring unit address signals and decoded measuring unit setting signals upon receipt of the respective encoded signals, and that is discards said encoded selecting unit address signals and said encoded selecting unit setting signals,

a programmable measuring unit address recognition circuit which has a set input receiving said decoded measuring unit setting signals and an address input receiving said decoded measuring unit address signals, said programmable measuring unit address recognition circuit being programmed to store a measuring unit address which is different for each of the measuring units belonging to the same measuring unit group, and being adapted to be set by said decoded measuring unit setting signals to an initial state starting from which it compares decoded measuring unit address signals received from said measuring unit signal decoder with said stored measuring unit address in order to generate a measuring unit activation signal when a decoded measuring unit address signal coincides with said stored measuring unit address, and in order to terminate generation of said measuring unit activation signal upon receipt of a further decoded measuring unit address signal which does not coincide with said stored measuring unit address, and

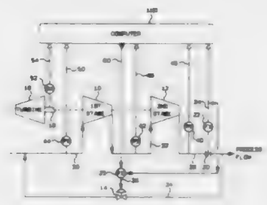
a measuring unit switch arrangement comprising at least one controllable ON/OFF switch, which is closed only when said measuring unit activation signal is applied to its control input terminal, and which, in its closed state, allows a measuring signal, which is generated in the measuring unit, to be transmitted on said system measurement line wire back to said central control unit.

4,807,150

CONSTRAINT CONTROL FOR A COMPRESSOR SYSTEM

James W. Hobbs, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 2, 1986, Ser. No. 914,694
Int. Cl.[4] G01F *1/00*
U.S. Cl. 364—510 **12 Claims**



7. A method of controlling a compressor system in which a minimum flow controller and an associated control valve manipulate gas flow in a recycle stream from the discharge outlet to the suction inlet of said compressor system, said method comprising the steps of:

(a) establishing a first signal representative of an actual flow rate of compressed gas in said compressor system;

(b) establishing a second signal representative of a desired minimum value for said actual flow rate represented by said first signal wherein an initial value is established for said second signal and further wherein said second signal is a periodically updated signal having a current value and then one time period later having an updated value;

(c) comparing said first signal and the current value of said second signal to establish a third signal representative of the deviation of said first signal from the current value of said second signal;

(d) establishing a fourth signal representative of a high limit for the deviation represented by said third signal;

(e) comparing said third signal and said fourth signal to determine if a deviation constraint has been violated wherein an incremental value is added to the current value of said second signal if said third signal is greater than said fourth signal, and wherein said incremental value is subtracted from the current value of said second signal to establish the updated value of said second signal if said fourth signal is greater than said third signal; and

(f) manipulating the flow rate of said recycle stream in response to said updated value of second signal.

4,807,151

ELECTRICAL TECHNIQUE FOR CORRECTING BRIDGE TYPE MASS AIR FLOW RATE SENSOR ERRORS RESULTING FROM AMBIENT TEMPERATURE VARIATIONS

Stephen J. Citron, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Apr. 11, 1986, Ser. No. 850,511
Int. Cl.[4] G01M *15/00*; G01F *1/68*; F02D *41/34*
U.S. Cl. 364—510 **24 Claims**

1. A bridge type mass air flow rate sensor for generating an output signal related to mass air flow rate, comprising

a bridge circuit having legs;

the bridge circuit having a mass air flow rate sensing first element in a leg;

the first element comprising a first resistor, the resistance of which changes as the temperature of the element changes;

the first element responding to changes in air flow rate by changing temperature;

the bridge circuit being balanced when the first element is at a particular temperature;

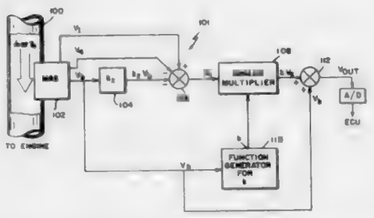
VOL 1099 ISS 3 FEB 21 1989 UMI

the resistance of the first resistor balancing the bridge when the first element is at the Particular temperature;

an ambient air temperature sensing second element in a leg of the bridge circuit for determining the resistance of the first resistor which will balance the bridge circuit;

the second element including means for responding to changes in ambient air temperature and changing the resistance of the first element at which the bridge circuit is balanced, thus changing the particular temperature;

means for supplying operating voltage to the bridge circuit including means responsive to bridge circuit imbalances



caused by changes in the resistance of the first element for changing the power supplied to the first element to maintain the first element at the particular temperature;

means for sensing the current provided to the first element and producing an output signal related to mass air flow rate sensed by the first element;

means for sensing changes in the resistance of the first element at which the bridge is balanced and producing a correction factor; and

means for applying the correction factor to the output signal.

4,807,152

METROLOGICAL APPARATUS

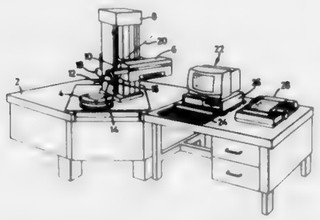
Hugh R. Lane, Leicester, and Peter D. Oxyon, Loughborough, both of United Kingdom, assignors to Rank Taylor Hobson Limited, England

Filed Mar. 2, 1987, Ser. No. 20,436

Claims priority, application United Kingdom, Mar. 4, 1986, 8605324

Int. Cl.[4] **G01B** *5/00, 7/00*

U.S. Cl. 364—513 **38 Claims**



1. Metrological apparatus comprising rotatable member means for receiving a workpiece; first drive means for rotating said member means, sensor means for sensing the surface of a workpiece on the rotatable member means during rotation thereof, means for supporting said sensor for movement relative to said member means, second drive means for effecting said movement of said sensor means and digital computer means for receiving signals derived from said sensor, controlling relative movement between said workpiece and said sensor in response to said signals such that said sensor means follows curvature in said workpiece surface and said sensor traverses said workpiece surface at a speed which is substantially constant, and providing metrological data in dependence both on said signals and on said movement of said sensor.

4,807,153

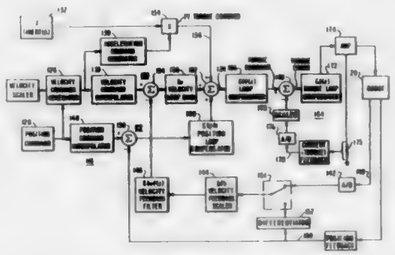
MULTIAXIS DIGITAL ROBOT CONTROL HAVING A BACKUP VELOCITY MONITOR AND PROTECTION SYSTEM

Elmel M. Onaga, Brookfield Center, and Richard J. Casler, Jr., Newton, both of Conn., assignors to Unimation Inc., Danbury, Conn.

Filed Nov. 20, 1986, Ser. No. 932,842

Int. Cl.[4] **G06F** *15/46;* **G05B** *9/02*

U.S. Cl. 364—513 **10 Claims**



1. A digital control for a robot having a plurality of arm joints, said control comprising:

an electric motor for driving each of the robot arm joints;

a power amplifier operable to supply drive current to each motor;

each joint motor having digital feedback control loop means operable at a predetermined sampling rate and including digital position and velocity control loops driving a digital torque control loop in accordance with digital position commands to generate digital motor voltage commands for controlling the associated power amplifier;

means for sensing the motion of each joint motor and for generating corresponding digital position and primary velocity feedback signals for control calculations in said position and velocity control loops;

means for generating digital signals representative of the respective joint motor drive currents for control calculations in said torque control loop; and

backup velocity monitoring means independently determining the velocity of each joint motor from the motor current and terminal voltage and the motor inductance and resistance; and

means for comparing said primary and backup velocity signals for each joint motor.

4,807,154

METHOD FOR DEVELOPING AUTOMATIC REPLIES IN AN INTERACTIVE ELECTRONIC CALENDARING SYSTEM

Keith J. Scully, Austin, Tex., and Harinder S. Singh, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1987, Ser. No. 8,033

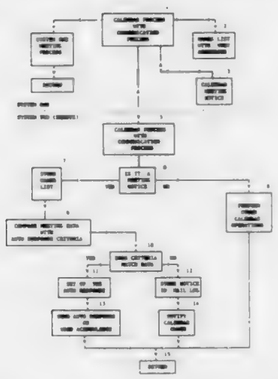
Int. Cl.[4] **G06F** *15/40*

U.S. Cl. 364—518 **10 Claims**

1. An electronic calendaring method for use in a data processing system having a plurality of interactive type work stations connected directly or indirectly to a host processing unit and in which a first calendar owner receives a response from a second calendar owner as a result of a meeting notice sent through said system to said second calendar owner at the time said first owner is calendaring a meeting type event, said method selectively developing said response automatically, based on criteria that are pre-established by said second owner, said method comprising the steps of;

(a) establishing a first data structure for use by said system during the calendaring of an event by said first owner including a plurality of fields for storing data relevant to said event,

(b) establishing a second data structure for use by said system in developing an automatic response upon receiving



said meeting notice from said first owner including a plurality of predefined fields for storing data entered into said system by said second owner including (1) criteria type data and (2) response type data,

(c) comparing said criteria type data stored in said second data structure to data stored in said first data structure when said meeting notice is received by said second owner, and

(d) developing said response automatically when said comparing step indicates a predetermined relationship between one or more of said criteria type data and the corresponding respective data stored in said first data structure.

4,807,155

ELECTRONIC CALENDARING METHOD FOR CONFIRMATION OF RESOURCE AVAILABILITY DURING EVENT CALENDARING

Charles M. N. Cree; Grady J. Landry; Keith J. Scully, all of Austin, Tex., and Harinder S. Singh, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1987, Ser. No. 8,036

Int. Cl.[4] **G06F** *15/40*

U.S. Cl. 364—518 **8 Claims**

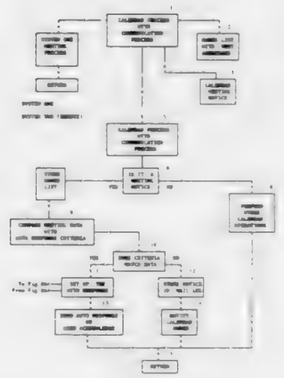
1. An electronic calendaring method for use in a data processing system having a plurality of interactive type work stations connected to a host processing system in which a calendar owner can at the time of calendaring a meeting type event on his calendar send a meeting notice through said system to specified system addresses to invite other calendar owners to said meeting at a specified conference room at a designated time and in which one of said system addresses is assigned to an electronic calendar for maintaining the availability status of said conference room and in which a reply is developed automatically in response to receiving a meeting notice at said one said system address which indicates to said calendar owner calling said meeting if said conference room is available at the designated meeting time and what items of equipment are available for use at said meeting, said method comprising the steps of:

(a) establishing a plurality of data structures for

(1) defining different types of events to be calendared including said meeting type event,

(2) storing data that is entered into said system interactively by calendar owners which further defines details of events that are calendared and assists said system in processing calendared events,

(3) developing said reply in response to receiving said meeting notice indicating the availability of said conference room and said items of equipment that are available for use in said conference room during said meeting,



(b) maintaining at a predefined system address said electronic calendar for said specified conference room which includes a plurality of established time slots for indicating the status of said conference room,

(c) entering data interactively into said system for storage in at least one set of two similar said data structures each of which specifies the same criteria which must be met by said meeting notice before said automatic response is developed, and each of which designates a different response, and

(d) selecting one of said data structures of said set depending on whether the time slot(s) on said conference room calendar corresponding to the meeting time is available.

4,807,156

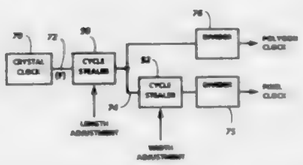
ADJUSTABLE PRINT SIZE CONTROL FOR RASTER OUTPUT SCANNERS

Michael A. Parisi, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 23, 1987, Ser. No. 29,012

Int. Cl.[4] **G06F** *5/06*

U.S. Cl. 364—519 **4 Claims**



1. In a printer for printing images having a width and a length, a printer magnification control for selectively control-

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ling the width, length, or both the width and length of the images printed by the printer, the printer having a laser beam for exposing a photoconductive member, a rotatable scanning element for scanning the beam across the photoconductive member, and control means for controlling beam intensity in accordance with image pixels, comprising:

(a) a source of master clock signals;

(b) a first means for adjusting the clock signals output by said master clock to provide pixel clock signals at a predetermined frequency for clocking the image pixels to said beam controller;

(c) a second means for adjusting the clock signals output by said master clock to provide control clock signals at a predetermined frequency for use in controlling the rotational speed of said scanning element;

(d) a first adjustable cycle stealing circuit interposed between said master clock and said first and second means for periodically dropping a selected one of the clock pulses in the clock signal output of said master clock to said first and second means whereby to proportionally change only the length of the images printed by said printer, and

(e) a second adjustable cycle stealing circuit interposed between said first cycle stealing circuit and said second means for periodically dropping a selected one of the clock pulses in the clock signal output of said first cycle stealing circuit to said second means whereby to proportionally change only the width of the images produced by said printer.

4,807,157

METHOD OF DISPLAYING A MAP

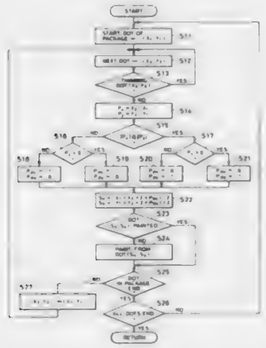
Atsuhiko Fukushima; Takashi Kashiwazaki; Masayuki Hosoi, and Hitoshi Ando, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 2, 1987, Ser. No. 115,732

Claims priority, application Japan, Oct. 31, 1986, 260421

Int. Cl.⁴ G06F *3/14*

U.S. Cl. 364—521 **5 Claims**



1. A method for displaying a map on an electronic display unit, comprising the steps of:

evaluating a start dot and an end dot of each of a plurality of segments defining boundaries of a predetermined area on the map;

storing sequentially each of the evaluated start and end dots so that each of said segments has a predetermined directional relationship with respect to said predetermined area;

determining a direction from at least one of said segments toward said predetermined area according to said evaluated start and end dots of said at least one segment

calculating a start point for coloring positioned inside said predetermined area and offset from said at least one segment according to said determined direction from said at least one segment and at least one pair of said evaluated start and end dots: and

coloring said predetermined area on said electronic display unit with a predetermined color starting from said start point.

4,807,158

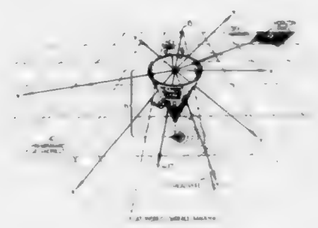
METHOD AND APPARATUS FOR SAMPLING IMAGES TO SIMULATE MOVEMENT WITHIN A MULTIDIMENSIONAL SPACE

Keith A. Blanton, Alpharetta, and John E. Tumblin, Decatur, both of Ga., assignors to Daleco/Ivex Partners, Ltd., Newport Beach, Calif.

Filed Sep. 30, 1986, Ser. No. 913,507

Int. Cl.⁴ G09B *9/08*

U.S. Cl. 364—521 **91 Claims**



1. A method of generating an image to simulate a view seen by an observer within an imaginary space, comprising the steps of:

(1) mapping at least a portion of a panoramic view of a first surface to be simulated in the imaginary space onto a second mapping surface by providing as picture elements the picture values of areas of said mapping surface corresponding to areas of said first surface projected onto said mapping surface;

(2) storing said picture elements on a storage medium as a panoramic image;

(3) retrieving from said storage medium a portion of said picture elements as a function of the position and orientation of an observer with respect to the imaginary space; and

(4) displaying said plurality of picture element on a display.

4,807,159

APPARATUS AND METHOD FOR CONTROLLING IRRADIATION OF AN ELECTRON BEAM AT A FIXED POSITION IN AN ELECTRON BEAM TESTER SYSTEM

Fumio Komatsu, Tokyo; Motosuke Miyoshi, Fujisawa, and Katsuya Okumura, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 18, 1986, Ser. No. 897,429

Claims priority, application Japan, Aug. 19, 1985, 60-181381

Int. Cl.⁴ G01N *23/00*; G21K *1/08*; G01K *25/00*

U.S. Cl. 364—524 **9 Claims**

1. An electron beam tester system having a beam control device for correcting a deviation from an irradiating position due to drift of the electron beam while measuring a sample, the system comprising:

an electron gun for generating an electron beam for irradiating the sample;

a deflecting coil for deflecting the electron beam generated from said electron gun;

a scintillator for detecting a secondary electron generated due to irradiation of the electron beam onto said sample;

a current/voltage converter for converting an output current of said scintillator to a voltage corresponding to said current;

an image display device to which an output of said current-/voltage converter converter is supplied and which displays an image obtained due to the irradiation of the electron beam onto the sample;

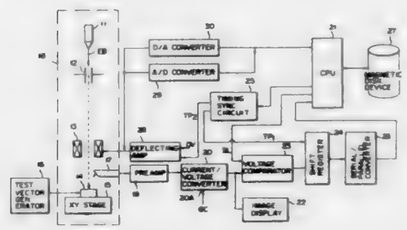
binarizing means for binarizing the output voltage of the current/voltage converter;

reference pattern data memory means for irradiating the electron beam from said electron gun onto a scanning area of the sample according to a specific pattern that is on said sample to be measured prior to measuring the sample, for detecting the secondary electron derived by said scintillator during irradiation of the sample, and for storing a binarized signal as reference pattern data, the binarized signal being derived by said binarizing means by binarizing the image signal obtained by converting an output current of said scintillator to a voltage by said current-/voltage converter;

analog/digital converting means for converting an analog deflection current, which is supplied to said deflecting coil, to digital data;

reference deflection current memory means for storing a value of said deflection current coverted to the digital data by said analog/digital converting means when said reference pattern data is obtained;

comparison pattern data memory means for interrupting the measurement of said sample to be measured, for deflecting the electron beam by supplying the deflection current



stored in said reference deflection current memory means to said deflecting coil, for detecting the secondary electrons derived due to the irradiation of the electron beam by said scintillator, and for storing the binarized signal as comparison pattern data which is derived by said binarizing means by binarizing the image signal obtained by coverting the output current of the scintillator to the voltage by said current/voltage converter;

comparison deflection current memory means for storing the deflection current which is obtained by converting the analog deflection current to the deflecting coil when obtaining said comparison pattern data to the digital data;

exclusive OR means for obtaining an exclusive OR of the reference pattern data stored in said reference pattern data memory means and the comparison pattern data stored in said comparison pattern data memory means;

deviation amount calculating means for calculating deviation amounts in saidcomparasion pattern data on the basis of the exclusive OR data derived by said exclusive OR means and said reference pattern data;

deflection current converting means for converting the deviation amounts calculated by said deviation amount calculating means for to deflection currents for said deflecting coil; and

digital/analog converting means for converting the digital comparison pattern data which is output from said deflection current converting means to the analog data and for supplying said analog data as drift correction data to said deflecting coil.

4,807,160

METHOD OF TESTING RIGGED DISTRIBUTING CABLE FOR TRAIN MONITOR

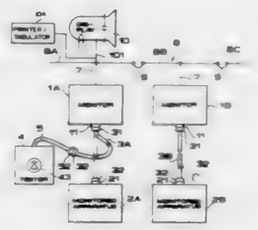
Yasutaka Nozaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1986, Ser. No. 893,646

Claims priority, application Japan, Oct. 11, 1985, 60-227229

Int. Cl.⁴ G01R *31/02*

U.S. Cl. 364—550 **10 Claims**



1. A method of testing electrical continuity, deterioration and so forth of distributing cables rigged for train monitors installed in a plurality of vehicles coupled with one another to constitute a railroad train, said cables serving to electrically connect said monitors with monitored apparatus disposed in said train vehicles, said method comprising:

a first step of connecting at least one display device in common to said monitors installed in said train vehicles;

a second step of disconnecting a connector of each distributing cable adjacent to said monitored apparatus and connecting said connector to a tester;

a third step of feeding from said tester to each of said monitors a testing signal electrically equivalent to the output signal of said monitored apparatus; and

a fourth step of displaying the information, which corresponds to the state of said distributing cable, on said display means via said monitor.

4,807,161

AUTOMATIC TEST EQUIPMENT

John J. Comfort; Paul A. Hayter, both of Berkshire; Dinesh Kargathra, Middlesex; Brian R. Mason; Graham N. Turner, both of Berkshire; Ian R. Fisher, Middlesex, and John W. Bailey, Berkshire, all of England, assignors to Mars Incorporated, McLean, Va.

Continuation of Ser. No. 674,559, Nov. 26, 1984, abandoned. This application Dec. 29, 1987, Ser. No. 140,895

Claims priority, application United Kingdom, Nov. 25, 1983, 8331558; Apr. 16, 1984, 8409794

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 364—550 **49 Claims**

1. Automatic test equipment for the functional testing of electronic circuits, said automatic test equipment comprising:

a programmable controller comprising a digital computer having keyboard and display facilities;

first means for the connection to said programmable controller of a number of testing devices such as power supplies and external specialist instrumentation;

second means for the connection to said programmable controller of a user configured number of optional testing devices, said second means comprising a plurality of function module connection sites provided in the automatic test equipment with each of said connection sites being capable of receiving any one of a plurality of different function modules of predetermined type designed to be controlled by the controller;

a user-configured selection of optional function modules comprising a plurality of such modules received in selected ones of said connection sites, each of said optional

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function modules being adapted to be controlled by the controller in the performance of predetermined specific circuit testing operations and including means to enable the function module type, as regards its functional capability, to be determined by the controller;

connector means for coupling said plurality of function modules to an electronic circuit to be tested; and

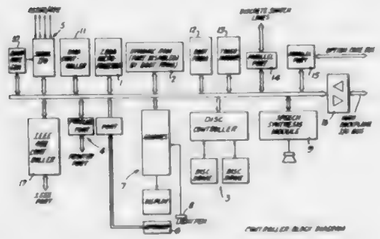
a bus structure interconnecting said plurality of function module connection sites with each other and with said programmable controller in a shared resource arrangement providing for direct module-to-module communication, said bus structure comprising:

(i) a computer databus for communicating control data from the controller to the function modules for controlling the operation of the function modules and for passing digital data to and from the function modules;

(ii) a function module indentification bus for enabling the controller to identify individual function module types and ascertain their locations in said plurality of module connection sites;

(iii) analog stimulus and analog measurement buses enabling the sharing of analog resources within the automatic test equipment by direct communication between function modules received in said connection sites of analog stimulus and response signals; and

(iv) a synchronization bus comprising a plurality of sync-/digital common lines for enabling direct module-to-module communication for cross-synchronization of events occurring within the automatic test equipment.



4,807,162

TEACHABLE INSPECTION CONTROLLER

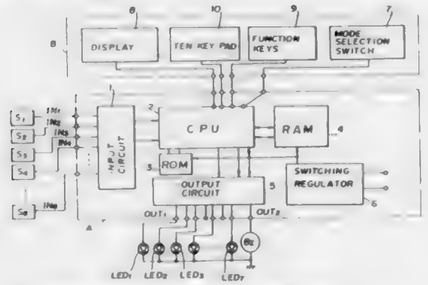
Masahiko Shibayama, Shiga; Umekichi Kai, Kyoto, and Hideki Yamamoto, Kameoka, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 29, 1986, Ser. No. 947,438

Claims priority, application Japan, Dec. 27, 1985, 60-204577[U]; Dec. 28, 1985, 60-204142[U]

Int. Cl.⁴ G06F *15/20*; G01N *21/16*

U.S. Cl. 364—552 **8 Claims**



1. An object inspection controller comprising:

a plurality of sensors for sensing predetermined characteristics of an object, and supplying a set of input signal states respectively corresponding to outputs of said sensors;

a plurality of output terminals for supplying a set of output signal states representing said characteristics of said object;

memory means for storing different sets of output signal states corresponding to different sets of input signal states;

control means responsive to a set of input signal states for selecting from said memory a set of output signal states corresponding thereto and supplying said selected set of output signal states to said output terminals;

means for commanding an automatic programming of predetermined sets of output signal states to correspond with predetermined sets of input signal states during a teaching mode;

means, responsive to said commanding means, for receiving at least one set of input signal states from said sensors representing sensed characteristics of an object during said teaching mode;

means, operative during said teaching mode, for storing said at least one set of input signal states received by said receiving means; and

means, operative during said teaching mode, for causing said memory means to store a set of output signal states corresponding to each set of input signal states received by said receiving means and stored in said storing means.

4,807,163

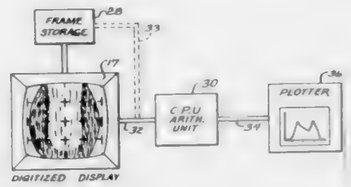
METHOD AND APPARATUS FOR DIGITAL ANALYSIS OF MULTIPLE COMPONENT VISIBLE FIELDS

Robert D. Gibbons, 1560 N. Sandberg Terrace #307, Chicago, Ill. 60610

Filed Jul. 30, 1985, Ser. No. 760,666

Int. Cl.⁴ G01N *15/00*; G06K *9/46*

U.S. Cl. 364—555 **15 Claims**



1. A method for digitally analyzing two component fields, comprised of human hair and human scalp, each having a relatively distinct, visible intensity, to measure a relative proportional content of each component comprising:

recording a selected field area to create a record having a plurality of discrete segments of varying intensity;

digitally resolving the intensity of each of said discrete segments into one of a multiple of discrete values;

registering a frequency of occurrence of each said multiple of discrete values in said field to obtain a frequency distribution; and

resolving said frequency distribution into multiple, normally distributed component distributions, through a Gaussian mixture analysis, each being representative of a selected component to provide a first measure of a proportional content of said field comprised of each component.

4,807,164

APPARATUS FOR MEASURING AND CONTROLLING VELOCITY

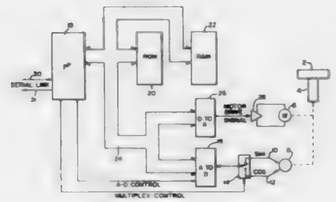
Peter D. Onyon, Leicester, United Kingdom, assignor to Rank Taylor Hobson Limited, England

Filed Dec. 11, 1986, Ser. No. 940,506

Claims priority, application United Kingdom, Dec. 12, 1985, 8530577

Int. Cl.⁴ G01P *3/42*

U.S. Cl. 364—565 **21 Claims**



1. Apparatus for measuring velocity of members in a high precision apparatus, comprising:

an optical grating fixed relative to a first member;

transducer means fixed relative to a second member and arranged for receiving light from said optical grating so as to produce two signals which have magnitudes, which are substantially in quadrature with one another, and which have a frequency dependent upon velocity of said first and second members relative to one another; and

calculation means coupled to said transducer means for receiving said two signals as input signals to the calculation means, said calculation means including means for providing a first value dependent upon a derivative of a first of said input signals and a second value dependent upon the magnitude of the second of said input signals, said calculation means further including means for dividing one of said values by the other value to obtain a third value which represents said velocity.

4,807,165

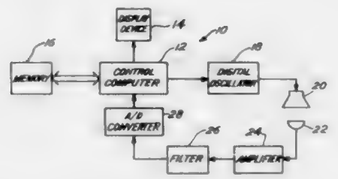
METHOD FOR THE DETERMINATION AND DISPLAY OF SIGNAL ARRIVAL TIME, INTENSITY AND DIRECTION

Farrel M. Becker, Kensington, Md., assignor to Crown International, Inc., Elkhart, Ind.

Filed Oct. 30, 1987, Ser. No. 115,469

Int. Cl.⁴ G04F *10/00*; G01S *9/68, 3/80*

U.S. Cl. 364—569 **8 Claims**



1. A method of determining and displaying the arrival time, intensity and direction of a signal comprising the steps of:

(a) transmitting a first signal into an area under test, said first signal including a plurality of frequencies;

(b) receiving a first received signal through a directional microphone positioned at a first selected position, said first received signal including said first signal frequencies and said first signal frequencies which have been reflected by said area under test;

(c) converting said first received signal into a first energy time curve indicating time of arrival and intensity at arrival;

(d) positioning said directional microphone in a second selected position located selectively from said first selected position;

(e) repeating step a;

(f) receiving a second received signal through a directional microphone positioned at said second position, said second received signal including said first signal frequencies and said first signal frequencies which have been reflected by said area under test;

(g) converting said second received signal into a second energy time curve indicating time of arrival and intensity at arrival;

(h) positioning said directional microphone at a third position located selectively from said first selected position;

(i) repeating step a;

(j) receiving a third received signal through a directional microphone positioned a said third position, said third received signal including said first signal frequencies and said first signal frequencies have been reflected by said area under test;

(k) converting said third received signal into a third energy time curve indicating time of arrival and intensity at arrival;

(l) positioning said directional microphone at a fourth position located selectively from said first selected position:

(m) repeating step a;

(n) receiving a fourth received signal through said directional microphone positioned at said fourth position, said fourth received signal including said first signal frequencies and said first signal frequencies which have been reflected by said area under test;

(o) converting said fourth received signal into a fourth energy time curve indicating time of arrival and intensity at arrival;

(p) converting said first and third energy time curves into a representative of a Cartesian Y axis component;

(q) converting said second and fourth energy time curves into a representative of a Cartesian X axis component;

(r) converting said X axis component representative and said Y axis component representative into a value for the angle of arrival by the equation $\tan^{-1}[Y/X]$;

(s) displaying said first, second, third, and fourth energy time curves in polar format wherein the time of arrival of said X and Y axis representative components determine the vector length and said angle of arrival equals a theta angle.

4,807,166

METHOD AND APPARATUS FOR CALIBRATING AN ELECTRO-OPTICAL MOUSE

Thomas Zaleski, Killingworth, Conn., assignor to Summagraphics Corporation, Fairfield, Conn.

Filed Sep. 19, 1986, Ser. No. 909,829

Int. Cl.⁴ G08C *21/00*; G01C *25/00*; G09G *3/02*

U.S. Cl. 364—571.06 **12 Claims**

1. A method for calibrating an electro-optical mouse, the mouse including a light-emitting means capable of outputting light of variable intensity, a light-detecting means capable of outputting a voltage signal substantially proportional to the amount of light impinging thereon, means for converting digital signals into analog reference voltage signals proportional to the numeric values represented by said digital signals, comparing means electrically connected to receive said voltage signals from said light detecting means and said reference voltage signals from said converting means, said comparing means outputting a detector signal representing one of two digital values in response to the amplitude of a voltage signal from said light-detecting means being greater than or substantially equal to the amplitude of a reference voltage signal from said

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converting means and outputting a detector signal representing the other of said two digital values in response to the amplitude of said voltage signal from said light-detecting means being less than the amplitude of said reference voltage signal form said converting means, and a processing means connected to receive detector signals from said comparing means and to send digital signals to said converting means, comprising the steps of

(a) activating said light-emitting means to emit light onto a surface having position-related optically contrasting indicia thereon and arranged whereby light reflected by said surface impinges on said light-detecting means;

(b) generating reference voltage signals representing a stepped ramped sequence of numeric values;



(c) stopping the stepped ramped sequence of numeric values in response to a transition of the output of said comparing means from one of said two digital values to the other of said two digital values;

(d) repeating steps (a)–(c) a plurality of times;

(e) determining the highest and lowest numeric values at which any of the stepped ramped sequences are stopped; and

(f) determining a value for said digital signals for application to said converting means by calculating at least one predetermined numeric value representing a threshold as a function of the difference between said highest and lowest numeric values.

4,807,167

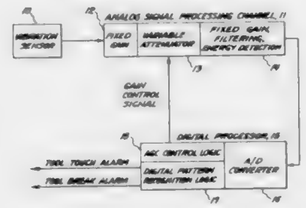
RAPID METHOD OF DIGITAL AUTOMATIC GAIN CONTROL

Ben A. Green, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 18, 1987, Ser. No. 27,367

Int. Cl.[4] H03G *3/20*; **G01L** *25/00*; **G01P** *21/00*

U.S. Cl. 364—571.04 **16 Claims**



1. A rapid method of digital automatic gain control in a signal channel having a digitally programmable variable attenuator that adjusts gain and an analog-to-digital converter to sample the channel output and convert signal samples to digital values, comprising the steps of:

(a) providing to an automatic gain control computer the digitized output signal X whose exponential average with time constant T is to be kept at a desired signal level L by adjusting the gain G presented to said variable attenuator;

(b) determining and storing the integer constants N, NT, L, −NT and −L where L and T are selected and the others computed, and N is the smallest integer such that NT is greater than or equal to a given maximum value of gain;

(c) setting arbitrary variables A and B to initial values, where A is an accumulated difference over a plurality of sampling periods between the output signal X and desired output signal level L and B changes by the current gain G when he magnitude of A becomes larger than L;

(d) in each sampling period, adding to A the difference between the current digitized output signal X and the desired average level L, and

(i) when A is between L and −L, taking no further action to adjust current gain G;

(ii) when the output signal X has been large for sufficient time above the desired average signal level, and A becomes larger than L, decrementing A by L and incrementing B and G, and decreasing current gain G only if B is now greater than NT;

(iii) when the output signal X has been small for sufficient time, below the desired signal level L, and A becomes less than −L, incrementing A by L and decrementing B by G, and increasing current gain G only if B is now less than −NT; and

(e) retaining the values of A, B and G for use in the next sampling period and passing the current gain G to said variable attenuator.

4,807,168

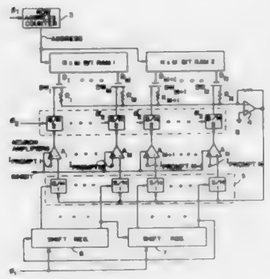
HYBRID ANALOG-DIGITAL ASSOCIATIVE NEURAL NETWORK

Alexander W. Moopenn; Anilkumar P. Thakoor, both of Pasadena, Calif., and John J. Lambe, Redmond, Wash., assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 10, 1987, Ser. No. 60,201

Int. Cl.[4] G06J *1/00*; **G06G** *7/12, 7/122*; **G11C** *15/04*

U.S. Cl. 364—602 **10 Claims**



1. A hybrid analog-digital neural network comprising

a first random access memory for storing an N×N matrix of synaptic information in the form of binary 1 and 0 digits,

an array of N analog amplifiers for performing the neuron function of said network, said array of amplifiers being numbered 1 through N corresponding to columns of said matrix,

a first array of N electronic switches, each having an input terminal, an output terminal and a control terminal, one switch for each column having its control terminal connected to receive a binary signal of said synaptic information matrix stored in said first memory to enable current to flow through the switch from an input terminal to an output terminal thereof,

a first summing amplifier having input and output terminals and a first array of N resistors, one resistor for each of said switches, connecting said switches to the input terminal of said summing amplifier,

a first array of N sample-and-hold devices for sampling and holding an output signal at the output terminal of said summing amplifier in response to a control signal, said array of N sample-and-hold devices having its output terminals connected to said array of analog amplifiers, each device being connected to a corresponding one of said amplifiers numbered 1 through N in sequence,

means for generating first and second timing signals where said first consists of N timing signals for every one of said second timing signals,

means for producing and sequentially applying said control signal to said first array of N sample-and-hold devices in response to said first timing signal, said first array of N sample-and-hold devices having its output terminals connected to said array of analog amplifiers, each device being connected to a corresponding one of said amplifiers numbered 1 through N in sequence,

a second array of N sample-and-hold devices having its input terminals connected to said array of analog amplifiers for sampling analog signals in response to said second timing signals, each device being connected to a corresponding one of said amplifiers numbered 1 through N in sequence, and having its output terminals connected to said array of N electronic switches, each device being connected to a corresponding one of said switches numbered 1 through N in sequence, and

means for addressing said memory one row at a time to read out in parallel one row of binary digits from said matrix at a time in response to N timing signals to enable said switches in response to said binary digits.

4,807,169

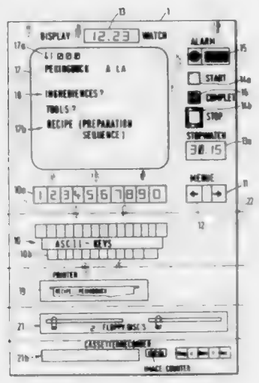
INFORMATION DEVICE CONCERNING FOOD PREPARATION

Felix J. Overbeck, Am Heidberg 13, D-4100 Duisburg 25, Fed. Rep. of Germany

Filed Mar. 31, 1986, Ser. No. 846,703

Int. Cl.[4] G06F *9/00*

U.S. Cl. 364—715.01 **2 Claims**



1. Information device concerning food preparation comprising:

data storage facilities for storing programs representing a description of ingredients;

including basic feed stuff and relative quantities as they relate to particular dishes and meals, and (b) description of preparation and combination of a plurality of individual dishes and meals;

keying means for calling on said information in sequence or at random; and

display means for displaying said information on call, including particularly associative display of information on ingredients and rules for preparation of one or more particular dishes and meals.

4,807,170

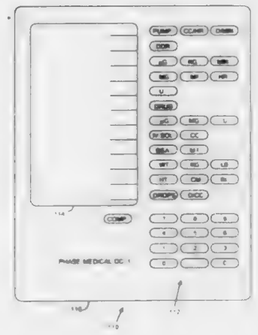
DRUG DOSE RATE CALCULATOR

John Kalli, 1929 Spruce, South Pasadena, Calif. 91030; Thomas M. Mitchell, 1715 La Cresita, Pasadena, Calif. 91103, and Arthur E. Brown, 3130 S. Center St., Santa Ana, Calif. 92704

Filed Mar. 25, 1986, Ser. No. 845,929

Int. Cl.[4] G06F *15/42*

U.S. Cl. 364—413.01 **21 Claims**



1. A system for intravenously administering a drug dosage to a patient, the system including a calculation system for calculating an unknown one of the variables in a group including flow control or pump setting, intravenous solution volume, drug dose rate and drug quantity when three of the variables are known for intravenous administration of drugs or the like to a patient, comprising:

keyboard means for entering data into the system;

a computation device connected to the keyboard means to receive data for three of the variables therefrom for calculating the unknown variable

display means connected to the computation device for displaying the data input to the computation device and for displaying a calculated value for the variable that was unknown.

4,807,171

DIGITAL PHASE ROTATION OF SIGNALS

Simon J. Gale, Bishops Stortford, England, assignor to STC plc, London, England

Filed Mar. 20, 1986, Ser. No. 842,119

Claims priority, application United Kingdom, Mar. 22, 1985, 8507552

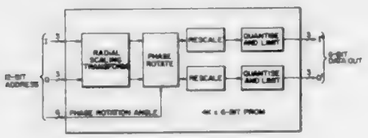
Int. Cl.[4] H03H *17/08*; **G01S** *5/14*

U.S. Cl. 364—715.01 **2 Claims**

2. Apparatus for effecting phase rotation of a digital signal represented as digitized quadrature I and Q signal vectors including a memory containing a look-up table, means for applying said digitized signal vectors as partial address signals to said look-up table in the memory, means for applying additional digital address signals representing a required phase rotation angle to the look-up table in the memory, the memory including means responsive to combination of the partial address and additional address signals to select and read out part

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of the look-up table, the read out from the look-up table representing the phase rotated signal vector values, characterised in that the look-up table incorporates scaling factor means to radially scale the magnitude of each input vector while maintaining the phase of the input vector so that points representing



the digitized input values plotted on a rectangular co-ordinate grid are transformed by scaling to lie on a circular co-ordinate system before phase rotation and each phase rotated signal vector is retransformed by scaling and requantizing to values plotted on a rectangular grid corresponding to the output of the look-up table.

4,807,172

VARIABLE SHIFT-COUNT BIDIRECTIONAL SHIFT CONTROL CIRCUIT

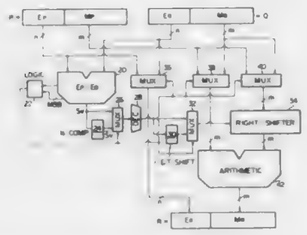
Tomoji Nakiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 17, 1987, Ser. No. 15,466

Claims priority, application Japan, Feb. 18, 1986, 61-34388

Int. Cl.[4] G06F *7/00*

U.S. Cl. 364—715.08 **4 Claims**



1. A shift control circuit comprising:

(a) bit string generator means for producing a string of a predetermined number of data bits,

(b) switching means for detecting the positive or negative sign of the bit string and producing a first switch signal responsive to the positive sign of the bit string or a second switch signal responsive to the negative sign of the bit string;

(c) one's complement generator means for producing a signal representative of the one's complement of said bit string,

(d) first selective signal transfer means responsive to said first and second switch signals for allowing said bit string to pass therethrough in response to the first switch signal or to the signal from said one's complement generator means in response to the second switch signal,

(e) decoder means for decoding the bit string or the signal passed through said first selective signal transfer means for producing a decoded output signal,

(f) single-bit shifting means for shifting the bit of the decoded output signal by a single-bit in a predetermined direction for producing a single-bit shifted output signal, and

(g) second selective signal transfer means responsive to said first and second switch signals for allowing said decoded output signal to pass therethrough in response to said first switch signal or to the signal from said single-bit shifting means in response to said second switch signal.

4,807,173

FREQUENCY-DOMAIN BLOCK-ADAPTIVE DIGITAL FILTER

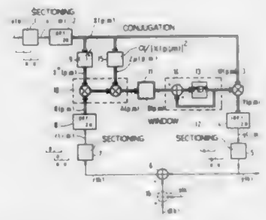
Petrus C. W. Sommen; Theodoor A. C. M. Claasen; Petrus J. Van Gerwen, and Hendrik J. Kotmans, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 3, 1987, Ser. No. 57,561

Claims priority, application Netherlands, Jun. 20, 1986, 8601604

Int. Cl.[4] G06F *15/31*

U.S. Cl. 364—724.18 **1 Claim**



1. A frequency-domain block-adaptive digial filter having a finite impulse response of length N for filtering a time-domain input signal in accordance with the overlap-save method, comprising:

first sectioning means for segmenting the time-domain input signal into blocks of length 2N, each block overlapping its preceding block over a length N;

first transformation means for obtaining 2N frequency-domain components of the Discrete Fourier Transform of length 2N of each input signal block;

first multiplier means for multiplying each of the 2N frequency-domain components with an associated frequency-domain weighting factor for obtaining 2N weighted frequency-domain components;

second transformation means for obtaining 2N time-domain components of the inverse Discrete Fourier Transform of length 2N of the weighted frequency-domain components;

second sectioning means for discarding the first N time-domain components and conveying the last N time-domain components as the time-domain output signal of the filter;

means for generating a time-domain error signal as a difference between the filter output signal and a reference signal;

third sectioning means for segmenting the time-domain error signal into blocks of length 2N, each block overlapping its preceding block over a length N, and for assigning the zero value to the first portion of a length N of each block;

third transformation means for obtaining 2N frequency-domain components of the Discrete Fourier Transform of length 2N of each error signal block;

conjugation means for forming the complex conjugate value of the 2N frequency-domain components produced by the first transformation means;

second multiplier means for multiplying each of the 2N frequency-domain components produced by the third transformation means with the associated frequency-domain component produced by the conjugation means and with a gain factor for obtaining 2N frequency-domain products;

window means for performing an operation on the 2N frequency-domain products, whose time-domain equivalent is a multiplication by a window function, to obtain 2N frequency-domain weighting factor modifications;

accumulator means for accumulating on a block-by-block basis each of the 2N weighting factor modifications for obtaining the 2N frequency-domain weighting factors;

characterized in that the window means are arranged for convolving the 2N frequency-domain products by a function having one real and two mutually conjugate complex coefficients and corresponding to a time-domain window function g(k) of length 2N defined by

$$g(k)=(\tfrac{1}{4})[1+\cos((k-k_o)\pi/N]$$

for k=0, 1, . . . , 2N−1, where k_o is a constant with $0 \leqq k_o < N$.

4,807,174

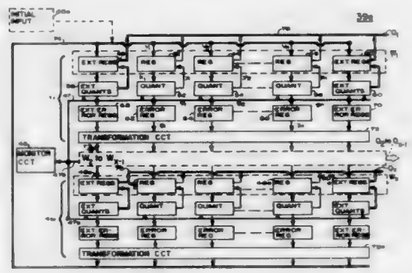
APPARATUS AND METHOD FOR QUANTIZING A SET OF WEIGHTS FOR A WEIGHTED SUM SIGNAL PROCESSING SYSTEM

John P. Costas, Waban, Mass., assignor to Cogent Systems, Inc., Waban, Mass.

Filed Sep. 27, 1985, Ser. No. 781,241

Int. Cl.[4] G06F *15/31*

U.S. Cl. 364—724.03 **28 Claims**



1. A conversion apparatus for quantizing a set of weights for a weighted sum signal processing system, comprising:

a predetermined number of conversion arrays operated in succession, each having:

means for storing a plurality of values to be converted;

means for quantizing the values to be converted to produce a set of discrete values and a set of error values and for replacing the contents of said means for storing with the set of discrete values; and

transformation means for combining the set of error values with a set of preselected transformation weights to form a transformed error set; and

transfer means, responsive to each said conversion array, for successively combining the transformed error set most recently formed with the contents of a successive said conversion array and for monitoring the successively produced sets of error values, said transfer means halting the successive conversions and combinations when a predetermined condition is satisfied.

4,807,175

BOOTH'S MULTIPLIER

Takeji Tokumaru, and Hidechika Kishigami, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 6, 1987, Ser. No. 22,968

Claims priority, application Japan, Mar. 29, 1986, 61-69749

Int. Cl.[4] G06F *7/52*

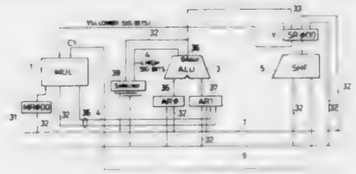
U.S. Cl. 364—760 **10 Claims**

1. A Booth's multiplier comprising:

(a) partial product multiplication means for simultaneouly generating at least two partial products of a multiplier including at least two bits divided in sequence beginning from the least significant digit of the multiplier and a multiplicand and for calculating a sum of the at least two partial products;

(b) calculating means for accumulatively adding the calculated partial product sums; and

(c) shifter means for shifting the multiplier by the number of



bits required to generate the plural partial products and for transferring the bits of the multiplier to said multiplication means whenever said multiplication means calculates one sum of the partial products.

4,807,176

MANCHESTER TYPE CARRY PROPAGATION CIRCUIT

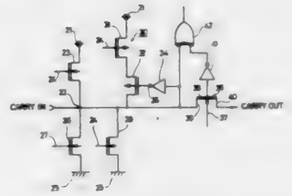
Akira Yamada; Toyohiko Yoshida, and Hiromasa Nakagawa, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1986, Ser. No. 838,302

Claims priority, application Japan, Jul. 12, 1985, 60-154548

Int. Cl.[4] G06F *7/50*

U.S. Cl. 364—786 **12 Claims**



1. A Manchester type carry propagation circuit for propagating a carry from a carry signal line of a less significant bit in a full adder composed of a transistor circuit, comprising:

sources of first and second supply potentials wherein said first supply potential is greater than said second supply potential; and charge means to precharge the output of said carry signal line to a precharge voltage level, said precharge voltage level having an intermediate potential which is less that said first supply potential and greater that said second supply potential said charge means including:

first transistor switching means having a predetermined threshold, connected between said source of first supply potential and said carry signal line, receiving a precharge clock signal as a control signal;

second transistor switching means connected between said carry signal line and said source of second supply potential, receiving said precharge clock signal as a control signal, to set the potential of said carry signal line at said precharge voltage level as a function of the on-state resistance ratio of said first transistor; and

a pull-up circuit connected between said source of first supply potential and said carry signal line, to pull up to a high level the value of the carry signal line of said precharge voltage level at the time of said carry propagation.

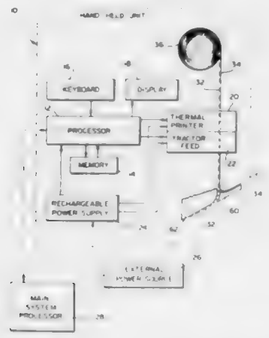
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4,807,177

MULTIPLE FORMAT HAND HELD LABEL PRINTER

Richard J. Ward, c/o Manhattan Electronics, 17 W. 45 St., New York, N.Y. 10036

Filed Jun. 6, 1986, Ser. No. 872,245
Int. Cl.[4] G06F *15/21*
U.S. Cl. 364—900 **19 Claims**



15. A multiple format hand held label printing apparatus, said apparatus comprising processing means, the processing means controlling functional operation of the apparatus, means for printing successive labels in machine readable format and alphanumeric format, the means for printing being operationally connected to the processing means, means for inputting data to the apparatus, means for operatively interconnecting the means for inputting data and the processing means, the means for inputting data comprising means for interconnecting the processing means with an external system processor, the external system processor transmitting input data to the processing means, the processing means receiving the data from the means for inputting data and in response thereto, formatting the data for printing indicia in machine readable format and alphanumeric format, the formatted data corresponding to at least a portion of the data received, the means for printing receiving such formatted data and in response thereto imprinting corresponding indicia in machine readable and alphanumeric format on a selected label.

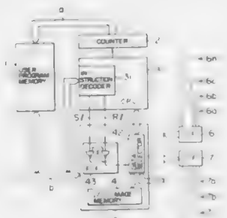
4,807,178

PROGRAMMABLE SEQUENCE CONTROLLER HAVING INDIRECT AND DIRECT INPUT/OUTPUT APPARATUS

Katsuhiro Fujiwara, Sakura; Takayuki Oshiga, and Toshiro Kanehara, both of Narashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 13, 1986, Ser. No. 930,232
Claims priority, application Japan, Nov. 16, 1985, 60-255835
Int. Cl.[4] G06F *13/38, 15/46*
U.S. Cl. 364—900 **8 Claims**

1. A programmable sequence controller comprising:
user program memory means for storing a sequence processing procedure having a direct input/output (I/O) instruction;
processor means connected to said user program memory means for cyclically performing logical processing in accordance with said sequence processing procedure;
instruction decoder means provided in said processor means for detecting said direct I/O instruction within said sequence processing procedure;
I/O control means connected to said processor means for controlling the input and output of data to and from said processor means;
data selector means provided in said I/O control means and connected to said processor means through a data bus for selectively switching between direct I/O of data and indirect I/O of data:
a plurality of data input terminals connected to said data selector means for providing direct input of data;
a plurality of data output terminals connected to said data selector means for providing direct output of data;
an I/O image memory provided in said I/O control means and connected to said data selector means for storing data status of said data input terminals and said data output terminals, said I/O image memory providing indirect I/O of data; and
switching means connected to said instruction decoder means and said data selector means for causing said data selector means to selectively switch between direct I/O of



data and indirect I/O of data in response to an output from said instruction decoder means such that when a direct I/O instruction is detected by said instruction decoder means and an indication thereof is output to said switching means, said switching means in response thereto causes said data selector means to select direct I/O of data wherein said plurality of data input terminals and said plurality of data output terminals are connected to said data selector means, and when said direct I/O instruction is not detected by said instruction decoder means and an indication thereof is output to said switching means, said switching means in response thereto causes said data selector means to select indirect I/O of data wherein said I/O image memory is connected to said data selector means.

4,807,179

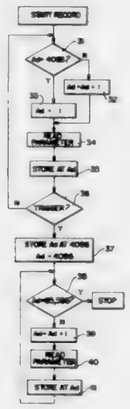
METHOD AND DEVICE FOR RECORDING ANALOG PARAMETERS ON A STATIC DIGITAL MEMORY

Jean-Michel Clere, Bretigny-sur Orge, and Dominic Lebrun, Savigny-sur-Orge, both of France, assignors to Etat Francais, Paris, France

Filed Apr. 9, 1985, Ser. No. 721,480
Claims priority, application France, Dec. 19, 1984, 84 19407
Int. Cl.[4] G06F *15/74*; G11B *5/02*
U.S. Cl. 364—900 **8 Claims**

1. A method for recording and retrievir g variations over time of analog parameters in a static digital memory comprising:
allocating a memory into n memory blocks corresponding to n parameters, n being a positive integer, and allocating each block into first, second and third parts;
loading at a frequency f and cyclically storing values of m components representing each analog parameter in sequential portions of the first part of a respective memory block, m being a positive integer, and, if a last sequential portion of said first part of said respective memory block is reached, continuing storing the m components in said first part of said respective memory block by wrapping around to a first sequential portion of said first part of the respective memory block, and storing the m components in the first and subsequent sequential portions of said first part of the respective memory block;
detecting a starting signal;

upon detection of said starting signal, loading and storing in the second part of each memory block data including at least an address Ad of the last loaded sequential portion of the first part of the memory block before detection of the starting signal;
loading and storing at the frequency f, the m components in sequential portions of the third part of each memory block up to the last portion of the memory block;
retrieving recorded data by:
retrieving from the second part of each memory block the address Ad of the last stored sequential protion of the first part of each memory block;



retrieving data from the sequential portions of the first part of each memory block starting at an address Ad+1, and continuing up to the last sequential portion of said first part of each memory block;
retrieving data from the first portion of said first part of each memory block and from sequentially following portions of the first part of each memory block up to and including the address Ad retrieved from the second part of each memory block;
retrieving data from a first portion and sequentially following portions of the third part of each memory block up to a last sequential portion of each respective memory block.

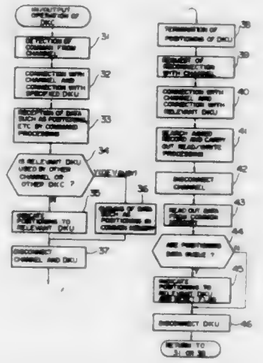
4,807,180

MULTIPLE CONTROL SYSTEM FOR DISK STORAGE AND METHOD FOR REALIZING SAME

Hisaharu Takeuchi; Akira Kurano; Yoshiro Shiroyanagi; Hiroaki Takamatsu, and Katsunori Nakamura, all of Odawara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1986, Ser. No. 932,027
Claims priority, application Japan, Nov. 20, 1985, 60-260395
Int. Cl.[4] G06F *13/14*
U.S. Cl. 364—900 **11 Claims**

1. A disk storage multiple control method for a multisystem accessed by a plurality of host CPU's connected with a plurality of disk controllers by sharing each of rotating disk storages in common, by which an access request issued by each of the hosts is sent to a specified disk storage and a read/write operation is performed, comprising:
(a) a step of reading/writing a data stored in said specified disk storage according to commands given by said hosts by controlling a head system for accessing said specified disk storage;
(b) a step memorizing positioning information for the head system of said specified disk storage necessary for said access in response to a state that said specified disk storage is busy when another of said hosts accesses said disk storage;
(c) a step of transmitting said positioning information to said



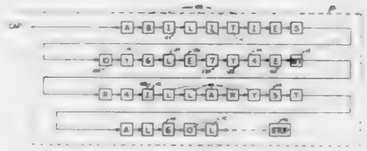
specified disk storage, responding to a busy to free report of said specified disk storage; and
(d) a step of reading/writing memory information specified by said access to said specified disk storage.

4,807,181

DICTIONARY MEMORY WITH VISUAL SCANNING FROM A SELECTABLE STARTING POINT

Howard C. Duncan, IV, Marathon; Donald T. Adams, Homer, and R. William Gray, Ithaca, all of N.Y., assignors to Smith Corona Corporation, Cortland, N.Y.

Filed Jan. 2, 1986, Ser. No. 869,777
Int. Cl.[4] G06F *15/00*
U.S. Cl. 364—900 **10 Claims**



1. In a word-processing apparatus having an input keyboard with alphabetic keys, a multi-character display, a printer output, and a dictionary storage containing a word list for verifying the spelling order of character inputs; the combination of:
(a) first and second control key means included in said input keyboard,
(b) template-forming means operable in response to entry of a string of alphabetic characters via said alphabetic keys,
(c) first and second storage areas in said dictionary storage holding character information comprising said word list, successive words thereof being alphabetically arranged and demarked by word separators, said character information in said first storage area comprising a succession of root character sequences having at least two root characters therein; character information in said second storage area being arranged in a tree structure with a plurality of branches, each branch stemming from a discrete one of said root character sequences and holding at least one word remnant associated with said discrete one sequence, each said word remnant being followed by one of said word separators;
(d) detection means signalling presence of each said word separators in a branch,

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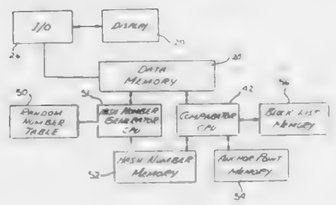
(e) a counter incremented in response to a signalling by said detection means,
(f) a register for storing values from said counter,
(g) comparison means having an equality output,
(h) listing means, including said comparison means, responsive to actuation of said first control key means and being operable to set said counter and said register to zero, clear said display of existing characters and replace same with a first word from said dictionary storage, said first word containing the template formed by said entry and ending in the one of said branches defined by a particular root character sequence corresponding to said entry, said ending occurring upon a signalling by said detection means of the presence of a first one of said word separators subsequent to said template, said counter being incremented once in response to said signalling and once more in response to said ending, the resultant count in said counter then being stored in said register, and
(i) means, including said comparison means, responsive to actuation of said second control key means and being operable to replace, in turn, said first word discerned by said template with a succeeding word in said dictionary storage, said succeeding word containing at least the template formed by said entry and a minimum of one character between said first word separator and a next word separator in said branch said next word separator being identified by an equality output by said comparison means upon a comparison of the incremented value in said counter with said resultant count stored in the register.

4,807,182

APPARATUS AND METHOD FOR COMPARING DATA GROUPS

Cary L. Queen, Rockville, Md., assignor to Advanced Software, Inc., Sunnyvale, Calif.

Filed Mar. 12, 1986, Ser. No. 839,326
Int. Cl.[4] G06F *15/00*
U.S. Cl. 364—900 **22 Claims**



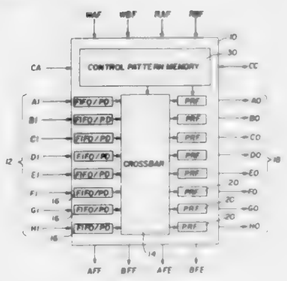
12. A method for identifying and displaying the differences between first and second documents, said documents comprising groups of alphanumeric characters including words, lines and sentences comprising the steps of:
storing each of said documents in a memory;
generating hash numbers from said lines and sentences of each of said documents, such that identical lines and identical sentences produce identical corresponding hash numbers;
comparing hash numbers generated for said first document with hash numbers generated from said second document;
creating lists of anchorpoints in said memory, said anchorpoints representing matching hash numbers from each of said documents;
defining blocks of identical text in both documents containing at least one anchorpoint;
defining difference blocks of text not contained in said identity blocks;
storing in memory the location in each document of said identity and difference blocks;
classifying said identity and difference blocks into one of a plurality of classifications and storing said classifications in memory;
displaying said identity and difference blocks and said classifications.

4,807,183

PROGRAMMABLE INTERCONNECTION CHIP FOR COMPUTER SYSTEM FUNCTIONAL MODULES

Hsiang-Tsung Kung; Feng-Hsiung Hsu; Alan L. Sussman, all of Pittsburgh, Pa., and Teiji Nishizawa, Nara, Japan, assignors to Carnegie-Mellon University, Pittsburgh, Pa.

Continuation of Ser. No. 781,752, Sep. 27, 1985, abandoned. This application Jan. 23, 1988, Ser. No. 210,754
Int. Cl.[4] G06F *13/00, 15/16, 15/347*
U.S. Cl. 364—900 **16 Claims**



1. A programmable interconnection chip for use in interconnecting major components of a processor such as arithmetic logic units, floating point multipliers, processor memory and processor register files to provide physical communication and data buffering between such components comprising:
(a) programmable data input buffer and flow control means including a plurality of data input ports;
(b) programmable pipeline register file output means including a plurality of data output ports;
(c) crossbar interconnection means electrically connected between the data input buffer and flow control means and the pipeline register file output means, said crossbar interconnection means configured on each clock cycle to provide a desired interconnection pattern in a manner allowing multiple data transfers to flow in parallel between the data input buffer and flow control means and the pipeline register file output means in accordance with said pattern; and
(d) control pattern memory means electrically connected to the crossbar interconnection means and the pipeline register file output means for storing programmed instructions designed to control the configuration of the interconnection pattern and the operations of the crossbar interconnection means on each clock cycle and to control shifting of data into and output of data from the pipeline register file output means on each clock cycle, said electrical connection of the control pattern memory means to the crossbar interconnection means being independent of said electrical connection between the crossbar interconnection means and the data input buffer and control means.

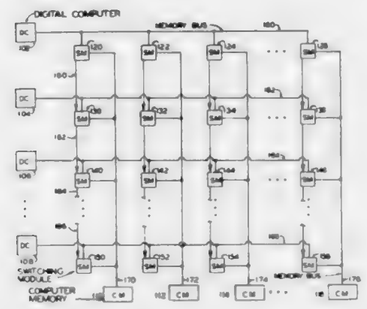
4,807,184

MODULAR MULTIPLE PROCESSOR ARCHITECTURE USING DISTRIBUTED CROSS-POINT SWITCH

Charles F. Shelor, Arlington, Tex., assignor to LTV Aerospace, Dallas, Tex.

Filed Aug. 11, 1986, Ser. No. 895,239
Int. Cl.[4] G06F *13/00, 13/14, 13/18;* **G05B** *15/08*
U.S. Cl. 364—900 **13 Claims**

1. A modular switching system for connecting a plurality of digital computers to a plurality of computer memories, the system comprising:
(a) a plurality of switching modules;
(b) groups of the plurality of switching modules conductively coupled to each give digital computer of the plurality of digital computers for data transmission, each switching module of each group of switching modules conductively coupled to a different one of the computer memories for data transmission;



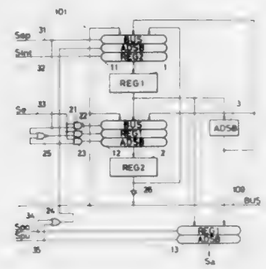
(c) each switching module including means, responsive to the transmission of a memory address by its respective digital computer of the plurality of digital computers within a range of memory addresses assigned to the computer memories, for forming a path for data storage and retrieval between its respective digital computer and a given one of the computer memories; and
(d) the switching modules operable in combination to arbitrate simultaneous attempts by two or more of the digital computers to access one of the computer memories.

4,807,185

STACK POINTER CONTROL CIRCUIT

Shigeo Kamiya, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 4, 1986, Ser. No. 937,828
Claims priority, application Japan, Mar. 28, 1986, 61-068408
Int. Cl.[4] G06F *9/42*
U.S. Cl. 364—900 **9 Claims**



1. A stack pointer control circuit for designating stack memory addresses to save and/or return information, from a predetermined register to a stack memory or vice versa, which comprises:
(a) first register means for storing a stack memory address to be read next;
(b) updating means for updating the address stored in said first register means;
(c) second register means for storing a same stack memory address as that stored in said first register means at a start of an information saving and/or return operation;
(d) setting means for setting the same stack memory address as that stored in said first register means to said second register means at the start of an information saving and/or return operation;
(e) designating means for designating a stack memory address stored in said first register means in response to an information saving and/or return operation start signal for the information saving and/or return operation; and
(f) stopped address processing means for setting an address stored in said second register means to said first register means in response to a stop signal generated during the information saving and/or return operation.

4,807,186

DATA TERMINAL WITH CAPABILITY OF CHECKING MEMORY STORAGE CAPACITY AS WELL AS PROGRAM EXECUTION PARAMETERS

Souichi Ohtahki, Yao; Tadahiro Toda, Nara; Kousaku Komai, Yamatokouriyama, and Mamo Sugihara, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 784,606, Oct. 4, 1985, abandoned. This application Jul. 5, 1988, Ser. No. 214,826
Claims priority, application Japan, Oct. 5, 1984, 59-210267
Int. Cl.[4] G06F *11/32, 11/00*
U.S. Cl. 364—900 **3 Claims**



1. A data input/output terminal, comprising:
random access memory (RAM) means for storing data including backup power supply means for maintaining the contents stored in said RAM means when main power to said terminal has been turned off;
data entry means for entering data including program execution parameters to be stored in said RAM means;
processor means for processing the data stored in said RAM means;
display means for displaying information related to the state of said terminals as well as processed data;
means for storing said program execution parameters in an area of said RAM means;
means for calculating check sum codes of said execution parameters and storing said codes in another areas of said RAM means;
means for determining the correct storage of said parameters in said RAM means by re-calculating said check sum codes and comparing said re-calculated codes with the codes stored in said RAM means and indicating via said display means whether said compared codes match;
means for determining whether said RAM means contains

additional data storage capacity and indicating via said display means whether said RAM means is full or is capable of storing additional data; and

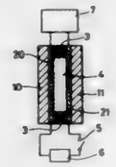
means for checking the existence of program instructions in said RAM means in an application mode and turning off power to said terminal if no program instructions exist.

4,807,187

METHOD AND DEVICE OF MEMORY USING LIQUID CRYSTAL

Iwao Tabushi, Kyoto, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1987, Ser. No. 22,692
Claims priority, application Japan, Mar. 7, 1986, 61-50221
Int. Cl.⁴ G11C *13/04*
U.S. Cl. 365—108 **15 Claims**



1. A memory method comprising:

(a) arranging a voltage sensitive element consisting of a viologen which has liquid crystalline properties between a pair of electrodes so that a voltage may be applied thereto;

(b) applying to said electrodes a voltage sufficient to change electric conductivity of said voltage sensitive viologen element from a first state to a second state; and

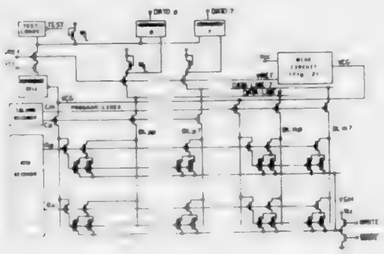
(c) measuring the electric conductivity state of said element, a measurement indicating said first conductivity state representing a first memory state and a measurement indicating said second conductivity state representing a second memory state.

4,807,188

NONVOLATILE MEMORY DEVICE WITH A HIGH NUMBER OF CYCLE PROGRAMMING ENDURANCE

Giulio Casagrande, Vignate, Italy, assignor to SGS-Thomson Microelectronics s.p.a., Catania, Italy

Filed May 26, 1988, Ser. No. 199,077
Claims priority, application Italy, May 27, 1987, 83629 A/87
Int. Cl.⁴ G11C *11/34, 7/00*; H03K *3/01*
U.S. Cl. 365—182 **3 Claims**



1. An electrically alterable, nonvolatile memory device, organized as a rows and columns array of addressable memory cells wherein

each cell of said array is formed by a pair of n-channel, EEPROM type, elementary memory cells having a source, a drain and a control gate connected substantially in parallel with each other, and the two elementary EEPROM cells of the pair share a single select transistor;

a bias voltage generating circuit for biasing the control gates of said memory cells is essentially a current mirror having a virgin elementary EEPROM type memory cell and a broken elementary EEPROM type memory cell respectively in the two branches thereof, and generates a biasing voltage V_{CG} at an output node, corresponding to the control gate node of the said virgin cell, having a value satisfying the equality relationship of the currents flowing along the two branches of the current mirror;

reading sense amplifiers for reading the bit stored in any addressed memory cell comprise a two input comparator, one input thereof being connected through addressing means and through said select transistor to one of said memory cells of the array, the other input thereof being connected through means simulating said addressing means and said select transistor to a reference cell formed by a pair of virgin n-channel, EEPROM TYPE, elementary memory cells similar to the ones forming said memory array cells and having a source, a drain and a control gate substantially connected in parallel with each other;

the said reference cell establishing a comparator threshold in terms of current given by the relation:

$$I_{sensing} = 2I_{virgin};$$

the bit reading threshold being given by the following relation:

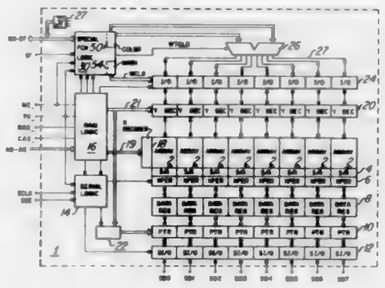
$$I_{Cell\ erased} + I_{Cell\ virgin} < I_{sensing} < I_{Cell\ written} + I_{Cell\ virgin}.$$

4,807,189

READ/WRITE MEMORY HAVING A MULTIPLE COLUMN SELECT MODE

Raymond Plakhem, Missouri City, and Anthony M. Balistreri, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 5, 1987, Ser. No. 81,948
Int. Cl.⁴ G11C *11/40, 13/00*
U.S. Cl. 365—189 **17 Claims**



1. A memory device having a normal write mode and a block write mode, comprising:

an array of read/write memory cells;

mode select means, for receiving a mode select signal indicating said normal write mode or said block write mode;

an address decoder, for decoding a memory address signal, comprising:

a first decode stage for decoding selected bits in said memory address signal, said selected bits specifying a group of memory cells in said array;

a second decode stage associated with each of said groups of memory cells, said second decode stage for decoding the remaining bits of said memory address signal to select a memory cell in said group corresponding to said remaining bits of said memory address signal; and

a plurality of select means, one selecting means associated with each of said groups of memory cells and connected to the second decode stage associated with its group of memory cells, each of said selecting means enabled by the output of said first decode stage specifying its associated group of memory cells, for selecting the memory cell specified by said second decode stage responsive to said mode select signal indicating said normal write mode, and for selecting a predetermined plurality of memory cells within said group responsive to the mode select signal indicating said block write mode; and

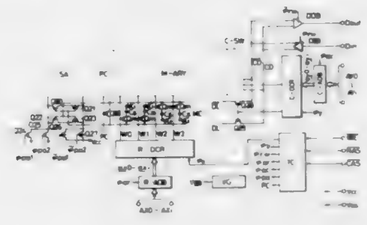
data input means, for receiving and for writing said input data to the selected memory cells of said specified group.

4,807,190

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Kyoko Ishii, Tokyo; Kazumasa Yanagisawa, Kokubunji, and Masaya Muranaka, Akishima, all of Japan, assignors to Hitachi Ltd. and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

Filed Feb. 24, 1987, Ser. No. 17,533
Claims priority, application Japan, Mar. 12, 1986, 61-52514
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—189 **46 Claims**



1. A semiconductor integrated circuit device comprising:

an output node;

a boost capacitor having a first terminal and a second terminal, wherein said second terminal is coupled to said output node;

a voltage supply terminal to which a first voltage is supplied;

precharge means coupled between said second terminal of said boost capacitor and said voltage supply terminal, and for precharging said boost capacitor at a predetermined precharge voltage;

clock providing means for providing a clock signal; and

voltage limitation means for providing a predetermined voltage less than said first voltage to said first terminal of said boost capacitor in response to said clock signal.

4,807,191

REDUNDANCY FOR A BLOCK-ARCHITECTURE MEMORY

Stephen T. Flannagan, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 4, 1988, Ser. No. 140,706
Int. Cl.⁴ G11C *7/00, 11/40*
U.S. Cl. 365—189 **8 Claims**

1. A memory having a read mode and a write mode, comprising:

a plurality of sub-arrays comprised of intersecting rows and columns of memory cells;

a plurality of sets of local data line pairs, each set of local data lines coupled to a corresponding sub-array for carrying data to and from selected columns of the particular sub-array to which the set of local data lines corresponds;

block-select means, coupled to the plurality of sub-arrays, for enabling a particular sub-array as determined by a first set of address signals;

a set of global data lines for carrying data which corresponds to the data carried by the set of local data lines which corresponds to the enabled sub-array;

first sense amplifier means, coupled to the plurality of sets of local data line pairs and the set of global data line pairs, for coupling data between the set of global data lines and the set of local data lines which corresponds to the selected sub-array;

a block of redundant columns;

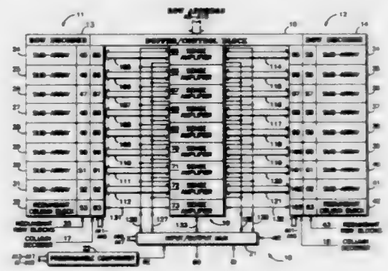
a redundant local data line pair for carrying data to and from the block of redundant columns;

a redundant global data line pair for carrying data;

second sense amplifier means, coupled to the block of redundant columns via the redundant local data line pair, for coupling data between the redundant global data line pair and the redundant local data line pair;

detection means for detecting when a column in the block of redundant columns is to replace a column in one of the sub-arrays of the plurality of sub-arrays;

multiplexer means, coupled to the detection means, the redundant global data line pair, and the set of global data line pairs, for outputting external data which corresponds to the data present on the redundant global data line when the memory is in the read mode and the detection means detects that a column in the block of redundant columns is to replace a column in one of the sub-arrays and for providing, onto the redundant global data line pair, external data which has been received when the memory is in the write mode and the detection means detects that a column in the block of redundant columns is to replace a column in one of the sub-arrays.



4,807,192

MEMORY DEVICE EMPLOYING ADDRESS MULTIPLEXING

Masao Nakano, Kawagoe; Hirohiko Mochizuki; Tsuyoshi Ohira, both of Kawasaki; Yukinori Kodama, and Hidenori Nomura, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kanagawa and Fujitsu VLSI Limited, Aichi, both of, Japan

Filed Aug. 31, 1987, Ser. No. 90,988
Claims priority, application Japan, Sep. 4, 1986, 61-208527; Sep. 4, 1986, 61-208526
Int. Cl.⁴ G11C *11/40, 13/00*
U.S. Cl. 365—193 **17 Claims**

11. A memory device employing address multiplexing wherein a row address and a column address are respectively received from an exterior responsive to a row address strobe and a column address strobe, said memory device comprising:

a memory cell array having a matrix arrangement of memory cells, each memory cell being designated by the row address and the column address;

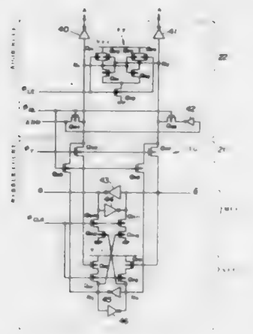
a column decoder supplied with an address signal for designating the column address of said memory cell array;

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a data bus for transferring data to and from said memory cell array;

a counter for initially receiving an external address and for successively incrementing a counted address value therein responsive to toggle of said column address strobe during one active time period of said row address strobe so as to successively supply the counted address value to said column decoder as the address signal, said counter comprising at least four bits and being supplied with at least predetermined four bits of said external address, said counter successively incrementing the counted address value by incrementing only two predetermined bits out of said four predetermined bits of said external address; and

a switching logic circuit supplied with external switching information and coupled to said counter for determining said two predetermined bits in said counter depending on said external switching information.



4,807,193

SEMICONDUCTOR MEMORY DEVICE WITH A DETECTION CIRCUIT TO DETECT WORD LINE POTENTIAL

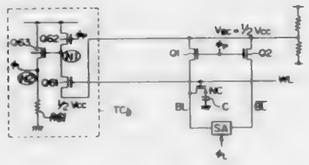
Yoshihiro Takemae, Tokyo; Takeo Takematsu, Yokohama; Kiyoki Sato, Tokyo; Takashi Horii, Yokohama; Noboru Kodama; Makoto Yanagisawa, both of Kawasaki, and Yasuhiro Takada, Yokohama, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 25, 1987, Ser. No. 81,559

Claims priority, application Japan, Feb. 28, 1986, 61-043084

Int. Cl.[4] G11C *7/00, 8/00*

U.S. Cl. 365—205 **7 Claims**



1. A semiconductor memory device comprising:

a word line;

a pair of bit lines;

a one-transistor one-capacitor type memory cell connected between said word lines and one of said pair of bit lines;

a sense amplifier connected between said pair of bit lines;

a detection means for detecting that an electric potential, at one point in a plurality of points on said word line, exceeds a precharged potential of said bit line plus a threshold voltage of the transistor in said memory cell, the potential rise time at said point being the longest rise time on said word line of any of said plurality of points on said word line, and said sense amplifier being connected to said detection means and having an operation timing driven by a detection signal of said electric potential from said detection means.

4,807,194

SEIMICONDUCTOR MEMORY DEVICE HAVING SUB BIT LINES

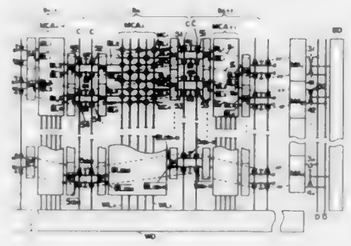
Toshio Yamada, Sakai, and Michihiro Inoue, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 20, 1987, Ser. No. 40,471

Claims priority, application Japan, Apr. 24, 1986, 61-95364

Int. Cl.[4] G11C *7/02, 5/02*

U.S. Cl. 365—207 **4 Claims**



3. A semiconductor memory device comprising;

a memory cell array having a plurality of blocks, each block including a memory cell sub array, and sense amplifiers disposed on two sides of said memory cell sub array;

a plurality of sub bit lines coupled to said sense amplifiers in each block;

an amplifier unit disposed at one end of said memory cell array and coupled to said sub bit lines;

a pair of data busses coupled to said amplifier unit;

a column decoder unit disposed on one of said two sides of said memory cell array; and

a row decoder unit disposed on the other of said two sides of said memory cell array.

4,807,195

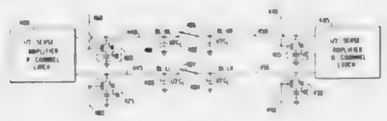
APPARATUS AND METHOD FOR PROVIDING A DUAL SENSE AMPLIFIER WITH DIVIDED BIT LINE ISOLATION

Robert E. Busch, and Endre P. Thoma, both of Colchester, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1987, Ser. No. 50,361

Int. Cl.[4] G11C *7/00, 11/24*

U.S. Cl. 365—207 **21 Claims**



1. a memory array device with divided bit line isolation, comprising:

dual sense amplifier means for sensing logical memory values, said dual sense amplifier means being constructed of a first latch and a second latch;

at least one bit line disposed to allow electrical interconnection between said first and second latch, said at least one bit line having a first end electrically connectable to said first latch, and a second end electrically connectable to said second latch; and

switch means disposed to divide said at least one bit line into a first bit line segment and a second bit line segment, said switch means providing electrical connection between said first and second bit line segments when said switch is closed, and providing electrical isolation between said first and second bit line segments when said switch means is open.

4,807,196

REFRESH ADDRESS COUNTER TEST CONTROL CIRCUIT FOR DYNAMIC RANDOM ACCESS MEMORY SYSTEM

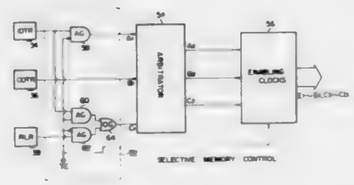
Takashi Mizukami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 24, 1987, Ser. No. 29,566

Claims priority, application Japan, Mar. 24, 1986, 61-66509

Int. Cl.[4] G11C *7/00, 11/40*

U.S. Cl. 365—222 **12 Claims**



1. A semiconductor memory system with a fully automated built-in refresh control circuitry, comprising

(a) a dynamic random access memory cell array,

(b) at least one data transfer gate means through which data signals are to be transferred to or from said memory cell array,

(c) at least one data transfer request signal generator for producing a signal to request activation of said data transfer gate means,

(d) a refresh request signal generator for producing a signal to request refreshing of said memory cell array,

(e) at least two memory address counters including a first memory address counter for storing an address signal representing a memory address at which a data signal transferred or to be transferred through said data transfer gate means is to be written into or read from said memory cell array, and a second memory address counter for storing an address signal representing a memory address at which said memory cell array is to be refreshed, and

(f) a control circuitry for selectively activating said first and second memory address counters and said data transfer gate means, the control circuitry comprising

(f-1) a refresh test control circuit responsive to the signals respectively produced by said data transfer request signal generator and said refresh request signal generator for producing output signals each depending one each of the signals from the signals generators respectively,

(f-2) an arbitrator circuit for determining the order of priority of the output signals produced by said refresh test control circuit and passing therethrough the signals from the refresh test control circuit in said order, and

(f-3) control signal generator means responsive to the signals passed through said arbitrator circuit for activating said data transfer gate means and said first memory address counter or said second memory address counter alone depending on the signal received from the arbitrator circuit,

wherein said refresh test control circuit has a first condition transparent to the signal from both of said data transfer and refresh request signal generators and operative to pass the signals from the signal generators to said arbitrator circuit and a second condition transparent to the signal from said data transfer request signal generator and, without respect to the signal from said refresh request signal generator, operative to pass the signal from the data transfer request signal generator to said arbitrator circuit not as a signal to request activation of said data transfer gates means but as a refresh request signal requesting refreshing of said memory cell array for enabling said control signal generator means to activate said second memory address counter responsive to the refresh request signal passed through the refresh test control circuit to said arbitrator circuit and through the arbitrator circuit to said control signal generator means.

4,807,197

INTEGRATED CIRCUIT WITH FUNCTION OF MONITORING AN INTERNAL SIGNAL

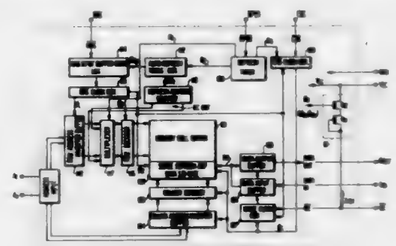
Hiroshi Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 10, 1985, Ser. No. 774,430

Claims priority, application Japan, Sep. 10, 1984, 59-189107

Int. Cl.[4] G11C *7/00*

U.S. Cl. 365—222 **10 Claims**



1. An integrated circuit, comprising:

a semiconductor chip;

a matrix of dynamic type memory cells arranged in rows and columns;

sense amplifiers;

means for selecting one of said rows;

first means for operatively generating a first timing signal for enabling said selecting means;

second means for operatively generating a second timing signal for enabling said sense amplifiers;

control means responsive to a control signal for enabling said first and second means, said first and second means being provided with a voltage within a predetermined voltage range;

an internal refresh control circuit responsive to a refresh control signal for generating an internal refresh control signal;

a refresh timing control circuit responsive to said internal refresh control signal for rendering said first and second means operative irrespective of said control signal so that contents of the memory cells are refreshed; and

an internal signal detection circuit, including;

a field effect transistor;

means for applying said internal refresh control signal to the gate of said field effect transistor;

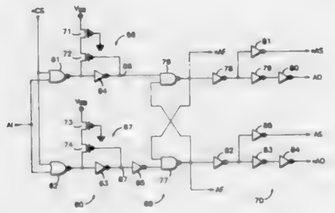
voltage switching which assumes a conductive state when a predetermined voltage, outside said predetermined voltage range, is impressed thereto; and

means for connecting said field effect transistor and said voltage switching means in series between first and second external terminals, wherein generation of said refresh

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control signal is detected by a current flowing between said first and second external terminals when said predetermined voltage is applied between said first and second external terminals.

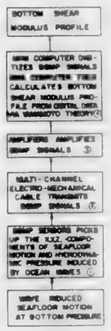
4,807,198
MEMORY INPUT BUFFER WITH HYSTERESIS AND DC MARGIN
Stephen T. Flannagan, Austin, Tex., and Peter H. Voss, Eersel, Netherlands, assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 28, 1987, Ser. No. 138,103
Int. Cl.[4] G11C *11/40, 13/00*
U.S. Cl. 365—230 **12 Claims**



1. An input buffer circuit for providing true and complementary signals in response to an input signal switching between first and second voltages, comprising:
- a first buffer having an input for receiving the input signal and, an output for providing a first intermediate signal responsive thereto;
- a second buffer having an input for receiving the input signal and, an output for providing a second intermediate signal responsive thereto;
- a cross-coupled latch having an inverting input coupled to the output of the first buffer, a non-inverting input coupled to the output of the second buffer, a first output for providing the true signal, and a second output for providing the complementary signal;
- a first hysteresis circuit coupled to the output of the first buffer for causing the first buffer to provide the first intermediate signal at a voltage which, for a first predetermined range of voltage of the input signal between the first and second voltages, is different for a transition of the input signal from the first voltage to the second voltage than for a transition of the input signal from the second voltage to the first voltage; and
- a second hysteresis circuit coupled to the output of the second buffer for causing the second buffer to provide the second intermediate signal at a voltage which, for a second predetermined range of voltage of the input signal between the first and second voltages, is different for a transition of the input signal from the first voltage to the second voltage than for a transition of the input signal from the second voltage to the first voltage.

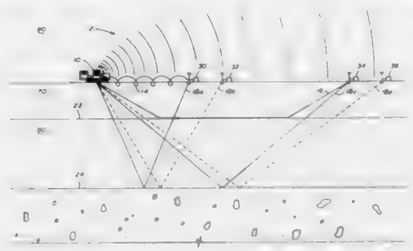
4,807,199
BOTTOM SHEAR MODULUS PROFILER
Tokuo Yamamoto; Michael Brown, both of Miami, Fla.; Tsuyoshi Torri, Chiba, Japan, and Alan Berman, Miami, Fla., assignors to University of Miami, Coral Gables, Fla.
Filed May 16, 1986, Ser. No. 863,980
Int. Cl.[4] G01V *1/36*
U.S. Cl. 367—15 **10 Claims**

1. An apparatus for measuring the shear modulus profile of a seafloor comprising:
- means for measuring the motion of the seabed in three dimensions;
- means for measuring the water wave pressure at the seabed floor; and



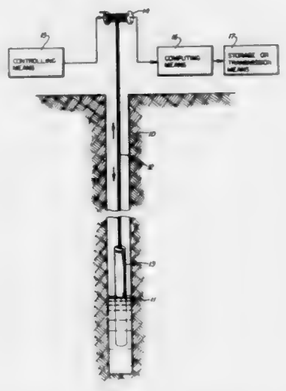
- means for converting the measurements of the motion of the seabed and the pressure at the seabed floor into a shear modulus profile.

4,807,200
METHOD AND APPARATUS FOR GATHERING SEISMIC DATA AND SELECTIVELY CONTROLLING ISOLATED DISTRIBUTED RECORDERS IN AN ISOLATED DISTRIBUTED RECORDING SYSTEM
Raul R. Montes, Houston, and Richard J. Kostelnicek, Dickinson, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.
Filed Mar. 26, 1987, Ser. No. 32,201
Int. Cl.[4] G01V *1/22*
U.S. Cl. 367—76 **34 Claims**



14. A method for gathering seismic data and remotely controlling isolated distributed recorders in an Isolated Distributed Recording System, comprising the steps of:
- (a) preconditioning individual isolated distributed recorders in an Isolated Distributed Recording System to respond selectively to encoded acoustic waveforms by effecting a plurality of control actions at the isolated distributed recorders, said encoded acoustic waveforms having a unique signal characteristic;
- (b) transmitting said encoded acoustic waveforms utilizing an acoustic seismic energy source for the purpose of producing said control actions at said Isolated Distributed Recording System;
- (c) effecting said control actions at said Isolated Distributed Recording System in response to said transmitted encoded acoustic waveforms;
- (d) storing said encoded acoustic waveforms at least one isolated distributed recorder;
- (e) referencing the time of arrival of said stored encoded acoustic waveforms to the time said stored encoded acoustic waveforms were transmitted so that said encoded acoustic waveforms function to provide information for the selection and control of said isolated distributed recorders and also to provide seismic data concerning the sub-surface geology; and
- (f) changing said encoded acoustic waveform's unique signal characteristic and repeating steps b, c, d, and e for effecting a plurality of control actions at said Isolated Distributed Recording System and for gathering seismic data concerning the sub-surface geology.

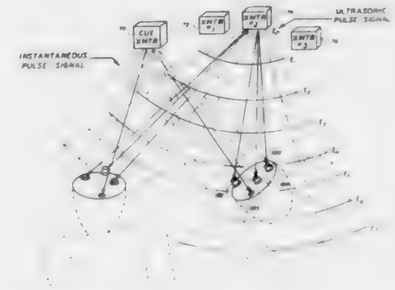
4,807,201
GROUNDWATER PRESSURE MEASUREMENT
Lawrence J. Fryda, Bloomington, and John W. Foster, Normal, both of Ill., assignors to Illinois State University, Normal, Ill.
Filed Mar. 25, 1988, Ser. No. 173,281
Int. Cl.[4] G01S *13/08, 15/08*
U.S. Cl. 367—99 **3 Claims**



1. An apparatus for measuring changes in groundwater pressure in a borehole, the apparatus comprising:
- (a) a probe comprising: a hollow tube having a smooth interior surface, an outside diameter of about 5 to 30 cm, and a length of about 0.5 to 10 m; an ultrasonic transmitter located at or near the top of the tube which emits ultrasonic waves at adjustable time intervals down the interior of the tube where the waves reflect off the groundwater; and an ultrasonic receiver located at or near the top of the tube which receives and registers the ultrasonic waves reflected from the groundwater;
- (b) a means to raise and lower the probe so the tube is partially submerged in the groundwater;
- (c) a means to control the emission of ultrasonic waves by the ultrasonic transmitter;
- (d) a means to compute the time interval from emission of the ultrasonic wave to receipt of the reflected ultrasonic wave and to convert the time into a distance or pressure measurement; and
- (e) a means to store or transmit the data.

4,807,202
VISUAL ENVIRONMENT SIMULATOR FOR MOBILE VIEWER
Allan Cherri, 330 N. Mathilda #904, Sunnyvale, Calif. 94086, and Peter W. Cooper, Rd. 2 Box 177A, Cherry Tree, Pa. 15724
Filed Apr. 17, 1986, Ser. No. 853,307
Int. Cl.[4] G09G *3/00*; **G06G** *7/78*
U.S. Cl. 367—129 **16 Claims**

1. Apparatus for periodically indicating the location and pitch, roll, and yaw orientation coordinates of a mobile unit, moveably disposed within a predefined implementation space, in terms of display images simulating an environment, comprising:
- emitting means including three ultrasonic transmitters, fixedly disposed on, and relative to said space, for sending ultrasonic pulses into said space;
- detecting means including three ultrasonic receivers fixedly disposed on, and relative to, said mobile unit, for receiving ultrasonic pulses sent from said transmitters;
- measuring means, operatively coupled both to said emitting means and to said detecting means, for measuring the transit time intervals from the time when each transmitter initiates sending an ultrasonic pulse until the times when



each of said three receivers receives that pulse, and for developing therefrom position indication signals;
- host computing means for storing graphic image data characterizing said environment, connected to receive input signals corresponding to said position indication signals and operative to use said image data to generate updated video image display signals representing said environment in the perspective from the position of said mobile unit; and
- video image displaying means, disposed fixedly with respect to said mobile unit, and coupled to receive said image display signals from said host computing means, for using said display signals to display images of said environment.

4,807,203
SIREN
John G. Powell, Northridge, Calif., assignor to Southern California Edison Co., Rosemead, Calif.
Division of Ser. No. 766,278, Aug. 16, 1985, Pat. No. 4,615,530.
This application Jul. 28, 1986, Ser. No. 867,070
The portion of the term of this patent subsequent to Dec. 17, 2002, has been disclaimed.
Int. Cl.[4] G10K *7/04*
U.S. Cl. 367—191 **5 Claims**

1. A method of generating an acoustic output comprising the steps of providing multiple acoustic output ports circumferentially about an axis around which the acoustic output is to be generated, periodically activating different output ports of the multiple acoustic output ports whereby the periodic output of generated sound from each of the output ports is a square wave with missing alternative pulses, transmitting said square wave pulses through circumferentially adjacent outputs, said alternative square wave pulses being out of phase and whereby the square wave pulses have a fundamental frequency which is

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substantially half of a frequency without missing pulses, and the square wave pulses have a second harmonic frequency



having substantially the same amplitude as the square wave pulse fundamental frequency.

4,807,204

MAGNETO-OPTICAL RECORDING MEDIUM HAVING PAIRS OF MUTUALLY CORRESPONDING RECORDING SEGMENTS, AND APPARATUS FOR RECORDING INFORMATION ON THE MEDIUM

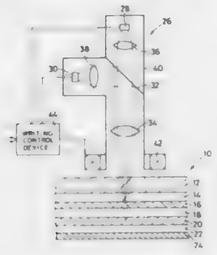
Shozo Mizutani; Riki Matsuda; Kazunari Taki, all of Nagoya; Yutaka Hattori, Aichi; Kazuyuki Miyaki, Ichinomiya, and Shinichi Hirabata, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 6, 1987, Ser. No. 70,346

Claims priority, application Japan, Jul. 7, 1986, 61-159345; Jul. 10, 1986, 61-162640; Jul. 12, 1986, 61-107315[U]; Jul. 17, 1986, 61-109960[U]; Jul. 17, 1986, 61-109961[U]; Jul. 17, 1986, 61-109962[U]

Int. Cl.[4] G11B *11/14, 13/04*

U.S. Cl. 369—13 **13 Claims**



1. A magneto-optical recording apparatus for writing information on a magneto-optical recording medium, wherein the improvement comprises:

said magneto-optical recording medium having at least one pair of magneto-optical storage layers each pair consisting of a first storage layer and a second storage layer, said first and second storage layers having at least one pair of corresponding recording segments, each of said at least one pair of mutually corresponding recording segments consisting of a first recording segment provided on said first storage layer and a second recording segment provided on said second storage layer;

first writing/erasing means for writing and erasing information on said first storage layer;

second writing/erasing means for writing and erasing information on said second storage layer; and

recording control means connected to said first and second writing/erasing means, for activating one of said first and second writing/erasing means to erase previous information already recorded on corresponding one of said first and second recording segments of said each pair of corresponding recording segments, while activating the other of said first and second writing/erasing means to write first new information on the other of said first and second recording segments,

upon reception of a command to write second new information, said recording control means activating said other writing/erasing means to erase said first new information recorded on said other of said first and second recording segments, while activating said one writing/erasing means to write said second new information on said one of said first and second recording segments.

4,807,205

PROCESS FOR WRITING WITH UPDATING AND READING INFORMATIONS ON A NON-ERASABLE SUPPORT ORGANIZED INTO SECTORS

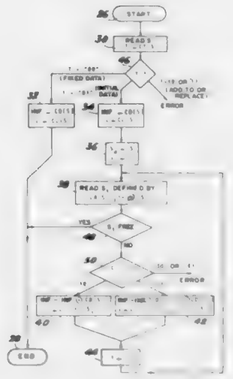
Michel Picard, 16 Cours du Buisson, 77420 Noisiel, France

Filed Nov. 26, 1986, Ser. No. 935,277

Claims priority, application France, Nov. 29, 1985, 85 17670

Int. Cl.[4] G11B *17/22*

U.S. Cl. 369—32 **4 Claims**



1. A method for writing information on a non-erasable support organized into sectors, each sector comprising at least one synchronization field, a data field, a length field, an address field and a redundancy field, into which is written a synchronization code into the synchronization field, data information into the data field and length of said data information into the length field, wherein there is also a type field into which is written a type code for indicating whether the data information is fixed or can be updated, wherein an address code is written into the address field for designating a free sector if said data information can be updated, so that said free sector is reserved for a possible updating of the data information and a selected value in the address field if said data information is fixed, writing into all fields of the sector being carried out by a single writing operation, the redundancy code written into the redundancy field function taking into account at least the contents of the data, length, type and address fields.

4,807,206

TRACK JUMP DETECTION SYSTEM

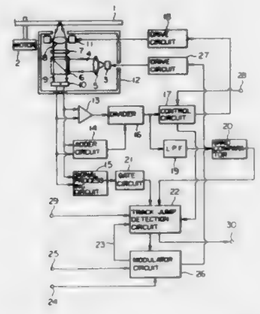
Mitsuro Moriya, Neyagawa; Toshiji Kanamaru, Katano; Kazuharu Shimogami; Hiroyuki Yamaguchi, both of Hirakata, and Katsuya Watanabe, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 12, 1987, Ser. No. 2,069

Claims priority, application Japan, Jan. 14, 1986, 61-5410; Jan. 14, 1986, 61-5411; Jan. 20, 1986, 61-9156; Jan. 26, 1986, 61-150283; Jan. 27, 1986, 61-152457

Int. Cl.[4] G11B *7/00*

U.S. Cl. 369—32 **34 Claims**



1. A track jump detection system comprising:

means for focusing a light beam from a light source and irradiating said focused light beam on a record carrier having tracks used for recording an applied signal,

means for shifting said light beam on said record carrier along a direction across said track,

track displacement detection means for detecting a positional displacement between said track and said light beam on the basis of light reflected from or transmitted through said record carrier,

tracking control means for controlling said light beam on said record carrier for positioning said light beam on said track, said tracking control means driving said shifting means in accordance with a positional displacement signal output from said track displacement detection means,

means for recording said applied signal on said record carrier and for changing the intensity of said light beam on the basis of said applied signal, and

off-track detection means for detecting when said light beam is positioned within a predetermined range in said track by said positional displacement signal, and for generating an alarm signal when said light beam is out of said predetermined range, said off-track detection means being prevented from generating said alarm signal during a predetermined period immediately after said recording means starts the recording operation, and said recording means stopping the recording operation when said off-track detection means generates said alarm signal.

4,807,207

TRACKING CONTROL DEVICE

Yoshikiyo Konno, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 10, 1987, Ser. No. 24,214

Claims priority, application Japan, Mar. 10, 1986, 61-34095[U]

Int. Cl.[4] G11B *7/09*

U.S. Cl. 369—46 **7 Claims**

1. A tracking control device, comprising:

at least one pair of detecting elements arranged to be disposed on respective sides of a data detecting point of one of a plurality of tracks of a recording medium during a tracking control operation;

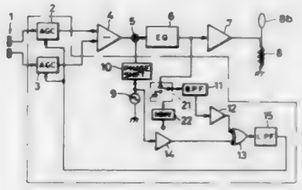
a differential amplifier for receiving outputs of said detecting elements to provide a tracking error signal;

an oscillating circuit for outputting a warbling signal having a predetermined frequency;

an addition circuit for adding said warbling signal to said tracking error signal;

drive means for causing said data detecting point to follow said one of said tracks according to an output signal of said addition circuit;

a separating circuit, receiving said output signal, for separating said warbling signal from said output signal applied to said drive means from said addition circuit;



a gain detecting circuit for detecting a gain of a tracking servo loop, including said detecting elements and said drive means, from an output of said separating circuit corresponding to said warbling signal;

at least one gain control circuit for controlling the gain of said tracking servo loop according to a detection output of said gain detecting circuit;

a position detecting circuit for detecting when said data detecting point is between tracks; and

interrupting means for interrupting application of said detection output to said gain control circuit when a detection signal of said position detecting circuit signifies that said data detection point is between tracks.

4,807,208

COMPACT-DISK CHANGER

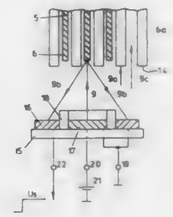
Erich Geiger, Unterkirnach, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Oct. 27, 1987, Ser. No. 113,881

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1986, 3636784

Int. Cl.[4] G11B *17/04, 17/22*

U.S. Cl. 369—39 **10 Claims**



1. A compact disk changer comprising: playing means; magazine means with an open side containing disks; means for moving said playing means and said magazine means back and forth relative to each other for removing various disks; optical means between said playing means and said magazine means for positioning said playing means in relation to said magazine; said magazine having walls facing said playing means and

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being nonreflective to light; said optical means comprising a light source on said playing means for projecting a beam of light to the open side of said magazine means, and a photoelement on said playing means for detecting light reflected from disks lying in said magazine means.

4,807,209

RECORD CARRIER BODY WITH A FOLLOW-ON TRACK AND APPARATUS FOR RECORDING INFORMATION THEREON

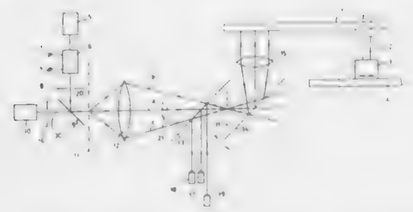
Pieter Kramer, and Jan Roos, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 318,169, Nov. 4, 1981, which is a continuation of Ser. No. 127,354, Mar. 5, 1980, which is a continuation of Ser. No. 902,713, May 4, 1978, which is a continuation of Ser. No. 619,039, Oct. 2, 1975, which is a continuation of Ser. No. 431,422, Jan. 7, 1974. This application May 31, 1983, Ser. No. 499,571

Claims priority, application Netherlands, Feb. 9, 1973, 7301830

Int. Cl.⁴ G11B *7/095, 7/00*

U.S. Cl. 369—44 **13 Claims**



7. An apparatus for writing information on a disk-shaped carrier body provided with a radiation sensitive layer and a continuous, generally circular diffractive follow-on track extending about the center of said disk-shaped record carrier body, said apparatus comprising first means for producing a write beam of radiation having an intensity sufficient to produce a change in said radiation sensitive layer, second means for producing a further beam of radiation, first means for projecting said write and further beams onto said record carrier body, said projecting means including a lens system for forming from said write beam a write spot on said radiation sensitive layer and for forming from said further beam a further spot of a predetermined size on said follow-on track, said write spot being spaced by a predetermined distance from said further spot, means for modulating said write beam in accordance with information to be recorded, means for rotating said carrier body about the center thereof so that a generally circular information track is recorded by said write beam in said radiation sensitive layer upon rotation of said carrier body, means for detecting the position of said further spot relative to said follow-on track, said follow-on track having a width smaller than the size of said further spot in the width direction and being configured so as to diffract the radiation of said further beam incident thereon, said detecting means including at least one radiation sensitive detector which supplies an electrical signal indicative of radiation incident thereon, and second means for projecting onto said detector only a predetermined portion of the radiation of said further beam which is diffracted by said follow-on track so that due to said diffraction by said follow-on track, the intensity of the radiation projected onto said detector and said electrical signal varies in dependence on movement of said further spot relative to said follow-on track in a direction transverse thereto, said apparatus further including means for moving said write spot in said transverse direction in response to said detecting means to thereby guide said write beam during recording of said information track in dependence on the position of said further spot relative to said follow-on track.

4,807,210

OPTICAL INFORMATION PROCESSING APPARATUS

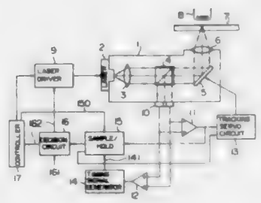
Toshimitsu Kaku, Sagamihara; Kazuo Shigematsu, Kitakatsushika; Yoshito Tsunoda, Mitaka, and Takeshi Maeda, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 8, 1987, Ser. No. 71,183

Claims priority, application Japan, Jul. 9, 1986, 61-159610

Int. Cl.⁴ G11B *7/00*

U.S. Cl. 369—44 **6 Claims**



1. An optical information processing apparatus comprising:
- a record medium having a guide track and intermittently arranged correction marks;
- an optical system for focusing light to said record medium;
- modulation means for changing an intensity of the light between a reproduce mode and a record mode;
- a detector for detecting a light reflected by said record medium to produce an electrical signal;
- track error detection means for detecting a tracking signal from said electrical signal;
- offset detection means for detecting a track offset from said electrical signal when said light irradiates said correction marks;
- tracking control means connected to said track error detection means and said offset detection means for correcting the tracking signal by the track offset to effect tracking control; and
- control means for deactivating the correction in a record mode and comparing an output level of said offset detection means with a predetermined level and controlling said modulation means in accordance with the comparison result.

4,807,211

APPARATUS FOR INSCRIBING AND/OR READING A RECORD CARRIER

Kurt W. Getreuer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 27, 1982, Ser. No. 382,737

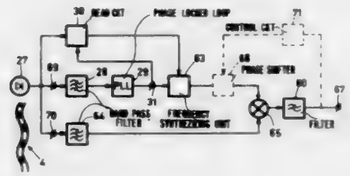
Claims priority, application Netherlands, May 29, 1981, 8102621

Int. Cl.⁴ G11B *7/095*

U.S. Cl. 369—44 **8 Claims**

1. In an apparatus for recording and/or reading digitally coded information of a fixed bit frequency on a record carrier comprising a disc-shaped substrate provided with a radiation-sensitive layer and a plurality of generally circular track portions arranged in a spiral or concentric track pattern, said track portions having a first periodic track modulation for generating a clock signal for synchronizing read-out or recording of said digitally coded information, said first track modulation having a first period corresponding to a frequency at which the power spectrum of the digitally coded information is at a substantially zero level, said track portions further having a second periodic track modulation in the radial direction of a second period superimposed on said first track modulation for

generating a tracking signal, said apparatus including means for projecting a beam of radiation onto said record carrier, means for producing relative movement between said beam and said record carrier so that said beam scans a given track portion and the radiation of said beam is modulated by said first track modulation with a first frequency corresponding to said first period at the scanning speed and is modulated by said second track modulation with a second frequency corresponding to said second period at the scanning speed, means for detecting radiation modulated by the record carrier, said detecting means supplying an electrical read-out signal having a first and second frequency component corresponding to said first and second frequency respectively, means for generating



said tracking signal and means responsive to said tracking signal for maintaining said beam centered on the track portion being scanned, the improvement wherein said means for generating said tracking signal includes first means for deriving, from said read-out signal, a first signal having a frequency equal to said first frequency, second means for deriving, from said read-out signal, a second signal having a frequency which is dependent on said second frequency, a frequency synthesizing circuit synchronized by said first signal for generating, independently of said second signal, a third signal of a frequency equal to said second frequency, and a synchronous detection circuit for mixing said second signal with said third signal so as to obtain said radial tracking signal.

4,807,212

CORRECTING FOR COMATIC ABERRATION IN AN OPTICAL HEAD OF AN OPTICAL DISK APPARATUS

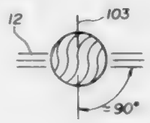
Tokuya Kaneda; Akira Saito, both of Odawara; Masateru Watanabe, Chigasaki; Tomoji Ozmi, Kanagawa, and Noboo Suzuki, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 24, 1987, Ser. No. 29,549

Claims priority, application Japan, Mar. 24, 1986, 61-64203

Int. Cl.⁴ G11B *7/00*

U.S. Cl. 369—44 **9 Claims**



1. An optical head for an optical disk apparatus having an optical disk with a track recess formed therein, comprising:
- means for forming a light spot and means for projecting said light spot onto the track recess for reading and writing information on a recording surface of the optical disk;
- means for receiving reflected light of the light spot reflected from the track recess including means for positioning and focusing said light spot onto the track recess including means having a plurality of photo detectors for receiving the reflected light and providing an output, said positioning and focusing means having means for receiving said output and generating a signal proportional to the deviation between the track recess and the light spot for controlling said light spot projecting means to minimize the deviation and thereby accurately position and focus the light spot onto the track recess;
- said means for projecting said light spot onto the track recess and for receiving the reflected light from said track recess including lens means having comatic aberration such that in a plane perpeadicular to an optical axis of said lens means, S-like interference fringes are created, said interference fringes having a direction of central parallel ones of the fringes; and
- means for positioning said lens relative to said track recess such that said direction of the central parallel ones of the fringes optically forms an angle with said track recess that is within a predetermined range.

4,807,213

LASER DRUM FOR USE IN RECORDING AND REPRODUCING INFORMATION ON OPTICAL TAPES

Seung T. Chung, Seoul; Hae W. Kwon, and Tae S. Park, both of Kyungki, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Feb. 24, 1987, Ser. No. 17,583

Claims priority, application Rep. of Korea, Feb. 28, 1986, 1986-1430

Int. Cl.⁴ G11B *7/09, 7/12*

U.S. Cl. 369—46 **6 Claims**



1. A laser drum for use in recording and reproducing information on an optical tape, comprising:
- an upper drum, which has two projection holes at the opposite sides of its lower circumferential edge, said upper drum supporting a fixing board on which is mounted first and second semiconductor lasers, a total reflective prism, first and second stoppers, first and second diffraction gratings, first and second beam splitters, first and second pair of object lenses, first and second condensing lenses, first and second photodetectors, an upper transformer having induction coils on its bottom side, and an upper rounded-board having looped metal bands on its bottom side; and
- a lower drum which has a slanting guide line projected on its surface and holds a lower transformer having induction coils on its top and a lower rounded-board having brushes which make contact with said looped metal bands;
- the first semiconductor laser radiating a first laser beam which is reflected by said total reflective prism to the first stopper, and the second semiconductor laser radiating a second laser beam which is reflected by said total reflective prism to the second stopper, the first laser beam passing through the first stopper which causes the first laser beam to have a circular section, and the second laser beam passing through the second stopper which causes the laser second beam second to have a circular section;
- the first laser beam proceeding through the first stopper to

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the first diffraction grating which diffracts the first laser beam into zero-order and (±) first-order beams, and the second laser beam proceeding through the second stopper to the second diffraction grating which diffracts the second laser beam into zero-order and (±) first-order beams;

the order beams originating from the first diffraction grating proceeding through the first beam splitter and proceed through the first pair of object lenses and thereby being focused through the first projection hole and upon said optical tape, and the order beams originating from the second diffraction grating proceeding through the second beam splitter and proceed through the second pair of object lenses and thereby being focused through the second projection hole and upon said optical tape;

said optical tape reflecting the order beams, which originate from the first diffraction grating back through the first projection hole, through the first pair of object lenses and to the first beam splitter, and said optical tape reflecting the order beams which originate from the second diffraction grating back through the second projection hole, through the second pair of object lenses and to the second beam splitter;

the first beam splitter directing the order beams, which were reflected back through the first pair of object lenses, through the first condensing lens to the first photodetector, the first photodetector detecting the order beams, and the second beam splitter directing the order beams, which were reflected back through the second pair of object lenses, through the second condensing lens to the second photodetector, the second photodetector detecting the order beams;

the first photodetector producing a plurality of output signals which are transmitted to said upper transformer and to said lower transformer, and the second photodetector producing a plurality of output signals which are transmitted to said upper transformer and to said lower transformer; and,

a control means to supply control signals to said first and second semiconductor lasers, said control signals of said control means being transmitted to said semiconductor lasers via said upper rounded-board and said lower rounded-board.

4,807,214

APPARATUS FOR RECORDING AND/OR READING INFORMATION ON AN OPTICAL RECORD CARRIER PROVIDED WITH PREFORMED TRACKS

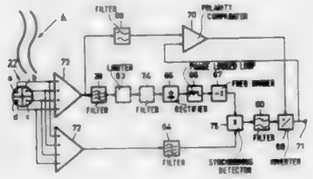
Kurt W. Getreuer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 23, 1981, Ser. No. 314,149

Claims priority, application Netherlands, Jun. 29, 1981, 8103117

Int. Cl.⁴ G11B *7/095, 7/007*

U.S. Cl. 369—46 **5 Claims**



1. An apparatus for recording and/or reading information on a record carrier comprising a disk-shaped substrate provided with a radiation sensitive information layer and a plurality of generally circular tracks arranged in a spiral or concentric track pattern, said tracks having a periodic radial track modulation having a predetermined period and being radially in phase from track to track for generating a radial tracking signal during recording or reading of the information, said apparatus comprising means for projecting a beam of radiation onto said record carrier, means for producing relative movement between said beam and said record carrier so that said beam scans a given track and the radiation of said beam is modulated by said track modulation with a frequency corresponding to said predetermined period, means for generating said tracking signal and means responsive to said tracking signal for maintaining said beam centered on said track being scanned, said tracking signal generating means including at least two radiation-sensitive detectors arranged on opposite sides of a line corresponding to the track direction and disposed in the path of said modulated radiation coming from the record carrier, each of said two detectors supplying an output signal in dependence on the modulated radiation incident thereon, means coupled to said two detectors for producing a difference signal representative of the difference between said output signals, said difference signal having a frequency corresponding to said predetermined period, means responsive to said modulated radiation for deriving therefrom a further signal having a frequency corresponding to said predetermined period, means for generating a higher, even harmonic of one of said difference and further signals, means for deriving from said higher harmonic a reference signal having a frequency corresponding to said predetermined period, and means for producing said tracking signal by synchronous detection of said reference signal and the other of said difference and further signals.

4,807,215

FLOPPY DISC LOADING APPARATUS

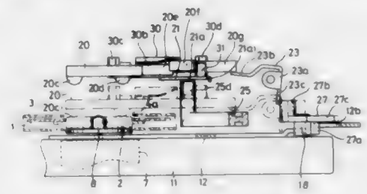
Takashi Hishizuma, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 30, 1987, Ser. No. 115,045

Claims priority, application Japan, Oct. 31, 1986, 61-259913

Int. Cl.⁴ G11B *23/02, 17/04*

U.S. Cl. 369—77.2 **4 Claims**



1. A disc loading apparatus comprising a main chassis having a disc spindle and a signal transducer, a slide chassis mounted on the main chassis for sliding movement between a first position and a second position, means biasing the slide chassis toward the first position, a disc holder being mounted on said main chassis for movement between a first position spaced away from said main chassis and a second position adjacent said main chassis, means for biasing said disc holder toward the second position, means for moving said disc holder to said first position against said means for biasing, a rotary arm being mounted on the main chassis for pivoting between a first and second position, said rotary arm having an arcuate cam surface formed thereon, said cam surface coacting with a stop on the slide chassis to lock the slide chassis in said second position when the rotary arm is in its second position, means biasing the rotary arm to said second position, a center core pressing arm being mounted on the disc holder for pivotable movement, spring means biasing the center core pressing arm toward the main chassis for pressing a center core of a disc cassette toward said disc spindle of the main chassis temporarily during insertion of the cassette into said apparatus, a protect arm cooperating with the rotary arm and the center core pressing arm for preventing the pressing action of the center core pressing arm against said center core, and means mounted on said disc holder cooperating with said slide chassis for lifting said center core pressing arm into a disengaged position when the slide chassis is in each of said first and second positions but releasing said center core pressing arm as the slide chassis moves between said first and second positions so that on inserting a disc cartridge into the disc holder, said rotatable arm is engaged and moved to a position to release said slide chassis to move toward said first position.

4,807,216

RECORDING DISC PLAYBACK APPARATUS

Ichiro Kawamura; Yoshitaka Fujioka, both of Osaka; Tetsuo Yoshikane, Katano, and Noboru Okuno, Sennan, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP85/00522, § 371 Date Dec. 22, 1986, § 102(e) Date Dec. 22, 1986, PCT Pub. No. WO87/01855, PCT Pub. Date Mar. 26, 1987

PCT Filed Sep. 19, 1985, Ser. No. 10,138

Int. Cl.⁴ G11B *17/04*

U.S. Cl. 369—77.2 **5 Claims**



1. A recording disc playback apparatus for use with a rectangular disc case having a case body defining therein an accommodating space for storing therein a disc-like recording medium and formed at one end thereof with an opening for drawing out said disc-like recording medium from said accommodating space, and a lid removably engaged with said opening, said recording disc playback apparatus comprising:

an external casing having a front surface formed therein with a case insertion opening adapted to receive only a front portion of said disc case including said opening, said lid and a part of said disc case to which said lid is engaged;

a turntable disposed in said external casing and adapted to rotate a said disc-like recording medium drawn out from said case body of said disc case and set thereon;

a reproducing head for reading signals on said disc-like recording medium rotated by turntable;

a lid releasing means disposed in said external casing in the vicinity of said case insertion opening, for releasing the engagement between said case body of said disc case and said lid;

a lid locking means disposed in said external casing and having a locking member adapted to disengageably lock with said lid of said disc case released from said case body;

a feed means for reciprocally feeding said lid locking means along a feed path between an advanced position where said lid locking means is advanced to substantially the same position as that of said lid releasing means and a retracted position where said lid locking means is retracted rearward beyond said turntable within said external casing, said lid being reciprocated in said external casing while said case body of said disc case is left at the position of said lid releasing means, said feed means also being associated with a means for drawing out said disc like recording medium form said case body and setting it on said turntable, when said lid locking means is retracted and returning said disc like recording medium into said case body when said lid locking means is returned to said advanced position.

4,807,217

MULTI-CHANNEL STEREO REPRODUCING APPARATUS

Teruhisa Ide, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

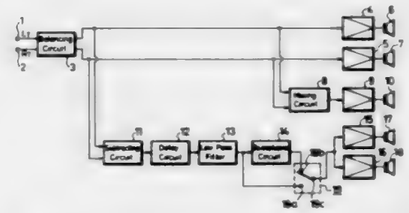
PCT No. PCT/JP86/00588, § 371 Date Jul. 22, 1987, § 102(e) Date Jul. 22, 1987, PCT Pub. No. WO87/03449, PCT Pub. Date Jun. 4, 1987

PCT Filed Nov. 18, 1986, Ser. No. 86,631

Claims priority, application Japan, Nov. 22, 1985, 60-263158

Int. Cl.⁴ H05B *7/094;* **H04R** *5/00;* **G06K** *9/50, 9/48*

U.S. Cl. 369—99 **4 Claims**



1. In a multi-channel stereo reproducing apparatus for reproducing a recording medium on which if a left front signal is taken as L_F, a right front signal is taken as R_F, a center front signal is taken as F and a rear signal is taken as B, these signals are encoded to left and right composite signals L_T and R_T respectively expressed as $L_T=L_F+(F/2)+(B/2)$ and $R_T=R_F+(F/2)-(B/2)$, the high frequency component of said rear signal B is pre-emphasized and then they are recorded, said multi-channel stereo reproducing apparatus being characterized in that there are provided a matrix circuit for producing said left composite signal L_T, said right composite signal R_T, a sum signal L_T+R_T of said left composite signal L_T and said right composite signal R_T and a difference signal L_T-R_T of said left composite signal L_T and said right composite signal R_T, reproducing circuit for reproducing said left composite signal L_T, said right composite signal R_T and said sum signal L_T+R_T and a reproducing circuit for reproducing said difference signal L_T-R_T through a delay circuit and a de-emphasis circuit, wherein the improvement is provided means for bypassing said de-emphasis circuit when reproducing a recording medium on which a 2-channel stereo signal formed of only said left and right front signals L_F and R_F is recorded in which the center front signal F and the rear signal B are not encoded at all is recorded so that the high frequency component of the sound reproduced by the rear loudspeakers is alternated unnaturally.

4,807,218

SYSTEM FOR RECORDING DIGITAL INFORMATION USING A REGULAR ARRAY OF DISCRETE MICROMIRRORS

Arthur M. Gerber, 350 Thames Drive, Colorado Springs, Colo. 80906

Continuation of Ser. No. 700,735, Feb. 11, 1985, abandoned. This application Aug. 27, 1987, Ser. No. 91,294

Int. Cl.⁴ G11C *13/04;* **G11B** *7/00*

U.S. Cl. 369—100 **15 Claims**

1. A system for recording digital information comprising

a laser beam source,

a recording medium having

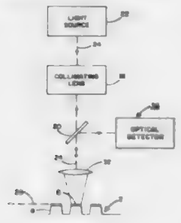
a substrate, and

an array of equally spaced, discrete, immediately detectable alterable micromirrors arranged in equally spaced parallel rows, each of said micromirrors having in its

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unaltered state a reflectivity of at least twenty percent of the laser beam produced by said source, and being capable of recording at least one bit of digital information,

said laser beam source being capable of sufficient intensity to immediately reduce the reflectivity of a micromirror of said medium exposed to said beam,



scanning means arranged to focus said laser beam successively on and identify individual micromirrors of said medium, and

modulation means arranged to modulate said beam in accordance with the digital information to be recorded.

4,807,219

OPTICAL PICKUP FEED UNIT OF OPTICAL DISK PLAYER

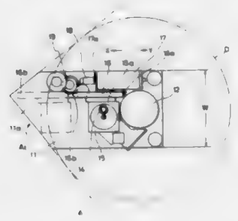
Shoichi Kyohya, Kakuda, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jan. 21, 1987, Ser. No. 5,752

Claims priority, application Japan, Mar. 25, 1986, 61-44139[U]

Int. Cl.⁴ G11B *3/10, 17/06*

U.S. Cl. 369—220 **5 Claims**



1. In an optical disk player including a drive chassis provided with: a spindle motor for driving a turntable on which an optical disk is supported; an optical pickup with a rack which is movable while being guided in the direction of approaching-/separating with respect to said turntable; and a feed motor for applying a driving force to said rack,

an optical pickup feed unit characterized in that said rack is disposed on an operating line crossing said spindle motor, and an end portion of said rack is positioned completely inside the area of a corner portion of a square circumscribing the outer circumference of the optical disk, whereby side dimensions of said square equal the diameter of said optical disk, when said optical pickup is moved to a position remotest from said turntable.

4,807,220

OPTICALLY RECORDABLE CARRIER

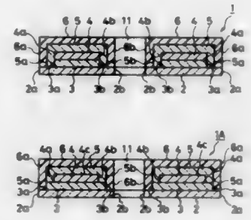
Seiichi Miyai, Kanagawa, and Junichi Akamatsu, Saitama, both of Japan, assignors to Sony Corp., Tokyo, Japan

Filed Apr. 15, 1987, Ser. No. 38,765

Claims priority, application Japan, Apr. 16, 1986, 61-88944

Int. Cl.⁴ G11B *3/70*

U.S. Cl. 369—286 **13 Claims**



1. An optically recordable carrier, comprising a substrate, an optical record layer on said substrate, and a protective film of inorganic material interposed between said optical record layer and said substrate and further enveloping all surfaces of said optical record layer, wherein said optical record layer and said substrate are of annular shape, and said protective film of inorganic material includes a first protective layer interposed between said substrate and said optical record layer and a second protective layer of the same inorganic material as said first protective layer and being formed so as to cover an upper surface and inner and outer peripheral edge surfaces of said optical record layer and to fuse with said first protective layer.

4,807,221

DIGITAL SIGNAL MULTIPLEX DEVICE

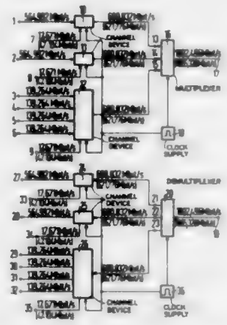
Baldur Stummer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 25, 1985, Ser. No. 801,289

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1984, 3443239

Int. Cl.⁴ H04J *3/06*

U.S. Cl. 370—102 **13 Claims**



1. A digital signal multiplex device comprising:

a multiplex portion comprising first channel means for converting 564.992 Mbit/s signals into first synchronous intermediate time division multiplex signals in which every n^{th} time slot in the pulse frame of the intermediate time division multiplex signals is provided for auxiliary signals and the remaining time slots are provided for the main information to be transmitted and for a first stuffable bit, second channel means for converting four 139.264 Mbit/s signals into the first synchronous intermediate time division multiplex signals in which every n^{th} time slot in the pulse frame of the intermediate time division multiplex signals is provided for auxiliary signals and the remaining time slots are provided for the four main information to be transmitted interlaced bit-by-bit and for respectively one first and m second stuffable bits including means for providing for four 139.264 Mbit/s signals a superframe of four pulse frames in which a stuffing information and a channel number of a 139.264 Mbit/s signal are inserted in each pulse frame as auxiliary signals, and a multiplexer connected to said first and second channel means for interlacing the intermediate time division multiplex signals bit-by-bit to form a first time division multiplex signal of a higher order; and

a demultiplex portion for demultiplexing the first time division multiplex signal of a higher order into second intermediate time division multiplex signals, including third channel means for converting second intermediate time division multiplex signals into plesiochronic 564.992 Mbit/s signals by destuffing and blanking of auxiliary signals, and fourth channel means for converting second intermediate time division multiplex signals into plesiochronic 139.264 Mbit/s signals by destuffing and blanking of auxiliary signals.

4,807,222

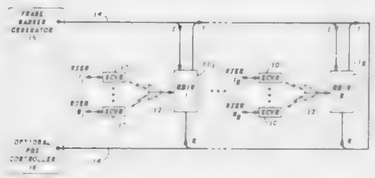
CORDLESS ACCESSED HIGH-SPEED HIGH-CAPACITY LOCAL AREA NETWORKS

Noach Amitay, Tinton Falls, N.J., assignor to American Telephone and Telegraph Company AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 25, 1986, Ser. No. 899,647

Int. Cl.⁴ H04J *3/02*

U.S. Cl. 370—85 **15 Claims**



1. A Local Area communications network (LAN) comprising:

a communications bus (**14,40**) which is routed along a predetermined path within an area to be serviced by the LAN; and

a plurality of regional bus interface units (**11**) (RBIUs) disposed at separate selected points around the area to be serviced by the LAN, each RBIU comprising:

means (**12, 27**, FIG. 2–3; **12, 35**, FIG. 5) for providing cordless, low-level radiation, two-way communications between the RBIU and each user of a separate group of one or more network users assigned to, and located in, the proximity of the RBIU using a predetermined communications protocol;

transmitting means (**20–22, 25–26, 28**, FIGS. 2–3) for (a) forming an information signal received by the cordless transmission means from a user of the associated group of users into a separate packet of information with a predetermined format including a destination user's address, (b) detecting when the communications bus is not currently propagating a packet of information from another RBIU of the network that would interfere with the transmission of the formed packet of information, and (c) transmitting the formed packet of information received from a user of the group assigned to the RBIU onto the communications bus in a detected free packet period; and

receiving means (**30, 32–34**, FIG. 5) for (a) receiving formatted information signals propagating on the communications bus, (b) detecting from an included destination user's address whether or not each received information signal is destined for a user of the group of users assigned to the RBIU, and (c) delivering an information signal destined for one of said network users to the cordless two-way transmission means for transmission to the destined user.

4,807,223

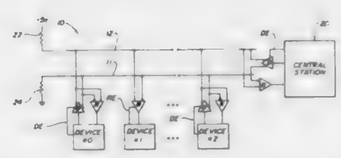
COMMUNICATIONS PROTOCOL FOR DISTRIBUTED STATION NETWORK

Charles A. Wells, Clearwater, Fla., assignor to Critikon, Inc., Tampa, Fla.

Filed Oct. 8, 1987, Ser. No. 106,748

Int. Cl.⁴ H04J *3/02*

U.S. Cl. 370—85 **13 Claims**



1. In a communications network employing a plurality of transmitting devices capable of sending messages over a common message line, said messages being comprised of one or more message units of predetermined durations, a protocol for enabling a transmitting device to gain exclusive access to the line independent of a central line access controller, said protocol comprising the steps of:

(a) monitoring the message line for at least the duration of a message unit to determine that the line is idle; and if so

(b) asserting the line for a predetermined period with a binary signal that differs from a valid message and is unique to the transmitting device seeking line access; and then

(c) monitoring the message line for a second predetermined period which is less than said monitoring duration of step (a) to determine the absence of binary signals thereon; and if so,

(d) recognizing that the transmitting device may now gain exclusive access to the line.

4,807,224

MULTICAST DATA DISTRIBUTION SYSTEM AND METHOD

Steven E. Narcus, 9909 Sorrel Ave., Potomac, Md. 20854; John M. Brazan, 404 Suffield Dr., Gaithersburg, Md. 20878, and Gerald A. Maria, 12528 War Admiral Way, Darnestown, Md. 20878

Filed Aug. 21, 1987, Ser. No. 87,850

Int. Cl.⁴ H04J *3/24;* **G08C** *25/02;* **H04L** *1/00*

U.S. Cl. 370—94 **35 Claims**

1. A reliable, high performance data communication system comprising:

data source means for assembling data into data packets and transmitting respective said data packets as they become full with a predetermined amount of data, or if not full, at an occurrence of a reference interval of time, each of said data packets having data corresponding to data packet sequencing data and an information field; and

a plurality of receiver means for receiving said transmitted data packets, each said receiver means having failure detection means for checking for failures in the reliable receipt of said data packets by monitoring:

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said data packet sequencing data; and

for receipt of a respective data packet within each expiration of a period of time corresponding to said reference interval of time;

whereby both receipt of a data packet having data packet



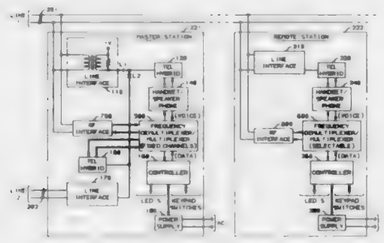
sequencing data which does not match a next expected data packet sequencing data of a predetermined sequence, and also a failure to receiver a respective data packet within an expiration of a period of time corresponding to said reference interval of time, are indicative of a failure in a reliable receipt of said data packets.

4,807,225

TELEPHONE LINE CARRIER SYSTEM

Richard C. Fitch, Noblesville, Ind., assignor to American Telephone and Telegraph Company, AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Feb. 2, 1987, Ser. No. 10,248
Int. Cl.[4] H04J *1/02, 1/14*
U.S. Cl. 370—71 **19 Claims**



1. Telephone station apparatus for use at a subscriber's premises, adapted to be parallel connected onto a first wire-pair that extends between said premises and a telephone line switching system, the apparatus including means for transmitting and receiving electrical signals substantially in a frequency band below 4 kHz,

characterized by:

a first modulator, having input and output ports, responsive to the transmitting means for converting electrical signals at its input port and in the frequency band below 4 kHz into electrical signals in a first frequency band above 4 kHz at its output port;

means interconnecting the output port of the first modulator with the first wire-pair;

a first demodulator, having an input port connected to the first wire-pair, for converting signals at its input port and in a second frequency band above 4 kHz into electrical signals in the frequency band below 4 kHz at an output port thereof;

means interconnecting the output port of the first demodulator with the receiving means;

means responsive to one or more telephone station control signals or status indicators for encoding same into a digital data signal;

a second mdoualtor, having input and output ports, responsive to the digital data signal at its input port for converting same into an electrical signal in a third frequency band above 4 kHz at its output port; and

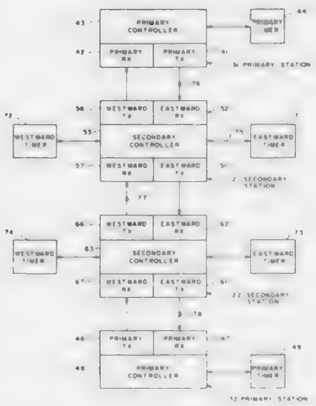
means interconnecting the output port of the second modulator with the first wire-pair, whereby additional channels are added to an existing wire-pair without interference with, or displacement of, voiceband services already present on the wire-pair.

4,807,226

SECONDARY STATION OPERABLE IN A DATA COMMUNICATION NETWORK LIKE A PRIMARY STATION UPON OCCURRENCE OF A FAULT

Yoshihiro Naka, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 23, 1987, Ser. No. 7,135
Claims priority, application Japan, Jan. 24, 1986, 61-14159
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—8 **3 Claims**



1. A secondary communication equipment for use in a data communication network between a pair of primary communication equipments, each of said primary communication equipments being adapted for successively transmitting signal combinations at predetermined time intervals, each signal combination comprising a flag; said secondary communication equipment comprising:

detecting means for detecting said flag in each signal combination;

transmitting means coupled to said detecting means and responsive to a detection of said flag for transmitting a first combined signal towards a particular one of said primary communication equipments, said first combined signal comprising said flag and a data signal which should be transmitted from said secondary communication equipment towards said particular one of the primary communication equipments; and

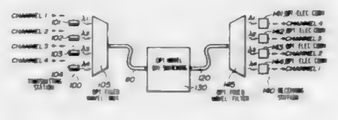
controlling means coupled to said detecting means for controlling said transmitting means to cause said transmitting means to transmit a second combined signal towards a different one of said primary communication equipments in response to said detecting means failure to detect the flag that is transmitted from said particular one of the primary communication equipments, said controlling means causing said transmitting means to so transmit after a lapse of said predetermined time interval following the last previous detection of the flag transmitted from said particular one of the primary communication equipments provided that said controlling means detects the flag transmitted from said different one of the primary communication equipments, said second combined signal comprising said data signal and the flag transmitted from said different one of the primary communication equipments.

4,807,227

OPTICAL WAVELENGTH-DIVISION SWITCHING SYSTEM WITH COHERENT OPTICAL DETECTION SYSTEM

Masahiko Fujiwara; Misoru Shikada, and Kazuhisa Kaede, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 15, 1987, Ser. No. 108,679
Claims priority, application Japan, Oct. 15, 1986, 61-245842
Int. Cl.[4] H04B *9/00*
U.S. Cl. 370—3 **2 Claims**



1. An optical wavelength-division switching system with coherent optical detection system, comprising,

means for dividing an input wavelength division multiplexed optical signal into a predetermined number of wavelength division multiplexed optical signals, said predetermined number of corresponding to the number of channels of an optical communication system,

means for reproducing a predetermined number of electric signals from said predetermined number of wavelength division multiplexed optical signals, said electric signals being separated from each other to correspond to said channels,

means for converting said predetermined number of electric signals to a predetermined number of optical signals, said predetermined number of optical signals being controlled to have individual frequencies in accordance with a specified switching condition of said optical communication system, and

means for combining said predetermined number of optical signals to provide an optical wavelength division multiplexed optical signal,

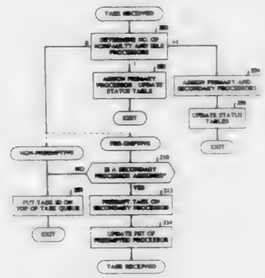
wherein said means for reproducing is composed of a predetermined number of optical signal detectors, each of said optical signal detectors including a wavelength tunable light source for producing a local oscillation light having an optical frequency controlled in accordance with said specified switching condition, an optical combiner for combining one of said predetermined number of wavelength division multiplexed signals with said local oscillation light to produce an intermediate frequency optical signal, an optical-electrical converter for converting said intermediate frequency optical signal to an intermediate frequency electrical signal, and a demodulator for demodulating said intermediate frequency electric signal to produce one of said predetermined number of electric signals.

4,807,228

METHOD OF SPARE CAPACITY USE FOR FAULT DETECTION IN A MULTIPROCESSOR SYSTEM

Anton T. Dahbura, Bedminster; William J. Hery, Meadham, and Krishan K. Sabnani, Berkeley Heights, all of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 18, 1987, Ser. No. 27,541
Int. Cl.[4] G06F *11/20*
U.S. Cl. 371—9 **21 Claims**



1. A method of detecting faults in a multiprocessor system in which processing tasks are executed by plural ones of the processors and the results from each of the processors compared, characterized by the steps of

ascertaining if one or more of the processors are idle response to an initiation of a computing task and, if so,

assigning the task to a primary idle one of the processors if an idle processor is available,

assigning the task to a secondary processor if a second idle processor is available,

if a secondary processor is assigned,

comparing the task results of the primary and secondary processors,

setting an indication in a disagreement table that the primary and secondary processors disagree if the task results of the primary and secondary processors do not compare, and

periodically analyzing indications in the disagreement table according to a predetermined algorithm to determine faulty ones of the processors.

4,807,229

SEMICONDUCTOR DEVICE TESTER

Tetsuo Tada, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1987, Ser. No. 50,549
Claims priority, application Japan, May 20, 1986, 61-115008
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—27 **6 Claims**

1. A semiconductor device tester comprising

a first data generator for generating first test pattern data varying randomly,

a second data generator for generating second test pattern data defined algorithmically,

a third data generator for generating third test pattern data being serial, and

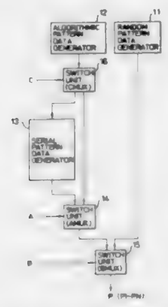
means for selecting and combining the test pattern data of the first, second and third data generators to output a fourth test pattern data,

said selecting and combining means appying at least part of the test pattern data from the second data generator to one of the first data generator and the third data generator,

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228-660 O.G.-89-22

said one of the first data generator and the third data generator being responsive to said at least some of the test pattern



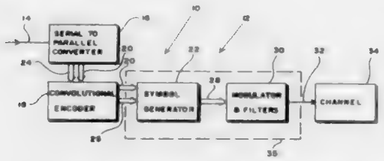
data from the second data generator for producing the first test pattern data or the third test pattern data.

4,807,230

FRAME SYNCHRONIZATION

Rangarajan Srinivasagopalan, Coral Springs, and James D. Pruett, Ft. Lauderdale, both of Fla., assignors to Racal Data Communications Inc., Sunrise, Fla.

Filed May 29, 1987, Ser. No. 55,805
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—46 **27 Claims**



1. In a modulation-demodulation system including a transmitter having a convolutional encoder for transforming digital information bits into a plurality of expanded bit sequences with each of said expanded bit sequences having a plurality of symbol-selecting bits and a plurality of bit groups of subset-selecting bits, said bit groups of said expanded bit sequences defining a plurality of consecutive frames of said bit groups and said transmitter further having multidimensional coded modulation means coupled to said convolutional encoder to receive said expanded bit sequences, said multidimensional coded modulation means being responsive to each said expanded bit sequence for selecting during each of a plurality of group intervals a multidimensional symbol from a multidimensional symbol subset, said multidimensional symbol being composed of a plurality of 2-dimensional symbols, each of said group intervals including a plurality of symbol intervals, and said multidimensional coded modulation means being operable for generating a modulated carrier signal by modulating a carrier signal with one of said 2-dimensional symbols during each of said symbol intervals and for transmitting said modulated carrier signal over a transmission medium; and said system further including a receiver having demodulation means for receiving said modulated carrier signal from said transmission medium and for demodulating said modulated carrier signal to obtain a baseband signal and slicer means coupled to said demodulation means to receive said baseband signal, said slicer means being operable for obtaining from said baseband signal one of said bit groups of said subset-selecting bits for each of said symbol intervals, the improvement in said receiver comprising:

synchronizer means including window means coupled to said slicer means to receive said bit groups, said window means being operative for grouping said bit groups into a plurality of sets of candidate frames with there being one of said sets of said candidate frames for each of a plurality of successive time periods and with each of said candidate frames having the same number of said bit groups as each of said consecutive frames of said transmitter, said candidate frames of each said set including a received frame and a plurality of successive said candidate frames with each said successive candidate frame having an offset from a previous said candidate frame of one of said bit goups so that said each set has a number of said candidate frames equal to said number of said bit groups in each of said candidate frames, said candidate frames of said plurality of successive time periods having a same said offset define one of a plurality of series of said candidate frames;

said synchronizer means further including parity check means coupled to said window means to receive said series of candidate frames, said parity check means being operable for repeatedly calculating an output for each of said series of candidate frames using a parity check equation; and

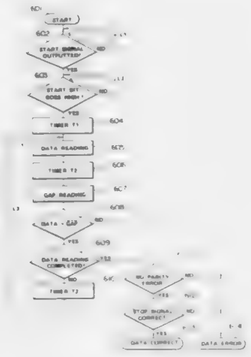
said synchronizer means further including comparator means coupled to said parity check means to receive said outputs therefrom, said comparator means being operable for comparing said outputs of said parity check means for each of said series of candidate frames over a number of said time periods and for selecting one of said series of candidate frames which gives one of said outputs indicative of synchronization with said consecutive frames of said transmitter.

4,807,231

MULTIPLEX COMMUNICATION METHOD

Morio Sato, Yokohama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Mar. 3, 1987, Ser. No. 21,345
Claims priority, application Japan, Mar. 8, 1986, 61-50772; Mar. 8, 1986, 61-50774
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—55 **8 Claims**



1. A multiplex communication method of transferring data between a plurality of nodes via a single signal line in a time sharing manner; the data transmitted from each of said nodes including a start bit, data bits and a party bit in a serial order; the data being associated with and interposed between a start signal at a first level and a stop signal at a second level; each of the start bit, data bits and parity bit being composed of a forward half portion representing data contents and a rearward half portion representing a gap; signal levels of the forward and rearward half portions of said each bit being in inverted relation to each other, said method comprising the step of:

coupling said nodes to said signal line through means which transmits a signal having said first level and blocks a signal having said second level, in the event that a signal at a node is not the same as the signal on said signal line,

determing whether the signal levels of said forward and rearward portions of each bit of the data at each of said nodes are in inverted relation to each other and

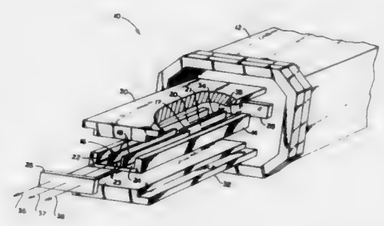
deciding that said data at each node is correct is said inverted relation is detected.

4,807,232

PHASE LOCKED STAGGERED DIELECTRIC RIDGE ARRAY WAVEGUIDE GAS LASER

Richard A. Hart, Wethersfield; Leon A. Newman, South Windsor, and John T. Kennedy, Meriden, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1987, Ser. No. 138,898
Int. Cl.[4] H01S *3/098*
U.S. Cl. 372—18 **16 Claims**



1. A phase-locked ridge waveguide gas laser, comprising:

a body circumferentially bounding an internal space extending along a central plane and having length and width dimensions parallel to said central plane and a height dimension normal to said central plane;

a gaseous lasing medium contained in said internal space;

excitation means disposed on said body for exciting said gaseous medium at radio frequency with attendant light emission from said gaseous medium;

light-reflecting means so positioned relative to said body as to provide lasing of said light emission; and

partitioning means for partitioning said internal space into at least two arrays of laser resonator cavities,

each of said cavities having such width as to sustain a guided mode of the lasing light emission, extending along said length dimension and being spaced from an adjacent cavity of the same cavity array in the direction of said width dimension,

said partitioning means including at least two arrays of ridges projecting from said body into said internal space along said height dimension and respectively delimiting said cavities of one and the other of said cavity arrays, and

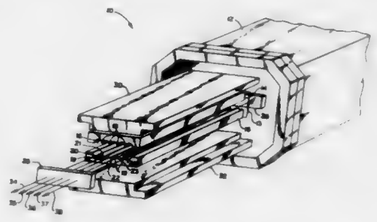
said ridges of each of said ridge arrays being situated at an opposite longitudinal side of a transverse plane that is parallel to said height and width dimensions from those of the respective other ridge, array being offset relative to those of said other ridge array in the direction of said width dimension by substantially one-half of said cavity width, and having such a cross- sectional configuration that a cavity of one of said cavity arrays alignedly opens into only a portion of each of two adjacent ones of said cavities of the respective other cavity array.

4,807,233

PHASE LOCKED CUSP-SHAPED DIELECTRIC RIDGE GAS LASER

Richard A. Hart, Wethersfield; Leon A. Newman, South Windsor, and John T. Kennedy, Meriden, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1987, Ser. No. 138,899
Int. Cl.[4] H01S *3/098*
U.S. Cl. 372—18 **7 Claims**



1. A phase-locked ridge waveguide laser, comprising:

a body circumferentially bounding an internal space extending along a central plane and having length and width dimensions parallel to said central plane and a height dimension normal to said central plane;

a gaseous lasing medium contained in said internal space;

excitation means disposed on said body for exciting said gaseous medium at radio frequency with attendant light emission from said gaseous medium;

light-reflecting means so positioned relative to said body as to provide lasing of said light emission; and

partitioning means for partitioning said internal space into a plurality of cylindrical laser resonator cavities each sustaining a guided mode of the lasing light emission, each of said cavities extending along said length dimension and being spaced from an adjacent cavity by a distance in the direction of said width dimension, said partitioning means including a plurality of cusp-shaped ridges extending into said internal space along said height dimension in respective aligned pairs and at least one of said ridges of each pair terminating short of said central plane to provide with the respective other ridge of the pair a gap which connects two adjacent ones of said laser resonator cavities for phase-locking said guided modes in such cavities.

4,807,234

PHASE LOCKED ALTERNATING DIELECTRIC RIDGE GAS LASER

Richard A. Hart, Wethersfield; Leon A. Newman, South Windsor; Archie D. Heath, Enfield, and John T. Kennedy, Meriden, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1987, Ser. No. 138,900
Int. Cl.[4] H01S *3/098*
U.S. Cl. 372—18 **4 Claims**

1. A phase-locked ridge waveguide laser, comprising:

a body having a first and a second major wall and two minor walls extending between said major walls, said major and minor walls together circumferentially bounding an internal space within said body;

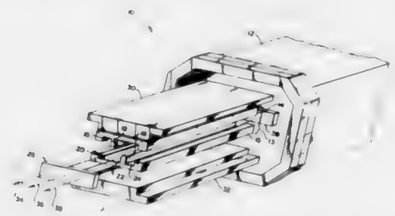
a gaseous lasing medium contained in said internal space;

excitation means disposed on said body for exciting said gaseous medium at radio frequency with attendant light emission from said gaseous medium;

light-reflecting means positioned relative to said body in such a manner as to provide lasing of said light emission; and

partitioning means for partitioning said internal space into at least three elongated laser resonator cavities each sustain-

ing a guided mode of the lasing light emission, said partitioning means including a plurality of dielectric ridges connected to and extending in an alternating fashion from said first and from said second major walls of said body into and across said internal space toward the respective other of said first and second major walls and terminating a predetermined distance from said other of said first and



second major walls to provide between themselves and the respective other of said first and second major walls respective gaps each of which connects two adjacent ones of said laser resonator cavities for phase-locking said guided modes in such cavities, said gaps being alternatively situated at said second and said first major walls to discriminate against higher-order transverse modes.

4,807,235

SEMICONDUCTOR LASER DEVICE

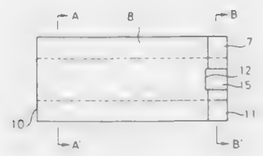
Takahiro Suyama; Kohsei Takahashi, both of Tenri; Saburo Yamamoto; Toshiro Hayakawa, both of Nara, and Masafumi Kondo, Tenri, all of Japan, assignors to 501 Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 9, 1986, Ser. No. 905,516

Claims priority, application Japan, Sep. 11, 1985, 60-201200

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—19 **4 Claims**



1. In a semiconductor laser device comprising a multi-layered semiconductor crystal containing an active region for laser oscillation, a first cavity facet, and a second cavity facet, the device wherein

said first facet has a recessed portion constituting a recessed facet, said recessed facet having a width less than the width of said active region, and said recessed facet being positioned such that portions of said active region extend past said recessed facet on both sides of said recessed facet to said first cavity facet to form extended portions, said extended portions constituting light-absorbing regions by which light in a high-order transverse mode is absorbed to a greater extent than that in a fundamental transverse mode, thereby achieving laser oscillation in a stable fundamental transverse mode up to a high output power.

4,807,236

GAS LASER WITH HIGH-FREQUENCY EXCITATION

Hinrich Martinsen, Quickborn; Samuel Simonsson, and Peter Wirth, both of Wissen, all of Fed. Rep. of Germany, assignors to Rofin-Sinar Laser GmbH, Hamburg, Fed. Rep. of Germany

Filed Jul. 13, 1987, Ser. No. 72,310

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1986, 8619083[U]

Int. Cl.⁴ H01S *3/03*

U.S. Cl. 372—33 **6 Claims**



1. In a waveguide gas laser of the type having a laser tube of a given diameter, an inlet block adapted to direct a gas into the tube, an outlet block adapted to discharge the gas from the tube, at an elevated temperature, a pair of externally mounted high conductivity metal electrodes adapted to apply a high frequency excitation signal to the tube for exciting the laser, the electrode pair being situated between the outlet block and the inlet block, the improvement comprising a disc extending about the tube in a plane substantially perpendicular to the axis of said tube, having a high dielectric constant, and being positioned between said electrodes and said outlet block.

4,807,237

METHOD AND APPARATUS FOR OPERATING A DYE LASER WITH A PROTON TRANSFER REACTION

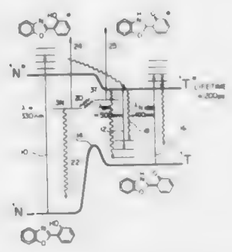
Nikolaus Ernsting, Göttingen, Fed. Rep. of Germany, assignor to Max-Planck -Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Jul. 18, 1986, Ser. No. 888,128

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1985, 3525689

Int. Cl.⁴ H01S *3/20*

U.S. Cl. 372—53 **16 Claims**



1. Operating process for a dye-laser, comprising the steps of exciting, by a pumping radiation pulse, a normal form of a chemical molecule system, capable of a proton-transfer reaction, from a ground state (^1N) of said normal form to an excited state ($^1N^*$) thereof which then spontaneously converts itself with a very short first time constant by proton transfer reaction into a laser-capable excited state ($^1T^*$) of a tautomeric form of said system which tends to decay by a mix of a radiatively stimulated transition into its ground state (^1T) and a radiationless transition into its ground state (^1T) and a radiationless transition into its lowest triplet state (^3T), said mix depending on the temperature, said radiationless transitions together having a second time constant, said ground state (^1T) of said tautomeric form having a higher energy level than said ground state (^1N) of said normal form, said triplet sate (^3T) of said tautomeric form being in equilibrium with the lowest triplet state (^3N) of the normal form, said triplet states (^3T and ^3N) of the tautomeric or of the normal form absorbing light at wavelengths corresponding to that emitted by the dye-laser and reverting to their respective ground state (^1T and ^1N) with a relatively large third time constant, and/or said ground staste of the said tautomeric form (^1T) absorbing light at wavelengths corresponding to that emitted by the dye-laser and reverting to the ground state (^1N) of the normal form with a relatively large third time constant, and further comprising:

performance of the pumping step by producing a rise of pumping radiation intensity to a value sufficient for the emission of a short laser pulse, said rise of intensity to said value being produced in an interval which is shorter than twice said second time constant and, then,

during the remainder of said pumping radiation pulse maintaining said pumping radiation at an intensity which does not rise further, if at all, at a rate of more than 10% per interval defined by said second time constant.

4,807,238

A SEMICONDUCTOR LASER DEVICE

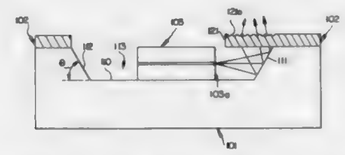
Kiyoshi Yokomori, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1987, Ser. No. 24,585

Claims priority, application Japan, Mar. 12, 1986, 61-54122; Apr. 28, 1986, 61-96674; Sep. 17, 1986, 61-217079

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—32 **18 Claims**



11. A semiconductor laser device which comprises:

(a) a base plate having a top surface;

(b) a mask layer having a predetermined pattern provided on said top surface of said base plate;

(c) a recessed portion which is formed on said base plate by etching using said pattern of the mask layer, said recessed portion having a first inclined plane for reflection;

(d) first projecting portion extending from a part of said mask layer toward and partly over said recessed portion;

(e) a lens means formed on said first projecting portion; and

(f) a semiconductor laser chip means disposed on said recessed portion and having a first side emitting a light beam therefrom;

wherein light beam emitted from said first side of said semiconductor laser chip means is reflected by said first inclined plane of said recessed portion at a predetermined angle and passes through said lens means to produce an output light beam.

4,807,239

DRIVE AND CONTROL CIRCUIT FOR LASER DIODE

Hiroshi Takano, and Teiichi Shimane, both of Tokyo, Japan, assignors to Copal Electronics Co., Ltd. and Copal Co., Ltd., both of Tokyo, Japan

Filed Apr. 1, 1987, Ser. No. 32,814

Claims priority, application Japan, Apr. 3, 1986, 61-75473; Apr. 3, 1986, 61-75474; May 12, 1986, 61-106865; Aug. 29, 1986, 61-201629

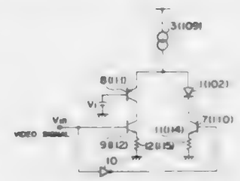
Int. Cl.⁴ H01S *3/00*

U.S. Cl. 372—38 **13 Claims**

1. A drive and control circuit for laser diodes comprising:

(a) first switching means connected in series to a laser diode for actuating the laser diode when a binary drive signal is at one of its levels, said laser diode being connected to a constant-current source;

(b) impedance means connected in parallel to said series circuit of the laser diode and the first switching means, said impedance means being connected to the constant-



current source together with the laser diode , said impedance means having impedance characteristics substantially equal to those of the laser diode; and

(c) second switching means connected in series to said impedance means for actuating said impedance means when said drive signal is at the other of its levels.

4,807,240

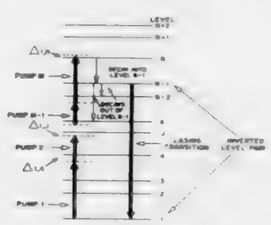
FREQUENCY ADDING LASERS AND OPTICAL AMPLIFIERS

Jeffrey A. Goldstone, Los Angeles, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 11, 1988, Ser. No. 142,100

Int. Cl.⁴ H01S *3/09*

U.S. Cl. 372—69 **7 Claims**



1. A method for creating population inversions for use in stimulated emission devices which beam combine, beam cleanup, or frequency up-convert electromagnetic radiation, comprising:

(a) providing a multilevel quantum medium;

(b) providing pump beams for near resonantly enhanced multiphoton pumping of said multilevel quantum medium, said multilevel quantum medium having atoms or molecules with three or more energy levels whose transition energies are near resonant with said pump beams, said near resonantly enhanced multiphoton pumping being defined such that each pump beam photon energy is close to but not equal to a transition energy between two energy levels of said multilevel quantum medium, thus producing small single photon detunings between the pump beams and said energy levels, these small single photon detunings thereby defining interacting energy levels of said multilevel quantum medium;

(c) directing said pump beams into said multilevel quantum medium having decay rates into an intermediate energy level greater than decay rates out of said intermediate energy level, said intermediate energy level lying between the lowest and highest of said interacting energy levels, said pump beams having intensities and frequencies satisfying the following limitations;

(1) the Rabi frequencies are at least one order of magni-

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tude larger than the decay rates between the energy levels of said quantum medium, said Rabi frequencies being defined for each interacting level pair to be $\Omega=\mu E/2h$ where μ is the magnitude of the dipole moment of said interacting energy level pair, E is the magnitude of the electric field of said pump beam, and h is Planck's constant divided by 2π,

(2) a maximum cycling of population between the lowest and highest interacting energy level of said quantum medium is produced the condition for said maximum cycling being determined from an analysis of the density matrix equations which describe the interaction of said pump beams with said multilevel quantum system, and

(3) a multiphoton detuning is produced having a value which is at least one order of magnitude smaller than any of said single photon detunings, said multiphoton detuning being equal to the difference between the sum of said pump beam photon energies and the total transition energy between the lowest and highest of said interacting energy levels divided by Planck's constant;

whereby, each of said pump beams interacts with one pair of energy levels of said quantum medium, said pairs of energy levels of said multilevel quantum medium being connected stepwise such that the upper energy level of one energy level pair is also the lower energy level of the next energy level pair, thus producing a pump driven cycling of population between the lowest and highest of said interacting energy levels of said multilevel quantum medium, said decay rates producing a greater rate of population transfer into said intermediate level than out of said intermediate level resulting in a build-up of population in said intermediate level and thereby creating a steady-state population inversion in said multilevel quantum medium.

4,807,241
ELECTRON BEAM PUMPED LASER

George W. Berkstresser, Bridgewater, and Joseph Shmulovich, Murray Hill, both of N.J., assignors to American Telephone and Telegraph Company AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 749,928, Jun. 28, 1985. This application Jul. 10, 1987, Ser. No. 71,850
Int. Cl.[4] H01S *3/091*
U.S. Cl. 372—80 6 Claims



1. Optical apparatus comprising

an elongated element including a laser active medium and a conversion layer optically coupled to said medium,

said active medium comprising $(Y_{3-x-y}R_xLu_y)(Al_{5-w}Ga_w)O_{12}$, with R chosen from the group consisting of the lanthanide rare earth elements other than Lu and Y, and $0<x<0.3$, $1.5<w<2.5$, and $y=1.4w\pm0.4w$.

means forming an optical resonator including said element therein, and

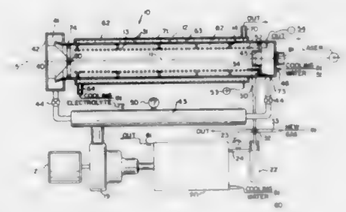
means for generating an electron beam having an essentially oblong cross section which is made incident along the elongated dimension of said element,

said electron beam being absorbed in said conversion layer so as to generate optical radiation which is absorbed in said active medium, thereby to produce stimulated emission from said active medium.

4,807,242
GAS LASER DISCHARGE TUBE

Simon M. Kim, 65 - E. 39th Avenue, Vancouver, B.C., Canada V5W 1J6

Filed Jul. 21, 1987, Ser. No. 76,184
Int. Cl.[4] H01S *3/097*
U.S. Cl. 372—87 15 Claims



1. A gas laser discharge tube, comprising:

(a) a tubular housing having an internal discharge chamber with a first end and a second end opposite the first end;

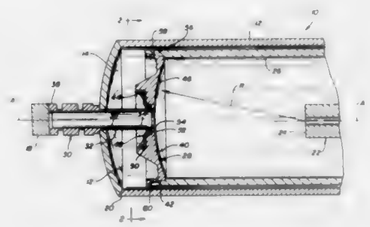
(b) a plurality of first electrodes mounted on the housing within the chamber, the first electrodes having a spaced-apart relationship with each other over an area of the housing extending substantially the distance between the ends of the discharge chamber;

(c) a second electrode having a coil shape within the chamber extending substantially the distance between the ends of the discharge chamber, being spaced-apart from the first electrodes and having opposite polarity to the first electrodes.

4,807,243
TWO-PIECE LASER CATHODE ASSEMBLY

David C. Riley, Eugene, Oreg., assignor to Spectra-Physics, Inc., San Jose, Calif.

Filed May 12, 1988, Ser. No. 193,811
Int. Cl.[4] H01S *3/097*
U.S. Cl. 372—87 14 Claims



1. A two-piece cathode assembly for a laser with a central axis and having an outer envelope and a bore tube mounted within the envelope and coaxially along the central axis with a free end of the bore tube being spaced axially from one end of the envelope, said cathode assembly comprising:

a cylindrical cathode tube having opposite open ends and adapted to be positioned within the outer envelope in

radially inward spaced relation thereto and adjacent the one end thereof; and

a cathode end cap having a body portion and an outer peripheral rim portion surrounding and formed integrally on said body portion, said end cap being adapted at its outer peripheral rim portion to be mounted to one end of said cathode tube, said body portion of said end cap having an interior surface defined thereon adapted to face toward the free end of the bore tube and being of a concave curvature for promoting achievement of a substantially uniform electrical discharge between the bore tube free end and said interior surface of said end cap body portion.

4,807,244
CHEMICAL LASER

Salman Rosenwaks, P.O. Box 952, Omer 84965; Lawrence A. Levin, 27 Mishol Maale Akrabim, Beer-Sheva, and David Chachem, P.O. Box 299, Omer 84965, all of Israel

Filed Mar. 30, 1987, Ser. No. 32,440
Claims priority, application Israel, Apr. 2, 1986, 78405
Int. Cl.[4] H01S *3/097*
U.S. Cl. 372—89 11 Claims



1. A pulsed short-wavelength chemical laser comprising:

introducing means for introducing an explosive fuel, the detonation of which by flash initiation results in the formation of first electronically excited molecules and the pulsed emission of short-wave light, either indirectly, by energy transfer from said first electronically excited molecules to other molecules or atoms to form second electronically excited molecules or atoms which lase to emit said short-wave light by electronic relation, or directly, said first electronically excited molecules lasing by electronic relaxation;

a detonation chamber for receiving said explosive fuel from said introducing means;

a detonation means for detonating, by flash initiation, explosive fuel in said detonation chamber; and

a resonant cavity, in communication with said detonation chamber, for amplifying said pulsed emission of short-wave light resulting from detonation of said explosive fuel in said detonation chamber by said detonation means.

4,807,245
DISTRIBUTED-FEEDBACK TYPE SEMICONDUCTOR LASER

Shoji Hirata, and Kazuo Honda, both of Kanagawa, Japan, assignors to Sony Corp., Tokyo, Japan

Filed Jul. 6, 1987, Ser. No. 70,215
Claims priority, application Japan, Jul. 28, 1986, 61-177372
Int. Cl.[4] H01S *3/08*
U.S. Cl. 372—96 10 Claims

1. A distributed-feedback type semi-conductor laser device operable in both single longitudinal and single transverse modes, comprising:

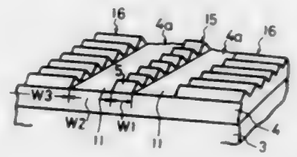
a pair of clad layers;

an active layer having a guide layer thereon, said active and guide layers being interposed between said pair of clad layers;

said guide layer including stripe-shaped distributed-feedback means only along a relatively narrow central portion of said guide layer, inactive opposite side regions at opposite sides of said distributed-feedback means and having the same configuration as the distributed-feedback means, and elongated plane regions extending along opposite sides of said distributed-feedback means and dividing said inactive opposite side regions from said distributed-feedback means;

a substrate underlying the one of said clad layers which is next to said active layer;

first electrode means on a surface of the substrate layer which faces away from said one of the clad layers;



a cap layer on a surface of the other of said clad layers facing in the direction away from said one clad layer;

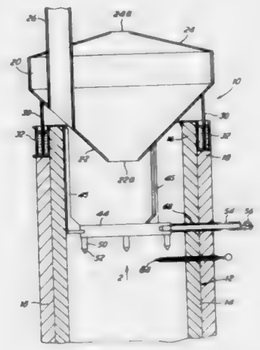
ion implanted regions in said cap layer which are coextensive with said inactive opposite side regions and said plane regions; and

second electrode means on said cap layer.

4,807,246
APPARATUS FOR TREATMENT OF PARTICULATE MATERIAL

John A. Moss, Johannesburg, South Africa, assignor to Carbon Activators (Proprietary) Limited, Johannesburg, South Africa

Filed Apr. 28, 1987, Ser. No. 43,543
Claims priority, application South Africa, Apr. 29, 1986, 86/3187
Int. Cl.[4] H05B *3/60*
U.S. Cl. 373—120 6 Claims



1. Apparatus for treating particulate material comprising:

(a) a single vertical column;

(b) upper and lower electrode means arranged at vertically spaced locations within the column, the electrode means extending across the column and being so constructed that the particulate matter can pass with ease through the electrode means; and

(c) prongs having pointed lower ends depending from the upper electrode to minimise the effect of sparking across the material.

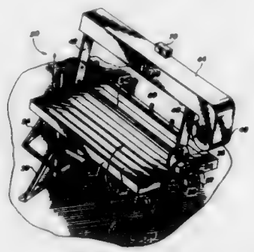
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4,807,247

TEMPERATURE-CONTROLLED ACCELERATED WEATHERING DEVICE

Joseph S. Robbins, III, Phoenix, Ariz., assignor to DSET Laboratories, Inc., Phoenix, Ariz.

Filed Jul. 31, 1987, Ser. No. 80,551
Int. Cl.[4] G01N *25/00*
U.S. Cl. 374—57 10 Claims



1. An accelerated weathering test apparatus of the type used to concentrate solar radiation upon target samples, said apparatus being adapted to maintain a substantially uniform target sample temperature despite variations in the daytime ambient air temperature and variations in solar radiation intensity, said apparatus comprising in combination:

a. a target board for supporting at least one test sample to be exposed to concentrated solar radiation;

b. reflector means for reflecting solar radiation and concentrating the reflected solar radiation onto said target board for illuminating said at least one test sample;

c. air circulation means for circulating ambient air over said target board for cooling said at least one test sample, said air circulation means including an electrical motor and a fan powered by said electrical motor for creating a flow of ambient air;

d. temperature sensing means mounted to said target board for exposure to said concentrated solar radiation and generating an electrical signal responsive to the temperature thereof; and

e. control means coupled to said temperature sensing means and responsive to said electrical signal for selectively controlling the application of electrical power to said electrical motor; in order to control the rate at which ambient air is circulated over said target board, said rate being generally increased when the temperature of said temperature sensing means rises, and said rate being generally decreased when the temperature of said temperature sensing means falls.

4,807,248

AUTOMATIC RESYNCHRONIZATION TECHNIQUE

Roger A. Pyatt; Ivan E. Hardt, both of Cedar Rapids, and Cynthia A. Beneibright, Marion, all of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 23, 1984, Ser. No. 613,659
Int. Cl.[4] H01K *1/00*; H04L *9/00*
U.S. Cl. 375—1 2 Claims



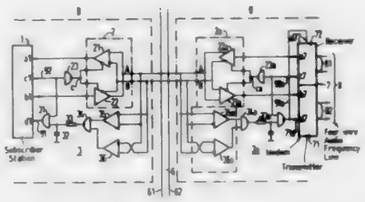
1. A data transmission technique comprising: (a) providing a transmitter capable of transmitting information in a series of different and pseudoramdomly selected frequencies; (b) providing a receiver capable of receiving information in a series of different and pseudoramdomly selected frequencies; (c) generating a plurality of synchronization frames and resynchronization frames, for allowing the receiver to frequency synchronize with the transmitter, wherein the information necessary to acquire synchronization is divided among at least two of said synchronization or resynchronization frames with each frame transmitted on a different frequency, said at least two synchronization or resynchronization frames comprising a plurality of identically formatted and timed synchronization frames and a start of message frame; (d) generating a plurality of message frames including information defining a message to be transmitted and (e) transmitting said plurality of identically formatted and timed synchronization frames and said start of message frames such that said plurality of identically formatted and timed synchronization frames are transmitted prior to the transmission of said start of message frame, each frame is transmitted on a different pseudoramdomly selected frequency and said plurality of resynchronization frames are separated by message frames.

4,807,249

CIRCUIT ARRANGEMENT FOR SERIAL DATA TRANSMISSION BETWEEN A PLURALITY OF SUBSCRIBER STATIONS

Otto Lang, and Manfred Dombrowski, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 17, 1987, Ser. No. 15,713
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1986, 3604952
Int. Cl.[4] H04L *25/02*
U.S. Cl. 375—7 6 Claims



1. In a circuit arrangement for serial data transmission between two subscriber stations each connected to a respective transmission/receiving device, and each of said subscriber stations including means for transmitting data and means for receiving data, each means for transmitting data and each means for receiving data connected two leads of a data bus, each of said means for transmitting data normally assuming a passive condition and including a data input and a control input connected to the transmission/receiving device at the subscriber station containing the means for transmitting data, said control input responsive to control signals such that only one of the means for transmitting data is driven to an active condition at a time to output a voltage of a first polarity or of a second polarity dependent on the state of a data signal applied to its data input by the respective transmission/receiving device, each of the means for transmitting data having a higher internal impedance in the passive condition than in the active condition, and each of the means for receiving data operable in response to the data bus to output data to the respective transmission/receiving device, the improvement comprising:

first and second recognition circuits each in a respective one of said subscriber stations, each of said recognition circuits comprising first and second data receivers, including inputs connected in opposite polarity fashion to the two leads of the data bus and an output, said data receivers assuming one of two prescribed signal states at their outputs dependent on the polarity of their input voltage and assuming one of the two prescribed signal states at their outputs in a defined manner given a signal-free input; and

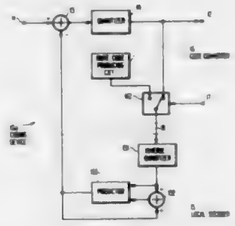
logic means in each subscriber station including inputs connected to said outputs of the first and second data receivers in a subscriber station and an output connected to the transmitting/receiving device at the subscriber station containing said logic means, for producing at said output a free signal having a first logic state in response to identical logic levels at its input and producing a busy signal having a second logic state in response to unequal logic levels at its inputs.

4,807,250

CODING DEVICE SELECTIVELY CONNECTED TO A TRANSMISSION LINE

Susumu Tanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 6, 1986, Ser. No. 915,351
Claims priority, application Japan, Oct. 4, 1985, 60-219995
Int. Cl.[4] H04B *14/06*
U.S. Cl. 375—28 2 Claims



1. A coding device for coding for coding an input signal into a coded signal which is transmitted through a connection control circuit to a transmission line while said coding device is connected to said transmission line through said connection control circuit, said coding device comprising subtracting means for subtracting a local signal from said input signal to produce a difference signal, coding means for coding said difference signal into said coded signal, and local decoding means for locally decoding an internal code signal related to said coded signal into said local decoded signal, said coding device being selectively connected to said transmission line under control of said connection control circuit, wherein the improvement comprises:

code producing means for producing a predetermined code;

selecting means, coupled to said connection control circuit and responsive to a control signal provided by said connection control circuit, for selecting said coded signal as a selected code signal when said control signal indicates connection of said transmission line to said coding device, and said predetermined code as said selected code signal when said control signal indicates disconnection of said transmission line from said coding device; and

means for supplying said selected code signal to said local decoding means as said internal code signal.

4,807,251

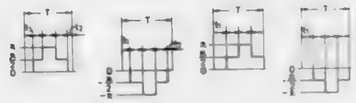
PSK MODEM SYSTEM WITH IMPROVED DEMODULATION RELIABILITY

Yoshiso Shifuno, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 21, 1987, Ser. No. 76,173
Claims priority, application Japan, Jul. 21, 1986, 61-171338; Aug. 29, 1986, 61-204643
Int. Cl.[4] H04L *27/18*
U.S. Cl. 375—53 12 Claims

12. A modem system for digital data, comprising:

means for producing a transmission signal which is phase modulated in accordance with "mark" and "space" states of an applied digital signal in repetitive signal time slots, each of a predetermined duration, said transmission signal having a phase reference period of predetermined time duration in total provided at at least one of the front and rear portions of each of said time slots during which said transmission signal assumes a reference phase value, and in the first half of the remaining portion of each said time slot the phase of said transmission signal changes stepwise in a predetermined direction in correspondence to the "mark"



state of said digital signal while, in the second half, the phase of said transmission signal changes stepwise in a direction opposite to said predetermined direction to said reference phase value, and in correspondence to the "space" state of said digital signal the phase of said transmission signal is changed in a direction opposite to that in the case of the "mark" state of said digital signal, and,

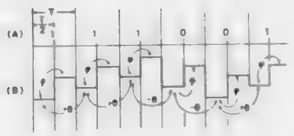
means for applying said digital signal to said producing means.

4,807,252

DIGITAL COMMUNICATION SYSTEM

Fumio Ikegami, 5-7010 Yunoji Mansion, 34-10 Kobatacchata, Uji-shi, Kyoto-fu; Susumu Yoshida, Kyoto; Tsutomu Takeuchi, Kyoto, and Shiriki Ariyavisitakul, Kyoto, all of Japan, assignors to Fumio Ikegami and Mitsubishi Denki Kabushiki Kaisha, both of, Japan

Filed May 7, 1987, Ser. No. 46,787
Claims priority, application Japan, May 13, 1986, 61-111672
Int. Cl.[4] H04L *27/18*
U.S. Cl. 375—53 16 Claims



1. A digital communications system employing a carrier wave comprised of a plurality of time slots and having a variable phase θ, said digital communications system further including a modulating signal having encoded therein a plurality of digital information symbol sequences, said modulating signal for shifting the phase θ of said carrier wave responsive to said digital information symbol sequences, the digital communication system having an improved transmission bit error rate of said digital information symbol sequences, comprising:

first means for controlling a non-zero phase change ϕ of the carrier within a time slot of said plurality of time slots so that said phase change ϕ is established between any position in a first half of said time slot and any other position in a second half of the time slot, the two positions being separated from each other by $\frac{1}{2}$ time slot; and

second means for setting a phase difference in the carrier between any position in said time slot and any other position in an adjacent time slot to a discrete angle θi, wherein θi is a non-zero integral multiple of ϕ.

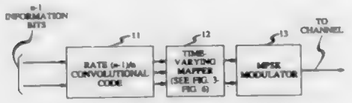
VOL 1099 ISS 3 FEB 21 1989 UMI

4,807,253

TIME-VARYING TRELLIS-CODED MODULATION FORMATS WHICH ARE ROBUST IN CHANNELS WITH PHASE VARIATIONS

Joachim Hagenauer, Seefeld, Fed. Rep. of Germany, and Carl-Erik Sundberg, Chatham, N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 13, 1987, Ser. No. 120,305
Int. Cl.[4] H04L 27/00
U.S. Cl. 375—57 **9 Claims**



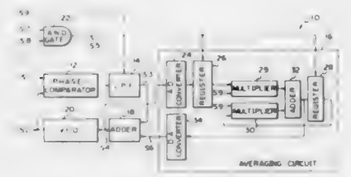
1. A method for the digitally-coded transmission of information, said method being of the type including the steps of
providing a carrier wave in the transmitter,
coding the information according to a type of convolutional digital coding, and
modulating the carrier wave with the convolutionally-coded information according to a nonbinary digital modulation scheme involving a mapping of convolutionally-coded information values to nonbinary modulation values,
said method being characterized by
the step of varying periodically the number of modulation values in the nonbinary digital modulation scheme to change correspondingly the mapping from the convolutionally coded information to the nonbinary modulation values to reduce the effect of phase noise or phase-offset upon the transmission.

4,807,254

CARRIER WAVE RECOVERY SYSTEM

Susumu Otani, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 6, 1986, Ser. No. 893,847
Claims priority, application Japan, Aug. 9, 1985, 60-175215; Dec. 4, 1985, 60-272698
Int. Cl.[4] H04L 27/06; H04J 3/06
U.S. Cl. 375—81 **2 Claims**



1. A carrier wave recovery system for recovering a reference carrier wave from each of burst carrier waves which are sequentially inputted from a plurality of transmitting stations to said system in bursts at a period which is equal to a predetermined period of time or an integral multiple of the predetermined period of time and not always constant, the burst carrier waves each being not longer than the predetermined period of time, said system comprising:
phase comparator means for comparing in phase each of the burst carrier waves and the recovered reference carrier wave to produce an error signal based on the burst carrier waves from said plurality of stations;
averaging means, responsive to a timing signal indicative of burst reception, for averaging the error signals which are associated with the burst carrier waves inputted to said system in the past and storing a resultant mean value;
adder means for adding the error signal and the mean value stored in said averaging means; and
oscillator means for controlling an oscillation frequency in response to an output of said adder means to produce the recovered reference carrier wave.

4,807,255

ALARM SYSTEM RESPONSIVE TO INTRUSION INDUCED PHASE UNBALANCE

Carsten H. Idland, 3450-B Mountain View, Los Angeles, Calif. 90066

Filed Aug. 19, 1987, Ser. No. 87,510
Int. Cl.[4] G08B 13/16, 1/08
U.S. Cl. 367—93 **11 Claims**



1. In an alarm system, the combination that comprises:
(a) first means to be placed in a room and to
(i) transmit ultrasonic wave signals that rebound off the room's walls and contents, and
(ii) receive the rebounding ultrasonic signals,
(b) circuit means to phase balance the transmitted and received signals; to detect a subsequently unbalanced condition caused by a change in the rebounding signals due to intrusion activity; and to produce an electrical alarm signal in response thereto,
(c) and other means responsive to reception of the alarm signal to produce an audible or visible alarm, said other means being coupled to said circuit means for receiving the alarm signal via coupling transformer means coupled to electrical power line means,
(d) said first means including portable housing means carrying transmit and receive transducer means, said circuit means being associated with said first means and electrically connected with said transducer means, and said circuit means including an electrical connector having terminals to be electrically connected to terminals of an electrical connector associated with said power line means, a phase locked loop circuit to provide phase balancing, and a microprocessor electrically connected between said phase locked loop circuit and said first mentioned electrical connector to transmit digital alarm data to the power line means in response to activation by said circuit means.

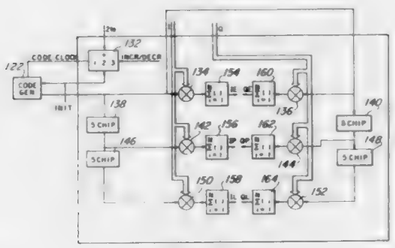
4,807,256

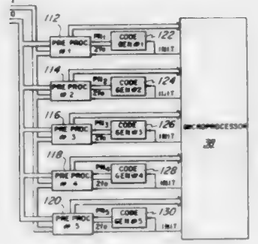
GLOBAL POSITION SYSTEM RECEIVER

Jerry D. Holmes, Dallas, and Hatcher E. Chalkley, Carrollton, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 23, 1985, Ser. No. 811,984
Int. Cl.[4] H04L 27/06
U.S. Cl. 375—97 **11 Claims**

1. A global position system (GPS) receiver comprising:
(a) a frequency synthesizer means;
(b) a fixed frequency converter means operatively connected to the frequency synthesizer means for downconverting GPS signals received from a plurality of space vehicles to baseband in-phase (I) and quadrature phase (Q) signals and forming digital words thereof of preselected bit lengths; and
(c) a signal processor means, said signal processor means including a code generator means, a plurality of space vehicle signal preprocessors and a computer means, the code generation means operatively connected to the frequency synthesizer means for receiving code clocking signals, and each of said plurality of preprocessors operatively connected to the fixed frequency converter means and code generator means for receiving the in-phase and quadrature phase digital words and selectively timed code signals for the in phase and quadrature phase signals of early (I_E,Q_E), prompt (I_P,Q_P) and late (I_L,Q_L) complex responses for one space vehicle for producing early, late and prompt correlation outputs for the computer means, whereby the plurality of space vehicle signal preprocessors operate in the same I,Q base band signals for producing early, prompt and late correlations peculiar to each space vehicle for the computer means, and said computer means operatively connected to the plurality of preprocessors, code generator means and frequency synthesizer means for performing preselected fundamental GPS signal processing functions.



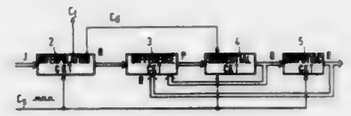


4,807,257

APPARATUS FOR THE REGENERATION OF CHANNEL-CLOCK INFORMATION IN SYNCHRONOUS DATA TRANSMISSION AND DATA-RECOVERY CIRCUIT ARRANGEMENT COMPRISING SUCH APPARATUS

Kornelis A. Schouhamer Immink, and Josephus A. H. M. Kahlman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 12, 1986, Ser. No. 895,966
Claims priority, application Netherlands, Apr. 9, 1986, 8600889
Int. Cl.[4] H04L 7/00
U.S. Cl. 375—106 **12 Claims**



1. Apparatus for the regeneration of channel-clock information from a series of samples which represent the signal values of a band-limited transmission signal at equidistant sampling instants, which transmission signal is synchronous with the channel clock, comprising:
a. computing means for deriving initial positions of the successive sampling instants relative to reference instants defined by variable reference phase positions of a virtual reference clock, the initial position of each sampling instant being determined from the initial positions of the prior sampling instants;
b. detection means for detecting, from the signal values of samples at the sampling instants, crossing of a detection level by the transmission signal between successive sampling instants;
c. interpolation means coupled to said detection means and responsive to level-crossings detected thereby for determining second positions of the successive sampling instants relative to such level crossings from the signal values of samples in the proximity of such level crossings;
d. means for comparing the initial and second sampling positions of said sampling instants with each other and deriving the difference there-between; and
e. means for correcting the time difference between the period of the virtual reference clock and the signal sampling interval in accordance with the differences between the initial and second sampling positions determined by said comparing means;
said computing means being adapted to derive the initial positions of the sampling instants in accordance with said corrected time difference.

4,807,258

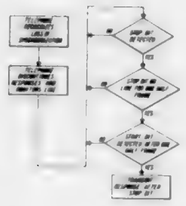
METHOD FOR SYNCHRONIZING A DIGITAL COMMUNICATION SYSTEM

Richard W. Sieber, Attleboro; David A. Perreault, Reading, and Arnold Paige, Natick, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 17, 1987, Ser. No. 121,654
Int. Cl.[4] H04L 7/00
U.S. Cl. 375—108 **8 Claims**

1. In a digital transmission system wherein a first subsystem transmits a message on a transmission line to a second subsystem during a message portion of a repetitive frame and the second subsystem transmits a response on the transmission line to the first subsystem during a response portion of the frame, a method for establishing synchronization between the first subsystem and the second subsystem comprising the steps of:
(a) the second subsystems recognizing that synchronization between said message and said response has been lost;

(b) when synchronization has been lost, discontinuing transmission of responses by the second subsystem while continuing transmission of messages by the first subsystem;
(c) the second subsystem monitoring the transmission line until a first message followed by an absence of both mes-



sage and response for a predetermined time, followed by a second message, are detected; and
(d) resuming transmission of responses having prescribed time relationships with respect to said second message and each subsequent message.

4,807,259

TIME SYNCHRONIZATION METHOD IN DATA TRANSMISSION SYSTEM

Toruo Yamanaka; Terubiro Shoyama, and Nobuo Teraji, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1987, Ser. No. 50,576
Claims priority, application Japan, May 20, 1986, 61-115662; Jun. 30, 1986, 61-142780
Int. Cl.[4] H04L 7/00
U.S. Cl. 375—109 **4 Claims**

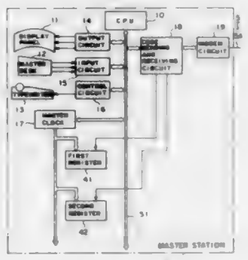
1. A time synchronization method where a master station which is provided with at least a central processing unit (CPU), a master clock and a sending/receiving means is connected with slave station and/or stations having at least a CPU, a slave clock and a sending/receiving means through a data transmission line which assures bidirectional data transmission between said master station and said slave station and/or stations and a time of said slave clock and/or clocks is synchronized with a time of said master clock, said time synchronization method comprising:

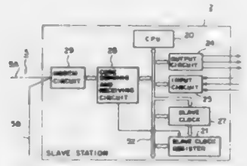
the first step; said master station transmits a code of slave clock time survey command to said slave station and time T_M of said master clock at timing of completing the transmission of such code is stored in a first register provided in said master station at the time of such transmission,

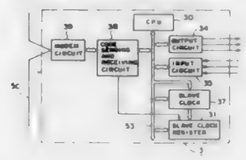
the second step; a slave station which has received said code of slave clock time survey command stores time T_2 of said slave clock at timing of completing reception of said code received from said master station into a slave station register provided in said slave station and then transmits the time T_2 of said slave clock stored in said register to said master station on the next occasion of transmitting the code of slave clock time data, which occasion is preset so that the transmission to said master station is started after constant period T_p from the timing of completing the reception of said code,

the third step; said master station after receipt of the code said slave clock time data reads

time T_{De} of said master clock at timing of starting reception of said code and stores it in a second register, thereafter obtains a time difference T_{D1} between said master clock and said slave clock, on the basis of the time data stored in said first register and said second register, respectively, said slave clock time T_2 received from the slave station and the transmission delay time T_1 calculated with said constant period (T_p) up to the start of transmission of the code of said slave clock time data in said slave station $T_1=(T_{De}-t_p-T_M)/2$, and transmits such time difference $T_{D1}=T_M+T_1-T_2$ to said slave station in a code of time correction data,







the fourth step; said slave station which has received said time difference T_{D1} in said code of time correction data corrects the time of said slave clock based on such time difference.

4,807,260

NON HIGH FREQUENCY CLOCK DEPENDENT MANCHESTER BIPHASIC DECODER AND COMPARATOR

Rodney M. Soltas, Orange, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Oct. 5, 1987, Ser. No. 105,069
Int. Cl.[4] H04L 7/02
U.S. Cl. 375—110 **27 Claims**

1. A decoder and comparator for a biphase code comprising

code storage means for receiving a stream of said code and temporarily storing a frame of said code,

clock recovery means for receiving a stream of said code and recovering clock pulses from said code, said clock recovery means outputting a train of clock pulses to said code storage means for loading said frame of said code into said storage means, and

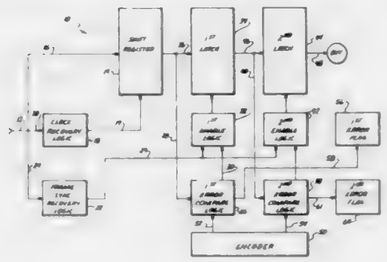
code frame recovery means for receiving a stream of said code and for recognizing a frame indicator in said code including

sync pulse generating means for generating signals in response to code input,

sync pulse delay means for delaying at least one of said generated signals,

sync center detect means for detecting a center signal transition in a frame sync indicator, and

sync strobe means for generating a strobe signal in response to at least the detection of said center signal transition in a



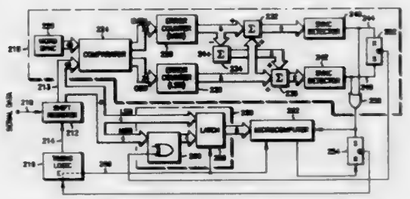
frame sync indicator and for outputting at least one strobe signal to said code storage means for outputting a stored frame of code from said code storage means in response to recognition of said frame indicator.

4,807,261

AUTOMATIC CHANNEL POLARITY DETECTION AND CORRECTION ARRANGEMENT AND METHOD

Mark J. Johnson, Algonquin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 26, 1987, Ser. No. 112,151
Int. Cl.[4] H04L 7/00
U.S. Cl. 375—114 **20 Claims**



1. A method for decoding data received in a receiver wherein the data is coded in symbols which are represented by a grey code-like numbering system and the data includes a predetermined word sync pattern, the method comprising the steps of:

prestoring data representative of the predetermined word sync pattern;

comparing the prestored data with the received data to determine if the predetermined word sync pattern is represented in the received data;

in response to the comparison, determining if the grey code-like numbering system has been transposed in the data; and

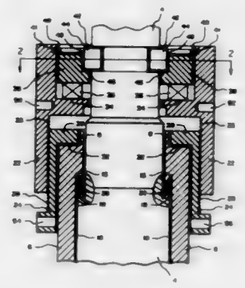
responsive to the grey code-like numbering system being transposed, automatically correcting the transposition in the data.

4,807,262

APPARATUS FOR SEALING THE SEAM BETWEEN TWO CONDUITS

Edward P. Shields, North Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 925,861, Oct. 30, 1986, abandoned. This application Apr. 29, 1988, Ser. No. 188,720
Int. Cl.[4] G21C 13/00
U.S. Cl. 376—203 **21 Claims**



1. An apparatus for sealing the seam between first and second axially aligned conduits comprising:

sealing means disposed at the seam between the first and second conduits to resist passage of fluid through the seam when the first conduit is relatively axially displaced with respect to the second conduit;

first spacer means having means for detachably connecting said first spacer means to said first conduit in such a manner as to apply a generally uniform axial force to the perimeter of the first conduit and a first threaded surface, the first spacer means being disposed in surrounding relationship with the first conduit;

second spacer means having means for detachably connecting said second spacer means to said second conduit in such a manner as to apply a generally uniform axial force to the perimeter of the second conduit and a second threaded surface which cooperates with said first threaded surface, the second spacer means being disposed in surrounding relationship with the second conduit;

at least one of said spacer means being rotatably disposed with respect to the connected conduit; and

said first threaded surface and said second threaded surface cooperating to relatively axially displace the first conduit and the second conduit by applying said axial forces thereto to compress said sealing means when said first spacer means and said second spacer means are relatively rotated.

9. In combination:

a nuclear reactor pressure vessel;

an instrumentation port extending through said pressure vessel and comprising: a male flange secured to said pressure vessel, an instrumentation port column extending through said male flange, and generally annular sealing means between said male flange and instrumentation port column which forms a seal therebetween when said port column is axially displaced relative to said male flange; and

means for axially displacing the port column relative to the male flange comprising: generally hollow cylindrical first spacer means having a first threaded surface and disposed in surrounding relationship with the port column, said first spacer means having a first generally annular inwardly projecting radial flange for applying a generally uniform axial force to the permitter of the port column; and generally hollow cylindrical second spacer means having a second threaded surface which cooperates with said first

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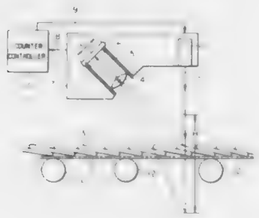
threaded surface and disposed in surrounding relationship with the male flange, said second spacer means applying a generally uniform axial force to the perimeter of the male flange; said first threaded surface and said second threaded surface cooperating to relatively axially displace the port column away from the male flange by said first spacer means applying said axial force to the port column and said second spacer means applying said axial force to the male flanges when said first spacer means and said second spacer means are relatively rotated.

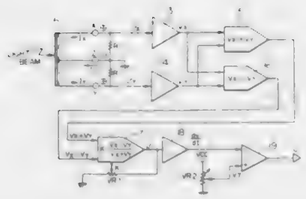
4,807,263

COUNTER OF OBJECTS BEING TRANSPORTED

Kiichiro Ohno, Tokyo, and Mitsuru Kawabata, Kawasaki, both of Japan, assignors to Tokyo Kikai Seisakusho, Ltd., Tokyo, Japan

Filed Mar. 27, 1987, Ser. No. 32,006
Claims priority, application Japan, Mar. 27, 1986, 61-69188
Int. Cl.[4] G06M 7/06
U.S. Cl. 377—8 3 Claims





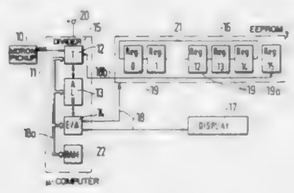
1. A counter for counting the number of objects being transported by transport equipment, comprising: light projecting means for projecting a light beam onto a location in the path of said objects being transported; light receiving means including means for focusing said light beam reflected from said objects and means for receiving said focused light beam reflected from said objects, a focused point of light shifting in position on said means for receiving said focused light as the objects being transported are moved with respect to said light beam; position sensor means associated with said light receiving means for sensing a shift of the position of the focused point of said reflected light beam and for outputting an analog signal representing the position of the focused point of said reflected light on said means for receiving said focused light beam; a pulse generating means for generating pulses in response to sudden rapid changes in said analog signal representing the rapid shift of the focused point of said reflected light beam caused by movement of the ends of said objects; and, a counter for counting said pulses, the number of objects being counted on the basis of said pulses generated by said pulse generating means, said position sensor generates two analog signals representing a location at which the reflected light is focused on said reflected light receiving surface, said pulse generating means has an adder and a subtractor for receiving said two analog signals and adding and subtracting said two signals, respectively, a divider for dividing the added signals outputted by said adder with subtracting signals outputted by said subtractor, a differentiator for differentiating the output signal of said divider, and a comparator for comparing the differentiated output of said differentiator with a predetermined threshold value, changes in height of the objects being transported being indicated in the form of pulse signals generated when the output of said differentiator exceeds the predetermined threshold value.

4,807,264

CIRCUIT ARRANGEMENT FOR THE ADDITION, STORAGE AND REPRODUCTION OF ELECTRIC COUNTING PULSES

Harald Bauer, Nuremberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE86/00245, § 371 Date May 13, 1987, § 102(e) Date May 13, 1987, PCT Pub. No. WO87/01884, PCT Pub. Date Mar. 26, 1987
PCT Filed Jun. 13, 1986, Ser. No. 55,714
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1985, 3532768
Int. Cl.[4] G01C 22/00
U.S. Cl. 377—24.1 9 Claims



1. Circuit arrangement for the addition, storage and reproduction of electric pulses generated by a signal transmitter, preferably counting pulses generated by a motion pickup, comprising a series of storage registers of a nonvolatile, overwritable storage, a control circuit including programmed writing means which, starting with the first storage register, writes each new counting pulse into the next storage register while blocking the remaining ones until the last storage register is reached, then with the next counting pulse, increases by one the contents of said first storage register, and then with each new counting pulse the contents of the subsequent storage registers, means programmed for reading out in a cyclical manner the contents of said storage, said reading out means determining by mutual comparisons of the contents of all storage registers in said series a storage register with maximum matches, and then determining the sum (X) of written-in counting pulses (I_Z) by means of the contents (ej) and the position number (j) of the storage register with maximum matches.

4,807,265

RECREATION VEHICLE DISTANCE MEASURING DEVICE

Carl S. Swanson, P.O. Box 4251, Brownsville, Tex. 78523

Filed Sep. 3, 1987, Ser. No. 92,866
Int. Cl.[4] G01C 22/00
U.S. Cl. 377—24.1 12 Claims

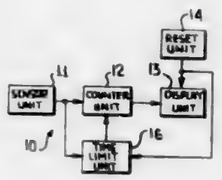
1. A battery operated, self-contained distance measuring device for use with a recreation vehicle having a plurality of ground contacting rotating wheels, said device comprising:

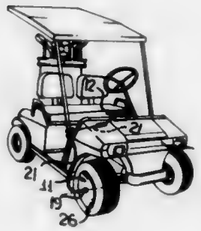
(A) sensor means for sensing rotation of at least one of said wheels and for producing sensor signals in response thereto;

(B) counter means preprogrammed for responding to said sensor signals by incrementing a count related to rotation of said at least one wheel corresponding to a preselected standard distance measuring unit, and hence distance moved by said recreation vehicle;

(C) display means incremented by said count of said counter means for continuously displaying said measure of said distance moved by said recreation vehicle in said preselected standard units;

(D) reset means operable by an operator of said vehicle for causing said display means and said counter means to reset; and





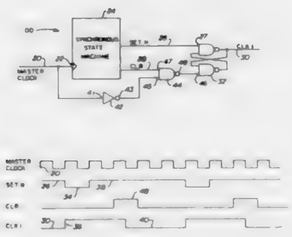
(E) time limit means interconnecting said counter with said battery and responsive to said sensor signals for providing power to said counter means so long as a next received sensor signal occurs within a predetermined period of time with respect to a last received sensor signal to thereby conserve power of said battery.

4,807,266

CIRCUIT AND METHOD FOR PERFORMING EQUAL DUTY CYCLE ODD VALUE CLOCK DIVISION AND CLOCK SYNCHRONIZATION

Mark Taylor, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Sep. 28, 1987, Ser. No. 101,946
Int. Cl.[4] H03K 21/10, 23/70, 23/50
U.S. Cl. 377—48 30 Claims



1. A circuit for providing an output clocking signal having a frequency which is an odd integer division of an input clocking signal, comprising:

means for dividing the input clocking signal by an odd integer value to provide an output clocking signal having a duty cycle substantially of the proportion n:n+1 cycles, where 2n+1 is the division value and

means for extending said n portion by ½ clock cycle and reducing said n+1 portion by ½ clock cycle to provide an output signal having a duty cycle substantially of an n+½:n+½ proportion,

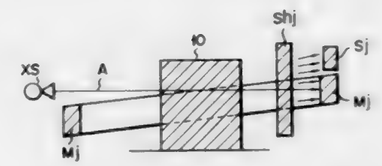
wherein said dividing means include means for producing a signal for enabling said n portion of the output clocking signal and means for producing a signal for enabling said n+1 portion of the output clocking signal.

4,807,267

X-RAY COMPUTED TOMOGRAPHY APPARATUS

Toshihiro Rifu, and Kyojiro Nambu, both of Tochigi, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 4, 1987, Ser. No. 45,467
Claims priority, application Japan, May 7, 1986, 61-105154
Int. Cl.[4] G01T 1/20; G21F 5/04
U.S. Cl. 378—7 10 Claims



1. An X-ray computed tomography apparatus comprising:

X-ray irradiating means for irradiating X-rays onto a subject;

main detection means including a plurality of X-ray detectors for detecting the X-rays passing through the subject after it has been irradiating means;

a scattering ray detector located in a position corresponding to at least one of the X-ray detectors in said main detection means;

main X-ray shielding means detachably insertable along a line connecting the X-ray irradiating means to said main detection means and having a dimension so as to completely shield said main detection means and said scattering ray detector from the main X-rays irradiated from said X-ray irradiation means;

means for calculating a correction coefficient from a first and second scattered-component detection data which are respectively output from said main detection means and said scattering ray detector, which detect scattered components caused due to a reference scattering body located in place of said subject with the main X-ray shielding means being inserted between said X-ray irradiating means and a group of said X-ray detectors of said main detection means and said scattering ray detector to shield both said main detection means and said scattering ray detector from said main X-ray emitted from said X-ray irradiating means, said correction coefficient being calculated from a ratio between said first and second scattered-component detection data; and

means for correcting X-ray information corresponding to the X-rays, having been passed through the subject and detected by said main detection means, with the use of said correction coefficient obtained by said calculating means and a scattering ray value detected by said scattering ray detector and estimated as a detection value detected by said main detection means, wherein said X-ray information is calculated by subtracting the scattering ray value divided by the correction coefficient from a value obtained as an output of said main detection means without said main X-ray shielding means being inserted.

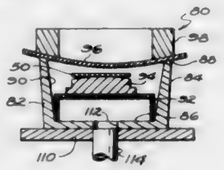
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4,807,268

SCANNING MONOCHROMETER CRYSTAL AND METHOD OF FORMATION

David B. Wittry, Pasadena, Calif., assignor to University of Southern California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 549,366, Nov. 4, 1983, Pat. No. 4,599,741. This application Feb. 26, 1986, Ser. No. 833,950
Int. Cl.[4] G01N *23/20*
U.S. Cl. 378—84 6 Claims



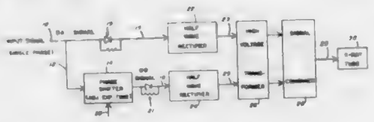
1. A method of fabricating a crystal structure for an X-ray monochromator comprising the steps of:
- preparing at least one crystal lamella having planes of lattice points and having a concave crystal surface which is cylindrically curved about a preselected axis;
- placing the lamella onto a convex mold curved to a first preselected radius in the direction to a second preselected radius;
- covering the lamella with a continuous sheet of material able to withstand elevated temperatures;
- heating the mold, the lamella and the continuous sheet to a temperature at which the sheet is flexible and at which the lamella can be deformed; and
- creating a partial vacuum beneath the sheet to draw it downwardly against the lamella and plastically deform the lamella so that it has a concave surface which matches the mold;
- prior to the deformation of the lamella the planes of lattice points are flat and the adjacent crystal surface is curved about the preselected axis to substantially twice said first preselected radius.

4,807,269

APPARATUS FOR POWERING X-RAY TUBES

John K. Grady, 43 Slaugh Rd., Harvard, Mass. 01451

Filed Apr. 2, 1987, Ser. No. 34,096
Int. Cl.[4] H05G *1/12, 1/10*
U.S. Cl. 378—104 31 Claims



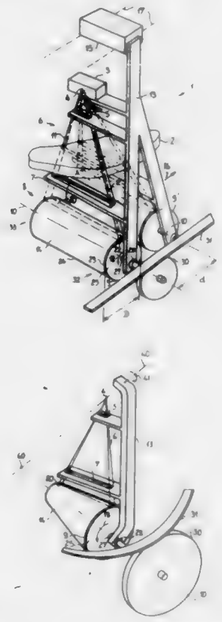
1. A high voltage x-ray tube power supply which operates from single-phase alternating current and which produces a high voltage output which can be varied from periodic pulses with a pulse width of less than one cycle of said alternating current to a substantially continuous output, said supply comprising:
- a plurality of low voltage switching power supplies, each of said power supplies generating a periodic sequence of low voltage pulses with the same frequency, each of said pulses consisting of a sine like signal of alternating current consisting of a first half cycle and a second half cycle,
- means for varying the phase of said periodic sequences relative to each other to adjust the x-ray exposure time, and
- voltage transforming means responsive to said low voltage pulses generated by said plurality of low voltage supplies for generating high voltage signals,
- said voltage transforming means including rectifier means for combining said high voltage signals for providing a high voltage output signal for operation of said x-ray tube.

4,807,270

RADIOLOGICAL SCANNING APPARATUS

Jean L. Ploix, Issy Les Moulineaux, and Jacques Trotel, Palaiseau, both of France, assignors to Thomson-CSF, Paris, France

Filed Oct. 20, 1986, Ser. No. 920,441
Claims priority, application France, Oct. 22, 1985, 85 15665
Int. Cl.[4] G21K *5/10*
U.S. Cl. 378—146 8 Claims



1. A radiodiagnosis scanning apparatus including an X-ray source which emits X-rays, a collimator forming a flat fan shaped X-ray beam from said X-rays, a film sensitive to said X-rays, a slit interposed between an object to be examined and said film in the path of said fan shaped beam, means for producing a movement of said fan shaped beam with respect to said object so as to scan this latter by means of said fan shaped beam, wherein said film is conformed about a surface of revolution whose axis of revolution is substantially parallel to the plane of said fan shaped beam, said firm being on the one hand moved with respect to said object in the same scanning movement and in synchronism with said fan shaped beam, said film being on the other hand moved with respect to said object in the same scanning movement and in synchronism with said fan shaped beam, said film being on the other hand rotated on itself about said axis of revolution, so as to renew, during said scanning movement, an exposure surface exposed by said fan shaped beam, wherein said film is conformed about a cone.

8. A radiodiagnosis scanning apparatus comprising:
- X-ray source means for emitting X-rays;
- a first collimator forming from said X-rays a first fan shaped X-ray beam;
- a first film sensitive to the first fan shaped X-ray beam;
- a first slit interposed between an object to be examined and said first film in the path of said first fan shaped X-ray beam;
- first means for producing a movement of said first fan X-ray shaped beam with respect to said object so as to scan said object by means of said first fan shaped X-ray beam;
- wherein said first film is conformed about a surface of revolution having an axis of revolution substantially parallel to the plane of said first fan shaped X-ray beam, said first film being on the one hand moved with respect to said object in the same scanning movement and in synchronism with said first fan shaped X-ray beam, said first film being on the other hand rotated on itself about said axis of revolution so as to renew, during said scanning movement, an exposure surface exposed by said first fan shaped X-ray beam;

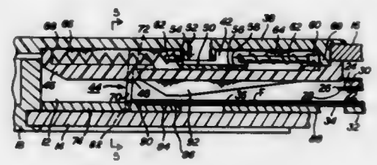
said apparatus further comprising:
- a second collimator forming from said X-rays a second flat fan shaped x-ray beam;
- a second film sensitive to the second fan shaped X-ray beam;
- a second slit interposed between said object to be examined and said second film in the path of said second fan shaped X-ray beam;
- second means for producing a movement of said second fan shaped X-ray beam with respect to said object so as to scan said object by means of said second fan shaped X-ray beam;
- wherein said second film is conformed about a second surface of revolution having a second axis of revolution which is substantially parallel to the plane of said second fan shaped X-ray beam and substantially parallel to the plane of said first fan shaped X-ray beam, said second film being on the one hand moved with respect to said object in the same scanning movement and in synchronism with said second fan shaped X-ray beam, said second film being on the other hand rotated on itself about said second axis of revolution, so as to renew, during said scanning movement, an exposure surface exposed by said second second fan shaped X-ray beam.

4,807,271

FILM SHEET PRESENCE INDICATING MECHANISM FOR A PHOTOGRAPHIC CASSETTE

Roger G. Covington; Bruce R. Muller; Evan P. Carmichael, and John J. Niedospial, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1987, Ser. No. 125,418
Int. Cl.[4] G03B *42/04*
U.S. Cl. 378—182 6 Claims



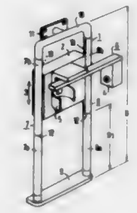
1. In an x-ray cassette having one end wall with a slot therein through which a film sheet is moveable therethrough between screens along an inlet path to a loaded position adjacent an opposite end wall, opposite side walls joining the one end wall and the opposite end wall, and opposing front and rear cover walls joined to the end walls and side walls in which one of the cover walls has an inner side facing an inner surface of the other cover wall, a film sheet presence indicating mechanism for the x-ray cassette comprising:
- a housing secured to the inner side of the one cover wall to define a cavity adjacent the opposite end wall;
- a film sheet presence indicator member mounted within the housing cavity for slidable movement within the housing cavity between a normal first position indicating the absence of a film sheet in the x-ray cassette, and a second position indicating that a film sheet is loaded in the cassette, the indicator member having a depending flag at one end extending to the front cover, and adjacent first and second differently colored surfaces at the other end; and
- an opening extending through the one cover wall which is in alignment with the first colored surface in the normal first position of the indicator member, and which opening is in alignment with the second colored surface when a film sheet is moved along the inlet path to its loaded position within the x-ray cassette causing a leading edge thereof to engage the flag and slidably move the indicator member to its second position.

4,807,272

X-RAY EQUIPMENT SUPPORT APPARATUS

Werner Guenther, and Erich Houbeck, both of Bensheim, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 28, 1986, Ser. No. 845,688
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1985, 3511876
The portion of the term of this patent subsequent to Jan. 31, 2006, has been disclaimed.
Int. Cl.[4] A61B *6/00, 6/14*; F16M *11/00*; H05G *1/02*
U.S. Cl. 378—196 13 Claims



1. In a dental medical apparatus including a stationarily erectible post on which a carriage is adjustably held by means of a guide device, said carriage being the carrier of a medical apparatus, being a rotatory unit composed of an X-ray generator and X-ray film holder, said post being formed of a tubular frame which contains two vertical carrying pipes which proceed parallel to one another and accept said carriage therebetween, said carrying pipes being connected to one another at least at their ends by means of a cross-strutting and comprising at least one transverse division within the pipe length at which the divided pipe sections are joined to one another during assembly, the improvement comprising both of said carrying pipes being composed of a lower pipe section at the floor side which extends up to said transverse division and includes pipes having a closed cross section, and being composed of an upper pipe section above and connected to said lower pipe section and including pipes having a cross section open at one side and thus forming a profile having a longitudinal slot; and said upper pipe section containing guide elements for an adjustment of said carriage arranged between said carrying pipes of said upper pipe section.

4,807,273

VOICE CONTROLLED X-RAY DIAGNOSTICS INSTALLATION

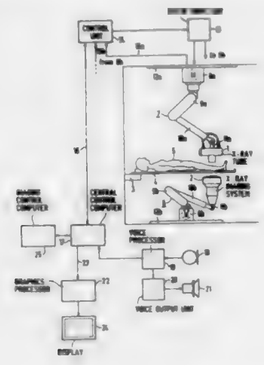
Joerg Haendle, Leipziger Str. 16g, D8520 Erlangen, Fed. Rep. of Germany

Filed Oct. 6, 1987, Ser. No. 105,005
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1986, 3636678
Int. Cl.[4] H05G *1/02*
U.S. Cl. 378—197 9 Claims

1. An x-ray diagnostics installation for examining a subject comprising:

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a plurality of diagnostic components;
a like plurality of adjustable means for respectively supporting and positioning said diagnostic components with respect to said subject;
control means for operating said adjustable means to selectively position said components;
computer means for generating signals for operating said control means;
graphics processor means connected to said computer means



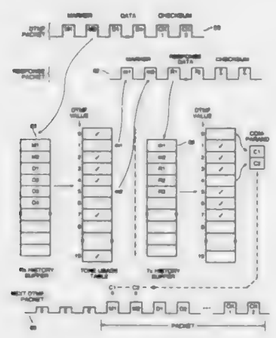
for generating signals corresponding to a pictorial simulation of said components and their positions with respect to said subject;
display means connected to said graphics processor means for visually presenting said pictorial simulation of said components and their positions with respect to said subject; and
means for providing input commands to said computer means for selectively positioning said components by voice.

4,807,274

TELEPHONE LINE QUALITY TESTING SYSTEM

Paavo T. Kouns, Campbell, Calif., assignor to Octel Communications Corporation, Milpitas, Calif.

Filed Feb. 1, 1988, Ser. No. 150,995
Int. Cl.[4] H04M *3/08, 3/24*
U.S. Cl. 379—6 **12 Claims**



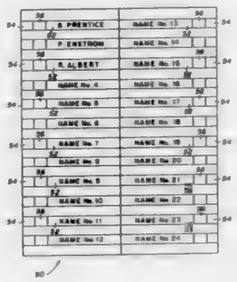
1. A telephone line quality testing system for use in a message transmitting system having at least two subsystems which can be interconnected by a telephone connection, each subsystem having message storage means for storing messages, said telephone line quality testing system comprising:
call initiating means in a first subsystem for establishing a telephone connection with a second subsystem;
communication protocol means in the first subsystem coupled to said telephone connection for transmitting packets of DTMF tones to the second subsystem via the telephone line connection, and for receiving DTMF tones transmitted by the second subsystem via the telephone connection;
response generating means in the second subsystem coupled to said telephone connection for receiving packets of DTMF tones transmitted by the first subsystem, and for responding to each said packet by transmitting a responsive packet of DTMF tones, said responsive packet including a marker comprising at least one DTMF tone selected from the set of DTMF tones not used in at least a predefined portion of the DTMF tones received from said first subsystem; and
echo detection means in the first subsystem coupled to said communication protocol means in the first subsystem for generating a comparand identical to the marker which the second subsystem would generate if the second system properly received the last packet sent to it, and for generating an error signal if said comparand does not match a predefined portion of the DTMF tones received from the telephone connection.

4,807,275

DISPATCH BOARD SYSTEM WITH DISPLAYS FOR INDICATING THE STATUS OF VARIOUS MESSAGES

Paul M. Enstrom, Fremont, Calif., assignor to Ceatigram Corporation, San Jose, Calif.

Division of Ser. No. 38,153, Apr. 14, 1987. This application Jul. 8, 1988, Ser. No. 222,066
Int. Cl.[4] H04M *1/64*
U.S. Cl. 379—68 **4 Claims**



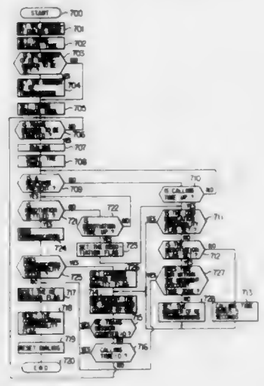
1. A dispatch board system comprising:
a message recording device having a plurality of voice mailboxes and a address signal transmitting means connected to said voice mailboxes for transmitting a first address signal responsive to a message being placed in one of said voice mailboxes and a second address signal responsive to a message being deleted from one of said voice mailboxes; and
a dispatch board connected to the message recording device, and having a plurality of lights with each light being associated with one of said voice mailboxes, and having an address signal receiving means connected to the message recording device and said plurality of lights, for receiving said first and second address signals and for setting one of said lights in a first state responsive to said first address signal and for setting one of said lights in a second state responsive to said second address signal.

4,807,276

RE-TRANSMISSION METHOD AND APPARATUS IN COMMUNICATION SYSTEM USING PUBLIC COMMUNICATION LINES

Shinichi Okabe, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 22, 1988, Ser. No. 147,325
Claims priority, application Japan, Jan. 24, 1987, 62-14472
Int. Cl.[4] H04M *11/00;* **H04N** *1/32*
U.S. Cl. 379—93 **13 Claims**



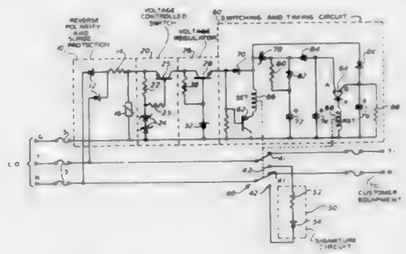
1. A method for re-transmission in a teletex system comprised of a word processor for preparing, printing and registering documents, and a communication unit connected to a public communication line and to said word processor and having an automatic transmission/reception function to transmit and receive documents, said method comprising:
a first decision step for deciding a wrong telephoning and a communication failure transmission operation in the abbreviated dialing mode communications on the condition that either no response is received within a predetermined period of time or a response is received but no negotiation is settled within a predetermined period of time;
a first reduction step responsive to said first decision step for sequentially reducing the calling time or response waiting time for each of re-transmission operations following said communication failure transmission operation when time runs within a specified time zone;
a second decision step for deciding a wrong telephoning and a communication failure transmission operation, in the arbitrary dialing mode communications in which an addressee dialing number is inputted for communication with each desired addressee, on the condition that no response is received within a predetermined period of time;
a second reduction step responsive to said second decision step for sequentially reducing the calling time or response waiting time for each of re-transmission operations following said communication failure transmission operation irrespective of whether time runs within said specified time zone;
a third decision step for deciding a wrong telephoning and a communication failure transmission operation in the arbitrary dialing mode communications on the condition that a response is received within the predetermined period of time but no negotiation is settled within a predetermined period of time; and
an inhibition step responsive to said third decision step for inhibiting communication operations following said communication failure transmission operation when time runs within said specified time zone.

4,807,277

REMOTELY ACTIVATED SWITCHING APPARATUS

Steven B. Perry, Highlands, N.J., assignor to Keptel, Inc., Tinton Falls, N.J.

Filed May 15, 1987, Ser. No. 51,043
Int. Cl.[4] H04M *15/34*
U.S. Cl. 379—102 **20 Claims**



1. Apparatus adapted to be coupled to a link such as a telephone line and to equipment to connect or disconnect the equipment from the link in response to a signal transmitted on the link from a location remote from the location at which the apparatus is located, the apparatus comprising switch means coupled to the link and to the equipment so as to connect and disconnect the link and the equipment in respective switch states of the switch means, first energy storage means, second energy storage means, third energy storage means, means having an input coupled to receive the signal from the link for providing a predetermined substantially constant signal to the first, second and third energy storage means thereby to charge the first, second and third energy storage means, first de-energizing means coupled to the first energy storage means for de-energizing the first energy storage means, voltage threshold means disposed between said first de-energizing means and said first energy storage means whereby said first energy storage means is prevented from charging by a voltage below a predetermined level, second de-energizing means coupled to the second energy storage means for de-energizing the second energy storage means, the switch means having two states and further comprising first actuating means and second actuating means for actuating said switch means, said first actuating means placing said switch means in a first of said states and said second actuating means placing said switch means in a second of said states, said switch means being in the first of said states when said first energy storage means is de-energized by said first de-energizing means, and being placed in a second of said states when said second energy storage means is discharged by said second de-energizing means, and further comprising timing means coupled to the third energy storage means for discharging the third energy storage means, whereby, after a time delay, the third energy storage means will actuate the second de-energizing means to discharge the second energy storage means to place the switch means in the second of the states.

4,807,278

TELECOMMUNICATION CONTROLLER HAVING A TELEPHONE LINE SHARING FUNCTION

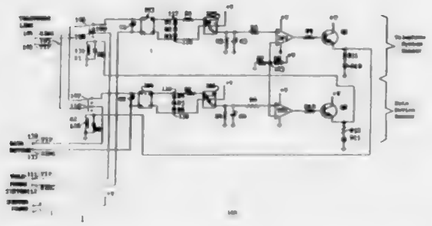
David W. Ross, 732 S. 93 St., West Allis, Wis. 53214

Filed May 11, 1987, Ser. No. 48,736
Int. Cl.[4] H04M *1/70, 11/00*
U.S. Cl. 379—184 **7 Claims**

1. An apparatus for coupling a plurality of telephone line utilizing devices to a shared telephone line comprising:
a plurality of electrically operable switches, each of which couples one of the utilizing devices to the shared telephone line;
a plurality of electric current sensing means, each having means for producing an output voltage which corresponds to the level of current flowing between the tele-

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phone line and a different one of the utilizing devices, a voltage comparator for comparing the output voltage to a reference voltage, and a capacitor and a resistor coupled in parallel between an input of said voltage comparator and substantially ground potential to inhibit a ringing signal on the telephone line from activating said switches; and



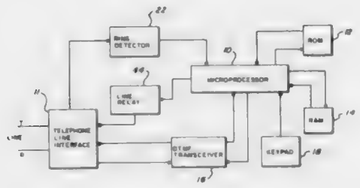
means, responsive to the voltage comparators of said plurality of current sensing means, for activating said switches to disconnect the other utilizing devices from the telephone line when the current flowing between the telephone line and one of the utilizing devices exceeds a given level.

4,807,279

REMOTELY PROGRAMMABLE CALL FORWARDING CONTROL DEVICE

William C. McClure, Denver, Colo., and Bob C. Kunce, Joplin, Mo., assignors to H&M Communications

Filed Jan. 7, 1987, Ser. No. 1,150
Int. Cl.[4] H04M *3/54*
U.S. Cl. 379—211 **14 Claims**



1. A device for remotely changing a call forwarding telephone number for a user s telephone line from a remote telephone, the device comprising:

(a) means for storing a programmed telephone number of the remote telephone line;

(b) means for sensing a ring voltage on the user's telephone line and producing an actuation signal indicative thereof;

(c) means responsive to said actuation signal for seizing the user's telephone line;

(d) means for dailing out on said seized user's telephone line the programmed telephone number, to make contact with the remote telephone; and

(e) means for changing the stored programmed telephone number from said remote telephone.

4,807,280

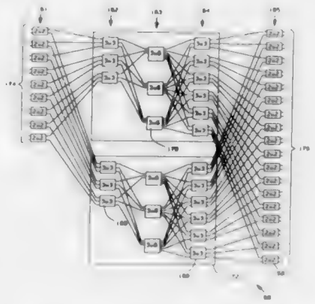
CROSS-CONNECT SWITCH

Edward C. Posner, and Patrick Smyth, both of Pasadena, Calif., assignors to Pacific Bell, San Francisco, Calif.

Filed Sep. 18, 1987, Ser. No. 98,519
Int. Cl.[4] H04Q *3/42*
U.S. Cl. 379—272 **13 Claims**

7. A rearrangeable, non-blocking cross-connect switch for connecting any of N_{in} input lines to any of N_{out} output lines, said switch comprising 2S+1 stages labeled, −S to S, wherein the center stage thereof is labeled O and wherein stage i, for i different from O, comprises a plurality of ${}^{i}n\times{}^{i}n$ switch modules and stage O comprises a plurality of ${}^{0}n_{in}\times{}^{0}n_{out}$ switch modules wherein ${}^{0}n_{in}$ is not equal to ${}^{0}n_{out}$, each said switch module comprising means for connecting any given input line thereto to any given output line therefrom provided the input and output lines in question are idle, wherein

for s=−S to S−1, each output line of each switch module in stage s is coupled to an input line of a switch module in



stage s+1 such that each switch module in stage s is coupled to at least two different switch modules in stage s+1 and each switch module in stage s+1 is coupled to a switch module in stage s,

each input line to said cross-connect switch being coupled to a corresponding input line of a switch module in stage −S, and

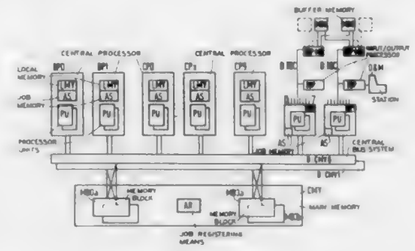
each output line from said cross-connect switch being coupled to a corresponding output line of a switch module in stage S.

4,807,281

METHOD FOR LOAD DISTRIBUTION AMONG THE CENTRAL PROCESSORS OF A MULTIPROCESSOR CENTRAL CONTROL UNIT OF A SWITCHING SYSTEM

Anton Weber, and Mark Clark, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 23, 1987, Ser. No. 137,345
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1987, 3700673
Int. Cl.[4] H04M *3/00*
U.S. Cl. 379—269 **3 Claims**



1. A method for distributing processing load among the central processors (BP, CP, IOC) of a multiprocessor central control unit of a switching system, having a plurality of central processors (BP, CP, IOC) which, in case they are free and

operable, respectively automatically fetch a job for processing a switching task, such as a job relating to a detail of "calling" or "through connecting", stored at a central job registering means (AR), fetching it from said central job registering means; and having a central main memory (CMY) which stores data about the current connections in various memory areas and to which the central processors (BP, CP, IOC) have access via a central bus system (B:CMY), said processors being connected in parallel to said central bus system (B:CMY), including the steps of;

storing in said control processor a protective code corresponding to the address of this central processor (CPx), attaching such protective code to the data of each and every connection to be set up or be maintained or be cleared down, such code being attached thereto in at least a single, characteristic location as soon as and as long as this central processor (CPx) is handling a fetched job appertaining to this connection,

immediately erasing the protective code for the appertaining connection it has entered as soon as the central processor (CPx) has handled its job,

whereby each (for example CP9) of the central processors (BP, CP, IOC) which fetches a new job in the job registering means (AR) immediately checks the data stored in the main memory (CMY) which relate to the connection belonging to its (CP9) job, checking these upon subsequent reading to see whether a protective code for the appertaining connection allocated to another central processor (for example CPx) is already stored, and whereby the central processor (CP9) checking the protective code does not handle its (CP9) fetched new job when the protective code is allocated to another central processor (CP9) and does not completely read the appertaining data,

characterized in that every central processor (BP, CP, IOC) has its own job memory (AS) individually allocated to it, with those further, new jobs which relate to the same connection which the central processor allocated to the job memory (AS) is currently handling being written thereinto;

when a second central processor (CP9), in checking a protective code, identifies that this protective code is allocated to another, first central processor (CPx), the said second central processor (CP9) immediately writes its own, new, second job most recently fetched from the job registering means (AR) into the job memory (AS) of the first central processor (CPx), so that this first central processor (CPx) can itself in turn handle this new, second job, after the conclusion of its (CPx) previous, first job; whereby the second central processor (CP9) can immediately fetch another, new, third job in the job registering means (AR) or, respectively, can fetch another, new, third job from its (CP9) own job memory (AS).

4,807,282

PROGRAMMABLE P/C COMPATIBLE COMMUNICATIONS CARD

Howard Kazan, Raleigh, and Ronald W. Kohake, Cary, both of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

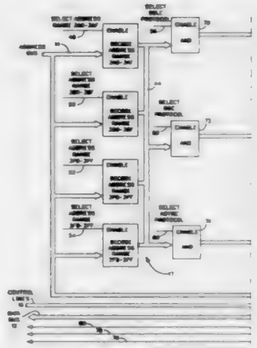
Filed Dec. 30, 1985, Ser. No. 814,436
Int. Cl.[4] G06F *9/00*
U.S. Cl. 379—284 **5 Claims**

1. A multi-protocol communications adapter circuit for use in a telephone communication system or network for interfacing a processor with a modem for providing communication between said processor and a remote host computer via said communication system or network, comprising;

a common communications channel which includes a programmable configuration register for storing control information generated by the processor, said control information representative of one of a plurality of protocols to be used to format data to be transmitted to the remote host computer by means of said communication system or network;

a configuration control logic circuit means coupled to said register; said configuration control logic circuit means operable to monitor the contents of the register and for generating a plurality of control signals therefrom;

address decoding means coupled to an address bus of said processor; said address decoding means being operable for



generating and outputting enable signals if activated by the control signals and if a predetermined address range is being decoded on the address bus; and

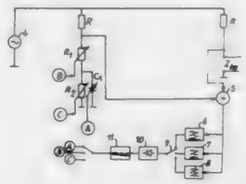
a plurality of protocol conversion controllers coupled to the address decoding means, each one being responsive to the enabling signals and operable for receiving or transmitting a data stream and for converting said data stream into a predetermined protocol format for transmission through said communications system or network.

4,807,283

METHOD FOR ADJUSTING THE BALANCING IMPEDANCE OF A HYBRID JUNCTION

Seppo Pyhillaasmi, Helsinki, Finland, assignor to Oy Nokia Ab, Finland

Filed Jun. 12, 1986, Ser. No. 874,007
Claims priority, application Finland, Jun. 13, 1985, 852355
Int. Cl.[4] H04B *1/58*
U.S. Cl. 379—404 **5 Claims**



1. A method for adjusting balancing impedance in a hybrid junction, said junction comprising a balancing impedance for maximizing hybrid attenuation within a frequency range between predetermined upper and lower operating frequencies; said frequency range being within the passband of a first bandpass filter; said upper frequency determined by the passband of a second bandpass filter; said lower frequency determined by the passband of a third band pass filter; said balancing impedance comprising first and second resistors connected in series and a capacitor connected in parallel with one of said first and second resistors; said method for balancing impedance comprising the steps of:

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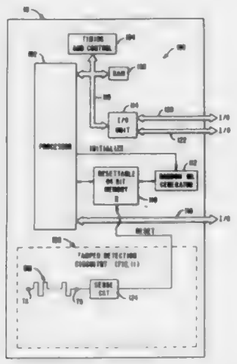
(a) adjusting said first resistor for the maximization of said hybrid attenuation at said upper frequency;
(b) adjusting said capacitor for the maximization of said hybrid attenuation at said upper frequency;
(c) adjusting said second resistor for the maximization of said hybrid attenuation at said lower frequency;
(d) readjusting said first resistor for the maximization of said hybrid attenuation at said upper frequency;
(e) readjusting said second resistor for the maximization of said hybrid attenuation at said lower frequency, and;
(f) readjusting said capacitor for the maximization of said hybrid attenuation within said frequency range and weighing frequencies within said range with respect to each other in accordance with the respective frequency responses of said bandpass filters.

4,807,284

SECURITY DEVICE FOR SENSITIVE DATA

Theodoor A. Kleijne, Dreumel, Netherlands, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 5, 1987, Ser. No. 58,730
Claims priority, application United Kingdom, Sep. 24, 1986, 8622975
The portion of the term of this patent subsequent to Jun. 3, 2003, has been disclaimed.
Int. Cl.[4] H04L *9/00*
U.S. Cl. 380—3 **6 Claims**



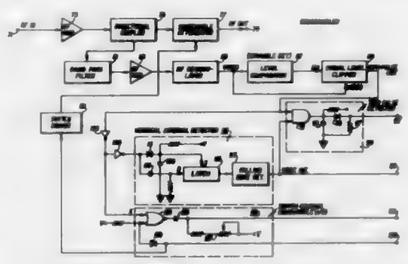
1. A security device for protecting stored sensitive data comprising:
a closed housing containing memory means adapted to store sensitive data and including a top plate, a base plate and a plurality of side plates having conducted path segments formed in meandering configurations over substantially the entire inner surface areas of the respective parts;
interconnection means arranged to electrically interconnect said conductive path segments to form conductive path means, the interruption of which, brought about by an attempt to penetrate said housing, causes the erasure of the contents of said memory means; and
a printed circuit board on which said memory means is supported, wherein said side plates are mounted on the top surface of said printed circuit board which is mounted on said base plate, and wherein said interconnection means includes conductive track means provided on said printed circuit board and conductive wires extending from said top plate through electrically conductive apertures in said printed circuit board to thereby directly connect with a part of said conductive track means on said printed circuited board.

4,807,285

METHOD AND APPARATUS FOR SCRAMBLING A TELEVISION SIGNAL

Dale W. Mariand, Canastota, N.Y., assignor to Eagle Comtronics, Inc., Clay, N.Y.

Filed Apr. 23, 1982, Ser. No. 370,842
Int. Cl.[4] H04N *7/167*
U.S. Cl. 380—15 **43 Claims**



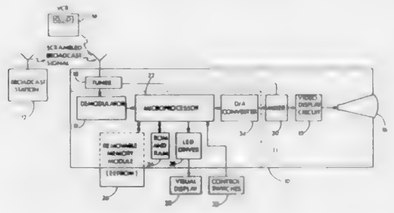
1. An apparatus for scrambling a television signal containing horizontal and vertical synchronizing signals and image information signals, said apparatus comprising:
means for receiving said television signal;
a first detector for deriving horizontal synchronizing signals from said television signal;
first signal generating means responsive to the output of said first detector for generating horizontal sync suppression pulses at times corresponding to the occurrence of horizontal synchronizing signals in said television signal;
second signal generating means responsive to the output of said first detector for generating timing pulses which are related in time to said horizontal sync suppression pulses;
switchable means responsive to the output of said first and second signal generating means for selectively forcing the amplitude of said television signal to a first predetermined level upon the occurrence of said horizontal sync suppression pulses, and for selectively forcing the amplitude of said television signal to a second predetermined whiter-than-white level upon the occurrence of said timing pulses.

4,807,286

HIGH SECURITY PAY TELEVISION SYSTEM

John D. Wiedemer, 6161 Savoy Dr., Houston, Tex. 77036

Filed Apr. 22, 1987, Ser. No. 41,308
The portion of the term of this patent subsequent to Sep. 22, 2004, has been disclaimed.
Int. Cl.[4] H04N *7/167*; **G06K** *15/00*
U.S. Cl. 380—16 **8 Claims**



1. A television receiver adapted for use in a pay television system in which broadcast signals are scrambled comprising:
a tuner to receive the broadcast signal and derive a video signal therefrom;

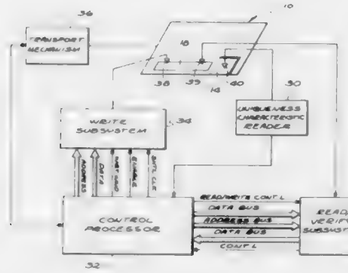
a decoder circuit connected to receive the video signal from the tuner;
a mixer to combine the output of the decoder circuit with the output of the tuner;
a television screen and associated driver circuitry to display the output of the mixer;
a removable, electrically alterable memory module containing a first memory portion in which at least one pre-written external code is carried and second memory portion in which program information may be entered; and
a microprocessor in the decoder circuit programmed to (1) read the external code from the portable memory module, (2) derive a broadcast code from the video signal, (3) generate a descrambling signal from the external code and output the descrambling signal to the mixer, and (4) to write information about programs actually being descrambled, as determined by the broadcast code, in the memory module so that use of the receiver to view scrambled broadcasts can be billed on a usage basis.

4,807,287

DOCUMENT AUTHENTICATION METHOD

Frank D. Tucker, Valencia, and Leonard Nunley, Agoura, both of Calif., assignors to Light Signatures, Inc., Los Angeles, Calif.

Filed Apr. 6, 1987, Ser. No. 34,192
Int. Cl.[4] H04K *1/00*; **G06F** *11/10*
U.S. Cl. 380—23 **19 Claims**



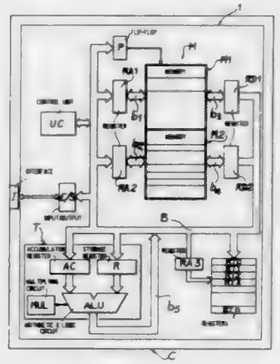
1. A method for authenticating a printable item made of a medium subject to physical damage and having an irregular random surface and a machine-readable uniqueness characteristic over a specified are of the item, the method comprising the steps of:
applying a magnetic composition onto a part of the irregular surface of the item, the magnetic composition forming a magnetic stripe having a non-uniform magnetic characteristic along the surface of the item;
encoding the item according to the substeps of:
reading the uniqueness characteristic along the specified area of the item to define an identifier;
writing the identifier value onto the magnetic stripe to thereby encode the item; and
authenticating the encoded item according to the substeps of:
reading the uniqueness characteristic along the specified area of the item to obtain a verification value;
reading the magnetic stripe to obtain the identifier written thereon by substeps of:
sensing the magnetic flux variations along the magnetic stripe and generating therefrom an analog data signal characterized by peaks in the analog data signal;
conditioning the analog data signal by obtaining a uniform amplitude of the peaks and filtering of noise from the signal;
detecting the position of the peaks, whether of negative or positive polarity, of the conditioned analog data signal;
sensing the differential position between successive peaks;
sensing the polarity of each peak;
processing the differential positions and polarity information to assign a first value representative of a "0" to a bit when there is a first differential position value, to assign a second value representative of a "1" when there is a second differential position value, to assign a third value representative of a non-data character when there is a third differential position value, and assigning values other than the first, second or third values to peaks whose differential position is other than the first, second or third differential positions;
recovering the values of the data bits whose value could not be defined in the step of processing by applying predefined error correction criteria to a data bit string of the assigned values; and
comparing the verification value and the identifier read from the magnetic stripe according to a predefined comparison criterion, the item being authenticated when the verification value and the read identifier compare according to the predefined comparison criterion.

4,807,288

MICROPROCESSOR INTENDED PARTICULARLY FOR EXECUTING THE CALCULATION ALGORITHMS OF A PUBLIC CODE ENCODING SYSTEM

Michel Ugon, Maurepas, and Louis Guillou, Bourgbarre, both of France, assignors to C.I.I. Honeywell Bull, Paris; Etat Francais representé par le Ministre des P.T.T. (C.N.E.T.), Issy Les Moulineaux and Etablissement Public de diffusion dit Telediffusion de France, Montrouge, all of, France

Filed Nov. 30, 1983, Ser. No. 556,414
Claims priority, application France, Nov. 30, 1982, 82 20051
Int. Cl.[4] H04L *9/04*
U.S. Cl. 380—30 **14 Claims**



1. A one chip microprocessor for executing a public key algorithm of a public code encoding system formed by a public function and a secret inverse function of the type comprising at least one programmable read-only memory, a processing unit and an input/output device, wherein it comprises a memory, in

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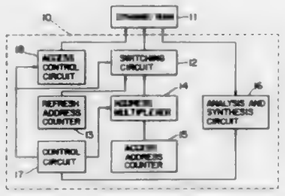
which is recorded at least one algorithm corresponding to the performance of said secret function, and wherein the programmable read-only memory contains the secret parameters constituting the secret code and recorded in an area of the read-only memory which is inaccessible from the outside, the processing unit including multiplying circuits for the execution of the algorithm, the microprocessor further including a first address register for addressing an information to be modified into the memory and a second register for the address progression of a writing sequence authorizing the writing of the modified information of the memory, said two registers being respectively associated with two data registers.

4,807,289

APPARATUS FOR RECORDING AND REPRODUCING HUMAN SPEECH BY ITS ANALYSIS AND SYNTHESIS

Takao Nakajima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1985, Ser. No. 780,883
Claims priority, application Japan, Sep. 28, 1984, 59-203255
Int. Cl.⁴ G10L *5/00*
U.S. Cl. 381—36 **2 Claims**



1. An apparatus for recording and reproducing human speech by analyzing and synthesizing the same comprising:

first means for analyzing human speech according to a first control signal, providing analyzed data and synthesizing human speech on the basis of said analyzed data;

a dynamic RAM for memorizing said analyzed data provided by said first means and for reading the analyzed data therefrom;

a refresh address counter for providing a refresh signal of a predetermined frequency so as to output a refresh address sequentially varying every predetermined refresh cycle, said refresh address indicating a location of a memory cell to be refreshed in said dynamic RAM;

an access address counter for outputting an access address indicative of a location of a memory cell where said analyzed data in said dynamic RAM is accessed;

an address multiplexer for dividing said access address from said access counter into a plurality of bit trains according to a second control signal so as to obtain a upper bit train and a lower bit train, the dividing point of said bit trains being arbitrarily changeable, depending upon the memory capacity of said dynamic RAM;

second means for selecting either said refresh address or said access address in synchronism with said predetermined refresh cycle according to a third control signal;

third means for outputting a refresh control signal to said dynamic RAM when said refresh address is selected by said selecting means and for outputting an access control signal to said dynamic RAM when said access address is selected by said selecting means; and

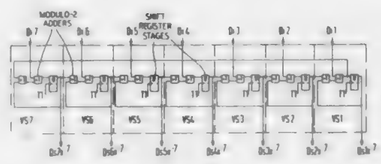
means for effecting a refresh operation of a memory cell assigned to said refresh address in response to said refresh control signal, for effecting an access to a memory cell assigned to said access address in response to said access control signal and for providing the first to third control signals to said first to third means and said address multiplexer.

4,807,290

SELF-SYNCHRONIZING SCRAMBLER

Reginhard Pospischil, Grafelfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

PCT No. PCT/DE85/00027, § 371 Date Sep. 25, 1985, § 102(e) Date Sep. 25, 1985, PCT Pub. No. WO85/03612, PCT Pub. Date Aug. 15, 1985
PCT Filed Feb. 1, 1985, Ser. No. 784,684
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1984, 3403650
The portion of the term of this patent subsequent to May 26, 2004, has been disclaimed.
Int. Cl.⁴ H04K *1/02*; H04L *9/04*
U.S. Cl. 380—43 **3 Claims**



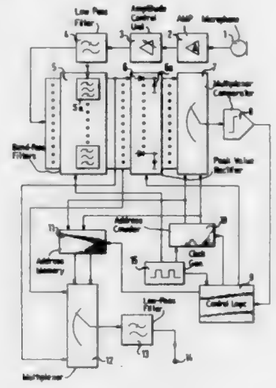
1. A self-synchronizing scrambler comprising n parallel scrambler stages each comprising a first modulo-2 adder and a second modulo-2 adder connected in series and a clock shift register stage, including n parallel inputs for respective ones of n bits arriving in parallel of a digital signal to be scrambled, the inputs being ordered corresponding to the sequence of the incoming bits with the nth bit applied to the first input and the following bits applied in succession to the remaining inputs in each scrambler stage, one input of the second modulo-2 adder representing the signal input and the output of the second modulo-2 adder representing the signal output, characterized in that, for the generation of the scrambled signal having a scrambler period of 2^n-1 bit, one shift register stage is provided in each scrambler stage and therefore n shift register stages are provided in total; in that the output of the shift register stage (SR) is connected to the first input of the first modulo-2 adder (A1) and its output connected to the first input of the second modulo-2 adder (A2); in that the second input of the second modulo-2 adder (A2) is connected to the assigned input for the digital signal; in that the output of the second modulo-2 adder (A2) is connected to the input of the shift register stage (SR) contained in the same scrambler stage; in that the second input of the first modulo-2 adder (A1) of the one scrambler stage is connected to the output of the shift register stage of the scrambler stage for the mth bit in all scrambler stages up to the $(n-m+1)^{th}$ scrambler stage; in that m is smaller than n and is a whole number; in that, in the $(n-m)^{th}$ scrambler stage the connection from the second input of the first modulo-2 adder is to the input of the shift register stage of the nth scrambler stage and, correspondingly, from the $(n-m-1)^{th}$ scrambler stage to the $(n-1)^{th}$ scrambler stage; in that the individual bits of the scrambled digital signals can be optionally taken at the inputs or at the outputs of the shift register stages; and in that the clock inputs of the shift register stages are connected to a source for a clock signal whose frequency is the 1/7-fold portion of the bit clock frequency of the digital signal.

4,807,291

CIRCUIT FOR A FLASH STROBOSCOPE FOR EXAMINING VOCAL CHORD FUNCTIONS

Reiner Hoffmann, Illingen, and Peter Jaggy, Ostelsheim, both of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Fed. Rep. of Germany

Filed Oct. 10, 1986, Ser. No. 917,692
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1985, 3536972
Int. Cl.⁴ A61B *1/26*; G10L *9/04*
U.S. Cl. 381—49 **16 Claims**



1. A circuit for operating a flash lamp in a lamp drive circuit in synchronization with the fundamental frequency of an incoming acoustic signal of variable fundamental frequency comprising:

transducer means for converting said acoustic signal into an electric signal;

a plurality of band-pass filters connected in parallel having respectively different pass-bands to which said electric signal is supplied;

means for cyclically scanning the outputs of all of said filters;

means for detecting the presence of a signal at an output of one of said filters having said fundamental frequency;

means for stopping said means for scanning upon detection of said signal having said fundamental frequency; and

means for connecting the output of said one of said filters to said lamp drive circuit for use as a control signal for said lamp drive circuit.

4,807,292

APPARATUS FOR CONVERTING A MOTOR VEHICLE PLUG-IN AUDIO UNIT INTO A REMOTE PLAYABLE UNIT

Bernard Sorscher, 75-74 199th St., Fresh Meadows, N.Y. 11366

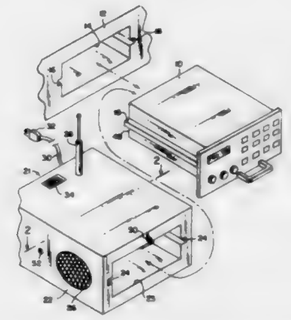
Filed Oct. 13, 1987, Ser. No. 107,104
Int. Cl.⁴ H05K *5/00*
U.S. Cl. 381—86 **9 Claims**

1. An apparatus for converting a motor vehicle plug-in audio unit into a remote playable unit which comprises:

(a) a housing to receive the audio unit;

(b) means within said housing for supplying DC power to the audio unit, said DC power supply means including a connector located within said housing for receiving a connector of the audio unit and a battery located within said housing and electrically connected to said housing connector for supplying DC power through the audio unit connector and into the audio unit and an AC to DC battery charger located within said housing and electrically connected to said battery and a power cord electrically connected to said battery charger and a power plug electrically connected to said power cord for taking AC current through said power cord into said battery charger for charging said battery when needed and an AC to DC transformer located within said housing and electrically connected to said housing connector and a transfer switch located on said housing and being electrically connected in a first mode between said power plug on said power cord and said battery charger and in a second mode between said power plug on said power cord and said transformer so that when said transfer switch is in said first mode said battery charger will operate and when said transfer switch is in said second mode said transformer will operate to supply DC power through the audio unit connector and into the audio unit; and

(c) a pair of speakers electrically connected to the audio unit so that the audio unit can be played away from and independently of the motor vehicle.



4,807,293

LOUDSPEAKER HOUSING

Joachim Weckler, Im Berggarten 4, D-6309 Reckenberg, Fed. Rep. of Germany

Filed Oct. 30, 1987, Ser. No. 114,783
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1986, 3637910
Int. Cl.⁴ H05K *5/00*
U.S. Cl. 381—159 **18 Claims**



1. Loudspeaker housing, particularly for the radiation of deep and middle tone ranges, with a front side and a rear wall as well as with an intermediate wall located between the front side and the rear wall and being smaller than said rear wall, further with a sound emitting element provided at the front side, wherein a rear side of said sound emitting element is in an acoustic connection with a folded flare comprising two sound guidance branches, branches of which are equidistant with respect to the rear wall, said flare basically emitting sound in the same direction as the front side of the sound emitting element and a radiating opening of the folded flare is located at

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one location above or below the sound emitting element, characterized in that between the rear wall and the intermediate wall generally vertical spacers are disposed, each of them extending from said rear wall to said intermediate wall, upper ends of the vertical spacers are oriented towards respective sound deflection devices, each of said sound deflection devices deflecting the sound in a different direction, and lower ends of the vertical spacers enclose an opening in the intermediate wall.

4,807,294

PIEZOELECTRIC AND FOAM RESIN SHEET SPEAKER

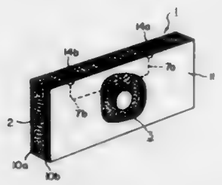
Yoichi Iwata; Nubuo Tanaka, and Junichi Katarayama, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Japan

Filed Jun. 17, 1987, Ser. No. 63,548

Claims priority, application Japan, Jun. 20, 1986, 61-095257[U]; Apr. 10, 1987, 62-088215

Int. Cl.⁴ H04R *17/00*

U.S. Cl. 381—190 **10 Claims**



1. A sheet speaker assembly comprising; a planar piezoelectric ceramic sheet; a planar hard resin foam sheet surrounding and encapsulating said planar piezoelectric ceramic sheet; said planar piezoelectric sheet being approximately at the center of said planar hard resin foam sheet; said planar hard resin foam sheet having a surface area approximately at least ten times the surface area of said planar piezoelectric ceramic sheet whereby said assembly provides a sheet speaker having high acoustic output power.

4,807,295

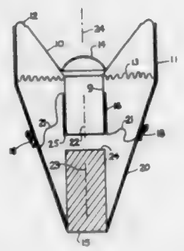
LOUDSPEAKER

Earl L. Dombroski, Rio Rancho, N. Mex., assignor to Dumbroski and Hanson Industrial Designs, Inc., Rio Rancho, N. Mex.

Filed Aug. 18, 1987, Ser. No. 86,595

Int. Cl.⁴ H04R *9/04*

U.S. Cl. 381—194 **14 Claims**



1. A loudspeaker comprising in combination:
a frame defining an aperture;
a diaphragm having an axis;
means for movably mounting said diaphragm to said frame so as to span the aperture, for limited motion along the axis;
a permanent magnet, but not more than one permanent magnet, cylindrical in shape and having an axis and two ends, attached to said frame with its axis substantially colinear with the axis of said diaphragm; and,
a solenoid, attached to said diaphragm and having an axis substantially colinear to the axis of said permanent magnet, the length of said solenoid being greater than its diameter.

4,807,296

AUTOMATIC PATTERN ORIGINAL READING APPARATUS

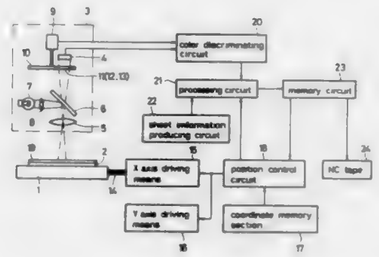
Masaaki Ando, Yokohama, and Masaaki Matsuzaka, Fujisawa, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 12, 1985, Ser. No. 743,790

Claims priority, application Japan, Jan. 12, 1984, 59-119206

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—8 **4 Claims**



1. An automatic pattern original reading apparatus comprising:
a table for positioning and placing a hole diameter indication sheet having a colored indication formed at a position corresopnding to a perforation position of a pattern original for a printed substrate, said color indication indicating a hole diameter;
optical means opposed to said hole diameter indication sheet on said table for optically reading said colored indication;
position control means for moving said optical means and said table relatively in accordance with perforation position coordinate data prepared beforehand by reading the perforation position of said pattern original and for sequentially positioning to perforation position coordinates;
color discriminating means for discriminating color information color by processing an output of said optical means; and
memory means for storing an output of said color discriminating means in a corresponding relationship with said perforation position coordinate data;
said optical means including:
a light source for illuminating the surface of said hole diameter indication sheet,
color filter means for selectively transmitting reflected light from said hole diameter indication sheet, and
a single photo detector for detecting the transmitted light through said color filter means;
said position control means performing position control by retrieving stored data form said memory means.

4,807,297

NEIGHBOR IMAGE PROCESSING DEVICE

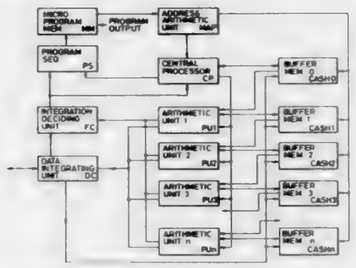
Makoto Hosoda, Shizuoka, Japan, assignor to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, Japan

Filed Aug. 26, 1986, Ser. No. 900,515

Claims priority, application Japan, Aug. 27, 1985, 60-187586

Int. Cl.⁴ G06K *9/56*

U.S. Cl. 382—27 **8 Claims**



1. A neighbor image processing device for processing image data according to a predetermined program comprising:
address generating means for simultaneously generating address corresponding to each of a central point and a plurality of individual neighbor points of an image neighbor region;
buffer memory means for simultaneously receiving data on the points, and their corresponding addresses from said address generating means;
central processor means coupled to said address generating means and said buffer memory means for comparing the neighbor point data with data on the central point of the neighbor region;
arithmetic and logic means connected to said central processor means for selectively modifying the data simultaneously for the individual points according to the instructions from said central processor means;
data integration means for receiving a plurality of simultaneous outputs from said arithmetic and logic means and generating a single output based on instructions from the program;
decision integrating means for receiving a plurality of the single outputs from said data integration means and generating a coded multi-value based on instructions from the program; and
memory means for storing the program to be executed by said processing device.

4,807,298

METHOD OF AND SYSTEM FOR DIGITAL SIGNAL CODING BY VECTOR QUANTIZATION

Garibaldi Conte, San Severo; Mario Guglielmo, Montalenghe, and Fabrizio Oliveri, Quiliano, all of Italy, assignors to Cselt–Centro Studi E Laboratori Telecomunicazioni S.P.A., Turin, Italy

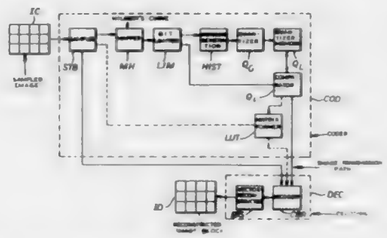
Filed Apr. 1, 1987, Ser. No. 34,025

Claims priority, application Italy, Apr. 7, 1986, 67273 A/86

Int. Cl.⁴ G06K *9/36*

U.S. Cl. 382—56 **17 Claims**

1. A method of coding a digital signal by vector quantization, which comprises the steps of:
subdividing said signal into blocks to be coded in sequence and each comprising a predetermined number of samples which are coded at the same time, each block being representable as a vector identifying a point in an n-dimensional space, wherein n=the number of samples in a block, and having n components whose values represent the values of the individual samples;
for each block to be coded, transforming the coordinates of the respective point in the n-dimensional space into the coordinates of a point in a one-dimensional space according to a mapping preserving in the one-dimensional space adjacency properties of the n-dimensional space;
comparing the coordinates of the points in said one-dimensional space with coordinates of the end points of a plurality of adjacent intervals in said one-dimensional space, each interval being associated with an index forming a coded value of the end points of the respective interval and with respective ones of said vectors falling in said interval; and
during decoding, selecting based upon said index a vector out of a previously determined codebook consisting of means values of the vectors falling in said interval.



4,807,299

BULK CONTAINERS

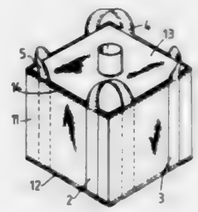
Frank Nattrass, Harrogate, and Geoffrey Page, Leeds, both of England, assignors to Bowater Packaging Limited, London, England

Filed Sep. 23, 1987, Ser. No. 100,114

Claims priority, application United Kingdom, Sep. 23, 1986, 8622893

Int. Cl.⁴ B65D *30/08*

U.S. Cl. 383—109 **16 Claims**



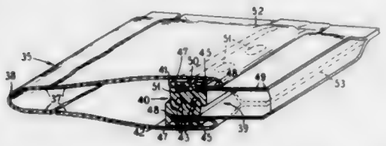
1. A flexible bulk container having a side wall structure and a plurality of lifting loops all formed from a single length of tubular woven fabric that comprises base fabric and reinforcing bands woven integrally with the base fabric and extending parallel to the axis of the tube, the tubular woven fabric having been folded transversely to the axis to form a tubular double-walled side wall structure having an outer wall and an inner wall of approximately equal lengths joined at the top of the container by lifting loops formed by lengths of the reinforcing bands, parts of the base fabric being cut away in the region of the lifting loops so that the lifting loops stand above the side wall structure, the lower end of the side wall structure being closed by a base.

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4,807,300
PLASTIC ZIPPER BAG WITH ANCHOR-SOCKET ATTACHMENT ARRANGEMENT

Steven Ausnit, New York, and Per Bentsen, Suffern, both of N.Y., assignors to Minigrip, Inc., Orangeburg, N.Y.

Continuation-in-part of Ser. No. 769,894, Aug. 27, 1985, Pat. No. 4,682,366. This application Jul. 13, 1987, Ser. No. 72,559
The portion of the term of this patent subsequent to Jul. 21, 2004, has been disclaimed.
Int. Cl.[4] B65D *33/16*
U.S. Cl. 383—65 **25 Claims**



1. A bag structure having a thin web body providing an openable top portion flanked by opposed upwardly projecting pull flanges, and an extruded plastic zipper means carried by said body along said pull flanges, and comprising:

said body and said zipper means being fusibly incompatible;

said zipper means comprising a pair of extruded plastic strips having complementary separably interlockable zipper profiles located substantially below upper ends of said pull flanges;

said plastic zipper strips having sockets extending therealong and material of said body received in said sockets;

said material received in said sockets having anchor holes therethrough at predetermined intervals along the sockets;

anchors extending from said zipper strips into said anchor holes and thereby permanently securing said zipper strips to said body; and

a pilfer evident seal extending along said pull flanges and required to be destructively opened to gain access into said openable top which is thereafter reclosable by said zipper means.

6. A bag structure having a thin web material body having wall panels providing an openable top portion flanked by opposed upwardly projecting pull flange portions, and extruded plastic zipper means carried by said body along said pull flange portions, and comprising:

said body and said zipper means being fusibly incompatible;

said zipper means comprising a pair of extruded plastic strips having complementary separably interlockable zipper profiles located substantially below upper ends of said pull flanges portions;

said plastic zipper strips having base socket parts providing respective sockets extending therealong and said pull flange portions having anchorage structures received in said sockets;

said anchorage structures having anchor holes therethrough at predetermined intervals along the sockets;

anchors extending from said zipper socket parts into said anchor holes and thereby permanently securing said zipper strips to said pull flange portions; and

said pull flange portions in each instance extending substantially beyond said socket parts or said socket parts extending substantially beyond said flange portions and thereby providing digital grasping areas of a length adapted for providing a pilfer evident seal when sealed together.

17. A method of making a bag structure having a thin body providing an openable top portion flanked by opposed upwardly projecting pull flanges, and an extruded plastic zipper means carried by said body along said pull flanges, and comprising:

forming said body from one selected material and said zipper means from extruded plastic material which is fusibly incompatible with the material of said body;

providing said zipper means as a pair of strips having complementary separably interlockable profiles located substantially below upper ends of said pull flanges;

forming said zipper strips with sockets extending therealong;

receiving material of said body in said sockets with anchor holes at predetermine intervals therealong;

forming anchors extending from said zipper strips into said anchor holes and thereby permanently securing said zipper strips to said body; and

forming a pilfer evident seal extending along the pull flanges and required to be destructively opened to gain access into said openable top which is thereafter reclosable by said zipper means.

22. A method of making a bag structure having a thin web body with wall panels providing an openable top portion flanked by opposed upwardly projecting pull flange portions, and extruded plastic zipper means carried by said body along said pull flange portions, and comprising:

providing said body of one material and said zipper means from another material which is fusibly incompatible with the body material;

providing said zipper means as a pair of extruded plastic strips having complementary separably interlockable zipper profiles located substantially below upper ends of said pull flanges portions;

providing said plastic zipper strips with base socket parts defining respective sockets extending therealong and receiving anchorage structures of said pull flange portions in said sockets;

providing anchor holes in said anchorage structures at predetermined intervals along the sockets;

providing anchors extending from said zipper strip socket parts into said anchor holes and thereby permanently securing said zipper strips to said pull flange portions; and

effecting extension of one of said pull flange portion or said socket part in each instance substantially beyond the other of said flange portion or said socket part and thereby providing digital grasping area of a length adapted for providing a pilfer evident seal when sealed together.

DESIGNS

FEBRUARY 21, 1989

299,880
BRASSIERE

Phyllis Shook, Glen Rock, and Shiela Gass, Saddlebrook, both of N.J., assignors to Playtex Apparel, Inc., Stamford, Conn.

Filed Feb. 26, 1986, Ser. No. 836,183
Term of patent 14 years
U.S. Cl. D2—24



299,881
CHILD'S SUIT

Tsun M. Chmielinski, and Robert W. Chmielinski, both of 163 S. Great Rd., Lincoln, Mass. 01773

Filed May 15, 1985, Ser. No. 734,061
Term of patent 14 years
U.S. Cl. D2—33



299,882
BIB

Brigitte Frosins, Guerickestr. 25, Munich, Fed. Rep. of Germany

Filed Jul. 7, 1986, Ser. No. 882,288
Term of patent 14 years
U.S. Cl. D2—226



299,883
HIGH HEEL GUARD

Melvin A. Steele, 122 Bayridge Rd., Cape May, N.J. 08204

Filed Apr. 24, 1986, Ser. No. 857,459
Term of patent 14 years
U.S. Cl. D2—277



299,884
ELEMENT OF A SHOE UPPER

Paul D. Brown, Hingham, and David E. Miller, Carver, both of Mass., assignors to Reebok International Ltd., Canton, Mass.

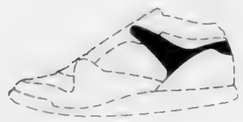
Filed Jul. 20, 1988, Ser. No. 221,630
Term of patent 14 years
U.S. Cl. D2—314



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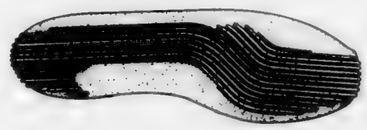
299,885
ELEMENT OF A SHOE UPPER
Paul D. Brown, Hingham, Mass., assignor to Reebok International Ltd., Canton, Mass.
Filed Aug. 3, 1988, Ser. No. 227,715
Term of patent 14 years
U.S. Cl. D2—314





299,887
SHOE SOLE
Juan A. Diaz, Weymouth, Mass., assignor to Reebok International, Ltd., Canton, Mass.
Filed Jul. 16, 1987, Ser. No. 74,163
Term of patent 14 years
U.S. Cl. D2—320



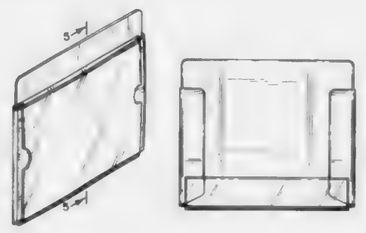


299,886
SHOE UPPER
Paul D. Brown, Hingham, Mass., and Hugh J. Hamill, State College, Pa., assignors to Reebok International Ltd., Canton, Mass.
Filed Aug. 3, 1988, Ser. No. 227,712
Term of patent 14 years
U.S. Cl. D2—314

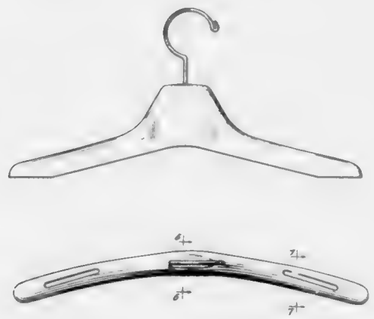




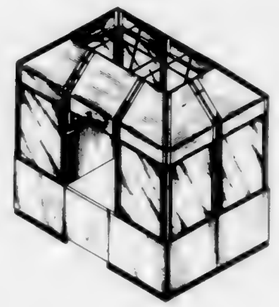
299,888
ENVELOPE FOR COMPUTER DISKETTE
Rodger D. Maxwell, 4435 Lindblade, Mar Vista, Calif. 90066
Filed May 14, 1984, Ser. No. 609,756
Term of patent 14 years
U.S. Cl. D3—35



299,889
CLOTHES HANGER
Bernard Spitz, c/o The Henry Hanger & Display Fixture Corp. of America, 450 Seventh Ave., New York, N.Y. 10123
Filed May 12, 1986, Ser. No. 863,381
Term of patent 14 years
U.S. Cl. D6—318



299,891
MODULAR MERCHANDISING BOOTH
Henry Belznek, Columbus, Ohio, assignor to National Ice Corporation, Philadelphia, Pa.
Filed May 1, 1986, Ser. No. 859,721
Term of patent 14 years
U.S. Cl. D6—396



299,892
PANEL MOUNTED RACK UNIT
Steven J. Rose, 5542 Sepulveda Blvd., Culver City, Calif. 90230, and Larry F. Knowles, 835 Milwood Ave., Venice, Calif. 90291
Filed Jan. 21, 1986, Ser. No. 820,135
Term of patent 14 years
U.S. Cl. D6—566





299,890
CHAIR
Noel S. D. Wood, Lindfield, Australia, assignor to Sebel Furniture Ltd., Bankstown, Australia
Filed Mar. 18, 1986, Ser. No. 845,079
Claims priority, application Australia, Sep. 19, 1985, 2629/85
Term of patent 14 years
U.S. Cl. D6—380

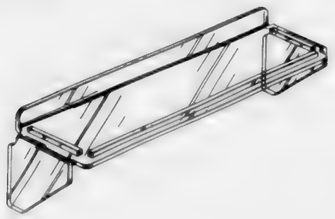


299,893
TABLE
Hans Diehl, Haufroostrasse 11, CH-5452 Oberrohrdorf, Switzerland
Filed Jun. 25, 1986, Ser. No. 878,193
Term of patent 14 years
U.S. Cl. D6—484



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299,894
TOWEL BAR ATTACHED SHELF
Grace M. Vigsale, 355 Garden St., Deland, Fla. 32720
Continuation of Ser. No. 143,359, Jan. 12, 1988. This application Feb. 1, 1988, Ser. No. 150,720
Term of patent 14 years
U.S. Cl. D6—574



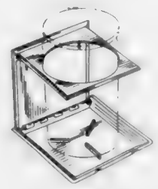
299,895
HOLDER FOR INFANT-CARE ARTICLES
Kathleen R. Converti, 5601 W. Missouri #90, Glendale, Ariz. 85301
Filed Nov. 24, 1986, Ser. No. 934,317
Term of patent 14 years
U.S. Cl. D6—514



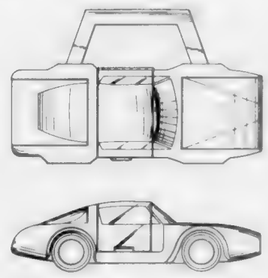
299,896
WALL HUNG CONSOLE TABLE
Charles W. Harrell, 609 N. Douglas Ave., Margate, N.J. 08402
Filed Dec. 24, 1986, Ser. No. 946,291
Term of patent 14 years
U.S. Cl. D6—574



299,897
FOLD UP BEVERAGE CONTAINER HOLDER
Robert R. Rasmussen, 1120 Grandview La., Lake Forest, Ill. 60045
Filed Jan. 13, 1986, Ser. No. 818,281
Term of patent 14 years
U.S. Cl. D7—70



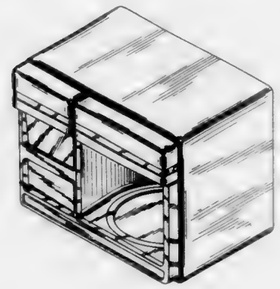
299,898
LUNCH BOX
Daniel L. Pashley, 1308 S. Shore Rd., Marmora, N.J. 08223
Filed May 19, 1986, Ser. No. 864,887
Term of patent 14 years
U.S. Cl. D7—76

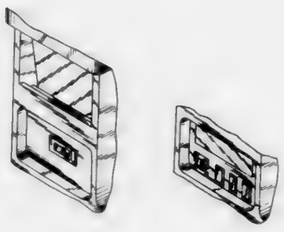


299,899
FORK OR SIMILAR ARTICLE
Andrew Liebmann, St. Laurent, Canada, assignor to Polar Plastics Ltd., St. Laurent, Canada
Filed Feb. 24, 1986, Ser. No. 836,612
Term of patent 14 years
U.S. Cl. D7—138



299,900
BREWER FOR COFFEE OR TEA
Vincent G. Marotta, 18801 S. Park Blvd., Shaker Heights, Ohio 44122
Filed Dec. 6, 1985, Ser. No. 806,085
Term of patent 14 years
U.S. Cl. D7—309

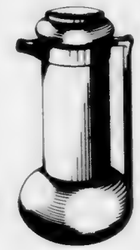




299,901
VACUUM JUG
Frank T. S. Huang, P.O.Box 84-885, Taipei, Taiwan
Filed Jan. 17, 1986, Ser. No. 819,768
Term of patent 14 years
U.S. Cl. D7—317



299,902
VACUUM JUG
Frank T. S. Huang, P.O.Box 84-885, Taipei, Taiwan
Filed May 12, 1986, Ser. No. 862,596
Term of patent 14 years
U.S. Cl. D7—317



299,903
EGG COOKER
Joachim Grützke, Offenbach am Main, Fed. Rep. of Germany, assignor to Rowenta-Werke GmbH, Fed. Rep. of Germany
Filed Feb. 26, 1986, Ser. No. 836,591
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1985, 5MR10626
Term of patent 14 years
U.S. Cl. D7—357





299,904
POT LID KNOB COVER
Patricia C. Smith, 450 Astoria Crescent S. E., Calgary, Alberta, Canada (T2J 0Y7)
Filed Oct. 7, 1986, Ser. No. 785,358
Term of patent 14 years
U.S. Cl. D7—393

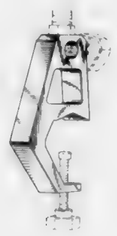


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299,905
ELECTRONIC CARD-OPERATED DOOR LOCK
Aaron M. Fish, Cote St. Luc; Leon Mayzels, Montreal, and Brian Gosselin, Laval, all of Canada, assignors to Ilco Unican Inc., Montreal, Canada
Filed Sep. 3, 1986, Ser. No. 903,431
Term of patent 14 years
U.S. Cl. D8—331



299,906
ADAPTER CLAMP BODY FOR MICROPHONES OR THE LIKE
Robert G. Greulich, Cranford, N.J., assignor to Atlas Sound, Division of American Trading & Production Corporation, Parsippany, N.J.
Filed Dec. 5, 1986, Ser. No. 939,020
Term of patent 14 years
U.S. Cl. D8—394



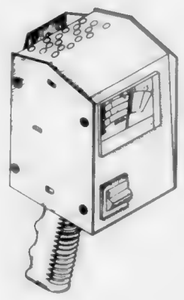
299,907
ORAL THERMOMETER
George T. Brown, Jr.; Luis Santacaterina, and Winfried Schuberth, all of Dayton, Ohio, assignors to American Thermometer Co., Inc., Dayton, Ohio
Filed Jul. 3, 1986, Ser. No. 881,858
Term of patent 14 years
U.S. Cl. D10—57



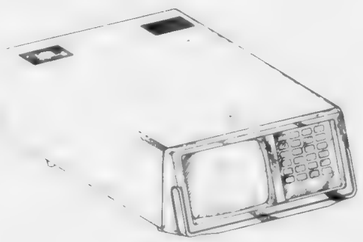
299,908
COMPASS
Yasushige Miyazima, No. 502, 3-19-5 Midori, Sumida-ku, Tokyo, Japan
Filed Jul. 22, 1986, Ser. No. 889,112
Term of patent 14 years
U.S. Cl. D10—68



299,909
PORTABLE BATTERY TESTER
Ralph F. Casey, St. Louis, Mo., assignor to Associated Equipment Corporation, St. Louis, Mo.
Filed Mar. 17, 1986, Ser. No. 845,047
Term of patent 14 years
U.S. Cl. D10—77



299,910
ENGINE ANALYZER
Donald W. Doman, Janesville; Gerald R. Bakula, Kenosha; Raymond R. Zazinec, Sr., Kenosha; Thomas J. Christensen, Kenosha, and Jack A. Purse, Kenosha, all of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.
Filed Jun. 23, 1986, Ser. No. 877,679
Term of patent 14 years
U.S. Cl. D10—78



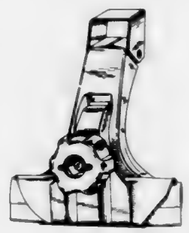
299,911
IDENTIFICATION BRACELET
George V. Selke, Denver, Colo., assignor to Clink Products, Inc., Denver, Colo.
Filed Feb. 26, 1987, Ser. No. 19,023
Term of patent 14 years
U.S. Cl. D11—5



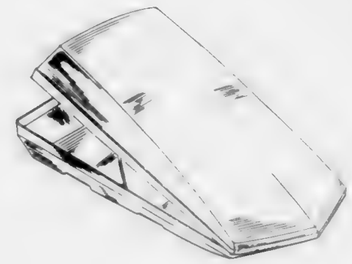
299,912
JEWELRY RING
Jonathan Goldman, 154 W. 14th St., New York, N.Y. 10011, and Naohiro Ueno, 1-12-12, Higashi-Ueno, Taito-ku, Tokyo, Japan
Filed Feb. 24, 1987, Ser. No. 18,010
Term of patent 14 years
U.S. Cl. D11—38



299,913
SKI RACK HOLDER
Jan-Ivar Arvidsson, Hillerstorp, Sweden, assignor to Industri AB Thule, Hillerstorp, Sweden
Filed Sep. 11, 1986, Ser. No. 906,203
Claims priority, application Sweden, Mar. 11, 1986, 86-0611
Term of patent 14 years
U.S. Cl. D12—157



299,914
AUTOMOTIVE LUGGAGE CARRIER
Eric C. Witte, 16 Greenwood La., Westport, Conn. 06880
Filed Feb. 7, 1986, Ser. No. 827,006
Term of patent 14 years
U.S. Cl. D12—157



299,915
BOAT FENDER
Johan Ullman, Ångstadsgatan 3, S-582 58 Linköping, and Fredrik Amt, Västra Frölunda, both of Sweden, assignors to Johan Ullman, Linköping, Sweden
Filed Dec. 18, 1985, Ser. No. 810,130
Claims priority, application Sweden, Jun. 28, 1985, 85-1655
Term of patent 14 years
U.S. Cl. D12—168

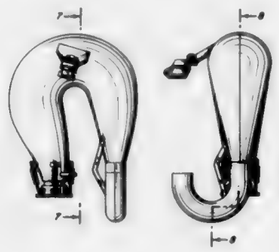


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299,916
REAR BUMPER FOR AN AUTOMOBILE
Mitsuo Ikeda, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed May 8, 1986, Ser. No. 862,442
Claims priority, application Taiwan, Apr. 7, 1986, 75301630
Term of patent 14 years
U.S. Cl. D12—169



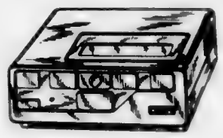
299,917
WETBIKE MUFFLER PIPE
Christopher L. Lessel, 15205 Rayner St., Van Nuys, Calif. 91405
Filed Jul. 11, 1986, Ser. No. 884,576
Term of patent 14 years
U.S. Cl. D12—194



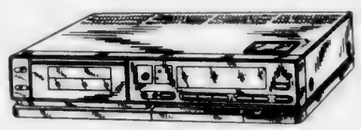
299,918
WHEEL
Björn E. A. Eavall, Vänersborg, Sweden, and Geoffrey P. Wardle, Coundon Coventry, England, assignors to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Apr. 24, 1984, Ser. No. 603,950
Claims priority, application Sweden, Oct. 26, 1983, 83-2776
Term of patent 14 years
U.S. Cl. D12—209



299,919
VIDEO TAPE RECORDER
Atsushi Fukutomi, Kamakura, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 24, 1986, Ser. No. 923,657
Claims priority, application Japan, May 13, 1986, 61-17962
Term of patent 14 years
U.S. Cl. D14—135



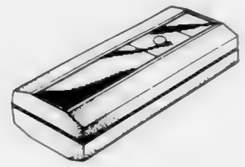
299,920
VIDEO TAPE RECORDER
Shin Miyashita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jun. 20, 1985, Ser. No. 746,634
Claims priority, application Japan, Dec. 28, 1984, 59-54509
Term of patent 14 years
U.S. Cl. D14—135



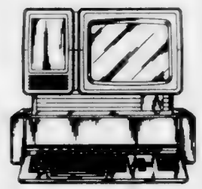
299,921
MICROPHONE
Fumitaka Kikutani, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 22, 1985, Ser. No. 768,471
Claims priority, application Japan, Mar. 26, 1985, 60-12033
Term of patent 14 years
U.S. Cl. D14—227

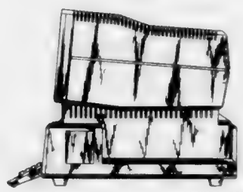


299,922
REMOTE CONTROL UNIT
Paul M. Schraemmer, Hunters Hill, Australia, assignor to Byrne & Davidson Doors (N.S.W.) Pty. Limited, Revesby, Australia
Filed Oct. 15, 1986, Ser. No. 919,336
Claims priority, application Australia, Apr. 15, 1986, 4887/86
Term of patent 14 years
U.S. Cl. D14—218

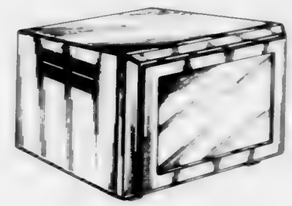


299,923
MICROCOMPUTER FOR TESTING ELECTRONIC CIRCUITS
Trevor Thompson, Wallingford, England, assignor to Mars Incorporated, McLean, Va.
Filed Sep. 27, 1985, Ser. No. 780,839
Claims priority, application United Kingdom, Mar. 29, 1985, 1025860
Term of patent 14 years
U.S. Cl. D14—106

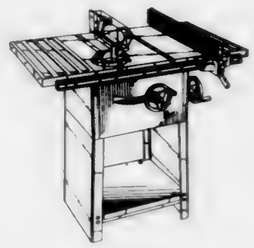




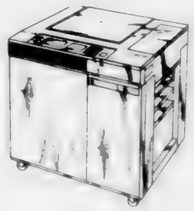
299,924
HIGH-RESOLUTION VIDEO MONITOR
David P. Chuboff, North Barrington, and Marilyn M. Johnson, East Des Plaines, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.
Filed Jun. 7, 1985, Ser. No. 742,256
Term of patent 14 years
U.S. Cl. D14—126



299,925
TABLE SAW
Louis C. Brickner, Jr., Pittsburgh, Pa.; Jerry D. Skipworth, Burkesville, Ky., and Steven W. Ashworth, Blawnox, Pa., assignors to Delta International Machinery Corp., Pittsburgh, Pa.
Filed Apr. 8, 1986, Ser. No. 848,624
Term of patent 14 years
U.S. Cl. D15—133

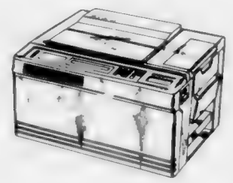


299,926
ELECTROPHOTOGRAPHIC COPIER
Yoshie Katada, Yokohama, and Minoru Aoyama, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 29, 1986, Ser. No. 890,393
Claims priority, application Japan, Jan. 30, 1986, 61-3148
Term of patent 14 years
U.S. Cl. D18—38



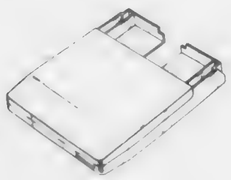
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299,927
ELECTROPHOTOGRAPHIC COPIER
Minoru Aoyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 29, 1986, Ser. No. 890,413
Claims priority, application Japan, Jan. 30, 1986, 61-3154
Term of patent 14 years
U.S. Cl. D18—37



299,928
ELECTROPHOTOGRAPHIC COPIER
Nobuo Masaki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 21, 1986, Ser. No. 854,427
Claims priority, application Japan, Oct. 22, 1985, 60-44362
Term of patent 14 years
U.S. Cl. D18—37

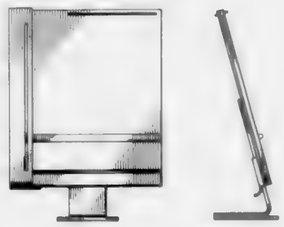
299,929
PAPER FEEDER CASSETTE
Takashi Yomo, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 29, 1986, Ser. No. 890,414
Claims priority, application Japan, Jan. 30, 1986, 61-3153
Term of patent 14 years
U.S. Cl. D18—44



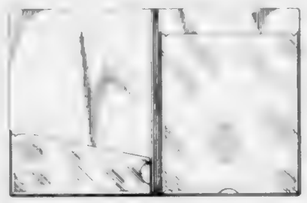
299,930
ELECTRONIC TYPEWRITER
Richard Nibley, and Noriaki Haranishi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 8, 1986, Ser. No. 850,913
Term of patent 14 years
U.S. Cl. D18—1



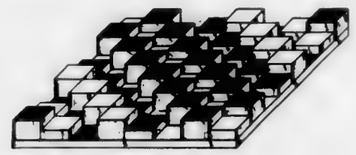
299,931
MOTORIZED COPY HOLDER AND LINE SCANNER
Nicholas F. Mauro, 1003 N. Gondola Dr., Venice, Fla. 33595
Filed Oct. 11, 1985, Ser. No. 786,677
Term of patent 14 years
U.S. Cl. D19—91



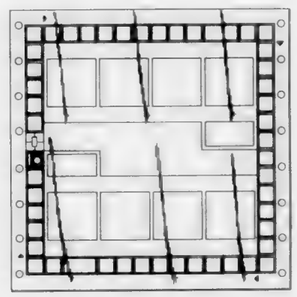
299,932
COMBINED PAD HOLDER AND FILE FOLDER
Vytautas K. Beleckis, East Longmeadow, Mass., assignor to Dennison National Company, Holyoke, Mass.
Filed Nov. 4, 1985, Ser. No. 794,392
Term of patent 14 years
U.S. Cl. D19—26



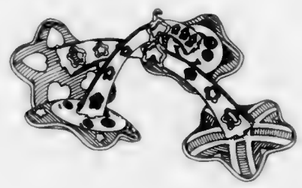
299,933
CHESSBOARD
Kishalk R. A. Shalson, 106 Dover Dr., New Haven, Conn. 06513
Filed Jan. 31, 1986, Ser. No. 824,635
Term of patent 14 years
U.S. Cl. D21—23



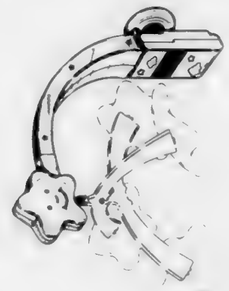
299,934
GAME BOARD
J. Leon Boler, 1401 E. River Rd., Minneapolis, Minn. 55414
Filed Feb. 20, 1986, Ser. No. 834,440
Term of patent 14 years
U.S. Cl. D21—34



299,935
MOBILE ELEMENT
D. Michael Williams, New York; Lois E. Kelly, Brooklyn, both of N.Y.; David W. Schweitzer, Fairfield, Conn.; John Piszko, Edison, and George Lopac, Piscataway, both of N.J., assignors to Johnson & Johnson Consumer Products, Inc., New Brunswick, N.J.
Filed Feb. 7, 1986, Ser. No. 827,298
Term of patent 14 years
U.S. Cl. D21—63



299,936
SUPPORT FOR TOY MOBILE
D. Michael Williams, New York; Lois E. Kelly, Brooklyn, both of N.Y.; David W. Schweitzer, Fairfield, Conn.; John Piszko, Edison, and George Lopac, Piscataway, both of N.J., assignors to Johnson & Johnson Consumer Products, Inc., New Brunswick, N.J.
Filed Feb. 7, 1986, Ser. No. 827,314
Term of patent 14 years
U.S. Cl. D21—63

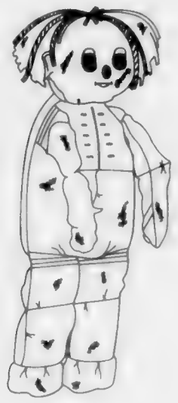


299,937
DOLL
Charles A. McGary, P.O. Box 252, Lafferty, Ohio 43951
Filed May 15, 1986, Ser. No. 863,535
Term of patent 14 years
U.S. Cl. D21—166



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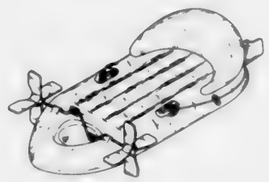
299,938
DOLL
Kimberly A. Shepherd, 1020 Lane 10 HC-73, Powell, Wyo. 82435
Filed May 27, 1986, Ser. No. 867,378
Term of patent 14 years
U.S. Cl. D21—104



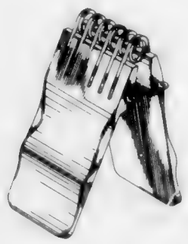
299,940
GAME FOOTBAG
Jimmie M. Fitzgerald, 635 N. Garden Way, Eugene, Oreg. 97401, and Reed J. Gray, 1116 Lorane Hwy., Eugene, Oreg. 97405
Filed Feb. 13, 1986, Ser. No. 879,944
Term of patent 14 years
U.S. Cl. D21—204



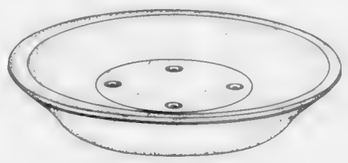
299,941
PADDLE WHEEL PROPELLED WATERCRAFT
Harry Chang, No. 371-7, Hsin Ming Road, Nei Hu District, Taipei, Taiwan
Filed Mar. 20, 1987, Ser. No. 28,720
Term of patent 14 years
U.S. Cl. D21—236



299,939
PORTABLE EXERCISER
Alfredo R. Sandoval, Casilla 165, Tacna, Peru
Filed Aug. 22, 1986, Ser. No. 899,256
Term of patent 14 years
U.S. Cl. D21—198



299,942
CHILD'S AMUSEMENT SPINNING DISC OR THE LIKE
Ronald R. Klawitter, Hermann, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.
Filed Jun. 3, 1985, Ser. No. 740,730
Term of patent 14 years
U.S. Cl. D21—247



299,943
RIFLE
Izhak Zelzer, Hod Hasharon, Israel, assignor to The State of Israel, Ministry of Defence, Israel Military Industries, Israel
Filed Jan. 15, 1986, Ser. No. 819,017
Claims priority, application Israel, Aug. 13, 1985, 10805
Term of patent 14 years
U.S. Cl. D22—103



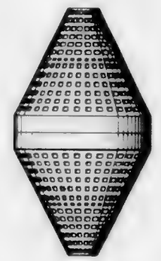
299,944
FISHING JIG
Thomas H. Maavig, 19656 Cedar Dr. NW., Cedar, Minn. 55011; Howard G. Hantaja, 1528 Carroll Ave., St. Paul, Minn. 55104, and Kenneth R. Jackson, 1270 Greystone, Oakdale, Minn. 55119
Filed Jul. 23, 1987, Ser. No. 76,924
Term of patent 14 years
U.S. Cl. D22—126



299,945
FISHING LURE
William H. Wilson, Fort Smith, and Jim Gowing, Altus, both of Ark., assignors to EBSCO Industries, Inc., Leeds, Ala.
Filed Jul. 15, 1986, Ser. No. 885,725
Term of patent 14 years
U.S. Cl. D22—133



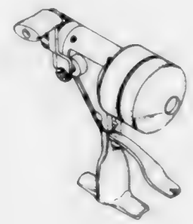
299,946
CHUM BASKET
Harris J. Dorsey, 1840 Pt. Neches Ave., Port Neches, Tex. 77651
Filed Jul. 19, 1985, Ser. No. 756,712
Term of patent 14 years
U.S. Cl. D22—134



299,947
FLOATING FISH CONTAINER
Daniel E. Nelson, and Mickey C. Nelson, both of 245 S. Snelling Ave., St. Paul, Minn. 55105
Filed May 27, 1986, Ser. No. 867,371
Term of patent 14 years
U.S. Cl. D22—136

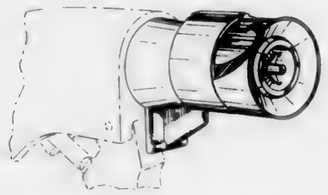


299,948
FISHING REEL
Seiji Myojo, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Oct. 6, 1986, Ser. No. 916,054
Claims priority, application Japan, Apr. 23, 1986, 61-15211
Term of patent 14 years
U.S. Cl. D22—141

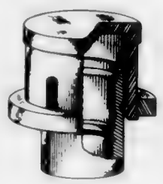


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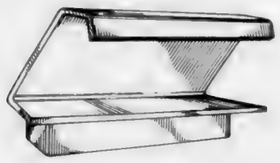
299,949
FOAM NOZZLE FOR A HAND OPERATED TRIGGER SPRAYER
Joseph W. J. Maas, Someren, Netherlands, assignor to AFA Products, Inc., Forest City, N.C.
Filed Jan. 10, 1986, Ser. No. 817,700
Term of patent 14 years
U.S. Cl. D23—213



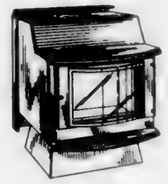
299,950
COMBINED SEAL-OFF VALVE BODY AND CAP
Mark A. Canaan, and Joseph H. Nichols, both of San Luis Obispo, Calif., assignors to Cryolab, San Luis Obispo, Calif.
Filed Aug. 19, 1985, Ser. No. 766,541
Term of patent 14 years
U.S. Cl. D23—233



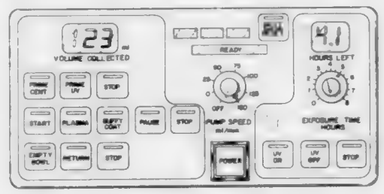
299,951
SPOUT
Edmond Pery, Blegny-Trembleur, Belgium, assignor to Sunset Collection Sprl., Blegny-Trembleur, Belgium
Filed May 28, 1986, Ser. No. 867,880
Claims priority, application World Int. Prop. O., Dec. 4, 1985, DM/006192
Term of patent 14 years
U.S. Cl. D23—255



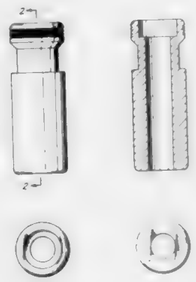
299,952
STOVE
Thomas E. Mowrey, Bliesfield, Mich., assignor to Derco, Inc., Bliesfield, Mich.
Filed Jan. 1, 1987, Ser. No. 56,747
Term of patent 14 years
U.S. Cl. D23—343



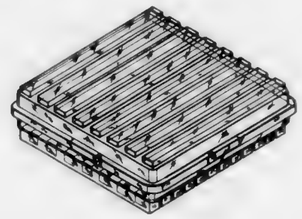
299,953
CONTROL PANEL FOR A PATIENT PHOTOPHORESIS TREATMENT UNIT
Martin J. King, Seminole, and Vernon H. Troutner, St. Petersburg, both of Fla., assignors to McNeilab, Inc., Spring House, Pa.
Filed Feb. 27, 1986, Ser. No. 838,043
Term of patent 14 years
U.S. Cl. D24—1.1



299,954
VIAL SUPPORT SLEEVE
James A. Baxter, London, England, assignor to Chromacol Limited, London, England
Filed Feb. 12, 1987, Ser. No. 13,924
Claims priority, application United Kingdom, Aug. 14, 1986, 1036088
Term of patent 14 years
U.S. Cl. D24—29



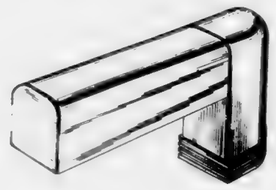
299,955
CUVETTE PACKAGE
William G. Kendrick, Sr., Bucks County, Pa., assignor to King Diagnostics, Inc., Indianapolis, Ind.
Filed Mar. 6, 1986, Ser. No. 841,997
Term of patent 14 years
U.S. Cl. D24—31



299,956
PIPETTE
Elmer Saint-Amaad, San Fernando, Calif., assignor to Saint-Amaad Manufacturing Co., Inc., San Fernando, Calif.
Filed Dec. 29, 1986, Ser. No. 947,486
Term of patent 14 years
U.S. Cl. D24—55



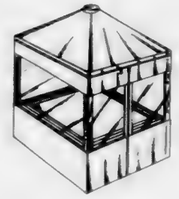
299,957
ULTRAVIOLET LIGHT FOR FINGERNAIL TREATMENT
Richard E. Shoemaker, Milford, Conn., assignor to Conair Corporation, Edison, N.J.
Filed Jun. 9, 1986, Ser. No. 872,453
Term of patent 14 years
U.S. Cl. D24—68



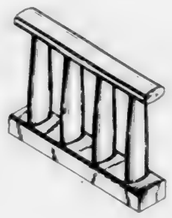
299,958
MOTEL BUILDING
Monica P. Subtirelu, Columbus, Ohio, assignor to Cardinal Industries, Inc., Columbus, Ohio
Filed Oct. 20, 1986, Ser. No. 920,877
Term of patent 14 years
U.S. Cl. D25—22



299,959
SPA GAZEBO COVER
Vivian A. Montgomery, 6944 Wilbur Avenue, Reseda, Calif. 91335
Filed Jun. 6, 1986, Ser. No. 871,577
Term of patent 14 years
U.S. Cl. D25—26

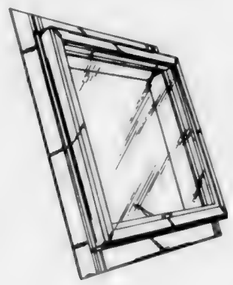


299,960
HIGHWAY MEDIAN STRIP DIVIDER
John A. DeRis, 39 Joy Rd., Middlebury, Conn. 06762
Filed Aug. 4, 1986, Ser. No. 892,403
Term of patent 14 years
U.S. Cl. D25—44

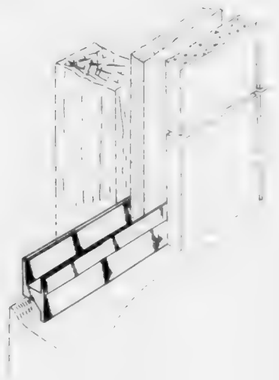


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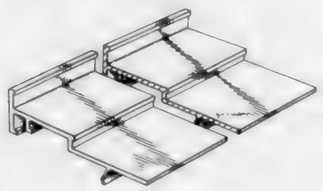
299,961
SKYLIGHT OR SIMILAR ARTICLE
Stephen K. Bechtold, 306 Ocean Ave., Northport, N.Y. 11768
Filed May 20, 1986, Ser. No. 865,242
Term of patent 14 years
U.S. Cl. D25—52



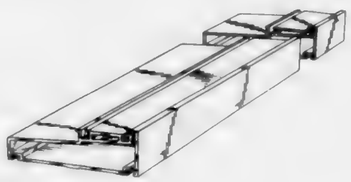
299,963
STRIP FOR WATER SEALING BATH TUBS FROM DRY WALL AND WALL STUDS
Joseph M. Callahan, 26886 Parkside Dr., Hayward, Calif. 94542
Filed Apr. 22, 1985, Ser. No. 725,936
Term of patent 14 years
U.S. Cl. D25—119



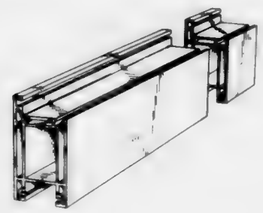
299,962
COVER MEMBER FOR A WINDOW OR DOOR CONSTRUCTION
Terence Hardy, Ripley, England, assignor to L.B. (Plastics) Limited, England
Filed Oct. 7, 1986, Ser. No. 916,456
Term of patent 14 years
U.S. Cl. D25—119



299,964
FRAME COMPONENT FOR A PATIO DOOR
Leon G. Litchfield, and Terence Hardy, both of Derby, England, assignors to L.B. (Plastics) Limited, England
Filed Sep. 4, 1985, Ser. No. 772,545
Claims priority, application United Kingdom, Mar. 6, 1985, 1025408
Term of patent 14 years
U.S. Cl. D25—124



299,965
DOOR FRAME COMPONENT
Leon G. Litchfield, and Terence Hardy, both of Derby, England, assignors to L.B. (Plastics) Limited, England
Filed Sep. 4, 1985, Ser. No. 772,544
Claims priority, application United Kingdom, Mar. 6, 1985, 1025409
Term of patent 14 years
U.S. Cl. D25—124



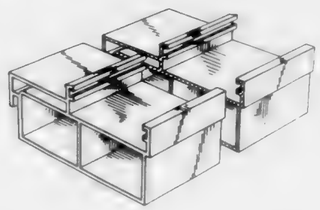
299,966
GLAZING MEMBER
Leon G. Litchfield, and Terence Hardy, both of Derby, England, assignors to L.B. (Plastics) Limited, England
Filed Sep. 4, 1985, Ser. No. 772,543
Claims priority, application United Kingdom, Mar. 6, 1985, 1025411
Term of patent 14 years
U.S. Cl. D25—124



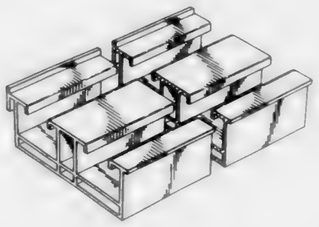
299,967
GUIDE AND SUPPORT MEMBER FOR A SLIDING DOOR
Leon G. Litchfield, and Terence Hardy, both of Derby, England, assignors to L.B. (Plastics) Limited, England
Filed Sep. 4, 1985, Ser. No. 772,542
Claims priority, application United Kingdom, Mar. 6, 1985, 1025410
Term of patent 14 years
U.S. Cl. D25—124



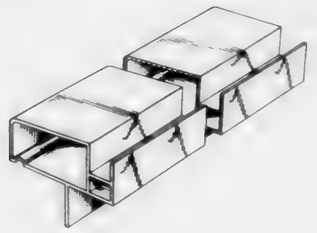
299,968
FRAME MEMBER FOR A WINDOW OR DOOR CONSTRUCTION
Terence Hardy, Ripley, England, assignor to L.B. (Plastics) Limited, England
Filed Oct. 7, 1986, Ser. No. 916,478
Term of patent 14 years
U.S. Cl. D25—124



299,969
FRAME MEMBER FOR A WINDOW OR DOOR CONSTRUCTION
Terence Hardy, Ripley, England, assignor to L. B. (Plastics) Limited, England
Filed Oct. 7, 1986, Ser. No. 916,466
Term of patent 14 years
U.S. Cl. D25—124

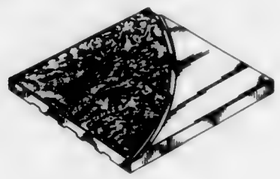


299,970
SILL MEMBER FOR A WINDOW OR DOOR CONSTRUCTION
Terence Hardy, Ripley, England, assignor to L. B. (Plastics) Limited, England
Filed Oct. 7, 1986, Ser. No. 916,465
Term of patent 14 years
U.S. Cl. D25—124



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299,971
TILE
Barry P. Gilbert, Stoke-on-Trent, Great Britain, assignor to Daniel Platt & Sons Limited, England
Filed Mar. 14, 1986, Ser. No. 844,742
Claims priority, application United Kingdom, Sep. 17, 1985, 1029248
Term of patent 14 years
U.S. Cl. D25—138



299,972
ROLLER APPLICATOR FOR DISPENSING CREAM OR LOTION
Stuart K. J. Moore, Mississauga, Canada, assignor to American Home Products Corporation (Del.), New York, N.Y.
Filed Aug. 29, 1986, Ser. No. 902,333
Term of patent 14 years
U.S. Cl. D28—7



299,973
COMBINED FOUNTAIN BRUSH APPLICATOR BOTTLE AND CAP THEREFOR
Ugo Campello; Enrico Racca, both of Miami, Fla., and Robert Ryan, Wall, N.J., assignors to New High Glass, Miami, Fla.
Filed Oct. 14, 1986, Ser. No. 918,369
Term of patent 14 years
U.S. Cl. D28—7



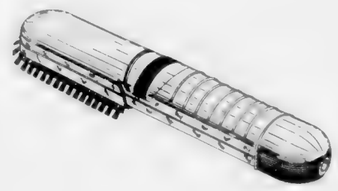
299,974
ROLLER APPLICATOR FOR CREAM OR LOTION
Edward H. Schmitt, Glen Rock, N.J., assignor to American Home Products Corporation (Del.), New York, N.Y.
Filed Aug. 29, 1986, Ser. No. 902,332
Term of patent 14 years
U.S. Cl. D28—7



299,975
HANDLE FOR LOTION APPLICATOR
Elsie E. Boyer, 4015 Covington Hwy., Apt. B-3, Decatur, Ga. 30032
Filed Sep. 26, 1986, Ser. No. 911,825
Term of patent 14 years
U.S. Cl. D28—7



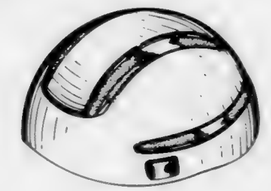
299,976
HOT AIR BRUSH
Marten F. Elkerbout, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 24, 1987, Ser. No. 13,122
Claims priority, application United Kingdom, Sep. 1, 1986, 1036429
Term of patent 14 years
U.S. Cl. D28—13

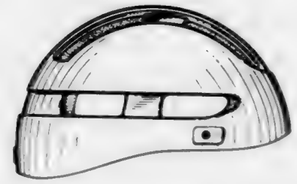


299,977
DENTAL FLOSS HOLDER
Vincenzo Rinando, 3 Reddick La., Rochester, N.Y. 14624
Filed Jul. 28, 1986, Ser. No. 890,138
Term of patent 14 years
U.S. Cl. D28—64

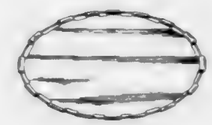


299,978
HELMET
Michele A. Chiarella, Via Vall'Orba 22, Lugano, Switzerland
Filed Feb. 20, 1986, Ser. No. 834,469
Term of patent 14 years
U.S. Cl. D29—12





299,979
GRASS/LEAF COLLECTION SHEET
Diane Garrison, 111 W. Irving Blvd., Irving, Tex. 75060
Filed Jun. 16, 1986, Ser. No. 875,378
Term of patent 14 years
U.S. Cl. D34—1





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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF FEBRUARY, 1989

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A. O. Smith Corporation: *See*—
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A/S Alfred Benzon: *See*—
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Abe, Hiraku; Takahashi, Yoshiiro; and Shimojima, Yoji, to Alps Electric Co., Ltd. Code wheel for a reflective type optical rotary encoder. 4,806,751, Cl. 250-231.0SE.

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Abe, Shunetsu, to Pioneer Koki Co., Ltd. Apparatus for cutting adhesive tape roll stocks. 4,805,498, Cl. 82-92.000.

Abe, Tomoaki; Takao, Mitsunori; and Kiyono, Masashi, to Nippondenso Co., Ltd. Fault detection system for internal combustion engine control apparatus. 4,805,576, Cl. 123-479.000.

Abeles, Robert H.: *See*—
Taub, David; Abeles, Robert H.; and Patchet, Arthur A., 4,806,680, Cl. 562-574.000.

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Abshire, James B.; and Fuhr, Peter L., to Caterpillar Inc. Multi-power laser seam tracking system. 4,806,732, Cl. 219-124.340.

Accolla, William R.: *See*—
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ACF Industries, Incorporated: *See*—
Mundloch, James D.; and Canseau, William U., 4,805,540, Cl. 105-358.000.

Acheson Industries, Inc.: *See*—
Wiley, Robert E., 4,806,272, Cl. 252-511.000.

Ackerman, Abram. Combination locking and radio frequency interference shielding security system for a coaxial cable connector. 4,806,116, Cl. 439-304.000.

Acumeter Laboratories, Inc.: *See*—
McIntyre, Frederic S., 4,805,554, Cl. 118-666.000.

Ad-Tech Medical Instrument Corporation: *See*—
Wyler, Allen R., 4,805,625, Cl. 128-642.000.

Adaci, Takayuki; and Nakano, Nobuo, to JSE Corporation; and Katsuhiko Watanabe Holdings Ltd. Method and apparatus for removing substances adhering to surface. 4,806,172, Cl. 134-34.000.

Adam, Bruno; Jaecklin, Andre ; and Vlasak, Thomas, to BBC Brown Boveri AG. Method for producing large-area power semiconductor components. 4,806,497, Cl. 437-006.000.

Adams, Charles, Jr.; and Cook, Jerry A., to Chemical Products Corporation. Process of sintering alkaline earth metal carbonates. 4,806,331, Cl. 423-430.000.

Adams, Donald T.: *See*—
Duncan, Howard C., IV; Adams, Donald T.; and Gray, R. William, 4,807,181, Cl. 364-900.000.

Adams, Stephen R.: *See*—
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Swartz, Jerome; Shepard, Howard M.; Barkan, Eric F.; Krichever, Mark J.; Metlitsky, Boris; Barkan, Edward; and Adelson, Alexander M., 4,806,742, Cl. 235-472.000.

Advanced Micro Devices, Inc.: *See*—
Kaku, Shinkyo; and Yu, Chang-Li, 4,807,043, Cl. 358-341.360.
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Advanced Plasma Systems, Inc.: *See*—
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Advanced Polymer Systems: *See*—
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Advanced Software, Inc.: *See*—
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Ferreira, Nicholas C., 4,805,459, Cl. 73-620.000.

Aerospatiale Societe Nationale Industrielle: *See*—
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Agarwal, Arun K., to Wang Laboratories, Inc. Screen manager multiple viewport for a multi-tasking data processing system. 4,807,142, Cl. 364-200.000.

Agarwal, Paul D.; and Kade, Alexander, to General Motors Corporation. DC torque motor actuated anti-lock brake controller. 4,807,134, Cl. 364-426.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
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Agrotcam Consultants Ltd.: *See*—
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Tomlinson, Roger R.; and Ahmed, Nazeer, 4,806,027, Cl. 384-58.000.

Ahrosi, Joseph M. Lampholders for miniature light sets. 4,807,098, Cl. 362-249.000.

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Aikins, Warren A. Automatic whole and multiple tree firewood/hog fuel processor. 4,805,676, Cl. 144-3.00K.

Air-Lock, Incorporated: *See*—
MacKendrick, Robert R.; and McKeon, John J., 4,805,802, Cl. 222-5.000.

Air Products and Chemicals, Inc.: *See*—
Berrettini, Bruce J.; Bucci, Donald P.; and Hollopeter, Roy D., 4,805,672, Cl. 141-5.000.

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Airflow Company: *See*—
Inglis, Robert S.; and Thomas, Owen, 4,805,317, Cl. 34-1.000.

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Aisin Seiki Kabushiki Kaisha: *See*—
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Aizawa, Satoru: *See*—
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Ajinomoto Co., Inc.: *See*—
Saeki, Toshinori; Mizutani, Tadashi; and Tsujimoto, Susumu, 4,806,376, Cl. 426-537.000.

Akamatsu, Junichi: *See*—
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Akebono Brake Industry Co., Ltd.: *See*—
Shimazaki, Haruki; Akima, Hideo; and Hoashi, Akira, 4,807,133, Cl. 364-426.020.

Akeel, Hadi A., to GMF Robotics Corporation. Multiple joint robot part. 4,805,477, Cl. 74-479.000.

Akerman, David: *See*—
Akerman, Marina J.; and Akerman, David, 4,806,406, Cl. 428-65.000.

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Akiko, Ota, to Yoshino Kogyosho Co., Ltd. Container having collapse panels with longitudinally extending ribs. 4,805,788, Cl. 215-1.00C.

Akima, Hideo: *See*—
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Alcatel Hochvakuumtechnik GmbH: *See*—
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Alexander, Richard B.; and Kindschuh, Dennis P., to Alexander Manufacturing Company. Method and apparatus for charging a nickel-cadmium battery. 4,806,840, Cl. 320-20.000.

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Bugner, Douglas E.; Alexandrovich, Peter S.; De Mejo, Lawrence P.; Guistina, Robert A.; and Anderson, James H., 4,806,284, Cl. 260-501.150.

Alexson, Charles E.; and Guenther, Heinz H., to Minnesota Mining and Manufacturing Company. Method of forming crisp white indicia in aluminum. 4,806,730, Cl. 219-121.690.

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Alley, Robert P.: *See*—
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DeGiorgio, Daniel; Medina, Henry; and Accolla, William R., to MYOTECH Corp. Muscle testing apparatus and methodcu4,805,455, Cl. 73-379.000.

Delk, Anne: *See*—
Leong, Helen; Katz, Martin; Delk, Anne; Berliner, David; and Nacht, Sergio, 4,806,360, Cl. 424-487.000.

Della Bella, Davide: *See*—
Ferrari, Vittorio; Carenzi, Angelo; and Della Bella, Davide, 4,806,567, Cl. 514-513.000.

de Louvencourt, Laurence; Fukuhara, Hiroshi; Heslot, Henri; and Wesolowski, Micheline, to Societe Nationale Elf Aquitane. Cloning and expression vector, yeast transformed by such vector and applications thereofcu4,806,472, Cl. 435-68.000.

Delshar Industries, Inc.: *See*—
Brody, Harvey, 4,805,812, Cl. 222-402.110.

De Mejo, Lawrence P.: *See*—
Bugner, Douglas E.; Alexandrovich, Peter S.; De Mejo, Lawrence P.; Guistina, Robert A.; and Anderson, James H., 4,806,284, Cl. 260-501.150.

Demers, Rosario N., to United States of America, Air Force. Compressor blade clearance measurement systemcu4,806,848, Cl. 324-61.00R.

Demetrius, Kris; and Spector, George. Sander paint scrapercu4,805,349, Cl. 51-170.0PT.

Den norske stats oljeselskap a.s: *See*—
Svenning, Bjornar; Svenson, Rune; and Truedesson, Lars, 4,805,549, Cl. 114-325.000.

Deneuville, Claude; and Hondermarck, Dominique, to S N C Le Petit Cuisinier. Process for preparing elaborated food products and installation for carrying out the processcu4,805,524, Cl. 99-339.000.

Denham, Stuart K.: *See*—
Ragland, Owtis J., Jr., deceased; Westlund, Arnold E., Jr.; Reynolds, Paul B.; and Denham, Stuart K., 4,806,817, Cl. 313-279.000.

Denhoff, Donald P.: *See*—
Brandt, Charles M.; Denhoff, Donald P.; Everett, C. Joe; Murray, Donald F.; and Wilson, William H., 4,805,793, Cl. 215-10.000.

Deniega, Jose C.: *See*—
Bedi, James J.; Golden, Donald M.; Gaterud, Mark T.; Mikuza, Anthony S.; Deniega, Jose C.; Smith, Richard; and Yorks, W. Brinton, Jr., 4,805,617, Cl. 128-334.00C.

Denny, Lee N.: *See*—
Fisher, David W.; Denny, Lee N.; and Furlong, Joseph T., 4,805,538, Cl. 108-7.000.

Dentsply GmbH: *See*—
Poltz, H., 4,806,383, Cl. 427-2.000.

DePasquale, John A.; Segalowitz, Ivar R.; and Andolfi, Ceasar P., to J.A.D. Enterprises, Inc. Mail inserting and collating apparatuscu4,805,382, Cl. 53-520.000.

DePasquale, John A.; Segalowitz, Ivar R.; and Andolfi, Ceasar P., to J.A.D. Enterprises, Inc. Mail inserting and collating apparatuscu4,805,384, Cl. 53-569.000.

Derrien, Michel: *See*—
Veaux, Jacques; and Derrien, Michel, 4,805,882, Cl. 267-64.250.

Desaulty, Michel A. A.: *See*—
Barbier, Gerard Y. G.; Laboure, Gerard J. P. B.; Desaulty, Michel A. A.; Duchene, Francois; and Trovillot, Pascal M., 4,805,397, Cl. 60-39.320.

Deslippe, Anastase: *See*—
Lemire, Gilbert; and Deslippe, Anastase, 4,806,403, Cl. 428-34.100.

DeSoto, Inc.: *See*—
Hawker, Fred D.; Pietryga, Victor E.; and Byrd, Robert W., 4,806,390, Cl. 427-156.000.
Krajewski, John J.; Bishop, Timothy E.; Coady, Clive J.; Zimmerman, John M.; Noren, Gerry K.; and Fisher, Christopher E., 4,806,574, Cl. 522-96.000.

Despotakis, John A.: *See*—
Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McElvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,807,116, Cl. 364-200.000.

Desroches, Romeo. Vehicle and joist monorail trackway and method of transporting roof decking thereovercu4,805,537, Cl. 104-246.000.

Deuker, Ernst: *See*—
Brand, Uwe; Schmitz, Ruediger; Deuker, Ernst; and Fuchs, Hugo, 4,806,638, Cl. 540-540.000.

Deutsch, Robert W.; and Karim, Frank, to Motorola, Inc. Servo control system for transmission shaft speed controlcu4,807,130, Cl. 364-424.100.

Deutsche Carbone Aktiengesellschaft: *See*—
Bruun, Dieter; Dietz, Wolfgang; Muller, Klaus-Jurgen; and Reynvaan, Conrad H. H., 4,806,224, Cl. 204-222.000.

Deutsche ITT Industries GmbH: *See*—
O'Leary, Paul, 4,806,804, Cl. 307-605.000.

Deutsche Thomson-Brandt GmbH: *See*—
Geiger, Erich, 4,807,208, Cl. 369-39.000.
Keesen, Werner; Hartnack, Wolfgang; and Westerkamp, Dietrich, 4,807,033, Cl. 358-167.000.

De Vargas, Angela; and Casement, John M. Toilet seat handlecu4,805,246, Cl. 4-251.000.

de Vrijer, Bertus, to U.S. Philips Corporation. High-pressure discharge lampcu4,806,816, Cl. 313-331.000.

Dewitte, Elisabeth: *See*—
Manoury, Philippe; Binet, Jean; and Dewitte, Elisabeth, 4,806,560, Cl. 546-118.000.

De Zylva, Walter H., to Ford New Holland, Inc. Twine tail collector system for agricultural balerscu4,805,391, Cl. 56-343.000.

Diafoil Company, Limited: *See*—
Ohno, Ken; Yoshimoto, Mitsuo; and Ozaki, Yoshihide, 4,806,422, Cl. 428-336.000.

Dial, Darrell D.; and Geesbreght, John M., to CareSystems, Inc. Medical cap with face shieldcu4,805,639, Cl. 128-857.000.

Di Cesare, Paul C.: *See*—
Blake, Joseph W.; and Di Cesare, Paul C., 4,805,876, Cl. 254-28.000.

Dick, Richard; Moulin, Guy; and Galzy, Pierre, to Institut National de Recherche Chemique Appliquee. Process for adjusting the alcohol content of wines or alcoholic beverages and installation for its implementationcu4,806,366, Cl. 426-15.000.

Dicke, Hans-Rudolf: *See*—
Eckhardt, Volker; Dicke, Hans-Rudolf; Hammerschmidt, Erich; and Freitag, Dieter, 4,806,619, Cl. 528-128.000.

Dickerson, Robert T.: *See*—
Ives, Fred H.; Dickerson, Robert T.; Dickerson, William J.; McNamee, Michael D.; and Talbot, Mark D., 4,806,881, Cl. 332-22.000.

Dickerson, William J.: *See*—
Ives, Fred H.; Dickerson, Robert T.; Dickerson, William J.; McNamee, Michael D.; and Talbot, Mark D., 4,806,881, Cl. 332-22.000.

Dickey, Glen R.; Bosley, Alton M.; Weyrich, Robert H.; and Juarez, Charles C., to Houston Industries Incorporated. Anti-rotation cable stringingcu4,805,878, Cl. 254-134.30R.

Dickinson, Roger P.: *See*—
Cross, Peter E.; and Dickinson, Roger P., 4,806,536, Cl. 514-252.000.

Dicks, L. W. R.: *See*—
Davis, D. G.; and Dicks, L. W. R., 4,805,561, Cl. 122-7.00R.
Davis, D. G.; Dicks, L. W. R.; and Horwege, J. A., 4,805,562, Cl. 122-7.00R.

Didier-Werke AG: *See*—
Stein, Hermann; Kainer, Hartmut; and Grimm, Daniel, 4,806,427, Cl. 502-60.000.

Diesel Kiki Co., Ltd.: *See*—
Arai, Kenji; Kurihara, Kazumasa; and Oshizawa, Hidekazu, 4,807,132, Cl. 364-424.100.
Ishizuka, Yutaka; and Nagao, Teruyaki, 4,805,418, Cl. 62-298.000.

Dietz, Timothy J.: *See*—
Downing, Verlon D.; and Dietz, Timothy J., 4,805,941, Cl. 280-279.000.

Dietz, Wolfgang: *See*—
Bruun, Dieter; Dietz, Wolfgang; Muller, Klaus-Jurgen; and Reynvaan, Conrad H. H., 4,806,224, Cl. 204-222.000.

Digital Equipment Corporation: *See*—
Simmons, Elmer, 4,806,792, Cl. 307-357.000.

DiMassimo, Virgil; and Gelbien, Mark J., to Fonar Corporation. Air flotation patient bedcu4,805,626, Cl. 128-653.000.

Dimitrov, Boris K.: *See*—
Ivanova, Nedyalka S.; Ivanov, Tshavdar B.; Dryanska, Margarita D.; Zabunova, Orhideya B.; Dalleva, Lilyana D.; Nikolova, Milka P.; Berova, Nikolina D.; Rakovska, Rossitza S.; Stoyanova, Maria S.; Mihaylova, Sascha R.; Luna, Milka A.; Nissimmou, Josif N.; Vitkova, Snejana G.; Matov, Vladimir K.; Dimitrov, Boris K.; and Metshkov, Grigor M., 4,806,548, Cl. 514-310.000.

Dimmick, Gary S.; and Lockerman, Scott G., to Lockman Products Company, Inc. Locking devicecu4,805,426, Cl. 70-14.000.

Dimmock, Ivan H., to BAJ Limited. Dual gas pressure vesselcu4,805,796, Cl. 220-89.00A.

Dinagraphics, Inc.: *See*—
Harvey, Albert J., 4,806,197, Cl. 156-449.000.

Ditschun, Arthur; and Zajaczkowski, Boleslaw, to Welding Institute of Canada. Twin pulsed arc welding systemcu4,806,735, Cl. 219-130.510.

Dive N'Surf, Inc.: *See*—
Meistrell, William R., 4,805,620, Cl. 128-402.000.

DiVincenzo, Gregory T.: *See*—
Castonguay, Roger N.; Morris, Robert A.; Dziura, Richard A.; Scott, Graham A.; and DiVincenzo, Gregory T., 4,806,893, Cl. 335-20.000.

Dixon, Kenneth. Liquid light treecu4,806,392, Cl. 428-18.000.

Dizon, Edmund S.: *See*—
Kalvaitis, Arvydas J.; Dizon, Edmund S.; and Tso, Kenneth K., 4,806,710, Cl. 200-50.00A.

Dobhan, Herbert: *See*—
Bauer, Bernhard; and Dobhan, Herbert, 4,806,026, Cl. 384-486.000.

Dobner, Reinhold; Mertel, Bernhard; and Willenbacher, Erich, to Pfaff Industriemaschinen GmbH. Sewing machine with thread monitor for the bobbin threadcu4,805,544, Cl. 112-278.000.

Dobrova, Natalya B.: *See*—
Charkovsky, Alexandr V.; Dobruva, Natalya B.; Filatov, Vladimir N.; Iofis, Naum A.; Bukatov, Alexandr S.; Danilova, Zinaida P.; Kovarsky, Alexandr V.; and Egorov, Jury G., 4,805,424, Cl. 66-194.000.

Dobson, Keith F.; and Steeves, Walter E., to Avco Corporation. Blade airfoil holding systemcu4,805,351, Cl. 51-217.00R.

Dr. Ing. h.c.f. Porsche AG: *See*—
Ampferer, Herbert, 4,805,566, Cl. 123-90.150.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Moedinger, Wolfgang; Preiss, Michael; and Lechner, Reinhard, 4,805,747, Cl. 188-264.00A.

Dr. Johannes Heidenhain GmbH: *See*—
Fischer, Roland, 4,806,752, Cl. 250-231.0SE.

Dr. Lo. Zambeletti SPA: *See*—
Giardina, Giuseppe; and Vecchietti, Vittorio, 4,806,547, Cl. 514-307.000.

Doi, Shunichi: *See*—
Ikemoto, Hiroyuki; Owa, Nobutaka; Hayashi, Yasutaka; and Doi, Shunichi, 4,807,128, Cl. 364-424.050.

Dolnick, Earl M.: *See*—
Goldstein, Mark K.; and Dolnick, Earl M., 4,806,095, Cl. 431-54.000.

Dombroski, Earl L., to Dumbroski and Hanson Industrial Designs, Inc. Loudspeakercs4,807,295, Cl. 381-194.000.

Dombrowski, Manfred: *See*—
Lang, Otto; and Dombrowski, Manfred, 4,807,249, Cl. 375-7.000.

Dominguez, Richard J. G.: *See*—
Rice, Doris M.; Grigsby, Robert A., Jr.; and Dominguez, Richard J. G., 4,806,615, Cl. 528-68.000.

Dominico, James; Cino, Paul; and Fardin, Carlos E., to Van Dam Machine Corporation. Crossed turret cup feedercu4,805,758, Cl. 198-444.000.

Donaldson, Jay W.: *See*—
Witherell, Donald R.; Donaldson, Jay W.; and Rooks, Howard B., 4,805,828, Cl. 228-46.000.

Doncel, Miguel, to Companie Generale d'Automatisme. Set of transmit/receive antennas situated at a fixed station for a two-way radio link with a vehiclecu4,806,943, Cl. 343-742.000.

Donelli, Giordano: *See*—
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Dones, Nelson. Personal video viewing devicecu4,805,988, Cl. 350-137.000.

Donnelly Corporation: *See*—
Skogler, Brian L.; Schofield, Kenneth; Lantz, William P.; Nyhof, Eldon J.; Helder, Dorothy J.; and Flowerday, Charles M., 4,807,096, Cl. 362-142.000.

Donzelli, Giampiero, to Telettra Telefonia Elettronica e Radio S.p.A. Mesfet transistor with gate spaced above source electrode by layer of air or the like method of fabricating samecu4,807,002, Cl. 357-23.100.

Doria, Pierluigi; and Mottana, Sergio, to Luigi Franchi S.p.A. Packtype clip for shotgun cartridgescu4,805,333, Cl. 42-50.000.

Dorn, George K.; and Gilbert, Herbert A., to Prepolene Industries, Inc. Fuel extendercu4,806,129, Cl. 44-56.000.

Dornier Medizintechnik GmbH: *See*—
Wess, Othmar; Groezinger, Reiner; Isdebski, Kai; Windsheimer, Manfred; and Erhardt, Wolfgang, 4,805,600, Cl. 128-24.00A.

Doty, John T. Method for providing access to underground valve stems and toolscu4,806,170, Cl. 134-9.000.

Douglas, Monte A., to Texas Instruments Incorporated. Dry etch of phosphosilicate glass with selectivity to undoped oxidecu4,807,016, Cl. 357-67.000.

Douss, Thomas P., to Mayo Foundation for Medical Education and Research. Inhibition of epithelial phosphate transportcu4,806,532, Cl. 514-120.000.

Dow Chemical Company, The: *See*—
Beale, Alvin F., Jr.; and Hoblit, Louis D., 4,806,227, Cl. 208-22.000.
Bogan, Gary W.; and Monnerat, Georgia A., 4,806,625, Cl. 528-422.000.
Bowman, Robert G., 4,806,690, Cl. 564-480.000.
Brewster, Steven L., 4,806,296, Cl. 264-83.000.
Chang, Kuo Y.; Kohatsu, Iwao; and Garrou, Philip E., 4,806,658, Cl. 549-368.000.
Chen, Augustin T.; and Onder, Kemal, 4,806,589, Cl. 524-539.000.
Daigle, Emmanuel L., 4,806,315, Cl. 422-89.000.
Guilbeau, Michel, 4,806,244, Cl. 210-638.000.
Haigh, Daniel H., 4,806,469, Cl. 435-19.000.
Harris, L. Scott; and Oriel, Patrick J., 4,806,636, Cl. 536-123.000.
Inbasekaran, Muthiah N.; and Strom, Robert M., 4,806,688, Cl. 564-443.000.
Knobel, Thomas M.; Walker, Mary K.; and Maschmeyer, Donald M., 4,806,571, Cl. 521-107.000.
Laurea, Larry J.; Coomer, Virgil W.; and Schrenk, Walter J., 4,806,289, Cl. 264-1.500.
Monzon, Medardo; Lock, Michele R.; and Galloway, James G., 4,806,207, Cl. 162-168.100.
Morgan, Ted A., 4,806,673, Cl. 558-332.000.
Priddy, Duane B., 4,806,599, Cl. 525-146.000.
Rose, Gene D.; and Teot, Arthur S., 4,806,256, Cl. 252-71.000.
Wessling, Ritchie A.; and Im, Jang-hi, 4,806,439, Cl. 429-48.000.

Dow Corning Corporation: *See*—
Chandra, Grish; and Zank, Gregg A., 4,806,612, Cl. 528-10.000.

Dow Corning Ltd.: *See*—
Burrill, Peter M., 4,806,266, Cl. 252-174.150.

Downey, Rogers B., to Polaroid Corporation. Bi-directional self-resetting force transmitting overload armcu4,805,753, Cl. 192-150.000.

Downing, Verlon D.; and Dietz, Timothy J., to Huffy Corporation. Quick release wheel retainercu4,805,941, Cl. 280-279.000.

Dowty Fuel Systems Limited: *See*—
Masterman, John M., 4,806,812, Cl. 310-182.000.

Dragerwerk Aktiengesellschaft: *See*—
Eckstein, Wolfgang; and Kolbe, Gunther, 4,805,608, Cl. 128-202.260.
Heim, Ulrich, 4,806,491, Cl. 436-165.000.

Drake, James R.: *See*—
Foaket, Timothy G.; and Drake, James R., 4,806,935, Cl. 342-120.000.

Drane, Mark R.; Johnson, Jerry E.; and Ragusa, Samuel L., to Hart/-Troxel Joint Venture. Tabletop constructioncu4,805,541, Cl. 108-27.000.

Draper, A. Allen. Food grater holdercu4,805,843, Cl. 241-287.000.

Draper, Douglas C.: *See*—
Holmes, J. Fred; Hunt, John M.; Draper, Douglas C.; Closinger, Todd L.; Mereness, Tom R.; and Hosler, Michael J., 4,806,729, Cl. 219-121.630.

Drent, Eit; and Wife, Richard L., to Shell Oil Company. Catalytic polymerization of carbon monoxide and olefin, with organo nitro or organo nitrite compound additivecu4,806,630, Cl. 528-392.000.

Drent, Eit, to Shell Oil Company. Process for the dimerization of olefinscu4,806,647, Cl. 585-511.000.

Drent, Eit, to Shell Oil Company. Process for the preparation of unsaturated ketonescu4,806,693, Cl. 568-417.000.

Drew Chemical Corporation: *See*—
Mullins, Michael A.; and Thomas, Peter A., 4,806,310, Cl. 422-13.000.
Drezel Equipment (UK) Limited: *See*—
Armell, Richard A., 4,805,448, Cl. 73-151.000.
Drivon, Gilles; and Gurtner, Bernard, to Atochem. Process for the preparation of bromofluoroacetic acidacu4,806,684, Cl. 562-605.000.
Drucker, Coleen A.: *See*—
Arnold, Richard M.; Baker, Paul A.; Drucker, Coleen A.; Gashler, Robert J.; Lipari, Dominic T.; Robin, Max S.; and Schell, Howard C., 4,806,107, Cl. 439-79.000.
DRUMCO: *See*—
Johnsey, Walter F.; and Drummond, Donald D., 4,805,709, Cl. 175-228.000.
Drummond, Donald D.: *See*—
Johnsey, Walter F.; and Drummond, Donald D., 4,805,709, Cl. 175-228.000.
Dryanska, Margarita D.: *See*—
Ivanova, Nedyalka S.; Ivanov, Tshavdar B.; Dryanska, Margarita D.; Zabunova, Orhideya B.; Dalleva, Lilyana D.; Nikolova, Milka P.; Berova, Nikolina D.; Rakovska, Rossitza S.; Stoyanova, Maria S.; Mihaylova, Sascha R.; Luna, Milka A.; Nissimmou, Jossif N.; Vitkova, Snejana G.; Matov, Vladimir K.; Dimitrov, Boris K.; and Metshkov, Grigor M., 4,806,548, Cl. 514-310.000.
DSET Laboratories, Inc.: *See*—
Robbins, Joseph S., III, 4,807,247, Cl. 374-57.000.
Dubeta, David J. Water slide systemacu4,805,897, Cl. 272-56.50R.
Dubois, Guy: *See*—
Rochet, Andre ; Dubois, Guy; Faure, Louis; and Lalanne, Alain, 4,805,759, Cl. 198-346.100.
Duchene, Francois: *See*—
Barbier, Gerard Y. G.; Laboure, Gerard J. P. B.; Desaulty, Michel A. A.; Duchene, Francois; and Trovillot, Pascal M., 4,805,397, Cl. 60-39.320.
Duckett, John W., to Barrier Systems, Inc. Anti-crash lane barrier with self-centering hingesacu4,806,044, Cl. 404-6.000.
Duerig Urs T.; Gimewski, James K.; Greschner, Johann; Pohl, Wolfgang D.; and Wolter, Olaf, to International Business Machines Corporation. Micromechanical atomic force sensor headcu4,806,755, Cl. 250-306.000.
Dufresne, Regis: *See*—
Giraud, Daniel; Dufresne, Regis; and Charron, Jean, 4,806,924, Cl. 340-792.000.
Dugas, Theodore F. Blade pick and well cleanercu4,805,250, Cl. 7-118.000.
Dumbroski and Hanson Industrial Designs, Inc.: *See*—
Dombroski, Earl L., 4,807,295, Cl. 381-194.000.
Dunavan, David S.; and Babish, Richard, to Perkin-Elmer Corporation, The. Optical direction of arrival sensor with cylindrical lenscu4,806,747, Cl. 250-203.00R.
Dunaway, Jason K.: *See*—
O'Neill, Robert M.; and Dunaway, Jason K., 4,805,730, Cl. 181-148.000.
Duncan, Howard C., IV; Adams, Donald T.; and Gray, R. William, to Smith Corona Corporation. Dictionary memory with visual scanning from a selectable starting pointcu4,807,181, Cl. 364-900.000.
Duncan, Ronnie J., to Remco Research and Development, Inc. Straining and stop valvecu4,806,258, Cl. 210-423.000.
Dunham, Russell H., to Dunham Tool Co., Inc., The. Externally indexable turret-like device for cutting machinesacu4,805,497, Cl. 82-36.00A.
Dunham Tool Co., Inc., The: *See*—
Dunham, Russell H., 4,805,497, Cl. 82-36.00A.
Dunogues, Jacques: *See*—
Pillot, Jean-Paul; Bacque, Eric; Dunogues, Jacques; Biran, Claude; and Otry, Pierre, 4,806,666, Cl. 556-412.000.
Dunski, Neil; and Bazzi, Ali A., to Mallinckrodt, Inc. Method of making mixed pentaerythritol esters having up to 75 percent thio-containing side chainscu4,806,675, Cl. 560-75.000.
Dupin, Claude, to Societe d'Exploitation F.F.D.M.-Pneumat. Portable pneumatic machine having embodied control electronicscu4,805,404, Cl. 60-409.000.
Du Pont de Nemours, E. I., and Company: *See*—
Bryant, Walter M., III; and Huhn, George F., 4,806,651, Cl. 546-156.000.
Burns, John T., 4,806,299, Cl. 264-171.000.
Ebersole, Richard C.; Forsythe, Jesse G., Jr.; and Gelormini, Frank T., 4,806,313, Cl. 422-61.000.
Frohlich, Helmut H., 4,806,451, Cl. 430-291.000.
Gibson, Joseph W., Jr., 4,806,506, Cl. 430-309.000.
Gier, Thurman E.; Shanaon, Robert D.; Sonnichsen, George C.; Corbin, David R.; and Kease, Michael, Jr., 4,806,689, Cl. 564-474.000.
Hertler, Walter R., 4,806,605, Cl. 526-190.000.
Rellick, Joseph R., 4,806,188, Cl. 156-89.000.
Ripka, William C.; and Sipio, William J., 4,806,671, Cl. 558-411.000.
Shapiro, Rafael, 4,806,142, Cl. 71-92.000.
Waller, Francis J., 4,806,674, Cl. 560-024.000.
Durda, Joseph A., to Aeration Industries, Inc. Oscillating propeller type aerator apparatus and methodcu4,806,251, Cl. 210-747.000.
Durfeea, Dana, to Hoechst Celanese Corporation. Composition containing a mixture of hexa-alkyl disilazane and propylene glycol alkyl ether and/or propylene glycol alkyl ether acetatecu4,806,458, Cl. 430-331.000.
Durschlag, Mark S.: *See*—
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Van Gorkum, Aart A.; Vriens, Leendert; Duwaer, Arne L.; Spruit, Johannes H. M.; and Van Schoonhoven, Alexander R. H., 4,807,014, Cl. 358-65.000.
Dwivedi, Ratnesh K.; and Kennedy, Christopher R., to Lanxide Technology Company, L.P. Modified ceramic structures and methods of making the samecu4,806,508, Cl. 501-94.000.
Dyer, Michael E., to Intera Corporation. Treatment of Lewis base polymers to improve antistatic, hygroscopic and dye receptive propertiescu4,806,125, Cl. 8-116.100.
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Fernand, Beaumann, 4,805,310, Cl. 33-170.000.
Dziura, Richard A.: *See*—
Castonguay, Roger N.; Morris, Robert A.; Dziura, Richard A.; Scott, Graham A.; and DiVincenzo, Gregory T., 4,806,893, Cl. 335-20.000.
E. Beaudrey & Cie: *See*—
Jackson, Philip, 4,806,242, Cl. 210-303.000.
E. Beuadrey & Cie: *See*—
Jackson, Philip, 4,806,243, Cl. 210-303.000.
E.C.C. America Inc.: *See*—
Raythatha, Rasik H., 4,806,167, Cl. 106-465.000.
E. L. Nickell, Co., Inc.: *See*—
Ayub, Zahid H., 4,805,694, Cl. 165-158.000.
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Czetwertynski, Albert S., 4,805,810, Cl. 222-319.000.
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Bugner, Douglas E.; and Alexandrovich, Peter S., 4,806,283, Cl. 260-501.150.
Bugner, Douglas E.; Alexandrovich, Peter S.; De Mejo, Lawrence P.; Guistina, Robert A.; and Anderson, James H., 4,806,284, Cl. 260-501.150.
Calhoun, Lee M., 4,805,892, Cl. 271-225.000.
Covington, Roger G.; Muller, Bruce R.; Carmichael, Evan P.; and Niedospial, John J., 4,807,271, Cl. 378-182.000.
Frickey, Paul H.; and Norton, Gary E., 4,806,470, Cl. 435-21.000.
Guslits, Vladimir S., 4,806,991, Cl. 355-3.0DD.
Jamzadeh, Fereidoon S.; and Stoudt, Michael D., 4,806,980, Cl. 355-14.00E.
Momot, David; and Townsend, Ensley E., 4,806,958, Cl. 354-21.000.
Momot, David; Townsend, Ensley E.; and LaCourt, Michael W., 4,806,960, Cl. 354-21.000.
Rule, Mark; and Tustin, Gerald C., 4,806,697, Cl. 570-202.000.
Rule, Mark; and Tustin, Gerald C., 4,806,698, Cl. 570-202.000.
Shaw, James D.; and Tuszynski, Michael P., 4,805,772, Cl. 206-443.000.
Steinmetz, Guy R.; and Rule, Mark, 4,806,676, Cl. 560-80.000.
Townsend, Ensley E., 4,806,959, Cl. 354-21.000.
Ester, Edrick H.: *See*—
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Eaton Corporation: *See*—
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Kelledes, William L.; and O'Neil, Walter K., 4,805,463, Cl. 73-862.330.
Ebara Corporation: *See*—
Mizobuchi, Shotaro; Sasaki, Katsumi; and Kimura, Yoshikazu, 4,806,080, Cl. 417-353.000.
Ebera, Takeshi: *See*—
Sasaki, Toshio; Ebera, Takeshi; Kawai, Kiyoshi; and Shiga, Akinobu, 4,806,433, Cl. 502-115.000.
Ebersole, Richard C.; Forsythe, Jesse G., Jr.; and Gelormini, Frank T., to Du Pont de Nemours, E. I., and Company. Rapid assay processorcu4,806,313, Cl. 422-61.000.
Echizen, Hiroshi: *See*—
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Eckebring, Bengt O. D.; and Wallin, Sven C., to AB Bahco Ventilation. Supply air devicecu4,805,521, Cl. 98-40.010.
Eckhardt, Volker; Dicke, Hans-Rudolf; Hammerschmidt, Erich; and Freitag, Dieter, to Bayer Aktiengesellschaft. Thermotropic aromatic polyesters having a high deflection temperature under load and excellent mechanical properties, a process for their preparation and their use for the production of moldings, filaments, fibres and filmscu4,806,619, Cl. 528-128.000.
Eckhaus, Ira. Door jamb buttoncu4,806,711, Cl. 200-61.620.
Eckstein, Wolfgang; and Kolbe, Gunther, to Dragerwerk Aktiengesellschaft. Breathing apparatuscu4,805,608, Cl. 128-202.260.
ECP Energy Conservation Products: *See*—
Zelin, Asher A., 4,807,099, Cl. 362-225.000.
ECRM Incorporated: *See*—
Troxel, Donald E., 4,806,879, Cl. 331-2.000.
EDI Engineering Limited: *See*—
Boddey, Derek O.; and Young, Alan G., 4,805,519, Cl. 98-1.000.
Edouard Dubied & Cie. S.A.: *See*—
Hoya, Fernando, 4,805,423, Cl. 66-78.000.

Edwards, Clarence C. Apparatus for viewing a refracted image and photographic methodcu4,805,990, Cl. 350-168.000.
Edwards, James R.: *See*—
Springer, Joseph E.; and Edwards, James R., 4,805,568, Cl. 123-188.00C.
Efamol, Ltd.: *See*—
Horrobin, David F., 4,806,569, Cl. 514-552.000.
Effland, Richard C.; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals, Inc. Pyrazol and indazolpyridinaminescu4,806,554, Cl. 514-338.000.
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Charkovsky, Alexandr V.; Dobrova, Natalya B.; Filatov, Vladimir N.; Iofis, Naum A.; Bukatov, Alexandr S.; Danilova, Zinaida P.; Kovarsky, Alexandr V.; and Egorov, Jury G., 4,805,424, Cl. 66-194.000.
Eguchi, Takeshi: *See*—
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Eguchi, Yoshitugu; Miyashita, Masaru; Arai, Hitoshi; and Ogushi, Yoshimi, to Shin-Etsu Chemical Co., Ltd. Copper-foiled laminated sheet for flexible printed circuit boardcu4,806,432, Cl. 428-457.000.
Ehm, Thomas; and Seidel, Peter, to Siemens Aktiengesellschaft. Hinge for fastening swivelably arranged electrotechnical appliancescu4,805,265, Cl. 16-340.000.
Eiermann, Kurt; Goebel, Reiner; Gries, Peter; and Hohenstatt, Martin, to Degussa Aktiengesellschaft. Device for the thermal measurement of the mass flow gases and liquidscu4,805,452, Cl. 73-204.260.
Eifert, Gyula: *See*—
Bohus, Peter; Bihari, Ferenc; Kertesz nee Szabo, Marianna; Kuronya, Istvan; Boros, Peter; Szulagyi, Janos; Meszaros, Jeno ; Eifert, Gyula; Meszaros nee Szekrenyes, Agnes; Jartoo, Odon S.; and Gondos, Laszlo , 4,806,151, Cl. 71-111.000.
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Eischen, Clement G., Sr. Device for lower limb extremity having weight-response pressure chamberscu4,805,601, Cl. 128-64.000.
Eisenwerke Friedrich Wilhelm Duker GmbH & Co.: *See*—
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Eisinger, Magdalena: *See*—
Albino, Anthony; Cairncross, J. Gregory; Eisinger, Magdalena; Houghton, Alan N.; and Old, Lloyd, 4,806,628, Cl. 530-387.000.
Ejiri, Kiyomi: *See*—
Saito, Shinji; Araki, Hiroaki; Ejiri, Kiyomi; Ogawa, Hiroshi; and Mizuno, Chiaki, 4,806,417, Cl. 428-323.000.
Ejiri, Yoshihiro: *See*—
Matsuzaki, Akira; Ejiri, Yoshihiro; Nakai, Taiichiro; and Yamaguchi, Yoshiro, 4,805,547, Cl. 114-221.00A.
Elan Elektronische Anlagen GmbH: *See*—
Rutt, Winfried P., 4,806,884, Cl. 332-31.00R.
Elander, Jay C.; and Godfrey, Wayne G., to Honeywell Inc. Method of joining metals of different physical propertiescu4,805,280, Cl. 29-149.5DP.
Elbe, Hans-Ludwig; Stetter, Jorg; Buchel, Karl H.; Schaller, Klaus; and Plempel, Manfred, to Bayer Aktiengesellschaft. Novel substituted hydroxyalkyl-azole antimycotic agentscu4,806,559, Cl. 514-383.000.
Elbe, Hans-Ludwig; and Holmwood, Graham, to Bayer Aktiengesellschaft. Process for the preparation of 5-acylpyrimidinescu4,806,644, Cl. 544-335.000.
Elbicki, Janean M. Liquid crystal nondestructive inspection of magnetization and variations in magnetization of high energy magnetscu4,806,858, Cl. 324-205.000.
Electrical Equipment, Inc.: *See*—
Golowash, Victor, 4,806,716, Cl. 200-244.000.
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Ellington, William E.: *See*—
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Ema, Taiji; and Yabu, Takashi, to Fujitsu Limited. Semiconductor memory device with wirings having ensured cross-sectionscu4,807,017, Cl. 357-68.000.
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Enami, Toshiaki, to Enami Seiki Mfg. Co., Ltd. Joint construction for metal sheetscu4,805,592, Cl. 126-273.00R.
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Endo, Mitsuharu: *See*—
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Engel, Dusan J.: *See*—
Baumann, William M.; Scott, Ray V., Jr.; House, David W.; and Engel, Dusan J., 4,806,616, Cl. 528-68.000.
Engelbrecht, Jurgen; von Wallis, Helmut; and Gunther, Michael, to Ernst Muhlbauer KG. Polymerizable compounds containing acid and acid derivatives, mixtures containing the same, and use thereofcu4,806,381, Cl. 427-2.000.
Engelhard Corporation: *See*—
Chiba, Tadao; Funabiki, Masaki; and Watanabe, Tsunao, 4,806,519, Cl. 502-252.000.
Engelhardt, John A.; and Tarr, Richard R., to Boehringer Mannheim Corporation. Modular intramedullary nail systemscu4,805,607, Cl. 128-92.0YZ.
Enros Chemical Company: *See*—
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Entravision, Inc.: *See*—
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Envirotech Corporation: *See*—
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Epson Corporation: *See*—
Koto, Harahito; Okada, Junichi; Ishii, Hiroshi; and Sawada, Kenji, 4,806,955, Cl. 346-140.00R.
Erhardt, Wolfgang: *See*—
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Erkki, Telamo. Electric platecu4,806,738, Cl. 219-457.000.
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Ernst, Alfred: *See*—
Sacco, Bruno; Gallitzendorfer, Josef; Klein, Michael V.; Janz, Gerhard; and Ernst, Alfred, 4,805,962, Cl. 297-454.000.
Ernst, Hansgeorg; Leininger, Hartmut; and Paust, Joachim, to BASF Aktiengesellschaft. Preparation of ribitylxylidinecu4,806,686, Cl. 564-398.000.
Ernst Muhlbauer KG: *See*—
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Ernst Winter & Sohn (GmbH & Co.): *See*—
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Ernsting, Nikolaus, to Max-Planck -Gesellschaft zur Forderung der Wissenschaften e.V. Method and apparatus for operating a dye laser with a proton transfer reactioncu4,807,237, Cl. 372-53.000.
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Establissement Public de diffusion dit Telediffusion de France: *See*—
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Etat Francais: *See*—
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Etat Francais represente par le Ministre des P.T.T. (C.N.E.T.): *See*—
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Ethicon, Inc.: *See*—
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Ethyl Corporation: *See*—
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Eto, Takehiko: *See*—
Hirose, Yagoro; Miyagi, Yoshimitsu; Hirose, Kiko; Hino, Mituo; Harada, Masayuki; Eto, Takehiko; Iida, Tetsunori; and Shimamura, Masahiro, 4,806,307, Cl. 420-528.000.

Evans, Blair, to Microtouch Systems, Inc. Method of and apparatus for sensing the location, such as coordinates, of designated points on an electrically sensitive touch-screen surfaceus4,806,709, Cl. 178-19.000.

Everett, Benjamin H., II: *See*—
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Everett, C. Joe: *See*—
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Everson, Richard W., to Thermoid, Inc. Method of making a track broom bristleus4,805,964, Cl. 300-21.000.

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Ewen, Alexander T. E.; and Hewitt, David A., to Glynwed Tubes & Fittings Limited. Method for moulding a thermoplastics member with a fusion padus4,806,181, Cl. 156-64.000.

Ewer, Ronald W., deceased; Scott, Dean G., legal representative; and O'Connor, Kevin D., to Pilkington Visioncare Holdings, Inc. Multifocal lensus4,806,010, Cl. 351-169.000.

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Ezure, Yoji; Yamamoto, Masashi; Maruo, Shigeaki; and Sugiyama, Makoto, to Nippon Shinyaku Co., Ltd. Method of manufacturing morazoline derivativesus4,806,633, Cl. 536-18.500.

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Fair, David C.: *See*—
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Fairchild Semiconductor Corporation: *See*—
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Fajner, Michael J.; Mallonee, Edward A.; and Siebenlist, John J., to Eaton Corporation. Overload relay having adaptive differential mechanismus4,806,897, Cl. 337-49.000.

Falk, Robert A., to Boeing Company, The. Angular reflectance sensorus4,806,018, Cl. 356-446.000.

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Fardin, Carlos E.: *See*—
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Farges, Gilbert, to Gradient "Association regie par la loi de 1901". Cardiorespiratory monitoring apparatusus4,805,629, Cl. 128-671.000.

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Figueras, Juan M., to Merck Patent Gesellschaft mit Beschrankter Haftung. Process for preparing vat pigment dyesus4,806,128, Cl. 8-650.000.

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Howell, Roland A., to Southern Railway Company. Gate circuitry for hot box detectorcu4,805,854, Cl. 246-169.00D.

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King, James C.: *See*—
Pratt, Richard J.; and King, James C., 4,806,396, Cl. 428-4.000.

Kingport International Corporation: *See*—
Gerch, Edward L., 4,805,748, Cl. 190-103.000.
Gerch, Edward L., 4,805,749, Cl. 190-111.000.

Kinka, Mikio: *See*—
Suzuki, Kunio; Kobayashi, Ippei; Shibata, Katsuhiko; Susukida, Masato; Kinka, Mikio; Fukada, Takeshi; Nagayama, Susumu; Abe, Masayoshi; and Yamazaki, Shunpei, 4,806,496, Cl. 437-4.000.

Kinnersley, Alan M.: *See*—
Dennig, Morris J.; and Kinnersley, Alan M., 4,806,149, Cl. 71-100.000.

Kinney, Jerry N., to PPG Industries, Inc. Method of preparing an asbestos diaphragmcu4,806,214, Cl. 204-98.000.

Kinsey, Joe L., Jr.: *See*—
Gibbons, Charles E.; Kinsey, Joe L., Jr.; and Whillock, Allan A., 4,806,399, Cl. 428-34.200.

Kinugawa, Masumi: *See*—
Kikuchi, Toshiaki; Kinugawa, Masumi; and Kamai, Kenichirou, 4,805,578, Cl. 123-489.000.

Kioritz Corporation: *See*—
Baba, Toru, 4,805,306, Cl. 30-276.000.

Kirby, Thomas S. Bar hanger for hanging conduits or the likecu4,805,855, Cl. 248-58.000.

Kirkup, Michael P.; and Boland, Amy S., to Schering Corporation. 6-(Hydroxyethyl)-2-(heterocyclylthio)-penem-3-carboxylatescu4,806,637, Cl. 540-310.000.

Kirsanova-Belova, Elena V.: *See*—
Azarevich, Gennady M.; Akimov, Boris I.; and Kirsanova-Belova, Elena V., 4,805,431, Cl. 72-70.000.

Kirsimae, Peter: *See*—
Bulanda, John; and Kirsimae, Peter, 4,805,278, Cl. 29-33.00M.

Kishi, Masamichi; and Sagawa, Hiroya, to Minolta Camera Kabushiki Kaisha. Microfilm reader scanner capable of editing imagecu4,807,041, Cl. 358-256.000.

Kishida, Akira: *See*—
Kawai, Yoshito; Kishida, Akira; Yokoama, Shiroh; Yokoyama, Ichiku; and Yokoyama, Goudai, 4,806,724, Cl. 219-121.680.

Kishida, Masahiko: *See*—
Akiyama, Hiroyuki; Sudo, Yoshimi; Kishida, Masahiko; and Nishida, Mitsuru, 4,806,293, Cl. 264-53.000.

Kishigami, Hidechika: *See*—
Tokumaru, Takeji; and Kishigami, Hidechika, 4,807,175, Cl. 364-760.000.

Kishimoto, Hideaki: *See*—
Nakato, Hakaru; Nozaki, Tsutomu; Habu, Yasuhiro; Oka, Hiromu; Ueda, Tsunehiro; Koshikawa, Takao; Kishimoto, Hideaki; and Shimokawa, Fumitaka, 4,806,163, Cl. 106-38.220.

Kishimoto, Tadao; Isobe, Toshifumi; Maruyama, Hiroyuki; and Yokobori, Jun, to Konishiroku Photo Industry Co., Ltd. Color image-forming apparatus for producing overlapped monochrome imagescu4,806,973, Cl. 355-4.000.

Kishuyakuhinme Kabushiki Kaisha: *See*—
Nakashima, Todomu, 4,806,365, Cl. 426-17.000.

Kiso, Junko: *See*—
Kikuchi, Yutaka; Nagashima, Nao; and Kiso, Junko, 4,807,044, Cl. 358-280.000.

Kisojibas Consultants Co., Ltd.: *See*—
Sakai, Katsuo; Muromachi, Tadahiko; and Sakai, Yukio, 4,806,153, Cl. 73-151.000.

Kisou, Masaaki: *See*—
Takeuchi, Motohiko; and Kisou, Masaaki, 4,807,034, Cl. 358-167.000.

Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, to Degussa Aktiengesellschaft. Luminescing glassescu4,806,268, Cl. 252-331.40F.

Kiss, Bela: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Szombathelyi, Zsolt; Karpati, Egon; Kiss, Bela; Csomor, Katalin; Laszlovszky, Istvan; Lapis, Erzsebet; Szporny, Laszlo; Forgaca, Lilla; Kuthi, Csaba; and Gere, Aniko, 4,806,545, Cl. 514-285.000.

Kiss, Eva: *See*—
Abraham, Gizella; Horvath, Tibor; Toldy, Lajos; Borvendeg, Janos; Csanyi, Endre; Kiss, Eva; nee Hermann, Ilona S.; and Tory, Kalman, 4,806,685, Cl. 564-324.000.

Kisumi, Shintaro: *See*—
Sato, Seii; Wakitani, Masayuki; Hasegawa, Tadashi; Miura, Shoshin; Andoh, Shizuo; Takizawa, Hideaki; Kobayashi, Tetsuya; Takahara, Kazuhiro; Kawada, Toyoshi; Hoshiya, Takayuki; and Kisumi, Shintaro, 4,807,047, Cl. 358-300.000.

Kitajima, Hajime: *See*—
Mizutani, Morikazu; Onoda, Shigeyoshi; Ikemoto, Isao; Kanemitsu, Shinji; and Kitajima, Hajime, 4,806,977, Cl. 355-8.000.

Kitamura, Shigeharu; and Segita, Kazuhiko, to Mitsubishi Denki Kabushiki Kaisha. Passenger conveyor guide arrangementscu4,805,763, Cl. 198-332.000.

Kitchen, John P., to Hoover Group, Inc. Box spring assembly with a grid structure formed of both basic and spring wirecu4,805,883, Cl. 267-103.000.

Kiuchi, Hiroshi; Murata, Katsumi; Murakami, Kazuo; Kusakabe, Isao; and Kobayashi, Hideyuki, to Kabushikikaisha Kibun; and Kabushikikaisha Kibun Foodchemifa. Process for the production of a food materialcu4,806,367, Cl. 426-46.000.

Kiyama, Masao: *See*—
Nagai, Norimichi; Hirayama, Akihiko; Sugita, Norio; Kiyama, Masao; Takada, Toshio; Fujimoto, Katsunori; and Ota, Yasutaka, 4,806,429, Cl. 428-403.000.

Kiyohara, Hiroshi: *See*—
Mori, Nobuo; Takeuchi, Terumasa; and Kiyohara, Hiroshi, 4,805,516, Cl. 91-503.000.

Kiyono, Masashi: *See*—
Abe, Tomoaki; Takao, Mitsunori; and Kiyono, Masashi, 4,805,576, Cl. 123-479.000.

Klapheke, James W.: *See*—
Knego, Frank M.; Cox, Fred D.; and Klapheke, James W., 4,805,560, Cl. 119-51.120.

Kleckner, John R. Ventilating support for roof insulationcu4,805,367, Cl. 52-408.000.

Kleijne, Theodoor A., to NCR Corporation. Security device for sensitive datacu4,807,284, Cl. 380-3.000.

Klein, Andr' : *See*—
Colin, Gerard R.; Klein, Andr' ; Lecleroq, Alain; and Mara, Patrick, 4,806,223,a, Cl. 204-206.000.

Klein, Itzhak: *See*—
Bodenheimer, Joseph S.; Klein, Itzhak; and Levi, Yehuda L., 4,806,013, Cl. 356-133.000.

Klein, Joseph T.: *See*—
Effland, Richard C.; and Klein, Joseph T., 4,806,554, Cl. 514-338.000.

Klein, Michael V.: *See*—
Sacco, Bruno; Gallitzendorfer, Josef; Klein, Michael V.; Janz, Gerhard; and Ernst, Alfred, 4,805,962, Cl. 297-454.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
Heumann, Anton, 4,806,078, Cl. 416-186.00R.

Kleinewefers GmbH: *See*—
Pav, Josef, 4,805,279, Cl. 29-116.200.

Kleinschmit, Peter: *See*—
Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, 4,806,268, Cl. 252-331.40F.

Klemarczyk, Philip, to Loctite Corporation. Curable siloxane maleimide compositionscu4,806,608, Cl. 526-262.000.

Kletti, Michael W.; and Das, Balbhadra, to PPG Industries, Inc. Polymeric compositions having flame retardant propertiescu4,806,620, Cl. 528-244.000.

Kleven, Lowell A.: *See*—
Corpron, Gary P.; Kleven, Lowell A.; and Johnson, Lawrence A., 4,806,016, Cl. 356-373.000.

Kley, Victor B. Electrical illumination and detecting apparatuscu4,806,776, Cl. 250-560.000.

Klingenbeck, Klaus; and Rega, Judith, to Siemens Aktiengesellschaft. Method and apparatus for identifying the distribution of the dielectric constants in an objectcu4,805,627, Cl. 128-653.000.

Klink, Josef: *See*—
Bauer, Heinz; Becker, Burckhard; Frohahera, Ernst-Reiner; Gedig, Alfred; Klink, Josef; and Koucky, Antonin, 4,805,481, Cl. 74-528.000.

Klockner Ferromatik Desma GmbH: *See*—
Postina, Klaus; and Settinger, Manfred, 4,805,803, Cl. 222-52.000.

Klopping, Jeffrey N.: *See*—
Joehlin, Stanley W.; and Klopping, Jeffrey N., 4,807,144, Cl. 364-473.000.

Kluppel, Klemens; and Stuba, Albert, to Atlas Fahrzeugtechnik GmbH. Arrangement for the generation of a trigger pulsecu4,807,137, Cl. 364-431.040.

KM Werkzeugmaschinen GmbH: *See*—
Till, Konrad, 4,806,052, Cl. 409-231.000.

Knapp, Alfons; Roland, Robert D.; and Hutto, Joe D., to Masco Corporation of Indiana. Faucet valve with anti-siphon back flow preventercu4,805,661, Cl. 137-218.000.

Knego, Frank M.; Cox, Fred D.; and Klapheke, James W. Automatic pet feeding devicecu4,805,560, Cl. 119-51.120.

Kaiser, Wolfgang; and Schempp, Otto, to Winchester Electronics. High density edgecard connector systemcu4,806,103, Cl. 439-60.000.

Kaobel, Thomas M.; Walker, Mary K.; and Maechmeyer, Donald M., to Dow Chemical Company, The. Organic composition containing a fluoroalkyl sulfonic acid saltcu4,806,571, Cl. 521-107.000.

Kaochel, Reinhard; and Kohler, Jurgen, to U.S. Philips Corporation. Microwave componentscu4,806,941, Cl. 343-700.0MS.

Kaoop, Heinz-Peter, to D. G. S. Research & Development. Utility knife having a sliding blade holdercu4,805,304, Cl. 30-162.000.

Kaopf, Edward J. Beverage filter dispensercu4,805,801, Cl. 221-210.000.

Kaowles, Steven C., to Olin Corporation. Non-erosive arcjet starting control system and methodcu4,805,400, Cl. 60-203.100.

Knowlton, Robert E., to C-I-L Inc. Natural gas storage and retrieval systemcu4,805,674, Cl. 141-47.000.

Kobashi, Ichiro: *See*—
Kobashi, Teruhisa; Kobashi, Ichiro; Touki, Yoshio; and Kobiki, Yasuhiro, 4,805,704, Cl. 172-91.000.

Kobashi Kogyo Co., Ltd.: *See*—
Kobashi, Teruhisa; Kobashi, Ichiro; Touki, Yoshio; and Kobiki, Yasuhiro, 4,805,704, Cl. 172-91.000.

Kobashi, Teruhisa; Kobashi, Ichiro; Touki, Yoshio; and Kobiki, Yasuhiro, to Kobashi Kogyo Co., Ltd. Rotary tilling devicecu4,805,704, Cl. 172-91.000.

Kobayahsi, Nobuki: *See*—
Kano, Taisaku; Kobayahsi, Nobuki; and Ichihara, Yoshinobu, 4,806,600, Cl. 325-206.000.

Kobayashi, Hideaki, to Hitachi. Ltd. Method of and apparatus for recovering exhaust gas energy of internal combustion enginecu4,805,409, Cl. 60-597.000.

Kobayashi, Hideyuki: *See*—
Kiuchi, Hiroshi; Murata, Katsumi; Murakami, Kazuo; Kusakabe, Isao; and Kobayashi, Hideyuki, 4,806,367, Cl. 426-46.000.

Kobayashi, Hiroshi: *See*—
Kosaka, Norifumi; and Kobayashi, Hiroshi, 4,807,071, Cl. 360-105.000.

Kobayashi, Ippei: *See*—
Suzuki, Kunio; Kobayashi, Ippei; Shibata, Katsuhiko; Susukida, Masato; Kinka, Mikio; Fukada, Takeshi; Nagayama, Susumu; Abe, Masayoshi; and Yamazaki, Shunpei, 4,806,496, Cl. 437-4.000.

Kobayashi, Masaaki: *See*—
Takeuchi, Akihiro; Kobayashi, Masaaki; Yamanishi, Kazuhiro; and Ochi, Atsuo, 4,807,050, Cl. 358-328.000.

Kobayashi, Nobuo: *See*—
Mochizuki, Hiroyuki; Kobayashi, Nobuo; Tamaki, Shigenori; Iwase, Takahiro; Masuda, Naofumi; and Taguchi, Yoshio, 4,806,388, Cl. 427-46.000.
Tamaki, Shigenori; Machizuki, Hiroyuki; Kobayashi, Nobuo; Iwase, Takahiro; and Masuda, Naofumi, 4,806,387, Cl. 427-46.000.

Kobayashi, Nobuyoshi; Hara, Nobuo; Iwata, Seiichi; and Yamamoto, Naoki, to Hitachi, Ltd. Semiconductor device having electrodes and or interconnections of refractory metal film containing silicon oxidecu4,807,015, Cl. 357-67.000.

Kobayashi, Osamu, to Fujitsu Limited. Amplifier having a cascade circuitcu4,806,877, Cl. 330-253.000.

Kobayashi, Ryuichi; Harada, Yoshihito; Kawamura, Masaharu; Kataoka, Hiroyuki; and Kumakura, Toshiyuki, to Canon Kabushiki Kaisha. Aperture decision system for flash photographingcu4,806,963, Cl. 354-415.000.

Kobayashi, Seishichi: *See*—
Sato, Nobuyuki; Matsubayashi, Hiroshi; Kobayashi, Seishichi; Mitsuhashi, Minoru; Matsuno, Kenji; and Ishibashi, Kazuhisa, 4,805,795, Cl. 220-75.000.

Kobayashi, Shigeo; Yoshida, Osamu; Saito, Haruo; Shigeta, Tsutomu; Nara, Hiroshi; Abe, Shinji; and Yamamoto, Kiyoharu, to Oki Electric Industry Co., Ltd. Work following apparatus and method for press workingcu4,805,439, Cl. 72-419.000.

Kobayashi, Shigeo: *See*—
Fujimoto, Susumu; and Kobayashi, Shigeo, 4,806,588, Cl. 524-305.000.

Kobayashi, Souji, to Taseto Co., Ltd. Back-fire preventive unit in a gas cutting torchcu4,806,096, Cl. 431-346.000.

Kobayashi, Takatoshi; and Ohya, Takahiro, to KAO Corporation. Process for producing highly absorptive resincu4,806,578, Cl. 523-402.000.

Kobayashi, Tetsuya: *See*—
Sato, Seii; Wakitani, Masayuki; Hasegawa, Tadashi; Miura, Shoshin; Andoh, Shizuo; Takizawa, Hideaki; Kobayashi, Tetsuya; Takahara, Kazuhiro; Kawada, Toyoshi; Hoshiya, Takayuki; and Kisumi, Shintaro, 4,807,047, Cl. 358-300.000.

Kobayashi, Toshio: *See*—
Suzuki, Migaku; and Kobayashi, Toshio, 4,805,275, Cl. 28-104.000.

Kobayashi, Tsuneki: *See*—
Tokoro, Hiroyoshi; Kobayashi, Tsuneki; Hosoya, Kensei; Nobumori, Shogo; and Hayakawa, Mitsuaki, 4,806,979, Cl. 355-14.0SH.

Kobiki, Yasuhiro: *See*—
Kobashi, Teruhisa; Kobashi, Ichiro; Touki, Yoshio; and Kobiki, Yasuhiro, 4,805,704, Cl. 172-91.000.

Kobler, Ingo; and Hartung, Georg, to M.A.N. Roland Druckmaschinen AG. Printing machine inker systemcu4,805,530, Cl. 101-350.000.

Kodaira, Kazuhiko: *See*—
Noishiki, Yasuharu; Kodaira, Kazuhiko; Furuse, Masayasu; and Miyata, Teruo, 4,806,595, Cl. 525-54.200.

Kodama, Kazuo: *See*—
Takahashi, Kazatomo; Kodama, Kazuo; and Saotome, Minoru, 4,806,577, Cl. 523-445.000.

Kodama, Nobuzni: *See*—
Takemae, Yoshihiro; Takematsu, Takeo; Sato, Kimiaki; Horii, Takashi; Kodama, Nobumi; Yanagisawa, Makoto; and Takada, Yasuhiro, 4,807,193, Cl. 365-205.000.

Kodama, Yukinori: *See*—
Nakano, Masao; Mochizuki, Hirohiko; Ohira, Tsuyoshi; Kodama, Yukinori; and Nomura, Hidenori, 4,807,192, Cl. 365-193.000.

Kodama, Yukio: *See*—
Takahashi, Mitsuo; Oyama, Fusami; and Kodama, Yukio, 4,805,721, Cl. 180-248.000.

Koen, Myron J.: *See*—
Halbert, Joel M.; and Koen, Myron J., 4,807,147, Cl. 364-487.000.

Koenig, Earl, to Goodman, Donald, a part interest. Electrical circuit for inductance conductors, transformers and motorscu4,806,834, Cl. 318-523.000.

Koenigs, Philip E.: *See*—
Mason, Richard A.; and Koenigs, Philip E., 4,805,256, Cl. 15-320.000.

Kogler, Peter; Scheiber, Berthold; Martin, Wulf; and Wrulich, Herwig, to Voest-Alpine Aktiengesellschaft. Shield advancing machinecu4,805,963, Cl. 299-33.000.

Kohachi, Nomura: *See*—
Hagiwara, Michiaki; Menjiu, Akira; Kohachi, Nomura; Masaru, Kataoka; Yoshinao, Yamada; and Miyuri, Sasaki, 4,806,179, Cl. 148-403.000.

Kohake, Ronald W.: *See*—
Kazan, Howard; and Kohake, Ronald W., 4,807,282, Cl. 379-284.000.

Kohatsu, Iwao: *See*—
Chang, Kuo Y.; Kohatsu, Iwao; and Garrou, Philip E., 4,806,658, Cl. 549-368.000.

Kohler, Jurgen: *See*—
Knochel, Reinhard; and Kohler, Jurgen, 4,806,941, Cl. 343-700.0MS.

Kohli, Dilip; and Sandor, George N. Rotary linear actuator for use in robotic manipulatorscu4,806,068, Cl. 414-735.000.

Kohn, Joachim; and Langer, Robert S., to Massachusetts Institute of Technology. Biocompatible, bioerodible, hydrophobic, implantable polyimino carbonate articlecu4,806,621, Cl. 528-211.000.

Koike, Hideo, to A. O. Smith Corporation. Gauge for monitoring the dimensions of a structural membercu4,805,309, Cl. 33-147.00L.

Koishi, Toshio: *See*—
Imai, Yoshio; Kakimoto, Masaaki; Maruyama, Yutaka; and Koishi, Toshio, 4,806,618, Cl. 528-125.000.

Koizumi, Satoru; Teshima, Daisuke; and Katayama, Yoshio, to Sharp Kabushiki Kaisha. Tape recorder including device to prevent improper operation of recording operationcu4,807,058, Cl. 360-60.000.

Kojima, Takao; Ishiguro, Hiroyuki; Kawachi, Yoshiki; and Yamada, Tetsuyo, to NGK Spark Plug Co., Ltd. Plate-like ceramic heatercu4,806,739, Cl. 219-543.000.

Kojin Co., Ltd.: *See*—
Kamijo, Masayasu; Katsuta, Shinichiro; and Wada, Takeo, 4,806,206, Cl. 162-145.000.

Koken Co., Ltd.: *See*—
Noishiki, Yasuharu; Kodaira, Kazuhiko; Furuse, Masayasu; and Miyata, Teruo, 4,806,595, Cl. 525-54.200.

Kokusai Denshin Denwa Co., Ltd.: *See*—
Hatori, Yoshinori; Nishiwaki, Mitsuo; and Mukawa, Naoki, 4,807,028, Cl. 358-133.000.
Matsuzaki, Akira; Ejiri, Yoshihiro; Nakai, Taiichiro; and Yamaguchi, Yoshiro, 4,805,547, Cl. 114-221.00A.
Tamura, Yasuaki; and Mochizuki, Kiyofumi, 4,805,977, Cl. 350-96.160.

Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Utaka, Katsuyuki; Sakai, Kazuo; and Matsushima, Yuichi, 4,805,975, Cl. 350-96.130.

Kolbe, Gunther: *See*—
Eckstein, Wolfgang; and Kolbe, Gunther, 4,805,608, Cl. 128-202.260.

Kolleth, Horst; and Wieczorek, Andreas, to Voest-Alpine Aktiengesellschaft. Loading device, in particular bucket-wheel excavatorcu4,805,756, Cl. 198-314.000.

Komabashiri, Takamichi: *See*—
Yasui, Hideo; Mitani, Toragoro; and Komabashiri, Takamichi, 4,805,650, Cl. 134-57.00R.

Komai, Kensaku: *See*—
Ohnishi, Souichi; Toda, Tadahiro; Komai, Kensaku; and Sugihara, Masuo, 4,807,186, Cl. 364-900.000.

Komatsu, Fumio; Miyoshi, Motosuke; and Okumura, Katsuya, to Kabushiki Kaisha Toshiba. Apparatus and method for controlling irradiation of an electron beam at a fixed position in an electron beam tester systemcu4,807,159, Cl. 364-524.000.

Komatsu, Junichi; Fujikawa, Toshiaki; and Mizuno, Koji, to Sharp Kabushiki Kaisha. Programmable system for inputting & Processing data using visually perceptible data entry framescu4,807,123, Cl. 364-200.000.

Komori Printing Machinery Co., Ltd.: *See*—
Kusaka, Akehiro, 4,805,893, Cl. 271-258.000.

Komp, Karl-Heinz; and Walczak, Bruno, to Schumag AG. Method for straight-line drawing of round materialcu4,805,434, Cl. 72-282.000.

Kompis, Ivan: *See*—
Johdoe, Synese; Locher, Rita; Kompis, Ivan; Weiss, Ekkehard; and Wyss, Pierre-Charles, 4,806,541, Cl. 514-254.000.

Kondo, Hiroshi: *See*—
Ohe, Junzo; and Kondo, Hiroshi, 4,806,942, Cl. 343-713.000.

Kondo, Kazuhiko: *See*—
Arai, Hatsuyuki; Nagahashi, Isao; Maeda, Seiichi; Yasuda, Kazumi; Furusawa, Shiro; Hirata, Kazuhiko; Nagao, Kastunori; Kondo, Kazuhiko; Sanoki, Takaya; Sagiyama, Misuo; and Kusano, Shinichi, 4,805,348, Cl. 51-118.000.

Kondo, Kuniharu: *See*—
Urayama, Yuji; Kondo, Kuniharu; and Nakatsukasa, Takeshi, 4,806,861, Cl. 324-212.000.

Kondo, Masafumi: *See*—
Suyama, Takahiro; Takahashi, Kohei; Yamamoto, Saburo; Hayakawa, Toshiro; and Kondo, Masafumi, 4,807,235, Cl. 372-19.000.

Kondo, Tatsuhiko; Seo, Kenzo; Itoh, Shinetsu; Kanazawa, Masaru; and Okada, Kiyotaka, to Nippon Hoso Kyokai. Signal processing filter for an image projection device utilizing an oil filmcu4,807,040, Cl. 358-233.000.

Kondo, Tetsuro: *See*—
Yamada, Tomiharu; Shizuta, Atsushi; Shirata, Tomonori; and Kondo, Tetsuro, 4,805,581, Cl. 123-519.000.

Kondoh, Yoshitaka: *See*—
Sumi, Akiyasu; Yoshida, Shigeru; Kurosawa, Akira; Takahashi, Tohru; Kondoh, Yoshitaka; and Chigira, Tatsuo, 4,806,813, Cl. 310-254.000.

Kone Elevator GmbH: *See*—
de Jong, Johannes; and Perttula, Jouko, 4,805,741, Cl. 188-1.110.

Konica Corporation: *See*—
Yamanouchi, Kenji; Teraoka, Yutaka; Ikeda, Makoto; Nakamura, Masao; and Kawai, Satoshi, 4,806,965, Cl. 355-1.000.

Konig, Axel; and de Buzzaccarini, Francesco, to Procter & Gamble Company, The. Textile treatment compositioncu4,806,255, Cl. 252-8.800.

Konig, Joachim: *See*—
Probst, Joachim; Baumgen, Heinz; Bomer, Bruno; Konig, Joachim; and Mottweiler, Renke, 4,806,591, Cl. 524-820.000.

Konig, Wolfgang: *See*—
Volk, Alexander; and Konig, Wolfgang, 4,806,641, Cl. 544-183.000.

Koninklijke Emballage Industrie Van Leer B.V.: *See*—
Koudstaal, Willem; Thomas, Alan; and Lewis, Jeffrey L., 4,806,021, Cl. 383-40.000.

Konishi, Kenjiro; and Obata, Ken, to Furukawa Electric Co., Ltd., The. Electrical connector device with a number of terminalscu4,806,123, Cl. 439-595.000.

Konishiroku Photo Industries Co., Ltd.: *See*—
Isozaki, Shin; and Yagi, Michio, 4,807,070, Cl. 360-104.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Kishimoto, Tadao; Isobe, Toshifumi; Maruyama, Hiroyuki; and Yokobori, Jun, 4,806,973, Cl. 355-4.000.
Saito, Taku; and Fujii, Yozo, 4,806,989, Cl. 355-55.000.
Uchida, Makoto; Kakuhari, Hiroyuki; Isogawa, Wataru; and Amano, Tadashi, 4,806,962, Cl. 354-324.000.

Konno, Yoshikiyo, to Pioneer Electronic Corporation. Tracking control devicecu4,807,207, Cl. 369-46.000.

Konoma, Kunihiko: *See*—
Ueda, Toshihiko; and Konoma, Kunihiko, 4,805,999, Cl. 350-425.000.

Konsevich, Francis X.: *See*—
Thorpe, J. Carlton; and Konsevich, Francis X., 4,806,892, Cl. 333-246.000.

Kopperschmidt-Mueller GmbH & Co. KG: *See*—
Kuhn, Wolfgang, 4,806,079, Cl. 417-343.000.

Korber AG: *See*—
Radzio, Andrzej; and Siems, Wolfgang, 4,805,641, Cl. 131-280.000.
Wendt, Ulrich, 4,806,175, Cl. 148-16.500.

Korf, Dieter; and Seibel, Eberhard, to Walter Sarstedt Kunststoff-Spritzgusswerk. Blood collecting vesselcu4,805,635, Cl. 128-763.000.

Korf Engineering GmbH: *See*—
Hauk, Rolf; Papst, Gero; Langner, Klaus; Nagl, Michael; Kepplinger, Werner; and Seirlehner, Leopold, 4,805,880, Cl. 266-87.000.
Hauk, Rolf, 4,806,154, Cl. 75-10.190.

Korthaus, Helmut: *See*—
Wilke, Richard; and Korthaus, Helmut, 4,805,740, Cl. 188-173.000.

Kosaka, Norifumi; and Kobayashi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Mechanism for preventing damage to the magnetic head and medium ofa magnetic recording/reproducing apparatus during transportcu4,807,071, Cl. 360-105.000.

Koschke, Peter: *See*—
Ullrich, Georg J.; Pomorin, Karl-Heinz; Kronberg, Harald; Bramm, Gunter; Koschke, Peter; Novak, Pavel; and Gaab, Michael R., 4,805,634, Cl. 128-748.000.

Koshikawa, Takao: *See*—
Nakato, Hakaru; Nozaki, Tsutomu; Habu, Yasuhiro; Oka, Hiromu; Ueda, Tsunehiro; Koshikawa, Takao; Kishimoto, Hideaki; and Shimokawa, Fumitaka, 4,806,163, Cl. 106-38.220.

Kostamo, Pentti, to Valmet Oy. Vehiclecu4,805,719, Cl. 180-242.000.

Kosteck, Gregory R., to Olin Corporation. Semi-wadcutter bullet and method of manufacturing samecu4,805,536, Cl. 102-514.000.

Kostelnicek, Richard J.: *See*—
Montes, Raul R.; and Kostelnicek, Richard J., 4,807,200, Cl. 367-76.000.

Kotani, Tsutomu; and Takahashi, Minoru, to TDK Corporation. Displacement sensorcu4,805,633, Cl. 128-715.000.

Kotmans, Hendrik J.: *See*—
Sommen, Petrus C. W.; Classen, Theodoor A. C. M.; Van Gerwen, Petrus J.; and Kotmans, Hendrik J., 4,807,173, Cl. 364-724.180.

Koto, Haruhiko; Okada, Junichi; Ishii, Hiroshi; and Sawada, Kenji, to Epson Corporation. Ink jet printer of the ink-on-demand typecu4,806,955, Cl. 346-140.00R.

Koto, Shingo, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for cancelling leakage magnetic fieldcu4,806,894, Cl. 335-214.000.

Kotzach, Thomas: *See*—
Spase, Rainer; and Kotzach, Thomas, 4,806,169, Cl. 134-3.000.

Koucky, Antonin: *See*—
Bauer, Heinz; Becker, Burckhard; Frohnhaus, Ernst-Reiner; Gedig, Alfred; Klink, Josef; and Koucky, Antonin, 4,805,481, Cl. 74-528.000.

Koudstaal, Willem; Thomas, Alan; and Lewis, Jeffrey L., to Koninklijke Emballage Industrie Van Leer B.V. Container for drink and method of manufacturing the containercu4,806,021, Cl. 383-40.000.

Kousa, Paavo T., to Octel Communications Corporation. Telephone line quality testing systemcu4,807,274, Cl. 379-6.000.

Kovacs, Gabor: *See*—
Hermecz, Istvas; Keresztzuri, Geza; Vasvari, Lelle; Horvath, Agnes; Balogh, Maria; Kovacs, Gabor; Meszaros, Zoltan, deceased; Ritli, Peter; Sipos, Judit; and Pajor, Aniko , 4,806,645, Cl. 546-13.000.

Kovarsky, Alexandr V.: *See*—
Charkovsky, Alexandr V.; Dobrova, Natalya B.; Filatov, Vladimir N.; Iofis, Naum A.; Bukatov, Alexandr S.; Danilova, Zinaida P.; Kovarsky, Alexandr V.; and Egorov, Jury G., 4,805,424, Cl. 66-194.000.

Kowa Company, Ltd.: *See*—
Sekine, Kiyoshi; and Ohtani, Akio, 4,806,950, Cl. 346-76.0PH.

Kowalczyk, Ludwik; and Kaetzel, Gilbert C., to Hoffmann-La Roche Inc. Automatic ampule openercu4,805,821, Cl. 225-96.500.

Koyama, Kazuaki: *See*—
Kawai, Yoshihiko; Koyama, Kazuaki; and Yasuda, Isao, 4,807,075, Cl. 360-125.000.

Koyama, Shuntaro: *See*—
Morihara, Atsushi; Miyamoto, Tomohiko; Koyama, Shuntaro; Nogita, Shunsuke; and Hishinuma, Yukio, 4,806,131, Cl. 48-210.000.

Koyasu, Yoshiro; Tsuchida, Yutaka; and Suzuki, Nobukazu, to Nippon Steel Corporation. Non-heat refined steel bar having improved toughnesscu4,806,178, Cl. 148-330.000.

Kozlik, Antonin: *See*—
Jeffery, James E.; Kozlik, Antonin; and Wilmhurst, Eric C., 4,806,570, Cl. 514-646.000.

Kozlov, Valery S.; Polyakova, Elena A.; Novikov, Alexei E.; and Krupko, Mikhail T., to Belorussky Politekhnicheisky Institute. Method of magnetographic inspection of quality of materialscu4,806,862, Cl. 324-213.000.

Kraemer, Dieter: *See*—
Hartl, Roland; and Kraemer, Dieter, 4,806,348, Cl. 424-85.000.

Krajewski, John J.; Bishop, Timothy E.; Coady, Clive J.; Zimmerman, John M.; Noren, Gerry K.; and Fisher, Christopher E., to DeSoto, Inc. Ultraviolet curable coatings for optical glass fiber based on a polyfunctional corecu4,806,574, Cl. 522-96.000.

Krajicek, Richard W.; and Cradeur, Robert R., to Serv-Tech, Inc. Mobile articulatable tube bundle cleanercu4,805,653, Cl. 134-166.00C.

Kramer, Pieter; and Roos, Jan, to U.S. Philips Corporation. Record carrier body with a follow-on track and apparatus for recording information thereoncu4,807,209, Cl. 369-44.000.

Kransco Manufacturing, Inc.: *See*—
Geller, Douglas A.; Schneider, Stephen E.; and Holbrook, William C., 4,805,546, Cl. 114-132.000.

Krantz, Jeremy J. Wheeled silicu4,805,936, Cl. 280-842.000.

Kraus, Menahem A.; and Tran, Chinh N., to Monsanto Company. Composite fluid separation membranecu4,806,189, Cl. 156-155.000.

Krauss, Helmuth: *See*—
Joseph, Frank; Krauss, Helmuth; Muller, Peter; and Kreher, Klaus, 4,805,675, Cl. 141-302.000.

Krautsack, Richard G.: *See*—
Boggess, Charles H.; and Krautsack, Richard G., 4,805,331, Cl. 40-651.000.

Krcova, Zuzana: *See*—
Sulc, Jiri; Krcova, Zuzana; and Vacik, Jiri, 4,806,287, Cl. 264-1.100.

Kreher, Klaus: *See*—
Joseph, Frank; Krauss, Heimuth; Muller, Peter; and Kreher, Klaus, 4,805,675, Cl. 141-302.000.

Kreitlow, Horst: *See*—
Will, Erich; Harms, Harry; Lullman, Johannes; Illgen, Edgar; Boseck, Siegfried; Schmidbauer, Georg; and Kreitlow, Horst, 4,806,746, Cl. 250-201.000.

Krenz, Dean C.: *See*—
Bossard, Ronald G.; Krenz, Dean C.; and Smith, Russell P., 4,805,979, Cl. 350-96.200.

Kress, Hans-Jurgen; Lindner, Christian; Grape, Wolfgang; Peters, Horst; Schoeps, Jochen; and Wittmann, Dieter, to Bayer Aktiengesellschaft. Thermoplastic moulding materials having good resistance to ageing and good low-temperature impact strengthcu4,806,593, Cl. 525-63.000.

Krichever, Mark J.: *See*—
Swartz, Jerome; Shepard, Howard M.; Barkan, Eric F.; Krichever, Mark J.; Metlitsky, Boris; Barkan, Edward; and Adelson, Alexander M., 4,806,742, Cl. 235-472.000.

Krider, E. Philip; Pifer, Albert E.; and Byerley, Leon G., III, to Lightning Location and Protection, Inc. Thunderstorm sensor and method of identifying and locating thunderstormscu4,806,851, Cl. 324-72.000.

Krogmann, Uwe, to Bodenseewerk Geratetechnik GmbH. Device for determining the north directionscu4,807,138, Cl. 364-453.000.

Kroseberg, Harald: *See*—
Ullrich, Georg J.; Pomorin, Karl-Heinz; Kroseberg, Harald; Brumm, Gunter; Koechke, Peter; Novak, Pavel; and Gaab, Michael R., 4,805,634, Cl. 128-748.000.

Krone Aktiengesellschaft: *See*—
Herfort, Hermann; and Hegner, Gunter, 4,806,119, Cl. 439-395.000.

Kru ha, Jurgen, to Zeiss Ikon AG. Lock and keycu4,805,428, Cl. 70-393.000.

Krug, George C.; Beeler, Donald J.; Plank, David C.; Sitman, Robert W.; Sheaf, Walter F.; and Pike, Robert F., to PPG Industries, Inc. Adjustable press facecu4,806,140, Cl. 65-290.000.

Krug, Martin; Hahm, Horst; and Motting, Gotz, to Daimler-Benz Aktiengesellschaft. Seat-contact switchcu4,806,713, Cl. 200-85.00A.

Kruger, Rolf: *See*—
Wilkening, Gunter; and Kruger, Rolf, 4,805,976, Cl. 350-96.200.

Krulik, Gerald A., to Morton Thiokol, Inc. Apparatus for bailout elimination and for enhancing plating bath stability in electrosynthesis/electrodialysis electroless copper purification processcu4,805,553, Cl. 118-603.000.

Krupko, Mikhail T.: *See*—
Kozlov, Valery S.; Polyakova, Elena A.; Novikov, Alexei E.; and Krupko, Mikhail T., 4,806,862, Cl. 324-213.000.

Krupsik, Elliot, to Astronics Corporation. Low profile backlighted keyboardcu4,806,908, Cl. 341-22.000.

Kubo, Kenji: *See*—
Ohno, Kenichi; and Kubo, Kenji, 4,805,940, Cl. 280-91.000.

Kubota, Kazuhisa; Hirose, Hisashi; Sakakibara, Takao; Miyake, Yasuo; and Mizutani, Sinzi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Rotary shaft coupling devicecu4,806,809, Cl. 310-75.00D.

Kubota, Robin M.; Thomas, Sharon M.; Chapdelaine, Albert H.; and Courtright, Steven B., to Wm. Wrigley Jr. Company. Method of making chewing gumcu4,806,364, Cl. 426-5.000.

Kubozoe, Morioki; and Sato, Hisasi, to Hitachi, Ltd. Electron lens assemblycu4,806,767, Cl. 250-396.0ML.

Kudo, Yoshinobu: *See*—
Kamitani, Masatoshi; Inoue, Manabu; Nakanishi, Motohiro; Ootsuka, Hiroshi; Kudo, Yoshinobu; and Hata, Yoshiaki, 4,806,961, Cl. 354-195.100.

Kuehnl, George E. Structure for supplying goods and servicescu4,805,360, Cl. 52-169.100.

Kuhla, Donald E.: *See*—
Faith, William C.; Campbell, Henry F.; Kuhla, Donald E.; Studt, William L.; and Barnes, James L., 4,806,535, Cl. 514-248.000.

Kuhn, Wolfgang, to Kopperschmidt-Mueller GmbH & Co. KG. Apparatus for simultaneously pumping a plurality of liquidscu4,806,079, Cl. 417-343.000.

Kujanpaa, Pentti K.: *See*—
Leiponen, Matti O.; Eriamo, Seppo J.; Kujanpaa, Pentti K.; and Ylimaki, Olli E., 4,806,213, Cl. 204-12.000.

Kulcsar, Erno : *See*—
Vodicska, Miklos; Vajda, Nora; Zagyvai, Peter; Solymosi, Jozsef; Nagy, Lajos G.; Kulcsar, Erno ; Takacs, Marta; and Ambrus, Peter, 4,806,278, Cl. 252-631.000.

Kulick, John M. Collapsible exercise devicecu4,805,901, Cl. 272-73.000.

Kulli, John; Mitchell, Thomas M.; and Brown, Arthur E. Drug dose rate calculatorcu4,807,170, Cl. 364-413.010.

Kumada, Yoshio: *See*—
Kamiya, Soji; Yokota, Yuji; Fukuoka, Tatsuhiko; and Kumada, Yoshio, 4,806,308, Cl. 420-530.000.

Kumakura, Toshiyuki: *See*—
Kobayashi, Ryuichi; Harada, Yoshihito; Kawamura, Masaharu; Kataoka, Hiroyuki; and Kumakura, Toshiyuki, 4,806,963, Cl. 354-415.000.

Kumar, Sudesh: *See*—
Goldberg, Eugene P.; Burns, Jim; Sheets, John W.; Larson, Jeffrey A.; Kumar, Sudesh; and Osborn, David, 4,806,382, Cl. 427-2.000.

Kumazawa, Hisao: *See*—
Saito, Shuichi; Kumazawa, Hisao; Tokiwa, Toru; and Yoshishige, Toshihisa, 4,805,500, Cl. 83-277.000.

Kunce, Bob C.: *See*—
McClure, William C.; and Kunce, Bob C., 4,807,279, Cl. 379-211.000.

Kung, Hsiang-Tsung; Hsu, Feng-Hsiung; Sussman, Alan L.; and Nishizawa, Teiji, to Carnegie-Mellon University. Programmable interconnection chip for computer system functional modulescu4,807,183, Cl. 364-900.000.

Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Hybrid cell line for producing monoclonal antibody to a human prothymocyte antigen, antibody, and methodscu4,806,349, Cl. 424-85.800.

Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Monoclonal antibody to a human thymocyte antigencu4,806,629, Cl. 530-387.000.

Kunz, Jacques: *See*—
Neidecker, Rudolf; and Kunz, Jacques, 4,806,122, Cl. 439-495.000.

Kuppelmaier, Harald: *See*—
Schrott, Wolfgang; Neumann, Peter; Albert, Bernhard; Thomas, Michael; Barzynski, Helmut; Schomann, Klaus-Dieter; and Kuppelmaier, Harald, 4,806,664, Cl. 556-136.000.

Kurano, Akira: *See*—
Takeuchi, Hisaharu; Kurano, Akira; Shiroyanagi, Yoshiro; Takamatsu, Hisashi; and Nakamura, Katsunori, 4,807,180, Cl. 364-900.000.

Kurata, Hisao, to Honda Electric Co., Ltd. Fish sonar bodycu4,805,337, Cl. 43-17.500.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Saitoh, Shigeru; and Shimada, Masaki, 4,806,318, Cl. 422-251.000.
Tabushi, Iwao, 4,807,187, Cl. 365-108.000.

Kurihara, Kazumasa: *See*—
Arai, Kenji; Kurihara, Kazumasa; and Oshizawa, Hidekazu, 4,807,132, Cl. 364-424.100.

Kurimoto, Ltd.: *See*—
Miyake, Katsunobu; Horii, Hiroshi; and Ikoma, Kenji, 4,805,874, Cl. 251-306.000.

Kurokawa, Ikuji: *See*—
Ito, Kenji; and Kurokawa, Ikuji, 4,805,513, Cl. 84-402.000.

Kuroki, Katsuro: *See*—
Harase, Jiro; Kuroki, Katsuro; Wada, Toshiva; and Nakashima, Shozaburo, 4,806,176, Cl. 148-111.000.

Kuronya, Istvan: *See*—
Bohus, Peter; Bihari, Ferenc; Kertesz nee Szabo, Marianna; Kuronya, Istvan; Boros, Peter; Szulagyi, Janos; Meszaros, Jeno ; Eifert, Gyula; Meszaros nee Szekrenyes, Agnes; Jartoo, Odon S.; and Gondos, Laszlo , 4,806,151, Cl. 71-111.000.

Kurosaki, Toshiki: *See*—
Sugimoto, Masatoshi; and Kurosaki, Toshiki, 4,806,351, Cl. 424-421.000.

Kurosawa, Akira: *See*—
Sumi, Akiyasu; Yoshida, Shigeru; Kurosawa, Akira; Takahashi, Tohru; Kondoh, Yoshitaka; and Chigira, Tatsuo, 4,806,813, Cl. 310-254.000.

Kurtz, Karl-Rudolf: *See*—
Hoffmann, Gerhard; and Kurtz, Karl-Rudolf, 4,806,452, Cl. 430-306.000.

Kurtz, Thomas D. Finger pullcu4,805,263, Cl. 16-124.000.

Kusaka, Akehiro, to Komori Printing Machinery Co., Ltd. Abnormal-paper sensing apparatus in a printing machinecu4,805,893, Cl. 271-258.000.

Kusakabe, Isao: *See*—
Kiuchi, Hiroshi; Murata, Katsumi; Murakami, Kazuo; Kusakabe, Isao; and Kobayashi, Hideyuki, 4,806,367, Cl. 426-46.000.

Kusano, Shinichi: *See*—
Arai, Hatsuyuki; Nagahashi, Isao; Maeda, Seiichi; Yasuda, Kazumi; Furusawa, Shiro; Hirata, Kazuhiko; Nagao, Kastunori; Kondo, Kazuhiko; Sanoki, Takaya; Sagiyama, Misuo; and Kusano, Shinichi, 4,805,348, Cl. 51-118.000.

Kuthi, Csaba: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Szombathelyi, Zsolt; Karpati, Egon; Kiss, Bela; Csomor, Katalin; Laszlovszky, Istvan; Lapis, Erzsebet; Szporny, Laszlo; Forgacs, Lilla; Kuthi, Csaba; and Gere, Aniko, 4,806,545, Cl. 514-285.000.

Kutilin, Eugen E., to Beloit Corporation. Method and apparatus for pretreating and debarking logscu4,805,678, Cl. 144-342.000.

Kuwakado, Satosi: *See*—
Kato, Masahiko; Katou, Masanori; Kuwakado, Satosi; Tanaka, Katsuyuki; and Ito, Koji, 4,805,733, Cl. 181-206.000.

Kwan, Sik-Piu: *See*—
Banga, Richard G.; Grey, Michael O.; and Kwan, Sik-Piu, 4,806,948, Cl. 346-76.0PH.

Kwon, Hae W.: *See*—
Chung, Seung T.; Kwon, Hae W.; and Park, Tae S., 4,807,213, Cl. 369-46.000.

Kwon, Sung T., to Gold Star Co., Ltd. Apparatus for driving loading gears in a video cassette-tape recordercu4,807,065, Cl. 360-85.000.

Kyocera Corporation: *See*—
Fujimaka, Hiroshi; and Terasawa, Masami, 4,806,334, Cl. 428-631.000.
Hagiwara, Yoichi; Shimizu, Kenichi; and Tanaka, Satoshi, 4,806,160, Cl. 106-1.120.

Kyohya, Shoichi, to Alps Electric Co., Ltd. Optical pickup feed unit of optical disk playercu4,807,219, Cl. 369-220.000.

Kysela, Ernst: *See*—
Fest, Christa; Muller, Klaus-Helmut; Pfister, Theodor; Riebel, Hans-Jochem; Kysela, Ernst; Santel, Hans-Joachim; Schmidt, Robert R.; and Strang, Robert H., 4,806,147, Cl. 71-92.000.

La, Duong T.: *See*—
Mebane, Janet E.; Chan, Lawrence W.; La, Duong T.; and Nevarez, Ruben, 4,806,106, Cl. 439-77.000.

Laakmann, Katherine D.; and Laakmann, Peter. Hollow lightpipe using a low refractive index inner layercu4,805,987, Cl. 350-96.320.

Laakmann, Peter: *See*—
Laakmann, Katherine D.; and Laakmann, Peter, 4,805,987, Cl. 350-96.320.

LaBianca, Nancy C., to MacDermid, Incorporated. Thermal stabilization of photoresist imagecu4,806,455, Cl. 430-325.000.

Labinal Components and Systems, Inc.: *See*—
Bowlin, Robert F., 4,806,124, Cl. 439-607.000.
Lindeman, Richard J., 4,806,110, Cl. 439-108.000.

Laboure, Gerard J. P. B.: *See*—
Barbier, Gerard Y. G.; Laboure, Gerard J. P. B.; Desaulty, Michel A. A.; Duchene, Francois; and Trovillot, Pascal M., 4,805,397, Cl. 60-39.320.

Labschies, Hartmut, to Carl Schenck AG. Method and apparatus for continuously measuring a flow rate of a stream of flowable bulk materialcu4,805,462, Cl. 73-861.360.

Lacey, Richard F., to Hewlett-Packard Company. Deconvolving chromatographic peakscu4,807,148, Cl. 364-498.000.

LaCourt, Michael W.: *See*—
Momot, David; Townsend, Ensley E.; and LaCourt, Michael W., 4,806,960, Cl. 354-21.000.

Ladang, Michel, to Norton Company. Flame resistant polymerscu4,806,162, Cl. 106-18.130.

LaGrange, Donald E.: *See*—
Herold, Stanley J.; LaGrange, Donald E.; Limberger, Thomas R.; and Taylor, James F., 4,805,533, Cl. 102-341.000.

LaGrange, Nyle D.; Nielsen, Darryl M.; and Peterson, Terry A., to Marley-Wylain Company, The. Submersible pump with expanded foam housingcu4,806,083, Cl. 417-423.140.

L'Air Liquide: *See*—
Virey, Franck, 4,806,137, Cl. 65-26.000.

Lak, Khosrow: *See*—
Palm, Charles S.; Slayton, Danny L.; Lak, Khosrow; Sampson, Peter F.; Davis, David R.; Wheatley, Maurice S., Jr.; Chatham, Gregory A.; Jones, Wayne C.; Charles, Kirk W.; and Ireland, Anthony J., 4,806,097, Cl. 432-60.000.

Lalanne, Alain: *See*—
Rochet, Andre ; Dubois, Guy; Faure, Louis; and Lalanne, Alain, 4,805,759, Cl. 198-346.100.

Laloe, Franck: *See*—
Schearer, Laird; Leduc, Michele; Laloe, Franck; and Hamel, Joseph M., 4,806,864, Cl. 324-301.000.

Lambe, John J.: *See*—
Moopenn, Alexander W.; Thakoor, Anilkumar P.; and Lambe, John J., 4,807,168, Cl. 364-602.000.

Lamle, Stewart M. Board game with changeable playing piecescu4,805,915, Cl. 273-261.000.

Lampard, John F.: *See*—
Khan, Karrar A.; and Lampard, John F., 4,806,358, Cl. 424-466.000.

Lancesseur, Francois; and Mandin, Claude, to Hoffmann-La Roche Inc.; and Air Sec. Packaging tube for tablets, pills and the like, with a reserve boxcu4,805,789, Cl. 215-6.000.

Land Infrared Limited: *See*—
Beynon, Thomas G. R.; and Ridley, Ian H., 4,806,723, Cl. 219-109.000.

Landmeier, Waldo L., to Calcomp Inc. 3-Dimensional digitizer pencu4,806,707, Cl. 178-18.000.

Landry, Grady J.: *See*—
Cree, Charles M. N.; Landry, Grady J.; Scully, Keith J.; and Singh, Harinder S., 4,807,155, Cl. 364-518.000.

Landsman, Douglas A.: *See*—
Luczak, Francis J.; and Landsman, Douglas A., 4,806,515, Cl. 502-185.000.

Lane, Hugh R.; and Onyon, Peter D., to Rank Taylor Hobson Limited. Metrological apparatuscu4,807,152, Cl. 364-513.000.

Lang, Otto; and Dombrowski, Manfred, to Siemens Aktiengesellschaft. Circuit arrangement for serial data transmission between a plurality of subscriber stationscu4,807,249, Cl. 375-7.000.

Lange, Karl-Heinz: *See*—
Steinhauer, Eric; and Lange, Karl-Heinz, 4,805,638, Cl. 128-774.000.

Langen, Marinus J. M.; and Guttinger, Peter, to H. J. Langen & Sons Limited. Carton end closurecu4,805,375, Cl. 53-142.000.

Langer, Robert S.: *See*—
Kohn, Joachim; and Langer, Robert S., 4,806,621, Cl. 528-211.000.

Langer, Salomon, to Synthelabo. Pharmaceutical compositions based on diltiazem and lysine acetylsalicylatecu4,806,530, Cl. 514-161.000.

Langford, Cooper H.; Mak, Mark K. S.; and Crouch, Andrew M., to Canadian Patents and Development Limited -Societe Canadienne des Brevets et D'Exploitation Limitee. Composite photocatalyst for refractory waste degradationcu4,806,514, Cl. 502-159.000.

Langner, Klaus: *See*—
Hauk, Rolf; Papst, Gero; Langner, Klaus; Nagl, Michael; Kepplinger, Werner; and Seirlehner, Leopold, 4,805,880, Cl. 266-87.000.

Langridge, John R.: *See*—
Harrison, Paul J.; Langridge, John R.; and Potter, Christopher J., 4,806,361, Cl. 424-495.000.

Lantz, William P.: *See*—
Skogler, Brian I.; Schofield, Kenneth; Lantz, William P.; Nyhof, Eldon J.; Helder, Dorothy J.; and Flowerday, Charles M., 4,807,096, Cl. 362-142.000.

Lanxide Technology Company, LP: *See*—
Dwivedi, Ratnesh K.; and Kennedy, Christopher R., 4,806,508, Cl. 501-94.000.

Lapierre, Robert M.; and Leonardi, Nicholas J., to Enron Chemical Company. Method of making a foam injection molded articlecu4,806,294, Cl. 264-54.000.

Lapis, Erzsebet: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Szombathelyi, Zsolt; Karpati, Egon; Kiss, Bela; Csomor, Katalin; Laszlovszky, Istvan; Lapis, Erzsebet; Szporny, Laszlo; Forgacs, Lilla; Kuthi, Csaba; and Gere, Aniko, 4,806,545, Cl. 514-285.000.

Largen, Michael T.: *See*—
Buckley, Helen R.; Largen, Michael T.; and Strockbine, Nancy A., 4,806,465, Cl. 435-7.000.

Larkin, John M.: *See*—
Vanderpool, Steven H.; Watts, Lewis W., Jr.; Larkin, John M.; and Renken, Terry L., 4,806,517, Cl. 502-208.000.

Larsen, Jens E. L.: *See*—
Molin, Soren; Light, Janice A.; and Larsen, Jens E. L., 4,806,471, Cl. 435-68.000.

Larson, Gary B.; Williams, Ann S.; and Letize, Raymond A., to MacDermid, Incorporated. Method for manufacture of printed circuit boardscu4,806,200, Cl. 156-652.000.

Larson, Jeffrey A.: *See*—
Goldberg, Eugene P.; Burns, Jim; Sheets, John W.; Larson, Jeffrey A.; Kumar, Sudesh; and Osborn, David, 4,806,382, Cl. 427-2.000.

Larson, Raymond L., to BMR Investments, Inc. Container and liquid dispenserscu4,805,808, Cl. 222-185.000.

Lasenga, Werner, to Hergeth Hollingsworth GmbH. Apparatus for producinhg fibrous webs of superposed web layerscu4,805,269, Cl. 19-106.00R.

Laszlovszky, Istvan: *See*—
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Nakato, Hakaru; Nozaki, Tsutomu; Habu, Yasuhiro; Oka, Hiromu; Ueda, Tsunehiro; Koshikawa, Takao; Kishimoto, Hideaki; and Shimokawa, Fumitaka, 4,806,163, Cl. 106-38.220.
Oka, Osamu: *See*—
Maeda, Koji; and Oka, Osamu, 4,806,626, Cl. 530-375.000.
Okabe, Minoru; Yokota, Akira; and Nishioka, Kimihiko, to Olympus Optical Co., Ltd. Objective for an endoscopecu4,806,001, Cl. 350-432.000.
Okabe, Shinichi, to Hitachi, Ltd. Re-transmission method and apparatus in communication system using public communication linescu4,807,276, Cl. 379-93.000.
Okada, Junichi: *See*—
Koto, Haruhiko; Okada, Junichi; Ishii, Hiroshi; and Sawada, Kenji, 4,806,955, Cl. 346-140.00R.
Okada, Kiyotaka: *See*—
Kondo, Tatsuhiko; Seo, Kenzo; Itoh, Shinetsu; Kanazawa, Masaru; and Okada, Kiyotaka, 4,807,040, Cl. 358-233.000.
Okajima, Hidekazu: *See*—
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Okajima, Kenichi: *See*—
Kano, Tsuyoshi; Takahashi, Tetsuhiko; Okajima, Kenichi; Umetani, Kenji; Ataka, Saburo; Yokouchi, Hisatake; and Suzuki, Ryuichi, 4,806,757, Cl. 250-327.200.
Okano, Hiroshi: *See*—
Shiokama, Yoshiharu; Ohta, Naoto; Okano, Hiroshi; and Inadome, Kiyotaka, 4,806,000, Cl. 350-430.000.
Okauchi, Shigeki; and Uehara, Tsukasa, to Canon Kabushiki Kaisha. Apparatus using disc-shaped record bearing mediumcu4,807,069, Cl. 360-99.060.
Okazaki, Kenji: *See*—
Skinner, David J.; Chipko, Paul A.; and Okazaki, Kenji, 4,805,686, Cl. 164-423.000.
Oki Electric Industry Co., Ltd.: *See*—
Inamura, Kazuhiko; and Tashita, Yoji, 4,806,857, Cl. 324-158.00R.
Kobayashi, Shigeo; Yoshida, Osamu; Saito, Haruo; Shigeta, Tsutomu; Nara, Hiroshi; Abe, Shinji; and Yamamoto, Kiyoharu, 4,805,439, Cl. 72-419.000.
Shinohara, Mamoru, 4,806,499, Cl. 437-31.000.
Oki Electric Industry Co., Ltd: *See*—
Tamura, Yasuaki; and Mochizuki, Kiyofumi, 4,805,977, Cl. 350-96.160.
Okino, Yoshinori: *See*—
Sakamoto, Katsuhiko; Hatamura, Kouichi; and Okino, Yoshinori, 4,805,574, Cl. 123-421.000.
Okitaka, Takenori; and Miyazaki, Yukio, to Mitsubishi Denki Kabushiki Kaisha. CMOS circuit having shoot through current controlcu4,806,802, Cl. 307-542.000.
Okonogi, Hirotaka: *See*—
Machida, Hideo; Kawakami, Shin; Haruyama, Satoshi; Okonogi, Hirotaka; Nikaido, Katutomo; and Mukai, Norito, 4,806,706, Cl. 174-68.500.
Okubo, Mika: *See*—
Suzuki, Kenji; Masumoto, Tsuyoshi; Ota, Nobuhiro; Okubo, Mika; Mitera, Masao; Matsumoto, Akira; and Masuda, Shuji, 4,806,265, Cl. 252-62.630.
Okuda, Souitirou: *See*—
Ikegami, Kazunori; Okuda, Souitirou; Yamada, Tadatoshi; Yamamoto, Shunji; and Matsuda, Tetsuya, 4,806,871, Cl. 328-235.000.
Okumura, Katsuya, to Kabushiki Kaisha Toshiba. Semiconductor device having stacking structurecu4,807,021, Cl. 357-75.000.
Okumura, Katsuya: *See*—
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Okumura, Shigeo; and Inaba, Koshiro, to Sanshin Kogyo Kabushiki Kaisha. Knocking sensor for internal combustion enginecu4,805,442, Cl. 73-35.000.
Okuno, Noboru: *See*—
Kawamura, Ichiro; Fujioka, Yoshitaka; Yoshikane, Tetsuo; and Okuno, Noboru, 4,807,216, Cl. 369-77.200.
Olby, John K., to Cookson Group PLC. Method of preventing glaze defectscu4,806,507, Cl. 501-17.000.
Old, Lloyd: *See*—
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O'Leary, Paul, to Deutsche ITT Industries GmbH. Mosfet integrated delay line for digital signalcu4,806,804, Cl. 307-605.000.
Olin Corporation: *See*—
Day, Roger W.; and Morgan, Michael J., 4,806,995, Cl. 357-8.000.
Knowles, Steven C., 4,805,400, Cl. 60-203.100.
Kosteck, Gregory R., 4,805,536, Cl. 102-514.000.
Walter, Jackie A.; Sharenow, Brett; Walker, Robert; and Voss, Scott V., 4,806,409, Cl. 428-138.000.
Oliver, Warren C., to Haynes International, Inc. Ductile nickel-silicon alloycu4,806,305, Cl. 420-457.000.
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Olympus Optical Co., Ltd.: *See*—
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Kanbara, Koji, 4,805,595, Cl. 128-4.000.
Nakamura, Junichi; and Mizoguchi, Toyokazu, 4,806,779, Cl. 250-578.000.
Nishioka, Kimihiko; and Yabe, Hisao, 4,807,026, Cl. 358-98.000.
Okabe, Minoru; Yokota, Akira; and Nishioka, Kimihiko, 4,806,001, Cl. 350-432.000.
Ueda, Yasuhiro, 4,805,598, Cl. 128-6.000.
Ueda, Yasuhiro; Nagai, Isao; Shinkai, Naruto; Nakazawa, Masaaki; and Terayama, Toshiki, 4,805,618, Cl. 128-346.000.
Omi, Shigeaki: *See*—
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Omori Machinery Co., Ltd.: *See*—
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Omron Tateisi Electronics Co.: *See*—
Shibayama, Masahiko; Kai, Umekichi; and Yamamoto, Hideki, 4,807,162, Cl. 364-552.000.
Onaga, Eimei M.; and Casler, Richard J., Jr., to Unimation Inc. Multiaxis digital robot control having a backup velocity monitor and protection systemcu4,807,153, Cl. 364-513.000.
Oncogen, Inc.: *See*—
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O'Neil, Walter K.: *See*—
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O'Neill, Robert M.; and Dunaway, Jason K., to Peavey Electronics Corporation. Loudspeaker enclosurecu4,805,730, Cl. 181-148.000.
Onnenberg, Volker: *See*—
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Ono, Mamoru; and Takeuchi, Kenji, to Teac Corporation. Head position control mechanism for a magnetic disk apparatus with head lockingcu4,807,072, Cl. 360-105.000.
Ono, Noritsugu: *See*—
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Ono, Yuichi: *See*—
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Onoda, Shigeyoshi: *See*—
Mizutani, Morikazu; Onoda, Shigeyoshi; Ikemoto, Isao; Kanemitsu, Shinji; and Kitajima, Hajime, 4,806,977, Cl. 355-8.000.
Onodera, Masako, to Kabushiki Kaisha Toshiba. Multiple force retract circuit for a magnetic disk drivecu4,807,062, Cl. 360-75.000.
Onuma, Akihiko; and Fujii, Iwao, to Minolta Camera Kabushiki Kaisha. Multitone thermal transfer recording method and apparatuscu4,806,949, Cl. 346-76.0PH.
Onyon, Peter D., to Rank Taylor Hobson Limited. Apparatus for measuring and controlling velocitycu4,807,164, Cl. 364-565.000.
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Oogita, Yoshinori, to Sharp Kabushiki Kaisha. IC card with fewer input keyscu4,806,745, Cl. 235-492.000.
Ootsuka, Hiroshi: *See*—
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Oregon Graduate Center: *See*—
Holmes, J. Fred; Hunt, John M.; Draper, Douglas C.; Cloninger, Todd L.; Mersereau, Tom R.; and Hosler, Michael J., 4,806,729, Cl. 219-121.630.
Oretti, John E.: *See*—
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Oriel, Patrick J.: *See*—
Harris, L. Scott; and Oriel, Patrick J., 4,806,636, Cl. 536-123.000.
Oriental Yeast Co., Ltd.: *See*—
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Ormond, Douglas W., Jr.: *See—*
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Ortho Pharmaceutical Corporation: *See—*
Kung, Patrick C.; and Goldstein, Gideon, 4,806,349, Cl. 424-85.800.
Kung, Patrick C.; and Goldstein, Gideon, 4,806,629, Cl. 530-387.000.

Osada, Hisashi; Fujioka, Hideaki; Kato, Ikuo; and Yamashita, Yoshinari, to TDK Corporation. Complex circuit component for a video signal circuit in a television receiver setcu4,807,036, Cl. 358-196.000.

Osborn, David: *See—*
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O'Shea, Geraldine M.: *See—*
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Oshiga, Takayuki: *See—*
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Oshizawa, Hidekazu: *See—*
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Ossberger, Karl F.: *See—*
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Linss, Gerhard; and Ossberger, Karl F., 4,806,093, Cl. 425-529.000.

Ossberger, Karl-Friedrich: *See—*
Linss, Gerhard; and Ossberger, Karl-Friedrich, 4,806,092, Cl. 425-529.000.

Ossberger-Turbinenfabrik GmbH: *See—*
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Osterstrom, Gordon E.; Livshits, Leonid; and Renz, Mark B., to Sargent-Welch Scientific Co. Turbomolecular pump with improved bearing assemblycu4,806,075, Cl. 415-170.00R.

Osugi, Minoru; Nakamura, Tadasi; and Obata, Yoriko, to Mitsubishi Gas Chemical Company, Inc. Process for producing fluidized catalyst for synthesis of methanolcu4,806,516, Cl. 502-202.000.

Osumi, Tomoji: *See—*
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Ota, Nobuhiro: *See—*
Suzuki, Kenji; Masumoto, Tsuyoshi; Ota, Nobuhiro; Okubo, Mika; Miters, Masao; Matsumoto, Akira; and Masuda, Shuji, 4,806,265, Cl. 252-62.630.

Ota, Yasutaka: *See—*
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Otani, Susumu, to NEC Corporation. Carrier wave recovery systemcu4,807,254, Cl. 375-81.000.

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Ottengraf, Simon P. P., to Clair Tech B.V. Apparatus for biological treatment of waste gasescu4,806,148, Cl. 55-223.000.

Oury, Robert, to Crouzet–Societe Anonyme Francaise. Device for measuring the earth's magnetic field disturbed by anomaliescu4,806,865, Cl. 324-301.000.

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Leiponen, Matti O.; Erlamo, Seppo J.; Kujanpaa, Pentti K.; and Ylimaki, Olli E., 4,806,213, Cl. 204-12.000.

Overbeck, Felix J. Information device concerning food preparationcu4,807,169, Cl. 364-715.010.

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Owada, Kazuo: *See—*
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Owens-Corning Fiberglas Corporation: *See—*
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Owens, David W.: *See—*
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Owens-Illinois Closure Inc.: *See—*
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Owens-Illinois Glass Container Inc.: *See—*
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Oxenberg, Steven M.: *See—*
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Oyama, Fusami: *See—*
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Oziomek, James: *See—*
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Pace Incorporated: *See—*
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Packageing Concepts, Inc.: *See—*
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Padden, James B.: *See—*
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Padget, John C.; and McIlrath, Donald H., to Imperial Chemical Industries PLC. Aqueous-based sealant compositionscu4,806,590, Cl. 524-568.000.

Padgett, John G.: *See—*
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Page, Geoffrey: *See—*
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Pagendarm Beschichtungstechnik GmbH: *See—*
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Pagendarm, Ralph; and Hebels, Albert, to Pagendarm Beschichtungstechnik GmbH. Apparatus for regulating the flow of gaseous and liquid mediacu4,805,552, Cl. 118-325.000.

Paige, Arnold: *See—*
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Pajes, Chajkiel: *See—*
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Pajor, Aniko : *See—*
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Paker, Robert: *See—*
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Palm, Charles S.; Slayton, Danny L.; Lak, Khosrow; Sampson, Peter F.; Davis, David R.; Wheatley, Maurice S., Jr.; Chatham, Gregory A.; Jones, Wayne C.; Charles, Kirk W.; and Ireland, Anthony J., to Colorocs Corporation. Fuser assembly for an electrophotographic print enginecu4,806,097, Cl. 432-60.000.

Palmer, David G.; Shannon, David J.; and Vacha, Keith L., to Pure Water, Inc. Condenser for water purification apparatuscu4,805,692, Cl. 165-110.000.

Palmer, Dwight O.: *See—*
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Panamax, Inc.: *See—*
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Pang, Chan S.: *See—*
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Pao, David S. C. Bipolar probes for ophthalmic surgery and methods of performing anterior capsulotomycu4,805,616, Cl. 128-303.170.

Papahadjopoulos, Demetrios P.; and Heath, Timothy D., to University of California, The Regents of the. Cell agglutination reagent comprising conjugates of antibody covalently bound to liposomescu4,806,466, Cl. 435-7.000.

Papst, Gero: *See—*
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Papst-Motoren GmbH and Company KG: *See—*
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Papst Motoren KG: *See—*
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Parisch, Jochen: *See—*
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Parisi, Michael A., to Xerox Corporation. Adjustable print size control for raster output scannerscu4,807,156, Cl. 364-519.000.

Park, John Y.: *See—*
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Park, Tae S.: *See—*
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Parker, Dane K., to Goodyear Tire & Rubber Company, The. Method of chemically bonding antioxidants into polymeric materialscu4,806,447, Cl. 525-263.000.

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Parks, Richard D.: *See—*
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Parran, John J., Jr.; and Saklab, Nabil Y., to Procter & Gamble Company, The. Oral compositionscu4,806,339, Cl. 424-52.000.

Parysek, Karen D.: *See—*
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Passant, Muriel E., executrix: *See—*
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Pastan, Ira; Fitzgerald, David J.; and Willingham, Mark, to United States of America, Health & Human Services. Monoclonal antibody against ovarian cancer cells (OVB-3)cu4,806,494, Cl. 424-85.910.

Patchet, Arthur A.: *See—*
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Patel, Nathalal C.: *See—*
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Patterson, James A.; Piecuch, Robert M.; and Hamilton, Charles E., to Southeastern Illinois College Foundation. Osmotic fiber systemscu4,805,343, Cl. 47-79.000.

Patterson, John T.: *See—*
Goers, Steven K.; Ghossi, Parviz; Patterson, John T.; and Young, Cynthia L., 4,806,379, Cl. 426-650.000.

Patterson, William L.: *See—*
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Carrico, Robert J.; Hatch, Robert P.; and Patterson, William L., 4,806,631, Cl. 536-27.000.

Pattison, David C.: *See—*
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Paulet, Jean-Francois: *See—*
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Paulhac, Rene, to Clecim S. A. Device for axially supporting a rollercu4,805,432, Cl. 72-164.000.

Paulik, Jiri: *See—*
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Paulsson, Bjorn N. P., to Chevron Research Company. Nondestructive downhole seismic vibrator source and processes of utilizing the vibrator to obtain information about geologic formationscu4,805,725, Cl. 181-106.000.

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Paulus, Wilfried: *See—*
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Pausch, Horst, to Gebruder Netzsch Maschinenfabrik GmbH & Co. Method and apparatus for feeding grinding bodies to a grinding areacu4,805,841, Cl. 241-30.000.

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Pav, Josef, to Kleinewefers GmbH. Pressure roll for use in calenders and the likecu4,805,279, Cl. 29-116.200.

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Paynter, John; Gillooly, George R.; Soules, Thomas F.; and Hoffman, Mark V., to General Electric Company. Fluorescent lamp using multi-layer phosphor coatingcu4,806,824, Cl. 313-486.000.

PDA Engineering: *See—*
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Peavey Electronics Corporation: *See—*
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Pedersen, Chris S.; and Merkel, Sue M., to EZ Designer, Inc. Modular layout assemblycu4,806,102, Cl. 434-80.000.

Pedersen, Harry, to Gleason Works, The. Side gear mounting for differential assemblycu4,805,487, Cl. 74-715.000.

Pege, Leif; and Pege, Nils-Goran. Positioning devicecu4,805,829, Cl. 228-47.000.

Pege, Nils-Goran: *See—*
Pege, Leif; and Pege, Nils-Goran, 4,805,829, Cl. 228-47.000.

Peil, William, to General Electric Company. Power distribution system for a phased array radarcu4,806,937, Cl. 342-175.000.

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Houston, James M., Jr.; and Baker, John W., Re. 32,870, Cl. 137-430.000.

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Fox, Clarence D., to Borg-Warner Corporation. Proportional solenoid valvecuB1 4,715,396, 2-21-89, Cl. 137-82.000.

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Zenith Electronics Corporation: *See*—
Chuboff, David P.; and Johnson, Marilyn M., 299,924, Cl. D14-126.000.
Zuzinec, Raymond R., Sr.: *See*—
Doman, Donald W.; Bakula, Gerald R.; Zuzinec, Raymond R., Sr.; Christensen, Thomas J.; and Parise, Jack A., 299,910, Cl. D10-78.000.

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LIST OF PLANT PATENTEES

Barr, William C., to Weyerhaeuser Company. *Nerium oleander* 'Hines Hardy'cu6,616, 2-21-89, Cl. 54.000.

Coffey, Michael D.; and Guillemet, Fred B., to University of California, The Regents of the. Avocado tree called Barr Dukecu6,627, 2-21-89, Cl. 44.000.

Coffey, Michael D.; and Guillemet, Fred B., to Reagents of the University of California, The. Avocado tree called Thomascu6,628, 2-21-89, Cl. 44.000.

Colorado State University Research Foundation: *See*—
Goldsberry, Kenneth L., 6,626, Cl. 73.000.

de Roose, Albert, to J. J. Henny Bos. *Vriesia poelmanii* plant named White Linecu6,619, 2-21-89, Cl. 88.000.

Duffett, William E.; and VandenBerg, Cornelis P., to Yoder Brothers, Inc. Chrysanthemum plant named Boaldicu6,613, 2-21-89, Cl. 77.000.

Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant named Rayacu6,615, 2-21-89, Cl. 74.000.

Ellison, J. Howard; and Kinelski, John J., to Rutgers University. Asparagus plant named Lindacu6,622, 2-21-89, Cl. 89.000.

Ellison, J. Howard; and Kinelski, John J., to Rutgers University. Asparagus plant named Jersey Jadecu6,623, 2-21-89, Cl. 89.000.

Ellison, J. Howard; and Kinelski, John J., to Rutgers University. Asparagus plant named Jersey Knightcu6,624, 2-21-89, Cl. 89.000.

Goldsberry, Kenneth L., to Colorado State University Research Foundation. Dwarf carnation plant 'Redcloud'cu6,626, 2-21-89, Cl. 73.000.

Guillemet, Fred B.: *See*—
Coffey, Michael D.; and Guillemet, Fred B., 6,627, Cl. 44.000.
Coffey, Michael D.; and Guillemet, Fred B., 6,628, Cl. 44.000.

J. J. Henny Bos: *See*—
de Roose, Albert, 6,619, Cl. 88.000.

Kinelski, John J.: *See*—
Ellison, J. Howard; and Kinelski, John J., 6,622, Cl. 89.000.
Ellison, J. Howard; and Kinelski, John J., 6,623, Cl. 89.000.
Ellison, J. Howard; and Kinelski, John J., 6,624, Cl. 89.000.

Mack, Grace H.; and VandenBerg, Cornelis P., to Mack, Grace H. Chrysanthemum plant named Froliccu6,620, 2-21-89, Cl. 77.000.

Mack, Grace H.; and VandenBerg, Cornelis P., to Mack, Grace H. Chrysanthemum plant named Targetcu6,621, 2-21-89, Cl. 78.000.

Moore, Ralph S., to Sequoia Nursery. Rose plant/var.: Morsegoldcu6,617, 2-21-89, Cl. 8.000.

Moore, Ralph S., to Sequdia Nursery. Rose plant/var.: Morfirecu6,618, 2-21-89, Cl. 7.000.

Reagents of the University of California, The: *See*—
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Rutgers University: *See*—
Ellison, J. Howard; and Kinelski, John J., 6,622, Cl. 89.000.
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Ellison, J. Howard; and Kinelski, John J., 6,624, Cl. 89.000.

Sequdia Nursery: *See*—
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Sequoia Nursery: *See*—
Moore, Ralph S., 6,617, Cl. 8.000.

University of California, The Regents of the: *See*—
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Van Staaveren B.V.: *See*—
van Andel, Jacob, 6,625, Cl. 68.000.

van Andel, Jacob, to Van Staaveren B.V. Alstroemeria named Stalibroncu6,625, 2-21-89, Cl. 68.000.

VandenBerg, Cornelis P., to Yoder Brothers, Inc. Chrysanthemum plant named Dark Tancu6,614, 2-21-89, Cl. 74.000.

VandenBerg, Cornelis P.: *See*—
Duffett, William E.; and VandenBerg, Cornelis P., 6,613, Cl. 77.000.
Mack, Grace H.; and VandenBerg, Cornelis P., 6,620, Cl. 77.000.
Mack, Grace H.; and VandenBerg, Cornelis P., 6,621, Cl. 78.000.

Weyerhaeuser Company: *See*—
Barr, William C., 6,616, Cl. 54.000.

Yoder Brothers, Inc.: *See*—
Duffett, William E.; and VandenBerg, Cornelis P., 6,613, Cl. 77.000.
Duffett, William E., 6,615, Cl. 74.000.
VandenBerg, Cornelis P., 6,614, Cl. 74.000.

CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 21, 1989

NOTE.—First number, class; second number, subclass; third number, patent number

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	4,805,460		4,805,890		4,806,504		4,807,203		4,807,141		4,806,167
	4,805,709		4,805,894		4,806,509		4,807,218		4,807,153		4,806,203
	4,805,799		4,805,895		4,806,523		4,807,240		4,807,166		4,806,331
	4,806,399		4,805,916		4,806,537		4,807,255		4,807,232		4,806,598
	4,806,716		4,805,922		4,806,543		4,807,260		4,807,233		4,806,898
	4,806,901		4,805,935		4,806,573		4,807,268		4,807,234		4,807,158
04 :	4,805,619		4,805,937		4,806,604		4,807,274	10 :	4,805,571	16 :	4,805,613
	4,805,784		4,805,943		4,806,653		4,807,275		4,806,142		4,806,150
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	4,806,285		4,806,008		4,806,770		4,805,383		4,806,506		4,805,263
	4,806,707		4,806,027		4,806,774		4,805,782		4,806,508		4,805,278
	4,806,782		4,806,031		4,806,776		4,805,909		4,806,606		4,805,353
	4,806,796		4,806,032		4,806,783		4,805,934		4,806,607		4,805,495
	4,806,851		4,806,044		4,806,800		4,805,954		4,806,635		4,805,536
	4,806,940		4,806,054		4,806,841		4,806,284		4,806,671		4,805,539
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4,807,121
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04 : 299,895
299,945
06 : 299,888
299,892
299,917
299,950
299,956
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February 28 1989



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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Oct. 1, 1988, and was announced in the *Official Gazette* at 1094 O.G. 2 on Sept. 6, 1988.

Domestic PCT fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Danish declaration under PCT Article 64 (1)(a), that Denmark shall not be bound by PCT Chapter II, as from Nov. 1, 1988, was announced at 1095 O.G. 2 on Oct. 4, 1988.

The withdrawal of the Norwegian declaration under PCT Article 64(1)(a), that Norway shall not be bound by PCT Chapter II, as from Jan. 1, 1989, was announced at 1096 O.G. 34 on Nov. 22, 1988.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	520.00
—Corresponding prior U.S. national application filed	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1160.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

Oct. 26, 1988.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel for A Decision Without A Hearing as of Jan. 31, 1989

Chemical Discipline	–	March 3, 1988
Mechanical Discipline	–	April 23, 1987
Electrical Discipline	–	May 19, 1987

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Hearing as of Jan. 31, 1989

Chemical	–	September 25, 1986
Electrical	–	November 4, 1986
Mechanical	–	October 1, 1986

Board of Patent Appeals and Interference Decisions Rendered in Ex Parte Appeals During the Month of Jan. 1989

Affirmed	217
Affirmed-in-Part	48
Reversed	134
Total Decided	399

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on February 25, 1986 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,571,741 through 4,573,215
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 23, 1982 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,316,286 through 4,317,236
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months are set forth in 37 CFR 1.20(e), (f), (h) and (i), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED DECEMBER 11, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,486,910	06/371,132	12/11/84
4,486,911	06/557,244	12/11/84
4,486,918	06/489,892	12/11/84
4,486,919	06/444,463	12/11/84
4,486,930	06/436,559	12/11/84
4,486,945	06/456,081	12/11/84
4,486,948	06/506,798	12/11/84
4,486,951	06/414,615	12/11/84
4,486,955	06/488,747	12/11/84
4,486,959	06/565,421	12/11/84
4,486,960	06/434,323	12/11/84
4,486,961	06/476,669	12/11/84
4,486,972	06/323,233	12/11/84
4,486,974	06/424,304	12/11/84
4,486,977	06/407,331	12/11/84
4,486,979	06/497,502	12/11/84
4,486,986	06/473,694	12/11/84
4,486,989	06/397,671	12/11/84
4,486,996	06/379,707	12/11/84
4,487,008	06/425,041	12/11/84
4,487,012	06/452,802	12/11/84
4,487,017	06/408,133	12/11/84
4,487,025	06/485,805	12/11/84
4,487,064	06/494,206	12/11/84
4,487,065	06/473,144	12/11/84
4,487,072	06/407,295	12/11/84
4,487,080	06/502,363	12/11/84
4,487,086	06/240,505	12/11/84
4,487,088	06/362,920	12/11/84
4,487,092	06/448,710	12/11/84
4,487,096	06/469,177	12/11/84
4,487,102	06/510,040	12/11/84

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Patent Number	Serial Number	Issue Date
4,487,116	06/496,486	12/11/84
4,487,129	06/539,142	12/11/84
4,487,130	06/456,908	12/11/84
4,487,135	06/394,458	12/11/84
4,487,141	06/614,581	12/11/84
4,487,155	06/404,698	12/11/84
4,487,156	06/361,991	12/11/84
4,487,164	06/393,926	12/11/84
4,487,167	06/341,764	12/11/84
4,487,172	06/468,708	12/11/84
4,487,173	06/414,433	12/11/84
4,487,175	06/338,057	12/11/84
4,487,194	06/522,963	12/11/84
4,487,201	06/443,062	12/11/84
4,487,204	06/433,672	12/11/84
4,487,208	06/459,741	12/11/84
4,487,211	06/490,787	12/11/84
4,487,212	06/282,773	12/11/84
4,487,225	06/442,246	12/11/84
4,487,229	06/503,419	12/11/84
4,487,234	06/365,549	12/11/84
4,487,237	06/459,974	12/11/84
4,487,239	06/330,093	12/11/84
4,487,241	06/420,165	12/11/84
4,487,247	06/403,354	12/11/84
4,487,253	06/318,581	12/11/84
4,487,255	06/527,779	12/11/84
4,487,260	06/584,980	12/11/84
4,487,268	06/462,351	12/11/84
4,487,281	06/438,554	12/11/84
4,487,284	06/441,296	12/11/84
4,487,298	06/490,275	12/11/84
4,487,300	06/447,335	12/11/84
4,487,308	06/387,126	12/11/84
4,487,310	06/389,687	12/11/84
4,487,314	06/460,262	12/11/84
4,487,316	06/514,141	12/11/84
4,487,325	06/395,396	12/11/84
4,487,326	06/550,349	12/11/84
4,487,327	06/451,844	12/11/84
4,487,328	06/437,640	12/11/84
4,487,331	06/497,635	12/11/84
4,487,336	06/384,096	12/11/84
4,487,342	06/377,097	12/11/84
4,487,343	06/446,207	12/11/84
4,487,347	06/531,405	12/11/84
4,487,355	06/376,014	12/11/84
4,487,358	06/420,057	12/11/84
4,487,359	06/497,111	12/11/84
4,487,361	06/432,074	12/11/84
4,487,369	06/583,802	12/11/84
4,487,371	06/377,653	12/11/84
4,487,386	06/354,603	12/11/84
4,487,389	06/442,289	12/11/84
4,487,395	06/493,953	12/11/84
4,487,396	06/532,060	12/11/84
4,487,398	06/548,969	12/11/84
4,487,400	06/517,046	12/11/84
4,487,401	06/442,276	12/11/84
4,487,415	06/502,221	12/11/84
4,487,419	06/554,542	12/11/84
4,487,422	06/403,656	12/11/84
4,487,425	06/447,314	12/11/84
4,487,443	06/469,633	12/11/84
4,487,455	06/498,770	12/11/84
4,487,456	06/442,260	12/11/84
4,487,457	06/425,160	12/11/84
4,487,458	06/425,196	12/11/84
4,487,459	06/510,374	12/11/84
4,487,461	06/477,957	12/11/84
4,487,466	06/449,343	12/11/84
4,487,467	06/355,338	12/11/84
4,487,484	06/532,150	12/11/84
4,487,490	06/408,405	12/11/84
4,487,498	06/394,921	12/11/84
4,487,500	06/363,070	12/11/84
4,487,503	06/318,905	12/11/84
4,487,512	06/460,122	12/11/84
4,487,516	06/469,157	12/11/84
4,487,521	06/350,106	12/11/84
4,487,526	06/464,999	12/11/84
4,487,533	06/329,063	12/11/84
4,487,535	06/473,724	12/11/84
4,487,537	06/462,817	12/11/84
4,487,540	06/433,465	12/11/84
4,487,543	06/372,961	12/11/84
4,487,559	06/528,994	12/11/84
4,487,579	06/558,261	12/11/84
4,487,581	06/429,201	12/11/84
4,487,585	06/573,426	12/11/84
4,487,586	06/440,948	12/11/84
4,487,589	06/503,927	12/11/84
4,487,590	06/455,029	12/11/84
4,487,592	06/502,130	12/11/84
4,487,593	06/317,608	12/11/84
4,487,600	06/521,849	12/11/84
4,487,606	06/462,502	12/11/84
4,487,608	06/474,640	12/11/84
4,487,615	06/504,031	12/11/84
4,487,616	06/476,971	12/11/84
4,487,621	06/535,514	12/11/84
4,487,631	06/522,436	12/11/84
4,487,645	06/514,466	12/11/84
4,487,649	06/421,892	12/11/84
4,487,652	06/595,229	12/11/84
4,487,658	06/528,526	12/11/84
4,487,671	06/368,091	12/11/84
4,487,736	06/340,184	12/11/84
4,487,758	06/501,445	12/11/84
4,487,763	06/402,440	12/11/84
4,487,766	06/469,129	12/11/84
4,487,774	06/370,327	12/11/84
4,487,785	06/436,970	12/11/84
4,487,819	06/452,391	12/11/84
4,487,822	06/390,387	12/11/84
4,487,838	06/338,946	12/11/84
4,487,843	06/579,721	12/11/84
4,487,851	06/474,577	12/11/84
4,487,862	06/470,373	12/11/84
4,487,906	06/513,477	12/11/84
4,487,910	06/578,733	12/11/84
4,487,924	06/494,556	12/11/84
4,487,952	06/463,555	12/11/84
4,487,965	06/508,143	12/11/84
4,487,971	06/537,648	12/11/84
4,487,981	06/530,289	12/11/84
4,487,982	06/530,443	12/11/84
4,487,990	06/552,899	12/11/84
4,487,997	06/502,874	12/11/84
4,488,011	06/498,733	12/11/84
4,488,012	06/486,780	12/11/84
4,488,013	06/494,973	12/11/84
4,488,023	06/451,730	12/11/84
4,488,024	06/504,896	12/11/84
4,488,068	06/425,156	12/11/84
4,488,071	06/587,126	12/11/84
4,488,075	06/315,260	12/11/84
4,488,082	06/459,982	12/11/84
4,488,106	06/394,480	12/11/84
4,488,110	06/220,999	12/11/84
4,488,113	06/398,500	12/11/84
4,488,117	06/370,189	12/11/84
4,488,138	06/436,817	12/11/84
4,488,140	06/379,231	12/11/84
4,488,147	06/358,022	12/11/84
4,488,148	06/349,960	12/11/84
4,488,149	06/238,553	12/11/84
4,488,155	06/403,848	12/11/84
4,488,159	06/489,936	12/11/84
4,488,183	06/313,691	12/11/84
4,488,199	06/424,126	12/11/84
4,488,205	06/552,609	12/11/84
4,488,208	06/409,998	12/11/84
4,488,226	06/443,945	12/11/84
4,488,238	06/324,398	12/11/84
4,488,240	06/344,561	12/11/84

Patent Number	Serial Number	Issue Date
4,488,253	06/373,458	12/11/84
4,488,264	06/387,049	12/11/84
4,488,281	06/357,354	12/11/84
4,488,284	06/430,716	12/11/84
4,488,285	06/449,314	12/11/84
4,488,297	06/365,829	12/11/84
4,488,308	06/412,136	12/11/84
4,488,310	06/387,880	12/11/84
4,488,312	06/497,591	12/11/84

Notification of Acceptance of Delayed Payment of Maintenance Fee (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below is considered as not having expired but is subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,430,530	06/445,256	2/7/84	11/29/82	1/27/89

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,523,585, Re. S.N. 246,260, Filed Dec. 16, 1988, Cl. 128/80, ANATOMIC BRACE FRACTURE FOR THE KNEE, Steve R. Lamb, et al., Owner of Record: *Orthopedic System Inc., Hayward, Calif.*, Attorney or Agent: Richard E. Peterson, Ex. Gp.: 337

4,568,465, Re. S.N. 151,884, Filed Feb. 3, 1988, Cl. 210/085, WATER TREATMENT SYSTEM AND CONTROL THEREFOR, Stephen H. Davis, et al., Owner of Record: *Inventor(s)*, Attorney or Agent: Herbert D. Hart, III, Ex. Gp.: 136

4,616,890, Re. S.N. 256,919, Filed Oct. 12, 1988, Cl. 312/257R, MEDICATION CARTS AND CASSETTES, Jerome M. Romick, et al., Owner of Record: *PDSW Corp., Chester, Pa.*, Attorney or Agent: Herbert C. Brinkman, et al., Ex. Gp.: 357

4,617,608, Re. S.N. 255,918, Filed Oct. 11, 1988, Cl. 361/291, VARIABLE GAP DEVICE AND METHOD OF MANUFACTURE, Greg E. Blonder, Owner of Record: *A. T. & T. Bell Laboratories, Murray Hill, N.J.*, Attorney or Agent: Lester H. Birnbaum, Ex. Gp.: 211

4,635,064, Re. S.N. 286,721, Filed Dec. 19, 1988, Cl. 342/408, MICROWAVE LANDING SYSTEM, John P. Chisolm, Owner of Record: *Sundstrand Data Control, Inc., Redmond, Wash.*, Attorney or Agent: Jean D. Kueiper, Ex. Gp.: 222

4,660,925, Re. S.N. 223,116, Filed July 22, 1988, Cl. 350/096.150, APPARATUS FOR PRODUCING A CYLINDRICAL PATTERN OF LIGHT AND METHOD OF MANUFACTURE, James S. McCaughan, Jr., Owner of Record: *Laser Therapeutics, Inc., Worthington, Ohio*, Attorney or Agent: George Woiken, Jr., Ex. Gp.: 251

4,724,285, Re. S.N. 287,788, Filed Dec. 20, 1988, Cl. 178/21, STENOGRAPHIC TRANSLATION SYSTEM, Jerrold P. Lefler, Owner of Record: *Inventor*, Attorney or Agent: Gregory B. Wood, Ex. Gp.: 261

4,726,430, Re. S.N. 289,365, Filed Dec. 22, 1988, Cl. 173/109, DEVICE FOR DRIVING A DRILLING AND/OR IMPACTIVE TOOL, Wilhelmus J. M. Hendrikx, et al., Owner of Record: *Skil Corp., Breda, The Netherlands*, Attorney or Agent: Clarence J. Fleming, Ex. Gp.: 324

4,727,520, Re. S.N. 272,406, Filed Nov. 17, 1988, Cl. 367/4, CABLE DEPLOYMENT UNIT, Atef R. Tadros, Owner of Record: *Sparton of Canada, Ltd., London, Ontario, Canada*, Attorney or Agent: Fred W. Hathaway, Ex. Gp.: 222

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,803,660, Reexam. No. 90/001,679, Requested: Dec. 23, 1988, Cl. 15/21, APPARATUS FOR CLEANING DISCS, Norman D. Jividen, et al., Owner of Record: *Randomex Inc., Palos Verdes Peninsula, Calif.*, Attorney or Agent: John Carson, Ex. Gp.: 240, Requester: Weingarten, Schurgin, et al., Boston, Mass.

4,199,219, Reexam. No. 90/001,682, Requested: Dec. 28, 1988, Cl. 350/6.1, DEVICE FOR SCANNING AN OBJECT WITH A LIGHT BEAM, Akiyoshi Suzki, et al., Owner of Record: *Cannon Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Anthony Zupcic, Ex. Gp.: 250, Requester: Owner

4,210,775, Reexam. No. 90/001,681, Requested: Dec. 23, 1988, Cl. 178/19, METHOD AND APPARATUS FOR DIGITIZING THE LOCATION OF AN INSTRUMENT RELATIVE TO A GRID, James L. Rodgers, et al., Owner of Record: *Sanders Assoc. Inc., Nashua, N.H.*, Attorney or Agent: William A. Cammett, Ex. Gp.: 260, Requester: Owner

4,241,399, Reexam. No. 90/001,676, Requested: Dec. 20, 1988, Cl. 364/200, CALLING INSTRUCTIONS FOR A DATA PROCESSING SYSTEM, William Strecker, et al., Owner of Record: *Digital Equipment Corp., Maynard, Mass.*, Attorney or Agent: Arnold, White, et al., Ex. Gp.: 230, Requester: Owner

4,261,339, Reexam. No. 90/001,686, Requested: Jan. 6, 1989, Cl. 128/1.4, BALLOON CATHETER WITH ROTATABLE SUPPORT, Bruce L. Hanson, et al., Owner of Record: *Datascope Corp., Paramus, N.J.*, Attorney or Agent: Stevan J. Bosses, Ex. Gp.: 330, Requester: Kontron Inc., Everett, Mass.

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4,820,989, Reexam. No. 90/001,684, Requested: Nov. 30, 1988, Cl. 51/73, WAFERING SYSTEM, Robert E. Steere, Jr., Owner of Record: *Silicon Technology Corp., Oakland, N.J.*, Attorney or Agent: Kenyon & Kenyon, Ex. Gp.: 320, Requester: Owner

4,438,217, Reexam. No. 90/001,677, Requested: Dec. 22, 1988, Cl. 252/477, CATALYST FOR OXIDATION OF PROPYLENE, Masahiro Taketa, Owner of Record: *Nippon Shokubai Kagaku Kogyo Co., Osaka, Japan*, Attorney or Agent: Sherman & Shalloway, Ex. Gp.: 110, Requester: Evelyn K. Merker, Washington, D.C.

4,589,773, Reexam. No. 90/001,680, Requested: Dec. 28, 1988, Cl. 277/82, PUMP-MECHANICAL SEAL CONSTRUCTION WITH AXIAL ADJUSTMENT MEANS, Robert Wentworth, Owner of Record: *BW/IP International Inc., Long Beach, Calif.*, Attorney or Agent: Aubrey L. Burgess, Ex. Gp.: 240, Requester: Owner

4,565,469, Reexam. No. 90/001,683, Requested: Jan. 3, 1989, Cl. 405/288, CRIBBING, Nicholas Chlumecky, Owner of Record: *Commerical Shearing Inc., Youngstown, Ohio*, Attorney or Agent: Unknown, Ex. Gp.: 350, Requester: Jones, Askew, et al., Atlanta, Ga.

4,753,232, Reexam. No. 90/001,685, Requested: Jan. 6, 1989, Cl. 128/156, ADHESIVE WOUND DRESSING, William J. Ward, Owner of Record: *Smith & Nephew Assoc. Co., London, England*, Attorney or Agent: Jacobs & Jacobs, Ex. Gp.: 330, Requester: Owner

4,772,947, Reexam. No. 90/001,678, Requested: Dec. 23, 1988, Cl. 360/98, METHOD AND APPARATUS FOR TRANSMITTING COMPRESSION VIDEO DATA AND RECORDING THE SAME FOR RECONSTRUCTING AN IMAGE FROM THE RECEIVED DATA, Tesujiro Kono, Owner of Record: *Sony Corp., Tokyo, Japan*, Attorney or Agent: Curtis, Morris, et al., Ex. Gp.: 230, Requester: Owner

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Errata

"All reference to Patent No. 4,798,097 to Richard E. Eastman, et al., of New York for 'TRANSFER CASE PLANETARY WITH ANNULUS GEAR POWER TAKEOFF' appearing in the Official Gazette of Jan. 17, 1989 should be deleted since no patent was granted."

"All reference to Patent No. 4,798,079 to Michael Miles, et al., of England for 'FASTENER INSTALLATION APPARATUS' appearing in the Official Gazette of Jan. 17, 1989 should be deleted since no patent was granted."

"All reference to Patent No. 4,800,029 to Masahi Dassi, of Japan for 'LUBRICATING OIL COMPOSITION' appearing in the Official Gazette of Jan. 24, 1989 should be deleted since no patent was granted."

Service of Process and Testimony of Employees of the Patent and Trademark Office and Production of Documents in Legal Proceedings

The Patent and Trademark Office (PTO) is adding Parts 15 and 15a to Title 37 of the Code of Federal Regulations. Part 15 concerns service of process on the Commissioner, the Patent and Trademark Office, and employees of the Patent and Trademark Office in their official capacity. Part 15a concerns the testimony of PTO employees regarding official matters and the production of official documents in legal proceedings. Parts 15 and 15a were effective upon publication in the Federal Register. 54 FR 3976-8 (Jan. 26, 1989).

In addition, §§1701 and 1701.01 of the Manual of Patent Examining Procedure and §§1801 and 1801.01 of the Trademark Manual of Examining Procedure are amended, as indicated below, effective immediately.

Parts 15 and 15a, §§1701 and 1701.01 of the Manual of Patent Examining Procedure and §§1801 and 1801.01 of the Trademark Manual of Examining Procedure are published in this notice as a convenience to the public. In addition to these materials, the Patent and Trademark Office alerts the public to its position with respect to *Standard Packaging Corp.* v. *Curwood, Inc.*, 365 F. Supp. 134, 180 USPQ 234 (N.D. Ill. 1973). In the past, parties have attempted, based on *Standard Packaging*, to obtain answers to questions which the Patent and Trademark Office has regarded to be improper. While the Patent and Trademark Office believes *Standard Packaging* accurately states the law, the Office believes that the court misapplied the law to the precise questions in issue. Accordingly, the Office agrees with the Federal Circuit's observation in *Western Electric Co.* v. *Piezo Technology, Inc.* v. *Quigg*, 860 F.2d 428, 432, 8 USPQ 2d 1853, 1857 (Fed. Cir. 1988), that there is considerable doubt whether *Standard Packaging* was correctly decided. The Patent and Trademark Office will not permit examiners to answer questions similar to those which the *Standard Packaging* court found acceptable.

* * * * *

Department of Commerce
Patent and Trademark Office
37 CFR Parts 15 and 15a

[Docket No. 9106-9006]

Service of Process and Testimony of Employees of the Patent and Trademark Office and Production of Documents in Legal Proceedings

Agency: Patent and Trademark Office.
Action: Final rule.
Summary: The Patent and Trademark Office is adding 37 CFR Parts 15 and 15a to supplement 15 CFR Parts 15 and 15a. These new parts prescribe policies and procedures to be followed with respect to service of process on the Patent and Trademark Office, the Commissioner of Patents and Trademarks, and employees of the Office, the testimony of Office employees regarding official matters, and the production of official documents in legal proceedings. These regulations serve as a statement of Office policy and provide comprehensive guidelines for the Office and its employees, outside agencies, and other persons regarding the appropriate procedures for service of process, testimony, and production of documents.
Effective date: Jan. 26, 1989.
For Further Information Contact: Associate Solicitor John W. Dewhirst by mail at Box 8, U.S. Patent and Trademark Office, Washington, D.C. 20231 and by phone at (703) 557-4035.
Supplementary Information: These regulations are designed to supplement, and be construed consistent with, 15 CFR Parts 15 and 15a. The regulations in Part 15a state the views of the Office with respect to the permissible scope of testimony which may be given by Office employees in connection with their performance of quasi-judicial patent and trademark matters. These Office views are consistent with *United States* v. *Morgan*, 313 U.S . 409, 422 (1941); *Western Electric Co., Inc.* v. *Piezo Technology, Inc.* v. *Quigg*, No. 88-1216, 860 F.2d 428, 8 USPQ 2d 1853 (Fed. Cir. Nov. 1, 1988); *In re Mayewsky*, 162 USPQ 86, 89 (E.D. Va. 1969), and *Shaffer Tool Works* v. *Joy Mfg. Co.*, 167 USPQ 170 (S.D. Tex. 1970).

Because these regulations concern agency management and personnel, they are not rules or regulations within the meaning of section 1(a) of Executive Order 12291, and they are not subject to the requirements of that Order. Accordingly, no preliminary or final regulatory impact analysis has to be or will be prepared.

These regulations, relating to agency management and personnel, are exempt from all requirements of section 553 of the Administrative Procedure Act [5 USC 553] including a delayed effective date and therefore will be effective immediately upon publication in the Federal Register.

Because a notice of proposed rule making and an opportunity for public comments are not required to be given for these regulations by section 553 of the APA, or by any other law, no regulatory flexibility analysis has to be or will be prepared for purposes of the Regulatory Flexibility Act [5 U.S.C. 603(a) and 604(a)].

This final rule does not contain policies with Federalism implications sufficient to warrant preparation of a Federalism assessment under Executive Order 12612.

This rule does not contain collections of information for purposes of the Paperwork Reduction Act.

List of subjects in 37 CFR Parts 15 and 15a: Attorneys, Administrative practice and procedure, Courts, Government employees.

For the reasons set forth in the preamble, 37 CFR is amended as follows:

1. Part 15 is added to read as follows:

Part 15
Service of Process

Sec.
15.1 Scope and purpose
15.2 Definitions
15.3 Acceptance of service of process

Authority: 5 U.S.C. 301; 15 U.S.C. 1501, 1512, 1513, 1515, and 1518; Reorganization Plan No. 5 of 1950; 44 U.S.C . 3101; 15 CFR 15.2(a).

§15.1 *Scope and Purpose.*

(a) This part supplements 15 CFR Part 15 and sets forth the procedures to be followed when a summons or complaint is served on the Office or the Commissioner or an employee of the Office in his or her official capacity. This part is to be construed consistent with 15 CFR Part 15.

(b) This part is intended to ensure the orderly execution of the affairs of the Office and not to impede any legal proceeding.

(c) This part does not apply to subpoenas. The procedures to be followed with respect to subpoenas are set out in Part 15a of this Title.

(d) This part does not apply to service of process made on an Office employee personally on matters not related to official business of the Office or to the official responsibilities of the Office employee.

§15.2 *Definitions.*

For the purpose of this part:

(a) "Commissioner" means Assistant Secretary and Commissioner of Patents and Trademarks.

(b) "Legal proceeding" means a proceeding before a tribunal constituted by law, including a court, an administrative body or commission, or an administrative law judge or hearing officer.

(c) "Office" means Patent and Trademark Office.

(d) "Office employee" means any officer or employee of the Office.

(e) "Official business" means the authorized business of the Office.

(f) "Solicitor" means the chief legal officer of the Office or other Office employee to whom the Solicitor has delegated authority to act under this part.

§15.3 *Acceptance of service of process*

(a) Any summons or complaint to be served in person or by registered or certified mail or as otherwise authorized by law on the Office or the Commissioner or an Office employee in his or her official capacity, shall be served on the Solicitor or an Office employee designated by the Solicitor.

(b) Any summons or complaint to be served by mail may be addressed to Solicitor, P.O. Box 15667, Arlington, Va. 22215. Any summons or complaint to be served by hand may be delivered to the Office of the Solicitor.

(c) Any Office employee served with a summons or complaint shall immediately notify and deliver the summons or complaint to the Office of the Solicitor.

(d) Any Office employee receiving a summons or complaint shall note on the summons or complaint the date, hour, and place of service and whether service was by personal delivery or by mail.

(e) When a legal proceeding is brought to hold an Office employee personally liable in connection with an action taken in the conduct of official business, rather than liable in an official capacity, the Office employee by law is to be served personally with process. Service of process in this case is inadequate when made upon the Solicitor or the Solicitor's designee. Any Office employee sued personally for an action taken in the conduct of official business shall immediately notify and deliver a copy of the summons or complaint to the Office of the Solicitor.

(f) An Office employee sued personally in connection with official business may be represented by the Department of Justice at its discretion. See 28 CFR 50.15 and 50.16 (1987).

(g) The Solicitor or Office employee designated by the Solicitor, when accepting service of process for an Office employee in an official capacity, shall endorse on the Marshal's or server's return of service form or receipt for registered or certified mail the following statement: "Service accepted in official capacity only." The statement may be placed on the form or receipt with a rubber stamp.

(h) Upon acceptance of service or receiving notification of service, as provided in this section, the Solicitor shall take appropriate steps to protect the rights of the Commissioner or Office employee involved.

2. Part 15a is added to read as follows:

Part 15a
Testimony by Employees and the Production of Documents in Legal Proceedings

Sec.
15a.1 Scope
15a.2 Definitions
15a.3 Office policy
15a.4 Testimony or production of documents; general rule
15a.5 Testimony of Office employees in proceedings involving the United States
15a.6 Legal proceedings between private litigants
15a.7 Procedures when an Office employee receives a subpoena

Authority: 5 U.S.C. 301; 15 U.S.C. 1501, 1512, 1513, 1515, and 1518; Reorganization Plan No. 5 of 1950; 44 U.S.C. 3101; 15 CFR 15a.1(e) and 15a.2(f).

§15a.1 *Scope*

(a) This part supplements 15 CFR Part 15a and prescribes the policies and procedures of the Office with respect to the testimony of Office employees as witnesses in legal proceedings and the production of documents of the Office for use in legal proceedings pursuant to a request, order, or subpoena. This part is issued pursuant to 15 CFR 15a.1(e) and is to be construed consistent with 15 CFR Part 15a.

(b) This part does not apply to any legal proceeding in which an Office employee is to testify, while on leave status, as to facts or events that are in no way related to the official business of the Office.

(c) This part is intended to ensure the orderly execution of the affairs of the Office and not to impede any

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legal proceeding and in no way affects the rights and procedures governing public access to records pursuant to the Freedom of Information Act or the Privacy Act. See 15 CFR 15a.4 and 37 CFR 1. 15.

§15a.2 *Definitions.*

For the purpose of this part:

(a) "Commissioner" means Assistant Secretary and Commissioner of Patents and Trademarks.
(b) "Demand" means a request, order, or subpoena for testimony or documents for use in a legal proceeding.
(c) "Document" means any record, paper, and other property held by the Office, including without limitation official patent and trademark files, official letters, telegrams, memoranda, reports, studies, calendar and diary entries, maps, graphs, pamphlets, notes, charts, tabulations, analyses, statistical or informational accumulations, any kind of summaries of meetings and conversations, film impressions, magnetic tapes, and sound or mechanical reproductions.
(d) "Legal proceeding" means a proceeding before a tribunal constituted by law, including a court, an administrative body or commission, an administrative law judge or hearing officer or any discovery proceeding in support thereof.
(e) "Office" means Patent and Trademark Office.
(f) "Office employee" means any officer or employee of the Office.
(g) "Official business" means the authorized business of the Office.
(h) "Solicitor" means the chief legal officer of the Office or other Office employee to whom the Solicitor has delegated authority to act under this part.
(i) "Testimony" means a statement given in person before a tribunal or by deposition for use before the tribunal or any other statement given for use before a tribunal in a legal proceeding, including an affidavit, declaration under 35 U.S.C. 25, or declaration under 28 U.S.C. 1746.
(j) "United States" means the Federal Government, its departments and agencies, and individuals acting on behalf of the Federal Government.

§15a.3 *Office policy.*

The Office policy is that its documents will not be voluntarily produced and Office employees will not voluntarily appear as witnesses or give testimony in a legal proceeding. The reasons for this policy include:

(a) To conserve the time of Office employees for conducting official business.
(b) To minimize the possibility of involving the Office in controversial or other issues which are not related to the mission of the Office.
(c) To prevent the possibility that the public will misconstrue variances between personal opinions of Office employees and Office policy.
(d) To avoid spending the time and money of the United States for private purposes.
(e) To preserve the integrity of the administrative process, minimize disruption of the decision-making process, and prevent interference with the Office's administrative functions.

§15a.4 *Testimony or production of documents; general rule*

(a) No Office employee shall give testimony concerning the official business of the Office or produce any document in any legal proceeding without the prior authorization of the Solicitor. Where appropriate, an Office employee may be instructed in writing by the Commissioner, Solicitor, or other appropriate Office employee not to give testimony or produce a document. Without prior approval, no Office employee shall answer inquiries from a person not employed by the Department of Commerce regarding testimony or documents subject to a demand or a potential demand under the provisions of this Part. All inquiries involving a demand or potential demand on an Office employee shall be referred to the Solicitor.
(b) A certified copy of a document, not otherwise available under Chapter I of this Title, will be provided for use in a legal proceeding upon written request and payment of applicable fees required by law.
(c)(1) *Request for testimony or document.* A request for testimony of an Office employee or document shall be mailed or hand-delivered to the Office of the Solicitor. The mailing address of the Office of the Solicitor is Box 8, Patent and Trademark Office, Washington, D.C. 20231.
(2) *Subpoenas.* A subpoena for testimony by an Office employee or a document shall be served in accordance with the Federal Rules of Civil or Criminal Procedure as appropriate, or applicable state procedure, and a copy of the subpoena shall be sent to the Solicitor.
(3) *Affidavit.* Every request and subpoena shall be accompanied by an affidavit or declaration under 28 U.S.C. 1746 or, if an affidavit or declaration is not feasible, a written statement setting forth the title of the legal proceeding, the forum, the requesting party's interest in the legal proceeding, the reasons for the request or subpoena, a showing that the desired testimony or document is not reasonably available from any other source, and if testimony is requested, the intended use of the testimony, a general summary of the testimony desired, and a showing that no document could be provided and used in lieu of testimony. The purpose of this requirement is to permit the Solicitor to make an informed decision as to whether testimony or production of a document should be authorized.
(d) Any Office employee who is served with a demand shall immediately notify the Office of the Solicitor.
(e) The Solicitor may consult or negotiate with an attorney for a party or the party, if not represented by an attorney, to refine or limit a demand so that compliance is less burdensome or obtain information necessary to make the determination required by paragraph (c) of this section. Failure of the attorney or party to cooperate in good faith to enable an informed determination to be made under this part may serve as the basis for a determination not to comply with the demand.
(f) A determination under this part to comply or not to comply with a demand is not an assertion or waiver of privilege, lack of relevance, technical deficiencies or any other ground for noncompliance. The Commissioner reserves the right to oppose any demand on any legal ground independent of any determination under this part.

§15a.5 *Testimony of Office employees in proceedings involving the United States.*

(a) An Office employee may not testify as an expert or opinion witness for any party other than the United States.
(b) When appropriate, the Solicitor may authorize an Office employee to give testimony as an expert or opinion witness on behalf of the United States. Expert or opinion testimony on behalf of the United States will not be authorized in any legal proceeding involving the validity or enforceability of a patent or registered trademark.
(c) Whenever, in any legal proceeding involving the United States, a request is made by an attorney representing or acting under the authority of the United States, the Solicitor will make all necessary arrangements for the Office employee to give testimony on behalf of the United States. Where appropriate, the Solicitor may require reimbursement to the Office of the expenses associated with an Office employee giving testimony on behalf of the United States.

§15a.6 *Legal proceedings between private litigants*

(a) Testimony by an Office employee and production of documents in a legal proceeding not involving the United States shall be governed by §15a.4.
(b) If an Office employee is authorized to give testimony in a legal proceeding, the testimony, if otherwise proper, shall be limited to facts within the personal knowledge of the Office employee. An Office employee is prohibited from giving expert or opinion testimony, answering hypothetical or speculative questions, or giving testimony with respect to subject matter which is privileged. If an Office employee is authorized to testify in connection with the employee's involvement or assistance in a quasi-judicial proceeding which took place before the Office, that employee is further prohibited from giving testimony in response to questions which seek:

(1) Information about that employee's:

(i) Background.
(ii) Expertise.
(iii) Qualifications to examine or otherwise consider a particular patent or trademark application.
(iv) Usual practice or whether the employee followed a procedure set out in any Office manual of practice in a particular case.
(v) Consultation with another Office employee.
(vi) Understanding of:
(A) A patented invention, an invention sought to be patented, or patent application, patent, reexamination or interference file.
(B) Prior art.
(C) Registered subject matter, subject matter sought to be registered, or a trademark application, registration, opposition, cancellation, interference or concurrent use file.
(D) Any Office manual of practice.
(E) Office regulations.
(F) Patent, trademark, or other law.
(G) The responsibilities of another Office employee.
(vii) Reliance on particular facts or arguments.

(2) To inquire into the manner in and extent to which the employee considered or studied material in performing the quasi-judicial function.
(3) To inquire into the bases, reasons, mental processes, analyses, or conclusions of that Office employee in performing the quasi-judicial function.

§15a.7 *Procedures when an Office employee receives a subpoena.*

(a) Any Office employee who receives a subpoena shall immediately forward the subpoena to the Office of the Solicitor. The Solicitor will determine the extent to which an Office employee will comply with the subpoena.
(b) If the Office employee is not authorized to comply with the subpoena, the Office employee shall appear at the time and place stated in the subpoena, produce a copy of Part 15a of Title 15 and a copy of this part, and respectfully refuse to provide any testimony or produce any document. *United States ex rel. Touhy* v. *Ragen*. 340 U.S. 462 (1951).
(c) When necessary or appropriate, the Solicitor will request assistance from the Department of Justice or a U.S. Attorney or otherwise assure the presence of an attorney to represent the interests of the Office or an Office employee.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Dec. 23, 1988.

Revisions to §§1701 and 1701.01 of MPEP

§1701 Office personnel not to express opinion on validity or patentability of patent

Every patent is presumed to be valid. 35 U.S.C. §282, first sentence. Public policy demands that every employee of the Patent and Trademark Office refuse to express to any person any opinion as to the validity or invalidity of, or the patentability or unpatentability of any claim in any U.S. Patent, except to the extent necessary to carry out (a) examination of an application seeking to reissue the patent, (b) a reexamination proceeding to reexamine the patent, or (c) an interference involving the patent.

The question of validity or invalidity is otherwise exclusively a matter to be determined by a court. Members of the patent examining corps are cautioned to be especially wary of any inquiry from any person outside the Patent and Trademark Office, including an employee of another Government agency, the answer to which might indicate that a particular patent should not have issued.

When a field of search for an invention is requested, examiners should routinely inquire whether the invention has been patented in the United States. If the invention has been patented, no field of search should be suggested.

Employees of the Patent and Trademark Office, particularly patent examiners who examined an application which matured into a patent or a reissued patent or who conducted a reexamination proceeding, should not discuss or answer inquiries from any person outside the Patent and Trademark Office as to whether or not a certain reference or other particular evidence was considered during the examination or proceeding and whether or not a claim would have been allowed over that reference or other evidence had it been considered during the examination or proceeding. Likewise, employees are cautioned against answering any inquiry concerning any entry in the patent or reexamination file, including the extent of the field of search and any entry relating thereto. The record of the file of a patent or reexamination proceeding must speak for itself.

Practitioners can be of material assistance in this regard by refraining from making improper inquiries of members of the patent examining corps. Inquiries from members of the public relating to the matters discussed above must of necessity be refused and such refusal should not be considered discourteous or an expression of opinion as to validity or patentability.

§1701.01 Office personnel not to testify

[Reprint: 37 CFR 15a.1
37 CFR 15a.2
37 CFR 15a.3
37 CFR 15a.4
37 CFR 15a.5
37 CFR 15a.6
37 CFR 15a.7]

It is the policy of the Patent and Trademark Office that its employees, including patent examiners, will not appear as witnesses or give testimony in legal proceedings, except under the conditions specified in 37 CFR Part 15a. Any employee who testifies contrary to this policy will be *dismissed* or *removed*. The reasons for this policy are set out in 37 CFR 15a.3.

Whenever an employee of the Patent and Trademark Office, including a patent examiner, is asked to testify or receives a subpoena, the employee shall immediately notify the Office of the Solicitor. Inquiries requesting testimony shall be also referred immediately to the Office of the Solicitor.

Patent examiners and other Patent and Trademark Office employees performing or assisting in the performance of quasi-judicial functions, are forbidden to testify as experts or to express opinions as to the validity of any patent.

Any individual desiring the testimony of an employee of the Patent and Trademark Office, including the testi-

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mony of a patent examiner or other quasi-judicial employee, must comply with the provisions of 37 CFR Part 15a.

A request for testimony of an employee of the Patent and Trademark Office should be made to the Office of the Solicitor at least *ten working* days prior to the date of the expected testimony.

If an employee is authorized to testify, the employee will be limited to testifying about facts within the employee's personal knowledge. Employees are prohibited from giving expert or opinion testimony. *Fischer & Porter Co.* v. *Corning Glass Works*, 61 F.R.D. 321, 181 USPQ 329 (E.D. Pa. 1974). Likewise, employees are prohibited from answering hypothetical or speculative questions. *In re Mayewsky*, 162 USPQ 86, 89 (E.D. Va. 1969) (deposition of an examiner must be restricted to relevant matters of fact and must avoid any hypothetical or speculative questions or conclusions based thereon); *Shaffer Tool Works* v. *Joy Mfg. Co.*, 167 USPQ 170 (S.D. Tex. 1970) (deposition of examiner should be limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the examiner in acting upon a patent application). Employees will not be permitted to give testimony with respect to subject matter which is privileged. Several court decisions limit testimony with respect to quasi-judicial functions performed by employees. Those decisions include *United States* v. *Morgan*, 313 U.S. 409, 422 (1941) (improper to inquire into mental processes of quasi-judicial officer or to examine the manner and extent to which the officer considered an administrative record); *Western Electric Co.* v. *Piezo Technology, Inc.* v. *Quigg*, 860 F.2d 428, 8 USPQ 2d 1853 (Fed. Cir. 1988) (patent examiner may not be compelled to answer questions which probe the examiner's technical knowledge of the subject matter of a patent); *McCulloch Gas Processing Co.* v. *Department of Energy*, 650 F.2d 1216, 1229 (Temp. Emer. Ct. App. 1981) (discovery of degree of expertise of individuals performing governmental functions not permitted); *In re Nilssen*, 851 F.2d 1401, 7 USPQ 2d 1500 (Fed. Cir. 1988) (technical or scientific qualifications of examiners-in-chief are not legally relevant in appeal under 35 U.S.C. §134 since board members need not be skilled in the art to render obviousness decision); *Lange* v. *Commissioner*, 352 F. Supp. 166, 176 USPQ 162 (D.D.C. 1972) (technical qualifications of examiners-in-chief not relevant in §145 action).

In view of the discussion above, if an employee is authorized to testify in connection with the employee's involvement or assistance in a quasi-judicial proceeding which took place before the Patent and Trademark Office, the employee will not be permitted to give testimony in response to questions which seek:

(1) Information about that employee's:

- (A) Background.
- (B) Expertise.
- (C) Qualifications to examine or otherwise consider a particular patent or trademark application.
- (D) Usual practice or whether the employee followed a procedure set out in any Office manual of practice (including the MPEP or TMEP) in a particular case.
- (E) Consultation with another Office employee.
- (F) Understanding of:
  - (i) A patented invention, an invention sought to be patented, or patent application, patent, reexamination or interference file.
  - (ii) Prior art.
  - (iii) Registered subject matter, subject matter sought to be registered, or a trademark application, registration, opposition, cancellation, interference or concurrent use file.
  - (iv) Any Office manual of practice.
  - (v) Office regulations.
  - (vi) Patent, trademark, or other law.
  - (vii) The responsibilities of another Office employee.
- (G) Reliance on particular facts or arguments.

(2) To inquire into the manner in and extent to which the employee considered or studied material in performing a quasi-judicial function.

(3) To inquire into the bases, reasons, mental processes, analyses, or conclusions of that Office employee in performing the quasi-judicial function.

Any request for testimony addressed or delivered to the Office of the Solicitor shall comply with 37 CFR 15a.4(c). All requests must be in *writing*. The need for a subpoena may be obviated where the request complies with 37 CFR 15a.4(c) if the party requesting the testimony further meets the following conditions:

(1) The party requesting the testimony identifies the civil action or other legal proceeding for which the testimony is being taken. The identification shall include:

- (a) the style of the case,
- (b) the civil action number,
- (c) the district in which the civil action is pending,
- (d) the judge assigned to the case, and
- (e) the name, address, and telephone number of counsel for all parties in the civil action.

(2) The party agrees not to ask questions seeking information which is precluded by 37 CFR 15a.6(b).

(3) The party shall comply with applicable provisions of the Federal Rules of Civil Procedure, including Rule 30, and give ten working days notice to the Office of the Solicitor prior to the date a deposition is desired. Fifteen working days notice is required for any deposition which is desired to be taken between Nov. 15 and Jan. 15.

(4) The party agrees to notice the deposition at a place convenient to the Patent and Trademark Office. The Conference Room in the Office of the Solicitor is deemed to be a place convenient to the Office.

(5) The party agrees to supply a copy of the transcript of the deposition to the Patent and Trademark Office for its records.

Absent a written agreement meeting the conditions specified in paragraphs (1) through (5), a party must comply with the precise terms of 37 CFR 15a.4(c) and the Patent and Trademark Office will not permit a deposition without issuance of a subpoena.

* * * * *

Revisions to §§1801 and 1801.01 of TMEP

§1801 Office personnel not to express opinion on validity of registered trademark

A certificate of registration of a trademark on the Principal Register is prima facie evidence of the validity of the registration. 15 U.S.C. §1057(b). Public policy demands that every employee of the Patent and Trademark Office refuse to express to any person any opinion as to the validity of any registered trademark, except to the extent necessary to carry out *inter partes* proceedings at the Trademark Trial and Appeal Board in cancellation and similar proceedings authorized by law.

The question of validity of a registered trademark is otherwise exclusively a matter to be determined by a court. Members of the trademark examining operation are cautioned to be especially wary of any inquiry from any person outside the Patent and Trademark Office, including an employee of another Government agency, the answer to which might indicate that a particular registration should not have been published or issued.

Employees of the Patent and Trademark Office, particularly trademark examining attorneys who examined an application should not discuss or answer inquiries from any person outside the Patent and Trademark Office as to whether or not a certain registration or other particular evidence was considered during the examination of the application or whether a trademark would have been published or registered if the registration or other evidence had been considered during the examination. Likewise, employees are cautioned against answering any inquiry concerning any entry in the trademark registration file, including the extent of the field of search and any entry relating thereto. The record of the file of a trademark registration or *inter partes* proceedings before the Trademark Trial and Appeal Board must speak for itself.

Practitioners can be of material assistance in this regard by refraining from making improper inquiries of members of the trademark examining operation. Inquiries from members of the public relating to the matters discussed above must of necessity be refused and such refusal should not be considered discourteous or an expression of opinion as to validity of any registration.

§1801.01 Office personnel not to testify

[Reprint: 37 CFR 15a.1
37 CFR 15a.2
37 CFR 15a.3
37 CFR 15a.4
37 CFR 15a.5
37 CFR 15a.6
37 CFR 15a.7]

It is the policy of the Patent and Trademark Office that its employees, including trademark examining attorneys, will not appear as witnesses or give testimony in legal proceedings, except under the conditions specified in 37 CFR Part 15a. Any employee who testifies contrary to this policy will be *dismissed* or *removed*. The reasons for this policy are set out in 37 CFR 15a.3.

Whenever an employee of the Patent and Trademark Office, including a trademark examining attorney, is asked to testify or receives a subpoena, the employee shall immediately notify the Office of the Solicitor. Inquiries requesting testimony shall be also referred immediately to the Office of the Solicitor.

Trademark examining attorneys and other Patent and Trademark Office employees performing or assisting in the performance of quasi-judicial functions, are forbidden to testify as experts or to express opinions as to the validity of any registration.

Any individual desiring the testimony of an employee of the Patent and Trademark Office, including the testimony of a trademark examining attorney or other quasi-judicial employee, must comply with the provisions of 37 CFR Part 15a.

A request for testimony of an employee of the Patent and Trademark Office should be made to the Office of the Solicitor at least *ten working* days prior to the date of the expected testimony.

If an employee is authorized to testify, the employee will be limited to testifying about facts within the employee's personal knowledge. Employees are prohibited from giving expert or opinion testimony. *Fischer & Porter Co.* v. *Corning Glass Works*, 61 F.R.D. 321, 181 USPQ 329 (E.D. Pa. 1974). Likewise, employees are prohibited from answering hypothetical or speculative questions. *In re Mayewsky*, 162 USPQ 86, 89 (E.D. Va. 1969) (deposition of an examiner must be restricted to relevant matters of fact and must avoid any hypothetical or speculative questions or conclusions based thereon); *Shaffer Tool Works* v. *Joy Mfg. Co.*, 167 USPQ 170 (S.D. Tex. 1970) (deposition of examiner should be limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the examiner in acting upon an application). Employees will not be permitted to give testimony with respect to subject matter which is privileged. Several court decisions limit testimony with respect to quasi-judicial functions performed by employees. Those decisions include *United States* v. *Morgan*, 313 U.S. 409, 422 (1941) (improper to inquire into mental processes of quasi-judicial officer or to examine the manner and extent to which the officer considered an administrative record); *Western Electric Co.* v. *Piezo Technology, Inc.* v. *Quigg*, 860 F.2d 428, 8 USPQ 2d 1583 (Fed. Cir. 1988) (patent examiner may not be compelled to answer questions which probe the examiner's technical knowledge of the subject matter of a patent); *McCulloch Gas Processing Co.* v. *Department of Energy*, 650 F.2d 1216, 1229 (Temp. Emer. Ct. App. 1981) (discovery of degree of expertise of individuals performing governmental functions not permitted); *In re Nilssen*, 851 F.2d 1401, 7 USPQ 2d 1500 (Fed. Cir. 1988) (technical or scientific qualifications of examiners-in-chief are not legally relevant in appeal under 35 U.S.C. §134 since board members need not be skilled in the art to render obviousness decision); *Lance* v. *Commissioner*, 352 F. Supp. 166, 176 USPQ 162 (D.D.C. 1972) (technical qualifications of examiners-in-chief not relevant in Sec. 145 action).

In view of the discussion above, if an employee is authorized to testify in connection with the employee's involvement or assistance in a quasi-judicial proceeding which took place before the Patent and Trademark Office, the employee will not be permitted to give testimony in response to questions which seek:

(1) Information about that employee's:

- (A) Background.
- (B) Expertise.
- (C) Qualifications to examine or otherwise consider a particular patent or trademark application.
- (D) Usual practice or whether the employee followed a procedure set out in any Office manual of practice (including the MPEP or TMEP) in a particular case.
- (E) Consultation with another Office employee.
- (F) Understanding of:
  - (i) A patented invention, an invention sought to be patented, or patent application, patent, reexamination or interference file.
  - (ii) Prior art.
  - (iii) Registered subject matter, subject matter sought to be registered, or a trademark application, registration, opposition, cancellation, interference or concurrent use file.
  - (iv) Any Office manual of practice.
  - (v) Office regulations
  - (vi) Patent, trademark, or other law.
  - (vii) The responsibilities of another Office employee.
- (G) Reliance on particular facts or arguments.

(2) To inquire into the manner in and extent to which the employee considered or studied material in performing a quasi-judicial function.

(3) To inquire into the bases, reasons, mental processes, analyses, or conclusions of that Office employee in performing the quasi-judicial function.

Any request for testimony addressed or delivered to the Office of the Solicitor shall comply with 37 CFR 15a.4(c). All requests must be in *writing*. The need for a subpoena may be obviated where the request complies with 37 CFR 15a.4(c) only if the party requesting the testimony further meets the following conditions:

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(1) The party requesting the testimony identifies the civil action or other legal proceeding for which the testimony is being taken. The identification shall include:

(a) the style of the case,
(b) the civil action number,
(c) the district in which the civil action is pending,
(d) the judge assigned to the case, and
(e) the name, address, and telephone number of counsel for all parties in the civil action.

(2) The party agrees not to ask questions seeking information which is precluded by 37 CFR 15a.6(b).
(3) The party shall comply with applicable provisions of the Federal Rules of Civil Procedure, including Rule 30, and give ten working days notice to the Office of the Solicitor prior to the date a deposition is desired. Fifteen working days notice is required for any deposition which is desired to be taken between Nov. 15 and Jan. 15.
(4) The party agrees to notice the deposition at a place convenient to the Patent and Trademark Office. The Conference Room in the Office of the Solicitor is deemed to be a place convenient to the Office.
(5) The party agrees to supply a copy of the transcript of the deposition to the Patent and Trademark Office for its records.

Absent a written agreement meeting the conditions specified in paragraphs (1) through (5), a party must comply with the precise terms of 37 CFR 15a.4(c) and the Patent and Trademark Office will not permit a deposition without issuance of a subpoena.

Feb. 7, 1989. FRED E. McKELVEY, *Solicitor.*

Department of Commerce
Patent and Trademark Office
37 CFR Part 1

[Docket No. 81024-9018]

Revision of Patent Practices

Agency: Patent and Trademark Office, Commerce
Action: Notice of Extension of Comment Period for Proposed Rule Making.

Summary: The Patent and Trademark Office is extending the comment period for receiving comments on the proposed amendments to the rules of practice in patent cases, Part 1 of Title 37, Code of Federal Regulations. The Office is extending the comment period on the proposed amendments to 37 CFR 1.53, 1.55, 1.60, 1.62, and 1.96, and on the proposed addition of 1.21(n), as published on November 30, 1988 at 53 FR. 48402. These amendments would clarify requirements in the filing of applications and provide for procedures for applicants to cure certain defects in the filing of applications. After comments are received, the Patent and Trademark Office will issue a notice of final rule making addressing these proposals.
Date: Written comments on proposed amendments to 37 CFR 1.53, 1.55, 1.60, 1.62 and 1.96, and proposed new rule 1.21(n) must be submitted by March 3, 1989.
Address: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Frances Michalkewicz, Suite 904, Crystal Park 2.
For Further Information Contact: Frances Michalkewicz by telephone at (703) 557-1610 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Feb. 10, 1989 BRADFORD R. HUTHER, *Assistant Commissioner for Finance and Planning.*

Survey of Registered Practitioners In Patent Cases

Pursuant to 37 CFR 10.11(b), a survey letter was mailed on Nov. 18, 1988 from the Office of Enrollment and Discipline (OED) to all practitioners in patent cases whose last names begin with K through O. Enclosed with the letter was a data sheet which had to be completed and returned to OED as soon as possible. All data sheets returned to OED will be acknowledged. Failure by a practitioner to submit a completed data sheet within the time period specified in the survey letter will result in the practitioner being removed from the register in accordance with CFR 10.11(b).

If your last name begins with K through O and you have not received a data sheet or if you returned the data sheet to OED and you did not receive an acknowledgement within three (3) months after returning the data sheet to OED, please contact Patricia M. Jordan at (703) 557-1728.

Dec. 12, 1988. CAMERON WEIFFENBACH, *Director, Office of Enrollment and Discipline.*

Status of PTO Services

The following is an update of the status of PTO services for January 1989:

Service Item	FY 1989 Goal (Calendar Days[1])	Monthly Average (Calendar Days[1])
Filing Receipts:		
Patents	22	24
Trademarks	30	17
Patent/Trademark Copies:		
Special Window Coupons	24 Hours	18 Hours
Window Coupons	5	2
Mail Coupons	12	5
Letter Orders	16	8
Certified Copies:		
Trademark Registrations	21	28
Applications-As-Filed	17	9*
File-Wrapper/Contents	N/A	13
Walk-up Certification	1	1
Trademark Search Library:		
Filing Pending Marks	21	27
Filing Reg. Certificates	Issue Date	+10 Days***
Filing Temp. Drawings	6	6
Assignments:		
Recording Patent Assignments	20	72**
Receipt Date of Patent Documents Returned		Sept. 12, 1988
Recording Trademark Assignments	20	26**
Receipt Date of Trademark Documents Returned		Dec. 1, 1988
Avg. Days from Issue Fee Payment to Issue Date	90–100	96
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On schedule
Patent Copies Available	95% on Issue Date	78% within 2 days after Issue Date***
Trademark Copies Available	95% on Issue Date	77% on Issue Date ****

1] Unless otherwise noted.
* The 5% of orders for which fiche are not on site are not included in calculations.
** See Narrative.
*** Holiday closings caused printing delays by contractor.
**** Contractor production problems caused late printing of trademarks.

SERVICE STATISTICS

- *Assignment Backlog Improvement* — The trademark assignment backlog has been reduced to an average of 26 days. Information is available to the public in the Assignment Search Room through Dec. 29, 1988. All documents from Nov. 1988 have been returned to senders. Dec. 1988 documents are in the microfilming process and should be ready to be released on Feb. 10, 1989.

  The majority of patent assignments received from mail room work have a backlog dating from Nov. 25, 1988. The majority of patent assignments which were filed with new applications have a backlog dating from Nov. 15, 1988. Dates are different because the backlog contains a mixture of mail room documents and new application documents; new application documents are received later than mail room work.

  Our goal is to have patent and trademark assignment information available for public use within 20 days of mail room receipt for work not included with an application. For patents, availability means that the assignment is recorded on the data base. For trademarks, availability means that the assignment is filed in the Assignment Search Room card file.

  Assignments received with new applications will still take longer to record since we do not generally receive these documents for at least 30 days after filing of the application and application processing has been completed.

  We continue to investigate problems and study ways to report information. We ask that any problems and/or corrections to assignment records be brought to our attention.

HELPFUL HINTS

- *Appeal Brief Rule* — Applicants are reminded that new formal and content requirements for appeal briefs in ex parte appeals are now in effect for cases where the notice of appeal was filed on or after Sept. 12, 1988. Amended section

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37 CFR 1.192 was published in the *Official Gazette* at 1092 O.G. 26 on July 12, 1988, and reprinted on Jan. 3, 1989, in the *Consolidated Listing of Official Gazette Notices* as item number 162. The changes are also set forth in chapter 1200 of the Manual of Patent Examining Procedure as revised in revision number 9, dated Sept. 1988.

Feb. 3, 1989.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Feb. 28, 1989

PP. 6,268	4,726,334	4,758,216	4,771,788
Re. 32,346	4,727,463	4,758,422	4,771,815
Re. 32,737	4,727,490	4,758,478	4,771,862
Re. 32,739	4,728,022	4,758,789	4,771,885
D. 297,153	4,729,031	4,758,821	4,771,921
3,803,124	4,729,748	4,758,885	4,772,026
4,213,174	4,730,069	4,759,211	4,772,095
4,374,099	4,732,637	4,759,361	4,772,322
4,435,460	4,734,092	4,759,526	4,772,539
4,501,479	4,734,420	4,759,636	4,772,653
4,526,937	4,735,959	4,759,697	4,772,726
4,531,045	4,736,106	4,759,968	4,772,733
4,577,101	4,736,168	4,760,063	4,773,071
4,582,237	4,736,228	4,760,575	4,773,177
4,589,249	4,736,683	4,760,739	4,773,415
4,598,331	4,737,351	4,762,006	4,773,424
4,622,949	4,737,541	4,762,679	4,773,765
4,645,248	4,738,463	4,763,514	4,774,017
4,649,972	4,738,768	4,763,520	4,774,182
4,660,216	4,739,395	4,764,616	4,774,313
4,664,865	4,740,211	4,765,343	4,774,329
4,668,494	4,742,276	4,765,701	4,774,334
4,669,320	4,743,836	4,765,742	4,774,492
4,670,413	4,746,201	4,765,810	4,774,737
4,672,367	4,747,782	4,765,873	4,774,778
4,673,539	4,748,190	4,765,959	4,774,839
4,678,959	4,748,684	4,765,969	4,775,451
4,681,953	4,749,154	4,766,022	4,775,782
4,683,506	4,749,510	4,766,048	4,775,952
4,689,817	4,749,713	4,766,357	4,776,229
4,693,930	4,749,742	4,766,467	4,776,295
4,696,671	4,749,766	4,766,586	4,776,358
4,698,486	4,750,007	4,766,723	4,776,577
4,700,305	4,751,029	4,767,082	4,777,213
4,702,569	4,751,947	4,767,910	4,777,368
4,703,836	4,752,272	4,767,968	4,777,464
4,704,619	4,752,926	4,768,063	4,777,613
4,705,707	4,753,943	4,768,107	4,777,699
4,705,832	4,754,154	4,768,223	4,777,726
4,707,108	4,754,992	4,768,574	4,777,770
4,708,455	4,755,630	4,768,589	4,777,814
4,713,035	4,755,869	4,768,690	4,777,992
4,714,844	4,756,208	4,769,058	4,778,061
4,719,388	4,756,313	4,769,204	4,778,067
4,720,266	4,756,670	4,769,411	4,778,517
4,720,273	4,757,075	4,769,501	4,778,701
4,721,451	4,757,137	4,769,512	4,779,304
4,722,012	4,757,373	4,770,464	4,780,017
4,722,435	4,757,692	4,770,788	4,780,061
4,724,050	4,757,911	4,770,941	4,782,951
4,724,715	4,758,147	4,771,540	4,783,364

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SPECIAL BOXES FOR MAIL

Special PTO mail box numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they are intended.

The following special boxes should be used only for their specified purpose. Address mail as follows:

Box_____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
Box 5	"No fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement.
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 8	All papers for the Office of the Solicitor except communications relating to pending litigation.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of patent and trademark applications.
Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box FWC	Requests for File Wrapper Continuation Applications.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box Non Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Mail related to Reexamination.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").
PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries (PDLs), receive current issues of U.S. Patents and maintain collections of earlier-issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections, which are organized in patent number sequence, are available for use by the public free of charge. Each of the PDLs, in addition, offers supplemental reference publications of the U.S. Patent Classification System, including the *Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions,* and provides technical staff assistance in their use to aid the public, in gaining effective access to information contained in patents. CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data, is available at all PDLs. Facilities for making paper copies of patents from either microfilm or paper collections are generally provided for a fee.

Since there are variations in the scope of patent collec patents from either microfilm or paper collections are generallcontemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext. 21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 261-2907
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7140
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 612-3200
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2347
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 451-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 636-5060
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1741
Kentucky	Louisville Free Public Library	(502) 561-8617
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 376
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska—Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada—Reno Library	(702) 784-6579
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New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 846-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, North Carolina State University	(919) 737-3280
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 744-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 367-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin —Madison	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF January 14, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-4-87
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	1-21-86
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	1-20-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	7-31-86
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-24-86
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	6-8-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	7-7-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	2-11-87
DESIGN, GROUP 290—K. L. CAGE, Director	1-23-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	1-12-88
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	8-12-87
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	1-20-87
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-22-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-4-88

Expiration of patents: The patents within the range of numbers indicated below expire during January 1989, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,631,539 to 3,638,238, inclusive
Plant Patents ..... None

REEXAMINATIONS

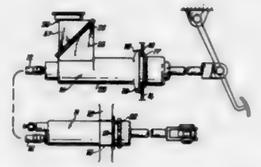
FEBRUARY 28, 1989

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,599,860 (1018th)
LIQUID PRESSURE APPARATUS

David Parsons, Leamington Spa, England, assignor to Automotive Products plc, Warwickshire, England

Reexamination Request No. 90/001,071, Aug. 19, 1986.
Reexamination Certificate for Patent No. 4,599,860, issued Jul. 15, 1986, Ser. No. 376,248, May 10, 1982.
Continuation of Ser. No. 911,477, Jun. 1, 1978, Pat. No. 4,407,125, which is a continuation of Ser. No. 676,474, Apr. 13, 1976, abandoned.
Claims priority, application United Kingdom, Apr. 14, 1975, 15283/75
The portion of the term of this patent subsequent to Oct. 4, 2000, has been disclaimed.
Int. Cl.[4] B60T *11/30*
U.S. Cl. 60—584



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 2 and 5 are cancelled.

Claims 1, 3, 7 and 8 are determined to be patentable as amended.

Claims 4, 6, 9 and 10, dependent on an amended claim, are determined to be patentable.

New claims 11–14 are added and determined to be patentable.

1. A method of shipping and installing a pre-assembled hydraulic actuating apparatus comprising a master cylinder having an outlet, a slave cylinder having an inlet, a conduit interconnecting the outlet of said master cylinder to the inlet of said slave cylinder, and a bleed port for controllably placing the interior of said hydraulic apparatus in communication with the ambient, said method comprising opening said bleed port to the ambient, filling said master cylinder, said conduit and said slave cylinder with a hydraulic fluid while simultaneously bleeding atmospheric air therein contained through said bleed port open to the ambient, and closing said bleed port after said apparatus has been fully filled with said hydraulic fluid prior to shipment for installation on a motor vehicle **[.]** *, said apparatus having an hydraulic fluid reservoir in communication with said master cylinder, said method further comprising filling the reservoir at least partially with said hydraulic fluid, and installing an expansible seal in said reservoir as an expansible interface between said hydraulic fluid and any air space in said reservoir to permit said fluid to expand and to prevent the ingestion of air into said system.*

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REISSUES

FEBRUARY 28, 1989

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,878

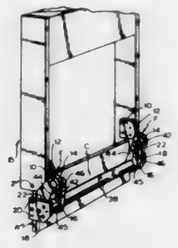
COUNTERBALANCE DEVICE AND TORSION MEMBER USABLE THEREIN

George H. Leonard, Darien, Conn., assignor to Airpot Corp., Norwalk, Conn.

Original No. 4,571,775, dated Feb. 25, 1986, Ser. No. 712,757, Mar. 18, 1985. Continuation of Ser. No. 477,337, Mar. 21, 1983, abandoned. Application for reissue Dec. 22, 1986, Ser. No. 4,177

Int. Cl.[4] E05F *1/10*

U.S. Cl. 16—298 **22 Claims**



1. A counterbalance device to act between first and second parts connected to one another to pivot about a first axis, comprising a pair of spaced supports adapted to be secured to said first part and spaced from one another along a second axis spaced from said first axis, socket members secured to said supports, extending toward one another, and having polygonal recesses facing one another along said second axis, a torsion member having ends non-rotatably received in said recesses and extending along said second axis, a sleeve extending between and mounted on said socket members to rotate relative to said socket members about said second axis, said torsion member being freely received within said sleeve, an anchor means inside said sleeve [non-rotatably mounted on said torsion member at a point spaced from said socket members, and means operatively connecting said anchor means to said second part] *and non-rotatably connected to said sleeve and to said torsion member at a first point spaced from said socket members, and means externally non-rotatably mounted on said sleeve at a second point axially spaced from said first point and operatively connecting said sleeve to said second part.*

Re. 32,879

TAMPER INDICATING SCREW CAP

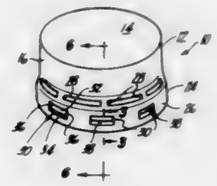
David M. Wright, and Edward Luker, both of Evansville, Ind., assignors to Sunbeam Plastics Corporation, Evansville, Ind.

Original No. 4,572,388, dated Feb. 25, 1986, Ser. No. 713,327, Mar. 18, 1985. Application for reissue Feb. 24, 1988, Ser. No. 162,294

Int. Cl.[4] B65D *41/34*

U.S. Cl. 215—252 **20 Claims**

20. A threaded tamper indicating closure for use on a container having a threaded neck and an outwardly projecting stop means below said thread, said closure being molded as a one piece cap comprising in combination: a flat top; an annular skirt depending from said top having internal threads complementary to said container threads; a tamper indicating band spaced from the bottom of said annular skirt and connected thereto by a plurality of circumferentially spaced axially extending frangible bridges; a plurality of circumferentially spaced stop segments attached to the lower portion of said band by flexible webs; and a plurality of circumferentially spaced windows formed in said band in line with said stop segments; said flexible webs permitting swinging of said stop segments to individually engage said windows for application of said cap to said container, and upon rotation of said cap in an



unthreading direction, the engagement of said stop segments with said container stop means resisting movement of said band causing fracture of said frangible bridges, leaving said tamper indicating band on said container after said cap has been removed.

Re. 32,880

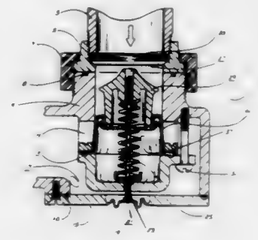
ROLLING DIAPHRAGM METERING VALVE

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, Harahan, La.

Original No. 4,488,702, dated Dec. 18, 1984, Ser. No. 537,079, Sep. 29, 1983. Application for reissue Oct. 15, 1985, Ser. No. 787,671

Int. Cl.[4] F16K *31/12*

U.S. Cl. 251—46 **8 Claims**



9. A valve controlling fluid flow comprising:

a. a valve body having an inlet and an outlet for fluid flow therethrough;

b. an inner section within said body having interior walls defining a passage of a selected cross-sectional shape for fluid flow therethrough, said inner section having an open end for receiving fluid from said inlet and a closed end, and further having orifices disposed peripherally along the sides of said interior walls such that fluid flows into said open end and out of said pheripheral orifices through said interior walls;

c. said inner section dividing the valve body into an intake chamber and an outlet chamber;

d. an elastomeric rolling diaphragm having a shape conforming to said selected cross-sectional shape of said passage, and having one edge sealingly connected to said interior walls of said passage at a location between said peripheral orifices and said closed end, said rolling diaphragm for moving between a first position wherein said diaphragm extends along said interior walls of said passage to seal said orifices against fluid

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flow, and a second position for opening said orifices to allow fluid flow;

e. a diaphragm actuating means sealingly connected to the other end of said rolling diaphragm forming thereby a metering chamber between said closed end and said actuating means, and for moving said diaphragm between said first and second positions;

f. said activating means defining a flow metering orifice for allowing the passage of fluid from said open end of said inner section to said metering chamber;

g. said closed end of said inner section defining a fluid dumping passage between said metering chamber and said outlet chamber, said fluid dumping passage having a fluid rate of flow substantially in excess of the fluid rate of flow through said flow metering orifice;

h. a dump means for opening and closing the fluid dumping passage so as to dump the fluid contents of the metering chamber to the outlet chamber; and

i. a biasing means biasing said actuating cup to urge said diaphragm to said first position.

Re. 32,881

CLAMPING DEVICE

Ralph Muellenberg, Im Wiesengrund 6, D-4048 Grevenbroich 12, Fed. Rep. of Germany

Original No. 4,557,621, dated Dec. 10, 1985, Ser. No. 668,906, Nov. 7, 1984. Application for reissue Dec. 8, 1987, Ser. No. 130,557

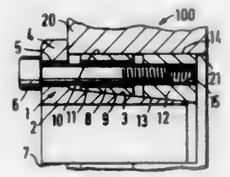
Int. Cl.[4] F16D *1/06*

U.S. Cl. 403—16 **6 Claims**

1. A clamping device for fastening an external structural part *having a recess* to an inner structural part having a [circular] *cylindrical* external circumferential surface, such as a shaft, comprising:

(a) a tapered flange ring having a [circular inner] *cylindrical* circumferential surface, a radially disposed conical circumferential [outer] surface and a radial flange projecting from said conical circumferential surface;

(b) a conical part having a conical [tapered] surface cooperating with the conical circumferential surface of said tapered flange ring;



(c) [at least] a plurality of axial clamping screws passing through said flange and engaging said conical part;

(d) [said tapered flange ring having] at least one further conical part with a [tapered] *conical* circumferential surface cooperating with the [tapered] *conical circumferential* surface of said tapered flange ring; and

(e) said further conical part being capable of being clamped to said tapered flange ring [or forced from it] by [said] *a second* plurality of *axial clamping* screws.

PLANT PATENTS

GRANTED FEBRUARY 28, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,629

RHODODENDRON PLANT 'SCENTED SPRINGTIME'

James P. Halligan, P.O. Box 489, Freeland, Wash. 98249

Filed Oct. 16, 1987, Ser. No. 108,982

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—55 **1 Claim**

1. A new and distinct variety of Rhododendron plant substantially as herein shown and described, characterized in particular by its prostrate growth habit and fragrant flowers.

6,630

IVY PLANT

Paul Apgar, and Lisdi Apgar, both of 330 Estrellita Dr., Vista, Calif. 92084

Filed Aug. 24, 1987, Ser. No. 103,036

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—67 **1 Claim**

1. A new and distinct variety of ivy substantially as herein described and illustrated.

6,631

KALANCHOE PLANT NAMED GARNET

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Oct. 5, 1987, Ser. No. 104,371

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Garnet, as described and illustrated.

6,632

KALANCHOE PLANT NAMED GOLDSTRIKE

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Oct. 5, 1987, Ser. No. 104,370

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Goldstrike, as described and illustrated.

6,633

ACHIMENES PLANT NAMED PINK ROSE

Linda S. Wiles, Greenwood, S.C., assignor to Geo. W. Park Seed Co., Inc., Greenwood, S.C.

Filed Sep. 30, 1987, Ser. No. 103,034

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Achimenes plant named Pink Rose, as illustrated and described.

6,634

ACHIMENES PLANT NAMED WHITE ROSE

Linda S. Wiles, Greenwood, S.C., assignor to Geo. W. Park Seed Co., Inc., Greenwood, S.C.

Filed Sep. 30, 1987, Ser. No. 103,033

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Achimenes plant named White Rose, as illustrated and described.

6,635

STREPTOCARPUS PLANT NAMED ACHILLES

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Apr. 22, 1987, Ser. No. 42,104

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct Streptocarpus plant named Achilles, as illustrated and described, and particularly characterized by its distinct dark red flower color, semi-compact growth habit, ease of propagation, highly floriferous and continuous flowering habits, and its ability to flower both under low light and high temperature conditions.

6,636

VARIETY OF GERANIUM NAMED CARNIVAL

Blair L. Winner, Lompoc, Calif., assignor to Denholm Seeds, Lompoc, Calif.

Filed Jul. 15, 1987, Ser. No. 73,808

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of geranium plant, substantially as herein shown and described and parts thereof.

6,637

ACHIMENES PLANT NAMED PICOTEE ROSE

Linda S. Wiles, Greenwood, S.C., assignor to Geo. W. Park Seed Co., Inc., Greenwood, S.C.

Filed Sep. 30, 1987, Ser. No. 103,035

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Achimenes plant named Picotee Rose, as illustrated and described.

6,638

AFRICAN VIOLET PLANT NAMED IRISH RUFFLES

Arnold Fischer, Kahlenstamm 22, 3000 Hannover 51, Fed. Rep. of Germany

Filed Aug. 13, 1987, Ser. No. 85,089

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant named Irish Ruffles, as illustrated and described, and particularly characterized by its white flower color with ruffled light green edges, large single flowers, medium green foliage, compact growth habit, and its floriferous habit.

6,639

AFRICAN VIOLET PLANT NAMED PICOTEE RUFFLES

Arnold Fischer, Kahlenstamm 22, 3000 Hannover 51, Fed. Rep. of Germany

Filed Aug. 13, 1987, Ser. No. 85,090

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Picotee Ruffles, as illustrated and described, and particularly characterized by its large single bi-colored flowers which have ruffled edges and are mainly white with a dark purple picotee; medium green ruffled leaves, compact growth habit, and its floriferousness.

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6,640
AFRICAN VIOLET PLANT NAMED BLUE WATERS
Arnold Fischer, Kahlendamm 22, 3000 Hanover 51, Fed. Rep. of Germany
Filed Aug. 13, 1987, Ser. No. 85,121
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Blue Waters, as illustrated and described, and particularly characterized by its large, single dark violet blue flowers, dark green foliage, compact growth habit, and its floriferousness.

6,641
DWARF CARNATION PLANT 'QUANDARY'
Kenneth L. Goldsberry, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.
Filed Jul. 10, 1987, Ser. No. 71,805
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—70 1 Claim

1. A new and distinct cultivar of *Dianthus caryophyllus*, Linn, identified as 85-215-120 and known as Quandary and substantially as herein described and illustrated.

6,642
DWARF CARNATION PLANT 'SNOWMASS'
Kenneth L. Goldsberry, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.
Filed Jul. 10, 1987, Ser. No. 71,082
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—70 1 Claim

1. A new and distinct cultivar of *Dianthus caryophyllus*, Linn, identified as 85-246-18 and known as Snowmass and substantially as herein described and illustrated.

6,643
DWARF CARNATION PLANT 'SHAVANO'
Kenneth L. Goldsberry, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.
Filed Jul. 10, 1987, Ser. No. 71,804
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—71 1 Claim

1. A new and distinct cultivar of *Dianthus caryophyllus*, Linn, identified as 85-215-116 and known as Shavano and substantially as herein described and illustrated.

6,644
CHRYSANTHEMUM PLANT NAMED ILLUSION
Grace H. Mack, 108 Wahackme Rd., New Canaan, Conn. 06840, and Cornelis P. VandenBerg, Salinas, Calif., assignors to Grace H. Mack, New Canaan, Conn.
Filed Sep. 22, 1987, Ser. No. 99,741
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct Chrysanthemum plant named Illusion, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; spoon daisy capitulum type; white ray floret color; diameter across face of capitulum of up to 8.5 cm at maturity; short plant height with spreading and prolific branching pattern; average natural season flower date of August 29 in Salinas, Calif. and September 25 in Hightstown, N.J.; uniform seven week photoperiodic flowering response to short days in photoperiodic controlled flowering programs; and durable, uniform performance in outside fall flowerings and in spring small pot flowering programs.

PATENTS

GRANTED FEB. 28, 1989

ERRATA

For CLASS	See PATENT NO.
172-793	4,807,461
177-145	4,807,558
134-002	4,807,649
105-355	4,807,722
131-084	4,807,809
409-132	4,808,046
416-224	4,808,055
427-242	4,808,086
128-844	4,808,174
604-056	4,808,184
181-175	4,808,202
203-039	4,808,270
208-210	4,808,289
526-312	4,808,332
424-047	4,808,388
424-053	4,808,389
423-273	4,808,423
524-413	4,808,673
071-094	4,808,722
528-097	4,808,740
514-336	4,808,762
250-226	4,808,838
375-120	4,808,884
364-900	4,809,029
355-028	4,809,049
355-014	4,809,050
434-317	4,809,246
369-044	4,809,247
333-024	4,809,284

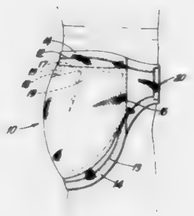
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PATENTS

GRANTED FEBRUARY 28, 1989

GENERAL AND MECHANICAL

4,807,301
PROTECTIVE GARMENT FOR THE HIP AREA
Robert C. Ferber, Box 909, Jackson Heights, N.Y. 11372
Filed Sep. 2, 1987, Ser. No. 92,209
Int. Cl.[4] A41D *13/00*
U.S. Cl. 2—2 10 Claims



1. A shock stress protective garment for the hip area and which is worn around the body at hip level to protect the hips and other bones in the pelvic area from fracture due to impact of falling and which does not contain rigid or semi-rigid plates adjacent the hip or pelvic area comprising a

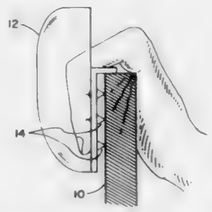
two way stretch fabric panel adapted to extend below the buttocks, said panel adapted to encircle the pelvic area, said panel including at least one pocket located on the portion of the panel adapted to be adjacent the hip bone and pelvic area of the body of the wearer,

means to fix said shock stress protective garment encircling the pelvic area, and at least one perforated closed cell plastic shock absorbent pad in said at least one pocket,

said pad adapted to extend below the buttocks,

the thickness of said shock absorbent pad being from about three-eighths inch to about one-half inch, and said pad is adapted not to bottom under the falling stress of normal body weight from a height of two feet.

4,807,302
HAND PROTECTOR WITH GRIPPING MEANS
Alexander Cannella, 541 Dawson Rd., Delmar, N.Y. 12054
Filed Nov. 3, 1987, Ser. No. 115,992
Int. Cl.[4] A41D *13/10*
U.S. Cl. 2—16 8 Claims

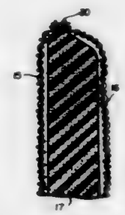


1. A hand protector with gripping means for use in the martial arts, which comprises:

a sheath made of a substantially non-deformable material for enveloping the full digit set of a user's hand, said sheath having a dome-like portion and an underside; and

a gripping plate fixedly attached to and covering a portion of the underside of said sheath, the outer surface of said gripping plate including a plurality of detents to provide frictional gripping of an object being held.

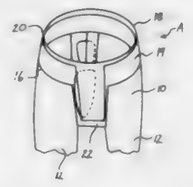
4,807,303
PROTECTIVE CLOTHING SYSTEM FOR COLD WEATHER
Joe A. Mann; Vincent J. Ambrosiani; Cynthia D. Wilder, and Abdelfattah M. Seyam, all of Greensboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.
Filed Jul. 14, 1986, Ser. No. 885,444
Int. Cl.[4] B32B *3/26, 5/18*
U.S. Cl. 2—69 29 Claims



1. A cold weather garment comprising: an interior synthetic lining fabric; an outer fabric; a layer of preponderantly open cell foam at least ¼ between the interior lining fabric and the outer fabric; and the lining, foam layer, and outer fabric connected together by connecting means to form a synthetic garment; and wherein:

the outer fabric comprises a fabric having an air permeability of less than 15 cubic feet per minute per square foot at 0.5 inches head of water, and having a moisture vapor transmission of at least 1,000 grams per square meter per 24 hours.

4,807,304
PANTYHOSE UNDERGARMENT
Dorothy McCants-Reed, 13052 Sutton Ave., Cerritos, Calif. 90701
Filed Oct. 29, 1987, Ser. No. 114,052
Int. Cl.[4] A41B *9/02*
U.S. Cl. 2—405 20 Claims



1. A pantyhose undergarment for men which permits urination and defecation without need of lowering the undergarment said undergarment comprising:

(a) a fabric torso section adapted to extend about a portion of the torso of the user below the waist,

(b) a pair of tubular leg sections extending from the torso section and forming a crotch region on the lower portion of the torso section,

(c) a first pair of flaps capable of being spread apart to form a first opening in the front portion of the torso section

adjacent the crotch region to allow urination without lowering of the undergarment, and

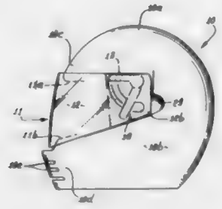
(d) a second pair of flaps capable of being spread apart to form a second opening in the rear portion of the torso section adjacent the crotch region to allow defecation without lowering of the undergarment.

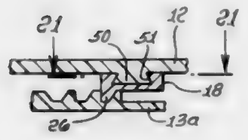
4,807,305

HELMET SHIELD MECHANISM

James G. Sundahl, Irvine, Calif., assignor to Bell Helmets Inc., Norwalk, Calif.

Filed Nov. 14, 1986, Ser. No. 930,577
Int. Cl.[4] A42B 3/02
U.S. Cl. 2—424 4 Claims





1. In a helmet having an outer shell with a front viewing opening, and a visor swingable between up and down positions, the combination comprising:

(a) means mounting the visor to swing between said positions,

(b) and detent means to retain the visor in said positions, said detent means including means to lock the visor in at least one of said positions, and to allow unlocking by manual deflection of a portion of the visor, away from the shell,

(c) said detent means including at least one arc shaped sequence of detent notches, and including swing arm means attached to the visor and carrying a detent tongue means successively receivable in said notches as the visor is pivoted, the stiffness of the visor resiliently urging the tongue means toward and into certain notches as the visor is pivoted,

(d) said means mounting the visor to swing including visor bearing means on the shell, the swing arm means pivotally supported by said bearing means, said bearing means including two bearings respectively at opposite sides of the helmet, said swing arm means including two swing arms respectively at opposite sides of the helmet and each attached to the visor at said opposite sides of the helmet,

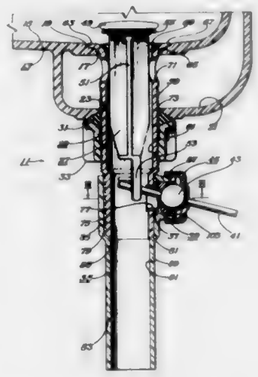
(e) and wherein there are dove-tail tongue and recess elements rigidly attaching the swing arms to the visor, and at two locations at each side of the helmet.

4,807,306

POP-UP DRAIN ASSEMBLY FOR LAVATORY BASINS

Dennis J. Hayman, Plano, and David M. Pearce, Abilene, both of Tex., assignors to United States Brass Corporation, Plano, Tex.

Continuation of Ser. No. 946,312, Dec. 23, 1986, abandoned, which is a continuation of Ser. No. 844,140, Mar. 26, 1986, abandoned. This application Jul. 24, 1987, Ser. No. 77,167
Int. Cl.[4] E03C 1/22
U.S. Cl. 4—203 11 Claims



1. In a pop-up drain assembly for a lavatory basin having a drain opening, which assembly includes drain conduit means having a flange portion for bearing on the peripheral surface of said basin drain opening, at least one upper lateral opening, at least one lower lateral opening and a sidewall, means for fixing said drain conduit means in the installed condition on said lavatory basin, a pop-up plug for selectively opening or closing the basin drain, a horizontal rod and rod bearing member, and bearing seat and retaining means for said rod bearing member, the improvement characterized by:

a. said bearing seat and retaining means including a removable inner seat member for said rod bearing member, a compression nut and outer seat for said rod bearing member, and an inner seat member and compression nut receiving means fixed relative to said drain conduit means and projecting laterally outward therefrom;

b. said inner seat and compression nut receiving means having an inner surface disposed to be coaxial with said lower lateral opening in the sidewall of said drain conduit means and shaped to matingly receive a first exterior surface portion of said removable inner seat member, and further having a threaded portion adapted for matingly receiving a threaded portion of said compression nut;

c. said removable inner seat member having a seat surface adjacent one end shaped to bearingly engage an inner portion of said rod bearing member and having a second exterior surface portion adjacent the other end and shaped to be matingly received by said drain comduit means lower sidewall opening;

d. said compression nut acting to move said outer seat into contact with an outer portion of said rod bearing member so as to sealingly capture said rod bearing member, with an inner end portion of said horizontal rod projecting into said drain conduit means in coacting relation with the lower end portion of said pop-up plug;

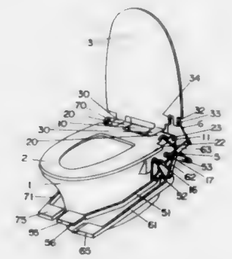
wherein said drain conduit means includes a flange piece and a tail piece with the upper end portion of said tail piece being sized to telescopically receive the lower end portion of said flange piece, with said flange piece and said tail piece having respective sidewall openings that are coaxial so that said removable inner seat member first and second exterior surface portions act to lock said flange piece and said tail piece in the telescoped position when said device is assembled.

4,807,307

DEVICE FOR OPENING AND CLOSING THE SEATING PLATE OF THE LAVATORY UNIT OF THE SEAT TYPE

Toru Sato, and Toshihisa Hasegawa, both of Yonago, Japan, assignors to Hakuju Institute for Health Science Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1987, Ser. No. 118,014
Claims priority, application Japan, Nov. 10, 1986, 61-267146
Int. Cl.[4] A47K 13/10
U.S. Cl. 4—251 3 Claims



1. A device for opening and closing a seating plate of a lavatory unit where the seating plate is freely swingably pivoted around a pivot axis at one end to the unit comprising:

a movable member which is adapted to be freely pivotally attached at one end thereof to the unit, the other end of said movable member adapted to swing through an arc;

a spring having one end adapted to be connected to a spring holder on the seating plate at a point spaced from said seating plate pivot axis and to the other end of said movable member such that said spring passes over a plane passing through said pivot axis of said seating plate and said spring holder;

an opening means for moving said movable member from a position in which said spring is on a same side of said plane as the unit where said spring urges the seating plate to a closed position to a position on the opposite side of said plane where said spring lifts the seating plate to an open position, said opening means including a lever which is adapted to be freely pivotally attached at one end of the unit and which has a pedal at the other end thereof and a link pivotally connected to said lever one end to an intermediate point on said movable member; and

a closing means for moving the seating plate from the open position to the closed position, said closing means including a lost motion means for allowing play between said closing means and the seating plate as the seating plate is moved by said opening means such that said closing means only transmits a closing force to the seating plate when the seating plate is in the open position.

4,807,308

PORTABLE STACKING AND NESTING TOILET

LaAnn H. Person, 330 W. 55th St., New York, N.Y. 10019, and Kenneth A. Roddy, 15322 E. Ritter Clr., Houston, Tex. 77071

Filed Dec. 11, 1987, Ser. No. 131,632
Int. Cl.[4] A47K 11/04, 11/06
U.S. Cl. 4—483 18 Claims

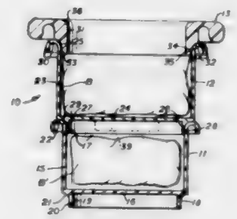
1. A portable stacking and nesting toilet comprising;

a first or smaller cup-shaped member having a bottom wall and an integral sidewall extending upwardly therefrom which terminates in an open top end,

a second or larger cup-shaped member having a bottom wall and an integral sidewall extending upwardly therefrom which terminates in an open top end, and

said first or smaller cup-shaped member sufficiently smaller than the second or larger cup-shaped member to be slidably received substantially therein in an upright nested position.

the bottom portions of said smaller cup-shaped member and said larger cup-shaped member each configured to releasably engage one another when placed end to end in an opposed stacked position,



the bottom portion of said larger cup-shaped member configured to releasably engage the open top end of said smaller cup-shaped member when placed thereon in an upright stacked position, and

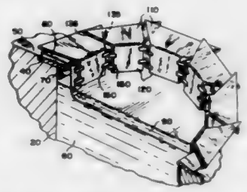
a seat member having its underside configured to releasably engage the open top end of the uppermost cup-shaped member of the stacked cup-shaped members when placed thereon and having a central opening therethrough smaller than the open top end of the uppermost member and said seat member configured to receive the bottom portion of said larger cup-shaped member in the nested position.

4,807,309

SWIMMING POOL PROTECTOR AND CONVERTER

R. Rand Cushing, 696 Commercial St., Weymouth, Mass. 02189

Filed Nov. 30, 1987, Ser. No. 126,610
Int. Cl.[4] E04H 3/18
U.S. Cl. 4—494 9 Claims



1. Apparatus for converting a swimming pool into a skating rink and preserving the structural integrity of the pool, the pool comprising a water basin and a ledge extending around the top edge of the basin, the ledge protruding inwardly over the edge of the basin, the basin being filled with water up to a predetermined level below the ledge, the apparatus comprising:

a sheet completely overlying the ledge and the open top of the basin and extending downwardly into the basin to at least the predetermined level of the water in the basin such that the bottom of the sheet contacts essentially the entire surface of the water in the basin below and inside the ledge;

the sheet extending downwardly into the basin and being filled above its top surface with water up to a predetermined level below the ledge;

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a plurality of impact resistant cornices overlying the sheet and the ledge and extending around the circumference of the pool in sequential array;

each cornice comprising a trapezoidal plate overlying the ledge and a rectangular flange plate attached to and extending the length of the short end of the trapezoidal plate, the flange plate extending downwardly into the basin a predetermined level below the ledge;

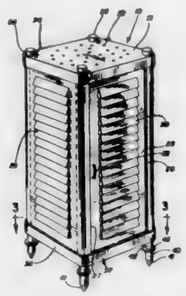
the trapezoidal sides of the trapezoidal plate forming an angle of greater than about 45 degrees with a line extending from the short end of the plate;

the cornices being sequentially arranged around the ledge such that the left side of the rectangular plate of each cornice is aligned substantially parallel to and closely adjacent to the right side of the rectangular plate of each immediately adjacent cornice.

4,807,310
PORTABLE SHOWER STALL

John R. Sedala, 430 E. Frost Pl., Lake Forest, Ill. 60045

Filed Apr. 10, 1987, Ser. No. 37,021
Int. Cl.[4] A47K 3/23
U.S. Cl. 4—599 26 Claims



1. A portable shower stall comprising:

upright wall means including sidewall panels and corner posts for forming an enclosure defining a shower space, said wall means being provided with inclined air deflecting means distributed along substantially the entire height of the sidewall panels for directing air flow from circumjacent said enclosure upwardly into said shower space, said wall means further defining an access opening for providing access to the shower space;

a door swingably mounted to said wall means for selectively closing said access opening;

a base wall having distributed openings therethrough for passage of air into and water out of the shower space, and through openings therein, said base wall being disposed at a bottom portion of said shower space for supporting a person therein;

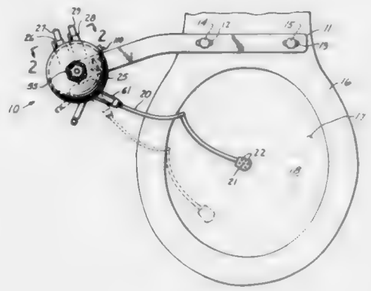
support means comprising tubular spacers having a lower support portion defining a downwardly facing support surface arranged to be supported on a subjacent ground surface, said corner posts passing through said through openings and said spacers and having a tapered end adapted to be driven into the subjacent ground surface, said base wall resting on an upper portion of said spacers for supporting said enclosure in an elevated disposition above the ground surface to define a laterally open air space below said base wall; and

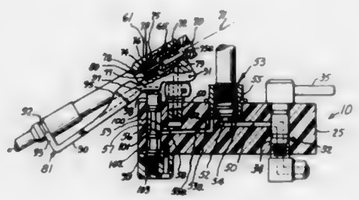
delivery means for providing a shower water delivery at an upper portion of said shower space, said enclosure further including a top wall closing the top of said shower space and having means for permitting limited upward convection from said shower space of air guided upwardly into said shower space by said air deflecting means.

4,807,311
BIDET ATTACHMENT FOR CONVENTIONAL COMMODES

Luis Ingels, 242 S. Irwindale, Azusa, Calif. 91702

Filed Jun. 30, 1987, Ser. No. 68,565
Int. Cl.[4] A47K 3/20, 3/22
U.S. Cl. 4—443 7 Claims





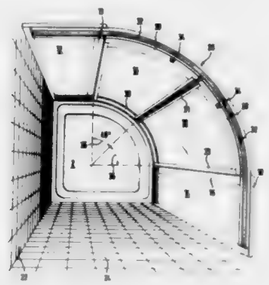
1. A bidet attachment for conventional commodes having a bowl, said attachment including a body, an adjustable hot water valve and an adjustable cold water valve, adapted to receive and control the flow of a respective hot and cold water supply, said water valves discharging to a control valve adapted to mix the water passed by the two water valves and control the rate of flow of mixed water, including the capacity to shut it off, a tubular swing arm pivotally mounted to said body so as to swing from a position near the rim of the bowl to a position central in the bowl, there being a spray head on the end of the swing arm, and handle means for swinging the arm from one said position to the other, the improvement comprising:

swivel mounting means mounting said swing arm on said body, said swivel mounting means having a conduit to discharge water thereto, anti-siphon means comprising an internal passage on said swivel mounting means receiving water which has passed through said control valve, said internal passage having a cylindrical wall, a tubular nozzle having an air passage from end to end fitted in said swivel mounting means with an outer cylindrical wall coaxial with and at least partly coextensive with said internal passage, thus leaving an annular clearance for discharging water annularly and axially forward into said swing arm with said air passage open to discharge air therein, and to prevent backflow in the event of a negative supply pressure; said swing arm being removably fitted to said swivel mounting means, and in which a safety valve is interposed between the control valves and said anti-siphon means to close the attachment to flow unless said swing arm is fitted to the swivel mounting means.

4,807,312
PARTITION, MORE PARTICULARLY FOR CORNER-SHOWERS

Heinz G. Baus, Wartbodenstrasse 35, CH-3626 Hünibach-Thun, Switzerland

Filed Feb. 19, 1987, Ser. No. 16,634
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1986, 3605770
Int. Cl.[4] A47K 3/22
U.S. Cl. 4—607 19 Claims



1. A partition comprising a rounded entrance-area and two wall-elements, one of which is arranged at each side of said entrance-area;

at least one guide-rail comprising a curved middle portion extending across said entrance-area and straight end portions extending along said wall-elements;

a pair of door-elements, each door-element being curved to complementally match the curved middle portion of said guide-rail, for opening and closing said entrance-area;

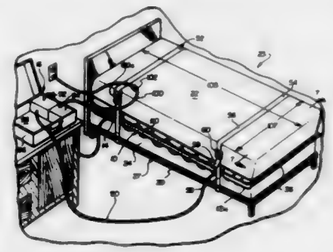
a pair of outwardly extending guide elements mounted on each door-element for movably supporting the door-element on said guide-rail, said guide elements of each door-element being arranged at a predetermined distance from longitudinal edges of the door-element and being spaced apart a distance which is larger than, but less than 2 times as large as, said predetermined distance between one of said guide elements and the respective longitudinal edge of said door-element, and wherein roller elements associated with said guide elements are inclined in relation to a radial-plane extending through the guide elements, at a predetermined angle toward a central radial plane through each door element.

4,807,313
INFLATABLE INCLINED MATTRESS SUPPORT SYSTEM

Francis E. Ryder, Arab, and Rowland W. Kasner, Guntersville, both of Ala., assignors to Ryder International Corporation, Arab, Ala.

Continuation-in-part of Ser. No. 804,262, Dec. 3, 1985, abandoned. This application Jul. 10, 1987, Ser. No. 73,353
Int. Cl.[4] A61G 7/00; A47C 21/00
U.S. Cl. 5—62 14 Claims

9. An inflatable mattress support assembly, for use with a bed having a bed frame, a supporting surface and a mattress, for disposition between said supporting surface and said mattress for positioning the mattress at an inclined angle with respect to said supporting surface, said inflatable mattress support assembly comprising: an inflatable mattress support member comprising a plurality of inflatable cells, said cells being interconnected to provide an integral elongate support member; air inlet means associated with at least one of said inflatable cells, port means provided between certain of said cells to provide for inflation and deflation thereof; the inflatable cell adjacent a first end of said integral elongate support member having a predetermined size and the size of each adjacent cell decreasing in the direction of a second, opposite end of said elongate support member, such that when said elongate support member is inflated and disposed between said support surface and said mattress in use, said mattress will be positioned at an inclined angle with respect to said support

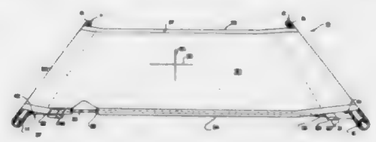


surface; and strap means for, in use, securing said inflatable mattress support member to said bed frame and said mattress; wherein said integral elongate support member is substantially greater in length, in its deflated state, than the mattress to which it is to be secured in use, and wherein said strap means comprise a pair of strap assemblies which are secured to opposite lateral sides of said inflatable mattress support member at positions thereon which are spaced apart longitudinally by a length at least as great as the length of the mattress to which the support member is to be secured in use when said member is in its deflated state.

4,807,314
TENSIONED BED

Steven A. Fry, 30052 Running Deer La., Laguna Niguel, Calif. 92677, and Rodney L. Stafford, 4900 E. Chapman #113, Orange, Calif. 92667

Filed Oct. 28, 1987, Ser. No. 113,945
Int. Cl.[4] A45F 3/22; A47C 19/00
U.S. Cl. 5—118 14 Claims



1. A tensioned bed comprising:

a first and a second support rod adapted to be mounted to fixed structure, extending parallel to one another;

a flexible sheet with limited stretchability, having a dimension of length and width, a pair of edges and a pair of ends, said sheet being adapted to be bent around each of said support rods;

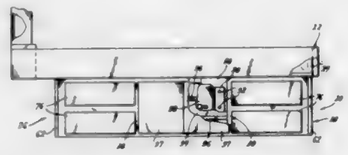
a spreader rod attached to at least one of said ends extending parallel to said spreader rods;

a strap extending along and attached to each of said edges, said straps being attached to one of said sheet ends and having a free end; and

a pair of buckles attached to the other of said sheet ends, each adapted to engage and hold a respective free end of a strap in tension.

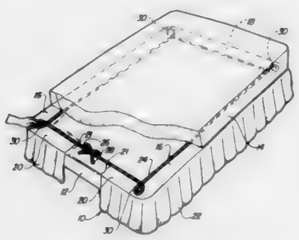
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4,807,315
WATERBED PEDESTAL WITH SAFE
John E. Wachenheim, 1729 E. Clay, Decatur, Ill. 62521
Filed Nov. 27, 1987, Ser. No. 126,181
Int. Cl.[4] A47C *19/22*
U.S. Cl. 5—400 19 Claims



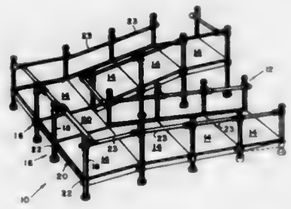
1. An improved waterbed pedestal for supporting a waterbed frame and mattress on its top surface, the pedestal of the type comprising a plurality of panels assembled to form head, foot, and left and right side faces, the improvement comprising:
- means for defining a cavity in the pedestal positioned to extend underneath a waterbed mattress supported on the pedestal so that the mattress covers the top of the cavity, the cavity opening at its front in one of the faces of the pedestal and including a back wall and opposing side walls;
- Safe positioned in the cavity;
- attachment means for securing the safe in the cavity by attachment to at least one of the sides or back of the cavity; and
- a removable panel adapted to be positioned over the front of the cavity to close he cavity and hide the safe.

4,807,316
DUST RUFFLE
Gleadola R. Whipple, 2180 St. Francis Dr., Ann Arbor, Mich. 48104
Filed Nov. 24, 1987, Ser. No. 124,685
Int. Cl.[4] A47C *21/00*
U.S. Cl. 5—493 11 Claims



1. An improved dust ruffle to be placed on bedding of the type wherein a mattress is supported by a box spring, comprising:
- an interlining having an outer edge generally outlining the outer top edge perimeter of a box spring and defining an inner edge inside of said perimeter, said interlining forming two free ends and a plurality of corners,
- skirt portion means for extending downwardly along the outside of said box spring and joining said interlining outer edge,
- strip means of substantially inelastic material joining said interlining inner edge and having ends extending from said interlining free ends, said strip means provided for facilitating straightening of the dust ruffle by exerting tension on said strip means,
- pull loops formed by said strip means at the corners of said interlining inner edge, said pull loops adapted to be grasped by a user to exert tension on said strip means, and fastening means for the ends of said strip means ends.

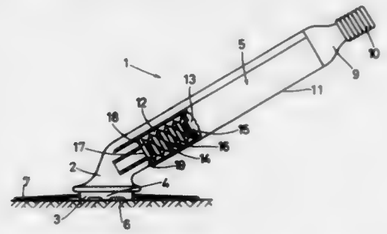
4,807,317
MODULAR RAMP
Charles F. Quinn, Grand Rapids, and Thomas E. Young, East Lansing, both of Mich., assignors to Easter Seal Society of Michigan, Inc., Grand Rapids, Mich.
Filed Jun. 24, 1987, Ser. No. 66,042
Int. Cl.[4] E01C *1/00*
U.S. Cl. 14—69.5 24 Claims



1. A modular ramp kit to be used in erecting a reusable ramp, said kit comprising:
- a support framework having components including a plurality of first PVC conventional plumbing pipe segments, a plurality of second PVC conventional plumbing pipe segments having opposite ends, a plurality of conventional plumbing PVC T connectors each including a first hollow portion and a second hollow portion extending orthogonally outward from a medial section of said first hollow portion, and a plurality of locking devices;
- said components being cooperatively assembled such that said first PVC pipe segments define a plurality of vertical legs grouped into pairs and arranged to define a path, each said second PVC pipe segment is coupled with a pair of said PVC T connectors to define a plurality of crossbars, each end of said second PVC pipe segments being secured within said second hollow portion of one of said PVC T connectors, one of said crossbars being slidably mounted on each of said grouped legs such that each said leg slidably receives thereon on of said PVC T connectors such that said leg is received into said first hollow portion, each of said PVC T connectors being positioned at a desired elevation along said length of said received leg and secured thereto by said locking devices; and
- a plurality of ramp sections each including a ramp surface having a pair of opposite ends, each ramp section further including support means for receiving one of said crossbars and for supporting the associated ramp section end on the crossbar, whereby a ramp can be erected by arranging said grouped legs into a path, adjusting the crossbars thereon to have increasing heights along the path, and placing the ramp sections on the support assemblies by interfitting each ramp end support means onto one of said crossbars.

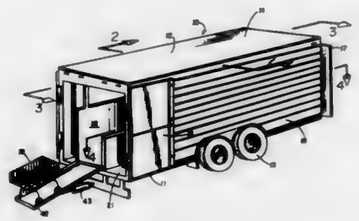
4,807,318
SUCTION OPERATED CLEANER
Dieter H. F. Kallenbach, Chartwell, South Africa, assignor to Coxwold (Proprietary) Limited, Johannesburg, South Africa
Filed Oct. 21, 1987, Ser. No. 112,224
Claims priority, application South Africa, Oct. 21, 1986, 86/7962; Oct. 21, 1986, 86/7963
Int. Cl.[4] E04H *3/20*
U.S. Cl. 15—1.7 13 Claims

1. A pool cleaner of the type in which an interruption in the flow of water induced through the cleaner is utilized to provide a propulsive force to cause the cleaner to move over submerged surfaces; wherein the cleaner has a hollow head having an inlet providing a mouth which in use will open in close proximity to the surface being cleaned; and an outlet suitable for connection to a flexible suction hose; a rigid passageway being provided to extend from the interior of the head to the outlet and having that end of the passageway opening



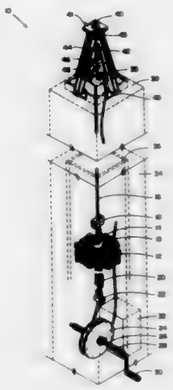
into the head normally closed by an axially resilient tubular diaphragm mounted in the head; wherein one end is closed to include a closure member for the rigid passageway and means to enable the diaphragm to respond to pressure variations in water flow through the head during use to intermittently interrupt the flow of water through the pool cleaner to provide said propulsive force.

4,807,319
SELF CONTAINED HIGH PRESSURE HOT WATER CLEANING SYSTEM FOR GROCERY CARTS
Anton Poitevin, 911 Durango, Great Falls, Mont. 59404
Filed Aug. 24, 1987, Ser. No. 89,353
Int. Cl.[4] A47L *11/00*
U.S. Cl. 15—21 D 9 Claims



1. A mobile self contained high pressure hot water cleaning systm for grocery carts comprising:
- a mobile frame means;
- an enclosure mounted on said frame means for receiving the grocery cart therein;
- a holding tank mounted on said frame means within said enclosure;
- a wash tunnel having a first set of spray nozzles and a second set of spray nozzles spaced downstream of the first set of spray nozzles; said wash tunnel mounted above said holding tank within said enclosure;
- cleaning brushes rotatably mounted in the tunnel for engaging and dislodging foreign particles from the grocery cart;
- a conveyor means mounted within said wash tunnel for conveying the grocery cart through said tunnel past the first and second set of spray nozzles and the brushes;
- a supply tank having a cleaning fluid within said enclosure wherein said supply tank is in fluid communication with said first set of spray nozzles;
- a supply tank having a sterilizing fluid within said enclosure wherein said second fluid supply tank is in fluid communication with said second set of spray nozzles;
- a drain means within said wash tunnel means wherein said drain means is in fluid communication with said holding tank means;
- a first pump means operably connected to pump said cleaning fluid to the first set of nozzles to clean the grocery cart;
- a second pump means operably connected to pump said sterilizing fluid to the second set of nozzles to sterilize the cleaned grocery cart; and
- a heater means operably connected to heat said first fluid.

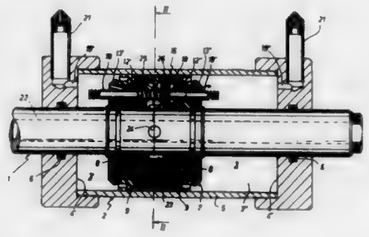
4,807,320
CHIMNEY BRUSH
Robert Labrecque, 34 Third St., Berlin, N.H. 03570
Filed Oct. 16, 1987, Ser. No. 109,206
Int. Cl.[4] F23J *3/00*
U.S. Cl. 15—163 4 Claims



1. In a chimney having an elongated flue liner, and a clean out door disposed at a lower end of said flue liner, the improvement comprising:
- brush means disposed within said flue liner;
- cable means attached to opposed ends of said brush means;
- said cable means attached to one end of said brush means by a coil spring;
- first pulley means;
- a four sided support plate having opposite sides parallel to each other;
- four support legs, each leg pivotally attached adjacent one end to said support plate, a pair of oppositely disposed legs being adjustable in length to accommodate a rectangular flue liner;
- a right angle flange on an opposite end of each of said support legs for engagement within said liner, each of said support legs being pivotally attached to a mid-portion of each side of said support plate such that tension in the cable means forces said right angle flanges outwardly into engagement with an inner wall of said flue liner;
- a threaded rod extending centrally through said support plate and adjustably mounting said first pulley means on said support plate for axial movement;
- second pulley means;
- means rotatably mounting said second pulley means within a lower end of said chimney flue liner;
- said cable means forming a loop around said first and second pulley means; and
- means for rotating said second pulley means in first and second opposite directions for reciprocating said brush means along the length of said chimney flue liner.

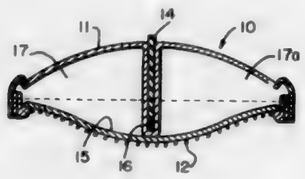
VOL 1099 ISS 4 FE 28 1989 UMI

4,807,321
AIR CLEANING SYSTEM
Giorgio Grasselli, Via A. Variaco, 1, 42020 Albinea, Reggio Emilia, Italy
Filed Jul. 27, 1987, Ser. No. 78,059
Claims priority, application Italy, Dec. 16, 1986, 46863 A/86
Int. Cl.[4] B08B *5/02*
U.S. Cl. 15—312 R 6 Claims



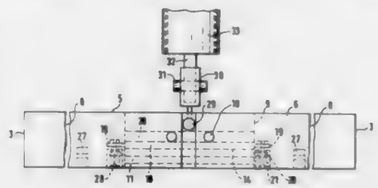
1. An automatic gas-moved cleaning device comprising a source of gas, a movable first cylindrical means (2) laterally movable upon a second cylindrical means (1), said first cylindrical means containing a fixed body (7) having adjacent its opposite sides gastight chambers (3) and (3'), said chambers adapted to be alternately expanded and contracted with entrance of gas therein, when one of said chambers expands as filled with gas the other chamber adapted to be reduced in volume, said first cylindrical means (2) adapted to be continuously moved laterally along said second cylindrical means (1) as gas fills each chamber alternately, at least one nozzle (21) in gas flow relation with each of said chambers and adapted to permit gas to continuously flow out said nozzles from the interior of each of said chambers, said body (7) comprising means to direct gas flow alternately into each chamber and thereby cause first cylinder means (2) to move laterally back and forth and wherein the same source of gas is used to provide gas jets exiting said nozzles (21) and to provide movement of first cylindrical means (2) back and forth along the lateral periphery of a roller (29) to be cleaned.

4,807,322
AUTOMOBILE WINDSHIELD CLEANING TOOL
Tomislav F. Littledeer, 1961 Gertrude Street, Carignan, Quebec, Canada (J3L 4G8)
Filed Apr. 30, 1987, Ser. No. 44,315
Int. Cl.[4] A47L *13/16*
U.S. Cl. 15—121 1 Claim



1. An automobile windshield cleaning tool, comprising:
a multiple-sided structure;
first means on one side of said structure for removing frost or the like;
second means on the side opposite said first means for cleaning and absorbing the remaining moisture after the frost has been removed;
at least one projection means for the removal of moisture or the like extending from said second means;
said first means comprises a surface having a rough or coarse texture;
said roughened surface comprises a mesh material having a multitude of looped strands;
said second means comprises a layer of absorbent material;
said absorbent material is attached to said mesh material by means of overlapping said absorbent material over the edges of said mesh material for stitching or the like said overlap of said absorbent material through said mesh material;
said projection means comprises a length of rubber or like material;
said length of material is positioned at the centerline of said second means and traverses substantially the entire length of said second means;
said length of material is attached to said centerline of said second means; and
said length of material is connected to said second means by means of adhesive means or the like.

4,807,323
FLOOR MOP
Heinrich Karpp, Fahrenberg 19A, 4300 Essen 15, Fed. Rep. of Germany
PCT No. PCT/EP87/00343, § 371 Date Feb. 18, 1988, § 102(e) Date Feb. 18, 1988, PCT Pub. No. WO88/00019, PCT Pub. Date Jan. 14, 1988
PCT Filed Jun. 25, 1987, Ser. No. 163,811
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1986, 3622291; Nov. 8, 1986, 3638178
Int. Cl.[4] A47L *13/258*
U.S. Cl. 15—147 A 25 Claims

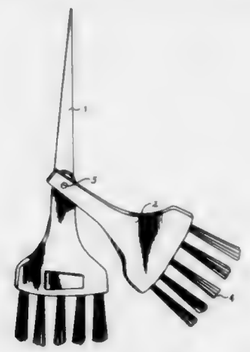


1. A floor mop having a support for holding an attachment provided on its underside with a plurality of fringes or the like, or with a raised-pile washing attachment, consisting of two arms as well as of a central piece, whereby the arms of the support are pivotably connected with the central piece at their mutually facing ends and the central piece is equipped with a handle arranged in the middle thereof, characterized in that the central piece (7) has a bottom plate (9) pivotably connected with the two arms (5, 6) to which a support plate (11) is attached with a spring disk (14) rotatably arranged thereon, a clamping disk (18) being located on the spring disk and connected thereto, and with the handle holder (28) secured to the clamping disk, whereby on the upper sides of the arms (5, 6), tension springs (25) are provided for their tensioning and guided in a groove (17) of the spring disk (14).

4,807,324
TWO COLOR DEPTH TINTING APPARATUS
Edward C. Owens, 1061 Gorman Ave., W. St. Paul, Minn. 55118
Filed May 1, 1987, Ser. No. 45,298
Int. Cl.[4] A46B *15/00*
U.S. Cl. 15—166 1 Claim

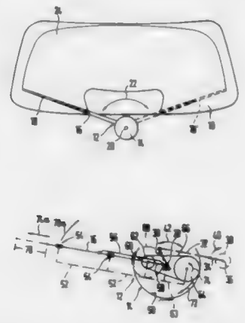
1. A device for adding depth to tinted hair by applying two colors at once,
said device comprising:

a first brush having a handle with bristles extending forwardly from one end thereof;
a second brush also having a handle with bristles extending forwardly from one end thereof, said second brush handle being shorter than said first brush handle;
rivet means fastening said handle of said second brush to said handle of said first brush in spaced relation thereto, said rivet means allowing said second brush to pivot partially around the axis formed by said rivet means;



said device having a closed position wherein said second brush is aligned in a vertical line with said first brush, and an open position wherein said second brush is aligned at an acute angle with said first brush;
said bristles of said first brush and said second brush being spaced alternately on said brushes;
said bristles of said second brush and said first brush being vertically offset such that in the closed position the bristles of the first brush are spaced at an elevation above the bristles of the second brush.

4,807,325
WINDSCREEN WIPER FOR AUTOMOBILES
Gerd Kühbauch, Bühlertal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE87/00071, § 371 Date Jan. 29, 1988, § 102(e) Date Jan. 29, 1988, PCT Pub. No. WO87/05269, PCT Pub. Date Sep. 11, 1987
PCT Filed Feb. 26, 1987, Ser. No. 165,275
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1986, 3606367
Int. Cl.[4] B60S *1/24, 1/26*
U.S. Cl. 15—250.21 6 Claims



1. A windscreen wiper for automobiles, comprising a wiper arm; a guide element driven back and forth in a pendulum fashion; a thrust crank mechanism for displaceably guiding said wiper arm on said guide element radially to a pendulum axis, said wiper arm carrying on a free end thereof a wiper blade placed against a window to be wiped, said guide element including a pendulum lever protruding beyond the pendulum axis; a first gear wheel rotatably supported on said pendulum lever, an axis of rotation of said gear wheel being parallel to the pendulum axis; a chassis provided with a set of teeth positioned concentric with the pendulum axis and cooperating with said gear wheel; a second gear wheel; and a toothed belt wrapped partially about said first gear wheel (66 or 164) and partially about said second gear wheel (62 or 162) and having an inner toothed profile (68) and an outer toothed profile (70), of which the outer toothed profile meshes with said set of the teeth (50 or 150) provided on the chassis and the inner toothed profile (68) meshes with the first gear wheel (64 or 164) and also with the second gear wheel (62 or 162) rotatably supported on the guide element (52 or 152), said thrust crank mechanism including a crank (58), the second gear wheel being rigidly connected to the crank (58) of the thrust crank mechanism (56, 58).

4,807,326
BACKING MEMBER IN WIPERBLADE OF WINDSHIELD WIPER
Masaru Arai, and Itsuro Saita, both of Yono, Japan, assignors to Nippon Wiperblade Co., Ltd., Saitama, Japan
Filed Feb. 18, 1988, Ser. No. 157,267
Claims priority, application Japan, Feb. 20, 1987, 62-22798[U]
Int. Cl.[4] B60S *1/04*
U.S. Cl. 15—250.42 7 Claims

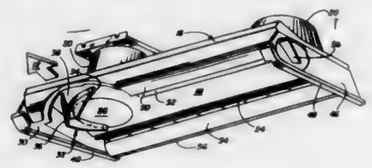
1. A backing member in a wiperblade of a windshield wiper, said backing member comprises two elongated body elements extending parallel at a spaced apart relationship and extending substantially along the entire length of a blade rubber to which the backing member is mounted, a plurality of bridge portions being spaced apart in the longitudinal direction of the backing member and connecting the body elements, the space between the body elements being adapted to receive a neck portion of the blade rubber, the bridge portions extending in the sidewise direction and above the body elements so as to define a space above the body elements for receiving a head portion of the blade rubber, and two longitudinally spaced apart pivot connections for connecting with a yoke member of the wiper, at least one of the pivot connections being adapted to permit relative longitudinal displacement of corresponding pivot connection of the yoke member, and the curvature of the lower surfaces of the body elements and the rigidity of the backing member being changed in the longitudinal direction.

4,807,327
DIRT DEFLECTOR FOR CLEANING HEADS
Robert A. Jajko, Villa Park, and Oliver M. Julien, Barrington, both of Ill., assignors to Elgin Sweeper Company, Elgin, Ill.
Filed Mar. 24, 1988, Ser. No. 172,549
Int. Cl.[4] E01H *1/08*
U.S. Cl. 15—346 20 Claims

1. In apparatus for cleaning surfaces with recirculating air flow including a cleaning head defining an open-faced chamber for facing the surface to be cleaned; air recirculating conduit means for drawing air from said chamber through a first port in said chamber adjacent one end thereof, and for blowing air through a second port into said chamber, said air recirculat-

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ing conduit means including impeller means for circulating air through said conduit means and dirt collector means in said conduit means; and baffle means positioned in said cleaning head substantially between said one end and said first port to reduce the flow of dirt-laden air to said one end, the improvement comprising, in combination:

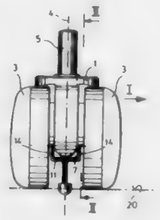


aperture means providing communication at a central portion of said baffle means substantially between said first port and that volume within said chamber which extends between said baffle means and said one end.

4,807,328
ROLLER OR CASTER WITH ELECTRICALLY CONDUCTIVE WIPER CONTACT

Bruno Hezel, Stuttgart, Fed. Rep. of Germany, assignor to Gross & Froelich GmbH & Co., Stuttgart, Fed. Rep. of Germany

Filed Mar. 11, 1987, Ser. No. 24,626
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1986, 8608186
Int. Cl.[4] B60B *33/00*
U.S. Cl. 16—47 **11 Claims**

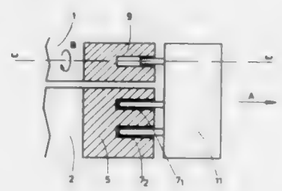


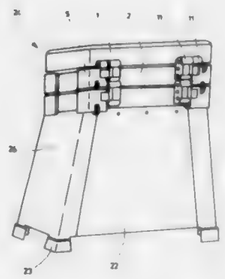
1. Roller, in particular for office furniture, comprising a supporting body made from a plastic material, an axle mounted in the supporting body, at least one wheel seated on the axle, a metallic pin seated rotatably in the supporting body and arranged in offset position relation to the axle, in a plane extending perpendicularly to the axle, said pin having an at least approximately conical surface adjacent the end of the said pin in said supporting body, and a wiper contact conductively connected to the pin and provided with a resilient portion projecting beyond a plane extending perpendicularly to the pin and tangential to the at least one wheel at a point remote from said pin, wherein the said resilient portion of the said wiper contact is formed by a helical spring having a lower, free end, and an upper end mechanically and electrically connected to a metallic conductor element of said wiper contact which is fixed to said supporting body, said conductor element comprising a portion extending parallel to the said tangential plane and a spring arm engaging a recess in the said supporting body and having an upper end in contact with said approximately conical surface of said pin, said helical spring extending substantially perpendicular to the tangential plane and carrying on said free end a contact body projecting in a direction away from said pin beyond the said tangential plane.

4,807,329
DETACHABLE HINGE, PARTICULARLY FOR ARTICULATING A LID ON A BOX BODY

Francois Mossalgue, 39, rue Emile Roux 94120, Fontenay sous Bois, France

Filed Nov. 30, 1987, Ser. No. 126,772
Int. Cl.[4] E05D *7/10*
U.S. Cl. 16—262 **10 Claims**





1. Detachable hinge for articulating a first element and a second element, particularly for articulating a lid (1) on a box body (2), the hinge being more particularly intended for a fisherman's creel/seat comprising a plurality of superposed box bodies (2), characterised in that it consists of a main flap (5) connected to the first element (2), an auxiliary flap (9) connected to the second element (1), a removable connecting member (11) adapted to connect the first and second elements (2, 1) and means (12, 13, 8, 7_1, 7_2, 7_3) permitting the displacement of the connecting member (11) between a first position or locking position in which the auxiliary flap (9) is adapted to pivot about the main flap (5) and the connecting member (11) and a second position or free position in which the auxiliary flap (9) and the main flap (5) are independent of each other.

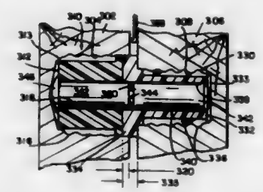
4,807,330
PIVOT HINGE

Daniel Gomes, Bloomington, Ind., assignor to Abra, Inc., Bloomington, Ind.

Continuation-in-part of Ser. No. 371,604, Apr. 26, 1982, Pat. No. 4,482,186. This application Feb. 22, 1983, Ser. No. 468,141
Int. Cl.[4] E05D *7/10*
U.S. Cl. 16—261 **18 Claims**

1. A pivot hinge for coupling two parts to each other to produce a concealed pivot joint, the pivot hinge comprising truncated bores in the two parts, pivot members for engaging the bores, each pivot member including a first portion having a leading end sized for insertion into one of the bores, means for securing the first portions of the pivot members in the truncated bores in fixed relationship to the parts, at least one of the pivot members including a second portion providing a

thrust bearing between the two parts, bearing means for allowing the two pivot members to rotate relative to each other, and

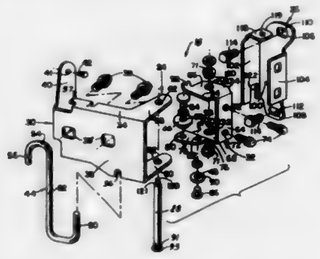


retaining means cooperating with said thrust bearing and said bearing means to prohibit separation of the pivot members.

4,807,331
DOOR LIFT-OFF HINGE

William M. Calucci, Troy, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Oct. 5, 1987, Ser. No. 104,189
Int. Cl.[4] E05D *7/10*
U.S. Cl. 16—262 **3 Claims**



1. In a lift-off hinge assembly of the type having a body-half sub-assembly adapted to be secured to a vehicle body and a door-half member pivotally connected by a pintle pin about a vertical hinge axis to said body-half sub-assembly, said lift-off hinge assembly particularly adapted to enable removal and mounting of a vehicle door during manufacture of the vehicle, said lift-off hinge assembly comprising:

a hinge body-half assembly including a main member adapted to be secured to the vehicle body and a U-shaped link member pivotally connected by a pintle pin aligned on said hinge axis to said hinge main member;

said main member having upper and lower parallel extensions interconnected by a mounting wall, said mounting wall adapted to abut the vehicle body with said upper and lower extensions each having a pintle pin hole aligned on said hinge axis;

said U-shaped link member formed with a base wall having a planar exterior guide surface and upper and lower parallel legs projecting therefrom, said upper and lower legs having aligned pintle pin holes for the reception of said pintle pin;

each said upper and lower leg having a guide edge surface thereon, each said leg guide edge surface located in a vertically disposed plane oriented at right angles to a plane that includes said base wall exterior guide surface;

said link member having stop means thereon adapted to contact said main member so as to pivotally position said link member relative to said main member at a predetermined door lift-off position providing a maximum door opening angle;

said door-half member having a channel-shape including a bight wall and a pair of first and second parallel sidewalls extending normally from said bight wall, said first sidewall upper end being formed with an inwardly extending leaf flange having a pintle pin hole therein;

said door-half member of a size such that upon its initial lateral movement relative to said body-half sub-assembly said door-half member is in predetermined nested contact with said link member, wherein said door-half member second sidewall having its interior surface positioned in flush abutment with said link member base wall exterior surface and the interior surface of said door-half member bright wall contacting both said link member upper and lower guide edge surfaces, whereby said leaf flange is spaced a predetermined distance above said pintle pin upper end with said leaf flange pin hole center self aligned on said hinge pintle pin axis;

whereby upon said door-half member being lowered a predetermined vertical distance said pintle pin having its upper free end portion received in said leaf flange pin hole and said leaf flange having its inner face contacting stop means on said pintle pin; and

whereby said door-half member first sidewall having its interior surface in flush abutment with an opposed side edge surface of said link member lower leg such that said door-half member and said link member are in predetermined interlocked engagement for coajoint swinging movement about said hinge axis relative to said main member.

4,807,332
RIGID STRUCTURE FOR ENGAGING PREFERABLY CLOSED ROPE ENDS

Cesare Airaghi, Via Brunonte, 39, 20100 Milano, Italy

Filed Jan. 12, 1987, Ser. No. 68,930
Claims priority, application Italy, Jul. 8, 1986, 4928/86[U]
Int. Cl.[4] F16G *11/00*
U.S. Cl. 24—129 R **12 Claims**



1. An assembly comprising a cord and a retaining member securing the ends of said cord, said member comprising a body having a curved groove extending along its perimeter, at least one first bore extending through said body, said first bore being in communication with said groove, and at least one first hole extending from said groove into said body; said first hole and said groove defining an angle therebetween which is less than or equal to 90° wherein said first bore, substantially the entire curved groove, and said first hole extend substantially in the same plane and said first bore and said first hole are substantially parallel.

4,807,333
CORD LOCK WITH CORD REMOVAL SLOT

Ogden W. Bodes, 1580 Geywood Dr., Altadena, Calif. 91001

Filed Dec. 3, 1987, Ser. No. 128,023
Int. Cl.[4] F16G *11/04*
U.S. Cl. 24—117 **22 Claims**

1. A cord lock comprising:

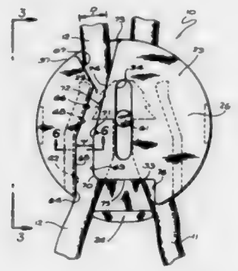
a body containing a passage through which two cords can extend; and

a locking element located at least partially within said passage and movable relative to said body between a locking position in which it retains said cords against longitudinal

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movement in a predetermined direction and a released position permitting such longitudinal movement;

said body having first and second walls which are spaced apart and which define two opposite sides of said passage, with said locking element received and confined between said first and second walls;



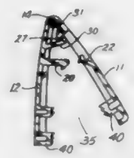
said first wall containing a slot which is laterally adjacent one of said cords and through which said one cord is movable transversely of its length between a position within the passage and a position outside of said passage and at the exterior of said body.

4,807,334

ARTICLE HANGER CLIP

Russell O. Blanchard, Zeeland, Mich., assignor to Batts, Inc., Zeeland, Mich.

Filed Apr. 28, 1988, Ser. No. 187,508
Int. Cl.[4] A44B *21/00*
U.S. Cl. 24—487 **7 Claims**



1. An article clamp adapted for support from a rod-like member, said clamp having a pair of jaws pivotally joined at their upper ends by an integral flexible web, a latch opening in the forward one of said jaws having vertically spaced upper and lower ends forming latch keepers, a lower latch member integral with the rear jaw and extending forwardly and having a downwardly extending latch finger at its forward end for engaging the lower latch keeper for holding said jaws in closed article gripping position, an upper latch member spaced from and extending forwardly above said lower latch member and having an upwardly extending latch finger at its forward end for engaging the upper latch keeper for limiting the opening movement of said jaws when they are sufficiently separated to release articles which have been held by the jaws when closed.

4,807,335

GASKET HANDLING DEVICE

Cornell Candea, Clawson, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

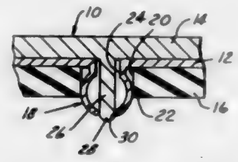
Filed May 26, 1987, Ser. No. 53,902
Int. Cl.[4] A41F *1/00*
U.S. Cl. 24—453 **1 Claim**

1. In combination: an elongated gasket with spaced openings therethrough, the gasket characterized by relative flexibility and lack of stiffness thereby rendering the gasket inconvenient for handling;

an elongated gasket handling and stiffening device adapted to overlay the elongated gasket, the device having put means for engaging the wall portion of the gasket opening whereby the gasket and handling device provides sufficient stiffness for handling;

the handling and stiffening device including an elongated and relatively rigid first plate member for extending along the gasket in overlying contact therewith, the first plate member having a depending protrusion corresponding to each gasket opening which extends into the gasket opening and positioning substantially the entire protrusion within the thickness of the gasket when the first plate member and gasket are in overlying contact with one another, the protrusion having a generally bulbous configuration with a diameter just sufficient to permit a close fit with the gasket opening as the first plate member is in overlying contact with the gasket, the protrusion being of thin-walled construction with a hollow interior and further having a lesser diameter base portion interconnected to the first plate member;

an elongated second plate member adapted to overlie the



first plate member, the second plate member having a pin like protrusion corresponding to each bulbous protrusion of the first plate member;

the first plate member having first aperture means therethrough extending into each of the hollow interiors of the bulbous protrusions and having second aperture means extending through the thin-walled bulbous protrusion at a location diametrically opposite the first aperture, the aperture means being aligned to receive the pin like protrusion of the second plate member when the second plate member is moved into an overlying contact with the first plate member;

slot means in the bulbous protrusion which interconnect with the second aperture to permit a general radial outward expansion of the bulbous protrusion as the pin like protrusion extends through the first and second aperture means whereby a slight increase in diameter of the bulbous protrusion produce a firm engagement between the bulbous protrusion and the encircling wall portions of the gasket opening, the diameter of the pin like protrusion being slightly greater than the diameter of the second aperture which produces in the slight increase in diameter of the bulbous protrusion by movement of the pin like protrusion through the second aperture.

4,807,336

LINK DEVICE FOR STRETCHING SHEET MATERIAL AND STRETCHING APPARATUS USING SAID LINK DEVICE

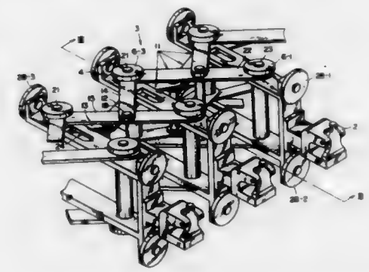
Hiroshi Yoshimura, and Yuichi Tagami, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 574,714, Jan. 27, 1984, abandoned. This application Sep. 22, 1986, Ser. No. 910,360
Int. Cl.[4] B29C *55/16*; D06C *3/04*
U.S. Cl. 26—73 **17 Claims**

1. A link device for stretching a sheet of material, said link device being capable of moving in a running direction and comprising:

a plurality of pantograph-like link member units coupled to each other in series in the running direction, each of said units being pivotally connected via a first connection pin to one adjacent unit and being pivotally connected via a first connection pin of another adjacent unit to said another adjacent unit in said running direction, each of said units being constructed of a plurality of link members including first and second long links and first and second short links pivoted in a pantograph manner, each of said link members having first and second ends, said first ends of said first long and short links being pivotally mounted about said first connection pin, said first ends of said second long and short links being pivotally mounted about said first connection pin of another adjacent unit, said second ends of said first and second short links being pivotally mounted about a second connection pin, said second ends of said first and second long links being located distally from one another, the second end of said first long link being pivotally connected via a third connection pin to a portion of the second long link;

a plurality of sub-links, each of said sub-links being provided for each of said link member units, each of said sub-links having a longitudinal axis extending substantially perpendicular to said running direction, each of said sub-links having an elongated slot through which said first connection pin is mounted said elongated slot permitting said first connection pin to reciprocate in a direction perpendicular to said running direction, each of said sublinks and said second end of said second long link being pivotally mounted about a fourth connection pin;



a line of support rollers supporting said link member units via said sub-links, said support rollers being rotatably mounted on fixed parts of preselected ones of said sub-links, each of said support rollers rotating about an axis substantially parallel to the longitudinal axis of said sub-link as said link device moves in said running direction, said support rollers supporting the weight of said link member units via said sub-links;

a plurality of grippers attached to preselected ones of said sub-links for gripping a side edge of the sheet material to be stretched; and

lines of guide rollers, said guide rollers being rotatively mounted on fixed parts of preselected ones of said link member units, said guide rollers being reciprocable in a direction perpendicular to the running direction, reciprocation of said guide rollers in said perpendicular direction causing said first connection pin to reciprocate in said direction perpendicular to said running direction, said reciprocation causing grippers to move toward or away from one another, whereby when said grippers holding said sheet material move away from adjacent grippers, said sheet material is longitudinally stretched.

4. A stretching apparatus for sheet material including a pair of endless chains on both sides of said sheet material, said chains being movable in a running direction, each of said chains comprises:

a plurality of pantograph-like link member units constructed from long links and short links having adjacent links pivoted with respect to each other, said link member units being arranged adjacently in said running direction to form said endless chain;

a sub-link for each of said link member units, each of said long and short links of each of said link member units being pivotable attached thereto, said sub-link being positioned substantially perpendicular to said running direction;

a pair of upper support rollers and a pair of lower support rollers rotatably mounted above and beneath each of said sub-links, respectively, said pair of lower rollers supporting said link member unit via said sub-link;

a plurality of grippers, attached to preselected ones of said sub-links, for gripping an edge of said sheet material to be stretched;

a pair of upper guide rollers and a pair of lower guide rollers for each of said link member units, a first one of said pair of upper guide rollers and a first one of said pair of lower guide rollers being rotatably attached to said sub-link via a first connection pin, a second one of said pair of upper guide rollers and a second one of said pair of lower guide rollers being rotatably attached to said long and short links via a second connection pin, said second connection pin vertically extending and passing through slots which are defined in said sub-link and extend perpendicularly to said running direction, said second connection pin being slidably engaged with said slots so as to move in a longitudinal direction of said slots, said second one of said upper guide rollers and said second one of said lower guide rollers being reciprocable in a direction perpendicular to said running direction through movement of said second connection pin in said slots, said reciprocation causing said long and short links of said link member unit to pivot with respect to one another; and

guide rail means for supporting said pairs of lower support rollers and for guiding said pairs of guide rollers, said guide rail means having guide portions which contact said guide rollers along a contact face, said guide portions being located between rollers of each of said pairs of guide rollers, said contact face for said first one of said pair of upper guide rollers and said contact face for said first one of said pair of lower guide rollers being positioned form another contact face for the second one of said pair of upper rollers and the contact face for the second one of said pair of lower rollers by a predetermined distance, said predetermined distance varying in said running direction in order to cause said reciprocation of said second one of said pair of upper guide rollers and said second one of said pair of lower guide rollers and to pivot said links, said guide rail means further having a portion for restraining said upper pair of support rollers from vertical movement.

4,807,337

CRIMPING DEVICE FOR CRIMPING OF SYNTHETIC TEXTILE MATERIALS

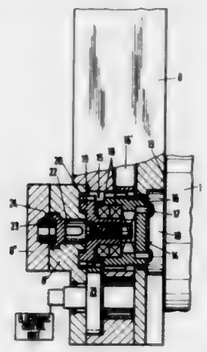
Gerold Fleissner, Chur, Switzerland, assignor to Vepa AG, Rieden, Switzerland

Filed Jan. 26, 1987, Ser. No. 66,533
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1986, 3621479; Aug. 5, 1986, 3626522
Int. Cl.[4] D02G *1/12*
U.S. Cl. 28—248 **6 Claims**

1. A device for the crimping of synthetic yarns, bundles or bands, which comprises a pair of pressure rollers with a nip formed therebetween and a stuffer box chamber arranged downstream of said pressure rollers, said chamber comprising two plates arranged in parallel to axes of the rollers, one of which is mounted to be at least partially movable for reducing the chamber area, and two lateral walls closing off the sides of the chamber adjacent to said nip of the pressure rollers, a pressure disk located in each of the lateral walls at the level of the nip of the pressure rollers and in engagement with an edge area of the end surfaces of the rollers, an adjustment unit acting

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on each pressure disk, said adjustment unit being connected to at least one sensing device which, via the adjustment unit, presses the pressure disk against the end surfaces of the rollers under a pressure force, the sensing device comprising an in-



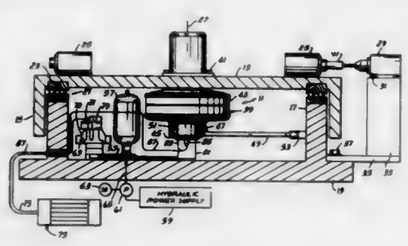
strument for determining bending, adjusted on the basis of the pressure force, of the lateral wall containing the pressure disk and the pressure force being adjustable by said adjustment unit in dependence of the continuously determined bending of the lateral wall.

4,807,338

COMPUTER CONTROLLED HYDRAULIC DRIVE FOR INDEX TABLE

J. Scott Myles, Berkley, Mich., assignor to J. E. Myles, Inc., Troy, Mich.

Filed Jan. 7, 1988, Ser. No. 141,549
Int. Cl.[4] B23Q *5/26*
U.S. Cl. 29—38 C **20 Claims**



1. In combination, an index table rotatably mounted and journaled upon a support and located upon a vertical axis and a computer controlled hydraulic drive for the index table;

said drive comprising;

a hydraulic motor mounted upon said index table and upon said axis, said motor being rotatable upon said axis;

a manifold mounted upon said support and having a pressurized hydraulic fluid chamber;

a hydraulic accumulator mounted upon said manifold in communication with said chamber;

a hydraulic power supply connected to said manifold for pressurizing said accumulator and maintaining the pressure of the hydraulic fluid at a pre-reset level;

an electro-hydraulic proportional valve having a power connector and a hydraulic directional control valve with an intake connected to said accumulator and a pair of outlet feed conduits connected to said hydraulic motor for selectively receiving pressurized hydraulic fluid from said proportional valve for feeding pressurized hydraulic fluid to said motor at a predetermined flow, at a predetermined rate and duration for controlling rotational speed, acceleration and duration of incremental rotation of said motor and connected index table; and

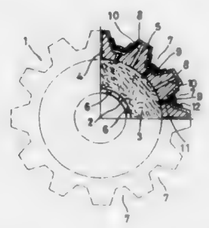
a computer including a motion controller having a power source and a power lead connected to said proportional valve for feeding bi-directional variable electric command signals to said proportional valve in accordance with a pre-selected program.

4,807,339

SUPER HIGH-SPEED APPLICATION ROLLER FOR COATING LOW VISCOSITY LIQUIDS ON A SURFACE OF A FILM

Kanji Hayashi, Tokyo, Japan, assignor to Fanetech Institute Limited, Japan

Filed Nov. 17, 1987, Ser. No. 121,535
Claims priority, application Japan, Nov. 18, 1986, 61-177915[U]
Int. Cl.[4] B21B *27/00*
U.S. Cl. 29—121.5 **9 Claims**



1. An application roller to apply a treated liquid of low viscosity onto the surface of the sheet moving at high speed, comprising a radially inner axially extending tubular treated liquid distribution channel for distributing the treated liquid in axial and radial directions, an outer tubular roller body mounted over said treated liquid distribution channel and having an outer surface with circumferentially extending adjacent heel-like projections forming tops and valleys between said tops extending around the circumference of said roller body, and an application material extending over the surface of said tubular roller body at least on said tops, and means defining a conveyor channel for the treated liquid to be conveyed between said treated liquid distribution channel interior and said application material.

4,807,340

CONCENTRIC INJECTION FLOW PIPE JUNCTION FABRICATION METHOD

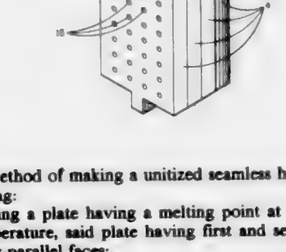
Harold A. Fuller, and Michael L. Shepard, both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Filed Jan. 28, 1988, Ser. No. 149,483
Int. Cl.[4] B21D *53/00*
U.S. Cl. 29—157 R **1 Claim**

1. A method of fabricating a pipe junction wherein the wall of a main fluid carrier conduit is penetrated by an injection fluid carrier conduit for positionment of an injection fluid discharge flow channel that is substantially parallel and coaxial with a main fluid flow channel and direction, said method comprising the steps of:

(a) securing a flow stagnation zone fairing enclosure to the outer wall surface of said injection fluid carrier conduit;

(b) removing sufficient material from the wall of said main fluid carrier conduit to permit the positionment of said injection fluid carrier conduit and attached enclosure into the resulting opening;



(c) securing said fairing enclosure to the outer wall fluid seal about the entire perimeter of said main fluid carrier conduit opening.

4,807,341

TONER FUSING ROLL COVERED WITH CROSSLINKED ELASTOMERIC SILOXANE COPOLYMER CONTAINING DIPHENYLSILOXANE RECURRING UNITS AND METHOD OF PREPARATION

Paul L. Nielsen, Rochester, and Joseph A. Pavlisko, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 13, 1987, Ser. No. 107,601
Int. Cl.[4] C08K *3/36*
U.S. Cl. 29—132 **4 Claims**

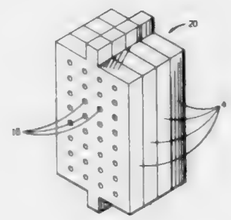
1. A roll useful for fusing heat-softenable toner material to a substrate, wherein the roll comprises a cylindrical core having an outer covering comprising a crosslinked elastomeric siloxane copolymer comprising a major proporton of dimethylsiloxane recurring units, from 5 to 15 mole percent diphenylsiloxane recurring units, and more than 0 but less than 5 mole percent vinyl-addition-crosslinked siloxane recurring units.

4,807,342

METHOD FOR MAKING AN IMPROVED HEAT EXCHANGER

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, Harahan, La.

Continuation of Ser. No. 22,120, Mar. 5, 1987, Pat. No. 4,727,935, which is a continuation of Ser. No. 733,205, May 13, 1985. This application Dec. 21, 1987, Ser. No. 135,573
Int. Cl.[4] B21D *53/04*
U.S. Cl. 29—157.3 D **6 Claims**



1. A method of making a unitized seamless heat exchanger comprising:

providing a plate having a melting point at a first known temperature, said plate having first and second substantially parallel faces;

forming a plurality of passages in said plate which connect said first face to said second face;

depositing a uniform metallic coating having a melting point at a second temperature which is greater than said first temperature on all exposed surfaces of said plate including the walls of said plurality of passages; and

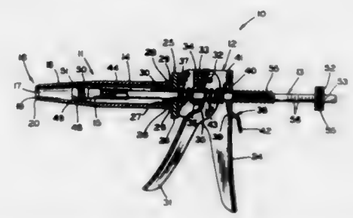
heating said metallic coated plate to a temperature in excess of said first temperature and less than said second temperature to melt said plate from within said metallic coating to form a unitized shell structure suitable for use as a heat exchanger.

4,807,343

TUBELESS TIRE VALVE STEM INSERTER

Thomas P. Wadsworth, Clyde, Ohio, assignor to Chemi-Trol Chemical Company, Fremont, Ohio

Filed Aug. 14, 1987, Ser. No. 85,344
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—221.5 **8 Claims**



1. A tool for inserting a tubeless tire valve stem having an enlarged base into the opening of a rim from the exterior of the rim, comprising a tubular barrel having an exit orifice defined by an end thereof, which end is adapted to mate with said opening, said tubular barrel including a loading section and a funnel-shaped exit section gradually decreasing in diameter from said loading section to said exit orifice, shaft means adapted to extend axially within said tubular barrel, including means for releasably connecting said shaft to said valve stem, and means for advancing said shaft axially within said tubular barrel to thereby advance said valve stem along said exit section and eject said base through said orifice into said opening, said means for advancing said shaft including a handle mechanism removably affixed to said loading section of said tubular barrel to permit the affixing of different size barrels to said handle mechanism for different standard size valve stems, a trigger pivotally mounted in said handle mechanism, said trigger being operatively connected to said shaft whereby said shaft is incrementally advanced upon each retraction of said trigger, and including index means on said shaft for indicating in cooperation with said handle mechanism the position at which said shaft has been advanced sufficiently to eject said base through said orifice and seat it in said opening for each of several diffrent standard length stems.

4,807,344

MEDICAL SAMPLING NEEDLE REMOVAL AND DISPOSAL DEVICE

Lance P. Kelson, 300 N. 5555 W., Ogden, Utah 84404; Ross J. Kelson, Ogden, and Allan F. Martin, Tooele, both of Utah, assignors to Lance P. Kelson, Ogden, Utah

Filed Oct. 13, 1987, Ser. No. 107,354
Int. Cl.[4] B65D *25/00*
U.S. Cl. 29—240 **25 Claims**

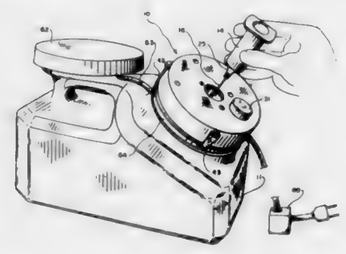
1. A device for safely removing a medical cannula from a body fluid sampling assembly said cannula being mounted within an externally threaded hub, an external sleeve, and an internally threaded boss carried by the sleeve and engaging the threads of the hub, said removal device comprising:

a base plate having an upper side and a lower side;

an electrical motor mounted on the base plate and having a rotating output shaft;

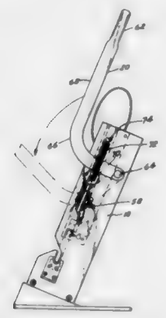
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a wheel mounted to be rotated by the shaft;
hub engaging means on at least a portion of the periphery of the wheel; and



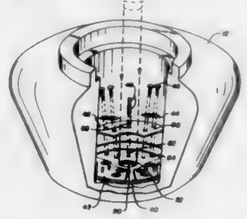
means positioning the sleeve for engagement of the hub by the periphery of the wheel, so that the hub is rotated to be unthreaded from the assembly.

4,807,345
MANUALLY OPERATED CLIP ATTACHMENT APPARATUS
Gordon R. Jacobson, Mayville, N.Y., assignor to Delaware Capital Formation, Inc., Bloomington, Del.
Filed Aug. 7, 1987, Ser. No. 83,519
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—243.56 **5 Claims**



1. An improved manually operated clipper of the type for attaching U-shaped metal clips about gathered material comprising, in combination:
(a) a generally planar main body plate having generally opposed, spaced side surfaces and including a longitudinal punch guide and clip channel in the plate, said channel having a lower end for receipt of a clip die, said channel having a connected, parallel slot through one side of the plate, a clip window in the opposite side of the plate, an open throat above the lower end of the channel and die, the dimension of the throat opening being less than the length of a leg of a clip for the clipper;
(b) a punch slidably mounted in the channel;
(c) a manual lever arm having a manual handle, said arm pivotally attached to the main plate at the end opposite the handle to pivot about an axis transverse to the direction of the channel, said lever arm including a cam surface and mounted on the same side surface of the plate as the parallel slot;
(d) bearing means mounted on the outside surface of the plate for cooperative engagement with the lever arm cam surface;
(e) attachment means having a length extending parallel with said axis and connecting the bearing means to the punch and extending through and riding in the slot and attached to the punch, said bearing means cooperatively engaged with the cam surface of the arm, said bearing means engaging the arm intermediate the handle and the fulcrum pivot for translating the punch in the channel toward the die in response to pivoting action of the lever arm in one direction, said slot engageable with the attachment means of the bearing means to the punch to limit the travel of the punch in the channel in at least one direction;
(f) biasing means for biasing the punch in a retracted position away from the die; and
(g) a unitary clip magazine attached to the main plate on the side defining the clip window, said magazine defining a channel for directing clips one at a time through the window into the clip channel.

4,807,346
COAL MILL ROLL BEARING RACE REMOVER
Charles M. Wisner, 4407 Coghill Rd., Richmond, Va. 23234
Filed Nov. 13, 1986, Ser. No. 929,772
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—252 **10 Claims**



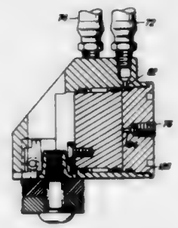
1. A removal tool for removing a race from a cylindrical bore of a housing having a closed bottom end and an open top end, comprising:
a main body member having first and second longitudinal ends and a circular cross-section with a maximum diameter less than an internal diameter of a race to be removed, said main body member having a central aperture defined therethrough, the walls of said central aperture having coupling means defined thereon;
at least first and second plate elements;
means for fixedly mounting said plate elements to said main body member so that an edge of each of said plate elements extends beyond a peripheral edge of said main body member so as to define an assembled structure of symmetrical configuration and having a maximum cross-sectional dimension greater than an inner diameter of a race to be removed; and
removing means including means for coupling to said coupling means defined in said central aperture of said main body member and for pushing against a closed bottom end of a housing bore in which a race to removed is disposed so as to remove the race from the open end of the housing whereby when said removing means is coupled to said main body member, and said removing means is actuated to push against the closed bottom end, said main body member can be lifted from below the race to be removed and the plate elements can engage and lift the race from the cylindrical bore of the housing.

4,807,347
METHOD AND TOOL FOR REWINDING A RECOIL STARTER SPRING
George H. Johnson, 1242 Broad St., Augusta, Ga. 30901
Filed Jul. 15, 1988, Ser. No. 219,609
Int. Cl.[4] B23P *6/00, 19/04*
U.S. Cl. 29—402.01 **6 Claims**



6. A method for effecting repair upon a small engine wherein the engine is of the type having a self-winding recoil starter mechanism including a recoil starter pulley having a central aperture and a central spring receiving recess and having an elongated flat recoil spring with a proximal end and a distal end, the proximal end of the spring having a locking notch therein, a spring anchor means adapted to overly the central portion of the pulley, the spring anchor means having generally a hollow cylindrical configuration with a through aperture at one end thereof and the other end being open to the full extent of the cylinder, the spring anchor further having a shoulder portion projecting into the interior of the cylinder and having a spring locking slot positioned in the cylinder side wall, the method comprising:
placing the spring anchor means within the central spring receiving recess of the starter pulley,
inserting the locking notch of the proximal end of the flat recoil spring into the spring locking slot thereof,
inserting a distal end of a tubular shaft of a crank handle in the through aperture of the spring anchor means,
moving the shaft, anchor means and the attached recoil spring to the central aperture of the recoil starter pulley,
inserting the distal end of the handle shaft through the anchor means and the central aperture of the starter pulley,
positioning a spring anchor engagement pin attached to the shaft handle into the spring anchor means and positioning the spring anchor engagement pin against the shoulder portion of the spring anchor means,
providing the handle shaft with a substantially hollow cylindrical spring cover being open at one end thereof and enclosed at the other end thereof,
positioning the spring cover centrally about the handle shaft,
positioning the spring cover over the central spring receiving recess of the recoil starter pulley to maintain the recoil spring within the spring receiving recess,
turning the crank handle and winding the recoil spring around the spring anchor means within the central spring receiving recess of the starter pulley until the spring is fully wound within the receiving recess and locked in position,
removing the winding tool from the spring anchor means and the recoil starter pulley leaving the recoil spring wound in operative position.

4,807,348
HYDRAULICALLY ACTUATED LOCKBOLT COLLAR CUTTER AND METHOD OF CUTTING A COLLAR
John J. Kaelin, Saugerties, and Gary L. Port, Woodstock, both of N.Y., assignors to Hack Manufacturing Company, Irvine, Calif.
Continuation of Ser. No. 136,467, Dec. 22, 1987, abandoned, which is a continuation of Ser. No. 927,195, Nov. 4, 1986, abandoned. This application Jan. 29, 1988, Ser. No. 213,520
Int. Cl.[4] B23P *19/02*; B26B *13/00, 15/00, 17/00*
U.S. Cl. 29—426.4 **13 Claims**



1. An actuatable tool for removing a swaged collar from a pin member of a lockbolt type fastener, the collar and pin member serving as a two piece lockbolt type fastener, said actuatable tool comprising: a housing having a collar receiving opening therein having opposite walls, a piston slidably mounted in said housing, power means operatively connected to said housing for moving said piston, a ram secured to the forward face of said piston to be positioned thereby at one of said opposite walls, and dual cutter blade means circumferentially spaced and longitudinally extending with respect to said opening and fixedly thereby at one of said opposite walls, and disposed from said ram and adjacent the other of said opposite walls, said spaced cutter bladed means and said ram receiving a swaged collar of a lockbolt type connector therebetween prior to actuation of said piston and further adapted to be engageable with the swaged collar upon actuation of said piston, said ram forcing said swaged collar with respect to said blade means to cause said blade means to cut through and spread said collar upon movement of said ram to thereby separate said collar from the pin member.

4,807,349
FASTENER REMOVING METHOD
B. Brian Blackmore, Arapriar, Canada, assignor to The Boeing Company, Seattle, Wash.
Filed Jun. 26, 1987, Ser. No. 66,433
Int. Cl.[4] B23P *19/00*
U.S. Cl. 29—426.5 **2 Claims**



1. A method of dislodging and unscrewing a screw from a workpiece comprising the steps of:
entering the blade end of a screwdriver attachment into the screwdriver slot in the head of said screw;

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applying a pulsating force through a screw extracting tool and said blade end of said screwdriver attachment to the head of said screw;

simultaneously applying a further torquing force alternately and sequentially in counterclockwise and clockwise directions about the central axis of said screw; and,

wherein simultaneously applying said further torquing force alternately and sequentially in counterclockwise and clockwise directions about the central axis of said screw comprises rotating a handle of said screw extracting tool alternately and sequentially in counterclockwise and clockwise directions about the central axis of said screw extracting tool.

4,807,350

METHOD FOR BINDING COILS

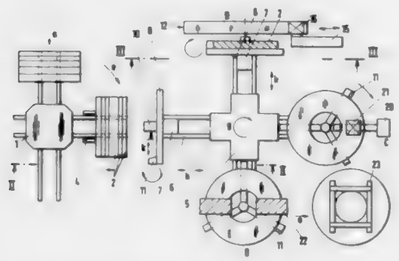
Friederich Hasenkamp, Nettetal, Fed. Rep. of Germany, assignor to Metallverarbeitung Breyell-Dinslaken GmbH, Nettetal, Fed. Rep. of Germany

Filed Dec. 1, 1986, Ser. No. 936,210

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1985, 3543692

Int. Cl.⁴ B65B *13/02*

U.S. Cl. 29—430 **10 Claims**



1. A process for binding material which has been coiled into generally cylindrical coils each having an axis and in which the outer circumference of the coiled material has a free end, compriaing transferring coils to a transfer station while engaging and holding down said free end of said coil which is being transferred, transferring said coil from said transfer station to a first binding station while continuing to engage and hold down said free end of said coil, binding said coil with a first binding material at said first binding station, transferring said coil from said first binding station to a second binding station, binding said coil with a second binding material at said second binding station, transferring said bound coil from said second binding station to a removal station and removing said bound coil from said removal station, said transfer at said transfer station, said binding steps at said first and second binding stations, and said removal at said removal station being simultaneously operable such that a plurality of coils are thereby bound upon passing progressively from said transfer to said removal station, wherein said step of engaging and holding down is performed by mechanical means.

4,807,351

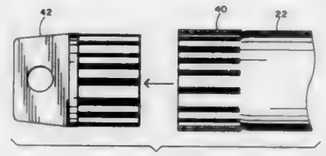
METHOD FOR ATTACHING AN END-FITTING TO A DRIVE SHAFT TUBE

Kenneth R. Berg, Trabuco Canyon; Roger L. Sandquist, El Toro, and Liem V. Truong, Anaheim, all of Calif., assignors to ASEA Composites, Inc., Irvine, Calif.

Filed Feb. 18, 1988, Ser. No. 158,013

Int. Cl.⁴ B23P *11/00*

U.S. Cl. 29—432 **7 Claims**



1. A method for attaching an end-fitting to a drive shaft tube, comprising the following steps:

(a) providing a smaller dimension replica of the end-fitting;

(b) inserting said replica into the end of said tube;

(c) swaging said tube end onto said replica;

(d) removing said replica from said tube end; and

(e) press-fitting said end-fitting into said tube end.

4,807,352

MACHINE FOR REMOVING BASECUPS FROM PLASTIC BOTTLES

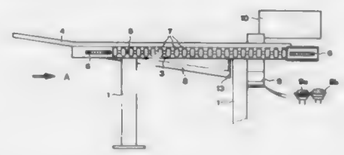
Anthony J. Carpani, Castle Hill, Australia, assignor to Glass Containers Pty. Ltd., Castle Hill, Australia

Filed Jun. 17, 1987, Ser. No. 63,640

Claims priority, application Australia, Nov. 12, 1986, PH8926

Int. Cl.⁴ B23P *19/00*

U.S. Cl. 29—564.1 **3 Claims**



1. A machine for removing basecups from two-piece plastic bottles, wherein said basecups are adhered or bonded to the said bottles, said machine comprising: a feed-in station; laterally spaced-apart conveyor chains between which a neck of a bottle is gripped for conveyance towards a cutting station; and decupping means comprising laterally spaced apart stripping rails positioned below and spaced apart from said conveyor chains, said stripping rails being located above said basecups of said bottles held by and between said conveyor chains; so that as said conveyor chains advance said bottles towards said cutting station, said stripping rails will engage with said basecups and force said basecups downwardly away from said bottles, to break bonding or adhesion therebetween and to separate said basecups from said bottles; said cutting station including cutting means which function to cut off a lower portion of said bottles contaminated with bonding agent or adhesive; said bottles thereafter being discharged from said machine.

4,807,353

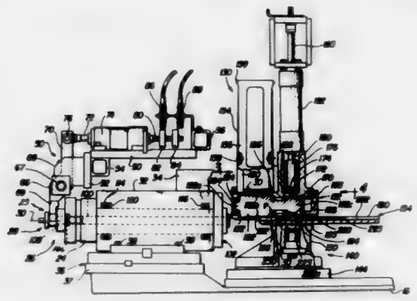
RECIPROCATING TOOL SPINDLE AND TOOL CHANGER MECHANISM OPERABLE DURING SPINDLE BACKSTROKE

James R. Corson, Saline; Benjamin W. Hubbard, Brighton, and Veryl F. Steinaway, Pinckney, all of Mich., assignors to R & B Machine Tool Company, Saline, Mich.

Filed Mar. 28, 1988, Ser. No. 174,300

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—568 **27 Claims**



1. A tool spindle and tool changer assembly comprising a spindle having a forward end for releasably holding a tool, a rear end and a bore extending between the ends, means for moving the spindle in a forward stroke toward a workpart and in a rearward stroke away from the workpart, means for sensing whether the tool is damaged, and tool changer means disposed behind the spindle for entering said bore through said rear end during the rearward stroke and responsive to said sensing means for inserting a replacement tool for the damaged tool.

4,807,354

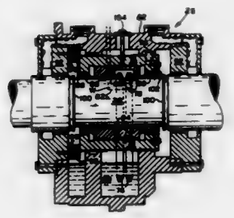
METHOD OF REARRANGING COMPONENTS OF A DYNAMOELECTRIC MACHINE

Angelo D. Capuano, Ballston Lake, and Gordon R. Hallenbeck, Amsterdam, both of N.Y., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 945,456, Dec. 23, 1986, Pat. No. 4,754,179, which is a division of Ser. No. 774,557, Sep. 10, 1985, Pat. No. 4,661,734. This application Feb. 2, 1988, Ser. No. 151,546

Int. Cl.⁴ H02K *15/14*

U.S. Cl. 29—596 **8 Claims**



1. A method for rearranging the position of a termination box relative to a rotor in a dynamoelectric machine having a stator, a frame for supporting the stator, a rotor, a shaft for supporting the rotor for concurrent rotation within the stator, shaft support menas on opposed ends of the frame for supporting corresponding ends of the shaft, end shields attached to the frame and each of the shaft support means for environmentally protecting the machine and at least one electrical termination box attached to a side of the frame, comprising the steps of:

removing each end shield;

supporting each end of the shaft sufficiently to release the shaft support means;

removing the shaft support means;

removing the rotor from the frame;

re-orienting the rotor and the frame end-for-end with respect to one another;

positioning the rotor back in the frame with the re-orientation; and

re-assembling the shaft support means and end shields whereby the position of the termination box is re-oriented with respect to the rotor.

4,807,355

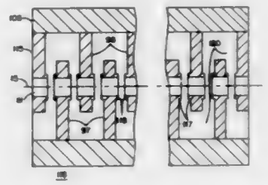
METHOD OF MANUFACTURE OF COUPLED-CAVITY WAVEGUIDE STRUCTURE FOR TRAVELING WAVE TUBES

Robert Harper, Concord, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation-in-part of Ser. No. 847,999, Apr. 3, 1986, Pat. No. 4,765,056. This application Jun. 3, 1988, Ser. No. 201,803

Int. Cl.⁴ H01J *9/00*

U.S. Cl. 29—600 **9 Claims**



1. Method of fabricating a coupled cavity delay line for a traveling wave tube comprising:

machining a cylinder of copper to a predetermined length and diameter;

machining said cylinder to provide spaced disks of copper connected to an axial support cylinder of copper having a first diameter;

removing a portion of the periphery of each of said disks;

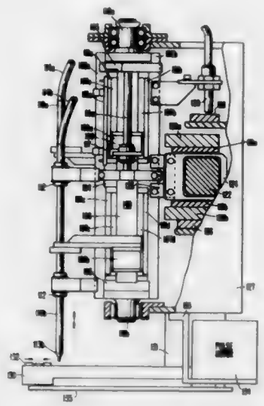
machining a cylindrical shell of copper having an internal diameter large enough to allow said disks to slide into said shell;

brazing said shell to said disks to form a plurality of cavities between adjacent said disks, said cavities being electromagnetically connected to each other by the gap produced between said shell and each said disk through the removal of said portion of said disks; and

machining a hole along the axis of said support cylinder to provide an axial beam tunnel of at least a first diameter in each of said disks and to provide axial gaps between each of said disks by the complete removal of a cylindrical portion of said support cylinder.

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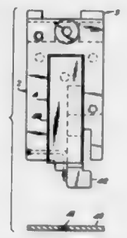
4,807,356
METHOD OF LOADING PARTS
Masahiro Maruyama, Mino; Kazuhiro Mori, Katano; Eiji Itomadani, Sakai, and Mikio Hasegawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Division of Ser. No. 743,860, filed as PCT JP84/00454 on Sep. 20, 1984, published as WO85/01416 on Mar. 28, 1985, abandoned. This application Jan. 7, 1987, Ser. No. 4,758
Claims priority, application Japan, Sep. 22, 1983, 58-175340
Int. Cl.[4] B23P *19/00*
U.S. Cl. 29—740 5 Claims



1. A part mounting device for mounting chip parts on a substrate, comprising:
a linear motor having a columnar yoke means with upper and lower ends thereof pivotably supported on said device, permanent magnets disposed in the vicinity of said columnar yoke means and forming with said columnar yoke means a magnetic circuit, and a bobbin disposed in the vicinity of said columnar yoke means and slidable in the columnar direction of said yoke means;
a chip part holder fixedly secured to said bobbin and having a vacuum nozzle for picking up and holding chip parts;
means connected to said linear motor for controlling the driving of said linear motor for driving said part holder rapidly for moving chip parts quickly from a first position remote from the position of the substrate on which the chip parts are to be mounted to a third position just before the chip parts are on the substrate and then driving said part holder slowly to move the chip parts from the third position to a second position where the chip parts are on the substrate; and
means connected to said yoke means for rotating said yoke means in a plane tranvserve to the columnar direction of said yoke means.

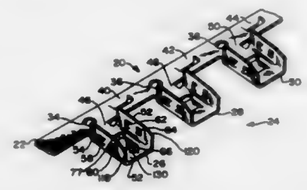
4,807,357
METHOD AND APPARATUS FOR BENDING AND INSERTING PIN IN ONE SEQUENTIAL OPERATION
Irwin Zahn, New York, N.Y., assignor to Autosplice, Inc., Woodside, N.Y.
Filed Apr. 29, 1987, Ser. No. 43,940
Int. Cl.[4] H01R *13/41*; H05K *13/04*
U.S. Cl. 29—845 12 Claims

1. A method for inserting a bent connector terminal into a hole in a substrate, comprising the following steps:
(a) clamping a first portion of said connector terminal by closing a clamping means;
(b) displacing said clamping means whereby the distance between said connector terminal and said hole decreases;
(c) displacing a bending means whereby a second portion of said connector terminal not clamped by said clamping



means is bent by said bending means during said displacement of said clamping means; and
(d) terminating said displacement of said clamping means when an end of said bent connector terminal is inserted in said hole.

4,807,358
CARRIER FOR MOLDED ARTICLES AND METHOD OF USING THE CARRIER
Helen Dechelette, Paris, and Christian Fontenaud, Pontoise, both of France, assignors to Molex Incorporated, Lisle, Ill.
Filed Jul. 17, 1987, Ser. No. 74,647
Int. Cl.[4] H01Z *43/00*
U.S. Cl. 29—857 23 Claims

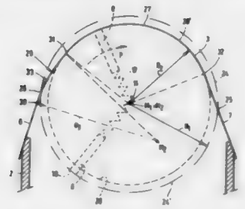


1. A carrier for releasably retaining a plurality of electrical connectors, each electrical connector including a housing having an interior cavity with interior walls, said carrier comprising:
an elongated carrier strip,
a plurality of clips extending from said carrier strip, each of said clips including a plurality of walls, and
engaging means extending from said walls of said clip to releasably engage said interior walls when one of said electrical connectors is placed on one of said clips.

4,807,359
DRY-SHAVING APPARATUS
Willem S. Wijma, Drachten, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.
Filed Dec. 16, 1986, Ser. No. 943,472
Claims priority, application Netherlands, May 22, 1986, 8601295
Int. Cl.[4] B26B *19/14*
U.S. Cl. 30—43.6 2 Claims

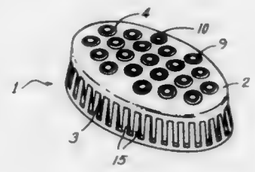
1. A dry shaving apparatus comprising:
a housing;
a cutter supported for rotation in said housing, said cutter including a plurality of radial cutting elements supported on a carrier for radial movement, said cutting elements

having cutting edges at their ends which when fully extended define a first circular arc; and
a shear plate supported by said housing having first and second peripheral portions adjoining said housing; a central portion curved to conform with a second circular arc concentric with said cutter axis and having a radius smaller than the radius of said first circular arc; and a transitional portion curved to have a radius greater than



he radius of the second circular arc; said shear plate forming a constrained path for the ends of said cutting elements, adjacent a free path where said radial elements fully extend, said transition portion providing between said first peripheral portion and said central portion a transition path to said free path for said radial cutting elements, whereby said radial elements enter and leave said transitional path reducing the effects of collisions between said radial cutting elements and said shear plate.

4,807,360
SHAVING DEVICE
Jeffrey C. Cerier, Franklin; Robert A. Trotta, Pembroke, and Jill M. Shertleff, South Boston, all of Mass., assignors to The Gillette Company, Boston, Mass.
Filed Sep. 2, 1987, Ser. No. 92,021
Int. Cl.[4] B26B *21/00*
U.S. Cl. 30—49 15 Claims



1. A multidirectional shaving device comprising:
a plurality of razor blades, each of said razor blades having a generally tubular upstanding wall of a predetermined height and defining a central aperture, said wall having an upper and lower end, an integrally formed inwardly facing flange on said upper end, said inwardly facing flange having a sharpened cutting edge, and an integrally formed outwardly facing flange on said lower end;
a body including an elastomeric member having a face surface and a bottom surface, said elastomeric member including a plurality of apertures, each of said razor blades being disposed in one of said apertures, said bottom surface of said elastomeric member including bearing surfaces disposed over and cooperating with said outwardly facing flanges of said razor blades; and
a flexible sponge-like member disposed under said bottom surface of said elastomeric member and under said lower ends of said razor blades, said sponge-like member including a plurality of rinse holes, each of said rinse holes being aligned with said central aperture of one of said razor blades, whereby each of said razor blades is capable of retracting vertically and angularly substantially independently of said other razor blades.

4,807,361
CUTTING BLADE LUBRICATION
Romuald Raczkowski, 6240 N. Naper, Chicago, Ill. 60631
Filed Aug. 6, 1987, Ser. No. 82,309
Int. Cl.[4] B23D *59/04*
U.S. Cl. 30—123.3 22 Claims



1. A lubricating unit adapted to be mounted on a cutting tool that is adapted for cutting a workpiece and has a body positioned over the workpiece in a normal operation thereof and a downwardly extending cutting blade below the body and reciprocating vertically in cutting the workpiece,
said lubricating unit comprising,
a container for holding a supply of lubricating liquid and having an outlet passage,
means for mounting the container on the body of the cutting tool in a position generally above the cutting blade with the outlet passage directed downwardly,
the lubricating unit including means operable, in an inactive and stationary condition of the cutting blade, for holding the lubricating liquid in the container, and
an outlet unit having a passage therethrough and connected at a first end with the container with its said passage communicating with the outlet passage of the container, the passage in the outlet unit terminating in a nozzle at a second end of the outlet unit, the outlet unit having its second end connected with and movable with the cutting blade, and with the nozzle also movable with the cutting blade and in position for directing liquid onto the cutting blade,
the outlet unit being operable, in response to reciprocation of the cutting blade, for impelling the lubricating liquid from the container through the passage in the outlet unit and through the nozzle onto the cutting blade.

4,807,362
HIDDEN BELT WEAPON
Charles H. Prentice, 423 Lime Hollow Rd., Verona, Pa. 15147
Filed Aug. 5, 1987, Ser. No. 82,036
Int. Cl.[4] B26B *3/06*
U.S. Cl. 30—155 12 Claims

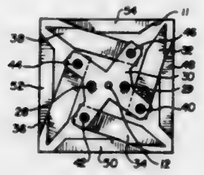
1. A hidden belt weapon, comprising:
a weapon cover having front and back segments thereto, having at least one aperture in the back thereof and having a central axis pin therethrough;
a central rotating member rotatably mounted by means of said central axis pin within said weapon cover and having at least one recessed area therein, said recessed area being a cavity in said central rotating member on the side of said central rotating member facing said back segment of said weapon cover;
a plurality of blades and a plurality of blade deployment pins, wherein each of said plurality of blades is mounted to

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said central rotating member by means of one of said blade deployment pins; and

an attachment shaft having means for engaging said recessed area via said aperture,

and further having means for engaging a belt;



whereby rotation of said means for engaging said recessed area via said aperture, together with the rotation of said weapon cover relative to said attachment shaft, deploys said blades to a position exterior to said weapon cover and simultaneously releases said weapon cover from said attachment shaft and likewise from said belt.

4,807,363

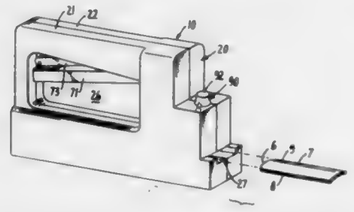
APPARATUS FOR TRIMMING VENETIAN BLINDS

Thomas S. Clifton, Jr., 1365 Bailey Dr., Ripon, Calif. 95366

Continuation-in-part of Ser. No. 022,055, Mar. 5, 1987, abandoned. This application Sep. 21, 1987, Ser. No. 98,953

Int. Cl.[4] B26B *13/00*

U.S. Cl. 30—242 **3 Claims**



1. Apparatus for trimming venetian blind slats to size, wherein each slat is elongated and has parallel edges, comprising:

a hand-held housing,

anvil means removably carried by said housing,

blade means removably carried by said housing and adapted to slide across said anvil means, thereby causing a shearing action between said blade means and said anvil means,

at least one of said anvil means or said blade means being sufficiently crowned at its center portion so that said crowned center portion contacts the center portion of said slat prior to contacting either edge of said slat being sheared whereby said shearing action begins between said edges of said slat and extends transversely to each edge of said slat,

guide means adapted to constrain said blade means so that said blade means moves in a repeatable path across said anvil means, and

drive means carried by said housing to cause said blade means to slide across said anvil when actuated by the user,

jig means comprising a jig support having a slot formed therein, a stop which rides in said slot and a thumbscrew for positioning said stop to facilitate trimming a predetermined amount of material from one or more of said slats.

4,807,364

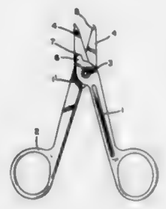
MEDICAL SCISSORS

Michael Porat, 52 Hamitnadev Str., Tel Aviv 69690, Israel, and Amir Porat, 18 Highland Dr., North Coldwell, N.J. 07006

Filed Mar. 27, 1987, Ser. No. 34,592

Int. Cl.[4] B26B *13/04*

U.S. Cl. 30—268 **3 Claims**



1. In disposable scissors for medical use comprising two plastic handles, two shaped stainless steel blades disposed between said handles and in contact with each other, and pivot means coupling said handles to said blades for pivotal movement of said blades into mutual cutting engagement, said blades extending forward of said pivot means and terminating in free forward ends, each of said handles, at the pivot means, being immediately laterally outward of a corresponding one of said blades; the improvement comprising an integral extension on each handle extending from the pivot means forward over part of the corresponding blade and immediately outward thereof, each said extension terminating in a forward end forwardly spaced from said pivot means, each said extension including integral pressure means freely engaged inwardly against the outer surface of the corresponding blade at said forward end and in forwardly spaced relation to said pivot means for applying pressure to the blade generally perpendicular to the pivoted movement of the blades said pressure means comprising a greater thickness and an inward enlargement of said extension relative to the thickness of the corresponding handle around the pivot means.

4,807,365

METHOD FOR MAKING THE SHAVING HEAD OF A DRY-SHAVING APPARATUS

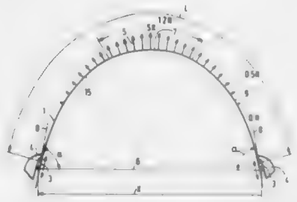
Leo Bertram, Stolberg, Fed. Rep. of Germany; Hugo Schemmann, Schaesberg, Netherlands; Romuald L. Bukoschek, Klagenfurt, and Reinhard Huszar, Stras, both of Austria, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jan. 20, 1987, Ser. No. 4,934

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1986, 3601202

Int. Cl.[4] B26B *19/04*

U.S. Cl. 30—346.51 **5 Claims**



1. A method for providing the shaving head of a dry-shaving apparatus with an effective shaving area of a desired shape in accordance with its use, said shaving head comprising a base,

a saving head frame, a shear foil and a cutter, comprising the steps of

clamping the shear foil in the frame between clamping locations without the cutter at a pre-selected angle said angle being the angle formed between the shaving head base and tangent lines to the shear foil at the clamping locations that extend toward the apex of the shaving head, with a pre-selected length of the shear foil between the clamping locations and at a predetermined distance between the clamping locations so that said foil assumes a free clamping curvature which is not influenced by the cutter, applying a normal pressure distribution perpendicular to the foil curvature which simulates the pressure distribution between the cutter and the foil in conformity with a desired effective shaving area, so that the shear foil experiences in said effective shaving area a deformation relative to the free clamping curvature to produce in the shear foil a simulated pretension curvature, the simulated pretension curvature of the shear foil thus obtained corresponding to the desired effective shaving area relative to the shear foil, forming the cutting edges of a cutter in conformity with said pretension curvature of the shear foil thus simulated, and

pressing said cutter having a shape corresponding to said pretension curvature into said shear foil with the force which provides the desired normal-pressure distribution.

4,807,366

COMPACT CHAIN SAW

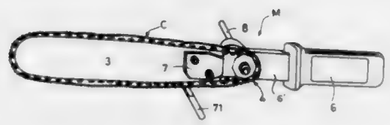
Honsho Maeata, and Hanahusa Toru, both of Himeji, Japan, assignors to Fuji Blade Co., Ltd., Hyogo, Japan

PCT No. PCT/JP85/00664, § 371 Date Jul. 24, 1986, § 102(e) Date Jul. 24, 1986, PCT Pub. No. WO86/03447, PCT Pub. Date Jun. 19, 1986

/PCT Filed Dec. 3, 1985, Ser. No. 890,018

Int. Cl.[4] B23D *57/02*; B27B *17/08*

U.S. Cl. 30—383 **4 Claims**



1. A chain saw comprising:

a support including a handle;

a guide bar mounted on said support, said guide bar having guide grooves being partially defined by inner peripheral edges providing a sliding surface, said guide bar having side edges located on either side of said guide grooves;

a sprocket rotatably mounted on said support;

drive means for rotatably driving said sprocket; and

an endless saw chain including a plurality of cutting links pivotably interconnected by pairs of side links,

each cutting link being disposed at each end thereof between sequential pairs of side links and pivotably connected together by a pin,

each said cutting link being formed with a notch for driving said saw chain by means of said sprocket, said notch being located between a pair of extended base portions on an underside of the cutting link and being provided with a plurality of teeth having cutting edges on an upper portion of the cutting link, said extended base portions slidingly engaging with said inner peripheral edges of said guide grooves of said guide bar with said side links riding said side edges of said guide grooves for preventing pivoting and lateral movement of said cutting links during operation of the chain saw,

said sprocket provided with a pair of guide plates rotatable with said sprocket for supporting and guiding portions of said saw chain located below positions at which said cutting links and said side links are pivotably connected together, said sprocket further including polygonal edges having a plurality of tooth portions with a pair of bottom portions disposed between each pair of tooth portions, said bottom portions being set at an angle relative to each other for aligning with the extended base portions of said cutting links while said polygonal edges engage with and align with bottom edges of pairs of side links to ensure contact between said bottom portions and said extended portions for preventing slippage and mechanical loss during driving of the saw chain by the sprocket,

said pins connecting said cutting links together with said side links at positions above the central height of each cutting link.

4,807,367

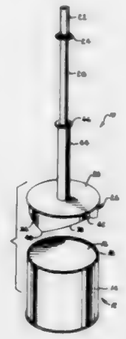
CAN END CUTTING DEVICE

Terry L. Loerwald, Harvey, La., assignor to Land and Marine Applicators, Inc., Jefferson County, La.

Filed Jan. 15, 1987, Ser. No. 61,454

Int. Cl.[4] B26F *1/44*

U.S. Cl. 30—445 **7 Claims**



1. A manually operated device for removing a discoidal end from a container having a generally cylindrical wall, said device comprising:

an elongate handle having opposite ends;

a planar circular metal plate mounted on one end of said handle with the handle being substantially perpendicular to the plane of the plate and generally centered thereon, said plate having a size to span the container wall at the end thereof adjacent the container end;

a cutting blade extending from said plate, said blade presenting a generally circular cutting edge having a size to fit closely within the container wall and a pair of diametrically opposed points, said cutting edge being tapered away from said points; and

a weighted sleeve mounted on said handle for sliding movement thereon to be manually driven forcefully against said plate, thereby driving said cutting blade through the container end adjacent the container wall to cut the end from the wall, said sleeve having a lower end surrounding the handle and arranged to effect impact of the entirety of said lower end against said plate when the sleeve is driven against the plate.

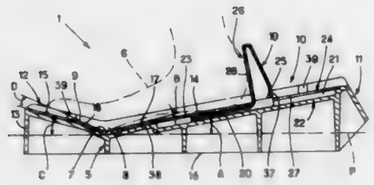
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4,807,368

JIG FOR FACILITATING THE ADJUSTMENT OF A BLOCK UNDER THE SOLE OF A CYCLIST'S SHOE, A SOLE AND A CYCLIST'S SHOE ADAPTED TO SUCH A JIG

Jean Beyl, 10, boulevard Victor Hugo, 58000 Nevers, France

Filed Dec. 9, 1987, Ser. No. 130,543
Claims priority, application France, Dec. 16, 1986, 8617548
Int. Cl.[4] A43D *1/00*
U.S. Cl. 33—3 B 13 Claims



1. A jig for facilitating the adjustment of a block under the sole of a cyclist's shoe, comprising a support whereon the user's foot is intended to be positioned, characterized in that this support is provided with an indentation intended to receive the bulge corresponding to the articulation of the first metatarsal of the foot; that stop is slidably mounted along the longitudinal direction of the support, this stop being capable of being applied against one end of the foot, and that provision is made for at least one graduation along the longitudinal direction of the support, so as to cooperate with a specific zone of the stop, to indicate the correct adjustment of the block to be carried out, so that the articulation of the first metatarsal should occupy a specific position in relation to the pedal axis.

4,807,369

DEVELOPMENT DRAFTER

Hu Ming-Chin, No. 1, Lane 109, Ta Kuang Road, Sec. 2, Pan Chiao City, Taipei Hsien, Taiwan

Filed Oct. 13, 1987, Ser. No. 107,974
Int. Cl.[4] G01B *5/20*
U.S. Cl. 33—175 6 Claims



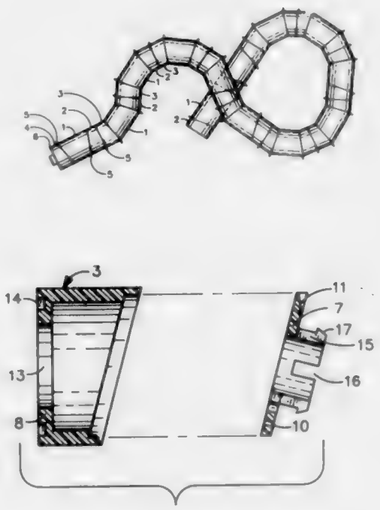
1. A gauge developer comprising:
a long tape of elastomeric flexible strip being in continuity along the direction of the length thereof and having provided thereon, equally spaced, and integrally formed, a plurality of parallel pin holder portions extending in the direction of the strip breadth and further having an adhesive layer provided on a back portion thereof for temporarily attaching said strip to a surface, a plurality of pins respectively frictionally inserted in said pin holder portions and including at one end thereof a head said pins having a length greater than the breadth of said strip, and wherein said pin holder portions are of open-tubular shape, having base ends integrally formed on an upper side of said flexible strip and free ends defining an elongated axial slit.

4,807,370

ADJUSTABLE TUBE BENDING PATTERN DEVICE

Paul M. Trimble, Aurora, Colo., assignor to Anterior, Inc., Aurora, Colo.

Filed Jul. 6, 1987, Ser. No. 70,190
Int. Cl.[4] G01B *21/00*
U.S. Cl. 33—529 5 Claims



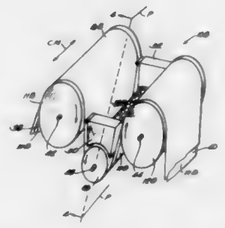
1. An adjustable tube bending pattern device used to form in place a pattern of a complex bent tube or pipe, comprising:
(a) a plurality or relatively short straight tubular components with end pieces fixed at right and acute angles interconnected and arranged in end to end relation, each said tubular component being rotatable with respect to other said tubular components to which it is interconnected,
(b) a means of locking said tubular components together,
(c) a means of controlling and locking the degree of rotation between said tubular components, and
(d) a serial arrangement of said tubular components with recurring configurations of said end pieces positioned at right angles and positioned at acute angles, whereby said serial arrangement allows patterning of tubes and pipes with bends of different angles and in different planes.

4,807,371

APPARATUS FOR MAINTAINING THE EDGES OF A WEB IN CONFORMITY WITH A DRYER FELT

Gregory L. Wedel, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 14,569, Feb. 13, 1987. This application Nov. 30, 1987, Ser. No. 126,547
Int. Cl.[4] F26B *13/08*
U.S. Cl. 34—117 14 Claims



1. An apparatus for maintaining a first and second lateral edge of a web in close conformity with a dryer felt of a papermaking machine, said apparatus comprising:
a first dryer drum of the papermaking machine, said first drum being rotatable about an axis which is parallel to the cross-machine direction of the web;
a second dryer drum, rotatable about an axis spaced and parallel to said axis of said first dryer drum;
an intermediate vacuum transfer roll, said transfer roll having an axis of rotation which is disposed in a plane parallel to, and between, the axes of said first and second drums such that the web and the felt extend contiguously around said first dryer drum and then around said transfer roll and subsequently around said second drum in a serpentine configuration so that said transfer roll and the felt define therebetween a pocket;
a first box disposed within said pocket and adjacent to the first lateral edge of the web, for maintaining a partial vacuum within said pocket adjacent to the first lateral edge such that the first lateral edge is drawn into close conformity with the felt which is disposed between the web and said first box thereby inhibiting detachment of the first lateral edge from the felt and subsequent wrinkling of the dried web; and
a second box disposed within said pocket and adjacent to the second lateral edge of the web for maintaining a partial vacuum within said pocket adjacent to the second lateral edge such that the second lateral edge is drawn into close conformity with the felt which is disposed between the web and said second box thereby inhibiting detachment of the second lateral edge from the felt and subsequent wrinkling of the dried web.

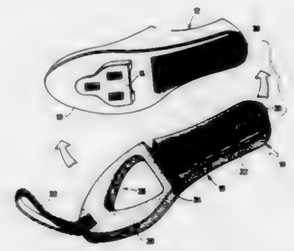
4,807,372

CLEATED SHOE WALKING SOLE

Hannon L. McCall, #10 Hilltop Trailer Park, Bristol, Tenn. 37620

Filed Jan. 13, 1988, Ser. No. 144,262
Int. Cl.[4] A43B *5/18*
U.S. Cl. 36—135 11 Claims

1. A walking sole for use with a bicyclists' shoe having a cleat attached to the shoe sole to engage corresponding structure on the pedal of the bicycle, said walking sole comprising:
a sole member having a front portion and a rear portion and a periphery which generally corresponds to the outer edge of the shoe, said front portion having an opening configured to receive the cleat of the shoe;
hinge means connecting said front and rear sole portions such that said front portion folds under said rear portion to move from a walking position in contact with the shoe sole with the cleat in the opening to a riding position in which said front protion underlies said rear portion;
first fastening means for attaching said rear portion of said sole member to said shoe; and



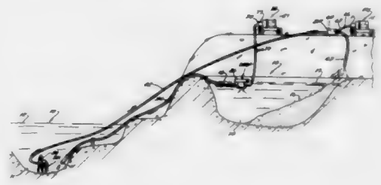
second fastening means for selectively attaching said front portion to the shoe in said walking position whereby said walking sole provides a generally smooth walking surface and for attaching said front portion to the shoe in said riding position whereby said front portion is clear of said cleat.

4,807,373

LOOP CIRCUIT DREDGING APPARATUS

Owen K. Sloan, and Albert H. Sloan, both of Ft. Lauderdale, Fla., assignors to Sloan Pump Company, Inc., Fort Lauderdale, Fla.

Filed May 8, 1987, Ser. No. 47,220
Int. Cl.[4] E02F *3/88*
U.S. Cl. 37—63 7 Claims



1. Dredging apparatus forming a dredging loop circuit comprising:
a hand-held dredge head having a suction nozzle for continuously dredging a mixture of solids and water from a first body, of water,
a dredge pump and power source located on shore and connected to said dredge head for pumping said mixture from said head and said first body of water and to a second, separate body of water which is spaced a distance from said first body of water and for depositing and allowing the solids to settle out from the mixture at one portion of said second body of water;
a water return pump located adjacent the surface of said second body of water and spaced from said one portion of said second body of water, said water return pump having a return water conduit for returning relatively clear water from adjacent the surface of said second body of water and to the hand held dredge head in said first body of water, whereby the returned dredge water is again used to convey more solids from said first body of water to said second body of water, thereby continually reusing and pumping the dredged water in a loop circuit to convey

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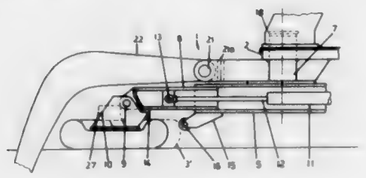
solids from the first body of water to said second body of water.

4,807,374

EXCAVATOR, IN PARTICULAR SELF-DRIVING, HYDRAULIC UNIVERSAL SMALL EXCAVATOR

Peter Kasberger, Augsburg, Fed. Rep. of Germany, assignor to Fa. Lechs Maschinenfabrik GmbH, Augsburg, Fed. Rep. of Germany

Filed Apr. 6, 1987, Ser. No. 35,590
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1986, 3627719
Int. Cl.⁴ E02F *5/02*
U.S. Cl. 37—103 **16 Claims**



1. An excavator, comprising:
an excavator arm;
a turning mechanism having a control device and a driving device;
at least one pair of wheels connected with, and supported on the ends of, an axle, with a track for each of said wheels, said axle having two axle extensions which cooperate with said tracks of said wheels;
an undercarriage attached to said excavator arm by means of said turning mechanism with said control device and said driving device, as well as with at least one of said pairs of wheels,
wherein each of said wheels is connected with at least one of said axles so that each of said wheels is capable of being tilted sideways about an axis of tilt parallel to the longitudinal axis of said excavator, said axle being capable of being stabilized in a raised position, and on said undercarriage of said excavator, there is at least one of said axles with two of said axle extensions, which cooperate with two of said tracks, said axle extensions being capable of being moved inwardly and outwardly and held in a pulled-in position near said axle, when said excavator moves or is transported, and in a pulled-out or pushed-out position away from said axle for excavating purposes, with each of said axle extensions being moved out and with each of said wheels supported thereon being tilted outwardly from its vertical normal position so that an outer side of at least one of said wheel comes into contact with the ground.

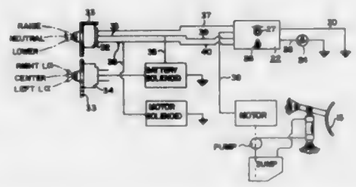
4,807,375

PLOWING DEVICE

Frank J. Iraci, Toms River, N.J., assignor to Ark Welding Co., Inc., N.J.

Filed Feb. 25, 1988, Ser. No. 160,200
Int. Cl.⁴ E01H *5/04*
U.S. Cl. 37—236 **15 Claims**

1. In a vehicle having a plow for plowing snow and the like when said vehicle is traveling in a forward direction, including adjustment means for moving said plow to a raised position and signal means for sending a signal indicting a change in movement of said vehicle, the improvement comprising:



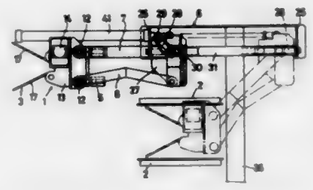
control means for sensing said signal and activating said adjustment means to raise said plow, said control means further being deactivated in the absence of said signal.

4,807,376

TROUSER PRESSER HAVING VERTICALLY AND HORIZONTALLY MOVABLE CARRIER

Shigeru Kamata, Moriyama, Japan, assignor to Fuji Car Mfg. Co., Ltd., Osaka, Japan

Filed Sep. 2, 1987, Ser. No. 92,359
Claims priority, application Japan, Sep. 19, 1986, 61-222796
Int. Cl.⁴ D06F *71/28*
U.S. Cl. 38—42 **2 Claims**



1. A trouser presser, comprising:
a trouser carrier for holding a pair of washed trousers in a desired attitude, said trouser carrier including a waist pad for receiving the waist portion of the trousers to shape it and a bottom stretcher for receiving the bottoms of the trousers to stretch them;
heat plates for pressing from both sides said pair of washed trousers to dry them;
a first drive means for moving said trouser carrier up and down, and
a second drive means for horizontally reciprocating said trouser carrier between a trouser loading position and a trouser press position, said second drive means including,
(a) a horizontal guide rod,
(b) an arm base slidably mounted on said guide rod,
(c) a pair of arms each having one end thereof pivotally mounted on said arm base and the other end thereof pivotally mounted on said trouser carrier,
(d) a guide rail having a straight portion extending substantially in parallel with said guide rod and having one end portion thereof bent at a predetermined angle comprising an elbow portion,
(e) a restriction plate fixedly mounted on one of said arms at its end portion near said arm base at a predetermined angle with respect to said arms, and
(f) a pair of roller means mounted on both ends of said restriction plate and rollingly received in said guide rail, for causing said trouser carrier to be swung by an angle corresponding to the bent angle of said guide rail when said roller means moves along the elbow portion of said guide rail and to move substantially in a straight line when said roller means moves along the straight portion of said guide rail, wherein the carrier maintains a generally parallel relationship with respect to said guide rod.

4,807,377

PHOTOGRAPH DISPLAY DEVICE

Robert W. Stuckel, 1385 Howard St., Elk Grove Village, Ill. 60007

Filed May 1, 1987, Ser. No. 44,759
Int. Cl.⁴ A47G *1/06*; G09F *1/12*
U.S. Cl. 40—152.1 **3 Claims**



1. A photograph display device comprising:
first and second enclosure members, wherein said enclosure members are arranged to separate entirely one from the other and thereby exhibit first and second cross sectional areas defined on said enclosure members respectively;
planar display means in said enclosure members supporting photographs proximate and parallel to the plane of separation of said enclosure members coincident with said respective cross sectional areas, thereby defining an interior cavity in each of said enclosure members, said planar display means in said first enclosure member comprising non magnetic responsive material, and said planar display means in said second enclosure member comprising magnetically reponsive material; and
magnetic means mounted within said interior of said first enclosure members to selectively hold said first and second enclosure members together.

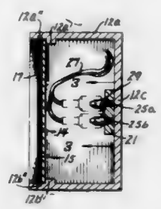
4,807,378

ILLUMINATED LOCATION SIGN

Harry T. Bell, P.O. Box 1054, 1101 Storey Ave., Murray, Ky. 42071

Filed May 21, 1987, Ser. No. 52,270
Int. Cl.⁴ G09F *13/04*
U.S. Cl. 40—576 **2 Claims**





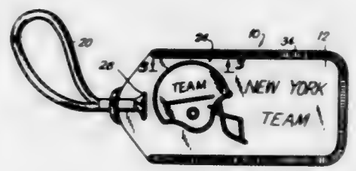
1. An illuminated location sign comprising a housing including a top wall, a bottom wall, a back wall and end walls, a light bar disposed along the inner surface of said back wall, cooperating projections and recesses on the inner surfaces of said top wall and said bottom wall, and a front member, an indicia carrying segment and a cover member assembled in a sandwiched relationship with respect to each other by said projections and said recesses, where said light bar includes spaced-apart and generally parallel main power lines disposed in grooves extending longitudinally along a base plate, connector means introducing power from incoming power lines into said main power lines, and a plurality of light emitting bulbs each having pigtails connecting said main power lines.

4,807,379

IDENTIFICATION TAG AND METHOD FOR MAKING SAME

Roy Blumhof, Arecibo, P.R., assignor to Joy Insignia, Inc., Deerfield Beach, Fla.

Filed Dec. 14, 1987, Ser. No. 132,900
Int. Cl.⁴ G09F *3/20*
U.S. Cl. 40—653 **12 Claims**



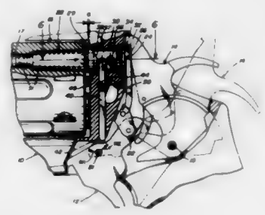
1. An identification tag comprising;
a top panel having a predetermined shape with peripheral edge, opposite inner and outer surfaces and a design embroidered on said outer surface;
a bottom panel which is the mirror image of the top panel;
said top and bottom panels superimposed on each other in juxtaposed relation with the juxtaposed panels being secured to each other by overedge stitching along a major portion of the periphery;
said top panel being formed from a base material which is cast expanded urethane supported by a pre-laminated drill backing; and
securing means for securing said superimposed top and bottom panels to an object.

4,807,380

FIREARM

Robert E. Domina, Somers, Conn., assignor to Dan Wesson Arms, Inc., Monson, Mass.

Filed Jul. 9, 1987, Ser. No. 71,751
Int. Cl.⁴ F41C *1/00, 11/02*
U.S. Cl. 42—65 **35 Claims**

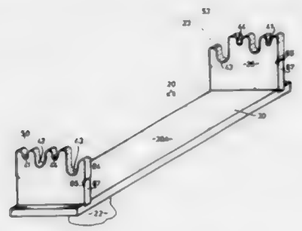


1. A firearm comprising:
a frame,
a trigger,
means mounting the trigger in the frame,
a cylinder mounted in the frame and having a plurality of cartridge-accommodating passages,
a hammer also mounted in the frame and responsive to trigger action,

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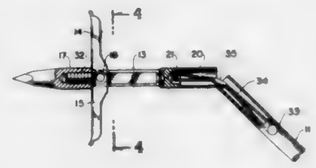
a breech member,
means supporting the breech member in the frame disposed between the hammer and cylinder,
breech operating means,
and means supporting the breech operating means in the frame disposed operatively between the trigger and breech member,
said breech operating means having a rest position in which said breech member is disengaged from a cartridge in said cylinder, and an active position in which said breech member is engaged with and locked against the cartridge,
said breech operating means comprising a cam integral with said trigger and an elongated cam follower responsive to cam rotation coincident with trigger rotation for causing said cam follower to engage and slide said breech member toward engagement with the cartridge.

4,807,381
GUN STORAGE AND MAINTENANCE WORK BENCH
Robert C. Southard, P.O. Box 94, Locust Grove, Ark. 72550
Filed Feb. 22, 1988, Ser. No. 158,945
Int. Cl.[4] F41C *29/00*
U.S. Cl. 42—94 **5 Claims**



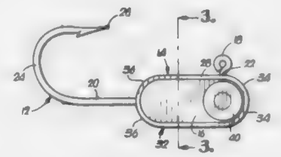
1. A work bench for securely receiving one or more hand-held long firearms, such as shotguns or rifles, said work bench adapted to stably secure said firearms in any or a plurality of user-selected positions for facilitating routine maintenance, repair, or adjustments, said work bench comprising:
a generally rectangular wooden base adapted to be disposed upon a work table or similar support, said base comprising:
a pair of opposing ends;
an upper surface;
a pair of spaced apart side accommodating rectangular mounting channels disposed near said opposing ends on said upper surface of said base;
a pair of wooden, spaced apart, vertical sides, each of said sides comprising:
a channel engaging bottom adapted to be fitted to one of the aforementioned pair of channels disposed on said base;
a top having an array of depressed grooves varying in depth, width, and curvature, each of said grooves adapted to compressively receive at least one compliant strip of leather and at least a portion of a firearm so that said firearm may be disposed between and upon said sides temporarily firmly held within corresponding aligned grooves defined therewithin by compression against said leather strip(s) without damaging or marring of the surface, finish, or integrity of said firearm;
said grooved side members being aligned such that at least one large groove of one side will be oriented toward at least one smaller groove of the opposite side so as to cooperatively receive the various portions of a firearm such as the barrel, the butt, or the stock; and,
a permanent leather strip being affixed across the top of each side within the grooves, the ends of said permanent strip of leather being anchored within terminal slits defined on each opposite upper edges of said sides.

4,807,382
FISHING ARROW
Larry Albrecht, 16630 Bowman Rd., Cotton Wood, Calif. 96022
Filed Jun. 20, 1988, Ser. No. 209,563
Int. Cl.[4] A01K *81/00*
U.S. Cl. 43—6 **5 Claims**



1. A fishing arrow comprising:
an elongated shaft having a notch on one end and a pointed penetration member at the opposite end thereof;
said pointed member having a multiple-sided, tapered point detachably connected on said shaft;
a pair of barbs pivotally carried on said pointed member and each barb terminating in a flared point; and
said pointed member pivotally attached to said shaft and including means normally biasing said pointed member into coextension relationship with said shaft so that their respective central longitudinal axes are coextensive with each other.

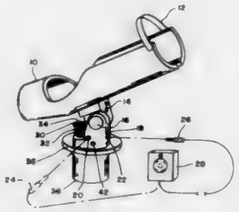
4,807,383
ALTERABLE, WEAR RESISTANT FISHING HOOK ASSEMBLY
Reginald J. Delwiche, P.O. Box 463, Park Falls, Wis. 54552
Filed Apr. 20, 1988, Ser. No. 184,356
Int. Cl.[4] A01K *85/01*
U.S. Cl. 43—17.5 **6 Claims**



1. In combination:
a fishing hook presenting a first, sharpened end portion and a second, connection end portion remote from said first end portion;
a weighted head comprised of lead fixed to said hook between said first end portion and said second end portion,
said head presenting a bottom wear surface and at least one substantially flat, upright, elongated side wall of a certain overall configuration;
a membrane having opposite sides,
one side of said membrane having luminous, light reflecting properties;
a pressure-sensitive adhesive carried by the other side of said membrane; and
a protective, peel-off backing initially covering said pressure-sensitive adhesive;
said membrane having an overall configuration complemental to and slightly smaller than said certain overall configuration of said at least one upright side wall of said head

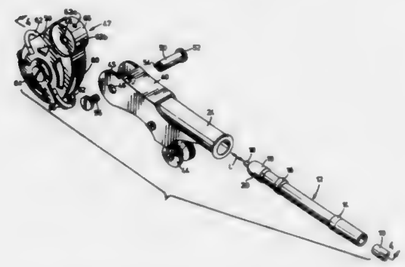
for securement to said upright wall in spaced relationship to said bottom wear surface.

4,807,384
FISHING-ROD HOLDER HAVING DUAL ACTUATION ALARM
Joseph M. Roberts, Sr., P.O. Box 2383, Alameda, Calif. 94501
Filed Jul. 31, 1987, Ser. No. 80,328
Int. Cl.[4] A01K *97/12*
U.S. Cl. 43—17 **12 Claims**



1. A fishing-rod holder comprising
a holster portion for receiving and holding a rod,
mount means including a first mount member supportably attached to said holster portion, a second mount member for engaging a fixed support, said first mount member including a housing for pivotally receiving said second mount member, and tension-adjusting means for adjusting the pivoting of said first mount member on said second mount member, and
alarm switch means inside said housing and actuated by the pivoting of said first mount member on said second mount member.

4,807,385
FISHING ROD TIP ROLLER
Harold H. Morishita, 105 Larose Ave. (Apt. 805), Weston, Ontario, Canada (M9P 1A9)
Filed Nov. 23, 1987, Ser. No. 123,710
Int. Cl.[4] A01K *87/02*
U.S. Cl. 43—24 **10 Claims**



1. Fishing rod tip roller assembly comprising:
end mount provided on the end of a fishing rod,
roller assembly provided with a sleeve designed to slide over said mount,
co-operating means on said sleeve and said end mount for releasably fixing said sleeve against axial translation relative to said tip,
said co-operating means being designed to allow rotation of said sleeve relative to said end mount about the longitudinal axis of the outer end of said rod,
roller mounting lever mounted on said sleeve to pivot about an axis perpendicular to said longitudinal axis,
a grooved roller for receiving fishing line from said rod mounted on said mounting lever to rotate about an axis substantially parallel to said lever axis,
said lever being pivotable between a first position where said roller axis is approximately aligned with said longitudinal axis and a second position where said roller axis is offset from said rod axis,
means for releasably locking said lever in a selected one of said first and second positions,
said lever and roller being designed, in said first position to carry line form rod when the rod reel and line are above the rod and, in said second position to have said roller axis below said rod axis and to carry line from a rod having the reel and line below the rod.

4,807,386
DOWNRIGGER ACTUATOR
John E. Emery, Jr., Traverse City, Mich., assignor to Big Jon, Inc., Traverse City, Mich.
Filed Jul. 19, 1988, Ser. No. 221,115
Int. Cl.[4] A01K *91/00, 91/06, 97/10, 97/12*
U.S. Cl. 43—27.4 **14 Claims**



1. Apparatus for automatically actuating a downrigger motor to reel in a downrigger line upon movement of a rod holder from a set position towards a strike position upon release of a fishing line from the downrigger line or upon temporary release of tension of the downrigger line, said apparatus comprising:
a switch adapted to be mounted on a rod holder and held in an open position when the rod holder is in a set position;
a source of electrical power; and
means for connecting the source of electrical power to a downrigger motor through said switch so that said motor is actuated to reel in a downrigger line when the holder moves towards a strike position causing said switch to close.

4,807,387
QUICK CHANGE FISHING LURE
C. Clark Dougherty, Jr., 2301 Old Farm Rd., Edmond, Okla. 73013, and Clifford C. Dougherty, III, 1400 E. Interurban Way, Edmond, Okla. 73034
Filed Feb. 29, 1988, Ser. No. 161,854
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.09 **14 Claims**

1. In a fishing lure having a body, a submergence inducing deflector attached to the body, fishing line connecting means attached thereto and hook means attached thereto, the improvement whereby the deflector and body can be quickly interchanged with other deflector and body parts comprising:
said body having a front head portion and a tail portion and having an opening at the front head portion thereof, said opening including at least one internal rearwardly facing shoulder formed therein; and
said deflector including a protuberant portion adapted to fit within said opening in said body having at least one lug portion forming a forwardly facing shoulder thereon for

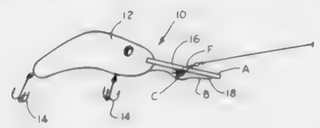
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coacting with said rearwardly facing shoulder in said opening and retaining said deflector in attachment with said body, said lug being capable of selective movement



relative to said forwardly facing shoulder in said opening whereby said body and deflector can be selectively attached and disattached.

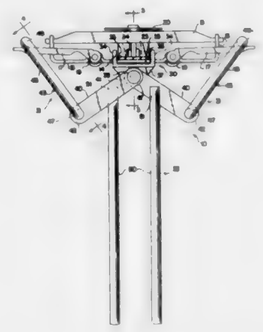
4,807,388
FISHING LURE TUNING MECHANISM
Harry L. Cribb, Rte. 13, Box 434, Florence, S.C. 29501
Filed Jun. 20, 1988, Ser. No. 209,206
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.22 **6 Claims**



1. A fishing lure having a body with a longitudinal axis, hooks attached to said body, and a forwardly extending horizontal spoon extending outwardly from the body along the longitudinal axis comprising:
- a plate extending vertically downwardly from a central portion of the spoon;
- a screw carried in the plate beneath and perpendicular to the longitudinal axis of the spoon;
- a receptacle formed by a transverse recess defined in the horizontal spoon extending vertically downwardly into the plate about the screw;
- a head carried by said screw on at least one of two opposed ends;
- an eye hook carried by a central portion of said screw extending upwardly in the receptacle through the plate and the spoon and protruding upwardly from the spoon;
- means moving said eye hook laterally across the longitudinal axis from one position to at least one another position within said receptacle responsive to lateral movement of the screw; and
- means restraining said eye hook from fully rotating responsive to helical movement of the screw allowing for lateral positioning of the eye hook with respect to the spoon and the body;
- whereby a path traveled by the lure as the lure is retrieved is changed by the position of said eye hook.

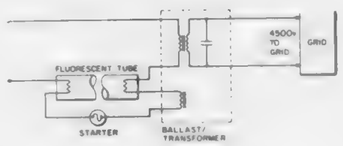
4,807,389
SETTING TOOL FOR ANIMAL TRAPS
Elmer D. Scherrinsky, R.R. #1, Box 308, Greenup, Ill. 62428
Filed Oct. 26, 1987, Ser. No. 112,542
Int. Cl.[4] A01M *23/28*
U.S. Cl. 43—97 **18 Claims**

1. A setting tool for animal traps having a pair of jaws movable on a base frame and being acted on by spring-loaded jaw actuating levers biasing said jaws from an open set position toward a closed position, said setting tool comprising a trap orienting base, a pair of elongated cam arms pivotally connected together on said base and extending outwardly therefrom, a pair of cam hook members connected to the outer ends of said cam arms to extend upwardly therefrom, said cam hook members including actuating lever engaging means on the



upper ends thereof, and a pair of handle members connected to said cam arms outwardly of their pivotal connection to said base, said pairs of cam arms, cam hook members and handle members being rigidly interconnected together in left-hand and right-hand pairs of unitary lever means.

4,807,390
INSECT ELECTROCUTION APPARATUS AND METHOD OF OPERATION
David P. Stevens, Billerica, Mass., assignor to Armatron International, Inc., Melrose, Mass.
Filed Mar. 4, 1988, Ser. No. 164,094
Int. Cl.[4] A01M *1/04, 1/22*
U.S. Cl. 43—112 **5 Claims**



1. An insect electrocution appartus comprising:
(1) a first electrical current input means;
(2) a second electrical current input means;
(3) a ballast/step-up transformer means having primary and secondary coil means, said primary coil means comprising first and second primary coils with one end of the first primary coil being connected to said first electrical current input means;
(4) electrocution grid means connected to said secondary coil means;
(5) an insect attracting flourescent tube having first and second filaments with said first filament being connected in series between the other end of said first primary coil and one end of said second primary coil and said second filament being connected at one end to said second electrical current input means; and,
(6) a flourescent tube starter means connected in series between the other end of the insect attracting flourescent tube second filament and the other end of said second primary coil whereby said second primary coil functions as an extension of the first primary coil only upon the starting of the insect attracting flourescent tube to provide increased impedance during the starting operation and thereafter is not part of the operating circuit so that ballast is supplied only by the first primary coil.

4,807,391
APPARATUS FOR DISPENSING INSECTICIDE
Philippe Bokios, Villa le Rosnec. Parc de la Cote Bleue, 13620 Carry Le Rouet, France
Filed Jan. 31, 1986, Ser. No. 824,850
Claims priority, application France, Jun. 25, 1985, 85 09766
Int. Cl.[4] A01M *1/14*
U.S. Cl. 43—131 **8 Claims**



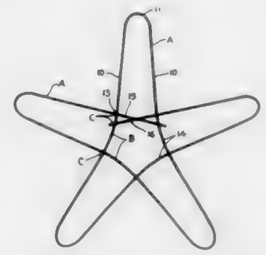
1. A container adapted for housing an insecticide comprising:
(a) a plurality of side walls, each of said side walls comprising an upper portion, each said upper portion comprising a retention section extending inwardly and downwardly from said upper portion;
(b) a bottom wall connecting said side walls, wherein said container is open at the top thereof, said side walls and said bottom wall forming a continuous canal having a substantially U-shaped transverse cross-section and forming a substantially parallelepipedic volume therein, said retention sections extending towards an inner surface of said bottom wall, said retention sections comprising means for retaining said insecticide within said container irrespective of the position of said container open at top, wherein said bottom wall comprises an exterior surface including a self-adhesive lining,
wherein said insecticide substantially fills said parallelepipedic volume and comprises a boric acid base, sugar molasses, and starch comprising flour and forms a substantially pasty mixture positioned in said container, wherein said insecticide adheres to said walls of said container and is substantially hygrometrically stable.

4,807,392
DOOR THRESHOLD POISON BAIT STATION APPARATUS AND METHOD
Bill L. Kirk, 2308 Enfield Rd., #102, Austin, Tex. 78703
Filed Aug. 31, 1987, Ser. No. 91,409
Int. Cl.[4] A01M *1/20*
U.S. Cl. 43—131 **20 Claims**



1. A threshold poison bait station comprising:
A. a threshold sealing frame;
B. an opening through said frame;
C. an interior poison bait receiving station adjacent to said opening; and
D. directing means attached to said opening for guiding insect to bait in said station.

4,807,393
ROOT BALL CONTAINER AND METHOD
Ray Bracken, 720 Latham Rd., Easley, S.C. 29640
Continuation of Ser. No. 17,639, Feb. 24, 1987. This application Jul. 5, 1988, Ser. No. 214,868
Int. Cl.[4] A01G *23/04*
U.S. Cl. 41—76 **5 Claims**



1. A container for a root ball of a plant comprising:
continuous strand forming an odd number of substantially flat loops;
a point formed by each loop being closed at its free end opposite a base portion;
a flat support formed by said continuous strand having said base portions of said loops joined together wherein said points are in circumferentially spaced relationship extending radially outwardly thereof; and
wherein said continuous strand joins said base portions of said loops by overlapping junctions wherein superposed strand portions are joined together in a substantially flat configuration;
thereby forming said loops including said points and said support;
whereby said points and said support formed from the continuous strand overlapping itself beneath the root ball may be drawn about said root ball and snuggly secured thereabout.

4,807,394
COMBINED PLATFORM AND CAPILLARY MAT FOR PLANT TENDER DEVICE AND METHOD OF MANUFACTURE
William Lyon, Hicksville, N.Y., assignor to Plant-Tech, Inc, Mineola, N.Y.
Continuation of Ser. No. 693,100, Jan. 22, 1985. This application May 29, 1986, Ser. No. 870,642
Int. Cl.[4] A01G *25/16*
U.S. Cl. 47—79 **11 Claims**

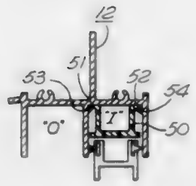


11. A combined capillary mat as in claim 8 wherein said top piece has a plurality of particles or granules of polyethelene adhered to its bottom surface for bonding said top piece to said bottom piece.

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4,807,395
LOW SOUND, THERMAL & AIR PENETRATION SLIDING WINDOW
Donald V. Kelly, 15903 Condor Ridge Rd., Canyon Country, Calif. 91351
Division of Ser. No. 904,174, Sep. 5, 1986, Pat. No. 4,763,446. This application Apr. 11, 1988, Ser. No. 180,166
Int. Cl.[4] E05D *15/16*
U.S. Cl. 49—407 5 Claims





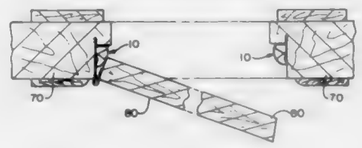
1. A sliding window assembly providing improved air and sound infiltration resistance comprising;
a frame including a ill member, a header member and a pair of jamb members defining a generally rectangular frame including a pair of side by side recesses, one outer and one inner, for retaining a pair of framed window panels and a pair of slots in opposite frame members;
the improvement of which comprises a mullion member having sufficient rigidity to prevent bowing of framed panels within said window including end tabs extending through said slots in said frame members;
means securing rigid mullion in rigid relationship with said frame;
wherein said substantially rectangular frame is generally bisected by said mullion which defines one edge of said outer recess; and
said framed window panels each include substantially continuous flexible seals on at least one opposite face of the frame thereof which engage the outer and inner surfaces of said frame and mullion to provide substantially air and water tight relationship between the framed windows and said rectangular frame when closed;
wherein said slots are located in opposed positions in respective sill members, and
wherein a pair of slots are located in the sill whereby the mullion may be reverse and moved to allow either left opening or right opening, horizontally movable window operation;
providing anti-lift out protection for the openable window in which said header member include s rib means in the inner recess; and
a stop member is insertable in said inner recess engaging said rib-means and partially obstructing said inner recess sufficiently that the openable window may not be litted out or said inner recess with said top means in place.

4,807,396
SEALING ASSEMBLY
Kevin A. Heikkinen, 630 Symes, Royal Oak, Mich. 48067
Filed Feb. 18, 1987, Ser. No. 16,032
Int. Cl.[4] E06B *1/70*
U.S. Cl. 49—470 20 Claims



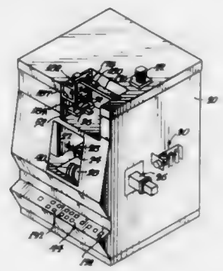
1. A door, primarily adapted for use as an exterior door in a building or dwelling, having a rectangular shaped frame including a pair of opposed vertical stiles joined together at their top and bottom by horizontal rails, said stiles and said rails each having an outer peripheral surface, the opposite vertical faces of said frame being covered by panels secured to the faces of the frame, comprising:
a sealing assembly including a door plate and a door sill opposed to one another such that when said door is closed said door plate and said door sill may be brought into abutting contact with one another along vertical surfaces;
said door plate having a set of steps including at least two steps, one of said steps including a first vertical surface and said other step including a second vertical surface;
said door sill having a set of steps including at least two steps, one of said steps including a first vertical surface and said other step including a second vertical surface; and
sealing means disposed along the vertical surfaces of one set of steps for sealing engagement with the vertical surfaces of the other set of steps with said door plate and said door sill spaced apart from one another to form an insulating air space between said steps to seal the bottom of said door against the weather when said door is closed.

4,807,397
COMPRESSION HONEYCOMB DOOR SEAL
Daniel C. Doan, Marietta, Ohio, assignor to RJF International Corporation, Akron, Ohio
Filed Oct. 5, 1987, Ser. No. 105,642
Int. Cl.[4] E06B *7/16*
U.S. Cl. 49—498 4 Claims



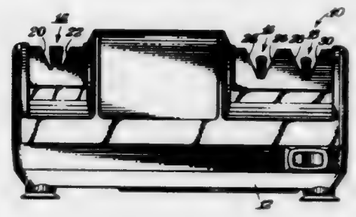
1. A thermoplastic compressible honeycomb door seal capable of use with a door and a door surrounding structure, comprising:
a relatively rigid base portion having a base plate, said base plate having a first distal portion and a second distal portion;
a compressible, flexible honeycomb sealing portion capable of providing a resilient door seal, having a plurality of enclosures and a curvilinear front contact surface face capable of contacting a door end surface, said curvilinear front contact surface face including a first front surface, a second front surface, and a third front surface;
a resilient backside member which extends substantially perpendicular from the first distal portion of the base plate;
said enclosures including an interior enclosure, a central enclosure and an exterior enclosure;
said central enclosure being formed by a first rib, a second rib, and the second front surface, said first rib traversing a line perpendicular to a line tangent to said contact surface face at an acute interior angle to the perpendicular line and thus being an interior rib, said second rib traversing the perpendicular line at an acute exterior angle to the perpendicular line and thus being an exterior rib, said first and second ribs being joined together and forming a common junction located in the vicinity of said backside member;
said interior enclosure being formed by the interior rib, the base portion and the first front surface, said front surface being short to provide for a limited backward movement of the front curvilinear surface face;
said exterior enclosure being formed by the exterior rib, the third front surface, and a backside rib, said backside rib being joined to said backside member and having a curvilinear portion therein, said exterior enclosure being capable of hingedly bending backward and contacting said door surrounding structure to permit a plurality of contact points of the seal with said structure.

4,807,398
LENS EDGING MACHINE
Rolando P. Ramos, Des Plaines; Wilfredo P. Loreto, Hoffman Estates, and Yordan Vulich, Oak Lawn, all of Ill., assignors to AIT Industries, Inc., Schaumburg, Ill.
Filed Nov. 14, 1983, Ser. No. 551,148
Int. Cl.[4] B24B *17/02*
U.S. Cl. 51—101 LG 11 Claims



1. Apparatus for grinding the peripheries of ophthalmic lenses, comprising a rotatable grinding wheel having a grinding surface; workholder means rotatably mounted above said grinding wheel for supporting and rotating a lens about an axis and for moving the lens against and away from said grinding surface; a wear plate mounted above said workholder in substantial vertical alignment with said grinding wheel; a pattern rotatably mounted above in substantial vertical alignment with and rotatable, about an axis, on said wear plate; means coupling said pattern with said workholder for conjoint rotation and for moving said workholder to move the lens against and away from said grinding surface in accordance with movement of said pattern axis toward and away from said wear plate; and motor means for rotating said pattern and workholder to grind the lens periphery to a configuration complementary to that of said pattern, all of said pattern, wear plate, grinding wheel and lens being in substantial vertical alignment during grinding of the lens.

4,807,399
METHOD AND APPARATUS FOR SHARPENING A KNIFE
Daniel D. Friel, Greenville, Del., assignor to Edgecraft Corp., Wilmington, Del.
Continuation-in-part of Ser. No. 588,794, Mar. 12, 1984, Pat. No. 4,627,194, and a continuation-in-part of Ser. No. 855,147, Apr. 23, 1986, Pat. No. 4,716,689, which is a continuation-in-part of Ser. No. 588,795, Mar. 12, 1984, abandoned. This application Oct. 9, 1986, Ser. No. 917,601
Int. Cl.[4] B24B *9/00, 1/00*
U.S. Cl. 51—109 RS 13 Claims



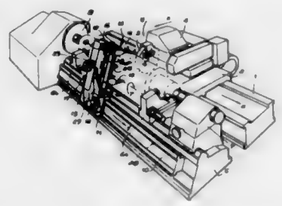
1. A knife sharpening apparatus for sharpening a knife having a cutting edge facet comprising a rotatably mounted drive shaft, drive means for rotating said shaft, a first disk assembly slidably mounted on said shaft, said first disk assembly having a back face and a front face perpendicular to said shaft, a second disk assembly slidably mounted on said shaft, said second disk assembly having a back face an a front face perpendicular to said shaft, said back faces of said disk assemblies being disposed toward each other and said front faces being disposed remote from each other, resilient means between said back aces and reacting against said assemblies for urging said front faces away from each other, stop means on said shaft or limiting the sliding motion of said disk assemblies imparted by said resilient means, a slot in each of said assemblies terminating short of said back faces leaving a wall portion, said stop means comprising a pin mounted to said shaft and located in each of said slots whereby said pins function to halt the motion of said disk assemblies when contacted by said wall portions and to prevent relative rotation of said disk assemblies with respect to said shaft for causing said diak assemblies to rotate with said shaft, and abrasive means on said front faces.

4,807,400
MEASURING APPARATUS FOR GRINDING MACHINES FOR CYLINDERS WITH STRUCTURAL AND SURFACE CHECKING DEVICES
Valeriano Corallo, Turin, and Paolo Rattazzini, Alpignano, both of Italy, assignors to Giustina International S.p.A., San Mauro Torinese, Italy
Filed Mar. 20, 1987, Ser. No. 28,478
Claims priority, application Italy, Mar. 20, 1986, 19619 A/86
Int. Cl.[4] B24B *49/00*
U.S. Cl. 51—165 R 4 Claims

1. A grinding machine comprising:
a longitudinally extending bed provided with means for supporting on said bed a workpiece having a cylindrical surface to be ground;
a tool carriage longitudinally displaceable along said bed and provided with a grinding tool disposed vertically above said workpiece and displaceable along said surface by said carriage to grind said surface;
a longitudinal bench affixed to said bed;
a gauge carriage displaceable along said bench independently of said tool carriage and provided with motorized drive means for displacing said gauge carriage along said workpiece on said bench;

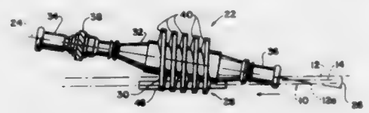
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an upright extending upwardly from said gauge carriage and inclined inwardly toward said workpiece;
a gauge mounted on said upright and including:
a support,
a pair of gauge arms mounted on said support and movable toward and away from one another to straddle said workpiece so that free ends of said arms are disposed diametrically opposite one another across said workpiece, said arms extending generally perpendicular to said upright so that the diameter across which said ends lie is inclined to the vertical,



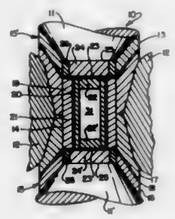
motorized drive means on said support for displacing said arms toward and away from each other, and
sensing means responsive to the engagement of said ends of said arms with said workpiece for providing a measurement of the diameter of said workpiece; and
a telescoping member on said support between said arms provided with a motorized drive enabling said end of said member to be moved toward and away from said surface of said workpiece, said end of said member being provided with at least one contactless sensor sensing for structural characteristics and defects in said surface.

4,807,401
PROCESS AND APPARATUS FOR PROVIDING CUTTING EDGES
Robert M. Atwater, Centerville, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Jan. 17, 1987, Ser. No. 62,911
Int. Cl.[4] B24B *3/48*
U.S. Cl. 51—285 **21 Claims**



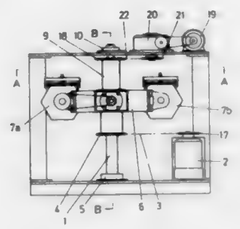
1. A method for forming a facet on opposed surfaces terminating at an edge of a cutting instrument, said method comprising the step of abrading the surfaces with a pair of juxtaposed wheels, each wheel having an axial length defining an entry and an exit end, said wheels being arranged and adapted to concurrently abrade the surfaces with progressively decreasing degrees of coarseness at progressively increasing angles of abrading as the surfaces are moved from the entry to the exit ends to thereby form a facet on each opposed surface in which the included angle of the facet surfaces decreases as the distance from the edge increases.

4,807,402
DIAMOND AND CUBIC BORON NITRIDE
Ghanshyam Rai, Worthington, Ohio, assignor to General Electric Company, Worthington, Ohio
Filed Feb. 12, 1988, Ser. No. 156,272
Int. Cl.[4] B24D *3/00*
U.S. Cl. 51—293 **23 Claims**



1. An article comprising a support mass having abrasive masses bonded to at least each of the upper and lower surfaces of said support mass.

4,807,403
ROTATING BARREL FINISHING METHOD UNDER HEAVY RESULTANT FORCE
Hisamine Kobayashi, and Katsuhiro Izuhara, both of Nagoya, Japan, assignors to Tipton Manufacturing Corporation, Aichi, Japan
Filed Mar. 14, 1988, Ser. No. 167,843
Claims priority, application Japan, Mar. 20, 1987, 62-66949
Int. Cl.[4] B24B *1/00, 31/02*
U.S. Cl. 51—313 **1 Claim**



1. A method of finishing workpieces by using a turret rotatably supported by its main spindle and a plurality of polygonally-shaped barrel containers mounted on the turret and rotatably supported by their respective shafts mounted perpendicularly to the main spindle for the turret, each of the barrel containers containing workpieces to be surface-finished or otherwise processed together with an abrasive media, the workpieces and abrasive media together constituting a mass, and causing each barrel container to rotate with a number of axial revolutions n and with a number of orbital revolutions N, wherein the method comprises:
causing said each barrel containter to rotate with smaller than the numbers of axial and orbital revolutions n and N defined as follows:

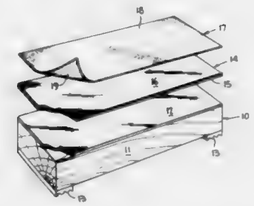
$$n=42.2/\sqrt{d}\,x^4\sqrt{1+x^2}$$

where
n: the number of axial revolutions per minute for said barrel container;
x: the ratio of the centrifugal force produced and gravity action, equal to $0<x\leqq 1$;
d: the diameter of the inscribed circle across the polygonal side of said barrel container; and

$$N=42.2/\sqrt{D}$$

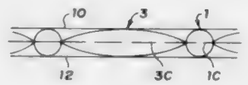
where
N: the number of revolutions per minute for said high-speed turret;
D: twice the distance, in meters, from the turret axis to barrel axis; and
thereby causing a resultant force substantially equal to $1G<Y\leqq\sqrt{2}G$ where Y is defined as the resultant force to be produced, said resultant force being composed of the components of the centrifugal force and gravity action and given to the mass within said each container.

4,807,404
SHARPENING DEVICE WITH REPLACEABLE SHARPENING ELEMENTS
Virgil P. Lewis, 9255-358 Magnolia Ave., Santee, Calif. 92071
Filed Feb. 26, 1988, Ser. No. 161,001
Int. Cl.[4] B24D *15/02*
U.S. Cl. 51—362 **8 Claims**



1. A sharpening device useful for sharpening cutting implements such as scissors, knives, pruning shears and grass clippers, said sharpening device comprising
a base element which includes a block having an upper surface and a lower surface, a paramagnetic layer positioned on said upper surface, and foot pads fixedly attached to said lower surface,
an intermediate element which includes a magnetic layer and a contact layer, said magnetic layer being magnetically attachable to said paramagnetic layer of said base element, and
a sharpening element which includes a grit paper having a rough sharpening surface on one side thereof and an adhesive on an opposite side thereof, said adhesive being removably attachable to said contact layer of said intermediate element.

4,807,405
GEODESIC INFLATABLE STRUCTURE, AND METHODS OF CONSTRUCTING AND UTILIZING SAME
Ronald B. Borgquist, 2133 Lawndale, West Bloomfield, Mich. 48033
Filed Aug. 20, 1987, Ser. No. 87,294
Int. Cl.[4] E04B *1/32*
U.S. Cl. 52—2 **10 Claims**



1. An inflatable structure, comprising:
a plurality of inflatable rib members arranged in a lattice-like framework;
a plurality of inflatable panel members, each said panel member being supported within a frame section defined by a plurality of said inflatable rib members;
valve means communicating with said rib members and said panel members for supplying a substance under pressure to inflation chambers defined within said rib members and said panel members; and
said inflatable structure being dome-shaped in its inflate state;
each said frame section supporting each said panel member is defined by three of said inflatable rib members arranged in a substantially equilateral triangle configuration; and
said inflatable structure has a geodesic dome shape in its inflated state;
each said rib member is substantially tubular; and
each said panel member is formed of at least an inner and an outer ply of material having said inflation chamber defined therebetween;
said panel members are affixed to said rib members by seam portions; and
conduits are provided in said seam portions to permit communication between said inflation chambers of said rib members and said inflation chambers of said panel members;
said plurality of inflatable rib members have the inflation chambers thereof intercommunicating so as to define a plurality of inflation sections of said inflatable structure; and
each said inflation section of said inflatable structure is provided with at least one said valve means;
each said substantially tubular rib member is formed with a central ply of material extending transversely therethrough;
each said panel member is formed with a central ply of material extending transversely therethrough in subetantially coplanar relation to said central ply of said rib members; and
said central plies are provided with perforations to permit flow of said substance under pressure therethrough; and
an external ply of material extends over at least a plurality of said frame sections.

4,807,406
SELF-CLEANING GUTTER
John Densmore, 15 Cheryl Ln., Carver, Mass. 02330
Filed Jan. 6, 1988, Ser. No. 141,215
Int. Cl.[4] E04D *13/00*
U.S. Cl. 52—11 **14 Claims**



1. A self-cleaning gutter system for a house or building which may be easily cleaned of debris remotely, comprising:
a horizontal gutter formed from two longitudinal halves, a

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front half and a back half, wherein said two halves are interlocked along the gutter bottom longitudinal axis;

a rod positioned within the gutter along the gutter's longitudinal axis between said halves, above said gutter bottom;

a plurality of bracket assemblies interconnecting said gutter halves and engaging said rod, whereby said assemblies open and close as said rod is axially rotated in one direction or another; and

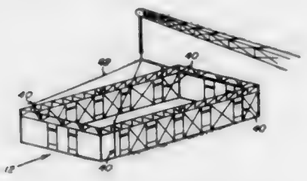
an actuator shaft gearingly engaged at one end with a protruding end of said rod and extending vertically downward near to ground level, and having means by which the shaft may be rotated about its radial axis, whereby radial twisting of the actuator shaft causes said rod to turn on its radial axis.

4,807,407

MODULAR BUILDING SYSTEM FOR A THREE-STORY STRUCTURE

John J. Horn, El Toro, Calif., assignor to PBS Building Systems, Anaheim, Calif.

Filed Jun. 22, 1987, Ser. No. 64,545
Int. Cl.[4] E04H *1/00*
U.S. Cl. 52—79.1 **18 Claims**



1. An improvement in prefabricated multi-story structures assembled with the use of a single reusable harness comprising:

a plurality of rigid, preassembled metallic modular units forming a three dimensional structure, each unit comprising in turn a perimeter frame with a plurality of sides, a corresponding plurality of side walls rigidly connected to each said side of said perimeter frame, a ceiling truss structure connected to said side walls, said plurality of modular units adapted for arrangement into an array of such modular units to comprise said multi-story structure; and

means for providing attachment for lifting said module, said means arranged and configured to accept said harness, said means comprising a plurality of lifting elements integrated into said modular unit, each lifting element comprising:

a lifting rod;

means for securing said lifting rod to said ceiling truss structure, said lifting rod being disposed through said side walls; and

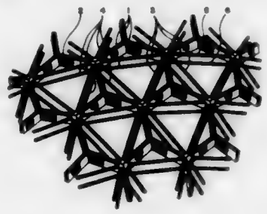
means for connecting said lifting rod to said perimeter frame, whereby said plurality of modular units may each be lifted and assembled in a horizontal and vertical stacked array to form said multi-story structure, without distortion of said modular unit when lifted.

4,807,408

GEODESICALLY REINFORCED HONEYCOMB STRUCTURES

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005, and Michael Stranahan, Woody Creek, Colo., assignors to Jung G. Lew and Hyok S. Lew, Arvada, Colo.

Continuation-in-part of Ser. No. 892,592, Aug. 4, 1986, Pat. No. 4,711,057, which is a continuation-in-part of Ser. No. 682,675, Dec. 17, 1984, Pat. No. 4,603,519. This application Dec. 7, 1987, Ser. No. 129,782
The portion of the term of this patent subsequent to Aug. 5, 2003, has been disclaimed.
Int. Cl.[4] E04B *1/32*
U.S. Cl. 52—81 **8 Claims**



1. A geodesically reinforced honeycomb structure comprising in combination:

(a) a plurality of elongated structural members having a generally slender cross section connected together to form a hexagonal network having a first and second surface;

(b) a first set of reinforcing elongated structural members arranged into a first triangular network superimposed to said hexagonal network at said first surface of said hexagonal network wherein each triangle of said triangular network includes three reinforcing elongated structural members with each corner connected to alternate corners of each hexagon of said hexagonal network; and

(c) a second set of reinforcing elongated structural members arranged into a second triangular network superimposed to said hexagonal network at said second surface of said hexagonal network opposite to said first surface wherein each triangle of said triangular network includes three reinforcing elongated structural members with each corner connected to the same alternate corners of each hexagon as said first set of reinforcing elongated structural members in said hexagonal network;

wherein adjacent triangular cells included in said triangular networks are connected to each other in a corner-to-corner pattern.

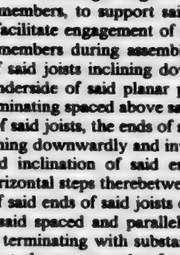
4,807,409

VENTED FASCIA BOARD

Gary L. Sells, Mishawaka, Ind., assignor to Cor-A-Vent, Inc., Mishawaka, Ind.

Filed Jun. 17, 1987, Ser. No. 63,106
Int. Cl.[4] E04B *7/00*
U.S. Cl. 52—95 **10 Claims**

1. In combination, a building roof including a fascia board having an inner face and lower and upper edges, said roof having rafters supporting a deck and extending past the side wall of the building structure, a soffit board extending horizontally outwardly from said side wall adjacently under said rafters and terminating in an outer edge, said fascia board secured between the outer edge of said soffit board and said roof deck and being generally vertical, the improvement wherein said fascia board includes an elongated beam and an elongated vent part secured to said beam, said vent part including a plurality of passages positioned at an oblique angle relative to said soffit, said passages extending downwardly through said fascia board



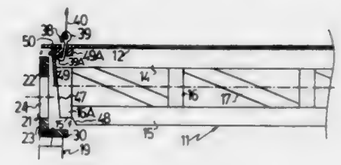
from said inner face below the upper edge thereof through said lower edge of said board.

4,807,410

SELF-CONTAINING PACKAGE SYSTEM FOR STORAGE AND TRANSPORTATION OF PRE-FABRICATED PORTIONS OF A BUILDING STRUCTURE AND THE ASSEMBLY THEREOF

Joseph Skvaril, 4807 - 143rd Street, Edmonton, Alberta, Canada (T6H 4C9)

Filed Sep. 22, 1986, Ser. No. 910,070
Int. Cl.[4] E02D *35/00*
U.S. Cl. 52—125.2 **17 Claims**



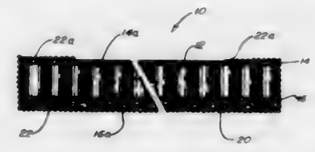
1. A prefabricated structure, said structure comprising in combination, two halves, each half including a plurality of spaced and parallel, transverse joists, each including ends, and a planar panel spanning one side of said joists and acting as a floor or ceiling surface, means to detachably secure said halves together along a common junction line to form a floor or ceiling unit, said unit including corners, said junction line extending parallel to said joists, each half having a joist at the common junction line for selectively securing said halves together, vertical support members for each of said corners, a pair of perimetrical beam members situated, spaced and parallel to one another and supported upon pairs of vertical support members and being situated perpendicular to said joists, anchoring support struts extending along the underside of said perimetrical beam members, to support said floor or ceiling unit and means to facilitate engagement of said unit with sad perimetrical beam members during assembly, said means including the ends of said joists inclining downwardly and inwardly from the underside of said planar panel towards the lower edges but terminating spaced above said lower edges, to define lower sides of said joists, the ends of said lower sides of said joists also inclining downwardly and inwardly inboard of said first mentioned inclination of said ends of said joists thereby defining horizontal steps therebetween, said first mentioned inclination of said ends of said joists engaging between the upper sides of said spaced and parallel and perimetrical beam members and terminating with substantially zero clearance therebetween at the upper ends of said joists and the upper side of said perimetrical beam, when in the assembled position, said inclining lower ends of the lowersides of said joists engaging between the lower ends of the lower sides of said joists engaging between the inner edges of said anchoring support struts and terminating with substantially zero clearance therebetween with said step engaging upon said anchoring support struts, when in the installed position.

4,807,411

ACOUSTICAL PANEL STRUCTURE

Raymond W. Capasl, Rte. #3, Wildwood Dr., Aurora, Ill. 60504

Continuation-in-part of Ser. No. 98,794, Sep. 21, 1987. This application Apr. 14, 1988, Ser. No. 181,682
Int. Cl.[4] E04B *1/82*
U.S. Cl. 52—144 **8 Claims**



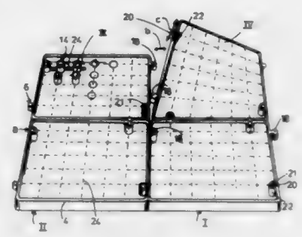
1. An acoustical panel structure, consisting essentially of: a lightweight core member in the form of a honeycomb having wall portions defining a plurality of hollow, open-ended cells and opposed end cell planes; a pair of thin, dense, sound transmitting, substantially homogeneous, glass fiber mats of substantially uniform thickness and density secured in opposed, substantially parallel relation to one another to said core member along the said opposed end cell planes thereof; and a glass fiber sheet secured to the surface of at least one of said mats, said glass fiber sheet having a thickness greater than, and a density substantially equal to that of each of said glass fiber mats, said panel structure having a noise reduction coefficient of the order of about 75, and a flame spread of less than 25.

4,807,412

GRATING OR MAT ELEMENT

Ruth Frederiksen, Lystrup, Denmark, assignor to JYDSK Fjederfabrik A/S, Lystrup, Denmark

Continuation-in-part of Ser. No. 897,790, Aug. 19, 1986, abandoned, which is a continuation of Ser. No. 780,000, Jun. 21, 1986, abandoned. This application May 26, 1987, Ser. No. 53,877
Int. Cl.[4] B44D *5/08*
U.S. Cl. 52—177 **7 Claims**

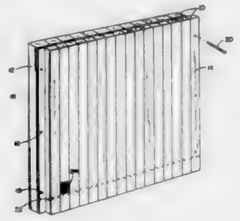


1. A flooring assembly comprising at least four flag members made of plastic and each shaped as a rectangular flat body having a top plate portion, a circumferential edge flange depending from the edge of said top plate portion, and a plurality of floor engaging carrier portions depending from the undersigned of the top plate portion, said flag members having, at each of side edges thereof, a set of locking members, which, for each pair of juxtaposed flag members, are interengageable for locking the flag members together, said set of locking members of each flag member side comprising respective complementarily shaped first and second locking members

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located spaced from each other symmetrically about a middle of the flag member side, said first locking members includes locking head portions arranged outwardly protruding from the respective edges of the flag members on respective connector portions of a width dimension less than a width of the head portions, said second locking members being constituted by downwardly open cavities for receiving said locking head portions by a relative substantially vertical insertion movement, said cavities being arranged inwardly spaced from the outside of the respective edge flange corresponding to the protrusion of the said head portions therefrom, and relatively narrow connector slot channels being provided between an outermost side area of said cavities and the adjacent outer surface of the edge flange, whereby said connector portions of the locking head portions are receivable in said connector slot channels by said insertion of the head portions into said cavities, all of said locking head portions, connector portions, cavities and connector slot channels being arranged beneath a level of said top plate portion for enabling the same to extend unbroken over said cavities and connector slot channels, said locking head portions and connector portions being provided integrally with the respective flag members as rigid and permanently projecting parts thereof, and said flag members being generally resilient so as to be bendable and twistable sufficiently to enable the locking members of each pair of juxtaposed flag members in the flooring assembly to be caused to engage or disengage each other, respectively, by a relative insertion or retraction movement substantially in the vertical direction such that the joining and separation of the central area of each group of four flag members requires a considerable flexing and twisting of at least one of the flag members.

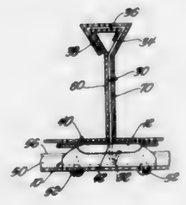
4,807,413
SOLID WALL CONSTRUCTION PANEL
John Randall, Rte. #1, Box 117, Osage, Minn. 56570
Filed Jun. 10, 1987, Ser. No. 61,154
Int. Cl.[4] E04B *1/10*
U.S. Cl. 52—233 17 Claims



1. A solid wall construction panel comprising:
(a) a first and second row of posts;
(b) the first row comprising a linear arrangement of posts, the posts sawed on at least three sides, the posts attached together to form a single row;
(c) the second row comprising a linear arrangement of posts, the posts sawed on at least three sides, the posts attached together to form a single row; and
(d) the first and second rows securely attached to each other to form a single panel, said first and second rows defining an overlap joint at each end.

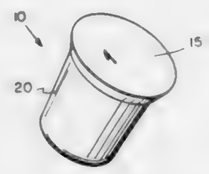
4,807,414
ROOF PANEL LOCKING SYSTEM
Gary L. Krause, 2270 W. Buell, Lake Orion, Mich. 48035
Filed Oct. 5, 1987, Ser. No. 104,089
Int. Cl.[4] E04D *1/34*
U.S. Cl. 52—478 7 Claims

1. In a sheet metal roofing system including roof panels supported on a roof support structure and having adjacent side edges seamed together to define a continuous roof covering, and roof panel fastener clip means secured to the roof support structure and to the seamed edges of the roof panels to secure the roof panels to the roof support structure while enabling relative lateral movement between the roof panels and the roof support structure, the improvement comprising:
a base plate secured to the roof support structure beneath the roof panels at the seamed edges thereof and having fastener clip attaching means formed thereon, said fastener clips having complemental attaching means engaged with



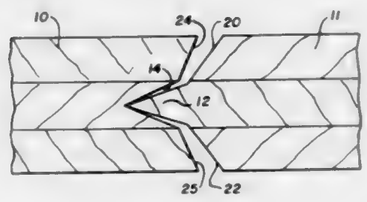
the attaching means on the base plate for attaching the roof panels to the base plate and thus to the roof support structure while enabling relative lateral movement between the roof panels and the base plate; and
an isolator plate engaged between said roof panels and said base plate at said fastener clip locations, said isolator plate resting on said base and being carried by said fastener clips for movement with said roof panels relative to the base plate, whereby the isolator plate protects the roof panels from frictional contact with the base plate.

4,807,415
VAPOR BARRIER HOLE PLUG
Reginald O. Oak, 230 Somerset Ave., Fairfield, Conn. 06430
Continuation of Ser. No. 000,169, Jan. 2, 1987, abandoned. This application May 4, 1988, Ser. No. 193,169
Int. Cl.[4] E04G *23/02*; E04B *1/72*
U.S. Cl. 52—514 8 Claims



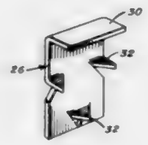
1. A plug adapted for water and vapor tight sealing of a hole drilled in concrete for the introduction of pesticide chemicals, said plug comprising a generally cylindrical body having a top surface of larger diameter than the hole and tapering to a tip having a smaller diameter than the hole, and including a resilient, compliant peripheral sealing tapered head lip adjacent the top surface, said plug being integrally molded of plastisol having a durometer in the range of seventy-five to eighty and a lubricant substantially mixed throughout the plastisol, whereby said plug is readily drivable into a concrete hole with aid of the distributed lubricant and having its tapered head and lip being deformed into intimate sealing conformiture with the concrete for sealing said concrete hole against water or pesticide chemical vapor.

4,807,416
TONGUE AND GROOVE PROFILE
Alexander V. Parasin, Vancouver, Canada, assignor to Council of Forest Industries of British Columbia Plywood Technical Centre, North Vancouver, Canada
Filed Mar. 23, 1988, Ser. No. 172,032
Int. Cl.[4] E04F *15/04*
U.S. Cl. 52—595 6 Claims



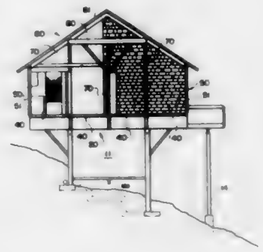
1. A tongue and groove plywood panel comprising in which the tongue comprises a protruding lip having a triangular cross-section extending along the length of a first essentially convex edge, said first essentially convex edge being formed by sloping surfaces that slope away from the junctions of said tongue and said first edge to the upper and lower veneers of the panel, and the groove comprises a triangular cavity formed in a second essentially concave edge opposite said first essentially convex edge, said second essentially concave edge being formed with inwardly sloping surfaces that slope inwardly from the upper and lower veneers of the panel to the groove to form a shallow essentially concave channel along said second edge to guide and direct said tongue into said groove, the tongue having a tip and the groove having a base, so that when the panel is joined to a similar panel, the tip of the tongue of one panel will engage the base of the groove of the other, and the veneers of the joined panels will be spaced slightly at the joint due to the sloping surfaces of said first essentially convex edge sloping away from the adjacent sloping surfaces of said second essentially concave edge of the joined panel.

4,807,417
WIRE HOLDING NAIL PLATE
Peter D. Bell, P.O. Box 788, Merrit Island, Fla. 32952
Filed Jul. 24, 1987, Ser. No. 77,457
Int. Cl.[4] E04B *1/38*
U.S. Cl. 52—699 6 Claims



1. A nail plate for shielding and retaining a service line positioned on a receiving edge extending laterally inward from a nailing surface, said nail plate comprising a planar face panel engageable against said nailing surface, fastener means for fixing said panel to said surface, said plate having a laterally inwardly directed planar holding flange integrally formed at one end of said panel for overlying and engaging a service line on and in retained engagement against said receiving edge, said fastener means being laterally spaced from said holding flange along said face panel, said face panel between said holding flange and said fastener means being imperforate and defining a nail barrier for an engaged service line.

4,807,418
PEDESTAL MOUNTED HOUSE AND METHOD
Jean C. Ferguson, Rte. 1 Box 186, Banner Elk, N.C. 28604, and Tilmoth H. Inman, II, P.O. Box 396, Linville, N.C. 28646
Filed Aug. 19, 1987, Ser. No. 86,913
Int. Cl.[4] E04B *1/34*
U.S. Cl. 52—747 5 Claims



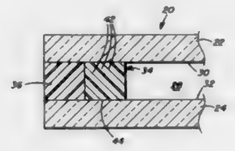
1. A method of constructing a house of the type mounted on a pedestal, said house having exterior walls which overhang the perimeter of said pedestal on at least two sides thereof to define at least one vertically unsupported corner and characterized by permitting the unsupported corner or corners of the house to transmit floor, wall and roof loads laterally inwardly to supporting members, and comprising the steps of:
(a) constructing a pedestal to support the house above grade;
(b) constructing a floor truss system from a plurality of intersecting trusses mounted on said pedestal, said truss system extending outwardly beyond the perimeter of the pedestal on at least two sides to define at least one corner area not supported for vertical load transfer;
(c) constructing a floor onto the floor truss system, said floor being constructed of connected-together stress skin panels comprising a core of expanded polystyrene bonded to and sandwiched between relatively thin sheathing;
(d) constructing exterior walls around the perimeter of the floor truss system and onto the floor to define the enclosure of the house, said exterior walls being constructed of stress skin construction panels connected-together to form an integral load-bearing structure supporting its own weight, and the weight of the unsupported corners and transferring the weight thus supported laterally to the load-bearing floor trusses and pedestal; and
(e) constructing a roof onto the top of the exterior walls, said roof being constructed of connected-together stress skin construction panels mounted on rafters secured to the top of the exterior walls, said rafters being mounted on vertical load-bearing columns supported by said pedestal and on said walls.

4,807,419
MULTIPLE PANE UNIT HAVING A FLEXIBLE SPACING AND SEALING ASSEMBLY
Robert B. Hodek, Gibsonia; James A. Meier, Bradford Woods; James E. Jones, Lower Burrell, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 25, 1987, Ser. No. 30,012
Int. Cl.[4] E04C *2/54*
U.S. Cl. 52—788 19 Claims

1. In a multiple glazed unit comprising a pair of glass sheets maintained in spaced-apart relationship to each other by a spacer element to provide a gas space therebetween and a sealing element to hermetically seal the gas space, wherein the improvement comprises a spacer element comprising a dehydrating material and an unplasticized polymeric material which is the reaction product of a polyisocyanate and an active hydrogen containing material; and a sealing element compris-

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ing an unplasticized polymeric material which is the reaction product of a polyisocyanate and an active hydrogen containing



material, the polymeric material of the spacer element having a moisture vapor transmission rating which is greater than that of the polymeric material of the sealing element.

4,807,420

HORIZONTAL FORM-FILL-SEAL PACKAGING MACHINES

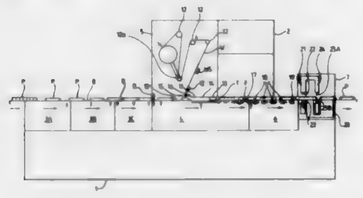
Michael J. Barker, Unit 21, Aylesbury Valve Industrial Park, Farmbrough Close Stocklake, Aylesbury-Buckinghamshire, England (HP20 1DQ)

Filed Dec. 23, 1986, Ser. No. 945,712

Claims priority, application United Kingdom, Dec. 24, 1985, 8531796; Apr. 17, 1986, 8609429

Int. Cl.[4] B65B *9/08, 57/04, 57/06, 57/08*

U.S. Cl. 53—51 **9 Claims**



1. A horizontal form-fill-seal packaging machine including a series of mechanically separate modules, each said module including a stepper motor, conveyor means having an inlet and an outlet, which conveyor means is operatively connected to said stepper motor, and electrical plug and socket input means operatively connected to said stepper motor,

said modules being arranged together in abutting relation in order to define a product travel path along which products to be packaged are conveyed, said product travel path being defined by said conveyor means with the outlet of the conveyor means of one module abutting the inlet of said conveyor means of the adjacent module,

said machine including:

an infeed conveyor defined by at least two said modules,

a web tube former including an inlet for packaging web, means operative to form said web into an inverted U-shaped tube with two spaced free edge portions, and an outlet for supplying said tube,

a said module for web infeed, said conveyor means of said web infeed module being operatively associated with said tube outlet from said web tube former such that the products on said conveyor means are entubed,

a first sealing module downstream of said web infeed module, and including means for bringing said two spaced free edge portions of the tube together into a fin beneath each said entubed product and for sealing said edge portions together,

a second sealing module downstream of said first sealing module including a seal head for producing a transverse seal across said tube between products, and

a control unit having an electrical output means operative to provide a respective control signal for input to said plug and socket input means of each said module to control a respective said stepper motor of said module.

4,807,421

EQUIPMENT FOR HANDLING VARIOUS CONTAINERS

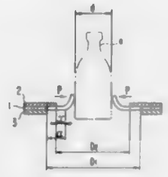
Kazunori Araki; Masayuki Hayashi; Shogo Yamaguchi, and Munehiro Hanada, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 879,585, Jun. 27, 1986, abandoned. This application Sep. 25, 1987, Ser. No. 101,202

Claims priority, application Japan, Jul. 19, 1985, 60-159952; Jul. 19, 1985, 60-159961; Oct. 31, 1985, 60-244790

Int. Cl.[4] B65B *43/52*

U.S. Cl. 53—167 **10 Claims**



1. A carrier for transporting containers comprising:

a pair of side plates in spaced opposed relation;

at least one groove in each said side plate of said pair of side plates, each said at least one groove of said one side plate being opposed to the other said at least one groove in the other said side plate, thereby comprising a pair of grooves; and

at least one flexible container holder for holding various sized containers, said flexible container holder being slidably received in said pair of grooves, said flexible container holder including a holding member having a central hole therein, said holding member having means for centering, exerting a holding force on, and releasably retaining a container, said flexible container holder including a holding frame for detachably retaining said holding member, and said flexible container holder including at least two different adaptor plates which are respectively individually detachably secured to said holding frame one at a time for releasably retaining said holding member against said holding frame, each adaptor plate of said at least two adaptor plates engaging said holding member for causing said holding member to exert a holding force on the container which is individual to the particular adaptor plate, and one of said at least two adaptor plates being interchangeable with another one of said at least two adaptor plates for effecting a different holding force of said holding member on the container.

4,807,422

APPARATUS FOR FILLING BOXES WITH OBJECTS NOTABLY FRUITS, FLOATING IN WATER

Philippe Blanc, Montauban, France, assignor to Societe Montalbanaise de Constructions Mecaniques, Montauban, France

Filed Mar. 30, 1988, Ser. No. 175,432

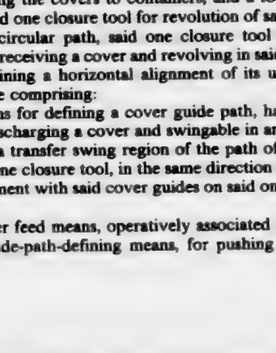
Int. Cl.[4] B65B *5/06, 25/04, 39/14*

U.S. Cl. 53—248 **9 Claims**

1. Apparatus for filling a crate with objects floating in water comprising a tank for containing water, a crate adapted for insertion into said tank, said crate having an open top, feeding means for bringing said objects suspended in water into said crate, and a water pump for circulating water through said tank, the improvement wherein said feeding means comprises:

(a) a plate for covering said open top of said crate, said plate having an upper surface, a lower surface, and an aperture extending therethrough for passing of said objects from said upper surface into said crate;

(b) an inlet channel for feeding said objects suspended in water to said upper surface of said plate;



(c) an arcuate wall extending upwardly from said upper surface of said plate and aligned with said inlet channel to direct said objects floating in water above said upper surface to said aperture, whereby said objects pass through said aperture and into said crate.

4,807,423

DEVICE FOR FEEDING COVERS TO A CONTINUOUSLY OPERATING CONTAINER CLOSING MACHINE

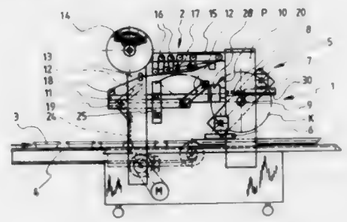
Horst F. Schnippering, Werdohl-Eveking, and Peter Steuxel, Herscheid, both of Fed. Rep. of Germany, assignors to Alcan International Limited, Quebec, Canada

Filed Mar. 19, 1987, Ser. No. 27,654

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1986, 3609480

Int. Cl.[4] B65B *7/28*

U.S. Cl. 53—296 **17 Claims**



1. A device for feeding covers to a continuously operating container closing machine including at least one closure tool for fastening the covers to containers, and a tool holder supporting said one closure tool for revolution of said one closure tool in a circular path, said one closure tool having cover guides for receiving a cover and revolving in said circular path while retaining a horizontal alignment of its under surfaces, said device comprising:

(a) means for defining a cover guide path, having a mouth for discharging a cover and swingable in an arcuate path, over a transfer swing region of the path of revolution of said one closure tool, in the same direction as and in flush alignment with said cover guides on said one closure tool; and

(b) cover feed means, operatively associated with said cover-guide-path-defining means, for pushing a cover from the mouth of the cover guide path into the cover guides on said one closure tool upon swinging of said cover-guide-path-defining means through said transfer swing region.

4,807,424

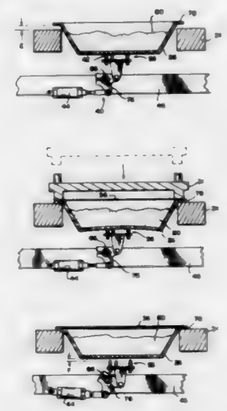
PACKAGING DEVICE AND METHOD

Edward A. Robinson, and Jesse McLeod, both of Louisville, Ky., assignors to Raque Food Systems, Inc., Louisville, Ky.

Filed Mar. 2, 1988, Ser. No. 163,258

Int. Cl.[4] B65B *31/02*

U.S. Cl. 53—432 **16 Claims**



1. In a packaging device which includes a conveyor for moving a series of containers, each having a volume, and a sealing head which mates a covering material with a material-receiving opening in each container while the container is being moved by the conveyor to seal the container, the improvement comprising means moving with the container for reducing the volume of the container prior to sealing and means for releasing the reducing means after sealing, thereby creating a vacuum in the sealed container.

4,807,425

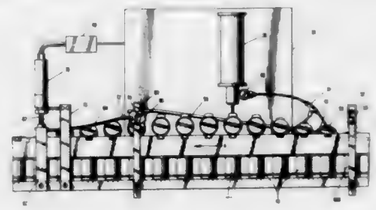
METHOD AND DEVICE FOR OPENING AND CLOSING VIALS

Robert S. Abrams, 21 Marion Ave., Albany, N.Y. 12203

Filed Nov. 30, 1987, Ser. No. 126,920

Int. Cl.[4] B65B *43/38*

U.S. Cl. 53—468 **22 Claims**



1. A device for use in connection with filling or testing equipment for opening and closing snap-on caps on vials adapted for moving sequentially through the device adjacent the filling or testing equipment, said device comprising:

a detachable rack having means for supporting a plurality of vials against rotation and tipping;

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piston means for sequentially snapping off a cap from each of the supported vials;
means for raising each cap from its respective vial so as to permit the filling or testing equipment access to the vial;
means for lowering each cap onto its respective vial;
piston means for snapping each cap onto its respective vial;
control means for controlling the operating of both piston means in coordination with the filling or testing equipment; and
means for mounting the control means on or adjacent to the filling or testing equipment, the control means including a sensor mounted on or adjacent the filling or testing equipment for sensing when a filling or testing operation occurs and for actuating both piston means substantially simultaneously with the filling or testing operation.

4,807,426

CRIMPER BAR SET FOR FORMING HERMETICALLY SEALED PACKAGES

Larry E. Smith, 900 Bexley Dr., Perrysburg, Ohio 43551

Filed Sep. 8, 1987, Ser. No. 93,642
Int. Cl.[4] B65B *9/08, 51/30, 51/16, 51/14*
U.S. Cl. 53—550 **11 Claims**



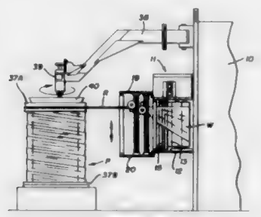
1. An improved crimper die for imparting crimp seals to ends of packages wrapped in sheet material, said die comprising a serriform crimping surface which defines a cotyloid.

4,807,427

STRETCH WRAPPING ROPING APPARATUS

Larry L. Casteel, Homerville, Ohio, and Robert L. Bowlin, Sr., Jeffersontown, Ky., assignors to Liberty Industries, Inc., Girard, Ohio

Filed Apr. 21, 1988, Ser. No. 184,132
Int. Cl.[4] B65B *11/04*
U.S. Cl. 53—556 **6 Claims**



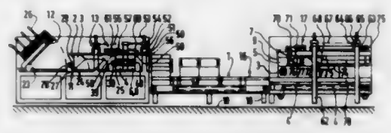
1. A film rope forming apparatus for use with a stretch wrapping machine comprises a pair of spaced vertically aligned support angles secured to said stretch wrap machine, a pair of control drive cylinders positioned between said respective support angles, a rope forming and gathering spool movably positioned on each of said drive cylinders for engaging opposite longitudinal edges of the film, guide means for supplying pre-stretch wrapping film to said rope gathering spools, secondary guide means to engage said pre-stretch wrapping film exiting said rope gathering spools, means for controlling a relative position of said rope gathering spools to one another, a package rotatably positioned on a turntable aligned for engagement of said prestretch wrapping film, means for controlling the rate of supply of said pre-stretch wrapping material and rate and count of rotation of said package on said turntable.

4,807,428

PACKING MACHINE FOR AMERICAN BOXES

Jean-Louis Boisseau, Sainte Savine, France, assignor to Vega Automation, France

Filed May 14, 1987, Ser. No. 49,472
Claims priority, application France, May 16, 1986, 86 07096
Int. Cl.[4] B65B *43/24*
U.S. Cl. 53—563 **30 Claims**



1. A packing machine for American boxes formed from box blanks having four sides, a bottom, and a lid, the lid being formed by a pair of first lid flaps and a pair of second lid flaps and the bottom being formed by a pair of first bottom flaps and a pair of second bottom flaps, comprising:
first and second shafts;
a magazine of stacked box blanks folded flat;
erecting means for opening and erecting the box and forming the bottom thereof by folding and securing the pairs of first and second bottom flaps, said erecting means being slidably but lockably mounted on said first shaft;
box-supplying means for supplying empty boxes, said box-supplying means having an upstream end and a downstream end and bearing, in the upstream-downstream direction, said magazine and said erecting means;
contents-supplying means for supplying the contents of the box in batches suitable for packing;
contents-transferring means for transferring the batches of contents and placing them in the opened and erected boxes, said contents-transferring means being interposed between the downstream parts of said box-supplying means and said contents-supplying means and comprising a robot having three degrees of freedom, whereby the boxes can be filled either vertically or from the side;
lid-making means for making up the lid by folding and securing the pairs of first and second lid flaps, said lid-making means being slidably but lockably mounted on said second shaft;
discharging means for discharging the boxes and bearing, in the upstream-downstream direction, said contents-transferring means and said lid-making means;
drive means permanently incorporated in said machine, said erecting means and said lid-making means being simultaneously movable by said drive means; and
digital control means associated with said drive means for controlling said drive means.

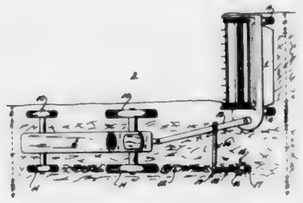
4,807,429

PROCESS FOR TEDDING OR FLUFFING CUT HAY THAT HAS BEEN COMPACTED BY THE WHEELS OF A TRACTOR

Jeffrey S. Roberts, Rt. 2, Box 230, Hudson, Wis. 54016

Filed Apr. 17, 1987, Ser. No. 40,249
Int. Cl.[4] A01D *78/10*
U.S. Cl. 56—371 **5 Claims**

1. A method to ted or fluff the area of hay that has been compacted by the wheels of a tractor running on a previously formed windrow or swath as the tractor pulls a mowing implement thru adjacent standing hay, by mounting behind the tractor a tedding or fluffing device of a width equal to or just wider than the area of hay compacted by the wheels of the tractor, so that the tedding or fluffing device is lined up with the wheel of the tractor that is compacting the area of hay and the area of hay compacted by the wheels of the tractor is



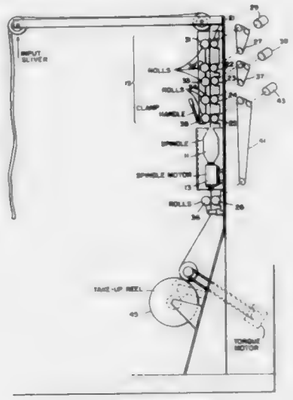
tedded or fluffed and the area of hay in the windrow or swath, that is not compacted by the wheels of the tractor is not tedded or fluffed.

4,807,430

THREAD WRAPPING APPARATUS

David W. Palmer, Charlotte, N.C., assignor to Walker Magnetics Group, Inc., Worcester, Mass.

Filed Oct. 22, 1987, Ser. No. 112,498
Int. Cl.[4] D02G *3/34, 3/38;* **D01H** *1/32, 7/88*
U.S. Cl. 57—18 **6 Claims**



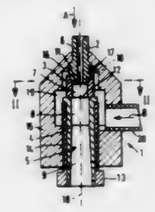
1. Apparatus for forming a wrapped thread from a fiber supply, said apparatus comprising:
a binder spindle;
a variable speed induction motor for driving said binder spindle at a preselectable speed;
a first control circuit means, including a variable oscillator and amplifier means, for operating said induction motor means at a speed corresponding to the operating frequency of said oscillator;
first, second and third sets of rolls for drawing said fiber, said third set of rolls having a pair of rolls downstream of said spindle;
a stepper motor means for each of said sets of rolls for driving the respective set of rolls at a respective preselectable speed; and
respective control circuit means for operating each of said stepper motor means, each of said respective control circuit means including a respective frequency scalar driven from said oscillator for operating the respective stepper motor means at a respective speed which is an individually preselectable proportion of the speed of said spindle motor.

4,807,431

AIR NOZZLE FOR PNEUMATIC FALSE-TWIST SPINNING HAVING A YARN CHANNEL THAT IS FORMED OF AT LEAST TWO SEGMENTS

Hans Braxmeier, Sinzes, Fed. Rep. of Germany, assignor to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

Filed Jan. 4, 1988, Ser. No. 140,635
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1987, 3700926; Sep. 29, 1987, 3732708
Int. Cl.[4] D02G *1/04, 1/16;* **D01H** *5/28, 7/92*
U.S. Cl. 57—333 **14 Claims**



1. Pneumatic false-twist spinning nozzle apparatus comprising:
nozzle housing means, and
a plurality of yarn channel segments disposed adjacent one another to form a yarn channel through the housing means, said yarn channel segments being clampingly exchangeably held in position in the housing means with said segments in end to end abutting relationship,
wherein a compressed air supply chamber is formed in the housing means which extends over a portion of the axial length of the yarn channel segments and which has a connection opening for a compressed air supply,
wherein at least one compressed air duct extends from the compressed air supply chamber and opens into the yarn channel to supply compressed air in a direction tangentially to the yarn travel path to thereby apply false twist to yarn travelling through the yarn channel,
and wherein said at least one compressed air duct is formed by axially open groove means at an axial end face of one of said yarn channel segments and an adjacent end face of an abutting axially adjacent one of the yarn channel segments which serves to close the groove means and form a respective closed compressed air duct.

4,807,432

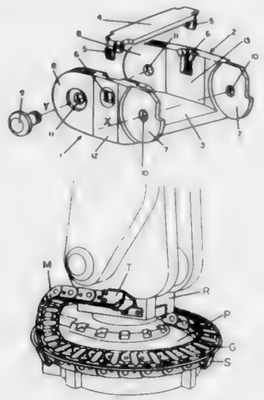
CHAIN FOR SUPPORTING FLEXIBLE CONDUITS WITH CURVILINEAR PATH

Giovanni Mauri, 2, Via dei Prati, I 20052 Monza, Province of Milano, Italy

Filed Dec. 30, 1987, Ser. No. 139,657
Claims priority, application Italy, Jan. 2, 1987, 20401/87[U]
Int. Cl.[4] F16G *13/16*
U.S. Cl. 59—78.1 **4 Claims**

1. A chain for supporting flexible conduits and adapted to lie in a curvilinear path comprising a plurality of links, each of said links having opposed side walls, a male connector at one end and a female connector at the other end of said link formed complimentary to said male connector, whereby the female connector of one link is interengageable with the male connector of an adjacent link; said male and female connectors having aligned openings when interengaged; a dowel adapted to be received in said aligned openings to connect together the interengaged links for articulated movement; a bottom root

extending between said side walls, an upper link stud operable to provide a support surface for flexible conduits carried by said chain, connecting means between said stud and said side walls for removably connecting said stud to said side walls; one of said side walls having a longitudinal length longer than the



longitudinal length of said other side wall to provide a root having a trapezoidal shape along its longitudinal edges, whereby said interconnected links form a chain curvilinear in a horizontal plane due to said trapezoidal shape and in a vertical plane due to said articulated linkage.

4,807,433

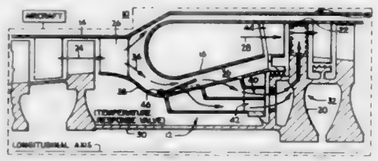
TURBINE COOLING AIR MODULATION

Harvey M. Maclin; Dean T. Lenahan, both of Cincinnati, and Tuley, Eugene N., Hamilton, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 491,839, May 5, 1983, abandoned. This application Jan. 13, 1988, Ser. No. 143,494

Int. Cl.[4] F02C *7/12*

U.S. Cl. 60—39.29 **14 Claims**



1. For a gas turbine engine operable in first and second modes of operation and including a rotor component to be cooled, a compressor effective for providing pressurized cooling air, and a combustor effective for providing combustion gases, a cooling air modulation apparatus comprising:

a first tangential flow accelerator effective for channeling a first portion of said cooling air in a substantially circumferentially uniform flow to an annular manifold in said rotor component during both said first and second modes of operation;

a second tangential flow accelerator effective for channeling a second portion of said cooling air to said manifold; and

a valve means effective for selectively modulating the amount of said second portion of cooling air flowing through said second tangential flow accelerator for preventing flow therethrough during said first mode of operation and flow allowing substantially unrestricted flow therethrough during said second mode of operation.

4,807,434

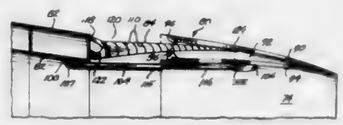
THRUST REVERSER FOR HIGH BYPASS JET ENGINES

Umberto Jurich, Kirkland, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 21, 1987, Ser. No. 135,703

Int. Cl.[4] F02K *3/04*

U.S. Cl. 60—226.2 **20 Claims**



1. A thrust reverser for a bypass fan jet engine having a core, an annular cowling supported concentrically about at least a portion of the core, an annular duct being defined between the core and the cowling, an aft section of the cowling defining a nozzle for the duct, the aft section including an inner and an outer surface that converge toward a trailing edge, and a fan extending radially beyond the circumference of the core an producing airflow through the duct when driven by the engine, said thrust reverser comprising

(a) a plurality of spaced apart, radially extending panels disposed between inner and outer surface of the aft section, defining a plurality of pockets, each pocket be open on its forward end and extending toward the trailing edge;

(b) a plurality of linear actuators connected between a forward fixed portion of the cowling and the aft section of the cowling and operative to translate the aft section rearwardly from a position in which it is adjacent the fixed portion of the cowling in a forward thrust mode, to a displaced position in a reverse thrust mode, creating an opening between the fixed portion and the aft section of the cowling;

(c) a plurality of spaced apart cascaded vane sections attached in cantilever fashion to the fixed portion of the cowling, edges of adjacent cascaded vane sections defining longitudinal slots therebetween, each of said cascaded vane sections extending into one of the pockets disposed in the aft section of the cowling in the forward thrust mode, a plurality of vanes comprising each cascaded vane section being curved to deflect airflow radially outwardly through the opening in a forward direction, when exposed in the reverse thrust mode;

(d) a plurality of blocker panels disposed in spaced apart array around the inner circumference of the aft section of the cowling and pivotally connected at one end to the radially extending panels in the aft section; and

(e) a plurality of links, one end of each link being pivotally connected to one of the blocker panels and the other end to one of the fixed section and the core, said links being operative to draw the blocker panels inwardly across the duct as the actuators translate the aft section to its full rearward extension, so that in the reverse thrust mode, airflow is thereby blocked from flowing through the duct nozzle and is instead forced to flow outwardly through the exposed cascaded vane sections.

4,807,435

AIR-BREATHING JET ENGINE

Manfred Moll, Duesseldorf, Fed. Rep. of Germany, assignor to Rheinmetall, GmbH, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 822,888, Jan. 27, 1986, abandoned. This application Jan. 5, 1987, Ser. No. 59,149

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1985, 3502673

Int. Cl.[4] F02K *9/28, 9/00*

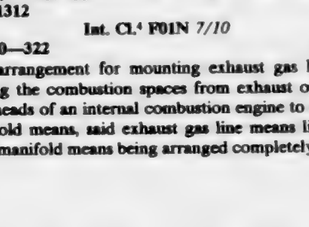
U.S. Cl. 60—253 **13 Claims**

1. A rocket engine comprising:

a body generally extending along an axis and for moving through the air in a predetermined axial back-to-front direction, the body being formed with axially spaced front and rear fuel-containing combustion chambers;

a nozzle on the axis, extending axially backward in the body from the front chamber, and having a rear nozzle end directed axially backward, gases are generated in the front chamber by combustion of the fuel therein and form a fan-shaped jet which has an extreme upstream end exiting from the rear nozzle end of said nozzle and which extends axially backward from said rear nozzle end;

a front tube having a cylindrical rear part and a radially inwardly tapered frusto-conical front part centered on the axis and surrounding the rear nozzle end, said frusto-conical front part having an upstream end sealingly coaxially mounted on the nozzle upstream of the rear nozzle end,



said cylindrical rear part being formed with a radially inwardly directed bevel and located axially downstream of the upstream end of the jet formed by the nozzle;

a rear tube secured to and coaxial with the front tube, at least a portion of said rear tube radially surrounding said front tube and forming therewith an annular gap open axially upstream, and having an upstream end formed with a radially inwardly directed bevel which upstream end is positioned axially forward of the rear end of the cylindrical rear part of said front tube and

means on the body for deflecting outside air axially back into the annular gap; said annular gap having a radial height "a" which is selected relative to the diameter "d", of the rear tube such that the stoichiometric combustion requirements of the rocket engine are satisfied.

4,807,436

ARRANGEMENT FOR THE MOUNTING OF EXHAUST GAS LINES

Herbert Deutschmann, Friedrichshafen; Gerd-Michael Wolters, Immenstaad, and Otto Reifenscheid, Friedrichshafen, all of Fed. Rep. of Germany, assignors to MTU Motoren- und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

PCT No. PCT/DE87/00303, § 371 Date Feb. 2, 1988, § 102(e) Date Feb. 2, 1988, PCT Pub. No. WO88/02060, PCT Pub. Date Mar. 24, 1988

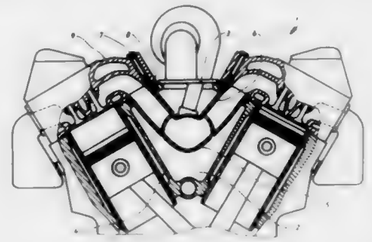
PCT Filed Jul. 3, 1987, Ser. No. 171,871

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1986, 3631312

Int. Cl.[4] F01N *7/10*

U.S. Cl. 60—322 **15 Claims**

1. An arrangement for mounting exhaust gas line means conducting the combustion spaces from exhaust openings of cylinder-heads of an internal combustion engine to an exhaust gas manifold means, said exhaust gas line means like the exhaust gas manifold means being arranged completely within an exhaust gas-tight space, each exhaust gas line means being connected at its end on the side of the cylinder head with a



flange means, and the flange means being secured at the internal combustion engine in only a single circumferential place.

4,807,437

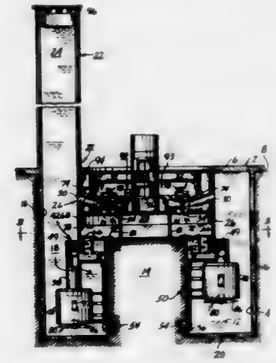
CLOSED SYSTEM, STANDPIPE OPERATED HYDROELECTRIC POWER PLANT

Charles Pelin, R.R. 1 - Box 1460, Eastsound, Wash. 98245

Continuation of Ser. No. 865,675, May 2, 1986, abandoned. This application Mar. 15, 1988, Ser. No. 168,641

Int. Cl.[4] F16D *33/00*

U.S. Cl. 60—325 **13 Claims**



1. In a hydro-electric power plant comprising:

casing means defining a first chamber filled with a first column of water and a standpipe relatively inclined to the horizontal thereabove to pressurize the first column of water,

a housing enclosed in the first chamber and defining a second chamber therein for containing water first column of water,

housing having a series of penstocks about the perimeter thereof which open into the first column of water at a first level above the second chamber and discharge at a second level below the first level,

hydroelectric power generation means including turbines in the penstocks and means for discharging the tailwater from the respective turbines,

the tailwater discharge means including elongated hollow bore, open ended nipples extending into the first chamber from the housing at a third level below the first and second levels and having open ended, thimble-like vessels telescopically engaged on the end portions thereof which are relatively remote from the housing, to be extended and

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retracted in relation to the respective nipples, axially thereof,
drive means operable to extend and retract the respective vessels,
float operated check valves in the vessels adjacent the end openings of the vessels relatively remote from the housing, each of which is adapted to permit flow through the bore of the respective nipple in the direction relatively away from the housing toward the first column of water in the first chamber when open, and to prevent flow in the opposite direction when closed, and
control means connected to the drive means to extend and retract the respective vessels in staggered sequence to one another about the circumference of the housing, with each vessel undergoing an at rest period between the respective retraction and extension stages thereof, when the vessel is fully retracted,
the improvement wherein:
the housing is surrounded by a moat-like recess and has an overhang thereover,
the nipples are secured to the periphery of the housing and depend into the recess below the overhang so that the vessels are telescopically engaged thereon in the recess, offset from the housing,
the second chamber extends above the overhang and has discharge openings in the same adjacent the respective nipples, and
there are means below the overhang defining passages interconnecting the discharge openings with the end portions of the nipples relatively adjacent to the housing,
movable closure means for opening and closing the respective passages to the second chamber through the discharge openings, when the respective vessels are disposed in the at-rest condition thereof, and
means defining stabilization openings through which the passages communicate with the first column of water to provide a constant state of equilibrium between the pressures of the first and second columns of water when the vessels are in the extended, retracted, and at-rest conditions thereof,
the control means for the vessels being operable through movement of the respective closure means, to control the rate of extension and retraction of the respective vessels and the length of the their respective rest periods, as a function of the water level in the second chamber, and
the height of the first column of water in the standpipe being adapted to drive the turbines, the vessels being each adapted in buoyancy to hover in equilibrium in the first column of water when at rest, and the number of nipples and vessels being adapted in relation to the number of penstocks and turbines so that the vessels collectively discharge the tailwater from the turbines at a rate adapted to maintain the water level in the second chamber between the predetermined limits.

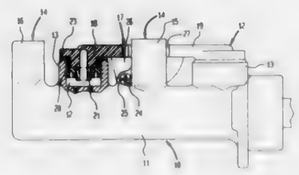
4,807,438

RESERVOIR INLET ASSEMBLY FOR A MASTER CYLINDER

Kaoru Tsubouchi, Toyota, and Chiaki Ochiai, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 13, 1987, Ser. No. 14,539
Claims priority, application Japan, Feb. 13, 1986, 61-019740
Int. Cl.⁴ F15B *7/00*
U.S. Cl. 60—585 **3 Claims**

1. A brake master cylinder having a reservoir, comprising:
a cylinder body having at least two inlet portions and one outlet portion positioned between said inlet portions at the same side of the body, said cylinder body having boss portions extending therefrom and surrounding said inlet and outlet portions respectively;
an inlet member mounted on said inlet portion of said cylinder body, said inlet member having two first members and one second member, each of said first members being formed of a first tubular portion hermetically fitted into said inlet portion and a second tubular portion connected to said first tubular portion, said second member having an opening portion fitted by said boss portion of said outlet portion of said cylinder body, said boss portion of said outlet portion of said cylinder body being loosely fitted in said opening portion of said second member, said second member being a substantially straight line continuation of



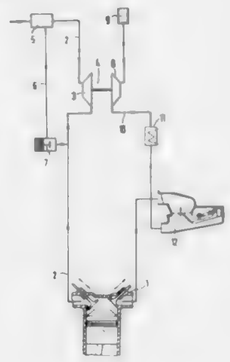
said first members when viewed from the side and being substantially symmetrically disposed with respect to the axial center of the cylinder body;
a respective hose member hermetically connected to said second tubular portion of each said first member and being in communication with said reservoir; and
means for positioning said inlet member on said cylinder body by means of said second member.

4,807,439

EXHAUST GAS SYSTEM WITH SILENCER FOR A TURBOCHARGED INTERNAL COMBUSTION ENGINE

Klaus Hain, Leonberg; Klaus-Peter Bensing, Ditzingen, and Claus Bruestle, Heimsheim, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Stuttgart, Fed. Rep. of Germany

Filed Jun. 3, 1988, Ser. No. 201,930
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1987, 3718875
Int. Cl.⁴ F02B *37/12*
U.S. Cl. 60—602 **15 Claims**



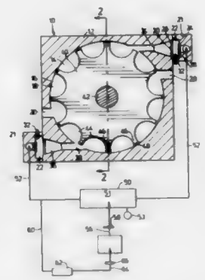
1. An exhaust gas installation, comprising silencer means having a housing means for a reciprocating piston internal combustion engine supercharged by a turbocharger means, exhaust gas line means including a main line leading to the turbine of the turbocharger means and a bypass line bypassing the turbine and controlled by a bypass valve means, and the main line and the bypass line terminating in the housing means directed to one another in such a manner that the exhaust gas flow of the main line exerts an ejector effect on the exhaust gas flow of the bypass line.

4,807,440

INTERNAL COMBUSTION ENGINE

Ahmed Salem, P.O. Box 6838, Jeddah 21452, Saudi Arabia

Continuation-in-part of Ser. No. 13,727, Feb. 24, 1987, abandoned, which is a continuation of Ser. No. 760,557, Jul. 30, 1985, abandoned. This application Oct. 19, 1987, Ser. No. 109,538
Int. Cl.⁴ F02C *5/00*
U.S. Cl. 60—727 **5 Claims**



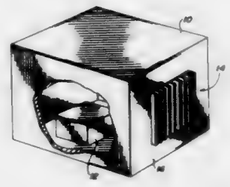
1. An internal combustion engine comprising:
(a) a housing having a rotor chamber formed therein,
(b) a combustion chamber in which combustion is to be carried out at a predetermined combustion pressure, said combustion chamber having a predetermined capacity and being located in close proximity to said rotor chamber, said combustion chamber having an input passage and an output passage having, respectively, input and output flow control means,
(c) ignition means in said combustion chamber for igniting a combustable fuel in use,
(d) a nozzle having an input end communicating with said output passage of said combustion chamber and an output end communicating substantially tangentially with said rotor chamber, said nozzle having a convergent portion extending from said input end which is shaped to maximize the discharge velocity while substantially atmospheric pressure,
(e) a rotor mounted for rotation in said rotor chamber on a power take-off shaft, said rotor having a plurality of pockets extending inwardly from and spaced about its outer periphery,
(f) an exhaust port opening from said rotor chamber and being circumferentially spaced from said output passage of said nozzle,
(g) a pressure head storage reservoir having a pressure head storage chamber formed therein for storing a pressurized gaseous medium in the form of air or an air/fuel mixture, said head storage chamber communicating with said combustion chamber through the input passage to the combustion chamber, said pressure head storage chamber having a storage capacity which is greater than the predetermined capacity of the combustion chamber by an amount which will permit the combustion chamber to be charged with a charge of gaseous medium drawn from the pressure head storage chamber without reducing the pressure head in the pressure head storage chamber below said predetermined combustion pressure,
(h) means for establishing said pressure head in said pressure head storage chamber before a first charge of gaseous medium is drawn from the storage chamber into the combustion chamber and for maintaining the pressure head in the storage chamber during successive recharging of the combustion chamber with gaseous medium,
(i) means for selectively opening and closing said input and output flow control means to open said input flow control means to admit a charge of said gaseous medium from said storage chamber to said combustion chamber when said output flow control means is closed and then close said input flow control means,
(j) means for igniting said charge, and
(k) said means for selectively opening and closing said input and output flow control means then being operable to open said output flow control means to allow the exhaust gas to discharge through said nozzle into said rotor chamber in the form of a high speed jet which impinges against the perimeter of the rotor and causes it to rotate to drive said power take-off shaft, and to locate successive pockets in a position to receive a portion of the exhaust gas which is discharged from said nozzle and thereafter to repeat steps I and II.

4,807,441

COOLING SYSTEM FOR A SEALED ENCLOSURE

Keith D. Agee, Torrance, and Fredrik E. Faulkner, Rolling Hills Estates, both of Calif., assignors to Allied-Signal Inc., Morristowa, N.J.

Filed Jul. 17, 1987, Ser. No. 74,827
Int. Cl.⁴ F25B *21/02*
U.S. Cl. 62—3 **8 Claims**



1. A cooling system for a sealed enclosure having a heat generating source therein:
means, within said sealed enclosure, for cooling the heat generating source by indirect forced convection;
means, external to said sealed environment, for dissipating said heat to the environment by natural convection;
said means for cooling comprising heat exchanger means for absorbing heat from the air within said sealed enclosure, and means for drawing air through said heat exchanger means,
said heat exchanger comprising a first and a second side plate, said first side plate forming a portion of the enclosure walls, a plurality of alternating cross-flow channels sealingly separated from adjacent channels and extending in parallel relationship with said side plates, inlet manifold means for directing enclosure air into alternative channels, and outlet manifold means for collecting the enclosure air.

4,807,442

CRYO-SLAMMING APPARATUS AND METHOD FOR ULTRARAPID COOLING OF BIOLOGICAL SAMPLES

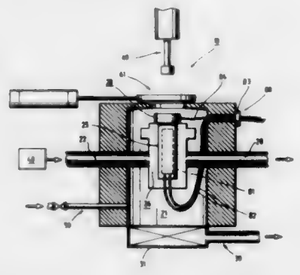
John G. Linner, and Stephen A. Livesey, both of The Woodlands, Tex., assignors to Board of Regents The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 939,701, Dec. 3, 1986, Pat. No. 4,707,998. This application Sep. 29, 1987, Ser. No. 102,395
Int. Cl.⁴ B01D *8/00*
U.S. Cl. 62—55.5 **21 Claims**

1. Apparatus for the ultrarapid cooling of biological tissue comprising:
(a) a cryogenic surface adapted to receive biological tissue

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and to ultrarapidly cool said biological tissue, said cryogenic surface being enclosed within a chamber;
(b) vacuum means functionally attached to said chamber and adapted to reduce the pressure of the atmosphere surrounding said cryogenic surface;
(c) cooling means functionally associated with said cryogenic surface and said chamber;
(d) vacuum reversal means functionally associated with said chamber to increase the pressure of the atmosphere surrounding said cryogenic surface;



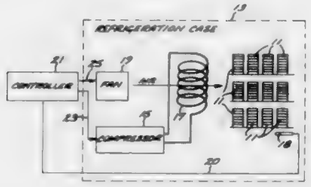
(e) a sample delivery assembly functionally associated with said cryogenic surface and said chamber, said assembly including means for mounting said biological tissue and means adapted to transfer said biological tissue from outside said chamber to said cryogenic surface inside said chamber; and
(f) heating means functionally associated with said cryogenic surface said heating means being effective to permit rapid regeneration of said cryogenic surface.

4,807,443

REFRIGERATION CONTROL SYSTEM

R. Kenneth Battson, 11331 Sheldon St., Sun Valley, Calif. 91352, and John E. Mascpust, Jr., 14333 Van Nuys Blvd., Unit 59, Arleta, Calif. 91331

Filed Oct. 20, 1987, Ser. No. 111,404
Int. Cl.[4] F25D *13/04*
U.S. Cl. 62—65 **16 Claims**



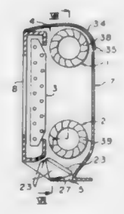
1. Refrigeration apparatus for continuously maintaining the temperature of a product below a predetermined maximum temperature, the refrigeration apparatus using electrical power having a relatively low cost during a first predetermined time period of each day, a relatively high cost during a second predetermined time period of each day, and an intermediate cost during a third predetermined time period of each day, following the second predetermined time period, the refrigeration apparatus comprising:
refrigeration means for cooling the product; and
control means for enabling the refrigeration means to cool the product to a predetermined low temperature during the first predetermined time period of each day, for disabling the refrigeration means from cooling the product during the second predetermined time period of each day, thereby permitting the temperature of the cooled product to rise from the predetermined low temperature, and for enabling the refrigeration means to cool the product to a predetermined intermediate temperature, between the predetermined low and maximum temperatures, during the third predetermined time period;
wherein the predetermined low temperature is selected such that the temperature of the product will not rise above a predetermined maximum temperature during the second predetermined time period of each day.

4,807,444

AIR FLOW CONTROL DEVICE

Katsuyuki Aoki; Hiroyuki Umemura; Tetsuji Okada; Kenji Matsuda; Hidenori Ishioka, all of Shizuoka; Isao Arai, Kamakura; Kenji Togashi, Shizuoka; Masanori Hara, Kamakura, and Sakuo Sugawara, Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1987, Ser. No. 104,214
Claims priority, application Japan, Nov. 19, 1986, 61-275812; Dec. 11, 1986, 61-295174
Int. Cl.[4] F25D *17/06*
U.S. Cl. 62—179 **7 Claims**



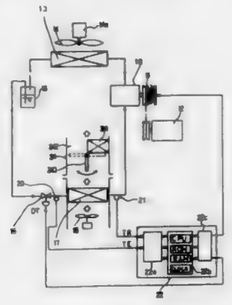
1. In an air flow control device for an air conditioner including a compressor, an outdoor side heat exchanger, expansion means and a room side heat exchanger in sequence, wherein the improvement comprises:
a room side unit with an upper and lower outlet ports, having the room side heat exchanger therein,
upper and lower air-blowing fans disposed in the room side unit so as to face the upper and lower outlet ports, respectively,
controlling means for controlling the operations of the air-blowing fans,
a covering member positioned at at least one of the outlet ports and movable so as to open and close the corresponding outlet port, and
driving means for controlling the opening and closing operations of the covering member,
wherein the controlling means comprises air-blowing fan operation modes determining means for determining the operation modes of the air-blowing fans in response to detection temperature signals from temperature detecting means, and air-blowing fan operation mode control means for controlling the operation of the air-blowing fans by the operation modes instructed from the air-blowing fan operation mode determining means, and wherein said air-blowing fan operation modes determining means comprises means for operating said lower air blowing fan at a high level when sensing a first temperature and for operating said upper air blowing fan only when sensing second temperature higher than said first temperature.

4,807,445

REFRIGERATION SYSTEM

Akio Matsuoka, Oobe; Yuuji Honda, and Masaai Takagi, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 24, 1987, Ser. No. 124,865
Claims priority, application Japan, Nov. 25, 1986, 61-280343
Int. Cl.[4] F25B *41/00*
U.S. Cl. 62—212 **14 Claims**



1. A refrigeration apparatus comprising;
(a) means for circulating a refrigerant;
(b) an electrically-driven expansion valve for expanding and decompressing said refrigerant, said valve being adapted so that its degree of opening can be electrically controlled;
(c) an evaporator for evaporating said refrigerant which is expanded and decompressed by said expansion valve;
(d) target superheat setting means for setting a target value of a degree of superheat at an outlet of said evaporator;
(e) actual superheat determination means for determining an actual degree of superheat at the outlet of said evaporator;
(f) deviation determination means for determining a deviation between said actual degree of superheat and target degree of superheat;
(g) opening degree control means responsive to said deviation, for electrically controlling the degree of opening of said expansion valve;
(h) heat load determination means for determining the heat load to be cooled by said evaporator; and
(i) control constant variation means for varying a control constant of said opening degree control means when an elapsed time after a start of circulation of the refrigerant reaches a reference time which is determined on the basis of said heat load.

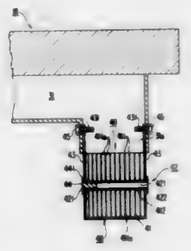
4,807,446

AIR OUTLET NOZZLES FOR AN AIR CIRCULATION DEVICE IN A REFRIGERATED DISPLAY CABINET

Mamoru Sasaga, Ota, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Jan. 27, 1987, Ser. No. 7,272
Claims priority, application Japan, Jan. 24, 1986, 61-8780[U]; Mar. 12, 1986, 61-35455[U]; Mar. 15, 1986, 61-37763[U]
Int. Cl.[4] A47F *3/04*
U.S. Cl. 62—256 **28 Claims**

1. In a refrigerant display cabinet comprising a display space, an access opening in the front of said display space, air curtain means for establishing an air curtain across said access opening, said air curtain means comprising an air inlet located adjacent the lower edge of said access opening, an air duct communicating with said air inlet having an air discharge outlet near the upper edge of said access opening, a nozzle device disposed on said air discharge opening to define the air curtain, circulating means for circulating air through said air duct and refrigeration means for refrigerating the air curtain, the improvement comprising:
said nozzle device comprising a plurality of flat tubes having a plurality of air passageways, said plurality of flat tubes being separately and individually removable and replaceable, a removable fastening element binding said flat tubes



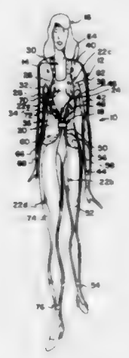
to each other to form a honeycomb section, and supporting elements removably holding said flat tubes on said air discharge outlet of said duct, said fastening element and said supporting elements being removable and replaceable to facilitate individual removal and replacement of said flat tubes.

4,807,447

HUMAN ENVIRONMENTAL CONDITIONER

James R. Macdonald, 627 Greenwood Ave., Akron, Ohio 44320, and George Spector, 233 Broadway, Rm 3815, New York, N.Y. 10007

Filed Oct. 28, 1987, Ser. No. 113,495
Int. Cl.[4] F25D *23/12*
U.S. Cl. 62—259.3 **1 Claim**

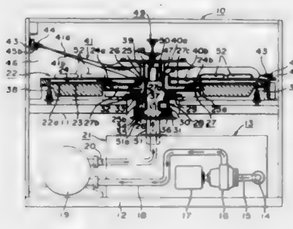


1. A human environmental conditioner which comprises:
(a) an undergarment worn over body of a person;
(b) a turbo pump compressor rotary generator worn on waist of said undergarment so that said generator can circulate refrigerent fluid therefrom;
(c) a plurality of closed recirculating conduits extending from said generator for carrying the refrigerant fluid through said undergarment to various areas of the body of the person, and
(d) a heat exchanger formed into said undergarment by interweaving said conduits to keep the body of a person cool in summer and warm in winter at a constant body temperature, wherein said turbo pump compressor rotary generator comprises:

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(e) a pair of turbo rotors having staggered vented flanges, said rotors in cooperation with said conduits, one of said rotors rotates clockwise and is driven by a motor, causing other of said rotors to rotate counterclockwise;
(f) a first modular valve shoe piston having a diaphram and positioned on one side of said rotors to be moved up and down by the breathing of the person to compress the refrigerant passing through said rotors;
(g) a second modular valve shoe piston having a follower and diaphram and positioned on opposite side of said rotors; and
(h) a cam driven by the motor, said cam engaging the follower on said second modular valve shoe to be moved up and down to compress the refrigerant passing through said rotors.

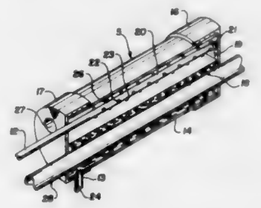
4,807,448
FREEZING APPARATUS
Masahide Hashimoto; Yoshitaka Kurisu; Hiroshi Suenaga, and Akio Katou, all of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 15, 1988, Ser. No. 168,383
Claims priority, application Japan, Mar. 18, 1987, 62-61152; Mar. 18, 1987, 62-61151; Mar. 18, 1987, 62-61153; Mar. 18, 1987, 62-61154; Mar. 18, 1987, 62-61155; Mar. 18, 1987, 62-61156; Mar. 18, 1987, 62-61160
Int. Cl.[4] F25D *17/02*
U.S. Cl. 62—376 **20 Claims**



1. A freezing apparatus which comprises;
a cooling hollow body adapted to receive thereon products to be frozen and adapted to be driven for rotation;
a flexible container made of a flexible sheet material which is arranged on the upper surface of said cooling hollow body so as to cover said products placed on said upper surface;
a cold brine circulating path including the hollow portion of said cooling hollow body and the interior of said flexible container which are mutually communicated to feed cold brine;
an adapter means comprising a plurality of adapters which are attached to the outer periphery of said flexible container; and
a guide means provided around the outer periphery of said flexible container to slidably support said adapters, whereby said flexible container is moved synchronously with said cooling hollow body due to a frictional force resulted between said flexible container and said cooling hollow body.

4,807,449
LATENT HEAT ECONOMIZING DEVICE FOR REFRIGERATION SYSTEMS
James R. Helmer, 205 Quincy St., Kingsford, Mich. 49801
Filed Nov. 10, 1986, Ser. No. 928,830
Int. Cl.[4] F25B *43/00*
U.S. Cl. 62—503 **17 Claims**

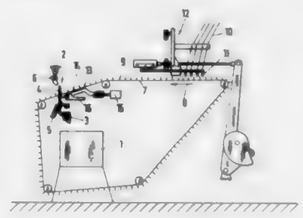
1. For use with a refrigeration system having an evaporator, a compressor, a condenser, a metering device and refrigerant lines therebetween, a refrigeration system component comprising
a closed hollow body having walls defining a chamber,
a chamber inlet means for receiving liquified and vaporized refrigerant from the condenser,
a distribution means connected to said chamber inlet means and extending into said chamber to distribute the liquified and vaporized refrigerant therein,
a plurality of conduits extending through said chamber and penetrating sealingly through said hollow body walls, each conduit having an exterior surface and an interior



passageway such that the exterior conduit surface will be in contact with the liquified and vaporized refrigerant in said chamber and said conduit interior passageway will be isolated therefrom,
one of said conduits will be wholly immersed in the liquid refrigerant in said chamber and adapted to be connected at one end to the refrigerant line leading from the evaporator and at the other end to the refrigerant line leading to the compressor, and
a chamber outlet means for flow to the metering device only of liquified refrigerant,

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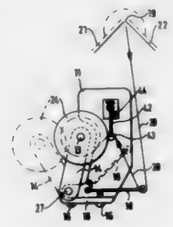
4,807,450
WARP KNITTING MACHINE WITH WEFT INSERTION ARRANGEMENT
Jakob Weiland, Rodgau, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany
Filed Jun. 3, 1988, Ser. No. 202,195
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1987, 3720348
Int. Cl.[4] D04B *23/06*
U.S. Cl. 66—84 A **7 Claims**



1. A warp knitting machine for delivering weft threads along a weft path to a needle bed having a needle bar, said machine comprising:
a weft thread magazine for transversely laying said weft threads across the breadth of said machine in parallel on said weft path, upstream of said needle bed,
a least one forwarding means for protruding into said weft path and through said needle bed for separating a leading one of said weft threads and bringing it to the downstream side of said needle bed,

at least one support element for said weft threads having a support surface directed towards said needle bed, and
a vibration element connected to a said weft thread support element.

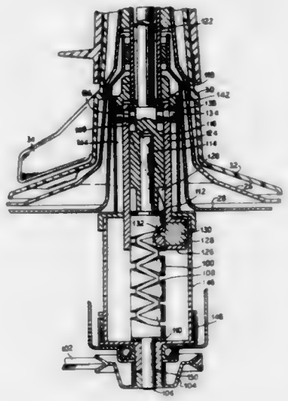
4,807,451
KNITTED FABRIC WINDING-UP DEVICE FOR FLAT KNITTING MACHINES
Ernst Goller, Reutlingen, and Fritz Walker, Kusterdingen, both of Fed. Rep. of Germany, assignors to H. Stoll GmbH & Co., Reutlingen, Fed. Rep. of Germany
Filed Mar. 4, 1988, Ser. No. 164,292
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1987, 3707141
Int. Cl.[4] D04B *15/88*
U.S. Cl. 66—149 R **13 Claims**



1. A knitted fabric winding-up device for flat knitting machines, with a winding roller which is interchangeably mounted on a support beneath the flat knitting machine, extends in the longitudinal direction of the machine, is drivable by means of a motor and to which the knitted fabric is guided over a pivotable guide roller by whose weight the knitted fabric is tensioned and whose pivot range is limited in both directions by electrical switches of a control device which acts on the drive motor of the winding-up device, characterised in that the support, which is also provided with a drive motor (25), comprises a lower supporting cross member (10) at both of whose ends upwardly directed supporting arms (14, 15) are located and are pivotable over a limited arc about an axis extending in the longitudinal direction of the supporting cross member (10), and at whose free upper ends the mounting positions and the coupling positions (31, 32) for the ends of interchangeable winding roller (13) are constructed, the arrangement being such that the winding roller (13) is pivotable from an inner position to an outer position located at the front side of the flat knitting machine and is also pivotable in the reverse direction.

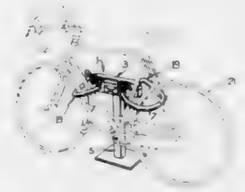
4,807,452
COMPACT TRANSMISSION FOR AUTOMATIC WASHER
Robert A. Breaner, St. Joseph Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Division of Ser. No. 848,281, Apr. 4, 1986, Pat. No. 4,774,822. This application Mar. 28, 1988, Ser. No. 174,182
Int. Cl.[4] D06F *37/40*
U.S. Cl. 68—23.3 **11 Claims**

5. In a clothes washing machine having a tub for receiving fabrics to be washed and an agitator positioned within said tub for agitation of said fabrics, a drive assembly for said agitator comprising:
an input shaft journalled for rotary motion;
an output shaft connected to said agitator and having at least a portion of its length in the form of a cylinder mounted coaxially around said input shaft and journalled for rotary motion;
an intermediate drive member mounted coaxially around said input shaft and coaxially within said output shaft;
a housing coaxially surrounding the assembly of said input shaft, said output shaft and said drive member;
said input shaft having a reversing thread formed on an exterior surface thereof;
said output shaft having at least one angled slot therethrough;
said housing having at least one vertical slot;
said drive member carrying a rotatable thread follower engagable with said thread of said input shaft;



said drive member having a radially outwardly extending projection engagable with said angled slot and said vertical slot;
whereby, rotary motion of said input shaft is converted to vertical reciprocating motion of said drive member through said thread and thread follower and the vertical reciprocating motion of said drive member is converted to oscillatory rotary motion of said output shaft through said projection and angled slot.

4,807,453
BICYCLE ANTI-THEFT DEVICE
Denis Berube, and Jean-Francois Simard, both of Montreal, Canada, assignors to Cyclopark Inc., Montreal, Canada
Filed Jun. 10, 1987, Ser. No. 60,359
Int. Cl.[4] E05B *71/00*
U.S. Cl. 70—233 **14 Claims**



1. A locking fixture for use in locking a two wheeled vehicle, said fixture comprising:
a housing;
means for mounting the housing at a fixed location;
at least one elongated, flexible locking member extending outside of the housing, said locking member being capable

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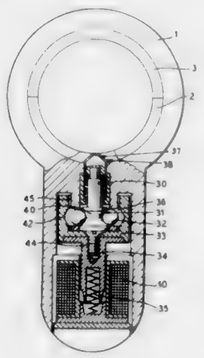
of being looped about a portion of the vehicle to be locked to said fixture;
means permanently fastening one end of said at least one locking member within the housing;
at least one opening in the housing to selectively receive the other end of said at least one locking member;
latch means within the housing for holding the other end of said at least one locking member within the housing when it is inserted into the housing through the opening;
lock means operable from outside of the housing for locking the latch means to prevent withdrawal of the other end of said at least one locking member from the housing; and
operator means mounted in the housing, operable from outside of said housing and mechanically connected to the latch means for manually moving said latch means between its holding and non-holding positions when the latch means is unlocked.
wherein said operator means are mechanically connected to the latch means through resilient means giving a slack to the connection, in order to prevent said operator means from being used to tamper with said latch means.

4,807,454

MEANS FOR LOCKING A DISPLACEABLE OR ROTATABLE PART

Pritimay Sengupta, and Ewald Koramayer, both of Berlin, Fed. Rep. of Germany, assignors to Zeiss Ikon AG, Fed. Rep. of Germany

Filed Apr. 18, 1988, Ser. No. 182,513
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1987, 3713653
Int. Cl.[4] E05B *47/00*
U.S. Cl. 70—277 **15 Claims**



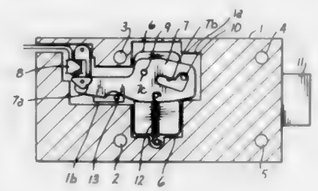
1. Locking means for preventing displacement of a displaceable member relative to a stationary member, comprising:
(a) electromagnet;
(b) an armature operatively associated with said electromagnet, said armature being retractable into said electromagnet upon energization of said electromagnet;
(c) a locking pin member located within said stationary member engageable with said displaceable member to prevent displacement of said displaceable member;
(d) a sleeve member coaxially surrounding said locking pin member and located on an end of said armature extending from said electromagnet;
(e) a groove circumferentially surrounding said locking pin member; and
(f) a plurality of balls located within bores in said stationary member radially movable between said grooves surrounding said locking pin member and an interior wall of said sleeve member, said radial movement of said balls being selectively limited by selective positioning of said sleeve member.

4,807,455

ELECTROMAGNETICALLY BLOCKING AND UNBLOCKING A LOCK FOR A SAFETY DEPOSIT BOX, STRONG BOX OR THE LIKE

Guenter Mauer, Heiligenhaus, Fed. Rep. of Germany, assignor to Mauer GmbH, Heiligenhaus, Fed. Rep. of Germany

Filed Dec. 29, 1986, Ser. No. 946,972
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1985, 3546241
Int. Cl.[4] E05B *47/00*
U.S. Cl. 70—277 **10 Claims**



1. Electromagnetically operated blocking/unblocking of locks for strong boxes, safety deposit boxes or the like under utilization of operating means for protracting and retracting a latch bolt, there being a housing having an opening for passage of the latch bolt, the housing being sufficient for accomodating at least one lock comprising:
an electromagnet mounted in the rear of the housing and having an armature being seated on a blocking lever;
spring means urging said armature against a yoke of the electromagnet;
means being a control lever or a slide for pivotal mounting said blocking lever, said means for pivoted mounting having a blocking nose; and
a control pin moved upon operating the lock, for pivoting the blocking lever about an axis spaced from the armature whenever the electromagnet is not energized, until said control pin runs against the blocking nose of said control slide or control lever thereby preventing retraction of the latch bolt, upon energizing said electromagnet the movement of the control pin causes the blocking lever to be pivoted about said armature permitting said control switch or lever to assume a latch bolt releasing disposition permitting retraction thereof.

4,807,456

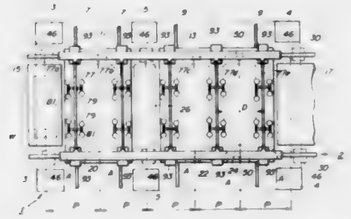
WORKPIECE TRANSFER DEVICE FOR PRESS MACHINE

Motoatsu Shiraishi; Mitsuki Nakamura, and Ryoichi Kageyama, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 25, 1987, Ser. No. 125,391
Claims priority, application Japan, Feb. 23, 1987, 62-39916
Int. Cl.[4] B21J *13/08*
U.S. Cl. 72—405 **5 Claims**

1. A workpiece transfer device in a press machine for pressing a plurality of workpieces that can be transferred in a workpiece transferring direction between stations, said workpiece transfer device comprising:
(a) two vertically movable bars extending along said workpiece transferring direction and vertically movable by a lifting/lowering mechanism;
(b) two feed bars mounted respectively on said vertically movable bars and axially movable relative to said movable bars by moving means to move said feed bars in said workpiece transferring direction between the stations;

(c) a plurality of handling bars detachably mounted on said feed bars and each having a plurality of workpiece holder means for holding the workpieces;
(d) means for detaching said handling bars from said feed bars; and
(e) a plurality of handling bar gripping devices disposed closely to opposite ends of said handling bars, said handling bar gripping devices being separate from said movable bars and feed bars, each of said handling bar gripping



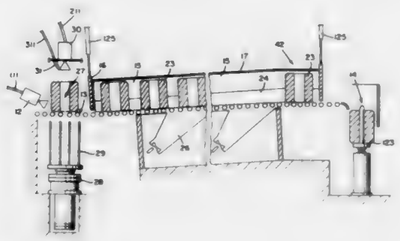
devices including a body and a swing arm angularly movably mounted on said body for movement between a first position and a second position, said swing arms being spaced from said handling bars in said first position and being in engagement with said handling bars in said second position for gripping one of the handling bars which has been detached from said feed bars so that said detached handling bars are supported in a predetermined orientation.

4,807,457

LINE TO COOL WOUND BUNDLES OF ROLLED WIRE AND ROD

Alfredo Polino, Ronchi Dei Legionari; Geremia Nonini, Buttrio, and Ferruccio Tonut, Udine, all of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Nov. 27, 1987, Ser. No. 125,935
Claims priority, application Italy, Dec. 2, 1986, 60520 B/86
Int. Cl.[4] B21B *45/02, 43/00*; B21C *47/02*
U.S. Cl. 72—128 **7 Claims**



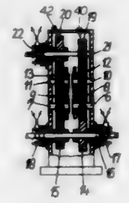
1. A line to process rolled stock of wire and rod having a diameter ranging from a few millimeters up to about 45 millimeters, comprising:
a roller conveyor;
a cooling tunnel located around at least a portion of the roller conveyor;
a head to form coils of wire and deposit the coils on the roller conveyor;
a reel to collect the coils of wire formed by the head and to form wound bundles of wire;
first and second Garrett-type reels located along lateral sides of said head, said Garrett-type reels being selectively rotatable and stationary;
at least one Edenborn-type coil-forming head which can cooperate with said Garrett-type reels to form wound bundles of wire or rod when said Garrett-type reels are stationary;
at least one intake which can cooperate with said Garrett-type reels to form wound bundles of wire or rod when said Garrett-type reels are rotated;
means for selectively supplying wire and rod to said head, said at least one Edenborn-type coil-forming head and said at least one intake; and
a discharge conveyor to discharge wound bundles of wire and rod.

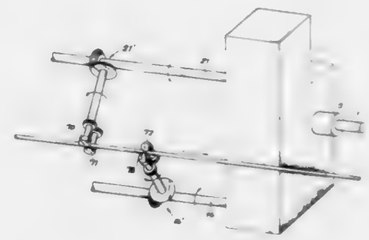
4,807,458

DIVIDING GEAR UNIT FOR A ROLL BLOCK

Elmar Buch, Essen; Jürgen Greff, Karlsbrunn; René Marzinkewitsch, and Herbert Vogelgesang, both of St. Ingbert, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit Beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Jul. 16, 1986, Ser. No. 886,530
Claims priority, application European Pat. Off., Jul. 18, 1985, 85 109991.2
Int. Cl.[4] B21B *1/16, 35/12*
U.S. Cl. 72—235 **3 Claims**





1. A roll mill block for rolling a wire to final gauge, comprising:
a plurality of vertical and horizontal roll units displaced alternately at right angles to each other and positioned along a rolling line, each of said roll units comprising:
a pair of working rolls on opposite sides of a wire to be rolled, each successive pair of said roll units being driven with respective speeds,
bevel gearing for driving the rolls of a respective pair in opposite directions; and
distributing driving means for driving said plurality of vertical and horizontal roll units, said driving means comprising:
an input driving shaft rotatable about an axis of rotation parallel to said rolling line,
two output driven shafts extending along said rolling line and being parallel thereto, said output shafts being connected to respective roll units by said bevel gearing,
two gear trains between said input shaft and said output shafts; and

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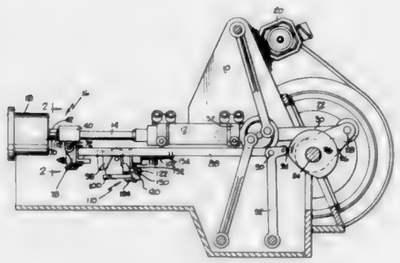
engaging means for selectively connecting said input drive shaft with both of said output shafts through respective ones of said gear trains and producing different rotational speeds in both of said output shafts but with a fixed speed ratio between said output shafts, depending upon the connected gear train.

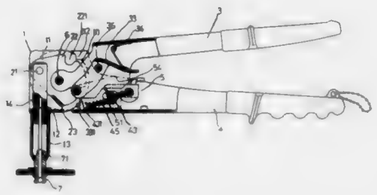
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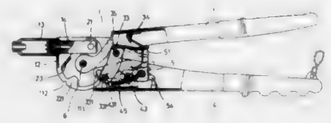
REDRAW APPARATUS FOR A CAN BODY MAKING APPARATUS

Conrad M. Grimm, and Bert Johansson, both of Golden, Colo., assignors to Adolph Coors Company, Golden, Colo.

Filed Jul. 1, 1987, Ser. No. 69,840
Int. Cl.[4] B21D *22/21*
U.S. Cl. 72—347 **14 Claims**







1. A can body making apparatus comprising means for reciprocating a ram assembly along its longitudinal axis, a housing holding the can forming and ironing dies and a reciprocating redraw apparatus which functions to position a can blank before the can forming and ironing dies so that the ram assembly pushes the can blank through the can forming and ironing dies wherein the redraw apparatus comprises:

housing means mounted in a fixed location for holding can forming and ironing dies;

a ram assembly;

ram reciprocation means for reciprocating said ram assembly;

at least a pair of spaced apart support posts fixedly mounted on said housing means;

said pair of spaced apart support posts projecting out of said housing means in a direction toward said ram reciprocation means;

a redraw carriage having at least a pair of spaced apart bearing means fixedly mounted therein;

said pair of spaced apart bearing means being slidably mounted on said pair of spaced apart support posts to provide substantially friction-free movement of said redraw carriage; and

redraw reciprocation means for reciprocating said redraw carriage.

4,807,460

RIVETER WITH ADJUSTABLE HEADPIECE

Lieu C. Tzong, No. 45, Lane 114, Kang-Tzeng Road, Ta-Li Hsian, Taichong Hsien, Taiwan

Filed Mar. 17, 1987, Ser. No. 26,768
Int. Cl.[4] B21J *15/34*
U.S. Cl. 72—391 **1 Claim**

1. An adjustable riveter comprising:

(a) a riveting headpiece (1) including a pair of opposed side plates (11), a connection piece (12) joining the side plates (11), a sleeve holder (13) extending from the connection piece (12), a sleeve tube (14) engageable within the sleeve holder (13), and first and second pairs of 90° notches (112) formed in spaced corresponding edge portions of the side plates (11);

(b) a cam actuator (2) including a pair of opposed side plates (22), first and second pairs of openings (221) formed in spaced corresponding edge portions of the side plates (22), and a first master pin (21) securing the sleeve tube (14) to the cam actuator (2);

(c) a pressing handle (3);

(d) an angle-adjusting plate (33) pivotally secured to the pressing handle (3) the plate (33) including a pin (331) for selective engagement within the first and second pairs of openings (221) and a spring (34) biasing the plate (33) away from handle (3);

(e) a fixed handle (4) including a fork head;

(f) a second master pin (6) pivotally securing the headpiece (1), cam actuator (2) and pressing handle (3) to the fork head of the fixed handle (4);

(g) a blockpiece (43) carried by the fixed handle (4) for selective engagement within the first and second pairs of notches (112) and a spring (45) biasing the blockpiece (43) away from notches (112); and

(h) an adjustable cam (5) carried by the fixed handle (4) for engaging the angle-adjusting plate (33) to disengage the pin (331) from the first or second pair of openings (221) and simultaneously disengage the blockpiece (431) from the first or second pair of notches (112); thereby permitting selective disposition of the headpiece (1) into either a crank position wherein the pin (331) and the blockpiece (431) are engaged within, respectively, the first pair of openings and the first pair of notches or a straight position wherein the pin (331) and the blockpiece (431) are engaged within, respectively, the second pair of openings and the second pair of notches.

4,807,461

MOTOR GRADER MAIN FRAME

Dennis A. Brimeyer, and David W. Stubben, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jan. 21, 1986, Ser. No. 821,427
Int. Cl.[4] E02F *3/76*
U.S. Cl. 172—793 **2 Claims**

1. A main frame for a motor grader vehicle having a wheeled engine frame articulately connected at the rear thereof, said main frame comprising:

an elongated unit including a rear unit for supporting an operator's station and a center unit secured together at adjoining ends, said rear unit and said center unit being in the form of a box section the entire length of said elongated unit, the transverse dimension of said elongated unit being substantially constant, said center unit having a location intermediate its ends, at which location, said center unit supports a saddle device having a ground engageable blade suspended therefrom, said center unit being free of structural strengthening means in addition to the box section for supporting the saddle device at said location, said center unit having a substantially constant outer transverse width at said location, said box section



including pairs of opposed transversely extending and normally horizontally disposed bosses extending into said center unit at said location, said pairs of bosses being in longitudinally spaced relationship with respect to each other, and said saddle device mounted by pins to said pairs of bosses; and

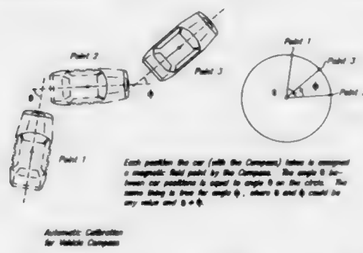
a front unit connected to the free end of said center unit and supported by ground-engageable wheels.

4,807,462

METHOD FOR PERFORMING AUTOMATIC CALIBRATIONS IN AN ELECTRONIC COMPASS

Rafi Al-Attar, Southfield, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Apr. 3, 1987, Ser. No. 34,134
Int. Cl.[4] G01C *17/38*
U.S. Cl. 73—1 E **12 Claims**



1. An automatic calibration method for use in an electronic compass control circuit that includes a microcomputer, a flux-gate, a flux-gate driver, a bandpass filter, a synchronous detector, an integrator and a summing amplifier; the control circuit equipped with a ranging circuit that includes an operational amplifier with resistive negative feedback connected to the output of the integrator; an RC charging network connected to the non-inverting input to the operational amplifier; a gate switch connected between the RC charging network and the microcomputer such that the microcomputer charges the RC charging network when the gate switch is closed; and comparator means to respond to the output of the integrator to control the operation of the gate switch; the calibration method for use with a vehicle equipped with a display for indicating information to the operator of the vehicle; the calibration method performed completely automatically while the operator the vehicle is driving the vehicle and comprising:

measuring and storing at least three compass headings, where each heading is measured and stored when the direction in which the vehicle is being driven changes;

deriving the coordinates for the center of the earth's magnetic field circle by using the compass headings;

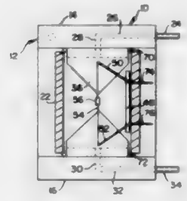
computing directional offset values by using the coordinates for the center of the earth's magnetic field circle for use in magnetic compass heading computations thereby eliminating the effects of the vehicle's magnetic field on the reading of the direction that the vehicle is pointed, in the earth's magnetic field.

4,807,463

OXYGEN MEASURING CELL

Wilhelm Ostermeier, Ratingen, Fed. Rep. of Germany, assignor to M & C Products Analysentechnik GmbH, Fed. Rep. of Germany

Filed Jan. 23, 1987, Ser. No. 6,721
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1986, 3633750
Int. Cl.[4] G01R *33/12;* **G01N** *27/00*
U.S. Cl. 73—27 A **6 Claims**



1. A device for measuring oxygen comprising in combination: hollow chamber means formed to be substantially cylindrical in shape with a central longitudinal axis and having a top end aperture and a lower end aperture and fabricated of transparent material top end means formed to pass magnetic flux and having a base section and an inclined section, said base section formed to substantially match said top end aperture and being inserted, said inclined section first, into said hollow chamber means to substantially form a seal between said top end means and said top end aperture, said inclined section of said top end means having at least first and second beveled side sections which start at said base section of said top end means and are inclined toward each other so as to end in a ridge formed between said last mentioned beveled side sections; lower end means formed to pass magnetic flux and having a base section and an inclined section, said base section formed to substantially match said lower end aperture and being inserted, said inclined section first, into said hollow chamber means to substantially form a seal between said lower end means and said lower end aperture, said inclined section of said lower end means having at least first and second beveled side sections which start at said base section of said lower end means and are inclined toward each other so as to end in a ridge formed between said last mentioned beveled side sections; said top end means disposed with respect to said lower end means in said hollow chamber to define a free space section of said hollow chamber means so that magnetic flux passing through said first and second beveled side sections of said top end means into said first and second beveled side sections of said lower end means creates an inharmonious field of magnetic flux between said top end means and said lower end means; dumbbell shaped means with gas filled retainers on either end and including mounting means which are disposed to enable said dumbbell shaped means to partially rotate in said free space around said central longitudinal axis of said hollow chamber; first and second gas conduit means formed respectively in said top end means and in said lower end means to enable gases containing oxygen to pass through said top end means, through said free space, across said gas filled retainers to create a torque by said dumbbell shaped means, commensurate with the quantity of oxygen present in said gases passing through said hollow chamber.

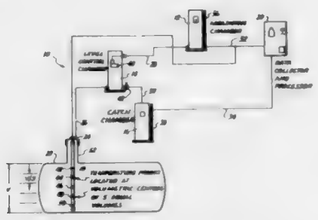
VOL 1099 ISS 4 FEB 28 1989 UMI

4,807,464

LEAK DETECTOR APPARATUS AND METHOD

Louis J. Jasetta, 7940 Teton Rd., Orland Park, Ill. 60462

Filed Jul. 17, 1987, Ser. No. 74,632
Int. Cl.[4] G01M *3/32*
U.S. Cl. 73—49.2 **24 Claims**



1. An apparatus useful for detecting a leak in a tank filled with liquid comprising:

measuring chamber means adapted to hold a volume of liquid and having first sensing means acting to monitor the volume of liquid in said measuring chamber means;

level control chamber means in fluid communication with said measuring chamber means and said tank, and adapted to maintain a substantially constant liquid head on said tank, said level control chamber means including inlet means adapted to receive liquid from said measuring chamber means to maintain said substantially constant liquid head and outlet means adapted so that liquid flows from said level control chamber means; and

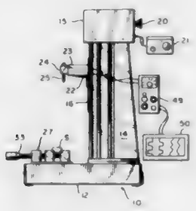
catch chamber means in fluid communication with said level control chamber means and adapted to receive said liquid from said outlet means, said catch chamber means having second sensing means acting to monitor the volume of liquid in said catch chamber means.

4,807,465

APPARATUS FOR MEASURING CAPSULE PLUG, GRANULE AND PELLET HARDNESS

John E. Botzolakis, Randolph; Michael R. Harris, Hackettstown, and Russell U. Nesbitt, Somerville, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 19, 1988, Ser. No. 158,012
Int. Cl.[4] B23Q *17/20*; G01N *3/08, 3/20*
U.S. Cl. 73—78 **11 Claims**



10. In an apparatus for measuring the hardness of capsule plugs, granules and pellets, wherein a movable probe is mounted for movement toward and away from a base on which a test subject may be supported for contact by the probe to cause stress failure of the test subject, and including means for measuring the force applied by the probe to the test subject, the improvement comprising:

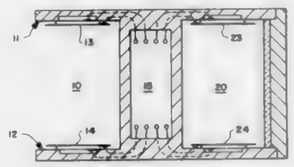
a test subject support means for holding the test subject while it is being contacted by the probe, said support means having a plurality of support sections movable into juxtaposed relationship with one another to define a continuous support surface for supporting a specimen continuously throughout its length, and movable away from one another into mutually spaced apart relationship, whereby spaced sections are provided for supporting a test subject at spaced locations.

4,807,466

METHOD AND APPARATUS FOR DETERMINING THE CHARGING OF CHARCOAL FILTERS

Jörg Boscher, Preetz, and Karl-Ernst Biehl, Hanau, both of Fed. Rep. of Germany, assignors to Honeywell-Elac-Nautik GmbH, Kiel, Fed. Rep. of Germany

Filed Jan. 2, 1987, Ser. No. 240
Claims priority, application European Pat. Off., Jan. 18, 1986, 86100623
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—38 **10 Claims**



1. A method for determining the charging of a charcoal filter with gases and vapors, comprising the following steps:

a. measuring the acoustical impedance of a partial volume of the filter;

b. comparing the measured acoustic impedance with a reference value corresponding to a non-charged filter;

c. measuring the electrical impedance of this partial volume of the filter;

d. comparing the measured electrical impedance with a reference value derived from a non-charged filter; and

e. determining an electrical signal depending on the charging by comparing the change of the electrical impedance with the change of the acoustical impedance in relation to the associated reference values.

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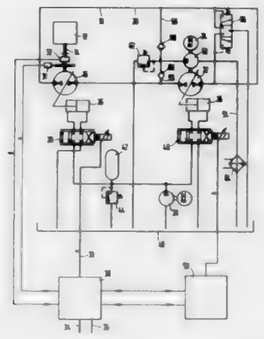
DYNAMIC LOAD TEST SYSTEM FOR DRIVE UNITS

Artur Kugler, Augsburg, Fed. Rep. of Germany, assignor to Renk Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Jul. 8, 1987, Ser. No. 70,908
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1986, 3623264
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—118.1 **18 Claims**

18. A flywheel load mass simulating test system for examination of drive system component specimens, the test system comprising a reversible hydrostatic unit, drive train means for operably interconnecting the hydrostatic unit and a test specimen, the hydrostatic unit including means for simulating a flywheel mass torque load, means for varying the flywheel

mass torque load applied to the specimen, the means for varying including means for rapidly varying the hydrostatic unit



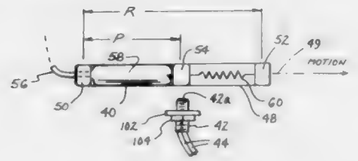
feed volume as a function of the instantaneous positive or negative rotational acceleration of the specimen.

4,807,468

ON-BOARD TIRE PRESSURE INDICATING SYSTEM

Louis Galan, Ann Arbor, Mich., assignor to Telemagnetics, Inc., Southfield, Mich.

Filed Mar. 17, 1987, Ser. No. 26,953
Int. Cl.[4] B60C *23/02*; G01L *7/06, 9/10*
U.S. Cl. 73—146.5 **14 Claims**



1. A system for providing inflation pressure information from a rotating pneumatic tire comprising means defining a reference dimension which is of circumferential extent and which rotates with the tire, means, related to inflation of the tire, defining an inflation measurement dimension which is of circumferential extent which rotates with the tire and sensor means including a Hall effect sensor which does not rotate with the tire and which is disposed in sensing relationship to the first-mentioned means and the second-mentioned means, said sensor means further comprising means for sensing via said Hall effect sensor said reference dimension, means for sensing via said Hall effect sensor said measurement dimension, and means for correlating the sensed measurement and reference dimensions to provide inflation pressure information for the tire.

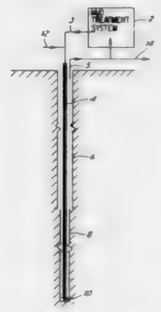
4,807,469

MONITORING DRILLING MUD CIRCULATION

Christopher Hall, Stapleford, England, assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Mar. 7, 1988, Ser. No. 164,614
Claims priority, application United Kingdom, Mar. 9, 1987, 8705503
Int. Cl.[4] E21B *49/08*
U.S. Cl. 73—155 **13 Claims**

1. A method for the monitoring of drilling mud circulation in a wellbore, by injecting in a discrete way a known amount or concentration of at least one tracer ion in the supply mud and by analysing on site the return mud for the tracer, said method being characterised in that said tracer ion is substantially non-interactive with the other mud components and with the strata drilled, the concentration of said tracer ion is measured, as a



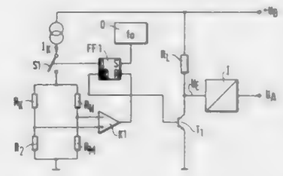
function of time, in the return mud and its residence time density function f(t) is determined from said measured concentration in order to assess the hydrodynamic dispersion of the circulating mud.

4,807,470

CIRCUIT ARRANGEMENT WITH A FLOW-MEASURING PROBE OPERATED IN A BRIDGE CIRCUIT

Josef Kleinhans, Ladwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE86/00440, § 371 Date Oct. 7, 1987, § 102(e) Date Oct. 7, 1987, PCT Pub. No. WO87/05694, PCT Pub. Date Sep. 24, 1987
PCT Filed Nov. 3, 1986, Ser. No. 130,233
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1986, 3608538
Int. Cl.[4] G01F *1/68*
U.S. Cl. 73—204.15 **5 Claims**



1. A circuit arrangement having a flow-measuring probe operated in a bridge circuit, the circuit arrangement providing an output signal which is a function of the incident air volume through a flow channel in which the flow-measuring probe is disposed and furthermore providing said output signal proportional to an operating supply voltage to the circuit arrangement, comprising a resistive bridge circuit with said flow-measuring probe provided as one element of the bridge circuit, means for determining a balanced state of the bridge circuit comprising means coupled to said bridge circuit for breaking a connection between the bridge circuit and the operating supply voltage when bridge balance has been sensed, and for re-establishing the connection between the bridge circuit and the operating supply voltage after a predetermined imbalance of the bridge circuit has been sensed, and further comprising integrator means coupled to said supply voltage and responsive to the state of balance or imbalance of said bridge circuit, such that said operating supply voltage is supplied to said

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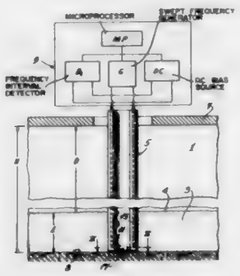
integrator means when said operating supply voltage is connected to said bridge circuit.

4,807,471

LEVEL MEASUREMENT FOR STORAGE SILOS

Thomas C. Cournane, 4475 de Maisonneuve Blvd. W., Westmount, PQ H3Z 1L8, and Cyril F. McSweeney, 4800 de Maisonneuve Blvd. W., #217, Westmount PQ H3Z 1M2, both of Canada

Filed Sep. 16, 1987, Ser. No. 97,057
Int. Cl.[4] G01F *23/28*
U.S. Cl. 73—290 R 5 Claims



1. Apparatus for determining the level of material in a silo, comprising:

elongated cable means having a length equal to the height of said silo and being disposed in said silo and extending along the length thereof, whereby the cable extends from the top end to the bottom end of said silo;

generator means for generating an AC electric signal, said generator means including means for automatically and continuously sweeping the frequency of the generated signal through a pre-selected frequency range, said generator means being connected to the said cable means to thereby transmit said generated signal along said cable means;

whereby, said generated signal is transmitted along said cable means and the frequency of the generated signal is automatically and continuously swept, so that peak and null voltages will occur at frequency intervals, said frequency intervals being a function of said level of material;

means for detecting said frequency intervals;

means for determining said level connected to said means for detecting;

said generator means and said means for detecting being connected at the top end of said cable means and a portion of said signal transmitted along said cable means being reflected at the top surface of said material to provide signals proportional to said level, the remainder of said signal being reflected at the bottom end of said cable means to cause interference signals;

said cable means including means for eliminating said interference signals comprising an adjustable impedance device at the bottom end of said cable means; and

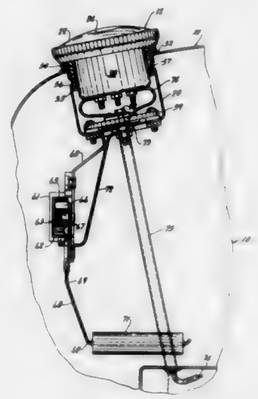
means for adjusting the impedance of said adjustable impedance device to equal the impedance of the portion of the cable means submerged in said material during operation of the apparatus.

4,807,472

MOTORCYCLE FUEL LEVEL GAUGE

William H. Brown, Menomonee Falls, and Michael W. Hamann, Waukesha, both of Wis., assignors to Harley-Davidson, Inc., Milwaukee, Wis.

Filed Jul. 31, 1987, Ser. No. 80,095
Int. Cl.[4] G01F *23/02, 23/26*
U.S. Cl. 73—313 7 Claims



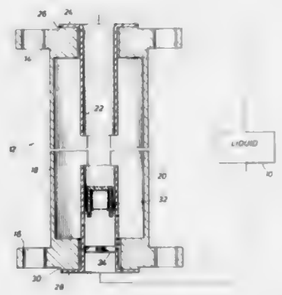
1. A fuel level gauge assembly for a fuel tank, said assembly including a housing having a removable subassembly having a portion thereof secured to and extending outwardly of said fuel tank and having a subassembly portion extending inwardly of the fuel tank, and a retained cover member for the outwardly extending portion of said housing, said cover member including a viewing area in a selected portion of said cover member for visual observation of fuel level indicating means contained within said housing, and wherein the said cover member and said outwardly extending subassembly portion are characterized in appearance to substantially resemble a conventional fuel tank filler cap.

4,807,473

THERMOPLASTIC SIGHT MONITOR

William A. Jackson, Houston, Tex., assignor to Jogler, Inc., Houston, Tex.

Filed Dec. 21, 1987, Ser. No. 135,705
Int. Cl.[4] G01F *23/02*; F16L *47/00*
U.S. Cl. 73—323 8 Claims



1. A sight monitor for visually monitoring a liquid of an accompanying liquid system, the liquid system connectible to the sight monitor with connection means, the sight monitor comprising

a thermoplastic tube having a longitudinal channel throughout its length for receiving liquid from the accompanying liquid system, the tube sufficiently translucent to permit the liquid to be seen in the tube,

a hollow annular flange connected to the thermoplastic tube, the flange having a top, a bottom, a central opening in the top, an interior channel therethrough in communication with the central opening, and the top of the flange having a central section adjacent and about the central opening, the thermoplastic tube receivable in and received in the interior channel of the flange and its central opening,

the flange having mating means for coaction with the connection means for connecting the sight monitor to the liquid system, and

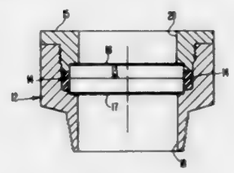
the themoplastic tube having at least one end with an outwardly flaring portion lying along the top of the flange to hold the tube in location at the flange, and the tube having a lower end through which the longitudinal channel extends.

4,807,474

SIGHT GLASS ASSEMBLY

Robert J. Foster, Leawood, Kans., assignor to Pressure Products Company, Inc., Charleston, W. Va.

Continuation of Ser. No. 820,229, Jan. 21, 1986, abandoned. This application Dec. 7, 1987, Ser. No. 132,626
Int. Cl.[4] G01F *23/02*
U.S. Cl. 73—331 12 Claims



1. A sight glass assembly, comprising:

a housing adapted to be mounted on a wall, said housing having an outer annular surface and a bore therethrough, said housing bore having an enlarged bore section provided with a recess aligned with said housing bore, said recess having a shoulder;

a lens partially disposed within said recess and extending through said enlarged bore section seating on said shoulder, at least one deformable sealing ring mounted on said lens and disposed between a periphery of said lens and a wall of said enlarged bore section;

a retainer member threadedly mounted on said housing, said retainer member having a laterally projecting annular flange portion provided with an inwardly facing annular surface and a bore therethrough disposable in alignment with said housing bore when said retainer member is mounted on said housing, said retainer bore having a recess aligned with said retainer bore, said recess having a shoulder with said lens being disposed between said housing and retainer shoulders, both recesses in said retainer and said enlarged bore section being approximately the same size as a cross section of said lens,

said retainer member having compressing means receivable within said enlarged housing bore section between said housing and said lens when said retainer member is mounted on said housing for compressing said at least one deformable sealing ring against said housing shoulder and causing said sealing ring to expand laterally and place said lens in peripheral compression; and

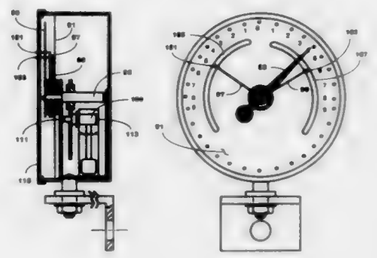
means for restricting the travel of said retainer member into said housing defined by said inwardly facing annular surface of said retainer member being engageable with said outer annular surface of said housing when said retainer member is threaded into said housing.

4,807,475

ACCELEROMETER

Wayne B. Graham, 11630 Jessica La., Los Altos Hills, Calif. 94022

Filed Sep. 2, 1987, Ser. No. 92,065
Int. Cl.[4] G01P *15/04*
U.S. Cl. 73—492 7 Claims



1. An apparatus for measuring acceleration comprising:

a first shaft;

a pendulum fixed to said first shaft such that movement of said pendulum causes rotation of said first shaft;

a first gear member attached to said first shaft, said first gear member having a portion with gear teeth on an internal arc;

a second shaft parallel to and spaced apart from said first shaft;

a second gear member attached to said second shaft, said second gear member being an external gear and engaging said first gear member such that said second shaft rotates in the same rotary direction as said first shaft;

a first pointer attached to said second shaft for indicating the rotation of said second shaft;

a dial face adjacent to said first pointer, said dial face having a scale to indicate the amplitude of movement of said first pointer;

a second pointer rotating about the same center as said first pointer, said second pointer operable by said first pointer in one rotary direction, said second pointer for indicating the maximum movement of said first pointer in said one rotary direction;

a frame for supporting said first and second shafts, said pointers and said dial face; and,

mounting means connected to said frame for mounting said apparatus to another body.

4,807,476

VARIABLE ANGLE TRANSDUCER SYSTEM AND APPARATUS FOR PULSE ECHO INSPECTION OF LAMINATED PARTS THROUGH A FULL RADIAL ARC

James E. Cook, Seattle; James C. Kennedy, and Fred D. Young, both of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 22, 1986, Ser. No. 945,108
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—620 1 Claim

1. An ultrasonic variable angle scanning apparatus comprising in combination:

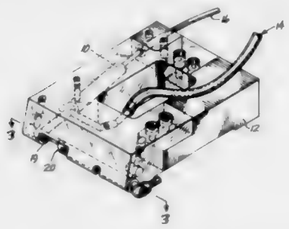
a housing;

a fixed reflector mounted in said housing for reflecting incident sound wave energy ninety degrees;

a rotating reflector axially disposed with respect to said fixed

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reflector, said rotating reflector providing rotation of sound wave energy received from said fixed reflector about a radial arc which cuts through the part under inspection.

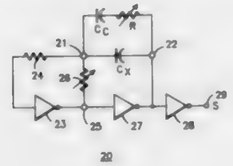


4,807,477

CAPACITIVE TEMPERATURE COMPENSATION FOR A PRESSURE SENSOR

Donald O. Myers, Elgin, and Gregory D. Stamm, La Grange, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 1, 1988, Ser. No. 150,602
Int. Cl.[4] G01L 9/12, 19/04
U.S. Cl. 73—708 20 Claims



11. A capacitive sensor with temperature compensation comprising:

a capacitive transducer element connected between two end terminals, said capacitor transducer element providing between said end terminals a variable capacitance which varies in accordance with a variable parameter, other than temperature, the magnitude of which is desired to be sensed, said variable capacitance having a predetermined temperature coefficient of capacitance (TCC) with a predetermined polarity which provides an undesired capacitance variation as a function of temperature;

sensor circuit means, including said capacitive transducer element, in which an electrical signal at a predetermined operative frequency is applied to said transducer element to provide an output signal varying in accordance with the capacitance variation of said transducer element provided across said two end terminals in response to said sensed variable parameter; and

compensation means, coupled to said transducer element, for altering the temperature variation of said output signal, said compensation means comprising,

a series circuit comprising a compensation capacitor connected in series with a resistor, said series circuit being connected across said end terminals and in parallel to said capacitive transducer element, said compensation capacitor having a temperature coefficient of capacitance of opposite polarity with respect to the polarity of the temperature coefficient of capacitance of said variable capacitance, and said resistor providing a nonnegligible resistive impedance at said predetermined operative frequency with respect to the reactive impedances of said variable capacitance or said compensation capacitor, whereby said series circuit can provide for adjusting the temperature variation of said output signal by adjusting the magnitude of said resistor.

4,807,478

PRESSURE TRANSDUCER

Joseph T. Betterton, Arab; Alfred H. Glover, Decatur, and Thomas S. McKee, Madison, all of Ala., assignors to Chrysler Motors Corporation, Highland Park, Mich.

Filed Nov. 3, 1987, Ser. No. 116,439
Int. Cl.[4] G01L 7/08, 9/02
U.S. Cl. 73—725 2 Claims



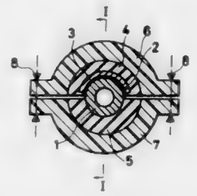
2. A pressure transducer, comprising: a generally hollow base member having an apertured first end to admit a pressurized fluid therein; a generally hollow housing attached to the base member defining an interior space; a flexible diaphragm member supported at its peripheral edge between the base and housing members, the diaphragm having a movable mid portion separating the interior space from the pressurized fluid within the base member; a piston member in the interior space operatively connected to the mid portion of the diaphragm; means between the piston and the housing preventing rotation of the piston while permitting axial movements thereof corresponding to changes in fluid pressure; the piston having a tubular portion extending coaxially through the housing, a helically extending channel means formed in the tubular wall portion of the piston; an elongated support member attached to the housing and extending axially through the housing interior and the tubular portion; a follower member having an apertured central portion, the elongated support member extending through the apertured central portion permitting the follower member to rotate thereabout; the follower member further having a radially extending arm which operatively interacts with the helical channel of the encircling tubular portion whereby the arm is moved in the circumferential direction and the follower is rotated as the tubular portion moves axially in the housing; a roller follower means positioned between the radially extending arm of the follower member and the surfaces of the piston's tubular portion which define the helically extending channel therein; a contact bearing assembly rotatively supported about the elongated support member adjacent the follower member; means connecting the contact bearing assembly and the follower member so that they rotate together; and electrical circuit board having a resistor grid with a generally circular pattern thereon positioned in the interior space by the housing member whereby a sliding contact between the contact bearing assembly and the board is produced by relative rotation therebetween.

4,807,479

TRANSDUCER FOR DETECTING PRESSURE CHANGES IN PIPES

Junichi Seko, Takatsuki, and Masaaki Kanesobu, Suita, both of Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Filed Mar. 3, 1988, Ser. No. 163,846
Claims priority, application Japan, Mar. 6, 1987, 62-52822
Int. Cl.[4] G01L 7/04, 9/08
U.S. Cl. 73—730 11 Claims



1. A transducer for detecting pressure changes in a pipe by detecting deformation of the pipe and for converting the pressure changes in the pipe into electric signals, said transducer comprising:

a sensor element having a bimorph structure made of piezoelectric material, and

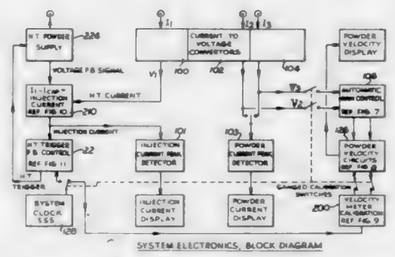
a holder for forcing the sensor element against an outer surface of the pipe.

4,807,480

FLOW MEASUREMENT/METERING

Brian C. O'Neill, and Christopher A. Willis, both of Nottingham, England, assignors to National Research Development Corporation, London, England

Filed Aug. 5, 1986, Ser. No. 893,236
Claims priority, application United Kingdom, Aug. 6, 1985, 8519685
Int. Cl.[4] G01F 1/74
U.S. Cl. 73—861.04 8 Claims



8. A method of measuring the mass flow rate of a powder comprising:

constraining the powder to flow in a tube in a required flow direction;

injecting a plurality of pulses of electrical charge of predetermined value into the powder to be carried by the powder particles downstream;

detecting at a plurality of positions downstream from the injection point a charge present at that position following each pulse of charge; and

calculating from the predetermined value of injected electrical charge and detected charge the mass of powder flowing in the tube.

4,807,481

THREE-IN-ONE VORTEX SHEDDING FLOWMETER

Hyuk S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 928,977, Oct. 20, 1986, Pat. No. 4,754,649, and a continuation-in-part of Ser. No. 922,850, Oct. 24, 1986, Pat. No. 4,727,756, and a continuation-in-part of Ser. No. 12,680, Feb. 9, 1987. This application Mar. 30, 1987, Ser. No. 31,982
The portion of the term of this patent subsequent to Mar. 1, 2005, has been disclaimed.
Int. Cl.[4] G01F 1/32
U.S. Cl. 73—861.24 26 Claims



1. An apparatus for measuring fluid flow comprising:

(a) a body including a flow passage;

(b) a vortex generator of an elongated cylindrical shape disposed across a first cross section of the flow passage; and

(c) a planar member disposed generally parallel to the vortex generator across a second cross section of the flow passage on a plane generally parallel to the central axis of the flow passage, wherein at least one extremity of the planar member is secured to the wall of the flow passage in an isolated arrangement from the vortex generator; and

(d) a transducer means secured to the body including a force transmitter member extending from the transducer means in an isolated arrangement from the vortex generator, wherein the force transmitter member is connected to the other extremity of the planar member opposite to said one extremity by a mechanical coupling;

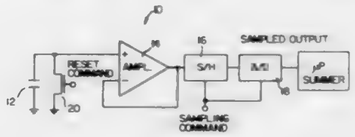
wherein the transducer means provides signals related to alternating lift forces on the planar member exerted by vortices shed from two sides of the vortex generator in an alternating pattern as a measure of fluid flow through the flow passage.

4,807,482

METHOD AND APPARATUS FOR MEASURING STIMULI APPLIED TO A PIEZOELECTRIC TRANSDUCER

Kyung T. Park, Upper Darby, and Richard D. Klafter, Wyncote, both of Pa., assignors to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Filed May 18, 1987, Ser. No. 51,440
Int. Cl.[4] G01L 1/16
U.S. Cl. 73—862.68 29 Claims



1. Method of measuring a stimulus applied to a piezoelectric transducer comprising the steps of:

(a) sampling the output of the transducer in response to the stimulus at intervals during application of the stimulus,

(b) resetting the output of the transducer to a predetermined value immediately following each sampling step, and

(c) summing the values of the sampled transducer output for

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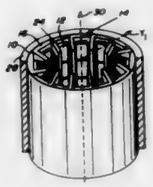
each sampling step to provide a value indicative of the total applied stimulus.

4,807,483

SLAT BELT FOR CENTRIFUGAL TEST ROTORS

Herschel E. Wright, Santa Clara, and Lawrence E. Stahl, San Mateo, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Oct. 27, 1986, Ser. No. 923,519
Int. Cl.⁴ G01M *19/00*
U.S. Cl. 73—865.3 **8 Claims**



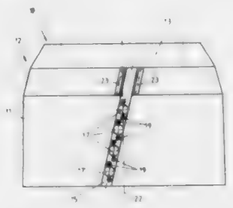
1. A slat belt for insertion into a centrifugal test rotor, the slat belt adapted to support and contain a plurality of integrated circuits during centrifuge operation, said slat belt comprising:
a flat flexible belt which when rolled will conform in shape to the inner circumference of a centrifugal test rotor;
said belt securing a plurality of slats, each slat being positioned side to side along the length of said belt;
each slat having a generally L-shaped cross section, defined by a pair of intersecting members;
one of said members being affixed to said belt, and the other member extending radially inward such that a pair of adjacent slats move towards each other to contain integrated circuits as the belt is rolled and away from each other when the belt is laid out flat, whereby the integrated circuits are easily inserted into and removable from the belt.

4,807,484

APPARATUS FOR THE MEASUREMENT AND NON-DESTRUCTIVE MATERIAL TESTING OF LAID PIPELINES

Hartmut Goedecke, Weilburg, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH and Pipetronix GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Aug. 6, 1987, Ser. No. 82,214
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1986, 3626646
Int. Cl.⁴ G01B *5/28*
U.S. Cl. 73—865.8 **17 Claims**



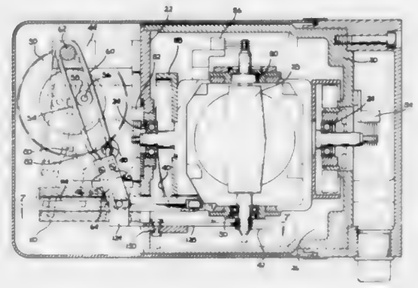
1. An apparatus, for the measurement and non-destructive material testing of laid pipelines including a scraper moved through the pipeline and guided on an inner wall thereof and at least one circular support with sensors arranged on a circumference thereof and at least one pressure-tight casing, which receives devices for processing and recording measured values and for a power supply, therein the support is constructed as a cylindrical sleeve of a rubber elastic material and is provided with an axially, radially and circumferentially regular profile, and protuberances located on a cylindrical envelope surface with a somewhat larger external diameter than the internal diameter of the pipeline, and depressions provided for containing the sensors on surface concentric to the envelope surface, and wherein the protuberances and depressions extend in a direction substantially axially parallel to a longitudinal axis of the cylindrical sleeve.

4,807,485

MOTOR DRIVEN CAGING SYSTEM FOR FREE GYROS

William E. Bennett, Westlake Village, Calif., assignor to Kirkos Development, Ltd., Newbury Park, Calif.

Filed Aug. 4, 1987, Ser. No. 81,827
Int. Cl.⁴ G01C *19/26*
U.S. Cl. 74—5.1 **4 Claims**



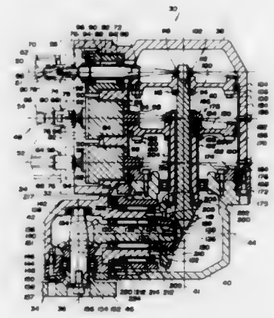
1. A caging system for a free gyro having an inner and an outer gimbal supported on a frame comprising
first means for moving from a first uncaged position not obstructing the free rotation of the outer gimbal, toward a second position engaging a cam on the outer gimbal to rotate the outer gimbal to an outer gimbal caged position and locking the gimbal in the outer gimbal caged position as the first means reaches a second caged position;
second means for moving from a first uncaged position not obstructing the rotation of the inner gimbal, toward a second position engaging a cam on the inner gimbal to rotate the inner gimbal to an inner gimbal caged position and locking the gimbal in the inner gimbal caged position as the second means reaches a second caged position;
a rotary caging motor responsive to excitation of a first polarity to rotate toward a caged position and to excitation of a reverse polarity to rotate toward an uncaged position; and
coupling means coupled between said rotary caging motor and said first and second means to move said first and second means to the caged position as the said rotary caging motor rotates to the caged position and to move said first and second means to the uncaged position as said rotary caging motor rotates to the uncaged position, said coupling means including a rotary crank means, and spring means coupling said rotary crank means to said first and second means, said rotary crank means being a means for rotating between first and second rotary crank positions, said first and second means reaching said first uncaged position and said second caged position as said rotary crank means approaches said first and second rotary crank positions, respectively, said rotary crank means first deflecting said spring means and then releasing at least part of the deflection as said rotary crank means finally proceeds to each of said first and second positions, whereby said spring means will elastically encourage said rotary crank means to remain in either of said first and second rotary crank positions.

4,807,486

THREE-AXES WRIST MECHANISM

Hadi A. Akeel, Rochester Hills; Donald S. Bartlett, Troy, and William H. Poynter, Jr., Mount Clemens, all of Mich., assignors to GMF Robotics Corporation, Auburn Hills, Mich.

Filed Nov. 9, 1987, Ser. No. 118,450
Int. Cl.⁴ B25J *17/02*; G05G *11/00*
U.S. Cl. 74—479 **16 Claims**



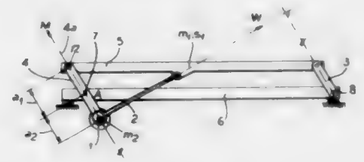
1. A mechanical wrist mechanism for positioning a work tool comprising:
a relatively stationary first housing;
first, second and third independent rotational axes, the first and second axes having a point of mutual intersection and being movable relative to each other, the first axis being fixed relative to said first housing, and the third axis intersecting the second axis and being movable relative to both the first and second axes;
a tool support member rotatable on the third axis and having a tool mounting surface;
second and third housings rotatably supported on the first and second axes, respectively;
first, second and third gear train mains for providing independent rotation of said second and third housings and said support member, respectively, about their respective axes, each of said gear train means having a member supported for rotation about the first axis wherein said third gear train means includes a first gear means (**110**) coupled to said third member (**100**) to rotate therewith about the first axis for providing rotation of the support member and wherein said second gear train means includes a second gear means (**192**) rotatably supported on the first gear means (**110**) and wherein said second member (**180**) is coupled to said second gear means to rotate therewith about the first axis for providing rotation of the third housing and wherein the second and third housings are permitted to rotate completely about the first axis; and
input drive means supported on said first housing for rotation about at least one input drive axis inclined at an angle fixed relative to the first axis, the input drive means being in driving engagement with each of said members for selectively rotating the members to selectively establish the position of said tool mounting surface within a substantially spherical envelope.

4,807,487

MASS-COMPENSATION OSCILLATING DRIVE FOR OSCILLATORY MACHINES

Johann Seidl, Hanftal, Austria, assignor to Maschinenfabrik Heid Aktiengesellschaft, Stockerau, Austria

Filed May 14, 1987, Ser. No. 50,539
Claims priority, application Austria, May 15, 1986, 1303/86
Int. Cl.⁴ B07B *1/42*
U.S. Cl. 74—26 **5 Claims**



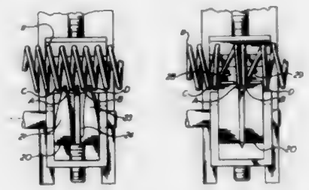
1. An oscillating machine, comprising:
a base;
a working frame of mass m_1 spaced from said base;
a plurality of links pivotally connected to said working frame and to said base for supporting said working frame for oscillating movement relative to said base; and
an oscillating drive coupled to said working frame, said oscillating drive including:
an extension on member formed on one of said links and extending from a first pivot means, which connects said one of said links to said base, in a direction away from a second pivot connecting said one of said links to said working frame, said first and second pivots being spaced apart by a distance a_1,
a motor-driven eccentric drive assembly of a suspended mass m_2 mounted on said extension and having an axis located at a distance a_2 from said first pivot such that the product $m_1 \cdot a_1$ is substantially equal to the product $m_2 \cdot a_2$, said axis being located substantially at an intersection between a centerline through said first and second pivots in a median position of the oscillation range of said one of said links and a line normal to said centerline through the center of mass of the working frame and
coupling means operatively engaged with said motor-driven eccentric drive assembly so as to be displaced with the throw thereof and operatively connected to said working frame so as to actuate said working frame with said throw.

4,807,488

ADJUSTABLE COIL RETAINER AND SPREADER AND METHOD OF USE

John R. McManus, Marcellus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 3, 1987, Ser. No. 92,815
Int. Cl.⁴ F16H *53/02*
U.S. Cl. 74—567 **6 Claims**



1. Cam means comprising:
blade means having a first circumferential extent;
a pair of wedge means located on opposite sides of said blade

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means with each of said wedge means having a second circumferential extent which is coextensive with said first circumferential extent for a small distance relative to the overall length of the blade;

said pair of wedge means coacting to define a circumferentially extending slot which is a circumferential continuation of said first circumferential extent and which has a rounded bottom defining a stop.

4,807,489

GEAR SHIFT DEVICE

Friedrich Schreiner; Otto Ebner, both of Meckenbeuren; Gerhard Burt, Friedrichshafen, and Bernhard Grapp, Weingarten, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

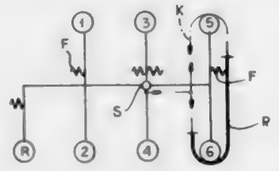
PCT No. PCT/EP85/00362, § 371 Date Mar. 21, 1986, § 102(e) Date Mar. 21, 1986, PCT Pub. No. WO86/00967, PCT Pub. Date Feb. 13, 1986

PCT Filed Jul. 20, 1985, Ser. No. 848,043

Claims priority, application PCT Int'l Appl., Jul. 26, 1984, PCT/EP84/00230

Int. Cl.[4] B60K *20/00*

U.S. Cl. 74—475 **9 Claims**



1. A gear shift device for a multispeed transmission having a set of low-speed gears with a neutral position therebetween along a first shift path between said low-speed gears, a set of high-speed gears with a neutral position therebetween along a second shift path between said high-speed gears, and a gearshift lever shiftable along a generally H-shaped shifting path between said gears and said neutral positions said first and second shift paths being perpendicular to a path connecting said first and second shift paths, said device comprising:

a member displaceable by said lever upon its movement between said gears and said positions for operating said transmission to select a gear thereof, said member being normally returned to said neutral position of said set of low-speed gears; and

a retention device including detent means acting on said member and constructed and arranged upon displacement of said member toward a higher speed one of said high-speed gears to retain said member in a position in which said lever is held in said second shift path upon its release by an operator of the transmission, and upon displacement of said member toward a lower speed one of said high-speed gears to release said member and permit said lever to return to said first shift path upon its release to said neutral position of said second shift path.

4,807,490

PREFORMED INTEGRAL COATING, PARTICULARLY FOR MOTOR VEHICLE GEAR SHIFT LEVERS

Giovanni Foggini, Corso Matteotti, 23 - Torino, Italy

Continuation of Ser. No. 884,841, Jul. 11, 1986, which is a continuation of Ser. No. 703,163, Feb. 19, 1985, Pat. No. 4,617,834. This application Dec. 30, 1987, Ser. No. 140,915

Claims priority, application Italy, Apr. 1, 1981, 53070/81[U]

Int. Cl.[4] G05G *1/10, 1/04*

U.S. Cl. 74—543 **1 Claim**

1. A transmission gearshift cover and gearshift rod assembly, in which said rod longitudinally extends from an aperture within a vehicle body, said cover and rod assembly comprising:

a bulbous insert member having an internal insert member bore adapted to receive an end of said gearshift rod;

a one-piece sheath member made from an elastic material having a knob portion which surrounds said insert member, a longitudinally-extending intermediate portion which closely surrounds said rod and extends along said rod and which converges from said knob portion toward said rod, said intermediate portion defining one or more radially inwardly directed ribs, and a bellows portion



which diverges from said rod having mounting means for enabling said bellows portion to be secured to said vehicle body to enclose said aperture, wherein said sheath may be mounted to said vehicle by inserting said rod within said intermediate portion and into said insert member bore; and

means for interlocking said insert member with said gearshift rod, including a radially inwardly directed annular rod groove formed in said rod generally adjacent said end of said rod and a radially inwardly directed projection formed in said insert member for interlockingly engaging said annular rod groove.

4,807,491

PEDAL CRANK AS WELL AS A PEDAL CRANK DRIVE FOR BICYCLES OR THE LIKE AND A MOUNTING FOR SUCH A PEDAL CRANK DRIVE

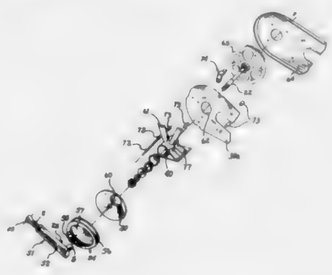
Freder Stuckenbrok, Rönnelstrasse 87, 2933 Jade 2, Fed. Rep. of Germany

PCT No. PCT/EP86/00191, § 371 Date Nov. 21, 1986, § 102(e) Date Nov. 21, 1986, PCT Pub. No. WO86/05755, PCT Pub. Date Oct. 9, 1986

PCT Filed Mar. 27, 1986, Ser. No. 948,349

Int. Cl.[4] G05G *1/14;* **B62M** *3/04*

U.S. Cl. 74—594.1 **18 Claims**



11. A pedal crank for a pedal crank drive for bicycles comprising a crank arm rotatable about an axis, a pedal-carrier arm carried by said crank arm, a control stud carried by said pedal-carrier arm for shifting said pedal-carrier arm with respect to said crank arm for varying the effective length of said pedal crank during rotation of said pedal crank, said pedal carrier arm being shifted with respect to said crank arm whereby the effective length of said pedal crank is lengthened during downwards movement of said pedal crank and is shortened during upwards movement of said pedal crank, bearing means comprising a stationary portion having a central axis disposed eccentrically with respect to said axis of said pedal crank, said stationary portion being adapted to be mounted on the frame of the bicycle, a rotatable bearing member interconnected with said control stud for causing said control stud to move in a circular path eccentric with respect to the axis of said pedal crank, said bearing means comprising at least three bearing rollers supported by said rotatable bearing member, said stationary bearing portion, comprising a bearing race, said rollers riding circumferentially on said bearing race, a bearing bushing carried by said rotatable bearing member, said control stud being supported in said bearing bushing, said bearing bushing being disposed intermediate said bearing rollers and being disposed in approximately the same place.

4,807,492

MECHANISM FOR SUPPORTING TRANSMISSION SHAFTS OF AUTOMATIC TRANSMISSION APPARATUS

Syuzo Moroto, Handa; Koji Sumiya, Nishio; Yukihiro Kobayashi, Obu; Takesori Kano, Anjo; Akira Hoshino, Toyota; Yasushi Ando, Toyata; Kazuaki Watanabe, Toyota, and Yutaka Taga, Aichi, all of Japan, assignors to Aisin-Warner Limited and Toyota Jidosha K.K., both of Aichi, Japan

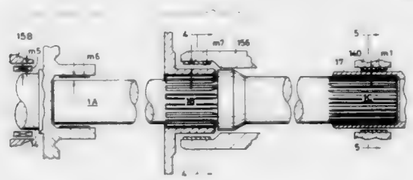
PCT No. PCT/JP85/00428, § 371 Date May 27, 1986, § 102(e) Date May 27, 1986

PCT Filed Jul. 30, 1985, Ser. No. 852,667

Claims priority, application Japan, Jul. 30, 1984, 59-160687; Aug. 6, 1984, 59-165515

Int. Cl.[4] F16H *57/02*

U.S. Cl. 74—606 R **3 Claims**



1. In an automatic transmission for use in a vehicle, the transmission comprising:

a transmission case;

an extension housing connected to the transmission case;

an input shaft;

an output shaft disposed coaxially with and in series to the input shaft;

a clutch mechanism for connecting the input shaft and the output shaft; and

a parking gear mechanism provided in the vicinity of an intermediate portion of the output shaft, having a parking gear for retaining the output shaft, said parking gear having a flange with a sleeve-like boss portion splined to the output shaft;

an improved transmission shaft supporting mechanism comprising:

means supported by the transmission case for supporting the output shaft at the input-side end portion thereof, the output-side end portion thereof being supported by the extension housing, and an intermediate portion thereof being supported by the transmission case through the sleeve-like boss portion of the parking gear flange, the output shaft being supported at each of said portions with a clearance;

in which the amount of clearance at the intermediate portion is greater than the clearances at the end portions of the output shaft; and

in which the clearance at the intermediate portion of the output shaft is shared by a gap between the output shaft and the sleeve-like boss portion of the parking gear flange splined thereto and by a gap between the sleeve-like boss portion of the parking gear flange and the transmission case.

4,807,493

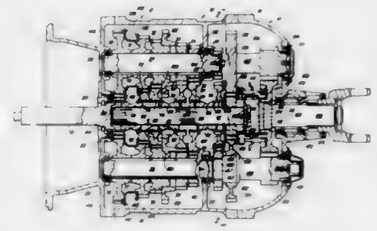
TWIN COUNTERSHAFT TRANSMISSION WITH FLOATING MAIN SHAFT

John M. Loeffler, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Sep. 25, 1987, Ser. No. 101,065

Int. Cl.[4] F16H *3/02, 3/08*

U.S. Cl. 74—745 **23 Claims**



1. A multi-speed transmission comprising, in combination:

a housing;

a pair of spaced parallel main countershafts mounted for rotation within said housing and being spatially fixed therein;

means for supplying input power to both of said main countershafts;

a plurality of pairs of driving gears mounted on said main countershafts, each gear of a pair being substantially identical and positioned on a respective one of said main countershafts at axially aligned locations along a floating mainshaft;

said floating main shaft having input and output ends, said main shaft being located within said housing between and parallel to said main countershafts and having its output end extending beyond said main countershafts with no internal or external bearings or other support at or adjacent its ends under torque delivering conditions;

a plurality of driven gears located on said main shaft, each in mesh with a pair of said driving main countershaft gears;

means for selectively clutching one of said driven gears into driving relationship with said main shaft;

a range drive gear affixed at the output end of said main shaft;

a pair of spaced parallel range countershafts mounted for rotation within said housing and being spatially fixed therein; and

a pair of input gears affixed to said range countershafts in engagement with said range drive gear;

whereby under torque delivering conditions the input end of said main shaft is self-aligned and totally supported by the pair main countershaft driving gears driving the main shaft driven gear which has been selectively clutched to said main shaft, and the output end of said main shaft is self-aligned and totally supported by the pair of input gears on said range countershafts being driven by said range drive gear.

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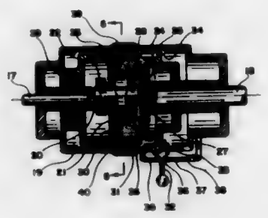
STEPWISE VARIABLE SPEED PLANETARY DRIVE

Hyuk S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 891,124, Jul. 31, 1986, Pat. No. 4,733,579, which is a continuation-in-part of Ser. No. 750,787, Jul. 1, 1985, abandoned, which is a continuation-in-part of Ser. No. 747,889, Jun. 24, 1985, abandoned. This application Jan. 20, 1987, Ser. No. 5,111

Int. Cl.[4] F16H 57/10

U.S. Cl. 74—768 16 Claims



1. A stepwise variable speed mechanical transmission apparatus comprising in combination:

(a) a housing;

(b) a first shaft rotatably mount in the housing;

(c) a second shaft disposed in line with the first shaft and rotatably mount in the housing, said second shaft including a first rotary member nonrotatably and coaxially affixed to the second shaft;

(d) a second roary member disposed in a parallel and eccentric arrangement with respect to the central axis of the first shaft and secured to the first shaft wherein the second rotary member is rotatable about the central axis thereof, said central axis of the second rotary member orbiting about the central axis of the first shaft at the same angular velocity as the angular velocity of the first shaft;

(e) a hollow cylindrical member disposed within the housing and enclosing the second rotary member said hollow cylindrical member being axially shiftable in a direction parallel to the central axis of the first shaft, the hollow cylindrical member including a plurality of internal generally circular cylindrical traction surfaces of various pitch diameters arranged in series in a coaxial arrangement with respect to the central axis of the first shaft and further including means for nonrotatably securing the hollow cylindrical member to the housing;

(f) an internal generally circular cylindrical traction surface included in said second rotary member in a coaxial arrangement with respect to the central axis of the second rotary member, said internal generally circular cylindrical traction surface engaging an external generally circular cylindrical traction surface included in the first rotary member in a coaxial arrangement with respect to the central axis of the second shaft and disposed within said internal generally circular cylindrical traction surface;

(g) a plurality of external generally circular cylindrical traction surfaces of various pitch diameters included in the second rotary member in series in a coaxial arrangement with respect to the central axis of the second rotary member, wherein only one of said plurality of external generally circular cylindrical traction surfaces engages only one of said plurality of internal generally circular cylindrical traction surfaces included in the hollow cylindrical member at each of various shift positions; and

(h) means for shifting and retaining the hollow cylindrical member to and at each of the various shift positions wherein only one of said plurality of external generally circular cylindrical traction surfaces engages only one of said plurality of internal generally circular cylindrical traction surfaces at each of the various shift positions.

4,807,495

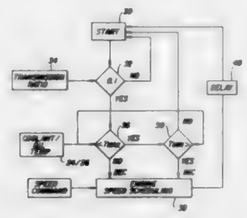
TEMPERATURE-DEPENDENT INFINITELY VARIABLE RATIO TRANSMISSION CONTROL SYSTEM AND METHOD

David A. Wallace, Walla Walla, Wash., assignor to General Electronic Company, Pittsfield, Mass.

Filed May 23, 1988, Ser. No. 197,735

Int. Cl.[4] B60K 41/14

U.S. Cl. 74—844 15 Claims



1. A control system for a vehicle equipped with a drive system including an internal combustion engine driving an infinitely variable ratio transmission, said control system comprising, in combination:

A. a manually operated throttle for generating engine speed commands to the engine;

B. a first sensor for generating a signal indicative of engine speed;

C. a transmission controller operatively linked with the transmission, said transmission controller adjusting the transmission ratio in response to said engine speed commands and said engine speed signal to maintain an engine speed schedule corresponding to a given engine speed command;

D. a temperature sensor monitoring the heat rejected by the drive system, said controller operating in response to said temperature sensor to produce a decrease in engine speed by increasing the transmission ratio when the heat rejected by said drive system reaches an unsafe level and then adjust the transmission ratio to maintain the decrease engine speed as a new engine speed schedule for said given engine speed command.

4,807,496

CONTROL SYSTEM FOR ALLEVIATING SHOCK IN AUTOMATIC TRANSMISSION

Koichi Hayasaki, Fujisawa, and Kazuhiko Sugano, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Division of Ser. No. 905,268, Sep. 9, 1986, Pat. No. 4,730,521. This application Nov. 16, 1987, Ser. No. 120,970

Claims priority, application Japan, Sep. 11, 1985, 60-199316

Int. Cl.[4] B60K 41/18, 41/16

U.S. Cl. 74—866 7 Claims

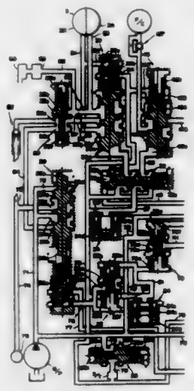
1. A hydraulic system, comprising:

a solenoid;

first means for generating a first hydraulic fluid pressure controllable by the solenoid, said first hydraulic fluid pressure being variable in a first pattern;

pressure modifier valve means for changing said first pattern of variation of said first hydraulic fluid pressure to a second pattern and generating a second hydraulic fluid pressure variable in said second pattern; and

pressure regulator means responsive to said second hydraulic fluid pressure for generating a third hydraulic fluid



pressure variable in response to said second hydraulic fluid pressure.

4,807,497

SYSTEM FOR INTEGRALLY CONTROLLING AUTOMATIC TRANSMISSION AND ENGINE

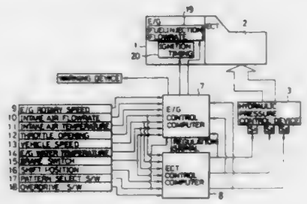
Hideki Yasue, and Kagenori Fukumura, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 9, 1987, Ser. No. 60,005

Claims priority, application Japan, Jan. 16, 1986, 61-139431

Int. Cl.[4] B60K 41/04

U.S. Cl. 74—867 5 Claims



1. A system for integrally controlling an automatic transmission and an engine, having a pattern select switch and wherein engine torque is changed by a predetermined change value during shifting to thereby maintain satisfactory shift characteristics, comprising:

means for determining at least one of a performing region of the engine torque change and an engine torque change value;

means for detecting a state of said pattern select swtich; and

means for correcting at least one of said engine torque change performing region and said engine torque change value in accordance with the state of said pattern select switch.

4,807,498

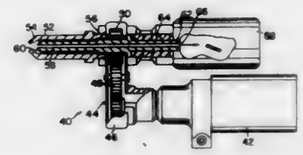
BLIND FASTENER INSTALLATION TOOL AND MODIFIED FASTENER

Charles M. Kleiser, and Mahen S. Gala, both of Warminster, Pa., assignors to SPS Technologies, Inc., Newtown, Pa.

Filed Oct. 21, 1986, Ser. No. 921,650

Int. Cl.[4] B25B 13/50

U.S. Cl. 81—56 14 Claims



1. A fastener installation tool for installing blind fasteners of the type having a core pin, bearing surface forming means mounted to said core pin, a drive stem interconnected with said core pin, first tool engaging means disposed on one end of said core pin, and second tool engaging means disposed on one end of said bearing surface forming means whereby axial displacement of said core pin relative to said bearing surface forming means causes said bearing surface forming means to form a bearing surface and, upon formation of said bearing surface, causes said drive stem to separate from said core pin, said installation tool comprising:

first tool means engageable with said first tool engaging means;

second tool means engageable with said second tool engaging means;

means for axially displacing said first tool means relative to said second tool means in said engaged condition;

axial through passageway means formed in said first tool means, said axial through passageway means accepting said core pin therein when said first tool means engaged said first tool engaging means;

a first tool engagement member, said first tool means being formed at one end of said first tool engagement member; and

receptacle means disposed adjacent the end of said first tool engagement member remote from said first tool engagement means, said receptacle means communicating with said axial through passageway means such as to permit entry therein of said drive stem after separation of said drive stem from said core pin.

4,807,499

SOCKET DRIVE AND SOCKET WITH STABLE UNIVERSAL COUPLING

Daniel M. Martinez, 306 Valley St., Delhi, La. 71232

Filed Aug. 27, 1987, Ser. No. 89,831

Int. Cl.[4] B25B 13/00

U.S. Cl. 81—177.75 17 Claims



1. A socket drive and socket with stable universal coupling

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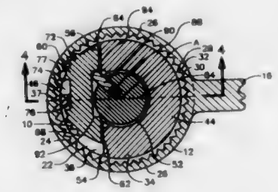
comprising a shaft, drive means carried by one end of said shaft for receiving a drive wrench; universal coupling means carried by the opposite end of said shaft and a socket carried by said universal coupling means, wherein said socket is adapted for free, pivotal and angular orientation with respect to said shaft into and from alignment with said shaft; a groove provided in said shaft in spaced relationship with respect to said universal coupling means and ring means seated in said groove; collar means slidably mounted on said shaft adjacent to said socket; bias means mounted on said shaft in contact with said collar means and said ring means and sleeve means slidably carried by said shaft, said sleeve means seated on said ring means for securing said bias means on said shaft, said bias means adapted for urging said collar means against said socket and selectively maintaining said socket in substantially stable alignment with said shaft in the first preferred position and in stable, pivotal and angular orientation with respect to said shaft, in a second preferred position, respectively.

4,807,500

REVERSING RATCHET MECHANISM FOR TOOLS

Harvey M. Main, P.O. Box 376, South Fork, Colo. 81154

Filed Nov. 14, 1986, Ser. No. 930,771
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—63.1 **25 Claims**





1. A ratchet drive tool adapted to rotatably drive a work piece, comprising:

a ratchet head having a cylindrical aperture formed therethrough and centered on a rotational axis, said aperture having an interior sidewall which has a first radius of curvature and which is provided with first ratchet teeth therearound;

a drive member mounted within said aperture and rotatable about said rotational axis, said drive member including a base portion, a drive shaft extending axially from a first side of said base portion exteriorly of said aperture in order to engage said work piece, and a pawl support structure on a second side of said base portion opposite said drive shaft, said pawl support structure having a planar slide surface oriented in a slide plane parallel to the rotational axis;

a pawl member supported by said pawl support structure movable with respect thereto, said pawl member having flat surface portions and an outer arcuate surface which has a second radius of curvature less than said first radius of curvature, said arcuate surface provided with second ratchet teeth defining left ratchet teeth and right ratchet teeth;

constraining means for constraining the movement of said pawl member such that said flat surface portions sideably engage said slide surface for movement therealong;

pawl biasing means switchable between a left drive position for resiliently biasing said left ratchet teeth into engagement with said first ratchet teeth on one side of an imaginary ratchet plane perpendicular to said slide plane and containing said rotational axis and a right drive position for resiliently biasing said right ratchet teeth into engagement with said first ratchet teeth on the other side of said ratchet plane such that selected engagement of said left and right ratchet teeth with said first ratchet teeth defines a selected positive drive direction whereby said drive member becomes locked for common rotation with said ratchet head when said ratchet head is rotated in the positive drive direction yet which permits relative ratchet rotation of said ratchet head with respect to said drive member when said ratchet head is rotated in a direction opposite the positive drive direction; and

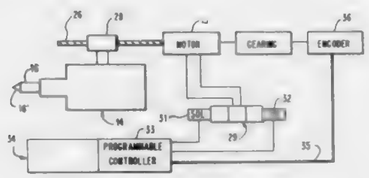
a switch member mountably receiving said pawl biasing means operative to switchably move said pawl biasing means between said left and right drive positions, said interior sidewall, pawl member and constraining means arranged such that there is an imaginary axis plane parallel to said slide plane and including said rotational axis and imaginary left and right planes which are perpendicular to one another and which bisect left and right regions, respectively, between said ratchet plane and said axis plane, said slide plane being spaced from said axis plane and wherein said left ratchet teeth will engage said first ratchet teeth in said left region, there being a greater number of engaged left teeth on a side of said left plane closer to said ratchet plane, and wherein said right ratchet teeth will engage said first ratchet teeth in said right region, there being a greater number of engaged right teeth on a side of said right plane closer to said ratchet plane.

4,807,501

CUTTING TOOL HAVING POSITIONING MEANS

Gary G. Leigh, and James F. Schwab, both of Wilmington, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 30, 1987, Ser. No. 31,977
Int. Cl.[4] B23B *23/00*
U.S. Cl. 82—31 **15 Claims**



1. A cutting tool for performing at least one cutting operation on a part including:

means engageable with one end of a part to rotate the part;

a tailstock body mounted for linear motion along a predetermined axis;

a quill slidably supported in aid tailstock body for longitudinal movement relative to said tailstock body and parallel to the predetermined axis;

said quill having support means engageable with the other end of the part to maintain the part aligned on a desired axis during its rotation;

cutting means for performing at least one cutting operation on the part;

moving means for moving said tailstock body along the predetermined axis;

said moving means including: a hydraulic rotary motor; and means to convert the rotation of said hydraulic rotary motor into linear motion of said tailstock body along the predetermined axis;

said converting means including means connected to said hydraulic rotary motor and said tailstock body to convert the rotation of said hydraulic rotary motor into linear motion of said tailstock body along the predetermined axis;

control means to control the direction of rotation of said hydraulic rotary motor for determining the direction of movement of said tailstock body along the predetermined axis;

stopping means to stop said hydraulic rotary motor when said tailstock body is at a predetermined distance prior to a desired position whereby said tailstock body stops at the desired position without any reversing of the direction of rotation of said hydraulic rotary motor during movement of said tailstock body to the desired position;

locking means to lock said tailstock body at the desired position;

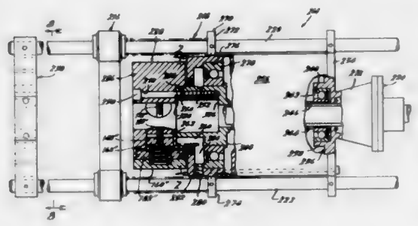
and quill moving means to move said quill longitudinally relative to said tailstock body and parallel to the predetermined axis to enable said support means of said quill to engage the other end of the part after said locking means has locked said tailstock body at the desired position, said quill moving means being separate from said hydraulic rotary motor.

4,807,502

TUBE CUTTING APPARATUS

Clifford D. Clark, and Delbert L. Adkins, both of Mt. Clemens, Mich., assignors to Bundy Corporation, Detroit, Mich.

Continuation of Ser. No. 192,355, Sep. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 125,698, Feb. 28, 1980, abandoned. This application Mar. 24, 1983, Ser. No. 478,474
Int. Cl.[4] B23B *5/14, 3/26*
U.S. Cl. 82—53.1 **26 Claims**



1. A tube cutting apparatus comprising:

a supporting base;

motor means supported on said base, said motor means including a rotating shaft;

a rotatable cutting assembly directly connected to said rotating shaft and adapted to be driven thereby, said cutting assembly including a housing having a bore extending therethrough positioned substantially coaxial with the axis of rotation of said cutting assembly and cutting blade means radially movably disposed within said housing, said cutting blade means including a piston movably disposed within a cylinder and a cutting wheel secured to the radially inner end of said piston and movable into said bore and into engagement with said workpiece so as to sever a length thereof;

means engageable with said workpiece to enable relative rotation between said workpiece and said cutting assembly;

actuating means including passage means within said housing operative to conduct a fluid under pressure to said cylinder adjacent the radially outer end thereof for moving said piston radially inwardly with respect to said housing; and

biasing means operative to exert a radially inwardly directed biasing force on said piston,

said rotating shaft having a bore extending therethrough, said bore being positioned coaxially with said bore in said cutting means whereby a workpiece may be moved axially through said motor means and said cutting assembly.

2. A flying tube cutting apparatus comprising:

a supporting base;

a carriage assembly movably supported on said base;

motor means including a rotating shaft having a rotor secured thereto intermediate the ends thereof and a stator secured within a motor housing and surrounding said rotor and first and second end plates secured to opposite ends of said motor housing, said end plates supporting said motor means on said carriage assembly;

a rotatably cutting assembly supported by said motor means on said carriage assembly and including a rotatably housing engaging and directly removably connected to said rotating shaft and adapted to be directly driven thereby, said cutting assembly having a bore extending therethrough positioned substantially coaxially with the axis of rotation of said cutting assembly and cutting blade means radially movably disposed within said housing, said cutting blade means including a portion movable into said bore and into engagement with said workpiece so as to sever a predetermined length thereof;

said rotating shaft having a bore extending therethrough, said bore being positioned coaxially with said bore in said cutting assembly whereby a workpiece may be moved axially through said motor means and said cutting assembly;

means engageable with said workpiece to enable relative rotation between said workpiece and said cutting housing;

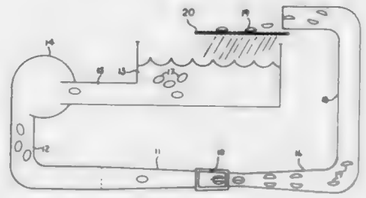
a stop assembly adjustably supported on said carriage assembly and spaced from said cutting blade means a predetermined distance, said stop means being engageable by an end portion of said workpiece whereby predetermined lengths of stock may be severed from said workpiece by said cutting blade means, said predetermined length being substantially equal to said predetermined distance.

4,807,503

HYDRAULIC FOOD CONVERGENCE CUTTER APPARATUS AND METHOD

George A. Mendenhall, 4252 S. Eagleson Rd., Boise, Id. 83705

Filed Feb. 2, 1988, Ser. No. 151,560
Int. Cl.[4] B26D *1/03*
U.S. Cl. 83—22 **7 Claims**



1. A method for cutting food product using a hydraulic fluid cutting apparatus which comprises:

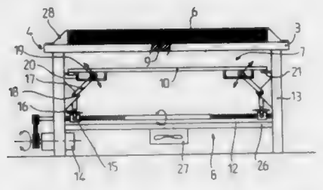
depositing the food product in a hydraulic carrier fluid;

pumping the food product and hydraulic carrier fluid mixture into a first converging conical segment of tubing for

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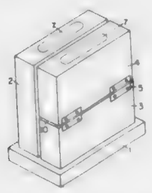
accelerating and aligning the food product to be cut in a laminar flow of hydraulic carrier fluid;
cutting the food product by passing the food product and the hydraulic carrier fluid through a cutter blade assembly having the same converging angles as and serving as an extension of, the converging conical segment and converging axially inward from its inlet end to its outlet end;
decelerating the cut food product and hydraulic carrier fluid by passing it through a diverging conical segment of tubing;
separating the cut food product from the hydraulic carrier fluid.

4,807,504
METHOD AND DEVICE FOR PREPARING A STACK OF FABRIC PANELS FOR SUBSEQUENT CUTTING
Marc Vandermarliere, Troyes, France, assignor to Institut Textile de France, Boulogne Billancourt, France
Filed Aug. 26, 1987, Ser. No. 89,672
Claims priority, application France, Sep. 8, 1986, 86 12555
Int. Cl.[4] B26D *7/14*; B26F *1/24*
U.S. Cl. 83—22 **6 Claims**



1. A method for preparing stacks of knitted fabric panels of subsequent cutting of the type in which the knitted panels are placed under extension in a stack over the needles of a needle table, said method comprising the steps of:
(a) covering the formed stack with a sheet of material impervious to air,
(b) compressing the stack by suction which reduces the pressure of the air contained between the table top and the sheet,
(c) retracting in needles from the stack, and
(d) cutting the stack of knitted fabric panels while maintaining said suction throughout said stack.

4,807,505
BAGEL SLICER
Stephen N. Campbell, Fort Lauderdale, Fla., and John U. Thurnheer, Ithaca, N.Y., assignors to Tc Bagel Cutter, Inc., Ithaca, N.Y.
Filed Jul. 23, 1987, Ser. No. 76,611
Int. Cl.[4] B26D *7/02*
U.S. Cl. 83—454 **2 Claims**



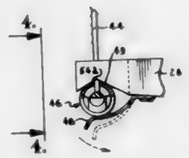
1. A slicer guide for bagel-like bread comprising:
(a) base means;
(b) a pair of face-matching block means having a slot therebetween to receive a knife mounted vertically on said base means;
(c) each of said face-matching block means having a cavity therein facing and matching the other which together forms a chamber generally the shape of a bagel to fully enclose the said bagel-like bread, said slot to receive a knife has a sufficient space below said chamber to allow the knife to pass completely through the bagel-like bread on its longest dimensions;
(d) the top part of one of said face-matching block means being hinged with respect to its remaining bottom part to open and allow for insertion and removal of the bagel-like bread to be sliced;
(e) a pin extending into said chamber from the upper half of the chamber surface of said hinged face-matching block, which when closed in an operative position causes the pin to penetrate the bagel-like bread and thereby restrict the movement of the bagel-like bread during the slicing operation;
(f) the said hinge being positioned on the vertical dimension of said hinged face-matching block above the bottom of the chamber such that the hinged portion extends sufficiently far into the lower half of the bagel shaped chamber allowing easy insertion and removal of the bagel-like bread.

4,807,506
PORTABLE SAW TABLE
Michel P. Audet, 109, Ruisseau de Frênes, Ste-Agnès, Quebec, Canada (G0T 1R0)
Filed May 4, 1988, Ser. No. 190,123
Int. Cl.[4] B27B *5/20*
U.S. Cl. 83—486.1 **9 Claims**



1. A saw table comprising a table member having two elongated lateral sides, an undercarriage pivotally mounted under said table member about a vertical axis perpendicular to said table member, the said undercarriage having a frame structure extending outside one of said lateral sides of the table member and above the level of the table member, a handle connected to said undercarriage for pivoting said undercarriage and said frame structure about said axis, the said handle extending on said side of the table opposite said frame structure, a carriage slidingly mounted on said frame structure adapted to move above and across said table member along a horizontal plane, and in an angularly adjustable position with said frame, the said carriage adapted to releasably retain a circular saw, a guiding wall secured on the table along said one lateral side for abutting and guiding a board resting on said table, whereby the circular saw mounted on said carriage is adapted to cut a board resting on said table member across and at an angle with the latter and also adapted to cut a board which slides on said table member in the direction of said guiding wall.

4,807,507
SELF-LUBRICATING HOLDER FOR SCROLL SAW BLADE
Verle L. Rice, Harrisonville, Mo. 64701, and Richard A. Keener, Garden City, Mo., assignors to Verle L. Rice, Harrisonville, Mo.
Filed Mar. 11, 1988, Ser. No. 167,197
Int. Cl.[4] B27B *19/02*
U.S. Cl. 83—783 **2 Claims**



1. A saw having upper and lower parallel arms, a saw blade positioned between said arms for rectilinear movement, and means for holding one end of said blade on one of said arms, the improvement comprising:
releasable means for holding the other end of said blade on the other arm; and
an open-ended tubular member for receiving said releasable holding means,
said tubular member having a slot for said blade,
said tubular member being characterized by the ability to release lubricant over the useful life of said member.

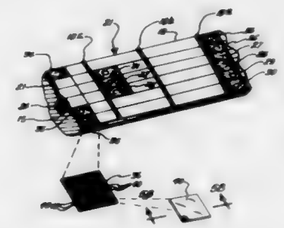
4,807,508
DIRECT COUPLED BRIDGE CONSTRUCTION FOR ACOUSTIC STRINGED INSTRUMENTS
Kazuo Yairi, Kani, Japan, assignor to St. Louis Music Supply Company, St. Louis, Mo.
Filed Nov. 17, 1987, Ser. No. 121,605
Claims priority, application Japan, Nov. 25, 1986, 61-280442
Int. Cl.[4] G10D *3/00*
U.S. Cl. 84—297 R **12 Claims**



1. An acoustic stringed instrument having a resonance body, characterized in that an elongated hole is formed on the surface of a surface plate of said resonance body in its transverse direction, a lower bridge to which one of the ends of each string is fixed and which has a protrusive sectional shape is fitted into said elongated hole in such a manner that only the narrow portion of said lower bridge is exposed to the surface of said surface plate, and a step portion of said lower bridge is bonded around the periphery of said elongated hole on the back of said surface plate.

4,807,509
ELECTROLUMINESCENT FRET GRID FOR STRINGED INSTRUMENTS
John F. Graham, 102 Marabou Pl., Woodlands, Tex. 77380
Filed Jul. 2, 1987, Ser. No. 69,114
Int. Cl.[4] G10D *3/06*; G10G *1/02*
U.S. Cl. 84—314 R **9 Claims**

1. A musical training device for stringed instruments having a neck with a fret board and multiple strings comprising:
a. a fret support plate extending substantially over the instrument neck and including regularly spaced transverse raised frets defining therebetween spaces receptive of a musician's fingers and selected strings to form preselected musical chords;
b. a matrix of thin lights displayed upon the fretboard in multiple separate positions of strings and frets, each light comprising a generally rectangular area carrying a note indicia thereon; and



c. the light matrix including electroluminescent flat panel displays carrying said note indicia thereon and viewable from a wide angle and under ambient lighting conditions, and comprising at least in part a phosphor layer and electrode means for applying an electric field across the phosphor layer.

4,807,510
SUSPENDED MUSICAL IDIOPHONE
Stephen M. Croteau, 1528 East 30th, Spokane, Wash. 99203
Filed Mar. 16, 1987, Ser. No. 25,957
Int. Cl.[4] G10D *13/08*
U.S. Cl. 84—402 **10 Claims**



1. A suspended idiophone, comprising:
an elongated resilient plate formed of a sonorous material and having suspension means thereon for facilitating free suspension of the plate from a support;
an axis passing through the plate; and
wherein the plate is formed along the length thereof in a series of flights that depend from the suspension means and that are resiliently expandable and contractible relative to one another along the axis to produce a musical sound with a vibrato effect responsive to sounding of the plate.

4,807,511
CARTRIDGE SHELL FLASH HOLE UNIFORMER
Kenneth E. Markle, 2525 Primrose La., York, Pa. 17404
Filed Mar. 3, 1988, Ser. No. 163,747
Int. Cl.[4] F42B *33/00*, *35/02*, *33/10*
U.S. Cl. 86—24 **1 Claim**

1. In combination with a cartridge shell (10) having a cylindrical wall (11), a base (12), a shell upper rim (14) and a primer chamber (15) formed in the shell base (12).

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wherein said cartridge shell has a flash hole (16) which extends between the primer chamber (15) and an interior portion of the cartridge shell,

wherein said flash hole (16) has an exit orifice which is adjacent to an inside bottom wall (17) of the cartridge shell,

a flash hole uniformer tool (20) having an elongated cylindrical centerpiece (21) with a first lower end and a second upper end,

wherein said first lower end of said centerpiece (21) has a depth gage (23) attached thereto,

wherein said depth gage (23) has an upper end (24) and a lower end (25)

wherein a cutter (40) is attached to and protrudes from said depth gage lower end (25),

means whereby, upon insertion of the cutter (40) into the flash hole (16) to a desired depth, the lower end (25) of said depth gage contacts said inside bottom wall 917) of the cartridge shell to provide uniform insertion of the cutter (40) into the flash hole (16) (.),



wherein said flash hole uniformer tool (20) includes a centering cone (30) having an internal annular rim (34) formed therein to provide means whereby said centering cone is slidable along said tool centerpiece (21),

wherein said centering cone (30) has a lower conical zone (31) formed thereon to provide means wherein said conical zone (31) contacts the inner portions of the upper shell rim (14) upon use of the tool,

wherein said depth gage (23) is of slightly larger diameter than said tool centerpiece (21) to provide means wherein said centering cone (30) is retained on the lower end of said tool centerpiece (21),

wherein said cutter (40) includes a straight zone (41) for reaming the flash hole (16) if required and an angled zone (42) for deburring and chamfering the exit orifice of flash hole (16).

wherein said cutter angled zone (42) lies in the region of the lower end (25) of said depth gage (23).

4,807,512

APPARATUS FOR OPERATING THE BOLT IN AUTOMATIC WEAPONS

Bertil Johansson, Brusensgatan 3B, S-633, 47 Eskilstuna, Sweden

Filed Sep. 3, 1987, Ser. No. 92,461
Claims priority, application Sweden, Sep. 5, 1986, 8603733
Int. Cl.[4] F41D *11/00*
U.S. Cl. 89—1.4 **12 Claims**

1. In an automatically feeding hand held firearm having a receiver (1) including a back wall (9), a bolt (2) supported for reciprocal movement within the receiver between cocking and firing positions, a recoil spring (4) for biasing the bolt position toward its firing position, and means for moving the bolt to its cocking position including a bolt actuating rod (5) projecting rearwardly beyond the back wall (9) and movable between first and second positions corresponding respectively to the firing and cocking positions of the bolt, the bolt (2) being movable between its firing and cocking positions independently of the movement of the bolt actuating rod (5) when the bolt actuating rod (5) is in its first position, the improvement comprising said bolt actuating rod (5) projecting rearwardly



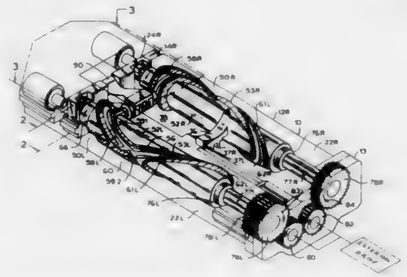
from said receiver (1) through a bore (10) in said back wall (9), and latching means for releasably retaining said bolt actuating rod (5) in its first position including a rear recess (12) in the rear end portion of said bolt actuating rod (5) for receiving therein an associated bore defining portion of said rear wall (9) when said bolt actuating rod (5) is in its first position to retain said bolt actuating rod (5) in fixed position relative to said rear wall (9), and means for biasing said bolt actuating rod (5) toward said bore defining portion.

4,807,513

STRAIGHT BREECH FOR AN AUTOMATIC GUN BARREL WEAPON, IN PARTICULAR A MACHINE CANNON

Lothar Post, Duesseldorf, and Bernhard Schneider, Moerchengladbach, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 9, 1983, Ser. No. 468,169
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1982, 3204722
Int. Cl.[4] F41D *3/06*
U.S. Cl. 89—11 **5 Claims**



1. In an improved ammunition feed and guide mechanism for an automatic gun barrel weapon, in particular, an automatic machine cannon having a linearly moving breech mechanism which is driven by means of a follower engaging in a driving ramp of at least one drum rotatably mounted in a housing parallel to the longitudinal axis of the gun barrel which is drivingly connected to an external drive, said drum having a driving ramp disposed on its periphery and said breech mechanism having a breech body with a follower which drivingly engages said driving ramp so that upon rotation of said drum said breech body is non-uniformly linearly moved forwardly and rearwardly during a firing cycle along central longitudinal guiding means operatively disposed in said housing, a firing bolt is axially movably mounted in a central bore disposed in

said breech body, there corresponds to each portion of the path traversed by said breech body and to each portion of the path traversed by the follower in a corresponding driving ramp a partial function within firing cycle, in particular to move said breech body into a forward end position and maintain it in said forward end position, in which it is blocked for the purpose of effecting a firing operation during a predetermined period of time, the improvement comprising in combination,

(a) said drum being formed as a pair of rollers and said longitudinal guiding means include a first pair of guide rails equidistantly mounted relative to the path of movement of said breech body, which is operatively movable over said first pair of guide rails; said pair of rollers being adapted to rotate in entraining groove, a guide groove is centrally disposed in each entraining groove;

(b) said breech body having a first pair of laterally extending projecting portions, which are adapted to coact with confrontingly disposed portions of the respective entraining and guide grooves of the driving ramps o the confronting roller of said pair of rollers;

(c) a guiding element and an entraining roller bearing are operatively mounted in each on one of said first projecting portions of said breech body and are adapted to respectively engage into a confronting guide groove and entraining groove, a guide roller bearing is also operatively mounted on each first projecting portion and is adapted to guidingly ride over a corresponding one of said first pair of guide rails;

(d) a pair of blocking sliders transversely movably mounted in said housing and are adapted to move from an inoperative outer position to an operative blocking inner position in which the breech body is blocked from moving rearwardly, each roller having an axially forwardly extending projection operatively connected to each blocking slider so that each blocking slider is reciprocally moved by the rotation of the rotation of the corresponding roller;

(e) said breech body having a pair of rearwardly facing shoulders, each blocking slider, when in its inner operative position, blocking the rearward movement of the breech body by engaging a corresponding rearwardly facing shoulder of said breech body; and

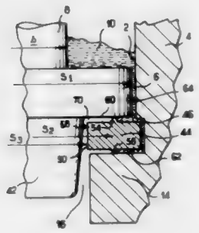
(f) blocking means operatively mounted in said breech body and guide elements coacting with the blocking means for moving said firing bolt into a forward firing position and rearwardly after the firing has been effected, said firing bolt being blocked in said forward and rear positions by said blocking means.

4,807,514

DIFFERENTIAL HYDRAULIC JACK WITH DAMPING SYSTEM FOR THE CONTROL OF ELECTRIC CIRCUIT-BREAKERS

Claude A. Gartzmuller, 30, avenue Georges Mandel, 75116 Paris, France

Filed Apr. 4, 1988, Ser. No. 177,675
Claims priority, application France, Apr. 13, 1987, 87 05198
Int. Cl.[4] F15B *15/22, 15/17*
U.S. Cl. 91—25 **10 Claims**



1. A differential hydraulic jack for oleopneumatic control of electric circuit-breakers, comprising a cylinder, a piston and an emergent piston-rod which define within the cylinder an annular chamber on one side of the piston and a main chamber on the other side of the piston, said emergent piston-rod being coupled with the moving contact of the circuit-breaker, said annular chamber being continuously connected to a source of hydraulic fluid under high pressure and said main chamber being provided in the corresponding end of the cylinder with a supply/drain orifice for said chamber, a damping extension stud being carried by said piston on that face which is directed toward the main chamber and being adapted to cooperate with a damping ring floatably mounted around the supply/drain orifice, wherein:

the jack piston is not provided with any packing ring forming a seal with the internal surface of the jack cylinder;

the damping ring constitutes an end-of-travel stop for the jack piston;

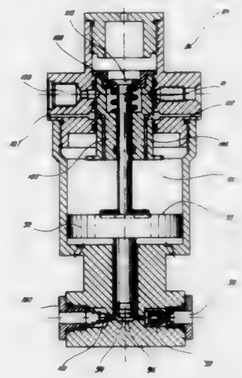
said ring is provided with a first annular sealing zone on its radial annular surface which is directed toward the main chamber and with a second annular sealing zone on its opposite radial annular surface, said first and second zones being adapted to form first and second valves providing a seal respectively with the aforesaid piston face and with the cylinder end when the piston is located at its end of travel.

4,807,515

METHOD AND APPARATUS FOR DEICING A LEADING EDGE

James A. Briscoe; James C. Putt, both of Doylestown, and Ronald W. Phillips, II, Mogadore, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 822,972, Jan. 27, 1986, Pat. No. 4,706,911.
This application Apr. 3, 1987, Ser. No. 33,566
Int. Cl.[4] F04B *17/00*
U.S. Cl. 91—346 **2 Claims**



1. A fluid pressure intensifier comprising: (i) an inlet for a low pressure supply of the fluid; (ii) a pair of piston chambers, one piston chamber being substantially larger than the other together with small and large piston surfaces associated therewith; (iii) conduit means for subjecting the smaller piston chamber to the supply of low pressure fluid; (iv) a shuttle poppet capable of shuttling between a first predetermined position and a second predetermined position, said poppet carrying conduit means in communication with the large piston chamber; (v) an indexer for the shuttle poppet; (vi) exhaust conduit means for communicating gaseous fluid from the large piston chamber to a point external to the intensifier, at least a portion of said exhaust conduit means being that conduit means

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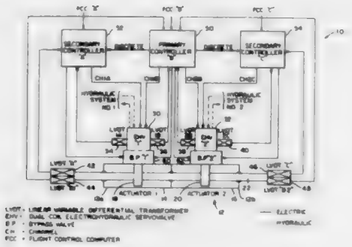
carried by the shuttle poppet, and a second portion being carried otherwise upon the intensifier, the exhaust conduit portions being alignable into communication position by movement of the shuttle poppet to said first predetermined position; (vii) a second source of low pressure fluid configured to be alignable with the portion of the conduit means carried by the shuttle poppet upon movement of the shuttle poppet to said second predetermined position for introduction of low pressure fluid into the large piston chamber; (viii) an outlet; (ix) a conduit means in fluid transmitting relationship between the outlet and the small piston chamber; and (x) means for shuttling the shuttle poppet to and from the first and second predetermined positions in coordinated manner relative to the position of the piston.

4,807,516

FLIGHT CONTROL SYSTEM EMPLOYING THREE CONTROLLERS OPERATING A DUAL ACTUATOR

Imre J. Takats, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 23, 1987, Ser. No. 41,872
Int. Cl.⁴ G05B *19/02;* **F15B** *9/03*
U.S. Cl. 91—363 A **21 Claims**



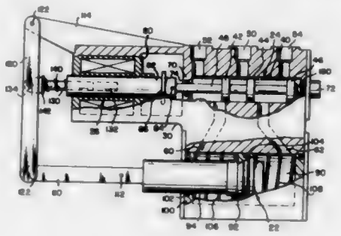
1. A hydraulic flight control system comprising:
a tandem hydraulic actuator having an actuating rod connected to a pair of pistons mounted in respective first and second cylinders;
first and second electrohydraulic servovalves controlling the flow of hydraulic fluid into and out of said first and second hydraulic cylinders, respectively, each of said electrohydraulic servovalves being controlled by a pair of actuating coils;
first, second and third controller means receiving a flight control signal, said first controller means having a control channel that is capable of providing an output to one actuating coil of said first electrohydraulic servovalve for operating said first electrohydraulic servovalve, said second controller means having a control channel that is capable of providing an output to one actuating coil of said second electrohydraulic servovalve for operating said second electrohydraulic servovalve, said third control having first and second control channels that are capable of providing respective outputs to the other actuating coils of said first and second electrohydraulic servovalves for operating either or both of said electrohydraulic servovalves; and
monitor and control logic means for monitoring the performance of said controller means, electrohydraulic servovalves and actuator, said monitor and control logic means selectively enabling said controller means so that each of said electrohydraulic servovalves is operated by only one controller means at a time and, in the event of a malfunction in the performance of one electrohydraulic servovalve or controller means driving said electrohydraulic servovalve, enabling the other controller means connected to said electrohydraulic servovalve.

4,807,517

ELECTRO-HYDRAULIC PROPORTIONAL ACTUATOR

John Dzeczner, Torrance, Calif., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Sep. 30, 1982, Ser. No. 430,212
Int. Cl.⁴ F15B *9/10*
U.S. Cl. 91—384 **14 Claims**



1. An electro-hydraulic proportional actuator, comprising:
a housing including a cylinder, said cylinder having ports for admitting hydraulic fluid to said cylinder, at a first port at one end of said cylinder, and at a second port at the other end of said cylinder;
piston means movably installed in said cylinder, said piston means having an output shaft coupled for movement therewith at said one end of said cylinder, said piston means being driven toward said other end of said cylinder when pressurized fluid is admitted through both said first port and said second port;
valve means means for admitting pressurized fluid to said cylinder, said valve means having selectable flow portions in which no fluid is admitted to said cylinder, fluid is admitted only through said first port, or fluid is admitted is admitted through both said first and second ports, said valve means being operable to cause said piston means to be driven to any of an infinite number of positions;
a solenoid coupled to produce a first force to drive said valve means to a selected flow position corresponding to an incremental change in the electrical control signal supplied to said solenoid; and
feedback means responsive to the movement of said piston means, for producing a second force opposing said first force, said second force also coupled to drive said valve means; said feedback means comprises:
a lever arm **120** pivotably connected to said housing, said lever arm also being pivotably connected to said output shaft **94** so any movement of said piston means in said cylinder causes a corresponding translation of said lever arm about said housing; and
means **130** operably connected to said level arm for transmitting said second force from said level arm to said solenoid;
and wherein said means for transmitting comprises: a spring, one end of said spring being connected to and moving with said lever arm, and other end of said spring being connected to the plunger of said solenoid.

4,807,518

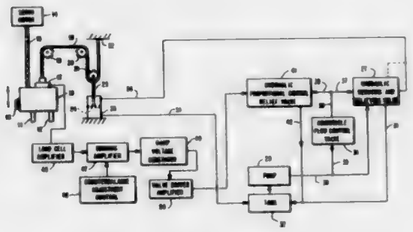
COUNTERBALANCE MECHANISM FOR VERTICALLY MOVABLE MEANS

Merrill E. Berchtold, Loveland, and John R. Witzel, Goshen, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Oct. 14, 1986, Ser. No. 918,427
Int. Cl.⁴ F15B *31/16*
U.S. Cl. 91—421 **24 Claims**

1. A machine tool including:
a vertically movable spindle carrier;
motive means connected to said spindle carrier to move said spindle carrier vertically in either vertical direction;

counterbalance means connected to said spindle carrier for exerting a counterbalance force on said spindle carrier in only one vertical direction as said spindle carrier is moved in either vertical direction by said motive means;



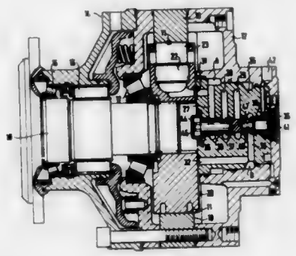
and control means for controlling said counterbalance means to cause said counterbalance means to exert a substantially constant counterbalance force on said spindle carrier in only the one vertical direction irrespective of the direction of vertical movement of said spindle carrier.

4,807,519

PISTON MACHINE WITH CHANGEABLE DISPLACEMENT

Peter Wüsthof, Lohr am Main, Fed. Rep. of Germany, and Sinclair Cunningham, Fife, Scotland, assignors to Mannesmann Rexroth GmbH, Fed. Rep. of Germany

Filed Oct. 20, 1987, Ser. No. 111,019
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1986, 3637174; Feb. 27, 1987, 3706460
Int. Cl.⁴ F01B *1/06, 13/06*
U.S. Cl. 91—492 **11 Claims**



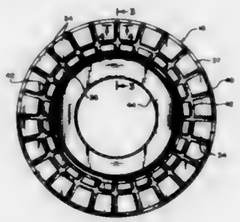
1. Piston machine having a plurality of pistons with changeable piston displacement comprising a distributor in which control bores leading to the pistons and distributor passages connected to the control bores are provided, via which the pistons can be connected to a high pressure or a low pressure connection, and a flow control valve for displacement changing, said flow control valve being actuated by servo pressure, actuation of said flow control valve being effective to vary the number of effective pistons, characterized in that the displacement is reduced by means of the flow control valve disconnecting a number of said distributor passages from the high pressure and low pressure connections and connecting said number of said distributor passages from the high pressure and low pressure connections and connecting said number of distributor passages to each other and to servo pressure.

4,807,520

LINEAR HYDRAULIC MOTOR HAVING A FRANGIBLE PISTON HEAD

Carlos A. Navarette, Canoga Park, Calif., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 1, 1984, Ser. No. 656,285
Int. Cl.⁴ B64C *13/42;* **F16J** *1/00;* **F15B** *13/10*
U.S. Cl. 92—146 **6 Claims**



1. A linear hydraulic motor including a cylinder, a rod in said cylinder and a frangible piston having a seal groove formed on its cylindrical peripheral surface for receiving a conventional seal member, said piston being carried on said rod and dividing said cylinder into two chambers, said piston subject to being exposed to a differential of hydraulic pressure to cause it to carry said rod in one of two directions:
characterized in that said rod is of steel material, said piston is fastened to said rod and is of a material chosen to fracture under low stress and is configured with a large number of radial grooves effectively dividing the first and second faces of said piston into sectors, a first circumferential groove is formed on each of said faces of said piston and located radially inwardly from said cylindrical peripheral surface at approximately the same distance as the bottom of said seal groove, a second pair of circumferential grooves is formed on each of said piston faces and positioned coaxially radially inwardly of said first circumferential grooves, said second circumferential grooves being of substantially greater depth than said first circumferential grooves.

4,807,521

ACTUATOR CASING

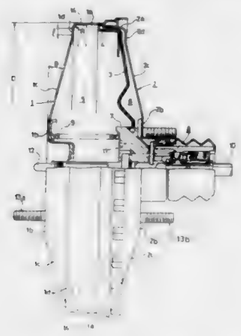
Shintaro Uyama, and Ryuji Ohta, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Japan

Filed Nov. 25, 1987, Ser. No. 125,489
Claims priority, application Japan, Nov. 29, 1986, 61-284958
Int. Cl.⁴ F01B *11/02*
U.S. Cl. 92—169 **6 Claims**

1. An actuator comprising a front casing and a rear casing, at least one of said casings comprising:
a cylindrical portion of circumferentially continuous substantially circular shape and which defines the outer periphery of the casing;
a flat central end wall disposed substantially perpendicular to the axis of the cylindrical portion;
a frustoconical portion interposed between the cylindrical portion and the central end wall and connected to said central end wall; and
means for enhancing the axial stiffness of at least said one casing and defining a flat peripheral end wall connecting the cylindrical portion and the frustoconical portion and oriented substantially perpendicular to the axis of the cylindrical portion, the cylindrical portion and peripheral end wall and frustoconical portion and central end wall being integrally formed so as to be continuous throughout;
master cylinder coupling bolts mounted on and extending forward from said front casing for mounting a master cylinder in front of said actuator;

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vehicle mounting bolts mounted on and extending rearward from said rear casing for mounting said actuator on a vehicle, said master cylinder coupling bolts and vehicle mounting bolts being axially spaced apart and separate from each other, the constancy of the axial distance be-



tween said master cylinder coupling bolts and vehicle mounting bolts during operation of said actuator being determined by the axial stiffness of said front and rear casings, said axial stiffness being enhanced by interposition of said flat peripheral end wall between said frustoconical portion and cylindrical portion.

4,807,522

PISTON AND ATTACHING APPARATUS FOR PISTON-AND-CYLINDER ARRANGEMENTS

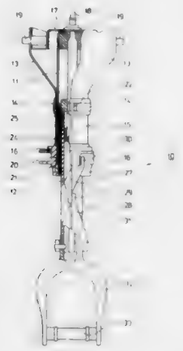
Olli Saarela, Vantaa; Vesa Heiske, and Erkki Haapanen, both of Kuorevesi, all of Finland, assignors to Valmet Oy, Finland

Filed Oct. 8, 1986, Ser. No. 916,701

Claims priority, application Finland, May 20, 1986, 862116

Int. Cl.[4] F01B *29/00*

U.S. Cl. 92—161 **17 Claims**



1. In combination with a piston-and-cylinder arrangement which includes a cylinder having closed and open ends and a piston extending through said open end of said cylinder and slideably mounted in said cylinder in an axial direction, supporting and attaching means for attaching the piston-and-cylinder arrangement to a supporting structure and for supporting said piston-and-cylinder arrangement, said supporting and attaching means comprising:

frame means attached to said cylinder of said piston-and cylinder arrangement for transmitting loads acting on said piston-and-cylinder arrangement to the supporting structure to which said piston-and-cylinder arrangement is attached, said frame means including a frame member having a shell-type design disposed over at least a portion of said cylinder, said frame of shell-type design having a first end substantially adjacent to said closed cylinder end, said first end being substantially wider than said closed cylinder end, said frame means further including reinforcing rib means closing said first end of said frame member, said reinforcing rib means coupled to said closed cylinder end, and said frame member having a second end proximate to said open cylinder end, said second end of said frame member being fit over said cylinder;

wherein said mechanical joint means includes a sleeve-like collar provided at said open cylinder end projecting outwardly from said cylinder and bolt joint means for affixing said reinforcing rib means to said closed cylinder end and for clamping said frame member in place against resistance provided by said sleeve-like collar;

wherein said sleeve-like collar is fixed to said cylinder at a bonded joint.

4,807,523

VENTILATING SYSTEM FOR AUTOMOTIVE VEHICLE

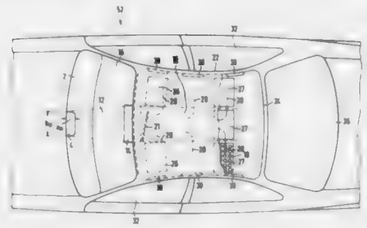
Wolfgang Radtke, Steinenbrück, and Freddie Soethout, Cologne, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 28, 1987, Ser. No. 78,858

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1986, 3625681

Int. Cl.[4] B60H *1/26*

U.S. Cl. 98—2.15 **15 Claims**



1. A ventilation system for a motor vehicle having a roof, a windshield and a rear window together partially defining a passenger compartment, said ventilation system comprising in combination:

air discharge means including a nozzle disposed at a lower end of said windshield in said passenger compartment for discharging a compact, focused, low-turbulence stream of air along an upward path at least approximately parallel to said windshield;

receiving means including a funnel disposed at an upper end of said windshield for receiving said stream of air, said funnel having an inlet opening approximating a cross-section of said stream of air at said upper end of said windshield;

a lining spaced from said roof in said passenger compartment to form an interspace along an upper side of said passenger compartment, said interspace communicating with said funnel for receiving said stream of air therefrom;

pressurization means for generating a substantially uniform air pressure throughout said interspace, said pressurization means including closure of said interspace essentially entirely along a rear end thereof;

outlet means including a plurality of apertures in said lining for directing air from said interspace into said passenger compartment;

said nozzle including a discharge opening with a width to depth ratio of less than approximately five;

said air discharge means further including a laminar choke disposed upstream from said nozzle;

said air discharge means being independent of a heater mounted at the lower end of said windshield; and

said apertures being arranged directly above seats mounted in said passenger compartment.

4,807,524

METHOD AND APPARATUS FOR PRODUCING A FOOD PRODUCT

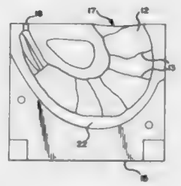
Hiroji Ikeuchi, and Kiyoaki Ikeuchi, both of Akashi, Japan, assignors to Kabushiki Kaisha Ikeuchi Tekkosho, Akashi, Japan

Continuation-in-part of Ser. No. 818,618, Jan. 13, 1986, Pat. No. 4,692,341. This application Jun. 30, 1986, Ser. No. 879,984

Claims priority, application Japan, Mar. 25, 1986, 61-067692

Int. Cl.[4] A23P *1/00*; **A47J** *37/00*

U.S. Cl. 99—353 **19 Claims**



1. Apparatus for producing a food product having the appearance of the shelled meat of a shellfish, comprising a split mold having an internal cavity formed by cavity walls, said cavity having the shape of a shellfish to be simulated, said walls including a plurality of flat portions separated by projections, a fill opening and a vent opening at the outer surface of said mold and connected to opposite ends of said cavity for filling and venting said cavity, and a filling unit connectable to said fill opening for pressing a substantially fixed amount of fish meat paste into said internal cavity, said fill opening having the shape of one end of the shellfish.

4,807,525

CONVEYOR PRESS

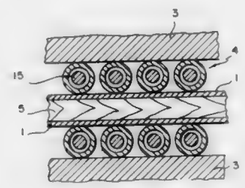
Raoul de Brock, Vogelzangiaan 16, B-6500 Kortrijk, Belgium

Filed Mar. 12, 1987, Ser. No. 24,818

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1986, 3608487

Int. Cl.[4] D05B *5/06*

U.S. Cl. 100—153 **40 Claims**



1. A conveyor press for applying a surface pressure to moving workpieces, such as wooden planks, rubber and plastic webs and the like, comprising

at least one rotatable endless pressing band having a predetermined width and an operating portion arranged to be pressed against a workpiece;

a pressure plate arranged to apply an operating pressure to said operating portion of said endless pressing band and having an inlet end and an outlet end;

at least one roller assembly including a plurality of rollers located in a region of said pressure plate, spaced at a distance from one another, being in frictional contact with said pressure plate and said operating portion of said endless pressing band, said rollers extending substantially over the whole width of said endless pressing band;

means for continuously transporting said rollers in a closed path from said inlet end of said pressure plate to said outlet end of said pressure plate, including means for routing said endless rotatable pressing band from said inlet end of said pressure plate to said outlet end of said pressure plate and rerouting said endless rotatable pressing band from said outlet end of said pressure plate to said inlet end of said pressure plate; and

wherein said rollers of each of said roller assemblies are arranged in an end-to-end abutting relationship with one another.

4,807,526

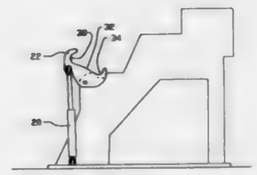
ROLL-FEEDER LOADER AND METHOD THEREFOR

James Troyer, Phoenix, Ariz., assignor to Phoenix Newspapers, Inc., Phoenix, Ariz.

Filed May 18, 1987, Ser. No. 50,408

Int. Cl.[4] B41F *3/82*, *3/46*

U.S. Cl. 101—216 **4 Claims**



1. In a roll-feeder having saddles for receiving the ends of a mandrel of a mandrel-mounted roll, means for moving said mandrel-mounted roll to a production position including a loader for elevating and translating said mandrel-mounted roll between a loading position and said production position with a single uni-directional motion, comprising:

rocker plates each mounted about a pivot center;

rotating means for rotating said rocker plates about said pivot centers, said rotating means consisting of a single hydraulic cylinder for each of said ends, said hydraulic cylinders rotating said rocker plates about said pivot centers in said single uni-directional motion;

said rocker plates each having a hook pocket for engaging one of said ends at said loading position;

said rocker plates each including a stop pocket for lowering one of said ends into said saddles, one of said rocker plates each having an upwardly convexed cam surface lying between said hook pocket and said stop pocket for elevating and translating a respective one of said ends above and then into its respective saddle.

4,807,527

PRINTING MACHINE CYLINDER HOLDER ARRANGEMENT

Peter Kaaser, Rain am Lech, Fed. Rep. of Germany, assignor to Man Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Feb. 18, 1988, Ser. No. 157,649

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1987, 3705477

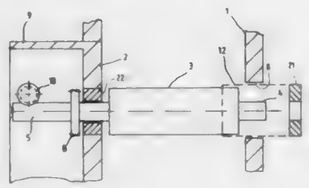
Int. Cl.[4] B41F *5/00*

U.S. Cl. 101—216 **8 Claims**

1. In a printing machine,

a printing cylinder holding arrangement for holding in posi-

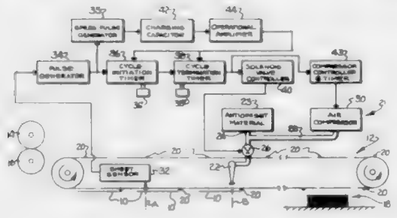
tion a printing cylinder (3) to permit application of a cover sleeve (12) over the cylinder,
wherein the cylinder has two shaft ends (4, 5) axially extending therefrom;
wherein the printing machine has two side walls (1, 2) and two bearing means (21, 22) positioned in said side walls and rotatably retaining the shaft ends (4, 5) in the side walls,
one side wall (1) permitting release of the associated bearing means (21) and being formed with an opening (6) of sufficient size to permit introduction of the cover sleeve (12) therethrough after release of the bearing means (21) retaining the respective shaft end (4) in said one side wall,
said holding arrangement supporting the cylinder (3) in cantilever manner on the second bearing means (22) after release of the first bearing means (21),
said second shaft (5) being elongated and forming a lever engagement arm,
and comprising:



a pair of structural elements (9') secured to that side wall proximate said second shaft end extending approximately parallel to the said second shaft end (5);
an auxiliary shaft (10) extending transversely to said second shaft end (5) and positioned thereabove, said auxiliary shaft being eccentrically rotatably retained in said structural elements;
locating means (11) on said auxiliary shaft determining the axial position of the auxiliary shaft with respect to the shaft end (5);
means (17) for rotating said auxiliary shaft to permit engagement of the auxiliary shaft with said second shaft end, or release said second shaft end therefrom; and
means (16 16'; 13, 14) for controllably axially positioning said auxiliary shaft (11) with respect to structural elements (9') and thereby position said locating means (11) and hence the second shaft end (5) in predetermined position to control the direction of cantilever projection of said cylinder (3).

4,807,528
OFFSET PREVENTION MEANS FOR PRINTING PRESSES

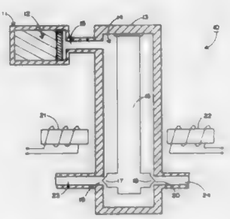
Duane A. Schmoeger, Cary, and Robert T. Neece, Raleigh, both of N.C., assignors to Airtech Company, Inc., Cary, N.C.
Filed Jun. 10, 1987, Ser. No. 60,220
Int. Cl.[4] B41F *23/06*
U.S. Cl. 101—424.2 **7 Claims**



1. In combination with a printing press having sheet delivery means for conducting freshly printed sheets along a path of travel from a printing station to a sheet collection station of said press, and cyclically operable sheet sprayng means for spraying successive ones of the sheets moving along said path of travel with antioffset material, the improvement comprising:
sheet location indicating means for, preparatory to each cycle of operation of said sheet spraying means, generating an electrical trigger signal indicative of the location along said path of travel of one of said sheets;
primary electrical control means for, in response to each said trigger signal, causing the performance by said spraying means of a cycle of operation thereof, said primary control means including timer means having an adjustable timing period regulating the time of termination of each of the cycles of operation of said spraying means, manually adjustable means for effecting manual adjustment of the duration of said timing period, second timer means having an adjustable timing period regulating the time of institution of each of said cycles of operation of said spraying means, and manually adjustable means for effecting manual adjustment of said second-mentioned timing period;
and speed responsive control means for automatically adjusting both said first-mentioned timing period and said second-mentioned timing period in response to and in a manner compensating for the changes in the speed to said printing press, said speed responsive control means including pulse generating means for generating electrical pulses at a frequency proportional to the speed of said printing press, and integrator means for receiving said pulses and in response thereto directing control signals to said first and second timer means effective to adjust said timing periods thereof.

4,807,529
HOT GAS CONTROL SYSTEM

Alson C. Frazer, Santa Ana, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.
Filed Nov. 6, 1987, Ser. No. 118,375
Int. Cl.[4] C06B *45/00*
U.S. Cl. 102—285 **14 Claims**



1. A gas generator for a hot-gas control system, comprising:
(a) a pressure vessel defining a chamber and an output port; and
(b) a body of solid propellant material disposed within the chamber, the body of solid propellant material having a leading portion, an intermediate portion, and a trailing portion;
(c) said body of solid propellant material including a first layer that extends between said leading portion and said intermediate region of the body of solid propellant material, said first layer being composed of a first propellant composition that produces a relatively clean gas; and
(d) said body of solid propellant material further including a second layer that extends between said intermediate region and said trailing portion of the body of solid propellant material, said second layer being composed of a second propellant composition that produces a relatively less clean gas.

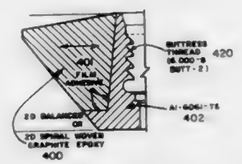
4,807,530
EXPANSIVE DEMOLITION AGENT

Shiro Ishii, Zushi; Hachiro Kubota, Tokyo; Toshiharu Hida, Koshigaya, and Junichiro Migita, Yokohama, all of Japan, assignors to Onoda Cement Co., Ltd., Japan
Continuation of Ser. No. 916,215, Oct. 7, 1986, abandoned. This application Dec. 9, 1987, Ser. No. 131,264
Claims priority, application Japan, Oct. 14, 1985, 60-226909
Int. Cl.[4] F42B *13/44*
U.S. Cl. 102—333 **9 Claims**

1. An expansive demolition agent, for insertion into a hole in a brittle material, comprising a sintered clinker which has been crushed to a first powder having a maximum particle diameter which is one third or less the diameter of said hole, and containing 10% or less fine particles having a diameter of 0.3 mm or less, an abrasion loss, of randomly sampled particles having 2.5 to 5 mm particle diameter, being such that the amount of said sampled particles passing through a 0.6 mm sieve is 15% or less of the total weight of said expansive demolition agent, when subjected to a test in accordance with Japanese Industrial Standards (JIS) A 1121 "Method of Test for Abrasion of Coarse Aggregate by Use of the Los Angles Machine", whereby said agent is adapted to hydrate and expand in said hole, thereby demolishing said brittle material.

4,807,531
CONTEMPORARY COMPOSITE POLAR BOSS

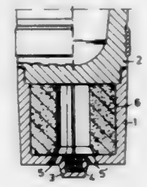
Hugh M. Reynolds, San Jose, Calif., and Curt M. Kawabata, North Ogden, Utah, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Oct. 16, 1987, Ser. No. 109,557
Int. Cl.[4] F42B *4/06*
U.S. Cl. 102—347 **4 Claims**



1. A composite polar boss for attaching a closure to a solid fueled rocket motor case, said solid fueled rocket motor case having an opening which has an indentation which circumscribes its inner circumference, said composite polar boss comprising:
an annular billet which forms a ring with an outer circumference which is shaped to fit within the indentation of the solid fueled rocket motor case, said annular billet thereby being fixed to said solid fueled rocket motor case wherein said annular billet is constructed from carbonized spiral graphite cloth which has been impregnated with an epoxy resin to form an effective billet for temperatures up to about 350 degrees;
a threaded metal interface ring which is fixed to and circumscribed by said annular billet, said threaded metal interface ring having a threaded inner circumference which screws onto a complementary set of threads on said closure to attach it to said solid fueled rocket motor case; and
a means for fixing said threaded metal interface ring to said annular billet.

4,807,532
BASE BLEED UNIT

Kurt G. Andersson, Pudelgrind 10, Farsta, Sweden (S-12362); Nils-Erik Gunners, Furudalsvagen 10, Västerhaninge, Sweden (S-13700), and Yngve L. Nilsson, Mariefredsvägen 2C, Strängnäs, Sweden (S-15200)
Filed Sep. 2, 1987, Ser. No. 96,631
Claims priority, application Sweden, Sep. 5, 1986, 8603737
Int. Cl.[4] F42B *13/02*
U.S. Cl. 102—490 **26 Claims**



1. A base bleed unit, comprising:
a fuel charge;
an igniter associated with said fuel charge;
a member attachable to a rear portion of a projectile body, arranged to form a housing in combination with said rear portion surrounding said fuel charge and said igniter, and including at least one outlet nozzle at a portion of the housing directed away from the projectile body, said outlet nozzle providing an open passage permitting communication from outside said housing to said igniter, said member including a restricting wall located at a distance from said rear portion, said fuel charge being arranged during combustion to generate a mass flow intended to reduce existing base drag, said igniter being included in the member and located adjacent to an internal surface of the restricting wall;
said igniter being located within said housing to be ignitable by combustion of a driving charge from outside said housing communicating with said igniter via said open passage provided by said outlet nozzle, whereby upon ignition said igniter provides a flame directed toward said fuel charge and away from said outlet nozzle.

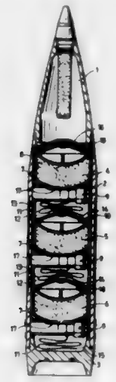
4,807,533
ARTILLERY PROJECTILE CONTAINING SUBMUNITIONS

Wolfgang von Eatzen-Fürstenock, Leisburg, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany
Filed Sep. 28, 1987, Ser. No. 101,651
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1986, 3635361
Int. Cl.[4] F42B *13/50*
U.S. Cl. 102—489 **4 Claims**

1. An artillery projectile having a casing containing a plurality of submunitions of the same type, each said submunition including a projectile-forming charge, an antenna arranged on one side thereof and a flight-stabilizing means on the opposite side; at least two of said submunitions being axially superimposed within the casing of said projectile; an insert sleeve in said casing to provide a hollow air space between two adjacent submunitions; a separating cover which is conical in cross-section extending transversely across the interior of said projectile casing intermediate said two adjacent submunitions for subdividing said air space; the flight-stabilizing means for one said

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submunition being located in the air space on the convex side of the separating cover, and the antenna of the adjacent submunition being located in the air space on the concave side of the separating cover.



4,807,534

DEVICE FOR EJECTING CONTAINERS, IN PARTICULAR, AMMUNITION

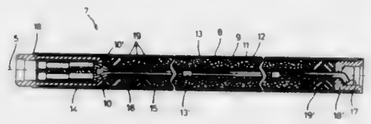
Hubert Vockensperger, Feldkirchen-Westerham; Franz Hieble, Neu-Ulm, and Robert Gebhardt, Poing, all of Fed. Rep. of Germany, assignors to Bayern-Chemie Gesellschaft fur flugchemische Antriebe GmbH, Fed. Rep. of Germany

Filed Sep. 1, 1987, Ser. No. 92,056

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1986, 3630082

Int. Cl.[4] F42B *13/50*

U.S. Cl. 102—489 **8 Claims**



1. A device for ejecting containers particulary containers of ammunition from a war head, comprising a longitudinally elongated bellows having a longitudinal axis with a plurality of concave circumferentially arranged radially outwardly opened container receiving pockets; bulk head means for closing said bellows at both ends thereof; a gas generator for inflating the bellows including a gas permeable tube provided with a plurality of partition walls subdividing the interior of the gas permeable tube into a plurality of individual chambers extending along the tube said gas permeable tube being arranged substantially concentrically in the interior of and extending the entire length of said bellows, a solid propellant particulate positioned in said chambers of said gas-permeable tube, a material damming up said gas-permeable tube positioned within said gas permeable tube towards the outside of said gas permeable tube and said material opens by pressure generated by ignition of said propellant charge, and an ignition chain for said propellant charge including at least one ignition cord which extends centrally over substantially the entire length of said tube, and a particulate ignition mixture comprising boron and at least one of aluminum and magnesium particles placed around said ignition cord.

4,807,535

DEVICE FOR REDUCING AMMUNITION DRAG AND AMMUNITION FOR RECEIVING SAID DEVICE

Michel Schilling, Chateauneuf S/Cher, and Marc Reuche, Bourges, both of France, assignors to Luchaire S.A., Paris, France

Continuation of Ser. No. 788,451, Oct. 17, 1985, abandoned. This application Jul. 17, 1987, Ser. No. 77,083

Claims priority, application France, Oct. 25, 1984, 84 16348

Int. Cl.[4] F42B *13/00*

U.S. Cl. 102—490 **8 Claims**



1. An artillery ammunition system comprising on the one hand an artillery projectile **(1)**, having a closed rear end and on the other hand a device which can be secured to the closed rear end of said projectile for reducing the drag and increasing the range of said projectile, said device comprising a casing **(2)** containing a gas producing charge **(3)** and an igniter **(6)** for initiating combustion of said charge, said casing **(2)** having an orifice **(8)** for discharging gases generated at the time of combustion of said charge, wherein:

(a) the casing **(2)** is self-contained, has an outer-skirt and comprises a leak-tight cover **(5)** enabling storing it independently of said projectile **(1)**, said cover being disposed on a side of said casing **(2)** to be fitted to the closed rear end of said projectile **(1)**,

(b) said discharge orifice **(8)** of said casing **(2)** is closed by a plug **(9)** so as to form a gas-tight seal, said plug being destructible under the action of the pressure generated within a tube of a weapon used for firing the ammunition,

(c) the cover **(5)** of said casing **(2)** has an internal face and the igniter **(6)** is fixed on said internal face of said cover **(5)**,

(d) the rear end of said projectile **(1)** and said side of said self-contained casing **(2)** comprise complementary fastening means **(10, 13; 11, 14)** so as to permit a direct and leak-tight attachment of said casing **(2)** to the rear end of said projectile **(1)**,

(e) said leak-tight cover **(5)** has a surface which is complementary to that of the closed rear end of the projectile so that said cover engages tightly said closed rear end when said casing **(2)** is attached to said projectile **(1)**, and

(f) said means **(10, 13, 11, 14)** for fastening the casing **(2)** to the projectile **(1)** has outer profiles such that when the casing **(2)** is attached to the projectile **(1)**, the outer skirt of said casing **(2)** follows the external surface of the projectile **(1)**.

4,807,536

MICROPROCESSOR-CONTROLLED SYSTEM OF AERIAL TRANSPORT FOR INDUSTRIAL INSTALLATIONS

Manuel Martinez Llanera, Madrid, Spain, assignor to Ivestronica, S.A., Madrid, Spain

Continuation-in-part of Ser. No. 490,158, Apr. 29, 1983, abandoned. This application Sep. 27, 1985, Ser. No. 780,724

Claims priority, application Spain, May 5, 1982, 511954

Int. Cl.[4] B61L *27/04*

U.S. Cl. 104—88 **7 Claims**



1. A transport system comprising:

a main circuit having a plurality of stations; a plurality of support elements which are rollable along said main circuit, wherein one of either hangers, trays and hooks or other elements for holding garments, parts, components or other elements are hung on said support element, and wherein each of said support elements carries a code thereon which identifies the support element as well as the element supported thereof;

a plurality of readers for identifying said support elements on their passage thereby and, for thus supplying information regarding the location and movement of said support elements;

wherein each of said support elements has a body with wheels, the back part being arranged so as to be retained and dispensed by a one-to-one dispenser and to be raised by a lifting system; and

a keel for guiding said support element along the tracks and for carrying an identification code and for allowing a load to be hung by means of a hook;

wherein said identification code is optically read through the transmission of a code punched on a card by a row of strobed punches, each of said readers comprising a transmitter and two receivers, said code being digitally recorded;

and wherein said support elements are transported along said main circuit by pushers and wherein said plurality of readers are spaced apart by a distance corresponding to a multiple of the distance separating said pushers;

said system further comprising a pusher detector operatively connected to a microprocessor which is operatively connected to said readers, said pusher detector outputting a signal to said microprocessor to enable said microprocessor to read registers, thereby enabling said microprocessor to monitor the movement of said support elements.

4,807,537

TRANSPORT APPARATUS HAVING VEHICLE REMOVING MECHANISM

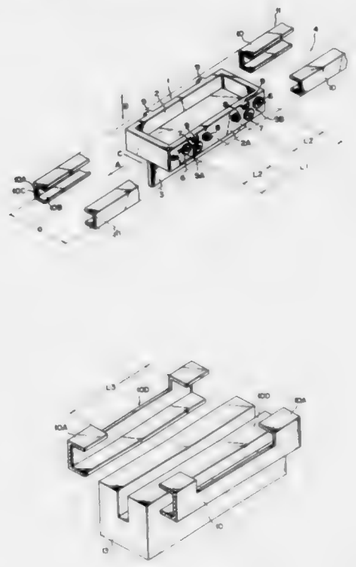
Yukito Matsuo, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 828,992, Feb. 13, 1986, abandoned. This application Feb. 22, 1988, Ser. No. 161,385

Claims priority, application Japan, Feb. 14, 1985, 60-28530

Int. Cl.[4] B61K *5/00;* **E01B** *26/00*

U.S. Cl. 104—129 **14 Claims**



1. A transport apparatus comprising:

a track including a pair of guide rails defining a predetermined transport path therebetween, each of said guide rails including spaced-apart first and second guide members respectively having first and second guide faces facing each other;

at least one runner capable of traveling along said transport path in a traveling direction, said runner including a carrying body having opposed lateral faces and first and second wheels mounted on each of said lateral faces, said first and second wheels on each of said lateral faces having axes spaced from each other in a direction perpendicular to said traveling direction, said first wheels being capable of having rolling contact with said first guide faces of said track and said second wheels being in rolling contact with said second guide faces of said track; and

removing means for removing said runner from said transport path, said removing means including a cut portion formed in each of said first guide members, said cut portions being laterally aligned and of sufficient length in said traveling direction to permit said runner to be lifted from said track through said cut portions, said removing means further including lift means for lifting up said runner through said cut portions to permit removal of said runner from said transport path at times when said runner is positioned at said cut portions, said second guide faces supporting said second wheels to guide said runner along said transport path at times when said runner is positioned at said cut portions.

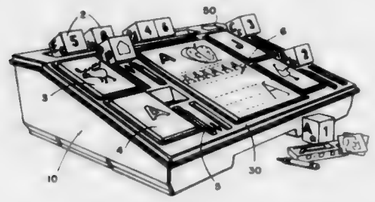
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4,807,538

TOY DESK UNIT

James D. Heffman, Grand Haven, Mich., assignor to School Zone Publishing Company, Grand Haven, Mich.

Filed Apr. 23, 1987, Ser. No. 43,229
Int. Cl.[4] A47B 85/00
U.S. Cl. 108—25 **6 Claims**



1. A toy desk for pre-school children comprising a housing having a base formed of upstanding front, rear and sidewalls, and a bottom; a top supported on said walls of said base; said walls, bottom and top defining a housing having a storage space; said walls being dimensioned to slant at least a portion of said top upwardly from said front wall toward said rear wall, the improvement comprising:

said top having a surface located generally on a plane with retention means extending from said plane to provide as plurality of compartments of a size and shape to receive and retain differently sized flat articles, said retention means extending from said plane at a distance sufficient to prevent said flat articles from sliding off said slanted top;

said top including two portions comprising a horizontal top portion located adjacent the rear wall and a slanted top portion slanted upwardly from said front wall to said horizontal top portion;

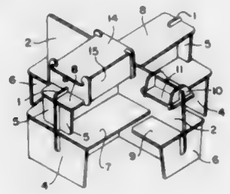
said horizontal top portion including a rear side, a front side and two spaced sides extending therebetween, said rear side being supporting on said rear wall and said spaced sides mounted on said side walls; and a lip extending from said front side; said slanted top portion including a rear upper side, a front lower side and two spaced sides extending therebetween; said rear upper side extending over and supported on said lip.

4,807,539

MULTI-STATION MODULAR OFFICE FURNITURE

Juan M. Del Castillo von Haucke, Salamanca 34, 2° Piso, Mexico City, D.F., Mexico

Continuation of Ser. No. 53,473, May 26, 1987, abandoned. This application May 2, 1988, Ser. No. 189,017
Claims priority, application Mexico, Jun. 4, 1986, 2698; Sep. 4, 1986, 3656
Int. Cl.[4] A47B 57/00
U.S. Cl. 108—111 **2 Claims**



1. Balanced modular furniture comprising at least two work stations, a first work station for one user and a second work station for a second user, each of said first and second work stations including at least two horizontal panel portions forming two vertically supported working tables having an adjacent side marginal free edge of each of their working surfaces extending generally laterally at right angles to each other so as to include in vertical projection an arc of 90 degrees and to provide a space between said adjacent free edges for each user of the two work stations and of the two working tables for each of two users,

the said two work stations include four working tables comprising two sets of two table portions each and wherein the first work station includes a first table portion and a second table portion and the second work station includes a third table portion integral with said first table portion to form a first integral one-piece member but partitioned therefrom by a first vertical partitioning panel member having a slot therein for engaging and joining with an intermediate part of the first integral one-piece member which includes the first table portion and the third table portion, a fourth table portion integral with said second table portion to form a second integral one-piece member but partitioned therefrom by said first vertical partitioning panel which has another slot therein for engaging with an intermediate part of the second integral one-piece member which includes the fourth table portion and the second table portion;

said first vertical partitioning panel member partitioning the first table portion from the third table portion having a side marginal free edge adjacent to a side marginal free edge of the first table portion with the second table portion arranged to extend generally laterally and at right angles to the first table portion and said second table portion is partitioned by said first partitioning panel from the fourth table portion having a side marginal free edge adjacent to a side marginal free edge of the third table portion which is at right angles to the third table portion,

a second single vertical panel member spaced from said first and third table portions supporting a margin of said second working table portion and a margin of said fourth table portion, a third vertical panel spaced from said first and second vertical panels supporting said first table portion and a fourth vertical panel spaced from the first, second, and third vertical panels supporting the third table portion,

panel members forming a document storage unit, at least one of said single integral vertical panels serving to support said document storage unit above and vertically spaced from a working table portion, a plurality of said panels including said horizontal portions and vertical panels being formed with one or more slots and being assembled with one another as aforesaid by means of said slots which cooperate with surfaces of said panels to effect the joining of said panels into a stable, strong, and balanced structure.

4,807,540

ARRANGEMENT OF WORK LOCATIONS

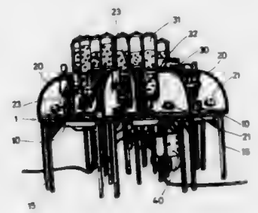
Wolfgang Priesemuth, Postkamp 13, D-2210 Itzehoe-Nordoe, Fed. Rep. of Germany

Continuation of Ser. No. 791,221, Oct. 25, 1985, Pat. No. 4,706,572. This application Sep. 4, 1987, Ser. No. 93,013
The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.
Int. Cl.[4] A47B 57/00
U.S. Cl. 108—60 **8 Claims**

1. An arrangement of work locations for cooperation and working together during the mass production of small, complex units by multiple individuals in a predetermined working cycle, said arrangement having improvement in combination therewith comprising:

a table having a periphery as well as a center and having a basically ring-shaped table top that is divided into individual sectors, each of which provides one of said work locations about the periphery of said table; the center of said table is provided with a central region that is open and free of said table top located exclusively laterally and radially outwardly from said central region as far as to the periphery; and supply lines, such as for power, lighting, gas, air, water, discharge, gas venting, etc., are disposed in said central region for all of said work locations; said table including a plurality of essentially identically-shaped work tables extending laterally outwardly and each having a trapezoidal table top that includes slanted edges which abut one another to form said ring-shaped configuration; and said work tables are disposed extending laterally and radially outwardly from said central region as far as to the periphery as work area located around said open central region to delimit said open central region;

said arrangement further including a portion of a climate-



control device disposed in said central region of said table, said climate-control device including suction lines extending to the work areas for removal of solder vapors therefrom; said arrangement, for defining said individual work locations, further including vertically upwardly projecting, radially directed partitions on said table top; material-transfer openings provided in said partitions to establish communication laterally between adjacent ones of said work locations, said partitions being made of transparent plastic material to aid in cooperation and working together by the individuals; and

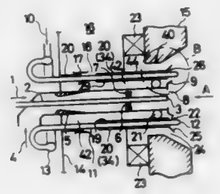
a shelf that at least partially covers said central region of said table; said partitions having upper edges above and remote from said table top, with said shelf being supported on said upper edges above and spaced inwardly of the work areas.

4,807,541

APPARATUS FOR LOW CONCENTRATION NOX COMBUSTION

Tadahiro Masui; Shigeki Morita, and Shigeto Nakashita, all of Kure, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1988, Ser. No. 159,214
Claims priority, application Japan, Feb. 27, 1987, 62-44728
Int. Cl.[4] F23C 1/10, 1/12
U.S. Cl. 110—262 **13 Claims**



1. An apparatus for low concentration NOx combustion which comprises:

a pulverized coal-feeding pipe (pulverized coal pipe) inserted into a burner throat on the lateral wall of a combustion furnace and for feeding pulverized coal together with air into the combustion furnace;

a means for feeding pulverized coal and air into the pulverized coal pipe;

an auxiliary fuel-feeding pipe inserted into the pulverized coal pipe and a nozzle provided at the tip end of said pipe;

a secondary air passageway formed between the pulverized coal pipe and a secondary air-feeding pipe, said secondary air-feeding pipe being concentric with the pulverized coal pipe and provided on the outer peripheral side of the pulverized coal pipe;

a tertiary air passageway formed on the outer peripheral side of the secondary air-feeding pipe;

a means for feeding air or an oxygen-containing gas into said secondary air passageway and that into said tertiary air passageway;

a flame-retaining means provided about the exit of said pulverized coal pipe;

a means for feeding oil or gas into the auxiliary fuel-feeding pipe;

an annular space part provided on the inner peripherical side of the secondary air-feeding pipe;

gas-feeding pipes inserted in said annular space part in a movable manner in the axial direction thereof, the tip end of the gas-feeding pipe being provided with a gas nozzle;

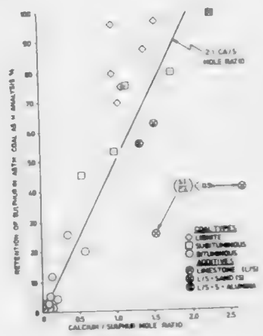
a means for feeding gas into said gas-feeding pipe.

4,807,542

COAL ADDITIVES

Owen W. Dykema, Canoga Park, Calif., assignor to Transalta Resources Corporation, Calgary, Canada

Filed Nov. 18, 1987, Ser. No. 123,044
Int. Cl.[4] F23B 7/00
U.S. Cl. 110—343 **14 Claims**



1. A process for combusting a sulphur-bearing fuel comprising the steps of:

(a) introducing a mixture of said fuel, sulphur binding material and sulphur retaining material into a first combustion zone;

(b) combusting said mixture in said first zone under conditions of fuel-rich stoichiometry and temperature wherein substantially all of said sulphur is captured in a solid form by said sulphur binding material and wherein the so-captured sulphur is bound to said sulphur retaining material, to produce combustion products including fuel-rich gases and solid sulphur-bearing flyash and slag;

(c) combusting said combustion products in at least one additional fuel-rich combustion zone at conditions normally thermodynamically unfavourable for sulphur capture by said sulphur binding material and at a temperature above the fusion temperature of said solid sulphur-bearing flyash and slag to induce further interaction between the

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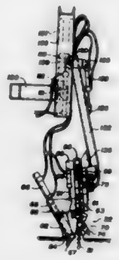
sulphur, the binding material and the retaining material to retain said sulphur in a solid form.

4,807,543

SEEDLING PLANTER

Lowell A. Paal, P.O. Box 557, Armstrong, British Columbia, Canada (V0E 1B0)

Filed Jul. 13, 1987, Ser. No. 72,378
Int. Cl.[4] A01C *11/02*
U.S. Cl. 111—2 **23 Claims**



1. A seedling planter comprising:
reciprocating means; and
a planting head comprising: a central mounting member having a hollow inner core and attached to said reciprocating means for essentially vertical reciprocatory movement;
a foot assembly slidably mounted about said central mounting member having means for lowering said food assembly;
a pod assembly mounted to the lower end of said central mounting member for insertion into the ground to create a planting location into which a seedling is deposited, said pod assembly comprising a planar mounting plate having a central access passage extending through the faces of said plate communicating with said hollow inner core of said central mounting member, said mounting plate having at least three side edges, cutting blades pivotally mounted to the side edges of said mounting plate with means for pivoting said cutting blades from a closed position in which said blades define an enclosure to house a seedling to be planted to an open position in which said blades pivot upwardly in a plane parallel to said side edges to release said seedling into the ground; and
tamping means attached to said central mounting member with means for raising and lowering said tamping means to compact the ground about said planting location.

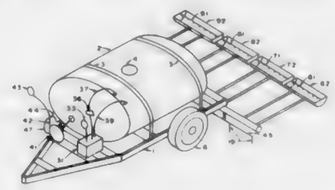
4,807,544

APPARATUS AND METHOD FOR SUBSURFACE INJECTION OF AGROCHEMICALS

Hewis W. Cross, and James C. Lewis, both of Albany, Ga., assignors to Cross Equipment Company, Inc., Albany, Ga.

Filed Sep. 21, 1987, Ser. No. 99,217
Int. Cl.[4] A01C *23/02*
U.S. Cl. 111—7 **23 Claims**

1. An apparatus for subsurface soil injection of agrochemicals utilizing a high pressure delivery system from a field sprayer vehicle, comprising:
(a) a liquid holding tank for supplying an agrochemical solution to be injected, said tank supported by said vehicle;
(b) a pump means, having hose connection to said tank, for receiving and delivering the solution into said high pressure delivery system within the range of 1000 to 2200 psi;
(c) an engine means for powering said pump;
(d) a distribution manfold, having hose connection to said pump, to receive and distribute the solution to injection nozzles;
(e) multiple injection nozzles to form liquid jets of the solution being delivered at high pressure, said jets having sufficient velocity and narrow cross-section to inject into subsurface of soil;
(f) an injection nozzle assembly for positioning said nozzles in a generally downward direction, said assembly including a header with hose connection to said manifold and having plurality of injection nozzles;
(g) a shield pan, semicircular in cross-section, for riding on surface of soil causing said injection nozzles to be positioned close to soil surface without making contact, said shield pan having multiple spray injection orifices on bottom;



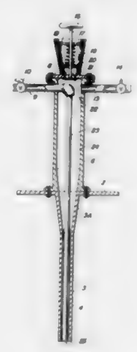
(h) a support frame attached to top of said shield pan, said nozzle assembly being attached to said frame such that said injection nozzles are aligned with injection orifices, whereby said liquid jets pass through said injection orifices into soil; where
(i) said frame is attached at one end to said vehicle and at the other end to said shield pan, said frame having a spring-hinge means to cause soil surface contact of said shield pan for varying terrain.

4,807,545

TECHNIQUE FOR LOOSENING, AERATING AND FERTILIZING SOIL PLANT ROOTS

Stanley E. Joy, Arvada, Colo., assignor to Grow Gun Corporation, Arvada, Colo.

Continuation-in-part of Ser. No. 780,973, Sep. 27, 1985, Pat. No. 4,682,550. This application Jul. 27, 1987, Ser. No. 78,031
Int. Cl.[4] A01C *15/02*
U.S. Cl. 111—7.1 **4 Claims**



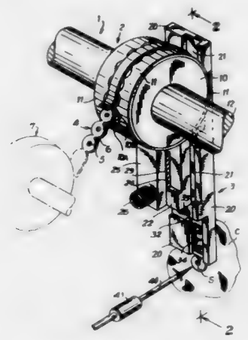
1. A method of treating of the roots of a plant, the method comprising the steps of:
(a) providing a root treatment apparatus including a first tube and a second tube both attached in fixed relationship to a ground plate and extending downward from the ground plate, and also including a chamber located above the ground plate in open communication with the first tube;
(b) pre-drilling a hole in soil near the roots of the plant;
(c) inserting the first and second tubes into the hole and lowering the root treatment apparatus so that a bottom surface of the ground plate rests on the soil around the hole;
(d) supporting the weight of an operator by means of the ground plate so that the bottom surface of the ground plate produces a seal over the top of the hole;
(e) forcing a quantity of compressed air through the chamber and the first tube into the hole, the quantity and pressure of the compressed air being sufficiently high to build up the pressure of air in the hole to a level that causes the ground plate and the weight of the operator to be lifted if the soil in which the hole is drilled is tightly packed, breaking the seal produced between the top of the hole and the surface of the soil by the ground plate;
(f) allowing some of the compressed air in the pre-drilled hole to escape between the bottom of the ground plate and the soil around the hole and allowing the root treatment apparatus and the weight of the operator supported thereby to fall, causing the bottom surface of the ground plate to rest on the soil around the hole and reseal the hole;
(g) repeating steps (e) and (f) to cause repetitive surging in the pressure of compressed air in the pre-drilled hole until the soil in which the hole is drilled is loosened, the compressed air producing voids and cracks in that soil.

4,807,546

SEQUIN APPLICATION APPARATUS FOR SHUTTLE EMBROIDERY MACHINE

Harry Leeson, Cliffside Park, and Lester L. Moise, Leonia, both of N.J., assignors to Sequins of Distinction, Inc., North Bergen, N.J.

Filed Dec. 4, 1987, Ser. No. 128,987
Int. Cl.[4] D05B *3/04, 7/02*
U.S. Cl. 112—88 **21 Claims**



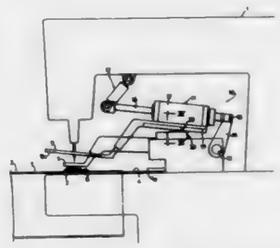
1. A shuttle embroidery machine with a plurality of needles and attachments for selectively applying sequin-like decoration to cloth, wherein an attachment corresponding to each needle of the machine comprises
a rotary coin-feed wheel for indexing a strip of coin-shaped sequins through a feed member, wherein the decoration is cut from the strip, which rotary wheel is one of a plurality of rotary wheels which are incrementally indexed via a feed shaft inserted through and frictionally mounted within the axes of the plurality of rotary wheels,
said feed member which positions and strip for severing of a single sequin wherein the feed member, mounted on the machine via a bar, is adjustably moveable along said bar, and
a cylindrical sleeve, with diameter approximately equal to the diameter of a single sequin, which sleeve is frictionally attached to each corresponding needle via insertion of the needle through the axis of the sleeve and which sleeve is positioned along the length of the needle such that the sleeve will sever a single sequin via contact with a cutting edge of said feed member during movement of the needle to form an embroidery stitch.

4,807,547

AUTOMATIC BUTTON SEWING MACHINE FOR STITCHING BUTTONS IN SERIES ON A FABRIC

Masaku Sato, 1428, Nishi Shimmachi, Tosushi, Saga, Japan

Filed Mar. 8, 1988, Ser. No. 165,299
Int. Cl.[4] D05B *3/14*
U.S. Cl. 112—112 **2 Claims**



1. A button sewing machine for stitching buttons in series on an object material such as sleeves of suits, the machine comprising:
a working table for supporting the object material:
a cloth back-up plate movably placed on the working table for backing up the object material;
a button holder for picking a button from a button carrier and placing it at a desired position on the object material;
a cloth holding and shifting arm for pressing and shifting the object material placed on the table along the surface of the working table;
a first driving means for effecting the ascent and descent of the cloth holding and shifting arm with respect to the working table;
an interlocking means for effecting the unitary movement of the cloth back-up plate, the button holder and the cloth holding and shifting arm, thereby placing the button held by the button holder at an appropriate position on the object material placed on the working table; and
a second driving means for shifting the cloth holding and shifting arm in the button aligning direction while it presses the cloth against the back-up plate.

4,807,548

ELECTRIC MOTOR DRIVE FOR A SEWING MACHINE, ESPECIALLY AN INDUSTRIAL SEWING MACHINE

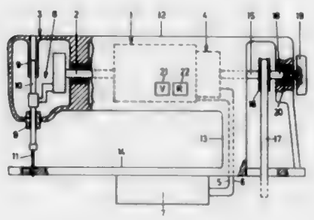
Gustav Rohr, Nusloch, and Gerd Nohl, Rauenberg, both of Fed. Rep. of Germany, assignors to Frankl & Kirchner GmbH & Co. KG, Schwetzingen/Baden, Fed. Rep. of Germany

Filed Nov. 17, 1987, Ser. No. 121,700
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1986, 3642277
Int. Cl.[4] D05B *69/12*
U.S. Cl. 112—220 **3 Claims**

1. An electric motor drive for a sewing machine, especially an industrial sewing machine, with a needle that can be moved up and down between an upper and lower end position by a sewing machine main shaft, the drive comprising:
a drive motor in direct driving connection with the main shaft;

a control system for varying the rotational speed of the drive; and

two input switches in the form of momentary contact switches to energize the drive when the sewing machine is



stopped with the needle randomly positioned, one switch serving to trigger command pulses for a movement of the drive in a first direction and the second switch triggering command pulses for a movement of the drive in a second direction.

4,807,549

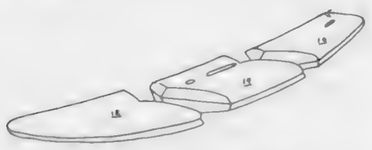
COLLAPSABLE ELONGATED ARTICLES INCLUDING SAILBOARDS AND THE LIKE

Stephen Rhodes, Mason St., P.O. Box 41, Bethel, Me. 04217, and James E. Simon, Tanglewylde Apts, Apt. 5B, South Boston, Va. 24592

Filed Jul. 12, 1984, Ser. No. 630,293

Int. Cl.[4] A63C *15/05*; B63B *7/04*

U.S. Cl. 114—39.2 **6 Claims**



1. A collapsable elongated article comprising:

a first elongated section having a double chevron adjoining edge;

a second elongated section having a double chevron adjoining edge, the respective adjoining edges of said first and second elongated sections being mating double chevrons; and

means for removably securely joining said first and second elongated sections along the respective adjoining edges thereof.

4,807,550

BELAYING CLAMP

Hannes Marker, Alpspitzstrasse 37, D-8100 Garmisch-Partenkirchen, Fed. Rep. of Germany

PCT No. PCT/EP86/00746, § 371 Date Oct. 16, 1987, § 102(e) Date Oct. 16, 1987, PCT Pub. No. WO87/03854, PCT Pub. Date Jul. 2, 1987

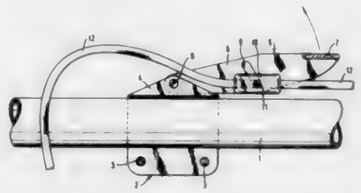
PCT Filed Dec. 13, 1986, Ser. No. 96,013

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1985, 3545340

Int. Cl.[4] B63H *9/04*

U.S. Cl. 114—109 **8 Claims**

1. A belaying clamp for releasably fixing an end of a stretching rope to the boom or mast base of a windsurfing craft, comprising a clamp and adjusting means for indirectly connecting the clamp to the boom or mast base of a boat wherein the adjusting means includes a lever having a pivot which on mounting extends transversely to the boom or the mast base of the boat and wherein the clamp is pivoted to the lever about an



axis which is transverse to the longitudinal direction of the clamp and parallel to the pivot for the lever.

4,807,551

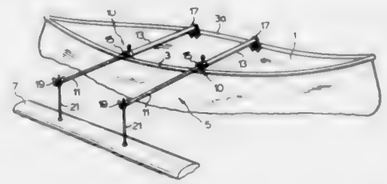
PORTABLE OUTRIGGER

Gwyn C. Ace, P.O. Box 223, Trout Creek, Ontario, Canada (P0H 2L0)

Continuation of Ser. No. 840,926, Mar. 18, 1986, abandoned. This application Nov. 9, 1987, Ser. No. 120,684

Int. Cl.[4] B63B *43/14*

U.S. Cl. 114—123 **1 Claim**



1. In combination, a canoe with a portable outrigger assembly, said assembly comprising a pair of fixed length mounting sleeves both having clamps at each end thereof attached to the inside of opposing gunnels generally free of overhang on said canoe, a pair of horizontal support rods telescopically fitted in said fixed length mounting sleeves, a pair of vertical support rods secured outwardly along said horizontal support rods and extending downwardly to a pontoon supported at longitudinally spaced apart locations by said vertical support rods, said vertical support rods being threadably adjustable relative to said horizontal support rods for height setting of said pontoon and said vertical support rods further being removable from said horizontal support rods with said horizontal support rods and said mounting sleeves being of substantial equal length whereby said horizontal support rods are fully slideable into said mounting sleeves for transporting said canoe without removing said mounting sleeves and horizontal support rods therefrom.

4,807,552

SMALL BOAT BOW THRUSTER

Larrie M. Fowler, 120 LeMaister Ave., Wenatchee, Wash. 98801

Continuation-in-part of Ser. No. 933,244, Nov. 21, 1986. This application Apr. 11, 1988, Ser. No. 182,897

Int. Cl.[4] B63H *25/46*

U.S. Cl. 114—151 **2 Claims**

1. Apparatus for maneuvering a boat in small spaces, the boat having a boat hull and bow, the apparatus comprising:

a. a bow starboard side outlet nozzle located in the boat hull above the water line,

b. a bow port side outlet nozzle located in the boat hull above the water line,

c. an inlet port located in the boat hull below the water line,

d. pump means connected between the inlet port and the starboard and port side nozzles; said pump means having at least two rotors so that rotation of said rotors in one direction produces water flow from said inlet port through said starboard side nozzle whereby the boat hull may be shifted toward the port side and rotation of said rotors in the other direction produces water flow from said inlet port through said port side nozzle whereby the boat hull can be directed to the starboard side,



e. electric motor means connected to said pump means, said electric motor means producing rotation of said rotors of said pump means when activated in either a clockwise or counterclockwise direction, and

f. activation means for activating said electric motor means, said activation means when activated allowing the electric motor means to produce either a counter clockwise rotation of said rotors of said pump means or a clockwise rotation of said rotors of said pump means.

4,807,553

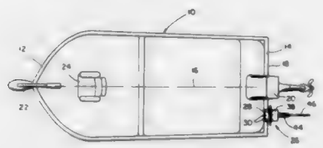
RETRACTABLE RUDDER FOR LIGHT-WEIGHT TROLLING MOTOR PROPELLED FISHING BOAT

Randal J. Brown, 205 W. Hopewell Manor, Plant City, Fla. 33566

Filed Sep. 24, 1987, Ser. No. 100,422

Int. Cl.[4] B63H *25/06*

U.S. Cl. 114—152 **2 Claims**



1. In combination with a light-weight fishing boat hull of the type including a longitudinal center line, a predetermined water line and bow and stern end portions, a fishing person actuatable and steerable trolling motor mounted from said bow end portion of said hull, mounting means mounted from stern end portion of said hull, an elongated upstanding support shank having upper and lower end portions, support means mounting the upper end portion of said support shank from said mounting means with said shank depending downwardly therefrom and terminating downwardly exteriorly of said hull, an edge upstanding rudder panel mounted from said lower end portion, disposed in an upstanding plane generally paralleling the longitudinal center line of said hull and with at least a major portion of the elevational outline of said rudder panel disposed below said water line, said support means mounting said shank from said mounting means against angular displacement about an upstanding axis relative to said boat hull, said stern end portion of said hull including a transom, said mounting means being mounted from said transom, said support means including release means supporting said shank from said mounting means for ready disengagement therefrom, said mounting means comprising a hinge leaf stationarily mounted from said transom and including axially spaced hinge barrels, said support means including a second hinge leaf stationarily mounted from the upper end of said support shank and including axially spaced hinge barrels interdigitated and aligned with the first mentioned hinge barrels, said release means including a hinge pin readily removably axially passed through the first and second mentioned hinge barrels.

4,807,554

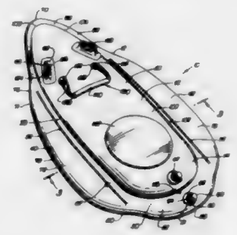
INFLATABLE BOAT FOR HIGH SPEED APPLICATIONS

Tseng Chi-Hung, Taipei, Taiwan, assignor to Intex Recreation Corp., Long Beach, Calif.

Filed Feb. 27, 1987, Ser. No. 20,031

Int. Cl.[4] B63B *7/08*

U.S. Cl. 114—345 **5 Claims**



1. An inflatable frame-less boat comprising:

a first buoyancy chamber;

a second buoyancy chamber disposed beneath said first buoyancy chamber, wherein said second buoyancy chamber includes a top wall portion, a bottom wall portion and a central longitudinal axis; and

flexible partition means disposed within said second buoyancy chamber, wherein said partition means includes a pair of flexible reinforcing partitions, substantially vertically disposed within said second buoyancy chamber, said pair of flexible reinforcing partitions including first and second longitudinal edges, said first edge being joined to said top wall portion, said second edge being joined to said bottom wall portion to form a bottom edge seam laterally inward towards said central longitudinal axis to define a generally V-shaped configuration in vertical cross-section, said flexible reinforcing partitions defining a central and lateral sub-chambers for providing horizontal rigidity to said second buoyancy chamber and reducing intra-buoyancy chamber air flow, said chambers sharing a substantially vertical dividing wall, and restrain the outward expansion of said bottom wall portion relative said top wall portion to create, upon inflation of said second buoyancy chamber, a second buoyancy chamber bottom surface contour having adjacent outwardly projecting convex arcuate portions defining longitudinal grooves between said adjacent arcuate portions.

2. An inflatable boat tow-ring to distribute, over a surface area, towing forces applied thereto, said tow-ring comprising a member having first and second longitudinal tie-line tunnels and a transverse tie-line tunnel, wherein said member is a reinforced hollow structure including a base portion having a tapered periphery and a convexly curved wall extending inward and projecting outward from said base portion, portions of said convexly curved wall defining said first and second longitudinal tie-line tunnels and said transverse tie-line tunnel, said tunnels substantially peripherally disposed about said base portion for receiving said tie-line therethrough.

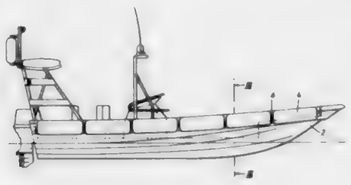
VOL 1099 ISS 4 FE 28 1989 UMI

4,807,555
RIGIDIFIER FOR AN INFLATABLE BOAT
John T. Hart, Ladue, Mo., assignor to H & H Sales Corporation, Clayton, Mo.
Filed Feb. 5, 1987, Ser. No. 11,269
Int. Cl.[4] B63B *7/08*
U.S. Cl. 114—345 11 Claims



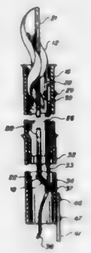
1. A rigidifier for an inflatable boat of the type having a flexible floor and an inflatable tubular portion around the periphery of the floor forming a cockpit, said rigidifier comprising a floorboard member removable from and receivable in said cockpit to overlay said floor, said floorboard member having opposite sides and opposite ends and comprising a multiplicity of substantially rigid generally parallel relatively long narrow slats extending in side-to-side direction with respect to the floorboard member at relatively closely spaced intervals from substantially one end of the floorboard member to the other, said slats being flexibly interconnected for permitting the floorboard member to be rolled up after it is removed from the cockpit, and a collapsible framework adapted for detachable connection to said floorboard member to provide rigidity to the floorboard member in end-to-end direction, said framework comprising a pair of collapsible poles adapted to extend lengthwise of the floorboard member on the underside of the member, and means for detachably connecting said poles to the floorboard member.

4,807,556
RIGID INFLATABLE BOAT
Jonathan D. Hillier, London, England, assignor to Task Force Boats Limited, London, England
Filed Jan. 20, 1987, Ser. No. 4,433
Claims priority, application United Kingdom, Jan. 21, 1986, 8601401
Int. Cl.[4] B63B *7/00*
U.S. Cl. 114—345 18 Claims



1. A boat comprising:
a rigid hull;
a plurality of separate, generally tubular, inflatable buoyancy members adapted to be attached around the exterior of the hull; and
first mounting means for said inflatable members, said first mounting means including: means for independently mounting each respective inflatable member to the hull, comprising:
first strap means comprising at least one strap extending circumferentially around each inflatable member;
an axially extending bore in each said inflatable member;
second strap means comprising at least one separate strap extending through said bore of each inflatable member; and
fastener means for each end of each strap, said fastener means comprising co-operating parts arranged respectively on said end of said strap and on the exterior of the hull, and whereby for ease of separate replacement, each inflatable member can be positioned on the hull in a semi-inflated condition and then fully inflated so as to be tightly held in position by the straps.

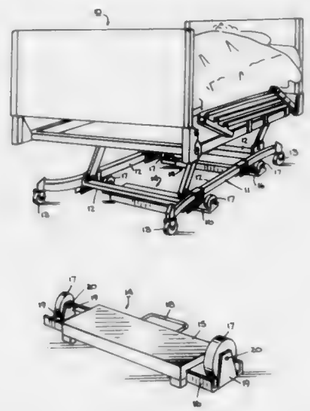
4,807,557
SAFETY ALERT FOR WATER SKIERS
Richard A. Lodisio, P.O. Box 2284 - Cave Creek Stage, Cave Creek, Ariz. 85331
Filed Sep. 14, 1987, Ser. No. 96,853
Int. Cl.[4] G09F *17/00*; G08B *5/02*
U.S. Cl. 116—173 9 Claims



1. A flag safety alert for water skiers comprising an open ended flag housing adapted to be mounted to the deck of a tow boat; an elongated flag standard having a flag attached to one end thereof and connector means attached to the other end thereof; a cylindraceous elastic member having elastic memory and operatively secured at one end thereof to said flag housing and having an extension member secured to the distal end thereof and extending axially therefrom; a pull rope extending axially in said housing and simultaneously secured to said connector means and said extension means at one end thereof and having a distal end attachable to a skier tow line whereby said pull rope when receiving tension from said tow line is operative to simultaneously elongate said elastic member and draw said flat standard axially into a non-visible position within said flag housing and when receiving no tension from said tow line ridges upwardly into said flag housing in response to said elastic memory of said elastic member which elevates said flag standard into a visible position, said pull rope having an obstruction defined thereon having a first diameter, said housing having a constricted throat defined therein adjacent the lower end thereof and having a second diameter smaller than said first diameter, said throat being adapted to pass said obstruction therethrough only in response to a preselected pressure applied to said pull rope from the other side of said throat thereby providing a regulator means.

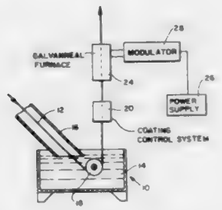
4,807,558
SCALE ASSEMBLY
Burt L. Swersey, Scarsdale, N.Y., assignor to Cobe ASDT, Inc., Elmsford, N.Y.
Filed May 18, 1988, Ser. No. 195,507
Int. Cl.[4] G01G *19/00, 21/22*
U.S. Cl. 177—145 16 Claims
1. A scale assembly comprising

a housing;
a load frame movably mounted on said housing; and



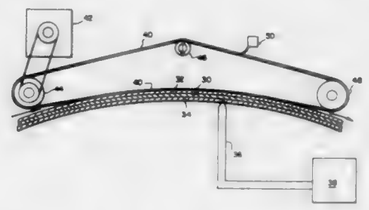
load support means including a pair of rollers mounted on said load frame at opposite ends thereof for receiving and elevating a load thereon.

4,807,559
APPARATUS FOR ALLOYING OF COATINGS
Richard A. Sommer, Warren; George Havas, Youngstown; Mario Tama, Cortland, all of Ohio, and Clayton H. Allen, Cheboygan Island, Me., assignors to Ajax Magnethermic Corporation, Warren, Ohio
Filed Sep. 2, 1987, Ser. No. 92,181
Int. Cl.[4] B05C *11/00*
U.S. Cl. 118—63 6 Claims



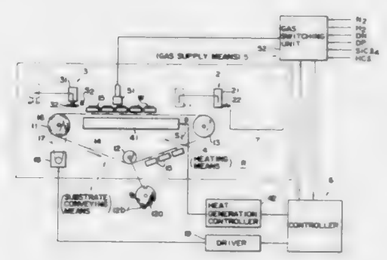
1. An assembly for galvannealing steel strip comprising:
means for applying a coating to the steel strip;
means for controlling a thickness of the applied coating;
means for heating the steel and coating by magnetic induction to produce a galvannealed product, the heating means having a preselected operating frequency; and
circuit means for imposing a frequency modulation on the operating frequency whereby undesirable transverse flexural resonance in the galvannealed product is avoided.

4,807,560
APPARATUS FOR GLOSSING A DEVELOPER SHEET
Benjamin C. Stone, Waynesville, and D. Scott Proehl, Miamisburg, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio
Division of Ser. No. 17,102, Feb. 19, 1987, Pat. No. 4,761,311.
This application May 23, 1988, Ser. No. 197,231
Int. Cl.[4] B05C *11/00*
U.S. Cl. 118—666 7 Claims



1. An apparatus for glossing a developer sheet having a thermoplastic developer resin on the surface thereof, said resin being capable of forming a film which imparts gloss upon the application of heat, comprising:
a metallic arched plate having a convex side and adapted to engage said sheet on said convex side, said arched plate having a blanket of polytetrafluoroethylene on said convex side which reduces the heat transfer rate from said plate when heated to said sheet so as to maintain the flatness of said sheet;
a belt held snugly against the convex surface of said arched plate and movable relative to said plate;
means for driving said belt relative to said plate;
electrical means connected to a heating pad under said plate to cause current to flow to said pad and heat said plate;
means to sense the temperature of said plate and correspondingly control the heating pad to maintain the plate at a predetermined temperature; and
static discharge means for said belt.

4,807,561
SEMICONDUCTOR VAPOR PHASE GROWTH APPARATUS
Hitoshi Ebata, Shizuoka, Japan, assignor to Toshiba Machine Co., Ltd., Tokyo, Japan
Filed May 12, 1987, Ser. No. 48,839
Claims priority, application Japan, May 19, 1986, 61-115498
Int. Cl.[4] B05C *11/00*
U.S. Cl. 118—697 5 Claims

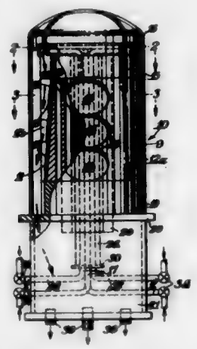


1. A semiconductor vapor phase growth apparatus comprising:
substrate conveying means for conveying a substrate of silicone or the like,

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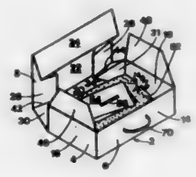
heating means for heating said substrate conveyed by said substrate conveying means,
gas supply means for supplying various gases necessary for vapor phase growth on said substrate, and
a controller for controlling said substrate conveying means, said heating means, and said gas supply means,
said controller having a memory area for storing a process program including information concerning conveying speed of the substrate conveying means, heating temperatures of the heating means, the type of gas to be used of the gas supply means and its flow rate, and means for controlling the substrate conveying means, the heating means, and the gas supply means, in accordance with the process program stored in the memory area, wherein said apparatus further comprises a control means including a self-diagnosis function for stopping supply of substrates into said substrate conveying means when a malfunction of said apparatus occurs.

4,807,562
REACTOR FOR HEATING SEMICONDUCTOR SUBSTRATES
Norman Sandys, 16 Crescent Dr., Searingtown, N.Y.
Filed Jan. 5, 1987, Ser. No. 306
Int. Cl.[4] C23C *16/00*
U.S. Cl. 118—725 50 Claims



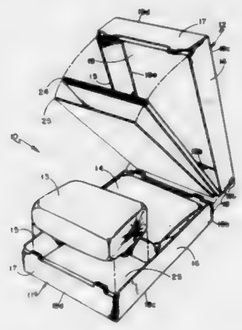
1. A reactor for producing epitaxial layers on semi-conducting wafers by depositing a film on each wafer with the depositing resulting from a reaction gas contacting the wafer, comprising a hollow outer body, a multi-sided susceptor vertically mounted within said body, each side of said susceptor having a surface for supporting at least one wafer, each supporting surface having a central region extending vertically between edge regions, heating means for heating said susceptor, reaction gas supply means, reaction gas distributor means communicating with said gas supply means and for flowing the gas along each of said susceptor sides in a gas flow pattern having a different amount of gas flow down said central regions than the amount of gas flow down said edge region of each of said susceptor sides, said heating means heating the gas flowing along said susceptor sides to form a deposit of uniform thickness on each wafer, and outlet means for discharging the gas from said body.

4,807,563
SELF-CONTAINED, DISPOSABLE, SANITARY TOILET FACILITY FOR PETS
Ronald L. Berry, Golden, and Linda J. Scholes-Witty, Wheatridge, both of Colo., assignors to Berry Products Corporation, Golden, Colo.
Filed Jul. 15, 1987, Ser. No. 73,465
Int. Cl.[4] A01K *29/00*
U.S. Cl. 119—1 22 Claims



22. In a combined box and tray, wherein said combination is formed from a single sheet of foldable material, said box having a first half and a second half, each half having a bottom portion, an endwall and, a pair of sidewall portions bracketing its said respective endwall, and a connecting portion having a connecting bottom portion and pair of connecting sidewall portions thereinbetween said first half and said second half, there being creases to facilitate folding between said connecting bottom portion and said pair of connecting sidewall portions and each said adjacent bottom portion and each said adjacent sidewall portion of said first and second halves, respectively; said box initially defining a closed container with said sidewall portions and said endwall of said second half nested within said sidewall portions and said endwall of said first half when said first and second halves are folded together to form a box; and forming a flat open tray with continuous surrounding upright side walls and end walls when said first and second halves of said box are folded open with their respective bottom portions and said connecting bottom portion in substantially coplanar relationship to one another, wherein the improvement comprises:
each of said sidewalls of said first half having a tab extending from it;
each of said connecting sidewall portions having a single inwardly folding diagonal crease extending from its top edge to its bottom edge and a pair of vertical creases extending from its top edge to its bottom edge, each said vertical crease being adjacent to one of said sidewalls of said first half or said second half, said vertical crease which is adjacent to said first half being outwardly folding, and said vertical crease which is adjacent to said second half being inwardly folding; and
each of said sidewall portions of said second half having an inwardly folding diagonal crease extending from its top edge to its bottom edge; whereby after said box is opened to form a tray, and then re-closed to form a box with said second half nesting within said first half, said connecting sidewall portions and said two sidewalls of said second half all fold inwardly at their said respective inwardly folding diagonal creases and inwardly folding vertical creases to allow such nesting; and wherein further a pair of slots is simultaneously formed on each side between each said inwardly folding diagonal sidewall crease of said second half and each said inwardly folding vertical crease between said second half sidewall and said connecting sidewall portion, thus allowing said tabs carried by said first half sidewalls to be inserted into said slots so formed between said creases to thereby secure said tabs and hold said box closed.

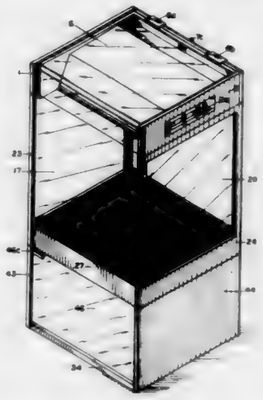
4,807,564
MULTIPLE DISPOSABLE ANIMAL LITTER CONTAINER
Harry W. Soberg, Fargo, N. Dak.; David G. Radtke, and Lyle R. Pitsenberger, both of Moorhead, Minn., assignors to Logical, Inc., Fargo, N. Dak.
Filed Oct. 28, 1986, Ser. No. 924,012
Int. Cl.[4] A01K *23/00*
U.S. Cl. 119—1 21 Claims



1. A sales package for litter comprising:
(a) a closed two-piece litter container having a waxed cardboard top section and a waxed cardboard bottom section, one of which in closing telescopes into the other;
(b) each of said sections having a central bottom panel having lateral edges, and having opposite side walls and opposite end walls extending normally and outwardly in the same direction from the edges of its said central bottom panel and defining therewith an open box, with its said central bottom panel constituting the bottom of the box;
(c) a plurality of high moisture absorptive capacity paper panels lining each of said central bottom panels in superimposed relation and extending in contiguous superimposed relation to each other and between said end and side walls of the box;
(d) a pair of strong but highly porous cardboard protector panels, one each of which is disposed contiguous to and superimposed relative to said high absorptive capacity paper panels and extends between the side and end walls of one of said sections, said protector panels each having a highly porous and highly scratch-resistant surface facing outwardly away from its said contiguous highly absorbent paper panels; and
(e) a pair of separate packages of litter disposed between said protector panels and each contained within said container during storage and sale whereby the contents of each may be utilized in conjunction with one of said sections as a readily disposable litter box when the container is opened.

4,807,565
GRAVITY FILTER SYSTEM AQUARIUM
Mark A. Hawthorne, 3341 Kensington, Kansas City, Mo. 64128
Filed Aug. 6, 1987, Ser. No. 82,384
Int. Cl.[4] A01K *63/00*
U.S. Cl. 119—5 24 Claims

1. An aquarium system wherein unclarified water is gravity filtered, as well as aerated and heated while creating a waterfall effect therein, said system being regulated by a programmable timer, said system comprising;
a. an open topped fish tank, said tank having glass sides that extend vertically from a funnelform bottom, said funnelform bottom being composed of a flat base and an interior structure that slopes downwards towards a trench and a drain outlet means;
b. a base cabinet stand with sides that extend vertically from a flat base, said stand having a glass door, said stand further being reinforced by an interior beam and panel structure;
c. an encased cover having raised side walls, a lift up top and a flat bottom said cover extending horizontally over the open topped fish tank said bottom extending horizontally between said side walls and substantially over the open topped fish tank, said cover further having an open interior comprising a water compartment and guide tray, said interior further comprising access means to th fish tank;
d. a water compartment and guide tray having raised side walls and a horizontal overflow edge said water compartment comprising inlet means for receiving and collecting water, said water compartment further extending slightly outward from said inlet means and terminating along said horizontal edge, said edge comprising outlet means, so that water collected in said water compartment spills over said horizontal edge, said horizontal edge further comprising inlet means for said guide tray, said guide tray com-

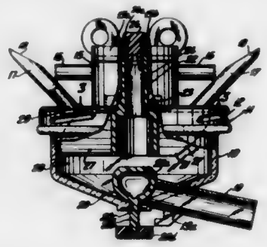


prising a sloping horizontal surface extending between said side walls, said guide tray further extending substantially outward over the open topped fish tank and terminating in a downward sloped surface, said sloping surface being in communication with the open topped fish tank so that water passes over said sloping surface and said downward sloped surface, generating a continuous curtain of water as it is returned to the tank, said guide tray further comprising a means by which to achieve a natural exchange of heat and air;
e. gravity filter means, said filter means being composed of two removable gravel support grating trays and a funnelform bottom inside the fish tank, along with a main shut-off means, a clean out means, a filter tank, a holding tank and a water pump means housed within the base cabinet stand;
f. a programmable timer, said timer being housed within the encased cover, said timer further being adapted to regulate daily on/off functions of the water pump means.

4,807,566
MILK CLAW
Mofazzal H. Chowdhury, Lenexa, Kans., assignor to Alfa-Laval, Inc., Ft. Lee, N.J.
Filed Oct. 5, 1987, Ser. No. 104,154
Int. Cl.[4] A01J *5/00*
U.S. Cl. 119—14.55 2 Claims

1. Milk claw comprising a bowl having a top and a bottom, a plurality of inlet means for delivering streams of milk from a lactating animal tangentially to the top of said bowl, an outlet for receiving milk from the bottom of said bowl and a plurality

of helically shaped vanes extending from the top of said bowl downwardly toward said bottom but terminating above said bottom to leave said bottom unobstructed, said vanes being spaced from one another to separate the milk streams delivered



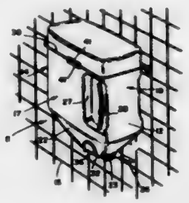
from each of said inlet means from milk delivered from other inlet means in the upper part of said bowl, thereby suppressing cross-contamination of said milk streams but permitting free communication between said streams in the bottom of the bowl.

4,807,567

INVERTED BOTTLE WATER DISPENSER FOR LARGE ANIMALS

Frank W. Atchley, 461 Walnut St., Napa, Calif. 94558

Filed Mar. 23, 1987, Ser. No. 29,235
Int. Cl.[4] A01K *31/00*
U.S. Cl. 119—18 **11 Claims**



1. An apparatus for dispensing water or other liquids to animals, comprising:

a bottle for storing said water or other liquid, said bottle having a vertical extent and a vertical axis,

a water dispensing tube extending obliquely downwardly and outwardly from the lower end of said bottle,

a support frame having a hook shaped open centered seat portion in which the lower end of said bottle is received and seated, said support frame having a back portion which extends upward from said seat portion along said bottle to an upper region thereof, said seat portion including a first opening through which said water dispensing tube may extend through said back portion and a second opening, opposed to said first opening, through which said water dispensing tube may extend away from said back portion, said bottle including surface configuration means adapted to seat in said seat portion in either of two angular orientations about said vertical axis, the first of said two angular orientations including said water dispensing tube extending through said first opening, and the second of said two angular orientations including said water dispensing tube extending through said second opening in said seat portion,

a bail member having ends pivotally coupled to said back portion of said support frame adjacent to said upper region of said bottle, said bail member being proportioned to clasp said upper region of said bottle against said back portion of said support frame and being pivotable in an upward direction to enable separation of said bottle from said support frame, and means for securing said back portion of said frame to an upright structure.

4,807,568

SHOULDER DRAPED BIRD PERCH

Ronald E. Perry, 19 Delaware Ave., Bath, N.Y. 14810, and Tammy D. Baumgardner, 19601 N. 7th St., Apt. 1065, Phoenix, Ariz. 85024

Filed Jan. 27, 1987, Ser. No. 6,787
Int. Cl.[4] A01K *31/12*
U.S. Cl. 119—26 **11 Claims**



1. A shoulder draped bird perch for transporting a bird on the shoulder of a person utilizing the perch comprising:

a claw graspable obverse surface securely graspable by the claws of a bird to be placed on said perch;

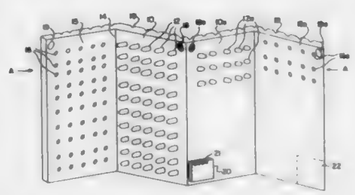
an anti-slip reverse surface for maintaining said perch securely in position on the shoulder of the person utilizing said perch and riser means coupled to said reverse surface to raise said perch to offset the slope of the user's shoulder.

4,807,569

GROOMING DEVICE

Arthur B. Leopold, Secaucus, N.J., assignor to Tarel Seven Design, Inc., Secaucus, N.J.

Continuation of Ser. No. 943,201, Dec. 18, 1986, Pat. No. 4,747,371. This application Mar. 24, 1988, Ser. No. 172,707
Int. Cl.[4] A01K *13/00*
U.S. Cl. 119—83 **5 Claims**



1. An animal grooming device comprising:

a unitary plate made of any plastic, rubber or combination thereof and having a first surface, said first surface having a pair of substantially flat surface portions, wherein said pair of flat surface portions are separated form each other to define an area at which said unitary plate can be folded, each of said pair of substantially flat surface portions having a plurality of teeth extending therefrom, said plurality of teeth being substantially equally spaced apart in a predetermined pattern on each of said pair of substantially flat surface portions, each of said plurality of teeth being conical in shape and having a base and having a tip with said base being larger in diameter than said tip;

means for securing said plate to a support; and

container means coupled to said plate for storing an aromatic substance for attracting the animal to said grooming device, wherein said container means has a surface with a plurality of holes therethrough to emit the aroma of the aromatic substance,

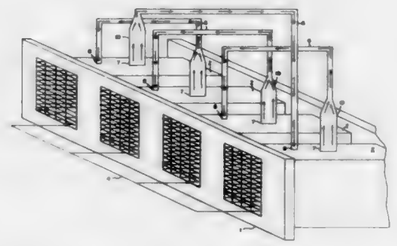
wherein said plate is adapted to fold along said area.

4,807,570

SEQUENTIALLY CHARGED INTAKE MANIFOLD

Russ F. Ruffolo, 417 W. Geneva Rd., Glen Ellyn, Ill. 60137

Filed Sep. 24, 1987, Ser. No. 100,736
Int. Cl.[4] F02B *75/18*
U.S. Cl. 123—52 MB **1 Claim**



1. An intake system for intercommunicating charge means and combustion chamber means of an internal combustion engine compriaing: a cylinder head, intake port means provided in said cylinder head, intake valve means provided in said intake port means, at least two intake runner means connected to said cylinder head, each of said runner means in communication with a respective one of said intake port means, each said runner means internally having at spaced intervals along its length honey-combed mini-venturi sections, each of said runner means further having at least two ducts communicating through a sidewall in said runner means, at least one of said ducts having a plenum at one end thereof which is in direct communication with an open space in said runner means between said mini-venturi sections, said at least one duct having an opposite end to said one end, said opposite end being in communication with a remaining one of said runner means, said ducts serving to redirect gaseous flow from one of said runner means serving a first cylinder to a succeeding one of said runner means which serves a second cylinder, said second cylinder follows in sequential firing order said first cylinder.

4,807,571

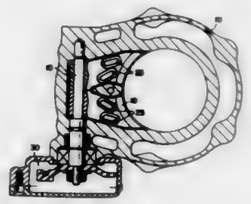
EXHAUST TIMING CONTROL APPARATUS

Hitoshi Yamamoto, Shiki; Takumi Tetteri, Saitama; Tsugio Ikeda, Saitama, and Kenji Okazaki, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 888,823, Jul. 22, 1986, abandoned. This application Aug. 13, 1987, Ser. No. 85,673
Claims priority, application Japan, Jul. 22, 1985, 60-112169; Feb. 25, 1986, 61-39090
Int. Cl.[4] F02B *75/02*
U.S. Cl. 123—65 PE **26 Claims**

1. An exhaust timing control apparatus for a two-cycle engine cylinder having an exhaust port and passage extending from a sidewall of the cylinder comprising:

a valve body pivotable about a pivot axis in the exhaust passage toward and away from a surface of the exhaust passage, the value body extending to a control surface at the exhaust port to define an apparent upper timing edge of the exhaust port, said valve body having at least one



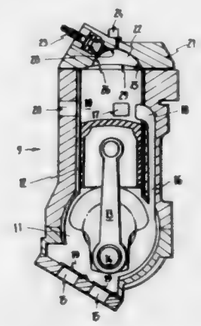
hole extending through said body at a location on said body between said pivot axis and said control surface.

4,807,572

TIMING OF FUEL INJECTED ENGINES

Christopher K. Schlunke, Kingsley, Australia, assignor to Orbital Engine Company Proprietary Limited, Balcatta, Australia

PCT No. PCT/AU86/00204, § 371 Date Mar. 11, 1987, § 102(e) Date Mar. 11, 1987, PCT Pub. No. WO87/00579, PCT Pub. Date Jan. 29, 1987
PCT Filed Jul. 18, 1986, Ser. No. 40,776
Claims priority, application Australia, Jul. 19, 1985, PH01561
Int. Cl.[4] F02B *33/04*
U.S. Cl. 123—73 C **36 Claims**



1. A method of operating a spark ignited two cycle internal combustion engine having a combustion chamber, and an exhaust port opened and closed in timed relation to the engine cycle to control the exhausting of gases from the combustion chamber, said method comprising, injecting a metered quantity of fuel directly into the combustion chamber so that at low engine loads and speeds at least 80% of the metered quantity of fuel is delivered into the combustion chamber after the exhaust port has closed, and at least at some high engine load at least 80% of the metered quantity of fuel is delivered into the combustion chamber before the exhaust port has closed.

4,807,573

FUEL INJECTION ARRANGEMENT FOR A TWO-STROKE ENGINE

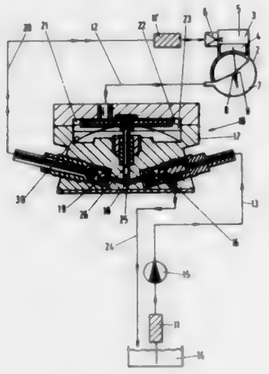
Roland Schierling, Affalterbach; Werner Geyer, Waiblingen; Michael Wissmann, Schorndorf-Weiler, and Hans Nickel, Cottenweiler, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

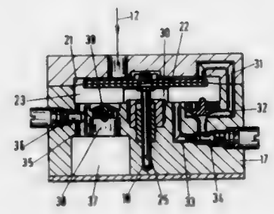
Filed Jun. 6, 1988, Ser. No. 202,817

Claims priority, application Fed. Rep. of Germany, Aug. 15, 1987, 3727268; Apr. 19, 1988, 3812949

Int. Cl.[4] F02M *37/04, 59/20*

U.S. Cl. 123—73 C **28 Claims**





1. A fuel injection arrangement for a two-stroke engine, especially for handheld portable tools such as motor-driven saws or the like, the engine having a piston and a cylinder conjointly defining a combustion chamber and having a crankcase wherein pressure is developed in response to the movement of the piston, the fuel injection arrangement comprising:

an injection nozzle for injecting fuel into the combustion chamber;

a fuel injection pump including: a housing defining an enclosed work space; and, a membrane partitioning said work space into a pulse chamber and a return chamber;

a connecting line connecting said pulse chamber to the crankcase for charging said pulse chamber with the pressure present in the crankcase for actuating said membrane to develop an actuating force;

said fuel injection pump further including pumping means for pumping fuel to said nozzle, said pumping means including a piston operatively connected to said membrane so as to be reciprocally movable through a piston stroke; and,

counterpressure means for generating a counterpressure in said return chamber for changing said piston stroke in dependence upon the rotational speed of the engine thereby changing the quantity of fuel pumped by said pumping means.

4,807,574

VALVE OPERATING DEVICE FOR INTERNAL COMBUSTION ENGINE

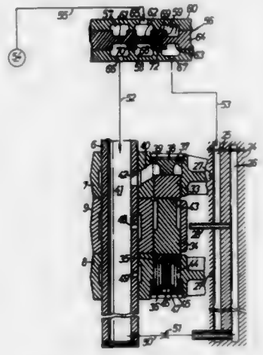
Mitsuhiro Shibata, Saitama; Kazuhide Kumagai, Tokyo; Koichi Fukuo, Saitama; Toshiaki Hiro, Saitama, and Masahiko Matsumoto, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1987, Ser. No. 137,954

Claims priority, application Japan, Dec. 27, 1986, 61-311629; Dec. 27, 1986, 61-311630

Int. Cl.[4] F01L *1/18, 1/26;* **F01M** *9/10*

U.S. Cl. 123—40.16 **7 Claims**



1. A valve operating mechanism for intake or exhaust valves of an internal combustion engine having a low-speed cam formed on a camshaft and suited for an operation mode of the intake or exhaust valves during low-speed operation of the engine, a high-speed cam formed on said camshaft and suited for an operation mode of the intake or exhaust valves during high-speed operation of the engine, a cam follower held in slidable contact with said low-speed cam, a cam follower held in slidable contact with said high-speed cam, a selective coupling mechanism disposed between said cam followers fo selectively connecting and disconnecting the cam followers in order to open and close the intake or exhaust valves dependent on the operating speed of the engine, an improvement comprising, a low-speed lubricating oil passage for supplying lubricating oil to sliding surfaces of the low-speed cam and the associated cam follower, a high-speed lubricating oil passage for supplying lubricating oil to sliding surfaces of the high-speed cam and the associate cam follower, said low-speed lubricating oil passage and said high-speed lubricating oil passage being separate of each other, an oil supply source, and a control valve connected between said oil supply source and said low-speed lubricating oil passage and said high-speed lubricating oil passage, said control valve being selectively operable for communicating said high-speed lubricating oil passage and said oil pressure supply source throughout a full operating range of the engine while restricting the rate of flow of oil during low-speed operation of the engine and for communicating said low-speed lubricating oil passage and said oil pressure supply source at least during low-speed operation of the engine.

4,807,575

HYDRAULIC LASH ADJUSTER WITH MULTI-DIRECTIONAL CHECK VALVE

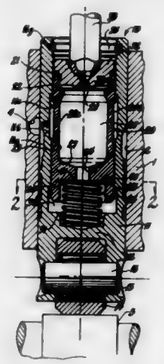
Alexander Litwiachuk, Jenison; Lowell E. Dura, Ada, and Adrian Dekker, Grandville, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1987, Ser. No. 124,160

Int. Cl.[4] F01L *1/24*

U.S. Cl. 123—90.55 **2 Claims**

1. A hydraulic lash adjuster including a cup-shaped cylinder member with a closed end, a plunger, with a stepped bore therethrough, slidable in said cylinder member and defining with said closed end of said cylinder member a pressure chamber, said plunger defining therein a reservoir chamber and a port connected thereto arranged for flow communication with said pressure chamber, a plunger spring operatively located in said pressure chamber in position to normally bias said plunger outward relative to said cylinder member and, a one-way check valve operatively positioned by said plunger spring, said



one-way check valve being normally operative to control flow through said port, and the improvement wherein said one-way check valve is in the form of a flat reed valve that includes a part-circular flapper, a split retainer ring extending about said flapper and having spaced apart free ends, and a spring leg integrally connecting said flapper to said split retainer ring centrally of and opposite said free ends, said split retainer ring being operative to operatively secure said flat reed valve within said stepped bore of said plunger to control flow through said port.

4,807,576

HYDRAULIC LASH ADJUSTER FOR USE IN VALVE OPERATING MECHANISM

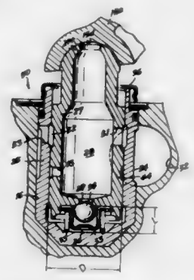
Toshinari Sonoda; Toshihiko Matsubara; Takashi Otowa, and Kazuo Yoshida, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1986, Ser. No. 919,027

Claims priority, application Japan, Oct. 15, 1985, 60-157198[U]; Oct. 15, 1985, 60-157199[U]; Oct. 16, 1985, 60-230852

Int. Cl.[4] F01L *1/24*

U.S. Cl. 123—90.57 **8 Claims**



1. A hydraulic lash adjuster for use in a valve operating mechanism in an internal combustion engine, comprising:

a cylinder containing a longitudinal bore having a bottom;

a plunger slidably disposed in a clearance gap in said cylinder bore;

a pressure chamber formed between the bottom of said cylinder bore and said plunger, wherein said pressure chamber meets the dimensional relationship $2<D/L<4$, wherein D is the diameter of the pressure chamber and L is the height of the pressure chamber;

an axially elongated oil chamber in said plunger;

said plunger and said cylinder having mutually communicating oil supply holes in the side walls thereof providing fluid communication between said oil chamber and an oil distribution passage exteriorly of said cylinder;

a valve hole in said plunger providing fluid communication between said oil chamber and said pressure chamber;

check valve means for selectively opening or closing said valve hole in response to a reduction or an increase, respectively, in oil pressure in said pressure chamber;

spring means for normally urging said plunger outwardly of said cylinder bore; and

means for returning oil leaked from said pressure chamber to said chamber.

4,807,577

PERISTROPHIC INTERNAL COMBUSTION ENGINE ASSEMBLY AND MULTI-PART PISTONS

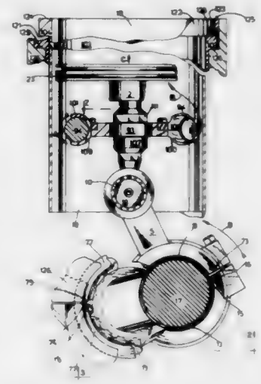
Theodore Koutsoupidis, Kekropos 39, Glyfada, Athens 166-75, Greece

Continuation-in-part of Ser. No. 769,966, Aug. 27, 1985, abandoned. This application Oct. 27, 1986, Ser. No. 923,273

Claims priority, application Greece, Mar. 3, 1986, 860589

Int. Cl.[4] F16J *1/24, 1/02, 1/14, 10/04*

U.S. Cl. 123—193 P **95 Claims**



65. A peristrophic combustion engine comprising:

at least one cylinder, said cylinder having an inner liner and an outer liner;

a receiprocable piston assembly disposed in said at least one cylinder, said piston assembly including a cylindrical top piston with upper surface, with an axially extending boundary edge, and with a lower surface extending radially from said boundary edge;

said lower surface having cylindrical extension means adapted to form a first threaded joint with a top end of a rod screw;

said rod screw having a peripheral annular recess defining a reduced diameter portion which retains a lower piston;

said lower piston being a triangular-spherical ball bearing including a central hollow portion with a periphery from which a plurality of bearing-bracket-forming holders extend each with an outer end supporting at least one

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respective peristrophic spherical ball in contact with a wall of said at least one cylinder so as to create a peristrophic effect according to the Peristrophic Principle when said top and lower pistons reciprocate, said peristrophic spherical balls and said triangular-spherical ball-bearing embodying transposed inertia weights which increase the torque and work output of the peristrophic engine; and,

a wrist pin operatively connected to said rod screw so as to be pivotably disposed in a pin bore formed in journal means adapted for operatively linking a connecting rod to said rod screw; with,

rolling bearing elements disposed between said wrist pin and said journal means so as to reduce friction and transpose inertia weights to said journal means and,

a stem portion forming part of said connecting rod, said stem portion operatively linked at an upper end to said journal means, and connected at a lower end to a half bottom journal which has case means retaining rolling bearing means disposed between said half bottom journal and a rotatable crankshaft;

said rolling bearing means replacing at least part of the crankshaft means web weights and transposing at least part of the web weights to said lower end of said connecting rod;

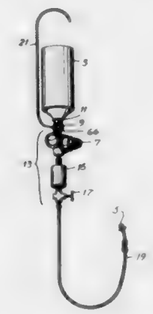
said half bottom journal connected to a half bearing case, said half bottom journal and said half bearing case retaining said rolling bearing means around a crankpin portion of said crankshaft.

4,807,578

APPARATUS FOR CLEANING FUEL INJECTORS AND COMBUSTION CHAMBERS

Lawrence J. Adams, Jacksonville; Thomas R. Frada, Green Cove Springs, and Paul D. Hughett, Jacksonville, all of Fla., assignors to Petro Chemical Corporation, Jacksonville, Fla.

Filed Sep. 8, 1987, Ser. No. 94,144
Int. Cl.[4] F02B 77/00
U.S. Cl. 123—198 A **5 Claims**



1. Apparatus for cleaning the fuel injectors and combustion chambers of an internal combustion engine with a cleaning mixture, said apparatus comprising:

(a) a cleaning mixture transfer device having first and second ends;

(b) a fuel rail fitting attached to said first end of said transfer device;

(c) a pressure regulator attached to second end of said transfer device;

(d) an aerosol container for containing said cleaning mixture, said container having a connector with a valve;

(e) a safety fitting having first and second ends, said first end of said fitting attached to said pressure regulator, said second end of said fitting having a generally compressible "O" ring disposed thereupon, said "O" ring having a convex portion protruding from said second end, which compresses when said second end is connected to said connector, thereby creating a seal around said valve before said valve is opened, said transfer device further including a shut of valve;

(f) said cleaning apparatus configured for use with an engine having a gas supply fitting, which is of the type known as a banjo fitting, a bolt for removably fastening said gas supply banjo fitting, and said fuel rail banjo fitting proximate to each other and said engine, said bolt being drilled partially up through its center line and cross-linked in two places, each of said cross-drilled places facing one of each of said banjo fittings to as to permit the flow of said cleaning mixture into said engine without disturbing said gas supply fitting; and

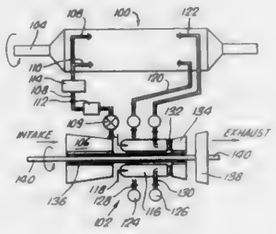
(g) said apparatus further comprising means to suspend said apparatus from the open hood of the automobile during the cleaning operation, safely away from high engine temperatures and moving parts.

4,807,579

TURBOCOMPOUNDED TWO-STROKE PISTON ENGINES

John A.J. Rees, 7 Hollies Close, Newton Solney, Burton-on-Trent, Staffordshire DE15 0SB, England

PCT No. PCT/GB87/00025, § 371 Date Sep. 16, 1987, § 102(e) Date Sep. 16, 1987, PCT Pub. No. WO87/04491, PCT Pub. Date Jul. 30, 1987
PCT Filed Jan. 16, 1987, Ser. No. 104,059
Claims priority, application United Kingdom, Jan. 16, 1986, 8601065
Int. Cl.[4] F02B 75/02
U.S. Cl. 123—257 **9 Claims**



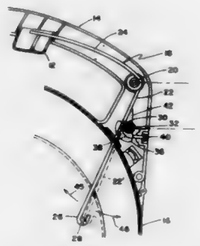
1. A turbocompounded 2-stroke piston engine having a cylinder head incorporating, for each cylinder of said piston engine, an indirect combustion chamber, inlet valve means for admitting turbocharging air to the cylinder, and exhaust valve means for exhausting combustion gases from the cylinder, the piston engine being adapted to perform an operating cycle, comprising a compression stroke and an expansion stroke, in which the expansion stroke expands the combustion gases to a pressure lower than the incoming turbocharging air, and in which scavenging of the combustion gases from the cylinder is facilitated by arranging that both the inlet valve means and the exhaust valve means are open at the same time during an early part of the compression stroke so as to purge the cylinder with turbocharging air during said early part of the compression stroke, whereby the cylinder has a compression ratio which is substantially less than its expansion ratio; wherein the inlet valve means is incorporated in the indirect combustion chamber such that when the inlet valve means is open, the incoming turbocharging air flows through the indirect combustion chamber before entering the cylinder, the indirect combustion chamber being connected to the cylinder by passage means for directing the incoming turbocharging air towards the piston thereby to displace the combustion gases towards the exhaust valve means and maximize the efficiency of said scavenging, said indirect combustion chamber incorporating two inlet valves disposed oppositely to each other across the indirect combustion chamber such that inlet obturating portions of the valves move towards each other when the valves are opened.

4,807,580

TRIGGER MECHANISM FOR ENGINES

Leonard R. Clark, Rock Hill, S.C., assignor to Textron Inc., Providence, R.I.

Filed Jul. 23, 1987, Ser. No. 77,111
Int. Cl.[4] F02D 11/04
U.S. Cl. 123—398 **6 Claims**



1. A trigger mechanism for a blower-vacuum apparatus having a trigger mounted within a handle and a small engine comprising:

a throttle:

a "L" shaped lever having first and second legs mounted for rotation about an intermediate pivot within the handle when the trigger is depressed, interconnecting the trigger and the throttle, the second leg having first teeth defined therein, said lever further having idle, full throttle and stop positions;

a normally raised latch means adapted to be rotated and axially depressed, said latch means having second teeth situated on a cam to engage the first teeth for holding the lever in an intermediate position between the idle and full throttle positions when the latch means is rotated, said latch means further being spring biased for moving the cam teeth into potential engagement with the lever teeth when the trigger is depressed, said lever being spring biased to the stop position; and idle adjusting means means for intercepting the second leg for preventing the second leg from reaching the stop position when the latch means is raised.

4,807,581

SYSTEM FOR CONTROLLING THE OPERATION OF AN INTERNAL COMBUSTION ENGINE

Toshihide Nishikawa; Kenichiro Hanada, both of Hiroshima; Yukinobu Nishimura, and Setsuhiro Shimomura, both of Himeji, all of Japan, assignors to Mazda Motor Corporation and Mitsubishi Denki Kabushiki Kaisha, both of, Japan

Filed Nov. 13, 1986, Ser. No. 930,103
Claims priority, application Japan, Nov. 13, 1985, 60-254071
Int. Cl.[4] F02D 41/18
U.S. Cl. 123—488 **10 Claims**

1. An engine control system comprising:

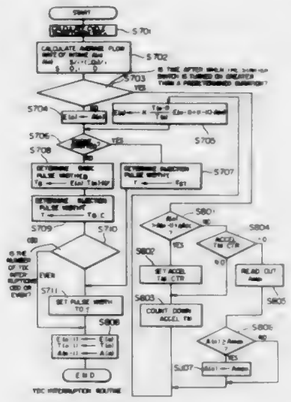
an air-flow sensor detecting a flow rate of intake air sucked into an engine through an intake passage;

an engine revolution-cycle sensor detecting a cycle of engine revolutions;

a first means for determining an average flow rate of intake air by sampling the row rate of intake air detected by said air-flow sensor at the cycle detected by said engine revolution-cycle sensor;

a second means for determining net flow rate of intake air actually sucked into the engine as an intake air parameter representative of an engine load on the basis of a predetermined formula in which the net flow rate of intake air to be determined is represented by the net flow rate of intake air previously determined by the use of an intrinsic volume of a portion of said intake passage downstream of a throttle valve, compression ratio of the engine, displacement of the engine, average flow rate of intake air determined by said first means, and the cycle of engine revolutions determined by said engine revolution-cycle sensor; and

electronic fuel injection control means for regulating fuel injection based upon the intake air parameter determined by said second means.

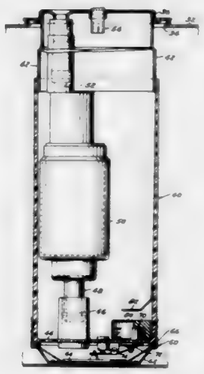


4,807,582

RESERVE FUEL SHUT-OFF VALVE

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Continuation-in-part of Ser. No. 928,184, Nov. 7, 1986, Pat. No. 4,747,388. This application May 14, 1987, Ser. No. 49,537
The portion of the term of this patent subsequent to May 31, 2005, has been disclaimed.
Int. Cl.[4] F02M 37/10
U.S. Cl. 123—514 **2 Claims**



1. In a fuel system for vehicles which includes a fuel tank and a vertical canister mounted within the fuel tank, and a fuel

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pump mounted in said canister, that improvement which includes:

(a) a base plate in said canister spaced from the bottom of said tank having a first fuel inlet passage to be connected to the inlet of a pump, and having a second passage formed by a well upstanding from said base plate to admit fuel from said canister to the area below said base plate,

(b) a first float valvecomprising a cap of inverted cup-shaped buoyant material construction having a base overlying said well and a peripheral wall surrounding said well to close said second passage when fuel in said canister approaches said base plate, and means positioned within said canister above said well to capture said first float valve over said well with said peripheral wall surrounding said well,

(c) a second valve associated with said second passage to open and close said passage, and

(d) a biased diaphragm means responsive to reduced pressure in said pump inlet connected to said second valve to open said second valve in response to lowered pressure above said diaphragm, thus allowing reserve fuel in said canister to reach said pump inlet.

4,807,583

FUEL PUMPING APPARATUS

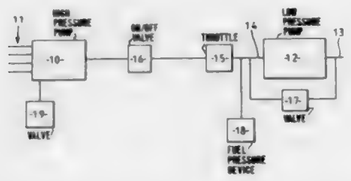
Ian R. Thorathwaite, Gillingham, and Robin E. Wardley, Sittingbourne, both of England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Jun. 2, 1987, Ser. No. 57,373

Claims priority, application United Kingdom, Jun. 4, 1986, 8613465

Int. Cl.⁴ E02M *67/00*

U.S. Cl. 123—516 **14 Claims**



1. A fuel pumping apparatus for supplying fuel to a compression ignition engine comprising a high pressure pump which in use is actuated in timed relationship with an associated engine and an engine driven low pressure pump for supplying fuel under pressure to the high pressure pump, valve means for controlling the outward pressure of said low pressure pump so that the pressure varies in accordance with the speed of said associated engine, the apparatus further including liquid pressure operable means for varying the quantity of fuel delivered by the high pressure pump, said low pressure pump constituting the source of liquid under pressure for said pressure operable means, electromagnetic valve means which when energized controls fuel flow to the associated engine, a pressure responsive device which is responsive to the pressure of fuel developed by the low pressure pump and which, when the fuel pressure is above a predetermined value, acts to maintain said electromagnetic valve means energized, and means for energizing said electromagnetic valve means to allow starting of the associated engine.

4,807,584

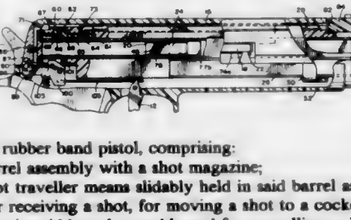
FUEL TANK HEATING SYSTEM

Leland L. Davis, Salina, Mich., assignor to Dayco Manufacturing Corp., Ann Arbor, Mich.

Continuation of Ser. No. 676,869, Nov. 30, 1984, abandoned. This application Nov. 9, 1987, Ser. No. 120,185

Int. Cl.⁴ F02M *31/12, 31/14*

U.S. Cl. 123—557 **7 Claims**



1. A fuel supply system of a combusion device for heating fuel, comprising:

a fuel tank,

a partition dividing said fuel tank into a fuel processing section and a fuel reservoir section, said fuel processing section adapted to retain a volume of fuel which is substantially less than the fuel volume capacity of said fuel reservoir section,

first fuel heating means disposed in said fuel processing section and confined to said fuel processing section for heating fuel within said fuel processing section for providing heated fuel for initial operation of the combustion device,

second fuel heating means for heating fuel within both said fuel processor section and said fuel reservoir section for providing heated fuel for sustained operation of the combustion device, said first and second heating means being independently operable and controllable, and

conduit means for transferring fuel from said fuel reservoir section and into said fuel processing section and for transferring fuel out of said fuel processing section, said conduit means including a fuel pickup tube disposed in said fuel reservoir section for conducting fuel out of said fuel reservoir section from a location in close proximity with said second fuel heating means.

4,807,585

RUBBER BAND POWERED GUN

Michael A. Gegere, 1020 Bartlett Dr., Vista, Calif. 92084, assignor to John O. Beckwith, Escinitas and Michael A. Gegere, Vista, both of, Calif.

Filed Feb. 17, 1987, Ser. No. 14,940

Int. Cl.⁴ F41B *7/08*

U.S. Cl. 124—21 **11 Claims**

5. A rubber band pistol, comprising:

a barrel assembly with a shot magazine;

a shot traveller means slidably held in said barrel assembly for receiving a shot, for moving a shot to a cocked position in said barrel assembly and for propelling a shot into a firing trajectory extending through said barrel assembly by accelerating from said cocked position to a release position;

singulating means in said barrel assembly for feeding a single shot from said magazine to said shot traveller means when said shot traveller means moves from said release to said cocked position;

a slide movable on said barrel assembly for engaging and moving said shot traveller means to said cocked position and for disengaging said shot traveller means at said cocked position and moving toward said release position;

elastic means connected between said shot traveller means and said slide for exerting an elastic force toward said release position on said shot traveller means at said cocked position in response to movement of said slide toward said release position; and

trigger means for retaining said traveller means at and releasing said shot traveller means from said cocked position.

4,807,586

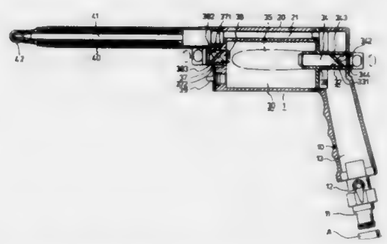
JET WATER GUN

Agee Kao, Keelung, Taiwan, assignor to Hung Mei Brush Co., Ltd., Keelung, Taiwan

Filed Jun. 9, 1987, Ser. No. 59,912

Int. Cl.⁴ F41B *11/00*; B05B *7/02*

U.S. Cl. 124—73 **5 Claims**



1. A jet water gun comprising:

a gun handle having a first end, an opposite second end, and a first water passage extending from said first end to said second end,

a first valve means at said second end;

a gun body having a chamber therein for receiving a cleanser, said chamber having a rear inlet communicated with said first water passage, a front oulet, and a second water passage smaller in cross-section than said first water passage, adjacent to said chamber, and having a rear open end and a front open end;

a second valve means disposed at said rear inlet;

a pressurizing envelope disposed in said chamber and connected to said second valve, said envelope being expandable to force the cleanser out of said chamber when water enters in said envelope upon opening of said second valve means;

a conduit extending from said front open end and having a front end and a nozzle at said front end of said conduit; and

a third valve means disposed at said front outlet for regulating the flow of the cleanser from said chamber and communicated with said conduit.

4,807,587

PROCESS OF FORMING OPENINGS

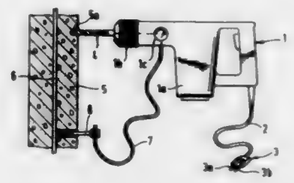
Daniel Bestschmuss, Alpnach-Dorf, Switzerland; Hansjorg Nipp, Mauren, Liechtenstein, and Karl Blass, Bucha, Switzerland, assignors to Hilti Aktiengesellschaft

Continuation-in-part of Ser. No. 802,756, Nov. 27, 1985, abandoned. This application Sep. 17, 1987, Ser. No. 98,779

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1984, 3443596

Int. Cl.⁴ B28D *1/00*; B23B *35/00*

U.S. Cl. 125—1 **2 Claims**



1. Process of forming an opening using a hand-held drilling device including a drilling or chisel bit in a masonry construction material having an outside surface, with the construction material containing steel reinforcing members spaced inwardly from the outside and being electrically conductively interconnected, comprising the steps of drilling into the construction material from the outside surface, providing a signal when the bit in the drilling device contacts a reinforcing member, wherein the improvement comprises measuring the electrical resistance of the construction material between the bit and the reinforcing member during the drilling step through a direct electrical connection with the reinforcing members, and providing the signal when the electrical resistance drops as the bit one of approaches or contacts the reinforcing member, and using the signal for controlling the operation of the drilling device.

4,807,588

WATER PERMEABLE HEAT EXCHANGER FOR CONDENSING FURNACE

Richard M. Bentley, Camillus; Chester D. Ripka, East Syracuse, and Henry F. Keller, Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 881,430, Jul. 2, 1986, abandoned. This application Nov. 5, 1987, Ser. No. 116,994

Int. Cl.⁴ F24H *3/02*

U.S. Cl. 126—110 R **3 Claims**

1. A warm air furnace for raising the temperature of air being circulated in heat exchange relation through the furnace and for discharging the heated air to an enclosure to be heated comprising:

a cabinet defining a flow path for the air to be heated;

a blower arranged relative to said flow path of the air to be heated for moving the air to be heated through said cabinet;

a burner for supplying a heating fluid producing hot gaseous products of combustion having water vapor therein;

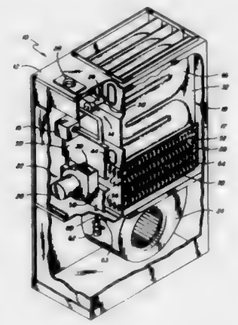
a primary heat exchanger arranged relative to said flow path of the air to be heated, said primary heat exchanger defining an internal flow path for conducting hot gaseous products of combustion and water vapor within said internal flow path to supply heat energy for raising the temperature of the air being circulated in heat exchange relation therewith, said primary heat exchanger including an inlet section for receipt of said heating fluid, a combustion connected to said inlet section wherein said heating fluid is combusted, and an outlet section connected to said combustion section such that the various sections form said internal flow path, said burner arranged adjacent said inlet

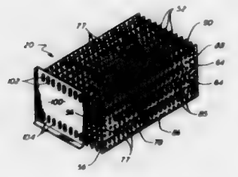
section of said primary heat exchanger to direct said heating fluid to be combusted into said combustion portion of said primary heat exchanger;

a clam shell condensing heat exchanger fluidly connected to said outlet section of said primary heat exchanger having a generally serpentine condensing flow path leading downwardly from an inlet portion to an outlet portion at the bottom of said condensing heat exchanger, said condensing heat exchanger comprising an engineering metal element having a plurality of apertures therethrough, said element being laminated with a layer of water permeable corrosion resistant sheet material over a substantial portion of its entire internal surface whereby water permeates through said corrosion resistant sheet material and through said plurality of apertures in said engineering metal into said flow path of the air to be heated;

an induced draft blower fluidly connected to said outlet portion of said condensing heat exchanger for drawing said hot gaseous products of combustion through said internal flow path of said primary heat exchanger and said condensing flow path or discharge through a flue; and

a condensate removal means arranged relative to said bottom of said condensing heat exchanger for withdrawing condensate from said condensing heat exchanger.





4,807,589

DRAFT OPERATED FIREPLACE INSERT

Willard D. Johnson, Rte. 1, Box 360-5, Forsyth, Mo. 65653

Filed Dec. 24, 1987, Ser. No. 137,594

Int. Cl.[4] F24B 7/00

U.S. Cl. 126—518 **4 Claims**

1. A draft operated fireplace insert for placement into a fireplace of a building, the fireplace having a floor, a passageway in the floor, side walls, a front and back wall, a chimney, and an opening in the back wall capable of transmitting air therethrough comprising:

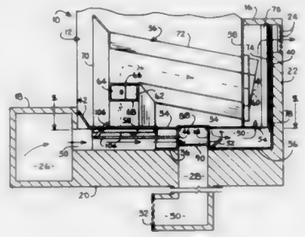
a floor plate spanning the width of a fireplace and extending rearwardly from the front of the fireplace but not contacting the back wall of the fireplace;

means supporting the floor plate above the floor of the fireplace;

a rear plate extending upwardly from said floor plate to enclose the rear of the fireplace and defining both a channel for the passage of air beneath the floor plate and between the rear plate and the back wall of the firepplace and a combustion zone above the floor plate and forward of the rear plate;

a pair of hollow andirons extending up through openings in the floor plate and rearwardly through openings in the back plate to provide an alternate route for the passage of air;

means for regulating the passage of air through the andirons and through said channel; and



means for selectively introducing air from beneath the floor through the passageway into the combustion zone of the fireplace above the floor plate,

means for regulating the passage of air through the andirons and through said channel including a vertical plate adapted for shiftable movement across the opening in the back wall; and

means for selectively introducing air from beneath the floor through the passageway into the combustion zone of the fireplace above the floor plate including louvers pivotal between a first closed position and a second, open position.

4,807,590

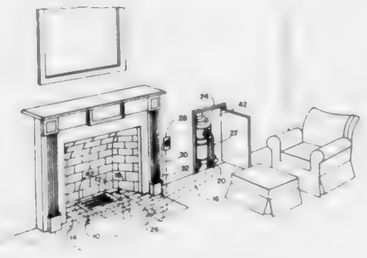
FIREPLACE VACUUM SYSTEM

Wendell K. Evans, 5313 Athens Dr., Savannah, Ga. 31404

Filed Mar. 16, 1988, Ser. No. 168,800

Int. Cl.[4] F23J 1/00

U.S. Cl. 126—242 **4 Claims**



1. Fireplace vacuum system for the removal of ashes from a fireplace hearth, comprising:

(a) a fireplace ash collection box supportable upon the fireplace hearth, and further including:

(i) at least one vacuum slot defined in its top,

(ii) a vacuum discharge coupling extending outwardly at one end of the box, and

(iii) a screen mounted upon an end of said vacuum discharge coupling within said ash collection box so as to cover said vacuum discharge coupling;

(b) a suction pipe secured at one end to said vacuum discharge coupling and extending away from the said collection box and beneath the hearth;

(c) a vacuum unit positioned apart from the fireplace and connected to the other end of said suction pipe, so as to remove fireplace ashes from said ash collection box and via said suction pipe; and

(d) an electrical control system for said vacuum unit including a source of power, an on/off switch and a thermocouple safety switch, positioned within said suction pipe.

4,807,591

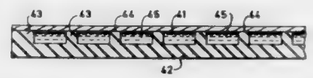
SOLAR-HEAT ABSORBING DEVICE

Fedor Strnisky, Aakdammagatan 29, S-171 43 Solna, Sweden

Continuation of Ser. No. 480,957, Mar. 23, 1983, abandoned. This application May 10, 1985, Ser. No. 733,395

Int. Cl.[4] F24J 2/36

U.S. Cl. 126—426 **2 Claims**



1. A solar-heat absorbing device comprising first and second elongated, thin flexible lengths of material placed one upon the other and joined together along a plurality of parallel, continuous longitudinally extending lines to form a plurality of separate fluid passages between said first and second lengths of material, characterized in that the first length of material (41) comprises a thin metal sheet positioned to be exposed to solar radiation formed, for example, of copper, brass, stainless steel or the like, the second length of material (42) comprising a heat-resistant rubber material having a plurality of integral mutually parallel upstanding ribs extending continuously from one end portion of the elongated device to the other end portion (43) onto which ribs the first material length is firmly vulcanized forming the plurality of passages (45) extending between said ribs (43).

4,807,592

SOLAR TRACKING SYSTEM

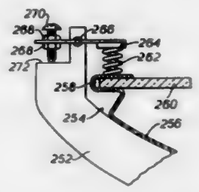
John M. Trihey, Victoria, Australia, assignor to Vulcan Australia Limited, Victoria, Australia

Division of Ser. No. 698,893, Feb. 6, 1985, Pat. No. 4,649,900. This application Jan. 13, 1987, Ser. No. 2,998

Claims priority, application Australia, Feb. 8, 1984, PG3512; Aug. 24, 1984, PG6763

Int. Cl.[4] F21J 3/02

U.S. Cl. 126—438 **4 Claims**



1. A reflective parabolic trough comprising a plurality of formers each having a concave parabolic edge, means interconnecting the formers together such that their parabolic edges lie upon a parabolic surface, reflective resilient sheet material which is initially flat except for integral flanges formed on side edges which are located at the sides of the trough, the flanges having opposed recesses which receive the edges of a sheet of transparent material which spans the trough and mounting means acting between said formers and the flanges and being operable to apply resilient forces to the flanges, said forces having components which are normal to the sheet of transparent material and are inwardly directed relative to the trough to thereby maintain intimate contact between the formers and the sheets of reflective material whereby the undersides thereof are forced into engagement with the parabolic edges of the formers whereby the other sides thereof assume the configuration of a concave parabolic trough, said mounting means including springs which apply resilient forces to said flanges, the mounting means including levers which are pivoted to said formers, and said springs comprising compression springs which act between the flanges and one end of each of the levers.

4,807,593

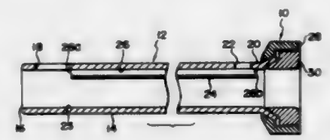
ENDOSCOPE GUIDE TUBE

Hideo Ito, Tokyo, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed May 8, 1987, Ser. No. 47,855

Int. Cl.[4] A61B 1/00

U.S. Cl. 128—4 **11 Claims**



1. An endoscope guide tube comprising:

a flexible hollow cylinder to be inserted into a body cavity so as to guide the distal end portion of the flexible tube of an endoscope into the body cavity, said hollow cylinder having an opening which is formed in the peripheral wall of said hollow cylinder, and an instrument-guiding passage which is provided in said hollow cylinder to extend along the longitudinal axis of said hollow cylinder from the proximal end of said hollow cylinder to said opening and is opened at its extended end toward the opening; and

a proximal-end holding section having an outer and an inner ring, which is so arranged as to clamp said proximal end of said hollow cylinder in the radial direction of the hollow cylinder.

4,807,594

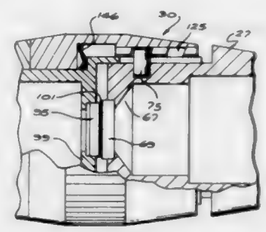
ADAPTER ASSEMBLY FOR ENDOSCOPIC VIDEO CAMERA

David Chatenever, Santa Barbara, Calif., assignor to Medical Concepts, Incorporated, Santa Barbara, Calif.

Filed Jan. 15, 1988, Ser. No. 139,785

Int. Cl.[4] A61B 1/04

U.S. Cl. 128—4 **35 Claims**



1. An endoscopic adapter assembly for coupling a video

VOL 1099 ISS 4 FE 28 1989 UMI

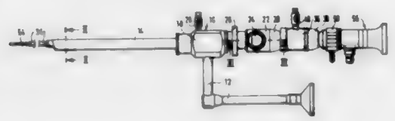
camera head and an endoscope having a proximal end, comprising in combination:

a. ocular adapter means for engaging the proximal end of the endoscope;
b. endoscope-engageable means for engaging said ocular adapter means;
c. means for focusing being rotatably secured to said endoscope-engageable means;
d. camera-engageable means being rotatably secured to said focusing means, for connecting said focusing means to the camera head;
e. said ocular adapter means including a window; and
f. said endoscope-engageable means including a window being aligned with, and facing said window of said ocular adapter means for maintaining glass-on-glass contact therewith.

4,807,595
SALPINGOSCOPE

Siegfried Hiltebrandt, Kaltlingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Fed. Rep. of Germany

Filed Jun. 16, 1987, Ser. No. 62,697
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1986, 3644728
Int. Cl.⁴ A61B *1/00*
U.S. Cl. 128—4 **10 Claims**



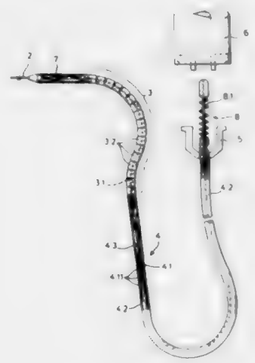
1. In a method for the examination of the fallopian tube in which a first endoscope is positioned with its distal end adjacent to the fallopian tubes from the outside and a second, thinner endoscope is supported in a guided fashion in the first endoscope and has its distal end introduced into the fallopian tube, the improvements comprising providing a second endoscope having a shaft surrounding the optics, said shaft having a distal end of a reduced diameter, said step of introducing the second endoscope includes inserting the distal end of a reduced diameter into the fallopian tube and then positioning the optics of the second endoscope to project from the distal end and to be freely displaced in a longitudinal direction of the shaft of the second endoscope and the fallopian tube.

4,807,596
GUIDING PROBE

Jürgen Hochberger, and Christian Eil, both of Erlangen, Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 11, 1986, Ser. No. 906,332
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1985, 3533452
Int. Cl.⁴ A61B *1/00*
U.S. Cl. 128—4 **14 Claims**

1. A guiding probe, for use in conjunction with an endoscope wherein the endoscope comprises a laser light guide transmitting laser light to an area of surgical treatment, and wherein the guiding probe allows a user of the endoscope to guide the laser light from the endoscope to the area of surgical treatment where the guiding probe is disposed, the guiding probe comprising an at least sectionwise flexible portion in the region of the surgical treatment, said portion having a melting or softening point which is above the temperature rise caused by absorption of laser light, said portion comprising a plurality



of separate elements thereby minimizing the absorption of laser light.

4,807,597
FIBERSCOPE

Koichi Tsuno; Mitsuru Nishikawa, and Kunio Awazu, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 819,078, Jan. 14, 1986, abandoned. This application Nov. 5, 1987, Ser. No. 119,235
Claims priority, application Japan, Jan. 14, 1985, 60-3247[U]; Feb. 26, 1985, 60-25423[U]; Feb. 26, 1985, 60-25424[U]
Int. Cl.⁴ A61B *1/06*
U.S. Cl. 128—6 **4 Claims**

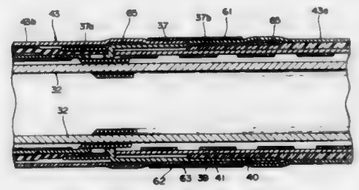


1. A fiberscope comprising image fiber means having lens means at one end of said image fiber means for focusing an image of an object to be observed on the end of the image fiber means for transmission therethrough, said lens means having a light receiving surface for receiving light from an object, a covering tube having an end surface surrounding said image fiber means with at least a portion of said lens means protruding beyond said end surface of said tube, light guide means for transmitting light to an object extending through said tube adjacent said image fiber means and having a front end surface adjacent said end outer surface of said covering tube and a substantially solid transparent plastic body secured to the end of said fiberscope, said body covering said front end surface of said light guide means and said end surface of said tube and having a convex surface substantially flush with but not covering said light receiving surface of said lense.

4,807,598
ENDOSCOPE HAVING FIXING AND EXPANDING MEMBERS

Hiroshi Hasegawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1988, Ser. No. 152,263
Claims priority, application Japan, Feb. 5, 1987, 62-025677
Int. Cl.⁴ A61B *1/06*
U.S. Cl. 128—6 **17 Claims**



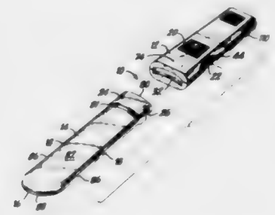
1. An endoscope comprising:
an elongated insertable part having an inner tube and a tubular outer cover for covering an outer peripheral part of said inner tube;
illuminating means for illuminating an object;
observing means having an observing window provided at a tip portion of said insertable part and adapted to allow observation of said object upon receiving a light from said object made incident from said observing window;
a cylindrical fixing member fitted externally to said outer cover and adapted to fix said outer cover to said inner tube; and
a cylindrically projecting portion which is disposed between said outer cover and said inner tube and in the vicinity of and on the outside of at least one axially opposite end portion of said fixing member and which is adapted to radially expand said outer cover in such a manner that an outside diameter of said outer cover in the vicinity of and on the outside of said axially opposite end portion of said fixing member becomes substantially identical with that of said fixing member.

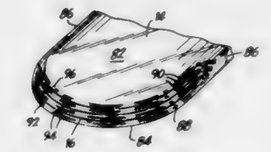
4,807,599
ILLUMINATING TONGUE DEPRESSOR

Herbert L. Robinson, Hoboken, and Allen S. Epstein, Clifton, both of N.J., assignors to Med-Struments, Inc., Totowa, N.J.

Filed May 8, 1987, Ser. No. 47,645
Int. Cl.⁴ A61B *1/06*; A61C *1/00*
U.S. Cl. 128—16 **13 Claims**

1. An illuminating tongue depressor for directing light to a defined area to assist in the inspection of the defined area, the tongue depressor comprising:
a handle;
a depressor blade for use in conjunction with the handle during inspection of the defined area, the blade having a length extending longitudinally between a proximal end and a distal end and laterally between opposite sides, and including upper and lower surfaces, a peripheral edge between the upper and lower surfaces defining a relatively thin blade thickness, a root adjacent the proximal end of the blade, a tip at the distal end of the blade, and a light-conducting material between the upper and lower surfaces and extending along the blade from the root to at least a portion of the peripheral edge at the tip;
a source of illumination including a light source associated with the handle and located so as to juxtapose the light source adjacent the root of the blade for transmitting light to the light-conducting material, which light-conducting material, in turn, will conduct the light at least to the portion of the peripheral edge at the tip of the blade; and
a light-directing graduated profile configuration extending along the portion of the peripheral edge at the tip of the blade for directing projected light from the portion of the peripheral edge at the tip of the blade toward the defined area, the graduated profile configuration including a plurality of steps extending along the portion of the peripheral edge of the tip, the tip being rounded and each step



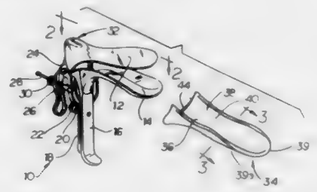


being curved to extend along the rounded tip, the steps being arranged to diminish in radius from a step of larger radius adjacent the lower surface to a step of smaller radius adjacent the upper surface.

4,807,600
SPECULUM PROTECTOR

Allen L. Hayes, 7362 Creekview, West Bloomfield, Mich. 48033

Filed Oct. 15, 1986, Ser. No. 919,031
Int. Cl.⁴ A61B *1/32*
U.S. Cl. 128—17 **1 Claim**



1. A blade cover to be used as one of a pair of disposable covers with a speculum of the type including a lower blade and an upper blade with opposing concavo-convex blade surfaces that can be separated or opened to provide a concave walled viewing channel therebetween for visual examination and treatment of a patient, each cover having opposite sides edges and a flexible elastic hollow or sleeve-like body having an outwardly flared open end adapted to be placed in covering protective relation over a specimen blade, the body being formed of a polymeric resin or plastic material which is capable of undergoing a temporary memory shift, the outwardly flared open end being structured such that said end of the blade cover can be partly opened with two hands and when partly open for purposes of insertion of the blade can be fully opened with one hand by inward radial compression of its opposite side edges at the open end such that said cover undergoes a temporary memory shift and temporarily remains fully opened upon release of the compression to a relaxed state thereby

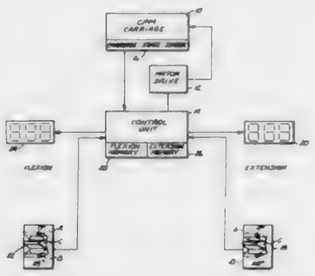
facilitating insertion of the speculum blade into the blade cover, the body further having in a relaxed state a dimensionally stable concavo-convex shape and size closely resembling but slightly larger than a speculum blade, so that when a pair of said covers is slipped in covering relation over and in contact with the respective speculum blades, each of the covers is substantially unstressed and retains its concavo-convex shape intimately matching, surrounding and closely conforming to substantially the entire length and sides of the respective blade surfaces without extensive voids therebetween, thereby maximizing the magnitude of the concavity of said viewing channel for purposes of enhanced surgical visibility.

4,807,601

LIVE DISPLAY APPARTUS FOR SETTING EXTENSON AND FLEXION LIMITS IN CONTINUOUS PASSIVE MOTION (CPM) SYSTEM

Thomas C. Wright, New Brighton, Minn., assignor to Empi, Inc., St. Paul, Minn.

Filed Dec. 20, 1985, Ser. No. 811,636
Int. Cl.[4] A61H *1/02*
U.S. Cl. 128—25 R **22 Claims**



1. A live display apparatus for selectively setting limits of movement in a continuous passive motion (CPM) system, including:

CPM carriage means for supporting a patient's limb through a range of reciprocal angular movement;

drive means for driving the carriage means through the range of reciprocal angular movement;

carriage state sensor means for providing a signal representative of a state of the carriage means within the range of reciprocal angular movement;

first limit memory means for storing data;

first limit select switch means having OFF and first ON positions; and

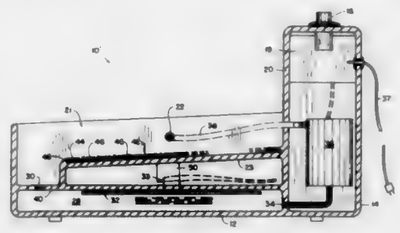
control means coupled to the carriage state sensor means, first limit memory means and the first limit select switch means, for controlling the drive means, wherein the control means causes the carriage means to be operated in a first limit select mode and driven through its range of movement in a first direction to a first selected limit of movement while the first limit select switch means is in its first ON position, causes data representative of the state of the carriage at the first selected limit of movement to be stored in the first limit memory means when the first limit select switch means is switched from the first ON position to the OFF position, and causes the carriage means to be operated in a normal operating mode and driven as a function of the signal provided by the carriage state sensor means and the data stored in the first limit memory means when the first limit select switch means is in its OFF position.

4,807,602

FOOT MASSAGER

Roderick L. Scarborough, and Diane Scarborough, both of 627 S. Walker St., Burgaw, N.C. 28425

Filed Nov. 16, 1987, Ser. No. 120,960
Int. Cl.[4] A61H *1/02*
U.S. Cl. 128—52 **1 Claim**



1. A foot massager, comprising:

a housing;

a foot receiving compartment in said housing;

an inclined floor in said foot receiving compartment;

a plurality of spaced apertures formed through said inclined floor;

a slot extending parallel with and beneath an upper surface of said inclined floor;

a nipple support plate provided with a plurality of spaced upstanding nipples;

said nipples formed from a flexible rubber material;

said nipple support plate received for limited reciprocal sliding movement in said slot, with said nipples extending upwardly through said apertures;

an oval recessed cam truck rigidly secured to said nipple support plate;

a variable speed rotary electrical motor;

an eccentric cam secured to a drive shaft of said rotary electrical motor;

an eccentric lob on said cam engaging said oval cam recess for reciprocating said nipple support plate;

a plurality of adjustable pulsating spray nozzles arranged in said foot receiving compartment for spraying an individual's feet when supported on said inclined floor;

a drain hole at a low point in said inclined floor;

a water storage tank beneath said inclined floor communicating with said drain hole;

an adjustable heating element in said water storage tank; and

an adjustable variable speed rotary pump connected for supplying water from said water storage tank to said spray nozzles.

4,807,603

MASSAGING DEVICE HAVING CYLINDRICAL BODY WITH AT LEAST ONE GROOVE

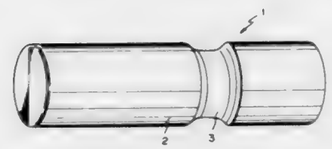
Shinjiro Yasui, 37, Aza Higashioka, Wassamucho, Kamikawa-gun, Hokkaido, Japan

Filed May 19, 1987, Ser. No. 51,378
Claims priority, application Japan, Jun. 9, 1986, 61-88378
Int. Cl.[4] A61H *15/00*
U.S. Cl. 128—57 **14 Claims**

1. A massage device for massaging an affected part of a user's body when said device is disposed on a floor and the affected part is pressed atop the device and the device is rolled along the floor,

said massage device consisting of a substantially rigid body,

said rigid body having a smooth cylindrical outer peripheral surface extending substantially over the entire length thereof for supporting the affected part and along which the device is rollable along the floor to massage the affected part, and an annular groove extending in said rigid



body and around the outer periphery of said body at a location proximate the longitudinal center thereof.

4,807,604

SCALP MASSAGER

Heriberto Canela, 8027 W. 14 Ave., Hialeah, Fla. 33014

Filed Dec. 11, 1987, Ser. No. 131,680
Int. Cl.[4] A61H *9/00*
U.S. Cl. 128—66 **4 Claims**



1. A scalp massager, for connecting to a tap water supply, comprising:

A. a helmet member having a plurality of interconnected slots through its surface;

B. one and only one water pulsating and massaging head member slidably mounted in said helmet slots so that said head member may be moved to any position in any of said slots, said head member being positioned to direct water inwardly toward a user's scalp; and

C. conduit means having two ends, one of said ends being connected to said head member, and the other of said ends being removably connected to said tap water supply, said head member including means to direct a jet of pulsating water onto a user's scalp, and being movable in said slots to direct said jet onto different areas of a user's scalp.

4,807,605

HALO TRACTION BRACE

Leslie G. Mattingly, 10761 E. Laurel La., Scottsdale, Ariz. 85259

Filed Dec. 16, 1986, Ser. No. 942,367
Int. Cl.[4] A61F *5/04, 5/02*
U.S. Cl. 128—75 **15 Claims**

1. A cervical brace to be worn on the upper body for stabilizing and immobilizing the head and cervical spine of a wearer comprising:

(a) a flexible anterior belt portion adapted to extend around the lower costal area of the ribs and terminating at either side of the wearer;

(b) a flexible posterior belt portion adapted to extend around the lower thoracic lumbar are a of the user and terminating at either side of the user;

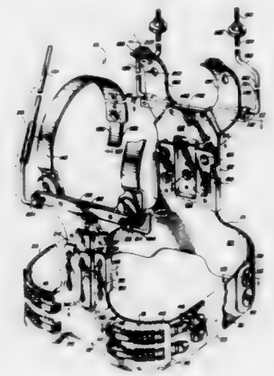
(c) fastener means adjustably connecting said anterior belt portion and said posterior belt portion of the sides of the wearer and adapted to apply a closing force generally perpendicular with respect to the sagittal plane of the body of the wearer;

(d) front bracket means on said anterior belt portion in the region of the sternum

(e) rear bracket means on said posterior belt portion in the lumbar spinal area;

(f) front yoke means carried on said front bracket means and being vertically adjustable relative to said front bracket means;

(g) rear yoke means carried on said rear bracket means and



being vertically adjustable relative to said rear bracket means;

(h) adjustable strap means extending between said front and rear yoke means adapted to extend over the shoulder of the wearer; and

(i) a pair of front support rods having upper and lower ends and attached at their lower ends of opposite sides of said front yoke means and a pair of rear support rods having upper and lower ends and attached at their lower ends at opposite sides of said rear yoke means, said front and rear support rods adapted to support a halo at their upper ends.

4,807,606

THERAPEUTIC APPLIANCE POR IMPROVING FUNCTIONS OF HAND FINGERS

Tsuneo Hasegawa; Mitsuma Matsumura; Atsuki Hashimoto, and Toshio Mikiya, all of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1987, Ser. No. 86,819
Claims priority, application Japan, Sep. 22, 1986, 61-145333
Int. Cl.[4] A61F *5/10*; A61H *9/00*
U.S. Cl. 128—77 **4 Claims**

1. A therapeutic appliance for improving functions of a person's carpal joints, hand and five fingers, comprising:

(a) a splint cloth made of flexible material and including

(i) a palm splint portion accommodating a palm with the fingers spread apart, and

(ii) a forearm splint portion extending from the palm splint portion to cover an underside surface of the carpal joint and forearm;

(b) first retainer means disposed on the hand back side surface of said palm splint portion for releasably holding the five fingers individually in their spread apart positions;

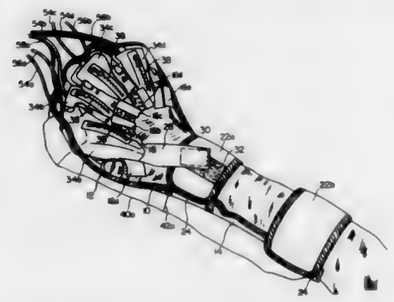
(c) second retainer means on said forearm splint portion for releasably securing at least one of the wrist and forearm to the forearm splint portion;

(d) a plurality of first generally delta-shaped pockets made of substantially non-extensible material disposed on the hand back side surface of said palm splint portion, each positioned between adjacent fingers;

(e) a pair of second pockets made of substantially non-exten-

sible material disposed on the palm side surface of said splint cloth and extending in generally parallel relation to each other form tips of the fingers toward the forearm along substantially the full length of the splint cloth, said second pockets positioned so as to span the space between the thumb and the forefinger and the space between the middle finger and the ring finger, respectively;

(f) a pair of third generally delta-shaped pockets made of substantially non-extensible material disposed on the palm side surface of said palm portion, one of said third pockets extending between said pair of second pockets from the finger tips toward the wrist so as to span the forefinger



and the middle finger, and the other of said third pockets extending from the finger tips toward the wrist so as to span the ring finger and the little finger;

(g) a plurality of inflatable bladders, one accommodated within each of said first, second and third pockets; and

(h) fluid supply and discharge tubes connected to said bladders for supplying and discharging fluid at a predetermined pressure to and from said bladders,

wherein said pair of second pockets is provided with darts at locations corresponding generally to the wrist so as to facilitate bending of said second pockets back toward the palm side when the bladders within said second pockets are inflated with fluid.

4,807,607

BRACE FOR TREATMENT OF LOWER ARM COMPLAINTS

Georg W. Röder, Harkshelder Strasse 157, D-2000 Hamburg 65, Fed. Rep. of Germany

Filed Jul. 16, 1987, Ser. No. 74,070

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1986, 3625983

Int. Cl.[4] A61F *5/00*

U.S. Cl. 128—77 **15 Claims**

1. A brace for treatment of complaints caused by overstressing of the tendinous insertions and/or the tendon sheath of the lower arm comprising:

a collar positionable around the lower arm, said collar defining an exterior side and an interior side;

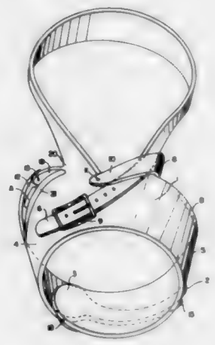
at least one pad on the interior side of said collar for engagement with the lower arm;

a tension element connected to said collar and postionable around the upper arm, said tension element having a free end;

means for fastening said free end of said tension element to said collar, said brace being made from a flexible material; and

a strip branching from the upper edge of the collar and leading to the tension element, said strip having an end connected with the tension element,

whereby the brace exerts pressure on bunches of tendons of the lower arm when muscles of the lower arm contracted and provides relief for ends of tendons of the lower arm by



transmitting the tension from the collar through the tension element to the upper arm.

4,807,608

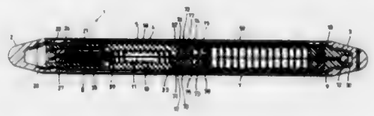
MECHANICAL PENILE PROSTHESIS

Dezso K. Levius, Minnetonka, Minn., assignor to American Medical Systems, Minnetonka, Minn.

Filed Jul. 22, 1987, Ser. No. 76,354

Int. Cl.[4] A61F *2/26*

U.S. Cl. 128—79 **12 Claims**



1. A penile prosthesis, having distal and proximal ends, for implantation in a penis, comprising:

(a) an outer sleeve made of a biocompatible and flexible material;

(b) a linear assembly of cups enclosed within said sleeve, each cup having an open proximal end and a substantially flat distal end, said substantially flat distal end having substantially flat inner and outer surfaces, said open proximal end accommodating the insertion of said substantially flat distal end of an adjoining cup such that said substantially flat outer surface of the substantially flat distal end of each cup is in substantially axial alignment with said substantially flat inner surface of each adjoining cup, when said prosthesis is in an erect state, each cup having a length that is shorter than its width, and wherein each said cup encloses a substantially bowl shaped cavity, said cavity bordered by an open upper surface at said proximal end of said cup, a generally circular inner wall, and said substantially flat inner surface at said substantially flat distal end of said cup, the radius of said generally circular inner wall decreasing from the radius at said proximal end of each said cup to the radius at said substantially flat inner surface, and wherein the substantially flat outer surface of the substantially flat distal end of each said cup engages the substantially flat inner surface of the substantially flat distal end of each adjoining cup, when said prosthesis is in an erect state,

(c) a cable having distal and proximal ends and extending longitudinally within said prosthesis for maintaining said penile prosthesis in a state of tension; and

(d) means for adjusting the position of said cable from a position in which the proximal end of said cable is nearer the proximal end of said prosthesis to a position in which said proximal end of said cable is moved closer to the distal end of said prosthesis, said means for adjusting the position of said cable allowing said movement of said cable to cause said prosthesis to move from an erect state to a flaccid state and allowing a further movement of said prosthesis in the same direction to return said prosthesis from said flaccid state to said erect state.

4,807,609

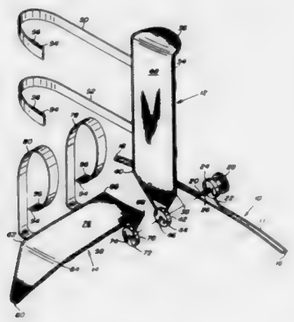
HAND-FOREARM SUPPORT

Roy A. Meals, Los Angeles, Calif., assignor to LMB Hand Rehab Products, Inc., San Luis Obispo, Calif.

Filed May 26, 1987, Ser. No. 53,632

Int. Cl.[4] A61F *5/04*

U.S. Cl. 128—87 R **5 Claims**



1. A freestanding hand-forearm support for elevation of a hand above the level of the elbow comprising:

a forearm support member, a humerus support member, and a base member;

said hand-forearm support having an interior as defined by the surfaces of said forearm support member and said humerus support member which contact the arm and forearm of a patient and which define an included angle which is within the natural bending arc of the elbow of a human being;

said forearm support member being generally upright and having a peripheral framework comprised of a single continuous length of wire with a flexible material suspended within at least a portion of said framework;

said forearm support member comprising a distal portion which is distal to the apex of said included angle, a central body portion, and a proximal portion which is proximal to the apex of said included angle, said central portion including spaced apart generally parallel wire extensions joined in said distal portion, said distal portion being angled away from the interior of the hand-forearm support and said proximal portion including means for attachment to said base member comprising the free ends of the wire extending toward each other at substantially 45° which are anchored in said base member attachment means;

said humerus support member being generally horizontal and having a peripheral framework comprised of a single continuous length of wire, and a flexible material suspended within at least part of said framework;

said humerus support means comprising a distal portion which is distal to the apex of said included angle, a central body portion, and a proximal portion which is proximal to the apex of said included angle, said central portion comprising spaced apart generally parallel wire extensions joined in said distal portion, said distal portion being angled away from the interior of the hand-forearm support and said proximal portion including means for attachment to said base member comprising the free ends of the wire extending toward each other at substantially 45° which are anchored in said base member attachment means;

said base member comprising a pair of legs formed of a single continuous length of wire bent back on itself, the free ends of which are secured to said attachment means at a point substantially midway between said legs;

attachment means for securing said forearm support member and said humerus support member to said base member comprising three separate disks, one disk being attached to each of said forearm support member, to said humerus support member, and to said base member;

means for detachably securing said disks together;

said humerus support member being secured to a disk having an internally threaded axial hole and having a pair of radial bores into which are inserted the free ends of the proximal portion of said wire framework;

said forearm support member being secured to a disk having an internally threaded axial bore and having a pair of radial bores into which are inserted the free ends of the proximal portion of said wire framework;

said base member further comprising a disk having an internally threaded axial hole and having a pair of radial bores for receiving and holding the free ends of the base member wire;

an externally threaded shaft member for threading through the respective internally threaded axial holes of the disks of said base member, said forearm support member and said humerus support member to secure said forearm support member, said humerus support member, and said base member together.

4,807,610

INTRAUTERINE CONTRACEPTIVE DEVICE

Raisa V. Gainutdinova; Boris A. Jurov; Bentsian M. Mazo, and Vera M. Petrova, all of Kazan, U.S.S.R., assignors to Nauchno-Proizvodstvennoe Objedinenie "Medinstrument", Kazan, U.S.S.R.

Filed Sep. 9, 1987, Ser. No. 94,417

Int. Cl.[4] A61F *5/46*

U.S. Cl. 128—830 **4 Claims**



1. An intrauterine device, comprising:

a strip;

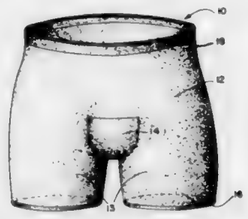
a rod interconnected with said strip to form a T-shaped element therewith;

a thread for dynamic monitoring of the intrauterine device while in the uterine cavity, said thread being connected to said rod;

a coil fitted over said rod and having a base made of an elastic polymer material, said base facing directly to said rod, and a metallic layer coated on said base.

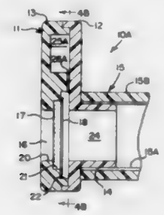
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4,807,611
PROPHYLACTIC DEVICE
Kenneth A. Johnson, Park Square Station, Box 15483, Stamford, Conn. 06901
Filed May 13, 1987, Ser. No. 49,347
Int. Cl.[4] A61F *5/42*
U.S. Cl. 128—844 **2 Claims**



1. A prophylactic device for use by a human wearer, comprising:
a body portion, formed of flexible material and adapted to fit snugly on a human body, extending at least from the area adjacent the navel downward to a point below which the thighs intersect the torso;
a trap portion, integral with said body portion and overlying the perineal area of a wearer, formed of a smooth, nonfolded extendible material for extending outwardly or inwardly to conform intimately with portions of the wearer in contact with said trap portion, said material being extendible between a nonextended state and a fully extended state such that the surface area of said trap portion in such fully extended state is at least four times greater than the surface area of said trap portion in said nonextended state;
said flexible material and said extendible material being impermeable to human bodily fluids.

4,807,612
PASSIVE EAR PROTECTOR
Elmer V. Carlson, Prospect Heights, Ill., assignor to Industrial Research Products, Inc., Elk Grove Village, Ill.
Filed Nov. 9, 1987, Ser. No. 118,455
Int. Cl.[4] A61F *11/02*
U.S. Cl. 128—868 **16 Claims**



1. A passive ear protector positionable in the canal of a user's ear for attenuating incoming sound, said protector comprising in combination sound input and output ports, a sound passage coupling said ports, and first attenuation-correcting means for providing a maximum of transmission for at least one frequency at which the unobstructed ear canal normally enhances the pressure at the eardrum and at which the presence of said ear protector in said canal substantially reduces said transmission to produce a spectrum of the sound coupled through the ear protector to the user's ear which is substantially the same at said one frequency as that which would be effective at the user's ear in the absence of the passive ear protector, but decreased by a substantially constant factor, said attenuation-correcting means including complaint diaphargm means positioned across said passage for responding to incoming sound and providing attenuated sound pressure communication through said passage to the user's ear, said diaphragm means being configured to function as a pressure divider with the occluded volume of said ear canal, and a damping member positioned across said sound passage, said first attenuation-correction means being the configuration of said diaphragm, said sound passage and said damping member to provide said transmission maximum.

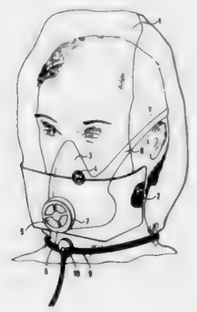
4,807,613
BANDAGE AND SHIELD
Raechelle K. Koehnke, and Gregory H. Koehnke, both of 36 Gleason Dr., Iowa City, Iowa 52240
Filed Dec. 22, 1986, Ser. No. 945,912
Int. Cl.[4] A61F *13/00, 15/00*
U.S. Cl. 128—155 **6 Claims**



6. In an adhesive bandage comprising a planar base having adhesive supplied to a face thereof, an absorbent pad affixed to said base intermediate the adhesive face thereof, and protective shield structure generally overlying said bandage, the improvement comprising
a non-adhesive extension depending from said base,
said shield structure comprising a releaseable sheet removably adhered to said adhesive face of said base,
said sheet having a flap generally overlying said non-adhesive extension of said base,
said flap being deflectable,
said extension of said base is adjoined to said base by a weakened region.

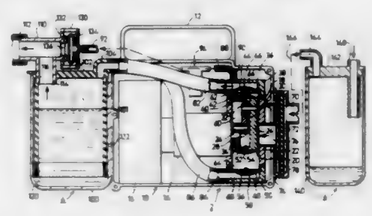
4,807,614
PROTECTIVE HOOD
Carl E. van der Smissen, Lübeck, and Holmer Röhling, Reinfeld, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany
Filed Jan. 22, 1988, Ser. No. 147,279
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1987, 3701695
Int. Cl.[4] A62B *17/04*
U.S. Cl. 128—201.23 **8 Claims**

8. A protective hood arrangement for emergencies comprising:
a hood adapted to be place over the head of a wearer and having a first portion made of transparent material at least in the region adjacent the eyes of the wearer;
a permeable large-area piece defining a further portion of said hood and being a filter made of nonwoven fabric;
preparation means disposed in said nonwoven fabric for holding back harmful substances including gaseous harmful substances;
a half-mask arranged in and attached to said hood, said hood and said half-mask conjointly defining a closed space when worn by the wearer, the half-mask including a breathing air inhalation valve communicating directly with said permeable large-area piece so as to define a clear and unobstructed path over which the wearer inhales air from the ambient through said permeable large-area piece; and,



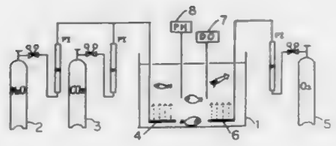
said half-mask further including en exhalation valve communicating directly with the ambient thereby completely bypassing said permeable piece and compelling the wearer to exhale to the ambient.

and a relief valve communicating with said delivery means for preventing the pressure in the delivery means from rising above a predetermined peak value;
characterized in that said apparatus further includes:
s sensor located in said delivery means between the positive-pressure outlet of the pump and the patient for sensing the positive pressure in said delivery means;
and control means effective to energize said pump when the sensed positive pressure in the delivery means is below said peak value, and to deenergize the pump whenever the



sensed positive pressure is substantially equal to said peak value.

4,807,615
METHOD FOR ANESTHETIZING AQUATIC ANIMALS
Koichi Nakagawa, Kakogawa, and Kazunori Imura, Takasago, both of Japan, assignors to Seitetsu Kagaku Co., Ltd., Washington, D.C.
Filed Sep. 8, 1987, Ser. No. 93,706
Int. Cl.[4] A01K *63/00*
U.S. Cl. 128—203.12 **10 Claims**

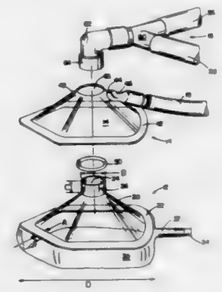


1. A method for anesthetizing aquatic animals which comprises anesthetizing the animals in water with nitrous oxide and carbon dioxide.

4,807,616
PORTABLE VENTILATOR APPARATUS
Carmeli Adahan, 1316/02 Ramot 03, Jerusalem 97 725, Israel
Continuation-in-part of Ser. No. 71,327, Jul. 9, 1987. This application Nov. 12, 1987, Ser. No. 119,880
Int. Cl.[4] A62B *7/02*
U.S. Cl. 128—204.21 **15 Claims**

1. Ventilator apparatus comprising:
a pump including a negative-pressure air inlet and a positive-pressure air outlet;
delivery means connected to the positive-pressure air outlet for delivering pressurized air to a patient;

4,807,617
SCAVENGING MASK
William Nesti, Brockton, Mass., assignor to Massachusetts Eye and Ear Infirmary, Boston, Mass.
Filed Feb. 1, 1988, Ser. No. 150,774
Int. Cl.[4] A62B *18/02, 18/08*
U.S. Cl. 128—205.12 **10 Claims**



1. A removable apparatus usable with a succession of gas delivery masks, for scavenging gas from the vicinity of a gas delivery mask applied to a face, said mask having a convex outer surface, a discrete gas supply means and a discrete gas exhaust means, and being operable alone as a gas delivery mask, said apparatus comprising
a cup having an inner concave surface adapted to form a gap between it and the convex surface of said gas delivery mask when said cup is positioned over said gas delivery mask, said cup being shaped so as not to contact said face

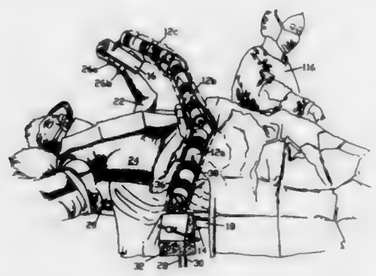
when positioned over said gas delivery mask when said gas delivery mask is placed over said face, said cup further comprising an aperture adapted for attachment to a gas scavenging line, separate and discrete from said gas exhaust means, for allowing evacuation of gas from said gap, wherein said apparatus is a discrete unit, being readily removable from said gas delivery mask and capable of being used with a succession of gas delivery masks.

4,807,618

PATIENT LIMB POSITIONING APPARATUS

Geoffrey F. Anchinleck, Vancouver; James A. McEwen, Richmond; John C. Osborne, Vancouver, and Carlo R. Bussani, Burnaby, all of Canada, assignors to Andronic Devices, Ltd., Vancouver, Canada

Filed Jan. 23, 1987, Ser. No. 6,131
Int. Cl.[4] A61F *13/00*
U.S. Cl. 128—878 **8 Claims**



1. Apparatus useful in srugery for holding part of a patient's body such as a limb, portion of a limb, extremity, organ or tissue in a number of different positions required by a surgeon for the performance of a surgical procedure at a surgical site, comprising:

(a) grasping means for grasping a part of a patient's body;

(b) a plurality of positioning members adapted to interconnect said grasping means to a supporting point such that the body part grasped by the grasping means can be moved to any position relative to said supporting point within a predetermined space, while locating said positioning members so as to avoid obstacles around the surgical site and to avoid obstruction of the surgical site, each of said positioning members comprising:

(i) selectably positionable joints, connected to said positioning member,

(ii) attaching means connected to said selectably positionable joints for attaching each said positioning member to another positioning member or to said grasping means, or to said supporting point,

(iii) locking means for locking said selectably positionable joints in a selected position, and

(iv) actuation means for actuating said locking means in response to a first control signal, and for unlocking said locking means in response to a second control signal; and

(c) signal generating means for enabling an operator to generate said first control signal and said second control signal for

(i) each said positioning member individually, and

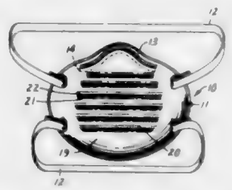
(ii) each said positioning member of a predetermined group of said positioning members so that said operator can selectively lock or unlock all of said positioning members of said group simultaneously.

4,807,619

RESILIENT SHAPE-RETAINING FIBROUS FILTRATION FACE MASK

James F. Dyrud, New Richmond, Wis.; Harvey J. Berg, St. Paul, and Alice C. Murray, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 7, 1986, Ser. No. 848,757
Int. Cl.[4] A62B *7/10*
U.S. Cl. 128—206.16 **57 Claims**



1. A resilient cup-shaped filtration face mask adapted to cover the mouth and nose of a wearer of the mask comprising:

(a) one or more molded fibrous shaping layers that comprise fibers bonded to one another and to other included fibers at intersecting points throughout the layer;

(b) a fibrous filtration layer disposed on one side of or between said molded fibrous shaping layers, the filtration layer removing a higher percentage of particles from a gaseous stream than the shaping layers remove;

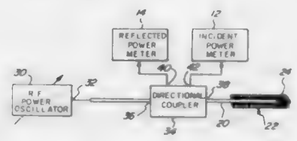
said molded fibrous shaping layers having a total basis weight of at least about 150 g/m^2, and at least one said fibrous shaping layer having an average density over the central area of the face mask of no greater than about 0.2 g/cc, such that at bends of the layer during deformation of the face mask the layer elastically deforms and tends to return to its original thickness and shape when the deforming pressure is removed.

4,807,620

APPARATUS FOR THERMAL ANGIOPLASTY

Bruno Strul, Palo Alto, and Tsvi Goldenberg, Irvine, both of Calif., assignors to Advanced Interventional Systems, Inc., Irvine, Calif.

Filed May 22, 1987, Ser. No. 53,391
Int. Cl.[4] A61B *17/39*
U.S. Cl. 128—303.1 **25 Claims**



1. In an interventional therapeutic apparatus for remote delivery of heat to body tissue, the combination which comprises:

(a) a oscillator for providing an r.f. output signal within the range of 10 MHz to 2 GHz;

(b) a transmission line having a proximal end connected to the oscillator for receiving the output signal and a distal end, the transmission line being constructed and arranged to pass through the interior of a body cavity; and

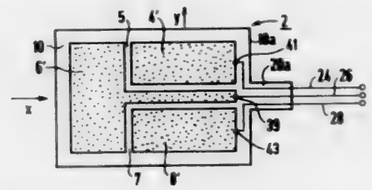
(c) an inductive load dispose at the distal end of the transmission line, the inductive load comprising a magnetic material and operating to convert the r.f. signal transmitted through the transmission line into heat, the conversion being optimized at a predetermined frequency, the frequency of the output signal from the oscillator being set at substantially said predetermined frequency, whereby the inductive load is heated to a temperature sufficient for therapeutic effects.

4,807,621

MULTI-ELEMENT FLAT ELECTRODE ESPECIALLY USEFUL FOR HF-SURGERY

Uwe Hagen, Forchheim, and Udo Rodler, Effeltrich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 15, 1987, Ser. No. 97,481
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1987, 3718585
Int. Cl.[4] A61B *17/39*
U.S. Cl. 128—303.13 **2 Claims**



1. An electrode useful as a neutral electrode for connection via electrical lines to an HF-surgical instrument, said electrode being of the type including three partial electrodes extending in a given direction and arranged alongside one another on a common carrier which is essentially rectangular in the given direction, wherein:

one of said partial electrodes is T-shaped, having head and foot portions, and arranged centrally on the carrier with the foot portion extending on the carrier in the given direction;

two other of said partial electrodes are essentially of rectangular shape and equal surface area and are arranged on the carrier so as to interpose in the given direction the foot portion of the T-shaped partial electrode and form insulating strips between said foot portion and said two other partial electrodes; and

the electrical line connections are provided for each of the three partial electrodes, one at an end of the foot portion which faces away from the head portion of the T-shaped partial electrode and the other two electrical line connections are at adjacent ends of the two other partial electrodes which also face away from the head portion of the T-shaped partial electrode.

4,807,622

TUBE CUTTING AND SEPARATING IMPLEMENT FOR CONDUIT OF BLOOD OR THE LIKE

Ichizo Ohkaka, Yokohama, and Hiroaki Nakajima, Tokyo, both of Japan, assignors to Kato Hatsujo Kaisha, Ltd., Yokohama, Japan

Filed Sep. 19, 1986, Ser. No. 909,313
Claims priority, application Japan, Sep. 20, 1985, 60-208501; Jul. 4, 1986, 61-157485
Int. Cl.[4] A61B *17/08*
U.S. Cl. 128—305 **12 Claims**

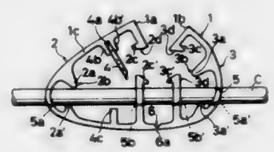
1. A tube cutting and separating implement for a conduit containing a flowing fluid comprising:

a housing, said housing having separable portions, an elongated base having a longitudinal axis and clamping means connected for movement relative to said base;

means in said housing for receiving a tube aligned substantially parallel to the longitudinal axis of said base;

means in said housing for maintaining said tube closed in each of said housing portions; and

severing means carried by one of said portions for severing said tube between said portions, whereby upon one-handed movement of said clamping means along a plane parallel to the longitudinal axis of said base, said tube is



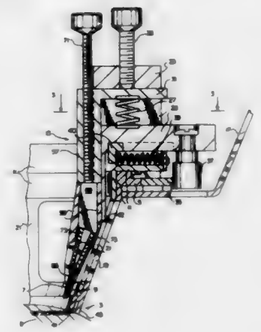
severed, said severed ends of said tube are maintained closed in each of said portions and said portions are separated.

4,807,623

DEVICE FOR SIMULTANEOUSLY FORMING TWO INCISIONS ALONG A PATH ON AN EYE

David M. Lieberman, c/o Pfizer Inc., 235 E. 42nd St., New York, N.Y. 10017, assignor to David M. Lieberman, Montague, N.J.

Continuation of Ser. No. 868,973, May 30, 1986, abandoned. This application Jun. 3, 1988, Ser. No. 202,223
Int. Cl.[4] A61B *17/32*
U.S. Cl. 128—305 **14 Claims**



1. An ophthalmic device for simultaneously forming two incisions oriented at an angle with respect to one another along a generally annular pat on an eye, said device comprising:

a base;

means connected to the base to conform and secure the eye and the ophthalmic device to one another;

pattern means for defining said generally annular path;

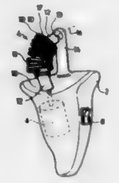
rotation means adapted to be disposed and rotated on the base; and

first and second cutting means fixedly connected generally adjacent one another at generally the same location along said path, said first and second cutting means being angularly aligned to one another for making a generally wedge shaped incision in said eye at said same location thereon, said first and second cutting means being operatively connected to said pattern means and said rotation means such that said rotation means moves said generally adjacent first and second cutting means from said same location and simultaneously along the generally annular path defined by the pattern means, such that said first and second cutting means remain generally adjacent one another at all respective locations along the path on the eye, whereby the generally adjacent alignment of the first and second cutting means at all locations along said path ens-

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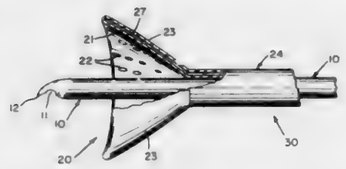
bles an accurate wedge shaped generally annular incision of the eye.

4,807,624
DEVICE FOR REMOVING HAIR
Joseph Gross, Moshav Mazor; David Lowenstein, Natanya; Menahem Tilman, Hofit, and Eitan Rosenberg, Kiryat Ono, all of Israel, assignors to Hair Remover Ltd., Tel Aviv, Israel
Filed Mar. 2, 1988, Ser. No. 163,356
Claims priority, application Israel, Mar. 25, 1987, 82002
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—355 **19 Claims**



1. A device for removing body hair, comprising a manually-grippable housing, and a hair-plucker body rotatably mounted to the housing and having an exposed section formed with a plurality of gaps in its outer surface which open and close during the rotation of the hair-plucker body to receive, pluck, and eject body hair growing on a surface over which the hair-plucker body is moved; characterized in that said hair-plucker body comprises a stack of circular discs of uniform diameter fixed to a resilient cylindrical core of smaller diameter passing through their centers; said core being rotated about its longitudinal axis and being supported in an arcuate position such that the outer edges of said discs open at the convex side of the core during its rotation to receive the hairs between the outer edges of the discs, and close at the concave side of the arcuate core during its rotation to clamp the hairs between the outer edges of the discs.

4,807,625
MEMBRANE PUNCTURING ASPIRATOR WITH DRAINAGE SHIELD
Ross R. Singleton, 3106 Edgewood Ave., Richmond, Va. 23222
Filed Jul. 7, 1987, Ser. No. 70,588
Int. Cl.[4] A61B *17/42*
U.S. Cl. 128—361 **5 Claims**

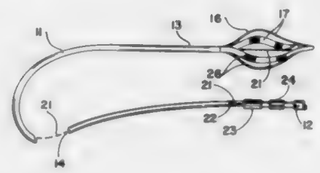


1. A funnel-shaped aspirating device for aspirating a region of a patient, said device comprising:

a funnel-shield including a mouth, a shaft, and a chamber between the inner and outer spaced-apart walls for aspirating fluids, a plurality of suction ports disposed in the inner wall of said funnel-shield communicating with said chamber, and at least one opening in the inner wall of said shaft of the funnel-shield for communicating with a source of negative pressure, the mouth of said funnel-shield being anatomically contoured to mate with the lower uterine segment of a patient, said funnel-shield being transparent in at least a portion thereof to permit visual observation of the region of aspiration; and

a tubular aspirator means having a puncture end and a discharge end, said tubular aspirator means comprising an elongated hollow shaft adapted to be slideably circumcased within the shaft of said funnel-shield, said tubular aspirator means including at the puncture end thereof a membrane puncture means and a fluid inlet port, said tubular aspirator means having at least one relief port therein for communicating with a common vacuum source that supplies negative aspirating pressure to both said funnel-shield and said tubular aspirator means when said relief port on the tubular aspirator means and the opening in the inner shield shaft are in alignment.

4,807,626
STONE EXTRACTOR AND METHOD
Douglas B. McGirr, 5362 Feather River Dr., Stockton, Calif. 95207
Continuation-in-part of Ser. No. 701,417, Feb. 14, 1985, abandoned. This application Dec. 30, 1985, Ser. No. 814,905
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—328 **14 Claims**

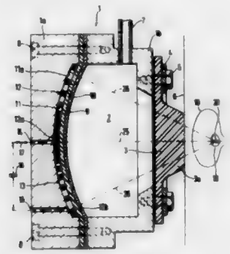


8. In an extractor for removing a foreign object from the body: an elongated flexible tubular member having proximal and distal ends and a longitudinally extending luminal opening, a plurality of normally straight strips of a nonmetallic flexible material extending longitudinally from the distal end of the tubular member and being connected together at their distal ends to form a normally closed basket which can be opened by flexing the strips to separate them laterally, means forming an opening at the distal end of the basket in axial alignment with the luminal opening in the tubular member whereby the extractor can be inserted into the body and advanced along a guide wire which passes freely through the luminal opening and the opening at the distal end of the basket, and a flexible control line connected to at least one of the strips forming the basket and extending to the proximal end of the tubular member for flexing the strips to open the basket when pulled, said strips tending to return to their normally straight condition to close the basket when the control line is relaxed.

4,807,627
CONTACTLESS COMMINUTION OF CONCREMENTS
Wolfgang Eisenmenger, Landhausstrasse 7, 7140 Ludwigsburg, Fed. Rep. of Germany
Filed Jul. 11, 1986, Ser. No. 884,353
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1985, 3525641; Jul. 23, 1985, 8521196[U]
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—328 **29 Claims**

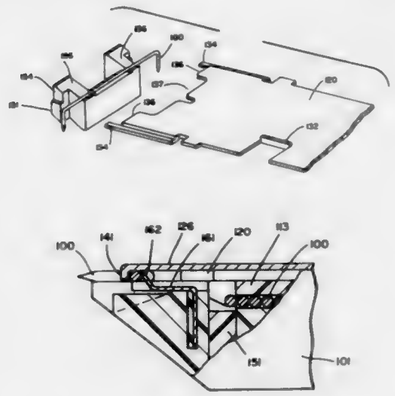
1. Method for contactfree comminution of a concrement in the body of a living being, including the steps of generating shock waves and focusing the shock waves as generated in a focal area located in a concrement, there being an axis of rotational symmetry regarding the shock wave generation and on which said concrement is located, the improvement of reducing a pressure drop in the focal area, by providing the steps of:

controlling in radial direction in relation to the axis, the energization distribution for the production of pressure shock waves such that the shock wave pressure amplitude generated at a given point in time decreases with radial distance from said axis; and



temporarily controlling the generation of the shock waves such that the amplitudes rise steeply at first and decay relatively slowly after having passed through a maximum.

4,807,628
METHOD AND APPARATUS FOR STORING, DISPENSING, AND APPLYING SURGICAL STAPLES
Rudolph Peters; Ronald L. Peters, and William Taylor, all of Oakland, Calif., assignors to Edward Weck & Company, Inc., Research Triangle Park, N.C.
Filed Apr. 26, 1985, Ser. No. 727,760
Int. Cl.[4] A61B *17/04;* **B31B** *1/00*
U.S. Cl. 128—334 R **45 Claims**



1. A surgical stapling device, including means for storing a pluality of surgical staples in a parallel, stacked column extending along a longitudinal axis, means for separating the endmost staple of said stacked column therefrom, means for engaging the legs of said endmost staple in torque applying fashion for rotating said endmost staple to a points-first orientation along an axis parallel to said longitudinal axis, and means for crimping and securing the rotated staple.

4,807,629
OXYGEN SENSING PACEMAKER
Michael D. Bardine, Coon Rapids; Michael D. De Franco, Blaine; Joseph F. Lesser, Coon Rapids; Dennis A. Brumwell, Bloomington, all of Minn.; Gene A. Bornzin, Camarillo, Calif., and Jeffrey A. Schweitzer, Minneapolis, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Division of Ser. No. 896,695, Aug. 15, 1986, Pat. No. 4,791,935. This application Nov. 19, 1987, Ser. No. 122,821
Int. Cl.[4] A61N *1/00;* **H05G** *00/00*
U.S. Cl. 128—419 PG **2 Claims**



1. In a demand heart pacemaker for providing stimulating pulses to the heart at a predetermined rate in the absence of naturally occurring heartbeats, of the type comprising:

sensing means for sensing naturally occurring heart signals and generating a reset signal;

pulse generator means for generating stimulating pulses at a minimum pacing rate, including first timing means for providing each stimulating pulse separated by an escape interval corresponding to the pacing rate and reset means responsive to a reset signal for resetting said timing means and restarting the escape interval;

means for measuring blood oxygen level and for providing an escape interval modifying signal;

means responsive to the escape interval modifying signal for adjusting the escape interval to provide pacing pulses on demand at a minimum rate correlated to the cardiac output requirements of the patient;

the improvement wherein said blood oxygen level measuring means comprises:

a sensor capsule means for location in the bloodstream, including a first light source generating light at a first wavelength, a second light source generating light at a second wavelength and a light responsive means for generating a light level signal indicative of the intensity of the light impinging upon said light responsive means, said first and second light sources and said light responsive means mounted within said sensor capsule means, said sensor capsule means at least partially transparent such that light generated by said first and second light sources may pass through said capsule body into said bloodstream and such that light reflected by said bloodstream may pass through said sensor capsule means to impinge upon said light responsive means;

second timing means coupled to said sensing means and to said pulse generator means for determining a first time interval following said reset signals and following said stimulating pulses, for determining a second time interval following said first time interval, for generating a first sampling signal during said first time period and for generating a second sampling signal during said second time period;

light source driving means coupled to said second timing means and to said first and second light sources for activating said first light source during said first time interval and for activating said second light source during said second time interval;

first sample and hold means coupled to said second timing means and to said light responsive means, responsive to said first sampling signal for sampling said light level signal and for holding a first value derived from said sampled light level signal; and

second sample and hold means coupled to said second timing means and to said light responsive means, responsive to said second sampling signal for sampling

said light level signal and for holding a second value derived from said sampled light level signal; and

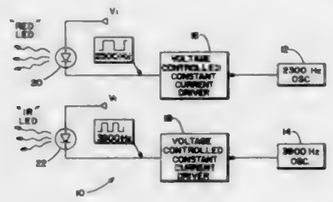
wherein said adjusting means is coupled to said first and second sample and hold means and wherein said adjusting means adjusts said escape interval in response to said first and second values stored in said first and second sample and hold means.

4,807,630

APPARATUS AND METHOD FOR USE IN PULSE OXIMETERS

Donald Mathewsonkas, Monroe, Conn., assignor to Advanced Medical Systems, Inc., Hamden, Conn.

Filed Oct. 9, 1987, Ser. No. 107,282
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—633 **17 Claims**



1. In a method for performing pulse oximetry wherein a selected extremity of a human being or an animal is exposed to electromagnetic radiation of two different wavelengths, the improvement comprising:

(a) generating first and second pulses of electromagnetic radiation having first and second wavelengths, respectively, said first pulses being generated at a first pulse frequency and said second pulses being generated at a second pulse frequency;

(b) exposing the selected extremity to the first and second pulses;

(c) producing an electrical signal corresponding to the electromagnetic radiation intensity at a selected location in the vicinity of the selected extremity, said electrical signal corresponding to the electromagnetic radiation intensity over a band of wavelengths which includes the first and second wavelengths;

(d) separating the electrical signal produced in step (c) into a first amplitude-modulated electrical signal at the first pulse frequency and a second amplitude-modulated electrical signal at the second pulse frequency: and

(e) demodulating the first and second electrical signals.

4,807,631

PULSE OXIMETRY SYSTEM

Lawrence T. Hersh, Tampa; Richard Medero, Clearwater, and Rush W. Hood, Jr., Tampa, all of Fla., assignors to Critikon, Inc., Tampa, Fla.

Filed Oct. 9, 1987, Ser. No. 107,138
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—633 **18 Claims**

1. An oximetry system for measuring blood oxygen saturation comprising:

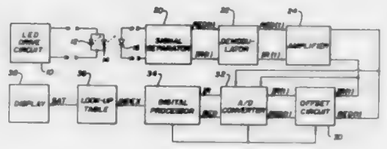
means for illuminating tissue containing arterial blood with light of two different wavelengths;

means for receiving light from said illuminating means and producing corresponding electrical signals of said two wavelengths of light;

means for measuring the peaks of said signals at the transition of the illuminated blood from diastole to systole;

means for integrating said signal waveforms during systole to produce integral values;

means for combining said integral values and signal peaks to determine an index value; and



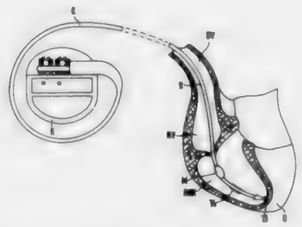
means responsive to said index value for producing an indication of oxygen saturation of the arterial blood.

4,807,632

MEASURING INSTRUMENT FOR INTRACARDIAL ACQUISITION OF THE BLOOD OXYGEN SATURATION OF A PATIENT FOR CONTROLLING THE PACING RATE OF A HEART PACEMAKER

Hans D. Liess, Muensing, and Roland Heinze, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 19, 1987, Ser. No. 52,032
Claims priority, application Fed. Rep. of Germany, May 22, 1986, 3617180
Int. Cl.[4] G01D *18/00*
U.S. Cl. 128—634 **19 Claims**



1. An instrument for intracardial acquisition of blood oxygen saturation in a sequence including making a reference measurement and a useful signal measurement, said instrument comprising:

a measuring probe having two leads, a light transmitter, means for generating said useful signal connected between said leads including a measuring current path having said light receiver therein, said light transmitter and light receiver disposed such that said light receiver receives light from said light transmitter reflected by the blood dependent on the degree of oxygen saturation of said blood;

an evaluation circuit connected to said measuring probe leads, said evaluation circuit supplying one applied signal for each sequence, said applied signal having non-changing polarity and being used for enabling both said reference measurement and said useful signal measurement; and

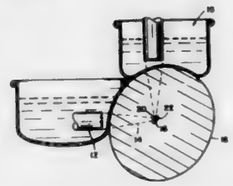
means for separately generating said reference signal and said useful signal in sequence in response to said applied signal.

4,807,633

NON-INVASIVE TISSUE THERMOMETRY SYSTEM AND METHOD

Francis J. Fry, Indianapolis, Ind., assignor to Indianapolis Center for Advanced Research, Indianapolis, Ind.

Filed May 21, 1986, Ser. No. 865,399
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660.02 **8 Claims**



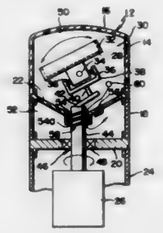
1. In a method of non-invasively determining a temperature change in tissue, comprising the steps of irradiating the tissue with an ultrasonic beam, receiving the irradiating ultrasonic beam a first time after it has passed through the tissue and been attenuated thereby, determining the attenuation of the power intensity of the irradiating beam due to its passage through the tissue, irradiating the tissue a second time with an ultrasonic beam, receiving the irradiating ultrasonic beam a second time after it has passed through the tissue and been attenuated thereby, determining for a second time the attenuation of the power intensity of the irradiating beam due to its passage through the tissue, comparing the attenuations of the intensity of the ultrasonic beam received the first and second times due to the tissue, and determining the temperature change of the tissue based upon the comparison, the improvement wherein the irradiating ultrasonic beam is in the non-linear power range in the tissue both the first and second times.

4,807,634

MECHANICAL TYPE ULTRASONIC SCANNER

Susumu Enjoji, Ootawara; Yushichi Kikuchi, Tochigi, and Kiyoshi Hara, Ootawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 3, 1987, Ser. No. 10,341
Claims priority, application Japan, Feb. 4, 1986, 61-21166; Feb. 28, 1986, 61-43673
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660.01 **7 Claims**



1. An ultrasonic scanner, comprising:

a housing having first and second chambers holding an acoustic liquid, said first and second chambers being connected through a hole, and said first chamber having a window passing ultrasonic pulses;

an ultrasonic transducer disposed in said first chamber;

rotating shaft means, extending from said second to said first chamber through said hole, for stirring said liquid near the hole so that bubbles inside of said first chamber move to said second chamber through a gap between the hole and said rotating shaft means; and

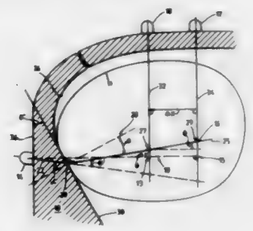
scanning means being connected with said rotating shaft means for giving said transducer scanning movement.

4,807,635

PULSE CENTROID ECHO METHOD AND APPARATUS FOR ENHANCED SOUND VELOCITY ESTIMATION IN VIVO

Jonathan Ophir, Houston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 823,332, Jan. 28, 1986, which is a continuation-in-part of Ser. No. 791,719, Oct. 28, 1985, Pat. No. 4,669,482. This application Jul. 21, 1986, Ser. No. 887,349
The portion of the term of this patent subsequent to Jan. 2, 2004, has been disclaimed.
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660.01 **15 Claims**



1. A method of enhancing the accuracy of in vivo sound velocity estimation in organic tissue along a transducer generated tracked ultrasound beam, characterized by the steps of:

(a) applying composite tracked ultrasound transducers to the outer skin of a body containing said organic tissue;

(b) partitioning said tracked beam into a plurality of contiguous segments, each segment having an estimated average velocity substantially different from its adjacent neighbor segments;

(c) intersecting said tracked beam with a plurality of transducer generated tracking ultrasound beams, said tracking beams being substantially parallel, an angle of incidence defined by the angle between said tracked beam and a line normal to said tracking beams;

(d) employing a means for measuring the energy and time duration of signal pulses produced by said ultrasound transducers;

(e) determining the location of the centroids of the pulses produced by said ultrasound transducers;

(f) measuring a first travel time for a pulse of ultrasound energy to travel between the ultrasound transducer producing the first tracking beam and the ultrasound transducer producing the tracked beam, based upon the baseline-to-centroid distance, on a time scale, of the pulses produced by said transducers;

(g) measuring a second travel time for a pulse of ultrasound energy to travel between the ultrasound transducer producing the second tracking beam and the ultrasound transducer producing the tracked beam, based upon the baseline-to-centroid distance, on a time scale, of the pulses produced by said transducers;

(h) computing the difference between said first and second travel times;

(i) repeating steps (a) through (h) for each of a plurality of preselected values for the angle of incidence; and

(j) fitting the plurality of data pairs so derived to the equation:

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$$t = \frac{\Delta X}{c} \quad \frac{1 + \sin(K_0 + K_1\theta')}{\cos(K_0 + K_1\theta')}$$

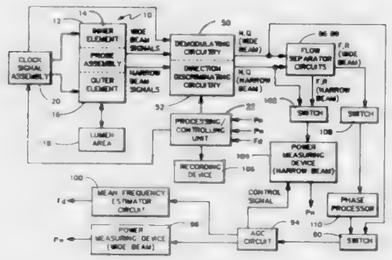
to numerically determine the values of K_0, K_1 and c and thereby yield a value for t wherein t is the travel time, ΔX is the distance separating tracking beams, c is the average speed of sound along a tracked beam between two points, K_0 is the equal to one minus one divided by the index of refraction, K_1 is equal to one divided by the index of refraction and θ' is the angle of incidence.

4,807,636

METHOD AND APPARATUS FOR MEASURING VOLUME FLUID FLOW

R. Skidmore, and Jonathan M. Evans, both of Bristol, England, assignors to Vital Science Corporation, Englewood, Colo.

Filed Sep. 9, 1986, Ser. No. 905,742
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—661.10 **25 Claims**



1. A method for use in measuring volume fluid flow, comprising:

providing transducer means having a plurality of transducer elements;

locating said transducer means in a position for monitoring the flow of fluid through vessel means;

transmitting ultrasonic energy directed towards the vessel means using said transducer means;

receiving returned ultrasonic energy from the flowing fluid using said transducer means wherein a wide beam of returned ultrasonic energy and a narrow beam of returned ultrasonic energy are defined;

developing signals representative of said wide beam and said narrow beam;

processing said signals to provide a Doppler power spectrum associated with each of said wide beam and said narrow beam;

controlling signal amplitudes of said Doppler power spectrum associated with one of said wide beam and said narrow beam wherein said signal amplitudes are controlled at a substantially constant level;

generating a control signal using said Doppler power spectrum associated with one of said wide beam and said narrow beam; and

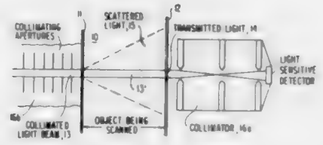
controlling signal amplitudes of the other of said Doppler power spectrums associated with said wide beam and said narrow beam using said control signal, wherein said signal amplitudes of said other of said Doppler power spectrums are not controlled at a substantially constant level whereby the ratio between said Doppler power spectrum associated with said wide beam and said Doppler power spectrum associated with said narrow beam is accurately maintained by reducing the level of said Doppler power spectrum associated with one of said narrow beam and said wide beam when there is an increase in said Doppler power spectrum associated with said other of said narrow beam and said wide beam.

4,807,637

DIAPHANOGRAPHY METHOD AND APPARATUS

Paul J. Bjorkholm, Sharon, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.

Continuation of Ser. No. 642,228, Aug. 20, 1984, abandoned. This application May 8, 1986, Ser. No. 861,200
Int. Cl.[4] A61B *6/08, 6/12*
U.S. Cl. 128—664 **31 Claims**



1. Diaphanography apparatus for examining a human breast comprising:

(a) first means for compressing the breast to be examined into a configuration having a pair of flat sides that are disposed in spaced substantially parallel relation to one another,

(b) a light source operative to direct a beam of collimated light along a linear input path into incidence with one of said flat sides,

(c) light collecting means comprising a light sensitive detector operative to generate electrical output signals in response to light that is incident on said detector,

(d) said light sensitive detector being positioned to detect light which emerges from the other of said flat sides along an output path which is colinear with said input path,

(e) said light collecting means including light scatter-rejection means for preventing light that emerges from the other of said flat sides along paths other than said output path or with angular deviation greater than an angular deviation of the beam of collimated light from impinging on said light sensitive detector,

(f) means for effecting relative movement between said first means and said beam of light, and

(g) means responsive to the signals that are generated by said light sensitive detector for producing a visible image.

4,807,638

NONINVASIVE CONTINUOUS MEAN ARTERIAL BLOOD PRSSURE MONITOR

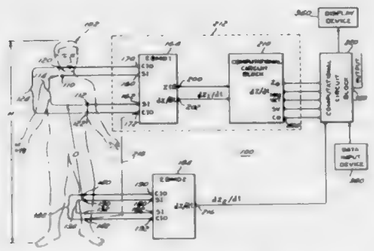
Bohumir Sramek, Irvine, Calif., assignor to Bomed Medical Manufacturing, Ltd., Irvine, Calif.

Filed Oct. 21, 1987, Ser. No. 111,699
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—672 **27 Claims**

1. A noninvasive apparatus for continuously monitoring the means arterial blood pressure of a patient, comprising:

first electrical bioimpedance measuring means electrically connectable to a first segment of the patient's body, for sensing the increase in blood flow in the first segment caused by the ejection of blood into the arteries during the ventricular contraction of the patient's heart and for generating a first output signal that indicates when the increase in blood flow occurs in the first segment;

second electrical bioimpedance measuring means electrically connectable to a second segment of the patient's body for sensing the increase in blood flow in the second segment caused by the ejection of blood into arteries during the ventricular contraction of the patient's hear and for generating a second output signal that indicates when the increase in blood flow occurs in the second segment, the second segment located at a distance from the first segment so that the increase in blood flow in the second segment occurs at a time interval after the increase in blood flow in the first segment, said time interval between said first output signal and said second output signal proportional to the distance between the first segment and



the second segment and inversely proportional to the mean arterial blood pressure of the patient; and

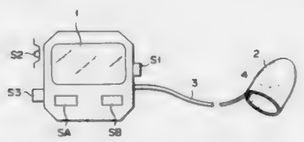
electronic measuring and calculating means for measuring the time interval between the first output signal and the second output signal, and for calculating the means arterial blood pressure of the patient based upon the measured time interval and the distance between the first segment and the second segment.

4,807,639

PULSE DETECTION APPARATUS

Atsuko Shimizu; Hiroshi Fejii, and Shinichi Ohki, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1986, Ser. No. 901,783
Claims priority, application Japan, Aug. 31, 1985, 60-192632; Aug. 31, 1985, 60-192633
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—690 **21 Claims**



1. A pulse detection apparatus comprising:

key input means for inputting a pulse count per unit time;

storage means for storing the pulse count which is input from said key input means;

a pulse sensor for detecting an actual pulse;

pulse measuring means for obtaining a pulse count per unit time responsive to a detection output signal from said pulse sensor;

percentage calculating means for performing a percentage calculation using the pulse count obtained by said pulse measuring means and the pulse count stored in said storage means, and for obtaining percentage data based on the pulse count stored in said storage means; and

display means coupled to the output of said percentage calculating means for displaying, in terms of percentage, the result of calculation obtained by said percentage calculating means.

4,807,640

STRETCHABLE BAND-TYPE TRANSDUCER PARTICULARLY SUITED FOR RESPIRATION MONITORING APPARATUS

Herman L. Watson, Miami; Deborah R. Seckner, Coconut Grove; Chu Pak, Miami, and Marvin A. Seckner, Miami Beach, all of Fla., assignors to Respitrace Corporation, Miami Beach, Fla.

Filed Nov. 19, 1986, Ser. No. 932,724
Int. Cl.[4] A61B *5/10*
U.S. Cl. 128—721 **71 Claims**



1. A band securable about an expandable three dimensional object comprising:

a first piece of inextensible material defining two surfaces;

elastic material;

means for adhesively securing said elastic material to said first piece of material along a substantial portion of the length thereof with said elastic material in a stretched condition when said first piece of material is in a flat condition, said first piece of material defining crosswise puckers when said elastic material is in an unstretched condition for accommodating stretching of said band when said elastic material is stretched;

a conductor; and

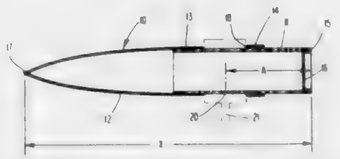
means for adhesively securing said conductor to said first piece of material, with said conductor extending substantially the length of the band and enclosing a larger circumference upon stretching of said band.

4,807,641

PNEUMOTACH AND COMPONENTS THEREFORE AND COMBINED PULMONARY FUNCTION MEASURING KIT CONTAINING THE SAME

John R. Boehringer; Jay B. Nelson, both of Wynnewood, and John Karpowicz, Havertown, all of Pa., assignors to Boehringer Laboratories, Wynnewood, Pa.

Filed Aug. 27, 1982, Ser. No. 412,227
Int. Cl.[4] A61B *5/08*
U.S. Cl. 128—725 **17 Claims**



1. A pneumotach flow tube with a mouthpiece and an opposite end, with at least said mouthpiece end being of generally cylindrical construction, said opposite end being at least substantially closed against the passage of exhaled air therethrough, said flow tube having a substantially non-porous mouthpiece portion and a substantially porous portion between the non-porous portion and the closed end, a transverse pressure tap opening through the cylindrical wall of said substantially non-porous portion, with said pressure tap opening comprising means inhibiting flow interference at that location of said flow tube, said opposite end and said pressure tap opening each being located so spaced from the mouthpiece end and the

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porosity of the porous flow tube portion being so sized, to be sufficient to produce substantially laminar flow in the tube and to permit substantially linear flow pressure measurements through the tap opening at the location of said pressure tap opening.

4,807,642

ELECTROMYOGRAPHIC REPETITIVE STRAIN INJURY MONITOR

David A. Brown, 12 Pritchard Street, Annandale, Australia (2038)

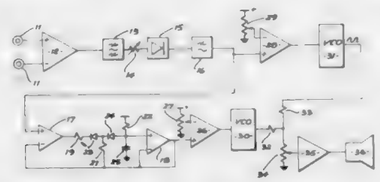
PCT No. PCT/AU86/00236, § 371 Date Apr. 10, 1987, § 102(e) Date Apr. 10, 1987, PCT Pub. No. WO87/01123, PCT Pub. Date Feb. 26, 1987

PCT Filed Aug. 18, 1986, Ser. No. 56,479

Claims priority, application Australia, Aug. 16, 1985, PH01987

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—733 **11 Claims**



1. An EMG monitoring device comprising:

signal conditioning means, including rectifier and low pass filter means to produce a signal which is the envelope of an EMG signal being monitored, said filter means having a time constant on the order of 0.1 seconds,

minimum signal detection means to produce a minimum level signal which tracks the minimum peaks of said envelope signal,

minimum signal detection means including a low pass filter with a first time constant in the range of 1–2 seconds and rate limiting circuit means to limit the rate of change of the output of the minimum signal detection means in response to an increasing EMG envelope signal, the rate limiting circuit means having a time constant in the range of 5 seconds to 10 minutes such that the minimum level signal produced by said minimum signal detection means has a fast attack to the minimum value of the EMG envelope signal and a slow decay to the maximum value of the EMG envelope signal, and

indicating means to indicate the difference between the minimum level signal and a predetermined threshold value.

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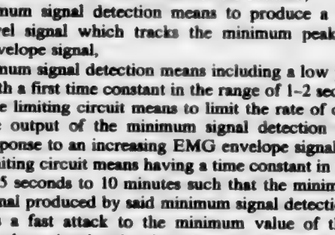
DIGITAL ELECTRONEUROMETER

Randy N. Rosier, Iowa City, Iowa, assignor to University of Iowa Research Foundation, Iowa City, Iowa

Filed Aug. 16, 1982, Ser. No. 408,193

Int. Cl.⁴ A61B *5/05*

U.S. Cl. 128—741 **5 Claims**



1. An apparatus used in determining motor and sensory peripheral nerve conduction potentials in patients, said apparatus comprising first patient contact means for applying an electrical stimulus directly to a selected peripheral nerve of the patient, second patient contact means for electrically detecting a potential difference in a muscle innervated by the nerve stimulated by the first patient contact means, means for producing a stimulus of a low-current electrical impulse of extremely short duration in the first patient contact means, measuring means for determining the elapsed time from a stimulus applied by the first patient contact means to the response detected by the second patient contact means, and means providing for selection of a predetermined threshold level of response detected by said second patient contact means, said measuring means being enabled upon production of the stimulus and disabled by detection of a response above the predetermined threshold level by the second patient contact means.

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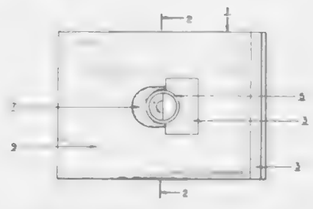
TEMPERATURE-REGULATING SURGICAL DRAPE

Jeffrey J. Sandhaus, Astoria, N.Y., assignor to Vastech Medical Products Inc., New Brunswick, N.J.

Filed Feb. 12, 1987, Ser. No. 13,773

Int. Cl.⁴ A61F *13/00*

U.S. Cl. 128—849 **28 Claims**



1. A temperature-regulating surgical drape for use in conducting surgical procedures on a predetermined body portion of a patient comprising a substantially planar drape body including an opening adapted to expose only said predetermined body portion during said surgical procedure, and means for generating heat affixed to said drape body at a localised predetermined location surrounding at least a portion of said opening for maintaining said predetermined body portion at a predetermined elevated temperature during said surgical procedure.

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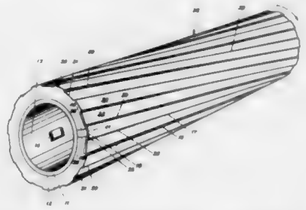
HUSKING ROLL SECTION

Dennis O. Mietzel, and Aaron L. Strand, both of Columbus, Wis., assignors to Hughes Company, Inc., Columbus, Wis.

Filed Jun. 16, 1987, Ser. No. 62,950

Int. Cl.⁴ A01F *7/00*

U.S. Cl. 130—5 J **19 Claims**



1. A husking roll section for use in combination with a second parallel husking roll section within a husking machine, comprising:

(a) a cylindrical core including an outside surface; and

(b) a husking sleeve affixed to and surrounding the outside surface of the core to form a husking surface, the sleeve including at least one hardened sector comprising a helical rigid rib affixed to the outside surface of the core, the sleeve further including a resilient major portion which is formed from an elastic material and which is bonded to the rigid rib and core, the husking sleeve presenting a plurality of helical lands and grooves which will mesh with reverse oriented helical grooves and lands of the second parallel husking roll when the two meshing husking rolls are rotated in opposite directions.

4,807,646

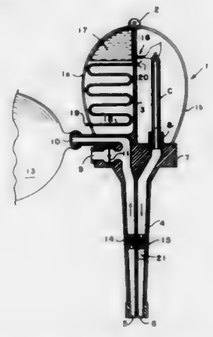
DEVICE FOR USE BY SMOKERS TO ENABLE SMOKING IN PUBLIC PLACES

Raphael Sahar, 2 Rehov David Hamelech, Tiberias, Israel

Filed Jul. 7, 1987, Ser. No. 70,581

Int. Cl.⁴ A24F *7/00, 13/00, 13/16*

U.S. Cl. 131—177 **3 Claims**



1. A device for safeguarding non smokers against harmful effects of smoke emitted by cigarette or cigar smokers which device comprises an openable container in which a short sleeve serving as a cigarette or cigar holder is positioned, an elongated mouthpiece including a first and a second conduit leading from the said container, the said first conduit being in communication with said short sleeve serving as cigarette or cigar holder while the second conduit leads into a sealed compartment, non-return valves being positioned in both said conduits, a first of the non-return valves being located in the first conduit for permitting flow of smoke from a cigarette or cigar on said holder into a smokers mouth when a smoker sucks on the mouthpiece, and a second of the non-return valves being located in the second conduit for permitting the smoker to expel smoke through the seconduit into said sealed compartment.

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VENTILATED CIGARETTE FILTER

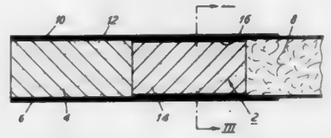
Ernest B. Hayes, Leighton Buzzard, England, assignor to Cigarette Components Limited, London, England

Filed Oct. 17, 1986, Ser. No. 920,301

Claims priority, application United Kingdom, Oct. 22, 1985, 8525967

Int. Cl.⁴ A24D *3/02, 3/04*

U.S. Cl. 131—336 **8 Claims**



1. A cigarette filter comprising a pair of longitudinally aligned core components, a first core component which is longitudinally air-permeable and has a relatively high pressure drop longitudinally of the filter and which is substantially air-impermeable radially of the filter across essentially the entire cross section thereof, a second core component which is air-permeable and has a lower pressure drop longitudinally of the filter than the first core component, an a common full or partial warp which extends along and at least partially around the pair of core components and provides for ventilation of the filter at a region longitudinally spaced from the first core component.

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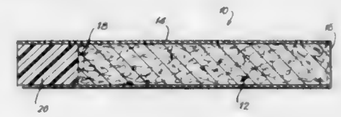
NON-BURNING TOBACCO SUBSTITUTE

Robert G. Breckwoldt, Goshen, N.Y., assignor to Tripar Incorporated, Stamford, Conn.

Filed Dec. 21, 1987, Ser. No. 135,326

Int. Cl.⁴ A24D *1/18*

U.S. Cl. 131—359 **6 Claims**



1. A tobacco substitute, which comprises;

a non-cellulose compound carrier; and

a flavor-enhancing proportion of distiller's dried grain and solubles;

said substitute being free of tobacco.

4,807,649

GEL DENTURE CLEANSER COMPOSITION AND METHOD OF APPLICATION

Anthony B. J. Eoga, Boonton, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 856,715, Apr. 28, 1986, Pat. No. 4,701,223, which is a continuation-in-part of Ser. No. 684,818, Dec. 20, 1984, abandoned. This application Jun. 30, 1987, Ser. No. 68,673

The portion of the term of this patent subsequent to Oct. 20, 2004, has been disclaimed.

Int. Cl.⁴ C11D *1/02*

U.S. Cl. 134—2 **24 Claims**

1. A gel denture cleanser composition consisting essentially of:

(a) a water-soluble detergent present in amounts of about 3 to about 18% by weight selected from the group consisting of sulfonate fatty alcohols having the formula $RO\text{-}SO_3M$, sulfated fatty alcohols having the formula $RO\text{-}SO_4M$, sulfoacetates having the formula $ROCOCH_2SO_3M$ and mixtures thereof, wherein R is $C_{10\text{-}16}$ and M is an alkali metal or an alkaline earth metal;

(b) a water-soluble chelating agent present in amounts of about 3 to about 18% by weight selected from the group consisting of amino carboxylates, organo phosphonates and mixtures thereof;

(c) a gelling agent in amounts of about 1% to about 50% by weight of the total composition; and

(d) water present in amounts such that the total percent of (a)–(d) equals 100%

4,807,650

MAKE-UP COVERTURE

Marilyna J. Bliss, 259 W. Brown, Birmingham, Mich. 48009

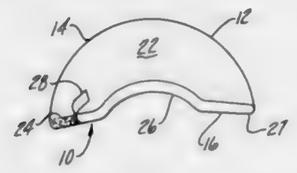
Filed Feb. 7, 1983, Ser. No. 464,469

Int. Cl.⁴ A45D *40/30*

U.S. Cl. 132—319 **14 Claims**

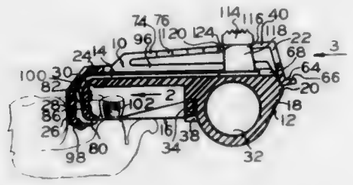
1. A coverture for protecting a first portion of a user's face

from make-up during the application of said make-up to a second portion of said face, said coverture comprising: a shield having at least one make-up impervious section, said shield being substantially flat but deformable to conform to the contours of said first portion of said face, and said shield including a curvilinear inner edge disposable adjacent the eye of said user



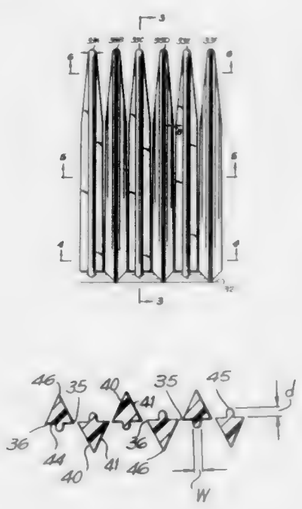
but slightly spaced therefrom; and means for holding said shield closely adjacent to said first portion of said face during the application of said make-up to said second portion of said face, said holding means comprising a detachably skin adhesive material disposed on said shield adjacent to said inner edge of said shield.

4,807,651
DENTAL DEBRIS REMOVER
Abram Naydich, 7242 Wilbur Ave., Reseda, Calif. 91335
Filed Dec. 23, 1985, Ser. No. 812,283
Int. Cl.[4] A61C *15/00*
U.S. Cl. 132—323 **1 Claim**



1. A hygiene tool employing an endless loop floss member for debris removal between teeth and under fixed dentures or bridges comprising a floss puller and a sickle shaped frame, said frame including as integral parts a handle, a bended end, a guide, and a fixing arm, all lying in a same plane, said handle located at one end of said frame and having a circular opening formed by a ring integrated with said frame; disposed adjacent to said handle is a vertical projection having an inner surface and an outer surface, said inner surface facing said handle and having a convex surface, said vertical projection including four inwardly directed horizontal notches symmetrically arranged in two levels on either side of said vertical projection; said bended end having an external surface with a soft layer of hygenic material disposed opposite said vertical projection on another end of said frame, said bended end having a C-shaped configuration approximately rectangular in cross section and directed toward said vertical projection, said bended end having an inner wall and an outer wall, said inner wall facing said vertical projection and having two notches and a separator disposed between said two notches, said two notches each having a V-shaped opening at one end and another end located along a vertical center line of said inner wall, said other end of each of said two notches being disposed at different heights along said vertical center line for positioning said floss member at two different levels during tightening; said separator formed by one side of each of said V-shaped openings of said two notches allowing separation of said floss member during tightening; said guide having one end formed like a trough extending horizontally above said handle, said trough having an opening in the end of said frame located above said handle, said guide having another end opposite said opening where said trough ends in a track oriented between said inner wall and said outer wall of said bended end, said inner wall and said outer wall having walls extending therebetween to enclose said track, and said track at said bended end terminating in an opening facing said vertical projection; said fixing arm formed of two strips extending above said trough and said handle and separated from each other by means of a slot lying above and in the same plane with said trough, said two strips each having an inner side on which symmetrical, inwardly directed stop teeth are arranged, each of said inner sides defining one side of said slot; said two strips merging with said frame to form an acute angle close to said bended end and opposite said bended end, above the end of the frame, a toothless portion of said fixing arm extends at an angle directed downward and outward from said handle defining a linkage, said linkage in combination with said two strips providing a spring effect; said puller slidable along said guide is formed of a flexible, thin strip having one end prebended in a semicircular shape, said end having two hooks placed on different levels on opposite sides of said end, said two hooks each having a Y-shaped notch with an inner circular opening at a lower portion of said Y-shaped notch, said Y-shaped notch enabling said floss member to be easily threaded through said two hooks; said puller having a pin which functions as a driving and a locking means for said puller, said pin having a puller handle secured on top of said pin and two edges placed underneath said pin to provide a guiding surface as said puller slides through said guide, said pin having two puller teeth mounted thereon, said two puller teeth are located immediately under said puller handle, oriented toward said prebended end and adapted to engage said stop teeth; immediately behind said puller teeth are two cams each having a sloped surface enabling said puller to be released from said stop teeth.

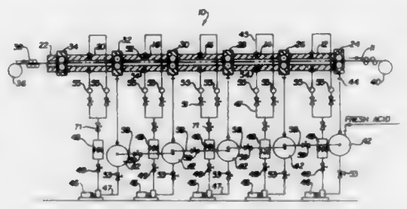
4,807,652
COMB
Frank Bachrach, Great Neck, N.Y., assignor to American Comb Corp., Paterson, N.J.
Filed Sep. 14, 1987, Ser. No. 95,929
Int. Cl.[4] A45D *24/04*
U.S. Cl. 132—137 **8 Claims**



1. An improved comb for removing lice and nits from hair

having a base, a plurality of teeth extending substantially in the same direction away from the base, the longitudinal axis of each tooth being parallel to the longitudinal axis of each other tooth and substantially the same length, each said tooth having a substantially triangular cross sectional shape forming a three sided pyramid, the sides of each such cross sectional triangle increasing in width from the free end of each tooth toward the base, so that the spacing between adjacent teeth narrows toward said base, the cross sectional triangle of each tooth having a bottom surface and an apex opposite said bottom surface, and side surfaces connecting said apex and bottom surfaces, the bottom surface of each cross sectional triangle of each tooth lying along the same line when the cross sectional plane of one tooth passes through each other tooth, each of the surfaces of said cross sectional shape of each tooth converging at a substantially rounded top of each tooth, wherein the improvement comprises a rib extending longitudinally along said bottom surface of each tooth, the width of said rib being less than the width of the bottom surface of its tooth.

4,807,653
CONTINUOUS TREATING OF A STRIP-LIKE PRODUCT
Anthony P. Cipriano, New Castle, Pa., and Howard J. Bortnas, Niles, Ohio, assignors to Wean Industries, Inc., Youngstown, Ohio
Filed Jan. 30, 1987, Ser. No. 8,911
Int. Cl.[4] B08B *3/04*
U.S. Cl. 134—64 R **15 Claims**



1. An arrangement for treating a generally flat, moving product with top and bottom surfaces, such as a slab, plate, or strip with a treatment fluid, having a relatively higher temperature and higher concentration than otherwise possible comprising:

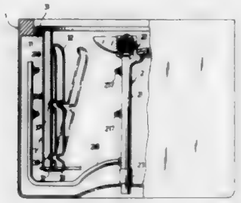
cell means having a longitudinal relatively straight passageway for forming a passline for said product traveling through said arrangement in a substantially flat disposition,

sealing means arranged at the entry and exit ends of said cell means, said sealing means at least at said exit end adapted to retain a substantial amount of said treatment fluid within said cell means,

said passageway of said cell means having a generally rectangular cross-section with top and bottom wall areas having significant solid continuous surfaces spaced a relatively short distance from each other to define a narrow, fluid restricting chamber running the length of and parallel to said passline, and

said cell means further comprising fluid inlet conduit means mounted in said top and bottom wall areas and having an exit opening in said solid surfaces and located a relatively short distance from each other and said passline for delivering said treatment fluid into said passageway of said cell means to totally immerse said top and bottom surfaces of said product in said fluid whereby said fluid impinges upon a substantially central portion of said top and bottom surfaces of said product in a manner said fluid is forced toward said surfaces of said product and caused to flow parallel to and on said surfaces at a high turbulent velocity rate relative to the speed of said product, said fluid conduit means being a plurality of spaced apart conduit means adapted to increase the speed of said fluid near said surfaces of said product as said portion of said top and bottom surfaces of said moving product progressively pass by each of said inlet conduit means in said cell means to obtain an increasing treatment rate of said moving product upon its travel in said cell means.

4,807,654
DISHWASHER
Ho Jui-Chi, and Wu Shun-chih, both of No. 2, Lane 21, Min-yu Chieh, Lo-dong Jean, Yi-lan Hsien, Taiwan
Filed Aug. 13, 1987, Ser. No. 84,994
Int. Cl.[4] B08B *3/02*
U.S. Cl. 134—179 **8 Claims**



1. A dishwasher for washing dishes and connectable to a pressurized water supply, said dishwasher comprising:

a tub having an upper inner periphery and a bottom opposite said upper inner periphery, said tub bottom defining a central portion therein;

a rotary nozzle head having a top and a bottom opposite said top, said nozzle head bottom being connected to said central portion of said tub and said pressurized water supply;

a rack having an upper outer periphery and a circular protrusion formed around said upper outer periphery so that said rack can be removably suspended from said upper inner periphery of said tub;

a rotary impact impeller comprised of impeller vanes, said impact impeller being located at said top of said rotary nozzle head;

a torsion spring associated with said impeller vanes;

an annular support frame associated with said top of said nozzle head; and

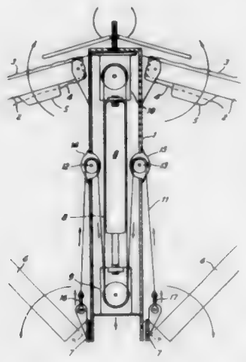
a plurality of nozzles associated with said nozzle head and communicating through said nozzle head with said pressurized water supply, said nozzles being operable to spray water onto dishes held in said dishwasher and onto at least one of said impeller vanes so that another of said impeller vanes impacts against said annular support frame such that said rotary nozzle head can rotate intermittently in said dishwasher.

4,807,655
GARDEN OR SUN UMBRELLAS
Malcolm S. Robertson, "Taigh-Beag", Dunally Park, Shepperton, Middlesex, United Kingdom
Filed Nov. 3, 1987, Ser. No. 116,028
Int. Cl.[4] A45B *25/14*
U.S. Cl. 135—22 **5 Claims**

1. In a garden or sun umbrella comprising a central post for supporting the umbrella, a plurality of arms hinged to the upper end of the post and spaced therearound, said arms being pivotable from a first, collapsed position in which they hang down alongside the central post to a second open position in which they extend in radial array around the post to support the fabric canopy of the umbrella, and means for erecting the umbrella, said erecting means comprising a plurality of struts

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hingedly connected at one end to the arms of the umbrella and at the other to a collar slidable axially on the central post to open and close the umbrella, an automatic opening means for opening the umbrella, said automatic opening means comprising a gas spring mounted inside the central post at its upper end, and means connecting the gas spring to the slidable collar externally mounted on said post to bias the collar upwardly thereon so as to effect the automatic opening of the umbrella by said spring, which spring also serves to hold the canopy in the open position against the weight of said canopy and said arms, and wherein the closing of the umbrella is effected by



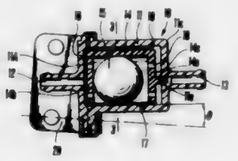
downward manual pressure on the distal ends of said arms to pivot said arms from the open to the collapsed position with consequent compression of the gas spring in preparation for a subsequent opening of the umbrella, and wherein the pivotal connections of struts to said collar and said arms provide a mechanical disadvantage such that, in the collapsed condition of the umbrella, the gas spring is held in compression solely by the combined weight of the canopy and the arms, until the opening of the umbrella is initiated by an initial outward pivoting of the distal ends of the arms away from the central post thereby to overcome said mechanical disadvantage.

4,807,656

FUEL-EFFUSION PREVENTION VALVE SYSTEM AND A DEVICE THEREFOR

Shoji Ito, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Continuation-in-part of Ser. No. 928,857, Nov. 10, 1986, abandoned. This application Mar. 3, 1988, Ser. No. 163,603
Claims priority, application Japan, Nov. 11, 1985, 60-173367
Int. Cl.[4] F16K *17/36*
U.S. Cl. 137—43 3 Claims



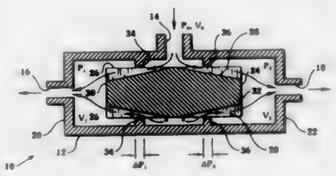
1. A fuel effusion prevention valve device comprising:
a casing fixed to a vehicle body and having an inlet port formed on a front wall thereof and an outlet port formed on a rear wall thereof for evaporated fuel, said inlet port and outlet port being disposed in the direction of an axis being slanted by a predetermined angle with respect to the horizontal direction of the vehicle body so that the inlet port is positioned downward,
a valve body having a front wall, a rear wall and a spherical valve formed on the rear wall, said valve body being disposed in said casing so as to be movable in the direction of said slant axis for opening and closing said outlet port by said spherical valve, and
a ball disposed in said valve body so as to be movable rollingly in the direction of said slant axis in order to move said valve body in the direction of said slant axis so that the rolling action of said ball acts to open said outlet port, thereby opening communication between said inlet port and outlet port.

4,807,657

AUTOMATIC FLUID FLOW REGULATOR

Hugo H. Van Den Bergh, San Diego, Calif., assignor to General Dynamics Corporation/Convair Div., San Diego, Calif.

Filed Apr. 29, 1988, Ser. No. 187,709
Int. Cl.[4] G05D *11/03*
U.S. Cl. 137—101 10 Claims



1. An automatic fluid flow regulator particularly adapted to split the flow of a fluid into the two separate branches and to maintain the ratio of such flows in a predetermined ratio and comprising:
a hollow regulator casing having an inlet port to provide fluid entry into the casing and first and second outlet ports, to provide exit of the fluid into two branches;
a solid cylindrical spool body slidably disposed within said casing, said spool body being provided at each end with longitudinally extending relieved portions that increase in size towards each end of the spool body;
first and second spaced apart flow restriction means each having a predetermined size and being positioned within the regulator casing and adapted to slidably receive the spool body whereby when a flow disturbance occurs within one branch or both branches so as to cause the flow rate or velocity of flow within one branch to be greater than the other then the pressure of the other branch will increase and exert a pressure against an end of the spool body causing it to slide within the regulator casing and expose a greater portion at that end of the spool body thereby permitting a greater fluid flow to that end of the spool body and to that particular branch until equilibrium is again reached for fluid flow through the regulator.

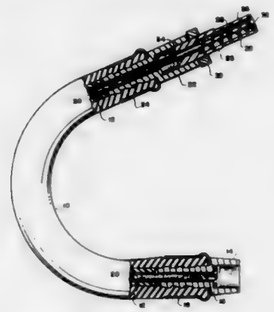
4,807,658

FLEXIBLE ADJUSTABLE-CORE AIR HOSE

Anthony J. Patti, 27610 Fairview Ave., Hayward, Calif. 94542

Filed May 2, 1988, Ser. No. 189,068
Int. Cl.[4] F16K *31/46*
U.S. Cl. 137—223 7 Claims

1. An extension hose for coupling a tire valve stem to a position at which air may be introduced into the hose through a conventional air source service nozzle, said air hose comprising:
a flexible hose having first and second ends;
a female nozzle on the first end of said hose, said nozzle being tubular and having a threaded bore section for attachment to a tire valve stem;
a flexible cable having first and second ends, said cable slideably extending through said flexible hose, the first end of said cable extending into said female nozzle for contacting the end of a tire valve coupled to said nozzle, said second cable end extending to the second end of said hose;



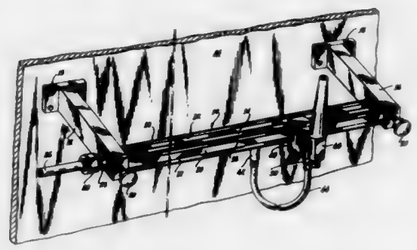
a tubular coupling assembly on the second end of said hose, said assembly having an exterior end for mating with a conventional air source service nozzle and a actuating pin responsive to the valve opening pin in a service nozzle for depressing the second end of said flexible cable, said assembly including manually adjustable means for varying the length of said coupling assembly according to length variations in said cable caused by bending of said hose.

4,807,659

SYMMETRICAL SINGLE MEDICAL GAS RAIL APPARATUS

Ernst F. Schindele, Stamford, Conn., assignor to Fairfield Medical Products Corporation, Stamford, Conn.

Filed Jul. 19, 1988, Ser. No. 221,108
Int. Cl.[4] F16L *5/00*
U.S. Cl. 137—360 8 Claims



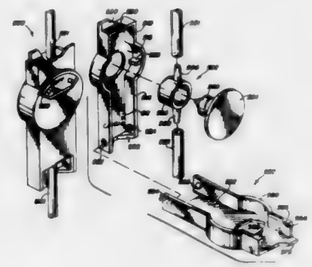
1. A fluid rail apparatus for providing a conduit for the conduction of a fluid therethrough and provides ready access to the said fluid at any convenient location along said rail comprising:
a symmetrical rail with first and second end and having a central opening therethrough:
means for coupling a fluid feed line to said first end,
said symmetrical rail having a generally square configuration with four corners and having four sets of aligned, spaced, opposed grooves located on opposite sides of each corner such that the front profile of the said rail is the same even when the rail is rotated 360° in 90° increments,
said rail being adapted to mount apparatus thereon in said at least one set of said aligned, spaced, opposed grooves in any given position of 90° in a 360° field,
access means coupled to said rail for providing access to the fluid flow in said rail, and
mounting means for removably mounting said rail on a surface.

4,807,660

FLOW CONTROL DEVICE FOR ADMINISTRATION OF INTRAVENOUS FLUIDS

Jerry L. Aalusius, 4247 E. Hazelwood, Phoenix, Ariz. 85018

Division of Ser. No. 630,632, Jul. 13, 1984. This application Jun. 1, 1987, Ser. No. 56,129
Int. Cl.[4] F16K *35/00, 5/10*
U.S. Cl. 137—382 11 Claims



1. In combination with an IV valve of the type for maintaining predetermined flow rates in an IV system having a source of fluid connected to an administration needle by means of flexible tubing, the IV valve to be interposed in the tubing line and having a body with generally longitudinally opposed ports connectable to the tubing to provide an inlet and outlet to the valve and having a dial operatively connected to a metering member movable to regulate flow through the said valve, a valve guard comprising:
(a) a backplate defining a recess for receiving the body of said valve in a position with the dial accessible, said backplate extending longitudinally opposite said recess providing a gripping surface to allow the valve to be manually adjustable at said dial when said valve is held in the hand.

4,807,661

FLUID CONTROL VALVE

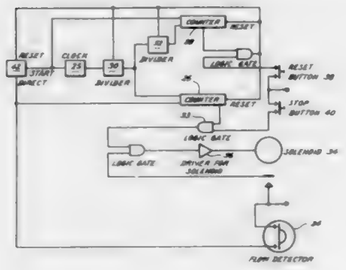
Joel Lewis, 2218 Glen Haven, and Harry Lewis, 2217 Maroneal, both of Houston, Tex. 77030

Filed Dec. 4, 1987, Ser. No. 128,729
Int. Cl.[4] F16K *17/00*
U.S. Cl. 137—456 20 Claims

7. An apparatus for selectively preventing the flow of a pressurized fluid through a conduit, comprising:
a sensor for generating a signal as the fluid flows through the conduit;
a valve for selectively preventing the flow of the fluid through the conduit;
a first timer connected between said sensor and said valve for selectively activating said valve to prevent flow of fluid when said sensor detects a single, continuous fluid flow which exceeds a selected time interval; and
a second timer connected between said sensor and said valve

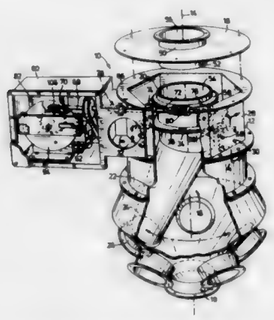
VOL 1099 ISS 4 FEB 28 1989 UMI

for selectively activating said valve to prevent flow of fluid when the cumulative sum of individual fluid flows



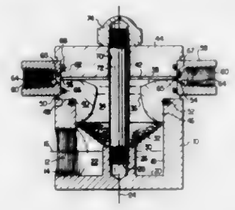
within a predetermined time interval exceeds a selected amount.

4,807,662
VALVE FOR DISTRIBUTING PARTICULATE MATERIALS
Jean A. Verne, Manitoba, Canada, assignor to Sullivan Strong Scott Ltd., Winnipeg, Canada
Filed Jul. 20, 1987, Ser. No. 75,764
Int. Cl.[4] F16K *37/00*
U.S. Cl. 137—354 **19 Claims**



1. A valve system for distributing particulate material, comprising:
a housing defining a plurality of outlets;
a distributor have an inlet for receiving the particulate material and an outlet for discharging the particulate material;
distributor mounting means for mounting the distributor to the housing such that the distributor outlet is movable into registration with any one of the plurality of housing outlets;
drive means for moving the distributor means outlet into registration with each housing outlet in a predetermined order;
position sensing means for sensing the position of the distributor outlet relative to the housing outlets, the position sensing means including
a. transmission means for transmitting an optical signal,
b. detection means for detecting the optical signal,
c. transmission varying means for so varying the optical transmission path between the transmission means and the detection means in response to movement of the discharge outlet that the optical signal is encoded to identify registration of the distributor outlet with each of housing outlets;
selection means for permitting selection of a housing outlet with respect to which the distributor outlet is to be registered; and,
control means responsive to the selection means and to the detection means for stopping movement of the distributor under the influence of the drive means when the distributor outlet is registered with the selected housing outlet.

4,807,663
MANIFOLD FOR THE APPLICATION OF AGRICULTURAL AMMONIA
James S. Jones, 45 Crown Pl., Richardson, Tex. 75080
Filed Jul. 24, 1987, Ser. No. 77,193
Int. Cl.[4] B05B *1/34*
U.S. Cl. 137—561 A **8 Claims**

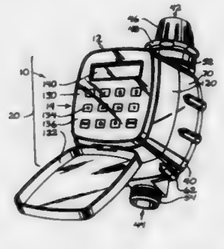


1. A method for equalizing the distribution of flow of a liquid and vapor mixture from a single inlet to a plurality of outlets, comprising:
introducing the liquid and vapor mixture into a body having said single inlet;
receiving said vapor and liquid mixture through said inlet in a receiving chamber within said body;
expelling said vapor and liquid mixture through said plurality of outlets; and
accelerating said vapor and liquid mixture in an accelerating chamber defining a liquid and vapor flow path between said receiving chamber and said outlets, said accelerating chamber having accelerating means for accelerating said liquid and vapor mixture through said flow path to said outlets.

4,807,664
PROGRAMMABLE FLOW CONTROL VALVE UNIT
Dennis A. Wilson, Wanconda Township, Lake County; Dennis W. Anesi, Rolling Meadows, and Mark S. Williamsen, Evanston, all of Ill., assignors to Ansan Industries Ltd., Harwood Heights, Ill.
Division of Ser. No. 890,170, Jul. 28, 1986. This application Oct. 28, 1987, Ser. No. 113,453
Int. Cl.[4] F16K *31/48*
U.S. Cl. 137—624.11 **12 Claims**

1. A flow control valve for controlling flow of a fluid, said flow control valve including a valve assembly, a drive mechanism for said valve assembly operably secured to said valve assembly with an electronic assembly cooperating with said drive mechanism to provide for operation of said flow control valve, wherein:
a. said flow control valve includes a housing for said flow control valve;
b. said housing contains, protects and mounts said valve assembly, said drive mechanism, and said electronic assembly, in a cooperating relationship;
c. said electronic assembly includes a solid state control and a solid state timing circuit for operating said flow control valve for a predetermined time period;

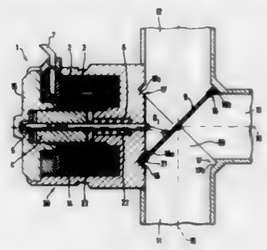
d. said housing includes a base plate substantially containing and protecting said valve assembly;
e. said housing includes a shield assembly substantially containing and protecting said drive mechanism;
f. said housing includes an electronic case substantially containing and protecting said electronic assembly;
g. said solid state timing circuit comprising a programmable timing device having a means to set a timing mode and a means to simply copy said timing mode;
h. said shield assembly is connected to said base plate and is between and separate from said base plate and said electronic case;
i. said electronic case includes a panel cover;
j. said programmable timing device includes a readout housing assembly for securing said programmable timing device in said electronic case;
k. said readout housing assembly includes a keypad overlay to secure a push button assembly and a liquid crystal readout in said electronic case;
l. said said push button assembly is operably connected to said liquid crystal readout to provide a visible indication of activation of a button member of said push button assembly;



m. said drive mechanism includes a shaft cover mounted at least partially within said electronic case, and between said drive mechanism and said electronic assembly;
n. an activating source is secured between said base plate and said liquid crystal readout to provide a visible indication of activation of a button member of said push button assembly;
o. said push button assembly is operably connected to said drive mechanism;
p. said drive mechanism includes said shaft cover having a securing means to position said shaft cover between said electronic assembly and said drive mechanism;
q. said shaft cover is supported by at least two shaft cover mounts;
r. said shaft cover mounts are molded into and form an integral part of said shield assembly;
s. said shaft cover mounts protrude upwardly from said shield assembly to support said shaft cover;
t. said shaft cover is secured to said shaft cover mounts;
u. said shaft cover is separated from and located within said electronic case; and
v. said base plate is removably secured to said shield assembly.

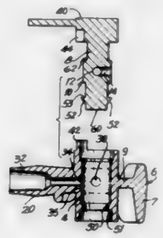
4,807,665
ELECTROMAGNETICALLY ACTUATABLE THREE-WAY/TWO-POSITION VALVE
Lothe Schiel, Hofheim, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany
Filed Jan. 6, 1988, Ser. No. 141,190
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1987, 3700219
Int. Cl.[4] F16K *11/02*
U.S. Cl. 137—625.4 **8 Claims**

1. An electromagnetically actuatable three-way/two-position valve for alternatively connecting an outlet connection with a first or a second inlet connection, comprising a housing having a central cavity, an electromagnet in said housing including a magnet winding and an armature in said cavity arranged for displacement upon excitation of the magnet winding, a valve closing body operatively connected to said armature and preloaded into an inoperative position by a return spring supported against the housing, a communication existing between the first inlet connection and outlet connection in an inoperative position of said electromagnet, the two inlet



connections have a common axis of symmetry, a connection area provided between the two inlet connections, the outlet connection being connected to the inlet connections at the connection area, the valve closing body being centrally pivotally-mounted around a pivot axis located on said axis of symmetry of said first and second inlet connections, two sealing seat pairs of symmetrically distributed within the connection area at an equal distance from the pivot axis of the valve closing body, said sealing seat pairs releasably engageable by said valve closing body.

4,807,666
STOPCOCK VALVE FOR HIGH PRESSURE APPLICATIONS
Phillip H. Morse, Glens Falls, N.Y., assignor to North American Instruments Corp., Glen Falls, N.Y.
Filed Aug. 26, 1987, Ser. No. 89,494
Int. Cl.[4] F16K *5/04*
U.S. Cl. 137—625.47 **11 Claims**



1. A high pressure, plastic stopcock valve comprising:
a valve body having an exterior surface, the body defining a bore, said bore defining an interior surface within said body;
at least two extensions projecting from said exterior surface, each said extension defining a passage into a port, the port extending through said interior surface fluidly connecting said bore with said passages;
a core having a first end and a second end, disposed within said bore, such that said first end extends out of said bore;
a reduced contact sealing surface defined by a portion of said core in sealing contact with said interior surface in the

vicinity of said ports, said sealing surface providing a fluid tight seal between said interior surface and said core while permitting rotation of said core within said bore;

conduit means within said core for fluidly connecting at least two of said extensions; and

a radial flange extending peripherally around said exterior surface of said valve body, substantially coplanar with said ports and parallel to said sealing surface for preventing crazing and cracking in said valve body.

4,807,667

CONVERTIBLE SHAPE HOOD STRUCTURE FOR AIR FLOW MEASUREMENT

Buford U. Ohnhaus, 9925 Lorelei La. NE., Albuquerque, N. Mex. 87111

Filed May 28, 1986, Ser. No. 867,772
Int. Cl.[4] G01F *1/40*
U.S. Cl. 138—45 **20 Claims**



10. Convertible-shape rim for providing an orifice of adjustable shape for a hood or duct of flexible material, said orifice having a contour lying in a plane, comprising:

a multiplicity of angle bar segments each having two flanges at right angles to each other, said segments being hinged to each other in a ring so that a first flange of each angle bar segment having oblique end edges contributes to the contour of said orifice and lies in said plane of said orifice contour and so that a second flange of each angle bar segment is hinged at each end of said second flange to another of said segments, said first flanges of said segments extending inwards of said ring and having oblique end edges for defining the smallest closing angle to which adjacent segments can be closed;

tightenable, adjustable braces respectively provided for all pairs of said hinged segment ends which are hinged to each other, for which said oblique flange edges limit the closing angle of said junction to an angle not substantially less than 90°, each said brace comprising:

a flat strip pivoted at one end on a said first flange of a first segment of a pair of adjacent segments including a second segment, and

releasable clamping means mounted on a flange of said second segment for releasably clamping said flat strip in a selectable fixed position relative to said second segment.

4,807,668

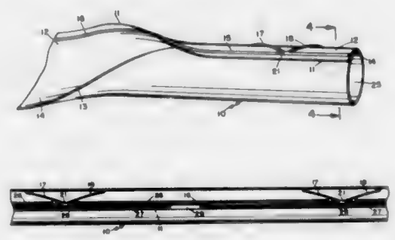
DRIP IRRIGATION TAPE

James C. Roberts, 1860 Jeffery Ave., Escondido, Calif. 92027

Continuation of Ser. No. 14,073, Feb. 5, 1987, abandoned, which is a continuation of Ser. No. 707,082, Mar. 1, 1985, abandoned. This application Nov. 20, 1987, Ser. No. 124,332
Int. Cl.[4] F15D *1/14*; B05B *15/00*
U.S. Cl. 138—103 **13 Claims**

1. A tubing structure, which comprises:

a flat strip of flexible material having a first longitudinally extending side edge portion and a second longitudinally extending side edge portion, the side edge portions having flat faces and the first edge portion being pre-shaped to define an indented groove in its flat face that extends lengthwise along the strip, the strip being folded lengthwise with the first edge portion and the second edge portion overlapping to form a first conduit, and the first edge portion and the second edge portion being joined together along spaced seal lines extending along opposite sides of the groove to form a seam in which the groove defines a secondary conduit of depth equal to the depth of the groove, each seal line being spaced outwardly from the respective adjacent side edge of the groove;



inlet means for maintaining fluid communications between the first conduit and the secondary conduit at a series of spaced apart locations along the secondary conduit; and

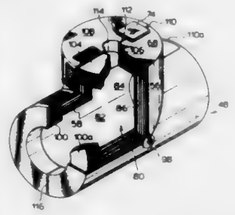
outlet means for maintaining fluid communications between the secondary conduit and a series of spaced apart locations along the exterior of the tubing structure.

4,807,669

REMOVABLE FLEXIBLE PIPE INSULATION

Gary R. Prestidge, Sr., 9411 97th Street, Fort Saskatchewan, Alberta T8L 1S9, Canada

Filed Feb. 12, 1987, Ser. No. 13,679
Int. Cl.[4] F16L *11/12*
U.S. Cl. 138—178 **8 Claims**



1. A removable, reusable insulating unit for insulating an exposed pipe section extending between existing pipe insulation on opposite sides of said exposed pipe section, said pipe insulation forming a part of an insulated pipe system, said insulating unit comprising a hollow body portion having insulating walls for enveloping such exposed section of an insulated pipe system, said body portion is covered inside and outside with a substantially non-rigid protective covering, said body portion having at least one parting line along its length dimension, said body portion being separable along said parting line to provide an entrance into a cavity defined within said insulating walls of said body portions, said insulating walls being formed of sufficiently flexible material to permit spreading of said insulating walls to open said entrance and place said unit about such exposed section of an insulated pipe system, said insulating walls abutting along said parting line to close said entrance, means for fastening said insulating walls in abutting relationship along said parting line and with said entrance closed, said insulating unit having one or more openings through which one or more components of an insulating pipe system passes, said parting line intersecting all of said one or more openings, each of said openings being defined by a perimeter end portion extending around the end of said insulating walls, said insulating walls of said body portion comprising a flexible first insulating material and said perimeter end portion for each said opening comprising a second insulating material which is substantially more dense than said first insulating material, said second insulating material being thicker in a radial direction of said opening than said first insulating material whereby said second insulating material defines inwardly extending arcuate segments forming the desired shape for each corresponding said opening when said fastening means closes said entrance between abutting portions of said insulating walls, at least one of said one or more openings has said parting line intersecting an edge thereof, said second insulating material includes means defining a hinge-like member opposite said parting line to permit opposing elements of said perimeter portion to swing away from one another about said hinge means as said entrance is opened, said hinge means permits said opening of said opposing elements to clamp around said existing insulation when said fastening means is secured with said insulating walls in abutting relationship along said parting line.

4,807,670

GIVER FOR A GRIPPER LOOM

Anton Egloff, Jona; Lothar Kohler, Tann-Rueti, both of Switzerland, and Franco Bianchi, Villaguardia, Italy, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 12, 1987, Ser. No. 119,587
Claims priority, application Switzerland, Nov. 19, 1986, 625/86
Int. Cl.[4] D03D *47/18*
U.S. Cl. 139—448 **8 Claims**



1. A giver for a gripper loom having a stationary weft supply, said giver comprising

a gripper casing;

a tongue mounted in said casing for clamping a weft yarn therebetween; and

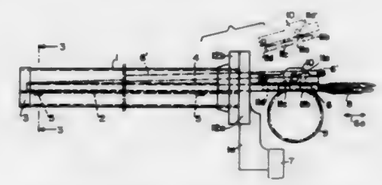
a clamping element secured at a proximal end to said tongue and biased in facing relation to a clamping surface on a central region of an underside of said casing to clamp the weft yarn between said surface and the top of said clamping element.

4,807,671

GUIDE MECHANISM FOR A WEFT THREAD INSERTING GRIPPER ROD IN SHUTTLELESS LOOMS

Horst Kerner, Lindenberg, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Feb. 3, 1988, Ser. No. 152,312
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1987, 3703316
Int. Cl.[4] D03D *47/00*
U.S. Cl. 139—449 **7 Claims**



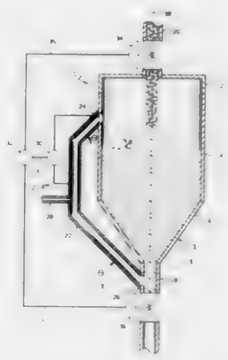
1. A guide mechanism for a weft thread inserting gripper rod for shuttleless looms, comprising housing means for protecting at least a portion of said gripper rod, a guide rail (4) having an upwardly open U-section mounted in said protecting housing means for receiving and guiding at least said portion of said gripper rod, freely rotatable guide roller means arranged for guiding said gripper rod in its back and forth movement, and mounting means for locating said guide roller means in an operative position for guiding said gripper rod in its back and forth movement, said mounting means permitting moving said guide roller means into an inoperative position in which said gripper rod is freely accessible.

4,807,672

EMPTY-FULL INDICATOR FOR SOLIDS TANKS AND BLENDERS

Fred T. Sherk, and Jimmy M. Gilbreth, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 4, 1987, Ser. No. 116,854
Int. Cl.[4] H01H *35/00*
U.S. Cl. 141—1 **13 Claims**



9. A process for controlling the filling status of particulate solids in an apparatus comprising:

a vessel having an upper end portion with a predetermined full level, a medial portion, and an lower end portion with a predetermined empty level;

an inlet means for feeding particulate solids into said vessel;

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an outlet means for removing particulate solids from said vessel;

a conduit means, having a vertically opened upper end and a vertically opened lower end, wherein said vertically opened upper end is in open communication with said upper end portion of said vessel at the location of said predetermined full level and said vertically opened lower end is in open communication with said lower end portion of said vessel at the location of said predetermined empty level;

a pressurized gas source connected to said conduit means at a location intermediate said vertically opened upper end and said vertically opened lower end of said conduit means; and

a pressure sensing means for measuring a pressure differential between the pressure within said conduit means and a predetermined pressure reference point, said process comprising:

(a) passing pressurized gas from said pressurized gas source through said conduit means;

(b) sensing the gas pressure within said conduit means and at said pressure reference point and measuring the pressure differential with said pressure sensing means;

(c) feeding particulate solids into said vesel such that when the level of said particulate solids reaches said predetermined full level, said particulate solids will flow by gravity into said vertically opened upper end of said conduit means through to said vertically opened lower end of said conduit means, thereby causing a first change of gas pressure within said conduit means;

(d) responsive to said first change of gas pressure within said conduit means, terminating said feeding of said particulate solids into said vessel;

(e) dispersing particulate solids from said vessel such that when the level of said particulate solids drops below said predetermined empty level, substantially all of said particulate material within said conduit means will flow by gravity through said vertically opened lower end of said conduit means into said lower end portion of said vessel, thereby causing a second change of gas pressure within said conduit means; and

(f) responsive to said second change of gas pressure within said conduit means, terminating said dispersing of said particulate solids from said vessel.

4,807,673

APPARATUS FOR FILLING LIQUIDS

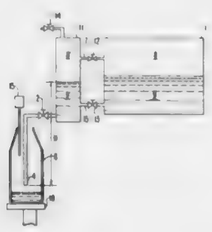
Hisashi Tazuke; Kazunori Araki; Shogo Yamaguchi; Sueshige Nakamura, and Sadahiro Abe, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1987, Ser. No. 98,468

Claims priority, application Japan, Sep. 30, 1986, 61-229747

Int. Cl.[4] B67C *3/04*

U.S. Cl. 141—57 **2 Claims**



1. In an apparatus for filling containers with carbonated liquid, said apparatus including a pressurized liquid storage tank for containing liquid in a liquid phase section and pressurized gas in a gas phase pressure chamber, and a filling valve for supplying carbonated liquid to a container to be filled, the improvement comprising:

an auxiliary tank including a liquid phase section connected to said liquid phase section of said pressurized liquid storage tank to receive liquid therefrom and a gas phase section connected to said gas phase pressure chamber of said pressurized liquid storage tank to receive pressurized gas therefrom;

means for isolating said gas phase section of said auxiliary tank from said gas phase pressure chamber of said pressurized liquid storage tank and for isolating said liquid phase section of said auxiliary tank from said liquid phase section of said pressurized liquid storage tank;

means for, upon said isolation of said auxiliary tank from said pressurized liquid storage tank, reducing the pressure in said auxiliary tank to atmospheric pressure; and

said filling valve being connected to said liquid phase section of said auxiliary tank such that carbonated liquid may be filled into a container to be filled at atmospheric pressure by opening said filling valve.

4,807,674

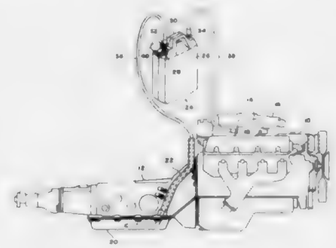
VACUUM CHAMBER SIPHON APPARATUS

Lyle F. Sweet, Greenville, Va., assignor to Paul A. Braginetz, Staunton, Va.

Filed Nov. 23, 1987, Ser. No. 124,265

Int. Cl.[4] B65B *31/04*

U.S. Cl. 141—59 **2 Claims**



1. Vacuum powered apparatus for selectively withdrawing oil from the crank case of a motor vehicle or transmission fluid from the automatic transmission housing of a motor vehicle comprising,

a plastic container of unitized construction having a generally rectangular shape,

one end of said container having a sloping shoulder wall section,

a pour spout integrally formed on said sloping wall section,

a threaded neck portion formed on said pouring spout,

a threaded cap adapted to be connected to said neck portion to provide a vacuum tight closure,

a pair of substantially flat horizontal wall portions formed on said one end of said container above said sloping shoulder wall section,

a hose nipple integrally formed on each of said flat horizontal wall portions extending outwardly therefrom and communicating with the interior of said container,

a handle integrally formed on said one end of said container and positioned between said nipples,

a pair of elongated, transparent, flexible plastic hoses,

one end of each hose being press-fitted onto said nipples,

the opposite end of one of said hoses being coupled to the intake manifold of the motor vehicle engine,

the opposite end of the other of said hoses being selectively inserted into the vehicle crank case or automatic transmission housing, whereby with the vehicle engine continuously running, a vacuum is applied to the interior of the container via the hose coupled to the intake manifold, thereby causing the oil or transmission fluid to be siphoned from the crank case or transmission housing to said container.

4,807,675

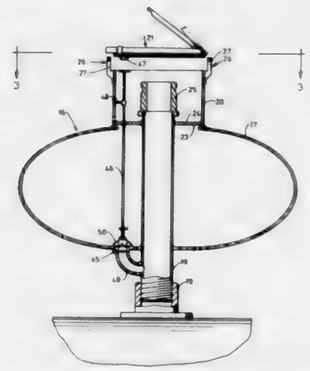
OVERFILL ASSEMBLY WITH REMOVABLE LID

Bruce R. Sharp, 4090 Rosehill Ave., Cincinnati, Ohio 45229

Continuation-in-part of Ser. No. 858,656, May 1, 1986, abandoned. This application May 18, 1987, Ser. No. 50,696

Int. Cl.[4] F16L *5/00*; **B65B** *3/06*

U.S. Cl. 141—86 **18 Claims**



1. An assembly for attachment to an underground liquid storage tank to control overfill of liquid during a filling operation with means to facilitate its use, comprising:

(a) a dump tank having an interior with a volumetric capacity of at least about five gallons, said dump tank characterized in having a main body and a neck extending therefrom with a top opening whereby access is gained to the interior of the dump tank, a bottom opening in the main body to accommodate a fill pipe, a second opening in a bottom of the main body for positioning of a valve mechanism, and permanent retaining means mounting on the dump tank's outside upper surfaces for the purpose of receiving a lid member;

(b) a fill pipe substantially within the dump tank, said fill pipe having a top extremity and a bottom extremity and extending from near the top of the dump tank through the bottom opening of the dump tank;

(c) a plate radiating from near the top extremity of the fill pipe and permanently attached to the fill pipe and interior walls of the neck, said plate having openings for allowing excess liquid to pass therethrough;

(d) a valve mechanism fitted within said second opening in the main body of the dump tank through which overfilled liquid collected in the dump tank can flow; and

(e) a completely removable center-point compression sealing lid member for fitting over the top opening of the dump tank so as to form a sealed closing of the dump tank.

4,807,676

FLUID TRANSFER WORKSTATION

David E. Cerny, Crystal Lake; David V. Bacehowski, Wildwood, and John T. Foley, Wheeling, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Feb. 26, 1985, Ser. No. 705,578

Int. Cl.[4] B01D *13/00*

U.S. Cl. 141—98 **3 Claims**

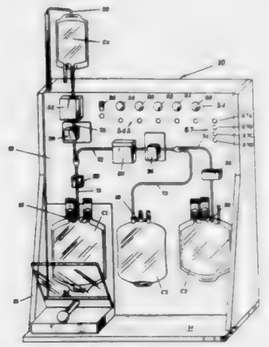
1. A fluid transfer work station usable with separate first and second connector carrying modular containers for the processing of a selected fluid previouly accumulated in the first container, the work station comprising:

planar supporting means bounded at least in part by selectively shaped spaced-apart edge members;

first and second hangers carried by said supporting means, spaced-apart thereon between said edge members for supporting respectively the first and second containers;

spring activated means connected to said supporting means between said edge members and adjacent to said first hanger, for compressing the first container;

electrically actuated means, affixed to said supporting means between said edge members, for fixedly coupling the connector of the first container to the connector of the second container and forming a fluid flow path therebetween;



means, affixed to said supporting means adjacent said first hanger, for sensing a flow of fluid from the first container in response to said spring activated means compressing the first container;

electrically activated clamping means, affixed to said supporting means adjacent said coupling means, for blocking a flow of fluid from the first container to the second container; and

programmed control means coupled to said coupling means, said sensing means and said clamping means for sequentially actuating said coupling means thereby coupling the first container to the second container, detecting a selected, sensed flow of fluid from the first container to the second container and in response thereto enabling said clamping means to block same.

4,807,677

DEVICE FOR MACHINING PLATE-SHAPED WORKPIECES, AS WELL AS BATTENS OR TIMBER STRIPS

Manfred Rottmann, Hildesheaseca, Fed. Rep. of Germany, assignor to SBR Maschinen-Handelsgesellschaft mbH & Co. KG, Herford, Fed. Rep. of Germany

PCT No. PCT/EP86/00782, § 371 Date Sep. 10, 1987, § 102(e) Date Sep. 10, 1987, PCT Pub. No. WO87/04108, PCT Pub. Date Jul. 16, 1987

PCT Filed Dec. 29, 1986, Ser. No. 116,724

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1986, 3600633

Int. Cl.[4] B21M *1/08*

U.S. Cl. 144—3 R **9 Claims**

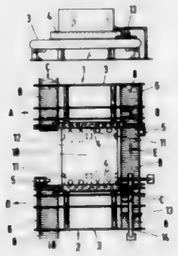
1. Device for machining plate-like workpieces, comprising:

(a) first and second parallel conveyor units each including respectively, upper and lower chain belts arranged with a clearance therebetween and driven in opposite directions of travel;

(b) the lower chain belts having opposite ends extending

beyond corresponding opposite ends of the upper chain belts thereby forming input and output regions for the workpieces;

(c) in the output region of the first conveyor unit and in the input region of the second conveyor unit are roller tracks which operate transversely to the opposite directions of



travel of the first and second conveyor units, said tracks being able to be raised and lowered relative to the chain belts and being linked together by a transverse conveyor; and

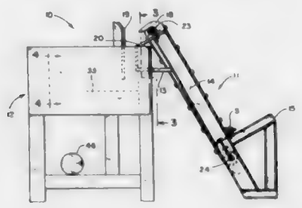
(d) a machining station between the first and second conveyor units which includes a plurality of machining devices adjacent the two conveyor units.

4,807,678

APPARATUS FOR NOTCHING PALLET STRINGERS

Billy H. Gray; Keith D. Gray, and Robert G. Hanna, all of West Plains, Mo., assignors to West Plains Machinery Corporation, West Plains, Mo.

Filed Dec. 30, 1987, Ser. No. 139,727
Int. Cl.⁴ B27C *5/00*; B27M *1/00*
U.S. Cl. 144—371 **10 Claims**



6. A method for forming notches in each of a plurality of stringer members to be incorporated in pallets, the method comprising:

(a) providing skid way means to define a predetermined path for movement of stringer members therealong;

(a) mounting rotating notch cutting means in the skid-way means to project into the path of movement of stringer member along the skid-way means;

(c) aligning a plurality of stringer members on the skid-way means so that a leading stringer member is in position to be pushed by the next trailing stringer member through the notch cutting means and the next trailing stringer member than becomes the leading stringer member;

(d) advancing each leading stringer member by pushing on a trailing stringer through a distance to support the leading stringer complete the cutting of the notches in the leading stringer; and

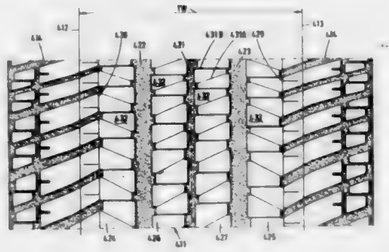
(e) adding trailing stringer one at a time to the plurality of stringer members already aligned on the skid-way means for continuing the support of and cutting of notches in each leading stringer member.

4,807,679

PNEUMATIC TIRE TREAD HAVING SIPES

Jean J. Collette, Bastogne, Belgium; Pierre M. J. Dauvister, Mersch, Luxembourg; Bernard Jonette, Fischbach, Luxembourg, and Claude Lardo, Luxembourg, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 11, 1987, Ser. No. 60,594
Int. Cl.⁴ B60C *11/06*, *11/12*
U.S. Cl. 152—209 R **17 Claims**



1. A pneumatic tire comprising a ground contacting tread having two tread edges, at least three grooves in said tread extend circumferentially thereabout, a circumferentially extending series of decoupling sipes is located close to each tread edge axially outwardly of all of said circumferentially extending grooves, a central one of said circumferentially extending grooves being located midway between said tread edges and at least one circumferentially extending groove being disposed on each side thereof, said circumferentially extending grooves and decoupling sipes cooperating to divide the tread into at least four axially spaced ribs, each of said ribs being subdivided by sipes into a plurality of blocks which each have only four sides all of which are straight, the sipes in each rib being arranged to circumferentially alternate between first sipes extending in substantially axial directions and second sipes extending in directions oriented at substantially the same acute bias angles with respect to the mid-circumferential plane of the tire, each of the sipes having a centerline that is a straight line, the blocks in each rib being arranged such that circumferentially adjacent blocks are axially offset relative to each other thereby forming walls of the circumferentially extending grooves having a series of spaced notches, each said circumferentially extending series of decoupling sipes separating one of said ribs from a circumferentially extending array of shoulder blocks.

4,807,680

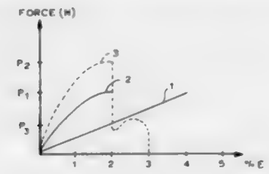
PNEUMATIC TIRE INCLUDING REINFORCING ROPE MADE OF AT LEAST TWO DIFFERENT MATERIALS

Wolfgang Weidenhaupt, Erkelenz; Gunther Wepner, Waldfeucht-Neuhaaren; Peter Dismon, Heinsberg-Proselen, all of Fed. Rep. of Germany, and Matthews G. Remijn, Velp, Netherlands, assignors to Akzo NV, Arnhem, Netherlands

Continuation-in-part of Ser. No. 610,875, May 16, 1984, abandoned. This application Nov. 17, 1986, Ser. No. 938,056
Claims priority, application Fed. Rep. of Germany, May 16, 1983, 3317708; Mar. 23, 1984, 3410703
Int. Cl.⁴ D02G *3/48*
U.S. Cl. 152—451 **19 Claims**

1. A pneumatic tire comprising a reinforcing rope which includes at least two components, a first component consisting of steel wires and the second component consisting of filaments of aromatic polyamides, the filaments forming a core around which the steel wires are coiled, each steel wire having a substantially rectangular cross-section defining opposite

broad and narrow sides and having rounded corners, and the respective coiled steel wires being twisted along their longitu-



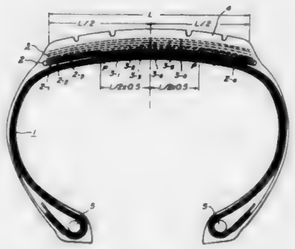
dinal axes such that a broad side of each wire engages in a circumferential direction a corresponding peripheral portion of the core.

4,807,681

PNEUMATIC RADIAL TIRES FOR AIRPLANES

Kuninobu Kadota, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Sep. 30, 1987, Ser. No. 102,924
Claims priority, application Japan, Jun. 17, 1987, 62-149231
Int. Cl.⁴ B60C *9/20*
U.S. Cl. 152—531 **8 Claims**



1. A pneumatic radial tire for airplanes, comprising; a toroidal carcass composed of plural plies each containing organic fiber cords arranged in parallel with each other and at a cord angle of 70°~90° with respect to an equatorial plane of the tire, at least one of which plies is being wound around each of a pair of bead cores from inside of the tire toward outside thereof to form a turnup, and a belt superimposed about a crown portion of said carcass and composed of a combination of cross belt layer structure and a circumferential belt layer structure; a tire tread over said belt, said tire tread having an axially extending central region with adjacent side regions disposed axially next to said central region; said cross belt layer structure being comprised of at least two cord layers each containing organic fiber cords arranged in parallel with each other and at a cord angle of 10°~70° with respect to the equatorial plane of the tire, the cords of said layers being crossed with each other; said circumferential belt layer structure being comprised of at least two cord layers each containing organic fiber cords arranged in parallel with each other and substantially in parallel to the equatorial plane of the tire; the number of cord layers at a side region of the tire tread in said cross belt layer structure being larger than that at a central region thereof, and the number of cord layers at the central region of the tread in said circumferential belt layer structure being larger than that at the side region thereof, and at least one of said cord layers in said circumferential belt layer structure being a continuous layer extending between both side regions of the tread.

4,807,682

HEAVY DUTY PNEUMATIC TIRE

Isamu Imai, Tokorozawa, and Norio Inada, Kodaira, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

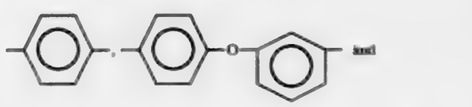
Filed Nov. 18, 1986, Ser. No. 931,824
Claims priority, application Japan, Nov. 18, 1985, 60-256800
Int. Cl.⁴ B60C *9/08*
U.S. Cl. 152—557 **1 Claim**



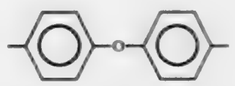
1. A heavy duty pneumatic radial tire for use at high speeds and under high internal pressures, comprising a plurality of carcass cord layers, wherein cords reinforcing the plurality of carcass cord layers are arranged at an angle from 90° to 75° with respect to a circumferential direction of the tire, and wherein said cords are composed of fibers of an aromatic polyamide having not less than 80 mole % of a repeating unit expressed by the following formula:

—NH—Ar_1—NHCO—Ar_2—CO—

wherein Ar_1 and Ar_2 are at least one aromatic residue selected from the group consisting of:



and



wherein the elongation E_n (%) of the aromatic polyamide fibers constituting the respective plies meets the following requirements:

$$E_{n-1}+0.2 \leqq E_n \leqq E_{n-1}+2.0$$

wherein E_n is an elongation (%) at 2.2 g/d of the n-th layer of the carcass cord layers, provided that the carcass cord layers are taken as the 1st ply, 2nd ply, 3rd ply, . . . , n-th ply radially located successively farther from the innermost side of the tire, wherein n is an integer of 2 or more and E_1 is an arbitrary value.

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RETRACTABLE SCREEN

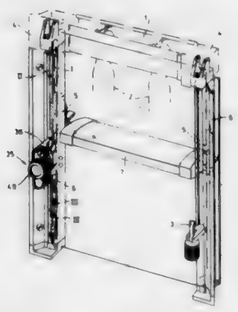
Petrus J. Hennequin, Rotterdam, and Herman Oskam, Vlist, both of Netherlands, assignors to Hunter Douglas International N.V., Curacao, Netherlands Antilles

Filed Dec. 10, 1986, Ser. No. 940,140
Claims priority, application European Pat. Off., Dec. 27, 1985, 85116592.8; Fed. Rep. of Germany, Jan. 8, 1986, 8600264[U]
Int. Cl.⁴ E06B *9/30*
U.S. Cl. 160—172 **8 Claims**

1. A retractable screen lying in a predetermined plane and comprising a headrail having ends, lateral profiles having channels therein and extending perpendicular from each end of

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the headrail, a bottom rail having end portions movable in said lateral profiles, draw-cords connected to said bottom rail and disposed in the channels formed in said profiles, a slide mounted for movement along one of the said lateral profiles and having a front face facing away from said lateral profiles and said plane, said slide having passage means formed therein, said passage means extending from said channels and opening into the front face of said slide, the draw-cords passing through said passage means, operation of said draw-cords causing raising or lowering of said bottom rail, said draw-cords extending



to the front face of said slide and out of said one profile, so that they may be pulled, and a first clamping means for releasably clamping said slide with respect to said one of said lateral profiles, a second clamping means for clamping said draw-cords to said slide; wherein, when said second clamping means is in an engaged position clamping said draw-cords to said slide, said draw-cords are operable solely by movement of said slide; and wherein, when said second clamping means is in a disengaged position, said draw-cords are operable solely by manual gripping and pulling thereof.

4,807,684

ROLL UP CLOSET DOOR

John G. Melton, 489 Panama Ave., Chico, Calif. 95926

Filed Jun. 11, 1987, Ser. No. 60,651

Int. Cl.[4] E06B *9/14*

U.S. Cl. 160—23.1 **2 Claims**



1. A roll up closet door comprising:

a flexible door panel comprising a plurality of articulated slats having an upper end thereof secured to a rotatable axle shaft;

a roll up door housing comprising an elongated tubular member having a slot throughout its length thereof, said axle shaft being rotatably disposed within said housing, said door panel being adapted to pass through said slot into said housing upon rotation of said axle shaft;

a tension spring motor mount comprising a leaf spring plate having first and second ends, the first end of said leaf spring plate being secured within said housing, the second end of said leaf spring plate having secured thereto a reversible electric motor,

said electric motor having an output shaft, a driver wheel secured to said output shaft, said driver wheel including a pliable O-ring tire affixed thereto, wherein, rotation of said output shaft effects rotation of said driver wheel;

said leaf spring plate continuously biassing said driver wheel into frictional contact with said flexible door panel such that rotation of said driver wheel effects rotation of said flexible door panel for accumulation thereof;

lighting means disposed within said housing;

a single manual override switch means for controlling the operation of said electric motor;

mechanical switch means disposed within said housing for engaging said leaf spring plate upon accumulation of said flexible door panel about said axle shaft,

upon engagement of said mechanical switch means with said leaf spring plate, said mechanical switch means stops rotation of said axle shaft and actuates said lighting means;

upon disengagement of said mechanical switch means with said leaf spring plate, said mechanical switch means deactivates said lighting means;

door position retainer tracks comprising generally square tubular material having a longitudinal slot along the length thereof;

said flexible door panel having at its bottom end thereof spring loaded T-shaped door track guides for engagement with said retainer tracks.

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SEGMENTED SHUTTER OR GATE

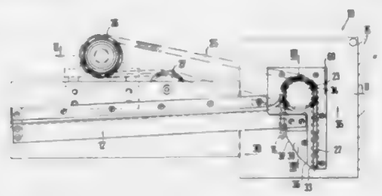
Max H. Losch, Filderstadt, Fed. Rep. of Germany, assignor to Losch GmbH & Co., Fed. Rep. of Germany

Filed Feb. 25, 1988, Ser. No. 160,058

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1987, 3706054

Int. Cl.[4] E06B *9/02*

U.S. Cl. 160—36 **22 Claims**



1. A segmented shutter or gate storage unit having a plurality of gate segments extending over the width of the gate and individually attached to laterally spaced transporting chains, said gate segments, in the closed position of said segmented shutter or gate, are placed in a clamped position on top of one another, and in the open position said gate segments are suspended and positioned in rows behind one another on storage rails behind a building slab plate or an opening, said gate segments have upper dowels on both sides in the area of the upper edge of said gate segment, said upper dowels connected in an articulated manner with said transporting chains, said transporting chains arranged in vertical guide rails and are powered by driven chain wheels, whereby said chain wheels transfer the ends of said upper dowels onto said storage rails, the improvement comprising: said gate segments (**29**) having lower dowels (**20**) on both sides of said gate segments (**29**) in the area of the lower border (**18**) of said gate segment (**29**) there being a defined distance (X) between said upper and lower dowels (**19, 20**); below said chain wheels (**23**) are control cams (**31**) which guide said lower dowels (**20**), said control cams (**31**) formed in the planes defined by said guide rails (**22**) and said storage rails (**12**) and have a transition area (**33**) where said vertical guide rails (**22**) meet control cam (**31**), the distance between said transition area (**33**) and chain turnaround points of said chain wheels (**23**) is not greater than said distance (X).

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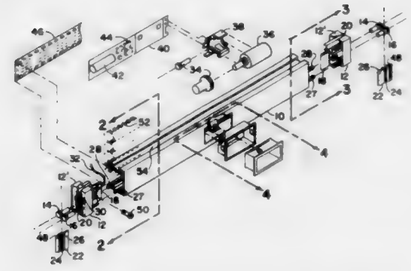
SHADE SYSTEM

John Schnebly, Albany, and Thomas J. Maruszak, Loudonville, both of N.Y., assignors to Comfortex Corporation, Cohoes, N.Y.

Filed Feb. 25, 1987, Ser. No. 18,189

Int. Cl.[4] E06B *3/94*

U.S. Cl. 160—84.1 **12 Claims**



1. A window shade deployment system comprising:

a pair of tracks adapted to be located opposite each other and attached to the sides of a window opening;

a window shade of the pleated type, one end of said shade affixed to a portion of the window frame, each side of said shade having therein a slot engaging with one of said tracks as said shade is moved over said opening;

a header secured to the opposite end of the shade and mounted transverse the sides of said frame, said header having a motor and electrical circuitry mounted therein, said motor providing motive power to traction drive wheels for the purpose of propelling said header over said pair of tracks;

at least two pairs of traction drive wheels rotatably secured to the header, one pair engaging each of said tracks, each wheel pair having an interior wheel adapted to travel on one side of the track and an opposing, closely biased exterior wheel adapted to travel on the other side of the track, at least one wheel in a wheeled pair mechanically coupled to one wheel in the other wheel pair and connected therewith, to said motor, whereby movement of said wheel pairs along said tracks is virtually identical with regard to speed and direction and said shade is played out and taken up by said header motion, unfolding and folding, as said motor drives said traction wheels and propels said header along said tracks.

4,807,687

SECURITY DOOR SYSTEM

Harry E. Fisch, 5273 Vista del Sol, Cypress, Calif. 90630, and Geza J. Szayer, 24771 Acropolis Dr., Mission Viejo, Calif. 92691

Filed Mar. 31, 1986, Ser. No. 846,341

Int. Cl.[4] E06B *9/08*

U.S. Cl. 160—133 **19 Claims**

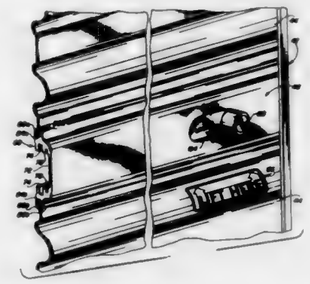
1. A security door system comprising:

a barrel assembly for mounting adjacent the upper edge of a door opening to provide support means rotatable about the horizontal axis;

a roll-up door positionable across said door opening and susceptible of being rolled about said barrel assembly as the door is raised, the door including a plurality of flexible panels and a plurality of rigid metal reinforcing beams interspersed between adjacent pairs of panels and along the bottom of the lowermost panel in a combination which can be rolled about a horizontal axis; said reinforcing beams comprising a bottom edge beam, a slide lock beam, and a pair of intermediate beams, one on either side of the slide lock beam, each beam being separated from an adjacent beam by a flexible metal panel which is joined thereto;

vertical door guide members for installing at opposite sides of the door to encompass the side edges of the opening;

said slide lock beam including a slide bolt mounted for limited movement along an inner face of the side lock beam, a locking member having an extendible tongue for locking the slide bolt in a locked position, a notched portion for receiving the extended tongue of the locking member, and means defining an aperture in a vertical door guide member in line with the slide bolt when the door is in the closed position in order to lock the door closed, the locking member being affixed to the slide bolt from a rearward



side thereof by mounting means extending from the locking member to the slide bolt;

a re-lock assembly having an eccentrically pivoted plate mounted to the slide bolt and configured to engage one end of the slide bolt beam when extended downwardly about its mounting pivot, said re-lock assembly further including a releasable restraining member for engaging the pivoted plate in a retracted position; and

common mounting means securing said restraining member and the locking member to the slide bolt in a manner such that removal of the locking member from the slide bolt also removes the restraining means, thereby allowing the pivoted plate to rotate into a position to engage the end of the slide bolt beam and prevent the slide bolt from being retracted.

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SUBMERGED CASTING

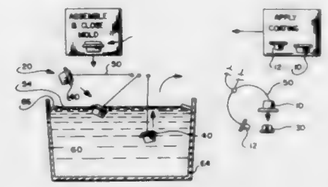
Robert H. Beetle, Box 337, Mountain Lakes, N.J. 07046

Continuation-in-part of Ser. No. 720,716, Apr. 8, 1985, Pat. No. 4,667,726. This application May 22, 1987, Ser. No. 52,885

The portion of the term of this patent subsequent to May 26, 2004, has been disclaimed.

Int. Cl.[4] B22D *23/04*

U.S. Cl. 164—72 **6 Claims**



1. A foundry apparatus for the production of cast metal parts which comprises a re-usable openable rigid mold body of metal-confining separable exterior walls defining a closed mold cavity and substantially uniformly composed of a glass ce-

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ramic, said metal-confining exterior walls having at least one in-gate to admit molten metal into said closed mold cavity, at least a part of said exterior walls being incased with a metal of high thermal conductivity, said metal incasing being coated with a barrier layer of a refactory, means for closing said openable rigid mold body, means for submerging substantially completely said mold body in a bath of molten metal, means for disposing said mold body while in said bath with said in-gate positioned to admit molten metal from said bath to said mold cavity, means for removing said mold body from said bath after said mold cavity is charged with molten metal, means for cooling said removed mold body to solidify the metal therein as a cast metal part, means for opening said mold body and recovering therefrom said solidified cast metal part, and means for assembling and re-using said mold body.

4,807,689

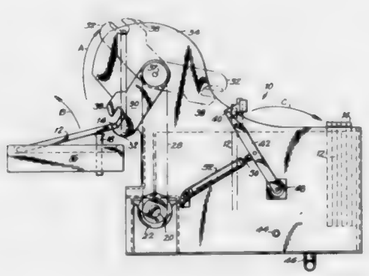
ROTARY TAKE-OFF SYSTEM AND METHOD OF OPERATING SAME

Raymond D. Benettone, San Manuel, Ariz., assignor to Magma Copper Co., San Miguel, Ariz.

Filed Feb. 10, 1987, Ser. No. 13,299

Int. Cl.[4] B22D *5/02, 47/00*

U.S. Cl. 164—76.1 **21 Claims**



1. A rotary anode take-off system for processing cast metal anodes, said system comprising:

(a) means for casting said metal anodes;

(b) quenching means for cooling and storing said cast anodes;

(c) transport means for removing said anodes from said casting means and thereafter transporting said anodes directly to said quenching means through a single arc of approximately 180°, said transport means consisting essentially of

(i) a pair of rotatable arm members, said members being configured for rotation about a first shaft member and a second shaft member respectively for attachment of said arm members to a first side and a second side respectively of said quenching means;

(ii) drive means coupled with at least one of said arm members for the synchronous rotation of said arm members; and

(d) means located within said quenching means for receiving said anodes from said rotatable arm members and subsequently positioning said anodes within said quenching means.

4,807,690

SHOOTING DEVICE FOR CORE BLOWING MACHINES

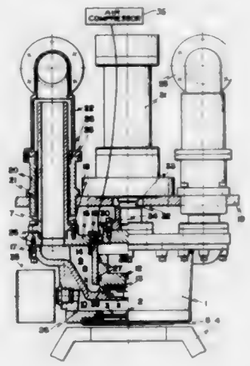
Agustin A. Erana, Zorrostea, 4 Polignoo Industrial Ali-Bobeo, 01010 Vitoria Alava, Spain

Filed Jul. 29, 1987, Ser. No. 79,034

Claims priority, application Spain, Aug. 12, 1986, 8600285

Int. Cl.[4] B22C *15/22*

U.S. Cl. 164—200 **4 Claims**



1. Shooting Device for Core Blowing Machines, which may be coupled to the mouth of the sand magazine prior to the shooting operation and separated therefrom at the end of said shooting operation in order to change the magazine, and which includes a ram, alternatively displaceable by hydraulic means, designed to couple to and separate from the mouth of the magazine, through which ram the air discharged from the reservoir reaches the magazine with the aid of a shooting valve which cuts off the supply from the reservoir by means of the pressure source acting against the piston thereof and specifically against one of the surfaces of said piston having a considerably larger surface area than that against which acts the pressure from the reservoir, aperture whereof is effected automatically by cutting off the pressure source supply both to the valve itself and to the reservoir, is essentially characterised in that the shooting valve is established within the hollow ram and the fluid stored in the reservoir reaches the magazine through the ram itself and, with the shooting valve placed therebetween, through the actual guide columns for alternative displacement of the ram, wherefore the said columns are hollow.

4,807,691

MOLD FOR CONTINUOUS CASTING OF METAL

Heinz Schneider, and Franz Spona, both of Duisburg, Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 7, 1983, Ser. No. 464,362

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207149

Int. Cl.[4] B22D *11/04*

U.S. Cl. 164—416 **6 Claims**

1. In an apparatus for continuous casting of metal having an oscillating table, there being a water tank mounted to said table, the improvement comprising:

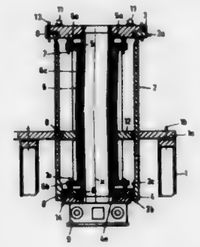
an integrated mold unit including a tubular mold defining a mold cavity, an upper and a lower flange plate mounted to the ends of the tube respectively;

a cooling jacket enveloping said tube;

connection means including a plurality of parallely positioned and annularly arranged rods for interconnecting said cooling jacket and said upper and lower flange plates to thereby combine them into a structural independently

placeable and removable unit for placement into the tank and removal therefrom; and

said water tank being open at its top and at its bottom, said



flange plates serving as bottom and top for said water tank upon insertion of said unit in said water tank for closing the tank whereby additional sealing means are provided to seal water-tightly said flanges as against said water tank.

4,807,692

MOLD APPARATUS FOR ENDLESS TRACK TYPE CONTINUOUS CASTING MACHINE

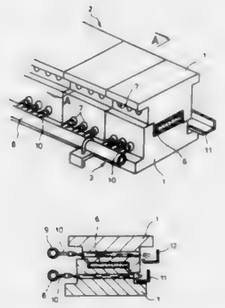
Yutaka Tsuchida, Yokosuka; Shuzo Takahashi, Yokohama; Shiro Onoda, Yokohama, and Nobuhiro Hasebe, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Nippon Kokan Kabushiki Kaisha, both of, Japan

Filed Aug. 13, 1987, Ser. No. 84,860

Claims priority, application Japan, Aug. 15, 1986, 61-191523; Dec. 12, 1986, 61-296461

Int. Cl.[4] B22D *11/06, 11/124*

U.S. Cl. 164—430 **6 Claims**



1. A mold apparatus for an endless track type continuous casting machine of the type in which a plurality of cooling blocks are interconnected with each other in the form of an endless chain so as to assemble a cooling block chain which can define a straight wall; two of said cooling block chains are disposed such that a mold is defined by said straight walls thereof; and said cooling block chains are driven in synchronism with a casting speed or rate, wherein a plurality of cooling holes are formed through each cooling block in the direction of the movement thereof and in parallel with said straight wall surface; cooling water pipes are extended along one side surface of said straight wall; said cooling water pipes are provided with nozzles in line with said cooling holes, respectively; means are provided to forcibly inject the cooling water through said nozzles into respective cooling holes of said cooling blocks which are moved; and means are provided to cause said injection of cooling water only when said nozzles are in line with their respective cooling holes.

4,807,693

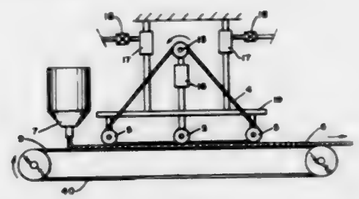
CHILL ROLL CASTING OF METAL STRIP

Venkatasubramanian Laxmanan, Rocky River, Ohio; Santosh K. Das, Randolph, and Chin-Feng Chang, Lake Hiawatha, both of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 545,569, Oct. 26, 1983, Pat. No. 4,649,983. This application Dec. 11, 1986, Ser. No. 940,666

Int. Cl.[4] B22D *11/16*

U.S. Cl. 164—452 **3 Claims**



1. A method for casting a metal filament, comprising the steps of:

(a) supplying a stream of molten metal onto a casting surface of a moving chill body to form said filament;

(b) entraining said filament against said casting surface by employing a flexible, metallic mesh hugger belt to provide an entraining, hugger pressure which is sufficient to maintain said filament in cooling contact with said casting surface and is sufficient to substantially prevent relative movement of said filament with respect to said casting surface; and

(c) controlling said flexible, metallic mesh hugger belt to prevent the application of a hugger pessure sufficient to induce excessive stresses within said filament during the cooling thereof.

4,807,694

PROCESS FOR REGULATING THE LEVEL OF THE LINE OF CONTACT OF THE FREE SURFACE OF THE METAL WITH THE MOULD IN VERTICAL CASTING

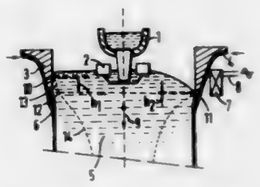
Charles Vives, Chatenurenard; Bernard Forest, Saint Etienne, and Jean-Pierre Riquet, Saint Etienne de St Geoirs, all of France, assignors to Cegedur Societe de Transformation de l'Aluminium Pechiney, Paris, France

Continuation of Ser. No. 870,762, filed as PCT FR85/00252 on Sep. 18, 1985, published as WO86/01756 on Mar. 27, 1986, abandoned. This application Nov. 18, 1987, Ser. No. 124,357

Claims priority, application France, Sep. 19, 1984, 84 14740

Int. Cl.[4] B22D *27/02*

U.S. Cl. 164—466 **7 Claims**



1. A process for regulating a level of a line of contact of a free surface of a liquid metal with a mold during a continuous vertical casting operation, said process comprising the steps of:

supplying said liquid metal to the inside of said mold;

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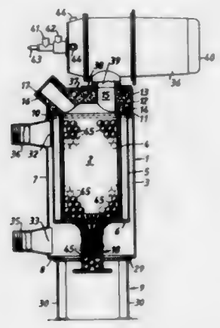
permitting said liquid metal to solidify;
applying an alternating magentic field to said liquid metal in the course of the solidification thereof, said magnetic field in said liquid metal adjacent the level of the line of contact of the free surface of said liquid metal having a vertical direction substantially parallel with the axis of said mold, whereby substantially horizontal electromagnetic forces form a bulge in the free surface of the liquid metal; and
adjusting the strength of said magnetic field to produce a desired value of the vertical level of the line of contact of the free surface of said liquid metal with said mold wherein the process further comprises the step of applying a magnetic field strength in a steady state casting condition which causes a level of said line of contact to reach a line of intersection between a solidification front of said liquid metal due to indirect cooling and a solidification front of said liquid metal due to direct cooling in a process wherein the magnetic field is not applied.

4,807,695

REGENERATOR FOR A REGENERATIVE HEATING SYSTEM

Trevor Ward, Kirby Moreside, England, assignor to British Gas plc, London and Hotwork Developments Ltd., Dewsbury, both of, England

Continuation of Ser. No. 928,031, Nov. 7, 1986, abandoned. This application Jun. 9, 1988, Ser. No. 204,921
Int. Cl.[4] F28D *17/00*
U.S. Cl. 165—4 **2 Claims**



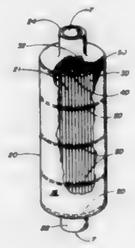
1. A regenerator for a regenerative heating system comprising:
an inner imperforate chamber for storing a heat storage bed in the form of discrete particles, a closable inlet for introducing fresh particles into the inner chamber to replace contaminated particles;
a closable outlet for removing the contaminated particles from the inner chamber so that the fresh particles may be introduced;
an outer chamber surrounding the inner chamber and serving to receive waste gas from the inner chamber after passage through the inner chamber or to supply air for heating in the inner chamber, the outer chamber serving either to discharge the waste gas from the regenerator or to receive air for heating in the regenerator; and
a closure assembly extending from said inner chamber through said outer chamber to said closable outlet, said closure assembly comprising a funnel-shaped cage portion tapered towards said closable outlet and a connecting cage portion connected between a tapered end of said funnel-shaped cage portion and said closure outlet, said closure assembly containing a portion of said heat storage bed and providing communication between said inner and outer chambers.

4,807,696

THERMAL ENERGY STORAGE APPARATUS USING ENCAPSULATED PHASE CHANGE MATERIAL

David P. Colvin, Apex, and James C. Mulligan, Raleigh, both of N.C., assignors to Triangle Research and Development Corp., Raleigh, N.C.

Filed Dec. 10, 1987, Ser. No. 131,189
Int. Cl.[4] F28D *20/00*
U.S. Cl. 165—10 **8 Claims**



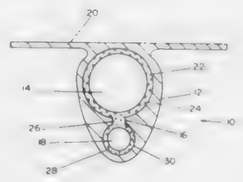
1. A thermal energy storage apparatus comprising:
a housing defining a chamber including spaced apart inlet means and outlet means communicating with said chamber,
channelling means subdividing the interior area of said chamber into a plurality of substantially equal area subchambers positioned within said chamber for dividing the flow stream of a heat exchange fluid into a plurality of separate flow streams and for directing the heat exchange fluid to flow from the inlet means through the chamber to the outlet means, and
macroencapsulated means for storing and releasing thermal energy by heat transfer to and from the heat exchange fluid, said storing and releasing means being positioned within said channelling means whereby the heat exchange fluid temperature is regulated as the heat exchange fluid passes in contacting relation with said thermal energy storing and releasing means as it passes through said housing.

4,807,697

EXTERNAL ARTERY HEAT PIPE

Nelson J. Gernert, Elizabethtown; Donald M. Ernst, Leola, and Robert M. Shanbach, Lititz, all of Pa., assignors to Thermacore, Inc., Lancaster, Pa.

Filed Feb. 18, 1988, Ser. No. 157,224
Int. Cl.[4] F28D *15/02*
U.S. Cl. 165—104.26 **7 Claims**



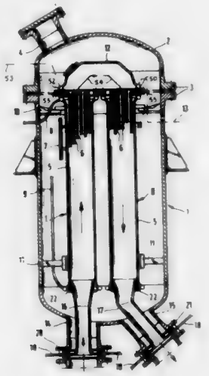
1. An improved external artery heat pipe structure comprising:
a vapor transport enclosure with regions located adjacent to a heat source and a heat sink, with the internal wall surface of the vapor transport enclosure covered by a first sintered wick layer, and with a continuous slot in the wall surface of the vapor transport enclosure, the slot being completely filled with a sintered wick structure which is continuous with the first sintered wick layer; and
a liquid artery enclosure located outside the vapor transport enclosure with its internal surface adjacent to an open surface of the continuous slot so that the continuous slot interconnects the vapor transport enclosure to the liquid artery enclosure, with the internal wall surface of the liquid artery enclosure covered by a second sintered wick layer which is continuous with the wick structure in the continuous slot.

4,807,698

HEAT EXCHANGER FOR GASES UNDER HIGH PRESSURE

Klaus Köhnen, Mülheim/Ruhr, and Hans Niermann, Essen, both of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Apr. 6, 1987, Ser. No. 35,097
Claims priority, application Fed. Rep. of Germany, May 10, 1986, 3615877
Int. Cl.[4] F28F *9/22*
U.S. Cl. 165—145 **14 Claims**



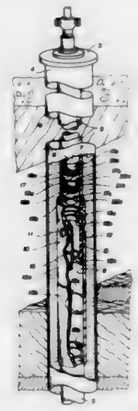
1. A heat exchanger for gases under high pressure, comprising a pressure vessel; a plurality of heat exchanger trains arranged in said pressure vessel so that gas flows through said heat exchanger trains one after the other, said heat exchanger trains being formed as substantially identical structural units each including a multi-pipe outer limiting wall and a bundle of pipes located inside said wall, said heat exchanger trains being connected with one another with a gas deflection therebetween and being connected with said pressure vessel so that they are releasable from and separately removable from said pressure vessel; means for supplying water into and withdrawing the water from each of said multi-pipe outer limiting walls; means for supplying water into and withdrawing water from each of said bundles of pipes; means for supplying gas into a space inside each of said multi-pipe walls and around each of said bundles of pipes, and withdrawing the gas from the space; means for gas deflection between said heat exchanger trains; and means for releasably and separately connecting said heat exchanger trains to said pressure vessel.

4,807,699

TUBING SLEEVE

Clark M. Sample, Bakersfield, Calif., assignor to Randy Merkey, Bakersfield, Calif.

Filed May 21, 1987, Ser. No. 52,500
Int. Cl.[4] E21B *34/14*
U.S. Cl. 166—68 **2 Claims**



1. A system suitable for use in conjunction with a tubing string in a well with an operational rod pump and a closed gas anchor, which comprises:
a. an outer tubular member located below said pump comprising first and second cylindrical members, including a first means incorporated at one end of said first cylindrical member and a second means incorporated at one end of said second cylindrical member, said first and second means adapted to connect said first cylindrical member to said second cylindrical member, a third means incorporated at a second end of said first cylindrical member adapted to engage a cooperating fourth means incorporated at one end of a first tubing string member to connect said first cylindrical member to said first tubing string member, a fifth means incorporated at the second end of said second cylindrical member adapted to engage a cooperating sixth means incorporated at one end of a second tubing string member to connect said second cylindrical member to said second tubing string member, said outer tubular member including a plurality of spaced apart radial ports formed in the periphery of said outer tubular member through which fluids and gases are allowed to enter and exit and upper and lower circular shoulders formed in the bore of said outer tubular member at opposite ends thereof;
b. an inner tubular member insertable into the bore of said outer tubular member in slidable relation therewith for opening and closing said radial ports, said inner tubular member having a slightly smaller external diameter than the diameter of said bore through which it moves axially between said upper and lower shoulders and including one or more gasket means in the periphery of said inner tubular member; and,
c. an activator means that works independently of the oscillating rods while they are oscillating in an operating rod pump and engages said inner tubular member to move said inner tubular member axially within said outer tubular member, said activator means being adapted for attachment to the bottom of an inactive rod pump and including at least one cylindrical member having a plurality of integrally formed compressible elongated leg members depending therefrom whereby, when said depending leg members releasably engage said inner tubular member to

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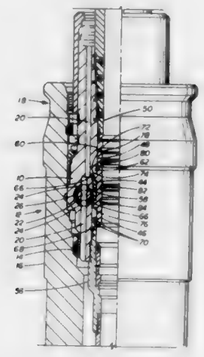
move said inner tubular member longitudinally of said bore in a first direction between said upper and lower shoulders, said radial ports open to allow fluids and gases to flow between the interior and exterior of said outer tubular member and, when said inner tubular member is moved longitudinally of said bore in a second direction between said upper and lower shoulders, said radial ports are closed to prevent fluids and gases from flowing between the interior and exterior of said outer tubular member.

4,807,700

WIRELINE DOWNHOLE ANNULUS VALVE

Robert L. Wilkins, Houston, Tex., assignor to Cameron Iron Works USA, Inc., Houston, Tex.

Filed Sep. 18, 1987, Ser. No. 98,377
Int. Cl.[4] E21B *33/04, 34/14*
U.S. Cl. 166—86 **5 Claims**



1. A tubing hanger comprising

an annular hanger body having a tubular wall with a central bore and a counterbore below the bore,

a sleeve positioned within said bore and having an external annular projection positioned within said counterbore and a rack secured on the exterior of said annular projection,

means on the interior of said sleeve to receive a tool for the shifting of said sleeve axially in said bore,

a passageway extending vertically through the wall of said hanger body with a chamber interrupting said passageway,

a valve ball having a bore therethrough, positioned within said chamber and mounted for rotation in said chamber to align said valve ball bore with said passageway to allow flow through the valve ball bore in one position and to close said passageway in its second position, and

gear means being in engagement with said rack whereby when said sleeve with said rack thereon is moved axially within said bore and counterbore said valve ball is rotated between its positions to control flow through said passageway.

4,807,701

METHOD FOR THERMAL STIMULATION OF A SUBTERRANEAN RESERVOIR AND APPARATUS THEREFOR

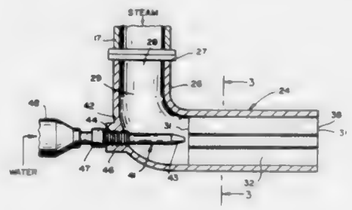
Dornese Hall, Houston, Tex., and Hung Q. Bui, Bakersfield, Calif., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 20, 1987, Ser. No. 87,372
Int. Cl.[4] B01F *3/04*; E21B *36/00, 43/24*
U.S. Cl. 166—272 **13 Claims**

5. A condensation shock resistant fluid mixer for receiving streams of high quality steam from respectively, for producing low quality steam and heated water, which apparatus includes

means forming a steam compartment having an inlet for communication with said high quality steam source,

means forming a heat exchange chamber including a plurality of discrete passage means which open into said means forming a steam compartment, and which terminate at a downstream aperture,



a later injector engageable with said water source and having a discharge nozzle opening into said steam department,

said discharge nozzle being disposed contiguous with and in alignment with said plurality of discrete passages to receive a stream of water therefrom.

4,807,702

METHOD FOR IMPROVING HIGH IMPULSE FRACTURING

Alfred R. Jennings, Jr., Plano, and Lloyd G. Jones, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 946,259, Dec. 24, 1986, Pat. No. 4,739,832.
This application Feb. 3, 1988, Ser. No. 151,763
Int. Cl.[4] E21B *43/24, 43/263, 43/267, 43/27*
U.S. Cl. 166—299 **7 Claims**

1. A method for increasing the permeability of a carbonate formation containing hydrocarbonaceous fluids where high energy impulse fracturing is used in combination with an inhibited acid comprising:

(a) directing an inhibited acid into a wellbore contained in said formation which acid is in an amount sufficient to substantially submerge the interval of the formation desired to be fractured;

(b) determining the amount of metal to be contained in a metallic sheath which encases a propellant for a high energy impulse device and the time necessary for sufficient heat to be generated from a reaction of said metal with the acid to destroy inhibitors contained in said acid;

(c) locating the high energy impulse device encased in said sheath within the acid in said wellbore near said interval;

(d) reacting said acid with the metallic sheath and generating heat sufficient to destroy the inhibitors which activates said acid; and

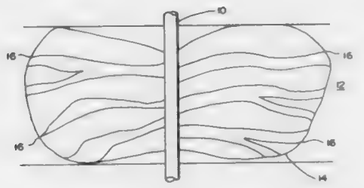
(e) igniting said propellant after sufficient heat has been generated to destroy said inhibitors thereby creating more than two simultaneous multiple radial fractures in said formation and simultaneously causing the uninhibited acid to enter said fractures thereby increasing the formation's permeability.

4,807,703

FRACTURE ACIDIZING SANDSTONE FORMATIONS

Alfred R. Jennings, Jr., Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 19, 1987, Ser. No. 87,561
Int. Cl.[4] E21B *43/26, 43/27*
U.S. Cl. 166—307 **15 Claims**



1. A method for acid treating a subterranean formation comprising:

(a) injecting a gelled and foamed acid into a formation under conditions and pressures sufficient to fracture said formation and create a foam pad in the face of at least one resultant fracture; and

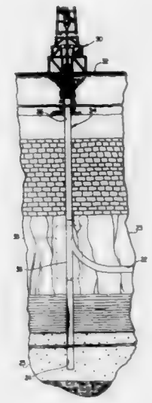
(b) thereafter, injecting into said fracture an ungelled and foamed acid which acid "fingers" through said foam pad thereby unevenly etching said fracture and propagating to substantially further distances into said formation.

4,807,704

SYSTEM AND METHOD FOR PROVIDING MULTIPLE WELLS FROM A SINGLE WELLBORE

Frank H. Hsu, and James A. Dech, both of Plano, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 28, 1987, Ser. No. 101,515
Int. Cl.[4] E21B *7/08, 43/14*
U.S. Cl. 166—313 **18 Claims**



1. A system for completing at least two wellbores which have been drilled from a common wellbore, each of said two wellbores having a wellbore portion which is in communication with said common wellbore, said system comprising:

anchor means adapted to be secured in one of said two wellbores;

guide means secured to said anchor means and including a guide surface disposed at the intersection of the other of said two wellbores with said common wellbore for guiding a tubing string and the like into said other wellbore;

packer means insertable in said common wellbore at a point between the earth's surface and said guide means,

conduit means extending between said guide means and said packer means for communicating fluid between said one wellbore and said packer means; and

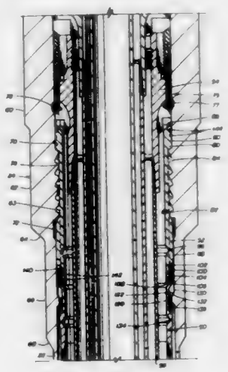
a tubing string extending from said packer means and guided into said other wellbore by said guide means.

4,807,705

CASING HANGER WITH LANDING SHOULDER SEAL INSERT

Herman O. Henderson, Aberdeen, Scotland, and Joseph H. Hynes, Houston, Tex., assignors to Cameron Iron Works USA, Inc., Houston, Tex.

Filed Sep. 11, 1987, Ser. No. 96,133
Int. Cl.[4] E21B *33/043, 33/047*
U.S. Cl. 166—348 **15 Claims**



1. Apparatus for suspending an intermediate casing string from a wellhead housing in an underwater well, for suspending at least one other casing string from the wellhead housing within the intermediate casing string, comprising:

a wellhead housing having a body, said body having a bore therethrough and breech block connecting means disposed therein;

a relatively small shoulder disposed on the wall of the wellhead housing bore below the connecting means and having a minimum bearing area sufficient to support the weight of an intermediate casing string;

a casing hanger having a body, said body having a bore therethrough and means disposed thereon for attaching the hanger to the intermediate casing string, and means for landing on the relatively small shoulder for suspending the hanger from the wall of the wellhead housing bore;

a landing shoulder insert having a body, said body having breech block connecting means thereon for engagement with the connecting means on the wall of said wellhead housing bore, a support shoulder means for supporting a second casing string within the intermediate casing string, first sealing means disposed on said body in sealing engagement with the wall of the wellhead housing bore and the landing shoulder insert body and a second sealing means in sealing engagement with the casing hanger bore and the landing shoulder insert body for sealingly isolating the casing hanger from fluid pressure inside the wellhead housing.

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4,807,706

BREATHABLE FIRE EXTINGUISHING GAS MIXTURES

Christian J. Lambertsen, Ardmore, and Joseph G. Santangelo, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 31, 1987, Ser. No. 80,507
Int. Cl.[4] H62C *1/00*
U.S. Cl. 169—45 6 Claims

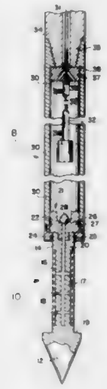
1. A method for controlling and extinguishing fires in a confined air-containing space while maintaining the confined space habitable for mammalian life, in particular, human life comprising introducing in the event of a fire into the confined space an effective amount of an extinguishing gas comprising carbon dioxide and an inert gas which is not toxic itself nor will decompose at combustion temperatures to produce toxic gases so as to lower the oxygen content of the confined space from its initial ambient concentration to an amount which does not support combustion, however, does support life and increase the carbon dioxide content of the confined space from its initial ambient concentration to an amount which increases brain blood flow and brain oxygenation, thereby sustaining consciousness without producing incapacitating dyspnea.

4,807,707

SAMPLING APPARATUS AND METHOD

James P. Handley, 3018 Hidalgo Dr., Orlando, Fla. 32806, and Philip B. Hildebrand, 541 Ventris Ct., Maitland, Fla. 32751

Filed Oct. 26, 1987, Ser. No. 112,300
Int. Cl.[4] E21B *49/08*
U.S. Cl. 175—20 20 Claims



1. Apparatus for sampling soil gas or ground water comprising:
a cylindrical probe housing having a chamber for receiving samples of soil gas or ground water;
a cylindrical probe head having a thrust point at a distal end thereof and a cylindrical shank telescopically engaged with a distal end of said housing, said shank having a central passage communicating with said chamber, and a plurality of inlet passages from the exterior thereof communicating with said central passage, said probe head having a first position in which said shank is telescoped within said housing blocking said inlet passages and a second position in which said shank is extended for permitting flow externally through said inlet and central passages into said housing;
a check valve disposed between said central passage and said chamber for passing samples from said inlet passages and central passage into said chamber;
a control system having a source of inert gas under pressure and gas pressure regulating means; and
an umbilical tube having a first end connected to a proximal end of said probe housing and a second end connected to said inert gas source and said pressure regulating means for introducing and controlling the pressure of said inert gas in said housing wherein high gas pressure in said housing causes said probe head to extend from said first position to said second position, and low gas pressure in said housing causes a sample of gas or water to flow by piezometric pressure through said inlet and central passages of said extended probe head, and through said check valve into said chamber.

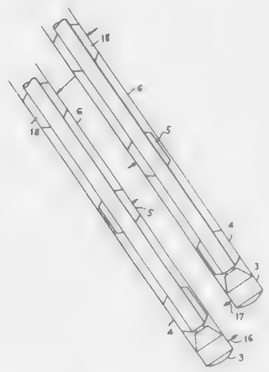
13. A method of obtaining a sample of subsurface water utilizing a probe having a probe housing, a probe head telescopically engaged with the probe housing, the probe having a first position in which the probe head is retracted into the probe housing, and a second position in which the probe head is extended from the probe housing, comprising the steps of:
(a) driving said probe into soil to a desired depth with the probe in the first retracted position;
(b) filling the probe housing with an inert gas under pressure to cause the probe head to extend to the second position;
(c) reducing the gas pressure in the probe housing to permit ground water to flow through the extended probe head into the probe housing under piezometric pressure;
(d) increasing the gas pressure to halt the ground water inflow; and
(e) withdrawing the probe to retrieve the ground water sample.

4,807,708

DIRECTIONAL DRILLING OF A DRILL STRING

John Forrest; Roger Catherall, both of Aberdeen; William Stewart, New Pitsligo, and Randall J. Pounds, Aberdeen, all of United Kingdom, assignors to Drilex UK Limited and Eastman Christensen Company, United Kingdom

PCT No. PCT/GB86/00727, § 371 Date Oct. 1, 1987, § 102(e) Date Oct. 1, 1987, PCT Pub. No. WO87/03329, PCT Pub. Date Jun. 4, 1987
PCT Filed Nov. 28, 1986, Ser. No. 79,780
Claims priority, application United Kingdom, Dec. 2, 1985, 8529651
Int. Cl.[4] E21B *7/08*
U.S. Cl. 175—45 4 Claims



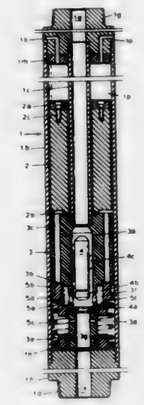
1. Apparatus for controlling the direction of a drill bit (3) at the downhole end of a drill string (2) characterised by a lower drill string drill sub-assembly (1) extending axially in the drilling direction and provided with a pair of bore hole stabilisers (4, 5) spaced apart longitudinally in the drilling direction (7), said stabilisers (4, 5) being eccentrically arranged with respect to the drilling axis in opposite manner and steerably mounted in relation to said lower drill string drill sub-assembly (1) by means adapted to be remotely controlled whereby adjustment of said stabilisers (4, 5) can alter the inclination of said sub-assembly (1) in relation to the bore hole (6) axis to alter the drilling direction (7), said sub-assembly (1) including a down-hole motor in a casing, and wherein said stabilisers (4, 5) are mounted on said motor casing, one at the bottom adjacent said drill bit (3) and the other near the top of the motor (1), and a third stabiliser (13) being fixedly mounted on said motor casing and concentric with the drilling axis approximately midway between said stabilisers (4, 5).

4,807,709

FLUID POWERED DRILLING JAR

Thomas E. Falgout, Sr., Youngsville, and William N. Schoeffler, Lafayette, both of La., assignors to Pioneer Fishing and Rental Tools, Inc., Youngsville, La.

Filed Oct. 6, 1986, Ser. No. 915,660
Int. Cl.[4] E21B *1/00, 31/113*
U.S. Cl. 175—296 20 Claims



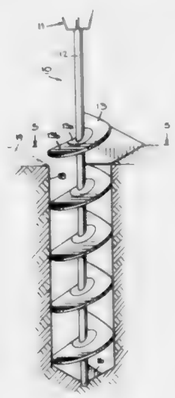
1. A drilling fluid powered drill string jar comprising:
(a) a body comprising a length of drill string;
(b) an elongated generally cylindrical opening situated in said body, having a first end and a second end and having an axial centerline generally parallel the centerline of said body;
(c) a mass situated for limited axial movement in said opening and operatively associated with said opening to act as a piston therein;
(d) a first fluid communication means to conduct drilling fluid from an upwardly continuing drill string through said body to a downwardly continuing drill string;
(e) a second fluid communication means to conduct drilling fluid from the upstream end of said first fluid communication means to said first end of said opening;
(f) selector valve means, situated in said body, operatively associated with said first and said second fluid communication means, to close said first fluid communication means and open said second fluid communication means in response to drilling fluid flow rate greater than a preselected limit fluid flow rate greater than a preselected limit and to function as a disabler means responsive to a preselected number of instances of drilling fluid flow rate changes, between said preselected limit to disable said jar; and
(g) motion stop means comprising abutting surfaces on said mass and on said body situated to stop axial movement of said mass when said mass reaches the limit of said axial movement at said second end of said opening.

4,807,710

EARTH AUGER FOR PLANTING BULBS

William Greeley, 55 Curtis Pl., Maplewood, N.J. 07040

Filed Mar. 9, 1987, Ser. No. 23,244
Int. Cl.[4] A01C *5/02*
U.S. Cl. 175—394 19 Claims



1. A one piece earth auger comprising
a shaft sized to fit a portable hand held drill;
an integrally secured screw extending helically about said shaft; and
an integrally secured flat planar blade extending radially from said shaft at a predetermined planting distance from a distal end of said shaft, said blade being disposed at a proximal end of said screw and extending radially outwardly beyond said screw for clearing soil from about a hole drilled in the ground for planting a bulb therein.

4,807,711

WEIGHING HOPPERS

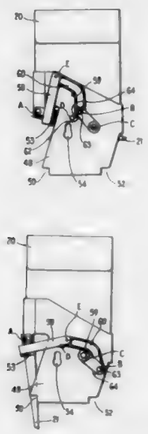
Kennedy M. O'Brien, Great Barr; Keith E. Dustow, Rugely; Peter E. Newley, Leigh Woods; Michael H. Parser, Plymouth; Jonathan M. Isherwood, Leamington Spa, and Robert W. Tansley, Stratford-upon-Avon, all of England, assignors to Driver Southall Limited, England

Filed Feb. 29, 1988, Ser. No. 162,009
Claims priority, application United Kingdom, Mar. 9, 1987, 8705451
Int. Cl.[4] G01G *13/16, 13/34;* B67D *3/00, 47/00*
U.S. Cl. 177—25.18 17 Claims

16. A combinational weighing system comprising: a plurality of weighing machines each comprising a weighing hopper and an associated hopper module arranged to provide a measurement of the weight of the contents of the associated hopper; means for feeding articles into said hoppers; means for utilizing the weight measurements provided by said hopper modules to select from said hoppers a number of hoppers whose contents have a total weight substantially equal to a target weight; and means for discharging said selected number of hoppers to provide a batch of articles of substantially said target weight, wherein each said weighing hopper comprises: a body portion for containing articles; a port in the body portion; a door pivotally connected to the body portion for rotation about a first axis between a first position in which said port is closed by the door to retain articles in the body portion and a second position in which articles contained in the hopper can be discharged through the port; and a mechanism for moving said door between its first and second positions comprising a first member rigidly connected to said door; a second member pivotally connected to said first member for rotation about a

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second axis parallel to and spaced from said first axis; and a third member pivotally connected to said second member for rotation about a third axis parallel to and spaced from said second axis, and pivotally connected to said body portion for rotation about a fourth axis parallel to and fixedly spaced from



said first axis so that rotation of the third member about said fourth axis causes rotation of said door about said first axis; and a first stop member which defines said first closed position of the door as a position just after said third axis has moved through a straight line joining said second and fourth axes.

4,807,712

SELF-PROPELLED CARRY-ALL TABLE FOR INVALIDS

Christopher Skottegard, 357A Nature Ct., San Jose, Calif. 95123

Filed Mar. 23, 1987, Ser. No. 87
Int. Cl.[4] B62D *51/04, 11/02*
U.S. Cl. 180—6.5 **7 Claims**



1. A machine for use by a partially invalid or handicapped or walking-assistance-dependent person, for transporting objects and following the person within an interior living space, comprising:

(a) propelling means for propelling said machine, including wheels adapted only for use in said interior living space;

(b) carrying means for carrying objects to be transported;

(c) control means for detecting the approximate position of said machine relative to the person using said machine and for activating the propelling means; and

(d) digital electronic circuitry means connected to the control means and effective to cause said machine to propel itself in the approximate direction of said person using the machine in any and all orientations of the user person with respect to the front, sides and rear of the machine,

said control means including separate contacts for respective forward, right, rear and left drive, and said control means including joystring post means for engaging and activating said contacts responsive to the direction in which said joystring post means is pulled;

said control means including an elastic stretchable joystring attached to said joystring post means and at least indirectly to the person,

and said digital electronic circuitry means including means for effecting gradual acceleration and deceleration of the machine to avoid tipping of the machine or spilling of liquids carried on the machine;

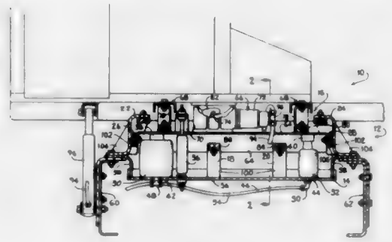
whereby the person can walk forward at varying rates and can make turns and the machine will closely follow the person, carrying said objects for the convenience of the person.

4,807,713

SUSPENSION SYSTEM FOR TRUCK CABS

Russell M. Smith, Overland Park, and William J. Peck, Lawrence, both of Kans., assignors to Ottawa Truck Corporation, Ottawa, Kans.

Filed Sep. 8, 1987, Ser. No. 93,961
Int. Cl.[4] B62D *27/04, 33/06*
U.S. Cl. 180—89.14 **9 Claims**



1. In a yard tractor having a frame, a cab, and a cab mounting means tiltably mounting the cab to the frame for permitting shifting of the cab between raised and lowered positions, the tractor presenting a longitudinal centerline, the cab having a center-of-gravity offset to one side of the centerline, a suspension system for the tractor comprising:

a first air sleeve spring having flexible walls for containing pressurized, compressible fluid therein;

a second air sleeve spring having flexible walls for containing pressurized compressible fluid therein; and

spring mounting means for mounting said springs remote from the cab mounting means to one of the frame and cab for disposition therebetween when the cab is in the lowered position, and for mounting said springs on opposed sides of the centerline with said first spring on the one side of the centerline having a center-of-gravity and with the second spring on the other opposed side of the centerline,

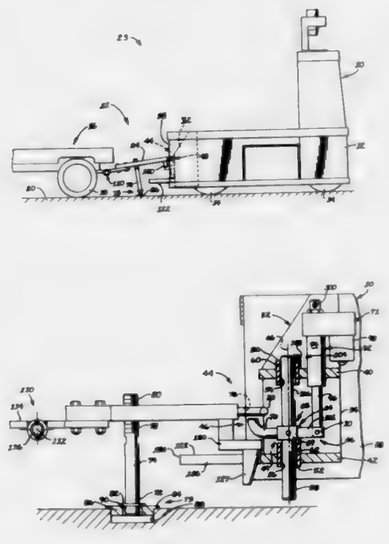
said first spring being larger than said second spring in order to compensate for the offset center-of-gravity of the cab and thereby to maintain the lateral level of the cab when in the lowered position.

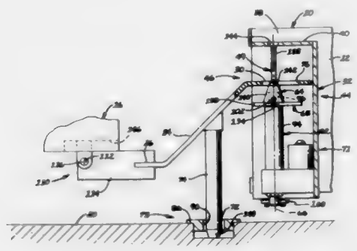
4,807,714

HITCH ASSEMBLY AND METHOD

Andrew P. Blau, Willoughby Hills, and Joseph A. Masso, Westlake, both of Ohio, assignors to Caterpillar Industrial Inc., Mentor, Ohio

Filed Aug. 18, 1987, Ser. No. 86,743
Int. Cl.[4] B60D *1/10;* **B62D** *1/24*
U.S. Cl. 180—168 **24 Claims**





1. A hitch assembly for connecting a vehicle to a towed apparatus supported on an underlying supporting surface, comprising:

a tongue having first and second spaced apart end portions and being adapted for connection at said first end portion to one of said towed apparatus and vehicle;

a socket member connected to the second end portion of said tongue;

a tongue supporting member having spaced apart mounting and piloting end portions and being connected at the mounting end portion to the tongue, said tongue supporting member extending in a transverse direction relative to said tongue and being adapted to engage the underlying supporting surface;

a bracket being mountable on the other of said vehicle and towed apparatus;

a socket engaging device having a guide and a hooking member, said guide being connected to said bracket and defining an elevationally oriented guide path and said hooking member having a guide following portion and being connected to said guide, said hooking member being elevationally movable along said guide path between a first position, at which said socket member is free from connection with said hooking member, and a second position elevationally spaced from said first position, at which said socket member is engaged with and connected to the hooking member;

a first flange member connected to the bracket at a location on the bracket adjacent the second position of the socket engaging device, said socket member being captured between the socket engaging device and the first flange member at the second position of the socket engaging device; and

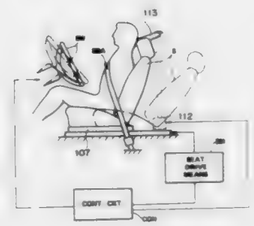
an actuator having a housing and an output member movably connected to the housing, said actuator housing being connected to one of the bracket and socket engaging device and said actuator output member being connected to the other of said bracket and socket engaging device, said socket engaging device being elevationally movable between said first and second positions in reponse to movement of said actuator output member, and said tongue being elevationally movable from a surface supported position, at which the piloting end portion of the tongue supporting member is engagable with the underlying supporting surface, to a socket engaging device supported position elevationally spaced from the surface supported position, at which the piloting end portion of the tongue supporting member is spaced from said underlying supporting surface, in response to elevational movement of the socket engaging device from the first position toward said second position.

4,807,715

CONTROL SYSTEM FOR VEHICLE EQUIPMENT

Hideyuki Nagashima, Yokohama; Hideo Obara, Tokyo, and Akira Kimitaka, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 17, 1988, Ser. No. 169,427
Claims priority, application Japan, Mar. 17, 1987, 62-60221
Int. Cl.[4] B60R *21/10*
U.S. Cl. 180—268 **14 Claims**



1. A vehicle comprising:

a seat;

means for selectively moving the seat forward and aft within said vehicle;

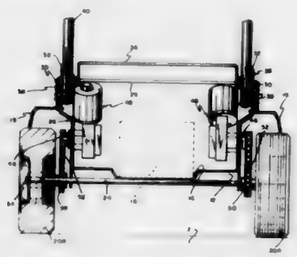
a seat belt associated with said seat;

a seat belt retractor operatively connected with said seat belt, said seat belt retractor including means for selectively permitting seat belt to be wound in and wound out of the same;

a circuit including a memory, said memory arranged to be conditioned to retain a first predetermined seat position and a first selectable seat position, said circuit being operatively connected with said seat moving means and said seat belt retractor, said circuit being arranged to induce said seat moving means to move said seat from said first

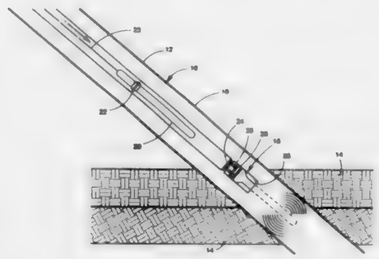
predetermined position to the first selected one and to condition said seat belt retractor to adjust the amount of slack in accordance with the change in the position of said seat.

4,807,716
MOTORIZED CARRYING CART AND METHOD FOR TRANSPORTING
J. F. Hawkins, 3120 W. 16th, Wichita, Kans. 67203
Filed Feb. 9, 1987, Ser. No. 12,277
Int. Cl.[4] B60K *1/00*
U.S. Cl. 180—65.1 15 Claims



1. A motorized carrying cart comprising:
a pan bracket means having a structure defining a lateral slot, a battery recess, a pair of fenders with each fender having a fender slot;
a pair of front wheels and a pair of rear wheels supporting the pan bracket;
a battery positioned in said battery recess to be supported by the pan bracket;
a pair of upright bracket means secured to said pan bracket means, each of said upright bracket means has a structure defining a first aperture, a second aperture, a plurality of third apertures with the majority of said third apertures being substantially oblong in shape and not circular, and a fourth aperture, each of said upright bracket means being structurally deformed such as to define a stop means;
a handle support bar with a pair of support ends extending through and protruding from said first apertures of said upright bracket means;
a handle latch means whose uppermost portion is generally horizontal with a horizontal plane and whose end sections are deformed such that each end section extends downwardly from the horizontal uppermost portions, then horizontally over to and past one of said upright bracket means and across the outside facial surface of said one of said upright bracket means and subsequently extending normally with respect to the plane of said one of the upright bracket means through said second aperture of said one of the upright bracket means such that said handle latch means has an end pivotally secured to one of said pair of upright bracket means;
a pair of spring means extending from the support ends of said handle support bar to the end sections of said handle latch means that extend across the outside facial surface of said upright bracket means for biasing the handle latch means upwardly towards the handle support bar;
a pair of motor drive means mounted to the pair of upright bracket means through said plurality of third apertures;
an axle extending laterally across the motorized carrying cart with its ends extending through the fourth aperture of said upright bracket means with said rear wheels rotatably secured to the ends of the axle;
a pair of upper sprocket means directly engaged to the pair of motor means on the opposite side of said upright bracket means where said motor drive means mount to said upright bracket means through said third apertures;
a pair of lower sprocket means secured to the axle between the upright bracket means and the rear wheels;
a pair of endless chains engaging the upper sprocket means and the lower sprocket means; and
a generally U-shaped handle means having end sections that are pivotally secured to said handle support bar such that the end sections of the U-shaped handle rests on the end sections of the handle latch means to be biased upwardly while the respective stop means on the pair of upright bracket means engages a section of handle means above the handle support bar to prevent the handle from rotating past the stop means on each of the bracket means.

4,807,717
METHOD OF LOGGGING AN INCLINED WELLBORE
Warren J. Winters, Tulsa, and Jehale L. Landreth, Bixby, both of Okla., assignors to Amoco Corporation, Chicago, Ill.
Filed Oct. 30, 1987, Ser. No. 115,088
Int. Cl.[4] G01V *1/40*
U.S. Cl. 181—102 3 Claims

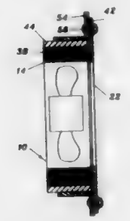


1. A method of logging a formation penetrated by an inclined or horizontal wellbore, comprising:
(a) attaching a collar catcher assembly to a lower portion of a drillstring;
(b) attaching a collar on an upper portion of a logging tool;
(c) lowering the drillstring within the inclined wellbore to a position adjacent the formation to be logged.
(d) introducing the logging tool through the drillstring until the collar engages and is restrained by the catcher assembly and a lower portion of the logging tool extends out from a lower end of the drillstring; and
(e) logging the formation while withdrawing the drillstring and with the logging tool extending out from a lower end of the drillstring; and wherein the collar catcher assembly includes a fluid bypass port in communication with the axial bore to provide a mechanism to generate a fluid pressure indication to the surface to indicate the logging tool collar is substantially restrained within the collar catcher assembly.

4,807,718
ACOUSTIC NOISE CONTROL FOR FANS
Robert Lotz, Groton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Continuation-in-part of Ser. No. 027,523, Mar. 18, 1987, abandoned. This application Mar. 2, 1988, Ser. No. 163,397
Int. Cl.[4] H02K *5/24*
U.S. Cl. 181—202 18 Claims

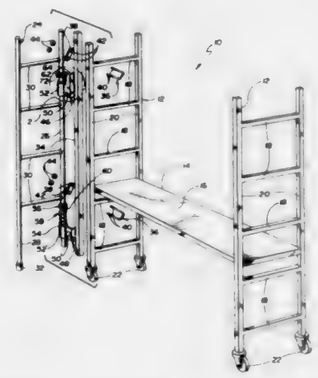
1. An acoustic noise control mounting for mounting a fan having a case surrounding a rotating blade assembly to a support structure having a cooling opening therein comprising:
(a) an acoustic isolation collar of a damping/absorption/isolation material shaped to fit circumferentially about the fan case;
(b) a high inertia collar sized and shaped to fit circumferentially about said acoustic isolation collar; and,

(c) mounting means carried by said high inertia collar for mounting said high inertia collar to the support structure wherein;



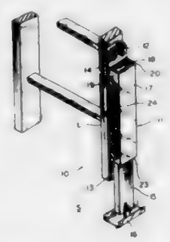
said high inertia collar is sized and shaped to squeeze said acoustic isolation collar under an inward pressure.

4,807,719
SCAFFOLDING ASCENT APPARATUS
George W. Burkstrand, Columbia Heights, and Lowell E. Burkstrand, Brahan, both of Minn., assignors to Side Step Inc., Columbia Heights, Minn.
Filed Jul. 20, 1988, Ser. No. 221,777
Int. Cl.[4] E06C *5/00*
U.S. Cl. 182—15 8 Claims



1. Apparatus for ascending scaffolding, including at least two end frames for supporting a member having a working surface therebetween with the working surface in a generally horizontal orientation and extending along an axis aligning the end frames, wherein said end frames define generally vertically oriented planes, comprising:
(a) a ladder; and
(b) means for mounting said ladder to one of the end frames for pivoting about a generally vertically oriented axis between a retracted position, wherein said ladder overlies the end frame to which it is mounted and defines a plane substantially parallel to that defined by the end frame to which said ladder is mounted, and an extended position, wherein said ladder is pivoted at an angle of more than 90° and less than 270° from said retracted position.

4,807,720
LADDER LEVELING ATTACHMENT
Soon Y. Kim, 10311 Ranger Rd., Fairfax, Va. 22030
Filed Jan. 15, 1988, Ser. No. 144,123
Int. Cl.[4] E06C *7/44*
U.S. Cl. 182—205 4 Claims

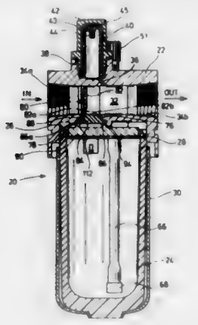


1. A ladder leveling attachment, comprising:
a hollow housing having an upper end and a lower end and having mounting means on the upper and lower ends thereof for attaching the housing to the leg of a ladder, said housing having a front wall, opposite side walls and a back wall which is disposed adjacent the leg of a ladder when the attachment is in use, an elongate channel in each of the opposite side walls extending along the length of the housing, and a plurality of upwardly angled notches in each side wall, communicating at one end with a respective channel and extending at their other end into close proximity with the back wall;
an extendible leg telescopically received in the housing and having a lower end projecting beyond the lower end of the housing for engaging a surface on which the ladder is placed; and
a latching pin carried by the extendible leg and extending transversely through the housing and leg, with opposite ends received in the notches in the housing to latch the leg in an adjusted position relative to the housing and ladder, said pin being movable out of said notches and into and along said channels for movement into a different notch to latch said extendible leg in a different adjusted position.

4,807,721
AIR LINE LUBRICATOR
Masaki Fujiwara, Sohka, Japan, assignor to Shoketsu Kinzoku Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 842,238, Mar. 21, 1986, abandoned. This application Apr. 12, 1988, Ser. No. 183,359
Int. Cl.[4] F16N *7/34*
U.S. Cl. 184—55.2 3 Claims

1. A lubricator comprising:
a case for storing lubricating oil;
a main body coupled to said case and defining an air passage therethrough having an inlet end and an outlet end, said main body including a first hole;
a damper disposed in said air passage and flexibly displaceable dependent on the rate of air flow through said air passage for varying the effective cross-sectional area of said air passage, said damper comprising a plate-like damper body positioned in said air passage and a support including a second hole and being mounted in said first hole of the main body, communication between said air passage and said case being provided through said first and second holes, said support supporting said damper body, said damper body and said support being integrally molded of a flexible material, said damper body having a groove horizontally transversely defined in a surface thereof which is downstream in the direction of the air flow through said air passage in the vicinity of a base portion close to said support; and

a plate-like damper holder which supports said damper in said main body, said damper holder having a fixed restric-



tion communication between said second hole and the interior of said case.

4,807,722

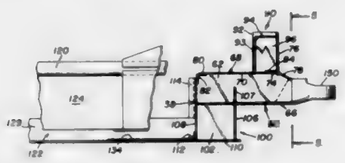
RAILROAD CAR FOR CONTAINER TRANSPORT

Richard E. Jamroxy, Lansing, Ill., and James M. Wilczynski, Highland, Ind., assignors to Thrall Car Manufacturing Company, Chicago Heights, Ill.

Filed Jul. 16, 1987, Ser. No. 74,341

Int. Cl.[4] B61D *3/08;* **B61F** *1/10*

U.S. Cl. 105—355 **22 Claims**



1. A railroad car for transporting a horizontal shipping container comprising:

first and second railroad trucks supporting opposite ends of a railroad car body;

the car body having a well portion, defined in part by low longitudinal side walls and lateral end walls, which supports one or more horizontal longitudinally positioned containers;

a center sill at each end of the car body;

each center sill being joined at one end to an upper portion of an adjacent well end wall with the other end of the center sill having coupler means to couple the car to another car to make up a train;

a vertical transition box extending downwardly outside of the well portion along the lateral end wall from the center sill bottom to about the bottom of the well portion;

the well side walls having top and bottom side sills extending at least for the length of the well portion; and

each bottom side sill is an inverted T-shaped member separate from but joined to the side wall and a plurality of lateral cross braces extend between and are joined to the bottom side sills.

4,807,723

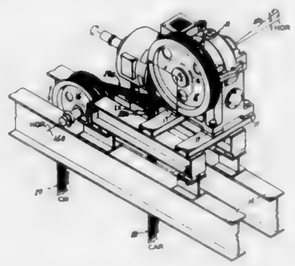
ELEVATOR ROPING ARRANGEMENT

John K. Salmon, South Windsor, and William S. Edge, Glastonbury, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Oct. 17, 1983, Ser. No. 542,628

Int. Cl.[4] B66B *11/04*

U.S. Cl. 187—20 **2 Claims**



1. An elevator system comprising, a car, a counterweight, a drive unit and a plurality of ropes extending from the counterweight to the car through the drive unit, which drives the rope to move the car within an elevator shaft, characterized by:

the drive unit comprising:

a motor;

a drive sheave; and

a deflection sheave;

the drive sheave being driven by the motor, and oriented at a first vertical angle relative to the rotational plane of the deflection sheave and offset a certain distance from the deflection sheave along the deflection sheave axis;

the ropes, in passing through the drive unit, extending from the counterweight to the deflection sheave and from the deflection sheave to the drive sheave at a second horizontal angle relative to the plane of each sheave, then around the drive sheave, and then to the car, the portion of the ropes from the deflection sheave to the drive sheave being adjacent the portions leaving the drive sheave and extending to the car;

the drive sheave and deflection sheave containing a nonmetallic insert in each groove for supporting and guiding the rope in the groove;

the first and second angles being equal.

4,807,724

HYDRAULIC DRIVE SYSTEM FOR ELEVATOR

Donnie L. Martin, Mercersburg, Pa., assignor to D. L. Martin Company, Mercersburg, Pa.

Filed Mar. 31, 1988, Ser. No. 176,062

Int. Cl.[4] B66B *9/04*

U.S. Cl. 187—110 **13 Claims**

1. A system for raising and lowering an elevator comprising:

(a) a vertically-oriented first hydraulic jack operatively connected to move said elevator vertically, said hydraulic jack including a first piston-cylinder combination;

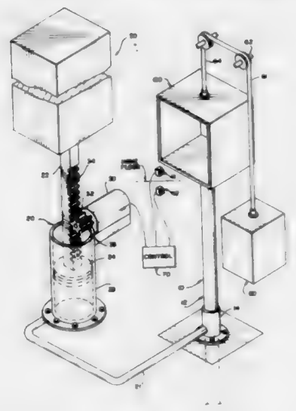
(b) a second hydraulic jack including a second piston/cylinder combination and a vertically movable shaft engaged by the piston of said second piston/cylinder combination;

(c) an interconnection pipe hydraulically joining the cylinder of said first piston/cylinder combination with the cylinder of said second piston/cylinder combination;

(d) drive means for providing a rotational motion;

(e) means for converting said rotational motion into translational motion of said shaft means; and

(f) hydraulic fluid within said first and second piston/cylinder and interconnection pipe, whereby downward move-



ment of said shaft raises said elevator and an upward movement of said shaft lowers said elevator.

4,807,725

FLOATING CALIPER SPOT-TYPE DISC BRAKE

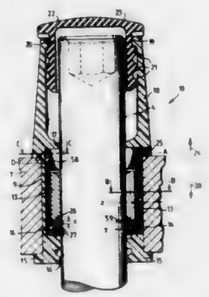
Rolf Weller, Frankfurt am Main; Uwe Bach, Niederahnsen; Thomas H. Kirst, Hilders, and Klaus Paschke, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 2, 1988, Ser. No. 162,927

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1987, 3707156

Int. Cl.[4] F16D *65/54*

U.S. Cl. 188—71.8 **11 Claims**



1. A floating caliper spot-type disc brake, comprising a brake carrier, at least one guide bolt arrangement, a brake housing displaceably disposed on the brake carrier by said guide bolt arrangement, said guide bolt arrangement including a guide bolt attached to the carrier extending into a bore in said brake housing, an elastomeric part in said bore surrounding the bolt, a holding member in said elastomeric member, a friction ring in said holding member, said friction ring mounted to said bolt in a manner to be carried along by the holding member in an axial direction, said holding member, in the area of the bore, is smaller in diameter than the bore diameter.

4,807,726

PAD RETAINING PLATE ASSEMBLIES FOR USE IN BRAKE SHOE ASSEMBLIES

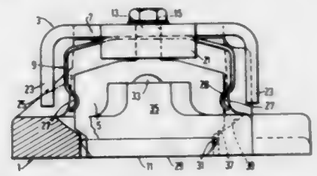
Colin J. F. Tickle, Burton, and Robert L. D. Burns, Dubai, both of Great Britain, assignors to Lucas Industries public limited company, Birmingham, England

Filed Nov. 10, 1987, Ser. No. 118,914

Claims priority, application United Kingdom, Nov. 11, 1986, 8626922

Int. Cl.[4] F16D *55/00, 65/04, 13/00*

U.S. Cl. 188—73.32 **9 Claims**



1. A pad retaining plate assembly comprising a latch member arranged to be movable relative to a guide, the guide being adapted to be secured to a brake shoe so that the latch member can then attain an operative position wherein the latch member projects through an aperture on the brake shoe, spring means being arranged to retain the latch member in the operative position, said spring means being a generally U-shaped leaf spring with the arms of the U-shaped spring having inwardly deformed regions which grip side edges of the latch member.

4,807,727

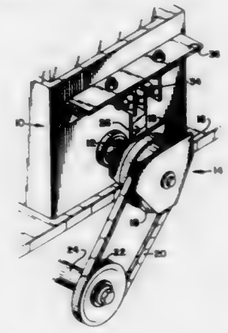
METHOD AND APPARATUS FOR SECURING A TORQUE APPLYING DEVICE

Dennis J. Pavlik, Eagan, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Sep. 21, 1987, Ser. No. 99,284

Int. Cl.[4] F16D *63/00, 67/02;* **B60T** *13/04;* **A01D** *69/10*

U.S. Cl. 188—84 **10 Claims**

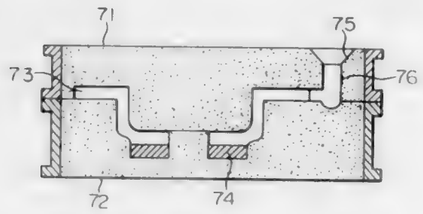


1. An apparatus for operatively securing the housing of an electric brake/clutch to a stationary member, comprising:

(a) an anti-rotation lever having first and second ends, wherein the first end is suitable for attachment to the housing through a connection means and the second end can be positioned such that the lever extends substantially radially from the housing; and

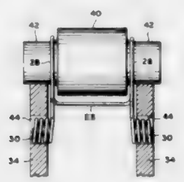
(b) means suitable for operative attachment to the stationary member for receiving the anti-rotation lever second end, wherein when the apparatus is utilized torque applied to the housing is transmitted through the anti-rotation lever, the second end receiving means, and finally to the stationary member, and runout of the electric brake/clutch is freely accommodated.

4,807,728
BRAKE MEMBER AND METHOD OF MANUFACTURING SAME
Makoto Suenaga, and Fumio Obata, both of Kitakyushu, Japan, assignors to Hitachi Metals, Ltd., Japan
Filed Mar. 17, 1987, Ser. No. 26,750
Claims priority, application Japan, Mar. 20, 1986, 61-62175; Apr. 23, 1986, 61-93691
Int. Cl.[4] F16D *65/02, 65/12;* B22D *19/00*
U.S. Cl. 188—260 16 Claims



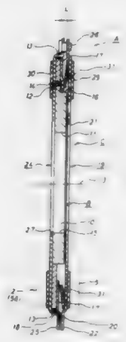
1. A brake member integrally cast from a single melt of a hyper-eutectic flaky graphite cast iron having an equivalent carbon content of greater than about 4.3% and composed of a sliding portion and a hub portion, said sliding portion having a flaky graphite cast iron microstructure with a good damping capacity and said hub portion comprising a rapidly solidified high-strength cast iron with a microstructure containing finer graphite particles than those in said flaky graphite cast iron.

4,807,729
BRAKE ROLLER RETAINER
Ernest C. Sampson, Fulton, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Nov. 9, 1987, Ser. No. 119,001
Int. Cl.[4] F16D *51/22*
U.S. Cl. 188—330 10 Claims



1. A retainer for retaining trunnions of a brake cam follower roller in open-sided bearing surfaces respectively disposed at ends of a pair of spaced-apart webs extending from a brake shoe, said webs respectively having means on facing surfaces for releasably securing the retainer thereto that are spaced-apart from the bearing surfaces, and said retainer having a generally "H" shaped configuration comprising;
- a bridging portion adapted to be disposed between the webs intermediate the trunnions and the means for releasably securing the retainer to the webs;
- a pair of resilient arms respectively disposed at opposite ends of the bridging portion, said arms respectively extending towards and encircling the trunnion on the same side of the bridging member as the arm without inhibiting rotation thereof and thence towards and past the bridging portion to respective free-ends thereof; and
- said arms respectively shaped between the bridging portion and the free-ends to resiliently engage the releasable securing means provided in the web in the same side of the bridging portion as the arm and thereby retain the trunnions in the bearing surfaces.

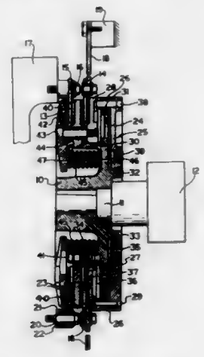
4,807,730
CLUTCH BRAKE
Seiichi Kitano; Yasunobu Fukatani, and Masaaki Asada, all of Osaka, Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan
PCT No. PCT/JP87/00503, § 371 Date Jan. 27, 1988, § 102(e) Date Jan. 27, 1988, PCT Pub. No. WO88/00662, PCT Pub. Date Jan. 28, 1988
PCT Filed Jul. 13, 1987, Ser. No. 181,150
Claims priority, application Japan, Jul. 14, 1986, 61-10770[U]
Int. Cl.[4] B60K *41/24;* F16D *67/02*
U.S. Cl. 192—13 R 5 Claims



1. A clutch brake (A) having a brake assembly (B) connectable to a rotatable shaft (3) with driving action accompanied and a cover assembly (C) providing external friction surfaces (29) and (30) and supported rotatably relatively to said brake assembly (B): characterized by that rivets (26) are provided which slidingly connect approximately disc-like, facing-each-other two cover elements (19) and (24) composing said cover assembly (C) with a specified axial clearance (L) left therebetween, an approximately disc-like spring member (31) for pressing the brake assembly (B) is interposed between the cover assembly (C) and the brake assembly (B), said clearance (L) between the cover elements (19) and (24) being so set that a spring force of the spring member (31) is not transmitted to the brake assembly (B) in an initial state where the cover assembly (C) is not pressed and the spring force of the spring member (31) is transmitted to the brake assembly (B) in an engaged state where the cover assembly (C) is pressed.

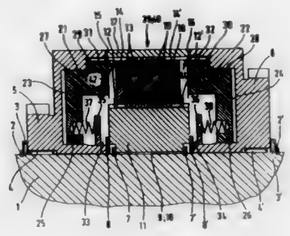
4,807,731
CLUTCH AND BRAKE ASSEMBLY
Marcus H. Collins, Akron, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed Sep. 11, 1987, Ser. No. 95,195
Int. Cl.[4] F16D *67/04*
U.S. Cl. 192—18 A 12 Claims

1. A spring operated brake and fluid operated clutch apparatus comprising,
- a hub fixed to and rotatable with a driven shaft;
- an annular piston means extending radially from said hub and fixed to and rotatable with said hub;
- a rotor and means mounting said rotor to said piston means at an axially displaced fixed distance from said piston means;
- an axially moveable cylinder means extending radially and forming an annular pressure chamber with said piston means and having a brake plate positioned at one side of said rotor;
- an axially moveable annular clutch plate and means for rigidly connecting said clutch plate to and axially spaced from said brake plate, said clutch plate positioned on the opposite side of said rotor;
- a drivable rotatable clutch disc and a non-rotatable brake disc, said rotor disposed between said clutch disc and brake disc;
- annular friction means disposed on opposite faces of said clutch disc and brake disc;
- means attached to the outer periphery of said clutch disc connecting said clutch disc to a rotatable driving member;



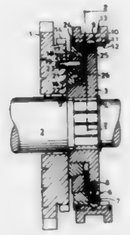
- means attached to the outer periphery of said brake disc connecting said brake disc to a fixed part;
- spring means biasing said brake disc toward said rotor, thereby applying a braking torque to the driven shaft; and
- passage means for admitting pressure fluid to said pressure chamber whereby the biasing forces are removed from said brake disc and said clutch plate is moved axially toward said clutch disc connecting the driving member to the driven shaft.

4,807,732
MULTIPLE-DISC CLUTCH FOR TRACTOR PTO SHAFT
Hubert Lehle, Meckenbeuren, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany
Continuation of Ser. No. 878,966, May 1, 1986, abandoned. This application Jul. 8, 1987, Ser. No. 71,031
Claims priority, application World Int. Prop. O., Oct. 24, 1984, PCT/EP84/00330
Int. Cl.[4] F16D *25/10, 25/06*
U.S. Cl. 192—48.5 6 Claims



6. A multiple disk clutch for a tractor PTO shaft comprising: a shaft having an inner disc carrier (11) connected thereto via splines (9, 10) and guard rings (7, 7', 8, 8'), said inner disc carrier carrying inner discs (13) and end discs (14) axially moveably between other guard rings (12, 12'); the end discs (14) supporting an outer disc carrier (17) carrying outer discs (19) via inner splines (18); the discs (13, 14, 19) forming a disc set (20) of a power shiftable multiple-disk clutch (40); at least one idler gear (5 or 6) being supported and axially fixed to the shaft (1) on one side of the outer disc carrier (17); the at least one idler gear forming a cylinder having an actuating chamber (23 or 24) with an actuating member (21 or 22) moveable therein; the actuating member (21 or 22) being non-rotatably and axially moveably connected with the idler gear (5 or 6) via an outer spline (29 or 31) and forming with the outer disc carrier (17) a shiftable positive claw clutch (42 or 44); a spring means (37 or 38) biasing the actuating member (21 or 22) into a disengaged position away from the disc set (20); wherein when pressure fluid is supplied to the actuating chamber (23 or 24) the fluid forces the actuating member (21 or 22) toward the disc set (20) and engages a claw clutch and then, almost simultaneously, the multiple disk clutch (40); and when the pressure in actuating chamber (23 or 24) decreases, the spring means (37 or 38) forces the actuating member (21 or 22) away from the disc set (20) and disengages the multiple-disc clutch (40) and then, almost simultaneously, the claw clutch.

4,807,733
SYNCHRONIZING MECHANISM FOR A GEARBOX
Horst F. Adler, Södertälje, Sweden, assignor to Saab-Scania Aktiebolag, Sodertalje, Sweden
Filed Mar. 20, 1987, Ser. No. 28,585
Claims priority, application Sweden, Mar. 20, 1986, 8601304
Int. Cl.[4] F16D *23/08*
U.S. Cl. 192—53 F 8 Claims



1. A synchronizing mechanism for a gearbox which includes a driving disc which is non-rotatably mounted on a shaft and is surrounded by a clutch collar non-rotatably connected to the disc, the clutch collar being axially displaceable for engaging with a gear rotatably mounted on the shaft,
- said synchronizing mechanism including:
- an outer synchronizing ring which is limitedly rotatable relative to the driving disc and formed with exterior detent teeth and an inner friction surface;
- an intermediate synchronizing ring non-rotatably connected to the gear and formed with an outer and an inner friction surface; and
- an inner synchronizing ring formed with the outer friction surface, the friction surfaces of the outer and the inner synchronizing rings being caused to glide, in use, against the friction surfaces of the intermediate synchronizing ring during a synchronizing phase;
- the outer and the inner synchronizing rings being joined to each other for torque transmission with the aid of a reaction disc having a first set of tabs engaging in recesses in the outer synchronizing ring and a second set of tabs engaging in recesses in the inner synchronizing ring, so that torque acting on the inner synchronizing ring during the synchronizing phase is transferred to the outer synchronizing ring and coacts with torque acting on the outer synchronizing ring for causing limited rotation of the outer synchronizing ring relative to the driving disc to a position where the exterior detent teeth on the outer synchronizing ring directly engage teeth on the clutch collar and prevent axial displacement of the clutch collar.

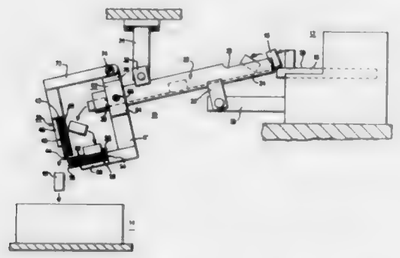
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4,807,734

PELLET-PRESS-TO-SINTERING-BOAT NUCLEAR FUEL PELLET LOADING APPARATUS

Fred S. Breedand, Jr., and Thomas B. Huggins, both of Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 24, 1987, Ser. No. 77,347
Int. Cl.[4] B65G 47/44
U.S. Cl. 193—32 10 Claims



1. An apparatus for loading nuclear fuel pellets into a sintering boat from a pellet press which ejects newly made said pellets from a pellet press rotating die table surface, said apparatus comprising:

(a) an inclinable pellet chute having a generally straight centerline, an upper end disposable proximate said die table surface of said pellet press for receiving ejected said pellets, and a lower end disposable proximate said sintering boat for discharging the received said pellets;

(b) a first member with a first resilient and generally planar surface having a first upper supported terminus and a flexible first lower free terminus, said first surface disposed such that said pellet discharged from said chute will strike and reflect downwardly off said first surface; and

(c) a second member with a second resilient and generally planar surface having a second upper supported terminus and a second lower free terminus, said second surface oriented generally parallel to the centerline of said chute and disposed such that said pellet reflecting downwardly off said first surface will strike and move downwardly along said second surface, and said second lower terminus of said second surface disposed with respect to said first lower terminus of said first surface such that said pellet moving downwardly along said second surface will contact said first lower terminus of said first surface before dropping off said second lower terminus of said second surface into said sintering boat.

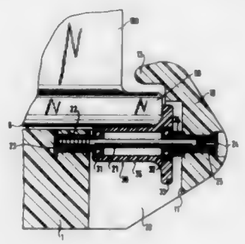
4,807,735

GUIDE ARRANGEMENT FOR A CONVEYOR TRACK

Thomas Huber, Iffeldorf, Fed. Rep. of Germany, assignor to Bavaria Cargo Technologie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 25, 1988, Ser. No. 160,240
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1987, 3733406
Int. Cl.[4] B65G 13/00
U.S. Cl. 193—35 B 4 Claims

1. A guide arrangement for a conveyor track having a panel means with side edges extending in the longitudinal direction of the conveyor track, the guide arrangement comprising guide bar portions which extend along respective ones of the side edges of the panel means of the conveyor track in the conveying direction at least over a part of the length of the respective side edges and which are of an inverted substantially L-shaped cross-section, adapted to engage over a portion of an article to be conveyed on the conveyor track, a plurality of openings in said panel means at spacings from each other along and adjacent to the respective guide bar portions, guide rollers which are freely rotatably mounted transversely to the direction of conveying movement in respective ones of said openings, the guide rollers each providing a circumferential surface which projects above the surface of said panel means and each guide roller having at an end thereof which is towards the



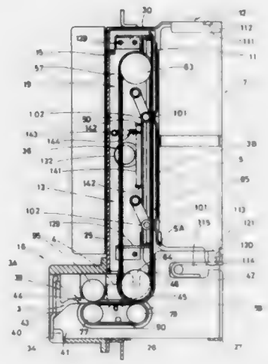
adjacent said guide bar portion an enlarged-diameter guide shoulder adapted during a conveying operation to guide said portion of a said article at a spacing relative to the respective guide bar portion, and means axially displaceably mounting each said guide roller and spring means biasing each said guide roller away from the respective guide bar portion, wherein said spring means is a plate spring means.

4,807,736

APPARATUS FOR DISCRIMINATING PAPER MONEYS AND STACKING THE SAME

Hirootsu Kondo, and Arihiko Iwasaki, both of Toyonaka, Japan, assignors to I.M. Electronics Co., Ltd., Japan

Filed Jan. 10, 1986, Ser. No. 817,587
Claims priority, application Japan, Jan. 7, 1986, 61-1921
Int. Cl.[4] G07F 7/04; B65H 29/44
U.S. Cl. 194—206 5 Claims



1. An apparatus for discriminating authenticity and denomination of paper money bills and stacking the same, comprising:

(a) a base box;

(b) sensor means in said base box for discriminating said paper money bills;

(c) a passage in said base box including a first part for transferring paper money bills inserted therein past said sensor means and a pushing-in part disposed to receive said paper money bills from said first part;

(d) a pair of guide members disposed on one side of said pushing-in part of said passage and extending along a

longitudinal direction of said pushing-in part, such that opposed inner edges of said guide members are spaced apart from each other in a transverse direction of said pushing-in part of said passage by a distance adapted to be less than a width of said paper money bills in said transverse direction when said paper money bills are being transferred through said passage;

(e) a stacker box mounted on said base box and having an opening positioned on said one side of said pushing-in part of said passage;

(f) a receiving plate disposed in said stacker box;

(g) means for biasing said receiving plate toward said opening in said stacker box;

(h) pushing means disposed in said base box, said pushing means including:

(i) a pair of parallel moving pieces disposed adjacent said pushing-in part and extending along said longitudinal direction of said pushing-in part,

(ii) a pair of swing members arranged symmetrically relative to said transverse direction, an outer end part of each swing member being pivotably connected to said base box to provide a pivot located on said one side of said pushing-in part, said swing members having respective inner ends connected to said moving pieces, respectively, such that said moving pieces are movably supported to said inner ends of said swing members, and

(iii) turning means for synchronously turning said swing members toward and away from said pushing-in part, whereby said swing members are turned forwardly by said turning means, said moving pieces are moved between said opposed inner edges of said guide members from a position on one side of said guide members to a position on the other side of said guide members while pushing one of said paper money bills between said opposed inner edges of said guide members such that one of said paper money bills transferred to said pushing-in part is pushed out therefrom onto said receiving plate;

(i) a distance between outer edges of said moving pieces in said transverse direction increasing while said moving pieces are being moved between said opposed inner edges of said guide members from a position on said one side of said guide members to said position on said other side of said guide members; and

(j) said distance between said outer edges of said moving pieces having a maximum when said swing members are pivoted to an extreme position with said moving pieces disposed on said other side of said guide members, said maximum being greater than said distance between said oppositely disposed inner edges of said guide members, whereby said one of said paper money bills pressed onto said receiving plate is spread out by said moving pieces.

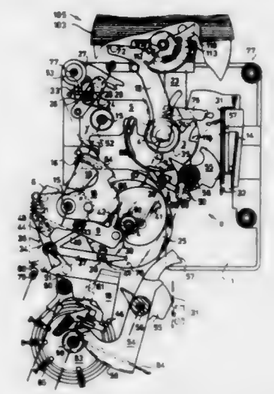
4,807,737

MANUALLY ACTUATED, SELF-COLLECTING PARKING METER

Lothar Herrmann, Horuberg; Bernhard Kaiser, and Ortwin Wokock, both of Villingen-Schwenningen, all of Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, VS-Villingen, Fed. Rep. of Germany

Continuation of Ser. No. 699,671, Feb. 8, 1985, abandoned. This application Jan. 27, 1987, Ser. No. 8,076
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1984, 3404752
Int. Cl.[4] G07F 17/24; G07C 1/30
U.S. Cl. 194—293 19 Claims

1. Manually actuated, self-collecting parking meter comprising a coin insertion device, a coin checking device for receiving coins of different diameters from said coin insertion device and checking the diameter of the coin, a rotary locking handle having a rotation cycle and arranged to place said coin insertion device in operation, and a parking time period display mechanism operable on the basis of the coin inserted into said coin insertion device after said rotary locking handle has been actuated, wherein the improvement comprises a first shaft (4) connected to and rotatable by said rotary locking handle (2), a heart-shaped cam disc (25) secured on said first shaft (4) for rotation therewith, an axle (15), a tilting lever (9) mounted on said axle and in engagement with said cam disc, said tilting lever in operable engagement with said coin checking device (8), a first toothed segment (5) secured on said axle (15) for rotation therewith, a coupling latch (6) on said first toothed segment (5) and engageable with said tilting lever (9) so that by turning said handle (2) in either rotational direction said tilting



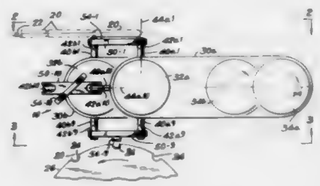
lever (9) is displaced for operating said coin checking device, a force accumulator (80) arranged to be loaded by said tilting lever when said tilting lever is displaced for operating said coin checking device, an operating mechanism (34) in operable engagement with said coin checking device, means in engagement with said force accumulator (80) and said operating mechanism, so that at the end of the rotation cycle of said handle said force accumulator automatically drives said operating mechanism for effecting the operation of said coin checking device and for setting said parking time period display mechanism.

4,807,738

CONVEYOR APPARATUS

Jack C. Wheless, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 13, 1987, Ser. No. 107,690
Int. Cl.[4] B65G 17/32
U.S. Cl. 198—377 6 Claims



1. Conveyor apparatus for conveying successive longitudinal articles from a first straight line path segment to a second straight line path segment which is parallel to but spaced from said first straight line path segment along an axis which is perpendicular to said first and second straight line path segment, said longitudinal articles being longitudinally aligned with one another while on one of said straight line path segments and parallel to but laterally spaced from one another

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while on the other of said straight line path segments, said conveyor apparatus comprising:

a plurality of first supports;

first means for causing said first supports to sequentially traverse a first path disposed in a first plane parallel to the plane defined by said first and second straight line path segments, said first path including third and fourth straight line path segments respectively parallel to said first and second straight line path segments;

a plurality of second supports;

second means for causing said second supports to sequentially traverse a second path disposed in a second plane, said first and second planes being substantially parallel but spaced from one another along a spacing axis substantially perpendicular to said first and second planes, said second path including fifth and sixth straight line path segments respectively parallel to said first and second straight line path segments, said third and fifth straight line path segments defining a third plane which is substantially parallel to but spaced from a fourth plane defined by said fourth and sixth straight line path segments, said first and second paths being congruent to one another but offset from one another along an offset axis which is substantially perpendicular to said spacing axis and substantially parallel to said first and second straight line path segments, said first and second means being synchronized to maintain each of said first supports at a respective point on said first path which is congruent to the point on said second path at which a respective one of said second supports is located;

a plurality of longitudinal conveyor members, each of said conveyor members extending between a respective one of said first supports and the one of said second supports which is at the congruent point on said second path, the offset between said first and second paths being such that the longitudinal axis of each conveyor member forms an angle of approximately 45° with an axis parallel to said spacing axis;

first and second connector means associated with each conveyor member for respectively connecting the associated conveyor member to the first and second supports between which said conveyor member extends; and

a plurality of longitudinal carrier members, each of said carrier members being mounted on a respective one of said conveyor members so that the longitudinal axis of each carrier member forms an angle of approximately 45° with the longitudinal axis of the associated conveyor member and so that when the supports for the associated conveyor member are on any of said third through sixth straight line path segments, the longitudinal axis of said carrier member is parallel to said third and fourth planes, all of said carrier members being mounted on their respective conveyor members at the same distance from said first plane so that the longitudinal axes of the carrier members on the portion of said conveyor apparatus adjacent said one of said first and second straight line path segments are longitudinally aligned with one another and so that the longitudinal axis of the carrier members on the portion of said conveyor apparatus adjacent said other of said first and second straight line path segments are parallel to but laterally spaced from one another, each of said carrier members being adapted to support at least one of said articles with the longitudinal axis of the article parallel to the longitudinal axis of said carrier member.

4,807,739

METHOD OF AND APPARATUS FOR TRANSPORTING AND TURNING STACKS OF PAPER SHEETS

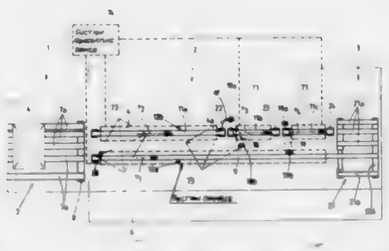
Wolfram Wolf, Bilsen; Klaus Reinmann, and Horst Lembcke, both of Hamburg, all of Fed. Rep. of Germany, assignors to E. C. H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Feb. 6, 1987, Ser. No. 11,935

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1986, 3604316; Aug. 20, 1986, 3628235

Int. Cl.⁴ B65G *47/24*

U.S. Cl. 198—415 **22 Claims**



5. Apparatus for turning stacks of paper sheets or the like, comprising means for transporting successive stacks in a predetermined direction, including a first conveyor defining an elongated first path and a plurality of second conveyors jointly defining successive sections of an elongated second path which is parallel to and adjacent the first path; adjustable drive means for driving said conveyors in a predetermined direction at different speeds so that a stack which is deposited in a predetermined starting orientation on said first conveyor and simultaneously rests on at least one of said second conveyors is turned when the first conveyor and the one second conveyor means are driven at different speeds; means for monitoring the orientation of stacks in predetermined portions of said first and second paths and for generating signals denoting the monitored orientation of stacks; and means for adjusting said drive means in response to said signals so as to cause each stack to assume a predetermined final orientation not later than upon completion of advancement along said first and second paths, said second conveyors including at least one upstream conveyor disposed ahead of the predetermined portion of said second path and at least one downstream conveyor disposed past the predetermined portion of said second path, said adjusting means including means for changing the difference between the speed of said first conveyor and the speed of said downstream conveyor when the monitored orientation of a stack deviates from a desired intermediate orientation.

4,807,740

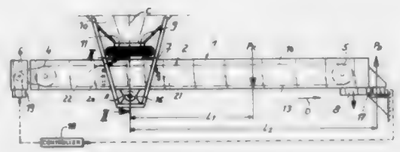
TROUGH-TYPE CHAIN CONVEYOR FOR BULK MATERIAL

Lothar Teske, Hegelstr. 15, D-5000 Köln, Fed. Rep. of Germany

Filed Aug. 17, 1987, Ser. No. 86,726

Int. Cl.⁴ G10G *11/08*

U.S. Cl. 198—505 **2 Claims**



1. In combination with a supply of bulk material having an outlet of a predetermined relatively great transverse width, a conveyor for moving the material from the outlet to an output location longitudinally and horizontally offset from the outlet in a transport direction, the conveyor comprising:

a trough having

an intake of generally the large transverse width and opening upwardly underneath the outlet of the supply for receiving bulk material therefrom,

an output opening downward at the output location,

a base extending in the transport direction, and

a pair of side walls extending upward from the base and also extending in the transport direction, the side walls flaring upward away from each other at least at the intake and having upper edges spaced transversely apart at least at the intake by the transverse width and having lower edges spaced transversely apart generally along the full length of the trough by a transverse width substantially smaller than the great width of the upper edges and intake;

an endless conveyor chain carrying transversely projecting pushers and having a lower stretch immediately juxtaposed in the trough with the base thereof and an upper stretch extending in the trough above the lower stretch and underneath the intake, whereby a stream of bulk material passing out of the supply outlet and into the trough intake is longitudinally traversed by the upper stretch;

drive means for driving the chain and thereby advancing the lower stretch in the transport direction to move the material from the intake to the output and to advance the upper stretch opposite to this transport direction and break up the incoming bulk-material stream at the intake;

a pivot supporting the trough for limited rocking about a horizontal axis directly underneath the intake and transverse to the transport direction;

means including a sensor supporting the trough downstream of the intake for generating an output corresponding to the weight of the trough and its contents downstream of the intake; and

control means connected to the sensor and to the drive means for varying the rate of advance of the lower stretch in accordance with the sensed weight of the trough and its contents downstream of the intake.

4,807,741

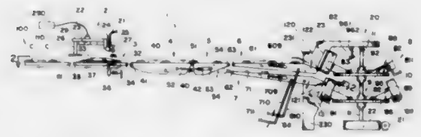
AUTOMATIC DIRECT SOFT COOKIE LOADING APPARATUS

William J. Simelunas, Glen Rock; Henry N. Shotket, Rutherford, and Celso Espejo, Chatham, all of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Division of Ser. No. 682,244, Dec. 17, 1984, Pat. No. 4,662,152. This application Sep. 30, 1986, Ser. No. 913,226

Int. Cl.⁴ B65G *29/00*

U.S. Cl. 198—477.1 **18 Claims**



1. An apparatus for handling articles, comprising:

a rotatable table having holders for a plurality of trays, wherein each of said trays has at least two compartments separated by a connecting portion, each holder comprising means for supporting each of said trays, said means for supporting trays being adapted to be in supporting contact with each of said trays along said connecting portion, said means for supporting trays comprising a fixed section and a pivotable section, wherein each of said trays is supported along a bottom edge thereof by said pivotable portion, and is supported along said connecting portion by projecting members of said fixed section.

4,807,742

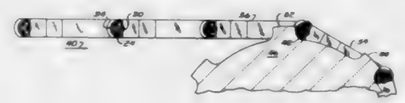
DRAG LINK CHAIN

Harry W. Templin, Morganton, N.C., assignor to PT Components, Inc., Indianapolis, Ind.

Continuation of Ser. No. 733321, May 13, 1985, abandoned. This application Apr. 20, 1987, Ser. No. 40,493

Int. Cl.⁴ B65G *19/24*

U.S. Cl. 198—730 **10 Claims**



1. Improved chain link construction comprising a first sidebar and a second sidebar, each said sidebar formed generally in the shape of a parallelopiped and having a first end portion angled obliquely inwardly for a predetermined distance and thereafter bent forwardly to assume a straight length of the first end portion, said sidebars spaced parallel to and apart from each other so that said first ends are separated by a distance less than the distance separating said sidebars at second ends thereof, a barrel fixedly secured between said sidebars substantially normal thereto at said first ends, said barrel and said first ends forming a closed end of the link, said second ends of the sidebars forming an open end of the link, said barrel having an outer first side formed to have a substantially flat, generally vertical surface facing inwardly from the closed end of the link toward said open end of the link, said barrel having an outer second side formed to have a round surface facing outwardly and away from the closed end of the link, a bore formed through said barrel shaped so as to provide substantially uniform wall thickness throughout the length of the barrel, said barrel bore having an inner first surface formed to provide a substantially flat generally vertical side of complementary shape to the outer first side of said barrel, said barrel bore having an inner second surface formed to provide a concavely curved rearward surface of complementary shape to the outer second side of said barrel, a cylindrically shaped pin adaptable to be fitted within said bore of the barrel and connect second ends of an open end of a second link disposed over and about the closed end of the link, said pin being secured in the second ends of the link and locked against both sliding and rotative movement therein, said pin having a diameter less than the longitudinal distance between said inner first surface of the bore and a most rearwardly disposed portion of the concavely rearward surface thereof so as to provide variable clearance between said pin and said bore, said barrel bore having its concavely curved rearward surface in continuous contact throughout its length with an outer rearwardly disposed portion of the circumferential surface of the pin, said barrel and said pin being effective to form an articulated joint only between said concavely curved portion of said bore and said rearwardly disposed portion of the circumferential surface of the pin.

4,807,743

WARE FOR FLAT GLASS PRESERVATION

Yoshimitsu Yasuda, Osaka, Japan, assignor to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Oct. 29, 1987, Ser. No. 115,602

Claims priority, application Japan, Oct. 29, 1986, 61-257527

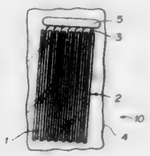
Int. Cl.⁴ B65D *81/26, 85/48*

U.S. Cl. 206—204 **7 Claims**

1. In a ware for preserving a plurality of flat glass pieces arranged in strata in combination with said glass pieces, the component comprising:

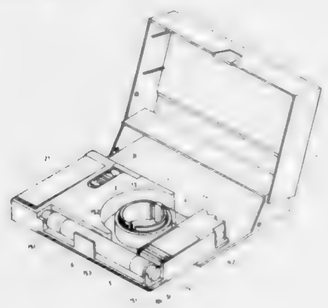
VOL 1099 ISS 4 FEB 28 1989 UMI

a plurality of paper sheets each respectively interleaved between said glass pieces;
a desiccating body in contact with said paper sheets; and



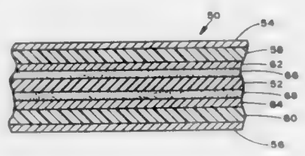
a sealable wrapper wrapped around said glass pieces, said paper sheets and said desiccating body in a shielding manner to the atmosphere.

4,807,744
CASSETTE STATIONERY SET
Jeng-Jong Chiou, 3F-1, No. 337, Sec. 4, Hsin Yi Rd., Taipei, Taiwan
Filed Mar. 16, 1988, Ser. No. 169,035
Int. Cl.[4] A45C *11/34, 11/36*
U.S. Cl. 206—214 **1 Claim**



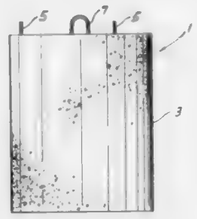
1. A cassete stationery set comprising:
a base, having a notch that has a flanged plate facing inward, a scoop channel opening at the front, a ring flange that has a plurality of gaps and two stop blocks, a case that has a cover plate and one side that forms a cutter plane, a pen holder seat with both ends in semi-circular arch shape and with a nose and a stop plate respectively arranged at both sides, a concave plane with a flange at both ends;
a stapler being attached with a U-shaped clamp to match with the notch of the base for location therein and by means of the flange plate to restrict its movement;
a knife being directly placed in the scoop channel a opening and having a convex plate matched with the shape of the opening;
an adhesive tape received on the ring flange of the base by means of the gap and being protected from breaking away by means of the stop blocks wherein the tape can be cut by the application of the cutter plane;
a case directly arranged at the base for receiving a variety of stationery accessaries;
a ball point pen being placed in the pen holder seat by means of its shaft at both ends to respectively match with the semi-circular arc and being firmly located therein by means of the restriction of the stop plate and the nose;
a short rule being placed in the concave plane and firmly located therein by means of notches on the scale respectively matching with the flanges of the concave plane;
a cassette case for receiving the base and all the stationery components placed in the base.

4,807,745
BARRIER SEALED PACKAGES FOR CIGARETTES AND OTHER SMOKING ARTICLES
William H. Langley; Roy E. Yeatts; Carl C. Hein, III, all of Winston-Salem, and Matthew S. Koschak, Pfafftown, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Continuation of Ser. No. 127,019, Nov. 27, 1987. This application Apr. 18, 1988, Ser. No. 183,429
Int. Cl.[4] A24F *15/00*
U.S. Cl. 206—245 **14 Claims**



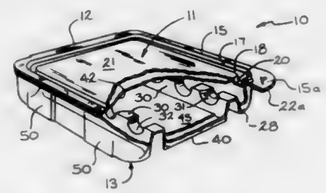
1. A packaging laminate for barrier sealed cigarette or other smoking article packages comprising:
a foil layer;
exterior and interior surface skin layers of fusion heat-sealable thermoplastic polymer having a softening point between about 165° F. and 190° F., each of said surface layers having a thickness between about 0.05 and 0.1 mils;
first and second biaxially oriented polypropylene homopolymer layers, said first polypropylene layer located between said exterior skin layer and said foil layer, said second polypropylene homopolymer layer located between said interior skin layer and said foil layer; and
first and second adhesive layers, said first adhesive layer coupling said first polypropylene layer to said foil layer and said second adhesive layer coupling said second polypropylene layer to said foil layer on the other side thereof;
said packaging laminate having a thickness of between about 1.5 and 2.5 mils.

4,807,746
PRE-MIXED THERMOPLASTIC UNITS AND METHOD OF USING SAME
William A. Jacobs, 711 Notre Dame, Edwardsville, Ill. 62025
Filed Jul. 31, 1987, Ser. No. 80,480
Int. Cl.[4] B65D *69/00;* **E01C** *7/08*
U.S. Cl. 206—321 **21 Claims**



1. A preformed one-piece unit in solid-state form adapted for transport and subsequent conversion to a fluid state, comprising a body of thermoplastic material having heater means embedded therein adapted for melting the thermoplastic material, the unit being adapted for storage and transport with said body in solid state form and subsequent heating of the body via said heater means at a work site to provide the thermoplastic material in a fluid state.
10. A method of incorporating a thermoplastic material into a mass comprising
providing a one-piece body of solid state thermoplastic material having heater means embedded therein for heating the body,
transporting the solid body having the heater means embedded therein from one location to a second location,
melting the body of solid state thermoplastic material via the heater means, and
incorporating the melted thermoplastic material into the mass.

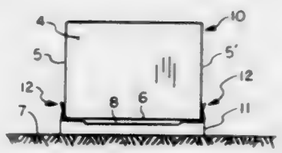
4,807,747
PACKAGE STRUCTURE FOR SPARK PLUGS
Frederick B. Haddke, New Providence, N.J., assignor to Champion Spark Plug Company, Toledo, Ohio
Continuation-in-part of Ser. No. 97,383, Sep. 16, 1987, abandoned, which is a continuation of Ser. No. 850,536, Apr. 11, 1986, abandoned. This application Apr. 19, 1988, Ser. No. 183,698
Int. Cl.[4] B65D *85/00*
U.S. Cl. 206—327 **29 Claims**



1. A package structure comprising:
a lid of a flexible material which is relatively resistant to elongation and compression, said lid having
a central, substantially planar lid panel, and
lid channel means which is integral with, and extends about a major portion of the periphery of, said lid panel;
a base of a flexible material which is relatively resistant to elongation and compression, said base having
a generally flat base panel, and
a stepped base wall which is integral with, and extends completely around the periphery of,
said base panel,
said lid and said base being movable relative to one another between an open position and a closed position, said channel means and the step of said stepped base wall abutting one another when said lid and said base are in a closed position, and
a base insert adjacent said base panel, interior of said stepped wall, said insert being sufficiently stiff and extending into sufficiently close proximity with opposed portions of said base that it is operable to strengthen said base against flexing.

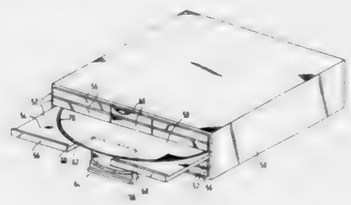
4,807,748
ATTACHABLE CONTAINER RISER
Douglas E. Manning, Knoxville, Tenn., assignor to Phelps Engineering Company, Inc., Knoxville, Tenn.
Continuation-in-part of Ser. No. 885,226, Jul. 14, 1986, abandoned. This application Dec. 4, 1987, Ser. No. 129,966
Int. Cl.[4] B65D *19/00*
U.S. Cl. 206—386 **6 Claims**

1. A material handling system having means for attaching a riser assembly to an object, said object having a bottom and a plurality of oppositely opposed upright sides, said material handling system comprising:
a plurality of elongated support members located underneath said object, each of said support members having a first and second end portion;
a plurality of clips each attached to said first and second end portion of said support members, each clip having one end rigidly attached to said support member and a free end extending generally perpendicular to said support member, each of said clips forming a cantilevered spring on top



of said support members for exerting force against the side of said object thereby allowing attachment of said support members to said object;
means for allowing deflection of the bottom of said object comprising clearance along the top portion of the mid-length of said support members and;
mounting means for attaching said clips upon said support members.

4,807,749
CONTAINER FOR FLAT RECORDING MEDIA
Peter Ackeret, Kusnacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Chur, Switzerland
Continuation of Ser. No. 862,232, Apr. 1, 1986, abandoned. This application Jan. 11, 1988, Ser. No. 142,187
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1984, 8423026[U]; Dec. 18, 1984, 8436936[U]
Int. Cl.[4] B65D *85/57, 85/672*
U.S. Cl. 206—387 **26 Claims**



1. A container for flat recording media comprising:
a housing having a front opening, said housing being sized to receive a plurality of slider members, and further including a plurality of intermediate floors formed in the housing to define individual compartments to receive the slider members, the intermediate floors having dish-like depressions;
a slider member cooperating with said housing for receiving the recording media and sliding in a first direction between a storage position wherein the recording media is fully within said housing to an ejected position partly outside the housing, the recording media having broader faces which lie substantially parallel to the side first direction when the media is supported on said slider member, said slider member further including a front wall for closing at least the portion of said housing front opening provided for said slider member when the slider member is pushed from the ejected position into the storage position, said front wall including a cut-out;
first spring means for biasing the slider member toward the ejected position;

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stop means for limiting the travel of the slider member in said first direction and therefore defining said ejected position;

locking means for holding the slider member in the storage position against the bias of said first spring means; and

removal means operatively associated with said front wall for exposing portions of the broader faces of the recording media in the vicinity of the cut-out when said slider member is in the ejected position, such that the media can be manually grasped, pincer-like through the cut-out, and removed from the slider member over the front wall.

6. A container for flat recording media comprising:

a housing having a front opening;

a slider member cooperating with said housing for receiving the recording media and sliding in a first direction between a storage position wherein the recording media is fully within said housing to an ejected position partly outside the housing, the recording media having broader faces which lie substantially parallel to the said first direction when the media is supported on said slider member, said slider member further including a floor and a front wall for closing at least the portion of said housing front opening provided for said slider member when the slider member is pushed from the ejected position into the storage position, said front wall including a cut-out;

first spring means for biasing the slider member toward the ejected position;

stop means for limiting the travel of the slider member in said first direction and therefore defining said ejected position;

locking means for holding the slider member in the storage position against the bias of said first spring means; and

removal means operatively associated with said front wall for exposing said portions of the broader faces of the recording media in the vicinity of the cut-out when said slider member is in the ejected position, said removal means including a lifting spring for lifting the recording media away from the slider member floor in the vicinity of the cut-out such that the media can be manually grasped, pincer-like through the cut-out, and removed from the slider member over the front wall.

26. A container for flat recording media comprising:

a housing having a front opening;

a plurality of slider members arranged one above the other and cooperating with said housing for receiving the recording media and sliding in a first direction between a storage position wherein the recording media is fully within said housing to an ejected position partly outside the housing, the recording media having broader faces which lie substantially parallel to the said first direction when the media is supported on said slider member, said slider member further including a front wall for closing at least the portion of said housing front opening provided for said slider member when the slider member is pushed from the ejected position into the storage position, said front wall including a cut-out;

first spring means for biasing the slider member toward the ejected position;

stop means for limiting the travel of the slider member in said first direction and therefore defining said ejected position;

locking means for holding the slider member in the storage position against the bias of said first spring means; and

removal means operatively associated with said front wall for exposing portions of the broader faces of the recording media in the vicinity of the cut-out when said slider member is in the ejected position, such that the media can be manually grasped, pincer-like through the cut-out, and removed from the slider member over the front wall;

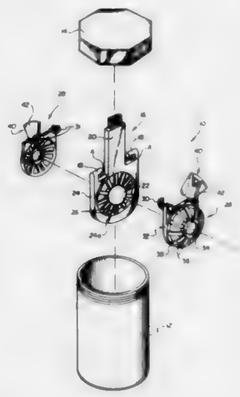
buttons for releasing the locking means, the release button of adjacent slider members being arranged in the region of the front wall so that the buttons are staggered in relation to one another.

4,807,750

LATCHING STRUCTURE FOR CONTACT LENS HOLDER

Francis E. Ryder, Arab, and Rowland W. Kanner, Guntersville, both of Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Oct. 28, 1987, Ser. No. 114,420
Int. Cl.[4] B54D *81/18*; A61L *2/18*
U.S. Cl. 206—5.1 **20 Claims**



1. An appliance for storing contact lenses comprising a container including a body with an open end and a removable cap closing the end, a lens support structure secured to said cap for holding a pair of lenses within said container, said lens support structure comprising; a support frame with pivot bearing means formed thereon: and a pair of pivotal, elongate lens holder members, each holder member providing a lens cover portion and being pivotably supported on said bearing means: said support structure further comprising latch means located vertically above said lens cover portions and between said lens cover portions and said cap, said latch means being in releasable latching engagement with said support frame releasably to retain said respective holder member in a closed position for enclosure of said respective lens by said cover portion.

6. An appliance for storing contact lenses comprising a container including a body with an open end and a removable cap closing the end, a lens support structure for holding a pair of lenses within said container, said lens support structure comprising; a support frame with pivot bearing means formed thereon: and a pair of pivotal, elongate lens holder members, each holder member providing a lens cover portion and being pivotably supported on said bearing means: said support structure further comprising latch means located above said lens cover portions and in releasable latching engagement with said support frame releasably to retain said respective holder member in a closed position for enclosure of said respective lens by said cover portion, wherein said latch means includes a finger flange mounted adjacent said pivot arm for manual engagement to actuate said release of the latch means.

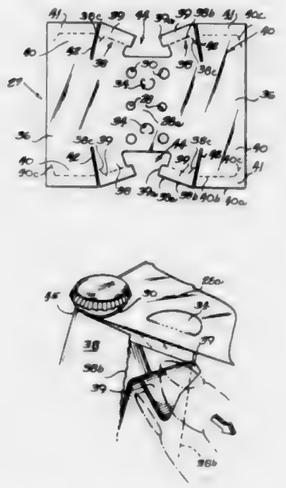
4,807,751

PACKAGE FOR CONTAINERS

Mindaugas J. Klygis, Barrington, and William N. Weaver, Northbrook, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 25, 1987, Ser. No. 101,174
Int. Cl.[4] B65D *75/00*
U.S. Cl. 206—427 **20 Claims**

2. A unitary package for retaining and handling a plurality of arranged containers or the like, comprising: a plurality of generally elongate containers arranged in an array; an arranging structure comprising a discrete apertured sheet of resiliently deformable material having a plurality of apertures within which respective body portions of the containers are gripped; a discrete film envelope stretched over said container array and comprising an upper panel having a plurality of holes through which upper portions of said respective containers project, said envelope further comprising a four sided skirt portion downwardly extending from said holes and being overlapped and bonded to said sheet to provide a cohesion therebetween, wherein said skirt portion comprises a first, upper pair of closure flaps and a second, lower pair of closure flaps located below said first pair of flaps, said flaps within each of said pairs being oppositely joined, said joined pairs being adjacently located to provide a tensioned closure portion of said skirt portion.



parallel relationship, the strand and gripping elements of each holder extending axially in a generally straight line, each of said first gripping elements being joined to other first gripping elements immediately adjacent thereto, each of said second gripping elements being joined to other second gripping elements immediately adjacent thereto, said assembly further comprising at least one generally stiff first support means having a body part and opposite ends, said support means situated generally parallel to the strand of one of said holders with said ends of said support joined to said first and second gripping elements respectively, whereby said first support means maintains said first gripping elements spaced apart from said second gripping elements of each pair respectively and maintains said strand between each pair of first and second gripping elements generally straight, each holder being separable from an adjacent holder by breaking off one gripping element relative to the adjacent gripping element joined to said one gripping element.

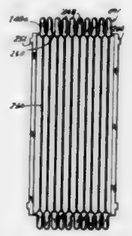
11. A package containing a plurality of dental floss holders, each holder formed of a strand of dental floss with upper and lower gripping elements secured on opposite ends of said floss, said upper gripping element and a portion of said strand of floss immediately adjacent thereto defining the upper part of the holder, said lower gripping element and a portion of said strand of floss immediately adjacent thereto defining the lower part of the holder, each holder having length L when extended lengthwise, said package comprising a panel that is generally stiff and flat, has front and rear surfaces with length at least as great as L, said front and rear surfaces having upper and lower parts, a plurality of spaced-apart upper holding means on said upper part of said front surface, each upper holding means adapted to releasably engage at least a portion of said upper part of the holder, a plurality of lower holding means on said lower part of said front surfaces, each lower holding means aligned with one upper holding means and each adapted to releasably engage at least a portion of said lower part of the holder, and a cover sheet secured to said front surface and covering said plurality of holders secured thereto, said panel having at least one flap portion bendable rearward out of the plane of said panel to expose upper gripping elements, whereby a user can grasp and pull an exposed upper gripping element to release and remove the corresponding holder from said upper and lower holding means and from said package.

4,807,752

DENTAL FLOSS HOLDERS AND PACKAGE ASSEMBLY OF SAME

Ingram S. Chodorow, Upper Saddle River, N.J., assignor to Placontrol Corporation, Montvale, N.J.

Filed Jan. 21, 1986, Ser. No. 819,906
Int. Cl.[4] A61B *19/02*; A61C *15/00*
U.S. Cl. 206—63.5 **21 Claims**



1. An assembly of dental floss holders, where each holder comprises a strand of dental floss having opposite first and second ends and a pair of first and second plastic gripping elements respectively secured to each of said ends, said assembly comprising a plurality of said holders situated in spaced

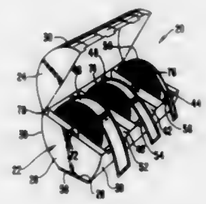
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4,807,753

DISPENSER AND PACKAGING FOR BANDAGE STRIPS

Nancy H. Goldstein, 3829 Windom Pl., NW., Washington, D.C. 20016

Division of Ser. No. 815,031, Dec. 31, 1985. This application Mar. 14, 1988, Ser. No. 141,133
Int. Cl.[4] A61B *17/06*, *19/02*
U.S. Cl. 206—390 **3 Claims**



1. Packaged rolls of bandage strips comprising:

a series of bandage strips disposed in end-to-end relation;

packaging material surrounding the bandage strips for maintaining the strips in the end-to-end relationship and in a sterile condition;

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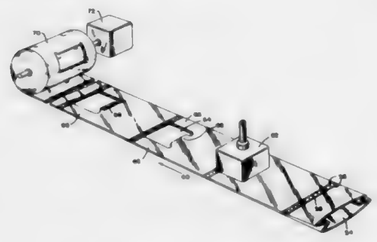
transverse seal means in the packaging material for maintaining the strips sterilely separate from each other;
line of weakness means in the packaging material, each located forward of a respective seal means for aiding separation of the packaging material and a corresponding bandage strip from the remainder of the roll while maintaining the bandage strips in the remainder of the roll in a sealed, sterile condition, and
wherein the length of a strip is greater than the distance between the seal means forward of the strip and the line of weakness means behind the respective seal means so that the strip is easily removable from the packaging material after separation of the packaging material along the line of weakness means.

4,807,754

PACKAGING SYSTEM FOR PLASTIC BAGS

E. R. Rowe, Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Feb. 29, 1988, Ser. No. 161,821
Int. Cl.[4] B65D *33/10*
U.S. Cl. 206—390 8 Claims



1. In a forming system for packaging a strip of severably joined T-shirt bags of plastic film in a bag package, a continuous length of formed bags defined by edge-joined overlying sheets of plastic film, means for longitudinally feeding said length of formed bags in a forward direction toward a bag package being formed, said length of formed bags having transverse severance lines thereacross at longitudinally spaced positions therealong and defining individual bags between adjacent pairs of severance lines, each of said bags having a leading top end defined by a forwardmost one of the pair of severance lines defining the bag, each bag having a central cutout along the leading end thereof, said cutouts defining a pair of laterally spaced bag handles extending rearwardly from the leading end of each bag and a transverse bag mouth between said handles in rearwardly spaced relation to the leading end of each bag, each bag mouth being defined by free overlying edges of the overlying sheets, said free overlying edges of each bag including means for precluding entry of air into the bag mouth upon forward feeding of said bags.

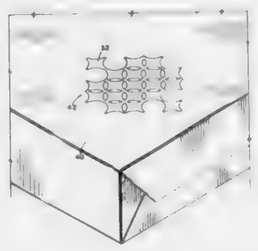
4,807,755

METHOD OF MAKING PACKAGING DESIGN

Carolyn S. Jones, 2102 N. Vancouver, Tulsa, Okla. 74127

Division of Ser. No. 892,200, Aug. 4, 1986, Pat. No. 4,741,793, which is a division of Ser. No. 738,408, May 28, 1985. This application Feb. 4, 1988, Ser. No. 152,333
Int. Cl.[4] B65D *65/02, 65/38*
U.S. Cl. 206—457 3 Claims

1. A gift package which comprises:
a wrapping on a gift package;
a decoration on said wrapping made from design building units arranged in an artistic manner, said design building units having been obtained from a design sheet having an adhesive thereon and peelable from a backing in which the design sheet has a plurality of rows of non-continuous circular holes.
2. A gift package which comprises:
a wrapping on a gift package;
a decoration on said wrapping made from design building units arranged in an artistic manner applied directly to



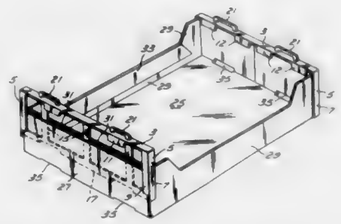
said package in close proximity to each other in a substantially nonsuperimposed relationship, said design building units having been obtained from a design sheet having an adhesive thereon and peelable from a backing in which the design sheet has a plurality of rows of non-continuous circular holes.

4,807,756

PRODUCE CARTON STRENGTHENING BRACKET

Thomas R. Young, 1535 East Orangewood, #118, Anaheim, Calif. 92806, and David A. Aure, Rte. 1, Box 112, Earlimart, Calif. 93219

Continuation-in-part of Ser. No. 857,735, Apr. 29, 1986, abandoned. This application Apr. 1, 1987, Ser. No. 30,406
Int. Cl.[4] B65D *21/02, 5/44*
U.S. Cl. 206—509 18 Claims



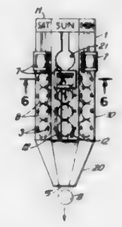
1. A bracket for strengthening a carton which has a bottom wall, side walls, and at least one end having an end flap and interior flaps, for holding said flaps and for supporting additional cartons in a stack of cartons, comprising:
a stiffening flange extending parallel to said bottom wall;
a pair of side members extending perpendicularly to said stiffening flange substantially throughout the heighth of said carton to resist the bending and twisting of said carton;
an end flange formed on each of said pair of side members extending parallel to said stiffening flange for engaging said end flap;
a flap retainer depending perpendicular from said stiffening flange for engaging said interior flaps; and
an internal member depending from said stiffening flange and extending a significant portion of the heighth of said side members;
said end flanges and said flap retainer being spaced on opposite sides of said internal member to frictionally engage and hold said end flap and said interior flaps against said internal member.

4,807,757

PILL DISPENSER PROVIDING SEQUENTIAL DISPENSING MEANS AND AUTOMATIC INCREMENTAL DISPENSING CONTROL

Lisa N. Rappaport, 165 W. End Ave., New York, N.Y. 10023, and Bradley J. Bolnick, 36 Hailey Dr., Pomona, N.Y. 10970

Filed Aug. 4, 1987, Ser. No. 81,650
Int. Cl.[4] B65D *83/04*
U.S. Cl. 206—535 12 Claims



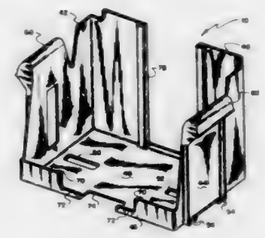
1. A pill dispensing device comprising:
a housing having a plurality of pill-retaining chambers extending axially thereof, each of said chambers being proportioned to hold a predetermined number of pills stacked edge-to-edge therein and formed with a dispensing opening;
a pair of opposed retaining rails mounted in the interior of each said chamber and extending along opposite sides thereof, each said pair of retaining rails adapted to retain said predetermined number of pills stacked edge-to-edge therebetween, each said pair of retaining rails having lower ends which are resiliently biased so as to move away from each other to release the lower-most pill in its corresponding stack in response to downward force exerted on said corresponding stack and allow the lower-most pill to pass through the dispensing opening of its corresponding chamber, said lower ends returning to their original position when said downward force is removed so as to prevent release of a next pill;
a vertical guide track for each said chamber formed on the exterior of said housing;
a unitary dispensing element mounted to each said guide track and slidable along the length thereof, each said dispensing element formed with an exterior portion projecting outwardly from its corresponding guide track and an integral interior portion projecting into its corresponding chamber, each said dispensing element being accessible from the exterior of said housing and being downwardly translatable in response to downward pressure so as to cause said interior portion to bear upon the upper-most pill in its corresponding stack;
resistance means disposed on the exterior of said housing, said resistance means adapted to permit each said dispensing element to translate downwardly along its corresponding guide track in response to downward pressure applied thereto yet generally stop further downward travel and hold said dispensing element in place on said corresponding guide track after each in a series of predetermined incremental downward movements, such that, during downward movement of each said dispensing element, the lower ends of its corresponding pair of retaining rails will move away from each other in response to force exerted by said dispensing element so as to release the lower-most pill in its corresponding stack from said corresponding retaining rails and allow the lower-most pill to pass through the dispensing opening in its corresponding chamber, said lower ends essentially immediately moving back towards each other to prevent a further pill from being released from said corresponding retaining rails and thereby ensure that only one pill at a time will be dispensed from said corresponding chamber.

4,807,758

TOTE BOX FOR REPRODUCTION APPARATUS

Charles R. Hubbard, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1987, Ser. No. 138,464
Int. Cl.[4] B65D *6/04*
U.S. Cl. 206—555 7 Claims



1. A tote box for receiving a stack of discrete sheets and for inverting and removing the stack from the box, the box comprising:
a bottom wall having a surface on which sheets are stacked,
means on the bottom wall defining a handhold by which a person can grasp and move the tote box,
first and second side walls projecting upwardly from the bottom wall in generally parallel planes,
a pair of handles secured to the first and second walls and spaced from the bottom wall,
third and fourth side walls projecting upwardly from the bottom wall in generally parallel planes that are substantially perpendicular to the first and second walls, the third wall being shorter than the fourth wall with the top of the third wall being sufficiently low to enable sheets to pass above the top of the third wall as they are delivered into the tote box,
whereby a stack of sheets resting on the bottom wall of the tote box and between the other walls can be unloaded by first turning the box approximately ninety degrees so that the box rests on the fourth wall, and then using the handhold on the bottom wall to turn the box another ninety degrees so that the box is completely inverted, and then lifting the box away from the stack.

4,807,759

PACKAGE FOR AN EXPANDABLE REMOTE INTERFACE UNIT

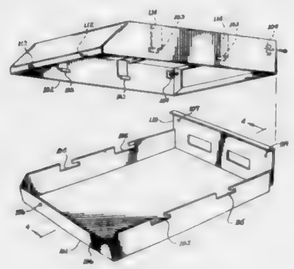
Bryan G. Castner, 119 E. Blacklidge Dr., Tucson, Ariz. 85705, assignor to Bryan G. Castner, Tucson, Ariz.

Division of Ser. No. 662,959, Oct. 19, 1984. This application Apr. 1, 1986, Ser. No. 846,832
Int. Cl.[4] B65D *43/20*
U.S. Cl. 206—576 1 Claim

1. A package for a remote interface unit comprising:
rigid four-walled base means including a plurality of apertures in a front member, a plurality of slots in side members, and a plurality of apertures in a rear member; and
detachable, rigid four-walled cover means including a plurality of projecting members in a front member for being operably engaged by said front base member apertures, said cover means further including projecting members for operably engaging said slots, said cover means including a plurality of apertures in said rear member for receiv-

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ing coupling means, said plurality of apertures in said rear member of said base and cover means being in close prox-



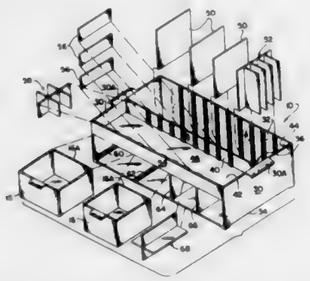
imity, and said cover means further comprising support structure means adapted to support a personal computer data processing system unit.

4,807,760

COMPARTMENTALIZED TRAY FOR COSMETICS AND SUNDRIES

Howard Sussman, 3101 NW. 25th Ave., Pompano Beach, Fla. 33069

Filed Dec. 5, 1986, Ser. No. 938,398
Int. Cl.[4] B65D *69/00*
U.S. Cl. 206—581 **2 Claims**



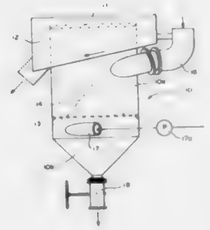
1. An open compartmentalized tray for storing various sized cosmetic sundries and the like comprising a body for the tray defined by a pair of opposite sides, a tray bottom wall, a front piece, and a rear wall, all cooperating to bound a storage area, a middle wall arranged in spanning relation between said opposite sides delineating said storage area into a front section and a rear section, said rear section above the rear portion of the tray bottom wall being bounded by the rearward portions of said opposite sides, said rear wall and said middle wall and all being of a selected height for forming a rear storage compartment for larger sized objects, a horizontally oriented compartment bottom wall disposed in said front section attached intermediate the height of and in spanning relation between said opposite sides and extending forwardly of said middle wall forming a front storage compartment in a clearance position above the front portion of the tray bottom wall for smaller sized objects, plural drawers disposed beneath said front storage compartment for sliding movement between open positions extended from the tray and closed positions in abutment against the bottom portion of said middle wall, a first array of spaced pairs of plural projections disposed in aligned facing relation on said rear wall and on one side of said middle wall for the full height of the last two mentioned walls, each of said pairs of plural projections of said first array defining a groove therebetween, and a second array of spaced pairs of plural projections disposed in aligned facing relation on said other side of said middle wall and confronting face of said front piece for the height of the last-mentioned side and face above said compartment bottom wall, each of said pairs of plural projections of said second array defining a groove therebetween, and plural panels sized to be disposed in said grooves of said first and second array for delineating storage compartments on opposite sides of said middle wall whereby the tray has compartments and drawers for storing different sized objects.

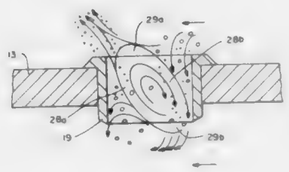
4,807,761

HYDRAULIC SEPARATING METHOD AND APPARATUS

Clinton A. Hollingsworth, Lakeland, Fla., assignor to C-H Development & Sales, Inc., Lakeland, Fla.

Continuation-in-part of Ser. No. 534,975, Sep. 22, 1983, Pat. No. 4,539,103, and a continuation-in-part of Ser. No. 368,625, Apr. 15, 1982, abandoned, and a continuation-in-part of Ser. No. 338,341, Jan. 11, 1982, abandoned, and a continuation-in-part of Ser. No. 716,973, Mar. 28, 1985, abandoned, and a continuation-in-part of Ser. No. 924,290, Oct. 29, 1986, abandoned. This application Mar. 17, 1987, Ser. No. 27,170
Int. Cl.[4] B03B *5/66*
U.S. Cl. 209—158 **12 Claims**





1. Apparatus for the separation of solid mineral particles in a hydrous mineral slurry, the particles having different settling velocities, comprising an upright tank having means for discharge of an overflow from an upper region of the tank and means for discharge of an underflow from a lower region of the tank, barrier means disposed between the upper and lower regions of the tank for separating the regions, said barrier means comprising an annular plate portion having spaced openings therethrough communicating between the upper and lower regions and distributed over said annular plate portion, the total area of the openings being a minor percent of the total area of the annular plate portion, means for supplying a hydrous slurry tangentially into the upper tank region to cause swirling of the material in the upper region of the tank, means for introducing water under pressure into the lower tank region below the barrier means to cause jet-like flow of water to be discharged upwardly through each of the openings of the annular plate portion, and from thence extending into that portion of the upper region of the tank immediately overlaying

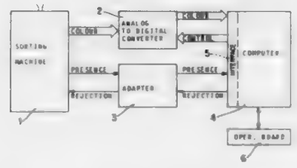
the barrier means, and an imperforate conical member positioned with its base disposed at the inner perimeter of said annular plate portion of the barrier means, and with its apex extending upwardly in the upper region of the tank, said conical member serving as means for directing particles progressing downwardly in the upper region of the tank into that portion of the upper region immediately above said annular portion of the barrier, whereby solid particles of the slurry in said upper region of the tank are caused to enter the jet-like flow and a separation is carried out between the solid particles of the slurry having different settling velocities, with the particles of lower settling velocity progressing upwardly to be discharged from the upper region of the tank as the overflow and with the particles of greater settling velocity progressing downwardly through the jet-like flow and through the said openings into the lower region of the tank for discharge from the lower tank region as the underflow.

4,807,762

PROCEDURE FOR SORTING A GRANULAR MATERIAL AND A MACHINE FOR EXECUTING THE PROCEDURE

Ernesto Illy, Trieste, Italy, and William S. Maughan, Sussex, United Kingdom, assignors to Illycaffè S.p.A., Trieste, Italy and Gunson's Sortex Limited, London, United Kingdom

Continuation of Ser. No. 560,821, Dec. 13, 1983, abandoned. This application Oct. 14, 1986, Ser. No. 918,626
Claims priority, application Italy, Dec. 21, 1982, 24875 A/82
Int. Cl.[4] B07C *5/342;* **G01J** *3/46*
U.S. Cl. 209—580 **22 Claims**



1. A method for sorting granular materials from a supply in accordance with surface characteristics as measured with a plurality of individual grain observation devices, each of which generates amplitude values related to the intensity of a colour reflected from an individual grain, comprising the steps of:

passing individual grains from the supply one after another past the grain observation devices to generate from each thereof a plurality of measured amplitude values related to the intensity of a colour reflected from an individual grain;

generating standard amplitude values for different colours reflected from a representative grain of the supply;

combining, for different colours reflected from a grain and detected by a device, the plurality of measured amplitude values associated with a column grain and a common colour to form measured mean amplitude values for the respective colours detected by the observation devices;

determining the differences between said standard amplitude values and corresponding colour related measured mean amplitude values to derive deviations of the measured mean amplitude values relative to said standard values as a function of colour for the grains in the supply;

adding the mean amplitude values associated with a common grain but for first and second different colours to form a first coordinate value;

forming the difference between said mean amplitude values associated with the common grain for said first and second different colours to form a second coordinate value; and

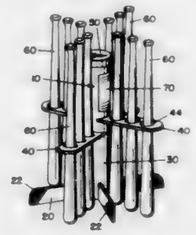
repeating said adding and forming steps for other grains and recording said first and second coordinate values for the grains passed through the observation devices.

4,807,763

PORTABLE, DISASSEMBLABLE STAND FOR BASEBALL BATS AND THE LIKE

Peter Jankovsky, 6 Old Dodgingtown Rd., Redding, Conn. 06896

Filed Nov. 13, 1987, Ser. No. 120,611
Int. Cl.[4] A47F *7/00*
U.S. Cl. 211—60.1 **48 Claims**



1. A disassemblable stand for supporting baseball bats and the like, said stand comprising:

A. a base adapted to rest on a horizontal surface;

B. a main support member releasably mounted on and extending generally vertically from said base; and

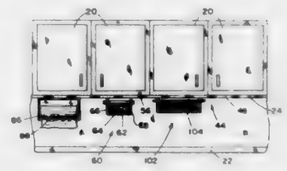
C. at least one arm piece releasably mounted and extending outwardly from said main support member, said at least one arm piece having means thereon to confine at least one baseball bat in a generally vertical position with each of the baseball bats having its butt end resting on the horizontal surface to further stabilize the stand.

4,807,764

SYSTEM FOR MOUNTING ARTICLES UNDER A DOWNWARDLY FACING SURFACE

Tamara Bellin, 104 Flax Mill Rd., Branford, Conn. 06405

Filed Aug. 27, 1987, Ser. No. 90,157
Int. Cl.[4] A47F *5/08*
U.S. Cl. 211—94 **8 Claims**



1. A system for mounting articles, said system comprising a unitary channel-shaped track member attachable to a fixed downwardly facing surface, said track member having a central portion, parallel side portions and coplanar bottom portions extending toward each other from the lower edges of said side portions and having parallel confronting free edges, one of said side portions and that said bottom portion which extends therefrom having at least three like cut-out portions spaced apart such that the distance between corresponding parts of any two adjacent ones of said cut-out portions is a constant dimension A, and an adjustable article holding support unit having a pair of vertical arms each having at its top a guide shaped and dimensioned for entry into a said cut-out portion, and a pair of right-angle members having horizontal portions telescopically engageable with each other and vertical portions telescopically engageable with said arms, whereby the distance between said arms is adjustable and the length of said arms is adjustable.

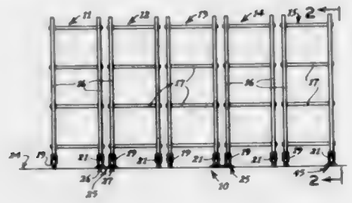
VOL 1099 ISS 4 FE 28 1989 UMI

4,807,765

MOBILE STORAGE APPARATUS

Billy R. Brown, Franklin, and A. Edwin Anderson, Columbia, both of Tenn., assignors to Nashville Wire Products Mfg. Co., Inc., Nashville, Tenn.

Filed Sep. 18, 1987, Ser. No. 98,300
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—162 **3 Claims**



1. A mobile storage appratus comprising:
(a) a horizontal floor surface,
(b) a pair of storage carts, each cart having a front end, a rear end, opposite sides, and a front-to-rear longitudinal axis,
(c) each cart having a pair of longitudinally aligned front and rear floor-engaging casters depending from each side of said cart and rollably supporting said cart upon said floor surface,
(d) an elongated track member having an elongated pair of adjacent first and second parallel track channels supported on said floor surface, said track channels terminating in front and rear ends,
(e) said first track channel receiving said front and rear casters on one side of one of said carts for rolling movement in and along said first track channel,
(f) said second track channel receiving said front and rear casters on the side of said other storage cart adjacent said one storage cart for rolling movement in and along said second track channel,
(g) said casters on the adjacent sides of said carts being received in said corresponding first and second channels between said front and rear ends when said carts are in an operative side-by-side storage position,
(h) said front ends of said track channels comprising relatively low barriers normally to limit forward movement of said front casters in said corresponding track channels yet low enough to permit said front casters to pass over said corresponding barriers when manually pushed forward to a forward loading position in front of said storage position, and
(i) said front and rear casters on the opposite side of each of said carts from the casters rollably received within a corresponding trach channel being rollably supported solely by said horizontal floor surface free of any track member.

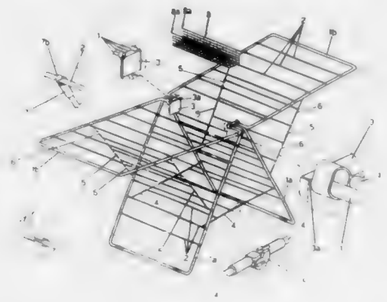
4,807,766

DOMESTIC CLOTHES DRYING RACK

Rossano Compagnucci, Via Flaminia II, Osimo (AN), Italy

Filed Nov. 2, 1987, Ser. No. 115,926
Claims priority, application Italy, Nov. 17, 1986, 20607/86[U]
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—198 **13 Claims**

1. A domestic clothes rack equipped with a peg tray, said rack comprised of: four arms being articulated in a fan-like fashion, a plurality of rods, each rod bearing a respective central "knee-like" joint, each of the arms including a supporting frame in the form of a portal, two of said arms being vertical supports each of which terminates in two short end sections, each end section being bent inwards at right angles in such a manner as to be exactly opposed and co-axial in relation to one another, a pair of lateral plates situated on parallel vertical planes, each of said plates including an external face having a plurality of holes formed therein, each end section further being housed within the holes inside which they may pivot around a horizontal axis, the plates functioning as the



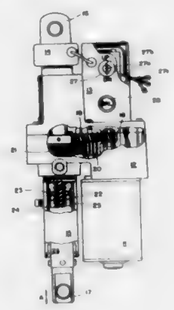
sole means of support and articulation for the four portal shapes frames, the vertical supports acting above all as a supporting and stabilizing trestle, resting on the ground, while the remaining two arms act above all as grids from which to hang washing.

4,807,767

SELF BALANCING ELECTRIC HOIST

Michael Kornely, Centerport, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation-in-part of Ser. No. 563,679, Dec. 20, 1983, Pat. No. 4,658,971. This application Apr. 28, 1987, Ser. No. 43,379
The portion of the term of this patent subsequent to Apr. 21, 2004, has been disclaimed.
Int. Cl.[4] B66C *13/12*
U.S. Cl. 212—159 **14 Claims**



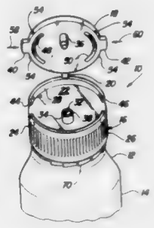
1. A self balancing electric hoist for assisting an operator in positioning and manipulating large supported loads, said hoist comprising:
(a) an electric motor means and a non-reversing gear means mounted between a load and a means for supporting a load, said electric motor means responsive to a controller means to raise and lower the load;
(b) load sensor means for supplying an actual load signal representative of the actual load carried by the hoist;
(c) null signal generating means for generating an adjustable null signal to offset the actual load signal;
(d) means for generating an updrive signal for said motor means if the actual load signal exceeds the null signal by a first predetermined value;
(e) means for generating a downdrive signal for said motor means if the actual load signal exceeds the null signal by a second predetermined value;
(f) controller means for energizing said motor means in response to either an updrive signal or a downdrive signal to energize said motor only when raising or lowering said load,
whereby an operator may raise or lower the load by manually loading the load in the desired direction of travel to generate an actual load signal that exceeds the null signal by said first or second predetermined value.

4,807,768

CHILD RESISTANT DISPENSING CLOSURE

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Apr. 22, 1988, Ser. No. 184,754
Int. Cl.[4] B65D *55/02*
U.S. Cl. 215—216 **21 Claims**



1. A dispensing closure for a container neck comprising:
a base cap having a top with a dispensing orifice therethrough, an annular skirt having a portion depending from the periphery of said top and a portion extending upwardly to form a recess, and means for attachment to said container neck;
a circular lid fitting in said recess contiguous with the upwardly extending portion of said annular cap skirt when said lid is in a closed position covering said orifice;
a hinge connecting said lid to said cap allowing said lid to be swung between said closed position covering said orifice and an open dispensing position;
said lid having a tab extending radially outward through a slot in the upwardly extending portion of said annular cap skirt;
an arcuate slot extending through said lid adjacent to and terminating in ends circumferentially beyond said tab; and
detent means adjacent said tab, locking said lid to the upwardly extending portion of said cap skirt;
whereby said tab can be pushed inwardly to release said detent means allowing the lid to be swung from said closed position to said open dispensing position.

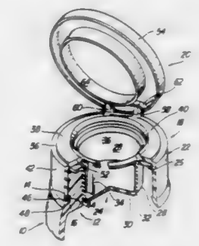
4,807,769

TAMPER INDICATING CLOSURE

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Mar. 15, 1988, Ser. No. 168,389
Int. Cl.[4] B65D *41/62*
U.S. Cl. 215—235 **6 Claims**

1. A tamper indicating closure for use in both sealing of and dispensing from a container adapted to receive said closure, said closure comprising:
a base member having a skirt for attachment to a container, an upper section extending inwardly of said skirt, and a spout,
a lid having container opening and closing positions, said lid having a member which sealingly engages said spout when said lid is in a container closing position,
an insert comprising a break out section for opening said container and indicating tampering, said insert comprising a flange extending peripherally thereof and complimentarily formed with respect to said upper base section, and means on said upper base section for impinging on said



flange and urging sealing contact between said flange, said upper base section and a neck of a container with which said closure is adapted for use to sealingly close said container and provide tamper indicating means therefore.

4,807,770

COMPOSITE, TAMPER EVIDENT, VACUUM INDICATING CLOSURE AND CONTAINER

Jacques J. Barriac, Montgomery, Pa., assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 29,030, Mar. 23, 1987, abandoned. This application Feb. 25, 1988, Ser. No. 160,477
Int. Cl.[4] B65D *41/34*
U.S. Cl. 215—252 **49 Claims**



1. A closure for engaging the rim of a helically threaded finish on a container, said closure comprising, in combination:
a lid having an outer annular portion, said outer annular portion having a top and a bottom, said lid being adapted to span and engage the rim of the finish of the container; and
a lid retaining ring, said lid retaining ring comprising;
an annular skirt having an upper portion and a lower portion, said annular skirt being adapted to surround the helically threaded finish on the container,
lid engaging means projecting radially inwardly from said annular skirt at a location adjacent said upper portion of said annular skirt for engaging said top and said bottom

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of said outer annular portion of said lid to frictionally retain said lid and said lid retaining ring in position relative to one another, said lid engaging means comprising a circumferential series of spaced apart flanges for engaging said top of said outer annular portion of said lid, and

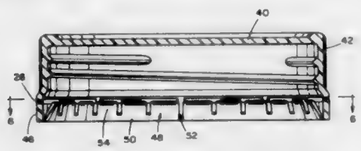
thread engaging means projecting radially inwardly from said annular skirt at a location between said upper portion and said lower portion for engaging the helically threaded finish of the container and for permitting said closure to be removed from the container by an unscrewing action.

4,807,771

TAMPER-EVIDENT CLOSURE

Gerald L. Roy, Lancaster, and James E. Herr, East Petersburg, both of Pa., assignors to Kerr Glass Manufacturing Corporation, Lancaster, Pa.

Filed Sep. 11, 1987, Ser. No. 95,547
Int. Cl.[4] B65D *41/34*
U.S. Cl. 215—252 **11 Claims**



1. A tamper-evident closure for sealing an open-topped container having a finish with an external screw thread and an annular breaker ledge disposed beneath the level of said thread, said ledge including an upper cam surface facing said thread and a lower abutment surface remote from said thread, said closure being of one-piece molded construction and comprising:

a cap including an annular top wall for extending across the opening of said finish, and an annular skirt dependent from said top wall and being joined thereto about the periphery of said top wall so that said top wall and said skirt are substantially coaxial, said skirt being provided with an internal thread configured to cooperate with the thread of said finish to enable said cap to be installed on and removed from said container by relative rotation between the cap and the container; and

a tamper-indicating assembly comprising a band positioned below and spaced from said skirt,

a plurality of spaced frangible bridges, detachably connecting the upper end of said band to the lower end of said skirt,

a plurality of spaced-apart ring segments, each including an annular end and a flexible hinge portion opposite the end which connects the ring segment to the bottom of said band so that said ring segment extends upwardly and inwardly therefrom, with adjacent ring segments separated by a slot extending through substantially the entire cross-section of said ring, from the end of the ring to the bottom of said band so as to define independently foldable ring segments between the slots, and

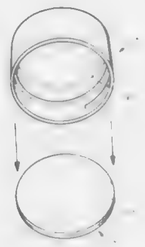
a plurality of resilient tabs connected to the end of each ring segment so as to extend upwardly and inwardly therefrom for engaging said ledge abutment surface upon attempted removal of said closure after installation on said finish, said tabs being resiliently outwardly deflected by said ledge cam surface during installation of said closure on said finish whereby upon removal of an installed closure, the free ends of said tabs bear on said ledge causing said bridges to break resulting in an indication of tampering.

4,807,772

POLYPROPYLENE CLOSURE WITH REMOVABLE LINER

Francis M. Schloss, Perrysburg, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Filed Mar. 4, 1988, Ser. No. 164,284
Int. Cl.[4] B65D *53/04*
U.S. Cl. 215—349 **8 Claims**



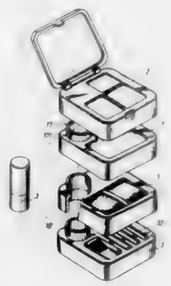
1. A polypropylene closure with a top and a depending skirt, a liner for the inside of the top that is compression molded with the closure, the liner being removable without tearing, the liner being a blend of polyethylene and a thermoplastic, elastomeric copolymer.

4,807,773

VERTICALLY ASSEMBLED COMPACT

Aaron Tsai, 10F-3, No. 4,530 Lane, Ming Sheng E. Rd., Taipei, Taiwan

Filed Sep. 21, 1987, Ser. No. 99,010
Int. Cl.[4] B65D *6/00*
U.S. Cl. 220—4 D **4 Claims**



1. A vertically assembled compact, comprising;

a plurality of generally flat body portions with the top side of each body portion having a recess therein for receiving a cosmetic or a cosmetic tool;

a hollow annular pivot on each body portion projecting from one face of the body portion and the body portion having a through hole therethrough aligned with the hollow interior of the pivot and substantially the same diameter as the inside diameter of the pivot, the through hole having an enlarged pivot receiving portion on the opposite side of the body portion from the side from which the pivot projects and having an inside diameter for receiving a pivot member in a rotatable friction fit;

said body portions assembled with a pivot from one body portion rotatably frictionally fitted into the enlarged pivot receiving portion on the next adjacent body portion, said assembled body portions having a first end body portion on one end and a second end body portion on the other end;

a first end portion having an enlarged pivot receiving recess therein and having a pivot from said first end body portion of the assembled body portions rotatably frictionally fitted into said enlarged pivot receiving recess, and said first end portion being unapertured in the portion thereof aligned with said enlarged pivot receiving recess; and

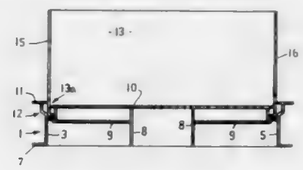
a second end portion having a further hollow annular pivot thereon rotatably frictionally fitted into the enlarged pivot receiving recess on said second end body portion of the assembled body portions, the second end portion being unapertured in the portion thereof aligned with said further hollow annular pivot; whereby the aligned hollow interiors of the pivots and the through holes form a cylindrical recess for receiving a cylindrical cosmetic container therein.

4,807,774

CONTAINER BASE ASSEMBLY

Ladislav S. Karpisek, 86 Woodfield Boulevarde, Caringbah, New South Wales, 2229, Australia

PCT No. PCT/AU86/00197, § 371 Date Mar. 23, 1987, § 102(e) Date Mar. 23, 1987, PCT Pub. No. WO87/00508, PCT Pub. Date Jan. 29, 1987
PCT Filed Jul. 16, 1986, Ser. No. 50,003
Claims priority, application Australia, Jul. 26, 1985, PH1659
Int. Cl.[4] B65D *7/24*
U.S. Cl. 220—6 **4 Claims**



1. A container base assembly, comprising:

a base member including a four-sided perimeter member, a four-sided support surface member disposed within the perimeter member and located in a plane below that occupied by a top edge of the perimeter member with a uniform width gap between the adjacent sides of the support member and the perimeter member;

a stepped width channel below the gap, said channel having a lower part wider than said gap and an upper part wider then said lower part and in communication with said gap; and

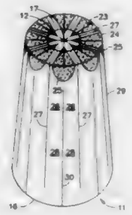
four substantially rectangular wall members each capable of being received by the gap, each of the wall members being provided with a sliding clearance so that the four wall members are capable of being located one adjacent to each side of the support surface member, the four substantially rectangular wall members each being provided with a thickened first edge having a thickness substantially the same as, but no greater than, the width of the channel lower part, the wall members being foldable into an overlying relationship with the support surface member by positioning the first edge of each wall member in the channel upper part and pivoting the wall inwardly using a side of the support surface member as a fulcrum and being capable of being maintained in an erected position by engagement of the first edge in the channel lower part with lateral support by an inner face of said perimeter member and an outer side of the said support surface member.

4,807,775

INJECTION MOLDING OF THIN-WALLED PLASTIC PRODUCTS

Jess O. Sorensen, Rancho Santa Fe, Calif., assignor to Acebo Company, La Jolla, Calif.

Continuation-in-part of Ser. No. 7,463, Jan. 26, 1987, Pat. No. 4,369,519. This application Mar. 18, 1987, Ser. No. 27,511
Int. Cl.[4] B65D *25/00*
U.S. Cl. 220—72 **7 Claims**



1. An injection-molded, thin-walled, plastic product formed by a mold cavity having a thin-cavity region; first and second flow channels, which are thicker than the thin-cavity region for directing injected plastic into the thin-cavity region; and a meld chamber, which is thicker than the thin-cavity region, and is displaced from the flow channels and at least partially located extensively between the flow channels where molten plastic directed into the thin-cavity region by the first flow channel joins molten plastic directed into the thin-cavity region by the second flow channel for melding plastic flowing together from different directions after flowing through the thin cavity region, the product comprising

a thin-walled area formed by the thin-cavity region;

first and second ribs formed by the pair of flow channels, said first and second ribs being thicker than the thin-walled area; and

a third rib formed by the meld chamber, wherein the third rib is displaced from the first and second ribs by the thin-walled area and is at least partially located extensively between the first and second ribs, said third rib being thicker than the thin-walled area.

4,807,776

MULTI-COMPARTMENTED CONTAINER ARRANGEMENT

Jeffery J. Cortopassi, Costa Mesa, Calif., assignor to Taco Bell, Irvine, Calif.

Filed Sep. 4, 1987, Ser. No. 93,809
Int. Cl.[4] B65D *21/02*
U.S. Cl. 220—23.83 **15 Claims**

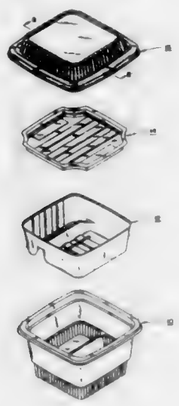
1. A multi-compartmented container arrangement for the separated storage and conveyance of a plurality of food items, ingredients or the like; comprising in combination;

(a) an upwardly opening container including a compartmented bottom wall structure; and upstanding encompassing side walls extending from said bottom wall structure in a outwardly stepped configuration; each said side wall including a first outwardly stepped portion and a second outwardly stepped portion spaced a predetermined height above said first outwardly stepped portion;

(b) a first tray member insertable into said container and having a plurality of compartments formed therein, said first tray member having a bottom being supported in said container by said first outwardly stepped portion and a side wall by said second outwardly stepped portion of said upstanding sides walls in spaced relationship above the compartments in said container bottom wall structure such that the bottom of said first tray member forms a cover for the compartments in said container bottom wall structure;

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(c) a second tray member insertable into said container and being supported by said upstanding container side walls in spaced superimposed relationship above said first tray member so as to form a cover for compartments of said first tray member;



(d) and a container closure superimposable on and engageable with the upper end of said upstanding container side walls so as to provide a sealed container arrangement in conjunction with said container.

4,807,778

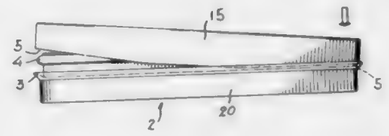
RECTANGULAR CONTAINER ASSEMBLY

Mai J. Lo, No. 48, Lane 57, Chung Cheng Road, Chungli City, Tao-Yuean Hsien, Taiwan, Taiwan

Filed May 20, 1988, Ser. No. 196,567

Int. Cl.[4] B65D *43/04*

U.S. Cl. 220—282 **2 Claims**



1. A rectangular container assembly comprising a cover (1) and a base tray (2), wherein

said base tray (2) comprises a flange member (3) arranged along an exterior surface of a wall (20) thereof to keep said cover (1), and comprises a sealing ring (4) provided above said flange member (3) to effect an intimate connection between said cover (1) and said base tray (2);

each corner (5) formed by a lateral wall (15) of said cover (1) is smoothly curtailed so as to facilitate an opening of said rectangular container by pressing one of said corner (5).

4,807,779

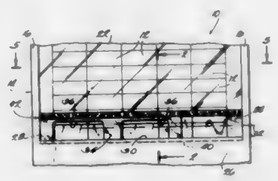
TAMPER-PROOF DISPLAY AND DISPENSING APPARATUS

Robert C. Clapper, Glendale, Wis., assignor to DCI Marketing, Milwaukee, Wis.

Filed Jul. 25, 1986, Ser. No. 889,476

Int. Cl.[4] B65G *59/06*

U.S. Cl. 221—92 **4 Claims**



1. A dispensing apparatus comprising

housing means for containing a plurality of aligned articles, said housing means having therein an elongated opening aligned with the articles for affording access to the articles, said elongated opening having a longitudinal axis, a length, and opposite first and second ends, and

a door mounted for movement axially of said elongated opening, said door having opposite first and second ends and a length less than said length of said elongated opening, said door having therein a plurality of access openings each of which affords access to only one of the articles, said door being movable to a first position wherein said first end of said door is located adjacent said first end of said elongated opening, wherein said door uncovers a first portion of said elongated opening adjacent said second end of said elongated opening such that an article is removable through said first portion of said elongated opening, wherein each of said access openings is aligned with and affords removal of an article, and wherein said door covers and prevents removal of at least one article, and said door being movable to a second position wherein said second end of said door is located adjacent said second end of said elongated opening, wherein said door uncovers a second portion of said elongated opening adjacent said first end of said elongated opening such that an article is removable through said second portion of said elongated opening, wherein each of said access openings is aligned with and affords removal of an article, and wherein said door covers and prevents removal of at least one article.

4,807,777

SAFETY TRANSPORT SYSTEM FOR HAZARDOUS OR VALUABLE CHEMICALS

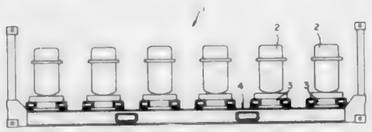
Ernst Berwald, Bergkamen, and Winfried Lewe, Kamen, both of Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Dec. 3, 1987, Ser. No. 128,155

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1986, 3644088

Int. Cl.[4] B65D *7/42*

U.S. Cl. 220—23.83 **24 Claims**



1. A safety transport system for shipment of chemicals in a modular unit load comprising a plurality of variably-sized tanks containing the chemicals and supported in a generally vertical condition, each said tank being provided with a tank base; a container platform; intermediate support elements resting on said container platform and each carrying at least one tank; detachable coupling elements being arranged between each tank and its associated tank base, said tank base and its associated intermediate support element, and said associated intermediate support element and said container platform; said plurality of tanks, tank bases, intermediate support element and container platform forming the unit load; and each said unit load having means engagable with a lifting apparatus.

said first end of said elongated opening such that an article is removable through said second portion of said elongated opening, wherein each of said access openings is aligned with and affords removal of an article, and wherein said door covers and prevents removal of at least one article.

4,807,780

VENDING MACHINE FOR BEVERAGE

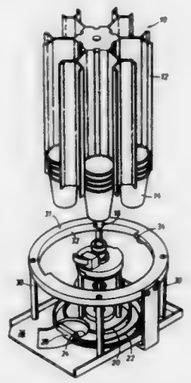
Alfred Parsons, Liverpool, and Thomas Sefton, Maghull, both of England, assignors to Enrocup (Crosby) Limited, Southport, United Kingdom

Filed Jul. 24, 1987, Ser. No. 77,685

Claims priority, application United Kingdom, Jul. 31, 1986, 8618744

Int. Cl.[4] B65G *59/00*

U.S. Cl. 221—113 **4 Claims**



1. A vending machine for dispensing cups, comprising:

a rotatable turret magazine for supporting a plurality of upright columns of cups;

a base plate;

means for defining an aperture in said base plate;

a fixed guide surface which engages the bottom of the lowermost cup in each column, said fixed guide surface being of generally circular configuration in plan view and rising generally uniformly above said base plate from a region of minimum cup height to a generally diametrically opposite position of maximum cup height;

a fixed cam surface which engages between the rims of the lowermost and next lowermost cups for stripping the lowermost cup from its column, the guide surface and cam cooperating such that, as the magazine is rotated, the lowermost cup from each column is stripped in turn, lowered to a discharge station and then, if that cup is not required, rejoined to its original column;

means responsive to a desired cup arriving at said discharge station to stop the rotation of the magazine and to release that cup downwardly to a dispensing station;

means defining a discontinuity in said generally circular fixed guide surface located at the region of minimum cup height to enable a selected cup to be released through said aperture in the base plate to said dispensing station;

a displaceable stop which normally occupies a position adjacent said aperture in the base plate for guiding cups across said discontinuity in the fixed guide surface but which can be selectively displaced so as to enable a selected cup to pass through the aperture to said discharge station; and

an electrically actuable solenoid for moving said displaceable stop between its two operational positions.

4,807,781

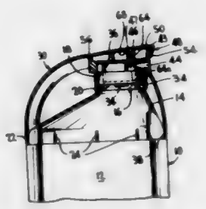
CONTAINER AND DISPENSING-CLOSURE ASSEMBLY

Karl J. Bobinger, Union Grove, and Ronald R. Gutkowski, Racine, both of Wis., assignors to S.C. Johnson & Son, Inc., Racine, Wis.

Filed Jul. 14, 1987, Ser. No. 73,137

Int. Cl.[4] B65D *37/00*; **B67D** *3/00*

U.S. Cl. 222—546 **10 Claims**



1. A dispensing-closure for a container comprising a cap portion including means for enclosing a container and means for attaching said dispensing-closure onto a container in fluid-tight sealing relation therewith, and dispenser means integral with said cap portion, said dispenser means including a recessed are in the top surface of said cap portion, said recess being open at one end and sized to receive a passageway and a dispensing orifice, said passageway connecting said dispensing orifice and the interior of a container and having an opening therein, and cover means having a top surface, sidewalls and a front wall enclosing said passageway, said cover means further including plug means extending downward from the underside of said top surface of said cover means and joined thereto, said cover means further including a relief area around said plug where said plug joins the underside of said top surface to permit said plug to tilt relative to said cover means when said cover means is moved to a position to open said passageway with said plug having a uniform diameter throughout its length and being constructed and arranged to mate with said opening in said passageway to provide a fluid-tight seal when said cover means is in a closed and non-dispensing position and to allow free fluid passage from the interior of a container to said orifice when in the open and dispensing position, said cover means having a living hinge connecting said cover means to said cap portion.

4,807,782

CONTENTS-SAVER PLASTIC DISPENSING TUBE

Wesley C. Meiserding, 1019 Knollwood Rd., NW., Canton, Ohio 44708, and Donavon L. Favre, 1600 S. Joyce St., Apt. CS03, Arlington, Va. 22202

Filed Mar. 4, 1987, Ser. No. 21,747

Int. Cl.[4] B65D *35/08*

U.S. Cl. 222—1 **7 Claims**



1. A flexible wall dispensing tube, made of plastic, the tube having a discharge nozzle at one end and a permanent closure at the other end, wherein the improvement comprises a rubber

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band attached to the other end of the tube by a folded over portion of the other end, which folded over portion covers a portion of the rubber band and leaves a portion of the rubber band uncovered by the folded over portion, and the rubber band positioned parallel to the other end to hold the lower tube portion in place and to prevent unwinding of the other end after it is wound, the exposed portion of the rubber band being moved to an outer surface of the tube opposing a roll as each roll is made.

4,807,783

WATER JET INJECTION DEVICE FOR USE WITH DISPENSERS FOR PRODUCING AND DISPENSING BEVERAGES MIXED OF FRUIT SYRUP OR CONCENTRATE AND WATER

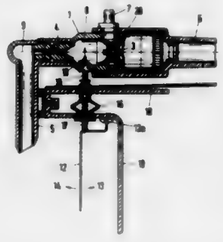
Willem van Zijverden, Lübeck, Fed. Rep. of Germany, assignor to Dagma Deutsche Automaten - Und Getraenkemaschinen GmbH & Co. KG, Rheinfeld, Fed. Rep. of Germany

Filed Mar. 2, 1987, Ser. No. 20,380

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1986, 3607622

Int. Cl.[4] B67D *5/56*

U.S. Cl. 222—129.2 **4 Claims**



1. A water-jet injection device for dispensing a mixture of water with another substance, said water jet injection device comprising:

an elongated body having an axis and defining a mixing chamber, said body being formed at one end thereof with a restricted throat lying along said axis and communicating with said chamber, and a discharge channel flaring outwardly from said throat;

plug means in said body at an opposite end thereof for delimiting said chamber in said body;

a water-supply tube extending completely through said plug means along said axis and having a free end projecting beyond said plug means into said chamber;

means for connecting an opposite end of said water-supply tube to a source of water under pressure so that pressurized water flowing from said free end of said tube is directed in a high-velocity stream into said throat;

an intake conduit opening laterally into said body and said chamber at an intake opening for supplying said substance to said chamber for mixing with water therein for discharge of the mixture through said channel;

means on said plug means forming a nonreturn valve between said opening and said chamber adapted to pass flow of said substance into said chamber when said high-velocity flow is unimpeded but blocking flow from said chamber into said opening in the absence of the unimpeded high-velocity flow; and

a deflecting element mounted for movement in said body between a deflecting position wherein said element projects into said chamber into the flow of water from said free end of said tube to interfere with said high-velocity stream, and an ineffective position wherein said element is retracted out of the path of said high-velocity stream.

4,807,784

DISPENSER FOR PASTY PRODUCT

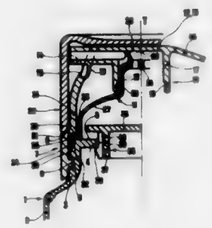
Alain Jupin, and Bernard Schneider, both of Sainte Menehould, France, assignors to Cebal, Clichy, France

Filed Sep. 29, 1987, Ser. No. 102,552

Claims priority, application France, Oct. 13, 1986, 86 14348

Int. Cl.[4] B65D *37/00*

U.S. Cl. 222—207 **16 Claims**



1. Dispenser for pasty products comprising:

a body (**1**) incorporating a tubular member adapted to receive a piston sliding therein, and a top (**3**) on said tubular member;

a dispensing head (**7**), means (**6**) on said top (**3**) for fixing the dispensing head to the body (**1**), said dispensing head having an actuator (**10**) incorporating a bearing web (**16**) and a distribution pipe (**14**),

a deformable cap (**11**) on said top defining a compression chamber (**43**), a suction valve (**35, 5**) (**350, 5**) between said top and said compression chamber for suction of pasty product into said compression chamber, and an expulsion valve (**23** and **29**) defined between the compression chamber (**43**) and said distribution pipe (**14**) for expelling the product into said distribution pipe (**14**);

the top (**3**) of body (**1**) having a central orifice (**4**) surrounded by an annular bearing surface (**5**) comprising the seat of the suction valve (**35, 5**) (**350, 5**), said suction valve including a flap (**35, 350**) comprising a sealing web (**36, 360**) with an annular edge (**361**) seated on said annular surface (**5**) when the suction valve (**35, 5**) (**350, 5**) is in the closed position, and an underlying cylindrical portion (**37, 370**) engaged in said central orifice (**4**) and provided in its lower part with retaining reliefs (**38, 380**);

said actuator (**10**) comprising a fixed part having an outer skirt (**9**) carrying on its lower part means (**8**) for fixing to the top (**3**) and an inclinable central part (**12**) connected to said fixed part (**9**) and having the bearing web (**16**), as well as the distribution pipe (**14**), issuing into a longitudinal duct (**17**) carried by the bearing web (**16**) and which tightly fits an upper tube (**18**) formed by the deformable cap (**11**) to define the compression chamber (**45**) between said bearing web (**16**) and said top (**3**), said bearing web (**16**) having a bottom surface (**29**) on the base of said duct (**17**), the bottom surface being planar or having limited curvature;

said deformable cap (**11**), which is in one piece, running from bottom to top comprising means (**25**) for the tight fixing to the top (**3**), then a deformable web (**27**), followed by the upper tube (**18**) surmounted by a flexible upper lip (**23**) forming with said bottom surface (**29**) the expulsion valve (**23, 29**) for expelling the product into the distribution pipe (**14**).

4,807,785

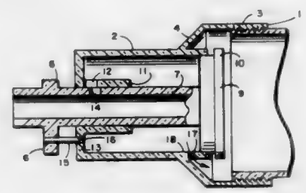
LIQUID DISPENSING DEVICE

Eddie J. Pritchett, 401 W. Stevens, Apt. D., Santa Ana, Calif. 92707

Filed Aug. 3, 1987, Ser. No. 80,802

Int. Cl.[4] G01F *11/28*

U.S. Cl. 222—442 **1 Claim**



1. A liquid dispenser device for dispensing a pre-determined volume of liquid comprising:

(a) a container for storage of liquid;

(b) a cap affixed to said container comprising a cylinder portion for engaging said container, a tapered portion connecting a main cylinder with said cylinder portion and where said main cylinder defines a chamber;

(c) A hollow tube inserted in said cap through a central aperture in an end wall of said main cylinder, such that a portion of said hollow tube is within said cap and a portion of said hollow tube is outside said cap;

(d) a handle affixed to said hollow tube on said portion of said hollow tube outside of said cap;

(e) one or more openings formed in said hollow tube on said portion within said cap;

(f) a valve seat affixed to the end of said portion of said hollow tube within said cap;

(g) a plug tube affixed to said handle which is removably inserted within an opening in the end wall of said main cylinder;

(h) an inner wall within said cap surrounding said central aperture in contact with the exterior surface of said hollow tube;

(i) one or more openings in said inner wall;

(j) said hollow tube being slidable within said inner wall and cap between a first position where said valve seat is disengaged from an interior end portion of said main cylinder to permit liquid flow from said container into said chamber and where said openings in said hollow tube and said inner wall are non-aligned, and a second position where said valve seat is engaged with said interior end portion of said main cylinder to prevent flow from said container to said chamber and where said openings in said hollow tube and said inner wall are aligned and where said plug tube is removed from said opening in said cap, so that upon such removal of said plug tube from said opening, liquid is dispensed from a discharge outlet in said portion of said hollow tube outside said cap.

4,807,786

CONTAINER COMPRISING A NECK AND A CAP WHICH CAN BE MANIPULATED WITH ONLY ONE HAND

Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Jul. 6, 1987, Ser. No. 69,964

Claims priority, application France, Jul. 7, 1986, 86 09827; Nov. 18, 1986, 86 15991

Int. Cl.[4] B65O *47/04*

U.S. Cl. 222—499 **21 Claims**

1. In a container comprising:

(a) a body delimited by a wall;

(b) a substantially cylindrical spout on said container;

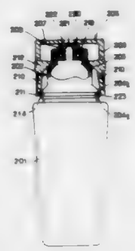
(c) a neck surmounting said body and terminating in said substantially cylindrical spout;

(d) fastening flange means carried by said neck; and

(e) a cap adapted to be manipulated with only one hand, said cap being constituted by a top panel and a side extension to said top panel;

(f) means for retaining the cap on the container, said means comprising fixing means cooperating with said at least one fastening flange means of the neck and

(g) wherein cooperable first and second means are carried by said side extension and said spout are effective to ensure the displacement of the cap relative to the neck and hence the opening of the container, one of said cooperable first and second means being constituted by two pushing means accessible from outside the cap, arranged substantially symmetrically relative to the spout and movable relative to an axis of flexure which is substantially parallel to said top panel of said cap, the other of said cooperable first and second means being constituted by inclined ramp means serving as a bearing surface for said pushing means when said cooperable first and second means are actuated;



said retaining means of the cap being carried by the top panel substantially perpendicular to said top panel and symmetrically relative to the axis of the cap, said fixing means being constituted by end projection means of said panel; wherein the side extension is constituted by a skirt surrounding the said retaining means and comprising the two pushing means; and wherein the neck comprises an annulus substantially coaxial with the spout and the cross section of which decreases towards the top of the spout and the cross section of which through a plane passing through the axis is a curve whereof at least one portion comprises a tangent inclined in relation to the axis so as to constitute said ramp means intended to cooperate with the pushing means so as to cause the end projection means to pass over said fastening flange means with which they cooperate when the cap is pushed down on the neck so as to close the spout;

said annulus being situated on the spout above said fastening flange means.

4,807,787

EASY-OPEN/RECLOSURE DEVICE HAVING DEFORMABLE POUR SPOUT

James R. Langmeier, Hamilton, Ohio; Mohamed N. H. Caehab, Brussels; Robert C. J. M. De Caluwé, Londerzeel, Belgium; Willy A. M. Hertogs, Sint Katelijne Waver, Belgium; Jean B. A. Van den Broeck, Aase, Belgium, and Miriam H. J. M. van Loon, Mol, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 48,867, May 12, 1987, abandoned. This application Oct. 27, 1987, Ser. No. 114,174

Int. Cl.[4] B65D *47/08*

U.S. Cl. 222—529 **23 Claims**

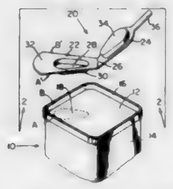
1. An easy-open/reclosure device for application to the top lid of a container having a peripheral rim projecting upwardly

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therefrom, said top lid having a pre-cut or pre-scored dispensing aperture therein, said device comprising:

(a) a base portion having a dispensing aperture therethrough and a bottom surface;

(b) a flange depending downwardly from said bottom surface of said base portion and encircling said base dispensing aperture, said flange having inner and outer surfaces and a bottom edge, said flange being shaped complementary to said pre-cut or pre-scored dispensing aperture in said top lid, whereby said flange enters said pre-cut dispensing aperture or breaks through said pre-scored aperture when said device is applied to said top lid;



(c) a moveable portion having a bottom surface and open and closed positions, said bottom surface having a plug member depending therefrom, said plug member having an outer surface and being shaped complementary to said base dispensing aperture, whereby said plug member will readily enter and snugly engage said base aperture when said moveable portion is in its said closed position; and

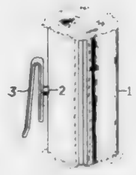
(d) a deformable pouring lip/drain surface extending outwardly from said base portion and intially lying substantially in the same plane as said base portion, said deformable pouring lip/drain surface coming into intimate contact with said peripheral rim and bending into an upwardly-inclined, trough-shaped configuration when said device is applied to said top lid of said container.

4,807,788

THUMB HOLSTER

Frederick J. Tolli, 335 N. Highee, Idaho Falls, Id. 83401

Filed Feb. 2, 1987, Ser. No. 9,717
Int. Cl.[4] A45F 5/00; A01K 97/04; B65D 25/52
U.S. Cl. 224—197 1 Claim



1. A thumb holster for holding the thumb and/or finger(s) of the user's hand comprising:

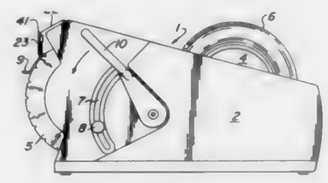
a hollow tube-like main body defined by a sidewall having inner and outer surfaces and a passage therethrough open at both ends and sized to receive the thumb and/or finger(s) of a user's hand, said inner surface being lined with a soft material confortable to the thumb and/or finger(s) of the user's hand, attaching means for attaching said main body to a user'belt, a fastener mounted to said outer surface of said main body so as to intersect said passage, said attaching means rotatably mounted to said fastener whereby said attaching means is allowed to completely rotate with respect to said main body.

4,807,789

TAPE DISPENSER

John W. Gana, 5077 Landisville Rd., Doylestown, Pa. 18901

Filed Dec. 29, 1986, Ser. No. 946,954
Int. Cl.[4] B65H 35/04
U.S. Cl. 225—16 8 Claims



1. An apparatus for dispensing predetermined lengths of tape which comprises:

(1) a framed housing in which there is disposed a revolving tape drum for supporting a tape roll;

(2) a feeder wheel onto which said tape is dispensed;

(3) a lever arm for rotating said feeder wheel through a succession of sequenced movements so as to feed said tape incrementally onto the peripheral surface of said wheel;

(4) a cover assembly slidably engaged within grooved openings in said housing above said feed wheel, said assembly terminating in a vertical segment which includes a slotted aperture having two end openings for receiving a straight-edged blade; and

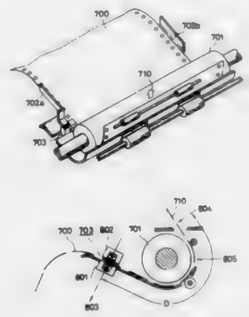
(5) a straight-edged blade slidingly engaged within said aperture to provide tape cutting means.

4,807,790

PAPER FEEDING METHOD AND APPARATUS

Kentaro Ushioda, 15-13, Sakuragaoka 2-chome, Setagaya-ku, Tokyo, and Shigeaki Yamaguchi, 22-9, Masugata 6-chome, Tama-ku, Kawasaki-shi, Kanagawa-ken, both of Japan

Filed Oct. 10, 1986, Ser. No. 917,776
Int. Cl.[4] B65H 23/00; G03G 15/10
U.S. Cl. 226—2 6 Claims



5. A method of employing a frictional sheet-feed mechanism to feed a sheet of paper and of printing lines of print on the sheet of paper at successive line positions on the sheet of paper separated by a nominal inter-line distance, the paper having feed holes formed at least adjacent either edge of the paper sheet and separated by nominal inter-hole distances, comprising the steps of:

A. printing successive print lines on the sheet and advancing the sheet-feed mechanism between print lines;

B. detecting successive feed holes in the paper and determining the distances, referred to herein as the measured inter-hole distances, by which the sheet-feed mechanism advances between detected feed holes;

C. determining for each print line the difference, referred to herein as the advancement discrepancy, between a hole-position deviation and a cumulative line-position adjustment, wherein the hole-position deviation is the cumulative difference between the nominal inter-hole distances and the measured inter-hole distances between the previous successive feed holes on the sheet and wherein the line-position adjustment for a given print line is the difference between the nominal inter-line distance and the advancement distance by which the sheet-feed mechanism advanced since the previous print line;

D. if the advancement discrepancy does not exceed a predetermined maximum, setting the advancement distance by which the sheet-feed mechanism advances between subsequent successive print lines equal to the nominal inter-line distance; and

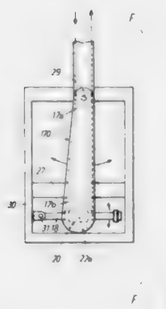
E. if the advancement discrepancy does exceed the predetermined maximum, adjusting the advancement distance between at least a pair of subsequent successive print lines to reduce the advancement discrepancy.

4,807,791

APPARATUS FOR ACTUATING A SIDEMOVEMENT CORRECTING MEMBER OF A MACHINE FOR CORRECTING THE SIDEMOVEMENT OF A TRAVELLING SHEET-LIKE ARTICLE

Hideyuki Cho, c/o Toyo Machinery Co. Ltd., 4-4-19, Zaiko, Higashiyodogawa-ku, Osaka-shi, Japan

Filed Mar. 12, 1986, Ser. No. 838,775
Claims priority, application Japan, Nov. 29, 1985, 60-270278
Int. Cl.[4] B65H 23/022; D06C 3/02
U.S. Cl. 226—19 5 Claims



1. An apparatus for actuating a sidemovement correcting member of a machine for correcting the sidemovements of a traveling sheet, comprising:

a scale of a predetermined length, located on the machine near the side of the traveling sheet,

a slider mounted on the scale for movement therealong, a casing secured to the slider and extending over the top of the scale,

a linear motor mounted on the slider, said linear motor having magnets located just beneath the scale and magnetically urging the slider toward the scale, said linear motor being operable to move the slider along the scale,

said slider also having a set of wheels engaging the bottom of the scale and urged thereagainst by the magnetic force of the magnets,

the top of the casing normally spaced above the top surface of the scale, so as to avoid frictional contact therewith when the wheels are against the bottom of the scale, and said top of the casing comprises means for preventing the slider from falling off the scale when the wheels are separated from the bottom of the casing,

a set of rollers extending vertically between the connecting member and a fixed portion of the frame to limit movement of the connecting member toward the casing, and hence limit the load of the connecting member on the casing, while permitting low friction relative horizontal movement between the connecting member and the casing,

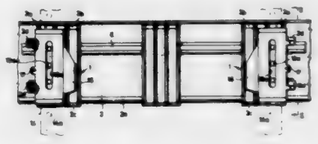
and a mounting member connecting the top of the casing to the sidemovement correcting member, such that the sidemovement correcting member is moved as the slider moves along the scale under the action of the linear motor.

4,807,792

PIN BELT TYPE PAPER TRACTOR

Akio Tajima, and Satoshi Tada, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1986, Ser. No. 914,126
Claims priority, application Japan, Oct. 7, 1985, 60-222968; Oct. 7, 1985, 60-222969; Apr. 2, 1986, 61-22249
Int. Cl.[4] G03B 1/30
U.S. Cl. 226—74 6 Claims



1. A pin belt type paper tractor for feeding a recording paper, comprising:

a stationary support frame having a length not less than the width of a recording paper;

a drive shaft mounted on the support frame and rotatively driven at the time of feeding a recording paper;

a belt driving wheel fitted on the drive shaft for rotation therewith and slidably in the axial direction thereof;

a chassis body for pinching the belt driving wheel from the opposite sides thereof, the chassis body being movable in the widthwise direction of a recording paper along the drive shaft and being in slideable engagement at its peripheral portion with the stationary support frame;

a rotary member rotatably supported within the chassis body;

an endless belt engaged between and around the belt driving wheel and rotary member, the endless belt being provided on its outer surface with a plurality of pins brought into engagement with perforations of the recording paper;

a paper holding cover attached to the chassis body movably between open and closed states; and

wherein the support frame has a knurled section formed thereon along the widthwise direction of the recording paper, and the paper holding cover has an end portion formed with a lock pawl which is engageable with the knurled section for positioning the chassis body relative to the support frame in the widthwise direction of the recording paper when the paper holding cover is in the closed state and disengageable from the knurled section when the paper holding cover is in the open state.

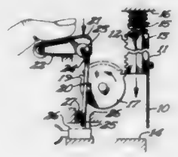
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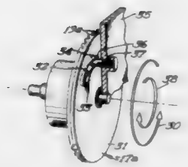
4,807,793

ELECTRICALLY OPERATED DRIVING DEVICE

Bruno Ghibely, Vogelsand 87, 2070 Ahrensburg, Fed. Rep. of Germany

Filed Jul. 20, 1987, Ser. No. 75,665
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1986, 8620799[U]; Mar. 28, 1987, 8704666[U]
Int. Cl.[4] B25L *1/06*
U.S. Cl. 227—131 9 Claims





1. An electrically operated fastener driving device of the type having an electric motor, a disc coupled to the electric motor, a driving pusher, means which cooperate with the driving pusher and with which the disc is movable into engagement to displace the driving pusher against a driving spring, and a trigger having an active and inactive state for actuation of the electric motor via an electrical switch, the switch including an actuating element, the improvement which comprises an operating rod (24) pivotally connected to the trigger (21) and extending between the switch (26) and the trigger (21), in the inactive state of the trigger (21) the rod (24) being automatically aligned in the direction of actuation of the actuating element (25) and further comprising projection means (20,51) for engaging the rod (24) and moving it out of engagement with the actuating element (25) when the driving pusher (19,40) is released in its raised position.

4,807,794

METHOD AND EQUIPMENT TO SOLDER PRINTED-CIRCUIT ASSEMBLIES

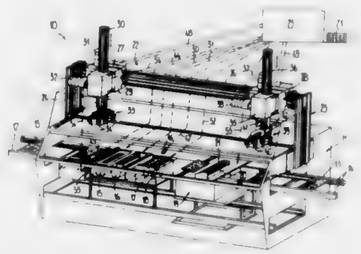
Fritz Hess, Mettmenstetten, Switzerland, assignor to EPM AG, Switzerland

Filed Jan. 27, 1988, Ser. No. 149,189
Claims priority, application Switzerland, Jan. 28, 1987, 295/87
Int. Cl.[4] H05K *3/34*; B23K *37/04*
U.S. Cl. 228—102 12 Claims

1. In a method for soldering assembled printed-circuit boards, wherein each printed-circuit board (13) is preheated on a side requiring soldering and provided with a fluxing agent and, in a warm state, said side is twice brought into contact with a flowing soldering wave (21), along a path (57,58), two mutually opposite lateral edges of the printed-circuit board (13) subtending an acute angle (α) relative to a direction of flow (56) of the soldering wave (21), the improvement comprising the step of rotating the printed-circuit board (13) about a vertical axis following a first soldering and

subjecting the printed-circuit board to a second soldering along a further path (57',58').

10. In an apparatus for soldering assembled printed-circuit boards, wherein each printed-circuit board (13) is preheated on a side requiring soldering and provided with a fluxing agent and, in a warm state, said side is twice brought into contact with a flowing soldering wave (21) along a path (57,58), two mutually opposite lateral edges of the printed-circuit board (13) subtending an acute angle (α) relative to a direction of flow (56) of the soldering wave (21), including a preheating station (17) followed by a wave soldering system (19) and advance means (22) for moving printed-circuit boards (13) from the preheating station (17) through the wave soldering system (19) to a removal means (14), the improvement comprising



a gripper head means in the advance means (22), said gripper head means (39) displaceable in at least two coordinate directions and rotatable about at least one axis parallel to said coordinate directions, a computer means (23) for determining driving paths for said gripper head means, said head means (39) operable for seizing one printed-circuit board (13) at a time from the preheating station (17), twice bringing the seized printed circuit board, by means of its soldering side, into contact with a soldering wave (21) of the wave soldering system (19) along one of the computer determined paths (57, 58; 57', 58').

4,807,795

METHOD OF MAKING A BIMETALLIC SHAPED-CHARGE LINER

Edward W. LaRocca, Placentia, and Robert Strike, Pomona, both of Calif., assignors to General Dynamics Pomona Division, Pomona, Calif.

Continuation of Ser. No. 751,830, Jul. 5, 1985, abandoned. This application Nov. 14, 1986, Ser. No. 931,238
Int. Cl.[4] B23K *20/08*
U.S. Cl. 228—107 8 Claims

1. A method of forming a bimetallic conoid for use in shaped-charge munitions having a penetration layer and an incendiary layer comprising the steps of:

explosively bonding a first metal sheet comprising a pyrophoric metal material to a second metal sheet comprising a metal having a greater density than said pyrophoric metal so as to form a bimetallic sheet having a continuous metal to metal interface joint between said first and second metal sheets without forming substantially any intermetallic compounds or discontinuities along said interface joint;

separating at least one generally circular preform plate from said bimetallic sheet having an incendiary layer corresponding to said pyrophoric metal and a penetration layer corresponding to said greater density metal; and

shear-forming said preform plate using a conoidal mandrel, positioning said pyrophoric layer with respect to said mandrel so as to form a conoid having an outer incendiary layer.

4,807,796

METHOD OF SOLDERING ALUMINUM-OXIDE CERAMIC COMPONENTS

Manfred R. Lichr, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 10, 1987, Ser. No. 119,008
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1986, 3639021
Int. Cl.[4] B23K *31/02*
U.S. Cl. 228—121 5 Claims

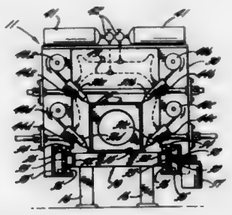
1. A method of dust-free and vacuum-tight interconnecting ceramic aluminum-oxide components each to the other by soldering in a protective gas atmosphere, using a solder material which connects the components by heating, characterized in that soldering of the components is effected in a protective gas consisting of a mixture of air and nitrogen, that a copper/-silver solder is used as the soldering material, individual constituents of which, including copper oxide formed during heating, diffuse into the surfaces of the ceramic components during the soldering procedure, and that the degree of oxidation of the copper during soldering is set by adjusting the air-to-nitrogen ratio in the protective gas.

4,807,797

METHOD AND APPARATUS FOR WELDING HOLLOW ELONGATED BEAMS

John D. West, Manitowoc, Wis., assignor to The Manitowoc Company, Inc., Manitowoc, Wis.

Continuation of Ser. No. 538,355, Oct. 3, 1983, abandoned, which is a continuation of Ser. No. 211,525, Dec. 1, 1980, abandoned. This application Jun. 21, 1984, Ser. No. 623,614
Int. Cl.[4] B23K *9/00*
U.S. Cl. 228—175 2 Claims



1. A method of welding hollow elongated beams which are generally rectilinear in cross-section and having a bottom plate and a top plate spaced apart by a pair of laterally spaced side plates, all of said plates having substantially square-cut edges, comprising the steps of:

positioning the plates forming the bottom and sides of the beam in proper relation to one another with the upper surface of the bottom plate of the beams engaging and projecting outwardly from the square-cut edges of the side plates,

tack welding at least one diaphragm element to the plates with the diaphragm being confined between the interior surfaces of the beam,

positioning the top plate in proper location with respect to the side plates and diaphragm elements such that the two upper corners of the beam are to be welded with open corner filet welds defined by the square-cut edges thereof,

tack-welding the plates together at spaced intervals along their length,

securing the tack-welded beam to a welding table having means associated therewith for supporting a welding carriage relatively movable along and with respect to the length of the beam,

directing welding heads mounted on the carriage at each corner of the beam, with the lower two welding heads being directed downwardly and inwardly with respect to the corners formed between the outwardly projecting bottom plate and the respective side plates, and the upper two welding heads being directed downwardly and inwardly to the respective open upper corners formed by the square-cut edges thereof,

energizing the welding heads directed at each corner of the beam, and

relatively moving the carriage along and with respect to the length of the beam to simultaneously and continuously weld all corners of the beam.

4,807,798

METHOD TO PRODUCE METAL MATRIX COMPOSITE ARTICLES FROM LEAN METASTABLE BETA TITANIUM ALLOYS

Daniel Eylon, Dayton, and Francis H. Froes, Xenia, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 26, 1986, Ser. No. 935,362
The portion of the term of this patent subsequent to Mar. 29, 2005, has been disclaimed.
Int. Cl.[4] B23K *20/22*, *31/00*
U.S. Cl. 228—190 5 Claims



1. A method for fabricating a titanium alloy composite consisting of at least one filamentary material selected from the group consisting of silicon carbide, silicon carbide-coated boron, boron carbide-coated boron, and silicon-coated silicon carbide, and a lean metastable beta titanium alloy which comprises the steps of:

(a) providing a rapidly solidified foil of said alloy;

(b) fabricating a preform consisting of alternating layers of at least one of said filamentary materials and said foil; and

(c) applying heat at a level about 1% to 10% below the beta transus temperature of said alloy and pressure of about 1.5 to 15 ksi for about 0.25 to 24 hours to consolidate said preform.

4,807,799

DEVICE FOR APPLYING SOLDER

Inho Myong, Newark, and Richard Freimanis, Fremont, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

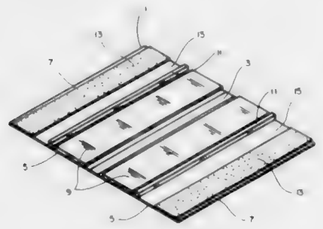
Filed Jun. 1, 1988, Ser. No. 200,998
Int. Cl.[4] B23K *31/02*
U.S. Cl. 228—212 17 Claims

1. A device for applying solder to a face of an object towards an edge thereof, comprising:

(a) a support sheet having a line of weakness along which the sheet can be folded to define two arms, each having a free end;

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(b) a quantity of solder located on a face of one of the arms of the support sheet; and



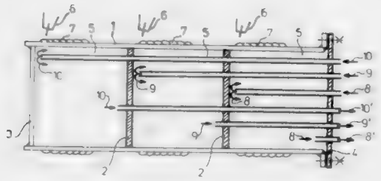
(c) means for controlling flow of the solder, when heated, in a direction perpendicular to the said line of weakness.

4,807,800

METHOD FOR MANUFACTURING THIN-WALLED HOLLOW BODIES OF CONCENTRIC METAL LAYERS

Karl Million, Oberhausen, Fed. Rep. of Germany, assignor to Man Gutehoffnungshuette, GmbH, Oberhausen, Fed. Rep. of Germany

Filed Dec. 15, 1987, Ser. No. 133,024
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1986, 3642886; Jan. 8, 1987, 3700377
Int. Cl.[4] B23K *9/04*
U.S. Cl. 228—222 **6 Claims**



1. A method for manufacturing thin-walled pipes of concentric, largely non-corrosive, high-temperature stable, and non-scaling metal layers, using a thin-walled material support pipe and at least one welding head, comprising preparing an inner layer on the support pipe, forming a plurality of additional outer layers following the inner layer by build-up welding with the said at least one welding head such that, during the build-up welding, the thin-walled material support pipe is filled with a pressurized cooling medium.

4. A method for manufacturing thin-walled pipes of concentric, largely non-corrosive, high-temperature stable, and non-scaling metal layers, using a thin-walled material support pipe and a plurality of welding heads at respective axially spaced welding zones along the pipe comprising the steps of:

preparing an inner layer on the support pipe;

forming a plurality of additional outer layers following the inner layer by build-up welding by operating the welding heads simultaneously;

dividing the pipe interior into axially spaced cooling zones associated with respective welding zones; and,

supplying separate streams of coolant under pressure to respective zones;

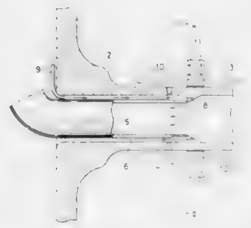
such that, during the build-up welding, the support pipe is filled with preasurized cooling medium distributed to provide even shrinkage of the pipe in each zone during welding.

4,807,801

METHOD OF AMELIORATING THE RESIDUAL STRESSES IN METALLIC DUPLEX TUBES AND THE LIKE AND APPARATUS THEREFOR

Hitoshi Nakamura, Yokohama, Japan, assignor to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1987, Ser. No. 114,336
Claims priority, application Japan, Oct. 28, 1986, 61-256589
Int. Cl.[4] C21D *1/00, 9/08*
U.S. Cl. 228—231 **7 Claims**



1. A method of ameliorating the residual stress in a metallic double pipe and the like, comprising the steps of:

(a) supplying cooling water inside the double pipe which includes a main pipe defined by an outer tube, and a thermal sleeve defining an inner pipe inserted into said main pipe, said thermal sleeve being welded to said main pipe at the root of said sleeve;

(b) fitting a restraining ring externally onto the outer surface of said main pipe at a position corresponding to said thermal sleeve root; and

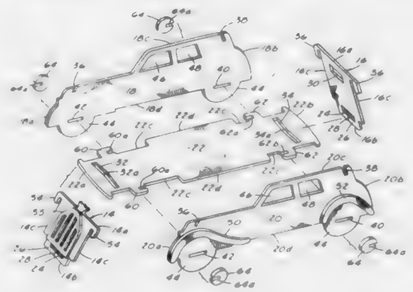
(c) heating said main pipe from its outer surface so as to generate a temperature differential in said main pipe in the direction of its wall thickness.

4,807,802

CONTAINER ASSEMBLY

Cole Williams, P.O. Box 1084, Glendale, Calif. 91209

Filed Feb. 1, 1988, Ser. No. 150,750
Int. Cl.[4] B65D *6/24*
U.S. Cl. 229—23 R **9 Claims**



1. A container assembly comprising:

(a) front and rear end members each having top, bottom and side portions;

(b) a generally planar bottom member having front, rear and side portions and being provided with a pair of longitudinally spaced, generally "V" shaped apertures;

(c) first locking means for releasably interconnecting said bottom portions of said front and rear end members with said bottom member;

(d) a pair of side members each having front, rear, top and bottom portions;

(e) second locking means for releasably interconnecting said front end member with said side members;

(f) third locking means for releasably interconnecting said rear end member with said side members, and

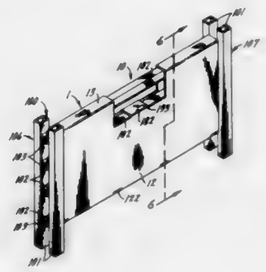
(g) fourth locking means for releasably interconnecting said bottom member with sad side members.

4,807,803

PACKING STRUCTURE FOR COLLAPSIBLE BASKET HOLDER

Onie Yang, Taipei, Taiwan, assignor to Ulike Corporation, Taipei, Taiwan

Filed Apr. 15, 1987, Ser. No. 38,339
Int. Cl.[4] B65D *5/02*
U.S. Cl. 229—40 **1 Claim**



1. A packing structure for a collapsible basket comprising a sheet of rectangular cardboard which may be folded into a box-like structure, said structure comprising two main walls, a top wall, and a bottom wall,

said packing structure being characterized by a plurality of lug members and mating slits located on said bottom wall of the packing structure,

said bottom wall being comprised of the bottom end of said two main walls, and being constructed by folding said bottom ends in a layered relationship and joining said plurality of lug members with said matching and mating slits,

said packing structure being further characterized by an open void section located in the upper central portion of the box-like structure, said open void section partially revealing a top horizontal member of said collapsible basket,

a tongue member being located on one side of said open void section and a mating slit being located on the other side of said open void section, said tongue member being constructed to straddle the open void section and to engage said mating slit,

said top horizontal member of said collapsible basket being revealed such that it may be used as a handle for the combined collapsible basket and packing structure for said collapsible basket.

4,807,804

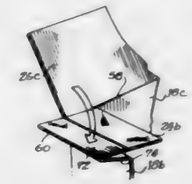
CARTON WITH LIFTING FLANGE

Jon M. Schwaner, Indianapolis, Ind., and Eric E. Falk, Louisville, Ky., assignors to Inland Container Corporation, Indianapolis, Ind.

Filed Feb. 2, 1988, Ser. No. 151,415
Int. Cl.[4] B65D *5/46*
U.S. Cl. 229—52 B **10 Claims**

1. A carton formed from a unitary paperboard blank, comprising:

a tubular body having an end and including first and second laterally adjacent axially-extending side panels joined by an axially-extending fold line, each side panel scored with a plurality of transverse score lines so as to form in each side panel a side wall, an end flap, and an intermediate lifting flange portion, said end flaps of said laterally adjacent side panels defining an axially extending slot between said end flaps to allow independent movement of said end flaps when said end flaps are folded about one of said transverse score lines extending between said end flaps and said intermediate lifting flange portion; and



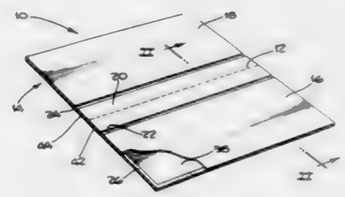
said intermediate lifting flange portions together comprising a plurality of unitary axially adjacent transversely extending wall portions folded one on top of the other and bonded together with adhesive means to form a collar-like lifting flange continuously overlying said side panels and the axially extending fold line joining said side panels, said lifting flange forming a continuous blade-receiving pocket with said tubular body which opens away from the end of said tubular body.

4,807,805

DUAL ENVELOPE SHEET-FED ASSEMBLY

Wayne L. Ratkowski, South Wales, N.Y., assignor to Avery International Corporation, Pasadena, Calif.

Filed Jan. 20, 1987, Ser. No. 5,458
Int. Cl.[4] B65D *27/10, 27/16*
U.S. Cl. 229—69 **16 Claims**



1. A dual envelope assembly for utilization with a sheet-feed printing apparatus comprising:

a first paper sheet bisected by a transverse perforated tear line, and having first and second transverse fold lines adjacent to, but spaced away from, said tear line;

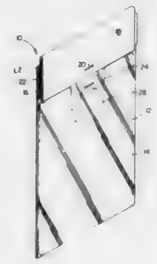
a composite paper sheet layer, including second and third separate, individual paper sheets, said second and third sheets being of substantially the same size, and superposed over opposite ends of said first sheet and each terminating adjacent said fold lines;

means for permanently securing said second and third sheets to said first paper sheet, to form two pockets which open toward said first and second transverse fold lines, said securing means including an adhesive border disposed along the borders of said first sheet, and three borders of said second and third sheets;

each of said two pockets having a length which is greater than the depth thereof, and being open along one of the longer sides thereof, and said two pockets having their

longer sides parallel to one another and with the two ends of the shorter sides being aligned with one another;
means on said first paper sheet, interposed between said first and second transverse fold lines, for sealing said pockets, said sealing means including first and second adhesive coated flaps, said first and second adhesive coated flaps being separated by said perforated tear line; and
said assembly having a simple, flat rectangular configuration, free of protrusions, webs, folds, or openings which could interfere with sheet feeding of a plurality of said assemblies through a laser printer or the like;
whereby said assembly may have two addresses applied to said first sheet in a sheet-feeding printer apparatus, and may be subsequently separated at said perforated tear line to form two addressed envelopes.

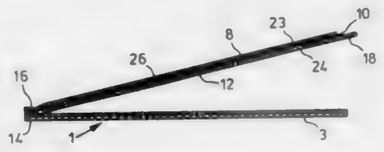
4,807,806
DISPLAY-MAILER ASSEMBLY
Conrad Neiman, P.O. Box 31143, Charleston, S.C. 29417
Filed Dec. 11, 1987, Ser. No. 131,923
Int. Cl.[4] B42D *15/00*
U.S. Cl. 229—92.8 **23 Claims**



1. A display-mailer assembly comprising:
a display card having a display side and a side for receiving an address,
means for attaching an object to be displayed to said display side of said card,
an outer envelope of a transparent material for containing said card during display, said envelope having an open end and a flap foldable over said open end,
means for quick-detachably fastening said envelope to retain said card in said envelope, and
manually activatable adhesive means on said flap to enable said card to be sealed in said envelope after it has been removed therefrom and addressed, to enable said assembly to be mailed,
said flap and said adhesive means being constructed and arranged to enable said flap to be folded over said open end to accept said fastening means without activation of said adhesive means and to be folded over said open end with said adhesive means activated to secure the flap to a wall of said envelope.

4,807,807
ADHESIVE POSTCARD FOR ARTICLES
Eliot M. Glick, 199 Old Forest Hill Road, Toronto, Ontario, Canada (N6C 2H1)
Continuation of Ser. No. 688,939, Jan. 4, 1985, abandoned, which is a continuation-in-part of Ser. No. 550,287, Nov. 9, 1983, abandoned, which is a continuation of Ser. No. 531,528, Sep. 12, 1983, abandoned. This application May 8, 1987, Ser. No. 48,971
Int. Cl.[4] B42D *15/02*
U.S. Cl. 229—92.8 **17 Claims**

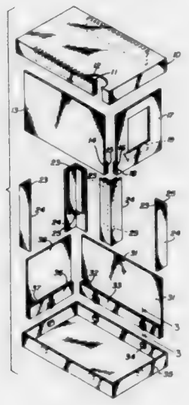
1. A postcard for use in mailing a sheet-form article with one side of such article visible, the postcard comprising:
(A) a sheet-form member formed from a relatively stiff material for supporting a sheet-form article and having a first layer of pressure-sensitive adhesive provided over all of one side of the sheet-form member; and
(B) a relatively flexible laminate comprising:
(i) a transparent sheet having a second layer of generally transparent pressure-sensitive adhesive provided over all of one side of the transparent sheet facing the first layer of adhesive and with the transparent sheet permanently secured along one edge portion to a corresponding edge portion of the sheet-form member by corresponding edge portions of said layers of adhesive; and
(ii) a protective release sheet positioned between the first and second layers of adhesive so as to maintain the sheet-form member and the transparent sheet separate, with the exception of said edge portions, which protective sheet includes a tab extending beyond an edge of



the sheet-form member opposite the corresponding edge portion;
the adhesion between the protective release sheet and the sheet-forming member and relative to the adhesion between the protective release sheet and the transparent sheet being such that, in use, the protective sheet and the transparent sheet are movable as a unit to separate the same from the sheet-form member, and the relatively flexible laminate may be peeled back from the sheet-form member by use of the tab to enable positioning of the sheet-form article on the sheet-form member while the sheet-form article is viewed from the front thereof, the protective sheet being subsequently peelable away from the transparent sheet, whereby the article can be secured between the sheet-form member and the transparent sheet with one side of the article visible prior to mailing.

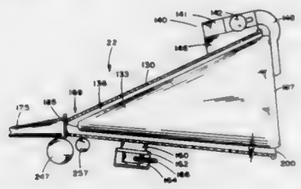
4,807,808
REUSEABLE CONTAINER
Harold F. Reed, 2611 Plaza Pkwy. #102, Wichita Falls, Tex. 76308
Filed Oct. 15, 1987, Ser. No. 108,742
Int. Cl.[4] B65D *11/16*
U.S. Cl. 229—103 **3 Claims**

1. An interlocking reuseable container with removable sides to facilitate unpacking, comprising in combination: a base having a bottom and an upturned peripheral flange delineating positions for the sides; bosses secured at spaced apart locations on the interior of the flange above the bottom; a plurality of removable sides each having receiving means for receiving portions of the flange; at least some of said receiving means interlocking with said bosses; and, a plurality of corner supports each comprising an outside elongated substantially right angle corner, an elongated spacer bonded to the interior of the corner to cover a narrow central portion thereof, and an elongated inside support bonded to the spacer to leave substantially right angle spaces between the corner support and the inside



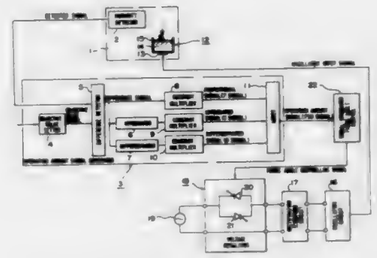
support for receiving edges of adjacent sides there by comprising a substantially rigid container.

4,807,809
ROD MAKING APPARATUS FOR SMOKING ARTICLE MANUFACTURE
James W. Pryor, Winston-Salem; John L. Nelson, Lewisville, and Clifford R. Marritt, Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Feb. 12, 1988, Ser. No. 156,502
Int. Cl.[4] A24C *5/18*
U.S. Cl. 131—84.1 **16 Claims**



1. An apparatus for manufacturing rods for use in the manufacture of smoking articles, the apparatus including:
(a) means for providing a web of sheet-like material;
(b) means for pleating the web and providing a rod-like composite from the pleated web, such means including a frustoconical tube and a frustoconical member concentric to the tube and positioned with respect to the tube such that (i) an annular region is formed between the outer surface of the frustoconical member and the inner surface of the frustoconical tube, and (ii) the web is fed through the annular region; and
(c) means for receiving the rod-like composite and circumscribing the rod-like composite with wrapping material thereby forming a rod.

4,807,810
HUMIDIFICATION CONTROLLING SYSTEM WITH AN ULTRASONIC HUMIDIFIER
Iwao Ando, Hachioji, Japan, assignor to Yukyan Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 8, 1987, Ser. No. 59,070
Claims priority, application Japan, Feb. 24, 1987, 62-40568
Int. Cl.[4] B01F *3/02*
U.S. Cl. 236—44 A **1 Claim**

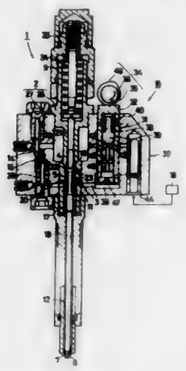


1. A system for controlling the humidity within a chamber comprising an ultrasonic humidifier positioned in said chamber, a constantly operating oscillator associated with said ultrasonic humidifier within said chamber, a humidity detector located in said chamber for sensing the level of humidity therein and thereby producing a detected signal, means to provide a preset objective value signal, means responsive to the sum of the proportional value, the integrated value and the differentiated value of the difference between said detected signal and said preset objective value signal to generate an operation amount signal, and means to convert said operation amount signal to an oscillator input signal for continual adjustment of the amplitude of the oscillator associated with said ultrasonic humidifier in response to variations in said operation amount signal to cause said oscillator to maintain the humidity within the chamber constant.

4,807,811
ACCUMULATOR FUEL INJECTOR FOR DIESEL ENGINE
Masahiro Akets; Masahiro Yamashita; Satoshi Torii, and Tetsuro Ikeshima, all of Sakaishi, Japan, assignors to Kubota Ltd., Osaka, Japan
Filed Sep. 11, 1987, Ser. No. 95,459
Claims priority, application Japan, Sep. 13, 1986, 61-216903; Sep. 13, 1986, 61-216901; Nov. 25, 1986, 61-280047
Int. Cl.[4] F02M *41/16, 47/02*
U.S. Cl. 239—91 **4 Claims**

1. An accumulator fuel injector suitable for a diesel engine, having a fuel inlet connected in communication with at least one nozzle hole through a valve closing pressure chamber, a first check valve, an accumulator means and an injection valve in a body thereof, said injection valve being provided with a valve closing spring, a valve closing pressure receiving surface and a valve opening pressure receiving surface, and said injection valve being adapted to be pushed in a first direction toward a valve closing side by a net force comprising force exerted by the valve closing spring and pressure in the valve closing pressure chamber acting on the valve closing pressure receiving surface and in a second direction toward a valve opening side by a pressure within the accumulator means acting on the valve opening pressure receiving surface, characterized in that:
said accumulator means comprises at least a first accumulator and a second accumulator, an inlet of said first accumulator being connected to the valve closing pressure

chamber through the first check valve and an outlet thereof being connected to the at least one nozzle hole through the injection valve, the first accumulator being connected in communication with the second accumulator through a second check valve and a relief valve arranged in parallel, wherein a relief pressure for the relief valve is higher than a valve closing set up pressure for the injection valve corresponding to the force exerted by the valve closing spring.

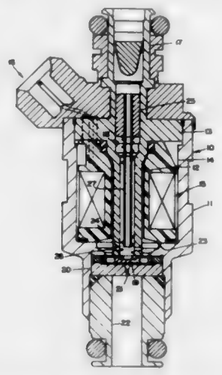


4,807,812

FUEL INJECTOR DESIGNED TO REDUCE FUEL VAPORIZATION

Paul S. Renowden, Hounslow; John H. Kenning, Sutton Coldfield, and Ian S. Johnson, London, all of England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed May 13, 1987, Ser. No. 49,614
Claims priority, application United Kingdom, May 16, 1986, 8611949
Int. Cl.[4] B05B *15/00*
U.S. Cl. 239—132 3 Claims



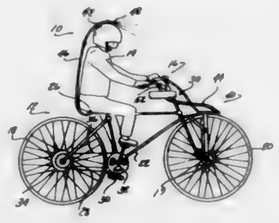
1. A petrol injector for delivering fuel to an air inlet manifold of an engine, the injector comprising an outer hollow body, a core member extending within the body, the body and core member being formed from magnetic material, a solenoid winding surrounding the core member, a seat ring defining an outlet orifice, the seat ring being mounted in one end of the body in spaced relationship to one end of the core member, a plate valve member formed from magnetic material located between the seat ring and said one end of the core member, a passage extending between the ends of the core member, the other end of the core member defining a fuel inlet, a coiled compression spring located in said passage, one end of the spring engaging said valve member to urge the valve member into sealing engagement with said seat ring, a spring abutment mounted in said passage at a position remote from said valve member, said abutment being engaged by the other end of said spring, and a tubular member extending within said spring, said tubular member being mounted on said abutment and acting to convey fuel from said fuel inlet to adjacent said valve member when said solenoid is energized to lift the valve member from said seat ring.

4,807,813

BICYCLE MOUNTED WATER TOY

Larry Coleman, 2801 S. Dort Highway, Flint, Mich. 48507

Filed Oct. 22, 1987, Ser. No. 111,343
Int. Cl.[4] B05B *9/08*; B62J *39/00*
U.S. Cl. 239—153 12 Claims



7. An amusement device adapted to be mounted to a velocipede, said velocipede having at least one moving wheel with a central axle, said amusement device comprising:

a housing having an inlet port, an outlet port and a central cavity, the housing connected to a pump mounting bracket;

means for securing the housing to the velocipede in releasable engagement with said moving wheel;

a rotatable drive shaft positioned in the central cavity, the drive shaft extending beyond the housing through a shaft opening;

an impeller mounted on the drive shaft and positioned within the cavity; and

a friction wheel mounted on the drive shaft releasably engageable with said moving wheel of said velocipede;

a fluid reservoir;

a pump for conveying fluid from the reservoir, the pump being driven by said velocipede wheel;

a first conduit connected to the fluid reservoir and the pump for conveying fluid from the first reservoir to the pump;

a second conduit for conveying fluid away from the pump having a first end connected to the pump and a second end of the conduit distal to the first end;

a nozzle attached to the second end of the conduit; and

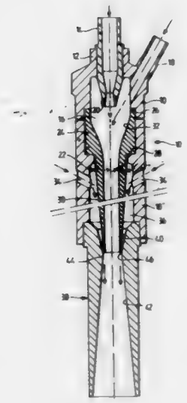
a helmet adapted to be worn by a rider of the velocipede, the nozzle and second end of the conduit mounted to the helmet.

4,807,814

PNEUMATIC POWDER EJECTOR

Jean-Pierre Douche, Theurette; Jean-Claude Coulon, Marcurey, and Claude Bernard, Livry-Gargan, all of France, assignors to Saint Gobain Vitrage, Courbevoie, France

Filed Jan. 3, 1986, Ser. No. 815,973
Claims priority, application France, Jan. 4, 1985, 85 00072
Int. Cl.[4] F04F *5/00*
U.S. Cl. 239—428 16 Claims



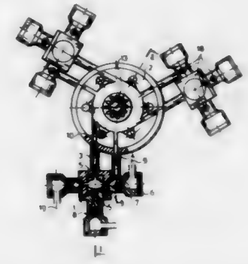
1. An pneumatic powder ejector for depositing a powder on a substrate comprising a body; a suction stage within said body at one end, said suction stage including a suction chamber, a venturi for communicating a flow of primary gas to said suction chamber, and an input flow path for communicating powder to be deposited to said suction chamber, said powder being entrained in air along said input flow path and further being supplied at a controlled delivery rate, said input flow path being located in lateral offset relation to a downstream end of said venturi; and an injection stage within said body extending coaxially from said suction chamber toward the end of said body opposite said suction stage, said injection stage including a nozzle surrounded by a wall with the spaced therebetween defining a flow path for powder, said wall having an outer surface supported at one end by said body and substantially spaced from said body throughout a tapered length to its opposite end, an injection chamber for supplying an entrainment gas, said injection chamber located within said body bounded by said outer surface, at least one opening in said body for communicating said entrainment gas to said injection chamber, and a diffuser supported at the end of said body opposite said suction stage, said diffuser having an inner wall including a length convergent toward a zone of minimum section and a length divergent from said zone, said zone of minimum section located substantially at said opposite end of said nozzle and forming with said nozzle a gap output from said injection chamber passage of entrainment gas into said diffuser.

4,807,815

AIR-JET MILL AND ASSOCIATED PREGRINDING APPARATUS FOR COMMINUATING SOLID MATERIALS

Zsolt Csillag; Géza Szentgyörgyi; Károly Solymár; Tibor Kálmán; Pál Tóth; Ferenc Rozsnyai; János Steiner, all of Budapest; János Morzsi, Érd; László Zsámberi, Budapest; Béla Lajtai, Dömök; Tibor Legát, Budapest; Ferenc Sütkei, Ajka; Ferenc Vallé, Ajka; Bálint Szabó, Ajka; Gábor Molnár, Ajka, and Sándor Csuffi, Ajka, all of Hungary, assignors to Magyar Aluminiumipari Troszt, Hungary

PCT No. PCT/HU86/00020, § 371 Date Jan. 29, 1987, § 102(e) Date Jan. 29, 1987, PCT Pub. No. WO86/05717, PCT Pub. Date Oct. 9, 1986
PCT Filed Apr. 3, 1986, Ser. No. 2,695
Claims priority, application Hungary, Apr. 3, 1985, 1272/85
Int. Cl.[4] B02C *19/06*
U.S. Cl. 241—39 21 Claims



1. An air-jet mill for fine grinding and sizing, comprising at least one pregrinding chamber, a grinding chamber defining a circular-shaped grinding space connected by a tangential blow pipe oriented to introduce particulate material into said grinding space through an injecting nozzle in a direction tangential to the periphery of said grinding space at a point on said periphery and with an orientation which causes air flow in a first direction, peripheral grinding nozzles opening into the grinding space and a discharge stub for the ground material, a sizer positioned in the grinding chamber, said pregrinding chamber being connected with the grinding space by said tangential blow pipe and by a material return channel, said peripheral grinding nozzles opening into the grinding space arranged symmetrically along a circle and the number of said peripheral grinding nozzles being twice the number of injecting nozzles.

4,807,816

COMPRESSING AND GRINDING APPARATUS

Takashi Ataka, 11-19, Oyodonaka 2-chome, Oyodo-ku, Osaka, Japan

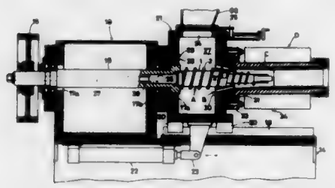
Continuation of Ser. No. 935,419, Nov. 26, 1986. This application Jul. 19, 1988, Ser. No. 222,399
Claims priority, application Japan, Dec. 23, 1985, 60-289816; Jan. 4, 1986, 61-85002
Int. Cl.[4] B02C *19/22*
U.S. Cl. 241—67 13 Claims

1. An apparatus for compressing and grinding a material such as crusts of seeds, rice, hulls, trunks, branches and leaves of plants and grasses, especially those containing a siliceous material, said apparatus comprising:

an outer cylinder having an inner surface which has a tapered frusto-conical shape in cross-section and a plurality of axially-extending grooves in said inner surface,

a sleeve co-axially connected at one end thereof to a downstream side of said outer cylinder and having an inner cross-sectional shape varying continuously from polygonal to circular from said one end to the other, and

a screw axially aligned with and extending through said cylinder and into said sleeve, and said cylinder and said screw defining a spacing having a decreasing cross-sectional area in which the material is compressed and ground at a pressure of from 1 to 100 tons/cm^2 and heated to a temperature of from 150° to 600° C., said screw including feeding-compressing portion, an intermediate



portion, and a compressing-grinding portion and having a body diameter and a screw thread diameter, said body diameter and said screw thread diameter each decreasing discontinuously in said intermediate portion, said intermediate portion being positioned within said outer cylinder, the pitch of each portion being uniform and the pitch of the compressing-grinding portion being smaller than the pitch of the feeding-compressing portion.

4,807,817

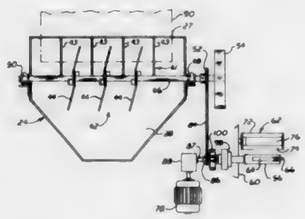
COMMINUTING AND WINDING APPARATUS

David G. Schoewe, P.O. Box 18271, Tampa, Fla. 33679

Filed Mar. 8, 1988, Ser. No. 165,612

Int. Cl.^{4} B02C *13/30*

U.S. Cl. 241—100 **21 Claims**



1. An apparatus for comminuting gypsum board and winding elongate bendable members comprising:

a support structure;

a comminuting mechanism including a housing mounted to said support structure, said housing having an intake portion for receiving gypsum board to be comminuted, an outlet portion for discharging comminuted material, and blade means rotatably mounted in said housing;

a winding mechanism that includes a winding shaft axially rotatably mounted to said support structure, said winding shaft having slot means disposed therein for receiving an elongate bendable member to be wound, and a holder device mounted to said support structure and spaced apart from said winding shaft for accommodating said member to be wound at a location spaced apart from the portion of said member received by said slot means in said winding shaft; and

means, mounted to said support structure, for rotatably driving said blade means to comminute gypsum board that is introduced into said housing, and for rotatably driving said winding shaft to wind said bendable member received in said slot means about said winding shaft.

4,807,818

MILL FOR GRINDING GRANULAR MATERIAL

Peter M. Standring, Nottingham, England, assignor to National Research Development Corporation, London, England

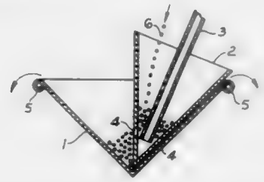
PCT No. PCT/GB86/00086, § 371 Date Oct. 27, 1986, § 102(e) Date Oct. 27, 1986, PCT Pub. No. WO86/04835, PCT Pub. Date Aug. 28, 1986

PCT Filed Feb. 21, 1986, Ser. No. 930,370

Claims priority, application United Kingdom, Feb. 26, 1985, 8504901

Int. Cl.^{4} B02L *7/12*

U.S. Cl. 241—198 R **1 Claim**



1. A mill for grinding granular material comprising:

a grinding surface;

a generally conical grinding member having a hollow therein and an apex;

a mounting arrangement for supporting the grinding member in such a manner that the grinding member can be precessed around the grinding surface, the mounting arrangement including feed means, having one or more holes through a peripheral conical surface thereof for introducing the granular material into the hollow of the grinding member to be fed to the grinding surface as the grinding member is precessed around the grinding surface.

4,807,819

PROCESS AND APPARATUS FOR GRANULATING POWDERY MATERIALS

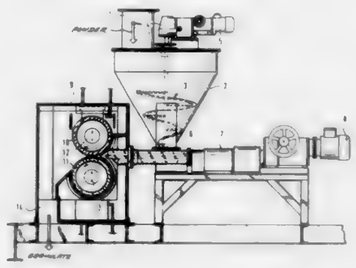
Alfons Kreher, Frankfurt; Werner Nagel, Alzenau; Bernd Brandt, Swisttal, and Albert Peters, Erftstadt, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 770,981, Aug. 30, 1985. This application Sep. 22, 1987, Ser. No. 102,819

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1984, 3431865

Int. Cl.^{4} B02C *4/30*

U.S. Cl. 241—222 **5 Claims**



1. A method of continuously processing a finely divided powdery material such as precipitated silica into a compressed form comprising:

(a) feeding said powder through a stirrer;

(b) conveying said stirred powder by means of at least one feed screw to a granulation station; and

(c) compressing said powder at said granulation station by means of a pair of rollers; one of said rollers having an interior surface that is connected to a vacuum source and a porous exterior jacket that is made of sintered metal; said step of conveying including conveying said stirred powder to a point adjacent a gap defined between said pair of rollers.

4,807,820

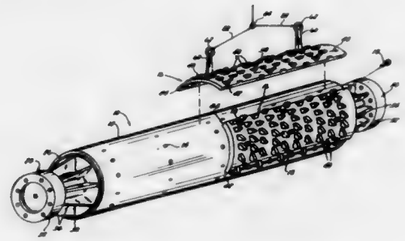
SEGMENTAL SHELL FOR A COAL CRUSHER ROLL

Theodore F. Gundlach, Belleville, Ill., assignor to T.J. Gundlach Machine Company, Belleville, Ill.

Division of Ser. No. 586,571, Mar. 5, 1984, Pat. No. 4,617,709. This application Aug. 11, 1986, Ser. No. 895,198

Int. Cl.^{4} B02C *13/26*

U.S. Cl. 241—294 **6 Claims**



1. A removable segment for a coal crusher having a cylindrical back-up roll adapted to receive a plurality of said segments, said segment comprising:

a curved metal member in the form of a sector of a cylindrical tube having inner and outer cylindrical faces, and having teeth formed on said outer cylindrical face;

a recess in said inner cylindrical face for weight reduction, for simplifying the face fit of the segment on the back-up roll, and for receiving balancing weights; said recess defined by a raised peripheral berm on all four sides of said segment;

radial holes in said segment around the periphery thereof through said berm for receiving bolts which thread into tapped holes in said back-up roll for attachment of said segment to said roll, said segment having a coaxial counterbore at said outer face for receiving the heads of said bolts.

4,807,821

METHOD FOR WINDING COILS OF SINGLE-PHASE INDUCTION ELECTROMOTOR

In S. Kim, #10-615 Samig Apt., 134-21 Cheong-dam-Dong, Kang-nam-ku, Seoul, Rep. of Korea

Filed May 18, 1987, Ser. No. 50,471

Int. Cl.^{4} H02K *3/00, 15/085*

U.S. Cl. 242—7.03 **1 Claim**

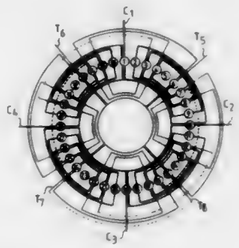
1. A method for winding stator coils of a single phase 4-pole 36-slot induction electromotor comprising:

winding a starting coil through slots of said electromotor for forming a starting winding,

avoiding winding of said starting coil about selected slots, said selected slots being unused slots,

moving an outer coil pitch to form coil overlapping slots adjacent to said selected unused slots for eliminating unused teeth between said unused slots and said coil overlapping slots, and

winding a main coil through slots for forming a main winding whereby the starting coil overlaps the starting coil in said selected slots, a 90° electric angle being formed between said main winding and said starting winding, and four slots being unused by the starting winding for effectively increasing the starting torque and promoting the operation efficiency of the electromotor.



4,807,822

YARN TRAVERSING MECHANISM

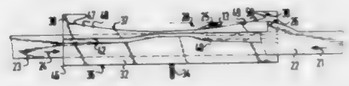
Heinz Kamp, Wegberg; Rolf Becker, and Horst Wiosack, both of Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Fed. Rep. of Germany

Filed Dec. 5, 1986, Ser. No. 938,567

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1985, 3543131

Int. Cl.^{4} B65H *54/32, 54/38*

U.S. Cl. 242—43 R **17 Claims**



1. A yarn traversing mechanism for a textile winder for cross-winding yarn packages, comprising yarn engaging elements, means for oppositely traversing said yarn engaging elements for alternately engaging the yarn by said oppositely traversing elements to cause the yarn to reciprocally traverse the package, transfer means for disengaging the yarn from one of said elements for transfer to engagement by an oppositely traversing element, said transfer means being operable selectively to transfer the yarn at a plurality of different yarn reversing locations at each end of said yarn traverse and having a guide member with a yarn guiding surface for guiding the yarn relative to a traversing element to separate the yarn and element and to position the separated yarn for engagement by an oppositely traversing element, said yarn engaging elements being relatively disposed for passing each other at said different yarn reversing locations, said yarn guiding surface and said yarn engaging elements being relatively disposed for transfer of yarn at different yarn reversing locations, and said transfer mean including means for displacing different elements away from said guiding surface at different reversing locations.

4,807,823

BATHROOM TISSUE DISPENSER

James A. Wyant, Pointe Claire, Canada, assignor to Wyant & Company Limited/La Compagnie Wyant Limitee, Saint Laurent, Canada

Continuation of Ser. No. 829,974, Feb. 18, 1986, abandoned. This application Mar. 18, 1988, Ser. No. 171,187

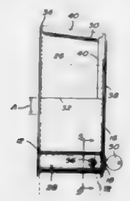
Int. Cl.^{4} B65H *19/04*

U.S. Cl. 242—55.3 **2 Claims**

1. A bathroom tissue dispenser for dispensing sheet material from a roll comprising:

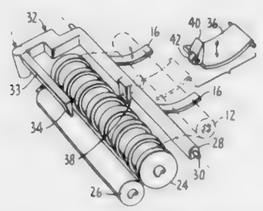
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a back plate, means in the back plate for use in attaching it to a flat surface;
a top fixed spindle cantilevered from the back plate to form a rigid structure with the back plate and positioned below an upper edge of the back plate;
a bottom fixed spindle cantilevered from the back plate to form a rigid structure with the back plate spaced beneath the top spindle, and having a free end, both the top spindle and the bottom spindle adapted to each hold a bathroom tissue roll;
side members integral with a top portion of the back plate, extending on each side of the top spindle, the side members having bottom edges located one-half to one inch below the top spindle so as to have the side members hide



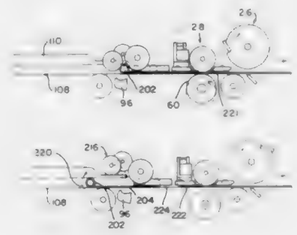
a major portion of the tissue roll mounted on the top spindle and to make it awkward to use the top tissue roll while there is a substantial amount of tissue on the bottom tissue roll, but to make the top tissue roll accessible when the bottom tissue roll is nearly depleted;
a cover with a top edge having a hinge connection to the upper edge of the back plate, the cover having a top plate integral with a front plate, which, with the side members, forms an enclosure for the top spindle and the bathroom tissue roll on the top spindle,
a central arm in the same plane and integral with the front plate of the cover extending down over the free end of the bottom spindle, and
locking means between the central arm of the cover and the free end of the bottom spindle.

4,807,824
PAPER ROLL TOWEL DISPENSER
Oliver B. Gains, La Verne; Jack L. Perris, Santa Barbara, and Council A. Tucker, Glendale, all of Calif., assignors to James River II, Inc., Oakland, Calif.
Filed Jun. 27, 1988, Ser. No. 211,947
Int. Cl.[4] B65H *19/04, 19/00*
U.S. Cl. 242—55.3 **2 Claims**



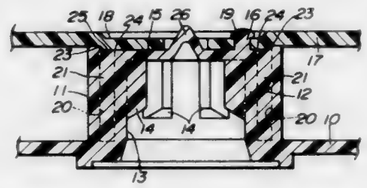
1. In a device for dispensing sheet material sequentially from a primary roll and a reserve roll, the device comprising a cabinet having a slot through which the sheet material is dispensed, feed means including a pair of rollers defining a nip through which the sheet material passes, and means for introducing sheet material from the reserve roll into the nip responsive to depletion of primary roll sheet material, the improvement wherein the means for introducing the sheet material comprises a lever mounted for rotational movement about a fulcrum, the portion of the lever to one side of the fulcrum comprising a cradle for supporting the primary roll and the portion of the lever to the other side of the fulcrum comprising an element for tucking sheet material from the reserve roll into the nip, the lever being balanced such that when the cradle supports a primary roll that has not been substantially depleted, the tucking element is raised above the nip, and when the primary roll has been substantialyl depleted, the tucking element is lowered to introduce sheet material from the reserve roll into the nip.

4,807,825
ROLL WINDING MACHINE
Bertram F. Elsner, and Robert E. Molison, both of Hanover, Pa., assignors to Elsner Engineering Works, Inc., Hanover, Pa.
Filed Mar. 29, 1988, Ser. No. 174,719
Int. Cl.[4] B65H *18/22*
U.S. Cl. 242—56 R **11 Claims**



10. A roll winding machine including first and second belts extending along adjacent portions of a feed path, first belt drive means for moving the first belt downstream along the path at a first rate; second belt drive means for moving the second belt downstream along the path at a second rate greater than the first rate; a rolling assembly on one side of the path defining a winding pocket extending across the first belt adjacent the second belt, the assembly including a plurality of rolls extending around the winding pocket, a rolling head supporting at least one roll located on the downstream side of the pocket, and opening means for moving the rolling head away from the path to open the downstream side of the winding pocket; web cutting means located on the path upstream of the rolling assembly for forming a cut through the web to define leading and trailing ends of the web; a take away rail located above the path and extending downstream from the winding pocket along the second belt; a guide finger assembly located on the other side of the path opposite the rolling assembly, the guide finger assembly including a guide finger movable through the path to the downstream side of the winding pocket and a finger drive for extending and retracting the finger across the path; and drive means for rotating said rolls at a circumferential speed equal to said first rate whereby upon continuous movement of a web downstream along said first belt the lead end of the web is spiral wound in the winding pocket to form a spiral body, said opening means opens the pocket for discharge of the winding of the spiral body and said second belt rotates such body downstream at the second rate to form a gap between the leading and trailing web ends for extension of the finger and to complete winding of the trailing end of the web onto the body to complete the roll.

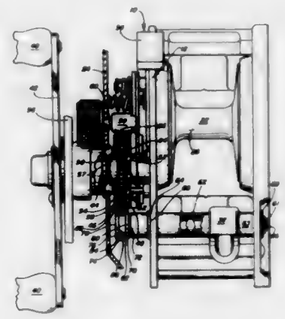
4,807,826
TAPE REEL FOR TAPE CASSETTE
Yuji Iwahashi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 1, 1987, Ser. No. 127,083
Claims priority, application Japan, Dec. 12, 1986, 61-191243[U]
Int. Cl.[4] B65H *75/14*
U.S. Cl. 242—71.8 **26 Claims**



1. A tape reel structure for a tape in a tape cassette comprising:
a tape reel including an inner cylindrical reel shaft boss section and an outer cylindrical tape reel section wherein said tape is found directly on an outer periphery of said outer cylindrical section, said inner and outer cylindrical sections being coaxially arranged relative to each other in a mutually spaced relationship, and a plurality of radially extending ribs extending between said inner and outer cylinder sections, said ribs having a first portion joining with the inner periphery of said outer cylindrical section and a second portion joining with the outer periphery of said inner cylindrical section;
an upper reel flange mounted on said tape reel; and
a lower flange section formed integrally with said tape reel;
wherein said first portion of said ribs extends substantially through an overall height of said outer cylindrical section and has a first upper end and said second joining portion of said ribs extends substantially through an overall height of said inner cylindrical section and has a second upper end, said second upper end being oriented at a lower elevation relative to that of said first upper end section, as measured axially along an axis of said tape reel.

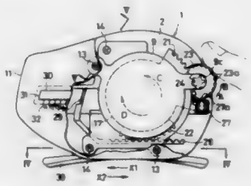
4,807,827
FRICTION DRIVE FOR LINE GUIDE ON BAIT CAST REEL
Robert F. Welch, Bixby, Okla., assignor to Zebco Corporation, Tulsa, Okla.
Filed Jul. 27, 1987, Ser. No. 78,293
Int. Cl.[4] A01K *89/04;* **F16H** *13/02, 55/34*
U.S. Cl. 242—84.42 **3 Claims**

1. An improved bait cast reel of the type having a line-carrying spool, a rotatable crank handle with an associated crank shaft for rotating the spool so that the line is wound thereon, a line guide, and rotating means for moving the line guide in a reciprocative manner axially across the spool to distribute line evenly thereover as the spool is rotated, the improvement comprising:
a drive element with an annular drive surface;
means mounting the drive element to the crank shaft so that the drive element follows rotation of the crank shaft;
a pulley;
means mounting the pulley to the means for moving the line guide to follow rotation thereof; and
friction means on the pulley directly engaged by the annular drive surface for imparting rotation of the drive element to the pulley and for allowing relative rotation to occur between the drive element and the pulley with a predetermined force applied to said line guide tending to resist movement thereof,
said friction means comprising a resilient O-ring that surrounds the pulley and is compressed between the pulley and the annular drive surface on the drive element,
said annular drive surface having radially projecting circumferentially spaced teeth which tend to dig into the O-ring



to both compress the O-ring against the pulley and key the drive element to the O-ring so that the line guide is positively driven by the drive element up to the point that said predetermined resistant force is applied to the line guide.

4,807,828
FISHING REEL
Nobuyuki Yamaguchi, Tokyo, Japan, assignor to Daiwa Seiko Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 754,232, Jul. 12, 1985, abandoned. This application Jun. 8, 1987, Ser. No. 59,164
Claims priority, application Japan, Jul. 14, 1984, 59-106753[U]; Jul. 14, 1984, 59-106752[U]
Int. Cl.[4] A01K *89/015*
U.S. Cl. 242—84.52 B **2 Claims**



1. A fishing reel for containing fishing line comprising:
a reel frame having a pair of cover members each having a front and, a rear end opposite said front end, and a rearwardly facing surface at said rear end, said fishing line adapted to be released from said front end;
a spool rotatably mounted on said reel frame;
brake means for braking a rotation of said spool when said spool is freely rotatable, said brake means including magnetic means for producing magnetic fields, and a non-magnetic conductor made of non-magnetic but electrically conductive material, said non-magnetic conductor being fixed to said spool and being fixed to said spool and being disposed in said magnetic field of said magnetic means;
adjusting means movably provided in one of said pair of cover members for adjusting a damping force for said rotation of said spool;
actuator means for actuating said adjusting means, said actuator means protruding from said rearwardly facing surface of said one of said pair of cover members, wherein said actuator means includes a rotatable dial, an edge of which protrudes beyond said rearwardly facing surface of

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said cover member and said edge of said dial being manually operable by a thumb of an operators hand which is gripping a fishing rod; and

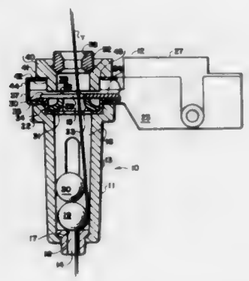
indicating means, mechanically coupled to said adjusting means to be spaced away from said dial, for indicating an amount of said damping force applied to said spool, wherein said indicating means comprises an indicia reference and a display window through which an operator can view said indicia reference, said display window being located substantially at a rear side of said one of said pair of cover members.

4,807,829

COMBINED YARN TENSIONING CONTROL AND STOP MOTION UNIT

Otto Zollinger, Spartanburg, S.C., assignor to Otto Zollinger, Inc., Spartanburg, S.C.

Filed Feb. 18, 1988, Ser. No. 157,643
Int. Cl.[4] B65H *59/22*
U.S. Cl. 242—152.1 **7 Claims**



1. A combined yarn tensioning control and stop motion unit comprising a ball tension control component having a ball housing formed with a yarn inlet, a yarn outlet, a yarn passageway between said inlet and outlet, a ball seat in said passageway through which yarn passes, and ball means associated with said ball seat for applying tension control to yarn traveling through said passageway, and a yarn sensing stop motion component having a housing containing electronic circuitry, said stop motion housing having an annular yarn passageway therethrough disposed at said yarn outlet, and means for sensing yarn traveling through said annular passageway, said electronic circuitry being responsive to said sensing means to provide a stop motion signal.

4,807,830

AIRCRAFT WITH MAGNETICALLY COUPLED ANNULUS

Paul F. Horton, 9393 Hackamore Dr., Boise, Id. 83709

Filed Dec. 15, 1986, Ser. No. 941,860
Int. Cl.[4] B64C *39/06*
U.S. Cl. 244—12.2 **24 Claims**

1. An aircraft comprising:

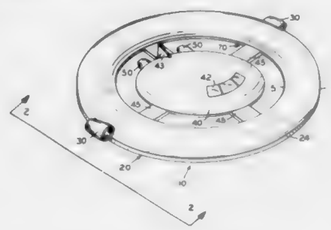
an annulus;

first propulsion means affixed to said annulus for rotation thereof;

a fuselage laterally located within the interior space defined by said annulus;

second propulsion means affixed to said fuselage for propelling said fuselage, and hence said aircraft, in a selected direction; and

electromagnetic means for coupling said annulus to said fuselage to permit spaced rotation of said annulus relative to said fuselage, one portion of said electromagnetic means concentrically spaced on and about the inner periphery of said annulus and a second portion of said electromagnetic means being coaxially spaced on and about



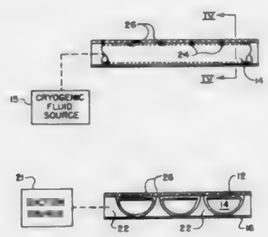
the outer periphery of said fuselage and in a fixed relationship with said fuselage.

4,807,831

COMBINATION BOUNDARY LAYER CONTROL SYSTEM FOR HIGH ALTITUDE AIRCRAFT

George D. Brewer, San Marcos, Calif., and David P. Marshall, Powder Springs, Ga., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 12, 1987, Ser. No. 84,341
Int. Cl.[4] B64C *1/38, 21/06*
U.S. Cl. 244—117 A **20 Claims**



1. A combination boundary layer control system for high altitude aircraft comprising:

a cryogenic cooling system for directing a cryogenic fluid into intimate contact with an aircraft surface in order to lower the aircraft surface temperature to less than 100° F. and thus promote boundary layer adhesion; and

an air duct system for applying suction to the aircraft surface in order to prevent boundary layer separation.

4,807,832

TWO-STRING DELTA-STYLE KITE WITH SAIL CURVATURE CONTROL

Donald C. Tabor, 4966 Santa Monica Ave., San Diego, Calif. 92107

Continuation-in-part of Ser. No. 73,996, Jul. 16, 1987, which is a continuation of Ser. No. 804,778, Dec. 5, 1985, abandoned.
This application Dec. 28, 1987, Ser. No. 138,837
Int. Cl.[4] B64C *31/06*
U.S. Cl. 244—153 R **14 Claims**

1. A stunt kite suitable for sailing in variable winds which comprises:

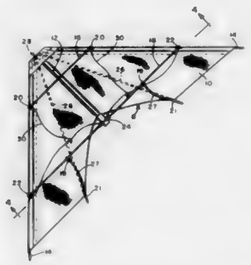
a sail of flexible material;

a substantially V-shaped frame covered by said sail and formed by an outer pair of rods connected at one end to form a forward point of said frame extending to and connected to the rear of said sail;

a central rod intermediate said otter pair of rods, connected thereto at said forward point of said frame and extending to and connected to the rear of said sail, said outer pair of rods extending rearwardly beyond said central rod;

a middle pair of rods connected to said frame at said forward point thereof, each rod of said middle pair disposed intermediate said central rod and one of the rods of said outer pair and extending to and connected to the rear of said sail, and extending rearwardly beyond said central rod;

a pair of horizontal rods arranged in fore and aft relationship and connected at opposite ends to said outer pair of rods,



with the aft horizontal rod also connected at its midpoint to the rear of said central rod, said aft horizontal rod being capable of substantial in-flight arcuate flexibility;

means for providing directional control; and

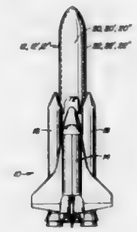
a pair of flexible rods disposed on opposite sides of said central rod, with each of said flexible rods assuming a curved shape and connected at one end to said aft horizontal rod at a point on said aft horizontal rod generally centrally intermediate said central rod and said respective one of said outer pair of rods and connected at the other end to the rear end of said respective one of said middle pair of rods.

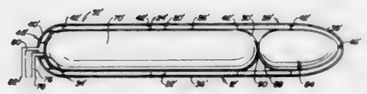
4,807,833

COMBINED SPACE VEHICLE FUEL CELL AND SPACE STATION STRUCTURAL BUILDING COMPONENT

James A. Pori, 670 E. Third St., San Mateo, Calif. 94401

Filed Apr. 11, 1986, Ser. No. 850,804
Int. Cl.[4] B64G *1/14*
U.S. Cl. 244—158 R **43 Claims**





1. In a space shuttle having an orbiter spacecraft with main rocket engines, an external tank for propellants to which the orbiter spacecraft is mounted on one side, and a pair of solid rocket boosters mounted on opposed sides of the external tank, the improvement comprising:

the external tank having a first pressure vessel means for containing a first propellant and a second pressure vessel means for containing a second propellant;

the first pressure vessel means being contained within the second pressure vessel means;

a payload compartment disposed in tandem with the first pressure vessel means, the payload compartment being contained within the second pressure vessel means;

the solid rocket boosters being connected to the external tank and adapted to apply thrust generated by the rocket boosters to an aft end of the external tank; and

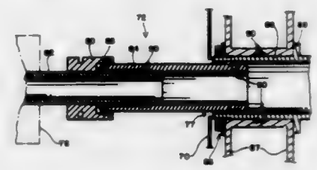
the orbiter spacecraft being connected to the external tank so as to apply thrust generated by the main rocket engines to the aft of the external tank.

4,807,834

SPACE STATION ARCHITECTURE, MODULE, BERTHING HUB, SHELL ASSEMBLY, BERTHING MECHANISM AND UTILITY CONNECTION CHANNEL

Marc M. Cohen, Palo Alto, Calif., assignor to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 588,036, Mar. 9, 1984, Pat. No. 4,728,060.
This application Feb. 23, 1988, Ser. No. 159,072
Int. Cl.[4] B64G *1/64*
U.S. Cl. 244—159 **3 Claims**



1. A fluid connector assembly comprising:

first and second connecting members, said second connecting member being adapted to receive varying portions of said first connecting member,

means for creating a hermetic seal between said first and second connecting members when they are engaged,

said first connecting member having first and second overlapping tubes that are movable longitudinally with respect to each other, a hermetic seal between said first and second tubes, and

means attached to said tubes for moving said second tube to and fro with respect to said first tube and changing the amount of engagement between said second tube and said second connecting member, said moving means including a threaded portion on the exterior of said first tube, a nut with threads engaging the threaded portion of said first tube, and means for rotatably coupling said nut to said second tube.

4,807,835

SPACECRAFT ATTITUDE STABILIZATION SYSTEM

Robert Z. Fowler, Ithaca, N.Y., assignor to Ithaco, Inc., Ithaca, N.Y.

Filed Apr. 10, 1987, Ser. No. 37,293
Int. Cl.[4] B64G *1/32*
U.S. Cl. 244—166 **9 Claims**

1. A control system for controlling a spacecraft in both an acquisition phase and in a libration phase of flight comprising:

a plurality of electromagnets,

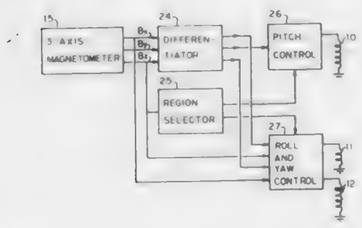
means for generating rate signals indicating the rate of

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change of the Earth's magnetic field in a plurality of directions,

means responsive to said rate signals for activating said electromagnets during said acquisition phase,

means for generating an orbital signal indicating the orbital angular velocity of said spacecraft,



means responsive to both said rate signals and to said orbital angular velocity signal for controlling said spacecraft during said libration phase,

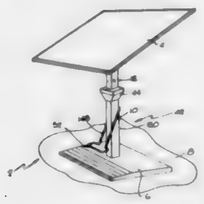
whereby the attitude of said space craft is controlled in both the acquisition phase of flight and in the libration phase of flight using the same electromagnets.

4,807,836

VERTICAL AND PIVOTAL ADJUSTING APPARATUS FOR DRAFTING TABLES

Macy J. Price, Golden, Colo.; Mario B. Accumanno, Cedar Grove, N.J., and Daniel C. Starkey, Englewood, Colo., assignors to Engineered Data Products, Inc., Broomfield, Colo.

Filed Mar. 15, 1988, Ser. No. 168,487
Int. Cl.[4] F16L *3/00*
U.S. Cl. 248—123.1 **20 Claims**



1. Apparatus for supporting a drafting table member comprising:

a base means adapted to be supported on a fixed surface;

a fixed hollow column means mounted on said base means and extending upwardly therefrom and terminating at an upper end portion;

a movable hollow column means having at least a portion thereof mounted in said fixed hollow column means so that said movable hollow column means can move in vertical directions;

said movable hollow column means having a cross-sectional configuration which is smaller than the cross-sectional configuration of said fixed hollow column means;

guide means between said fixed hollow column means and said movable hollow column means for guiding the movement of said movable hollow column means and for providing a space between opposite portions of said fixed hollow column means and said movable hollow column means;

at least one constant force spring means for providing a counterbalancing force mounted on an outer surface of said fixed hollow column means adjacent to said upper end portion thereof;

said at least one constant force spring means having an end portion thereof secured to said movable hollow column means adjacent to the lowermost portion thereof so that substantially all of any exposed portion of said at least one constant force spring means is located in said space between said fixed hollow column means and said movable hollow column means;

a drafting table member;

support means secured to said movable hollow column means adjacent to an upper portion thereof for supporting said drafting table member;

said at least one constant force spring means counterbalancing the weight of said drafting table member so that said movable hollow column means is readily movable up or down in vertical directions; and

locking means for holding said movable hollow column means at a desired position.

4,807,837

PORTABLE INTRAVENOUS STAND

Gerald M. Gawlik, Wheaton; Robert D. Hoyt, Lombard, both of Ill., and Eugene A. Anderson, 4 N. 463 Babson La., St. Charles, Ill. 60174, assignors to Eugene A. Anderson, St. Charles, Ill.

Filed Apr. 23, 1986, Ser. No. 854,944
Int. Cl.[4] A47G *29/00*
U.S. Cl. 248—125 **4 Claims**



1. An intravenous stand for dispensing intravenous fluids, comprising:

a plurality of elongated tubes partially disposed within each other in a telescoping relation with respect to one another;

means for adjusting the telescoping tubes to fix the overall height of the stand;

means integral with the uppermost tube of the stand for supporting an intravenous bag having a pair of oppositely extending support arms pivotally mounted therein to rotate from a storage position entirely within the tube to a use position generally perpendicular to the tube axis and notched for IV bags; and

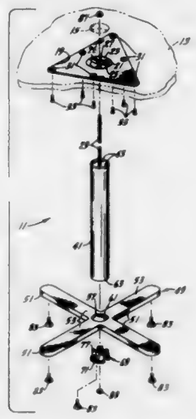
means integral with the lowermost tube of the stand for supporting the stand in an upright position having at least three legs pivotally mounted therein to rotate from a storage position within the tube to a tripod support configuration for using the stand, wherein the tubes telescope generally into the lowermost tube to form a collapsible, compact and portable stand generally the length of the lowermost tube for easy transport of the stand and wherein the intravenous support means comprises a solid upper half of the uppermost tube having a slot extending longitudinally and bisecting its center for storing the arms and having generally circular indents on opposing sides thereof bisected by the slot for inserting a digit to grasp the arm and rotate it upwardly into its fixed support position for use.

4,807,838

TABLE LEG WITH WIRE RACEWAY

Bradley T. Anderson, Muskegon, Mich., assignor to Shaw-Walker Company, Muskegon, Mich.

Continuation of Ser. No. 146,041, Jan. 20, 1988. This application Jul. 18, 1988, Ser. No. 221,002
Int. Cl.[4] F16M *11/20*
U.S. Cl. 248—188.1 **6 Claims**



1. A hollow table leg assembly for installation in a table having a tabletop with a vertical passage extending therethrough, said assembly including:

a top plate having means to attach the top plate to the underside of the tabletop at the vertical passage,

a downwardly-extending, circular protuberance formed in the top plate to define a recess beneath the vertical passage in the tabletop and a downwardly-facing annular lip formed on the protuberance below the recess,

a plurality of passages formed in the protuberance including a central passage,

at least one downwardly-projecting rib formed on the underside of said top plate and extending inwardly of said annular lip,

a base member having a central, vertically-extending passage with an upwardly-facing, annular recessed shoulder formed around said passage and a tab extending radially across the shoulder,

a cylindrical tube extending between the top plate and the base member, with the top end of the tube seated inside the annular lip of the top plate protuberance, and the bottom end of the tube seated on the recessed shoulder of the base member,

at least one notch formed in each of the top and bottom ends of the tube to receive the downwardly-projecting rib and radially-extending tab, respectively, to lock the tube against rotation,

a plug adapted to close the central passage of the base member,

said plug including a collar to engage the base member around its central passage and a hub portion which extends into the tube,

a plurality of passages extending axially through said plug including a central passage,

a threaded rod extending from the recess of said top plate through the central passage thereof, through said tube, and through the central passage of said plug, and

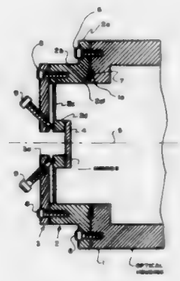
fastening means to engage said threaded rod, the top plate and the plug to hold the assembly together.

4,807,839

DEFORMABLE WEB OPTICAL MIRROR MOUNT

John E. Nettleton, and Dallas N. Barr, both of Woodbridge, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 24, 1985, Ser. No. 694,358
Int. Cl.[4] G02B *7/18*
U.S. Cl. 248—476 **1 Claim**



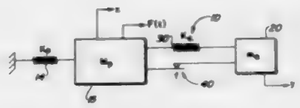
1. A device for mounting on a housing and for adjustably holding an optical element with respect to an optical axis in said housing, wherein said device includes: a unitary body of revolution with a flange portion for mounting to said housing, a boss portion extending from said flange portion, and a flexible ring portion within said boss portion for holding said element; and an adjustment plate secured to said boss portion and including at least three adjusting screws bearing on said ring portion, wherein said screws are inclined with respect to said optical axis, and wherein said body is formed of a single piece of solid material.

4,807,840

TUNED MASS DAMPING SYSTEM AND METHOD

George S. Baker, 603 E. Harwood St., Orlando, Fla. 32803, and Herbert B. Rothman, 32 Hilltop Dr., Syosset, N.Y.

Filed Oct. 18, 1985, Ser. No. 789,063
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—559 **16 Claims**



1. A damping system for attenuating the motion of a structure caused by external forces, said motion characterized by the vibration, rocking, or undulation of said structure, said damping system comprising:

(a) a countermass;

(b) means for enabling said countermass to oscillate in a translational manner relative to said structure, comprising:

(i) two torsion bars each having first ends attached to said structure with the longitudinal axis of each torsion bar normal to the line of motion of said countermass relative to said structure;

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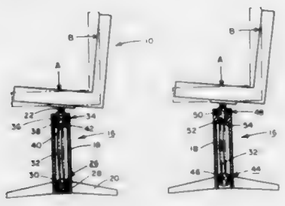
(ii) two spools respectively attached to second ends of said torsion bars;
(iii) two pulleys respectively attached to said structure equidistant along a line normal to the line motion of said countermass;
(iv) two equally tensioned cables having first ends respectively connected to said spools and second ends connected to said countermass with said pulleys each connecting one of said two cables to provide an equal tension on said countermass and with a sufficient length of each cable wrapped around said corresponding spool to enable the oscillation of said countermass;
(c) means for frictionally damping said oscillating motion of said countermass relative to said structure; and wherein
(d) said damping system has a frequency of oscillation matching the natural frequency of oscillation of said structure.

4,807,841

OMNIDIRECTIONALLY TILTING AND SWIVELLING SUPPORT MECHANISM FOR CHAIRS OR THE LIKE

Andrew Edstrom, San Jose, Calif., assignor to Serge Abend, Palto Alto, Calif., a part interest

Filed Mar. 22, 1988, Ser. No. 171,568
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—580 **22 Claims**



1. An omnidirectionally tiltable pedestal mechanism for supporting a chair seat, or the like, comprising
a pedestal member extending in a supporting direction,
elongated flexure means disposed within the confines of said pedestal member and extending in said direction,
first and second support means, spaced from one another in said direction and mounted between said flexure means and said pedestal member, for allowing said flexure means to tilt and swivel within said pedestal member, and
mounting means for connecting said flexure means to a chair seat, or the like, such that as said mounting means is tilted, the deflection force acts to tilt one end of said flexure means for deflecting said flexure means between said first and second spaced support means.

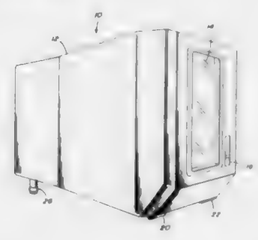
4,807,842

TILT APPARATUS FOR A DISPLAY MONITOR FIELD

Joseph L. Freal, Jr., Dracut, and John D. Ardito, Bedford, both of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Continuation of Ser. No. 846,336, Mar. 31, 1986, Pat. No. 4,708,318. This application Sep. 30, 1987, Ser. No. 103,619
The portion of the term of this patent subsequent to Nov. 24, 2004, has been disclaimed.
Int. Cl.[4] F16M *5/00*
U.S. Cl. 248—649 **7 Claims**

1. Apparatus for supporting a display monitor in any position within a continuous range of tilt angles comprising
means for supporting a display monitor for pivoting on a supporting surface through a continuous range of tilt angles, the supporting means being positioned forward of the center of gravity of the display monitor; and
spring means, positioned rearward of the center of gravity of the display monitor, for balancing the rear end of the display monitor in any position within the continuous range of tilt angles;



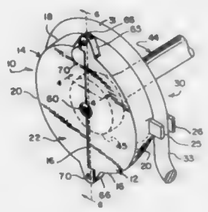
the spring means having a force range for counterbalancing the weight of the display monitor in any position within said continuous range.

4,807,843

RECESS PLUG FOR PRECAST CONCRETE PANELS

Peter D. Courtois, Centerville, Ohio, and Robert E. Truitt, Carson, Calif., assignors to Dayton Superior Corporation, Miamisburg, Ohio

Continuation-in-part of Ser. No. 29,305, Mar. 23, 1987, abandoned. This application Dec. 9, 1987, Ser. No. 130,698
Int. Cl.[4] B28B *7/16*
U.S. Cl. 249—61 **5 Claims**



1. Apparatus for casting, in a mold defined by vertical wood formwork, a concrete panel having embedded in an edge thereof, a lifting member including an elongated shank and an enlarged head, and for simultaneously holding reinforcing bar means in predetermined relation with said lifting member, comprising:
(a) a pair of essentially hollow, thin-walled, identical plug elements each configured to define a quartersphere having a spherically curved outer wall and two essentially flat sides,
(b) one of said flat sides of each of said plug elements defining an essentially semi-circular wall,
(c) the other said flat side of each said plug element being open,
(d) said edges being curved wall and said flat wall of each said plug element having edges which define said open side of said plug element and are configured for complementary interfitting frictional engagement with said edges of the other said plug element to compose a hemispherical plug assembly sized to enclose said head of said lifting member,
(e) said elements having complementary notches in said curved edges thereof located for cooperation to define an opening in the center of said hemispherical wall of said assembly which is sized to encompass said shank of said lifting member closely and thereby to retain said lifting member head within said assembly,
(f) means for attaching said plug assembly to said mold

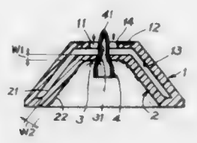
vertical formwork with said semi-circular walls of said plug elements engaging the surface of said formwork and with said elements retained in said frictional engagement with each other and in said encompassing relation with said lifting member shank to support said lifting member in cantilevered relation with said formwork,
(g) a reinforcing bar having a center portion of U-shape and arms projecting in opposite directions away from said center portion,
(h) said center portion defining a semi-circle of inner radius less than the outer radius of said plug assembly, and
(i) clip means integrally formed on said hemispherical wall of said plug assembly retaining said center portion of said reinforcing bar thereon in fixed spatial relation with the associated said lifting member and said formwork.

4,807,844

UNITARY MOLD FOR MAKING ICE SCULPTURE

Chen-Hua Tu, P.O. Box 10160, Taipei, Taiwan

Filed Mar. 24, 1988, Ser. No. 172,658
Int. Cl.[4] F25C *1/22*
U.S. Cl. 249—78 **3 Claims**



1. A unitary mold for making ice sculpture comprising:
a main mold made of elastomer material having a filling port formed on an upper portion of said mold for filling molding water into the mold, a divesting flange formed on an upper portion of the main mold for pulling the main mold outwardly for releasing a molded ice sculpture therefrom, a first cavity defining surface concave downwardly from the filling port for making a main surface of the ice sculpture, and a second cavity defining surface communicating with said first cavity for making an attachment portion of the ice sculpture;
a core made of elastomer material having an outer circumferential surface convex upwardly to confine a partition space between said first cavity defining surface of said main mold and said core for making a wall of the ice sculpture, said core being secured to said main mold;
an expansion-releasing means being a part of the mold serving as a buffer for the expansion volume of the water when refrigerated in a cooler; and
a perforating means for forming a hole through the ice sculpture having a hollow bar inserted through the mold, a handle portion secured with said hollow bar and a through hole formed through said handle portion and said bar for filling warm water through said through hole for slightly melting the ice surrounding the bar for easy withdrawal of the bar from an ice sculpture.

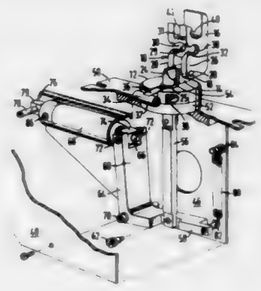
4,807,845

TUBE VALVE

Larry W. Darnell, Cypress, Tex., assignor to Kardiothor, Inc., The Woodlands, Tex.

Filed Sep. 30, 1987, Ser. No. 103,058
Int. Cl.[4] F16K *7/07*
U.S. Cl. 251—7 **3 Claims**

2. A tube valve for providing valving action of closing off and opening up hollow flexible tubing, the valve comprising
a valve body
a jaw pivotably connected to the valve body, the jaw having a jaw opening therethrough for receiving and holding the hollow flexible tubing,
a valving member projecting from the valve body and movable into the jaw opening for contacting the hollow flexible tubing within the jaw and closing the tubing off to a flow of fluid therethrough,
the jaw movable to move the valving member into the jaw opening to contact the hollow flexible tubing held therein, and



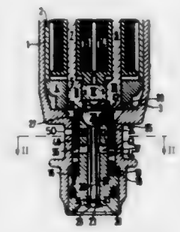
a movable latch assembly means for holding the jaw in position about the valving member, the movable latch assembly means comprising
a latch neck pivotably mounted to the valve body,
a latch shaft connected to the latch neck,
the latch shaft receivable and holdable within a latch shaft recess formed in the jaw, the latch shaft insertable in the latch shaft recess upon pivoting of the jaw to a position about the valving member.

4,807,846

ELECTROMAGNETICALLY ACTUATABLE FUEL INJECTION VALVE

Max Greiner, Gerlingen; Udo Hafner, Lorch; Waldemar Haas, Bamberg; Heinrich Knapp, Leonberg; Wolfgang Kramer, Kornwestheim; Rudolf Krauss, Stuttgart; Ferdinand Reiter, Markgroningen; Peter Romann, Stuttgart, and Rudolf Sauer, Besigheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 24, 1987, Ser. No. 124,527
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1986, 3642311
Int. Cl.[4] F16K *31/08*; F02M *51/06*
U.S. Cl. 251—129.15 **4 Claims**



1. An electromagnetically actuatable fuel injection valve comprising a valve housing, a valve seat body disposed at least partly in the valve housing, at least one magnet coil, a core and an armature connected to a valve closing member, said closing member being slidably supported in the valve seat body and further including a working face oriented toward the core

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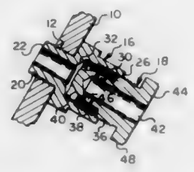
which protrudes partway out of a guide (36) of the valve seat body which guide is oriented toward the core and is spaced axially apart from it, and a plastic bushing (40) having upper and lower ends mounted on the guide (36) of the valve seat body (17), the upper end (42) of the bushing arranged to rest on the core (39) and surround the armature (27) with play.

4,807,847

VALVED OIL PAN PLUG

Mitchell R. Marts, 3660 Wellman Rd., Parma, Mich. 49269

Filed Apr. 4, 1988, Ser. No. 177,163
Int. Cl.[4] F16K *51/00*
U.S. Cl. 251—144 2 Claims



1. An oil pan drain plug characterized by its ease of operation comprising, in combination, an elongated body having a central axis, an inner end, an inner end region, an outer end, and an outer end region, a first cylindrical concentric bore defined in said body extending through said inner end region and intersecting said inner end, a second concentric bore defined in said body extending through said outer end region intersecting said outer end, said second bore having a greater diameter than the diameter of said first bore, a conical concentric valve seat defined in said body intermediate and interconnecting said first and second bores and converging in the axial direction toward said first bore, first threads defined on the exterior of said inner end region in radial alignment with said first cylindrical bore, second threads defined within said second bore, a valve having an inner end, an inner end region, an outer end, an outer end region and a longitudinal axis and a central region, external threads defined on said central region complementary to said body second threads, an axially extending nose defined on said valve inner end region including a wall portion adjacent said central region and a conical seal portion converging toward and intersecting said valve inner end, a coaxial drain bore defined in said valve having an inlet port defined in said valve wall portion and an outlet port, and torque transmitting means defined on the exterior of said body and said valve whereby said valve may be threaded into said body second bore to engage said seal portion against said valve seat to seal said first bore, disengagement of said seal portion from said valve seat permitting fluid flow through said first bore into said inlet port and from said outlet port, said torque transmitting means comprising wrench flats, said wrench flats defined on said body being adjacent said body inner end region and said wrench flats defined on said valve being adjacent said valve outer end whereby said wrench flats will be axially spaced from each other when said valve is threaded into said body.

4,807,848

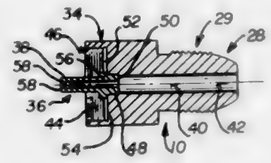
CONNECTING DEVICE

Kenneth R. Macomber, 110 Tamara, Kalkaska, Mich. 49646, assignor to Kenneth R. Macomber, Kalkaska, Mich.

Continuation of Ser. No. 932,891, Nov. 3, 1986, abandoned. This application Nov. 18, 1987, Ser. No. 122,172
Int. Cl.[4] F16L *37/28*
U.S. Cl. 251—149.4 15 Claims

1. A device for directly interconnecting first and second containers for transferring fluid between said first and second containers, said first container comprising female connecting means, an outlet and a valve movable between a closed position to close said outlet and an open position to permit fluid to exit or enter said first container through said outlet, said second container comprising male connecting means, an inlet and a needle valve movable between an outer position to close said inlet and an inner position to permit fluid to enter or exit said second container through said inlet, said needle valve normally urged in said outer position by a biasing means, and said device comprising:

a male end adapted to be removably mounted directly to said first container female connecting means, a female end adapted to be removably mounted directly to said second



container male connecting means, a longitudinal bore extending through said male and female ends and adapted to align with said first container outlet and said second container inlet when said device is mounted to said first and second containers, and a finger means adapted to force said needle valve to said inner position against said biasing means when said device is mounted to said second container;

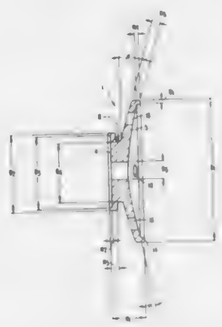
whereby fluid is transferred between said first and second containers when said device is mounted to said first and second containers and said first container valve is set in said open position.

4,807,849

FLUID FLOW CONTROL DEVICE AND COMPRESSION MEMBER THEREFOR

Daniel P. Morgan, Sonoma, Calif., assignor to Veriflo Corp., Richmond, Calif.

Filed Oct. 14, 1987, Ser. No. 108,431
Int. Cl.[4] F16K *25/00*
U.S. Cl. 251—362 21 Claims



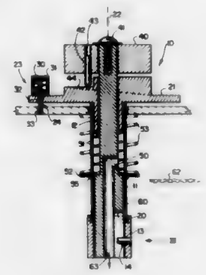
1. A compression member for acting as a unit load multiplier for transmitting force to produce a concentrated central force from a diametrically larger force, said compression member comprising a first surface centrally located on one side of said member for applying said concentrated central force and a diametrically larger second surface on a second side of said member opposite said first side, at least a radially outer portion of said second surface being located radially outward from said opposite first surface and being elevated with respect to a radially inner portion of said second surface to provide a contact surface upon which said diametrically larger force is applied and wherein said compression member is formed of a material having sufficient structural integrity for transmitting said diametrically larger force applied to said contact surface to said centrally located first surface.

4,807,850

MULTI-VISCOSITY METERING VALVE

Edgar C. Robinson, Vancouver, Canada, assignor to International Thermal Research, Ltd., Richmond, Canada

Filed Oct. 30, 1987, Ser. No. 115,040
Int. Cl.[4] F16K *47/08, 3/26, 3/32*
U.S. Cl. 251—206 13 Claims



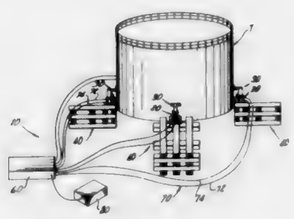
1. A multi-viscosity fuel metering valve comprising at least two orifices having different dimensions located in a first member, a port positioned in a second member, means to position one of said first or second members such that each of said orifices may be individually located adjacent said port and means to move the other of said first and second members such that the area of said port exposed to each individual orifice may be varied.

4,807,851

PROCESS FOR LIFTING TANKS

Bruno De Castro, Miami, Fla., assignor to United Tank Lifting Technologies, Inc., Miami, Fla.

Filed Jan. 11, 1988, Ser. No. 142,125
Int. Cl.[4] B66F *1/08*
U.S. Cl. 254—1 2 Claims



1. A process for lifting a tank, comprising the steps of:

A. securing a plurality of inverted hydraulic jack assemblies to the outer peripheral wall of said tank and said jack assemblies including a rod member and a housing member and said housing member having a lowermost end with sufficient support area adjacent to said rod;

B. activating said jack assemblies in tandem to cause said rod to extend downwardly thereby transmitting an upward force from said housing to said tank;

C. inserting two elongated first log members below said housing and adjacent to said rod so that said jack assemblies rest completely on said first log members when said rod is retracted; and

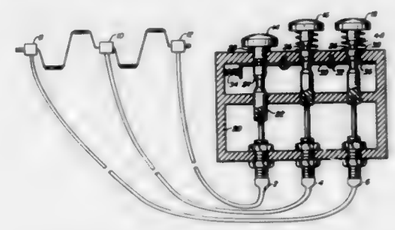
D. inserting a second log member below said retracted rod and in between said first log members so that a suitable supporting area is provided when said rod member is distended protruding downwardly and repeating these operations until said tank is lifted to the desired height.

4,807,852

MULTI-PEDESTAL WINCH SYSTEM

William C. Ottemann, and James E. Plagenhoef, both San Carlos, Calif., assignors to Barient, Inc., Fremont, Calif.

Filed Mar. 5, 1984, Ser. No. 586,112
Int. Cl.[4] B66D *1/14, 1/26*
U.S. Cl. 254—290 4 Claims



1. A multi-pedestal winch system comprising:
port and starboard winch drum assemblies,
port and starboard pedestal supported cranks,
drive means interconnecting the port winch drum assembly and the port pedestal crank with a port disconnect,
drive means interconnecting the starboard winch drum assembly and starboard pedestal crank with a starboard disconnect,
drive means interconnecting the port and starboard cranks with a center disconnect, and
unitary control means for engaging any one of said disconnects while automatically disengaging the other two of said disconnects.

4,807,853

CONTINUOUS FURNACE FOR GAS CARBURIZING AND HARDENING

Koji Murakami, Settsu; Tsuneo Shima, Ikoma; Yoshikazu Shimosato, Yahata, and Akira Yokoyama, Okayama, all of Japan, assignors to Chugai Ro Co., Ltd., Japan

Division of Ser. No. 686,207, Dec. 26, 1984, abandoned. This application Jul. 7, 1986, Ser. No. 882,420
Claims priority, application Japan, Dec. 27, 1983, 58-247174
Int. Cl.[4] C21D *11/00*
U.S. Cl. 266—81 19 Claims

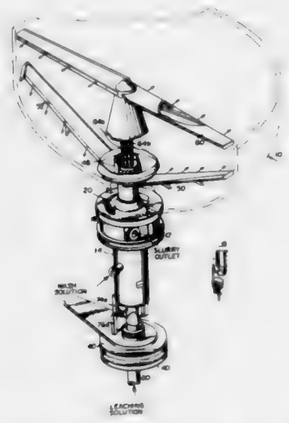


1. A continuous heat treating furnace for forming a carburized case on a steel article, wherein the objects are continuously and sequentially transported through furnace chambers which include a loading chamber, an carburizing chamber, a diffusing chamber, and a hardening chamber, said furnace comprising:

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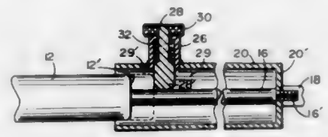
a loading vestibule;
a gas carburizing chamber connected in tandem with said loading vestibule;
a vacuum heating chamber connected in tandem with said gas carburizing chamber;
a vacuumized hardening chamber connected in tandem with said vacuum heating chamber;
transport means for transporting said steel article continuously and in sequence from said loading vestibule through said gas carburizing chamber, said vacuum heating chamber, and to said hardening chamber;
said gas carburizing chamber including a heating zone, a carburizing zone and a diffusing zone and means supplying a carburizing gas at atmospheric pressure thereto such that said heating zone, said carburizing zone and said diffusing zone are maintained at first, second and third predetermined carbon potentials, respectively, whereby chrome and manganese oxides are formed during carburization on the case of said carburized steel article; and wherein the improvement is further characterized as comprising:
said vacuum heating chamber being connected between said gas carburizing chamber in which the carbon potential is being controlled and the vacuumized hardening chamber, said vacuum heating chamber characterized by a heating means and a first evacuation means for holding said heating chamber under vacuum for not less than twenty minutes while the temperature of said steel article is brought to it's hardening temperature under vacuum and is held at that hardening temperature for the stated time; and
said hardening chamber being characterized by a second evacuation means for causing said hardening chamber to be evacuated to a vacuum prior to a hardening treatment of said steel article in said evacuated hardening chamber, whereby oxygen is dissociated, from chrome oxides and manganese oxides formed in said steel article in said gas carburizing chamber.

4,807,854
LEACHING SOLUTION DISTRIBUTION ARM AND CONTROL THEREFOR
Phillip Mitchell, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.
Filed Aug. 3, 1987, Ser. No. 80,601
Int. Cl.[4] C22B *3/02*
U.S. Cl. 266—168 **14 Claims**



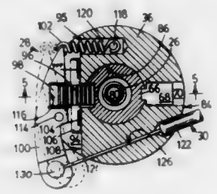
1. Apparatus for treating slurry in a tank comprising:
means defining a flow path for delivery of treatment solution into the slurry in the tank including a central member rotatable relative to the tank and having a distribution arm adjacent one end for rotation with the member and distributing treatment solution into the slurry, said distribution arm having a plurality of outlets spaced radially one from the other along the length of the arm; and
means defining a plurality of discrete flow passages in said member and said arm in respective communication one with the other and with respective outlets and, externally of the tank, with a source of treatment solution, said flow passage defining means including a plurality of discrete conduits, and means for individually variably controlling the flow of treatment solution through each conduit.

4,807,855
GAS CYLINDER PLUNGER LOCK
Frank M. Schultema, Grand Rapids, Mich., assignor to Snapa, Incorporated, Grand Rapids, Mich.
Filed Jul. 24, 1987, Ser. No. 77,380
Int. Cl.[4] F16F *5/00, 9/32;* **G05G** *5/06;* **F15B** *15/26*
U.S. Cl. 267—64.12 **8 Claims**



1. A fluid spring assembly comprising:
a cylinder defining a cavity therein;
a rod movable axially inwardly and outwardly of said cavity between retracted and extended positions, said rod having an inner end in said cylinder and an outer end outside of said cylinder;
a piston in said cavity on the inner end of said rod, slidingly engageable with said cylinder in sealed relationship thereto;
fluid in said cavity for shifting said rod outwardly of said cavity;
said cylinder having an annular end around the extending rod;
plunger lock means for holding said rod in one position, comprising a cover tube having one end secured to said rod outer end and having the other end open and around said cylinder, said cover tube having a diameter larger than that of said cylinder, and extending over the length of the rod outside said cylinder, defining an annular space around said rod; said cover tube always being axially aligned with said cylinder and said rod and always extending over portions of said cylinder; a lock plunger body on said cover tube, extending transversely therefrom; a lock plunger supported by said body, movable on an axis transverse to the axis of said rod and cylinder, between a radially inner position extending into said annular space in said cover tube to abut said cylinder annular end, and a radially outer position out of abutment with said cylinder annular end;
means biasing said plunger to said radially inner position to abut said cylinder annular end in an extended position of said rod for locking the piston rod and cylinder in said one position; and
means for allowing shifting of said lock plunger to said radially outer position against the bias of said biasing means to release said assembly from said extended position.

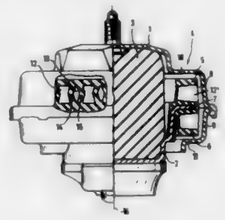
4,807,856
ADJUSTABLE BICYCLE SEAT POST
Gary Teckenbrock, 13591 Rd., 104 South, Alamosa, Colo. 81101
Continuation of Ser. No. 105,701, Oct. 8, 1987, abandoned. This application Aug. 18, 1988, Ser. No. 235,828
Int. Cl.[4] B62J *1/02*
U.S. Cl. 267—132 **15 Claims**



1. A remotely adjustable bicycle-type seat post assembly comprising:
a mounting member sized to be secured in a generally upright position within the seat tube of a bicycle or like apparatus, said mounting tube member having an enlarged collar portion at its upper end for limiting its inserted position in a bicycle seat tube;
an axially moveable seat post telescopically adjustable to different levels within the mounting tube member and adapted to support a saddle or seat at the upper end thereof;
a main spring within the mounting tube member urging the seat post upwardly relative to the mounting tube member;
a gear-toothed rack surface extending lengthwise along said seat post;
lock means including a floating gear, a floating latch member, a toggle lever, and a supplemental spring;
said floating gear being loosely positioned in a first recess in said collar and moveable to and from a locked position engaged with said gear-toothed rack surface;
said floating latch member being loosely positioned in said recess in said collar outwardly of said gear for movement with said gear and having gear teeth engaged with said gear opposite the rack surface;
said toggle lever being pivotally mounted in a second recess interesecting said first recess in said collar and having portions engageable respectively with the latch member and with a cable connection for a remote release cable; and
said supplemental spring being connected between the toggle lever and the collar to bias the gear towards its said locked position.

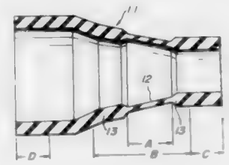
4,807,857
SOFT MOUNTING FOR INSULATING BODY-TRANSMITTED ACOUSTIC WAVES
Franz J. Wolf; Hubert Pletsch, both of Bad Sodes-Salmunster; Otto Weber, and Volkmar Keck, both of Wolfsburg, all of Fed. Rep. of Germany, assignors to WOCO Franz-Josef Wolf & Co. and Volkswagen AG, Fed. Rep. of Germany
Filed Sep. 24, 1987, Ser. No. 100,458
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1986, 3636674
Int. Cl.[4] B60K *5/12;* **F16F** *3/08*
U.S. Cl. 267—140.3 **15 Claims**

1. A soft mounting for insulating body-transmitted acoustic waves, comprising:
a soft support spring block comprised of elastic material;
means for restricting and limiting the deflection path of the soft supporting spring block, said means comprising two beaker-type housing parts which are coaxially arranged with respect to each other and which are telescopingly inserted into one another in a radially spaced and mutually axially restrictive relationship, said soft support spring block being disposed between said two beaker-type housing parts whereby said two beaker-type housing parts serve to transfer load forces into said soft support spring block, each of said two beaker type housing parts including an end stop; and



elastomer spring elements positioned adjacent said end stops, said elastomer spring elements including means for showing the effect of a collapse of a spring restoration force of said elastomer spring elements by kinking.

4,807,858
AIR SPRINGS
Isao Watanabe, Kodaira, and Yasushi Fujihira, Tanashi, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jun. 9, 1987, Ser. No. 59,990
Claims priority, application Japan, Jun. 13, 1986, 61-136287
Int. Cl.[4] F16F *9/04*
U.S. Cl. 267—64.27 **4 Claims**



1. An air spring comprising; a substantially tapered air sleeve airtightly connected at a small-diameter end portion to a piston, a large-diameter end portion connected to an end cap; said air sleeve having a circumferentially continuous thin-gauge portion at a position forming a turned-up portion when the air spring is subjected to a service stroke, and a circumferentially continuous thick-gauge portion at a position adjacent to at least one end of the thin-gauge portion and acting as a turn-up portion as the stroke of the air spring becomes larger than the service stroke.

4,807,859
DIE SPRING RETAINER
Robert Bolthouse, 7277 West Bay Shore Dr., Traverse City, Mich. 49684
Filed Apr. 25, 1988, Ser. No. 185,402
Int. Cl.[4] F16F *7/00, 1/12;* **B25G** *3/28*
U.S. Cl. 267—170 **8 Claims**

1. A retainer for vertically affixing a die spring to a die set, said retainer comprising:
a generally circular blank fabricated from a deformable material and defining a central opening adapted to receive a pilot screw therein, said blank including a major portion having a first diameter and a minor portion having a second diameter less than said first diameter, the minor portion constituting approximately 30 degrees to 120

degrees of the external circumference of the blank, whereby said blank is adapted to deform under compression provided by tightening of said pilot screw received in the central opening thereof so as to conform to and engage an end face of the die spring.



4,807,860

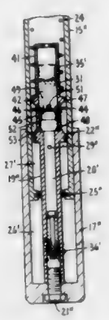
MOTORCYCLE FRONT FORK ANTI-CAVITY DAMPING SYSTEM

Stephen W. Simons, 119 Jordan, Los Altos, Calif. 94022

Continuation of Ser. No. 625,504, Jun. 28, 1984, abandoned. This application Oct. 15, 1986, Ser. No. 918,992

Int. Cl.⁴ B62K *25/08*

U.S. Cl. 267—217 **24 Claims**



1. A motorcycle front fork assembly comprising, in combination,

an upper hollow cylindrical fork tube, a lower hollow cylindrical fork leg closed at its lower end,

said fork tube and said fork leg telescopically, sealably movable with respect to one another and containing a substantially incompressible fluid,

a hollow damper rod connected at its lower end to the loswer end of said fork leg, said damper rod having a piston at its upper end slidably engaging the interior surface of said fork tube, and

floating means positioned with said fork tube to float on the fluid within said fork tube for preventing air from entering said damper rod,

said floating means for preventing air from entering the interior of said damper rod including

a float tube positioned in said fork tube above said damper rod piston,

a float positioned within said float tube to float on the fluid within said float tube, and

a fluid regulation valve permitting replenishment fluid flow through said float tube into the interior of said float tube when said float reaches the bottom of its travel.

4,807,861

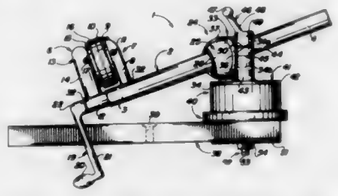
SWIVEL VISE

Keesey H. Kimball, P.O. Box 217, Alpine, Tex. 79831

Filed Jan. 11, 1988, Ser. No. 142,009

Int. Cl.⁴ B23Q *3/04*

U.S. Cl. 269—75 **16 Claims**



1. A swivel member comprising an elongated shaft; working means carried by one end of said shaft for engaging a workpiece; a split ball mounted on said shaft in spaced relationship with respect to said working means wherein said shaft extends through and beyond said split ball; and a narrow split ring having a fixed body segment and a movable body segment lying adjacent to said fixed body segment, said split ring having an internal curved radius for substantially matching the curvature of said split ball and adapted to substantially encircle said split ball and retain said split ball in universally rotating relationship; a pedestal having an extending end fixedly receiving said fixed body segment of said split ring; and a tensioner collar threadibly carried by said pedestal, with said movable body segment of said split ring fixedly attached to said tensioner collar, whereby tightening of said tensioner collar on said pedestal tightens said split ring on said split ball and loosening of said tensioning collar on said pedestal loosens said split ring on said split ball and said split ball is substantially universally rotatable in said split ring and said working means is substantially universally adjustable responsive to manipulation of said split ball in said split ring.

4,807,862

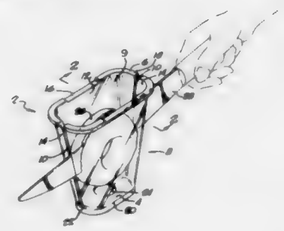
FOOD CUTTING APPARATUS

Ronald Popell, and Alan Backus, both of Los Angeles, Calif., assignors to Popell Industries, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 848,631, Apr. 4, 1986, abandoned. This application Sep. 9, 1986, Ser. No. 906,594

Int. Cl.⁴ B26D *7/02*

U.S. Cl. 269—87.2 **5 Claims**



1. A vessel for holding and positioning a bagel, roll or other food article having an elongated cross-section for bisection into elongated halves comprising:

an elongated base;

an elongated lip;

side walls and end walls extending between said base and said lip, said walls defining a chamber adapted to receive an elongated article of food, said side walls being substantially planar and angled outwardly from said base to orient and fix elongated articles of food of varying size at a predetermined angle with respect to a plane of cutting

extending through said end walls, said end walls being curved in plan but planar in side cross-section and angled outwardly from said base to orient and fix elongated articles of food of varying size at a predetermined angle with respect to a plane of cutting extending through said end walls and to prevent rotation of said elongated food articles;

a pair of slots disposed in said end walls, said slots being adapted to receive a cutting utensil and said slots being centered between said side walls and extending vertically downward from said lip to form a plane of bisection through said elongated food articles.

4,807,863

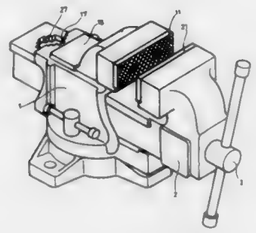
VISE WITH TWO SETS OF CLAMPING JAWS

Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Filed Dec. 19, 1986, Ser. No. 943,775

Int. Cl.⁴ B25B *1/10*

U.S. Cl. 269—153 **7 Claims**



1. A vise for clamping an object between a fixed jaw on a fixed body and a sliding jaw, said vise comprising:

two fixed jaws on the fixed body,

two sliding jaws supported by a sliding body and driven simultaneously in the same direction by one threaded shaft, said two sliding jaws driven with respect to said fixed jaws,

wherein said two sliding jaws and said two fixed jaws are arranged in two pairs of jaws facing each other, a first sliding jaw/fixed jaw pair and a second sliding jaw/fixed jaw pair,

wherein said two fixed jaws are located between said two sliding jaws, whereby a first sliding jaw/fixed jaw pair opens and closes oppositely to a second sliding jaw/fixed jaw pair,

said second sliding jaw/fixed jaw pair includes a sliding jaw formed as a circumferential jaw in a horizontal plane in said sliding body, said circumferential jaw permitting the object to be placed therethrough vertically, thereby permitting clamping of the object, wherein said fixed jaw in said second sliding jaw/fixed jaw pair cooperates with said circumferential sliding jaw for clamping the object therebetween.

4,807,864

HAND SURGERY TABLE

David A. Young, Ivanhoe, Australia, assignor to Australian Biomedical Corporation Limited, Australia

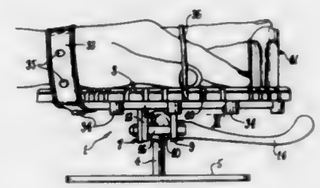
PCT No. PCT/AU85/00227, § 371 Date Jul. 16, 1986, § 102(e) Date Jul. 16, 1986, PCT Pub. No. WO86/01711, PCT Pub. Date Mar. 27, 1986

PCT Filed Sep. 17, 1985, Ser. No. 876,878

Int. Cl.⁴ A61G *13/00*

U.S. Cl. 269—328 **14 Claims**

1. A hand surgery table including, a base, a platform having an upper surface, mounting means connecting the platform to the base and being adjustable to permit movement of said platform relative to the base so that the inclination of said upper surface relative to horizontal plane can be varied, locking means operable to releasably hold said mounting means in a selected position of adjustment, a plurality of stations provided across said platform, locating means at each said station, and means for supporting fingers of a patient including a plurality of column supports at least one column support being releasably attachable to said platform at any one of said stations, said column support having a locating part at a lower end thereof and a supporting part at an upper end thereof, said locating part being cooperable with said locating means of a selected said station so as to hold said at lost one column support in an operative position at which it projects outwardly from said upper surface, and said supporting part is thereby positioned outwardly from said upper surface wherein an upper end of said at least one column support is contoured to provide a finger resting surface, and said finger resting surface forms said supporting part of said at least one column support to thereby support that hand portion at a position relative to said upper surface.



4,807,865

PAPER HANDLING APPARATUS FOR RECEIVING ADJACENTLY POSITIONED PAPER SHEETS, TRANSPORTING AND DEPOSITING THE SHEETS, SPREAD-APART, IN A RECEIVING SYSTEM

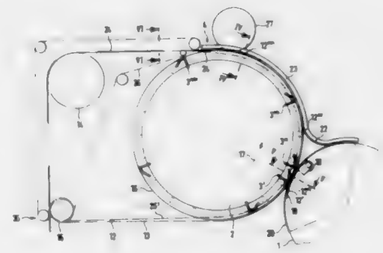
Ingo Köhler, Anhausen, and Godber Petersen, Augsburg, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed May 29, 1987, Ser. No. 56,857

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1986, 3621822

Int. Cl.⁴ B65H *39/02*

U.S. Cl. 270—54 **24 Claims**



1. Apparatus for transporting adjacently positioned substrate sheets (20, 22, 24) from a supply means (1, 2) to a receiving system (5) and at least partly spreading apart said sheets, particularly for printed copy paper substrate sheets, comprising a transport belt system (25, 26) positioned to transfer the sheets from the supply means (1, 2) and for delivering the sheets to the receiving system (5);

an endless belt means (13) located adjacent a part of the path of the transport belt system (25, 26);

a plurality of fingers (12) laterally projecting from said end-

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less belt means (13), said fingers being engageable between adjacent sheets (20, 22); and

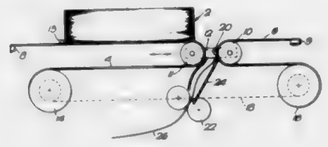
means (15) for guiding said endless belt means (13) in a guide path which departs from the path of said transport belt system (25, 26) at least in a region (35) adjacent the receiving system (5) and spreading apart the sheets between which the fingers are engaged.

4,807,866

SHEET STACKERS

Denis J. Stemmle, Wester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1986, Ser. No. 943,520
Claims priority, application United Kingdom, Dec. 17, 1985, 8531030
Int. Cl.[4] B65H 31/00
U.S. Cl. 271—209 8 Claims



1. A sheet stacker which effectively stacks a wide variety of sheets including lightweight flimsy sheets, comprising: a pair of support belts with horizontal, coplanar, opposing upper runs, the belts each being anchored at one end and wound on a supply drum on the other end and entrained over a respective roller, said rollers translatable as a unit while being free to rotate, and which define between them an unobstructed feed gap for sheets to be applied seriatim to the bottom face of a stack of sheets resting on one or both belts; means for feeding sheets singly through the gap and into contact, within said gap with a registration edge and for holding the sheet in contact therewith as the rollers are translated, and wherein the forward end of the stack with respect to the direction in which the stack is translated becomes aligned with the registration edge as one belt is successively pulled away from the said bottom face and is replaced after an interval by the other belt having the fresh sheet on its upper face, thus successively pressing the fresh sheet against the bottom face of the stack to displace it upwardly by one sheet thickness.

4,807,867

SHEET HANDLING APPARATUS

Steven R. Lippold, Oakfield, and Armand R. Fenicchia, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 14, 1988, Ser. No. 167,928
Int. Cl.[4] B65H 5/12
U.S. Cl. 271—277 9 Claims

1. Apparatus for rotating a flexible sheet of material comprising:

a rotatable axle;

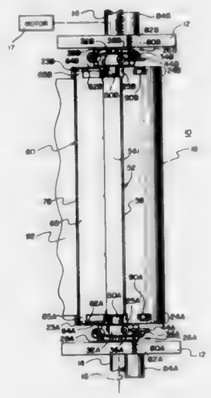
a drum having a generally cylindrical surface mounted on said axle for rotation with said axle;

a cam secured to an end surface of said drum for rotation with said drum, said cam defining at least one cam indentation extending towards said axle;

a cam follower positioned to generally follow said cam;

clamp means normally biased against the surface of said drum for securing a first edge of said sheet material to said drum;

biasing means journaled to said end surface of said drum in said cam indentation, said biasing means responsive to pressure from said cam follower for biasing said clamp means away from said drum surface so as to enable the insertion of a first edge of said flexible sheet of material between said clamp means and the surface of said drum; and



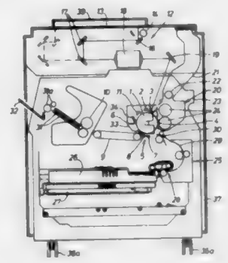
holding means for selectively holding said cam follower stationary relative to the rotation of said cam such that said cam follower can be selectively engaged with said biasing means to control the position of said clamp means.

4,807,868

SHEET TRANSPORT

Ian Hirst, Royston, and John R. Strutt, Shefford, both of United Kingdom, assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 20, 1983, Ser. No. 534,004
Claims priority, application United Kingdom, Sep. 21, 1982, 8226816
Int. Cl.[4] B65H 7/00
U.S. Cl. 271—256 4 Claims



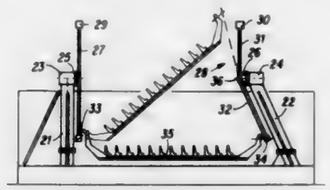
1. A sheet transport including one or more drive nips and means for automatically disengaging said nip(s) in response to a predetermined condition, said sheet transport including a tray for a stack of sheets and means for feeding sheets one at a time from the tray, said tray being moveable between a sheet feeding position and a retracted position and having a projection therefrom that is attached to a cable mounted over a series of pulleys and a capstan, said capstan is mounted on one end of a shaft which has a cam member mounted on its other end such that movement of said tray to a retracted position causes said capstan and said cam member to rotate and thereby actuate said means for automatically disengaging said nip(s).

4,807,869

AMUSEMENT DEVICE HAVING A ROTATABLE, SWIVELLING AND TILTABLE RIGID GONDOLA

Hette Knijpstra, Terband, Netherlands, assignor to Knijpstra Konstruktie B. V., Netherlands

Filed Jan. 27, 1987, Ser. No. 6,851
Claims priority, application Netherlands, Jan. 28, 1986, 8600190
Int. Cl.[4] A63G 1/08
U.S. Cl. 272—28 R 7 Claims



1. An amusement device comprising:

a first horizontal shaft having an end and a first horizontal axis, said first horizontal shaft being rotatable about said first horizontal axis;

a second horizontal shaft having an end and a second horizontal axis, said second horizontal shaft being rotatable about said second horizontal axis;

a first support column for supporting said first horizontal shaft for rotation about said first horizontal axis;

a second support column for supporting said second horizontal shaft for rotation about said second horizontal axis;

a first carrier arm rigidly connected to said end of said first horizontal shaft such that said first carrier arm is rotatable only about said first horizontal axis, said first carrier arm comprising a first counterweight portion and a first connecting portion, said first counterweight portion and said first connecting portion extending diametrically opposite one another relative to said first horizontal axis, said first counterweight portion having an end remote from said first horizontal axis, said end of said first counterweight portion remote from said first horizontal axis having a first counterweight attached thereto, said first connecting portion having an end remote from said first horizontal axis;

a second carrier arm, said second carrier arm comprising a second counterweight portion and a second connecting portion, said second counterweight portion rigidly connected to said end of said second horizontal shaft such that said second counterweight portion is rotatable only about said second horizontal axis, said second connecting portion disposed diametrically opposite said second counterweight portion relative to said second horizontal axis and being pivotally connected to said end of said second horizontal shaft for pivotal movement about a third axis, said third axis being transverse to said second horizontal axis, said second counterweight portion having an end remote from said second horizontal axis, said end of said second counterweight portion remote from said second horizontal axis having a second counterweight attached thereto, said second connecting portion having an end remote from said second horizontal axis and an end proximate said second horizontal axis;

gondola means, having a first end and a second end, for supporting a plurality of riders, said first end and said second end being a fixed distance apart;

first connecting means for connecting said first end of said gondola means to said end of said first connecting portion remote from said first horizontal axis;

second connecting means for connecting said second end of said gondola means to said end of said second connecting portion remote from said second horizontal axis;

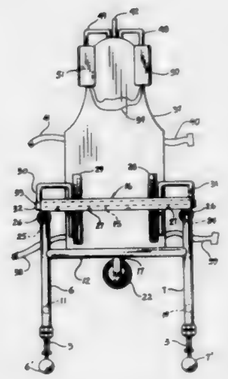
wherein each of said first and second connecting means comprises a three-dimensional rotation joint.

4,807,870

WALKING TRAINER

Allen G. Hickman, 309 Lynnhaven, Wash, Ill. 61571

Filed Feb. 25, 1987, Ser. No. 18,514
Int. Cl.[4] A61H 3/00
U.S. Cl. 272—70.3 1 Claim



1. A walking trainer for use on a variety of surfaces by users with varying degrees of walking disabilities comprising,

a lower carriage means including parallel upper and lower rear horizontal frame members orthogonally secured at their ends to parallel rear vertical legs, and parallel pairs of upper and lower side horizontal frame members orthogonally secured to said rear vertical legs at rearward ends and orthogonally secured to parallel forward vertical legs, and parallel forward upper and lower horizontal frame members orthogonally secured between said forward vertical legs;

said upper forward horizontal frame member surroundingly encompassed by a removable padded member;

said rear and forward vertical legs including spherical rollers secured and axially aligned with said vertical legs are lowermost portions thereof; and

vertically adjustable padded crotch support means extending between said lower forward and rear horizontal frame members, and

an elongate upwardly extending rear body member securable to a vertical post horizontally secured to said upper rear horizontal member, and

a plurality of head supports secured to first "U" shape rods are forward ends wherein said "U" shaped rods are pivotally secured proximate said vertical post at their other ends, and

torso supports secured to second "U" shaped rods at forward ends wherein said secured "U" shaped rods are pivotally secured to said upper horizontal side frame members at their other ends.

4,807,871

SIDE KICK MACHINE

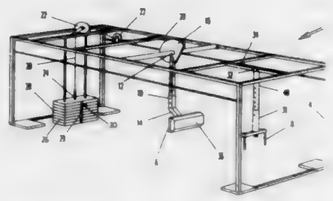
Eric C. Bryson, 108 Cornell Avenue, Kitchener, Ontario, Canada (N2G 3E4)

Filed Jul. 10, 1987, Ser. No. 71,856
Int. Cl.[4] A63B 69/00
U.S. Cl. 272—76 16 Claims

1. A side kick machine that can be used as an exerciser or a simulator for side kicking, said machine comprising a frame

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supporting a foot pad that is oriented towards a handle, said handle being supported by said frame horizontally apart from said foot pad, said foot pad having a rest position and being pivotally supported on said frame so that it can be made to pivot about a pivot point from said rest position to a pivotal position in a direction away from said handle when subjected to an appropriate external force and return automatically to its rest position when the external force is removed, said handle and foot pad being located relative to one another and relative



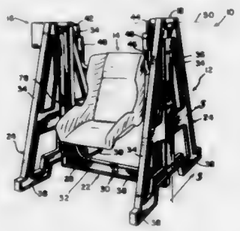
to a supporting surface so that a user of the machine can stand on the supporting surface between said foot pad and said handle and can assume a side kick position relative to said foot pad while hanging onto said handle, a kicking surface of said foot pad being substantially normal to a supporting surface when the foot pad is in the rest position and the machine is in an upright position, said foot pad pivoting in a vertical plane through said pivot point, a centre of said foot pad and a centre of said handle at all times from said rest position to said pivotal position.

4,807,872

CHILD SWING WITH UPSTANDING MEMBERS IN ABUTTING RELATIONSHIP

Raymond Spilman, Darien; Jacob Krapowicz, Ridgefield, both of Conn., and Alvin Fowler, Columbus, Ind., assignors to Cosco, Inc., Columbus, Ind.

Filed Nov. 25, 1986, Ser. No. 934,670
Int. Cl.[4] A63G *9/12*
U.S. Cl. 272—86 **13 Claims**



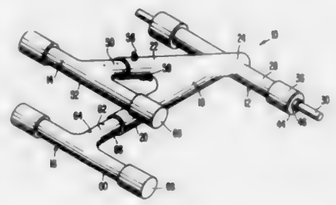
1. A swing assembly comprising
first and second swing support frames, each support frame including a pair of upstanding support members, base means for rigidly fixing the pair of upstanding support members in abutting relationship along at least a major portion of their length side-by-side one another in substantially perpendicular relation to an underlying surface, and coupling means for interconnecting the base means of the first and second swing support frames to align the pairs of upstanding support members in spaced-apart parallel relation to define a swing-receiving space therebetween, each pair of upstanding support members cooperating to provide a distal portion situated in vertically spaced-apart relation to the coupling means,
a swing seat, and
hanger means connected to the swing seat for suspending the swing seat in the swing-receiving space above the coupling means, the hanger means being pivotally connected to each of the distal portions of the spaced-apart pairs of upstanding support members so that the hanger means and the swing seat pivot about an axis extending between the pairs of upstanding support members during movement of the swing seat relative to the first and second swing support frames.

4,807,873

ABDOMINAL EXERCISE APPARATUS AND METHOD

Charles E. Naquin, 1604 Chatham Ave., Austin, Tex. 78723

Filed Sep. 18, 1987, Ser. No. 98,368
Int. Cl.[4] A63B *23/00*
U.S. Cl. 272—93 **15 Claims**



1. An abdominal exercise apparatus, comprising:
a first cross bar means for positioning behind a user's ankles;
a second cross bar means for positioning above and over the user's knees;
a third cross bar means for positioning below the user's hips and behind the user's thighs; and
a rigid frame connecting said first, second and third cross bar means, said first, second and third cross bar means being parallel to each other,
said frame generally extending in a single plane perpendicular to said cross bar means and having a generally V-shaped member with two acutely angled legs and an apex between said legs, said first cross bar means being connected to sais apex and said second and third cross bar means being connected to free ends of said legs and whereby said first, second and third cross bar means are connected at their longitudinal centers to said V-shaped member.

4,807,874

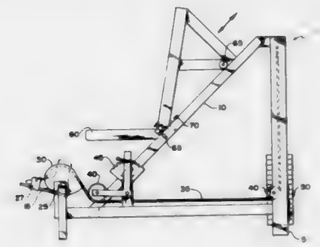
COMBINATION PLANTAR FLEXION/DORSIFLEXION ANKLE MACHINE

Lloyd R. Little, 265 W. 8th St., Island Plz., Ship Bottom, N.J. 08008

Filed Jul. 24, 1987, Ser. No. 77,610
Int. Cl.[4] A63B *23/04, 21/06*
U.S. Cl. 272—96 **1 Claim**

1. An exercise apparatus comprising:
pedal means for restraining a foot, from heel to toe, of a person to exercise in plantar flexion and dorsi flexion, said pedal means defining a plane;
pivot means defining a pivot axis for said pedal means, said pivot axis being above the plane of said pedal means:
resistance means for resisting angular displacement of said pedal means;
elongate, flexible connection means for transmitting force between said pedal means and said resistance means;
guide means defining a path of travel for said connection means, said connection means being trained about said guide means;
cam means mounted on said pedal means coaxially with said pivot means, said connection means being trained about

said cam means for providing a variable resistance in response to angular displacement of said pedal means; and,



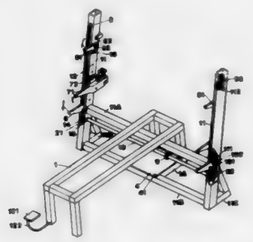
means for adjusting the angular range of motion of the pedal means.

4,807,875

EXERCISE BENCH WITH SAFETY APPARATUS

John Tanski, 24 Janet Dr., New Britain, Conn. 06053

Filed Jan. 25, 1987, Ser. No. 66,321
Int. Cl.[4] A63B *13/00*
U.S. Cl. 272—123 **11 Claims**



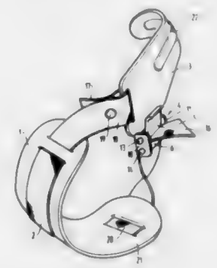
1. Exercise apparatus for use with an associated barbell which comprises:
a support for holding the body of a user in reclining position on his or her back;
first and second generally vertical columns disposed on respective sides of said support;
first and second bar raising arms carried respectively on said first and second generally vertical columns, each bar raising arm being mounted for vertical movement with respect to one of said columns;
means for raising said bar raising arms in synchronism; and
means integral with said exercise apparatus for sensing the lowering of the associated barbell to a predetermined vertical elevation and switching means integral with said exercise apparatus for automatically moving at least one switch contact upon sensing the lowering of the associated barbell to said predetermined vertical elevation and means for actuating said means for raising upon movement of said one switch contact.

4,807,876

LIFT/TOW ASSISTANCE DEVICE TO RELIEVE THE LOWER ARM IN SPORTING ACTIVITIES USING EQUIPMENTS

Eggerstorfer Lothar, Grilfelfing, Fed. Rep. of Germany, assignor to BHL - Sportartikel - Vertriebe GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 6, 1987, Ser. No. 22,677
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1987, 8702739
Int. Cl.[4] A63B *13/00*
U.S. Cl. 272—123 **6 Claims**



1. A lift/tow assistance device for use with a bar of sporting equipment to reduce stress on a lower arm of a user of said device, said device comprising:
an elongated cuff member having a pair of end portions, said cuff member encircling a portion of a wrist of a said user;
a hook member having a curved portion extending from a rear portion, said curved portion adapted for hooking engagement with said bar of said sporting equipment;
a lock device rigidly mounted to said rear portion of said hook member, said hook device having an clamp plate and a clamp lever, said clamp plate being fixedly mounted to said rear portion of said hook member, means for rotatably mounting said clamp lever to said clamp plate so that said clamp lever being rotatable with respect to said hook device; and
an elongated flexible strap connected to said cuff member, said flexible strap having a pair of ends, each of said pair of ends extending from a respective one of said pair of end portions of said cuff member; one of said pair of ends of said flexible strap being fixedly mounted to said hook member and the other of said pair of ends being demountably attached to said lock device in a predetermined orientation with respect to said hook member, said lock device clamping said other end of said strap when said strap is tensioned, and
wherein said strap extends between the end portions of said cuff member.

4,807,877

ROTARY WEIGHT LIFTING MACHINE

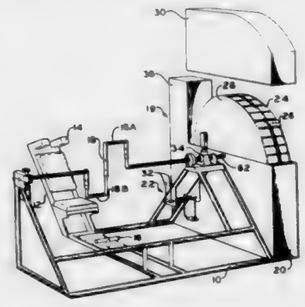
Brian F. Baxton, 57 Auburn Rd., West Hartford, Conn. 06112

Filed Jan. 16, 1987, Ser. No. 4,075
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—130 **19 Claims**

1. An exercise device comprising:
a frame;
a rotatable axle on said frame;
body engaging means for rotating said axle; and
a counterweight assembly connected to said axle for producing a static counterforce to rotation of said axle, said counterweight assembly including a tank for holding a liquid at a predetermined level, and
at least one wheel drivingly connected to said axle and

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rotatable about a non vertical axis, said wheel having a plurality of liquid containment troughs having closed sides and bottoms spaced around said axis, said troughs being positioned to pass through said tank as said wheel is



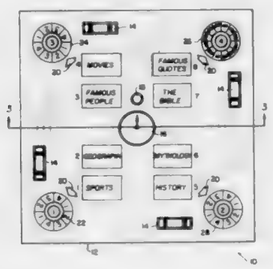
rotatably driven by said body engaging means, receive at least a portion of liquid from said tank, lift and hold said liquid at a first position said liquid above said predetermined liquid level, and discharge said received liquid at a second position above said predetermined liquid level.

4,807,878

SPINNER TRIVIA GAME

Gregory A. Tripp, HQ's USA EUR (ODCSD) P.O. Box 1861, Apo New York, N.Y. 09063

Filed Oct. 8, 1987, Ser. No. 105,568
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—1 E **15 Claims**



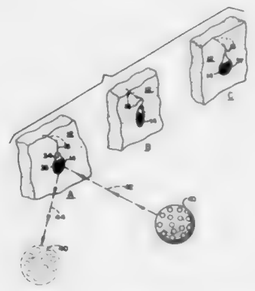
1. A new and improved spinner trivia game, comprising:
game board means;
first rotatably mounted spinner means on said game board means for selecting a player designation number to answer a question;
second rotatably mounted spinner means on said game board means for selecting a numerically designated location;
third rotatably mounted spinner means on said game board means for selecting a challenge player designation number;
fourth rotatably mounted spinner means on said game board means for selecting a degree of question difficulty
a plurality of numerically designated location means on said game board means; and
a plurality of stacks of subject category question cards each stack being a different subject category, each card imprinted with questions and answers of varying degrees of difficulty, received on said location means.

4,807,879

BALL RETURN/TARGET ASSEMBLY FOR RACQUET SPORTS

Joseph C. Eliot, 400 Glendale Rd., A-50, Havertown, Pa. 19083

Filed Jan. 28, 1988, Ser. No. 149,655
Int. Cl.[4] A63B *69/38*
U.S. Cl. 273—29 A **15 Claims**



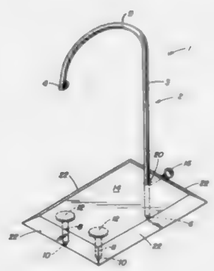
1. A ball return/target assembly for racquet sports comprising:
(a) a resilient backing board pad;
(b) at least one disk suspended from said pad, said disk being generally flat with two faces and of a weight predetermined to cause said disk to bounce and rotate 180° in response to the impact of a projectile against said disk; and,
(c) a filament attached to said disk and to said pad to suspend said disk so that one said disk face rest flat against said pad's surface.

4,807,880

BALL SUPPORT DEVICE

James S. Deal, 1463 43rd. Ave., San Francisco, Calif. 94122

Filed Dec. 11, 1987, Ser. No. 131,444
Int. Cl.[4] A63B *67/00*
U.S. Cl. 273—55 B **12 Claims**



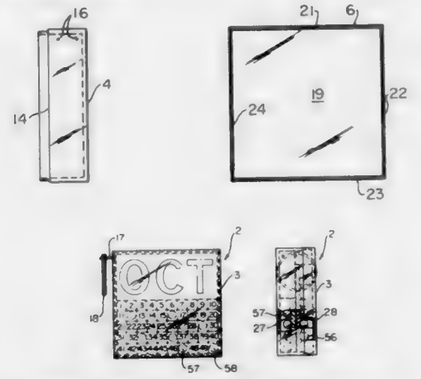
1. A ball support device including:
a planar platform, the platform having
horizontal upper and lower surfaces and
an aperture passing vertically between the upper and lower surfaces of the platform;
at least two calks projecting from the lower surface of the platform;
an arm slideably engaged within the aperture having
a pointed ground piercing bottom end and
a straight vertical shaft portion; and
a curved upper tensioning portion of the arm, the shaft portion having a cross-section of uniform size and shape from about the pointed end up to about the curved portion, whereby the arm forms an inverted J-spike that may be used as a ball holding stake independently of the remainder of the device.

4,807,881

RANDOM CHARACTER SELECTOR

Ramiro Jaquez, 1692 Burley Dr., Milpitas, Calif. 95035

Filed Apr. 20, 1987, Ser. No. 40,992
Int. Cl.[4] A63F *7/04*
U.S. Cl. 273—144 B **6 Claims**



1. A random character selector device, comprising:
(a) a housing having at least one transparent wall;
(b) at least one flat transparent plate mounted concave recesses on one surface separated from each other by an arcuate ridge and being relatively smooth on its opposite surface;
(c) an indicia card within the housing having indicia on one side thereof arranged in a pattern corresponding to the pattern of said semi-spherical concave recesses in said at least one flat transparent plate and juxtaposed thereto whereby the indicia on the card are visible between said arcuate ridges through said flat transparent plate and through said transparent wall of said housing; and
(d) a multiplicity of separate spherical balls within the housing associated with the recessed surface of said flat transparent plate and freely movable about within the housing among the concave recesses when the housing is shaken whereby when the shaking of the housing is stopped said balls settle randomly in said semi-spherical concave recesses between associated arcuate ridges to thereby indicate randomly selected indicia.

4,807,882

RANDOM NUMERAL SELECTING DEVICE

Robert Cimino, 3115 Feasler Ave., Erie, Pa. 16506

Filed Nov. 3, 1986, Ser. No. 926,081
Int. Cl.[4] A63B *71/00*
U.S. Cl. 273—144 B **2 Claims**



1. A random numeral selecting device comprising,
an enclosed body having a top, bottom, front, back and ends forming a closed container,
a first shelf,
a second shelf,
a third shelf,
said shelves being spaced from one another generally parallel to one another and defining an upper chamber, a middle chamber and a bottom chamber,
a transparent cover over said chambers,
said shelves each having a plurality of adjoining recesses, half cylindrical in shape forming an upper edge on each said shelf,
said first shelf having forty said recesses,
said second shelf having forty said recesses,
said third shelf having thirty said recesses,
said recesses in said first shelf being randomly numbered with a number taken from a group of from one to forty,
said recesses in said second shelf being numbered with scrambled numbers in four sequences from zero to nine,
said recesses in said third shelf being randomly numbered in three sequences from zero to nine,
six balls being disposed in said upper chamber,
four balls being disposed in said middle chamber,
three balls being disposed in said bottom chamber,
said upper chamber being adapted to have six balls rest in six of said recesses to designate a combination of any six of said numbers from 1 to 40,
said middle chamber being adapted to have said four balls rest in four said recesses to designate combinations of numbers from 0000 to 9999 of said group of numbers,
said bottom chamber being adapted to have said three balls rest in three said recesses to designate numbers from 000 to 999,
some of said recesses in said top chamber having two numbers below them indicating a two digit number,
each said recess being closed at its rear end by a back,
a bead wedge shaped in cross section being formed on said back and extending from one end of said chamber to the other,
said wedge shaped bead having a larger side and a smaller side, said larger side of said bead being disposed downward,
said large side of said bead overlying a part of said recesses preventing said balls from rolling out of said recesses when said device rests on its back and it tilted away from said bottom of said recesses.

4,807,883

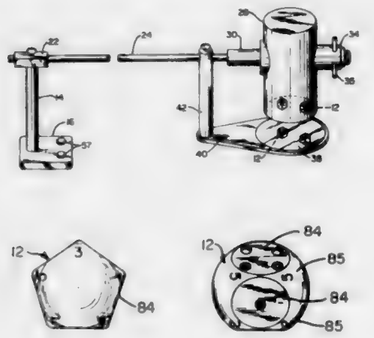
GAME APPARATUS AND DICE CONSTRUCTION THEREFOR

Hyman P. Silverman, 620 South Alton Way, Apt. 5C, Denver, Colo. 80231

Filed Jan. 19, 1988, Ser. No. 144,966
Int. Cl.[4] A63F *9/04*
U.S. Cl. 273—145 C **20 Claims**

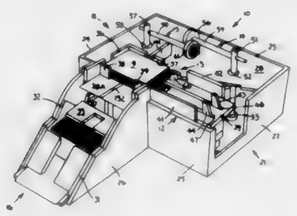
1. In a game device, the combination comprising:
a hollow, transparent container having opposed end portions;
first support means supporting said container for swinging movement about a vertical axis spaced horizontally from said container;
second support means for rotatably supporting said container with respect to said first support means for rotation of said container about a horizontal axis extending through said first support means until said container comes to rest in a generally vertical attitude; and
at least one multi-sided game piece loosely disposed in said container whereby rotation of said container is operative to cause tumbling of said game piece(s) in said container until said container comes to rest with said game piece(s) resting on a lower interior surface of one end of said container.
13. A game piece comprising a block of generally spherical

configuration having a plurality of sides in the form of flat surfaces of corresponding size and configuration with respect to one another and provided with intervening surfaces between adjacent of said sides one intervening surface being located diametrically opposite each flat surface, each flat surface being an external surface and having a different number of dots, the number of dots on different faces increasing in consecutive numerical order starting with one dot, and a plurality



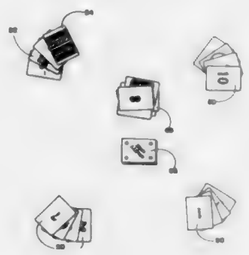
of numerals, each numeral corresponding to the number of dots on a different one of each said flat surface, each said numeral being located on the intervening surface diametrically opposite to the flat surface having the number of dots corresponding to that numeral so that when the piece is thrown or tossed and comes to rest on one of said flat surfaces with that surface lowermost, the numeral corresponding to the number of dots on that flat surface will appear on the uppermost portion of said piece.

4,807,884
CARD SHUFFLING DEVICE
John G. Breeding, St. Louis Park, Minn., assignor to Shuffle Master, Inc., St. Louis Park, Minn.
Filed Dec. 28, 1987, Ser. No. 138,440
Int. Cl.[4] A63F 1/12
U.S. Cl. 273—149 R 16 Claims



8. A card deck shuffling device comprising means for separating the deck into a pair of stacks, means for moving one of said stacks to a position at an angle to the other stack, means for elevating an adjacent corner of each of said card stacks and releasing said corners to interleaf said pair of stacks, and means for pushing said pair of stacks into a single stack.

4,807,885
CARD GAME
William A. Chamblee, 1360-B Harbour Dr., Wilmington, N.C. 28401, and Raymond Williamson, 7008 Jeffery Dr., Raleigh, N.C. 27603
Filed Jun. 30, 1987, Ser. No. 68,154
Int. Cl.[4] A63F 1/00
U.S. Cl. 273—292 5 Claims

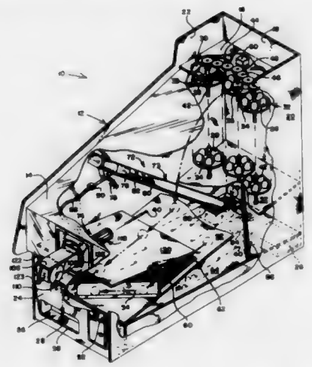


1. A method of playing a card game wherein the card game includes a series of numerical value cards and special cards and wherein the card game includes a preselected threshold game value that cannot be exceeded during the course of the game, the method of playing the card game comprising the steps of: dealing a set of cards to a plurality of players and forming a draw pile of cards; starting a discard pile by transferring a first card from the draw pile and adding to the discard pile by respective players discarding one card at a time as their playing turn comes around and thereafter drawing a replacement card from the draw pile of cards; establishing a numerical count by adding assigned numerical values of all cards discarded into the discard pile; establishing a threshold game value that is to be never exceeded by the numerical value of the established count of the discard pile; continuing to maintain a count by adding the numerical values of the respective cards discarded by the players and placed on the discard pile; prohibiting a player from discarding any card onto the discard pile that would cause the ongoing and cummulative count of the respective cards thereon to exceed the selected threshold game value; discarding special cards of the game onto the discard pile that effectively permit a player to make an additional discard play even if the threshold game value has been reached; the step of discarding special cards including the step of discarding a wild card and placing a selected value on that card, even a minus numerical value, so long as the count after adding in the assigned value of the wild card does not exceed the threshold game value; and the step of discarding special cards further including the step of discarding a card that automatically makes the count the threshold game value irrespective of the prior count; continuing to play the present game in a turn fashion until one or more players faces a situation where he or she does not have a play that would not exceed the threshold game value; continuing to play the present game until there is only one remaining player in the game as the other players have been forced out due to the fact that they reached a point where they had no play, thereby making the last remaining player the game winner.

4,807,886
AMUSEMENT GAME WITH DISPENSED TARGETS
Daniel N. Van Elderen, Los Altos Hills, and Gerald J. Lichac, Santa Cruz, both of Calif., assignors to Atari Games, Milpitas, Calif.
Filed Sep. 11, 1987, Ser. No. 95,600
Int. Cl.[4] A63F 9/02; F41J 9/00
U.S. Cl. 273—356 16 Claims

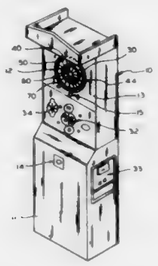
1. An amusement game comprising:
a target;

means for supporting said target in a manner allowing said target to be contacted in a predetermined manner by a moving object;
a plurality of projectiles;
means for projecting said projectiles toward said target so that said projectiles contact said supported target in a predetermined manner;
manually operable means for controlling the rate of projecting projectiles by said projecting means, said controlling means including a manually rotatable crank and projectile



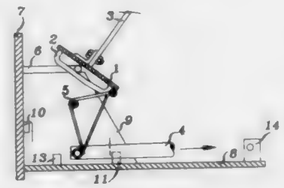
feeder means, said feeder means including a feed tube for receiving said projectiles and a roller disposed rearwardly of said projecting means contacting said projectiles in said feed tube and connected to said crank for rotation thereby, wherein said projectiles are forcibly fed to said projecting means at a variable rate dependent upon the rate at which said crank is rotated; and
means for transporting a target contacted by a projectile in the predetermined manner to a delivery station for recovery by a player.

4,807,887
MISSED HIT AND PLAYER PROXIMITY DETECTION SYSTEM FOR ELECTRONIC PROJECTILE GAME
Donald P. DeVale, Sycamore; Douglas W. Adams, DeKalb, and Robert W. Van Naarden, Hinkley, all of Ill., assignors to Industrial Design Electronic Assoc., Inc., Sycamore, Ill.
Continuation of Ser. No. 793,647, Oct. 3, 1985, abandoned. This application Oct. 1, 1987, Ser. No. 105,997
Int. Cl.[4] F41J 5/00
U.S. Cl. 273—372 12 Claims



1. A missed-hit detection system for an electronic, automatically scored projectile target game apparatus wherein a selected number of projectiles are thrown by the users of said game at a target portion means in order to activate scoring means therein, said system comprising:
cabinet means enclosing said game apparatus and having a front wall;
said cabinet means having projectile impact means positioned along said front wall;
said projectile impact means having a front face portion means and said target portion means including hit detection means for detecting and registering only the impact of any of said projectiles on said target portion means;
said front face portion means being positioned so as to substantially surround said target portion means and provide a missed-hit impact area for at least a portion of the projectiles which fail to impact upon said target portion means;
missed-hit detection means independent of said hit detection means operably and electronically associated with said projectile impact means, so as to detect and register only the impact of any projectiles which miss said target portion means and impact instead upon said front face portion;
scoring means operably and electronically associated with said target portion means and said missed-hit detection means so as to detect and count said preselected number of thrown projectiles and indicate the impact of said projectiles that impact upon said projectile impact means; and
control means operably and electronically associated with said scoring means so as to compute scores generated by said scoring means, display said score and deactivate said scoring means when desired.

4,807,888
DEVICE FOR THE AUTOMATIC OPERATION OF INTERNATIONAL METALLIC SILHOUETTE TARGET PLATFORMS
Victor S. Pidde, 377 Avro St., Albury, 2640, and John D. Langdon, 24 Hawkesview Road, Wirlinga N.S.W. 2640, both of Australia
Filed Aug. 24, 1987, Ser. No. 88,231
Int. Cl.[4] F41J 7/04
U.S. Cl. 273—392 5 Claims



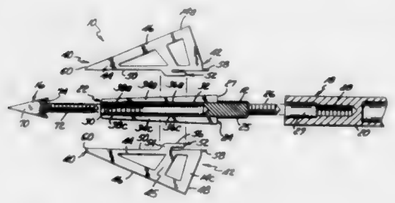
1. A device for the automatic operation of international metallic silhouette target platforms, comprising a single metallic silhouette target, a target platform to which the said target is attached, means for supporting and retaining said target platform while it falls by sliding over and pivoting on said supporting means, resetting means for returning the target platform to its normal position by a combination of sliding over and pivoting on said supporting means and pivoting on said resetting means.

4,807,889
ARROWHEAD
Ronald W. Johnson, Box 460, Starbuck, Minn. 56381
Filed Apr. 15, 1987, Ser. No. 38,638
Int. Cl.[4] F41B 5/02
U.S. Cl. 273—422 16 Claims

1. An arrowhead assembly for attachment to an arrow shaft, comprising:

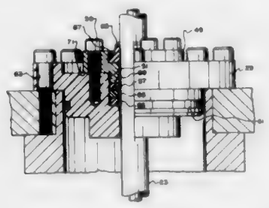
VOL 1099 ISS 4 FEB 28 1989

an elongated body having a forward end and a rearward end;
a bore extending into the body from one of the forward and rearward ends, and forming a cylindrical wall having a thickness equal to a first dimension;
at least one longitudinally oriented slot located on the periphery of the body, with a portion of the slot extending through the wall into the bore;
a blade engaged in the slot and having a blade body extending radially outward from the elongated body, the blade having a forward end and a rearwardly projecting tongue extending into the bore and underlying and engaging an adjacent portion of the elongated body, wherein the



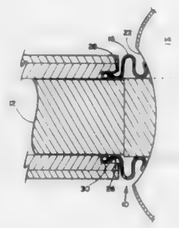
tongue includes an inwardly projecting portion having a length greater than the first dimension and projecting through the slot from the blade body, and a rearwardly projecting portion having a length greater than the first dimension and projecting rearwardly within the bore from the inwardly projecting portion;
tip receiving means for receiving a tip on the forward end of the body;
a tip adapted to be received by the tip receiving means and engaging the forward end of the blade for securing the blade onto the body by forcing the tongue rearwardly into engagement with the cylindrical wall; and
fastening means on the rearward end of the body for fastening the assembly to an arrow shaft.

4,807,890
SEALING COMBINATION
Gerald W. Gorman, Cedar Hill, and Everett E. Johnston, Newark, both of Tex., assignors to Esco Elevators, Inc., Fort Worth, Tex.
Continuation-in-part of Ser. No. 787,100, Oct. 15, 1985, abandoned. This application Mar. 26, 1987, Ser. No. 30,121
Int. Cl.[4] F16J *15/18*
U.S. Cl. 277—12 **16 Claims**



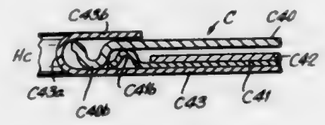
1. In a sealing combination for sealing intermediate ahead of a hydraulic cylinder and a plastic covered cable that is difficultly disconnectable and reconnectable at either end and traversing therethrough, including:
a. said plastic covered cable having a substantial cylindrical exterior of diameter d1 and being connected with a piston interiorly of the cylinder so as to be moved longitudinally responsive to hydraulic pressure applied to the piston traversing interiorly of the cylinder;
b. a gland disposed about and sealingly encompassing the plastic covered cable; said gland having a cavity of a diameter d4;
c. a head defining an annular packing box about the plastic covered cable and adapted to receive the gland for holding the seal in place; and
d. a wiper ring disposed in said gland and about the plastic covered cable for wiping dirt and the like therefrom before the cable enters the sealing combination; the improvement comprising
e. a split ring of resilient material emplaced in the bottom of said gland cavity and encompassing said plastic covered cable without sealing engagement therewith; said split ring having a compressive force when pushed against;
f. a split spacer ring of thermoplastic material disposed in the gland cavity and on top of said split ring of resilient material so as to be responsive to said compressive force of said split ring and encompassing the plastic covered cable;
g. only one split pressure balanced seal of resilient material disposed on the top of said split spacer ring and within said gland cavity so as to be responsive to said compressive force of said split ring transmitted by said spacer ring; said split pressure balanced seal having radially exterior circumferential projections of diameter d3 on an outer leg of the seal and a substantially cylindrical inner leg spaced from said outer leg by a bight portion, said inner leg defining an aperture of diameter d2 that is less than the substantially cylindrical exterior surface diameter d1 of the cable by an amount that is less than the amount the diameter d3 of said lips exceeds the diameter d4 of said gland cavity, all defined as said split pressure balanced seal having an interference fit that is sufficiently greater at its radial exterior with the wall of said packing than the interference fit at its radial interior with the plastic covered cable to prevent gapping and leaking of the formed joint defined by said pressure balanced seal such that the gland can be inserted within the gland cavity to press the pressure balanced seal against the spacer ring when a sufficient force to effect sealing with even a single seal even though said seal is split.

4,807,891
ELECTROMAGNETIC PULSE ROTARY SEAL
Clarence W. Neher, Lake Arrowhead, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jul. 6, 1987, Ser. No. 69,999
Int. Cl.[4] F16J *15/34, 15/54;* **H05K** *9/00*
U.S. Cl. 277—80 **2 Claims**



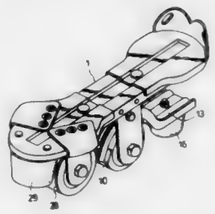
1. An electromagnetic pulse rotary seal for a shaft extending through an opening in an enclosure, comprising an electromagnetically conductive resilient bellows surrounding the shaft outside the enclosure opening, the bellows having a first open end attached to the shaft, a second open end biased against the enclosure around the enclosure opening, and wherein the bellows has a passivated surface area in contact with the enclosure for reducing electromagnetic leakage past said surface area.

4,807,892
STEEL LAMINATE GASKET WITH HIGH SEALING ABILITY
Tsunekazu Udagawa, Ichikawa, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan
Filed May 12, 1988, Ser. No. 193,692
Int. Cl.[4] F16J *15/08*
U.S. Cl. 277—235 B **9 Claims**



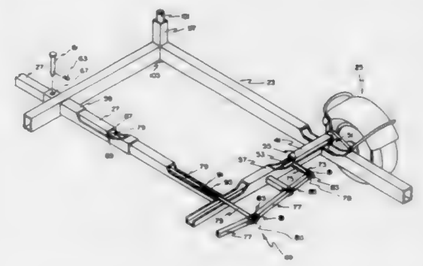
1. A steel laminate gasket for an internal combustion engine having at least one hole therein, comprising:
a first plate having at least one first hole corresponding to the hole of the engine and a first bead situated adjacent to the first hole to surround the same, and
a second plate including at least one second hole having a size substantially larger than an area that the first bead surrounds so that the first bead can be located in the second hole when the first and second plates are assembled, and a second bead situated adjacent to the second hole to surround the same, said second bead extending toward the first plate when the first and second plates are assembled together.

4,807,893
ROLLER SKATE
Chuan H. Huang, No. 13, La. 2, Chang Shou St., Shu Lin Chen, Taipei Hsien, Taiwan
Filed Mar. 21, 1988, Ser. No. 170,893
Int. Cl.[4] A63C *17/14*
U.S. Cl. 280—11.2 **10 Claims**



1. A roller skate comprising:
an elongated pedal plate having a toe portion, a heel portion, two spaced apart downward bracket plates extending from an intermediate portion between said toe portion and said heel portion;
two first rollers mounted on said bracket plates for rotation about a horizontal axis, said rollers being substantially close to one another with a clearance maintained therebetween for independent rotation, said rollers being situated to act as a fulcrum to permit said pedal plate to tilt forwardly and rearwardly about said horizontal axis;
a lever member between said pedal plate and said rollers, mounted on said bracket plates for pivotal movement about an axis above said horizontal axis of said first rollers, said lever having an arched portion which extends over said rollers and has a distal end near a front side of said first rollers, said lever extending rearwardly and holding substantially below said heel portion a brake block which will rest on the ground when in a braking position, said distal end of said arched portion being able to abut with said first rollers when in said braking position;
means formed on one of said bracket plates for engaging said arched portion in order to prevent said lever from swinging;
a spring member placed between said pedal plate and said arched portion for urging said arched portion to engage with said engaging means; and
two second rollers mounted on said pedal plate in front of said first rollers, said second rollers being substantially close to one another with a clearance maintained therebetween for independent rotation, said second rollers contacting the ground only when said toe portion is tilted forwardly with respect to said horizontal axis.

4,807,894
TRAILERABLE STRUCTURE AND COMPONENTS FOR USE THEREWITH
Douglas W. Walker, 2513 Borrego Dr., Durango, Colo. 81301
Filed Nov. 30, 1987, Ser. No. 126,768
Int. Cl.[4] B62D *61/00*
U.S. Cl. 280—63 **16 Claims**



1. A structure which can rest upon a surface and which avoids the appearance of being a trailer, but which is nevertheless capable of having wheels, a towing bar and other trailer components removably attached to it, without the need for tools, to allow it to be towed like a trailer, comprising in combination:
a frame;
wheel assembly receiving means carried by said frame for detachably receiving one or more wheel assemblies, which wheel assembly receiving means further includes means for quickly and easily attaching and detaching a wheel assembly to said receiving means without the need for tools;
wheel locking means for locking a wheel assembly to each said wheel assembly receiving means which is carried by said frame;
towing member receiving means carried by said frame for detachably receiving a towing member; and
actuation means carried by said frame for actuation of said wheel locking means, said actuation means being linked to said towing member receiving means; whereby, insertion of a towing member into said towing member receiving means received within said wheel assembly receiving means, automatically actuates said wheel locking means, and removal of a towing member from said towing member receiving means automatically deactivates said wheel locking means, and whereby further said frame can be towed when one or more wheel assemblies and a towing member is attached thereto, or rest upon a surface when all wheel assemblies are detached therefrom.

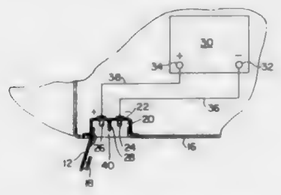
VOL 1099 ISS 4 FE 28 1989 UMI

4,807,895

PROTECTED AUTOMOTIVE BATTERY ACCESS TERMINALS

Harold F. Thomas, 8480 Hyne Rd., Brighton, Mich. 48116, and James M. Deimon, Pinckney, Mich., assignors to Harold F. Thomas, Brighton, Mich.

Division of Ser. No. 843,310, Mar. 24, 1986, Pat. No. 4,700,961. This application Oct. 16, 1987, Ser. No. 109,081
Int. Cl.[4] H02G *3/00*
U.S. Cl. 280—853 **2 Claims**



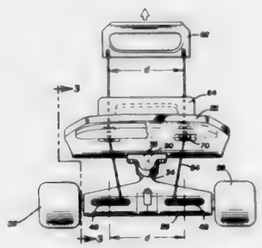
1. In an automotive vehicle including a storage battery therein and an external vehicle body enclosing at least a portion of the vehicle including the storage battery, the improvement comprising a chamber recessed in the body, insulative attachment means forming the back and sides of the chamber, an aperture in the body to provide external access to the recessed chamber, a pair of electrically conductive male terminals each of a size sufficient to accept automotive jumper cable alligator clips and each extending into the chamber from the insulative attachment means, a pair of electrical conduits connecting the pair of terminals to the poles of the storage battery in parallel, an insulative separator located between the male terminals to divide the chamber into two spaces of sufficient size to accept jumper cable alligator clips, an insulative shoulder forming the periphery of the chamber and inwardly spaced from the peripheral edge of the aperture, and a second shoulder inwardly facing the chamber, formed about the periphery of the chamber and affixed to the body of the aperture.

4,807,896

OPERATOR POWERED SKATEBOARD

Randy J. Philippi, 820 Scott Blvd., Santa Clara, Calif. 95051

Filed Jul. 18, 1986, Ser. No. 888,463
Int. Cl.[4] B62M *1/04*
U.S. Cl. 280—243 **18 Claims**



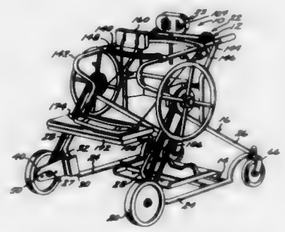
1. An operator powered skateboard, comprising:
a platform;
a drive assembly mounted to the platform by a pivot and swing arm structure for movement about a first pivot axis, the drive assembly including:
a housing having a bore extending therethrough, the housing having a longitudinal axis perpendicular to the first pivot axis, the housing having a slot extending along a substantial portion of the longitudinal axis; and
an axle extending through both ends of the housing bore and being rotatably supported therein;
operator power means for causing rotation of the axle with approximately constant torque, the operator power means including a threaded spool within the housing and fastened to the axle, the spool having a longitudinal axis parallel to the longitudinal axis of the slot and a cable fastened at one end to the spool and the other end of the cable exiting the drive assembly housing and fastened to a handle means for selectively engaging the operator power means, the cable being tangentially fed to the spool through the slot and means for rewinding the spool comprising a spring means for storing rotational energy as the cable is unwound from the spool, the spring means fastened at one end to the axle and connected to the housing at the other end; and
at least two pairs of wheels, one pair connected to the axle of the drive assembly, the other pair of wheels mounted to the platform about a second pivot axis, the first and second pair of wheels pivoting in opposite directions about their respective axes upon tilting of the platform for independent axial displacement, the one pair connected to the drive assembly having clutch means for permitting rotational force by the operator power means to be applied in one direction only,
whereby, pulling the handle during axial displacement, such as when the platform is tilted, causes the operator power means to exert a constant torque rotational force to the wheels.

4,807,897

STANDING SUPPORT

Jimmie R. Schultz, 1025 Calle Pecos, Thousand Oaks, Calif. 91360

Filed Jun. 26, 1987, Ser. No. 67,601
Int. Cl.[4] A61G *5/02*
U.S. Cl. 280—250 **18 Claims**



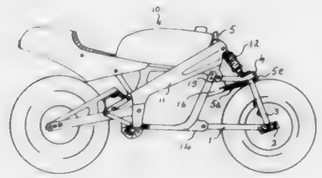
1. A standing support for docking with a conventional wheelchair used by handicapped humans, comprising:
a main frame including a pair of spaced apart side frame members having upper and lower ends, said side frame members defining a cavity sized to receive a conventional wheelchair therebetween;
a plurality of drive wheels, each of which is rotatably mounted upon an associated stub axle, said drive wheels providing means to move said standing support;
extension means mounted upon said lower ends of each of said frame members for the mounting of said stub axles thereupon, said extension means providing means to maintain a desired outermost transverse dimension of said drive wheel and said frame while increasing the unobstructed cross-section of said cavity; and
upper and lower cross bracing means for interconnecting, respectively, said upper and lower ends of said side frame members.

4,807,898

MOTORCYCLE FRONT SUSPENSION AND STEERING SYSTEM

Robert B. Huntly, 25 Sellmar Rd., Weston, Ontario, M9P 3E4, Canada

Filed Jun. 22, 1987, Ser. No. 64,521
Int. Cl.[4] B62K *21/02*
U.S. Cl. 280—276 **6 Claims**



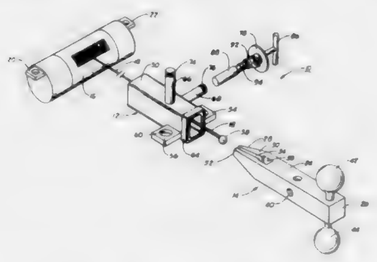
1. A suspension system for the front road wheel of a motorcycle, comprising:
two unequal length full wishbone type control arms extending forward from the frame of a motorcycle parallel to each other and connected to a two-legged upright supporting the road wheel;
of the said full wishbone type control arms, the top control arm is the shorter and is adjustable in length and of reverse wishbone design (A arm configuration), connected to the said upright above the wheel at a single point;
of the said full wishbone type control arms, the lower wishbone is a two-armed affair (H arm configuraton) extending along both sides of the wheel and connected to both legs of the said upright at the centre of the wheel;
of the said two-legged upright, to facilitate semi-circular movement from side to side enabling the front wheel to be steered, the upper closed section is connected to the upper control arm by a ball joint and the lower sections of the legs on both sides and at the centre of the wheel mounted and moving in curved bearings which are attached to and pivot in the said lower full wishbone arms forward ends.

4,807,899

HITCH ASSEMBLY

Nicky G. Belcher, 500 N.W. 27th St., Moore, Okla. 73160

Filed Mar. 4, 1988, Ser. No. 164,216
Int. Cl.[4] B60D *1/00*
U.S. Cl. 280—477 **17 Claims**



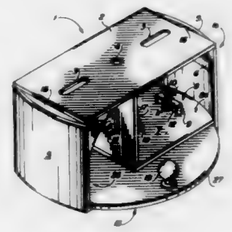
1. A hitch assembly for use with a vehicle, comprising:
a receiver means consisting of a tubular body having forward and rearward ends mounted axially longitudinally on the rear of said vehicle and defining a tubular passage;
a reinforcing band secured around the rearward end of said tubular body and presenting a rounded edge entry into said tubular passage;
power means for controlling a retractable cable mounted on said vehicle and extending said cable rearwardly through said tubular passage;
hitch bar means connectable to said retractable cable in order to be drawn for tight reception within said tubular passage; and
removable pin means insertable transversely into said tubular section to secure said hitch bar means when in tight reception within said tubular passage.

4,807,900

TRAILER HITCH HAVING ROTATABLE DRAW PLATE

Woodrow R. Tate, Rte. 5, Box 1670, Henderson, Tex. 75652

Filed Aug. 31, 1987, Ser. No. 91,587
Int. Cl.[4] B60D *1/06*
U.S. Cl. 280—491.3 **3 Claims**



1. A trailer hitch adapted for mounting on the bumper of a truck, compriaing:
(a) a frame characterized by a bumper mount plate adapted for attachment to said bumper; a pair of side plates downwardly extending from opposite edges of said bumper mount plate in substantially parallel relationship; a partition plate downwardly extending from fixed attachment to said bumper mount plate between said side plates, with the space between said partition plate and one of said side plates defining a ball clearance opening in said frame; a top mount plate extending from fixed attachment to said partition plate to said one of said side plates in substantially parallel relationship with respect to said bumper mount plate, with the space between said partition plate and the other of said side plates defining a latch chamber; and a bottom mount plate carried by said side plates and spaced in substantially parallel relationship from said top mount plate, said bottom mount plate defining the bottom of said frame;
(b) a pivot plate having a curved front margin rotatably positioned between said top mount plate and said bottom mount plate and spanning said side plates and a pivot bolt extending through said top mount plate and said bottom mount plate, said pivot bolt also projecting through said pivot plate for rotatably anchoring said pivot plate between said top mount plate and said bottom mount plate;
(c) attachment means carried by said pivot plate rearwardly of said curved front margin for securing a trailer to said pivot plate; and
(d) a latch bracket mounted on said top mount plate in said latch chamber, a t-bar slidably carried by said latch bracket and normally projecting through said top mount plate into engagement with said pivot plate for immobilizing said pivot plate and a coil spring carried by said t-bar between said latch bracket and said top mount plate, for biasing said t-bar into engagement with said pivot plate, whereby said pivot plate is rotatable between said top mount plate and said bottom mount plate to selectively locate said attachment means outwardly of said frame in functional configuration for attachment to a trailer and inwardly of said frame in non-functional configuration, responsive to manipulaton of said t-bar.

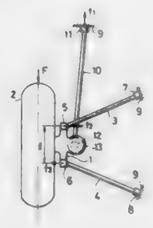
VOL 1099 ISS 4 FEB 28 1989 UMI

4,807,901

AUTOMOTIVE REAR SUSPENSION SYSTEM

Toshiro Kondo, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 23, 1987, Ser. No. 111,876
Claims priority, application Japan, Oct. 31, 1986, 61-261029
Int. Cl.[4] B60G *21/00*
U.S. Cl. 280—701 **39 Claims**



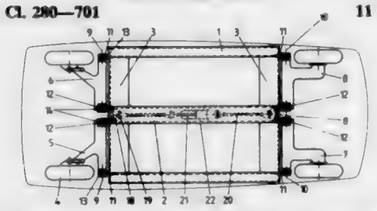
1. An automotive rear suspension comprising a wheel support for rotatably supporting a rear wheel, a pair of front and rear lateral link systems for supporting the wheel support on the vehicle body so that it is swingable in the vertical and longitudinal directions of the vehicle body and produces a toe-in movement in the rear wheel when the rear wheel is subjected to rearward force, and a trailing link system for supporting resiliently either one of the wheel support and the connecting portion of the lateral links with the wheel support to the vehicle body so that the wheel support is allowed to travel a short distance in the longitudinal direction of the vehicle body, at least one of said front and rear lateral link systems being provided with a non-linear deformation means which exhibits a non-linear deformation characteristic with respect to compression force caused by lateral force acting on the rear wheel and acting on the lateral link system, and said trailing link system being set to exhibit a non-linear deformation characteristic which has a given relation with said non-linear deformation characteristic of said lateral link system.

4,807,902

SUSPENSION FOR A WHEELED VEHICLE

Marius Girodin, 99 Bld. H. Barbusse, F-78800 Houilles, France

Filed Jul. 23, 1987, Ser. No. 76,582
Claims priority, application France, Jul. 25, 1986, 8610784
Int. Cl.[4] B60G *3/00*
U.S. Cl. 280—701 **11 Claims**



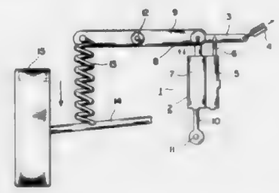
1. A suspension for a four-wheeled vehicle, comprising:
a single elastic member, having first and second ends, situated longitudinal to the vehicle in common to the four wheels;
a first transmission element attached to said first end of said elastic member, and a second transmission element attached to the second end of said elastic member;
first, second, third and fourth lever means, one of said lever means supporting each said wheel, each said lever means pivoting about an axis traverse to the vehicle and comprising a wheel lever and a couple lever integral therewith, said first and second lever means being articulatably attached to said first transmission element, said third and fourth lever means being articulatably attached to said second transmission element;
the action of one wheel upon said wheel's corresponding lever means transmitting a couple by articulation around the corresponding axis to the corresponding couple lever, which lever is connected by the first or second transmission elements to said elastic member.

4,807,903

AUTO CHASSIS WEIGHT EQUALIZATION SYSTEM

David Harrison, 37 Deacon Dr., Mercerville, N.J. 08619

Filed Oct. 7, 1987, Ser. No. 105,883
Int. Cl.[4] B62D *9/02*
U.S. Cl. 280—772 **4 Claims**



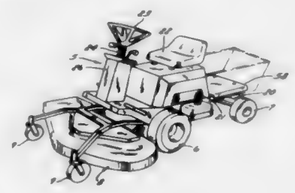
1. A system for automatically improving the handling of a vehicle during a turn comprises sensing means coupled to the vehicle for sensing the degree and direction of the turn and actuator means mounted on the chassis of said vehicle and responsive to said sensing means, said actuator means comprising a hydraulic fluid actuator having a control valve section which communicates with a piston section, said piston section comprising a housing having therein a piston and piston rod extending axially therefrom to form two fluid chambers one on each side of said piston and wherein the control valve position causes fluid to enter one of said two chambers of said piston section, thereby causing movement of the actuator in one of two directions along the axis of said piston rod, and wherein the end of said piston rod is fixedly mounted to the chassis of said vehicle and further wherein movement of the actuator causes movement of a spring control means coupled to said actuator and to a coil spring, said coil spring being coupled to a wheel in a manner such that compression or stretching forces on the spring caused by movement of spring control means causes the chassis in the vicinity of the spring to raise or lower thereby redistributing the lateral forces exerted on the wheels of said vehicle in a manner as to tend to equalize said forces.

4,807,904

RIDING MOWER CHASSIS HAVING IMPROVED REAR PORTION

Igor Kamlukin, Mequon; Donald G. Penkoske, West Bend, and John W. Schanz, Mequon, all of Wis., assignors to Simplicity Manufacturing, Inc., Port Washington, Wis.

Filed May 7, 1987, Ser. No. 47,931
Int. Cl.[4] B62D *21/00*
U.S. Cl. 280—781 **20 Claims**



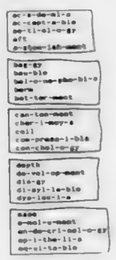
1. In a self-propelled riding vehicle:
an elongated, longitudinally extending frame comprising a pair of laterally spaced apart beam elements having a top surface, a bridging member extending laterally between said beam elements, and a laterally extending angle iron secured to and bridging across said beam elements with its apex uppermost, a pair of front, ground engaging traction wheels mounted adjacent a front end of said frame for propelling said vehicle; a pair of steerable wheels mounted adjacent a rear end of said frame; a mid-mounted power source on said frame for driving said traction wheels;
an accessory platform having a front edge and a rear edge, said platform mounted on and adjacent the rear end of said frame; means for pivotally connecting said frame and said platform to enable said platform to pivot about a transverse, horizontal hinge axis located adjacent its rear edge, whereby said platform can swing between a generally horizontal accessory carrying position and a downwardly and rearwardly tilting position in which said front edge of said platform is raised; and operator controlled latch means between said frame and said platform for locking said platform in said horizontal position, said latch means comprising:
(1) said laterally extending angle iron which is secured to and bridging across said beam elements with its longitudinal edges resting upon their top surfaces and its apex uppermost so as to provide an upper surface that is inclined rearward and downward from its apex, said angle iron being spaced forward from said hinge axis for supporting engagement by a front portion of said platform in its said horizontal position;
(2) a latching member carried by said platform and having a latch portion spaced beneath said platform and confined to movement relative to said platform substantially in said fore-end-aft direction between a forward latching position in which said latch portion can engage under said angle iron and a rearward releasing position in which said latch portion is clear of said angle iron;
(3) biasing means reacting between said platform and said latching member to urge said latch portion towards its latching position, said biasing means being yieldable to permit said latch portion to be cammed to its releasing position by said surface on said angle iron as said platform swings towards its load carrying position; and
(4) a manual actuator accessible adjacent to one edge of said platform and connected with said latching member for manually shifting said latch portion to its releasing position.

4,807,905

ARRANGEMENT OF WORDS USING THE LAST SYLLABLE THEREOF

Daniel F. Reagan, 1335 S. Ivanhoe Way, Denver, Colo. 80224

Filed Nov. 9, 1987, Ser. No. 118,440
Int. Cl.[4] B42D *1/00*; B42F *21/00*; G09B *19/00, 1/00*
U.S. Cl. 281—15 R **10 Claims**



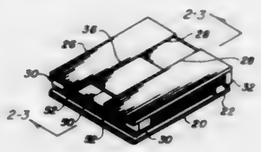
1. An arrangement of words in columnar form comprising:
a multiplicity of words arranged in columnar form and in sequential groupings, each sequential grouping having a plurality of words;
said plurality of words in each sequential grouping having the same alphabetical letters forming the last syllable thereof; and
said sequential groupings being in alphabetical order in accordance with the alphabetical letters forming said last syllable thereof.

4,807,906

COMPUTER PAPER BINDER

Sally Seaver, 8 Carville Ave., Lexington, Mass. 02173

Filed Aug. 3, 1988, Ser. No. 227,995
Int. Cl.[4] B42D *3/00*; B42F *13/00*; A47G *1/24*; A47B *94/04*
U.S. Cl. 281—45 **14 Claims**



1. A computer printout paper binder and stand comprising:
(a) a bottom base of a rigid material having sufficient structural integrity to cover and partially enclose an unburst computer printout stack;
(b) a pair of upstanding vertical retainers each having a perpendicular slot therein integrally joined to said base in such a location as to constrain opposite sides of a stack of paper;
(c) a top cover having an inside and outside surface with the inside surface contiguous with a stack of computer printout paper and the outside having a parallel center portion with raised sides, the top cover providing a protective shield for the paper when closed and also an angular rest when rotated open acting as a stand to hold the paper in a divided position with part of the paper on the bottom and the remainder on the top cover;
(d) hinge means integral with said top cover pivotally interfacing said slot in each vertical retainer, rotatably joining the base and cover together such that the cover expands or retracts vertically within the limitations of the slots while freely rotating axially at least 160 degrees from a closed position when the cover is juxtapositioned upon the base;
(e) a hinged diagonal support brace pivotally joined to said top cover creating a structural stand supporting the top cover in an angular position away from the base allowing computer readout paper to rest on the inside surface; and,
(f) means to retain said diagonal support brace in an angular position forming a rigid linear structure that limits the position of the support while in an open stand position and, yet, not impeding closing.

4,807,907

ARTICLE OF STATIONERY

Anthony E. Lancaster, 26 Felton Road, Parkstone, Poole, Dorset BH14 OQS, England

Filed Jan. 12, 1987, Ser. No. 2,209
Claims priority, application United Kingdom, Feb. 28, 1986, 8604967
Int. Cl.[4] B41L *1/20, 1/00*; B42D *3/18, 15/00*
U.S. Cl. 282—9 R **2 Claims**

1. An article of stationery comprising:
a sheet of substantially plain action paper, said sheet having a portion extending along one edge thereof, said portion

and the remaining part of said sheet being separated by perforations;

a flap attached to said portion of said sheet and extending over said edge and over a part of an upper surface of said sheet adjacent to said edge;



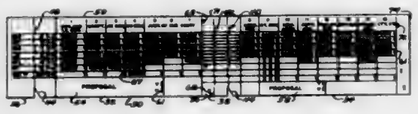
said flap, in use, permitting an edge portion of a sheet of non-action paper to be introduced beneath said flap so as to temporarily overlie said sheet of action paper and so as to temporarily locate said non-action paper over said sheet of action paper as required.

4,807,908

BALLOT FOR USE IN AUTOMATIC TALLYING APPARATUS

Jack Gerbel, Piedmont, Calif., assignor to Business Records Corporation, Dallas, Tex.

Filed Mar. 2, 1987, Ser. No. 20,602
Int. Cl.[4] B42D *15/00, 5/02;* **G09B** *5/00, 7/06*
U.S. Cl. 283—5 **9 Claims**



1. An election ballot for processing by a vote selection scanning apparatus which feeds information to a tallying machine programmed to properly allocate the vote selection to the proper classification, said ballot comprising two or more interconnected ballots cards foldably delineated from each other by perforated creases, a front side of said ballot bearing a selection of choice designations in the form of names of political parties, official positions, and candidates' names extending longitudinally along throughout said ballot, a marking position associated with each choice designation, a reverse side of said ballot having a plurality of write-in lines extending transversely of said ballot, a punching or marking position associated with each choice designation and being disposed in one longitudinal margin of said ballot, corner cut means for positionally identifying each ballot card so that it can be processed properly, and additional punched holes or marked positions on each ballot card for identifying official positions on one ballot card from official positions on the other ballot card during tallying.

4,807,909

PRESCRIPTION ASSEMBLY

Joshua Lepsker, Thornhill, Canada, assignor to Promo-Ad Canada Ltd., Concord, Canada

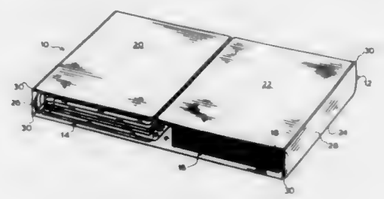
Filed Sep. 3, 1987, Ser. No. 92,684
Int. Cl.[4] B42D *15/00, 12/00, 1/04, 3/06*
U.S. Cl. 283—67 **17 Claims**

1. A prescription pad assembly for effecting free starter sample dosages of prescription pharmaceuticals comprising:

a plurality of sets of sheet means, the sheet means of each set of the said plurality bearing a sample dosage prescription for a distinct pharmaceutical product different from the sheet means of others sets of the said plurality,

a plurality of identification means, each identification means relating to a said distinct pharmaceutical product of said sheet means, and

holder means uniting said plurality of sets and said plurality of identification means as a unitary assembly with each identification means, for a distinct pharmaceutical product, of the said plurality in a predetermined association with a set of the said plurality for the same distinct pharmaceutical product,



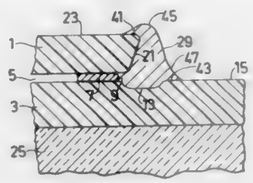
the sheet means of each set of the said plurality comprising a plurality of pre-printed first sheet members and a plurality of pre-printed second sheet members, the said first and second sheet members bearing pre-printed interrelated data for a free starter sample dosage prescription of a distinct pharmaceutical product.

4,807,910

SLEEVE JOINT AND METHOD OF PRODUCING SUCH A SLEEVE JOINT

Göran Johansson, Örebro, Sweden, and Dirk Arts, Ons, Netherlands, assignors to Oy Uponor AB, Nastola, Finland

PCT No. PCT/SE86/00481, § 371 Date Jun. 1, 1987, § 102(e) Date Jun. 1, 1987, PCT Pub. No. WO87/02753, PCT Pub. Date May 7, 1987
PCT Filed Oct. 16, 1986, Ser. No. 65,214
Claims priority, application Sweden, Oct. 22, 1985, 8504975
Int. Cl.[4] F16L *13/02*
U.S. Cl. 285—21 **16 Claims**



1. A sleeve joint for joining a plastic sleeve with a plastic sheath of a plastic-sheathed insulated pipe, comprising:

a pipe sheath having a circumferential groove;

a sleeve having an end overlapping said pipe sheath with said end having an end face, said overlapping end having an inner dimension greater than an outer dimension of said pipe sheath providing a gap therebetween and a gap opening at the end of said sleeve, said sleeve is positioned on said sheath so that said circumferential groove is located outside of said gap at approximately the end of said sleeve;

spacer means provided in said gap at the end of said sleeve for maintaining said sheath centered within the end of said sleeve, said spacer means is made of a material that is dimensionally stable at welding temperature during formation of the joint, said spacer means substantially filling the gap circumferentially at said gap opening; and

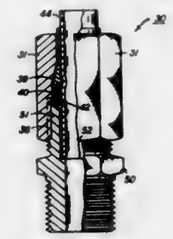
a fillet weld of plastic material substantially filling said groove and said gap opening, and covering at least a major portion of said end face of said sleeve.

4,807,911

PUSH IN FITTING CONVERTER FOR PLASTIC TUBING

Charles D. Short, 145 Danbury Cir. North, Rochester, N.Y. 14618

Filed Jan. 25, 1988, Ser. No. 148,037
Int. Cl.[4] F16L *19/00*
U.S. Cl. 285—323 **17 Claims**



1. A push in tube fitting converter for threaded attachment to a tube fitting body, including:

a nut defining a central through passage including an internal threaded portion at one end, a cylindrical seal seat portion of diameter smaller than that of said threaded portion, and a cylindrical tube end portion of diameter smaller than that of said seal seat portion, said threaded portion and said seal seat portion together defining an internal shoulder;

gripping means disposed within said passage for gripping engagement with tubing inserted therethrough;

an annular sealing member in sealing engagement around the inner periphery of said cylindrical seal seat portion of said passage, and adapted for sealing engagement with tubing inserted therethrough to form a seal between said tubing and said nut; and

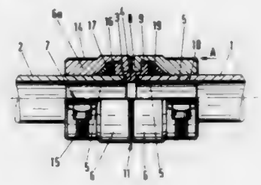
an annular sealing retainer disposed within said internal threaded portion of said passage and engaged by threads thereof to hold said sealing retainer, said sealing member, and said gripping means in place within said nut, said sealing retainer adapted for sealing engagement on one side thereof with said internal shoulder and on the other side thereof with said fitting body to form a seal between said nut and said fitting body.

4,807,912

PIPE COUPLING

Hans P. Maier, Zurich-Hoengg, Switzerland, assignor to Agintech AG, Zurich, Switzerland

Filed Feb. 1, 1988, Ser. No. 150,948
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1987, 3702948
Int. Cl.[4] F16L *17/04*
U.S. Cl. 285—348 **16 Claims**



1. A pipe coupling for joining a first pipe to a second generally cylindrical member, in a butt joint, comprising:

at least two partial shell members which engage around the first pipe to form an axial gap therebetween;

means for tightening the partial shell members against each other, including radially-acting tightening means;

a coupling collar for surrounding the first pipe at the butt joint and including a radially outwardly extending member having a planar end face facing said partial shell members;

a support ring adapted to be loosely fitted onto the first pipe and enclosed by said partial shell members;

a sealing ring comprising a profiled ring comprising (a) a radially acting sealing surface on which it is adapted to be supported on the first pipe, (b) an axially acting sealing surface with which it abuts in the axial direction on said planar end surface of said coupling collar, and (c) a jacket surface, in the form of a quadrant segment, joining together said two sealing surfaces, for abutting on said support ring;

said partial shell members having a radially inwardly projecting annular shoulder for engaging axially behind said radially outwardly extending member of the coupling collar, and an inner conical surface which exerts an axial force on said support ring when said partial shell members are tightened by said tightening means, thereby pressing the sealing ring, which projects into the conical sealing chamber of the support ring, against the coupling collar;

said partial shell members having an inner wall which comprises surface contourings in at least one section for abutting on the pipe wall of the first pipe, whereby tightening of the said tightening means causes the surface contourings to be pressed into the pipe wall; and

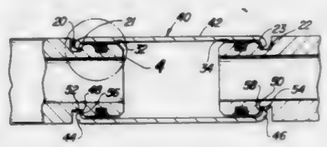
the support ring, together with the planar end face of the coupling collar and the pipe wall, defining an annular sealing chamber which is of approximately triangular cross section and which is under-dimensioned with respect to the external profile of the sealing ring, in an unloaded condition, when the partial shell members are tightened against each other.

4,807,913

HEAT BLOCKING JUNCTION

Donald D. Bartholomew, Marine City, Mich., assignor to Proprietary Technology, Inc., Southfield, Mich.

Filed Nov. 2, 1987, Ser. No. 115,336
Int. Cl.[4] F16L *17/02*
U.S. Cl. 285—369 **6 Claims**



1. A junction, adapted to transport fluid between an inlet body and an outlet body having a temperature difference, comprising:

said inlet and outlet bodies each including means for attaching said junction, said means including a retaining portion and a sealing portion;

said junction comprising a sleeve having an overall cylindrical tubular shape with a substantially constant wall thick cylindrical with two ends, an integral downwardly inwardly projecting peripheral flange on each of said ends;

sealing means adapted to be received by said sealing portion of attachment means, said sealing means contacting said sleeve for sealing said inlet and outlet bodies with said sleeve; and

said sleeve peripheral flanges adapted to be mechanically received by said retaining portions of said attachment means such that said flanges contact said retaining portions along a peripheral line to reduce heat transfer be-

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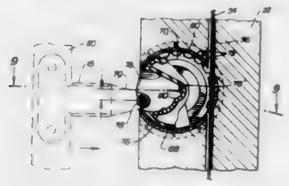
tween the inlet and outlet bodies when the inlet and outlet bodies are at different temperatures.

4,807,914

WINDOW LOCK ASSEMBLY

Paul D. Fleming, Glendale, and Nandor Gajer, Woodland Hills, both of Calif., assignors to W & F Manufacturing, Inc., Glendale, Calif.

Filed Aug. 18, 1986, Ser. No. 897,793
Int. Cl.⁴ E05C 3/08
U.S. Cl. 292—48 **17 Claims**



1. A window and lock assembly combination for releasably locking a first frame component of a window in a closed position with respect to a second frame component, comprising:

at least two lock devices mounted on said second frame component at spaced apart positions and each movable between locked and unlocked positions;

at least two keepers on said first frame component for locking engagement respectively with said first and second lock devices when said lock devices are in said locked positions and said first frame component is substantially in the closed position;

an actuator mounted on said second frame component at a position remote from said lock devices, said actuator including a handle, and means for pivotally supporting said handle for movement between first and second positions relative to said second frame component for correspondingly moving said lock devices between said locked and unlocked positions, said means for pivotally supporting said handle orienting said handle in a position substantially flush with said second frame component when said handle is in said first position;

said actuator further including means defining a track, and a slide block coupled to said handle and slidable along said track upon movement of said handle between said first and second positions; and

an elongated rack carried by said slide block and extending from said slide block to said lock devices for displacing said lock devices between said locked and unlocked positions upon movement of said handle between said first and second positions, said rack extending substantially concealed from view within a channel formed in said second frame component.

4,807,915

STRUCTURE OF MULTI-PROTECTION SAFETY CAR BUMPER

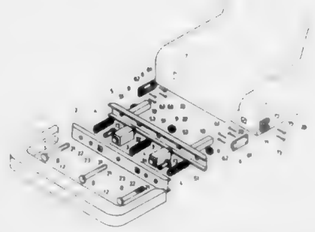
David Y. Shyi, 7F-1, No. 687, Chung-Shan N. Rd., Sec. 5, Taipei, Taiwan

Filed Mar. 28, 1988, Ser. No. 179,895
Int. Cl.⁴ E05C 19/10
U.S. Cl. 293—132 **1 Claim**

1. A multi-protection car safety bumper, comprising:

a U-shaped external bumper having bolt nuts fixedly attached interiorly at the center thereof, the lateral sides of the U-shaped bumper including a plurality of bolt holes; a front and a rear U-shaped steel bars arranged parallel to each other with their respective openings facing each other, each steel bar including a plurality of axially aligned holes; some of said axially aligned holes being for the securing of elastic rubber components; others of said axially aligned holes being for the placement of elastic buffer elements; said front U-shaped steel bar also including a plurality of holes for locating bolts to insert respectively thereinto and to screw into the bolt nuts of the U-shaped external bumper; said rear U-shaped steel bar comprising two locating rods welded thereon for insertion into respective receiving holes on the frame body of a car;

said elastic rubber components being placed between the front U-shaped steel bar and the rear U-shaped steel bar and comprising one rectangular flange at each end for inserting into the respective axially aligned holes of the front U-shaped steel bar and the rear U-shaped steel bar to absorb and disperse any percussive force transmitted through the U-shaped external bumper; said elastic buffer elements being placed between the front and rear U-shaped steel bars and secured therebetween by means of locating bolts and nuts to absorb and disperse the excessive percussive force that the U-shaped external bumper and the elastic rubber components are unable to absorb



and at the time to force the stressed U-shaped external bumper to return to its original position;

a sliding seat including locating holes aligned with said bolt holes on the lateral sides of the U-shaped bumper for receiving bolts to attach said sliding seat to the sides of the U-shaped external bumper at the inner side thereof, and further including a wedged track at the center to match with the scoop slide way of a slide guide;

said slide guide including locating holes for locating bolts to secure said guide on the side board of the car body, the central part of the slide guide comprising said scoop slide way to allow the U-shaped external bumper to move inwardly and outwardly by means of the wedged track through the scoop slide way so as to control the position of the U-shaped external bumper;

said car frame body having a stepped shape at the front, wherein said receiving holes are located at a lower part thereof to retain the structure of the safety bumper, the side board of the frame body providing a firm connection for said slide guide.

4,807,916

HANDLE FOR USE WITH ROLLABLE GARBAGE CANS

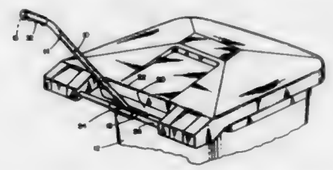
Herbert V. Erickson, 1219 S. Fife, Tacoma, Wash. 98405

Filed Jun. 4, 1986, Ser. No. 870,448
Int. Cl.⁴ B66F 3/00; B62B 1/20
U.S. Cl. 294—15 **4 Claims**

1. A handle for rollable garbage cans having a bar for user guiding comprising:

a shaft;

a projection affixed at one end of the rod, said projection capable of abutting the shoulder of a garbage can;



a curved projection capable of placement about a bar, said curved projection protrudes from the bar in a plan 180 degrees opposite the projection at the end of the rod; and

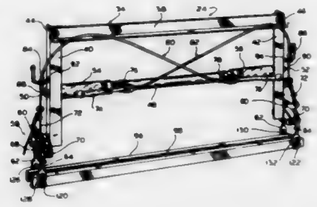
a means for gripping the rod.

4,807,917

BOTTLE DEPALLETIZER TOOL

Kemp R. Bunting, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Sep. 25, 1987, Ser. No. 102,000
Int. Cl.⁴ B66C 1/92, 1/28
U.S. Cl. 294—87.24 **15 Claims**



1. A manually operated tool comprising a somewhat rectangular frame having substantially vertical members depending from substantially opposite ends of the frame; caliper action tong means attached at a pivot point to each of said depending members with said tongs in a substantially spaced parallel relationship and with jaws of said tongs in a substantially horizontally alignment; a pair of elongated spaced substantially parallel and opposing flanges extending between, attached to and moving with the jaws; said flanges being substantially free of dedicated positions for grasping objects; elastomer means substantially lining at least a portion of said flanges at confronting locations on said opposing flanges; and manually operated means for selectively opening and closing said jaws by pivoting them about said midpoints, whereby a substantially aligned row of objects may be grasped by said flanges regardless of minor deviations of the positions of said object within said aligned row.

4,807,918

SINGLE LINE GRAPPLE

Richard A. Weeks, Slaughter, La., assignor to Hawco Manufacturing Co., Slaughter, La.

Filed Mar. 15, 1988, Ser. No. 168,915
Int. Cl.⁴ B66C 3/10
U.S. Cl. 294—110.1 **16 Claims**

1. A single line grapple comprising:

(a) an upper block;

(b) a plurality of arms, each of sad arms having an end pivotally connected to said upper block;

(c) a lower block vertically aligned beneath said upper block;

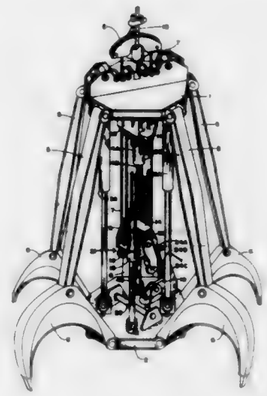
(d) a plurality of tines, each of said tines being pivotally connected to said lower block at a first point and pivotally connected to an opposite end of one of said arms at a second point whereby relative vertical movement of said upper block and said lower block opens or closes said tines;

(e) an upper sheave assembly connected to said upper block;

(f) a lower sheave assembly vertically aligned beneath said upper sheave assembly;

(g) a closing cable reeved between said lower sheave assembly and said upper sheave assembly and extending upward from said grapple whereby raising said cable draws said upper sheave assembly and said lower sheave assembly together;

(h) means to engage said lower sheave assembly and said lower block comprising:



(i) a latch pin connected to said lower block;

(ii) a hook assembly, pivotally connected to said lower sheave assembly, having a concave surface for engaging said latch pin;

(iii) a fulcrum connected to said lower block;

(iv) a trip lever mounted on said fulcrum, said trip lever having an end abutting said hook assembly when said hook assembly and said latch pin are engaged;

(v) means connected to said trip lever for urging said trip lever in position to block said hook assembly; and

(i) means to disengage said lower sheave assembly and said lower block.

4,807,919

INDICATOR MOUNTING STRUCTURE

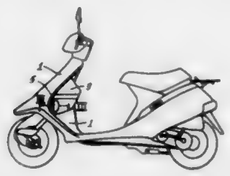
Kentaro Ito, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1987, Ser. No. 40,680
Claims priority, application Japan, Apr. 21, 1986, 61-58746[U]
Int. Cl.⁴ B62J 9/00, 6/00
U.S. Cl. 296—37.1 **9 Claims**

1. An indicator light mounting structure for use on a multi-wheeled vehicle having a vehicle frame, a front shield member including laterally spaced side edges adapted to be carried by said vehicle frame and at least one indicator light disposed laterally outwardly of the adjacent front shield side edge, said mounting structure comprising partition means having generally rectangularly disposed rear, bottom and oppositely spaced side panels forming an article storage space, means for securing

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said at least one indicator light to one of said side panels for disposition laterally outwardly of said front shield side edge,



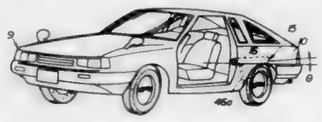
and means for detachably connecting said partition means to said front shield member.

4,807,920

VEHICULAR UMBRELLA CONTAINER

Hiroyuki Fujiki, Fujisawa, and Masami Fukumoto, Yokohama, both of Japan, assignors to Nissan Motor Co. and Nifco Inc., both of Yokohama, Japan

Filed Apr. 28, 1987, Ser. No. 43,583
Claims priority, application Japan, May 2, 1986, 61-102798; May 2, 1986, 61-67417[U]
Int. Cl.⁴ B60R *7/06*
U.S. Cl. 296—37.3 **21 Claims**



1. A vehicular umbrella container comprising:
an elongate casing having a first end opened to form an umbrella entrance and a second end;
an elongate umbrella support member disposed in said casing and displaceable within a first range in longitudinal direction of said casing;
means for locking and unlocking said umbrella support member at a plurality of predetermined positions in the casing longitudinal direction upon insertion of the umbrella;
means for biasing said umbrella support member in a first direction of said casing first end; and
said umbrella support member being snugly fitted for movement in said casing and with said casing controlling the entrance and exhaust of air therebetween to regulate the speed of displacement of said umbrella support member in the casing.

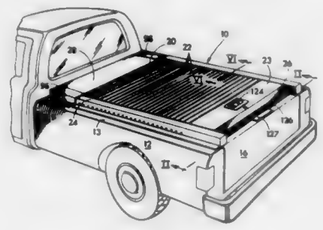
4,807,921

SLIDING COVER FOR TRUCK BED

James M. Champie, III, and Canyon D. Champie, both of 7435 W. Cheryl Dr., Peoria, Ariz. 85345

Filed Jul. 16, 1987, Ser. No. 74,271
Int. Cl.⁴ B60J *7/10*
U.S. Cl. 296—98 **14 Claims**

1. A sliding cover assembly for an open cargo bed defined by a flat bottom, two side walls, a front wall at the front portion of the cargo bed and a tailgate at the rear portion of the cargo bed comprising:
(a) guide means mounted on the top edges of the side walls of the cargo bed, the guide means extending from the front portion of the cargo bed to the rear portion of the cargo bed, the guide means including a left and right track having upper, middle and lower edges forming a C-shaped cross section, each track further including a lip to facilitate positioning of each track to the top edge of the side walls;
(b) a cover extending across the open cargo bed including a plurality of parallelly-disposed, arcuate, rotatably interconnected longitudinal slats slidably mounted in the guide means, the slats being successively disposed adjacent one another, each slat including a top side, a bottom side, a first longitudinal edge having an arcuate socket portion and a second longitudinal edge having a cylindrical rod



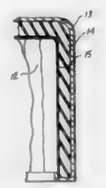
portion, wherein the rod portion of one slat is rotatably disposed within the socket portion of an adjacent slat in a substantially water-tight fashion and wherein the cylindrical rod portion defines a first runoff channel at the top side of the slat and the arcuate socket portion defines a second runoff channel at the top side of the slat;
(c) a return mean mounted adjacent the front end of the cargo bed and attached to the forward edge of the cover, the return means including a return assembly around which the cover winds when retracted.

4,807,922

IMPACT CAR COVER

Ralph S. Glover, 3507 W. Northgate #1101, Irving, Tex. 75062

Filed Sep. 8, 1987, Ser. No. 93,966
Int. Cl.⁴ B60J *11/00*
U.S. Cl. 296—136 **1 Claim**



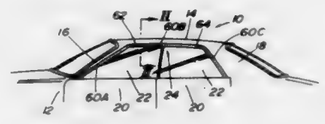
1. A high impact cover for a vehicle, said vehicle having a passenger compartment defined by lateral and forward sides, a forward surface, a roof surface, and a rear surface, a forward windshield, a rear windshield, and side windows, said cover comprising:
cover means for covering said surfaces, and
said cover means formed of alternating pleats and raised portions, and
said raised portions formed of a plurality of layers, and
wherein said plurality of layers includes three laminates, and
wherein said three laminates define an outer covering formed of a flexible material. and
a padded central laminate of contact density, and
an inner laminate, and
wherein said padded central laminate is of a thickness three to five times that of the said outer covering, and
wherein said cover means is further defined by a matrix of interconnected portions in overlying relationship to said surfaces wherein said portions are joined and removable from said cover means by a network of zipper means for selective replacement of various portions of said cover means.

4,807,923

WINDOW SEAL CONSTRUCTION FOR SASHLESS DOOR

Shigeru Nakamura, Odawara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 26, 1987, Ser. No. 30,379
Claims priority, application Japan, Mar. 28, 1986, 61-69884; Mar. 31, 1986, 61-72681; Apr. 1, 1986, 61-74825
Int. Cl.⁴ B60J *1/17*
U.S. Cl. 296—146 **13 Claims**



1. In a motor vehicle having a side roof rail structure which bounds an upper side of a door opening, a sashless type door hinged to the vehicle to open and close the door opening, a window pane held by said door in a manner to move between raised and lowered positions, first means for causing an upper edge of said window pane in the raised position to move along a first direction when said door is normally swung to open or close the door opening, and second means for causing the upper edge of said window pane in the raised position to move outwardly along a second direction when a lower pressure area is created at the outer surface of the vehicle,
a window seal construction which comprises:
an elongate weatherstrip secured to said side roof rail structure and extending along the same, said weatherstrip contacting sealingly with an upper peripheral portion of the window pane in the raised position upon closing the door;
a supporting member secured to said side roof rail structure and having an elongate flange portion which straddles the window pane in the raised position and extends along the side roof rail structure leaving a space between the upper edge of the window pane in the raised position and the elongate flange portion of said supporting member; and
an elongate stopper member of resiliently deformable material secured to said elongate flange portion of the supporting member and extending along the same, said stopper member being positioned to interfere with said second direction but not interfere with said first direction, so that when the upper edge of the window pane in the raised position is moved outwardly along the second direction, the outward movement is stopped by said stopper member establishing watertight sealing between the window pane and the elongate stopper member, said elongate stopper member being integrally formed with a specially deformable portion which is protected toward an upper peripheral portion of the window pane in the raised position to contact with the same.

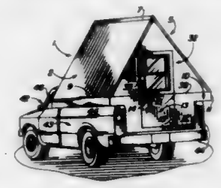
4,807,924

FOLDING CAMPER FOR PICK-UP TRUCKS

Gene R. Kottke, Rt. 2, Box 575, Big Sandy, Tex. 75755

Filed Nov. 16, 1987, Ser. No. 121,167
Int. Cl.⁴ B60P *3/37*
U.S. Cl. 296—164 **21 Claims**

1. A folding camper for pick-up trucks comprising a base frame adapted to fit in the bed of a pick-up truck; a front panel hingedly carried by one end of said base frame, aids front panel foldable on said base frame in travel configuration and pivotable upwardly from said base frame in deployed configuration; a rear panel hingedly carried by the opposite end of said base frame opposite said front panel, said rear panel foldable on said front panel in said travel configuration and pivotable upwardly from said base frame in substantially parallel relationship with respect to said front panel in said deployed configuration; a base frame door provided in said rear panel of said base frame and a rear panel door provided in said rear panel, said rear panel door disposed in substantially vertical alignment with said base frame door when said rear panel is pivoted into said deployed configuration; a left-hand roof panel hingedly carried by one side of said base frame and spanning said front panel and said rear panel, said left-hand roof panel foldable on said rear



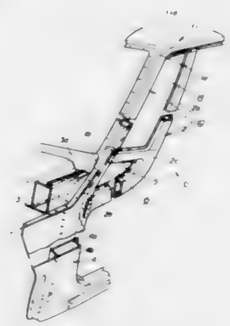
panel in said travel configuration and pivotable upwardly for engaging first corresponding sides of said front panel and said rear panel, respectively, when said left-hand roof panel is disposed in said deployed configuration; and a right-hand roof panel hingedly carried by the opposite side of said base frame and spanning said front panel and said rear panel, said right-hand roof panel foldable on said left-hand roof panel in said travel configuration and pivotable upwardly for engaging said left-hand roof panel and engaging second corresponding sides of said front panel and said rear panel, respectively, and closing said folding camper when said right-hand roof panel is pivoted into said deployed configuration.

4,807,925

FRONT VEHICLE BODY STRUCTURE

Toshinori Sakamoto, and Osamu Matsuura, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 11, 1987, Ser. No. 13,568
Claims priority, application Japan, Feb. 13, 1986, 61-30430
Int. Cl.⁴ B62D *25/00*
U.S. Cl. 296—194 **6 Claims**



1. A front vehicle body structure comprising:
a front pillar structure mounted as a vehicle body rigidity adding member between a front fender portion and a forward side end portion of the vehicle roof;
said front pillar structure comprising a first front pillar arranged on a forward side of the front pillar structure and

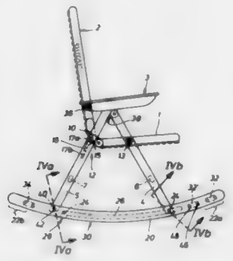
a second front pillar arranged behind the first front pillar in the longitudinal direction of the vehicle body;
said first and second front pillars each having a hollow closed cross section, said first front pillar being of a nearly straight shape, an upper portion of said second front pillar being of a nearly straight shape and a lower portion thereof being of a largely forwardly curved shape;
said front fender portion having a rear end portion adapted to be mounted to a hinge pillar extending vertically, and said hinge pillar having a hollow closed cross section;
said first front pillar connected at its upper end to the forward side end portion of said roof and at its lower end to said hinge pillar so as to form an integral member having a common closed cross section; and
said second front pillar connected at its upper end to the forward side end portion of said roof at a position behind the position at which said first front pillar is connected to said forward side end portion of the roof and at its lower end to said hinge pillar.

4,807,926

FOLDING FURNITURE

Oswald Bruna, Bunzlauer Platz 1, Munich 50, Fed. Rep. of Germany

Filed Oct. 13, 1987, Ser. No. 108,194
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1986, 3635003
Int. Cl.[4] A47C *3/02*
U.S. Cl. 297—33 7 Claims



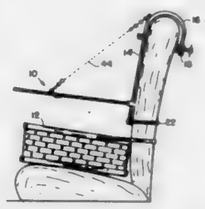
1. A collapsible rocking chair of the type having a back rest, a seat, front legs and rear legs, connected to assume folded and unfolded use positions, comprising:
first and second rockers pivotally mounted to selected ones of said front and rear legs, each rocker having a length;
a guide element, situated at a lower end of each of the others of the front and rear legs;
a guide groove, including an insertion slot situated at an end of said guide groove, extending over a substantial length of each rocker and adapted to receive said guide element through said insertion slot and into said guide groove for movement therealong as the seat assembly is manipulated between the folded and unfolded use positions; and
means for adjustably connecting said seat, backrest and rear legs, adapted to permit said seat to be adjusted in inclination in an unfolded use position, and collapsed for storage in a folded position;
said guide element being removable from said guide groove through said insertion slot, permitting said chair to be collapsed in a folded position for storage with said seat lying against said back rest.

4,807,927

SAFETY AUTO SEAT MOUNTED ADJUSTABLE BABY BASSINET SUNSHADER

Lester R. Livick, 15106 Beatty St., San Leandro, Calif. 94579

Filed Mar. 17, 1987, Ser. No. 41,068
Int. Cl.[4] A47C *7/10*
U.S. Cl. 297—184 7 Claims



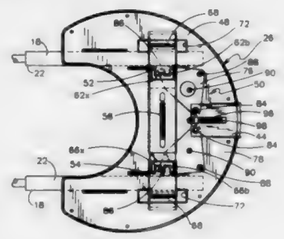
1. An adjustable hood for shielding an infant on an automobile seat from sun rays, said hood including:
a first frame having two side members having upper and lower ends, said ends being connected together by upper, lower and third cross members, said third cross member being adjustable coupled along a portion of said two side members;
means located at the upper ends of said two side members for removably securing said frame to the top of an automobile seat backrest;
a second frame having first and second sides and first and second ends, said second frame being substantially covered with sun ray protecting material, said first end of said second frame being pivotally coupled to said adjustable third cross member on said first frame to enable upward and downward rotational movement of said second frame;
limiting means for adjustably limiting the amount of downward rotational movement of said second frame from said first frame; and
locking means including a manually operable latch cooperating between said first and second frames for securing said second frame substantially flat against said first frame.

4,807,928

TRAY APPARATUS FOR USE WITH A CHAIR

Richard E. Cone, Dayton, Ohio, assignor to Gerico, Inc., Denver, Colo.

Filed Sep. 18, 1987, Ser. No. 98,456
Int. Cl.[4] A47B *39/00*
U.S. Cl. 297—153 20 Claims



1. A tray apparatus for use with a chair, comprising:
first means for use in attaching the tray apparatus to the chair at a substantially fixed predetermined attachment area; and
second means operatively associated with said first means for use in selectively positioning the tray apparatus at one

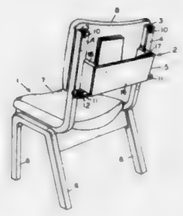
of a plurality of discrete and substantially fixed positions relative to the chair, said second means being movable wherein said second means moves to permit positioning the tray apparatus from one of said positions to another of said positions while said first means maintains attachment of the tray apparatus to the chair during the movement of said second means.

4,807,929

STACKABLE CHAIR WITH SLIDING COMPARTMENT

Vernon L. Balsbaugh, 2510 Liberty Rd., Dallas, Oreg. 97338

Filed Nov. 13, 1987, Ser. No. 120,402
Int. Cl.[4] A47C *7/62*
U.S. Cl. 297—191 2 Claims



1. A stackable sliding compartment, comprising:
a chair having a seat, four chair legs, and a back rest, said chair being stackable with other chairs of similar configuration;
at least one slide guide fixably mounted on the back side of said back rest;
a book shelf slidably mounted within said slide guide where said book shelf is adjacent to the back side of the back rest of said chair where the positioning of the lower chair's back rest top is in contact with the bottom of the upper chair's said book shelf;
a slide groove on said book shelf within which slidably fits a slide guide edge of said slide guide which permits the book shelf to slide up and down on said slide guide;
a stop at the lowermost point of said slide guide for holding said book shelf at its lowermost position; and
where positioning said slide guide so that the book shelf stays within the slide guide when the lower chair's back rest top is in contact with the bottom of the upper chair's book shelf and said upper chair is stacked on said lower chair.

4,807,930

SEATING APPARATUS PLANAR FOLD SLING

Bob Helfrich, 1411 Merced St., Richmond, Calif. 94804

Filed Jun. 11, 1987, Ser. No. 60,625
Int. Cl.[4] A47C *4/28*
U.S. Cl. 297—219 1 Claim



1. An improved folding chair of the type having, a chair frame composed of a plurality of pivotally connected members, and a sling seat supported at a plurality of points by the frame, said support points being symmetrically positioned about a centerline on the sling seat, said centerline extending longitudinally from a midpoint of the seat front edge to a midpoint of the backrest upper edge, wherein the improvement comprises:
a- a pair of ridge fold lines radiating in opposite directions along said centerline from a common point on the centerline, said common point being positioned between the upper edge of the seat backrest and the forward edge of the seat,
b- a first pair of valley fold lines radiating symmetrically about said centerline from said common point toward opposite lateral edges of the seat.
c- a second pair of valley fold lines radiating symmetrically about said centerline from said common point to points on opposite sides of the centerline on the front edge of the seat, and
d- a positional relationship of elements of the sling seat upon the folded chair having a cross-sectional form figuratively similar to a letter V nesting within a cusp of the letter W, and further having the vertex of the angle of the letter V being the ridge fold line of the backrest, and still further having the vertex of the angle between the cusps of the letter W being the ridge fold line of the seat portion of the sling.

4,807,931

AIR-CONTROLLED LUMBAR SUPPORT DEVICE

Keiichi Ishida, Toyota, and Kuniyoshi Haruda, Takahama, both of Japan, assignors to Aisin Seiki Co., Ltd., Kariya, Japan

Continuation of Ser. No. 756,675, Jul. 19, 1985, abandoned. This application Jan. 20, 1987, Ser. No. 6,276
Claims priority, application Japan, Jul. 20, 1984, 59-110385
The portion of the term of this patent subsequent to Feb. 18, 2003, has been disclaimed.
Int. Cl.[4] A47C *7/46*
U.S. Cl. 297—284 3 Claims



1. A lumbar support device for a vehicle seat having a seat frame and a backrest comprising:
an inflatable chamber mounted within said backrest and including at least one partition;
tube means connected at one end to said inflatable chamber for transferring a flow of pressurized air to and from said inflatable chamber;
valve mechanism adapted to be attached to the seat frame and connected to another end of said tube means opposite from said end connected to said inflatable chamber, said valve mechanism including:
a housing having s base portion and an upper portion,
a conduit for transferring air through said valve mechanism and into said tube means, said conduit having a first passage located along said base portion of said valve mechanism and a second passage in communication with said first passage and extending along said upper portion,
a hand pump mounted on said housing along said first passage for manually pumping air into said conduit,
a check valve seated within said second passage for normally restricting air from escaping from said tube means and said inflatable chamber, said check valve being unseated in

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response to the flow of pressurized air generated by actuation of said hand pump to permit transfer of air from said hand pump to said inflatable chamber, and

a manually operable switch mounted on said housing substantially adjacent said hand pump, said switch having a control valve extending coaxially with said check valve within said second passage, said control valve being slidably positioned by depression of said switch to unseat said check valve to release air from said inflatable chamber when the amount of air within said inflatable chamber exceeds a desired level, thereby enabling regulation of the amount of air within said inflatable chamber; and

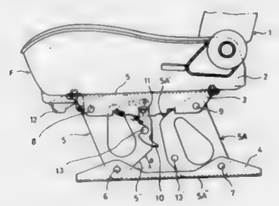
a secondary relief valve mounted along said housing and adapted to exhaust air within said conduit to the atmosphere automatically when the air pressure within said conduit exceeds a predetermined pressure.

4,807,932

DEVICE FOR MOVING AN AUTOMOBILE SEAT BACK AND FORTH

Bahk Hong, Yongam-ku, Rep. of Korea, assignor to Kia Motors Corporation, Rep. of Korea

Filed Aug. 13, 1987, Ser. No. 85,877
Int. Cl.[4] B60M *1/08*
U.S. Cl. 297—346 16 Claims



1. A device for moving an automobile seat back and forth comprising:

a first and second bracket secured on opposite sides of a main seat;

a first and second fixed bracket secured to a bottom of the automobile;

two pairs of legs, for pivotally allowing the seat to move back and forth, a first pair of legs being pivotally secured to said first seat bracket and said first fixed bracket and a second pair of legs being pivotally secured to said second seat bracket and said second fixed bracket, each leg includes a first contacting side for contacting a portion of the seat bracket when the leg is pivoted, and a second contacting side for contacting a portion of the fixed bracket, the first contacting side of a first leg of each pair contacting the seat bracket and the second contacting side of a second leg of each pair contacting the fixed bracket when the legs are in a first position, and the first contacting side of the second leg contacting the seat bracket and the second contacting side of the first leg contacting the fixed bracket when the legs are in a second position;

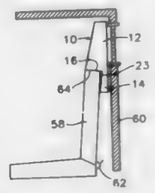
the legs each include a pin; and means for securing the legs in the first or second position, secured at a first end to the seat and including a linkage secured to a handle located at a first end of the means for securing the legs and having means for removably receiving one of the pins.

4,807,933

HEADREST

Daniel R. Alexander, 7493 Cedar Knolls Dr., Warrenton, Va. 22186

Filed Nov. 10, 1987, Ser. No. 118,954
Int. Cl.[4] A47C *7/36*
U.S. Cl. 297—391 3 Claims



1. A headrest for use with a seatback located adjacent a substantially vertical surface, comprising:

upper means for supporting the head of a user at a selected position above the seatback and cushioning the head of the user against direct impact with the vertical surface,

lower means for maintaining the position of the upper means during use and providing for quick and easy placement and removal of said headrest with respect to said seatback,

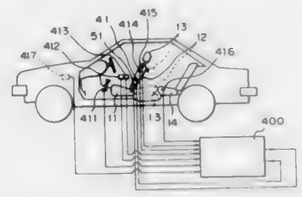
said upper and lower means each consisting essentially of a resilient foam body having a truncated right triangle cross section.

4,807,934

DEVICE FOR MOVING UP AND DOWN AND TILTING A HEADREST OF A VEHICLE SEAT

Kazuo Sakakibara; Toshiaki Shimogawa, both of Okazaki; Satoei Kuwakado; Koji Imai, both of Nukata, and Toshikazu Ina, Nagoya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jan. 20, 1988, Ser. No. 146,126
Claims priority, application Japan, Jan. 23, 1987, 62-7620
Int. Cl.[4] A47C *1/10*
U.S. Cl. 297—403 12 Claims



1. A device for moving up and down and tilting a headrest provided at an upper portion of a backrest of a seat mounted on a vehicle, said headrest having at least one leg member inserted in said seat backrest, said device comprising:

a rotatable driven shaft extending horizontally and being provided in said seat backrest and operatively connected to said at least one leg member to move said headrest up and down,

a drive mechanism driving said driven shaft to rotate about the axis thereof to move said headrest up and down relative to said seat backrest,

a support member provided below said driven shaft, said at least one leg member being rotated about an axis of said support member, said axis being parallel to said rotatable driven shaft, and

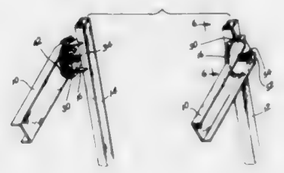
a tilting mechanism rotating said at least one leg member about said support member to tilt said headrest through a predetermined angle relative to said seat backrest.

4,807,935

SEAT ARM REST ASSEMBLY

Shaylor E. King, Elkhart, Ind., assignor to QMP, Inc., Elkhart, Ind.

Filed Dec. 7, 1987, Ser. No. 129,653
Int. Cl.[4] A47C *7/54*
U.S. Cl. 297—417 5 Claims



1. An arm rest assembly for a seat having a frame, said assembly including an arm rest rotatably moveable from a generally horizontal to a generally vertical position, said assembly composed of parts which are symmetrical and interchangeable from either left or right, said parts comprising a mounting bracket fixable to said seat fraome at either the right or left side thereof,

a locator plate which is assemblable to said mounting bracket and which includes means to releasably mate therewith,

said locator plate including a circumferential notch therein which defines a path of movement of said arm rest, said arm rest including a locator pin which is positioned so to cooperate with the slot in said locator plate in such a manner as to permit the arm rest to stop in its said generally horizontal and generally vertical positions,

said locator plate further including a tab portion extending from one face of said plate,

said mounting bracket including two openings located so as to mate with the tab portion of said locator plate, one of which mates when said mounting bracket is fixed to the left side of said seat frame and the other of which mates when said mounting bracket is fixed to the right side of said seat frame, and

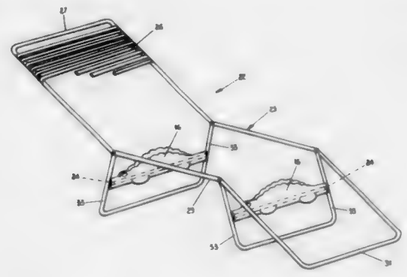
means to attach said arm rest to said mounting bracket with said locator plate located therebetween.

4,807,936

LOUNGE CHAIR RIB CUSHION

Douglas Behrendt, 342 Hayes Ave., Holland, Mich. 49423

Filed Sep. 10, 1987, Ser. No. 95,358
Int. Cl.[4] A47C *7/00*
U.S. Cl. 297—445 8 Claims



1. In a reclining lounge chair comprising a frame having side members and a flexible body support material suspended between the side members, with the frame comprising a central portion having pivoted legs attached to opposite ends thereof and head and leg support portions pivotally attached to the respective ends of the central portion, with rigid transverse support ribs extending across the central portion of the frame at the ends thereof, at or below the level of the central portion of the frame, the flexible body support material being such that the weight of a person lying on the chair can cause the support material to sag to the level of the transverse support rib, causing the rigid transverse support ribs to bear against the body of the user, the improvement comprising a lounge chair rib cushion comprising an elongated body formed of a resiliently yieldable material, an elongated opening formed through the body that is large enough to fit over the support rib, an elongated slot being formed in the side of the cushion that runs the length of the body and leads to the interior opening, such that the rib cushion can be fitted on the rib in a sideways direction through the slot, the portion of the body that is to be adjacent the flexible support material of the lounge chair being sufficiently thick and resilient to provide a soft cushion for the user of the lounge chair.

4,807,937

JUMPSUIT SUPPORT

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Filed Oct. 29, 1987, Ser. No. 114,736
Int. Cl.[4] A47C *31/00*
U.S. Cl. 297—465 4 Claims



1. A support and restraint device for seated human use on chairs and wheelchairs, comprising:

a substantially rectangular durable cloth panel vertically oriented longitudinally and folded twice horizontally forming a single piece front panel, a horizontally split rear panel and upwardly and downwardly looping ends with said horizontally split rear panel removably attached by double zipper and ring locking means adjacently said upwardly looping end;

said upwardly looping end apertured centrally with a V-neck opening having a rib-knit edging therearound;

said downwardly looping end apertured with two rounded rib-knit lined leg holes positioned on either side of a continuing crotch member there being short hip high side panels connecting said front panel to the lower section of said horizontally split rear panel on each side with the remaining openings between said panels providing arm passage for said seated humans;

said horizontally split rear panel having the lower section thereof apertured by two openings in horizontal parallel alignment sized and positioned to fit over and allow passage therethrough of push handles on wheelchairs;

said lower section of said split rear panel arranged to slide through the back opening at the seat of said wheelchair, up the outside of said wheelchair back and attach upwardly to said upper section of said split rear panel removably affixed by said double zipper and ring locking means;

means for protectively covering said double zipper and ring locking means;

said support and restraint device customized to human torso

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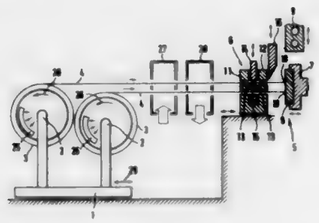
variations and to the needs of individual patients including the addition of short or long pantaloons to said leg holes.

4,807,938

PROCESS FOR PRODUCING BRISTLE ARTICLES

Georg Weihrauch, Wald-Michelbach, Fed. Rep. of Germany, assignor to Coronet-Werke Heinrich Schlerf GmbH, Wald-Michelbach, Fed. Rep. of Germany

Filed Dec. 14, 1987, Ser. No. 132,369
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1986, 3643202
Int. Cl.⁴ A46D *1/04*
U.S. Cl. 300—21 **13 Claims**



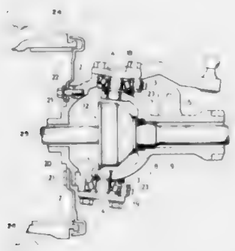
1. A process for producing bristle articles from multifilament bristle strands wound as endless material onto spools, the process comprising the steps of: feeding the multifilament bristle strands to a processing station either in endless or cut to size form, fixing the multifilament bristle strands to a bristle carrier in the processing station by applying a holding or tensile force acting thereon in timed sequence at the processing station and accompanied by the unwinding from the spools, and, at least during holding cycles acting on the processing station, applying a tensile force directed counter to the holding force and acting between the spools and the processing station on all of the bristle strands, and adjusting said tensile force in such a manner that the multifilament bristle strands are stretched between the spools and the processing station.

4,807,939

JOINT STRUCTURE FOR AXLE

Naomichi Sasa, Fujisawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Jan. 23, 1987, Ser. No. 6,140
Claims priority, application Japan, Jan. 30, 1986, 61-16690
Int. Cl.⁴ B60K *17/30*
U.S. Cl. 301—124 H **3 Claims**



1. A joint structure for an axle for a driving axle equipped with steering means, comprising:

non-rotatable tubular axles each extending in the transverse direction of a car;

spherical portions each having a spherical surface formed at the end portion of said tubular axle;

non-rotatable hollow axle casings each disposed on a wheel with respect to said tubular axle;

first and second knuckles each mounted to said axle casing and supporting rotatably by a pair of king pins fitted to said spherical portions;

annular seals each fitted to said knuckles and coming into sliding contact with said spherical surface of said spherical portions; and

constant-velocity joints each connecting an axle shaft supported rotatably in said tubular axle to a drive shaft disposed rotatably inside said axle casing, and disposed inside the space defined by the spherical portion, the knuckle and said axle casing;

wherein the outer race of said constant-velocity joint is coupled to the end of said axle shaft;

said axle casing has an annular end surface crossing substantially orthogonally the axis of said axle casing;

said knuckles have an annular end surface inclined by a predetermined angle from a surface orthogonal to the axis of said knuckles;

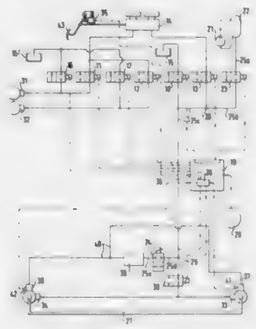
and when said annular end surface of said axle casing and said annular end surface of said knuckles are fitted in a contacting state, the axis of said first and second knuckles cross each other at the back of the axis of said tubular axle.

4,807,940

VEHICULAR HYDRAULIC BRAKE SYSTEM FOR AN AUTOMOTIVE VEHICLE WITH HYDRAULIC LEVEL ADJUSTMENT AT ONE WHEEL AXLE

Hans-Christof Klein, Hattersheim, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 14, 1988, Ser. No. 181,336
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1987, 3713640
Int. Cl.⁴ B60T *8/58*
U.S. Cl. 303—100 **5 Claims**



1. A hydraulic brake system for automotive vehicles having wheel axles with an anti-skid device which comprises closing valves connected in each brake circuit between the master cylinder and the wheel brake cylinders and opening valves connected between the return reservoir and the wheel brake cylinders, said valves being actuated by an anti-skid control circuit responsive to wheel sensors to ensure that a wheel slip occurring during braking is prevented, a hydraulic level adjustment system at one of the wheel axles comprising hydraulic lifters at the one wheel axle, at least one pressure source, a pressure line leading from the pressure source to said one axle, at least one level adjustment opening valve in the pressure line

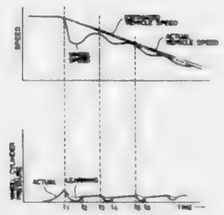
and one level adjustment closing valve at the pressure line, which valves are alternatively opened by a level adjustment control circuit in response to level control signals emitted by level sensors, wherein the brake line leading to said one axle is used as a pressure line by connecting a first level adjustment opening valve in the pressure line section extending upstream of the connection to the brake line and by connecting a second level adjustment opening valve in the pressure line section following a branch-off point of the brake line, which is arranged in the area of said one wheel axle, and wherein between the branch-off point and the wheel brake cylinders of said one wheel axle a level adjustment closing valve is connected, and wherein the two level adjustment opening valves and the level adjustment closing valve can be switched into the opening position by the level adjustment control circuit only if no braking action takes place.

4,807,941

ANTI-SKID CONTROL SYSTEM

Nobuyoshi Osugi; Mamoru Shimamoto, both of Nagoya; Yoshiki Hoashi, Kariya, and Masakazu Tago, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 15, 1987, Ser. No. 62,779
Claims priority, application Japan, Jan. 19, 1986, 61-143844
Int. Cl.⁴ B60T *8/08, 8/10*
U.S. Cl. 303—106 **4 Claims**



1. An anti-skid control system for a vehicle having a plurality of vehicle wheels, the system comprising:

(a) means for detecting rotational speeds of the respective vehicle wheels;

(b) a plurality of hydraulic actuators operative to brake respective vehicle wheels;

(c) means for calculating a sum of learning hydraulic pressures acting on the respective vehicle wheels, comprising calculating a revised hydraulic pressure derived from calculated differences between said detected vehicle wheel rotational speed and a target vehicle wheel rotational speed, and calculating a deceleration of the vehicle from the calculated sum;

(d) means for deriving a first speed of the vehicle from the detected vehicle wheel speeds;

(e) means for deriving a second speed of the vehicle from the calculated vehicle deceleration;

f) means for deriving a final speed of the vehicle as a function of the first vehicle speed and the second vehicle speed;

(g) means for controlling hydraulic brake pressures applied to respective hydraulic actuators in accordance with the detected vehicle wheel speeds and the final vehicle speed, and

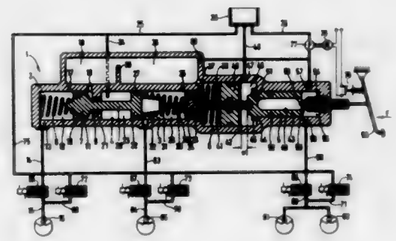
(h) means for deriving said target vehicle wheel rotational speed as a function of said final vehicle speed and a ratio of vehicle speed and vehicle wheel speed.

4,807,942

HYDRAULIC BRAKE SYSTEM WITH SLIP CONTROL

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 16, 1983, Ser. No. 495,208
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3222105
Int. Cl.⁴ B60T *8/02*
U.S. Cl. 303—114 **2 Claims**



1. A hydraulic brake system with slip control comprising:

at least one master cylinder piston disposed axially within a housing for operation of a vehicular brake operated by a brake pedal;

a hydraulic pump providing hydraulic braking medium by way of a gasket of said master cylinder piston, said gasket acting as a check valve to replace hydraulic braking medium removed from said brake during slip control;

a switch activated by said brake pedal for controlling said hydraulic pump;

a control valve cooperating with said hydraulic pump to provide a servo pressure acting upon said master cylinder piston in the direction of operation, said servo pressure being proportional to an operating force applied to said brake pedal;

inlet bores in said housing communicating with a working chamber associated with an adjacent surface of said master cylinder piston and a control pressure side of said control valve;

an open connection between said working chamber and a reservoir provided by said control valve solely when said control valve is open;

including a tappet disposed on a surface of said piston remote from said working chamber, said tappet sealingly penetrating a positioning piston disposed between said master cylinder piston and a control piston carrying a valve seat for said control valve, said tappet abutting said control piston;

the pedal-side front surface of said master cylinder piston defining a bore section of said housing in which the penetrating piston is housed and said control piston guided in another bore section of said housing; said penetrating piston bore section being larger than said control piston bore section; and

the cross-sectional area of said tappet being smaller than the cross-sectional area of said master cylinder piston which causes the master cylinder piston to be displaced in the direction of operation in response to the servo pressure acting upon the effective front surface of said master cylinder piston.

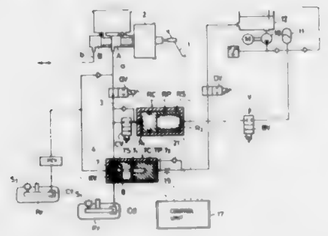
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4,807,943

BRAKE CONTROL SYSTEM FOR A MOTOR VEHICLE

Kinji Ogino, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo and Akebono Research & Development Centre Ltd., Hanyu, both of, Japan

Filed Dec. 8, 1987, Ser. No. 130,562
Claims priority, application Japan, Dec. 16, 1986, 61-297801
Int. Cl.[4] B60T *8/40, 13/70*
U.S. Cl. 303—113 **3 Claims**



1. A brake control system for use in a motor vehicle having a driving wheel and a driven wheel, comprising:
- a master cylinder generating a fluid pressure for a brake;
- a brake device having a wheel cylinder;
- a fluid passage communicating said master cylinder with said wheel cylinder;
- a gate valve provided at said fluid passage, said gate valve closing during the lock-preventing and the acceleration slip-preventing controls when said brake is operated;
- a compression cylinder device provided at said fluid passage between said gate valve and said wheel cylinder of said brake device, said compression cylinder device having a compression piston reciprocably disposed therein, said compression piston dividing an inner place of said compression cylinder device into a fluid supply chamber communicating with said fluid passage and a rear chamber;
- means provided inside said compression cylinder device for closing the fluid passage between said fluid supply chamber and said wheel cylinder of said brake device for said driven wheel in accordance with the movement of said compression piston toward said fluid supply chamber side;
- an accumulator accumulating a brake fluid pressure; and
- a valve system provided between said accumulator, a reservoir and said rear chamber of said compression cylinder device, said valve system selectively supplying the brake fluid pressure in said accumulator to said rear chamber and exhausting said brake fluid pressure in said rear chamber to said reservoir during the acceleration slip-preventing control of said driving wheel.

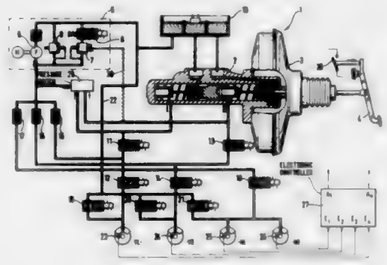
4,807,944

BRAKE SYSTEM WITH ANTI-LOCK CONTROL AND TRACTION SLIP CONTROL

Lutz Weise, Mainz, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 19, 1987, Ser. No. 64,181
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1986, 3624721
Int. Cl.[4] B60T *8/32, 8/34;* B60K *28/16*
U.S. Cl. 303—114 **3 Claims**

1. A brake system with anti-lock control and traction slip control for automotive vehicles including front and rear wheel brakes, said system comprising, in combination:
- a pedal-actuated master cylinder having first and second working chambers respectively connected to the front wheel brakes by way of first and second normally open control valves (11, 13);
- an unpressurized reservoir;
- an auxiliary pressure source having a normally open shut-off valve (8) and a pressure control valve (7) serially coupled between a suction side and a pressure side of said pressure source;
- first and second non-return valves respectively connected between said pressure side of said pressure source and said front wheels;
- a third non-return valve connected between said pressure side of said pressure source and the rear wheel brakes;
- said pressure control valve (7) having a pressure control input connected to one of said working chambers and being operative to close the serial connection of said pressure control valve (7) and said shut-off valve (8) proportionally in response to pressure in said one of said working chambers;
- a plurality of normally open pressure control valves respectively connected between said non-return valves and said wheel brakes;
- a plurality of normally closed pressure control valves respectively connected between said reservoir and said wheel brakes; and,
- said plurality of normally open valves and said plurality of normally closed valves being responsive to anti-lock control and traction slip control signals to provide brake pressure variation in response thereto.

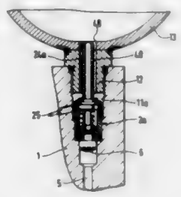


4,807,945

HYDRAULIC BRAKE SYSTEM FOR MOTOR VEHICLES

Ludwig Budecker, Frankfurt am Main; Anton David, Goetzenhain; Georg Obersteiner, Koenigstein; Ulrich Zatt, Niedernhausen, and Hans-Albrecht Gase, Bad Homburg, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 10, 1987, Ser. No. 84,256
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1986, 3627264
Int. Cl.[4] B60T *8/32, 13/12*
U.S. Cl. 303—114 **3 Claims**



2. Hydraulic motor vehicle brake system with slip control comprising a pressure accumulator, a hydraulic pump, a non-return valve and a brake power booster, the pressure outlet of the pump being connected with the pressure accumulator and

with an inlet of the brake power booster via the non-return valve, the outlet side of the non-return valve being connected with the inlet of the brake power booster via the pressure accumulator, wherein the pressure accumulator includes a connecting piece that accommodates a tube with a clearance between itself and the connecting piece, the tube communicates with one of two connecting channels, one of which connects the outlet side of the non-return valve with the pressure accumulator and the other of which connects the inlet side of the brake power booster with the pressure accumulator, the clearance between the connecting piece and the tube communicates with the other of the two connecting channels, wherein the tube is integrally formed with the non-return valve, and

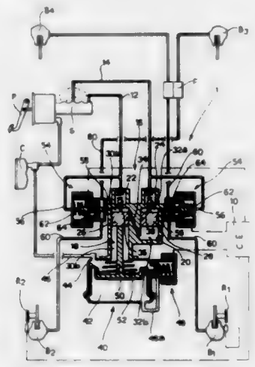
wherein the non-return valve includes a valve closure member and a valve seat formed on a valve seat member, the valve closure member being displaceably guided in a bore of the valve seat member, the valve seat member being inserted in a housing bore such that it is sealed relative to the latter, said bore being formed with the valve seat and continuing in the tube which is tightly connected with the valve seat member, the free end of the tube reaches almost up to the opening edge of the connecting piece of the pressure accumulator, the opening edge adjoining the accumulating chamber of the pressure accumulator.

4,807,946

ANTI-SKID BRAKE CONTROL SYSTEM

Antonino Bertone, S. Antonino di Saluggia, and Luigi P. Ippolito, Turin, both of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Sep. 21, 1987, Ser. No. 99,449
Claims priority, application Italy, Sep. 26, 1986, 67736 A/86
Int. Cl.[4] B60T *8/42*
U.S. Cl. 303—115 **4 Claims**



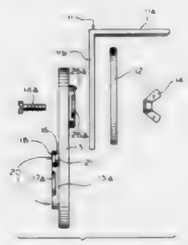
1. A device for the selective application of a fluid operating pressure generated by a source to groups of brake members associated with wheels of a vehicle, including:
- a fluid distributor member with first and second chambers, each of which is associated with a respective one-way valve for connecting it to the source and for preventing the propagation of fluid pressure from the source to the respective chamber, a piston being sealingly slidable in each chamber and dividing the chamber into a first volume, which communicates with the one-way valve associated with the respective chamber, and a second volume, the first volume of the first chamber communicating with the second volume of the second chamber; each piston carrying associated actuator means which can keep the one-way valve associated with respective chamber in an open position when the piston is in an advanced position towards the first volume of the respective chamber
- electrically operated actuator means selectively actuable to apply a force to the piston in the first chamber such as to move the piston into an advanced position towards the first volume of the first chamber
- solenoid valve means for each group of brake members, each solenoid valve means having a first intake duct connected to the source of fluid operating pressure, a second intake duct communicating with the first volume of said first and second chambers, respectively, and at least one further duct communicating with the brake members of the group; the solenoid valve means including first obturator means interposed in the first intake duct which is always opened during a normal braking operation for allowing fluid communication between the source and the brake members, and a second obturator means interposed in the second intake duct which is always closed during a normal braking operation,
- sensor means associated with at least two wheels which can detect the tendency of the wheels associated with the brake members of the group to lock and which can, upon a manifestation of this tendency to lock provide an electrical signal, and
- brake control circuit means connected to said sensor means, said electrically operated actuator means, and said solenoid valve means whereby upon receipt of said signal from a sensor means said brake control circuit means causes the deactivation of the electrically operated actuator means, with the stoppage of the force,
- the closure of the first obturator means of the respective solenoid valve means, and
- the opening of the second obturator means of the respective solenoid valve means.

4,807,947

DISPLAY CASE MOUNTING SYSTEM FOR SHELVING

Robert A. Nuzzo, Inverness, Ill., assignor to Morgan Container Corp., Chicago, Ill.

Filed Jan. 20, 1988, Ser. No. 146,254
Int. Cl.[4] A47F *5/12*
U.S. Cl. 312—140.4 **20 Claims**



1. A display case mounting system bracket assembly for shelving which comprises an angle bracket arm and a retainer plate; means for removably connecting said angle bracket arm and retainer plate in a manner to permit their rigid mounting on a shelf; a mounting plate removably carried on said angle bracket arm, said mounting plate defining projection means facing away from said arm, said projection means defining outwardly extending, wing-like extensions carried by the projection means in a manner spaced from the remainder of the mounting plate to define a slot therebetween, whereby a display container may be mounted on said mounting plate by inserting the projection means through an opening in the back wall of said display container and allowing said display container to laterally move slightly to cause a portion of said back wall to enter said slot; said mounting plate also carrying second projection means defining lateral extensions facing toward said arm and projecting through an aperture of said arm in interlocking relation therewith, said second projection means and

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aperture being respectively shaped to permit said second projection to enter the aperture in a first rotational position and to be locked together by moving to a second rotational position, whereby portions of said bracket arm occupy slots adjacent said lateral extensions to lock the mounting plate and bracket arm together.

4,807,948

CUPBOARD, MORE PARTICULARLY A BATHROOM CUPBOARD

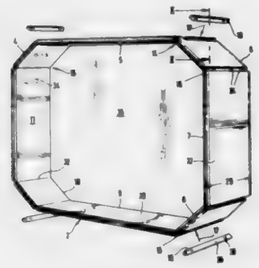
Heinz G. Baus, Wartbodenstrasse 35, CH-3626 Hünibach-Thun, Switzerland

Filed Mar. 2, 1988, Ser. No. 162,899

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1987, 3706997

Int. Cl.⁴ A47B *43/00*

U.S. Cl. 312—258 **10 Claims**



1. A cupboard frame comprising a plurality of hollow profiled rail sections fabricated from a single profile rail with inner and outer walls of substantially rigid material, said rail sections being arranged in end to end relationship to define said frame and being defined by a plurality of transverse slots cut into said rail from the outside of said frame through said outer wall to said inner wall, said inner wall constituting a continuous web integrally connecting said rail sections, wherein said web is bent at each of said slots so that adjacent rail sections are disposed at an angle to each other and terminal ends of said rail are disposed contiguous to each other to form a closed frame with said web forming a continuous inside wall of said frame and with said slots opened to form gaps which converge toward said inner wall between adjacent end faces of said rail sections;

means for joining the contiguous terminal ends of said rail to each other; and

a wedge-shaped connecting element arranged in each gap having converging side faces corresponding to the configuration of the gap, and at least one resilient locking element on each side face, said locking element being elastically deformable upon insertion of the connecting element into the gap, and wherein said locking element engages under the outer wall of the adjacent rail section without deforming or changing the position of the rail section and contacts said adjacent rail section only at said outer wall.

4,807,949

LIGHT WAVEGUIDE SWITCH

Hubert Jacobi, and Ralf R. Volkmar, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

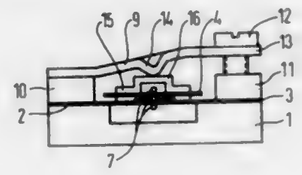
Filed Jan. 21, 1988, Ser. No. 146,737

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1987, 8701106

Int. Cl.⁴ G02B *6/36*

U.S. Cl. 350—96.2 **15 Claims**

1. In a light waveguide switch having a switch tongue composed of a flat sheet of material and being deflectible transversely relatively to its longitudinal extent, said switch including a base member forming a seating surface for the switch tongue and a carrier part, with the seating surface defining a first of two switch positions for the switch tongue and adjustable stop means secured to the base member for positioning the switch tongue in the second switch position, the improvements comprising the adjustable stop means being formed by a resilient arm extending transversely to the longitudinal extent of the switch tongue and having one end secured to the base member, a free end of the resilient arm being connected to the base member by an adjustment mechanism and said arm being provided with a projection directed towards the switch tongue, said projection engaging the switch tongue in the area adjacent a center of the tongue adjacent the free end as the tongue is in the second switch position.



4,807,950

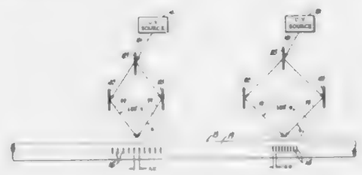
METHOD FOR IMPRESSING GRATINGS WITHIN FIBER OPTICS

William H. Glenn, Vernon; Gerald Meltz, Avon, both of Conn., and Elias Snitzer, Wellesley, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 925,512, Oct. 27, 1986, Pat. No. 4,725,110, which is a continuation of Ser. No. 640,489, Aug. 13, 1984, abandoned. This application Nov. 19, 1987, Ser. No. 122,830

Int. Cl.⁴ G02F *1/01*

U.S. Cl. 350—3.61 **5 Claims**



1. An optical fiber having a single core including at least one grating with a predetermined grating spacing permanently provided in at least one grating region of the core by exposing the core to an interference pattern resulting from mutual interference of two beams of ultraviolet radiation simultaneously directed at the fiber at such different acute angles of incidence relative to the longitudinal axis of the core that the interference pattern has fringes situated at said predetermined grating spacing from each other and propagates transversely through the core with attendant permanent change in the index of refraction of the core in correspondence with the interference pattern.

4,807,951

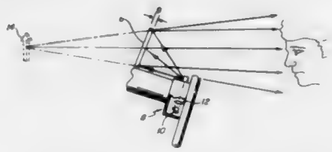
HOLOGRAPHIC THIN PANEL DISPLAY SYSTEM

Gaylord E. Moss, Marina del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 6, 1987, Ser. No. 789

Int. Cl.⁴ G03H *1/22*

U.S. Cl. 350—3.85 **20 Claims**



1. An improved minimal depth panel display for an instrument panel to be observed by the operator of a vehicle, comprising:

a hologram member of a thin dimension containing a holographic image of a predetermined panel display indicia that, when appropriately illuminated, will provide an image of the indicia at a location offset from the actual location of the hologram member whereby the operator will perceive the image as being produced by a panel having a greater offset depth than the thickness of the hologram member, wherein the hologram member includes a first film layer for supporting the holographic image of the panel display indicia and a second film layer for providing a reflective surface for redirecting light from an off axis position through the first film image to realize the image;

means for supporting the hologram member in the vehicle, and

means for illuminating the holographic image to realize the image.

4,807,952

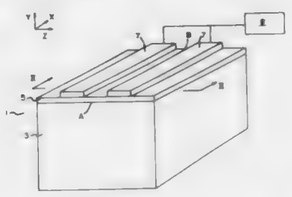
VOLTAGE-INDUCED OPTICAL WAVEGUIDE MODULATOR HAVING REDUCED INTER-ELECTRODE GAP

Nicolas A. F. Jaeger, Richmond, and Lawrence Young, Vancouver, both of Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed Oct. 22, 1986, Ser. No. 922,011

Int. Cl.⁴ G02B *5/14*

U.S. Cl. 350—96.14 **8 Claims**



1. A voltage-induced optical waveguide modulator comprising:

(a) a piece of electro-optical material which is substantially transparent to a given lightwave energy;

(b) a layer of dielectric material disposed on said electro-optical material and having a low refractive index relative to the refractive index of said electro-optical material;

(c) a pair of parallel, spaced electrodes disposed on said dielectric and arranged in side-by-side relationship in order to define a neighbouring region of said electro-optical material, whereby said region acts as a waveguide for said given lightwave energy in response to a suitable voltage being applied across said spaced electrodes, wherein said space between said electrodes is less than ten microns.

4,807,953

APPARATUS AND METHOD FOR FREQUENCY LOCKING ELECTROMAGNETIC OPTICAL SIGNALS

David W. Smith; David Cotter, both of Woodbridge, and Richard Wyatt, Martlesham Heath, all of United Kingdom, assignors to British Telecommunications public limited company, United Kingdom

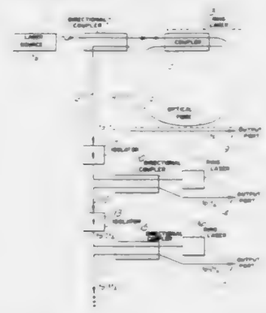
PCT No. PCT/GB86/00254, § 371 Date Jan. 5, 1987, § 102(e) Date Jan. 5, 1987, PCT Pub. No. WO86/06886, PCT Pub. Date Nov. 20, 1986

PCT Filed May 9, 1986, Ser. No. 2,694

Claims priority, application United Kingdom, May 9, 1985, 8511688

Int. Cl.⁴ G02B *6/26*; G02F *1/00*

U.S. Cl. 350—96.15 **10 Claims**



1. A method of generating a plurality of electromagnetic signals having linewidths centred on frequencies fixed relatively to a reference frequency, the method comprising

(a) injecting at least a portion of a reference frequency signal into a first waveguide ring, the characteristics of the signal and the form of the ring being such that scattering occurs to generate a first scattered signal travelling in an opposite direction to the reference frequency signal;

(b) injecting at least a portion of the first scattered signal into a second waveguide ring, the characteristics of the first scattered signal and the form of the second waveguide ring being such that scattering occurs to generate a second scattered signal travelling in an opposite direction to the first scattered signal;

(c) repeating step (b) n times with the second and successive scattered signals and respective waveguide rings; and

(d) guiding portions of at least two of the reference and scattered signals to respective output ports whereby the plurality of electromagnetic signals having frequencies fixed relatively to a reference frequency are provided at the output ports.

6. Appartus for generating a plurality of electromagnetic signals having linewidths centred on frequencies fixed relatively to a reference frequency, the apparatus comprising a reference frequency signal source; a plurality of waveguide rings connected together in series by waveguide means, the reference frequency signal source being arranged to inject at least a portion of the reference frequency signal into a leading one of the waveguide rings, the characteristics of each signal injected into a waveguide ring and the form of the waveguide ring being such that scattering occurs in each waveguide ring to generate a scattered signal travelling in an opposite direction to the injected signal, the waveguide means being arranged to pass at least a portion of the scattered signal to the next wave-

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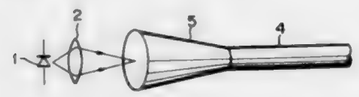
guide ring in series and to pass portions of at least two of the injected and reference signals to respective output ports.

4,807,954

OPTICAL COUPLING DEVICE

Kimiyuki Oyamada, and Yono Utsumi, both of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Feb. 11, 1986, Ser. No. 828,247
Claims priority, application Japan, Feb. 16, 1985, 60-27551
Int. Cl.⁴ G02B 6/26
U.S. Cl. 350—96.15 **12 Claims**



1. An optical coupling device to be used for light communication of purpose of the type for coupling an output light beam from a semiconductor laser to be used for light communication purpose to an optical fiber having a core of predetermined area, said optical fiber being a light communication purpose optical fiber for transmitting information, a reverse light beam generated on the downstream side of said optical fiber and propagating through said core toward said semiconductor laser, said optical coupling device comprising:

a first optical member for imaging the output light beam from said semiconductor laser; and

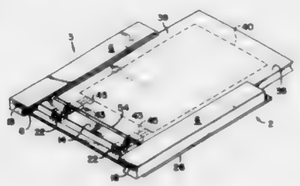
a second optical member having a core, a light receiving end face, on which the image of the light beam from said first optical member falls, an incidence angle θf of the imaged light beam from said first optical member to said light receiving end face of said second optical member being set to an incidence angle θf which does not exceed an allowable incidence angle θc at which said imaged light beam can transmit through said second optical member, so that an area of said imaged light beam from said first optical member on said end face is made as small as possible, and a coupling end face coupled to said optical fiber, wherein the area of the core of said second optical member at said coupling end face is equal to or less than the area of the core of said optical fiber, and is less than the area of the core of said second optical member at said light receiving end face.

4,807,955

OPTO-ELECTRICAL CONNECTING MEANS

John J. Ashman, Newport, Pa., and Hermanus P. J. Gilissen, Esch, Netherlands, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 6, 1987, Ser. No. 82,753
Int. Cl.⁴ G02B 6/36
U.S. Cl. 350—96.20 **17 Claims**



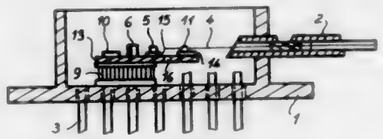
1. An electrical connector assembly comprising an electrical connector having a housing provided with electrical terminals, and a powered cassette incorporating an electrical circuit and being mateable with the housing, in a mating direction, electrically to connect said circuit to said terminals, the connector having encapsulated therein along an elongate edge thereof a first row of electro-optical interface modules each containing an active electro-optical element connected to said terminals, the cassette having encapsulated therein along an elongate edge thereof a row of second opto-electrical interface modules each containing a second active opto-electrical element connected to the circuit thereof, said active elements of said cassette each being a light emitter and those of said connector each being a light receiver, each module incorporating a light pipe having a first optical end surface located in light transmitting relationship with said active element of the module and a second optical end surface enclosed within a light transmitting alignment member said alignment members being encapsulated in said respective elongate edges and projecting therefrom, said light pipes being so arranged in said alignment members and said alignment members having smooth loosely interfitting mating faces so arranged relative to the cassette and the housing that when the cassette has been mated with the housing, said second optical end surfaces lie proximate to, and in substantial alignment, with one another so as to be in light transmitting relationship, whereby the circuit of the module is electrically connected to said terminals through the medium of said active elements and said light pipes.

4,807,956

OPTO-ELECTRONIC HEAD FOR THE COUPLING OF A SEMI-CONDUCTOR DEVICE WITH AN OPTIC FIBER, AND A METHOD TO ALIGN THIS SEMI-CONDUCTOR DEVICE WITH THIS FIBER

Alain Tourrereau, Chalette; Alain Richard, Etrechy; Daniel Dumas, and Guy Egen, both of Puiseaux, all of France, assignors to Thomson Hybrides Et Microondes, Paris, France

Filed Oct. 16, 1987, Ser. No. 109,173
Claims priority, application France, Oct. 17, 1986, 86 14421
Int. Cl.⁴ G02B 7/26
U.S. Cl. 350—96.20 **11 Claims**



1. A head for the coupling of a light emitting or receiving semi-conductor device with an optic fiber, wherein said head comprises components assembled on a monolithic ceramic substrate forming a reference plane for the optical alignment of the said fiber with the semi-conductor device, and wherein the substrate comprises a first zone dedicated to the semi-conductor device and a second zone dedicated to the optic fiber, the second zone supporting a heating electrical resistor deposited on the ceramic substrate and being separated from the first zone by a heat barrier consisting of a slit in the substrate which partially surrounds the resistor.

4,807,957

CONNECTOR FOR OPTICAL FIBERS

Michael de Jong, Conover, and Brian DiMarco, Taylorsville, both of N.C., assignors to Siecor Corporation, Hickory, N.C.

Filed Oct. 15, 1987, Ser. No. 108,760
Int. Cl.⁴ G02B 6/38
U.S. Cl. 350—96.21 **4 Claims**

1. A connector comprising:

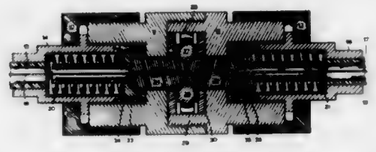
(a) first and second sleeves each having a terminal region provided with a conical outer surface tapering toward a flat end face, the sleeves placed end to end with said flat end faces in contacting relation;

(b) a housing having a recess therein holding the first and second sleeves;

(c) at least three balls engaging the conical outer surfaces of the first and second sleeves;

(d) a plurality of first springs in the housing recess, each first spring urging a ball radially inward; and,

(e) first and second coil springs urging the first and second sleeves against each other, wherein:



(i) the ratio having a numerator equal to the force exerted by a coil spring and a denominator equal to the force exerted by a first spring is equal to n $(\sin \alpha)(\cos \alpha)$, where n is the number of balls and α is the included angle of the conical outer surfaces; and

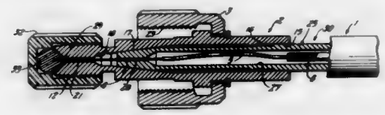
(ii) the tangent of the included angle of the conical outer surfaces is less than $\{1 \div [\mu\ (n-1)]\}$, where μ is the coefficient of static friction of the flat end faces and n is the number of balls.

4,807,958

METHOD OF INTERCONNECTING OPTICAL FIBER CABLES AND CONNECTOR THEREFOR

Colin Gunner, Bitterne, Great Britain, and Paolo Boero, Milan, Italy, assignors to Societa' Cavi Pirelli S.p.A., Milan, Italy

Filed May 13, 1987, Ser. No. 50,061
Claims priority, application Italy, May 19, 1986, 20479 A/86
Int. Cl.⁴ G02B 6/38
U.S. Cl. 350—96.21 **8 Claims**



1. Method for axially positioning the end of an optical fiber with respect to a spherical shaped lens in a conical seat of a connector, said method comprising:

before finally placing said lens in said seat, inserting in said seat a spherical body of a diameter smaller than the diameter of said lens;

putting said fiber into a position in which the end thereof is in contact with said spherical body;

securing said fiber in said position;

removing said spherical body from said seat and placing said lens in said seat; and

securing said lens in said seat.

4,807,959

METHOD OF SPLICING FIBERS

George E. Berkey, Pine City, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 7, 1987, Ser. No. 82,681
Int. Cl.⁴ G02B 6/38
U.S. Cl. 350—96.21 **3 Claims**

1. A method of splicing fibers comprising the steps of

providing a hollow glass splice member having a longitudinal bore,

said splice member defining a tapered, funnel-like aperture in each end thereof communicating with said longitudinal bore,

providing a pair of optical fibers comprising a core and cladding, and having an exterior protective resin coating thereon,

removing said exterior protective resin coating from the ends of said fibers,

inserting the uncoated end of one of said fibers into said longitudinal bore of said splice member from one end thereof to a depth such that the resin coated portion of the fiber extends into and is in part disposed within said tapered, funnel-like aperture in said one end of said splice member,



inserting the uncoated end of the other fiber into said longitudinal bore of said splice member from the other end thereof to a depth such that the resin coated portion of said other fiber extends into and is in part disposed within said tapered, funnel-like aperture in said other end of said splice member while the ends of said fibers simultaneously abut each other intermediate the ends of said splice member,

applying a quantity of adhesive to and abut each end of said splice member and within each said tapered, funnel-like aperture thereby surrounding each respective fiber including a resin coated portion of each said fiber so as to affix each said fiber to said splice member, and

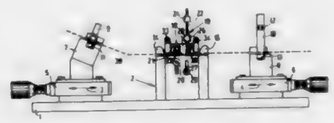
curing said adhesive.

4,807,960

DEVICE FOR PAIR-WISE COUPLING THE ENDS OF TWO GROUPS OF OPTICAL FIBERS

Theodor Oppenlander, Cologne, Fed. Rep. of Germany, assignor to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 40,464, Apr. 20, 1987. This application Jan. 29, 1988, Ser. No. 212,813
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1986, 3613345
Int. Cl.⁴ G02B 6/40
U.S. Cl. 350—96.22 **8 Claims**



5. A coupling device for first and second groups of optical fibers comprising:

first and second clamping devices, said first and second clamping devices being displaceable along the longitudinal axis of the optical fibers to permit the positioning of the end faces of said first group of optical fibers against the end faces of said second group of optical fibers;

an alignment block disposed between said first and second clamping devices, said alignment block including first and second guide grooves for receiving the individual fibers of said first and second groups of optical fibers;

first and second pressure members mounted to said alignment block for exerting pressure on said first and second groups of optical fibers, each of said pressure members including magnetic means for magnetic engagement with displaceable magnetic means disposed on said alignment

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block, said displaceable magnetic means being displaceable towards said magnetic means of said pressure member to increase the pressure on said optical fibers when said magnetic means on said alignment block are displaced towards said magnetic means on said pressure members.

4,807,961

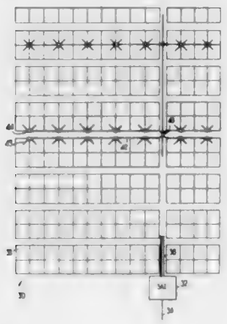
LOCAL AREA NETWORK SYSTEM

Francis J. Mullin, Chamblee; William C. Reed, Lilburn, and Christian Scholly, Atlanta, all of Ga., assignors to American Telephone and Telegraph Company, Murray Hill and AT&T Bell Laboratories, AT&T Technologies, Inc., Berkeley Heights, both of, N.J.

Filed Apr. 8, 1987, Ser. No. 35,953

Int. Cl.[4] G02B *6/00, 6/28, 6/44;* **G02F** *1/00*

U.S. Cl. 350—96.23 **15 Claims**



1. A communications distribution system, which comprises:
a feeder distribution interface which is served by a feeder cable;
at least one group interface which is adapted to serve a plurality of customer premises;
a backbone cable which is adapted to provide communications service for a plurality of customer premises from said feeder distribution interface for said group interface; and
a distribution service cable which is provided for and associated with each customer premises of said plurality of customer premises, each said distribution service cable being connected at said group interface to said backbone cable and extending from said group interface to a single customer premises of said plurality of customer premises.

4,807,962

OPTICAL FIBER CABLE HAVING FLUTED STRENGTH MEMBER CORE

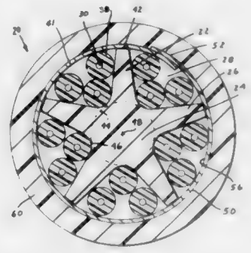
Candido J. Arroyo, Lithonia, and Benjamin C. Ellis, Snellville, both of Ga., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill and AT&T Technologies, Inc., Berkeley Heights, both of, N.J.

Continuation-in-part of Ser. No. 845,920, Mar. 6, 1986. This application Jun. 17, 1987, Ser. No. 65,689

Int. Cl.[4] G02B *6/44*

U.S. Cl. 350—96.23 **16 Claims**

1. An optical fiber cable, which comprises:
a plurality of optical fibers;
a fluted member which provides suitable tensile and compressive strength for the cable and which comprises a plurality of ribs extending radially from a central portion of said fluted member to provide a plurality of grooves each of which is disposed between two adjacent ribs with said optical fibers being disposed in said grooves, the ratio of the diameter of a circle that passes through outer ends of said ribs to the diameter of a circle that passes through the inverts of the grooves not exceeding a predetermined value which is sufficiently low to provide stability for said ribs and which is sufficiently high to cooperate with the spacing between adjacent ribs to allow a plurality of said optical fibers to be disposed in each groove and to be capable of longitudinal and transverse movement therein, further, the width of each rib as measured along the periphery of the circle that passes through the inverts of the



grooves being substantially greater than the width of said each rib as measured along the periphery of the circle that passes through the outer ends of the ribs and being sufficient in value to strengthen and prevent rupture of each rib at its juncture with said central portion of said fluted member; and
a sheath system which encloses said fluted member.

4,807,963

LASER EMITTING DEVICE

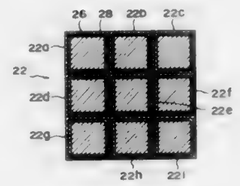
Keiji Iwasaki, Utsunomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 865,480, May 21, 1986, abandoned. This application Nov. 18, 1987, Ser. No. 124,416

Claims priority, application Japan, May 22, 1985, 60-109563

Int. Cl.[4] G02B *6/04*

U.S. Cl. 350—96.24 **9 Claims**



1. A laser emitting device for treatment of a human nevus comprising:
a light source for irradiating a laser beam;
a light transmitter bundle including a plurality of transparent prism-shaped transmitters for uniformly distributing an output energy of said light source onto a nevus, each of said transmitters having a light incident terminal and a light emitting terminal at respective longitudinal ends thereof and metallic reflecting films formed on the sides of said transmitters, and said light transmitter bundle constructed with said metallic reflecting films on adjacent sides of each transmitter being substantially contiguous and by arranging said light incident terminals and said light emitting terminals of the respective transmitters on the same surfaces, respectively; and
laser beam scanning means for scanning said light incident terminals with a laser beam by sequentially emitting said laser beam to said light incident terminals of said transmitter.

4,807,964

PLASTIC OPTICAL FIBER

Edward J. Sare, Clinton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 12, 1987, Ser. No. 60,795

Int. Cl.[4] G02B *6/00*

U.S. Cl. 350—96.34 **13 Claims**

1. A light transmitting plastic optical fiber having a vinylidene chloride polymer as the core component, said vinylidene chloride polymer having a copolymer of vinylidene chloride containing at least 60 mole percent of vinylidene chloride.

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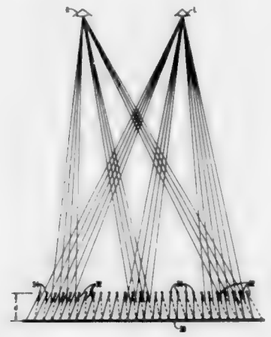
APPARATUS FOR THREE-DIMENSIONAL VIEWING

Reza G. Garakani, 6025 145 Pl. SE., Bellevue, Wash. 98006

Filed May 26, 1987, Ser. No. 54,458

Int. Cl.[4] G02B *27/22*

U.S. Cl. 350—131 **6 Claims**



1. A system for stereoscopic viewing, said system comprising:
means for presenting a first image and a second image, said images differing by a predetermined stereoscopic parallax; and
a plurality of louvers having a width in the range from about 0.5 to 5 inches for isolating the images from each other along predetermined sight lines corresponding to the positions of a viewer's eyes when the viewer is located within a predetermined area.

4,807,966

SIGHTING APPARATUS

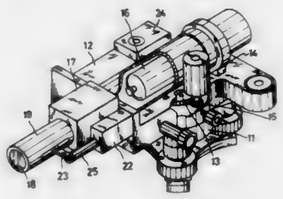
Yasuyuki Nakayama, and Tomoya Sada, both of Chofu, Japan, assignors to Mizoguchi Manufacturing Co., Ltd., Aichi, Japan

Filed Dec. 15, 1987, Ser. No. 133,276

Claims priority, application Japan, Dec. 18, 1986, 61-195121

Int. Cl.[4] G02B *7/08*

U.S. Cl. 350—255 **1 Claim**



1. A sighting apparatus comprising a table supported rotatably on a base, a laser oscillator and an optical system mounted on the table, the table being rotated by remote control, a movement conversion mechanism for converting a rotational movement to a linear movement, a drive unit including a motor operated by remote control and a reduction gear mechanism for transmitting the rotation of the motor to the movement conversion mechanism, the movement conversion mechanism and drive unit being provided on the table, the movement conversion mechanism being connected to a movable mirror cylinder for holding a focusing lens constituting part of the optical system to thereby apply a linear movement to the movable mirror cylinder, the movement conversion mechanism including a ball screw mechanism.

4,807,967

PASSIVE DISPLAY DEVICE

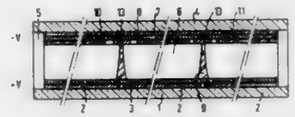
Hendrik Veenvliet; Antonius G. H. Verhulst, and Antonius H. M. Raaymakers, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1987, Ser. No. 1,308

Claims priority, application Netherlands, Jan. 9, 1986, 8600027; Mar. 19, 1986, 8600697

Int. Cl.[4] G02B *26/02;* **G09G** *3/16*

U.S. Cl. 350—269 **7 Claims**



1. A passive display device comprising
first and second separated substrates with at least said first substrate being transparent;
a plurality of display elements disposed between said first and second substrates for controlling reflection or transmission of light,
wherein each of said plurality of display elements include at least one fixed electrode connected to at least said second of said substrates, a movable electrode being movable between said substrates, said movable electrode having a plurality of apertures, and resilient elements connecting said movable electrode to said second of said substrates; and
polymeric supports disposed with one end on said second of said substrates, said resilient elements being supported at a second end of said polymeric supports, said second end of said polymeric supports extending nearly to said first substrate, wherein said polymeric supports are one of polyacrylate synthetic resin, polymethacrylate synthetic resin, polycarbonate synthetic resin, or a polyimide synthetic resin, and
wherein said resilient supports enable said movable electrode of each of said plurality of display elements to be near one of said first substrate or said second substrate.

4,807,968

POLYMER BLENDS EXHIBITING NONLINEAR OPTICAL RESPONSE

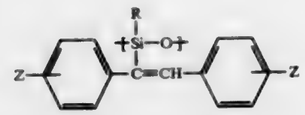
Thomas M. Leslie, Clinton Township, Hunterdon County, N.J., assignor to Hoechst Celanese Corp., Somerville, N.J.

Filed Oct. 27, 1986, Ser. No. 923,507

Int. Cl.[4] C08F *283/00;* **G02B** *5/20*

U.S. Cl. 350—311 **35 Claims**

1. A composition which is a blend of components comprising:
(a) a polysiloxane component which is characterized by a recurring structural unit corresponding to the formula:



where R is an inorganic substituent or an organic substituent containing between about 1–12 carbon atoms; Z is a substituent selected from hydrogen and electron-donating and electron-withdrawing substituents; and the polysiloxane contains between about 2–2000 silicon atoms; and

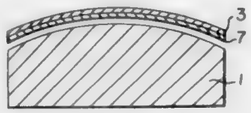
(b) a liquid crystalline component.

4,807,969

METHOD OF MANUFACTURING A REFLECTOR OF A FIBER-REINFORCED PLASTIC MATERIAL

Hiroyo Shimodaira, and Toshio Ono, both of Sagamihara, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1987, Ser. No. 44,210
Int. Cl.[4] G02B *5/10*
U.S. Cl. 350—320 **4 Claims**



1. A method of manufacturing a reflector of a fiber-reinforced plastic material, comprising:

(a) placing a thin glass plate on a forming mold made of a material having a small linear expansion coefficient, having a predetermined shape to have said glass plate take a curved-shape and finished with a given accuracy;

(b) placing on said glass plate a semi-cured product formed by impregnating a reinforcing fabric material with a resin;

(c) compressing and heating a laminated body of said glass plate and said semi-cured product on said forming mold;

(d) removing said laminated body having a curved-shape; and,

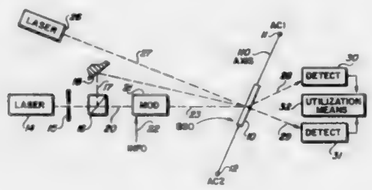
(e) forming a reflecting film on the front surface of said glass plate.

4,807,970

HOLOGRAMS IN PHOTOREFRACTIVE MATERIALS

Roger R. Dube, Carmel, N.Y., and Shingshwang Yao, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1987, Ser. No. 124,215
Int. Cl.[4] G03H *1/02, 1/04*
U.S. Cl. 350—3.64 **10 Claims**



1. In a method of optically activating a photorefractive crystal medium having a 110 axis;

the steps of:

subjecting the medium to an alternating polarity bias electric field along its 110 axis having a frequency of not greater than about one-hundred Hertz;

shining two beams of monochromatic light on the medium so that impingement of the two beams on the medium is transverse to the 110 axis;

maintaining the intensities of the two light beams to be within a ratio of less than 1000 to 1 in relative light intensities;

modulating one of the light beam intensities with information to be inserted into the medium in volume holographic form by interaction of the two light beams within the medium; and

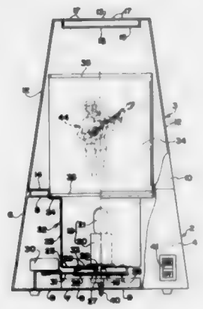
maintaining the bias electric field such that diffraction efficiency is maximized at the bias frequency and said intensity ratio.

4,807,971

OPTICAL DECORATIVE APPARATUS

Hideo Nurano, 2352-2, Horisouchi, Hachiozi-shi, Tokyo, Japan

Filed Nov. 12, 1987, Ser. No. 118,956
Claims priority, application Japan, Nov. 28, 1986, 61-184405[U]; May 12, 1987, 62-70472[U]
Int. Cl.[4] G03H *1/22*
U.S. Cl. 350—13.6 **6 Claims**



1. An optical decorative apparatus, comprising:

a casing constructed dividably into a lower casing part and a substantially transparent upper casing part;

a light equipment,

a hollow cylinder-shaped rotary stand supported rotatably, which surrounds the light equipment, and

a motor for rotating the rotary stand,

said light equipment, rotary stand and motor being arranged inside the lower casing part;

a drum-shaped hologram film fitted into the upper part of the rotary stand;

wherein the upper casing part is releasably coupled to the lower casing part so as to enclose the drum-shaped hologram film.

4,807,972

TEMPERATURE COMPENSATING DRIVER FOR A LIQUID CRYSTAL DISPLAY

Robert A. Klosterboer, Linden, Mich., assignor to American Microsystems, Inc., Pocatello, Id.

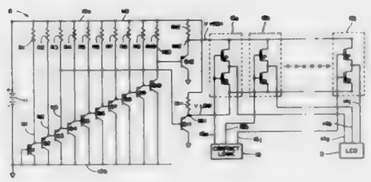
Filed Jan. 21, 1986, Ser. No. 820,853
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—331 T **11 Claims**

1. A circuit for driving an LCD comprising:

first and second leads for receiving a voltage from a voltage source;

a plurality of forward-biased diode connected means coupled in series between said first and second leads;

a third lead coupled to a first node located at the electrical connection between two of said diode connected means within said plurality of diode connected means, said third lead providing a first voltage for driving said LCD; and



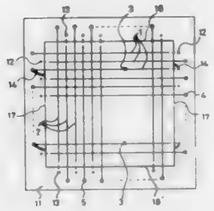
a fourth lead coupled to a second node located at the electrical connection between another two of said diode connected means within said plurality of diode connected means, said fourth lead providing a second voltage for driving said LCD.

4,807,973

MATRIX ADDRESS DISPLAY APPARATUS HAVING CONDUCTIVE LINES AND PADS FOR REPAIRING DEFECTS

Kiyohiro Kawasaki, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 19, 1987, Ser. No. 63,627
Claims priority, application Japan, Jun. 20, 1986, 61-145237
Int. Cl.[4] G02F *1/13*; G09G *3/36*; G01C *11/06*
U.S. Cl. 350—332 **8 Claims**



1. A matrix address display apparatus comprising:

a pixel part having a plurality of display elements disposed in a matrix;

scanning lines connected to said pixel part;

scanning electrodes connected to said scanning lines;

signal lines connected to said pixel part;

signal electrodes connected to said signal lines;

a conductive layer insulated from said scanning lines and said signal lines and disposed as a closed loop around said pixel part; and

connecting conductive parts, which are connected to said scanning line or said signal line, for selectively connecting said conductive layer disposed near said scanning electrodes and said signal electrodes.

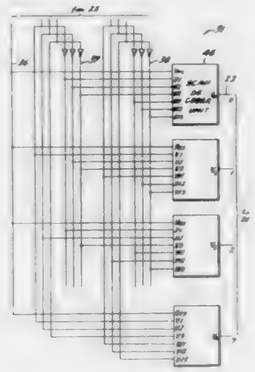
4,807,974

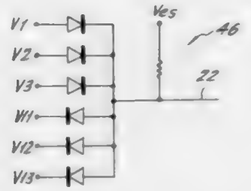
LIQUID CRYSTAL DISPLAY HAVING A DECODER BETWEEN A DRIVER AND SCAN ELECTRODES

Yoshihiko Hirai, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 26, 1986, Ser. No. 935,246
Claims priority, application Japan, Nov. 27, 1985, 60-267714
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—332 **4 Claims**

1. A matrix-type liquid crystal display device comprising a driver, a first and a second substrate, a liquid crystal layer between said substrates, a plurality of scan electrodes between said liquid crystal layer and said first substrate, a plurality of data electrodes between said liquid crystal layer and a preselected one of said substrates, and a scan decoder between said substrates and on said first substrate in a side-by-side relation to said liquid crystal layer, each of said scan electrodes and each of said data electrodes having a crossover which defines a respective picture element in said liquid crystal layer; said scan decoder comprising a plurality of bipolar coincidence scan circuit units having a plurality of scan input terminals connected to said driver and a plurality of scan output terminals





connected to the respective scan electrodes, said bipolar coincidence scan circuit units each comprising a first plurality of active circuit elements connected in a first direction to predetermined ones of said scan input terminals and to one of said scan output terminals and a second plurality of active circuit elements connected in a second direction to preselected ones of said scan input terminals and to one of said scan output terminals and said first and second plurality of active circuits elements commonly connected to said one of said scan output terminals.

4,807,975

IMAGE FORMING SYSTEM HAVING UNIFORM ILLUMINATION FLUX FOR LIQUID CRYSTAL IMAGE MEANS

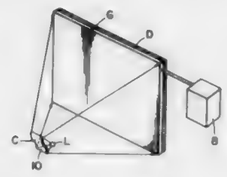
Masataka Negishi, 29-19, Daito 2-chome, Urawa-shi, Saitama-ken, Japan

PCT No. PCT/JP85/00210, § 371 Date Dec. 16, 1986, § 102(e) Date Dec. 16, 1986, PCT Pub. No. WO86/06237, PCT Pub. Date Oct. 23, 1986
PCT Filed Apr. 17, 1985, Ser. No. 2,654
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—345 **10 Claims**

1. An image forming system comprising: display surface means, a light source disposed in spaced apart relationship with said display surface means, light control means disposed in the light path to control light rays from said light source in such a

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manner as to cause the light rays to be transmitted with a uniform distribution of luminous flux density throughout the cross section of the light rays to said display surface means, and image generation means interposed between said light control means and said display surface means and having elemental



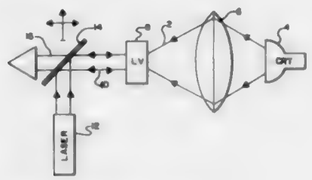
portions for varying the quantity of light to be transmitted therethrough, said elemental portions corresponding to respective picture elements of an image to be formed on the display surface means, each elemental portion controlling the quantity of light to be transmitted independently of each other in response to a signal.

4,807,976

LIGHT VALVE SYSTEM AND METHOD WITH PULSED READOUT

Michael J. Little, Woodland Hills; Uzi Efron, Los Angeles; Paul O. Braatz, Canoga Park; Robert N. Schwartz, Westlake Village; Yuri Owechko, Newbury Park, and Murray S. Welkowsky, Chatsworth, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 1, 1987, Ser. No. 33,319
Int. Cl.⁴ G02F *1/135, 1/01*
U.S. Cl. 350—355 **30 Claims**



1. A light valve system, comprising:

a light valve adapted to spatially modulate a readout beam in accordance with an applied input signal, the light valve including a layer of semiconductor material which produces a spatial voltage pattern in response to the input signal, the semiconductor material being capable of operation in alternating accumulation and depletion mode, an oxide layer adjacent aid semiconductor material, a reflective mirror adjacent said oxide layer for reflecting the readout beam, and a layer of electro-optic material adjacent said reflective mirror, the electro-optic material for receiving the voltage pattern from the semiconductor layer and spatially modulating the readout beam in response to said voltage pattern,

means for applying an alternating voltage signal to operate the light valve with the semiconductor material in alternating repletion and accumulation modes, and

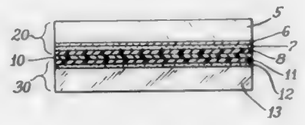
means for interrogating the light valve with a pulsed readout beam applied in synchronization with the applied alternating voltage so that the light valve is interrogated substantially only during accumulation modes, thereby mitigating the effect of readout beam leakage into the semiconductor material.

4,807,977

MULTI-COLOR ELECTROCHROMIC CELLS HAVING SOLID POLYMER ELECTROLYTES AND A DISTINCT ELECTROCHROMIC LAYER

Anthony F. Sammells, Naperville, Ill., assignor to Eltron Research, Inc., Aurora, Ill.

Filed Jun. 26, 1986, Ser. No. 879,027
The portion of the term of this patent subsequent to Jun. 14, 2005, has been disclaimed.
Int. Cl.⁴ G02F *1/01*
U.S. Cl. 350—357 **12 Claims**



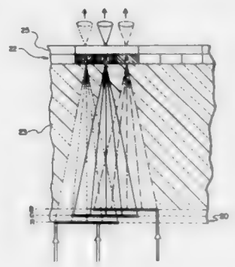
1. A solid-state multi-color electrochromic display cell comprising an electrochromic half cell, a counter half cell, and a separator therebetween, said electrochromic half cell comprising a display electrode comprising an electronically conducting film on a substantially transparent plate and a distinct electrochromic layer consisting essentially of an organic electrochromic chemical having one side immediately adjacent said electronically conducting film and further comprising a solid electrolyte layer comprising an ionically conducting polymer and a supporting electrolyte between said electrochromic layer and said separator, said separator comprising an insoluble cation conducting membrane and said counter half cell comprising an ionically conducting polymer layer with supporting electrolyte immediately adjacent said separator, a redox electroactive chemical and a counter electrode.

4,807,978

COLOR DISPLAY DEVICE AND METHOD USING HOLOGRAPHIC LENSES

Jan Grinberg, Los Angeles, and Ronald T. Smith, Redondo Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 10, 1987, Ser. No. 96,093
Int. Cl.⁴ G02B *5/32*; G02F *1/13*; G03H *1/18*; H04N *9/12*
U.S. Cl. 350—3.73 **30 Claims**



9. A lens structure for spatially separating white light into component radiation wavebands centered on a plurality of discrete wavelengths, comprising:

a plurality of area holographic lenses, each lens being responsive to a radiation waveband centered about a respective one of said discrete wavelengths, and

an optically transmissive substrate means, the holographic lens for each waveband being disposed on the substrate

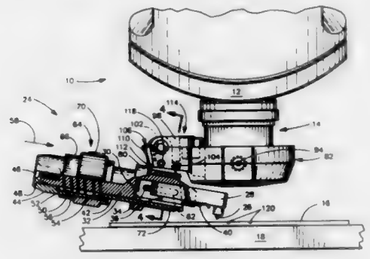
means and offset in staggered order from the lenses for the other wavebands such that the total of the incremental offsets for the successive lenses in a full set of the discrete wavelengths approximately equals the dimension of each lens in the offset direction.

4,807,979

MICROSCOPE SLIDE MARKING DEVICE

Geno Saccomanno, 778 26 ½ Rd., Grand Junction, Colo. 81501, and Paul O. Cary, 580 Stanford Way, Grand Junction, Colo. 81504

Continuation-in-part of Ser. No. 821,953, Jan. 24, 1986, Pat. No. 4,690,521. This application May 6, 1987, Ser. No. 46,575
The portion of the term of this patent subsequent to Sep. 1, 2004, has been disclaimed.
Int. Cl.⁴ G02B *7/02, 15/02*; G01B *5/14*; B23B *49/02*
U.S. Cl. 350—520 **36 Claims**



1. A reference marking device for identifying objects of interest on a microscope slide while observing the objects of interest through the microscope, said device comprising:

means for selectively placing a reference mark on said microscope slide;

means for mounting said marking means to the microscope; and

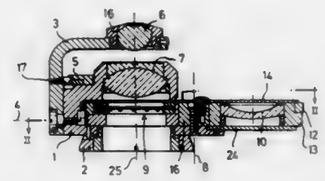
means for rotating said marking means about a substantially horizontal axis whereby said reference mark may be placed on said slide at a variable, preselected position.

4,807,980

UNIVERSAL CONDENSER HAVING ONLY A SINGLE TURRET FOR A MICROSCOPE

Peter Dietrich, Oberkochen, and Hanns J. Bendele, Heidenheim, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Jan. 11, 1988, Ser. No. 142,524
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1987, 3700965
Int. Cl.⁴ G02B *21/14, 21/06*
U.S. Cl. 350—526 **6 Claims**



1. A universal condenser for a microscope defining an illuminating beam path, the universal condenser comprising:

a mounting structure defining an optical axis;

interface means formed on said mounting structure to permit attachment of the universal condenser to the microscope in such a manner that said optical axis is coincident with said beam path;

only a single turret rotatably mounted on said mounting structure for rotation about a rotational axis;

a first member consisting only of a controllable aperture-iris diaphragm member;

an auxiliary lens member for illuminating a large object field corresponding to an objective contained in the microscope;

at least one contrasting member;

said single turret having a plurality of switching positions formed thereon for receiving respective ones of said members therein;

said switching positions being arranged on said single turret so as to be spaced from each other an angular distance to ensure that only one of said members is switchable into the beam path at any given time when said turret is rotated about said rotational axis thereof while the other ones of said members are held out of said beam path;

a front lens; and,

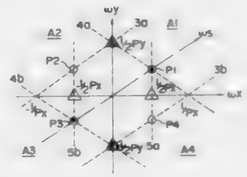
mounting means disposed on said mounting structure for holding said front lens in said beam path.

4,807,981

SPATIAL FREQUENCY FILTER

Yoshinori Takizawa, Tokyo, and Takahiro Nakamura, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 26, 1985, Ser. No. 727,914
Claims priority, application Japan, Apr. 28, 1984, 59-86584; May 17, 1984, 59-99612
Int. Cl.⁴ G02B *5/30, 27/28*
U.S. Cl. 350—404 **30 Claims**



1. A spatial frequency filter having a two-dimensional spatial frequency plane whose first quadrant includes a first prescribed point, whose second quadrant includes a second prescribed point, whose third quadrant includes a third prescribed point and whose fourth quadrant includes a fourth prescribed point, said two-dimensional spatial frequency plane having a vertical axis and a horizontal axis, said spatial frequency filter comprising:

primary filter means for providing a first trap line passing through said first prescribed point and a second trap line passing through said third prescribed point;

secondary filter means for providing a third trap line passing through said second prescribed point and a fourth trap line passing through said fourth prescribed point; and

tertiary filter means for providing a fifth trap line passing through said first and fourth prescribed points and a sixth trap line passing through said second and third prescribed points,

wherein each of said first to fourth trap lines crosses over said vertical and horizontal axes so as to form a rhombic trap pattern, and a modulation transfer function of the image sensor becomes substantially zero on the respective trap lines.

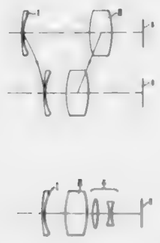
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4,807,982

LENS SYSTEM OF VARIABLE MAGNIFICATION RANGE AND HAVING A SUPPLEMENTARY LENS UNIT

Sadahiko Tsuji, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1987, Ser. No. 42,024
Claims priority, application Japan, May 10, 1986, 61-107443; May 10, 1986, 61-107444; May 10, 1986, 61-107445
Int. Cl.⁴ G02B *15/02, 15/177*
U.S. Cl. 350—422 12 Claims



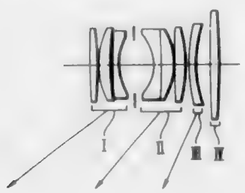
1. A zoom lens comprising, from front to rear,
(a) a first lens unit having a negative refractive power;
(b) a second lens unit having a positive refractive power, the zooming from the wide angle side to the telephoto side being achieved by moving at least said second lens unit forward; and
(c) a supplementary lens unit to be inserted in the image side space produced by the movement of said second lens unit.

4,807,983

PHOTOGRAPHIC LENS OF EXTENDED FOCUSING RANGE WITH IMPROVED STABILITY OF PICTURE QUALITY

Takashi Matsushita, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1987, Ser. No. 7,621
Claims priority, application Japan, Jan. 30, 1986, 61-018929; Jan. 30, 1986, 61-018932
Int. Cl.⁴ G02B *9/64*
U.S. Cl. 350—463 17 Claims



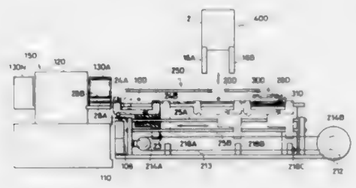
1. A photographic lens comprising, from front to rear, a first lens unit of positive refractive power, a second lens unit of positive refractive power, a third lens unit and a fourth lens unit, one of said third and said fourth lens units being of positive refractive power, and the other being of negative refractive power, wherein when focusing is performed from an infinitely distant object to a nearby object, said first, said second and said third lens units are axially moved forward in such relation that any of the three axial separations between the successive two lens units increases, while said fourth lens unit being held stationary.

4,807,984

APPARATUS AND METHOD FOR SPECIMEN INSPECTION

Masaaki Kurimura, Naka; Ryohei Yabe, and Isao Shindo, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 12, 1987, Ser. No. 13,799
Claims priority, application Japan, Feb. 18, 1986, 61-33371
Int. Cl.⁴ G02B *21/24*
U.S. Cl. 350—529 7 Claims



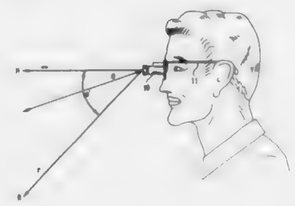
1. In a specimen inspection apparatus provided with:
a movable holder means (440) for holding a specimen by vacuum adsorption;
a microscope (400, 26, 27) for observing therethrough the specimen held by said holder means;
a means (250) for carrying the specimen to be delivered to said holder means so as to place it in a specimen replacing position (200);
the improvement comprising;
specimen holding arm means (16,) provided on said holder means, said specimen holding arm means having a vacuum adsorption surface (50) capable of coming in contact with a surface of the specimen;
means (17, 19, 21) for pushing said specimen elastically toward said vacuum adsorption surface while the specimen is observed through said microscope.

4,807,985

AUTOMATIC FOCUSING SYSTEM FOR TELESCOPES

Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., Ronkonkoma, N.Y.

Filed Feb. 17, 1988, Ser. No. 156,702
Int. Cl.⁴ G02C *1/00, 7/08;* G02B *7/02*
U.S. Cl. 351—158 7 Claims



1. An automatic focusing system for a terrestrial telescope for aiding an eye of a wearer, comprising:
a frame worn on the head of the wearer;
a fixed frame part mounted to the frame in viewing relationship to the wearer's eye;
a movable lens part carrying the telescopic lens which is slidably movable along a telescope axis relative to the fixed frame part;
a member on the movable lens part which moves together therewith so as to define a lens position of the movable lens part along the telescope axis;

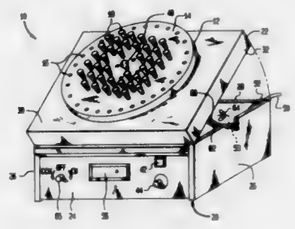
a sensor mounted to the frame for detecting an inclination angle of the head of the wearer; and
moving means including a motor responsive to the sensor for moving the movable lens part to a lens position relative to the fixed frame part corresponding to the inclination angle detected by the sensor.

4,807,986

VISION TESTING AND/OR TRAINING APPARATUS AND METHOD

Jacob S. Wasserman, 8 Dike Dr., Wesley Hills, N.Y. 10952

Filed Oct. 13, 1987, Ser. No. 107,548
Int. Cl.⁴ A61B *3/00*
U.S. Cl. 351—200 12 Claims



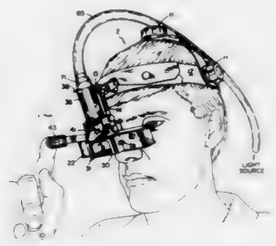
1. A vision testing and training apparatus, comprising a turntable, including a plurality of receiving means for receiving a plurality of peg inserts such that each receiving means receives one peg insert, where some of said pegs are of one color and some of said pegs are of a different color and rotating means for rotating said turntable at various different speeds, whereby an individual can test and/or improve his or her eye/hand coordination by inserting peg inserts into or removing peg inserts from said receiving means of said turntable as said turntable rotates, means coupled to said turntable for varying the angle of inclination of said turntable with respect to the horizontal so that said turn table can be infinitely adjusted between the horizontal and vertical position to assume any given angle of inclination between 0° and 90°.

4,807,987

DEEP CAVITY BINOCULAR LOUPE

David E. Bastable, 135 Walnut Ave., North Hampton, N.H. 03862, and Trevor I. Goldberg, 3233 Landerwood Dr., Charlotte, N.C. 28210

Filed Oct. 27, 1986, Ser. No. 923,481
Int. Cl.⁴ A61B *3/10*
U.S. Cl. 351—205 4 Claims



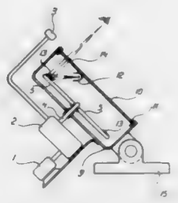
1. A binocular instrument for use by otolarynogologists comprising:
a binocular viewing body, having a front, back, and top, with eyepieces, laterally adjustable for individual interpupillary distances, mounted on the back of said viewing body, and with a mirror system within the viewing body in front of the eyepieces for reducing the pupillary parallax angle extending from an observed object in front of the viewing body to the left and right pupils of an observer from several degrees to one degree;
detachable lenses for magnifying the observed object, the lenses being mounted on each eyepiece and on the front of the viewing body between the mirror system and the observed object;
a lens and mirror system mounted on top of said viewing body for projecting a spot of light from a fiber optic cable to the observed object, said system containing an externally adjustable iris for varying the radial size of said spot of light, and an external switch for changing the mirror portion of said system to one of two present positions, one of which is for direct lighted viewing of the observed object with (optic) use of the binocular viewing body and the other of which is for direct lighted viewing of the observed object without (nonoptic) use of the binocular viewing body, and wherein the mirror portion of said lens and mirror system includes a flat mirror with two surfaces, the front surface of which is reflective and intercepts light from said fiber optics cable and reflects it to the observed object, and the back surface of which is attached to a radially rotatable horizontal bar attached to an external lever, said back surface also having a rod protruding therefrom to a point between two wedge-shaped blocks positioned in a vertical plane, whereby the optic lighted viewing position is established when said rod rests on the lower of said blocks and the nonoptic lighted viewing position is established when said rod rests against the upper of said blocks;
a headband with adjustment means for individual head sizes; and
adjustable brackets connecting the viewing body and lens and mirror system to the headband for positioning the instrument in front of the observer's eyes.

4,807,988

METHOD AND DEVICE FOR EVALUATING VISION

Iosif Bausberg, 69 Bay 29 St., Brooklyn, N.Y. 11214

Filed Dec. 29, 1986, Ser. No. 946,720
Int. Cl.⁴ A61B *3/14*
U.S. Cl. 351—210 3 Claims



1. A method of evaluating vision, comprising the steps of
providing a carrier with a plurality of symbols spaced from one another;
moving said carrier with said symbols in a predetermined direction while a person to be evaluated is observing the symbols;
adjusting a speed of the movement to such a speed at which the symbols moving with the carriers appear to a person to be evaluated during his observation of the symbols, as stationary periodically appearing symbols; and
determining an average frequency of jump-like eye movements of the person during his observation of the symbols in correspondence with an average frequency of the ap-

pearance, and a speed of jump-like eye movements of the person during his observation of the symbols in correspondence with the adjusted speed.

4,807,989

SURGICAL MICROSCOPE SYSTEM

Takashi Nagano, Hachioji; Toshiyuki Tsunoda, Sagamihara, and Takashi Fukaya, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Jan. 9, 1987, Ser. No. 1,585
Claims priority, application Japan, Jan. 14, 1986, 61-5259; Feb. 28, 1986, 61-41373
Int. Cl.⁴ A61B *3/10*
U.S. Cl. 351—212 **16 Claims**



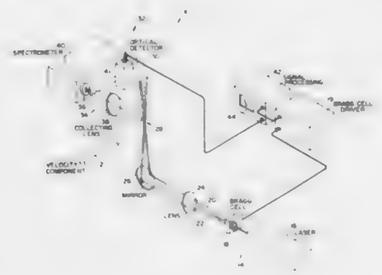
1. A surgical microscope system comprising:
an illumination light source for observation;
an observation optical system including an objective and an eyepiece;
an index projecting optical system including an index which is removably inserted in an illumination light beam emitted from said illumination light source and transmitted through the objective of said observation optical system;
said index including a slit plate disposed apart from the objective and removably mounted in said observation optical system to project a pattern of said slit plate on a cornea;
a cornea configuration measuring optical system for measuring a cornea configuration by receiving light beams reflected by said index projecting optical system.

4,807,990

LASER FLUORESCENCE VELOCIMETER

Dennis R. Keefer, Manchester, Tenn., assignor to University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Oct. 28, 1986, Ser. No. 923,873
Int. Cl.⁴ G01P *3/36*; G01B *9/02*; G01T *1/20*
U.S. Cl. 356—28.5 **4 Claims**



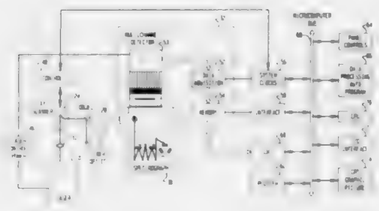
1. A method for measuring a velocity and direction component of a moving fluid having a chemical component that will fluoresce comprising:
directing two coherent light beams of two different wavelengths to intersect in the moving fluid to create a space-and-time modulated optical field in the form of a changing interference pattern within a sample volume, said wavelengths being such that at least one chemical component of the moving fluid is caused to fluoresce and emit fluorescent light by the optical field, said directing further comprising:
providing a source of coherent light at an original frequency;
directing first and second beams of the coherent light to cross in the sample volume;
firstly shifting the optical frequency of the first beam while leaving the second beam at the original frequency; and
after said first shifting, secondly shifting the optical frequency of the second beam and shifting the first beam back to the original frequency; and
measuring said fluorescent light that is produced by the space-and-time modulated optical field to determine the velocity of the moving fluid.

4,807,991

METHOD OF INSPECTING AND REPAIRING A STRUCTURAL DEFECT IN THE SURFACE OF AN OBJECT

Evan B. Carew, Dearborn, Mich., assignor to Electro-Organic Company, Dearborn, Mich.

Filed Apr. 7, 1986, Ser. No. 848,606
Int. Cl.⁴ G01N *21/64, 21/65, 21/88*
U.S. Cl. 356—72 **2 Claims**



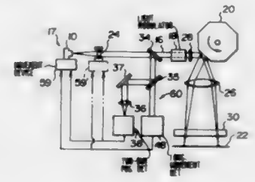
1. A method of inspecting and repairing a structural defect in the surface of an object, comprising the steps of:
identifying the defect in the surface of said object by
(1) directing a beam of light from a laser onto the surface of said object, the light reflected from said surface and originating from said laser being shifted in frequency by an amount determined by the morphology of the structure of said surface,
(2) scanning a plurality of locations on said surface using said laser light beam,
(3) receiving the light reflected from each surface location scanned in step (2), and
(4) analyzing the shift in frequency of light received in step (3) to determine the location of a defect in said surface structure; and
repairing the defect in said surface structure by
(5) increasing the power of said laser light beam to a level sufficient to effect a phase change in said surface structure, and
(6) directing said laser light beam onto the defect, whereby to effect a phase change in the surface structure of said object at the location of the defect.

4,807,992

METHOD OF DETECTING SEMICONDUCTOR LASER MODE HOPPING AND SEMICONDUCTOR LASER BEAM SOURCE APPARATUS

Masaru Noguchi; Ichirou Miyagawa, and Kenzo Horikawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 24, 1987, Ser. No. 17,403
Claims priority, application Japan, Feb. 24, 1986, 61-38608; Feb. 25, 1986, 61-40058; Feb. 25, 1986, 61-40059; Feb. 18, 1987, 62-33227
Int. Cl.⁴ G01J *1/42*
U.S. Cl. 356—121 **24 Claims**



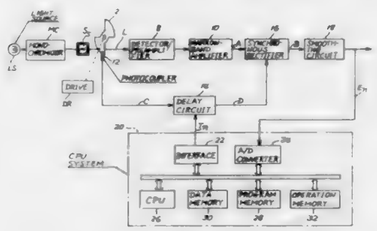
1. A method of detecting semiconductor laser mode hopping, wherein mode hopping of a semiconductor laser is detected by detecting at least one of movement of a laser beam emission point of said semiconductor laser in a longitudinal direction, which is a laser beam emitting direction, and movement of said laser beam emission point in a transverse directions normal to said longitudinal direction.

4,807,993

METHOD AND APPARATUS FOR MEASURING LIGHT BY FREQUENCY MODULATION USING A TIME-VARIABLE SYNCHRONOUS RECTIFICATION SIGNAL.

Kenji Nakamura, Osaka, and Yasutaka Tokuhara, Kyoto, both of Japan, assignors to Shimadzu Corporation, Japan

Filed Nov. 18, 1986, Ser. No. 932,025
Claims priority, application Japan, Nov. 19, 1985, 60-259214
Int. Cl.⁴ G01J *3/42*
U.S. Cl. 356—323 **15 Claims**



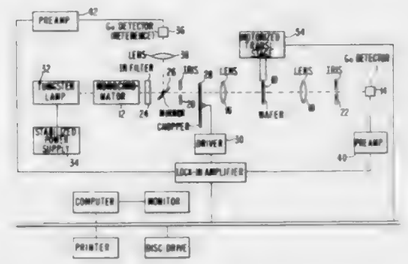
1. A method of measuring light by frequency modulation, comprising:
(a) chopping a light beam to be measured by means of a rotating chopper;
(b) detecting the chopped light beam to produce a corresponding frequency-modulated electrical signal;
(c) providing a first series of pulses in synchronism with said chopping of said light beam;
(d) providing a second series of pulses in response to and with a time delay after said first series of pulses;
(e) changing said delay time to determine the phase of said second series of pulses most suitable for a specific sample to be measured; and
(f) rectifying said frequency-modulated electrical signal in response to said second series of pulses whose phase has been determined to produce a demodulated electrical signal.

4,807,994

METHOD OF MAPPING ION IMPLANT DOSE UNIFORMITY

Susan B. Felch, Los Altos, and Ronald A. Powell, Redwood City, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Nov. 19, 1987, Ser. No. 123,073
Int. Cl.⁴ G01J *3/42*
U.S. Cl. 356—326 **6 Claims**



1. A method of mapping ion dose uniformity, comprising the steps:
(a) scanning wafers having a thin film or polysilicon coated on a substrate made of optically transparent material while measuring the optical transmission spectrum, thereby calibrating wafers suitable for subsequent steps,
(b) inserting in the ion implantation device to be mapped a wafer calibrated in step (a),
(c) implanting an ion dose in said thin layer of polysilicon in a controlled pattern,
(d) removing said wafer from said ion implantation device,
(e) scanning the wafer while measuring the optical transmission spectrum of the implanted film using essentially monochromatic radiation and a detection bandwidth of not more than 1 nm, and
(f) calculating the dose distribution from the data of the optical transmission spectrum data, film thickness calibration data and calibration data from known ion implant doses.

4,807,995

PROCESS FOR ELECTRO OPTICAL INSPECTION OF THE MOUTH AREA OF GLASS BOTTLES

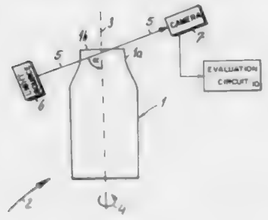
Hans-Ulrich Dassler, Oberschleissheim; Roediger Haas, Faistenhaar; Gerhard Loeffler, Munich, and Lutz Liebers, Bergneustadt, all of Fed. Rep. of Germany, assignors to OEM Messtechnik GmbH, Fed. Rep. of Germany

Filed Jul. 7, 1986, Ser. No. 882,229
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1985, 3523975
Int. Cl.⁴ G01N *21/90*
U.S. Cl. 356—240 **4 Claims**

1. A process for opto-electronic inspection of bottles comprising the steps of:
moving a bottle over a sector of a circular path and simultaneously rotating the bottle around a longitudinal axis thereof;
illuminating said bottle during the rotation around said longitudinal axis by a source of light emitting a diffuse beam at an oblique angle to said longitudinal axis in a mouth area of said bottle;
sequentially scanning light passing through the longitudinal

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axis of the bottle by an arrangement of photodiodes generating a scanning signal; and



evaluating intensity modulation of said scanning signal by comparing distance between intensity maxima with a reference value and identifying a chip in said bottle upon said distance exceeding said reference value.

4,807,996

TRANSIENT HOLOGRAPHIC INDICATION ANALYSIS

Andrew F. Ginnis, Glastonbury, and Wesley F. Larkin, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 10, 1987, Ser. No. 72,387
Int. Cl.[4] G01B 9/029
U.S. Cl. 356—347 **6 Claims**



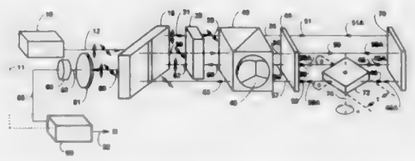
1. A method of characterizing an article, comprising:
generating a first reference time-average hologram of a reference article by vibrating the reference article at a first amplitude of vibration, wherein the reference article includes a known anomaly and the first amplitude of vibration is selected so that the first reference time-average hologram reveals a first reference indication of the known anomaly against a first reference background,
generating a second reference time-average hologram of the reference article by vibrating the reference article at a second amplitude of vibration, wherein the second amplitude of vibration is lower than the first amplitude of vibration and the second amplitude of vibration is selected so that the second reference time-average hologram reveals a second reference indication of the known anomaly against a second reference background,
generating a first time-average hologram of the article while vibrating the article at the first amplitude of vibration,
generating a second time-average hologram of the article while vibrating the article at the second amplitude of vibration,
comparing each of the holograms of the article and each of the reference holograms to each other to detect differences between the holograms, and
characterizing the article with regard to the difference detected.

4,807,997

ANGULAR DISPLACEMENT MEASURING INTERFEROMETER

Gary E. Sommargren, Santa Cruz, Calif., assignor to Zygo Corporation, Middlefield, Conn.

Filed Nov. 12, 1987, Ser. No. 119,846
Int. Cl.[4] G01B 9/02
U.S. Cl. 356—349 **30 Claims**



1. An angular displacement interferometer system for accurately measuring changes in angular displacement of a mechanical apparatus, said system comprising a source of a frequency stabilized input beam with two linear orthogonally polarized components; means for converting said input beam into two separated, parallel, orthogonally polarized beams; means located in one of said separated beams for converting said two separated, parallel, orthogonally polarized beams into first and second beams which are spatially separated, parallel, and have the same polarization; means for transmitting said first and second beams; means disposed in the path of said transmitted beams for reflecting said first and second transmitted beams; means disposed in the path of said reflected beams for producing third and fourth beams; refractive means having a plurality of faces, said refractive means being attached to said mechanical apparatus located such that said third and fourth beams enter adjacent faces of said refractive means and are refracted to produce fifth and sixth beams which are reflected from said reflecting means back through said means attached to said mechanical apparatus and back through said refractive means attached to said mechanical apparatus and back through said means for producing said third and fourth beams, said means for converting said two separated beams into said first and second beams having the same polarization and said means for converting said input beams into said two orthogonally polarized beams wherein said fifth and sixth beams are recombined into a single output beam having two orthogonally polarized components in which the phase difference between the two components of said output beam is related to said angular displacement; means for mixing said orthogonal components of said output beam; means for producing an electrical measurement signal; and means for indicating a measured phase, said measured phase being related to said angular displacement.

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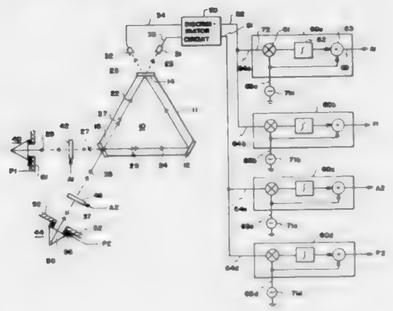
RING LASER HAVING AMPLITUDE AND PHASE CONTROLLED EXTERNALLY INJECTED BACK SCATTER

Mark W. Weber, Elk River, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 25, 1986, Ser. No. 843,957
Int. Cl.[4] G01C 19/64
U.S. Cl. 356—350 **6 Claims**

1. A ring laser angular rate sensor comprising:
a ring cavity having counter-propagating first and second laser beams;
means for extracting a first beam portion of said first laser beam along a first path, and for extracting a second beam portion of said second laser beam along a second path;
first means located external to said ring cavity for retroreflecting said first beam portion thereby directing a third beam portion back into said cavity in the direction of said second beam, said first means having,

means responsive to a first control signal for varying the energy of said third beam portion, and
first phase control means responsive to a second control signal for varying the phase of said third beam portion;
second means located external to said ring cavity for retroreflecting said second beam portion thereby directing a fourth beam portion back into said cavity in the direction of said first beam, said second means having,
means responsive to a third control signal for varying the energy of said fourth beam portion, and
second phase control means responsive to a fourth control signal for varying the phase of said fourth beam portion;
first detection means responsive to a portion of said first beam and said fourth beam portion for providing a first intensity signal indicative thereof;
second detection means responsive to a portion of said second beam and said third beam portion for providing a second intensity signal indicative thereof;
first servo control means for generating said first control signal in response to a first input signal as a function of said second intensity signal, said first servo control means including,
means for dithering said first control signal at a first dither frequency, and
means for producing said first control signal to minimize the amplitude of the signal component of said first input signal at said first dither frequency;



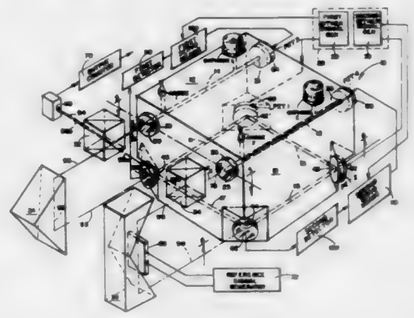
second servo control means for generating said second control signal in response to a second input signal as a function of said second intensity signal, said second servo control means including,
means for dithering said second control signal at a second dither frequency, and
means for producing said second control signal to minimize the amplitude of the signal component of said second input signal at said second dither frequency;
third servo control means for generating said third control signal in response to a third input signal as a function of said first intensity signal, said third servo control means including,
means for dithering said third control signal at a third dither frequency, and
means for producing said third control signal to minimize the amplitude of the signal component of said third input signal at said third dither frequency; and
fourth servo control means for generating said fourth control signal in response to fourth input signal as a function of said first intensity signal, said fourth servo control means including,
means for dithering said fourth control signal at a fourth dither frequency, and
means for producing said fourth control signal to minimize the amplitude of the signal component of said fourth input signal at said fourth dither frequency.

4,807,999

TWO SOURCE PASSIVE RING LASER GYROSCOPE

Kie L. Soo Hoo, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 13, 1986, Ser. No. 839,292
Int. Cl.[4] G01C 19/64
U.S. Cl. 356—350 **19 Claims**



1. A two source passive ring resonator gyroscope having enhanced stability and sensitivity comprising:
a dither signal means for providing a first and second dither signal at first and second dither signal frequencies (Fm1, Fm2);
a reference signal generator for providing a reference carrier signal at a fixed reference carrier frequency (FO);
a single piece body having integral first, second and third resonator cavities;
a first laser means using said first resonator cavity and having a first cavity path length adjusting means for providing a first single frequency light source (Fl);
a second laser means using said second resonator cavity and having a second cavity path length adjusting means for providing a second single frequency light source (F2);
said third resonator cavity being a passive high Q evacuated cavity having a closed optical path tuned to resonate at substantially the light frequency of said first and second resonator cavities, the sensitive axis of said two source passive ring resonator gyroscope being essentially normal to the plane of said closed optical path;
means responsive to said first single frequency light source for splitting said first single frequency light source into a propagating source and a reference first frequency light source, said propagating source being coupled into said third resonator cavity to form a propagating light beam (FCW);
means responsive to said second single frequency light source for splitting said second single frequency light source into a second frequency partial light source and into a reference second frequency light source;
means for modulating light from said second frequency partial light source at said reference carrier frequency (FO) to form a carrier modulated offset frequency counterpropagating light source and for coupling said carrier modulated offset frequency counterpropagating light source (FCCW) into said third resonator cavity;
a first detector positioned to sample said propagating beam and a second detector positioned to sample said counterpropagating beam;
cavity servo means responsive to said first and second dither signals and to output signals from said first and second detectors for providing control signals to said first and second cavity path length adjusting means to control the resonant frequency of said first and second single frequency light sources (Fl, F2), said first single frequency light source being tuned to control and maintain said propagating light beam in said third resonator at peak

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resonance, and to tune said second single frequency light source to control and maintain said carrier modulated offset frequency counterpropagating light beam (FCCW) at peak resonance;

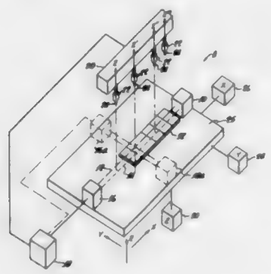
output means for measuring the frequency difference between said reference first frequency light source and said reference second frequency light source, said frequency difference representing the difference due to a gyro body rate input increased by the fixed frequency of the carrier offset frequency (FO).

4,808,000

POSITIONING DEVICE AND METHOD

Robert L. Pasciak, Decatur, Tex., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 15, 1986, Ser. No. 919,235
Int. Cl.⁴ G01B *11/14, 11/00*
U.S. Cl. 356—375 **30 Claims**



1. An apparatus for establishing a position of a tool or workpiece, said apparatus comprising:

(a) means for positioning the tool or workpiece along an axis A;

(b) means for providing a beam of coherent light along an axis which intersects axis A and is located so that the tool or workpiece can be positioned along axis A to at least partially block the beam;

(c) means for sensing beam blockage by the tool or workpiece and for providing an electric signal corresponding to the amount of beam blockage; and

(d) means for receiving said electric signal from the beam blockage sensing means and for controlling the positioning means in response to the signal so as to position the tool or workpiece out of blocking relationship with the beam.

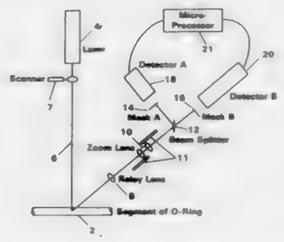
4,808,001

OPTICAL INSPECTION SYSTEM FOR CYLINDRICAL OBJECTS

Byron B. Breeden, and Timothy J. Peters, both of Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Continuation-in-part of Ser. No. 23,324, Mar. 9, 1987, abandoned. This application May 25, 1988, Ser. No. 198,527
Int. Cl.⁴ G01B *11/00*
U.S. Cl. 356—394 **29 Claims**

1. A method of inspecting for flaws the surface of an object of cylindrical cross-section comprising translating said object through a field of view, projecting, in a plane intersecting the axis of said object, a light trace on the surface of said object, projecting an image of said light trace on at least one mask, said mask having a size and shape corresponding to the size and



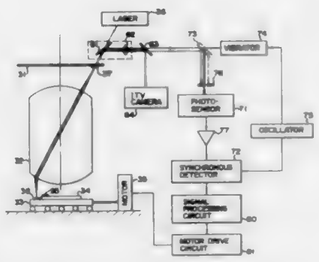
shape of said light trace if said object had a perfect surface, and sensing light which passes said mask.

4,808,002

METHOD AND DEVICE FOR ALIGNING FIRST AND SECOND OBJECTS RELATIVE TO EACH OTHER

Toru Tojo, Kanagawa; Mitsuo Tabata, Yokohama, and Hisakazu Yoshino, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki and Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, both of, Japan

Filed Mar. 11, 1988, Ser. No. 167,233
Claims priority, application Japan, Mar. 11, 1987, 62-54123
Int. Cl.⁴ G01B *11/00*
U.S. Cl. 356—401 **19 Claims**



1. A method of aligning first and second objects relative to each other, which objects are moved relative to and parallel to each other, comprising steps of:

forming a first mark on the first object, said first mark having first and second light-passing sections;

forming a second mark on the second object, said second mark having first and second light-reflecting sections;

directing a light beam, emitted from a light source, onto the first and second light-reflecting sections of the second mark;

transferring the light beam reflected by the first light-reflecting section onto the first mark, thereby projecting an image of the first light-reflecting section onto the first mark, and said first light-passing section having a first overlapping region which overlaps a part of the image of said first light-reflecting section;

transferring the light beam reflected by the second light-reflecting section onto the first mark, thereby projecting an image of the second light-reflecting section onto the first mark, and said second light-passing section having a second overlapping region which overlaps a part of the image of the second light-reflecting section;

detecting a first light beam passed through the first overlapping region and a second light beam passed through the second overlapping region independently of each other, the difference in amount between these two light beams being proportional to the positional shift between the first and the second object; and

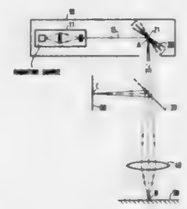
adjusting the first and second objects relative to each other in such a way that the first and second light beams become equal in amount, so that the first and second objects can be aligned relative to each other.

4,808,003

ARRANGEMENT FOR OPTICALLY MEASURING THE PROFILE OF A RADIATION REFLECTING SURFACE

Henricus M. M. Kessels, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 10, 1986, Ser. No. 929,234
Claims priority, application Netherlands, Nov. 19, 1985, 8503182
Int. Cl.⁴ G01B *11/24*
U.S. Cl. 356—376 **3 Claims**



1. An arrangement for optically measuring the profile of a radiation reflecting surface comprising a radiation source means for producing radiation, a lens system for deflecting the radiation produced by the radiation source means to form a radiation spot on the surface, said radiation being reflected from said surface, and a radiation sensitive detection system arranged in the path of the radiation reflected from the surface, wherein the radiation source means produces a radiation beam whose direction varies in time, the average direction of the beam during any particular measurement performed by said arrangement being substantially perpendicular to the surface to be measured and said beam during any particular measurement performed by said arrangement always passing through substantially the same point, which point is situated in a reference plane located on the same side of the lens system as the surface, said radiation sensitive detection system including means responsive to the radiation reflected from said surface for producing a signal indicative of the distance said reflecting surface is from the focal plane of the lens system.

4,808,004

MIXING APPARATUS

William R. McIntire, and James C. Ritter, both of Tulsa, Okla., assignors to Dowell Schlumberger Incorporated, Tulsa, Okla.

Filed May 5, 1988, Ser. No. 190,701
Int. Cl.⁴ B01F *15/02*
U.S. Cl. 366—155 **10 Claims**

1. A mixing apparatus for mixing liquids and particulate solids, which comprises

an enclosed generally cylindrical housing having a generally cylindrical inner side wall,

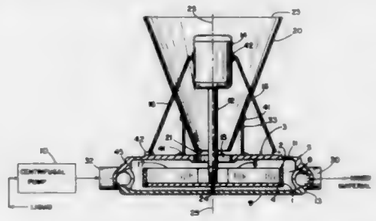
a generally circular bottom plate,

a generally circular top plate;

at least one liquid inlet means and an outlet means coupled to the said cylindrical wall, and

a particulate solids inlet aperture centrally disposed in the top plate of said housing and a rotatable slinger; said slinger being disposed within said housing and spaced from said cylindrical wall and said top and bottom plates; said slinger comprising

a flat generally circular bottom disc with a plurality of circumferentially spaced vertical vanes and a generally cylindrical outer wall mounted at the outer periphery of said flat bottom disc; said mixing apparatus including a drive means to rotate said slinger in said cylindrical housing to admix solids and liquids.

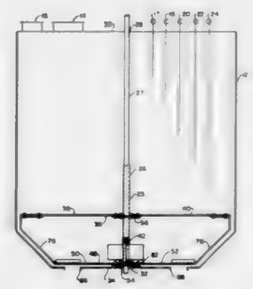


4,808,005

REGULATION OF THE FLOW-RATE OF CARBON BLACK INTO A PELLETIZER

William H. Lewis, and Robert E. Adcock, both of Pampa, Tex., assignors to Cabot Corporation, Waltham, Mass.

Filed Jun. 19, 1986, Ser. No. 876,277
Int. Cl.⁴ B01F *7/16*
U.S. Cl. 366—312 **5 Claims**



1. A process for mixing and agitating various types of carbon black in a surge tank having one or more inlet port(s) and one or more outlet port(s), which comprises:

(a) stirring the carbon black on at least two separate vertical levels within the surge tank, the lowest level being sufficiently close to the bottom of the surge tank to keep the carbon black located at the bottom of the tank in motion;

(b) lifting carbon black near the bottom of the tank and thereby decompacting the carbon black at the outlet(s) of the tank;

(c) moving equally the carbon black away from the center of the tank and toward the tank outlet(s):

(d) removing caked carbon black from the wall of the surge tank, and/or minimizing caking of carbon black on the wall of the tank.

4,808,006

DEVICE TO MAINTAIN SEPARATE UNTIL THE MOMENT OF USE AND THEN TO MIX TWO DIFFERENT SUBSTANCES WITHIN A CONTAINER, PARTICULARLY TWO-COMPONENT RESINS

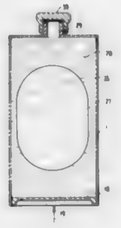
Max Kaufeler, Cadempino, Switzerland, assignor to Intecser S.A., Cadempino, Switzerland

Filed Dec. 8, 1986, Ser. No. 939,404

Claims priority, application Switzerland, Dec. 6, 1985, 5189/85

Int. Cl.[4] B65D *25/08;* **B01F** *7/00*

U.S. Cl. 366—332 1 Claim



1. A device to maintain separate until the moment of use and then to mix two different substances, comprising an elongated outer container, and an inner container within the outer container, one of the substances being sealed within the inner container and the other of the substances being within the outer container but outside the inner container, the inner container being readily breakable, one end wall of the elongated outer container being imperforate and slidable in the outer container to dispense the two substances when mixed, the other end wall of the elongated outer container having an opening therethrough for inserting within the outer container and device to break the inner container and to mix the two substances together, and removable closure means closing said opening.

4,808,007

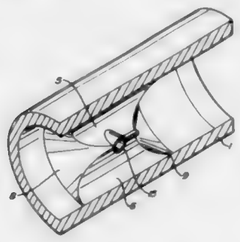
DUAL VISCOSITY MIXER

L. Tony King, Long Beach, Calif., assignor to Komax Systems, Inc., Long Beach, Calif.

Continuation-in-part of Ser. No. 25,517, Mar. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 378,005, May 13, 1982, abandoned. This application Aug. 27, 1987, Ser. No. 90,128

Int. Cl.[4] B01F *5/06*

U.S. Cl. 366—337 18 Claims



1. A device for the mixing of two or more fluids comprising an elongated substantially hollow tubular member having a longitudinal axis in which said hollow tubular member is constricted intermediate its ends with a mixing zone comprising

(A) at least two orifices for carrying a first fluid having substantially circular cross-sections and having longitudinal axes which are substantially parallel to the longitudinal axis of the substantially hollow tubular member, said orifices being situated and sized within the said substantially hollow tubular member such that said substantially circular cross-sections have a point of substantial mutual tangency; and

(B) A fluid entry port for discharging the second fluid at a point substantially coincident with the point of substantial mutual tangency of said orifices.

4,808,008

METHOD OF TRANSMITTING DIGITAL STREAMS OVER HIGHER RATE CHANNELS AND A DEVICE FOR IMPLEMENTING SAME

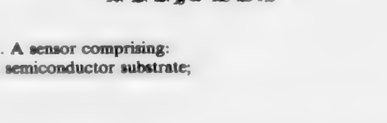
Yves Guerillot, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Jan. 15, 1987, Ser. No. 61,814

Claims priority, application France, Jan. 16, 1986, 86 00638

Int. Cl.[4] H04J *3/22;* **H04L** *7/00*

U.S. Cl. 370—84 12 Claims



1. A method for transmitting a digital data stream D_i, arriving at a first rate, by means of a digital channel having a second rate higher than said first rate, wherein, on emission, said digital stream D_i is chopped into packets of p bits, a preamble comprising at least one synchronization word is associated with each packet and said packets are transmitted over said channel: wherein

on the emission side, with a clock signal H_i associated with said digital stream D_i, the starting times of said packet are controlled by means of said clock signal H_i, so that the time interval separating the departure of two successive packets is equal to p times the period of said clock signal H_i, and

on the reception side, the successive arrival times of said packets are determined by recognizing said synchronization words, and said clock signal H_i is restored by dividing each time interval separating the arrival of two successive packets by p.

4,808,009

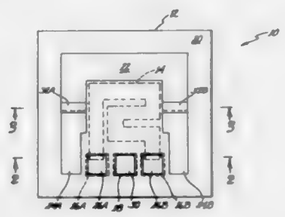
INTEGRATED SEMICONDUCTOR RESISTANCE TEMPERATURE SENSOR AND RESISTIVE HEATER

Fred C. Sittler, Victoria, and Robert C. Bohara, Eden Prairie, both of Minn., assignors to Rosemount, Inc., Eden Prairie, Minn.

Filed Jun. 5, 1986, Ser. No. 870,914

Int. Cl.[4] G01N *25/04;* **G01K** *7/22;* **H01C** *7/00*

U.S. Cl. 374—178 15 Claims



1. A sensor comprising:

a semiconductor substrate;

an electrical insulating layer covering a first surface of the substrate;

a semiconductor resistance temperature sensor formed in the semiconductor substrate adjacent the first surface of the substrate;

a film resistance heater having a low temperature coefficient of resistivity formed on the insulating layer adjacent the temperature sensor;

first contact means for providing electrical connection to the temperature sensor; and

second contact means for providing electrical connection to the resistive heater.

4,808,010

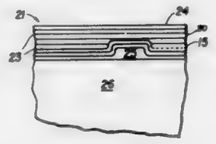
EASY-OPEN FLEXIBLE POUCH AND APPARATUS AND METHOD FOR MAKING SAME

Dennis J. Vegan, Etobicoke, Canada, assignor to W. R. Grace & Co., Duncan, S.C.

Filed Oct. 16, 1987, Ser. No. 109,673

Int. Cl.[4] B65D *30/00*

U.S. Cl. 383—107 6 Claims



1. A pouch formed from a tube of thermoplastic material comprising:

(a) a first transverse heat seal closing a first end of said tube;

(b) a second transverse heat seal closing a second end of said tube;

(c) each heat seal being a heat-sealed band extending transversely across the width of the bag; and

(d) the first heat seal including a plurality of parallel, spaced-apart seal ribs, each rib extending across the width of the pouch and disposed in a single substantially U-shaped concentric arrangement along a portion of the heat seal.

4,808,011

GUIDE ARRANGEMENT FOR GUIDING AN OBJECT ALONG A KINKED PATH

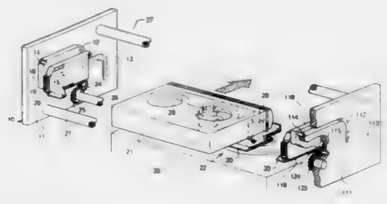
Petrus Aarts; Cornelis Verduijn, and Pieter D. Schuitmaker, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 28, 1988, Ser. No. 173,953

Claims priority, application Netherlands, Apr. 24, 1987, 8700968

Int. Cl.[4] F16C *29/02*

U.S. Cl. 384—9 5 Claims



1. A guide arrangement (10) for guiding an object (21) over a kinked path comprising a first and a second path section, which path sections are inclined relative to one another, comprising:

an object carrier (22) which is movable along the path,

at least one stationarily arranged guide plate (11) having a plurality of mutually offset profiled grooves (12, 13) profiled in conformity with said path, and

guide members (14, 15) which are connected to the object carrier (22), which engage the profiled grooves (12, 13) so as to be movable in said grooves, and which have a transverse dimension corresponding at least substantially to the width of the respective profiled grooves, characterized in that the guide plate (11) has two profiled grooves (12, 13), of which a first profiled groove (12) has a smaller width and a greater depth than a second profiled groove (13), the guide member (14) extends in the first profiled groove (12) to a point beyond the bottom of the second profiled groove (13), and the two profiled grooves (12, 13) intersect each other locally.

4,808,012

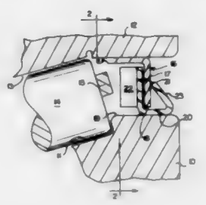
FLAP SEAL FOR ANTI-FRICTION BEARINGS

Dennis L. Otto, Malvern, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Mar. 23, 1987, Ser. No. 29,154

Int. Cl.[4] F16C *33/78;* **F16J** *15/32, 15/34, 15/44*

U.S. Cl. 384—482 7 Claims



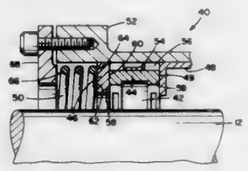
1. A lubricant retention and seal device for a lubricant containing anti-friction bearing assembly having relatively rotatable spaced apart inner and outer bearing members and rolling elements in the space between the bearing members, said seal device comprising:

(a) a body carried on one of said bearing members in position to be free of contact with the other one of said bearing members so that said body rotates with said one bearing member, said body having a first side presented to the space between the inner and outer bearing members adjacent said rolling elements and a second side presented to the exterior of that space;

(b) a plurality of flexible flap elements supported by said body in circumferentially spaced apart positions, said flap elements being directed into the space between said inner and outer bearing members, and said flexible flap elements having a contact with said body along one margin and having all other margins projecting into said space and being free of contact with said inner and outer bearing members and said body so that upon relative rotation of said inner and outer bearing members said flexible flaps contact the lubricant and deflect into positions as a result of that contact with the lubricant to form surfaces which act as a pumping mechanism to retain the lubricant in the bearing assembly.

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4,808,013
BEARING ASSEMBLY
Clive Waddington, Stratford, Conn., assignor to Avco Corporation, Providence, R.I.
Filed Jan. 11, 1988, Ser. No. 142,145
Int. Cl.[4] F16C *23/08, 43/04;* B21D *53/10*
U.S. Cl. 384—495 **17 Claims**



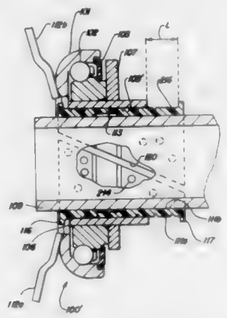
1. An automatically repositionable bearing assembly for use with a frame and a shaft comprising:
bearing means with which the shaft can move relative to the frame; and
means for repositionably mounting said bearing means relative to the frame; said mounting means comprising a spring means and a friction surface means, said spring means urging said friction surface means to frictionally hold said bearing means in a first position relative to the frame, allowing said bearing means to move radially to a second position relative to the frame in response to a pre-determined force and frictionally holding said bearing means in said second position when repositioned thereto.

4,808,014
ATTACHING STRUCTURE FOR CERAMICS BEARING
Kouichi Ueda; Kouichi Yamauchi; Hiroaki Takebayashi, and Kazuo Rokkaku, all of Osaka, Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan
Filed Oct. 21, 1987, Ser. No. 110,909
Int. Cl.[4] F16C *33/62, 33/58*
U.S. Cl. 384—492 **3 Claims**

1. A rotary member supporting apparatus comprising an inner ring, an outer ring, a plurality of rollers held between said inner and outer rings, and a shaft being press-fitted within said inner ring, at least said inner ring being made of ceramics molded by a hot press sintering process or a hot isostatic press sintering process, wherein an interference is previously formed between said shaft and said inner ring prior to press-fitting thereof in a manner such that a circumferential stress is produced therebetween without causing failure thereof, said circumferential stress being not greater than 20 Kgf/mm^2.

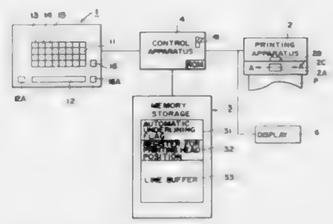
4,808,015
CLUTCH RELEASE BEARING ASSEMBLY INCLUDING A DOUBLE-ACTING SLIDING BORE SLEEVE
Bryce W. Babcock, Saline, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Filed Oct. 6, 1987, Ser. No. 106,509
Int. Cl.[4] F16C *19/10, 21/00, 31/00;* F16D *19/00*
U.S. Cl. 384—609 **7 Claims**

1. In a clutch release bearing having a bore surrounding a guide tube for reciprocating movement between the bearing and the guide tube, the improvement comprising:
a slider sleeve positioned between the bearing bore and an outer surface of the guide tube, the sleeve having a first sliding surface facing a surface of the bore and a second sliding surface facing an outer surface of the guide tube, the first and second sliding surfaces comprising a material exhibiting higher resistance to wear and friction than that of at least one of the bore surface and the outer surface of the guide tube, and the sleeve having a length sufficient to enable the clutch release bearing to reciprocate along the first sliding surface of the sleeve for a predetermined



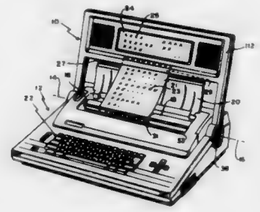
clutch release bearing stroke distance enabling proper operation of a clutch system associated with the bearing.

4,808,016
OUTPUT APPARATUS WITH SUPPRESSION OF UNDERSCORING OF BLANK CHARACTERS
Tsutomu Takahashi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 27, 1986, Ser. No. 833,559
Claims priority, application Japan, Mar. 5, 1985, 60-41885
Int. Cl.[4] B41J *29/26*
U.S. Cl. 400—17 **12 Claims**



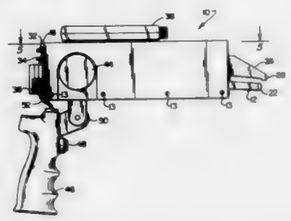
1. An output apparatus comprising:
input means for inputting at least space information and character information;
memory means for storing said space information and said character information input by said input means;
output means, responsive to said space information and said character information stored in said memory means, for outputting a space and a character, respectively, for each said space information and said charcter information stored in said memory means;
directing means for directing that an underline should be added to each said space and said character output by said output means; and
control means for controlling said output means such that even if said directing means directs that an underline should be added to each said space and said character, said underline is not added to a space positioned prior to a said character that begins a sentence despite said direction by said directing means that an underline should be added to each said space.

4,808,017
PIVOTABLE CHARACTER DISPLAY FOR A TYPEWRITER
Howard F. Sherman, McGraw; James H. Greggains, Truxton; Hans W. Mueller, Cortland, and Robert L. Kasprzycki, Poughkeepsie, all of N.Y., assignors to Smith Corona Corporation, Cortland, N.Y.
Filed Sep. 23, 1987, Ser. No. 100,149
Int. Cl.[4] B41J *3/46*
U.S. Cl. 400—83 **6 Claims**



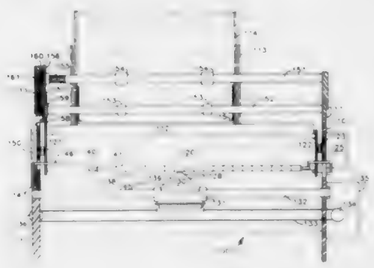
3. An electronic typewriter comprising:
a character display mounted on the typewriter for pivotable movement between a closed position and an open position for viewing the character display; and
holding means mounted on the typewriter for holding the character display in manually selected positions only near the open position, the holding means includes a brake pad, an inner wall and a cam surface for wedging the brake pad between the inner wall and the cam surface.

4,808,018
MARKING APPARATUS WITH MATRIX DEFINING LOCUS OF MOVEMENT
John A. Robertson, and David L. Cyphert, both of Chillicothe, Ohio, assignors to Telesis Controls Corporation, Chillicothe, Ohio
Filed Jun. 24, 1987, Ser. No. 66,092
Int. Cl.[4] B41J *3/12, 3/40*
U.S. Cl. 400—121 **22 Claims**



1. Apparatus for marking objects at a surface thereof with dot-like indentations arranged within a predetermined character forming matrix of pixel locations in response to data inputs, said pixel locations being of predetermined number arranged within vertical columns, said columns being spaced apart in lateral increments of predetermined extent, comprising:
head means having a confronting portion movable between first and second terminal positions along a lateral locus of travel and movable between third and fourth vertical terminal portions substantially transversely with respect to said lateral locus of travel to effect a predetermined undulating locus of travel pattern, said head means having at least one chamber extending interiorly from said confronting portion and a marker pin mounted for reciprocation within said chamber, said marker pin having a drive portion and a shaft portion depending therefrom and extensible through an opening within said confronting portion, said shaft portion having an impacting tip driveably movable into said surface;
drive means for reciprocally driving said marker pin drive portion in response to control inputs;
motor means for providing a drive output;
first actuator means responsive to said motor means drive output for effecting intermittent movement of said confronting portion along said lateral locus of travel between said first and second terminal positions, wherein said confronting surface is horizontally shifted to sequential indexing positions representing said matrix vertical columns;
second actuator means responsive to said motor means drive output for effecting movement of said head means confronting portion between said vertical third and fourth terminal positions when said confronting portion is positioned by said first actuator means at a said indexing position and effecting a stationary dwell of said confronting portion at a said vertical terminal position during said horizontal shift movement thereof; and
control means responsive to said predetermined locus of travel of said head means between said first and second and third and fourth terminal positions for deriving said control inputs to said drive means during said confronting portion movement between said vertical third and fourth terminal positions and only in correspondence with said pixel locations.

4,808,019
UNIFIED PAPER PATH PRINTER
Allan G. Olson, Camas, and Ted S. Heiles, Vancouver, both of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 29, 1987, Ser. No. 56,094
Int. Cl.[4] B41J *11/50*
U.S. Cl. 400—605 **47 Claims**



1. A printer adapted for selectively automatically accepting a printing medium such as paper from a plurality of distinct paths, comprising:
a frame (**110**);
means for selecting (**111**) the desired paper path;
platen means (**102**), connected to said frame, for positioning the paper from the selected path to enable printing thereon;
carriage means (**104**), connected to said frame, for printing on the paper;
feeder means (**106, 107**), engaged by said carriage means and adapted to simultaneously hold a variety of paper along selected ones of the distinct paper path, for automatically loading paper from one selected path to said platen means, while holding different paper along another distinct path distally from said platen means;
means, responsive to said selecting means, for controlling

(109) the operation of said platen means, carriage means and paper feeder means; and

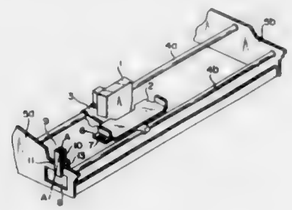
said feeder means including continuous form feeder means (106) for alternately automatically engaging and disengaging continuous forms along a first one of the paper paths.

4,808,020

CARRIAGE FIXING MECHANISM FOR PRINTING APPARATUS

Satoshi Kudo, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 20, 1987, Ser. No. 17,042
Claims priority, application Japan, Feb. 26, 1986, 61-25721[U]
Int. Cl.[4] B41J *29/54*
U.S. Cl. 400—663 **3 Claims**



1. A carriage fixing member for a printing apparatus having a platen, side frames, and a carriage moveable between the side frames and parallel to the platen, the carriage having an engaging opening, the carriage fixing member comprising:

a flat plate;

a first engaging portion engageable with an edge of one of said side frames, said first engaging portion including a first arm portion formed at one side of said flat plate and substantially parallel to and separated from said flat plate, said edge of one of said side frames being insertable between said flat plate and said first arm portion; and

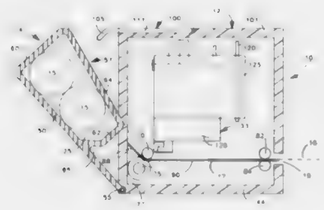
a second engaging portion engageable with said engaging opening, said second engaging portion including a second arm portion formed at the other side of said flat plate and substantially parallel to an separated from said flat plate, said second arm portion being insertable through said engaging opening.

4,808,021

METHOD AND APPARATUS FOR STORING ACCESSORIES INSIDE A PRINTING DEVICE

Kieran B. Kelly, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 30, 1988, Ser. No. 175,063
Int. Cl.[4] B41J *29/00*
U.S. Cl. 400—717 **19 Claims**



1. A printing device having a movable carriage assembly and adapted for storing various components, comprising in combination:

(a) a housing;

(b) means for printing being substantially enclosed within said housing, and defining a carriage swept volume defined by the space into which said movable carriage may move;

(c) enclosure means secured to the housing for enabling the storage of the accessories therewithin;

(d) said enclosure means being capable of assuming at least one open position entirely outside the carriage swept volume and on closed position; and

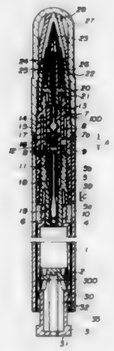
(e) said enclosure means being substantially housed within the carriage swept volume. when it is located in the closed position, without interfering with the path of travel of the carriage assembly when it is in the open position.

4,808,022

CONTAINER TYPE TOILET IMPLEMENT

Shigeo Iizuka, and Tadao Saito, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 854,768, Apr. 23, 1986. This application Jan. 27, 1988, Ser. No. 147,629
Claims priority, application Japan, Jul. 11, 1985, 60-106417[U]; Nov. 15, 1985, 60-176232[U]
Int. Cl.[4] A46B *11/02*; B05C *1/06*
U.S. Cl. 401—176 **9 Claims**



1. A container type toilet implement comprising:

a container body having upper and lower portions, a neck of the container body being located in the upper portion of the container body;

an external cylinder surrounding an outer periphery of said container body;

a bottom cover provided liquid tightly and elevationally movable at the lower portion of said container body;

an upwardly extending cylinder erected at the neck of said container body;

a suction valve mounted in a lower portion of said cylinder;

a piston engaged at a lower portion thereof with an upper inner surface of said cylinder and disposed slidably and telescopically in said cylinder, said piston having a top portion opposite said lower portion;

a spring member disposed between said cylinder and said piston for urging said cylinder downwardly;

an exhaust valve member having two elastic plates extending downwardly at a predetermined interval from an upper end cylindrical portion formed in said piston, said elastic plates having opposed bent parts in a ring shape substantially at an intermediate area thereof;

a rod valve disposed in said cylinder below said exhaust valve member and spaced therefrom, said rod valve extending at a lower end thereof to the lower portion of said cylinder;

an exhaust valve body formed at a lower portion of the

elastic plates of said exhaust valve member and a valve seat formed at a central inner surface of said piston;

a sealing mechanism for sealing the interior of said cylinder; and

a brush tip disposed above said exhaust valve member and supplied with a toilet article through said exhaust valve member,

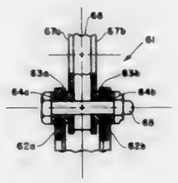
wherein said piston is secured directly or indirectly to the external cylinder on the outer periphery of said container body, and said exhaust valve member is secured to the top portion of said piston.

4,808,023

DUAL LOAD PATH PIN CLEVIS JOINT

Alison M. Arnold, Greenback, and Ronald G. Reed, Renton, both of Wash., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 700,857, Feb. 12, 1985, Pat. No. 4,786,202. This application May 22, 1987, Ser. No. 58,004
Int. Cl.[4] F16B *2/08*; F16C *9/06, 27/00*
U.S. Cl. 403—157 **15 Claims**



10. A dual load bearing path connector for pivotally joining a movable member to a structural member, comprising:

(a) a pair of spaced apart lugs, each said lug including at a first end thereof means for attachment to one of said movable member and said structural member, each of said lugs further including at a second end thereof means defining an eyelet;

(b) a pair of flanged bushings received by said lugs within respective eyelets thereof;

(c) a pivot pin received through said eyelets of said lugs and said bushings;

(d) a first connecting link pivotally supported at a first end on said pin, and disposed for operative connection at a second end to the other of said movable member and said structural member, said first connecting link, pin and lugs providing a first load bearing path between said structural member and said movable member; and

(e) a pair of second connecting links, pivotally supported at respective first ends on corresponding flanges of said flanged bushings, and disposed for operative connection at respective second ends to the other of said movable member and said structural member, said second connecting links, flanged bushings, and lugs providing a second load bearing path between said structural member and said movable member.

4,808,024

METHOD FOR INSTALLING A PAVEMENT UNDERDRAIN

Jon A. Haas, 38446 Valley Rd., Oconomowoc, Wis. 53066

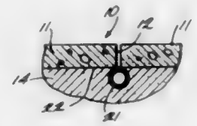
Filed Mar. 30, 1987, Ser. No. 32,208
Int. Cl.[4] E01C *11/24*
U.S. Cl. 404—2 **12 Claims**

1. A roadway underdrain system, comprising a plurality of perforate underdrain pipes disposed generally transversely relative to the lengthwise direction of a roadway in spaced-apart, generally parallel positions along the length of the roadway, said underdrain pipes being disposed within about 4 inches of fissures in the roadway for collecting water from such fissures and conducting such water out from under the roadway, each of said underdrains having filter means for admitting water therethrough into said underdrains and for preventing particulate matter capable of clogging said underdrains from entering said underdrains.

7. A method for installing an underdrain in a roadbed beneath a fissure in an existing roadway, comprising:

positioning a ground piercing tool at an entry site in said roadbed at one side of said roadway;

driving said ground piercing tool beneath said roadway to compact particulate matter in said roadbed from the path



of said ground piercing tool and thereby form an elongated tunnel beneath said roadway proximate said fissure, which tunnel extends generally transversely to said roadway; and

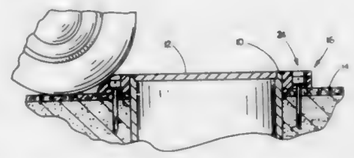
inserting an underdrain into said tunnel, which underdrain collects water from said roadbed and conducts said water out from under said roadway, said underdrain having filter means for admitting water therethrough and into said underdrain while preventing particulate matter capable of clogging said underdrain from entering said underdrain, wherein said underdrain is positioned within about 12 inches of said fissure.

4,808,025

TEMPORARY DEVICE FOR USE DURING STREET REPAIRS

Robert E. McGinnis, 13809 Polk St., Omaha, Nebr. 68137

Filed Aug. 21, 1987, Ser. No. 88,088
Int. Cl.[4] E02D *29/14*
U.S. Cl. 404—26 **11 Claims**



1. A temporary device for use with a manhole support positioned in a roadway which has been partially ground down for resurfacing with the grinding of the roadway causing the periphery of the manhole support to be elevated above the ground surface of the roadway, comprising,

a flat, resilient temporary ramp member having a thickness approximately equal to the vertical difference between the upper end of the manhole support and the ground surface of the roadway,

said ramp member having a central opening formed therein adapted to receive the manhole support therein whereby said ramp member may be temporarily positioned on the ground roadway around the manhole support to cushion contact between a vehicle wheel and the manhole support prior to the roadway being resurfaced,

and means temporarily securing said ramp member relative to the manhole support,

said securement means adapted to temporarily, removably

VOL 1099 ISS 4 FEB 28 1989 UMI

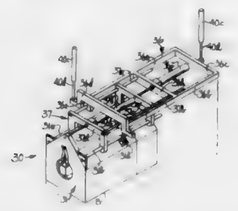
secure said ramp to said ground prior to resurfacing of said ground roadway.

4,808,026

CONSTRUCTION APPARATUS WITH EARTH TRIMMER

Samuel Y. Clarke, Jr., Mocksville, and Clifford J. Griffith, Jr., Clemmons, both of N.C., assignors to Power Curbers, Inc., Salisbury, N.C.

Continuation-in-part of Ser. No. 125,999, Nov. 27, 1987. This application Jan. 19, 1988, Ser. No. 145,831
Int. Cl.[4] E01C 23/12, 11/22
U.S. Cl. 404—90 19 Claims



1. A self-propelled construction apparatus for grading a ground surface in preparation for forming a strip of paving material on the graded ground surface, said apparatus comprising a main frame, movable ground engaging means connected to said main frame for supporting said main frame, prime mover means carried by said main frame and being operatively connected to said movable ground engaging means to provide propulsion for the construction apparatus, trimmer means positioned below said main frame and extending laterally of said main frame for grading the ground surface, and means adjustably connecting said trimmer means to said main frame for providing an individually adjustable three-point suspension of said trimmer means wherein each point of said three-point suspension is individually adjustable for adjusting the angle of the trimmer means relative to said main frame in accordance with the desired slope or grade of the ground surface, adjusting the angle of attack of the trimmer means, and also for raising and lowering of the trimmer means relative to the main frame.

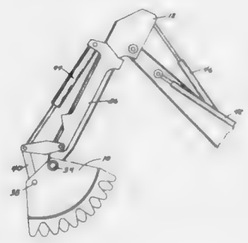
9. A self-propelled construction apparatus for concurrently grading a ground surface and forming a strip of paving material on the graded ground surface, said apparatus comprising a main frame, movable ground engaging means connected to said main frame for supporting said main frame, prime mover means carried by said main frame and being operatively connected to said movable ground engaging means to provide propulsion for the construction apparatus, molding means connected to said main frame for forming the strip of paving material on the ground, trimmer means positioned below said main frame and extending laterally of said main frame and forwardly of said molding means for grading the ground surface ahead of the molding means, said trimmer means comprising earth grading means, a carriage comprising a main carriage and an auxiliary carriage connected to and depending from said main carriage and mounted for movement relative to said main carriage, said earth grading means being connected to and depending from said auxiliary carriage, a plurality of actuator means operatively connected to said carriage and said earth grading means for moving both said auxiliary carriage and said earth grading means from a retracted position wherein said auxiliary carriage and said earth grading means underlie said main carriage to an extended position wherein said auxiliary carriage extends outwardly laterally beyond said main carriage and said earth grading means extends outwardly laterally beyond said auxiliary carriage.

4,808,027

COMPACTION ATTACHMENT FOR BACKHOE

Ronald L. Anderson, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 26, 1987, Ser. No. 112,412
Int. Cl.[4] E01C 19/23
U.S. Cl. 404—127 15 Claims



1. In a compacting apparatus of the type including a tractor tool-support boom and a cylindrical compacting member for application to the ground, the improvement comprising:

the cylindrical compacting member having a lower member with a convex cylindrical compacting surface with extends through an arc of less than about 180 degrees and in front and rear edges, the front edge being transverse to said boom;

at least one upright member secured to the lower member;

pivot-mounting means on the upright member(s), such pivot-mounting means in rigid fixed position with respect to the convex cylindrical compacting surface and providing means for attachment to a tool-support boom; and

said compacting apparatus forming a void segment adjacent to and forward of the front edge, said void segment being free of support structure,

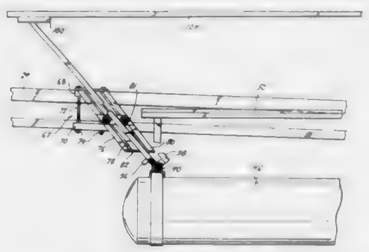
whereby edge compaction adjacent to vertical obstacles in front of the boom is facilitated.

4,808,028

BOAT LIFT

Charles J. White, Rte. 2, Box 439, Camdenton, Mo. 65020

Filed Jan. 25, 1988, Ser. No. 148,076
Int. Cl.[4] B63C 1/00
U.S. Cl. 405—3 7 Claims



1. A boat lift for installation in a boat well in a boat dock between the opposing sides of the boat well to lift a boat out of the water and lower a boat into the water, the boat lift comprising:

a frame adapted to receive and support a boat, the frame having a front, a back and left and right sides;

at least one pontoon, mounted on the frame, the pontoon adapted to be filled with air to lift the frame and to be filled with water to lower the frame;

a pair of sloped forward supports, on the left and right sides of the frame generally adjacent the front of the frame;

a pair of sloped rearward supports, on the left and right sides of the frame generally adjacent the rear of the frame the forward and rearward supports being parallel;

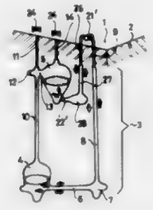
a pair of forward mounting brackets adapted to be mounted on opposite sides of the boat well, generally adjacent the front of the frame, and a pair of rearward mounting brackets adapted to be mounted on opposite sides of the boat well, generally adjacent the rear of the frame, each of the mounting brackets having a pair of spaced apart rollers thereon adapted to receive one of the supports therebetween, the brackets supporting the supports so that the frame is sloped with the back of the frame being above the front of the frame.

4,808,029

SYSTEM FOR SUBTERRANEAN STORAGE OF ENERGY

Arnold W. J. Grupping, Asjelleresiaan 3, 2111 BP Aerdenhout, Netherlands

Filed May 21, 1987, Ser. No. 53,069
Claims priority, application Netherlands, May 26, 1986, 8601342
Int. Cl.[4] B65G 5/00
U.S. Cl. 405—59 7 Claims



1. A system for subterranean storage of energy, comprising:

a first and a second cavern formed in a subterranean salt formation, said first cavern being situated at a considerably lower level than said second cavern;

a first channel interconnecting the lower portions of said caverns;

a second channel interconnecting the upper portions of said caverns;

both said caverns being partially filled with salt solution;

gas supply means for pressurizing a head space in each said cavern above said salt solution;

said first channel interconnecting the liquid filled portions of said caverns, said second channel interconnecting said head spaces of said caverns; and

a pumping-generating assembly including turbine/pump means arranged at the ground surface and connected between two vertical branches of said first channel, said assembly being adapted for pumping liquid through said first channel from said first towards said second cavern when supplied with energy, and for generating energy when driven by liquid flowing back through said first channel from said second towards said first cavern;

said gas supply means being adapted to maintain a gas pressure in said caverns such that the difference between said gas preasure and hydrostatic pressure differential between the liquid filled spaces in said caverns is equal to or greater than zero, said gas pressure being also sufficient for driving the liquid from said first cavern to the ground surface;

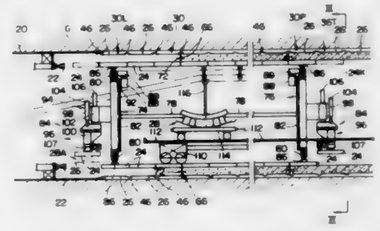
said channels having sufficient width so that pressure drop in the liquid flowing therein is negligible.

4,808,030

SHIELD TUNNELING METHOD AND ASSEMBLING AND DISASSEMBLING APPARATUS FOR USE IN PRACTICING THE METHOD

Keisosuke Takegawa, Tokyo, Japan, assignor to Shimizu Construction Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1986, Ser. No. 944,339
Claims priority, application Japan, Dec. 25, 1985, 60-295378; Dec. 26, 1985, 60-295748
Int. Cl.[4] E21D 9/06, 11/10
U.S. Cl. 405—146 10 Claims



1. A shield tunneling method for constructing a tunnel, comprising the steps of

(a) actuating a shield having shield jacks for drilling a hole in the ground;

(b) assembling inner forms and outer forms into a plurality of jointed tubular units in the hole in a concentrically aligned manner so that an annular concrete lining space is defined between the inner forms and the outer forms, the tubular units having a leading tubular unit;

(c) applying the shield jacks against inner forms of the leading tubular units for thrusting the shield during actuating to the shield to further drill the hole;

(d) injecting a concrete into the annular concrete lining space to form a concrete lining;

(e) setting the concrete lining within a predetermined length of tubular units for providing adhesion to the inner forms, in contact with the concrete lining, against a reaction force of the jack thrust for the shield;

(f) disassembling inner forms of the tubular units, located behind the predetermined length of the tublar units, from the associated outer forms so that the predetermined length of the concrete lining is remained covered with inner forms;

(g) reusing the inner forms, disassembled in the disassembling step (f), in the assembling step (b) for assembling a new tubular unit in the hole just behind the shield.

5. Apparatus for assembling and disassembling a plurality of joined tubular units each having inner forms and outer forms which are to be used in constructing a tunnel in a hole drilled in the ground using a shield, such that the inner and outer forms are assembled to define an annular concrete lining space and after which the inner forms are disassemblable and reuseable, said apparatus comprising:

(a) guiding means mounted to the inner forms of the tubular units;

(b) an assembling erector for assembling the inner forms and outer forms, circumferentially in the hole, into a tubular unit just behind the shield, the assembling erector including,

first supporting means,

first holding means for releasably holding the first supporting means to the inner forms of the tubular units,

first moving means, mounted to the first supporting means, for moving the first supporting means with the guiding means, and

transporting means, supported on the first supporting means,

for transporting each of the inner forms and the outer forms to a position on a wall of the hole; and

(c) a disassembling erector for disassembling the inner forms of the tubular units, located behind a predetermined length of the tubular units, the disassembling erector including,

second supporting means,

second holding means for releasably holding the second supporting means to the inner forms of the tubular units,

second moving means, mounted to the second supporting means, for moving the second supporting means with the guiding means, and

separating means, supported on the second supporting means, for separating inner forms of the tubular units, located behind the predetermined length of the tubular units, from the associated outer forms.

4,808,031

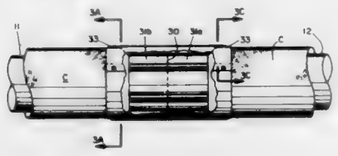
PIPELINE JOINT PROTECTOR

Ralph Baker, 14711 Hoya Ct., Houston, Tex. 77070

Continuation-in-part of Ser. No. 889,765, Jul. 28, 1986. This application Feb. 24, 1987, Ser. No. 17,830

Int. Cl.[4] F16L *1/04*

U.S. Cl. 405—168 **7 Claims**



1. A weight coated pipeline joint protective apparatus for protecting pipeline joints against impact or high stress concentrations comprising a high density plastic sheet wrapped around a pipeline joint with the opposite edges of such sheet overlaying the weight of coat material on the abutting pipes forming the joint, with the first end of the sheet overlapping the wrapped sheet with means for securing such first end to the sheet surface near or adjacent the opposite end of such sheet.

4,808,032

THRUST PIPE

Hans-Jürgen John, Hamburg, Fed. Rep. of Germany, assignor to Meyer & John GmbH & Co. Tief- und Rohrleitungsbau, Hamburg, Fed. Rep. of Germany

Filed May 29, 1987, Ser. No. 55,217

Claims priority, application Fed. Rep. of Germany, May 30, 1986, 3618334

Int. Cl.[4] F16L *1/00*

U.S. Cl. 405—184 **25 Claims**



1. Thrust pipe for disposition in a passage in the ground by advance of the pipe axially through the passage comprising:

a plurality of thrust pipe segments disposed in end to end relation one to the other, each thrust pipe segment including an inner pipe section and an outer pipe section about said inner pipe section;

each of said inner pipe sections having adjoining ends in abutting relation one with the other;

each said inner pipe section being formed of a material capable of carrying substantially the entirety of the axial compressive loading the corresponding pipe segment as the pipe segments are thrust axially along the passage with the outer pipe section thereof carrying substantially none of such loading; and

each said pipe segment having its outer pipe section terminating at one end short of the corresponding end of its inner pipe section.

4,808,033

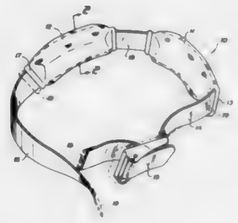
FLEXIBLE PRESSURE COMPENSATING DIVERS WEIGHT BELT

Bruce D. J. Belmonte, 3-869 Swan St., Victoria, British Columbia, Canada (V8X 2Z2)

Filed Mar. 26, 1986, Ser. No. 844,209

Int. Cl.[4] B63C *11/30*

U.S. Cl. 405—186 **11 Claims**



1. A flexible pressure compensating weight belt for scuba diver's comprising:

flaccid weight means;

a first and second resilient compartment for retaining said flaccid weight means;

first strap means having fastening means at one end and said first compartment connected at another end;

second strap means having one end adapted to be secured to said fastening means and another end connected to said second compartment;

said first and second compartments being connected via connecting means to form a flexible and elastic pressure compensating belt that is tightened about a diver such that said first and second compartments are stretched and under tension and said connecting means is positioned at the rear of the diver to provide a comfortable resting position for a pressurized air tank between said first and second compartments, whereby as the diver ascends or descends underwater said tensioned belt will stretch and contract due to changing water pressure to maintain a relatively constant tightness about the diver.

4,808,034

SYSTEM AND METHOD FOR SECURING A MARINE RISER TO A FLOATING STRUCTURE

Andrew D. Birch, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 6, 1988, Ser. No. 141,172

Claims priority, application United Kingdom, Apr. 16, 1987, 8709230

Int. Cl.[4] E21B *17/01*

U.S. Cl. 405—195 **11 Claims**

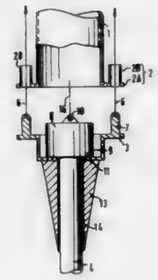
1. A system for securing a flexible marine riser to a conduit system of a floating structure supported on the water surface, the system comprising:

riser connector means arranged at an upper end of the riser for connecting the riser to a terminal end of the conduit system on the floating structure, said riser connector means comprising a stop shoulder having a larger width than the riser;

a guide ring surrounding the riser at a location below the riser connector means, said guide ring comprising an

opening having a width which is larger than the width of the riser but smaller than the width of the stop shoulder;

a guide ring receptor being secured to the floating structure at a location below said terminal end of the conduit system;



means for pulling the guide ring into engagement with the guide ring receptor while the stop shoulder is located on top of the guide ring; and

hoist means for raising the riser connector means from the guide ring to said terminal end of the conduit system while allowing the riser to slide through said opening.

4,808,035

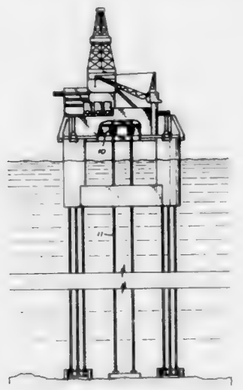
PNEUMATIC RISER TENSIONER

Paul N. Stanton, and Michael F. Cook, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed May 13, 1987, Ser. No. 50,258

Int. Cl.[4] E02B *17/00*; **E21B** *43/01*

U.S. Cl. 405—195 **14 Claims**



1. An apparatus for supporting an elongate element from a buoyant offshore structure, comprising:

a mounting frame adapted to be affixed to said buoyant offshore structure;

a support connector adapted to be attached to an upper portion of said elongate element;

a bellows having an expandable interior chamber, a first end affixed to said support connector and a second end affixed to said mounting frame; and

a valve means connected to said chamber whereby gas may be introduced into or removed from said expandable chamber.

4,808,036

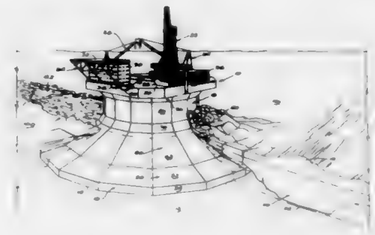
MOBILE MARINE OPERATIONS STRUCTURE

Arun Bhalaik, Seattle, Wash.; Peter W. Braddick, Fullerton, Calif.; Darryl S. Brittin, Laguna Hills, Calif., and Gerald L. Johnson, Orange, Calif., assignors to Santa Fe International Corporation, Alhambra, Calif.

Continuation of Ser. No. 819,288, Jan. 16, 1986, abandoned. This application Jan. 25, 1988, Ser. No. 148,176

Int. Cl.[4] E02B *17/00*

U.S. Cl. 405—217 **56 Claims**



1. A marine operations structure comprising a central core, a support base surrounding said central core, said support base formed with first and second sloped exterior surfaces for fracturing ice features encountered when said structure is installed in a fixed sea floor location, said first sloped surface being at a lower elevation than said second sloped surface and having its upper edge contiguous with the lower edge of said second sloped surface; and

the positioning of said first sloped surface with respect to said second sloped surface providing for the breakup of surface ice floes against said second sloped surface and providing for the fracturing of ice pressure ridges by both said second and said first sloped surfaces with lower forces imposed on said structure than produced by fracturing of such ice ridges on only one of said surfaces;

with said second sloped surface positioned to encounter and cause the break-up of surface ice floes, and wherein the break-up of said surface ice floes creates fracture planes extending generally radially and circumferentially away from said structure, and wherein said first sloped surface is positioned to encounter the bottom portion of an ice ridge extending the fracture planes into said ice ridge from said second sloped surface by out-of-plane bending along said fracture planes resulting from lifting of said ice ridge along said first sloped surface;

with the ratio of the annular width of said first sloped surface measured in the horizontal plane to the radius of said structure within the range of about from 0.15 to 0.30.

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4,808,037

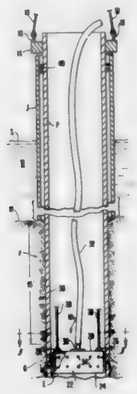
METHOD AND APPARATUS FOR REMOVAL OF SUBMERGED OFFSHORE OBJECTS

Franklin C. Wade, 6045 General Meyer Ave., New Orleans, La. 70114; Richard A. Anderson, Harvey, La., and Richard H. Barron, 127 Antigua Dr., Lafayette, La. 70503, assignors to Franklin C. Wade, New Orleans and Richard H. Barron, Lafayette, both of, La.

Continuation-in-part of Ser. No. 18,692, Feb. 25, 1987, abandoned, which is a continuation-in-part of Ser. No. 924,266, Oct. 29, 1986, abandoned. This application Aug. 7, 1987, Ser. No. 83,639

Int. Cl.[4] E02D *9/04*

U.S. Cl. 405—226 **110 Claims**



1. A method for removing support structure including metal piles embedded within a seabed comprising:

dislodging at least a portion of the environment for at least one of said piles below the mudline of said seabed,

injecting a liquified gas into the environment of the contact of said pile with said seabed in a sufficient amount to embrittle at least a portion of said pile in said environment when said liquified gas is in contact with said pile,

contacting said pile within said environment with said liquified gas for a sufficient time to cryogenically embrittle said pile,

fragmenting said pile upon said embrittlement and within said environment,

raising said pile and removing said pile from embedment in said seabed.

4,808,038

METHOD FOR INSTALLING A HOLLOW CLOSED BOTTOM PILE

David L. Roberts; Robert B. Stewart, and Peter K. Currie, all of Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 24, 1987, Ser. No. 42,400

Claims priority, application United Kingdom, Apr. 25, 1986, 8610221

Int. Cl.[4] E02D *3/12, 5/46*

U.S. Cl. 405—237 **9 Claims**

1. A method for installing a hollow, closed-bottom pile having perforations in a section of the wall near the bottom end thereof and/or in a bottom closing plate, in an earth formation comprising:

driving said pile into the earth formation, said earth formation tightly engaging the outer surface when said driving is completed;

disposing said perforated section of said pile within an unconsolidated portion of said earth formation;

displacing through said pile and said perforations a liquid thermosetting resin-forming composition which comprises:

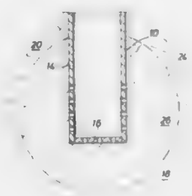
10–25% v liquid polyglycidyl ether of 2,2-bis(4-hydroxyphenyl) propane;

2.5–10% v diaminodiphenylmethane;

12.5–30% v 2-butoxyethanol;

0.25–2.5% v dimethylaminomethylphenol;

0.5–5% v Kerosene; and



37.5–65% v Xylene;

permeating said unconsolidated portion of said formation with said liquid composition in a radially extensive zone that is continuous from within the piling out into said unconsolidated portion; and

solidifying said liquid composition in said radially extensive zone to form a consolidated mass integrally comprising said permeated zone and said pile.

4,808,039

COUPLING MECHANISM FOR INTERCONNECTING SEALING PLATES THAT ARE TO BE BUILT INTO A SEALING WALL

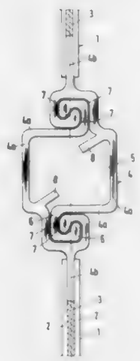
Joachim Fischer, Saarwerdenstrasse 41, D-4047 Dormagen 5, Fed. Rep. of Germany

Filed Jan. 29, 1988, Ser. No. 149,719

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1987, 3703066

Int. Cl.[4] E02D *5/02, 5/08, 5/14, 19/18*

U.S. Cl. 405—281 **7 Claims**



1. In a coupling mechanism for the interconnection of sealing plates that are to be built into a sealing wall, where each of said sealing plates has sides, at least some of which are provided with a coupling half, with adjacent coupling halves of adjacent sealing plates cooperating in a formfitting and interlocking manner to effect said interconnection of said sealing plates and to form a hollow space that can be checked, the improvement wherein:

each of said coupling halves has a first edge portion that is connected to a sealing plate, a notch-like part that adjoins said first edge portion, wall section means adjoining said notch-like part and defining, in conjunction with the wall section means of a cooperating coupling half, said hollow space, and a profiled connecting part that adjoins said wall section means and forms a second edge portion of each coupling half, with said profiled connecting part having a C-shaped cross-sectional shape, and said notch-like part having a corresponding shape, and with the profiled connecting part of one coupling half cooperating with the notch-like part of the cooperating coupling half to provide said interlocking interconnection of said sealing plates; each of said coupling halves is also provided with a sealing strip that is disposed where said notch-like part adjoins said wall section means and that, when the profiled connecting part of one coupling half and the notch-like part of a cooperating coupling half first cooperate with one another, projects into said hollow space defined by said wall sections means of these two cooperating coupling halves; to seal the cooperating profiled connecting parts and notch-like parts of two interlocking coupling halves, said sealing strip of one coupling half can be welded to that portion of the other coupling half where the profiled connecting part of the latter adjoins the wall section means thereof.

4,808,040

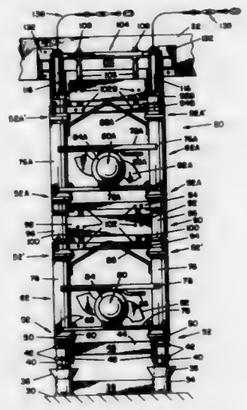
SUBMERSIBLE MIXER SUPPORT SYSTEM WITH REMOVABLE GUIDE BARS

Dominic A. Lisi, Trumbull, Conn., assignor to ITT Corporation, New York, N.Y.

Filed Oct. 20, 1987, Ser. No. 110,743

Int. Cl.[4] C02F *3/02*

U.S. Cl. 405—303 **3 Claims**



1. A submersible support system with removable guide bars for use with channel means holding a liquid material, said channel means having at least a bottom wall and a pair of side walls, the system comprising in combination:

at least two parallel substantially vertical guide bars supported at their lower ends on said bottom wall and extending upwardly therefrom;

means for attaching said guide bars in a fixed position relative to each other;

guide means permitting removal and reinstallation of said parallel guide bars from a position remote from said bottom wall, whereby said guide means allows said guide bars to be lifted upwardly from said bottom wall for removal from said channel means and to be accurately reinstalled on said bottom wall;

said guide means includes socket means for positioning and supporting said parallel guide bars on said bottom wall of said channel means;

said socket means is a pair of guide sockets with cone-shaped top portions for guiding said parallel guide bars into parallel position extending upwardly from said bottom wall;

said guide means further includes cable assemblies passing through the center of said tubular guide bars to guide said guide bars between a position mounted on said bottom wall and a position removed from said channel means;

a lower end of said cable assemblies are mounted to said socket means whereby said socket means and said cable assemblies cooperate to guide said guide bars between the position on said bottom wall and the position removed from said channel means;

a walkway extending over said channel means; and

means for securing said guide bars to said walkway, said securing means have a support structure and fixing devices extending into an interior portion of said guide bars and being expandable to secure said guide bars to said walkway.

4,808,041

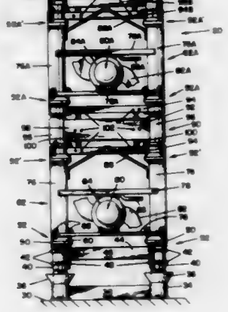
SUBMERSIBLE MIXER SUPPORT SYSTEM

Dominic A. Lisi, Trumbull, Conn., assignor to ITT Corporation, New York, N.Y.

Filed Oct. 20, 1987, Ser. No. 110,741

Int. Cl.[4] C02F *3/02*

U.S. Cl. 405—303 **15 Claims**



1. In a channel for holding liquid material having a bottom wall and a pair of side walls a, submersible mixer support system comprising:

at least two parallel substantially vertical guide bars supported at their lower ends on the bottom wall of the channel and extending upwardly therefrom;

a submersible mixer device mounted on a mixer stand extending between said parallel guide bars;

means located at the top and bottom of said mixer stand permitting selective clamping of said mixer stand to said parallel guide bars from a position remote from said mixer stand, whereby said selective clamping means allows said mixer stand to be clamped to said guide bars and unclamped from said guide bars to permit relative movement between said mixer stand and said guide bars for removal of said stand and said device;

said clamping means includes resilient means for selectively

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connecting said mixer stand to said parallel guide bars and means for selectively deforming said resilient connecting means to clamp said mixer stand to said parallel guide bars, and said resilient connecting means comprises at least one resilient clamping block shaped to engage one of said guide bars and said means for selectively deforming said resilient connecting means includes clamping members dimensionally sized to provide said clamping block with a clamping force to deform the same and clamp said mixer stand to one of said guide bars; and

said clamping block has tapered sidewalls and said clamping members are opposed cup-shaped clamping members whereby said clamping block fits snugly within and is substantially confined by said opposed clamping members so said clamping force provided by said clamping members squeezes said clamping block into clamping engagement with one of said guide bars.

4,808,042

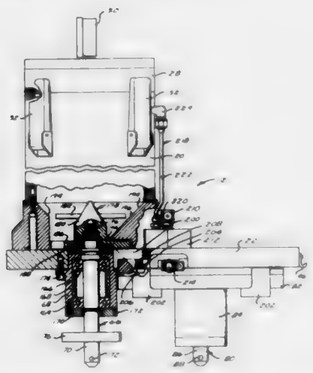
POWDER FEEDER

Erich Muehlberger, San Clemente, and Robert P. de la Vega, Santa Maria, both of Calif., assignors to Electro-Plasma, Inc., Irvine, Calif.

Continuation of Ser. No. 387,356, Jun. 11, 1982, abandoned. This application May 22, 1985, Ser. No. 736,972

Int. Cl.⁴ B65G *53/32*

U.S. Cl. 406—66 **20 Claims**



1. An arrangement for providing a controlled amount of powder in a gas stream comprising the combination of:

a rotatable feedwheel having a plurality of slots extending around an outer periphery thereof, the slots being of generally uniform size and each having a bottom and opposite sides defined by a pair of opposite vanes;

means for feeding controlled amounts of powder into the slots in the feedwheel, the means for feeding including an enclosed hopper for storing powder, a feed impeller rotatably mounted at an end of the hopper at a fixed location relative to the feedwheel, and a first conduit extending from a first location in the path of the feed impeller to a second location adjacent the path of the feedwheel, the feed impeller being operative to dispense uniform quantities of powder from the hopper through the first conduit and into the slots in the feedwheel;

means for directing a gas flow through the slots in the feedwheel as the slots pass a fixed location at the outer periphery of the feedwheel;

a second conduit on the opposite side of the slots from the means for directing for receiving the gas flow and powder from the slot; and

a third conduit coupled between the second conduit and the enclosed hopper to maintain pressure within the enclosed hopper substantially equal to pressure in the second conduit.

4,808,043

APPARATUS FOR DISTRIBUTION OF GAS-ENTRAINED POWDERS

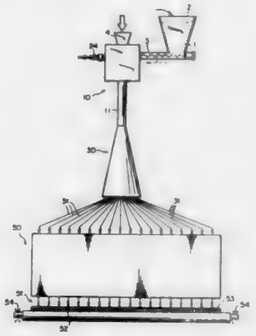
Claude Le Marrec, Asnieres, France; Carl Kramer, and Hans W. Kuster, both of Aachen, Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Courbevoie, France

Continuation-in-part of Ser. No. 627,592, Jul. 3, 1984, abandoned. This application Mar. 2, 1987, Ser. No. 18,745

Claims priority, application France, Jul. 4, 1983, 83 11059

Int. Cl.⁴ B65G *53/52*

U.S. Cl. 406—181 **29 Claims**



1. An apparatus for mixing and distributing a powder entrained in a gas comprising:

a primary intake pipe oriented to facilitate passage of said gas-entrained powder in a vertically downward flow direction wherein said flow of powder is subject to the least possible variation in direction to avoid formation of powder agglomerations and to prevent an uneven distribution of said powder among a plurality of secondary conduits located downstream therefrom, thereby preventing a negative effect on optical properties of a substrate coating produced therewith, said pipe having a length sufficient to facilitate passage of a homogeneous suspension of said powder therein; and

means for forming a continuous stream of said gas entrained powder in said pipe said stream-forming means located above and terminating at a first end of said pipe; and

an array of ducts distributed on a lateral surface of a cone having a circular cross section located within and aligned with a second end of said pipe, said array being located downstream of said stream forming means a sufficient distance to permit a thorough mixing of said powder with said carrier gas prior to the contact between said gas-entrained powder and said array, said ducts converging at or near the apex of said cone to constitute a single intake directed along the axis of the cone to said intake pipe, the total cross sectional area of said ducts being less than or substantially equal to that of said pipe, said ducts being oriented along generatrices on said surface of the cone and ending at its base in a multiplicity of orifices, each orifice connected to one of said plurality of said secondary conduits to form a continuous passageway which is free of dead zones, sharp bends and sharp turns to avoid formation of agglomerations or deposits of powder therein, so that said gas-entrained powder is uniformly divided from a single stream in said intake pipe to a plurality of uniform secondary streams in said secondary conduits, said cone being stationary relative to said intake pipe and said secondary conduits, said axis of said cone being oriented in a vertical direction.

4,808,044

INSERT CUTTER

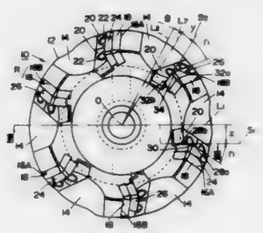
Osamu Tsujimura, Kawasaki, and Tatsuo Arai, Kitamoto, both of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1987, Ser. No. 43,621

Claims priority, application Japan, Apr. 30, 1986, 61-100483; Nov. 5, 1986, 61-263344; Nov. 5, 1986, 61-263346

Int. Cl.⁴ B23C *5/06*

U.S. Cl. 407—42 **9 Claims**



1. An inserted tooth milling cutter comprising:

a cutter body of a generally circular cross-section having an axis of rotation therethrough; and

first and second cutter inserts of an identical shape releasably mounted on a periphery of said cutter body in circumferentially spaced relation to each other, each insert having a first main cutting edge indexed in a peripheral cutting position, an auxiliary cutting edge indexed in an end cutting position and a second main cutting edge extending radially inwardly of said body from said indexed auxiliary cutting edge;

the second main cutting edge of said first insert being located on a first reference plane disposed parallel to the axis of said body and spaced circumferentially of said body from one of partitioning radial lines dividing the periphery of said body into equal parts, the second main cutting edge of said second insert being located on a second reference plane disposed parallel to the axis of said body and spaced circumferentially of said body from a reference line which is inclined circumferentially of said body from another partitioning line; said inserts being disposed so that said indexed main cutting edge of said first insert is provided with axial and radial rake angles different from axial and radial rake angles of the indexed main cutting edge of said second insert, and that said auxiliary cutting edges of said inserts are disposed in a common plane perpendicular to said axis of said body.

4,808,045

END MILL WITH THROW-AWAY TIP

Osamu Tsujimura; Takayoshi Saito; Tatsuo Arai, and Yasuzo Funaki, all of Shinagawa, Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 815,055, Dec. 31, 1985, Pat. No. 4,693,641. This application Jun. 23, 1987, Ser. No. 266,339

Claims priority, application Japan, Oct. 25, 1985, 60-163962; Oct. 25, 1985, 60-163963; Nov. 6, 1985, 60-170488; Jul. 29, 1986, 61-178553

Int. Cl.⁴ B23B *51/00*

U.S. Cl. 408—204 **13 Claims**

1. An end mill comprising:

an end mill body having an axis of rotation therethrough and having forward and rearward end portions, said forward end portion having a core receiving recess formed at a center of an end face thereof; and

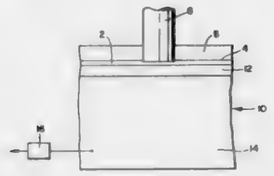
a cutting insert comprising a plate defined by an upper surface, a lower surface and side faces joining said upper and lower surfaces, said upper surface having a first cutting edge ridge, a second cutting edge ridge intersecting at one end thereof with said first cutting edge ridge and a third cutting edge ridge intersecting with said second cutting edge ridge at the other end thereof, said upper surface having a corner where said second cutting edge ridge and said third cutting edge ridge intersect with each other, said insert having a corner ridge defined by an adjacent pair of said side faces and extending from said corner, said upper surface being composed of a central portion and a corner portion which includes said corner, whereby said third cutting edge ridge is composed of a first edge portion defined by a marginal ridge of said corner portion and a second edge portion defined by a marginal ridge of said central portion, said first edge portion being disposed so that a distance between the axis and a point B located on the outermost radial end of said first edge portion is longer than a distance between the axis and a point A located on a radius of said body, whereby relief impingement of a relief surface for said first edge portion is prevented, at least that portion of said corner portion disposed adjacent to said central portion being inclined in such a manner that

the thickness of said insert between said lower and upper surfaces thereof is progressively reduced from said central portion toward said corner;

said insert being releasably mounted of said forward end portion of said body in such a manner that said first cutting edge ridge is located so as to protrude radially outwardly from an outer periphery of said forward end portion to serve as an outer peripheral cutting edge, that said second cutting edge ridge is located so as to protrude forwardly from the end face of said forward end portion to serve as an end cutting edge, that said third cutting edge ridge is located so as to protrude radially inwardly of the body into said core receiving recess to serve as an inner peripheral cutting edge, and that the insert has a negative radial rake angle at said outer peripheral cutting edge and a positive rake angle, said third cutting edge ridge being located so that said second edge portion thereof extends radially outwardly of said body as well as in a direction opposite to the direction of rotation of said body from that point of said third cutting edge ridge where said first and second edge portions intersect with each other, and that a distance between said corner and said axis of said body is longer than a distance between said axis and a point at which a line extending radially outwardly of the body from the axis and a line on which said corner ridge lies cross at right angles.

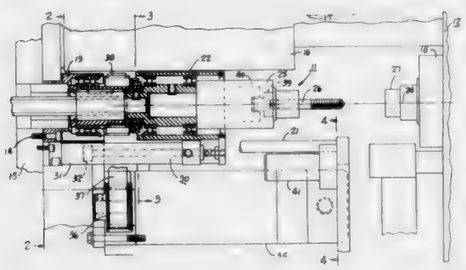
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4,808,046
CUTTING METHOD
Donald J. Pilkington, and Christopher I. Mariow, both of Northants, United Kingdom, assignors to Design Technologies Limited, United Kingdom
Filed Jul. 14, 1987, Ser. No. 81,071
Claims priority, application United Kingdom, Jul. 14, 1986, 8617114
Int. Cl.⁴ B23C *1/00*; B23Q *3/00*
U.S. Cl. 409—132 **14 Claims**



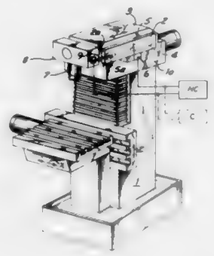
1. A method of cutting a metal sheet using a routing tool, in which a film is adhered to one side of the sheet, the sheet is held firmly in position by vacuum applied to said film and the routing tool penetrates completely through the sheet from the other side but does not penetrate completely through the film.

4,808,047
VARIABLE SPEED MOTOR TAPPING ATTACHMENT
Thomas J. Calevich, Wickliffe, and Lamont Hansen, Euclid, both of Ohio, assignors to Acme-Cleveland Corporation, Cleveland, Ohio
Filed Sep. 24, 1987, Ser. No. 100,721
Int. Cl.⁴ B23G *1/08*
U.S. Cl. 408—14 **14 Claims**



1. A tapping attachment for the tooling area of a multiple spindle machine tool comprising, in combination:
- a base adapted to be attached to the frame of a multiple spindle machine tool in a given spindle position of the machine tool;
- a rotatable tap holder;
- means movably mounting said tap holder on a slideway on said base for motion relative to a spindle in said given position;
- said tap holder adapted to carry a tap for operation on a workpiece in said given spindle position of the machine tool;
- motive means having first and second conditions to move said tap holder in advance and retract movements, respectively, relative to a workpiece in said given spindle position;
- a motor connected to rotate said tap holder at infinitely variable speeds within a given range, including first and second speeds;
- a switch mounted to be actuated by an advanced position of said tap holder; and
- control means connected to said switch (a) to establish said motor first speed and said motive means first condition to tap an aperture in the workpiece, and (b) to establish said motor second speed and said motive means second condition to retract the tap holder and back the tap out of the workpiece.

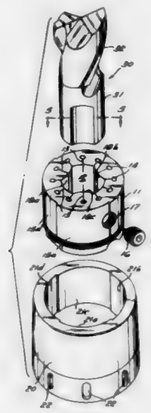
4,808,048
METHOD AND APPARATUS FOR ERROR COMPENSATION
Walter Miller, Traunstein, Fed. Rep. of Germany, assignor to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany
Filed Sep. 23, 1987, Ser. No. 100,019
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1986, 3633573
Int. Cl.⁴ B23B *39/08*
U.S. Cl. 409—239 **11 Claims**



1. In a method for compensating displacements of a machine point due to temperature changes relative to a machine reference point, the machine having a first stationary machine component and a second machine component movable relative to the first machine component, the reference point being on the first machine component and the machine point being at the second machine component, including determining the measurement values for the intended positioning of the machine point by means of a position measuring device which includes at least a first sensing device attached to the first machine component for sensing a measuring scale attached to the second machine component, the improvement comprising determining the temperature-related displacement with respect to direction and magnitude directly at the measuring scale of the position measuring device by means of a second sensing device of the same type as the first sensing device, the second sensing device being mounted at the machine point, and computing the determined displacement value into the measurement values for the intended positioning of the machine point.

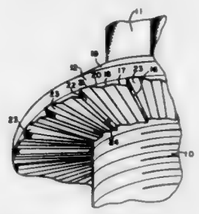
4,808,049
CAM ACTUATED COLLET TOOL HOLDER
Harold D. Cook, 33642 Via Martos, Dana Point, Calif. 92629
Filed Aug. 13, 1987, Ser. No. 85,049
Int. Cl.⁴ B23B *31/20*
U.S. Cl. 409—234 **9 Claims**

1. A chuck for use on a machine tool spindle comprising:
- a collet having narrow axial slots about an interior axial aperture which is sized to receive a tool shank, and having an exterior cam surface which cam surface is everywheres parallel to the aperture's axis;
- a tightening sleeve positioned about the collet having an interior cam surface complementary to the exterior cam surface of the collet;
- wherein selective rotation of the tightening sleeve relative to the collet causes selective engagement of the complementary cam surfaces which causes selective compression of the collet to grasp the shank of a tool disposed in the axial aperture and



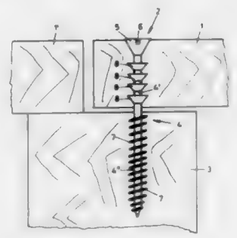
- wherein said collet's internal axial aperture is formed having an interior cam surface complementary to an exterior cam surface formed on the tool shank.

4,808,050
VIBRATION RESISTANT FASTENERS
Richard C. Landt, Souderton, Pa., assignor to SPS Technologies, Inc., Newton, Pa.
Continuation-in-part of Ser. No. 18,326, Feb. 24, 1987, which is a continuation of Ser. No. 680,212, Dec. 10, 1984, Pat. No. 4,657,459. This application May 7, 1987, Ser. No. 48,106
The portion of the term of this patent subsequent to Apr. 14, 2004, has been disclaimed.
Int. Cl.⁴ F16B *39/282*
U.S. Cl. 411—188 **23 Claims**



1. A self-locking fastener having a bearing surface comprising:
- a plurality of serrations in the form of teeth when viewed along a cylinder concentric with the longitudinal axis of the fastener;
- a plurality of intermediate surfaces each being between two teeth, each of the teeth having a root, a crest, a wall extending between the crest of the tooth and the root of the tooth, and an inclined surface extending between the crest of the tooth and one of the intermediate surfaces, and each intermediate surface being closer axially to the free surface than the crests of the teeth and being further axially from the free surface than the roots of the teeth each of said intermediate surfaces forming an angle relative to a bearing plane perpendicular to the longitudinal axis of the fastener of up to ten degrees;
- whereby the teeth are adapted to penetrate into a workpiece surface in which the fastener is being installed and the intermediate surfaces are adapted to control and limit the extent of penetration of the teeth into a workpiece surface when the fastener is operatively installed and the roots of the teeth do not bear against the workpiece surface.

4,808,051
SCREW, PARTICULARLY WOOD SCREW
Hans Gietl, Rodinger Strasse 1, 8490 Cham-Janahof, Fed. Rep. of Germany
Continuation of Ser. No. 750,326, Jun. 28, 1985, abandoned. This application Apr. 15, 1987, Ser. No. 39,010
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1984, 3425380
Int. Cl.⁴ F16B *35/00*
U.S. Cl. 411—378 **2 Claims**



1. An arrangement comprising:
(A) first and second wood elements adjustably positioned relative to each other; and
(B) a one-piece screw device interconnecting the first and second wooden elements, said screw device including
(i) an elongated screw shank having opposed ends,
(a) said shank having a first section extending from one of said ends toward, but terminating short of, the other of said ends, said first section having a screw thread threadedly engaging only the first wooden element, and having a maximum outside diameter, and
(b) said shank having a second unthreaded section extending from said other end toward, but terminating short of, said one end, said second section engaging only the second wooden element,
(ii) a frusto-conically shaped screw head at said other end and engaging only the second wooden element, said head having a frusto-conically tapering wall facing toward said first section and means for enabling the screw device to be turned about an axis extending lengthwise along the shank, said first section being movable along the axis during turning of the screw device to adjustably position the first and second wooden elements relative to each other, and
(iii) means on said second section for preventing movement of said second section along the axis during turning of the screw device, said preventing means having at least one annular projection on said second section between said screw head and said first section, said projection being aranged concentric to the axis and having a maximum outside diameter which is larger than the maximum outside diameter of the screw thread, said projection being frusto-conically shaped and having a single frusto-conical tapering side facing away from said screw head and rotatably engaging only said second element to permit only rotation in said second element during turning of the screw device.

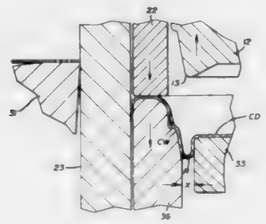
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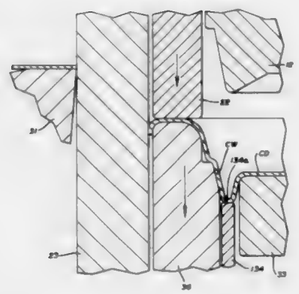
4,808,052

METHOD AND APPARATUS FOR FORMING CONTAINER END PANELS

Joseph D. Balse, Jr., Canton, and James A. McClung, North Canton, both of Ohio, assignors to Redicon Corporation, Canton, Ohio

Continuation-in-part of Ser. No. 889,683, Jul. 28, 1986, abandoned. This application Mar. 3, 1988, Ser. No. 163,863
Int. Cl.[4] B21D *51/44*
U.S. Cl. 413—8 8 Claims





1. A method of forming a container end piece from a sheet of material at one station in a double acting press having a fixed base and a movable platen, comprising the steps of:

(a) blanking a workpiece;

(b) holding said workpiece between a pressure sleeve carried by the movable platen and a fluidly supported die core ring carried by the base;

(c) forming said workpiece into an inverted up over said die core ring advancing a punch shell carried by the movable platen toward the base;

(d) advancing a punch with a radiused annular nose and carried by the movable platen radially inwardly of the punch shell to reverse said inverted cup and form an end piece having a chuckwall joined to a central bottom portion by an enlarged radiused portion with said central bottom portion supported on a die core fixed to the base with said chuckwall being formed between complemental surfaces of said punch and said die core ring;

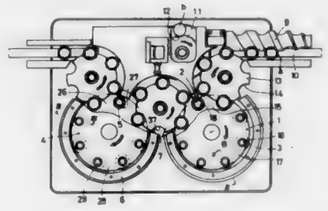
(e) shortening said chuckwall and reducing the radius of said the fluid pressure beneath said die core ring further while holding the workpiece against said die core ring and supporting said central bottom portion on said fixed die core.

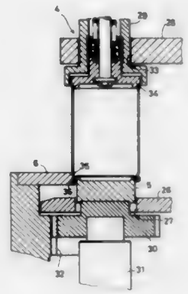
4,808,053

APPARATUS FOR MAKING A NECKED-IN CONTAINER WITH A DOUBLE SEAM ON CONTAINER COVER

Katsumi Nagai, Ohmiya, and Akio Shinjyo, Ageo, both of Japan, assignors to Hokkai Can Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1987, Ser. No. 17,552
Claims priority, application Japan, Feb. 25, 1986, 61-25161[U]
Int. Cl.[4] B21P *51/30*
U.S. Cl. 413—30 8 Claims





1. An apparatus for manufacturing a container including a barrel having an open end with a flange a cover having a panel, a cylindrical chuck wall raised from said panel and having an outside diameter smaller than the inside diameter of said barrel, and an end hook contiguous to said chuck wall, said chuck wall being inserted in said open end of the barrel, said flange and said end hook being fastened by a double seam, said barrel and said cover being necked-in adjacent to said double seam, said apparatus comprising:

a rotatable preliminary machining feeder including a plurality of first rotatable seaming chucks spaced circumferentially and radially equally from a center of rotation of the preliminary machining feeder, each of said first seaming chucks being insertable radially inwardly of said chuck wall, and a plurality of first holders disposed immediately above said first seaming chucks, respectively, said preliminary machining feeder being rotatable to rotate the barrel and the cover in a circumferential direction thereof while said barrel and said cover with the chuck wall inserted in the open end of the barrel are being rotatably held by each of said first seaming chucks and each of said first holders;

a first seaming segment having a preliminary fastening seaming groove and a preliminary necking-in jaw on an inner peripheral edge extending around said preliminary machining feeder and progressively approaching the flange of said barrel and the end hook of said cover as they are rotated by said preliminary machining feeder, for preliminary fastening and necking-in said barrel and said cover, said preliminary fastening seaming groove and said preliminary necking-in jaw of said first seaming segment have radii of curvature progressively smaller along a path of travel of said barrel and said cover which are fed by said preliminary machining feeder;

a rotatable final machining feeder including a plurality of second rotatable seaming chucks spaced circumferentially and radially equally from a center of rotation of the final machining feeder, each of said second seaming chucks being insertable radially inwardly of said chuck wall, and a plurality of second holders disposed immediately above said second seaming chucks, respectively, said final machining feeder being rotatable to rotate the barrel and the cover in a circumferential direction thereof, which have been preliminarily fastened and necked-in by said preliminary machining feeder and said first seaming segment, while said barrel and said cover are being rotatably held by each of said second seaming chucks and each of said second holders; and

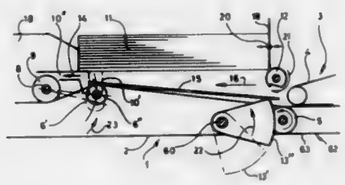
a second seaming segment having a final fastening seaming groove and a final necking-in jaw on an inner peripheral edge extending around said final machining feeder and progressively approaching the flange of said barrel and the end hook of said cover as they are rotated by said final machining feeder, for finally fastening and necking-in said barrel and said cover, said final fastening seaming groove and said final necking-in jaw of said second seaming segment have radii of curvature progressively smaller along a path of travel of said barrel and said cover which are fed by said final machining feeder.

4,808,054

DEVICE FOR PILING UP FLAT PIECES

Marc Cazin, Craponne, France, assignor to SA Martin, Villeurbanne, France

Filed Oct. 23, 1987, Ser. No. 112,894
Claims priority, application France, Oct. 24, 1986, 86 15023
Int. Cl.[4] B65G *57/30*
U.S. Cl. 414—795 5 Claims



1. In a device for piling up flat pieces, for example printed and folded box blanks, said device comprising a belt conveyor for introducing a box blank underneath a pile of box blanks which pile is already formed in a piling station, said piling station having a front stop and one blank jogging device, means for supporting the front and rear parts of a pile already formed in the piling station and means for supporting the front part and rear part of a new box blank being introduced beneath the pile, the improvements comprising the means for supporting the front part of the pile comprising a comb mounted by means for reciprocal movement between an extended position supporting the front part of the pile and a retracted position removed from beneath the front part of the pile, the means for supporting the rear part of the pile comprising an outer surface of a sleeve mounted on a shaft for rotation, said sleeve having an axially extending groove in the outer surface, the means for supporting the front part of a new blank to be raised into the pile including lifting elements acting on a lower face of belts conveying the blank into the piling station to lift a leading edge of the blank as it approaches the front part of the pile, the means for supporting the rear part of the blank being introduced into the pile including a plurality of sector elements mounted on a transverse shaft moving in continuous rotation to raise a rear part of the blank into the pile, said means being synchronized so that as the comb is shifted to the retracted position, the lifting elements and sector elements are lifting the blank into the raised position and the sleeve presents the axially extending groove to allow passage of a trailing edge of the blank as the blank is being lifted by the sector elements into the pile of blanks.

4,808,055

TURBINE BLADE WITH RESTORED TIP

Timothy A. Wertz, Manahawkin; Gilbert A. Saltzman, Howell, and Ira L. Friedman, Rumson, all of N.J., assignors to Metallurgical Industries, Inc., Tinton Falls, N.J.

Filed Apr. 15, 1987, Ser. No. 38,851
Int. Cl.[4] F01D *5/14*; B23P *15/02*
U.S. Cl. 416—224 13 Claims



1. A turbine engine blade comprising

a blade root;

a blade extending from said blade root to a blade tip; and

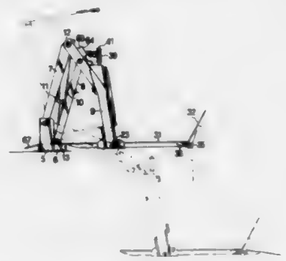
a metallurgically bonded wear resistant surface entirely made from powdered metal on said blade tip.

4,808,056

ELEVATOR DEVICE TRANSPORTABLE IN A MOTOR VEHICLE

Shimosuke Oshima, No. 1823, Shin-Machi, Tano-Gun, Gunma-Ken, Japan

Filed Feb. 2, 1988, Ser. No. 151,478
Claims priority, application Japan, Aug. 18, 1987, 62-203389
Int. Cl.[4] B60R *5/04*; B60P *1/44*
U.S. Cl. 414—462 7 Claims



1. An elevator device to be positioned in a motor vehicle through a rear opening thereof, comprising a base plate; frame means including a main frame positioned at one side of said base plate and an additional frame positioned at an opposite side of said base plate, each frame being provided with a parallelogram link mechanism and a pressure oil cylinder-piston unit having a cylinder and a piston, each link mechanism including two brackets spaced from each other and rigidly connected to said base plate, two link members spaced from each other and pivotally connected to said brackets, respectively, and an intermediate link arm pivotally connected to said link members, said cylinder of each cylinder-piston unit being

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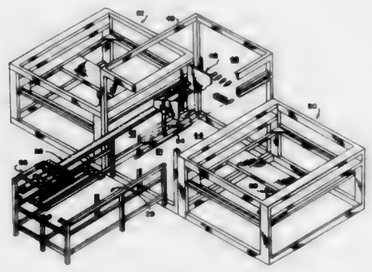
pivotally connected to one of said link members and said piston of said unit being pivotally connected to another of said link members so that each parallelogram link mechanism is opened by contraction of said piston rod in said cylinder and closed by extension of said piston rod from said cylinder whereby two link arms are moved to one end position when said piston rod is contracted and to another end position when said piston rod is extended from said cylinder; a connecting shaft which connects two ends of said link arms to each other so as to synchronize movements thereof, said link arm of the link mechanism of said main frame being provided with two lever plates at two sides thereof and pivotally supported on a pivot axle extending through said link arm, and a pressure air cylinder-piston unit having a cylinder pivotally connected to said link arm and a piston rod connected to one of said lever plates; and elevator means including a main platform, a folding platform pivotally connected to said main platform and a flap pivotable to said folding platform, said main platform being rigidly connected to said lever plates; said pressure air cylinder unit compensating for weight of said elevator means so that the latter can be manually raised to stand vertically to lean against said main frame or lowered to lie horizontally on said connecting shaft, said elevator means being triple-foldable in combination with said link arm of said main frame to stand in a vertical non-use position and being supported by said link arm of said additional frame to extend in a horizontal use position.

4,808,057

WORKLOAD REGULATOR FOR AUTOMATED PRODUCTION

Wayne T. Chiappe, Hinsdale, Ill., and Randy W. Gasquoine, Stockton, Calif., assignors to Sardee Corporation, Alsip, Ill.

Filed Sep. 11, 1986, Ser. No. 906,063
Int. Cl.[4] B65G 1/04
U.S. Cl. 414—267 **22 Claims**



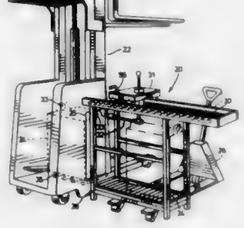
1. An apparatus adapted to be positioned between a first work station producing articles at a first cyclic rate and a second work station downstream of said first station and adapted to perform an operation on said produced articles at a second cyclic rate, said apparatus being adapted to regulate the rate of flow between said stations so that both stations may be operated continuously at their desired cyclic rates, respectively, said apparatus including means adapted for connection to a source of inbound articles, means adapted for connection to a destination for said articles when said articles are outbound from said apparatus, said apparatus also including a transfer station having at least one staging area for said inbound articles, at least one staging area for said outbound articles, a storage placement and retrieval area, and a transfer mechanism including means for picking up and releasing said articles in groups, means forming a part of said transfer mechanism for moving said pickup and releasing means between positions adjacent said staging areas and a position adjacent said storage placement and retrieval area, means operatively associated with said appratus for transiently storing at least some of said groups of articles, and detection and control means adapted to determine the rate at which articles are being supplied to said regulating apparatus from said first work station and the demand rate at which articles are required to be supplied to said second work station, said control means being operative, when said demand rate substantially equals said supply rate, to cause said transfer mechanism to transfer all of said groups of articles arriving at said inbound staging area to said outbound staging area at substantially the same rate at which said articles are arriving at said inbound staging area, when said supply rate exceeds said demand rate, to cause said transfer mechanism to transfer some of said groups of articles arriving at said inbound staging area to said outbound staging area and the remainder of said arriving groups to said transient storage means, and when said demand rate exceeds said supply rate, to cause said transfer mechanism to transfer all groups of articles arriving at said inbound staging area to said outbound staging area at substantially the same rate at which said articles are arriving at said inbound staging area, and to supplement the groups of articles being fed from said inbound to said outbound staging areas by periodically retrieving groups of articles from said transient storage means and transferring them to said outbound staging area.

4,808,058

BATTERY HANDLING MACHINE

Wayne D. Carney, 110 Sherwood Ave., Toronto, Ontario, Canada (M4P 2A7), and Wayne D. Patterson, 31 Alphonse Crescent, Mississauga, Ontario, Canada L5M 1A4

Filed Sep. 29, 1987, Ser. No. 102,442
Int. Cl.[4] B60P 1/32
U.S. Cl. 414—343 **6 Claims**



1. Conveying apparatus for servicing a battery in a vehicle of the type having a battery entered horizontally through a side opening in the vehicle, the battery, in use, sitting on a battery support bed in the vehicle and the apparatus comprising:

a framework having a longitudinal axis which includes a floor positioned to be in substantial alignment with the battery support bed so as to receive and support the battery, the floor including a plurality of parallel rollers located transverse to the longitudinal axis of the framework to facilitate movement of the battery across the floor;

longitudinal track means forming part of the framework and spaced from the floor to accomodate the battery between the track means and the floor;

a transport mechanism including rack and pinion drive means having pinion means carried by a body, the pinion means being coupled to rack means provided on the track means for operation to move the body longitudinally along the track means in either direction;

rail means on the track means to guide wheels provided on the body; and

a coupling assembly attached to the transport mechanism for movement with the body and including a connector

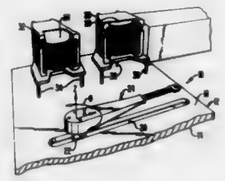
adapted to releasably engage the battery whereby on operation of the drive means the battery may be loaded onto or unloaded from the floor.

4,808,059

APPARATUS AND METHOD FOR TRANSFERRING WORKPIECES

William A. Eddy, Fremont, Calif., assignor to Peak Systems, Inc., Fremont, Calif.

Filed Jul. 15, 1986, Ser. No. 886,296
Int. Cl.[4] B65H 5/08
U.S. Cl. 414—416 **1 Claim**



1. In apparatus for handling a plurality of semiconductor wafers comprising:

a horizontal baseplate having a rectilinear slot therethrough;

a carriage;

means shiftably mounting the carriage on the baseplate below the slot for movement along a horizontal path relative thereto;

a post extending through the slot and having an upper and a lower end;

a vertical lead screw journalled on the carriage and movable therewith along said horizontal path;

means coupling the post to the vertical lead screw for movement of the post along a vertical path as a function of the rotation of the vertical lead screw;

a horizontal screw journalled at its ends thereof on the baseplate on the lower surface thereof, there being means coupling the carriage to the horizontal lead screw for movement of the carriage in response to the rotation of the horizontal lead screw relative to the baseplate;

a first reversible drive motor coupled with the horizontal lead screw for rotating the same to cause movement of the post along said horizontal path, said post having a shaft rotatably mounted therein and extending longitudinally thereof, there being a wafer transfer arm coupled to the upper end of the shaft for rotation therewith relative to the post;

a second reversible drive motor carried by the post near the lower end thereof for rotating the shaft relative to the post and thereby rotating the transfer arm in a generally horizontal plane, said arm having an outer end provided with a wafer engageable pad, said pad, said arm and shaft having a fluid passage therethrough, there being vacuum means coupled with said fluid passage for reducing the air pressure therewithin to cause a suction force at the pad to thereby permit removable attachment of a wafer to the pad;

a third drive motor coupled with the vertical lead screw for rotating the same; and

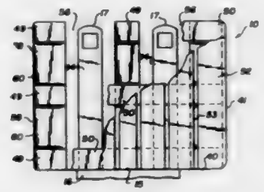
control means coupled with said drive motors and said vacuum means for actuating the same in accordance with a predetermined sequence.

4,808,060

LOAD CARRYING APPARATUS

Mike Wasylyshyn, Kamloops, Canada, assignor to Miro Enterprises Ltd., Kamloops, Canada

Filed Jan. 30, 1963, Ser. No. 509,312
Claims priority, application Canada, Jul. 13, 1982, 407120
Int. Cl.[4] B66B 9/20
U.S. Cl. 414—608 **6 Claims**



1. In load carrying apparatus for a vehicle the combination of lifting forks for the vehicle modified to provide a reduced effective length measured from a vertical abutment on the vehicle to outer ends of the forks, and a pallet adapted to be transported by the vehicle with the lifting forks entered in the pallet, said pallet comprising a rectangular base frame and a deck providing the pallet with side edges and end edges, said side edges being longer than said end edges, said side edges being spaced apart a distance substantially equal to the effective length of the lifting forks, said base frame having floor contacting members extending in parallel relationship from side edge to side edge one at each end edge and another at the center of the base frame, spacer members longitudinally spaced along each floor contacting member one at each side edge and another at the center of the base frame, longitudinal members mounted upon the spacer members to extend from end edge to end edge one at each side edge and another at the center of the base frame, said deck being constructed of a plurality of deck members extending from side edge to side edge normal to and resting on the longitudinal members, said deck and base frame defining a pair of longitudinal channels enterable by the lifting forks from either end edge of the pallet, and a pair of transverse channels open at their bottoms enterable by the lifting forks from either side edge of the pallet, the effective length of the lifting forks being no greater than the side edge to side edge width of the pallet so that, when the lifting forks are fully entered into the pair of transverse channels, one side edge is in contact with the vertical abutment on the vehicle and the outer ends of the lifting forks are located within the other side edge of the pallet, said lifting forks having upper surfaces which engage the undersides of said three longitudinal members when the lift forks are in the transverse channels and which entire upper surfaces engage the underside of said deck when the lift forks are in the transverse channels, said longitudinal channels being longer than the effective length of the lifting forks.

4,808,061

SINGLE ARM BACKHOE

David K. Cook, and Keith V. Cook, both of 4207 E. 12 Mile, Paris, Mich. 49338

Filed Sep. 24, 1987, Ser. No. 100,610
Int. Cl.[4] B66C 23/00; B66F 9/00
U.S. Cl. 414—695.7 **14 Claims**

1. A single-arm backhoe system, comprising:

a self-propelled tractor vehicle, having a front end, a rear end, opposed sides, at least four wheels supporting said tractor on the ground, and an operator's position thereon, said tractor further including an inherent pressurized hydraulic supply and controls therefor;

a boom arm assembly, pivotably supported at a first end thereof by at least one shaft forming a first pivot axis

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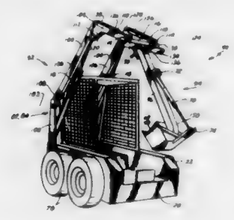
passing transversely of said tractor through at least one corresponding bracket rigidly affixed to said tractor proximate to said rear end thereof, said first pivot axis extending in a substantially horizontal direction transversely through said boom arm assembly at said first end thereof, said boom arm assembly extending from said first pivot axis in a cantilevered, non-interferring manner with respect to the structure of said tractor to at least one distal end of said boom arm assembly disposed proximate to said front end of said tractor;

a transverse structural member rigidly affixed to each of said at least one distal end of said boom arm assembly so as to be substantially horizontally disposed across and proximate to said front end of said tractor;

means for controllably pivoting said boom arm assembly including said transverse structural member in a substantially upward and downward direction about said first pivot axis;

a dipper arm assembly, having a first end thereof and a distal end thereof;

means, pivotably supported by said at least one distal end of said boom arm assembly and said transverse structural member, for pivotably supporting a first end of said dipper arm assembly in a manner enabling said dipper arm assembly to be rotated relative to said boom arm assembly and



said transverse structural member about a substantially horizontal second pivot axis oriented transversely through said at least one distal end of said boom arm assembly such that said second pivot axis is substantially parallel to said transverse structural member, and enabling said dipper arm assembly to be rotated relative to said boom arm assembly about a substantially vertical third pivot axis through said first end of said dipper arm assembly;

means for controllably pivoting said dipper arm assembly in a generally upward and downward direction about said second pivot axis;

means for controllably pivoting said dipper arm assembly from side to side, relative to said tractor, about said third pivot axis;

an excavating bucket, pivotably supported from said distal end of said dipper arm assembly by a substantially horizontal shaft forming a fourth pivot axis oriented transverse to the extent of said dipper arm assembly; and

means for controllably pivoting said bucket in a substantially upward and downward direction about said fourth pivot axis;

said tractor-mounted pressurized hydraulic supply and the controls associated therewith communicating operation and control of the several pivoting means of said backhoe system.

4,808,062

APPARATUS FOR PICKING UP ROCKS

Keith L. Bare, R.R. 1, P.O. Box 134, Emmetsburg, Iowa 50536

Filed May 27, 1986, Ser. No. 866,762

Int. Cl.[4] B66C *1/42*

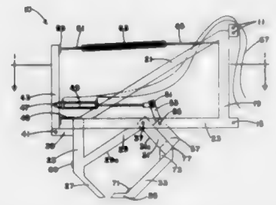
U.S. Cl. 414—703 **8 Claims**

1. An apparatus for picking up rocks from a field comprising:

a frame for attachment in the front to a three point hitch of an agricultural tractor;

a fixed jaw extending downward from the rear of the frame consisting of a plurality of vertical tines with the ends thereof narrowing and angling forward,

a strengthening plate affixed laterally across the vertical tines, and



two strengthening bars extending diagonally from approximately the point where the vertical tines narrow and angle forward, to approximately the point where the moveable jaw is rotatably mounted on the frame;

a moveable jaw rotatably mounted on the frame for cooperating with the fixed jaw to grasp and pick up rocks;

a hydraulic cylinder for rotating the moveable jaw; and

spring release means attached to the hydraulic cyclinder for preventing damage to the jaw during operation.

4,808,063

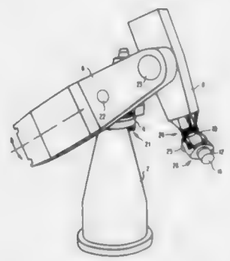
ROBOT SYSTEM EMPLOYING FORCE/POSITION CONTROL

Paul H. Haley, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 3, 1987, Ser. No. 116,089

Int. Cl.[4] B25J *9/06*

U.S. Cl. 414—730 **10 Claims**



1. In a robotic assembly system including a robotic device composed of a base member, a plurality of movable members and joint means coupling the members in a sequence extending from the base member such that a first one of the movable members is supported by the base member and is rotatable relative to the base member about a respective axis and each of the other movable members is supported by, and rotatable about a respective axis relative to, a respective preceding movable member in the sequence, with the last movable member in the sequence being an end member for supporting a workpiece which is to be brought to a selected position relative to a fixed body by movement along a surface defining a reference plane associated with the body, the selected position corresponding to a set of reference angular positions each of which defines an angular position of a respective movable member about the respective axis thereof; computer driven displacement means coupled to the joint means for rotating each movable member about the respective axis thereof in a manner to bring the workpiece to the selected position while displacing the workpiece generally along the reference plane and pressing the workpiece against the surface defining the reference plane with a force approaching a selected value; first monitoring means associated with the end member and coupled to the displacement means for producing a signal representative of the force with which the workpiece is being pressed against the reference plane; and second monitoring means coupled to the joint means and the displacement means for providing signals indicating the current angular position of each movable member about the respective axis thereof,

the improvement wherein said displacement means comprise means coupled to said joint means for effecting rotation of only one of said movable members in direct response to the signal produced by said first monitoring means.

4,808,064

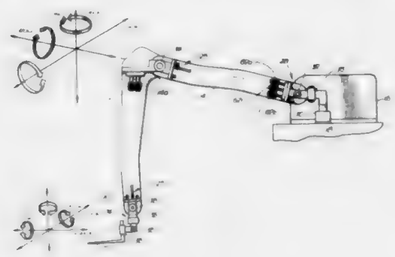
MICROPOSITIONING APPARATUS FOR A ROBOTIC ARM

Stephen J. Bartholet, Orange, Calif., assignor to Odetics, Inc., Anaheim, Calif.

Filed Dec. 5, 1985, Ser. No. 805,439

Int. Cl.[4] B65B *21/02*

U.S. Cl. 414—730 **4 Claims**



1. A micropositioning apparatus for a robotic device having a load bearing arm having a first end pivotally connected to a base and a second end for supporting a load, comprising:

means for detecting the angular orientation of the arm with respect to the base;

measuring means for optically measuring translational deflections of the arm, the measuring means having a target disposed at one end of the arm and means, disposed at the opposite end of the arm, for detecting displacement of the target, wherein the target comprises a plurality of light sources generally disposed in a common plane and at least one light source disposed outside said plane; and

means for pivoting the arm relative to the base to achieve a desired arm position based upon the detected angular orientation and the measured deflections.

4,808,065

APPARATUS FOR CHANGING POSTURE OF GREEN EXTRUDED BODY

Isao Hattori, Nagoya, and Akio Enomoto, Chita, both of Japan, assignors to NGK Insulators, Ltd., Aichi, Japan

Continuation of Ser. No. 843,731, Mar. 25, 1986, abandoned.

This application Feb. 26, 1988, Ser. No. 163,206

Claims priority, application Japan, Mar. 29, 1985, 60-63387

Int. Cl.[4] B65G *47/24*

U.S. Cl. 414—774 **3 Claims**

1. An apparatus for changing posture of green extruded bodies, comprising: a first table having a surface for receiving and supporting thereon at least one green extruded body which has been extruded horizontally and shaped into a predetermined configuration with end surfaces of the extruded body being perpendicular to the surface of said first table, said first table being rotatable about a first horizontal axis, a second table arranged adjacent to said first table and having a surface for receiving an end surface of the green extruded body thereon from the first table and supporting said green extruded body, said second table being rotatable about a second horizontal axis which extends coaxial with the first horizontal axis, and rotational means for causing said first and second tables to rotate about said first and second horizontal axes, respectively, and for transferring said green extruded body from said first table to said second table, said rotational means including stopper means located on said first table and contacting the second

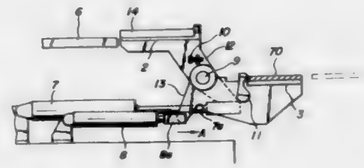


table for limiting rotation of said second table by said rotational means to maintain said surfaces of the first and second tables in a perpendicular state relative to each other, and for driving said second table when said first and second tables assume said perpendicular state, said green extruded body supported on the first table and whose end surfaces are perpendicular to the surface of the first table being transferred without deformation to the second table in a standing posture with one end surface of said end surfaces of the green extruded body being parallel to the surface of the second table and perpendicular to the surface of the first table.

4,808,066

DEVICE FOR CONVEYING FUEL FROM A SUPPLY TANK TO INTERNAL COMBUSTION ENGINE

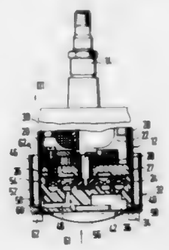
Hartmuth Kraemer, Ditzingen, and Ernst Zoldn, Korntal, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 19, 1987, Ser. No. 109,930

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1987, 3701382

Int. Cl.[4] F04D *5/00*

U.S. Cl. 415—53 T **4 Claims**



1. A device for conveying fuel from a supply tank to an internal combustion engine of a motor vehicle, comprising a fuel supply aggregate including a housing portion having a suction opening and at least one pump stage, a pressure passage leading to the internal combustion engine, said aggregate conveying fuel via the suction opening, which opens into the supply tank, into said pressure passage, and a degassing passage which connects a pump chamber of said pump stage to the

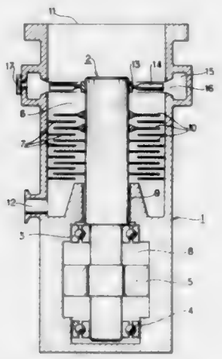
supply tank, said aggregate being provided with a structural element and arranged so that a fuel flow therein is directed upwardly, said aggregate having an upwardly extending channel into which said degassing passage opens, said channel being open at an upper end thereof and being connected to the supply tank to discharge gas bubbles from said degassing passage to the supply tank, said housing portion forming an internal wall for said channel, said structural element being a cup-shaped element, said aggregate vertically standing in said cup-shaped element, said cup-shaped element having a bottom wall having a perforation which corresponds to said suction opening, said cup-shaped element having a peripheral wall which forms an external wall for said channel to limit the latter, said peripheral wall having an inner surface which faces said internal wall and is spaced therefrom, said peripheral wall being formed at said inner surface with a plurality of ribs circumferentially spaced from each other and extending towards said internal wall, said ribs centering said aggregate in said cup-shaped element, said peripheral wall having an inner surface which faces said internal wall and is spaced therefrom, said peripheral wall being formed at said inner surface with a plurality of ribs circumferentially spaced from each other and extending towards said internal wall, said ribs centering said aggregate in said cup-shaped element, said degassing passage opening into said channel near said bottom wall, said channel being limited by two adjacent ribs, said bottom wall and said internal wall.

4,808,067

ROTARY VACUUM PUMP

Claude Saulgeot, Veyrier-Du-Lac, France, assignor to Alcatel Cit, Paris, France

Filed Feb. 8, 1988, Ser. No. 153,678
Claims priority, application France, Feb. 25, 1987, 87 02490
Int. Cl.[4] F04D *19/04*
U.S. Cl. 415—90 1 Claim



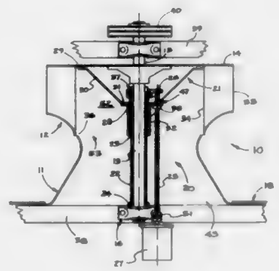
1. A rotary vacuum pump comprising a stator having a stator cavity, a rotor, and means mounting said rotor for rotation inside said stator cavity, said stator including a suction inlet, an exhaust outlet orifice and an annular stator collector tank disposed about said stator cavity and having a circular opening in communication with said stator cavity and said rotor including at least one wheel having sloping vanes disposed in a radial plane including said circular opening of said collector tank whereby any solid particles which may be sucked into said cavity will be projected radially outwardly by said vanes into said collector tank.

4,808,068

BLOWER UNLOADING DEVICE

Norman H. Asbjornson, Edina, and James V. Foty, Plymouth, both of Minn., assignors to Intertherm Investments, Inc., Providence, R.I.

Filed Oct. 28, 1986, Ser. No. 924,215
Int. Cl.[4] F01B *25/02*
U.S. Cl. 415—157 20 Claims



1. An automatically activated, non-rotating aerodynamic blower unloading device used in an environmental control system and for internally controlling a large air volume centrifugal fan assembly concentrically mounted for rotation to an air inlet funnel having a rounded air inlet funnel having a rounded intake orifice and a rear orifice periphery with a predetermined diameter, the fan assembly having a back plate, a plurality of fan blades having a predetermined width, a central cavity and a drive shaft with a hub assembly mounted to the back plate and extending axially therefrom through the central cavity and the intake and rear orifices, said blower unloading device comprising:

a. a fixed cylindrical support structure with respect to the rotating fan assembly mounted concentrically about the drive shaft of the fan assembly and extending from the drive shaft hub through the central cavity at least to the rear orifice of the air inlet funnel,

b. an internally active air deflection member movably mounted to said fixed support structure for controlling the airflow through the air inlet funnel, said air deflection member having an aerodynamic and generally frusto-conical frontal structure and being concentrically movable on said support structure from the fan assembly back plate to the inlet orifice and further having a predetermined diameter to abut and seal the rear periphery of the air inlet funnel,

c. drive means operative on said air deflection structure and being connected to the front thereof for moving said air deflection frontal structure a predetermined distance in the central cavity of the fan assembly for reducing airflow and, thus, the power requirements of the centrifugal fan, and

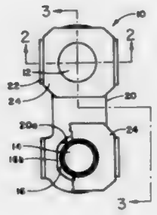
d. means to activate said drive means, said means being remotely located and being automatically operated based upon pressure differentials in the environmental control system.

4,808,069

ANTI-ROTATION GUIDE VANE BUSHING

George Bonner, Palm Beach Gardens; Milo R. Rodriguez, West Palm Beach, and Douglas L. Kisling, Palm Beach Gardens, all of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 3, 1986, Ser. No. 881,741
Int. Cl.[4] F04D *29/56*
U.S. Cl. 415—160 9 Claims



1. A variable guide vane bushing assembly for use in a compressor casing comprising:

(a) bushings for use on a rotatable vane stem of a guide vane, each of said bushings comprising sleeve and collar portions wherein said sleeve portions have a flat portion positioned on their periphery;

(b) bushing antirotation means comprising a lock washer having openings that mate with the flat portion of said sleeves of said bushings on at least two adjacent vane stems in order to prevent bushing rotation; and

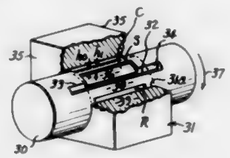
(c) retainer means to radially restrain said lock washer.

4,808,070

FLUID BEARING

G. Fonda-Bonardi, 1450 23rd St., Santa Monica, Calif. 90404

Filed Aug. 17, 1987, Ser. No. 85,704
Int. Cl.[4] F04D *29/04*
U.S. Cl. 415—110 9 Claims



1. A bearing comprising:

(a) a support having a longitudinally extending bore, generally circular in cross-section at any point, said bore being of a predetermined diameter and defining an inner surface, said support being disposed within a gaseous atmosphere and including longitudinally spaced faces;

(b) an elongated generally cylindrical shaft rotatable within said bore of the support, said shaft being of a predetermined diameter less than the diameter of said bore in said support and defining an outer surface, said outer surface of said shaft having:

(i) a plurality of circumferentially spaced, longitudinally extending recesses of a predetermined depth, each said recess defining an elongated, generally radially outwardly extending step of a predetermined height; and

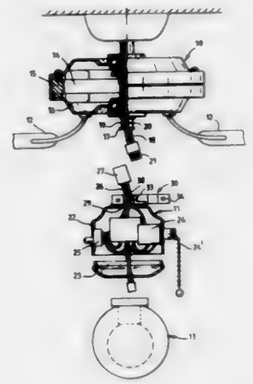
(ii) a plurality of circumferentially spaced, longitudinally extending grooves of a predetermined depth disposed proximate said steps, said grooves including an end portion extending beyond one of said longitudinally spaced faces of said support into said gaseous atmosphere whereby gas will be drawn into said recesses upon rotation of said shaft relative to said support, at least one end of each of said grooves being in communication with a source of fluid at a predetermined pressure.

4,808,071

CEILING FAN

Kwok Y. Chan, Ting Kau, Hong Kong, assignor to CEC Electrical Manufacturing (Int'l) Co. Ltd., Tuen Mun New Town, Hong Kong

Filed May 11, 1988, Ser. No. 192,688
Claims priority, application United Kingdom, Jan. 29, 1988, 8801974
Int. Cl.[4] F04D *25/08*
U.S. Cl. 416—5 8 Claims



1. A ceiling fan having a motor and a switch unit, the motor comprising an inner stator, an outer rotor, a rotor casing rotatable with the rotor, a tubular boss which depends from the inner stator and first wiring means extending through said boss, and the switch unit comprising a housing, switchgear for the motor contained within the housing, and second wiring means connected to the switchgear, wherein the first and second wiring means have complementary electrical connectors which are able to pass through an aperture provided in the upper end of the housing and wherein the housing has connecting means at its upper end for connecting the housing to the depending boss, the connecting means comprising an openable or enlargeable clamp to allow the complementary connectors to be passed through said aperture and the first wiring means to extend through and be withdrawn from said clamp.

4,808,072

ELECTRICAL GROUNDING CONNECTOR FOR A HELICOPTOR ROTOR

Thomas A. Moore, Monroe; Stanley J. Bazydola, Jr., Fairfield, and Richard A. Depietro, East Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 17, 1987, Ser. No. 97,993
Int. Cl.[4] H01R *4/66*
U.S. Cl. 416—5 6 Claims

1. A helicopter rotor hub characterized by:

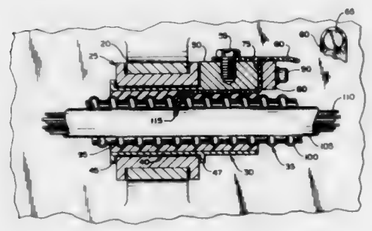
a connector for providing twistable support of a cable within said hub and an electrical ground connection from said cable to said rotor hub, said connector comprising:

a bushing fixedly attached to the interior of said rotor hub;

a hollow conductive spindle which receives said cable therewithin, said spindle being rotatably received

within said bushing to accommodate twisting of said cable;

means disposed interiorly of said spindle for fixing said cable thereto;



an electrical conductor, said electrical conductor at one end thereof being electrically connected to said cable; and

means for connecting an opposite end of said conductor to said spindle for ultimate electrical connection of said cable to said rotor hub.

4,808,073

METHOD AND APPARATUS FOR COOLING A HIGH PRESSURE COMPRESSOR OF A GAS TURBINE ENGINE

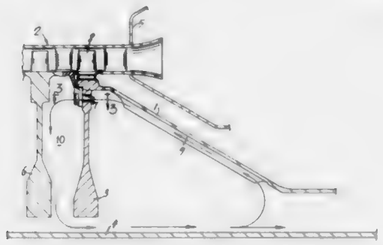
Gerhard Zachring, Woerthsee; Josef Wohlmuth, Puchheim Bhf, and Hans-Juergen Schmuhl, Woerthsee, all of Fed. Rep. of Germany, assignors to MTU Motoren- Und Turbinen- Union Muenchen GmbH, Muenchen, Fed. Rep. of Germany

Filed Nov. 16, 1987, Ser. No. 120,990

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1986, 3638960

Int. Cl.[4] F01D *5/08*

U.S. Cl. 416—95 **6 Claims**



1. A gas turbine jet engine comprising a high pressure compressor including a rotor comprising a hollow shaft and a plurality of spaced rotor discs rotatable with the rotor, said hollow shaft including a conically tapering section behind the last of the rotor discs of the high pressure compressor, means for cooling the high pressure compressor by the supply of cooling air from a low pressure compressor, characterized as follows:

(a) a plurality of vane-like ribs on said conically tapering section on an inner surface thereof for conveying the cooling air along said conically tapering section in the direction of widening thereof towards the last of the rotor discs,

(b) said last rotor disc being provided near the outer periphery thereof with a plurality of circumferentially spaced holes for flow of the cooling air therethrough.

4,808,074

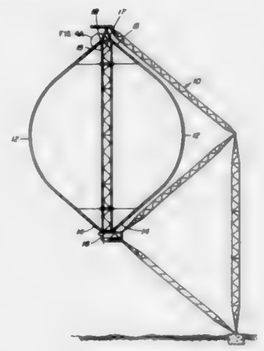
VERTICAL AXIS WIND TURBINES

Peter South, Weston, Canada, assignor to Canadian Patents and Development Limited-Societe Canadienne Des Brevets et D'Exploitation Limitee, Ottawa, Canada

Filed Apr. 10, 1987, Ser. No. 36,897

Int. Cl.[4] F03D *7/04*

U.S. Cl. 416—140 **10 Claims**



1. A vertical axis cross-wind turbine having a number of blades, each blade being attached at its top and bottom end roots to a rotor and having energy exchange means provided between said blade roots and said rotor comprising means to provide lead/lag motion of said blade with respect to said rotor.

4,808,075

HELICOPTER ROTOR

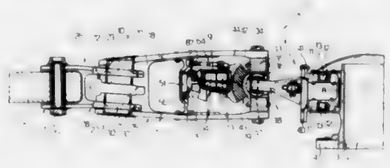
Emilio Pariani, Cardano al Campo; Vittorio Caramaschi, Gallarate, and Pierluigi Castelli, Busto Arsizio, all of Italy, assignors to Costruzioni Aeronautiche Giovanni Agusta S.p.A., Italy

Filed Nov. 20, 1987, Ser. No. 123,605

Claims priority, application Italy, Nov. 25, 1986, 67876 A/86

Int. Cl.[4] B64C *27/38*

U.S. Cl. 416—140 **8 Claims**



1. An articulated helicopter rotor comprising a drive shaft; a center hub fitted on to the said drive shaft; a number of blades extending substantially radially from the said hub and connected in articulated manner to the same; and a device for limiting oscillation of each blade in relation to the said hub and substantially parallel with the axis of the said drive shaft; characterised by the fact that, for each said blade, the said limiting device comprises a ring nut supported on the said blade in such a manner as to turn about its own axis parallel with the axis of the said blade; a drive extending between the said ring nut and the said hub, for rendering the same integral as regards rotation about the said ring nut axis, the said drive comprising a variable-length element and an articulated joint; and rocker arm means located between the said hub and the said ring nut, and designed to turn in a plane substantially parallel with the axis of the said drive shaft.

4,808,076

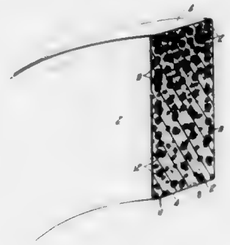
ROTOR FOR A GAS TURBINE ENGINE

David C. Jarmon, Kensington, and Karl M. Prewo, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 15, 1987, Ser. No. 133,093

Int. Cl.[4] F01D *5/34*

U.S. Cl. 416—230 A **3 Claims**



1. A turbine rotor comprising a glass or glass ceramic matrix reinforced with silicon carbide yarn fiber reinforcement and with silicon carbide monofilament fiber reinforcement, wherein the local volume fraction of the silicon carbide monofilament fiber reinforcement increases with increasing radial distance from the inner diameter of the turbine rotor so that the turbine rotor exhibits high hoop strength, oxidation resistance at elevated temperature and a nonuniform elastic modulus which increases with increasing radial distance from the inner diameter of the turbine rotor.

4,808,077

PULSATIONLESS DUPLEX PLUNGER PUMP AND CONTROL METHOD THEREOF

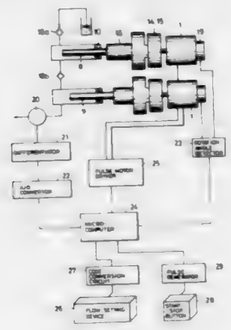
Tsuneo Kan; Yozo Nakamura, and Mieko Ishii, all of Shimoinsyoshi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 6, 1988, Ser. No. 141,218

Claims priority, application Japan, Jan. 9, 1987, 62-2909

Int. Cl.[4] E04B *41/06, 49/06, 3/00*

U.S. Cl. 417—2 **10 Claims**



1. A pulsationless duplex plunger pump in which check valves are provided at a suction side and at a discharge side of one of two reciprocating pumps incorporated therein, said two reciprocating pumps being arranged in series and driven by electric drive motor means, and an outlet of said check valve at the discharge side communicates with the other incorporated pump, which comprises:

means for detecting pressure in a resultant liquid discharged from said two reciprocating pumps;

means for detecting a position of a plunger of each of said reciprocating pumps;

memory means for storing an instruction of a plunger velocity at every position of said each plunger;

means for correcting the instruction of the plunger velocity from said memory means, based on the pressure corresponding to the detected position of said each plunger so that the sum of velocities of said two plungers will be constant; and

means for controlling a velocity of each of said plungers according to corrected velocity instruction through a control of said electric drive motor means, wherein said velocity instruction correction is effected by adding a value proportional to a value obtained through reversing a sign of a time differential value of the pressure in said resultant discharged liquid.

5. A method of controlling a pulsationless duplex plunger pump having two reciprocating pumps in series and check valves provided at suction and discharge sides of one of said reciprocating pumps, said method comprising the steps of:

detecting a position of a plunger of one of said reciprocating pumps;

detecting pressure in a resultant liquid discharged from said two reciprocating pumps, the pressure to be detected corresponding to a position of said plunger;

calculating a valocity instruction based on a predetermined flow rate required of said duplex plunger pump and the plunger position and storing the velocity instruction;

differentating the detected preasure with respect to time to obtain a time-differential value of the pressure in the resultant discharged liquid;

correcting the stored velocity instruction based on the time-differential value of the pressure and the detected plunger position; and

controlling the reciprocating pumps by using the corrected velocity instruction so that a flow rate of the resultant liquid discharged from the reciprocating pumps is constant.

4,808,078

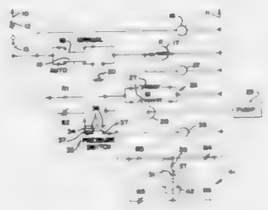
PUMP CONTROL SYSTEM FOR INSTANTLY REVERSING THE DRIVE MOTOR

Terry L. Havens, Wenona, and Robert E. Park, Metamora, both of Ill., assignors to Phoenix Park Systems, Wenona, Ill.

Filed Oct. 5, 1987, Ser. No. 104,767

Int. Cl.[4] F04B *49/00, 49/08;* **B65B** *57/00*

U.S. Cl. 417—38 **7 Claims**



1. A liquid flow control system comprising a liquid flow line, a positive displacement pump connected in said flow line for pumping a liquid therethrough, a bidirectional electric motor coupled to drive said pump in forward and reverse directions, first and second power input lines adapted to be connected to an electric power supply, control circuit means connecting said motor with said power input lines in one polarity for powering said motor in one direction and pumping the liquid in

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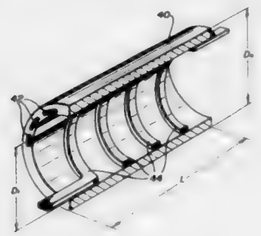
the forward direction in said pump and then instantly reversing said polarity while said motor is turning in said one direction for powering said motor to turn in the reverse direction and pumping the liquid in the reverse direction in said pump, and pressure responsive means connected in said flow line and connected to said control circuit means for disconnecting said power input lines from said power supply when said motor is powered in said reverse direction and the liquid pressure in said flow line is at a predetermined low pressure.

4,808,079

MAGNETIC PUMP FOR FERROFLUIDS

Christopher J. Crowley, R.F.D. Box 224, Lyme, N.H. 03768, and W. Dodd Stacy, R.F.D. 2, South Royalton, Vt. 05068

Filed Jun. 8, 1987, Ser. No. 59,402
Int. Cl.[4] E04B *15/02*
U.S. Cl. 417—50 **5 Claims**



1. A pump for a ferrofluid comprising:
- at least a first group of coil elements forming at least two coils of electrical conductors, said coils being arranged in a cylindrical configuration;
- a first ferromagnetic cylindrical stator having an outer cylindrical surface and an inner cylindrical surface said coils being wound in said stator;
- a tube for transporting the ferrofluid having magnetic particles suspended in a fluid, said tube being wound internal to and in close proximity to said inner cylindrical surface of said stator; and
- a power source of at least two phases and said power source being connected to said coils so as to produce a traveling magnetic field, whereby said traveling magnetic field moves said ferrofluid through said tube.

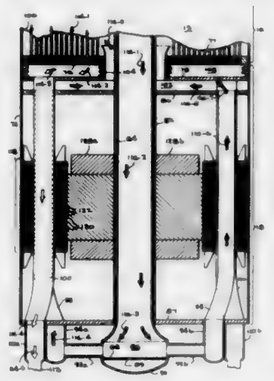
4,808,080

FLOW COUPLER ASSEMBLY FOR DOUBLE-POOL-TYPE REACTOR

Christopher C. Alexion, N. Huntingdon; Robert M. Slepian, Monroeville Boro, and Richard D. Nathenson, Pittsburgh, all of Pa., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Jul. 22, 1986, Ser. No. 888,667
Int. Cl.[4] H02K *44/02*; G21C *15/00*
U.S. Cl. 417—50 **27 Claims**

1. A liquid metal pump assembly adapted to be disposed as one of a plurality of said liquid metal pump assemblies in a continuous, circular array about a core of a nuclear reactor, said pump assembly having first and second ends and comprising:
- (a) a pipe for receiving and directing a pumped, intermediate liquid metal through said pump assembly in a first direction;
- (b) first and second duct modules disposed on either side of said pipe, each of said first and second duct modules comprising a primary duct for receiving and directing therethrough a primary liquid metal, and an intermediate duct in communication with said pipe for directing a first flow of said intermediate liquid metal therethrough in a second direction opposite to said first direction;
- (c) means for generating and directing a main magnetic field through each of said primary and intermediate ducts of said first and second duct modules and through said first and second ends of said pump assembly, whereby the interaction of said main magnetic field and said first flow of said intermediate liquid metal generates a first current flow, radially directed through said intermediate ducts



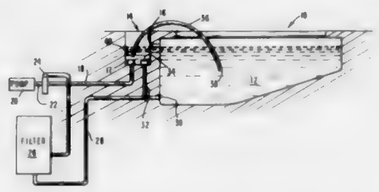
and said primary ducts, and pumps said primary liquid metal through said pump ducts; and
- (d) at least one magnetic circuit element disposed adjacent one of said first and second duct modules and one of said first and second ends for directing said main magnetic field from said one duct module to an adjacent liquid metal pump assembly of said plurality, whereby said magnetic field as generated by each of said plurality of liquid metal pump assemblies is directed in a circular path along said continuous array.

4,808,081

HOSE AIR PURGING, PUMP ANTI-DEPRIMING METHOD AND APPARATUS

Richard O. Finley, Huntington Beach, Calif., assignor to Plastiflex Company International, Fountain Valley, Calif.

Continuation of Ser. No. 636,332, Jul. 31, 1984, abandoned. This application Mar. 5, 1987, Ser. No. 22,480
Int. Cl.[4] F04B *39/00*; F04H *3/16*
U.S. Cl. 417—57 **21 Claims**



1. A method for purging a gas from a conduit through which a liquid is to be conveyed to and from a source of the liquid by a unidirectional source of negative and positive liquid pressures, the pressure source having an inlet for the negative pressure and an outlet for the positive pressure, without causing the pressure source to lose its prime, comprising the sequential steps of:

coupling both the conduit and the inlet to the liquid source for creating a positive pressure of the liquid in the conduit by the pressure source to flow the liquid in a forward direction away from the pressure source and thus to expel the gas from the conduit;

thereafter coupling the conduit directly to the inlet for creating a negative pressure of the liquid in the conduit by the pressure source to reverse the direction of the liquid flow back towards the pressure source; and

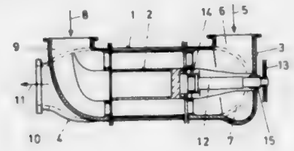
maintaining both the negative and positive pressures in the pressure source during both said coupling steps.

4,808,082

PRESSURE WAVE SUPERCHARGER

Hubert Kirchhofer, Gebenstorf, and Andreas Mayer, Niederrohrdorf, both of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Oct. 23, 1987, Ser. No. 111,579
Claims priority, application Switzerland, Oct. 29, 1986, 4280/86
Int. Cl.[4] F04F *11/02*; F02B *33/42*
U.S. Cl. 417—64 **3 Claims**



1. A pressure wave supercharger comprising:

a rotor casing having two ends;

an air casing mounted at one end of the rotor casing and a gas casing mounted at the other end of the rotor casing, the air and gas casings each including ducts for supplying and removing air and gas to the rotor casing;

a rotor enclosed in the rotor casing and including cells around the periphery thereof;

a rotor shaft supporting the rotor in the rotor casing and extending through the air casing, first bearings being provided between the rotor shaft and the air casing for mounting the rotor shaft in the air casing; and

a belt pulley mounted on the rotor shaft, a freewheel clutch and second bearings on each side thereof being provided between the belt pulley and the rotor shaft, the belt pulley being adapted to be driven via a belt, by an internal combustion engine which is to be supercharged by the pressure wave supercharger.

4,808,083

VARIABLE CAPACITY TYPE VANE COMPRESSOR

Yasushi Watanabe; Tatsuya Nakai; Shiaichi Suzuki, and Masahiro Kawaguchi, all of Kariya, Japan, assignors to Toyota Jidoshokki Seisakusho Kabushiki Kaisha, Aichi, Japan

Filed Jan. 29, 1988, Ser. No. 150,395
Claims priority, application Japan, Feb. 4, 1987, 62-015161[U]
Int. Cl.[4] F04B *49/02*; F04C *29/08*
U.S. Cl. 417—295 **12 Claims**

1. A variable capacity type vane compressor comprising:

an outer housing having housed therein a cylinder having a center axis and an inner surface to form an open-ended oblong cylinder bore and a pair of side plates coupled on either end of said cylinder to close said cylinder bore;

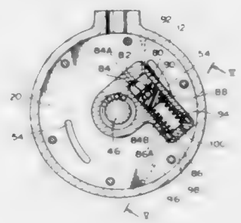
a rotor rotatably inserted in said cylinder about said axis and having an outer surface to provide an annular space between the inner surface of said cylinder and the outer surface of said rotor, said rotor having a plurality of vanes arranged generally radially thereon and axially extending between said side plates so that the radially outer ends of said vanes are in slidable contact with the inner surface of said cylinder to divide said annular space into compression chambers and thereby effect a compression of gas in said space upon rotation of said rotor;

gas inlet means including means for forming an inlet chamber in said outer housing for oil-containing gas and means for forming an inlet passage for introducing gas from said inlet chamber into said annular space;

gas outlet means including means for forming an outlet chamber in said outer housing and means for forming an outlet passage for discharging compressed gas from said annular space into said output chamber;

a means for forming an oil separating chamber in said outer housing in communication with said gas outlet means to separate liquid oil from oil containing gas and store same therein under an output pressure of the compressed gas;

a movable capacity control disk arranged at an interface between one of said side plates and said rotor to control a quantity of gas introduced from said inlet chamber into said annular space, or to control a quantity of compressed gas returned from said gas outlet means into said gas inlet means, or to control simultaneously the quantity of said introduced gas and returned gas to vary a capacity of the compressor; and



actuator means for moving said capacity control disk;

said actuator means comprising;

means for forming a spool cylinder;

a spool inserted in said spool cylinder for reciprocal movement and connected to said capacity control disk;

a first and a second working chambers formed in said spool cylinder on opposite sides of said spool;

first passage means connecting said first working chamber to said gas outlet means to introduce gas under output pressure into said first working chamber;

a spring arranged in said second working chamber to urge said spool toward said first working chamber;

second passage means connecting said second working chamber to said oil separating chamber to introduce liquid oil therein;

leak passage means connecting said second working chamber to said inlet chamber; and

a valve means arranged in said second passage means to open or close said second passage means in response to a predetermined requirement.

4,808,084

APPARATUS FOR TRANSFERRING SMALL AMOUNT OF FLUID

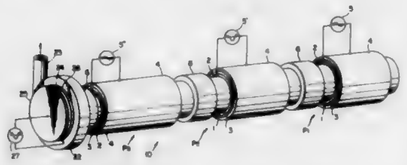
Kuniyoshi Tsubouchi, Mito; Shohei Yoshida, Hitachi; Kiyoshi Namura, and Akira Arai, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 23, 1987, Ser. No. 29,095
Claims priority, application Japan, Mar. 24, 1986, 61-64092
Int. Cl.[4] F04B *43/08*
U.S. Cl. 417—322 **10 Claims**

1. An apparatus for transferring a small amount of fluid comprising:

at least three vibration pump units which are connected in series along an axis, each of said vibration pump units

having a fluid transfer pipe, a peripheral vibrator mounted on the outer peripheral surface of the fluid transfer pipe and adapted to cause said transfer pipe to vibrate in a respiring manner, an inner peripheral electrode on the inner peripheral surface of said peripheral vibrator and having a major dimension extending parallel to said axis, an outer peripheral electrode on the outer peripheral surface on said vibrator and covering the inner peripheral electrode, said peripheral vibrator being positioned between said inner and outer electrodes, a high-frequency



voltage applying device for applying a high-frequency voltage between said inner peripheral electrode and said outer peripheral electrode thereby causing the peripheral vibrator to vibrate in respiring manner, a fluid diode exhibiting resistance to reversing of the fluid and connected to the fluid outlet of each fluid transfer pipe in such a manner as to permit the fluid to be discharged from each fluid transfer pipe, said high-frequency voltage applying devices of the adjacent vibration pump units being operated with a predetermined phase difference therebetween.

4,808,085

CLOSED TYPE ELECTRIC COMPRESSOR

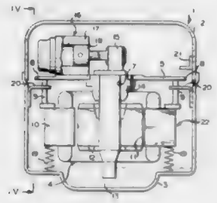
Kazuichi Nishitsuji, Fujisawa-shi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 25, 1986, Ser. No. 855,599

Claims priority, application Japan, Apr. 27, 1985, 60-63915[U]

Int. Cl.⁴ F04B *17/00, 35/00*

U.S. Cl. 417—363 **5 Claims**



1. A closed type electric compressor comprising:

a closed container;

a compressor body disposed within the closed container and having a support frame, compression means mounted on the support frame, and drive means for driving the compression means, said support frame having a flat section for supporting said compression means and drive means, and a pair of end portions which are located substantially perpendicular to the flat section, on each side thereof, each of said end portions having an engaging hole;

support means for elastically supporting the compression body within the closed container; and

a pair of first stoppers fixed to the closed container and loosely inserted into the engaging holes, respectively, for engaging the engaging holes to prevent excessive horizontal and vertical movement of said support frame relative to said closed container when the compressor receives a large shock, whereby said elastic support means, said compressor body, and said closed container are protected from damage that might otherwise result from such a shock.

4,808,086

ARTICLES AND METHODS FOR TREATING FABRICS

Mark D. Evans, Fairfield; Gregory B. Huntington, Cincinnati; Robert L. Stewart, Cincinnati; Peter H. Wolf, Cincinnati, and Roger E. Zimmerer, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 22,615, Mar. 3, 1987, Pat. No. 4,749,596, which is a continuation of Ser. No. 768,538, Aug. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 708,763, Mar. 6, 1985, abandoned. This application Oct. 29, 1987, Ser. No. 113,850

The portion of the term of this patent subsequent to Jun. 7, 2005, has been disclaimed.

Int. Cl.⁴ B05D *3/12*

U.S. Cl. 427—242 **45 Claims**

1. An article of manufacture adapted for providing fabric soil release and softening benefits within an automatic clothes dryer, said article comprising:

(a) a fabric conditioning composition being solid at room temperature and flowable at dryer operating temperatures, said fabric conditioning composition comprising:

i. 1% to 70% of a polymeric soil release agent; and

ii. 30% to 99% of a fabric softening agent selected from cationic and nonionic fabric softeners and mixtures thereof;

(b) dispensing means which provides for release of said conditioning composition within an automatic laundry dryer at dryer operating temperatures.

4,808,087

CANNED MOTOR PUMP

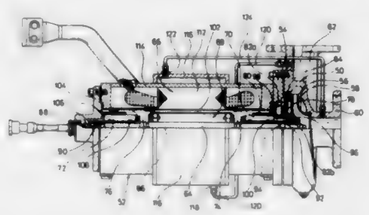
Toshiaki Tsutsui, and Takashi Akiba, both of Tokyo, Japan, assignors to Nikkiso Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 529,800, Sep. 6, 1983, abandoned. This application Aug. 14, 1985, Ser. No. 766,075

Claims priority, application Japan, Sep. 28, 1982, 57-167581

Int. Cl.⁴ F04B *17/00, 39/02*

U.S. Cl. 417—369 **11 Claims**



1. A canned motor pump for absorbing heat into a treating liquid which is generated within and in an electric motor of the canned motor pump having an improved dielectric strength at temperatures of above 200° C. and comprising a canned electric motor having a cylindrical housing, said motor driving an impeller pump having an impeller housing said impeller housing having a low pressure inlet and a high pressure outlet for discharging a high pressure treating liquid, said motor comprising of an inner rotor and an outer, annular which are both mounted within the cylindrical housing to define a gap therebetween, at least said stator having an iron core, fluid passage means for communicating a first portion of the high pressure treating liquid at a first pressure from a fluid chamber located on a rear side of the impeller to and through said gap between said rotor and said stator, in order to inhibit heat dissipation into the atmosphere from the cylindrical outer housing of the motor an outer surface of the iron core of the stator directly engages an inner surface of the cylindrical housing an outer surface of the cylindrical housing being directly engaged and surrounded about its entire circumference by a hollow jacket member having an inlet supplied with a second portion of the high pressure treating liquid at a second pressure, from the high pressure outlet of the pump, said jacket member having an outlet communicating with the low pressure inlet of the pump and thereby providing two liquid circulation systems in a single pump and motor arrangement whereby heat in the second portion of the treating liquid from the jacket outlet together with the heat in the first portion are recovered in the pump.

4,808,088

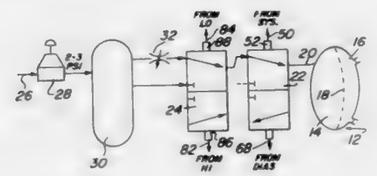
PNEUMATIC DRIVE CIRCUIT FOR AN ARTIFICIAL VENTRICLE INCLUDING SYSTOLIC PRESSURE CONTROL

William A. Minsfeldt, Ambler, Pa., assignor to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Filed Sep. 25, 1986, Ser. No. 911,598

Int. Cl.⁴ F04B *43/02*

U.S. Cl. 417—395 **7 Claims**



1. A pneumatic drive circuit for a pneumatically-driven artificial ventricle having a gas chamber and a blood chamber separated by a flexible diaphragm, comprising

(a) a single source of gas at a preselected positive pressure,

(b) valve means operatively associated with the gas chamber for controllably admitting gas from the source to the gas chamber through a restriction at the beginning of systole and admitting gas from the source directly to the gas chamber during the remainder of systole and exhausting said gas from the gas chamber during diastole, and

(c) pneumatic logic circuitry for actuating said valve means, said logic circuitry including means for causing the valve means to controllably admit said gas to the gas chamber during systole at a pressure which increases gradually at the beginning of systole from zero pressure to a pressure less than the preselected pressure and then increases rapidly to the preselected pressure.

4,808,089

RECIPROCATING PUMP FOR A MEDICATION ADMINISTERING DEVICE

Gerhard Buchholtz; Werner Fickweiler, and Peter Obermann, all of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 1, 1987, Ser. No. 91,721

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1986, 3629698

Int. Cl.⁴ F04B *17/04*

U.S. Cl. 417—417 **2 Claims**

1. A reciprocating pump for moving a liquid comprising:

means for reciprocably moving a piston in a jacket part, said piston having at least one planar end face;

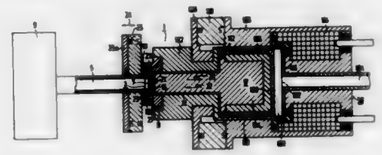
means for admitting liquid into an admission chamber, said planar end face of said piston forming one wall of said admission chamber;

a valve part accommodated in said admission chamber in a freely moveable fashion for engaging said means for admitting liquid to periodically prevent liquid from entering said admission chamber and surrounded by said jacket part, the valve part being hollowed out such that at its sealing side it is inwardly arced with a cutting edge present at the edge which is presented resiliently against a valve seal in a quiescent condition of the reciprocating pump, said piston having its planar end face seated against a planar end face of the valve part in its quiescent position;

a component part in magnetic interaction with said valve part and located external to said means for admitting liquid, said component part and said valve part forming a magnetic spring system for exerting a closing force on said valve part for engaging said means for admitting liquid, said component part being arranged outside of said means for admitting liquid;

means for providing at least one gap between said jacket part and said valve part, and between said jacket part and said piston;

a pump chamber having a discharge opening, said pump chamber being formed by two face sides, by a further and larger cylindrical jacket part, by said discharge opening, by said piston expanded in the discharge region and by said gap;



an armature part connected to said piston and surrounded by a pot-shaped capsule situated inside said pump chamber, said armature part being fabricated of a magnetizable material;

said capsule placed around said armature part, which is connected to an armature carrier of the piston, such that a complete encapsulation of the armature part is achieved;

a permanent magnet attached outside of the pump chamber as a ring magnet which is placed on an outer housing of said reciprocating pump such that a force permanently acts on said armature part which draws the latter away from said discharge opening, said armature part simultaneously serving as an armature for an electro-magnetic drive system composed essentially of an electro-magnetic coil;

said drive system being arranged at a defined location on the reciprocating pump such that when selecting his location when exciting the electro-magnetic coil with a current pulse, the magnetic field has an adequate force influence on said armature part so that said piston is conducted in the direction toward said discharge opening until said capsule contacts an end face of the pump chamber.

4,808,090

VACUUM MOTOR FAN COVER

David L. Evans, Rodman, N.Y., assignor to The Scott & Fetzer Company, Watertown, N.Y.

Filed Feb. 10, 1983, Ser. No. 465,539

Int. Cl.⁴ F04B *37/14, 39/12*

U.S. Cl. 417—423.2 **4 Claims**

1. A bypass vacuum motor unit comprising an electric motor, a vacuum air flow inducing fan fixed on the shaft of the motor, a pan-shaped fan cover fixed relative to the motor and enshrouding the fan, the fan cover being fabricated from a single sheet of metal stock and having a generally circular end wall and an integral generally cylindrical sidewall, the end wall having a central circular inlet aperture, the sidewall having a plurality of outlet apertures, said outlet apertures being

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generally curvilinear in form, coplanar with and exclusively in the sidewall, and arranged in a plurality of rows extending circumferentially of the sidewall, the apertures being of suffi-



cient size and number to provide adequate air flow therethrough while being sufficiently restricted in size to limit noise of operation of said unit.

4,808,091

BEARING SUPPORT OF THE SHAFT OF AN EXHAUST GAS TUBINE

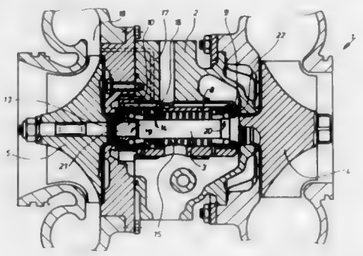
Georg Raetz, Immenstaad, Fed. Rep. of Germany, assignor to MTU-Motoren-und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 24, 1986, Ser. No. 933,868

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1985, 3541702

Int. Cl.[4] F04B *17/00*

U.S. Cl. 417—407 **14 Claims**



1. A bearing support of a shaft of an exhaust gas turbocharger in two roller bearing means arranged between its compressor and turbine, and in which the roller bearing means include bearing ring means forming race means, comprising axially acting elastic means pressing the race means of the bearing ring means which cooperate in a given roller bearing means and are axially displaceable relative to one another, against the roller members of the roller bearing means including pneumatic cylinder means operatively connected with the axially displaceable bearing ring means, the pneumatic cylinder means being provided with a pressure space operatively connected with a gas space of one of compressor or turbine to provide bearing preload as a function of the pressure of the compressor or turbine.

4,808,092

PRECISION RECIPROCATING METERING PUMP

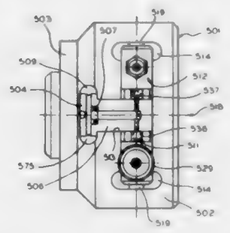
Herbert Funke, Krailling, Fed. Rep. of Germany, assignor to Sepbirwerk Industrieprodukte, Switzerland

Filed Jan. 6, 1987, Ser. No. 840

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1986, 3600343; Jan. 8, 1986, 3600342; Jan. 8, 1986, 3600341; Dec. 5, 1986, 3641652

Int. Cl.[4] F16J *10/02*; **F04B** *39/14, 21/02*

U.S. Cl. 417—454 **26 Claims**



1. A precision reciprocating metering pump, especially as applied in High Performance Liquid Chromatography (HPLC) techniques comprising a pump head casing, a pump head liner mounted in said pump head casing and containing a displacement chamber as well as inlet and outlet ports therein, and a plunger piston of clearance fit within said displacement chamber, said pump head liner and plunger piston being constructed of chemically inert material, the improvement wherein the pump head liner is formed of transparent synthetic sapphire or transparent monocrystalline zirconium oxide and the pump head casing is fitted with at least one viewing opening through which said pump head liner may be viewed from the exterior of the pump head casing.

4,808,093

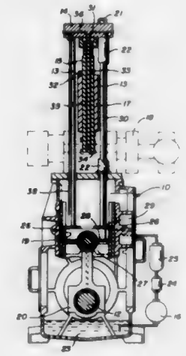
VERTICAL PLUNGER PUMP WITH ACTIVE PLUNGER HEAT EXCHANGE

Dragan Besic, West Caldwell, N.J., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 20, 1987, Ser. No. 28,369

Int. Cl.[4] F04B *21/00*

U.S. Cl. 417—539 **9 Claims**



1. In a plunger pump having an internal lubricant distribution system, a plunger, first and second side rods, and upper and lower crossheads, the improvement comprising:

a plunger having an internal reservoir, the reservoir further comprising intake and return means;

a first transverse passageway located within the upper crosshead, which cooperates with the reservoir intake means;

a second transverse passageway in the upper crosshead, which cooperates with the reservoir return means;

the first transverse passageway cooperating with a conduit internal to the first side rod;

the second transverse passageway cooperating with a conduit internal to the second side rods;

the reservoir comprising an enlarged void which cooperates with the first and second transverse passageways; and

the conduit internal to the first side rod supplied by and cooperating with a portion of the internal lubricant distribution system internal to the lower crosshead.

4,808,094

DRIVE SYSTEM FOR THE ORBITING SCROLL OF A SCROLL TYPE FLUID COMPRESSOR

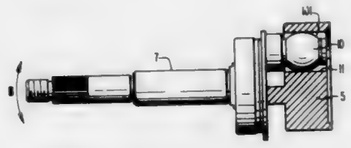
Kazuo Sugimoto, and Hideyuki Gonda, both of Isesaki, Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Jan. 24, 1986, Ser. No. 821,964

Claims priority, application Japan, Jan. 28, 1985, 60-9032[U]; Jan. 28, 1985, 60-9033[U]

Int. Cl.[4] F04C *18/04, 29/00*; **F01C** *17/06*; **F16D** *3/00*

U.S. Cl. 418—1 **7 Claims**



1. In a scroll type compressor comprising a drive shaft, a bushing and a crank pin connected therebetween said bushing having a hole therein defined by an inner surface of said bushing wherein said drive shaft is capable of tilting through a predetermined angle, a method of preventing said tilting movement of said drive shaft from being transmitted to said bushing, said method consisting essentially of modifying said crank pin by forming said crank pin with a surface that is curved away from an inner surface of said bushing.

4,808,095

SCREW VACUUM PUMP

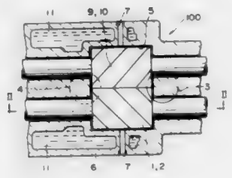
Kunihiko Nishitani, Akashi, and Noboru Tsuboi, Kakogawa, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 15, 1987, Ser. No. 108,702

Claims priority, application Japan, Jul. 1, 1987, 62-165042

Int. Cl.[4] F04C *29/04, 2/16*

U.S. Cl. 418—15 **4 Claims**



1. A screw vacuum pump, comprising:

a casing having a fixed wall rotor chamber having a first axial end thereof opening into a suction passage and a second axial end thereof opening into a discharge passage; and

a pair of screw rotors rotatably provided in the rotor chamber of said casing so as to be meshed with each other; wherein said casing has a cooling gas supply bore for supplying a cooling gas under atmospheric pressure from an external cooling gas source into the rotor chamber formed so as to open into a sealed spaced defined by a helical groove of one of said pair of screw rotors and an inner surface of the rotor chamber and out of communication with said suction passage wherein said helical groove sequentially takes on three transient states, a suction state in which the helical groove is open into the suction passage, a sealed state in which the helical groove defines a sealed space communicating with neither the suction passage nor the discharge passage between a wall thereof and the inner surface of the rotor chamber, and a discharge state in which the helical groove communicates with the discharge passage, as said pair of screw rotors are rotated.

4,808,096

AXIAL SEALING SYSTEM OF A ROTARY PISTON ENGINE

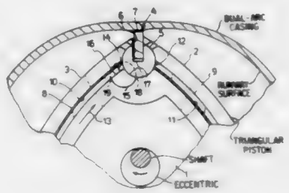
Dankwart Eiermann, Weissenberg-West, and Manfred Fischer, Lindau, both of Fed. Rep. of Germany, assignors to Wankel GmbH, Berlin, Fed. Rep. of Germany

Filed Jan. 10, 1987, Ser. No. 60,748

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1986, 3620299

Int. Cl.[4] F01C *19/04, 19/08*

U.S. Cl. 418—113 **5 Claims**



1. An axial sealing system of a rotary piston engine with dual-arc casing runway surfacing and a triangular piston rotating upon an eccentric of an eccentric shaft, said piston having radial sealing strips that run along the casing runway surfacing and that are located in grooves of corners of the triangular piston as well as having axial sealing strips in arcuate shaped grooves in side surfaces of the piston, said axial sealing strips cooperating sealingly with the radial sealing strips via sealing plugs arranged in axial bores in the piston corners, the improvement therewith comprising:

a sealing body with sealing surfaces engaging in added sealing relationship complementary as to said sealing plug and positioned angularly radially inwardly of the respective piston corner at a location axially adjacent and parallel to the respective sealing plug as well as engaging against an axial sealing strip said sealing body being located radially of said axial sealing strip and being located laterally and angularly to one side in an axial groove means as to said sealing plug, said sealing body preceding said sealing plug in the rotational direction of the piston and following said axial sealing strip in said rotational direction.

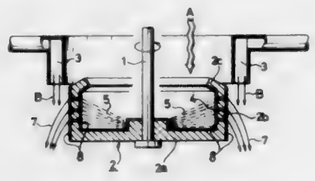
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4,808,097

APPARATUS FOR MANUFACTURING SHORT INORGANIC FIBERS

Tsuyoshi Takahashi, and Souichi Adachi, both of Tokyo, Japan, assignors to Sanei-Kiseisu Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1987, Ser. No. 5,704
Claims priority, application Japan, Jan. 22, 1986, 61-11628
Int. Cl.[4] B22D *11/01*
U.S. Cl. 425—8 **3 Claims**



1. An apparatus for manufacturing short inorganic fibers comprising:

a rotating nickel-chromium steel rotor and a support means for supporting said rotating rotor for rotation at high speed, said rotor having a bottom and inner and outer cylindrical peripheral surfaces adapted to receive directly thereon a coating of a high temperature, erosion resistant coating material;

means defining a coating formed of a base layer of nickel metal and a top layer including tungsten carbide, tungsten, chromium, nickel composite and partially stabilized zirconia, said coating covering said bottom and inner and outer cylindrical peripheral surfaces on said rotating rotor, an outer surface of said coating material being adapted to receive directly thereon a molten inorganic raw material, said coating serving to protect said bottom and inner and outer cylindrical peripheral surfaces of said rotor from erosion caused by contact with said molten inorganic raw material; and

a gas stream delivery port oriented so as to deliver high pressure gas to said port and across said outer cylindrical peripheral surface in an axial direction of said rotating rotor, said port encircling said support means supporting said rotating rotor and effecting a blowing away of melt from said coating on said outer cylindrical peripheral surface.

4,808,098

PIPE EXTRUSION DIE WITH A COOLED AND VACUUMED ADDITIONAL MANDREL

Harry Chan, 89 Larkin Ave., Markham, Ontario L3P 4R1, and Baolio Yi, 35 Hoover Dr., Thornhill, Ontario L3T 5M6, both of Canada

Filed Mar. 16, 1988, Ser. No. 168,935
Int. Cl.[4] B29C *47/88*
U.S. Cl. 425—72.1 **1 Claim**



1. An extrusion die for an apparatus producing seamless thermoplastic tubing, the die including:

an extrusion head having a central bore with at least one opening for receiving an extrudate of a thermoplastic material under pressure therefrom;

a nozzle attached to said head and carrying an outer die lip on a free end of the nozzle;

a hollow mandrel placed in said bore in a substantially coaxial relation with and spaced from the nozzle to provide a thermoplastic conducting passage extending in the longitudinal direction thereof for the delivery of the extrudate to the delivery end thereof carrying an inner die lip defining with the outer die lip an annular extrusion orifice of diminishing interior dimensions, through which the extrudate can flow uninterruptedly and form the tubing;

an additional mandrel mounted coaxially with the hollow mandrel, downstream thereof, for urging the tubing outwardly and extracting heat from the latter by means of a plurality of internal channels cooling an outer surface of the additional mandrel receiving the tubing from the extrusion orifice, said channels being connected to a coolant discharge and a coolant supply located exteriorly of the die and communicating with said channels through the additional hollow mandrel;

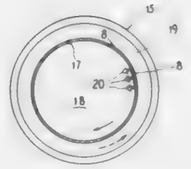
a plurality of grooves on said outer surface of the additional mandrel, the grooves being connected to a vacuum source located exteriorly of the die and communicating with the grooves through the hollow mandrel, wherein said plurality has at least two annular distributing grooves, one of which is axially most remote from and one of which is axially most close to the extrusion orifice, said annular grooves being connected to said vacuum source independently, and has at least two groups of helical grooves communicating respectively with said annular grooves in such a manner that the groups are communicated with said vacuum source independently to ensure the possibility of varying the intensity of vacuum pressure along the additional mandrel.

4,808,099

APPARATUS FOR MAKING TUBULAR FILM WITH TRANSVERSE CLOSURE STRIPS

Donald L. Van Erden, Wildwood, Ill., assignor to Minigrip, Inc., Orangeburg, N.Y.

Division of Ser. No. 799,828, Nov. 20, 1985, Pat. No. 4,701,361. This application Jul. 17, 1987, Ser. No. 74,704
Int. Cl.[4] B29C *47/24, 53/20*
U.S. Cl. 425—72.1 **15 Claims**



1. Apparatus for producing plastic film with transverse closure strips and especially adapted for making bags, comprising:

means for continuously extruding and running plastic film tube along a given longitudinal axis;

means for joining with a surface of said tube closure profiled strip means extending generally transversely relative to said axis wherein said joining means is part of said extruding means and effects extrusion of said closure strip means simultaneously with the plastic film tube and from the same plastic material;

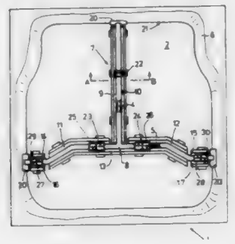
and means for converting said plastic film tube into ribbon sheet form with said closure strip means extending as individual closure strips across the ribbon sheet form at longitudinally spaced intervals.

4,808,100

PROCESS AND A FORM TOOL FOR THE PRODUCTION OF CUSHIONS MADE OF FOAM WHICH ARE PROVIDED WITH TEXTILE COVERS

Volker Ossenberg, Drabenderhoehe; Ralf Busch, Cologne, both of Fed. Rep. of Germany, and John Lindsey, Pittsburgh, Pa., assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Jun. 24, 1987, Ser. No. 65,793
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1986, 3622951
Int. Cl.[4] A23G *1/20*
U.S. Cl. 425—127 **9 Claims**



1. A form tool for the production of foam cushions, said cushions having a textile cover, said form tool comprising a mold which defines a mold cavity, said mold having gate means attached to said mold and extending into said mold cavity for altering the shape of articles molded in said mold, vacuum means which are outside said mold and said mold cavity for applying a vacuum to said mold cavity through holes which extend through said mold and between said mold cavity and said vacuum means, clamping device means to be used in conjunction with said gate means, said clamping device means having clamping means for clamping a textile cover to said gate means, means for positioning said clamping device means within said mold cavity from a position outside said mold cavity and means for withdrawing said clamping device means to a position outside said mold cavity.

4,808,101

TRI-INJECTION OF HOLLOW ARTICLES

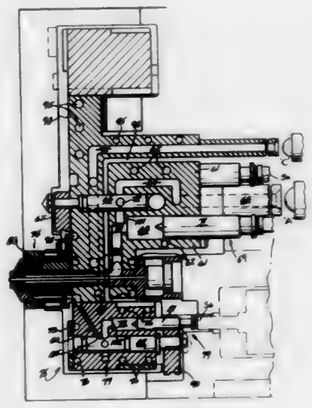
Robert D. Schad, Toronto, and Paul P. Brown, Orangeville, both of Canada, assignors to Husky Injection Molding Systems Ltd., Bolton, Canada

Continuation-in-part of Ser. No. 862,269, May 12, 1986, Pat. No. 4,717,324. This application May 18, 1987, Ser. No. 50,680
The portion of the term of this patent subsequent to Jan. 5, 2005, has been disclaimed.
Int. Cl.[4] B29C *45/02*
U.S. Cl. 425—130 **8 Claims**

1. A tri-injection molding apparatus for molding articles and preforms having multi-layered walls comprising:

at least one mold cavity, said cavity having a nozzle individual thereto,

a hot runner system including conduit means for supplying at least three thermoplastic materials to said mold cavity, each material originating from a separate source, in which the conduit means defines separate and individual channels for each thermoplastic material from said source through separate nozzle channels to said mold cavity, heating means associated with the apparatus for maintaining at least two of said materials at their appropriate temperature from its source through the hot runner system and through the separate nozzle channels to the mating mold cavity, insulating means in said nozzle separating at least two of said nozzle channels, said insulating means being substantially co-extensive with said nozzle and being operative to block heat transfer from one nozzle channel to the other, and heating means associated with



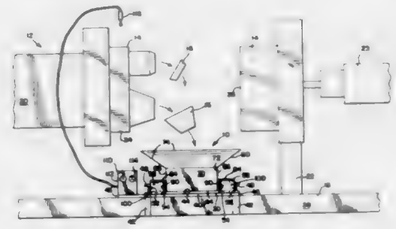
the apparatus for maintaining the third of said materials at the appropriate process temperature from its source to the nozzle.

4,808,102

APPARATUS FOR HANDLING AND TRANSFERRING A MOLDED ARTICLE

Robert C. Braun, Bloomingdale, Ill., assignor to Dursco Products, Inc., Streamwood, Ill.

Continuation-in-part of Ser. No. 92,394, Sep. 2, 1987, abandoned, which is a division of Ser. No. 812,356, Dec. 23, 1985, Pat. No. 4,719,059. This application Nov. 19, 1987, Ser. No. 122,929
Int. Cl.[4] B29C *45/42*
U.S. Cl. 425—150 **7 Claims**



1. An injection molding machine-article transfer apparatus system comprising:

an injection molding machine having a mold defined by a male and a female portion, and

apparatus for receiving an article formed in said mold during a forming cycle of said machine, said apparatus further including,

a platform having a first end positioned under said mold,

a pair of spaced apart tracks attached to a top side of said platform, said tracks extending from said platform first end to a platform second end located away from said machine,

a basket movably carried on said tracks, said basket having walls covered with a cushioney material to define an inner space to catch in a damage inhibiting manner said formed article upon ejection of said article from said mold,

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drive means carried by said platform and connected to said basket to effect movement of said basket between said platform ends, and

control means operatively connected to said mold and to said drive means, said control means upon sensing an opening of said mold activates said drive means after said article has been ejected and caught by said basket to move said basket and said article to said platform second end for removal of said article and then reactivates said drive means to return said basket to said platform first end during a final portion of said machine forming cycle,

wherein said machine may operate at maximum output as said apparatus remains free from interferring with said machine operation.

4,808,103

INJECTION MOLDING MACHINE HAVING AN INJECTION NOZZLE CONTROL DEVICE

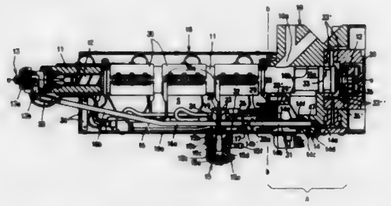
Karl Hehl, Arthur-Hehl-Strasse 32, D-7298 Lossburg 1, Fed. Rep. of Germany

Filed Mar. 16, 1988, Ser. No. 168,771

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1987, 3708434

Int. Cl.[4] B29C *45/20*

U.S. Cl. 425—190 **20 Claims**



1. In an injection molding machine including

a plasticizing cylinder having a front terminus, a rear terminus and a longitudinal axis;

a feed screw rotatably and axially shiftably disposed in said plasticizing cylinder generally coaxially therewith and being arranged for advancing a plastic material within said plasticizing cylinder towards said front terminus;

a shutoff nozzle mounted at said front terminus and being arranged for discharging the plastic material from the plasticizing cylinder into a mold assembly; the shutoff nozzle including needle means movable into open and closed positions for allowing and, respectively, blocking discharge of material through said shutoff nozzle;

a shutoff nozzle control means for moving said needle means into one of the positions thereof;

a carrier block including means defining a bore therein for receiving said rear terminus of said plasticizing cylinder;

locking means supported in said carrier block and having a locking position for locking said rear terminus to said carrier block and a releasing position for allowing withdrawal of the rear terminus from said bore; and

drive means for moving said plasticizing cylinder out of said bore and away from said carrier block in a direction parallel to said longitudinal axis of said plasticizing cylinder;

the improvement wherein said shutoff nozzle control means comprises

(a) a first power device supported by said carrier block;

(b) a force-transmitting element connected to said needle means of said shutoff nozzle and extending therefrom to said first power device; and

(c) coupling means including a movable coupling mechanism for placing said force-transmitting element into an engaged position or a disengaged position relative to said first power device, whereby in said disengaged position said plasticizing cylinder is, together with said force-transmitting element, movable away from said first power device and said carrier block; said coupling means including a second power device connected to said coupling mechanism for placing said coupling mechanism into said engaged or disengaged position.

4,808,104

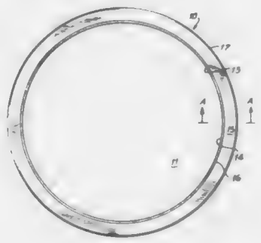
DOUGH FORMING AND CUTTING DEVICE

Michael D'Orlando, 8701 Shore Rd., Brooklyn, N.Y. 11209

Filed Nov. 6, 1987, Ser. No. 117,577

Int. Cl.[4] A21C *11/00*

U.S. Cl. 425—298 **2 Claims**



1. A device for shaping foodstuffs comprising a margin for establishing an opening within the device to receive the foodstuffs and to establish the shape of the foodstuffs, a base for the device extending from said margin in a direction away from said opening, a working surface spaced from said base and generally parallel therewith, an arcuate surface extending from said working surface toward said base to establish the outer perimeter for the device, and a cutting edge protruding from said working surface and sloping from said margin toward said base to an intersection with said working surface, said cutting edge forming an angle of about 5½° with said working surface.

4,808,105

APPARATUS FOR MANUFACTURING A PLASTIC HOLLOW BODY WHICH HAS A SLIDABLE MANDREL

Gerhard Linss, and Karl-Friedrich Ossberger, both of Weissenburg, Fed. Rep. of Germany, assignors to Ossberger Turbinenfabrik GmbH & Co., Weissenburg, Fed. Rep. of Germany

Filed Feb. 10, 1988, Ser. No. 154,360

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1987, 3704265

Int. Cl.[4] B29C *49/06*

U.S. Cl. 425—529 **10 Claims**

1. An apparatus for manufacturing a hollow body of thermoplastic plastic material,

said boy having a head piece formed by injection molding and a body member formed by blow-molding, and a tube-like preform segment, said segment being integral with the head piece, comprising:

a ring-shaped nozzle with a ring-shaped nozzle opening between a nozzle cone piece and a nozzle opening piece;

a withdrawal device operative with respect to the ring-shaped nozzle, said withdrawal device being axially, reciprocally moveable and having a recess for forming the head piece;

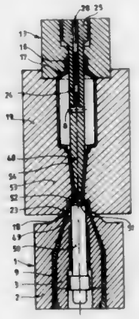
a blow mold with a plurality of blow mold pieces which are disposed laterally of said ring-shaped nozzle and said withdrawal device and are laterally, reciprocally movable, in order to form the closed blow mold between said ring-shaped nozzle and said retracted withdrawal device;

a reciprocally movable mandrel with a molding extension, said molding extension extends between regions of said blow mold pieces;

wherein walls of said closed blow mold pieces each have regions which project radially, inwardly with respect to the remainder of the respective walls; and

wherein said ring-shaped nozzle opening is radially, outwardly offset with respect to the outer contour of said molding extension;

whereby said mandrel with said molding extension extends between said closed blow mold pieces when said blow mold is closed;



said radially, inwardly projecting wall regions of said closed blow mold pieces are structurally coordinated with said molding extension;

said molding extension is in the form of a forming molding implement for forming the interior configuration of a body part region having reduced diameter; and

when said blow mold pieces are in said closed configuration said inwardly projecting wall regions press said preform against said molding extension.

4,808,106

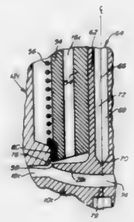
FLEX GATE

John W. Von Holdt, 6864 Lexington La., Niles, Ill. 60648

Filed Nov. 19, 1987, Ser. No. 122,752

Int. Cl.[4] B29C *45/38*

U.S. Cl. 425—547 **18 Claims**



1. In a mold gate for controlling flow between a molding chamber and a sprue aperture communicating with said chamber, said mold gate comprising flexible flap means positioned to restrict flow of molding compound through said sprue aperture, said flap means being positioned to be flexed toward said molding chamber by pressurized molding compound to permit increased flow of said molding compound through said sprue aperture into said molding chamber, said flap means being capable of resuming its original shape when said pressurized molding compound is substantially released of its pressure, said flap means in its original shape at least substantially obstructing said sprue aperture.

4,808,107

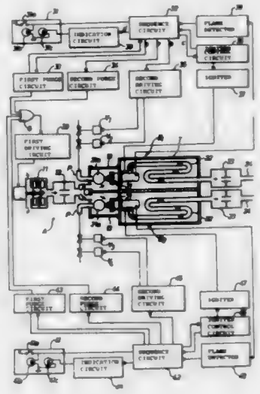
PULSE COMBUSTION SYSTEM

Nobuyoshi Yokoyama, and Yoshihiro Matsumura, both of Nagoya, Japan, assignors to Paloma Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 5, 1987, Ser. No. 47,301

Int. Cl.[4] F23C *11/04*

U.S. Cl. 431—1 **6 Claims**



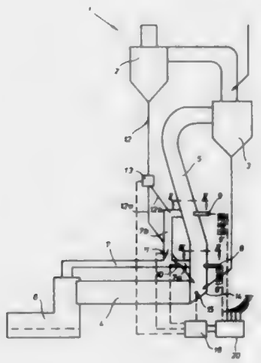
1. A pulse combustion system in which a single air intake assembly is associated with a plurality of pulse combustion gaseous fuel heater assemblies, said air intake assembly including a blower arranged to supply combustion air to said heater assemblies, and said heater assemblies each including a pulse combustion burner arranged to be supplied with gaseous fuel from a source of gaseous fuel and the combustion air from said burner, tailpipe means connected to a combustion chamber of said burner for heating a substance, and an electric control apparatus comprising means for selectively activating said heater assemblies, means for energizing a motor of said blower for a predetermined period of time prior to selective activation of said heater assemblies, and means for energizing the motor of said blower for a second predetermined period of time after one of said heater assemblies has been deactivated during activation of the other heater assemblies said means for selectively activating said heaters and said means for energizing said motor of said blower being controlled by circuit means responsive to flame in said combustion chamber.

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4,808,108
METHOD AND APPARATUS FOR THE HEAT TREATMENT OF FINE-GRAINED MATERIAL

Peter Tiggesbäumker; Manfred Dürr, both of Oelde; Jürgen Wurr, Ennigerloh; Karl Kritzner, Beckum; Wolfgang Rother, Oelde; Karl Mennel, Ennigerloh; Frank Schaberg, Oelde; Heinrich Klocksmbusch, Ahlen; Georg Unland, Ennigerloh, and Günter Driemeier, Lienen, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Fed. Rep. of Germany

Continuation of Ser. No. 837,382, Mar. 7, 1986, abandoned. This application Sep. 28, 1987, Ser. No. 102,283
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1985, 3510501; Jun. 21, 1985, 3522272
Int. Cl.[4] F27B *15/06*
U.S. Cl. 432—14 10 Claims



2. In a method of heat treating fine-grained material wherein:

(a) the material first is preheated in a preheating zone using hot gases from a precalcination zone;

(b) such material then is further heated and deacidified in said precalcination zone by the combustion of additional fuel;

(c) the material then undergoes final burning in a combustion zone and subsequently is cooled in a cooling zone;

(d) exhaust gases from the combustion zone are supplied to the precalcinatin zone;

(e) the additional fuel is delivered in at least two quantities at levels vertically spaced from one another in the direction of flow of gases passing through the precalcination zone; and

(f) preheated combustion air is introduced into the precalcination zone in the regions of the fuel charging levels in separate streams;

the improvement comprising:

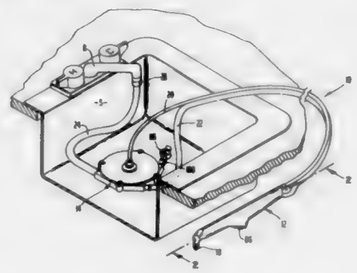
(g) measuring the NO_x content of exhaust gases from said combustion zone upstream from said precalcination zone; and

(h) adjusting the relative proportions of the additional fuel and the combustion air in the region of the precalcination zone lying closer to the combustion zone to produce sub-stoichiometric combustion of said additional fuel and establish a CO content of between about 0.05% and 1%, thereby producing reducing conditions in the precalcination zone for decomposition of the NO_x content of the exhaust gases.

4,808,109
DENTAL TREATMENT PROCESS AND APPARATUS THEREFOR

Thomas F. Thornton, 43 Contentment Island Rd., Darien, Conn. 06820

Filed Oct. 26, 1987, Ser. No. 112,278
Int. Cl.[4] A61K *5/00*
U.S. Cl. 433—216 3 Claims

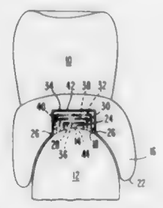


1. A process for removing plaque from a dental surface comprising the steps of simultaneously brushing the surface and treating the surface with a flushing water having a temperature above 40 degrees Centigrade.

4,808,110
METHOD FOR AFFIXING AN IMPROVED DENTURE APPLIANCE

Enrico Ramotti, 133 Reeger Ave., Trenton, N.J. 08610

Filed Dec. 11, 1987, Ser. No. 131,591
Int. Cl.[4] A61C *13/12*
U.S. Cl. 433—172 20 Claims



1. A method for affixing an improved denture appliance with respect to the gun tissue of a user comprising:

(a) constructing a support member for securing artificial teeth means with respect to one another thereon;

(b) forming a concave arcuate mounting channel in the support member to facilitate mounting thereof with respect to the gum tissue of a user;

(c) making a plurality of affixing hole means within the concave arcuate mounting channel;

(d) placing the mounting channel of the support member in position adjacent the gum tissue of a user with the affixing hole means in abutment therewith for a period of time to allow a protrusion of gum tissue to grow extending into the affixing hole means to facilitate detachable secure retainment of the improved denture appliance with respect to the gum tissue of a user;

(e) removing the support member from the mount of a user;

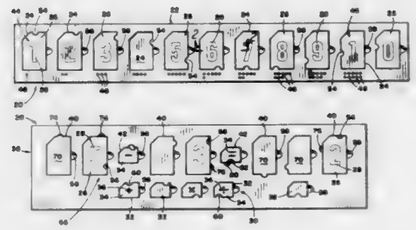
(f) enlarging the affixing hole means after removal; and

(g) replacing the mounting channel of the support member in position adjacent the gum tissue to allow growth of the protrusion of gum tissue extending into the enlarged affixing hole means.

4,808,111
MATHEMATICS EDUCATING DEVICE

William C. Pratt, 3909 South Gary Pla., Tulsa, Okla. 74105

Filed Jan. 11, 1988, Ser. No. 142,790
Int. Cl.[4] G09B *19/02*
U.S. Cl. 434—191 14 Claims



1. A mathematics educating device, comprising:

a number rack having a plurality of number recesses, each number recess having a unique shape;

a plurality of number plates, each number plate bearing a numeral, each number plate bearing a different numeral being uniquely shaped to fit within only one number recess with all number plates bearing the same numeral fitting within the same number recess;

an operator rack having a plurality of operator recesses;

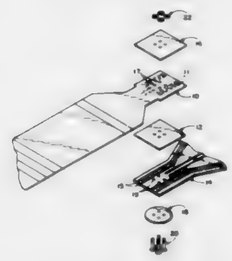
a plurality of operator plates, each operator plate bearing a different mathematical operator, each operator plate fitting within an operator recess; and

a practice rack having at least three number practice recesses and at least one operator practice recess arranged for addition, subtraction, multiplication, and division, each number practice recess being shaped to receive any of the number plates, each operator practice recess being shaped to receive any of the operator plates.

4,808,112
HIGH DENSITY CONNECTOR DESIGN USING ANISOTROPICALLY PRESSURE-SENSITIVE ELECTROCONDUCTIVE COMPOSITE SHEETS

Brian J. Wood, Hillsboro; Peter M. Compton, Beaverton, and Jerome P. Gismotti, Portland, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 25, 1986, Ser. No. 911,538
Int. Cl.[4] H01R *9/09*
U.S. Cl. 439—66 6 Claims



1. Apparatus for producing a high density of electrical interconnections of conductive paths on at least one side of at least two independent flat devices, when those devices are overlapped with the conductive paths on one device opposite the conductive paths on the other device at the point of interconnection, said paths on one device having a complementary pattern to that of the paths of the other device at the point of interconnection, said apparatus comprising:

means for aligning a selected portion of the conductive paths on one device opposite a selected portion of the conductive paths on the other device so that each pair of selected portions of conductive paths which are to be interconnected is adjacent the other and of a complementary pattern at the point of interconnection, said aligning means includes at least two registration holes precisionally located through the two independent devices for aligning the conductive paths thereon at the point of interconnection;

an anisotropic elastomeric polymer material disposed to be inserted between the conductive paths at the point of interconnection between each pair of devices, said anisotropic elastomeric polymer material includes registration holes therethrough in the same pattern as the registration holes through the two independent devices; and

means for clamping together the sandwich of devices and the anisotropic elastomeric polymer material, said clamping means includes:

a first clamping bar means disposed to be juxtaposed the side of one of the devices without the conductive paths to be interconnected with the other of the at least two independent devices at the point of interconnection, said first clamping bar having registration holes in the same pattern as the registration holes through the device to which the first clamping bar is disposed to be juxtaposed, said first clamping bar means includes at least one first boss disposed to extend through a said registration hole of said one of the at least two independent devices and a said registration hole of the anisotropic elastomeric polymer material, and into at least one of the juxtaposed registration holes of said other of the at least two independent devices with the shape and size of the boss being substantially the same as the registration hole of at least said other of the at least two independent devices;

a second clamping bar means disposed to be juxtaposed the side of the other of the devices without the conductive paths to be interconnected with the one of the at least two independent devices at the point of interconnection, said second clamping bar having registration holes in the same pattern as the registration holes through the device to which the second clamping bar is disposed to be juxtaposed and having at least two second bosses disposed to extend into the registration holes of said other of the at least two independent devices with their size and shape being substantially the same as the first bosses without coming into contact with the first bosses in the assembled apparatus; and

fastener means disposed to pass through the registration holes in the clamping bars and in each of the two independent devices and the anisotropic elastomeric polymer material for maintaining alignment thereof, and compressing the anisotropic elastomeric polymer material.

4,808,113
CONNECTOR FOR FLEXIBLE FLAT CABLE

Akira Kaneoge, Musashino, and Masashi Seto, Zama, both of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Jan. 28, 1988, Ser. No. 149,313
Claims priority, application Japan, Feb. 26, 1987, 62-020037
Int. Cl.[4] H01R *9/09, 9/07*
U.S. Cl. 439—67 2 Claims

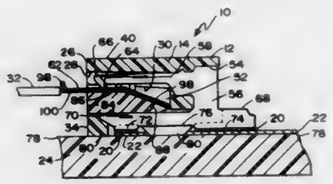
1. A surface-mount connector arrangement for electrically connecting printed circuits defined on a surface of a printed

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circuit board to another circuit member, said arrangement comprising:

a printed circuit board having a surface and a plurality of printed circuits defined on said surface, each of said printed circuits including a pair of spaced solder contact pads having a reflowable amount of solder material thereon; and

an electrical connector including a dielectric housing having a plurality of terminal-receiving cavities and a board -engaging surface; a plurality of electrical terminals mounted in said cavities, each terminal including a pair of spaced surfacemount board contact portions disposed adjacent



the board-engaging surface of the housing and spaced apart by a corresponding spacing to said solder contact pads; and hold down means for retaining the board-engaging surface in position on the printed circuit board preparatory to a permanent soldering treatment;

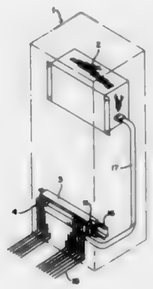
said connector positioned on said printed circuit board surface so that each of said surface mount contact portions engages a solder contact pad and both of said surface mount board contact portions and said solder pads interconnect upon reflow of the solder material to provide a redundant electrical connection between each terminal and each circuit and a balanced mechanical attachment of the connector to the printed circuit board.

4,808,114

I/O UNIT TERMINAL BASE WITH EXTERNAL CONNECTION TERMINALS, SOCKET FOR MOUNTING RELAYS, AND CONNECTOR FOR CABLE TO CPU

Masayuki Mohri, Yamaga, and Keiji Matsumoto, Kobe, both of Japan, assignors to 501 Omron Tateisi Electronics Co., Kyoto, Japan

Filed Oct. 1, 1987, Ser. No. 103,317
Claims priority, application Japan, Oct. 2, 1986, 61-234920
Int. Cl.[4] H01R *9/09*
U.S. Cl. 439—76 **2 Claims**



1. For an I/O unit:

a terminal base, comprising:

(a) a socket unit adapted for being mounted with a plurality of relays comprising a plurality of relay terminals and comprising a plurality of socket terminals which, when said plurality of relays are mounted to said socket unit, are contacted to said plurality of relay terminals;

(b) a plurality of I/O terminals, exposed to the outside for external connection, and connected to some of said socket terminals; and:

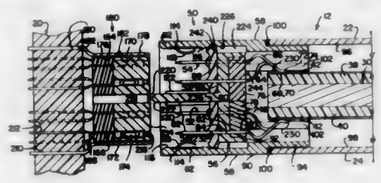
(c) a multi wire connector, adapted to be connected to a plurality of wires for leading to a central processing unit, and comprising a plurality of connector terminals which are connected to some of said socket terminals.

4,808,115

LINE REPLACEABLE CONNECTOR ASSEMBLY FOR USE WITH PRINTED CIRCUIT BOARDS

Jeffrey M. Norton, Lebanon; Edward J. Pankovits, Jr., Hershey; William J. Rudy, Jr., Annville, and Howard R. Shaffer, Millersburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 78,944, Jul. 28, 1987, abandoned. This application Jul. 5, 1988, Ser. No. 218,509
Int. Cl.[4] H01R *23/70*
U.S. Cl. 439—79 **35 Claims**



1. A connector assembly for interconnecting daughter cards and mother board of an electronic control unit wherein the daughter cards are mounted to heat sink means of an LRM having cover means fastened together as a unit and sealed and shielded, and the LRM is disposed along fixed guide channels of the control unit perpendicular to the mother board fixed within the control unit, the connector assembly comprising:

a first connector mounted to an end of the LRM and a second connector mounted within the control unit;

said first connector including a plurality of first terminals electrically secured to respective circuit paths of circuit cards secured to the heat sink means, first housing means for said first terminals, first metal shroud means peripherally surrounding said first housing means, and sealing means secured along a mating face of said first housing means and providing sealing engagement with said first metal shroud means;

said second connector includes second terminals secured to respective circuit paths of said mother board and matable with said first terminals, second housing means for said second terminals and matable with said first housing means, and second metal shroud means peripherally surrounding said second housing means and said second terminals and grounding means for said second shroud, said second shroud being adapted to be received within said first shroud means when said first and second connectors are mated;

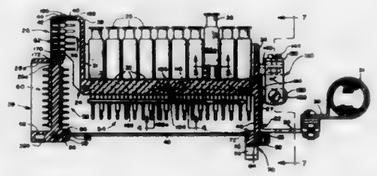
said first and second housing means having cooperating alignment means for aligning said connectors during mating, and said first housing means adapted to be incrementally movable transversely to said mating face thereof within said first metal shroud means as the first and second housing means become aligned by the alignment means and said sealing means adapted to remain in sealing engagement within said first shroud means upon such incremental movement, and said first shroud being dimensioned larger than said second shroud to receive thereinto said second shroud in a slightly off-center position and providing means for electrical engagement with said second shroud peripherally therearound after mating, whereby said first housing means of said first connector is alignable with respect to said second housing means of said second connector while being secured within said first shroud means and remains sealed within said first shroud means, and said first and second shrouds provide EMI and ESD shielding of said LRM and said first and second connectors.

4,808,116

TELEPHONE DISTRIBUTION FRAME CONNECTOR ASSEMBLY

John J. Unger, Elmhurst, and Louis Saffi, Westchester, both of Ill., assignors to Reliance Comm/Tec Corporation, Chicago, Ill.

Continuation of Ser. No. 591,765, Mar. 21, 1984, abandoned. This application Aug. 27, 1986, Ser. No. 901,964
Int. Cl.[4] H01R *4/66*
U.S. Cl. 439—94 **15 Claims**



1. A telephone distribution frame connector assembly for connecting incoming lines to inside equipment comprising: means for forming a module field, a test field and an equipment field; a frame member constructed of electrically conductive material for mounting said fields to a telephone distribution frame also of electrically conductive material and defining a frame ground; means for mounting said fields to said frame member to collectively define an enclosure having one open side; an access panel for normally covering said one open side; one or more of the fields including a plurality of ground terminals located interiorally of said enclosure; ground bus means for electrically interconnecting all of said ground terminals; and adjustable ground selection means for alternatively coupling said ground bus means to one of said frame ground any selected second ground, isolated from said frame ground.

4,808,117

COUPLER WITH COMBINATION LOCKING AND BONDING RING

Edwin J. Gale, Aurora, and Albert B. Olsen, Littleton, both of Colo., assignors to Stanley Aviation Corporation, Aurora, Colo.

Filed Sep. 8, 1987, Ser. No. 94,400
Int. Cl.[4] H01R *4/64*
U.S. Cl. 439—192 **10 Claims**



1. A threaded coupling assembly for interconnecting confronting ends of first and second fluid-carrying conduit members in locking and electrical bonding relationship, said assembly comprising:

first and second coupling means threadably interconnected and circumferentially engaging the confronting ends of said conduit members to hold them in fluid communication;

a complementary peripheral facing surface on each of said coupling means which are drawn axially toward each other as said coupling means are rotatably threaded together;

a bonding jumper in the form of a ring mounted on one of said facing surfaces having a plurality of resilient spring fingers for bearing against said other facing surface to establish a redundant electrical bond between said first and second coupling means when said facing surfaces are axially drawn toward each other;

a plurality of recesses in said other surface for coacting with said spring fingers to yieldably resist opposed relative rotation in the unthreading direction;

an annular recess in said one of said facing surfaces for receiving said ring, said recess having a peripheral edge;

a notch in a peripheral edge of said ring; and

a bent-in segment of said peripheral edge in engagement with said notch to prevent relative rotation.

4,808,118

RETENTION AND GROUND PLANE CONNECTOR CLIP

Albert H. Wilson, Los Angeles, and David E. Welsh, Tustin, both of Calif., assignors to ITT Corporation, New York, N.Y.

Filed Nov. 25, 1987, Ser. No. 125,276
Int. Cl.[4] H01R *9/00*
U.S. Cl. 439—95 **11 Claims**

1. A connector comprising:

a body of insulative material;

a metal shell extending around said body, said shell having opposite sides and forming an internal shoulder at each said side;

said body being removably mounted in said shell;

a plurality of contacts lying in said body;

a metal clip within said shell extending between said oposite sides of said shell, said clip having a middle portion lying substantially in a predetermined plane and attached to said body, and said clip having a pair of opposite ends bent out of said plane, said opposite ends having edges that abut said shoulders of said shell to releasably retain said clip and said body in said shell.

4,808,119

ZERO INSERTION FORCE MOUNTING HOUSINGS FOR ELECTRONIC DEVICE PACKAGES

Wayne K. Pfaff, 309 Steeplechase, Irving, Tex. 75062

Continuation of Ser. No. 912,837, Sep. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 771,104, Aug. 30, 1984, Pat. No. 4,618,199. This application Jan. 25, 1988, Ser. No. 148,070
Int. Cl.[4] H01R *13/635*
U.S. Cl. 439—268 **5 Claims**

1. A mounting housing for an electronic device package

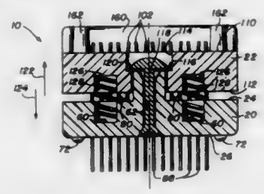
VOL 1099 ISS 4 FEB 28 1989

having a plurality of leads extending from said package substantially parallel with each other comprising:

(a) a plurality of elongated contact pins arranged substantially parallel in a row extending along a first axis, each of said contact pins having a first end, a second end and a camming surface offset from the central axis thereof;

(b) a base support member with first and second oppositely disposed major faces supporting said contact pins with said second end of each pin extending from said second major face and said first end of each said contact pin and said camming surface extending from said first major face;

(c) receptacle means having first and second oppositely disposed major faces positioned substantially parallel with said base support member and reciprocally mounted for movement between a first position spaced from said base



support member and a second position substantially adjacent said base support member;

(d) a row of apertures extending through said receptacle means, each of said apertures receiving said first end of at least one of said contact pins; and

(e) spreader means integral with said receptacle means and aligned to contact a camming surface on at least one of said pins when said receptacle means is moved from said first position to said second position and thereby deflect said first end of said at least one of said contact pins in a direction substantially parallel with said first axis to form an opening for receiving a lead extending from an electronic device package between said first end of said at least one pin and a side wall of the aperture receiving said first end.

4,808,120

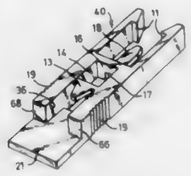
ELECTRIC CONNECTORS

Maurice A. Matthews, Basingstoke, United Kingdom, assignor to Electronic Components Limited, Mid-Glamorgan, Wales

Continuation-in-part of Ser. No. 936,060, Nov. 28, 1986, abandoned. This application Mar. 29, 1988, Ser. No. 174,693

Int. Cl.[4] H01R *13/627*

U.S. Cl. 439—357 2 Claims



1. An electrical connector comprising:

a male part further comprising an elongate male contact member having intermediate its length a collar, an open plastics housing having:

side walls;

a central cross member having an aperture therein;

a flexible bridge extending between said walls separated from said cross member by the length of said collar such that a leading end of said contact member passes through said aperture, and said collar is held between said bridge and said cross member; and

clips respectively formed integrally with said walls at a forward extremity thereof; and

a female part further comprising an elongate female contact member having intermediate its length a square collar with a locating tab and a circular collar adjacent thereto, an open plastics housing having:

side walls providing a central channel narrowed at a first end;

an aperture formed in a base of said channel; and

external indentations adjacent said narrowed part of said channel for receiving said clips of said male part, said female contact member fitting into said channel with said square collar located by said aperture in said base of said channel and held in position by said circular collar fitting snugly into said narrowed part of said channel.

4,808,121

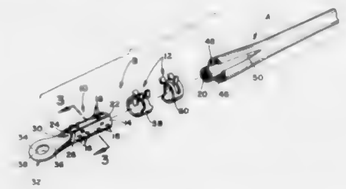
BOND CONNECTOR FOR SERVICE CABLE

Clarence E. Sarekar, Cleveland, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio

Filed Feb. 24, 1988, Ser. No. 159,702

Int. Cl.[4] H01R *4/24*

U.S. Cl. 439—394 12 Claims



1. A connector assembly comprising:

a connector member having a first portion of substantially cylindrical conformation, said first portion including radially outward extending teeth thereon adapted for electrically and mechanically connecting the first portion to a substantially circumferentially continuous region of an associated cable, a second portion of said connector member operatively engaging said first portion and including means for electrically connecting said connector member to an associated structure; and,

means for clamping said connector member to the associated cable.

4,808,122

CABLE CONNECTOR WITH STEPPED CONNECTING ELEMENT

Motoyuki Tomizu, Otokuni, and Yasuhiro Okada, Takatsuki, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jul. 28, 1986, Ser. No. 889,864

Claims priority, application Japan, Aug. 5, 1985, 60-120674[U]

Int. Cl.[4] H01R *11/20*

U.S. Cl. 439—417 5 Claims

1. A cable connector, comprising:

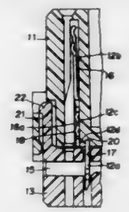
(a) a main housing formed with a first aperture;

(b) a cover formed with a slot for cable insertion and a second aperture opening to said slot;

(c) a means for fixing said cover to said main housing;

(d) a cable connecting element formed as an elongate member, one end thereof being adapted to be connected to a cable when pressed thereagainst, the other end thereof being adapted for external terminal contact, an intermediate portion thereof being adapted for press fitting, and a step portion thereof between said intermediate portion thereof and said cable connection end thereof functioning to perpendicularly displace the plane of said intermediate portion thereof from the plane of said cable connection end thereof;

(e) said cable connecting element being fitted into said first aperture of said main housing with its said intermediate portion being press fitted into said first aperture and its said external terminal contact end being housed in said first aperture, and with its said cable connection end protruding out from said first aperture for insertion into said second aperture of said cover and for coupling to a cable



inserted into said slot of said cover, when said cover is secured to said main housing by said fixing means therefor, said cable connection end being bifurcated to include parallel legs (i) each having a projection on its outer side at an intermediate portion and (ii) comprising respective tip end portions, said projection of both of said legs for engaging side walls of said second aperture of said cover commencing at approximately the time said tip end portions of said cable connection end are initially being inserted into said slot and said projection of both of said legs clearing said side walls to be disposed within said slot of said cover when said cover is fully fixed to said housing.

4,808,123

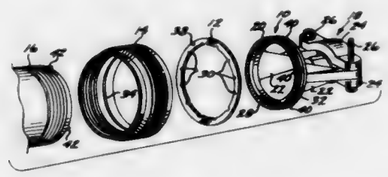
SELF-LOCKING STRAIN-RELIEF END BELL FOR ELECTRICAL CONNECTOR ASSEMBLY

James S. Dee, Yorba Linda, and Thomas J. Bell, Costa Mesa, both of Calif., assignors to Diverse Termination Products, Inc., Placentia, Calif.

Filed Feb. 4, 1987, Ser. No. 10,848

Int. Cl.[4] H01R *13/58*

U.S. Cl. 439—470 13 Claims



1. A self-locking strain-relief end bell for an electrical connector assembly, comprising:

strain relief means, including an annular fitting having an exterior surface;

a coupling ring having an interior surface dimensioned to fit around the exterior surface of said annular fitting; and

ratcheting means, engaging the exterior surface of said annular fitting and the interior surface of said coupling ring, for (a) restraining the relative axial movement of said coupling ring and said annular fitting, while (b) providing a plurality of detented rotational positions as said coupling ring is rotated relative to said annular fitting, said ratcheting means comprising:

a retainer ring having an inner peripheral edge and an outer peripheral edge, said inner peripheral edge having a plurality of detent-defining radial indentations at substantially equidistant intervals thereon;

first seating means, on the exterior surface of said annular fitting, for seating the inner peripheral edge of said retainer ring;

second seating means, on the internal surface of said coupling ring, for seating the outer peripheral edge of said retainer ring; and

a plurality of ball bearings retained in said first seating means at substantially equidistant intervals by said retainer ring, said ball bearings engaging said detents defined by said radial indentations as said coupling ring is rotated relative to said annular fitting.

4,808,124

COAXIAL-LINE CONNECTOR

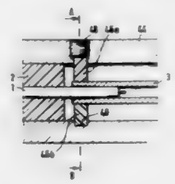
Georg Spinner, Feldkirchen-Westerham, and Franz-Xaver Pitschi, Rottach-Egern, both of Fed. Rep. of Germany, assignors to Spinner GmbH, Elektrotechnische Fabrik, Munich, Fed. Rep. of Germany

Filed Nov. 30, 1987, Ser. No. 126,605

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1986, 3641088

Int. Cl.[4] H01R *17/18*

U.S. Cl. 439—578 17 Claims



1. A coaxial-line connector; comprising:

a jack having an outer conductor and an inner conductor part divided in at least two segments and arranged in said outer conductor, said segments clamping a plug-type inner conductor; and

pressing means extending radially through said outer conductor for exerting a radial clamping force on said segments, said pressing means being accessible for allowing adjustment of the clamping force.

4,808,125

CONNECTOR ASSEMBLY WITH DIECAST HOUSING AND DRAWN SHELL

Mark H. Waters, Harrisburg; Charles Reynolds, Mechanicsburg; John A. Root, and Robert N. Whiteman, Jr., both of Middletown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 31, 1987, Ser. No. 90,563

Int. Cl.[4] H01R *13/658*

U.S. Cl. 439—607 18 Claims

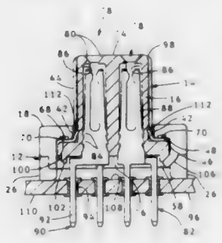
1. An electrical connector assembly for mounting on a printed circuit board having a ground, said assembly having terminals for interconnecting with traces on the printed circuit board, comprising

an electrically conductive diecast housing having an aperture therein;

a drawn shell having an aperture, said drawn shell adapted to be received in the diecast housing aperture and electrically commoned therewith;

a thermoplastic insert adapted to be received and secured in the drawn shell aperture, said insert having terminal receiving passages with terminals secured therein, said terminals having a mating portion secured in said insert and

a mounting portion extending beyond said insert, said mounting portion adapted to interconnect with traces on the printed circuit board, whereby the shell provides



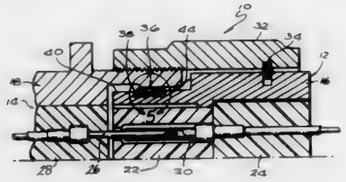
shielding for the terminals with the diecast housing electrically commoned with the shell providing an electrical path to a ground on the printed circuit board.

4,808,126

ELECTRICAL CONNECTOR SHIELD

Albert H. Wilson, Los Angeles, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Oct. 5, 1987, Ser. No. 104,714
Int. Cl.[4] H01R *4/66*
U.S. Cl. 439—607 **23 Claims**



1. In combination, mating male and female shells having opposed surfaces when mated with an electrical connecting element between said surfaces, said connecting element comprising:

a substantially closed loop elastomeric member mounted in a continuous groove formed in one of said surfaces, said groove having a bottom and opposite side wall;

a metallic spring mounted around the surface of said elastomeric member opposite to said bottom of said groove;

said spring having marginal portions extending over the sides of said elastomeric member adjacent to said sidewalls, said marginal portions being spaced from said bottom of said groove; and

said elastomeric member directly engaging said bottom of said groove and being compressed when said shells are mated causing said spring marginal portions to slidably engage said groove sidewalls.

4,808,127

CONNECTOR ASSEMBLY

Anthony Swanic, Las Vegas, Nev., assignor to Arbus, Inc., Las Vegas, Nev.

Continuation of Ser. No. 788,950, Oct. 18, 1985, abandoned.
This application Sep. 28, 1987, Ser. No. 132,611
Int. Cl.[4] H01R *13/44, 13/62*
U.S. Cl. 439—139 **9 Claims**

1. A connector assembly comprising:

a female connector having one or more sockets therein each for receiving a pin and a protruding portion containing said sockets extending from one end of said connector, each of said one or more sockets having a pin entry port exposed on said protruding portion,

a male connector having one or more pins therein each for being received in a different one of said sockets in said female connector, and a pin shield member having a cavity which contains said pins for receiving said protruding portion of said female member and movable between a forward position wherein said pins are recessed therein



and a retracted position wherein said pins are exposed from said shield member, and

means for urging said pin shield member in said forward position, said pin shield cavity and said protruding portion having shapes such that the protruding portion is constrained to rotate so as to be received in said cavity and in nested engagement therein in only a single relative axial alignment.

4,808,128

ELECTRICAL CONNECTOR ASSEMBLY HAVING MEANS FOR EMI SHIELDING

Dee A. Werth, Bainbridge, N.Y., assignor to Amphenol Corporation, Wallingford, Conn.

Filed Apr. 2, 1984, Ser. No. 595,761
The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.
Int. Cl.[4] H01R *13/648*
U.S. Cl. 439—610 **5 Claims**



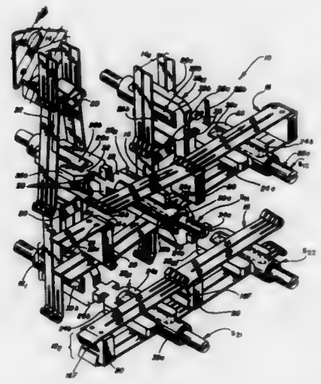
1. An electrical connector assembly including means for shielding against electro-magnetic interference, the assembly comprising a shell of electrically conductive material including a generally cylindrical back shell having a transverse end face, a cable having a center conductor encircled by a conductive braid shield and received within and extending rearwardly from said back shell, means including an accessory boot of an electrically conductive material for connecting the cable to the back shell, and means for shielding the center conductor against electro-magnetic interference, said shield means characterized by a continuous 360° electrically conductive seal between the cable braid and said back shell and comprising a ferrule of electrically conductive material being electrically connected to the braid, and a cylindrical sleeve of electrically conductive, plastically deformable material being in electrical circuit relation with the ferrule and the back shell, the sleeve having a forward sleeve portion thereof plastically deformed around and longitudinally forward from the transverse end face of the back shell to provide a continuous electrically conductive seal therearound.

4,808,129

CONTACT FOR STRIP LINE SWITCH

Stephen W. Kershner, 6667 Van Winkle Dr., Falls Church, Va. 22044

Filed Feb. 10, 1988, Ser. No. 154,262
Int. Cl.[4] H01R *13/11*
U.S. Cl. 439—856 **14 Claims**



1. A contact to be incorporated into a switch system comprising a strip line, which includes a plurality of like contacts arranged in an end-to-end, overlapping relation with each other, said strip line of contacts having one end adapted to be connected to a signal transmission system, said signal transmission system having a characteristic impedance, each contact in said strip line mounted upon a support member, each contact having first and second ends and comprising:

(a) a first portion adjacent said first end affixed to said support member;

(b) a second spring portion disposed intermediate said first and second ends;

(c) a third contact portion disposed adjacent to said first fixed portion and on the other side of said first fixed portion with respect to said second spring portion;

(d) a fourth contact portion disposed adjacent said second end and freely suspended by said second spring portion with respect to said support member for contacting a third contact portion of an adjacent contact in said strip line of contacts; and

(e) said contact having a bifurcating slot disposed longitudinally thereof and extending from said second end towards said first end for providing fingers, said bifurcating slot being of such dimension that said strip line of like contacts provides an impedance set substantially equal to said characteristic impedance.

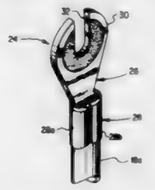
4,808,130

SPADE LUG HAVING SCORED SURFACES

Noel Lee, 47 W. Park Dr., Daly City, Calif. 94015

Filed Sep. 9, 1987, Ser. No. 94,696
Int. Cl.[4] H01R *11/12*
U.S. Cl. 439—886 **4 Claims**

1. A connector for providing an electrical connection between an electrical conductor and an electrical terminal having a threaded post, said connector comprising a plate member defining two opposed flat planar surfaces, means provided on said plate member for connecting to an electrical conductor, and a slot formed in said plate member and extending between said two opposed surfaces, the wall of said plate member defining said slot providing a continuous U-shaped surface for extending around said post, the areas of said flat planar surfaces of said plate member being scored to increase their respective coefficients of friction and thereby to provide a relatively high



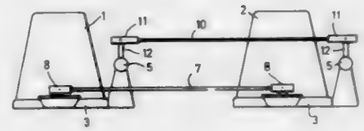
frictional engagement with corresponding planar surfaces of said terminal.

4,808,131

STEERING AND CONTROL GEAR

Robert D. Glen, Oxfordshire, Great Britain, assignor to E.P. Barrus Limited, Bicester, Great Britain

Filed Jul. 28, 1987, Ser. No. 78,734
Claims priority, application United Kingdom, Jul. 28, 1986, 8618363
Int. Cl.[4] B63H *5/12*
U.S. Cl. 440—63 **4 Claims**



1. Control gear for a group of at least two like outboard motors mounted side by side, each motor possessing a vertical mounting axis, a forwardly projecting tiller arm by which the motor can be turned about said mounting axis, a throttle, and a throttle grip located on the tiller arm and rotatable to open or close said throttle; said control gear comprising

(a) a first tie rod, and at least two pivot means on said first rod pivoted one in relation to each motor at the same position relative to its vertical mounting axis whereby each motor turns about its axis to the same extent when any one tiller arm is moved, and

(b) a second tie rod and at least two pivot means on said second rod pivoted one in relation to each throttle grip at the same position relative to said grip whereby each throttle grip rotates to the same extent when any one throttle grip is rotated.

4,808,132

MARINE DRIVE APPARATUS

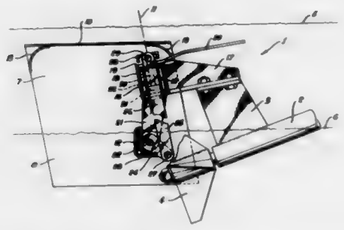
Geoffrey B. Douglas, P.O. Box 215, Airlie Beach, Queensland, Australia

Filed Sep. 16, 1987, Ser. No. 97,791
Claims priority, application Australia, Sep. 19, 1986, 62958/86
Int. Cl.[4] B63H *5/14*
U.S. Cl. 440—66 **20 Claims**

1. According to the invention there is provided a marine drive apparatus including a reversing and steering channel at least partly shrouding a rotatable propeller so as to direct the flow of water produced by said propeller, said channel in its forward configuration having spaced side walls joined by a roof portion and being selectively rotatable about a first substantially vertical axis to provide steerage and a second substantially horizontal axis to move said roof portion aft of said propeller such that said channel can intercept and deflect said flow, thereby to provide reverse thrust,

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said first axis being defined by a cylindrical rudder post rotatably mounted to a coaxial bearing adapted for rigid attachment to a water craft,



said movement of said roof portion around said second axis being achieved by an hydraulically actuatable piston coaxial with said rudder post.

4,808,133

MARKER BUOY WITH SELF RETRACTING LINE

Michael Gram, Oxnard, Calif., and James R. Austin, 27049 Rio Bosque Dr., Valencia, Calif. 91355, assignors to James Austin, Valencia, Calif.

Filed Mar. 3, 1987, Ser. No. 21,305
Int. Cl.[4] B63B *21/52*
U.S. Cl. 441—6 **6 Claims**



5. An improved anchor locating buoy for marking the position of a submerged anchor, comprising:

a location marking float;

an anchor locating line of predetermined length, attached to the float, for linking the float to the anchor; and

line length control means, attached to the line, for applying a controlled tension to the line in order to minimize the length of line extending between the float and the anchor while allowing the float to remain at least partially above water, including line collection means for drawing in and storing an excess portion of the predetermined line length, wherein the control means includes a gravity lock means for impeding payout of the anchor locating line while the control means is inverted.

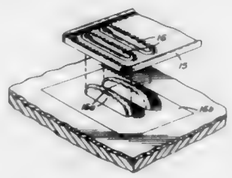
4,808,134

WATER SKI BOOT

Jacques Imbeault, 75 boulevard Des Hauts-Bois, Ste-Julie, Québec, Canada (J0L 2S0)

Filed Dec. 2, 1986, Ser. No. 936,834
Int. Cl.[4] A63C *15/06*
U.S. Cl. 441—70 **8 Claims**

1. A water ski boot to be used with a water ski, the boot comprising an upper and a sole, said upper completely enclosing a foot and including a toe portion and a heel portion, the sole including a forward portion projecting beyond the toe portion of the upper, and releasable binding means comprising a forward portion of the sole defining aperture means comprising at least one aperture having an axis which extends laterally of the boot, the forward portion of the sole being flexible and resilient to provide a sliding-gripping engagement of the aperture means with corresponding anchor projections on the water ski such that only the material of the forward portion of



the sole defining the aperture means engages the anchor projections to releasably secure the boot to the water ski whereby the boot is released and separated from the ski due to separation of the sole from the anchor projections.

4,808,135

CENTER ELECTRODE STRUCTURE FOR SPARK PLUG

Akio Sakura; Mitsutaka Yoshida, and Junichi Kagawa, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Oct. 13, 1987, Ser. No. 107,940
Int. Cl.[4] H01T *13/16, 13/39*
U.S. Cl. 445—7 **5 Claims**



1. In a center electrode structure for spark plug including a tublar insulator, the inner side of which has a stepped shoulder to provide a diameter-reduced bore therein; a center electrode having a flange and concentrically placed into said insulator with said flange engaging against said shoulder and with one end being axially through said bore so as to be exposed to outside of said insulator;

said center electrode having an electrically conductive core member of copper or copper-based alloy which is tightly encased into an enclosure member made of an oxidation and heat resistant nickel-based alloy; and

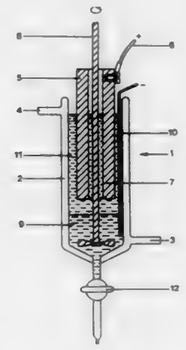
said core member being provided with a number of fractures in its granular structure so as to absorb thermal stress due to the thermal expansional difference between said core and enclosure members.

4,808,136

MERCURY RETENTION STRUCTURE POR INTRODUCTION OF MEASURED AMOUNTS OF MERCURY INTO A LAMP AND METHOD OF MAKING THE RETENTION STRUCTURE

Werner Schuster, Eching/A., Fed. Rep. of Germany, assignor to Patent Treuhand Gesellschaft für elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 934,195, Nov. 24, 1986, abandoned. This application Sep. 16, 1988, Ser. No. 246,904
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1985, 3545048; Dec. 19, 1985, 3545073
Int. Cl.[4] H01J *7/10*
U.S. Cl. 445—9 **28 Claims**



1. Mercury-containing or mercury-alloy-containing retention structure, particularly to introduce liquid mercury or liquid mercury alloy into a discharge lap, in a predetermined quantity, comprising,

a predetermined quantity of liquid mercury or mercury alloy,

a porous pressed body retaining in its pores the predetermined quantity of mercury or mercury alloy,

said porous pressed body comprising a metal which has the characteristics of:

the melting point of the metal is over 250° C;

the metal of the body does not form an alloy with mercury;

the metal can be wetted by mercury; and wherein said metal comprises (i) more than 50%, by weight, of iron, and (ii) chromium and nickel.

25. A method of making a liquid mercury or liquid mercury alloy retention element, for handling of liquid mercury or liquid mercury alloy and particularly for introduction of minute amounts of mercury or mercury alloy into a discharge vessel of a discharge lamp,

comprising the steps of

forming a suspension of a metal or metal alloy which does not form an alloy with the mercury or the liquid mercury alloy but is wetted by the mercury or the liquid mercury alloy;

coating the resulting mercury-metal suspension with aqueous-free glycerine and tempering said coated suspension at a temperature of at least 100° C;

decanting the glycerine, washing the suspension product, and drying the suspension product;

filtering the suspension, to remove excess mercury or liquid mercury alloy and to form a filter cake;

pressing the filter cake to further remove excess mercury or mercury alloy and form a brittle pressed body;

pulverizing the brittle pressed body to form a retention element powder; and

forming the retention element from said retention element powder.

4,808,137

METHOD OF MAKING A CATHODE FROM TUNGSTEN AND IRIDIUM POWDERS USING A BARIUMALUMINOIRIDIATE AS THE IMPREGNANT

Louis E. Bransovich, Howell Township, Monmouth Co.; Gerard L. Freeman, Freehold Township, Monmouth Co., and Bernard Smith, Ocean, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 31, 1988, Ser. No. 200,219
Int. Cl.[4] H01J *9/04*
U.S. Cl. 445—50 **8 Claims**

1. Method of making a long life high current density cathode suitable for operation in microwave devices from tungsten and iridium powders using a bariumaluminoiridiate as the impregnant, including the steps of:

(A) mixing the tungsten and iridium powders,

(B) adding about 2 percent by weight of an activator to the mixture,

(C) ball milling the mixture for about 8 hours,

(D) pressing the ball milled mixture into a billet at about 48,000 psi in a die,

(E) sintering the billet at about 1800° C. for about thirty minutes in dry hydrogen of less than −100 dewpoint,

(F) back filling the billet with copper in dry hydrogen at about 1500° C.,

(G) machining the billet to the desired geometry,

(H) removing the copper by etching in nitric acid,

(I) thoroughly rinsing in deionized water, methanol and then drying,

(J) firing the billet in dry hydrogen at about 1400° C. for about 15 minutes,

(K) impregnating the billet with bariumaluminoiridiate by firing the billet in a dry hydrogen furnace at a temperature at which the impregnant melts for about two minutes,

(L) removing the billet from the furnace after the furnace is cooled, and

(M) removing any loose pieces of impregnant from the billet.

4,808,138

BUBBLE MAKING DEVICE

Harold von Braunhut, P.O. Box 809, Bryans Road, Md. 20616

Filed Nov. 13, 1987, Ser. No. 120,349
Int. Cl.[4] A63H *33/28*
U.S. Cl. 446—16 **25 Claims**



1. A bubble-making device, comprising:

a container for storing a film making liquid, the container having an opening and including a removable member;

flexible cords having opposing ends, one each of each being coupled to said member, the cords extending in space apart relation to each other to form at least part of the boundaries of a film region when said member is withdrawn from said container;

cord retractor means disposed inside aid container and secured to the opposite end of each of said flexible cords, for retracting the cords into said container when said member is replaced onto said container, and

film edge defining means fixed between the flexible cords completing the boundaries of the film region;

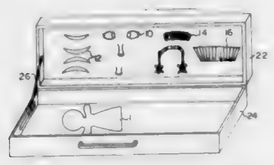
wherein when said container comprises film making liquid and said member is withdrawn, a film is formed within said film region which can then be extruded by a flow of air to form a floating bubble.

4,808,139

GLOVE PUPPET AND A KIT FOR A PUPPET SHOW

Maya Price, Kibbutz Ein Dor, Israel, assignor to Ein Dor Kibbutz Hashomer Hatzair L'Hityashvut Shitufit Beeravon Mugbal, Kibbutz Ein Dor, Israel

Filed Oct. 2, 1986, Ser. No. 914,251
Int. Cl.[4] A63H *3/14*
U.S. Cl. 446—75 **2 Claims**



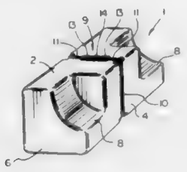
1. A kit for a puppet show comprising a glove puppet including interconnected front and back surfaces outlining at least the contours of front and back sides of a head of a figure, a neck, two upper limbs of a figure extending from said neck and a sleeve, wherein at least portions of said front and back surfaces are made of a material to which hooks of a hook and loop type pile fastener will adhere, and wherein said head, neck and limbs each are independently manipulatable by an operator, a plurality of feature elements for said figure, said feature elements being provided with a plurality of hooks of a hook and loop type fastener for selective attachment of said elements to said figure, and an openable casing containing said glove puppet and said elements wherein at least some of the inner surfaces of said casing is lined with material to which hooks of a hook and loop type fastener will adhere, so as to facilitate the orderly placement of individual elements thereon said materials of the puppet and the casing being the same.

4,808,140

TOY BUILDING BLOCK

Alain Clavet, Laval, Canada, assignor to Idee International R & D Inc., Montreal, Canada

Filed Sep. 15, 1987, Ser. No. 96,969
Int. Cl.[4] A63H *33/08, 33/12*
U.S. Cl. 446—127 **2 Claims**



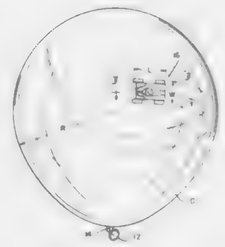
1. A toy building block comprising rectangular, parallelepipedic body means including four contiguous, planar, rectangular sides and a pair of planar ends; first slot means extending transversely of across a central portion of two adjacent first sides between the edges thereof; lug means extending outwardly from and transversely across a central portion of the remaining two adjacent second sides of said body means for sliding engagement with a said first slot means on a similar block, said lug means having a dovetail cross section, the lug means being shorter than the width of said second sides, and including a pair of similar bifurcated end sections, a bifurcated center section, and transversely extending gaps between said end and center sections, whereby said lug means are flexible to facilitate insertion of said lug means into said first slot means of a similar block, and to cause said lug means to bear against the sides of said first slot means for releasably holding the lug means in said first said slot means of a similar block; and a pair of longitudinally aligned, arcuate grooves in the ends of said body means, each said groove defining a segment of a cylinder, the curved side of which intersects adjacent side walls of the body means, whereby two such grooves on the block and a similar adjacent block can define a semi-disc shaped recess for receiving a wheel.

4,808,141

TOY CAR & BALLOON

Marvin Runge, Speedway, Ind., assignor to Zoom Balloons Corporation, Speedway, Ind.

Filed Mar. 18, 1988, Ser. No. 169,620
Int. Cl.[4] A63H *3/06*
U.S. Cl. 446—222 **11 Claims**



1. A balloon containing a toy vehicle, the toy vehicle comprising a body and a plurality of wheels, the body wholly contained within an envelope area circumscribed by a plurality of straight line segments between the wheels and having ends which are tangent to outer peripheries of the wheels and by the periphery of the wheels between the tangent line segments.

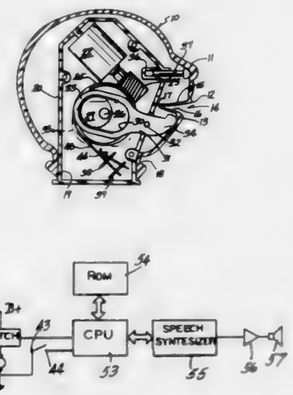
4,808,142

DOLL WITH CONTROLLED MOUTH ACTUATION IN SIMULATED SPEECH

William Berliner, Essex, Conn., assignor to Coleco Industries, Inc., West Hartford, Conn.

Filed Feb. 6, 1987, Ser. No. 11,833
Int. Cl.[4] A63H *3/28*
U.S. Cl. 446—301 **2 Claims**

1. A doll having a hollow head with lips defining a mouth, said head being formed of an elastically deformable material, a lip actuating mechanism within said head connected to said lips to provide movement thereof between an open position and a closed position of said mouth, a speech synthesizing system within said doll including a central processing unit for causing speech to be synthesized, a motor operable by said central processing unit upon initiation of synthesized speech for driving said mechanism and causing said mouth to open and close when speech is being synthesized, and switch means operable by said mechanism when said mouth is moved to a closed position for providing a signal to said central processing unit, whereby said central processing unit is operable to terminate operation of said motor to cause said mouth to remain in closed



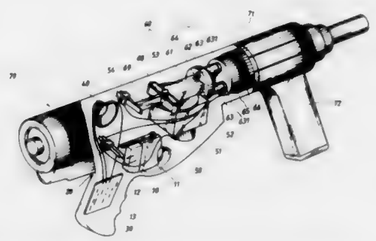
position upon termination of synthesized speech and receipt of a closed mouth signal from said switch means.

4,808,143

TOY MACHINE GUN

Yi Y. Kuo, 9th Fl. Bldg. A, No. 25, Chung Shan N. Road, Sec. 3, Taipei, Taiwan

Filed Sep. 2, 1987, Ser. No. 92,108
Int. Cl.[4] A63H *5/04*
U.S. Cl. 446—406 **2 Claims**



1. An improved toy machine gun comprising a trigger, a link assembly and rotating means;

said link assembly having a loop member and a plurality of steel tubes, said loop member having an arm connected to one end thereof and a plastic piece connected to another end thereof; each of said steel tubes having one end secured to said plastic piece by screw means, a portion passing through a sleeve and a liner, and another end secured to a head portion by screw means;

said rotating means including a motor coupled to an output rotatable wheel having a protruding pole thereon, said loop member of said link assembly being arranged to encircle said pole,

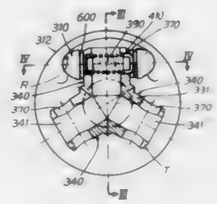
said trigger including means capable of activating said motor, so that said protruding pole rotates about said output rotatable wheel causing said link assembly together with said head portion to move in a reciprocating motion by action of said protruding pole on said loop member.

4,808,144

HOMOKINETIC TRANSMISSION JOINT FOR MOTOR VEHICLES

Michel A. Orain, Conflans Ste Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Feb. 4, 1987, Ser. No. 11,859
Claims priority, application France, Feb. 20, 1986, 86 02322
Int. Cl.[4] F16D *3/20*
U.S. Cl. 464—111 **19 Claims**



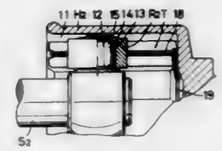
1. A homokinetic transmission joint comprising a male element for connection to a driving shaft and having radial arms, a rolling element mounted on each arm, a female element for connection to a driven shaft and defining pairs of rolling tracks, the rolling elements being trapped in respective pairs of said rolling tracks, expansible elastically yieldable bushings interposed between the radial arms and the rolling elements, each rolling element comprising two separate rolling segments each cooperative with a rolling track of the respective pair of rolling tracks, each bushing comprising two semi-cylindrical semi-bushings provided with first connecting means for preventing movement of the semi-bushings along and around the respective arm, each arm being provided with complementary second connecting means cooperative with said first connecting means, said two semi-bushings being radially expansible by a pinching between ends of the semi-bushings of the respective arm on which they are mounted, said first connecting means of each semi-bushing comprising a stud for locating the bushing on the respective arm, said stud being located on the interior of said semi-bushing on an axis of symmetry of said semi-bushing.

4,808,145

TRIPOD TYPE CONSTANT VELOCITY JOINT

Yasumasa Mizukoshi, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Japan

Division of Ser. No. 750,590, Jul. 1, 1985, abandoned. This application Nov. 2, 1987, Ser. No. 115,906
Claims priority, application Japan, Jul. 4, 1984, 59-137376; Feb. 14, 1985, 60-25178; Apr. 17, 1985, 60-80356; Apr. 17, 1985, 60-80357; May 1, 1985, 60-92177
Int. Cl.[4] F16D *3/20*
U.S. Cl. 464—111 **1 Claim**



1. A tripod type constant velocity joint comprising:

a housing including three grooves, each of said grooves having curved surfaces opposing each other in a circumferential direction,

a shaft inserted into said housing;

three trunnions mounted on said shaft and each of said trun-

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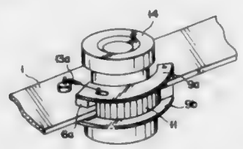
nions outwardly extending right-angled relative to an axis of said shaft;
three rollers movably mounted on said three trunnions and fitted in said three grooves;
an aligning member disposed between each of said three rollers and the curved surfaces of each of said three grooves, with each aligning member having two segments separated from each other and each segment is provided with a channel in a longitudinal direction on a contact plane surface with said cylindrical roller, and each segment being provided with a curved surface on a contact surface with said curved surface of said groove; and
a U-shaped spring for maintaining said separated segments within said groove being fitted in said channel of each of said two segments.

4,808,146

PAD NON-ROTATION MECHANISM OF STEERING WHEEL

Masatoru Nogami, Tokyo, Japan, assignor to S.T.N. Corporation, Tokyo, Japan

Filed Jan. 5, 1988, Ser. No. 141,091
Claims priority, application Japan, Jul. 22, 1987, 62-111301
Int. Cl.[4] F16H *7/02;* **B62D** *1/10*
U.S. Cl. 474—101 **1 Claim**



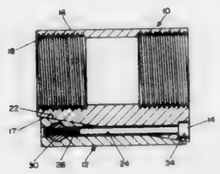
1. A pad non-rotation mechanism of a steering wheel wherein a pair of external gears having pad fitting portions at the upper and lower portions thereof are disposed rotatably in such a manner as to interpose therebetween a boss disposed at the center of arms of a steering wheel, and an endless timing belt or belts meshing with the pair of said external gears are fitted between rings mounted to spacers which are integral with said arms so that a pad can be kept stationary irrespective of the revolution of said steering wheel.

4,808,147

ADJUSTABLE BOTTOM BRACKET ASSEMBLY FOR BICYCLES

David Graham, Danbury, Conn., assignor to Cannondale Corporation, Georgetown, Conn.

Filed Jun. 3, 1987, Ser. No. 57,755
Int. Cl.[4] F16H *7/10;* **F16C** *35/00*
U.S. Cl. 474—112 **4 Claims**



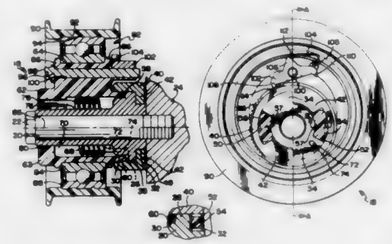
1. A bottom bracket assembly for a bicycle comprising
an eccentric body member having an external outer circular cylindrical surface adapted to be received in close fit with an internal circular cylindrical surface of a tubular shell over a major portion thereof and a planar wedge external surface disposed orthogonally to a plane that includes the axis of said external outer circular cylindrical surface and obliquely to the axis of said cylindrical surface and axially coextensive with said cylindrical surface, the body member further including a bore having an axis parallel to and spaced apart from the axis of said cylindrical surface and adapted to receive journal means for rotatably supporting a pedal crank spindle;
a wedge member having an external circular cylindrical surface adapted to be received with a close fit to the internal surface of the shell and a wedge surface complementary to, substantially coextensive with and engageable with the wedge external surface of the body member;
and drive means coupling the body and wedge members to each other for moving one wedge surface axially of the other in opposite directions selectively to loosen the body member for adjustable rotation in the shell and tighten the body member in clamped relation to the shell in a selected adjusted position of the pedal crank spindle.

4,808,148

TEMPERATURE COMPENSATED SELF-TENSIONING IDLER PULLEY

Glen D. Holtz, Brighton, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Apr. 4, 1988, Ser. No. 176,915
Int. Cl.[4] F16H *7/10*
U.S. Cl. 474—112 **10 Claims**



1. A belt tensioner, comprising
mounting means for mounting said tensioner to a support surface;
a hub operatively associated with said mounting means;
means operatively associated with said hub for biasing said hub for eccentric movement about said mounting means;
a pulley rotatably connected to said hub;
coupling means for interconnecting said hub and said mounting means and for limiting said eccentric movement of said hub about said mounting means; and
biasing means operatively associated with said coupling means for allowing limited movement of said coupling means and said hub about said mounting means.

4,808,149

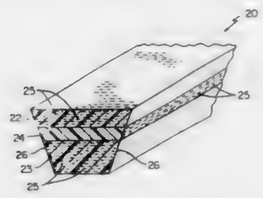
ENDLESS POWER TRANSMISSION BELT CONSTRUCTION AND METHOD AND APPARATUS FOR MAKING THE SAME

Paul M. Standley, Springfield, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 023,951, Mar. 10, 1987, Pat. No. 4,708,610, which is a continuation of Ser. No. 871,022, Jun. 5, 1986, abandoned, which is a continuation of Ser. No. 683,087, Dec. 18, 1984, abandoned, which is a division of Ser. No. 367,520, Apr. 12, 1982, Pat. No. 4,511,521. This application Oct. 15, 1987, Ser. No. 108,837
Int. Cl.[4] F16G *1/08, 5/06*
U.S. Cl. 474—260 **6 Claims**

1. In an endless power transmission belt construction or the like formed of material that is mainly polymeric material and comprising a tension section, a compression section, and a load-carrying section disposed intermediate said tension section and said compression section, a first part of the material of

at least one of said sections being oriented in a second part of said material, the improvement wherein said first part of said material comprises a liquid crystalline material that has a nematic mesophase and was oriented at a temperature in the temperature range at which said liquid crystalline material



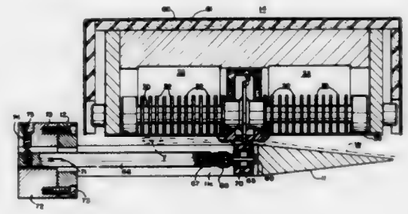
displays an ordered mesophase and wherein said second part of said material comprises a cross-linked thermal setting liquid polymer that has been cross-linked at a temperature in said temperature range and after said first part of said material has been oriented.

4,808,150

OVEN-HEATED HOT WHEEL SEALING APPARATUS

Fox J. Herrington, Holcomb, N.Y., and Clyde C. Tendick, Jacksonville, Ill., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 25, 1987, Ser. No. 100,870
Int. Cl.[4] B31B *1/64, 23/86*
U.S. Cl. 493—394 **14 Claims**



7. A heat sealing unit for heat sealing thermoplastic film comprising an oven having means for heating the air therein, at least one rotor rotatably supported within said oven, said rotor including a wheel having a rim extending outside of said oven for engaging the thermoplastic film to be heat sealed, said rotor having a plurality of spaced fins disposed axially thereof, and said fins of said rotor being constructed and arranged to circulate the heated air within said oven for heating said wheel by convection.

4,808,151

SIMPLIFIED METHOD POR THE PREPARATION OF HUMAN LYMPHOKINE ACTIVATED KILLER CELLS

George F. Dunn, Jr., Wenonah, N.J.; Joseph D. Irr, Newark, Del., and Lise N. Halpern, Newton Highlands, Mass., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 27, 1987, Ser. No. 42,998
Int. Cl.[4] A61M *37/00;* **A61K** *37/02, 45/05*
U.S. Cl. 604—6 **16 Claims**

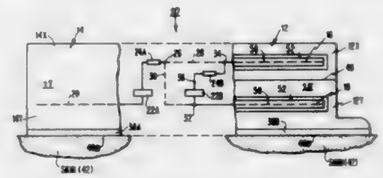
15. In the method of treatment of a cancer patient by adoptive immunotherapy which comprises removing peripheral blood from the patient, separating a lymphocyte-containing white blood cell-rich fraction from the blood, incubating the lymphocyte-containing white blood cell-rich fraction with interleukin-2 to produce lymphokine-activated killer cells, and reinjecting the activated cells into the patient, the improvement which comprises separating the lymphocyte-containing WBC-rich fraction without use of a ficoll gradient, whereby the volume percent of red blood cells in the white blood cell-rich fraction is in the range of about 1–20.

4,808,152

SYSTEM AND METHOD FOR CONTROLLING RATE OF ELECTROKINETIC DELIVERY OF A DRUG

Dan Sibalis, Stony Brook, N.Y., assignor to Drug Delivery Systems Inc., New York, N.Y.

Continuation-in-part of Ser. No. 524,252, Aug. 18, 1983, Pat. No. 4,557,723, and a continuation-in-part of Ser. No. 660,192, Oct. 12, 1984, Pat. No. 4,622,031, and a continuation-in-part of Ser. No. 702,486, Feb. 19, 1985, abandoned, and a continuation of PCT US85/01074, Jun. 10, 1985, published as WO86/07268 on Dec. 18, 1986. This application Jan. 5, 1987, Ser. No. 554
Int. Cl.[4] A61F *2/38*
U.S. Cl. 604—20 **22 Claims**

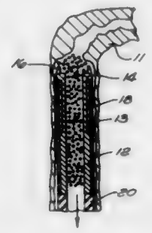


1. A system for selectively controlling the rate of delivery of a medicament or drug through the skin or mucous membrane of a human or animal by electrokinetic action, comprising, in combination:
drug reservoir means containing a drug, said drug reservoir means adapted to be in electrical contact with the skin at a first skin contact, said drug reservoir means retaining the drug and being capable of passing an electrical current through the drug wherein the drug is passed through the skin by electrokinetic action at said first skin contact,
a pair of spaced first and second electrodes positioned in said drug reservoir means, said first and second electrodes being spaced apart from said first skin contact,
electrode means in electrical contact with the skin at a second skin contact spaced from said skin contact, said electrode means being for passing and receiving current to and from said second skin contact,
a first electrical circuit, formed when the system is mounted on the skin, extending between said first and second electrodes, between said second electrode and said electrode means through the skin wherein the skin acts as an electrical conductor, and said electrode means and said first electrode, said first electrical circuit including a bypass electrical circuit extending between a junction positioned on said first electrical circuit and said second electrode, said junction being positioned between said electrode means and said first electrode, wherein said bypass electrical circuit bypasses said first electrode.
a second electrical circuit extending in parallel between said first and second electrodes,
first power means positioned in said first electrical circuit between said electrode means and said junction, said first power means being for generating a first electrical current through said first circuit,
second power means positioned in said second electrical circuit adapted to pass a second electrical current through said second circuit, and
means for passing a selected current between said first and second electrodes in accordance with the dosage and type of drug in said reservoir means, said means for passing a selected current including at least one of a plurality of the following options:

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(a) selectively passing only said first current in said first circuit;
(b) selectively passing only said second current in said second circuit;
(c) selectively inactivating said bypass circuit;
(d) selectively using only said bypass circuit;
(e) selectively positioning the polarity of said first power means; and
(f) selectively positioning the polarity of said first power means;
whereby a predetermined rate of electrokinetic delivery of said drug is attained.

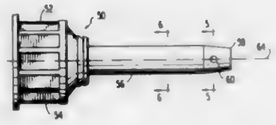
4,808,153
DEVICE FOR REMOVING PLAQUE FROM ARTERIES
Tulio T. Parisi, San Diego, Calif., assignor to Ultramed Corporation, San Diego, Calif.
Filed Nov. 17, 1986, Ser. No. 931,514
Int. Cl.[4] A61B 17/20
U.S. Cl. 604—22 9 Claims



1. In combination for removing an obstruction from the interior wall of an artery,
a member made from a light and strong material and provided at its forward end with a hollow interior defined by an interior wall having a smooth configuration and with characteristics of vibrating at an ultrasonic frequency,
means disposed on the member at a position abutting the forward end of the member and providing energy at the ultrasonic frequency for vibrating the member at the ultrasonic frequency to emulsify the obstruction,
a hollow tube covering the member and the ultrasonic energy means and made from a pliant material and extending rearwardly past the rear ends of the member and the ultrasonic energy means to facilitate the movement of the tube, the member and the energy means along the interior wall of the artery, and
the hollow tube covering the member and the ultrasonic energy means along the length of the ultrasonic energy means and the member having a chamfered configuration at its forward end to facilitate the removal of the obstruction from the interior wall of the artery by emulsification of the plaque in accordance with the vibrations of the member at the ultrasonic frequency,
the member being provided with a socket at its outer periphery to receive the ultrasonic energy means and to provide the hollow tube with substantially uniform external dimensions along the length of the tube when the ultrasonic means is disposed in the socket.

4,808,154
PHACOEMULSIFICATION/IRRIGATION AND ASPIRATION SLEEVE APPARATUS
Jerre M. Freeman, 1509 Peabody, Memphis, Tenn. 38104
Filed Oct. 26, 1983, Ser. No. 545,494
Int. Cl.[4] A61B 17/20
U.S. Cl. 604—22 5 Claims

1. A phacoemulsification/irrigation and aspiration sleeve apparatus for a phacoemulsification/irrigation and aspiration device which includes a handpiece enhousing an ultrasonic vibratory drive assembly and a cylindrical ultrasonic tip member connected to the drive assembly for contacting and emulsifying a cataract lens, said sleeve apparatus comprising:
a hollow cylindrical base member operable to be connected to the handpiece and to coaxially surround the elongate cylindrical tip;
a cylindrical sleeve member connected to said base and coaxially projecting from the base along the elongate cylindrical top toward a distal end thereof, said cylindrical sleeve member being composed of a material having a pliable elastomeric composition;



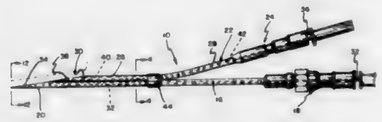
said cylindrical sleeve member having an internal diameter greater than the external diameter of the cylindrical ultrasonic tip member and thereby forming an annular passage around the ultrasonic tip, said cylindrical sleeve being operable to conduct a tip cooling and lens irrigating fluid around the ultrasonic tip and into a zone of lens emulsification at the distal end of the ultrasonic tip member; and
said cylindrical sleeve member having a plurality of rib members for guiding cooling and irrigating fluid through said cylindrical sleeve member and for isolating interior wall portions of said cylindrical sleeve member from the exterior surface of the ultrasonic tip member.

4,808,155
SIMPLE DOUBLE LUMEN CATHETER
Sakharam D. Mahurkar, 6171 N. Sheridan Rd.-#1112, Chicago, Ill. 60660
Continuation of Ser. No. 833,978, Feb. 27, 1986, abandoned, which is a continuation of Ser. No. 544,883, Oct. 24, 1983, abandoned. This application Sep. 16, 1987, Ser. No. 97,378
Int. Cl.[4] A61M 25/00
U.S. Cl. 604—43 12 Claims



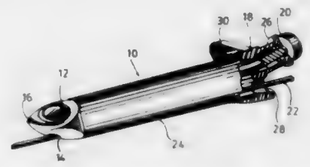
1. A double lumen catheter having an elongated tube with a proximal cylindrical portion enclosing first and second lumens separated by an internal divider, the proximal end of said elongated tube connecting to two separate connecting tubes communicating with the respective first and second lumens, the first lumen extending from the proximal end of said elongated tube to a first opening at the distal end of said elongated tube, and the second lumen extending from the proximal end of said elongated tube to a second opening spaced in the longitudinal direction away from said first opening, said tube having a non-conical and non-tapered distal end portion having a cross-sectional area smaller than the cross-sectional area of said proximal cylindrical portion, and said distal end portion extending from said second opening and terminating in a blunt distal end to prevent the distal end of the catheter from traumatizing or becoming caught in the walls of a vessel into which the catheter is inserted.

4,808,156
CANNULAR INSTRUMENT AND METHOD FOR INSERTING A CANNULAR INSTRUMENT INTO A VEIN
Consuelo M. Dean, 926 S. Hillside, Wichita, Kans. 67211
Filed Mar. 9, 1987, Ser. No. 23,812
Int. Cl.[4] A61M 3/00
U.S. Cl. 604—43 20 Claims



1. A method for inserting a cannular instrument into a blood stream of a vein comprising the steps of
(a) forming a straight rigid hollow first needle having a first needle beveled end;
(b) forming at least one rigid hollow second needle having a skewed needle structure and a second needle beveled end;
(c) passing slidably the straight rigid hollow first needle through a unitary straight flexible first cannula having a periphery and terminating in an associated first end having a facial plane that is essentially normal with respect to a horizontal plane along any point on the periphery of the entire length of the first cannula such that the associated first end is substantially not beveled;
(d) passing slidably respectively said at least one rigid hollow second needle through at least one flexible second cannula having a periphery and a skewed cannular structure defined by a unitary straight second cannular first part bound to said flexible first cannula substantially along the entire length of the second cannular first part and terminating in an associated second end having a facial plane that is essentially normal with respect to a horizontal plane along any point on the periphery of the entire length of the second cannular first part and distant rearwardly from the associated first end of the first cannula;
(e) rotating and adjusting the skewed structure of the second needle within the second cannula until the second needle beveled end extends beyond the associated second end and the second needle beveled end further extends from the periphery of the second cannular first part opposite the point on the periphery of the second cannular first part where the second cannular first part connects to the first cannula, forward of the associated second end and down to and terminating at a first imaginary straight line that extends longitudinally along the periphery of the first cannula from the point on the periphery of the first cannula where the second cannular first part connects to the first cannula;
(f) rotating and adjusting the first needle within the first cannula until the first needle beveled end extends beyond the associated first end and the first needle beveled end extends from the first imaginary straight line that extends longitudinally along the periphery of the first cannula from the point on the periphery of the first cannula where the second cannular first part connects to the first cannula, forward of the associated first end and down to and terminating at a second imaginary straight line that extends longitudinally along the periphery of the first cannula diametrically opposite to the first imaginary straight line;
(g) forcing the first needle beveled end and the associated first end of the first cannula into a blood stream of a vein which is to be fed medicinally; and
(h) forcing subsequently the second needle beveled end and the associated second end of the second cannula first part into the blood stream of the vein of step (g).

4,808,157
MULTI-LUMEN EPIDURAL-SPINAL NEEDLE
Dennis W. Coombs, Etna, N.H., assignor to Neuro Delivery Technology, Inc., Tempe, Ariz.
Filed Jul. 13, 1987, Ser. No. 72,428
Int. Cl.[4] A61M 5/32
U.S. Cl. 604—44 10 Claims



1. A multi-lumen epidural-spinal needle comprising:
a first lumen having a first axis;
a second lumen having a second axis; and
a tissue piercing point through which said first lumen and said second lumen exit, forming respectively a first opening and a second opening, said first axis and said second axis being parallel, and said openings diverging near said point such that a catheter exiting said first opening will be deflected along a path nearly perpendicular to said needle while said second opening essentially aligns with said second lumen.

4,808,158
VASCULAR CATHETER
Rudolf Krenzer, Munich, Fed. Rep. of Germany; Wayne A. Noda, Mission Viejo, Calif.; Friedemann Stockert, Munich, Fed. Rep. of Germany, and Paul F. Zapkas, Costa Mesa, Calif., assignors to Stockert Instrumente GmbH, Munich, Fed. Rep. of Germany
Continuation of Ser. No. 880,762, Jul. 1, 1986, abandoned. This application Jan. 4, 1988, Ser. No. 143,255
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1985, 3523520
Int. Cl.[4] A61M 31/00
U.S. Cl. 604—49 3 Claims



1. A method for connecting a venous return of a heart-lung machine to the heart of a patient during open heart surgery which includes a vascular catheter comprising a flexible plastic tube having blood passage orifices along the wall of the anterior portion which is to be inserted into the heart auricle or vessel, and having means for connecting the posterior open end of the tube to the heart-lung machine, a piston-like closure member displaceable within the tube and capable of closing the orifices in an advanced position and clearing the orifices in a retracted position, an actuating means attached to the closure member and extending outwardly from the posterior end of the tube, a sealing plug in close contact with the inner wall of the

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posterior portion of the catheter and removable with the retracting of the closure member, with the method comprising the steps of:

advancing the closure member, so that it closes the blood passage orifices of the catheter;

inserting the anterior portion of the catheter into the desired location of the heart or vessel whereby no blood enters the catheter;

operating the actuating means thereby displacing the piston-like closure member into a retracted position whereby the orifices of the catheter are cleared permitting blood to flow into the catheter;

clamping-off the catheter at a location forward of the closure member;

retracting the actuating means, sealing plug and closure member from the catheter;

attaching the posterior end of the catheter to the heart-lung machine; and

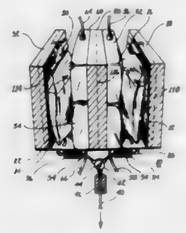
opening the clamping-off of the catheter whereby the venous return of the patient is connected to the heart-lung machine with no loss of blood and no introduction of air.

4,808,159

APPARATUS AND METHOD FOR ADMIXTURE BLOOD WARMING

Ethan B. Wilson, Tucson, Ariz., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 16, 1987, Ser. No. 26,478
Int. Cl.[4] A61M *37/00*
U.S. Cl. 604—4 **38 Claims**



1. A method for warming chilled erythrocytes to prevent hypothermia upon transfusion and to prevent hemolysis during warming, said method comprising the steps of:

(a) admixing a quantity of the erythrocytes with a quantity of saline solution having a temperature in excess of 45° C.; and

(b) conveying the admixture to a point of use.

4,808,160

NASAL CANNULA APPARATUS

John W. Timmons, and Gloria A. Timmons, both of 8390 W. Country Club Dr., Sarasota, Fla. 33580

Continuation-in-part of Ser. No. 851,209, Apr. 14, 1986, abandoned. This application Nov. 5, 1986, Ser. No. 927,525
Int. Cl.[4] A61M *11/00*
U.S. Cl. 604—94 **21 Claims**

1. A nasal cannula apparatus for receiving a gas from a supply line and delivering it to the nostrils of a wearer comprising:

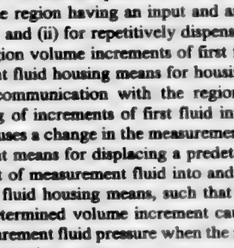
a pair of cannula tubes having ends;

a pair of nasal extensions;

a cannula junction;

said cannula junction having first and second laterally oriented and oppositely directed inlets for receiving and holding said pair of cannula tube ends;

said cannula junction also having first and second laterally spaced, downwardly oriented, outlets for receiving and holding said pair of nasal extensions, where by said nasal extensions may be readily replaced without replacement of said cannula tubes; and



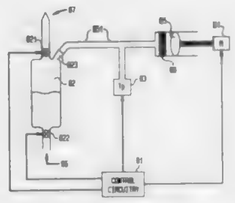
support means for holding said cannula junction at the forehead of the wearer.

4,808,161

PRESSURE-MEASUREMENT FLOW CONTROL SYSTEM

Dean L. Kamen, 46 Gage Rd., Bedford, N.H. 03102

Continuation-in-part of Ser. No. 836,023, Mar. 4, 1986. This application Mar. 5, 1987, Ser. No. 22,167
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—67 **32 Claims**



1. A system for controlling flow of a first fluid through a line, the system comprising:

dispensing means (i) for isolating a region of the first fluid in the line from effects of pressure in the line outside of the region, the region having an input and an output for the first fluid, and (ii) for repetitively dispensing into and out of the region volume increments of first fluid;

measurement fluid housing means for housing measurement fluid in communication with the region such that the dispensing of increments of first fluid into or out of the region causes a change in the measurement fluid pressure;

displacement means for displacing a predetermined volume increment of measurement fluid into and out of the measurement fluid housing means, such that displacement of the predetermined volume increment causes a change in the measurement fluid pressure when the region is isolated by the dispensing means;

pressure measurement means for measuring changes in measurement fluid pressure; and

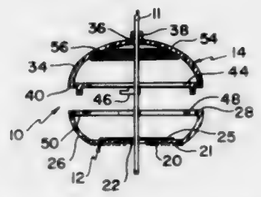
control means, in communication with the pressure measurement means, the displacement means, and the dispensing means, for causing the dispensing means to dispense first fluid in increments based on data from the pressure measurement means, such that at least one of the predetermined volume increments of measurement fluid displaced serves as a reference for the volume increments of first fluid outputted.

4,808,162

GASTROTOMY TUBE STABILIZER

Ruth Oliver, 809 Avis Dr., Upper Marlboro, Md. 20772

Filed Jan. 19, 1988, Ser. No. 145,307
Int. Cl.[4] A61M *5/32*
U.S. Cl. 604—180 **4 Claims**



1. A stabilizing apparatus for gastrotomy tubes comprising:

a substantially cup-shaped lower shell having an upper rim and a substantially planar base provided with a central aperture adapted to permit passage of a gastrotomy tube therethrough, said aperture having a diameter substantially larger than that of the gastrotomy tube to expose an adjacent wound area, said planar base having an underside having adhesive means thereon enabling said lower shell to be removably affixed to a patient's skin,

a substantially dome-shaped upper shell having a lower rim of substantially the same diameter as the upper rim of said lower shell, said upper shell having a body tapering upwardly and including a central opening having a collar extending upwardly therefrom, said central opening and said collar having a diameter substantially the same as that of the gastrotomy tube and adapted to receive the gastrotomy tube therethrough to maintain said gastrotomy tube in axial alignment, said upper and lower rims having cooperating interlocking means, whereby

said upper shell may be releasably joined to said lower shell to form a protective cavity surrounding the wound area and said upper shell may be readily disengaged from said lower shell to afford visual inspection of the wound area and access thereto for cleaning and changing of dressings.

4,808,163

PERCUTANEOUS VENOUS CANNULA FOR CARDIOPULMONARY BYPASS

Glenn W. Lamb, 16 Cameron Ct., Princeton, N.J. 08540

Filed Jul. 29, 1987, Ser. No. 79,118
Int. Cl.[4] A61M *29/00*
U.S. Cl. 604—105 **8 Claims**



1. A venous cannula for performing full or substantially full cardiopulmonary bypass comprising

a. a cannula having an opening at its distal end and a plurality of openings positioned around and through the cannula at its distal portion;

b. expansion means integrally formed adjacent the distal end of said cannula, said expansion means being adapted to dilate the walls of a vascular space and space said walls away from said openings, said expansion means having memory hysteresis, whereby said expansion means has a natural repose comprising an expanded orientation; and

c. a stylet slidably positioned within said cannula and having a diameter slightly larger than said opening in the distal end of said cannula; said stylet having a tapered distal end adapted to extend through said opening in the distal end of said cannula whereby the degree of engagement of the stylet with the periphery of the opening at the distal end of said cannula controls the expansion and contraction of said expansion means.

4,808,164

CATHETER FOR BALLOON ANGIOPLASTY

Robert Hess, Portola Valley, Calif., assignor to Progressive Angioplasty Systems, Inc., Los Angeles, Calif.

Filed Aug. 24, 1987, Ser. No. 88,264
Int. Cl.[4] A61M *25/00*; A61B *17/36*
U.S. Cl. 604—95 **12 Claims**



1. A catheter for balloon angioplasty comprising:

a flexible shaft having a hollow passage therein, said flexible shaft having a first proximal end which is open and a second distal end which is closed;

a core means movably and removably mounted within said passage, said core means having a first proximal end and a second distal end, said ends adjacent with first and second ends of said flexible shaft, respectively, said core means having a first flexible portion extending along its length from said first proximal end and a second flexible portion being of greater flexibility than said first flexible portion, said second flexible portion extending to said second distal end, said core means having an enlarged terminal knob at said second distal end thereof, said knob contacting said second distal end of said flexible shaft upon axial movement of said core means, further axial movement of said core means causing bending and buckling of said second flexible portion of said core means in turn bending said flexible shaft and causing angulation of said second distal end of said flexible shaft;

a flexible guide wire externally attached to the second distal end of said flexible shaft, said flexible guide wire axially extending away from said second distal end; and

an inflatable member having a non-inflatable sheath covering an external surface of said flexible shaft near the second distal end of said flexible shaft and further including means for inflating said inflatable member.

4,808,165

INFLATION/DEFLATION DEVICE FOR BALLOON CATHETER

Ann M. Carr, 2224 NE. 9th St., Ocala, Fla. 32670

Filed Sep. 3, 1987, Ser. No. 92,591
Int. Cl.[4] A61M *29/02*
U.S. Cl. 604—97 **15 Claims**

1. An inflation/deflation device for a catheter having an inflatable balloon at its distal end and a syringe at its proximal end, the syringe including a cylindrical barrel and plunger received within the barrel, comprising:

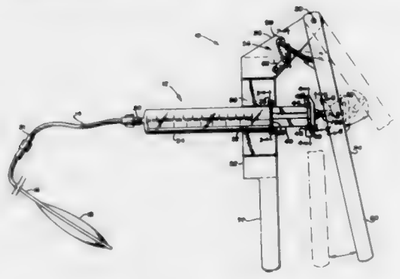
first and second elongated members connected one to the other adjacent corresponding end portions thereof for pivotal movement toward and away from one another about an axis;

means carried by said first member for fixedly mounting the

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barrel of the syringe relative to said first member against axial displacement of the barrel relative to the first member at a location therealong spaced from said pivotal connection, said barrel mounting means including means defining a slot opening laterally to one side of said device and said first member generally in the direction of the axis of said pivotal connection for receiving a flange formed about the barrel; and

means carried by said second member for fixedly mounting the plunger of the syringe relative to said second member against axial displacement of the plunger relative to the second member at a location therealong spaced from said



pivotal connection, said plunger mounting means including means defining a slot opening laterally to said one side of said device and said second member generally in the direction of the axis of said pivotal connection for receiving a flange formed about the plunger;

said slots enabling the syringe to be received and mounted on said device and removed therefrom from said one side of the device;

said members being pivotal toward and away from one another about said axis to positively displace the plunger axially relative to the barrel in opposite directions to thereby positively inflate and positively deflate the balloon, respectively, in response to said pivotal movement.

4,808,166

ANAL MEDICATION APPLICATOR

James Davidov, 21901 Burbank Blvd. #216, Woodland Hills, Calif. 91367

Filed Oct. 8, 1987, Ser. No. 105,897
Int. Cl.[4] A61M *29/00*
U.S. Cl. 604—114 **6 Claims**



1. An improved anal medication-containing applicator, said applicator comprising, in combination:

a hollow tubular container having an open front end and a generally central space in communication therewith;

anal medication disposed in said space;

means connected to said container for heating said medication in said space; and

means for ejecting said heated anal medication from said space into the anus of a patient;

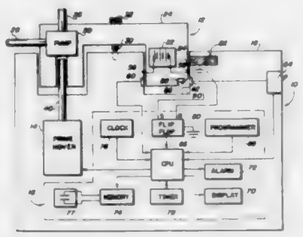
said heating means comprising a first set of electrical resistance wiring surrounding said space and connected to a rheostat for controlling the temperature of said medication and a second set of electrical resistance wiring adjacent the outer surface of said container, separated from said first set of electrical resistance wiring in said container by a thermal barrier and connected to a second separate rheostat for controlling the surface temperature of said container.

4,808,167

MEDICATION INFUSION SYSTEM WITH DISPOSABLE PUMP/BATTERY CASSETTE

Alfred E. Mann, Los Angeles, and Joseph H. Schulman, Granada Hills, both of Calif., assignors to Pacesetter Infusion, Ltd., Sylmar, Calif.

Filed Jan. 16, 1987, Ser. No. 4,352
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—151 **19 Claims**



1. A medication infusion system for infusion system for infusing fluid into a living body, comprising:

a disposable fluid pump having an inlet to which aid fluid is supplied for ma source, and an outlet form which said fluid is pumped in precisely metered amounts at preselected times;

a prime mover for driving said disposable fluid pump;

means for coupling an output of said prime mover to drive said fluid pump;

an electronic controller for controlling the operation of said prime mover to cause said disposable fluid pump to pump said precisely metered amounts at said preselected times;

main pump housing means for containing said prime mover and said electronic controller in an assembly defining a main pump unit;

a battery for powering at least one of said prime mover and said electronic controller, said battery being attached to and disposable with said disposable fluid pump;

cassette housing means for containing said disposable fluid pump and said battery in an integral package defining a disposable cassette, said disposable cassette for removable attachment to said main pump unit;

means interacting between said cassette and said main pump housing for preventing reuse of said disposable cassette after initial detachment form said main pump unit; and

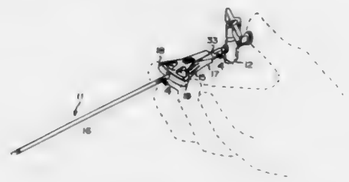
means for connecting said battery to provide electrical power to at least one component contained in said main pump unit.

4,808,168

PNEUMONEEDLE

Jessica A. Warring, Millbrae, Calif., assignor to Endotherapeutics, Menlo Park, Calif.

Continuation-in-part of Ser. No. 859,228, May 5, 1986, abandoned, which is a continuation of Ser. No. 764,358, Aug. 9, 1985, abandoned. This application May 19, 1986, Ser. No. 865,072
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—158 **8 Claims**



1. A Veress-type pneumoneedle comprising:

(a) an elongated handle having a longitudinal bore and flanges at one of its ends to permit the handle to be grasped like a syringe;

(b) a hollow needle for penetrating a body cavity and providing a conduit through which fluid may be passed to or from the cavity, the needle being fit in the end of the bore at the flanged end of the handle;

(c) a nonremovable stylet having an elongated body that extends through the lumen of the needle and into the bore and has a blunt tip at its forward end and a base member at its other end within the handle bore;

(d) a spring housed within the bore with one of its ends seated against the stylet base member for biasing the stylet forwardly so that the blunt tip extends outwardly of the needle tip in the absence of resistance; and

(e) a valve connected fixedly to the bore at the end opposite the flanges for regulating fluid flow through the needle.

4,808,169

DISPOSABLE SAFETY SYRINGE HAVING MEANS FOR RETRACTING ITS NEEDLE CANNULA INTO ITS MEDICATION CARTRIDGE

Terry M. Haber, Lake Forest; Clark B. Foster, El Toro, and William H. Smedley, Lake Elsinore, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Continuation-in-part of Ser. No. 143,751, Jan. 14, 1988. This application Mar. 31, 1988, Ser. No. 176,305
Int. Cl.[4] A61M *5/32*
U.S. Cl. 604—195 **16 Claims**

1. A syringe comprising:

a hollow cylinder having proximal and distal ends;

a cartridge located within said cylinder and containing a supply of fluid;

a needle cannula extending outwardly from the distal end of said cylinder and projecting into said cylinder to communicate with said cartridge so that said fluid supply may be injected from said cartridge via said cannula;

means to releasably retain said cannula at the distal end of said cylinder, said retaining means including a pair of movable jaws that are aligned with one another to engage said cannula therebetween; and



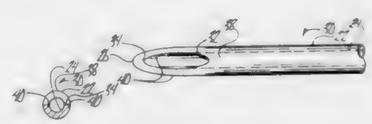
means to move said jaws out of engagement with said cannula to permit said cannula to be removed from the distal end of said cylinder.

4,808,170

HYPOTRAUMATIC INJECTION NEEDLE USEFUL IN OPHTHALMIC SURGERY

Spencer P. Thornton, and Rodger W. Williams, both of Nashville, Tenn., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 809,232, Dec. 16, 1985, abandoned. This application Mar. 6, 1987, Ser. No. 22,468
Int. Cl.[4] A61M *5/32*
U.S. Cl. 604—274 **6 Claims**



1. A self-guiding, hypotraumatic, ophthalmic injection needle adapted for retrobulbar and peribulbar injections, comprising:

a tubular body having a first end, a second end, and a longitudinal axis extending between the first end and the second end, said first end comprising a penetrating end;

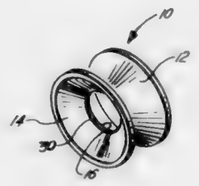
said penetrating end including a generally planar beveled surface which substantially truncates the tubular body at an angle relative to the longitudinal axis of the tubular body, and a tip portion located at the forward most point of the first end;

said beveled surface having a configuration of a generally elliptical ring, and including an outer periphery and an inner periphery, all portions of said beveled surface including said inner periphery and said outer periphery being polished and smoothly rounded to eliminate all cutting edges;

said tip portion having a first region which joins the tip portion to the tubular body, said first region being rounded and polished such that the tip portion curves toward the beveled surface.

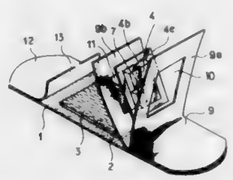
VOL 1099 ISS 4 FEB 28 1989 UMI

4,806,171
V-SHAPED EAR VENTILATION TUBE
Eric S. Berger, 2825 W. 6th St., Aberdeen, Wash. 98520
Filed May 16, 1986, Ser. No. 864,080
Int. Cl.[4] A61M 5/325
U.S. Cl. 604—264 5 Claims



1. An ear ventilation tube adapted for insertion in a slit formed in the tympanic membrance portion of a patient's ear for communicating the middle and outer ears, comprising:
(a) a hollow body formed of a biocompatible material having a fluid flow bore therethrough with inner and outer ends, the bore including a constricted portion that is at least as large in diameter as the minimum size that allows fluid in the middle ear to flow from the middle ear through the bore, the bore including inner and outer portions, each being conical is shape and gradually expanding in size in inner and outer respective directions away from the constructed portion;
(b) the hollow body further including an outer surface adapted to engage and maintain the tube in the slit in the tympanic membrane.

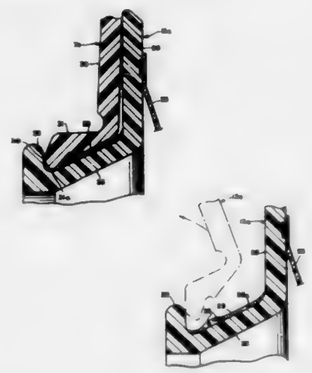
4,806,172
FIRST-AID ADHESIVE BANDAGE
Takaaki Murata, Kumamoto, Japan, assignor to Aso Pharmeceutical Co., Ltd., Kumamoto, Japan
Filed Jul. 1, 1987, Ser. No. 68,307
Claims priority, application Japan, Jul. 5, 1986, 61-103298; Jan. 17, 1987, 62-5159
Int. Cl.[4] A61F 7/02
U.S. Cl. 604—306 15 Claims



1. A first-aid adhesive bandage comprising a bandage main body having an adhesive coating on its upper surface; a pad affixed to the upper surface of the main body; a substantially rectangular, box-like capsule containing a medicinal agent and having a bottom wall of a thin sheet; and a peel cover removably attached to the adhesive coating and holding the capsule on or over the pad, the top wall of the capsule having a central portion dented toward the capsule bottom wall to form a groove extending laterally between opposed side walls of the capsule, and the dented portion having a projection extending downward from its center so as to rupture the thin sheet of capsule bottom when a force is applied to the upper surface of the capsule.

11. A first-aid adhesive bandage comprising a bandage main body having an adhesive coating on its upper surface; a pad affixed to the upper surface of the main body; a substantially rectangular, box-like capsule containing a medicinal agent and having a bottom wall of a thin sheet; and a peel cover removably attached to the adhesive coating and holding the capsule on or over the pad, the top wall of the capsule having a central portion dented toward the capsule bottom wall to form a groove extending laterally between opposed side walls of the capsule, the lower end of the dented portion having a pair of gentle slants extending upwardly from the center of the dented portion toward the capsule side walls, each slant having an actuate sectional profile to form a blade so as to rupture the thin sheet of capsule bottom when a force is applied to the upper surface of the capsule.

4,806,173
OSTOMY APPLIANCE COUPLING WITH VISCOELASTIC LINER
Paul O. Kay, Libertyville, Ill., assignor to Hollister Incorporated, Libertyville, Ill.
Continuation-in-part of Ser. No. 894,322, Aug. 7, 1986, abandoned. This application Jan. 28, 1988, Ser. No. 149,631
Int. Cl.[4] A61F 5/44
U.S. Cl. 604—339 9 Claims



1. A coupling ring for an ostomy appliance, said ring being formed of flexible plastic material and defining an axially-extending opening therethrough for receiving a patient's stoma; said ring also having a generally radially-facing annular channel for receiving and detachably engaging an annular flange of a second coupling ring adapted to mate with said first-mentioned ring; and a deformable liner of viscoelastic polymeric material securely and sealingly bonded to said first-mentioned ring within said channel for making direct, shape-conforming, fluid-tight sealing contact with said flange when said first and second rings are coupled together; said viscoelastic material comprising a hot-melt sealant having pressure-sensitive adhesive properties; the strength of the bond between said viscoelastic liner and said first-mentioned ring exceeding the strength of adhesion of said liner to said second-mentioned ring.

4,806,174
CONDOM OF PLASTIC MATERIAL
Reuben Sorkin, 4721 University Dr., Coral Gables, Fla. 33146
Continuation-in-part of Ser. No. 093,933, Sep. 8, 1987. This application Jan. 25, 1988, Ser. No. 148,724
Int. Cl.[4] A61F 5/44
U.S. Cl. 128—644 8 Claims

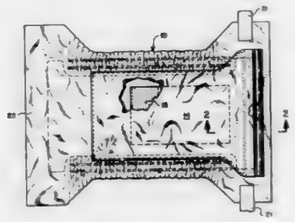
1. A thin-walled one-piece condom of plastic material com-

prising fiber means that reinforce a polyethylene film including a tubular length having a closed first end and an open second



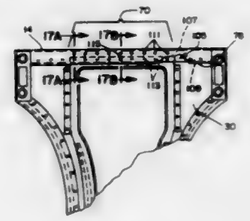
end, said open second end and tubular length being sized to receive and jacket the penis of a user while erect.

4,806,175
DISPOSABLE DIAPER AND WET WIPE PAD PACKAGE
William T. Hansen, 5877 S. Kyle Dr., Kearns, Utah 84118
Filed Jul. 27, 1987, Ser. No. 78,586
Int. Cl.[4] A61F 13/16
U.S. Cl. 604—385.1 8 Claims



1. A disposable diaper and wet wipe pad package, comprising a disposable diaper; a reversible, moisture proof bag having oppositely positioned broad panel walls, one of which is fastened to said diaper as a moisture proof backing therefor, said bag having an opening positioned to receive the diaper when the bag is reversed by turning it inside out; one or more wet wipe pads within said bag; sealing means associated with said broad panel walls adjacent to said opening of the bag and tightly closing said opening so as to seal the wet wipe pad or pads against loss of moisture, said sealing means comprising a longitudinal tongue and receiving groove arrangement extending, respectively, along edge margins of the broad panel walls that are adjacent to the bag opening so as to tightly seal the bag when turned inside out to contain the diaper and the wet wipe pad or pads in soiled condition.

4,806,176
ELASTICIZED WAIST INTEGRATION MEMBER FOR DISPOSABLE ABSORBENT GARMENTS
David P. Kielpikowski, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 31, 1986, Ser. No. 947,942
The portion of the term of this patent subsequent to Oct. 20, 2004, has been disclaimed.
Int. Cl.[4] A61F 13/16
U.S. Cl. 604—385.2 31 Claims



1. An anatomically form-fitting, generally self-adjusting disposable absorbent garment comprising:
a breathable elastomeric nonwoven outer cover, including a pair of leg openings, front and rear waist sections defining a waist opening, a crotch section situated between said leg openings and front and rear panels respectively situated between said front and rear waist sections and said crotch section;
an absorbent insert structure, superposable on said front and rear panels and said crotch section, including a liquid impermeable barrier, a liquid permeable bodyside liner, an absorbent composite disposed between said liner and barrier and opposed longitudinal ends attached to said outer cover at said waist sections; and
elastic integration means for attaching and integrating at least one of said opposed longitudinal ends of said insert to an associated one of said waist sections, including upper and lower borders attached to said associated waist section and said at least one longitudinal end, respectively, allowing said upper border to independently stretch with said attached outer cover while said lower border thereof remains in fixed position attached to said longitudinal end of said insert.

4,806,177
ABSORBENT ARTICLE HAVING FLOATING INNER CUFFS
Thomas A. DesMarais, Norwood, and Robert H. Siegfried, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 2, 1987, Ser. No. 103,872
Int. Cl.[4] A61F 13/16
U.S. Cl. 604—385.1 25 Claims

1. An integral disposable absorbent article having a front waist region, a back waist region, and a crotch region disposed between the front waist region and the back waist region, the absorbent article comprising:
an absorbent core having a garment facing surface, a body facing surface, and a pair of side edges;
a backsheet associated with said absorbent core on said garment facing surface; a continuous topsheet associated with said absorbent core on said body facing surface of said absorbent core;
a side flap extending outwardly from and along each side edge of said absorbent core in at least the crotch region;
a flap elastic member operatively associated with each of said side flaps in an elastically contractible condition; and
a floating inner cuff longitudinally extending along the ab-

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sorbent article in at least the crotch region in each side of the absorbent article, each of said floating inner cuffs comprising:

a cuff layer;

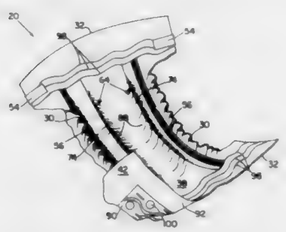
a base layer underlaying said cuff layer;

a first seam for securing a portion of said cuff layer to said base layer;

a central seam spaced inboard from said first seam for securing a portion of said cuff layer to said base layer;

said cuff layer having an unadhered stand-up portion positioned between said first seam and said central seam that is unadhered to said base layer; and

a central elastic member operatively associated with said floating inner cuff in an elastically contractible condi-



tion and positioned subjacent said unadhered stand-up portion of said cuff layer, said central elastic member comprising a pair of affixed portions and an unaffixed portion between said pair of affixed portions, said pair of affixed portions being affixed to said cuff layer and said base layer and said unaffixed portion being unaffixed to said base layer and said cuff layer so that said central elastic member may float in the crotch region of the absorbent article so as to optimize fit of said floating inner cuff, wherein said unaffixed portion is positioned in at least the crotch region of the absorbent article so that said unaffixed portion causes said unadhered stand-up portion of said cuff layer to stand-up and be spaced away from said base layer to form a ridge that enhances leakage prevention.

4,808,178

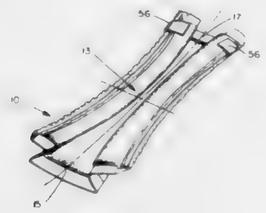
DISPOSABLE ABSORBENT ARTICLE HAVING ELASTICIZED FLAPS PROVIDED WITH LEAKAGE RESISTANT PORTIONS

Mohammed I. Aziz, Cincinnati, and Ted L. Blaney, West Chester, both of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 510,467, Jun. 30, 1983, abandoned, which is a continuation of Ser. No. 308,017, Oct. 5, 1981, abandoned. This application Jan. 10, 1985, Ser. No. 690,298

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—385.2 **6 Claims**



1. A disposable diaper comprising:

an outer covering layer;

an absorbent core means for absorbing liquid, said absorbent core means being encased in said outer covering layer, said absorbent core means having a peripheral edge comprising a first longitudinal side edge and a second longitudinal side edge;

a multiplicity of flaps, each of said flaps having a fixed edge, a distal edge in spaced relation to said fixed edge, and having a liquid contacting surface the longitudinal sides of which are bounded by said fixed and said distal edges, one of said flaps having said fixed edge connected to said outer covering layer at said first longitudinal side edge of said absorbent core means and one of said flaps having said fixed edge connected to said outer covering layer at said second longitudinal side edge, said flaps having a leakage resistant portion interposed on said liquid contacting surface between said fixed edge and said distal edge, said distal edge being displaced from said absorbent core mean, said leakage resistant portion being non-absorbent, and liquid impermeable; and

an elastic element, said elastic element being operatively associated with said distal edge of said flaps and secured in an elastically contractible condition to said flap at least at its two ends to render said distal edge of said flaps elastically contractible so that said elastic element effectively contracts or gathers the flap material.

4,808,179

CONTAINER DEVICE AND A METHOD FOR MANUFACTURING OF THE DEVICE

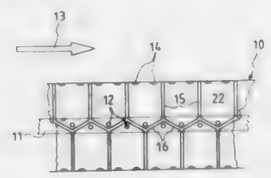
Göran Lindstam, Lund, Sweden, assignor to AB Akerlund & Rausing, Sweden

Continuation of Ser. No. 729,251, May 1, 1985, abandoned. This application Mar. 9, 1987, Ser. No. 22,506

Claims priority, application Sweden, May 9, 1984, 8402509

Int. Cl.⁴ A61B *19/00*

U.S. Cl. 604—408 **3 Claims**



1. A method of manufacturing filled containers comprising the steps of:

(a) providing a flexible tube filled with liquid, the wall of said tube having longitudinally spaced-apart connection regions each adapted for connection to a discharge device, said tube having releasably adhering thereto a cover layer in the form of at least one continuous tape extending longitudinally along said flexible tube, and overlaying a plurality of said regions;

(b) advancing the liquid-filled flexible tube with said cover layer through a sterilizer and sterilizing said tube, said liquid and said cover layer in said sterilizer;

(c) forming lateral weld seams extending across said tube to thereby subdivide said filled tube and said cover layer into a plurality of individual containers each including one of said connection regions and having thereon a portion of said cover layer; and

(d) separating said containers from one another and said portions of said cover layer from one another along said weld seams,

the method further comprising the step of forming a weld seam extending longitudinally along said tube before said separating step so that said longitudinal seam cooperaties with said lateral weld seams in subdividing said filled tube and said tape into a

plurality of individual containers, said separating said including the step of separating said containers and portions of said cover layer from one another along both said lateral weld seams and said longitudinal weld seam, said step of forming said longitudinal weld seam being performed so that said longitudinal weld seam is formed in a region of said tube covered by said tape, whereby said tape is subdivided along said longitudinal weld seam.

4,808,180

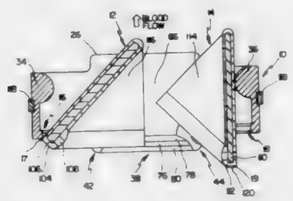
PROSTHETIC HEART VALVE

Keith M. Johnson, Coon Rapids, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 29, 1987, Ser. No. 44,073

Int. Cl.⁴ A61F *2/24*

U.S. Cl. 623—2 **12 Claims**



1. A prosthetic heart valve comprising a housing having a central orifice and an inner wall surrounding said central orifice and a first valve leaflet pivotably mounted to said valve housing along a first pivot axis extending across the orifice of said valve housing, said first leaflet pivoting between a closed position and an open position displaced through a first angle from said closed position;

wherein first and second projections extend from said inner wall of said housing, displaced from said first pivot axis, said first projection extending to and having a first surface substantially tangent to a first plane perpendicular to said first pivot axis, said second projection extending to and having a second surface substantially tangent to a second plane, displaced from said first plane and perpendicular to said first pivot axis, said first and second surfaces of said first and second projections defining first and second arcs, respectively, in said first and second planes, said first and second arcs centered on said first pivot axis, and subtending a second angle at least equal to said first angle; and

wherein said first valve leaflet is provided with first and second arcuate depressions, corresponding to and engaging with said first and second projections of said valve housing and defining arcs centered on said first pivot axis.

4,808,181

INTRAOCULAR LENS HAVING ROUGHENED SURFACE AREA

Charles D. Kelman, 269 Grand Central Pkwy., Floral Park, N.Y. 11005

Filed Aug. 7, 1987, Ser. No. 83,635

Int. Cl.⁴ A61F *2/16*

U.S. Cl. 623—6 **15 Claims**

1. Intraocular lens for implantation in the posterior chamber of an eye, following extracapsular removal of the natural eye lens, which comprises

a lens assembly constructed of a non-hydrophillic material having an anterior formation and a posterior surface formation, at least a portion of the posterior surface formation constituting a planar contact region adapted to be seated against the adjacent tissue surface of a part of the posterior capsule to form a connection interface for anchoring of the lens assembly thereat,

the contact region being provided with at least one roughened surface area defined by a series of ordered narrow curvilinear depressions therein extending generally transversely of the plane of the contact region and containing about 40-120 side by side curvilinear depressions per millimeter, for accelerated adhesion of the tissue of the adjacent posterior capsule part to the depressions and enhanced anchoring of the lens assembly to the posterior capsule part, to prevent dislodgment of the implanted intraocular lens.



4,808,182

DESWELLED, HYDROGEL INTRAOCULAR LENSES

Graham D. Barrett, City Beach, Australia, assignor to Nestle, S.A., Vevey, Switzerland

Filed Nov. 26, 1986, Ser. No. 935,413

Int. Cl.⁴ A61F *2/16*; B65D *81/22*

U.S. Cl. 623—6 **8 Claims**

1. A method for reducing the area of a hydrogel intraocular lens so as to allow its implantation through a smaller incision than the incision which would normally be required for said lens, comprising deswelling the hydrogel intraocular lens by equilibration in a physiologically acceptable, hyperosmotic solution.

4,808,183

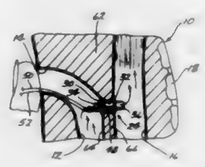
VOICE BUTTON PROSTHESIS AND METHOD FOR INSTALLING SAME

William R. Panje, Iowa City, Iowa, assignor to University of Iowa Research Foundation, Iowa City, Iowa

Filed Jan. 3, 1988, Ser. No. 156,177

Int. Cl.⁴ A61F *2/20*; A61M *16/00*

U.S. Cl. 623—9 **12 Claims**



5. A method for installing a voice button prosthesis for a patient having his larynx removed and having the upper end of his trachea opening through a stoma to the atmosphere through the forward portion of his neck, said prosthesis comprising an elongated tube having a forward end and a rearward end, a tracheal flange and an esophageal flange extending radially outwardly from said tube and being axially spaced from one another, and one way valve means at said rearward end of said tube for permitting air to exit rearwardly from said tube while at the same time preventing fluid from entering said rearward end of said tube, said method comprising:

surgically making an incision in the patient's trachea and

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esophagus to form a tracheo-esophageal fistula communicating between the patient's trachea and the patient's esophagus located behind said trachea;

inserting said tube through said fistula to a position wherein said esophageal flange and said valve means are within said esophagus and said tracheal flange is within said trachea.

8. A voice button prosthesis for a patient having his larynx removed, said patient having the upper end of his trachea opening through a stoma to the atmosphere through the forward portion of his neck, the patient's esophagus being located behind said trachea, a tracheo-esophageal fistula of predetermined diameter and axial length being surgically provided through the walls of said trachea and said esophagus to provide communication therebetween; said prosthesis comprising:

an elongated cylindrical tube sized to fit within said fistula and having forward and rearward ends and an axial bore extending therethrough;

one way valve means adjacent said rearward end of said tube for permitting air to pass outwardly from said bore through said rearward end and for preventing fluid from entering into said bore from said rearward end;

a pair of annular flanges spaced axially from one another on the exterior of said tube, each of said flanges extending around the circumference of said tube and extending radially outwardly therefrom to a circumferential diameter which is greater than the diameter of said esophageal fistula, and axial distance between said pair of annular flanges being slightly greater than said axial length of said esophageal fistula;

at least one of said flanges being sufficiently flexible so as to deform when manually inserted through said fistula and to resume its original configuration once inside said esophagus.

4,908,184

METHOD AND APPARATUS FOR PREPARING A SELF-CURING TWO COMPONENT POWDER/LIQUID CEMENT

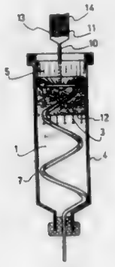
Slobodan Tepic, Davos, Switzerland, assignor to Laboratorium fur experimentelle Chirurgie Forschungsinstitut, Davos, Switzerland

PCT No. PCT/EP85/00227, § 371 Date Jan. 12, 1987, § 102(e) Date Jan. 12, 1987, PCT Pub. No. WO86/06618, PCT Pub. Date Nov. 20, 1986

PCT Filed May 14, 1985, Ser. No. 7,970

Int. Cl.[4] A61M *31/00*

U.S. Cl. 604—56 **14 Claims**



1. A method of preparing a self-curing cement from a powder component containing a polymerization catalyst and a liquid component containing a polymerizable monomer, comonomer, prepolymer or mixtures thereof, said method comprising:

A. supplying said powder component in an at least partially evacuated, sealed chamber of a first inflexible container, said powder component comprising particles of said powder and interspaces therebetween;

B. supplying said liquid component in a second inflexible container;

C. connecting said second container to said first container by means of an air-tight connection;

D. pressurizing said liquid component to a pressure higher than that of said partially evacuated chamber; and

E. propelling said liquid component into said partially evacuated container, whereby said liquid floods said partially evacuated interspaces by the action of the pressure difference between the pressure on the liquid component and the pressure in the interspaces, thereby forming a polymerizable cement mass.

4,908,185

TIBIAL PROSTHESIS, TEMPLATE AND REAMER

Brad L. Penenberg, 19 Charles St., Braintree, Mass. 02184; Murali Jasty, 7 Arden Rd., Wellesley, Mass. 02181, and Hugh P. Chandler, Lewis Wharf 438, Boston, Mass. 02110

Filed Feb. 7, 1986, Ser. No. 827,148

Int. Cl.[4] A61F *2/38, 2/30*

U.S. Cl. 623—20 **10 Claims**



1. An improved tibial prosthesis for attachment to the subchondral plates of a tibia, the plates having a lateral plateau and a medial plateau, said prosthesis comprising:

(a) an elongated tray member having an upper surface and an undersurface, said undersurface having a contour consisting of a flat surface having a plurality of domical protrusions extending outwardly therefrom, said plurality of protrusions being arranged with respect to said undersurface such that, in use, said medial plateau and said lateral plateau each have at least one protrusion attached thereto, said undersurface being adapted to be surgically attached to a corresponding contour surgically prepared on a proximal tibial plateau such that forces applied on said prosthesis are spread throughout said tibia substantially uniformly, and

(b) an articular insert portion having an upper surface and an undersurface, said insert portion upper surface including an articular surface adapted to bearinly receive cooperating condyles of a distal femur, said insert portion undersurface being matingly engaged to said tray portion upper surface

4,908,186

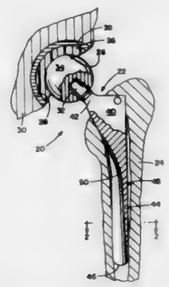
CONTROLLED STIFFNESS FEMORAL HIP IMPLANT

Todd S. Smith, Warsaw, Ind., assignor to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Feb. 2, 1988, Ser. No. 151,627

Int. Cl.[4] A61F *2/32*

U.S. Cl. 623—23 **10 Claims**



4. In an artificial joint for replacing a damaged natural joint in a skeletal structure of a body which includes a prosthesis having a first cooperating member to be secured to a first long bone having an intramedullary canal, said first cooperating member adapted to engage and being relatively movable with a second cooperating member of a second bone to permit relative movement between the first and second bones, the improvement comprising:

an elongated stem having a longitudinal axis lying generally in a coronal plane and being integral with said first cooperating member and receivable in the intramedullary canal of the first bone, said stem extending between proximal and distal ends and having a longitudinal channel generally lying in the coronal place when said stem is implanted, the thickness of said stem laterally of said channel being variable between said proximal and distal ends so as to affect the moment of inertia at any given location along the length of said stem to thereby achieve a stem flexibility which substantially correlates to the flexibility of the first bone.

4,908,187

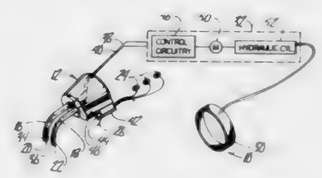
TACTILE STIMULUS RECEPTOR FOR A HAND PROSTHESIS

Patrick E. Patterson, Ames, Iowa, and Judd A. Katz, Montgomery, Ala., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Oct. 5, 1987, Ser. No. 104,067

Int. Cl.[4] A61F *2/70, 2/72*

U.S. Cl. 623—25 **15 Claims**



3. A tactile stimulus receptor for use with a myoelectric prosthesis comprising:

pressure transducer means positioned on the prosthesis for sensing pressure experienced by gripping of an object by the prosthesis, and converting the sensed pressure into a corresponding signal; and

pressure stimulus means adapted to be operatively positioned on a user for providing a pressure stimulus corresponding to the pressure sensed by the pressure transducer means, the pressure stimulus means comprising a tactile pressure means adapted to be placed in abutment with the user, and variable pressure generating means operatively connected to the pressure transducer means for producing a variable tactile pressure stimulus proportional to pressure sensed by the pressure transducer means, the variable pressure generating means comprising a motor which operates a hydraulic cylinder to produce variable hydraulic pressure according to the operation of the motor.

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4,808,188

POLYESTER FIBERS, YARNS AND FABRICS WITH ENHANCED HYDROPHILICITY AND METHOD OF PRODUCING SAME WITH BOROHYDRIDE ANIONS AND LITHIUM CATIONS

W. Troy Ledford, 2201 Linda St., and John R. Wasson, 3101 Gardner Park Dr., both of Gastonia, N.C. 28052

Continuation-in-part of Ser. No. 97,535, Sep. 16, 1987, abandoned, which is a continuation of Ser. No. 822,776, Jan. 27, 1986, abandoned. This application May 24, 1988, Ser. No. 198,117

Int. Cl.[4] D06M *9/00*; C08F *20/00*

U.S. Cl. 8—115.68 21 Claims

1. A modified polyester polymer having enhanced hydrophilicity which is produced by contacting the polyester with an aqueous treatment bath containing borohydride anions and lithium cations.

4,808,189

POWDERED HAIR DYE CONTAINING CYCLODEXTRIN INCLUSION COMPLEX

Takeshi Oishi, Seto; Fumio Nakanishi, Tajimi, and Toshihiko Yamamoto, Toyohashi, all of Japan, assignors to Hoyu Co., Ltd., Japan

Filed Aug. 19, 1987, Ser. No. 86,808

Claims priority, application Japan, Feb. 4, 1987, 62-24171

Int. Cl.[4] A61K *7/13*

U.S. Cl. 8—408 4 Claims

1. A powdered hair dye comprising in admixture an oxidative dye component and an amount of a powdered oxidizing agent, effective to react with said dye component, wherein said dye component is present in the form of a cyclodextrin inclusion complex, the aount of the dye is from 0.05 to 50 parts in 100 parts of the powdered hair dye and the molar ratio of cyclodextrin:dye is 1:0.1 to 1:3.

4,808,190

PROCESS FOR DYEING KERATINOUS FIBERS WITH 5,6-DIHYDROXY-INDOLE AND HYDROGEN PEROXIDE, PRECEDED OR FOLLOWED BY A TREATMENT WITH AN IODIDE

Jean F. Grollier, Paris, and Didier Garoche, Levallois-Perret, both of France, assignors to L'Oreal, Paris, France

Filed Jan. 20, 1987, Ser. No. 4,497

Claims priority, application Luxembourg, Jan. 20, 1986, 86256

The portion of the term of this patent subsequent to Feb. 14, 2006, has been disclaimed.

Int. Cl.[4] A61K *7/13*

U.S. Cl. 8—423 22 Claims

1. Process for dyeing keratinous fibers, characterized in that at least one composition (A) comprising, in a medium suitable for dyeing, 5,6-dihydroxyindole in proportions of between 0.01 and 5% by weight in combination with hydrogen peroxide at a concentration from 1 to 40 volumes at a pH of between 2 and 7 is applied to these fibers, the application of composition (A) being preceded or followed by the application of composition (B) comprising iodide ions in proportions of between 0.007 and 4% by weight expressed as I^- ions in a medium suitable for dyeing.

4,808,191

PROCESS FOR PATTERN DYEING OF TEXTILE MATERIALS

Richard V. Gregory, Spartanburg, and Daniel T. McBride, Chesnee, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 4, 1987, Ser. No. 58,104

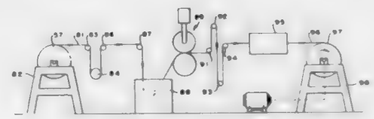
Int. Cl.[4] D06P *5/00*

U.S. Cl. 8—478 8 Claims

1. A process for pattern dyeing textile material comprising

a. applying to said textile material an aqueous solution of a water soluble salt of a metal selected from the group consisting of zirconium and hafnium;

b. applying to selected portions of said textile material from step a. an aqueous solution of at least one dye and at least one aqueous system thickener selected from the group



consisting of a water-soluble guar gum and a water-soluble xanthan gum, whereby said metal and said thickener form a complex which coordinates with said at least one dye to thereby inhibit migration of said dye, and

c. fixing said dye to the textile material.

4,808,192

PROCESS FOR PREPARATION OF WATER SOLUBLE DYES CONTAINING LITHIUM SULFONATE GROUP OR AMMONIUM SULFONATE GROUP BY CATION EXCHANGE, NEUTRALIZATION AND REVERSE OSMOSIS

Yoshihiro Narita, Konan; Hiroshi Takimoto, Yokohama, and Hideo Sano, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Sep. 15, 1986, Ser. No. 908,023

Claims priority, application Japan, Sep. 17, 1985, 60-204921

Int. Cl.[4] C09B *67/54*, *69/02*

U.S. Cl. 8—527 9 Claims

1. A process for preparation of water-soluble dye containing lithium sulfonate group or ammonium sulfonate group which comprises feeding an aqueous solution of a water-soluble dye containing sodium sulfonate group to a packed column packed with acid type cation exchange resin (H-form) to form an aqueous solution of a dye containing free sulfonic acid group, and neutralizing the resulting solution with LiOH or NH_4OH, followed by concentrating the solution of the dye according to a process for separation through, reverse osmotic membrane.

4,808,193

PROCESS FOR DYEING HYDROXY-CONTAINING FIBER MATERIAL WITH WATER-SOLUBLE DIS-AZO REACTIVE DYE COMPOUND

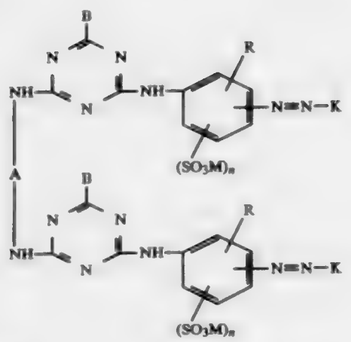
Ludwig Schlafer, Kelkheim; Hartmut Springer, Kleinstein, and Michael Kunze, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 945,491, Dec. 23, 1986, Pat. No. 4,762,916. This application May 26, 1988, Ser. No. 198,991

Int. Cl.[4] C09B *35/02*, *43/40*, *62/01*; D06P *1/38*

U.S. Cl. 8—549 21 Claims

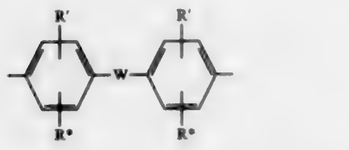
1. A process for dyeing a material comprising a hydroxy groups-containing fiber material, which comprises applying a water-soluble compound of the formula (1)



(1)

in which

A is alkylene of 2 to 6 carbon atoms or phenylene unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms, chlorine, sulfo and carboxy, or is a group of the formula



(2)

in which

W is a direct bond or a bridge member and the R′ and R* each are, independently on each other, hydrogen, chlorine, methyl, methoxy, ethoxy, carboxy or sulfo;

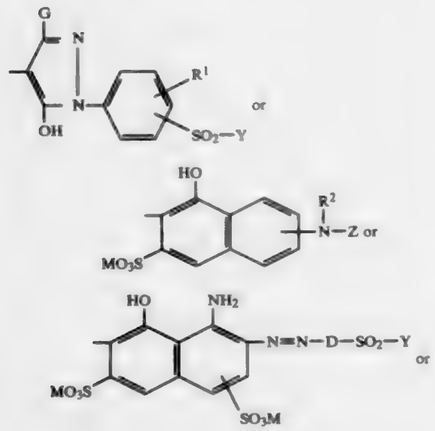
B is chlorine or fluorine;

R is hydrogen, chlorine, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms;

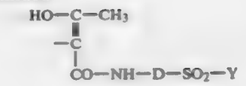
M is hydrogen or an alkali metal;

n is the number zero, 1 or 2 (where in the case of n=0 this group denotes a hydrogen atom);

K is a group of the formula



-continued



in which

D is phenylene unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of chlorine, bromine, alkyl of 1 to 4 carbon atom, alkoxy of 1 to 4 carbon atoms, carboxy and sulfo, or is naphthylene unsubstituted or substituted by 1 or 2 sulfo groups,

R^1 is hydrogen, chlorine, alkyl of 1 to 4 carbon atoms or alkoxy group of 1 to 4 carbon atoms,

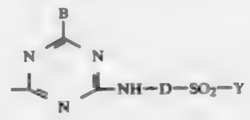
R^2 is hydrogen or alkyl of 1 to 4 carbon atoms,

G is carboxy, methyl or carbalkoxy of 2 to 5 carbon atoms,

Y is vinyl, β-sulfatoethyl, β-phosphatoethyl, β-thiosulfatoethyl or β-chloroethyl,

M has the abovementioned meaning and

Z is α- or β-bromoacryloyl or β-chloropropionyl or a group of the formula



in which B, D and Y are as defined above,

to said material in aqueous solution and allowing said compound to act on the material from the aqueous solution at a pH value between 4 and 8 and at a temperature between 100° and 150° C., while said compound is fixed on the material.

4,808,194

STABLE AQUEOUS SUSPENSIONS OF SLAG, FLY-ASH AND CHAR

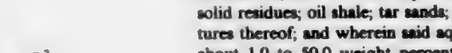
Mitri S. Najjar; Farrokh Yaghmaie, both of Hopewell Junction, and Louis S. Sorell, Fishkill, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 26, 1984, Ser. No. 674,898

Int. Cl.⁴ C10L *1/32*

U.S. Cl. 44—51 **5 Claims**

1. A pumpable aqueous suspension of particulate matter with reduced viscosity and increased resistance to sedimentation and having a particle size in the range of about 37 to 2000 microns as produced by quench cooling and/or scrubbing the hot raw effluent gas stream comprising H_2+CO at a temperature in the range of about 1700° F. to 3000° F. from the partial oxidation of solid carbonaceous fuel selected from the group consisting of anthracite, bituminous, and lignite coal; particulate carbon; coke from coal; petroleum coke; coal liquefaction solid residues; oil shale; tar sands; asphaltic bitumen; and mixtures thereof; and wherein said aqueous suspension comprises about 1.0 to 50.0 weight percent of said particulate matter consisting of a mixture of slag, fly-ash, and char; about 0.2 to 10.0 weight percent basis weight of said particulate matter, of a nonionic or anionic surfactant having a theoretical molecular weight in the range of about 484 to 1980 and having structural Formula I, as follows:



I

wherein: R is an alkyl group with 9 to 24 carbon atoms, P—O is a phenolic moiety in which O is oxygen, A is an ethoxy or propoxy group and y equals 5 to 39; B is $(CH_2—CH_2)$ when A is ethoxy and either



when A is propoxy; and M is the terminating moiety and is selected from the group consisting of —OH, $—SO_3Na^+$, and $—O—SO_3Na^+$; and the balance of said suspension is water.

4,808,195

HYDROCARBON FUEL ADDITIVE

Salvatore Ambrogio, Massapequa, N.Y., assignor to Aquanox Corp., Portsmouth, N.H.

Filed Mar. 24, 1986, Ser. No. 842,992

Int. Cl.⁴ C10L *1/18*

U.S. Cl. 44—53 **12 Claims**

1. In the method of fuel storage or combustion, wherein the fuel supply contains small amounts of water, the step of adding to said fuel supply an additive comprising a blend of

a hydrophilic agent chosen from the group of ethylene glycol, n-butyl alcohol, and cellosolve in the range of 22–37% by weight;

ethoxylated nonylphenol in the range of 26–35% by weight;

nonylphenol polyethylene glycol ether in the range of 32–43% by weight.

4,808,196

FUELS CONTAINING N-ALKYLALKYLENEDIAMINE AMIDES

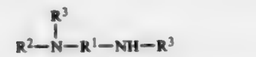
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 33,985, Apr. 2, 1987, which is a continuation-in-part of Ser. No. 827,228, Feb. 5, 1986, abandoned, which is a continuation of Ser. No. 705,403, Feb. 25, 1985, abandoned, which is a continuation of Ser. No. 493,463, May 11, 1983, abandoned. This application Jan. 2, 1988, Ser. No. 201,241

Int. Cl.⁴ C10L *1/22*

U.S. Cl. 44—71 **15 Claims**

1. A liquid fuel composition comprising a major proportion of a liquid fuel, and a friction reducing or antioxidant amount of a product of the formula



wherein R^1 is a C_2 to C_4 alkylene group, R^2 must be a C_{12} to C_{30} hydrocarbyl group and R^3 is (1) hydrogen, (2) a



group wherein R^4 is hyrogen or a C_1 to C_3 alkyl group or (3) a C_1 to C_3 aliphatic group, at least one of the R^3 groups being selected from (2).

4,808,197

QUENCH RING FOR A GASIFIER

Harold J. Ayers, Woodlands, Tex., assignor to Texaco Inc., White Plains, N.Y.

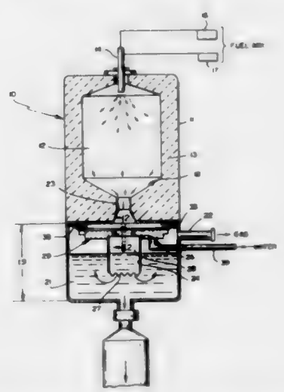
Filed Sep. 24, 1987, Ser. No. 100,672

Int. Cl.⁴ C10J *3/48*

U.S. Cl. 48—69 **7 Claims**

1. In a gasifier for producing a usuable gas by partial combustion of a carbonaceous fuel, a gasifier shell defining combustion chamber therein, and a burner for injecting said carbonaceous fuel therein, means forming a cooling zone in said shell beneath said combustion chamber, holding a water bath, means forming a throat communicating the combustion chamber with said means forming said cooling zone, a dip tube defining a flow path for guiding a hot effluent stream comprised of produced gas and particulated ash from said means forming said throat into said bath, and a quench ring supportably positioned above said diptube,

the improvement wherein said quench ring is comprised of, a plurality of discrete manifold segments cooperatively



positioned in a circular arrangement to define an annular effluent passage, each discrete manifold segment having an edge spaced laterally from an adjacent manifold segment edge to define an interspacial void there between, each said manifold segment having means forming an internal chamber communicated with a source of liquid coolant, and having a discharge port aligned with said dip tube to direct said coolant liquid there against.

4,808,198

ENVIRONMENTALLY SAFE METHOD FOR DISPOSING OF ASBESTOS CONTAINING MATERIALS

George N. Richter, San Marino, Calif., assignor to Texaco Inc., White Plains, N.Y.

Filed Feb. 1, 1988, Ser. No. 150,678

Int. Cl.⁴ C10J *3/46*

U.S. Cl. 48—197 R **15 Claims**

1. A method of disposing of asbestos-containing materials while simultaneously producing a gaseous mixture comprising H_2+CO comprising:

(1) introducing asbestos-containing material into the reaction zone of a free-flow unobstructed refractory lined partial oxidation gas generator simulaneously with an ash-containing liquid hydrocarbonaceous fuel and/or solid carbonaceous fuel, a free-oxygen containing gas, and a temperature moderator; wherein the weight ratio of asbestos-containing material to ash in the liquid hydrocarbonaceous and/or solid carbonaceous fuel is in the range of about 0.1 to 10;

(2) reacting said fuel in said reaction zone at a temperature which is at least about 10° to 200° F. above the fluid temperature of the ash in the fuel and above about 2000° F. and a pressure in the range of about 2 to 250 atmospheres, an O/C atomic ratio in the range of about 0.7 to 1.6, and a weight ratio of H_2O to fuel in the range of about 0.2 to 2.0 to produce a hot raw effluent gas stream comprising H_2, CO, CO_2 and at least one gas from the group H_2O, N_2, CH_4, H_2S, COS and Ar; entrained molten slag, and particulate matter; wherein the asbestos in the reaction zone melts and combines with the ash from said fuel to produce molten slag containing asbestos which has been rendered harmless; and

(3) cooling and cleaning the raw effluent gas stream from (2).

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4,808,199

APPARATUS AND METHOD FOR PROTECTING GAS SEPARATION MEMBRANES FROM DAMAGE DUE TO A REVERSAL OF DIFFERENTIAL PRESSURE

Jacob S. Yearout, Houston, Tex., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Mar. 31, 1987, Ser. No. 32,826
Int. Cl.[4] B01D *53/22*
U.S. Cl. 55—16 29 Claims



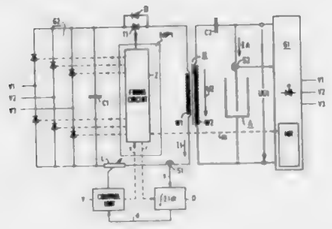
1. An improved method for using a membrane to separate gases in a mixture of feed gases by feeding said mixture across the feed side of the membrane at a gas pressure which is generally higher than the pressure on the permeate side of the membrane, the improvement comprising the step of providing relief means for relieving the pressure on the permeate side of the membrane when the permeate side pressure exceeds the pressure on the feed side of the membrane by a selected amount.

4,808,200

ELECTROSTATIC PRECIPITATOR POWER SUPPLY

Richard Dallhammer, Nürnberg; Franz Neulinger, Erzhausen; Walter Schmidt, Uttenreuth, and Helmut Schummer, Heusenstamm, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 12, 1987, Ser. No. 119,585
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1986, 3640092
Int. Cl.[4] B03C *3/66*
U.S. Cl. 55—105 19 Claims



8. An apparatus for electrically energizing an electrostatic precipitator, comprising:

first voltage generating means for generating a d-c voltage of amplitude variable in accordance with precipitator breakdown thresholds, said first voltage generating means being operatively connected to said electrostatic precipitator, whereby said d-c voltage is transmitted to said electrostatic precipitator;

second voltage generating means for generating a series of voltage pulses characterized by a plurality of parameters including d-c potential level, pulse amplitude, pulse width, pulse repetition frequency and rate of voltage rise, at least one of said parameters being variable, said second voltage generating means being operatively connected to said electrostatic precipitator over a primary winding and a second winding of a high-voltage transformer, whereby said voltage pulses are transmitted to said electrostatic precipitator and superimposed on said d-c voltage;

current detector means operatively connected to said second voltage generating means for sensing a current of at least one of said voltage pulses and for generating an electrical signal indicative of said current;

calculation means operatively connected to said current detector means for automatically determining from said electrical signal a difference between a positive area under a current-time curve for said detected current and a negative area under such current-time curve; and

control means operatively coupled to said calculation means automatically varying at least one of said plurality of parameters in response to said difference to increase the value of said difference.

4,808,201

CONNECTOR CONSTRUCTION FOR FLUID DRYING TUBE

Jack Kertzman, Pine Beach, N.J., assignor to Perma Pure Products, Inc., Toms River, N.J.

Continuation-in-part of Ser. No. 909,694, Sep. 19, 1986, Pat. No. 4,705,543. This application Nov. 9, 1987, Ser. No. 118,551
Int. Cl.[4] B01D *53/22*
U.S. Cl. 55—158 12 Claims



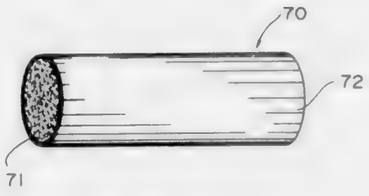
1. A fluid drying device comprising: a section of tubing formed of a first material having selective and reversible water-absorption properties, the surface of said tubing covered with a braided netting of a second material, means for connecting said tubing to receive fluid, said connecting means including a chemically inert tubular core inserted into said tubing, and a connector fused to said braiding and said tubing in proximity to said core.

4,808,202

ADSORPTIVE FIBER SHEET

Yasuo Nishikawa, Uji, and Yasumasa Nakazima, Joyo, both of Japan, assignors to Unitika, Ltd., Amagasaki, Japan

Filed Nov. 23, 1987, Ser. No. 123,871
Claims priority, application Japan, Nov. 27, 1986, 61-280779; Nov. 28, 1986, 61-281660; Sep. 7, 1987, 62-135551[U]
Int. Cl.[4] B01D *39/00*
U.S. Cl. 55—390 15 Claims



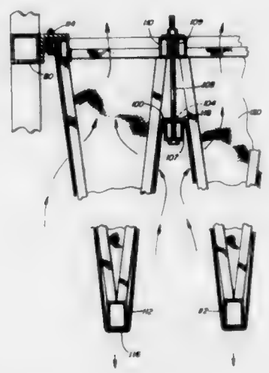
1. An adsorptive fiber sheet wherein a nonwoven fabric of synthetic fiber constituted only by synthetic fiber having a higher melting temperature is secured in a layered structure to at least one surface of a nonwoven fabric of adsorptive fiber which is constituted in such a state that synthetic fiber having a higher melting temperature, synthetic fiber having a lower melting temperature and adsorptive fiber are mixed to contact with in another and the contact points of said sythetic fiber having a lower melting temperature with other fibers are bound together by softening the synthetic fiber having a lower melting temperature.

4,808,203

DUST COLLECTOR

Hubert Sabourin, Alexandria, Canada, assignor to Hubert Sabourin Inc., Ontario, Canada

Continuation of Ser. No. 819,845, Jan. 17, 1986, abandoned. This application Jan. 14, 1988, Ser. No. 145,669
Int. Cl.[4] B01D *46/02*
U.S. Cl. 55—492 4 Claims



1. Apparatus for removing solid particles from a large volume gas stream, said apparatus comprising:

(i) a substantially airtight container (10) having a lower receiving space and an upper discharge space;

(ii) inlet means (12) communicating with said receiving space;

(iii) outlet means (14) communicating with said discharge space;

(iv) one-piece particulate collecting means (16) disposed between said inlet means and said outlet means, said collecting means comprising:

(a) upper, outer, support frame means (80) having a pair of end members and a pair of side members, all of which are fastened to said container in a plane that separates said lower receiving and upper discharge spaces, said upper outer fixed frame member (80) being provided with upper support frame members (87) being attached along the inner sides of said outer support frame (80), said upper support frame members (87) being provided with a plurality of spaced-apart first holes (88),

(b) a plurality, n, of upper inside longitudinal fixed frame members (110), said plurality of inside longitudinal fixed frame members (11) being attached to said outer support frame members (80) and spaced between said pair of end members and a pair of said side members in parallel relationship to said side members; wherein outer ones of said inside longitudinal frame members 110 are in gas-tight engagement with said container,

(c) a plurality, n−1, of lower longitudinal fixed frame members (112) disposed below said upper longitudinal fixed frame members (11) and supported therefrom by a plurality of pairs of inner and outer bag support frame members (84), upper ends of said frame members (84) are attached to adjacent pairs of said longitudinal fixed frame members (110) and the lower ends of said bag support frame members are attached to lower longitudinal fixed frame members (112), thereby forming, in transverse planes, a plurality of rows of bag supports which are longitudinally spaced apart along each of a plurality of longitudinal axes, so that said pairs of inner and outer bag support frame members (84) define an inverted triangular configuration;

(d) a one-piece filter medium (100), said filter medium having a plurality of pockets, said pockets embracing all of said bag support members (84), in which said pockets comprise:

a plurality of longitudinally disposed first sides (100*a*; 100*c*) having lower and upper ends and opposed ends;

a plurality of longitudinally disposed second sides (100*b*; 100*d*) having lower and upper edges and opposed ends, each of said pockets being defined by opposed pairs of first and second sides;

a plurality of longitudinally disposed upper joining portions (118), each one of which extends between associated upper edges of adjacent ones of said first and second sides; and

a plurality of end panels (120) integrally joined with associated first ones of said opposed ends of said first and second sides and with associated second ones of said opposed ends of said first and second sides and further joined to the associated lower joining portion, thereby defining a plurality of closed pockets closed with an open top, said pockets being closed by said end panels (120) formed adjacent opposite ends of each of said bag support members (84);

(e) stretcher means (86, 107, 108) cooperating with said upper joining members of said pockets for pulling each of said pockets into close contact with associated bag support frames in the said plurality of rows of bag support members;

(f) an inner frame (206) formed of separatable members that are inserted into said one-piece filter medium (100) wherein said inner frame (206) together with said filter medium is attached to said upper outer support frame (80) by means of said upper support frame members (87) in gas sealing engagement; and wherein said separable members of said inner frame (206) are provided with a plurality of spaced-apart second holes (64) respectively aligned with said first holes (88) in said upper support frame members (87), and a plurality of fastening means (62) are arranged therebetween to effect said gas sealing engagement.

4,808,204

METHOD AND APPARATUS FOR PRODUCING BENDS IN OPTICAL FIBERS

Rustin H. Wright, New York, N.Y., assignor to Polysoft Systems Corp., Baltimore, Md.

Filed Jun. 25, 1987, Ser. No. 66,150
Int. Cl.[4] C03B *37/14*
U.S. Cl. 65—1 11 Claims



1. An apparatus for producing bends in optical fibers comprising a pair of plates hingedly connected along one edge of each of said plates so that said plates are capable of lying in face-to-face contact and are capable of being hingedly separated from each other, means defining a cavity between said plates. When the plates are in face-to-face contact, said cavity having two portions defined in it for receiving lengths of a fiber and an encapsulated resin for said fiber on opposite sides of a bend to be formed, said portions being joined at an apex section, means defining an opening into said cavity at said apex section, a fiber channel in each of said portions, said fiber channels being mounted in said portions for relative movement in said cavity to a desired bend angle while the apex of said desired angle is positioned at said opening in said apex section, and pulling means for acting on a resin-encapsulated optical fiber in said channels when said plates are in face-to-face

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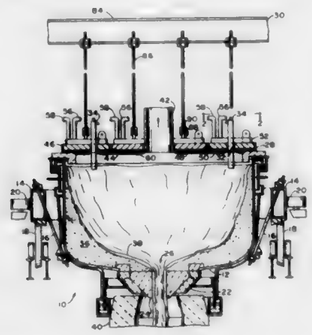
contact and thereby positioning a resin-encapsulated fiber at said desired angle whereby the apex of the bend of said fiber is accessible through said opening and means for providing said fiber encapsulating resin.

4,808,205

LID CONSTRUCTION FOR A HEATING VESSEL AND METHOD OF USE

Gary N. Hughes, Pittsburgh, and George A. Pecoraro, Lower Burrell, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 16, 1987, Ser. No. 121,424
Int. Cl.⁴ C03B 5/42
U.S. Cl. 65—135 **37 Claims**



1. A multilayer lid for a glass melting vessel comprising:
a rigid base plate member; and
a heating resistant member covering a portion of the lower major surface of said plate member and exposed to the interior of said vessel, wherein said member is an alloy including a major constituent selected from a group consisting of iron or cobalt or a combination of iron and cobalt, a minor constituent of chromium and is essentially nickel free.

33. A method of protecting an exposed inner surface of a glass melting vessel wherein heating material within said vessel establishes an exhaust gas circulating pattern within said vessel that moves along said exposed inner surface and said exhaust gas combines with particulate, molten, and vaporized material within said vessel so as to produce a high temperature, abrasive, and corrosive gas comprising:
overlaying said exposed inner surface with a protective facing member having a major constituent selected from a group consisting of iron or cobalt or a combination of iron and cobalt, a minor constituent of chromium, and is essentially nickel free; and
maintaining said temperature of said protective member outside of a temperature range within which said protective member cracks.

4,808,206

MICROCAPSULES AND METHODS FOR THEIR PREPARATION

Geoffrey W. Smith, King's Lynna, England, assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 849,322, Apr. 8, 1986, abandoned, which is a division of Ser. No. 648,993, Sep. 10, 1984. This application May 17, 1988, Ser. No. 195,486
Claims priority, application United Kingdom, Sep. 20, 1983, 8325061
Int. Cl.⁴ C05G 3/00, 3/08, 3/10
U.S. Cl. 71—64.07 **4 Claims**

1. A fertilizer prill or granule the surface of which has been coated with an admixture of an anti-caking oil and/or clay and microcapsules, said microcapsules incorporating a volatile active material, comprising a matrix of a water-reswellable gel and the gel being in particulate form and having physically incorporated therein during cross-linking, particles of a filler material having a sorptive capacity of at least 20 percent w/w, the said filler material having the said volatile active material absorbed therein and/or absorbed thereon, the volatile active substance incorporated in the said microcapsules being an agriculturally effective substance.

4,808,207

SYNERGISTIC HERBICIDAL COMPOSITIONS COMPRISING MICROBIAL HERBICIDES AND PLANT GROWTH REGULATORS

Alan R. Gotlieb, Essex Junction, Vt., and Alan K. Watson, Pincourt, Canada, assignors to The University of Vermont and State Agricultural College, Burlington, Vt. and The Royal Institution for the Advancement of Learning (McGill University), Quebec, Canada

Division of Ser. No. 9,001, Jan. 27, 1987, Pat. No. 4,776,873. This application Oct. 28, 1987, Ser. No. 113,703
Int. Cl.⁴ A01N 43/82, 31/00, 63/00
U.S. Cl. 71—73 **8 Claims**

1. A composition for controlling velvetleaf consisting essentially of the fungal pathogen *Colletotrichum coccodes* and the plant growth regulator thidiazuron.

2. A composition for controlling Florida beggarweed consisting essentially of the fungal pathogen *Colletotrichum truncatum* and a plant growth regulator selected from the group consisting of thidiazuron and mefluidide.

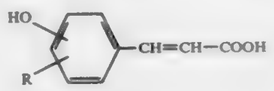
4,808,208

PHENOLIC SAFENERS FOR GLYPHOSATE HERBICIDES

Tsung T. Lee, and Alvin N. Starratt, both of London, Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Jul. 28, 1987, Ser. No. 78,709
Claims priority, application United Kingdom, Aug. 4, 1986, 8618992
Int. Cl.⁴ A01N 57/20, 37/38
U.S. Cl. 71—86 **8 Claims**

1. A method of protecting desired crop plants from the effect of the herbicide glyphosate comprising applying prior to the application of the herbicide a safening amount of a phenolic compound having an antidotal effect against said herbicide, wherein said phenolic compound is of the formula



wherein R=H, OH or OCH_3.

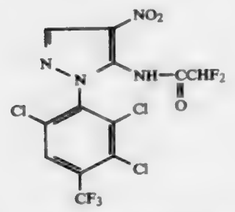
4,808,209

5-FLUOROACYLAMINO-4-NITRO-1-ARYL-PYRAZOLES

Reinhold Gehring, Wuppertal; Otto Schallner, Monheim; Jörg Stetter, Wuppertal; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, and Klaus Lürssen, both of Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 24, 1986, Ser. No. 934,075
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1985, 3543035
Int. Cl.⁴ C07D 231/16, 231/40; A01N 43/56
U.S. Cl. 71—92 **3 Claims**

1. A 5-fluoroacylamino-4-nitro-1-aryl pyrazole of the formula



2. A method of killing plants which comprises applying to said plants or to a locus in which said plants are growing or are to be grown, a herbicidally effective amount of the 5-fluoroacylamino-4-nitro-1-aryl pyrazole according to claim 1.

4,808,210

HERBICIDAL METHOD OF USING 5-PYRAZOLONES

Jean Tessier, Vincennes, and Pierre Girault, Paris, both of France, assignors to Roussel Uclaf, Paris, France

Filed Sep. 11, 1987, Ser. No. 96,364
Claims priority, application France, Sep. 18, 1986, 86 13050
Int. Cl.⁴ A01N 43/56
U.S. Cl. 71—92 **2 Claims**

1. A method of combatting weeds comprising contacting the weeds with a herbicidally effective amount of a compound selected from the group consisting of 1-(3,4-dichlorophenyl)-3,4-dichloro-4-(2-methylpropyl)-5-pyrazolone, 1-(3-chloro-4-bromophenyl)-3-trifluoromethyl-4-chloro-4-methyl-5-pyrazolone, 1,(3,5-dichlorophenyl)-3,4-dichloro-4-methyl-5-pyrazolone and 1-(3,4-dichlorophenyl)-3,4-dichloro-4-n-propyl-5-pyrazolone.

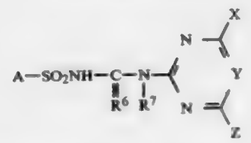
4,808,211

N-ARYLSULFONYL-N'-PYRIMIDYL UREAS

Karl Eicken, Wachenheim; Peter Plath, Frankenthal; Bruno Wuerzer, Otterstadt, and Norbert Meyer, Ladenburg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

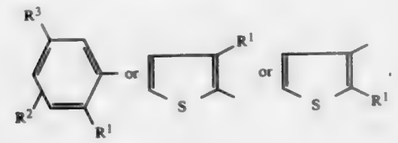
Filed Nov. 5, 1987, Ser. No. 116,902
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1986, 3639563
Int. Cl.⁴ C07D 239/69, 409/14, 401/04; A01N 43/54
U.S. Cl. 71—92 **8 Claims**

1. N-arylsulfonyl-N'-pyrimidylureas of the formula



(I)

where A is a radical of the formula



where
R^1 is hydrogen, halogen, cyano, nitro, C_1–C_4-halo-alkyl, C_1–C_4-alkyl, C_1–C_4-alkoxy, CO—R^4, $S(O)_m$— C_1–C_4-alkyl or SO_2R^5,
R^2 is hydrogen, halogen, methyl, ethyl, methoxy or ethoxy,
R^3 is hydrogen, halogen, nitro or methoxy,
R^4 is hydrogen, C_1–C_4-alkyl, C_1–C_5-alkoxy, C_3–C_5-alkenyloxy, C_3–C_5-alkynyloxy, C_1–C_5-alkylthio, phenoxy, benzyloxy or C_1–C_5-alkoxy which is substituted by 1 to 3 halogen atoms or C_1–C_3-alkoxy,
R^5 C_1–C_4-alkoxy, phenoxy or benzyloxy, each of which is unsubstituted or substituted by 1 to 3 halogen atoms,
m is one of the integers 0, 1 and 2,
R^6 is oxygen or sulfur,
R^7 is hydrogen or C_1–C_3-alkyl,
X is C_1–C_3-alkyl, C_1–C_3-haloalkyl, C_1–C_3-alkoxy, C_1–C_3-haloalkoxy, C_1–C_3-alkyl-thio or halogen,
Y is the methyne group —CH= and
Z is pyrazolyl, triazolyl or imidazolyl linked via nitrogen, and salts thereof.

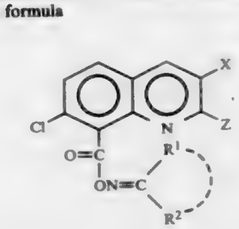
4,808,212

OXIME ESTERS OF SUBSTITUTED QUINOLINE-8-CARBOXYLIC ACIDS AND USE THEREOF AS HERBICIDES

Peter Plath, Frankenthal; Karl Eicken, Wachenheim; Bernd Zeeh, Limburgerhof; Ulrich Eichenauer, Frankfurt; Helmut Hagen, Frankenthal; Rolf-Dieter Kohler, Edingen-Neckarhausen; Norbert Meyer, Ladenburg, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 22, 1986, Ser. No. 944,519
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1985, 3545904
Int. Cl.⁴ C07D 215/48, 405/12, 409/12; A01N 43/42
U.S. Cl. 71—94 **6 Claims**

1. An oxime ester of a substituted quinoline-8-carboxylic acid of the formula



(I)

where X is hydrogen, C_1–C_4-alkyl or halogen, Z is hydrogen or methyl, R^1 is C_1–C_6-alkyl, C_1–C_4-alkoxymethyl, C_1–C_4-alkoxyethyl, C_1–C_4-alkylthiomethyl, C_1–C_4-alkylthioethyl, C_1–C_4-alkoxycarbonyl, C_3–C_6-alkenyl or C_5–C_6-cycloalkyl, each of which is unsubstituted or bears up to 3 methyl substituents, hydrogen, cyano, acetyl, benzoyl, unsubstituted benzyl or phenyl, or benzyl or phenyl bearing up to 3 substituents selected from the group consisting of halogen, cyano, trifluoromethyl, C_1–C_4-haloalkyloxy, C_1–C_6-alkylthio, C_1–C_4-alkoxy, C_1–C_4-alkyl, hydroxy, dimethylamino or acetamino, R^2 is hydrogen if R^1 is not hydrogen, R^2 further denotes C_1–C_6-alkyl, C_1–C_4-alkoxymethyl, chloromethyl, azolylmethyl, 1,1-dimethoxymethyl, cyano, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkoxy, phenyl if R^1 is H, CH_3 or acetyl, or R^2 denotes, when R^1 is H or methyl, furyl, tetrahydrofuryl, thienyl, tetrahydropyranyl, tetrahydrothiopyranyl, dihydro-Δ^3-pyranyl or dihydro-Δ^3-thiopyranyl; further, R^1 and R^2, together with the carbon atom to which they are linked, denote C_1–C_{12}-cycloalkylidene, C_4–C_6-cycloalkenylidene or 4-oxacyclohexadienylidene, each of which is unsubstituted or bears up to 3 methyl substituents, it being possible, where the ring is 5-membered or 6-membered, or doubly unsaturated 6-membered, for it to contain an oxygen or sulfur atom.

4. A method of eliminating undesirable plant growth which comprises: applying to the plants or to the soil in which the plants will grow a herbicidally effective amount of an oxime ester as defined in claim 1.

4,808,213

2,3,6-SUBSTITUTED PHENYLIMIDAZOLE DERIVATIVES AND THE USE THEREOF AS GROWTH REGULATORS

Roland Schmierer, Todtenweis; Hilmar Mildenberger, Kelkheim, and Helmut Bürstell, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

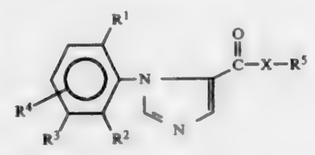
Filed Aug. 25, 1987, Ser. No. 89,476

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1986, 3629064

Int. Cl.[4] A01N *43/48*; C07D *233/66*

U.S. Cl. 71—92 **4 Claims**

1. A compound of the formula I



(I)

in which

R^1 and R^2, independently of one another, are $(C_1–C_4)$-alkyl,

R^3 is halogen,

R^4 is hydrogen, Cl, Br or methyl,

X is O, S or $N–R^5$, and

R^5 is hydrogen, $(C_2–C_6)$-alkenyl or $(C_1–C_6)$-alkyl, where the alkyl group may be up to disubstituted by $(C_1–C_6)$-alkoxy or $(C_1–C_3)$-dialkylamino, or up to hexasubstituted by halogen, or an agriculturally suitable salt thereof

with the proviso that R^3 is not Cl when R^1 and R^2 are each CH_3 and R^4 is hydrogen.

3. A method for regulating the growth of plants, wherein an effective amount of a compound of the formula (I) of claim 1, or a salt thereof, is applied to the plants or the cultivated areas.

4,808,214

CERTAIN 2-(2-SUBSTITUTED BENZOYL)-4-(SUBSTITUTED OXY OR SUBSTITUTED THIO)-1,3-CYCLOHEXANEDIONES

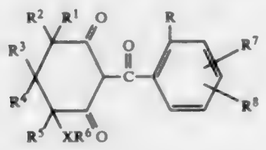
David L. Lee, Martinez, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 86,268, Aug. 20, 1987, which is a continuation-in-part of Ser. No. 919,280, Oct. 16, 1986, abandoned. This application Feb. 1, 1988, Ser. No. 150,873

Int. Cl.[4] A01N *31/06*

U.S. Cl. 71—98 **14 Claims**

1. The method of controlling undesirable vegetation comprising applying to the area where control is desired, an herbicidally effective amount of a compound having the formula



wherein

X is oxy, thio, sulfinyl or sulfonyl;

R is halogen; $C_1–C_2$ alkyl; $C_1–C_2$ alkoxy; trifluoromethoxy; difluoromethoxy; nitro; cyano; $C_1–C_2$ haloalkyl; R^aSO_n— wherein n is 0 or 2 and R^a is $C_1–C_2$ alkyl; trifluoromethyl or difluoromethyl;

R^1 is hydrogen, $C_1–C_4$ alkyl, phenyl or substituted phenyl;

R^2 is hydrogen or $C_1–C_4$ alkyl; or

R^1 and R^2 together are $C_2–C_5$ alkylene;

R^3 is hydrogen, $C_1–C_4$ alkyl with the proviso that R^1 and R^3 are not both phenyl or substituted phenyl;

R^4 is hydrogen or $C_1–C_4$ alkyl;

R^5 is hydrogen or $C_1–C_4$ alkyl;

R^6 is hydrogen, $C_1–C_4$ alkyl, $C_1–C_4$ haloalkyl, or phenyl;

R^7 and R^8 independently are (1) hydrogen; (2) halogen; (3) $C_1–C_4$ alkyl; (4) $C_1–C_4$ alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) $C_1–C_4$ haloalkyl; (9) R^bSO_n— wherein n is the integer 0, 1 or 2; and R^b is (a) $C_1–C_4$ alkyl; (b) $C_1–C_4$ alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) $—NR^cR^d$ wherein R^c and R^d independently are hydrogen or $C_1–C_4$ alkyl; (11) $R^eC(O)$— wherein R^e is $C_1–C_4$ alkyl or $C_1–C_4$ alkoxy; or (12) $—SO_2NR^cR^d$ wherein R^c and R^d are as defined; and (13) $—N(R^c)C(O)R^d$ wherein R^c and R^d are as defined; and their salts.

4,808,215

METHOD OF IMPROVING THE FLOWABILITY OF AGRO-CHEMICAL SLURRIES

Jasbir S. Gill, and Richard G. Varanasik, both of Coraopolis, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 791,670, Oct. 28, 1985, abandoned. This application Apr. 3, 1987, Ser. No. 34,826

Int. Cl.[4] A01N *37/34*

U.S. Cl. 71—105 **4 Claims**

1. A method of improving the flowability of a herbicide suspension comprising adding to said suspension an effective amount of a polyethylene imine, wherein said herbicide suspension comprises: (i) a herbicide selected from the group consisting of 1, 4-benzenedicarboxylic acid-2, 3, 5, 6-tetrachloro dimethyl ester and 1, 3-benzenecarbonitrile-2, 4, 5, 6 tetrachloro; and (ii) water.

4,808,216

PROCESS FOR PRODUCING ULTRAFINE METAL POWDER

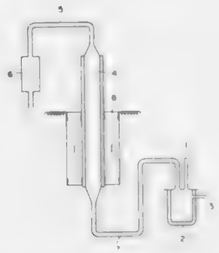
Yoshitaru Kageyama, and Yoshiaki Sawada, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Apr. 21, 1988, Ser. No. 184,280

Claims priority, application Japan, Apr. 25, 1987, 62-102567; Apr. 25, 1987, 62-102568; Sep. 28, 1987, 62-243386

Int. Cl.[4] B22F *9/30*

U.S. Cl. 75—0.5 A **15 Claims**



1. In a process for producing an ultrafine powder of a metal by subjecting a transition metal carbonyl compound to gas phase pyrolysis reaction, the improvement which comprises diluting said carbonyl compound with an inert gas or hydrogen to a concentration of 3 vol. % or less with optional addition of an oxygen-containing organic compound and/or a sulfur-containing organic compound in an amount of 0.0001 to 0.1 mol per mol of said carbonyl compound to prepare a gas mixture, and then carrying out gas phase pyrolysis reaction at 300° C. or higher by allowing said gas mixture to reside for 5 seconds or less in a reaction system to which a magnetic field of 100 gauss

or higher is being applied, thereby obtaining the ultrafine powder of said metal having a length of 1 micron or less, a coercive force of 800 oersted or higher and a saturation magnetization of 120 emu/g or higher.

4,808,217

PROCESS FOR PRODUCING FINE SPHERICAL PARTICLES HAVING A LOW OXYGEN CONTENT

Nelson E. Kopetz, and Lori S. Pruyne, both of Sayre, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 23, 1988, Ser. No. 197,559

Int. Cl.[4] B22F *9/08*

U.S. Cl. 75—0.5 B **2 Claims**

1. A process for producing fine spherical particles from a starting fine powder material, said process comprising:

(a) entraining said starting powder material in a carrier gas;

(b) passing said powder material and said carrier gas through a high temperature zone and maintaining said powder in said high temperature zone for a sufficient time to melt at least about 50% by weight of the particles of said powder material and to form spherical particles of the melted portion;

(c) allowing the resulting high temperature treated material to come in contact with a reducing atmosphere created by a stream of hydrogen gas; and

(d) rapidly solidifying the resulting high temperature treated material to form spherical particles wherein the oxygen content of said spherical particles is reduced by greater than about 10% by weight from the starting powder.

4,808,218

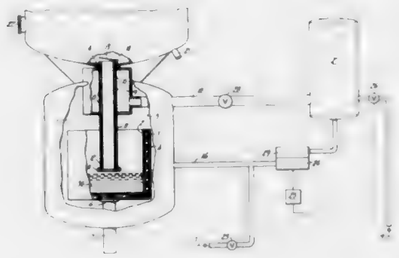
METHOD AND APPARATUS FOR MAKING METAL POWDER

Thomas R. Wagner, New Hartford; Joseph Wentzell, Remsen, and Wayne Hosey, Utica, all of N.Y., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 4, 1987, Ser. No. 93,276

Int. Cl.[4] B22F *9/00*; C22C *1/00*

U.S. Cl. 75—0.5 C **8 Claims**



1. An apparatus for making metal powder, comprising:

a melting chamber,

a crucible within the melting chamber, for containing a metal melt,

a collecting chamber for receiving the metal powder,

a percolation chamber between the melting chamber and the collecting chamber,

a transport tube, extending from a first end, said first end disposed within the melting chamber, through the percolation chamber to a second end, said second end disposed within the collecting chamber, said transport tube including a plurality of percolation holes communicating with the percolation chamber,

means for bringing the first end of the transport tube into contact with the metal melt,

means for establishing a pressure differential between the melting chamber and the collecting chamber,

means for introducing a stream of percolation gas to the percolation chamber, and

means for substantially equalizing pressure between the melting chamber and the percolation chamber.

4,808,219

METHOD FOR TREATING METAL MELTS AND APPARATUS FOR CARRYING OUT THE METHOD

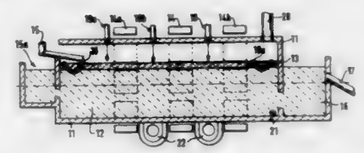
Paul Metz, 18 rue J.P. Brasseur, 1258 Luxembourg, Luxembourg

Filed Jun. 9, 1987, Ser. No. 59,727

Claims priority, application Luxembourg, Jun. 12, 1986, 86469; Aug. 5, 1986, 86541

Int. Cl.[4] C22B *4/00*; C21C *5/52*

U.S. Cl. 75—10.14 **10 Claims**



1. A method for treating a metal melt by the addition of chemically active substances or alloying elements, the metal melt residing in a vessel having an apex and having a longitudinal axis which is substantially horizontal or inclined from the horizontal including the step of:

filling said vessel above one half full with said melt to be treated;

rotating said melt less than 360 degrees about said longitudinal axis of said vessel using electromagnetic force to thereby raise said melt to the apex of said vessel;

causing said melt to fall back from the apex in the direction of said longitudinal axis of said vessel onto the surface of said melt while the melt is contemporaneously being raised to the apex of said vessel; and

adding substances to said melt.

4,808,220

PROCESS FOR THE PREPARATION OF REFINED FERROMANGANESE

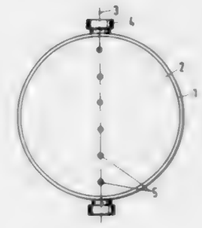
Hans Litterscheidt, Essen; Manfred Ribbeck, Mettmann; Carl-Heinz Schütz, Duisburg, and Richard A. Weber, Meers, all of Fed. Rep. of Germany, assignors to Thyssen Stahl AG, Duisburg, Fed. Rep. of Germany

Filed Mar. 1, 1988, Ser. No. 162,539

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1987, 3707696

Int. Cl.[4] C21C *7/00*

U.S. Cl. 75—51.7 **19 Claims**



1. A process for the preparation of low-carbon and low-silicon ferromanganese (refined ferromanganese) by refining ferromanganese of high carbon content (high-carbon fer-

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romanganese) produced in a blast furnace in a converter, comprising

(a) in an oxidation phase blowing oxygen only from above through a top lance onto the surface of the molten high-carbon ferromanganese, and blowing an inert stirring gas into the melt below its surface,

(b) in a subsequent reduction phase adding to the melt a solid reducing agent and lumps of lime to recover the slagged manganese, and

(c) adding to the melt material of approximately the same composition as the melt to cool the melt to casting temperature while continuing to blow inert stirring gas into the melt.

4,808,221

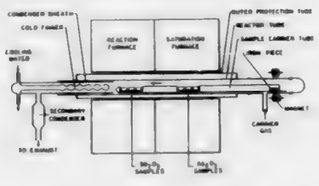
PROCESS FOR THE RECOVERY AND SEPARATION OF ARSENIC FROM ANTIMONY

Thomas P. Clement, II, Perrysburg, Ohio; Tate Li, Salt Lake City, Utah, and John P. Hager, Golden, Colo., assignors to Asarco Incorporated, New York, N.Y.

Filed Aug. 25, 1987, Ser. No. 89,112

Int. Cl.⁴ C22B 7/00

U.S. Cl. 75—63 **6 Claims**



1. A process for separating arsenic from antimony from a fume produced by the volatilization of a mixture of speiss, a sulfur source and a carbon source comprising;

(a) contacting the fume with an oxygen containing gas for a sufficient time at an elevated temperature to form arsenic and antimony compounds having different boiling points;

(b) separating the arsenic compounds from the antimony compounds.

4,808,222

POWDERED FLUX FOR TREATING ALUMINUM-SILICON ALLOYS

Michael C. Reeve-Parker, Kidderminster, England, assignor to Ashland Oil, Inc., Russell, Ky.

Continuation of Ser. No. 105,076, Sep. 30, 1987, abandoned. This application Apr. 13, 1988, Ser. No. 180,876

Int. Cl.⁴ C21B 5/04

U.S. Cl. 75—68 R **10 Claims**

1. A sodium and hydrogen free powdered flux used for treating mixtures of molten aluminum and silicon comprising:

(a) from 1 to 10 weight percent of a non hygroscopic carbonate;

(b) from 1 to 25 weight percent of a sodium and hydrogen free fluoride; and

(c) red phosphorus selected from the group consisting of amorphous red phosphorous, encapsulated red phosphorus, and mixtures thereof;

wherein said weight percent is based upon the total weight of the powdered flux and the red phosphorus is used in an amount effective to produce alloys having an acceptable primary silicon particles.

4,808,223

SILVER/METAL OXIDE MATERIAL FOR ELECTRICAL CONTACTS AND METHOD OF PRODUCING THE SAME

Ryoji Ozaki, Kamagaya; Hisaji Shinohara, Saitama; Hironobu Yamamoto, Musashino; Takashi Nara, Akiko, and Hajime Yoshida, Yokohama, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki and Tokuriki Honten Co., Ltd., Tokyo, both of, Japan

Filed Jul. 7, 1987, Ser. No. 70,577

Claims priority, application Japan, Jul. 8, 1986, 61-160183

Int. Cl.⁴ C22C 29/12

U.S. Cl. 75—235 **14 Claims**



(×350)

1. A method of producing an Ag/metal oxide material for electrical contacts which essentially consists of Ag and 5 to 30% by weight of at least one of oxides of Sb, Sn, Zn, In, Cu, Mn, Bi, and Pb, wherein fine particles of said oxides are substantially uniformly distributed in a matrix whose main component is Ag in a sintered state, and wherein there are no grain boundaries formed by agglomerations greater than 20 μm or agglomerated layers greater than 20 μm of said metal oxides, which comprises the steps of: changing in steps the hydrogen ion concentration in an initial aqueous solution containing Ag ions and at least one of metal ions of Sb, Sn, Zn, In, Cu, Mn, Bi and Pb so as to form precipitates of Ag-oxygen compounds and oxides and/or hydroxides of said metals' drying and thereafter heat-treating said precipitates to form mixed powder of Ag and oxides of said metals; and shaping and sintering said mixed powder.

4,808,224

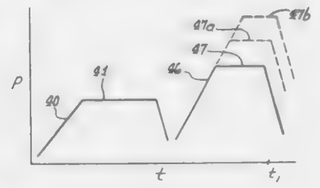
METHOD OF CONSOLIDATING FENDB MAGNETS

Raymond L. Anderson, Redding; Joanna R. Groza, and Brian Oslin, both of Carmichael, all of Calif., assignors to Ceracon, Inc., Sacramento, Calif.

Filed Sep. 25, 1987, Ser. No. 99,321

Int. Cl.⁴ G22F 1/00

U.S. Cl. 75—246 **31 Claims**



1. In the method of treating a preform consisting essentially of FeNdB alloy particles to produce a magnet having superior magnetic properties, the steps that include:

(a) removing O_2 from the preform and applying an O_2 resistant coating to the preform surface,

(b) heating the coated preform to elevated temperature and in a non-oxidizing atmosphere, to facilitate subsequent bonding of the particles during their consolidation,

(c) providing a consolidation zone containing a grain bed and transferring the heated and coated preform to said zone to be embedded in the grain bed,

(d) applying pressure to the grain bed sufficient to be transferred via the bed and to the heated preform, thereby to consolidate the preform, said application of pressure to the grain bed carried out to increase to a dwell level at a rate that minimizes fracturing of the consolidated preform, said application of pressure held at said dwell level for at least several seconds and subsequently increased to a second dwell level.

4,808,225

METHOD FOR PRODUCING AN ALLOY PRODUCT OF IMPROVED DUCTILITY FROM METAL POWDER

Stephen J. Donachie, New Hartford; James W. Fenke, Clinton; James J. Fargal, Clinton, and Francis E. Scaersenie, Clinton, all of N.Y., assignors to Special Metals Corporation, New Hartford, N.Y.

Filed Jan. 21, 1988, Ser. No. 146,553

Int. Cl.⁴ H22F 3/00

U.S. Cl. 75—246 **9 Claims**

1. In a process for producing an alloy product of improved ductility from metal powder, which process includes the steps of: providing atomized metal powder having at least 5 wt. % of one or more reactive elements from the group consisting of titanium, aluminum, hafnium, niobium, tantalum, vanadium and zirconium; and consolidating said powder to an essentially fully dense shape fundamentally free of interconnected porosity; the improvement comprising the step of progressively melting and solidifying localized areas of said consolidated shape so as to produce a product of improved ductility.

4,808,226

BEARINGS FABRICATED FROM RAPIDLY SOLIDIFIED POWDER AND METHOD

Colin M. Adam, Mt. Waverley, Australia, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 24, 1987, Ser. No. 124,805

Int. Cl.⁴ B22F 3/00

U.S. Cl. 75—246 **4 Claims**



1. A process for producing austenite and ferrite steel alloy stock, said process comprising the steps of:

selecting and melting an alloy composition to produce a molten alloy wherein said alloy composition is selected from a group consisting of about 9–14 percent Cr, 6 percent Mo, 1 percent V, 1.15 percent C and the balance Fe;

atomizing said molten alloy into a spray;

rapidly quenching said spray into said steel alloy powder using a stream of helium gas and then screening to a particle size ranging between 75 and 105 microns;

pouring said steel alloy powder into cylinders;

consolidating said steel alloy powder with pressures ranging between 5 and 30 tons per square inch; and

extracting said steel alloy stock from said cylinders when it cools, said alloy stock having RC hardness levels ranging between RC 60 and RC 64.

4,808,227

SEMI-SOLID INK

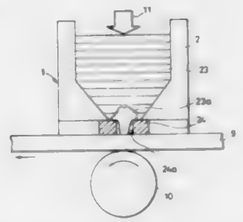
Toshiya Yuasa, Mitaka; Hiroshi Fukumoto, Kawasaki; Akihiro Mouri, Kokubunji, and Shuzo Kaneko, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1987, Ser. No. 79,154

Claims priority, application Japan, Jul. 30, 1986, 61-177791; Jul. 30, 1986, 61-177792; Aug. 7, 1986, 61-184235; Aug. 7, 1986, 61-184236; Aug. 7, 1986, 61-184237; Nov. 20, 1986, 61-275242; Jan. 14, 1987, 62-004898

Int. Cl.⁴ C09D 11/12; C03C 17/00

U.S. Cl. 106—31 **16 Claims**



1. A semi-solid heat transfer recording ink for recording, wherein said semi-solid ink is heated so as to melt and flow through passage holes and transfer onto a recording medium, said semi-solid ink having a viscosity of 100 to 1000 cps as measured by means of a cone disc rotatory viscometer under the conditions of a temperature of 25° C. and a shear rate of 2000 S^{-1} and a thermal conductivity of from 1.5×10^{-4} to 9.7×10^{-2} cal(cm-sec-deg)$^{-1}$ at a temperature of 25° C., and containing from 10–70 wt % of a wax and from 30–90 wt % of at least one selected from the group consisting of a naphthenic hydrocarbon, a modified silicone oil, and a paraffinic hydrocarbon.

4,808,228

GLASS IONOMER CEMENT POWDER

Ronald M. Randklev, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 20, 1987, Ser. No. 17,058

Int. Cl.⁴ A61K 6/02, 6/06, 6/08

U.S. Cl. 106—35 **8 Claims**

1. A process for making a dental cement powder, comprising the step of comminuting together fluoroaluminosilicate glass and carboxylic acid under sufficiently vigorous, substantially anhydrous pulverization conditions to form carboxylate salt in said powder wherein the presence of said salt in said powder is detectable by a diffuse reflectance Fourier transform infrared spectrum that exhibits distinct absorption peaks between 1610–1550 cm^- or at 1400 cm^-.

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4,808,229

ASBESTOS-FREE BUILDING MATERIAL PLATES AND METHOD OF MAKING SAME

Wolfgang Arheiger, Haiger, Fed. Rep. of Germany, assignor to Baierl & Demmelhuber GmbH & Co. Akustik & Trockenbau KG, Fed. Rep. of Germany

PCT No. PCT/EP85/00105, § 371 Date Nov. 15, 1985, § 102(e) Date Nov. 15, 1985, PCT Pub. No. WO85/04165, PCT Pub. Date Sep. 26, 1985

PCT Filed Mar. 15, 1985, Ser. No. 801,150

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1984, 34095977

Int. Cl.⁴ C04B *7/02*

U.S. Cl. 106—90 **15 Claims**

1. A method of making an asbestos-free building material plate, comprising the steps of:

(a) mechano-pneumatically mixing in a substantially dry state, fiber reinforcing materials comprising mainly cellulose fibers with binder particles comprising cement, the ratio of diameters of the cellulose fibers when air dry to the diameters of the binder particles being between 0.9 and 1.1 and the ratio of the diameters of the cellulose fibers when water swollen to the diameters of the binder particles being between 1.1 and 1.35, the mixing being continued until a quasi-homogeneous uniform distribution of components is achieved;

(b) densifying said quasi-homogeneous mixture to the extent possible by removing surplus air resulting from said mixing;

(c) subjecting said densified mixture to a weakly turbulent mechano-pneumatic suspending steam/rolling mixture with water mist present in at least an amount sufficient that the weight ratio of water to cement can subsequently be adjusted to between 0.375 and 0.45 in subsequent operations, the amount of water being limited by the amount which would create a possibility of dehomogenizing the mixture during trickle charging in a subsequent forming assembly;

(d) preforming the mixture of step (c) depending on the desired utilization of the building materials, either compressed in its dense packed form or joggled and slightly compressed only in a calibrating mode by allowing cavities resulting from the mixture, with adjustment of the weight ratio of water to cement to between 0.375 and 0.45.

4,808,230

ORGANIC PIGMENTS COATED WITH METAL OXIDES FIXED WITH ETHYL CELLULOSE

Philippe Bugnon, Essert, and Bernhard Medinger, Giffers, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 6, 1988, Ser. No. 202,856

Claims priority, application Switzerland, Jun. 16, 1987, 2257/87

Int. Cl.⁴ C08L *1/08;* **B32B** *5/16*

U.S. Cl. 106—483 **10 Claims**

1. A composition containing an organic pigment coated with metal oxides, wherein the pigment particles are provided with a tenacious, dense, highly crosslinked coating of silica and/or alumina which is fixed by polycondensation of a silicate and/or aluminate with the free hydroxyl groups of a layer of ethyl cellulose that densely coats the surface of the pigment particles.

4,808,231

INHIBITIVE TREATMENT FOR ALUMINUM PIGMENTS

Tom Kondis, Pittsburgh, Pa., assignor to Silberline Manufacturing Co., Inc., Lansford, Pa.

Continuation of Ser. No. 652,724, Sep. 21, 1984, abandoned. This application Feb. 5, 1988, Ser. No. 152,849

Int. Cl.⁴ C09D *5/10*

U.S. Cl. 106—404 **10 Claims**

1. A coating composition comprising:

metal pigment particles;

a suitable aqueous-based carrier for forming a coating composition; and

an organic phosphite present in an amount sufficient to inhibit reaction between the metal pigment particles and water.

4,808,232

SEPARATION AND PURIFICATION OF CYCLODEXTRINS

Thomas E. Beesley, Towaco, N.J., assignor to American Maize-Products Company, Stamford, Conn.

Filed Dec. 8, 1986, Ser. No. 938,821

Int. Cl.⁴ C13D *3/14;* **B01D** *15/08*

U.S. Cl. 127—46.3 **9 Claims**

1. A method for sequentially separating different cyclodextrins from a solution containing said different cyclodextrins comprising the steps of:

(a) passing the solution containing said different cyclodextrins through a matrix upon which an inclusion compound is attached by means of a bridging compound thereby positioning said inclusion compound about 6 to about 18 Å from the surface of said matrix, said inclusion compound being capable of forming an inclusion complex with said different cyclodextrins;

(b) forming the inclusion complex between said inclusion compound and said different cyclodextrins; and

(c) eluting sequentially said different cyclodextrins.

4,808,233

METHOD FOR HIGH PH WASHING OF SILICA-BASED CHROMATOGRAPHIC SORBENTS

Edward A. Pfannkoch, Ellicott City, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jul. 2, 1987, Ser. No. 69,473

Int. Cl.⁴ B08B *3/00*

U.S. Cl. 134—2 **16 Claims**

1. A method of cleaning a silica containing chromatographic sorbent comprising using as the wash solution a caustic solution having a caustic agent dissolved in water with pH above pH 8 and having aluminum or gallium ions present at an effective concentration so as to prevent deterioration of the sorbent.

4,808,234

CLEANER ASSEMBLY FOR AIR FILTERS

Roy D. McKay; Reid W. McKay, and Daniel A. Winfield, all of Wildwood, Canada, assignors to McWinn Filter Services Ltd., Edmonton, Canada

Filed Aug. 6, 1984, Ser. No. 637,811

Int. Cl.⁴ B08B *5/04*

U.S. Cl. 134—21 **7 Claims**

1. A cleaner assembly for dry cleaning a generally tubular air filter having a pleated paper filter medium therein on which dust has collected, comprising:

(a) means for spinning the filter about its longitudinal axis;

(b) means for applying one or more localized, close-coupled jets of pressurized air generally radially to the inner surface of the spinning filter, to dislodge the dust attached to the exterior of the filter paper and immediately in the path of said jet;

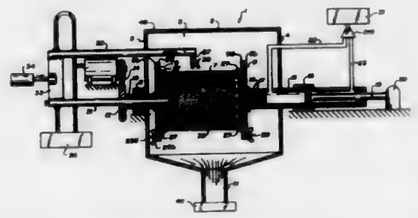
(c) means for supplying pressurized air to said means (b); and

(d) means for applying suction to the exterior of the spinning filter during air cleaning, to draw off dust-laden air.

4. A method for removing dust from the outer surface of the pleated paper filter medium of a generally tubular air filter comprising:

(a) drying the filter with dry air until the dust is substantially dry;

(b) then spinning the dry filter about its longitudinal axis in a cabinet;



(c) applying a localized, close-coupled air jet to the inside surface of the spinning filter to clean a small area of the filter wall directly in the path of the jet, and moving one of the jet and the filter relative to the other, so that the jet is applied to all or at least the major part of the surface of the filter wall; and

(d) simultaneously suctioning dusty air from the cabinet.

4,808,235

CLEANING GAS TURBINE COMPRESSORS

Jeffrey B. Woodson; Lance A. Cooper; Helen M. White, all of Lake Jackson, and Gordon C. Fischer, Angleton, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 5,509, Jan. 20, 1987, abandoned. This application Jan. 15, 1988, Ser. No. 144,282

Int. Cl.⁴ B08B *3/04, 17/00;* **C11D** *1/835, 3/43*

U.S. Cl. 134—22.19 **58 Claims**

1. A composition suitable for cleaning a gas turbine compressor on-line, consisting essentially of a mixture of:

(A) 4 to 95 percent by weight one or more glycol ethers having the formula

RO-[CH(X)-CH(X')-O]n-H

where R is an alkyl group of 1 to 4 carbons, X and X' are each independently hydrogen, methyl, or ethyl, with the provisos that X' is hydrogen when X is methyl or ethyl and that X is hydrogen when X' is methyl or ethyl and n is 1, 2, 3, 4, or 5;

(B) 0.1 to 14 percent by weight ethylene oxide adducts of fatty acids, alkyl phenols or aliphatic alcohols each having an aliphatic group of 6 to 20 carbons and each having 4 to 15 ethylene oxide units;

(C) 0.01 to 6 percent by weight a cationic surfactant; and

(D) 0 to 95 percent by weight purified water.

35. A method of cleaning a gas turbine compressor and/or the blades thereof during power generation without significant loss of power, which comprises contacting the surfaces to be cleaned with a cleaning composition consisting essentially of a mixture of:

(A) 4 to 95 percent by weight one or more glycol ethers having the formula

RO-[CH(X)-CH(X')-O]^n-H

where R is an alkyl group of 1 to 4 carbons, X and X' are each independently hydrogen, methyl, or ethyl, with the provisos that X' is hydrogen when X is methyl or ethyl and that X is hydrogen when X' is methyl or ethyl and n is 1, 2, 3,

4, or 5;

(B) 0.1 to 14 percent by weight ethylene oxide adducts of fatty acids, alkyl phenols or aliphatic alcohols each having an aliphatic group of 6 to 20 carbons and each having 4 to 15 ethylene oxide units;

(C) 0.01 to 6 percent by weight a cationic surfactant; and

(D) 0 to 95 percent by weight purified water,

in an amount effective to reduce deposits on the compressor or the blades thereof.

4,808,236

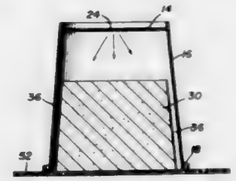
UNITARY DISHWASHING PRODUCT COMPRISING DETERGENT BLOCK IN CONTAINER AND USE THEREOF

Clyde V. Davis, Jr., Decatur, Ga., assignor to Diversey Corporation, Ontario, Canada

Filed Oct. 30, 1987, Ser. No. 114,766

Int. Cl.⁴ B08B *9/04;* **C11D** *17/00*

U.S. Cl. 134—25.2 **17 Claims**



9. A method of washing dishes and utensils in a dishwashing machine comprising:

placing soiled dishes and utensils in a dishwashing machine having a washing chamber;

manually grasping a product comprising a container having a closed top, side wall and open mouth bottom; a removable lid closing the container open mouth bottom; an opening in the container top; means removably closing the opening in the container top; and a solid block detergent composition in the container having a shape conforming to the internal volume defined by the container top and a substantial height of the side wall extending downwardly from the top;

removing the lid and the means removably closing the opening in the container top;

placing the manually grasped product in a dishwashing machine with the container top upright and the container and solid detergent block bottoms supported on a foraminous surface with clearance space between the block and container wall;

closing the dishwashing machine and supplying washing water to the machine washing chamber as a spray so that water enters the opening in the container top and flows downwardly in the container along the side of the block thereby dissolving some of the detergent and forming a detergent solution which flows out of the container and mixes with water to form a washing solution; and

recycling the washing solution into washing contact with the dishes and utensils to clean them.

4,808,237

METHOD AND COMPONENTS FOR CLEANING SILK SCREENS

James P. McCormick, 2229 E. 10375 South, and Alan G. McCormick, Jr., 2221 E. Deboers Dr., both of Sandy, Utah 84092

Filed Feb. 2, 1987, Ser. No. 9,836

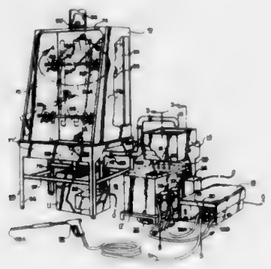
Int. Cl.⁴ B08B *30/00*

U.S. Cl. 134—26 **5 Claims**

1. A method of cleaning a silk screen including the steps of: providing a cleaning cabinet having an open front; supporting

VOL 1099 ISS 4 FEB 28 1989 UMI

a removable silk screen in said cabinet; providing a water supply system; and spraying through said silk screen in said cabinet through said open front with solely water only from said system, essentially free of soaps, detergents, and hydrocarbons, as a water spray under pressure of from 2700 psi to 3300 psi to thereby remove from said silk screen contaminants including inks, dyes and emulsions whereby said contaminants flow to a drain structure operatively connected to said cabinet.



4. A method for cleaning a silk screen, including the steps of: providing a silk screen; providing a pump with a spray means coupled thereto for spraying with tap water only, essentially free of soaps, detergents and hydrocarbons, to thereby clean said silk screen of contaminants including inks, dyes and emulsions, said pump delivering such tap water to said spray means at a pressure 2,700 to 3,000 psi; and directing said spray means toward said silk screeen to spray through the same solely with said tap water.

4,808,238

SELECTIVE COATING OF AND COATING REMOVAL FROM METAL PARTS PARTICULARLY CONSTRUCTION PARTS FOR AIRCRAFT

Volkmar Koerner, Nordenham, Fed. Rep. of Germany, assignor to MBB GmbH, Bremen, Fed. Rep. of Germany

Filed Apr. 16, 1987, Ser. No. 39,615

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1986, 3613274

Int. Cl.[4] B08B *7/04*

U.S. Cl. 134—38 **5 Claims**

1. Method of treating metal parts to be assembled for aircraft, comprising the steps of:

(i) pre-treating these parts by degreasing, alkali pickling, acid pickling, application of a protective primer to surface parts which will later be outside surface parts and from which the primer coating is to be removed, curing the primer at about 150° centigrade;

(ii) again degreasing alkali pickling, acid pickling, and chromic acid anodizing the parts on that side which later will be inside surface and is to receive a paint coating or a lacquer coating, applying thereto a primer and drying the primer as applied at a temperature between 80° and 150° centigrade;

(iii) interconnecting parts pretreated as per (i) and (ii) and applying a lacquer or paint to the surface portions carrying the dried on primer, and completing the assembly to obtain an outer skin; and

(iv) removing the cured primer from those outside surface portions of the interconnected parts where removal is wanted, by means of a medium being comprised of 20 parts sulfuric acid, 1 part nitric acid, and a filling and thixotropic medium.

4,808,239

METHOD OF CLEANING CONTACT LENS USING COMPOSITIONS CONTAINING POLYETHER CARBOXYLIC ACID SURFACTANT

Doris Schafer, and Rolf Schafer, both of Ariedorf, Switzerland, assignors to Alcon Laboratories, Inc., Forth Worth, Tex.

Continuation-in-part of Ser. No. 882,671, Jul. 7, 1986, abandoned, which is a continuation of Ser. No. 687,274, Dec. 28, 1984, Pat. No. 4,599,195. This application May 22, 1987, Ser. No. 53,962

The portion of the term of this patent subsequent to Jul. 8, 2003, has been disclaimed.

Int. Cl.[4] B08B *7/00*; **C11D** *1/08*

U.S. Cl. 134—42 **2 Claims**

1. A method of cleaning a contact lens which comprises applying to the contact lens an aqueous contact lens cleaning composition which comprises an effective amount of an anionic surfactant of formula:

$$R—O—(CH_2—CH_2—O)_z—CH_2—COOH$$

in which R is a C_8 to C_{18} hydrocarbon chain and z is a whole number from 1 to 25.

4,808,240

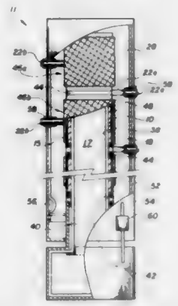
STACKED VAPOR FED AMTEC MODULES

Robert K. Sievers, North Huntingdon, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 8, 1987, Ser. No. 95,384

Int. Cl.[4] H01L *37/00*

U.S. Cl. 136—202 **18 Claims**



1. A stacked AMTEC module comprising:

a tubular member having an interior, said member comprised of

a beta"-alumina solid electrolyte positioned about the interior;

a porous electrode for conducting electrons and allowing sodium ions to pass therethrough and wherein electrons and sodium ions recombine to form sodium, said electrode positioned about the beta"-alumina solid electrolyte, said electrode capable of being at a temperature and pressure that allows sodium to vaporize; and

an outer current collector grid for distributing electrons throughout the porous electrode, said grid positioned about and contacting the porous electrode;

transporting means for transporting liquid sodium to the beta"-alumina solid electrolyte of the member;

a transition piece is positioned about the interior of the tubular member and contacts the transporting means to allow liquid sodium and electrons to be transported to the transition piece from the transporting means, said transition piece divides the tubular member into a first cell and a second cell such that each first and second cell has a beta"-alumina solid electrolyte, a porous electrode and a grid;

supply means for supplying sodium to the transporting means;

first conducting means for conducting electrons from the transition piece, said first conducting means extending through the shell; and

second conducting means for conducting electrons to the grid of the first cell, said second conducting means extending through the shell.

4,808,241

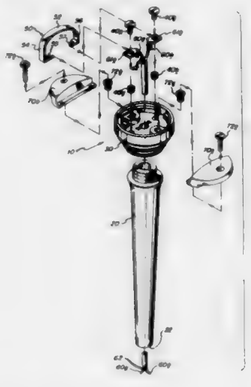
RAPID RESPONSE THERMOCOUPLE PROBE HAVING REPLACEABLE THERMOCOUPLE ELEMENT

Milton B. Hollander, and William E. McKinley, both of Stamford, Conn., assignors to Omega Engineering, Inc., Stamford, Conn.

Filed Jan. 14, 1987, Ser. No. 3,189

Int. Cl.[4] H01L *35/02*

U.S. Cl. 136—230 **25 Claims**



1. A thermocouple probe having a replaceable thermocouple element, the probe comprising:

(a) a cylindrical body having a housing means at one end;

(b) a securing means associated with said housing means comprising two securing elements in electrical isolation from each other; and

(c) a resilient thermocouple element comprising an arcuate strip of two dissimilar metals joined together, the ends of said thermocouple element being removably secured to said securing means.

4,808,242

PHOTOVOLTAIC DEVICE AND A METHOD OF MANUFACTURING THEREOF

Kenji Murata, and Yasuo Kishi, both of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Nov. 2, 1987, Ser. No. 115,693

Claims priority, application Japan, Nov. 7, 1986, 61-265811

The portion of the term of this patent subsequent to Feb. 23, 2005, has been disclaimed.

Int. Cl.[4] H01L *27/14, 31/18*

U.S. Cl. 136—244 **26 Claims**

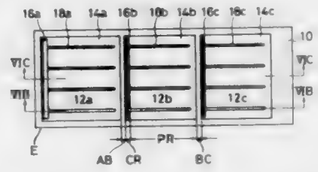
1. A photovoltaic device of the type including a plurality of photoelectric conversion cells formed as an array on a substrate having an insulate surface, each cell including a first electrode layer, a semiconductor photo-active layer, and a second electrode layer, said array comprising:

a plurality of spaced apart first electrode layers formed of said insulating surface of said substrate so as to define a plurality of separate photoelectric conversion cells, each of said first electrode layers including a transparent electrode, a coupling conductor formed in a coupling region on the transparent electrode, and at least one collecting conductor extending from the coupling conductor over the surface of the transparent electrode;

an insulator layer formed on a part of each of said transparent electrodes and including a first portion formed on a separating region for separating into said plurality of photoelectric conversion cells and a second portion covering said at least one collecting conductor;

a semiconductor photo-active layer formed on said substrate so as to cover each one of said first electrode layers and said insulator layers; and

a second electrode layer formed on each one of said semiconductor photo-active layers;



wherein, said semiconductor photo-active layer and said second electrode layer are separated to define each photoelectric conversion cell by irradiating a first energy beam onto respective said first portions of insulator layer from above said second electrode layer, and

the second electrode of each photoelectric conversion cell being connected to the transparent electrode of the first electrode layer of an adjacent photoelectric conversion cell through said coupling conductor by irradiating a second energy beam onto each said coupling conductor from above each said second electrode.

4,808,243

HIGH DAMPING ZINC ALLOY WITH GOOD INTERGRANULAR CORROSION RESISTANCE AND HIGH STRENGTH AT BOTH ROOM AND ELEVATED TEMPERATURES

Yoshiharu Mae, and Akihiko Sakonsoka, both of Saitama, Japan, assignors to Mitsubishi Metal Corporation, Ohte, Japan

Continuation of Ser. No. 751,615, Jul. 2, 1985, which is a continuation-in-part of Ser. No. 561,938, Dec. 15, 1983, abandoned. This application Sep. 16, 1987, Ser. No. 97,819

Claims priority, application Japan, Dec. 20, 1982, 57-223274; Dec. 20, 1982, 57-223275; Dec. 20, 1982, 57-223276

Int. Cl.[4] C22F *1/16*

U.S. Cl. 148—3 **5 Claims**

1. Manufacturing method for improving the damping property of alloys, comprising subjecting a zinc cast alloy melt after casting to solution-heat treatment in the range of 300° to 400° C. for sufficient time to obtain substantially homogenous alpha phase of one phase in the two-phase zinc-aluminum alloy equilibrium, and rapidly cooling the casting thereafter, to form a zinc cast alloy exhibiting an internal friction value Q^{-1} greater than 1×10^{-3}, as measured at room temperature and at approximately 800 Hz, and having maximum intergranular boundary corrosion depth of about 20 microns and 0.2% yield strength values greater than about 20 Kg/mm^2 at room temperature and greater than about 10 Kg/mm^2 at 100° C., said alloy consisting of the following composition by weight:

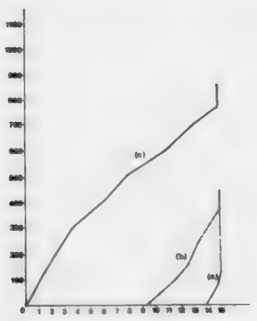
15–60% aluminum
0.05–3% copper
0.5–7% silicon
0.01–0.8% manganese
balance zinc and incidental impurities.

4,808,244

COMPOSITIONS FOR PROTECTING STEEL SURFACES AGAINST ATMOSPHERIC OXIDATION

Giuseppe Pedrazzini, Segrate, Italy, assignor to ITALBONDER Spa, Caleppio de Settala, Italy

Filed Sep. 21, 1987, Ser. No. 98,851
Claims priority, application Italy, Jul. 10, 1987, 21242 A/87
Int. Cl.[4] C23C *22/12*
U.S. Cl. 148—6.15 Z 2 Claims



1. Compositions for protecting steel surfaces against atmospheric oxidation, consisting essentially of the quercetin derivatives of monogalloyllellagic acid, contained in a quantity of between 15 and 30% by weight, phosphoric acid contained in a quantity of between 2 and 3.2% by weight, monoacid Zn phosphate contained in a quantity of between 1.1 and 2% by weight, Zn nitrate contained in a quantity of between 7 and 12% by weight, ascorbic acid contained in a quantity of between 0.05 and 0.5% by weight, an organic solvent mixture consisting of isopropyl alcohol, propylene glycol and ethoxypropanol, contained in a quantity of between 18% and 32% by weight, and water.

4,808,245

METHOD FOR DRAWING IRON AND STEEL WIRE ROD

Eiichi Nishi, Osaka; Fumio Aso, Kyoto, and Hiroyoshi Nakagawa, Osaka, all of Japan, assignors to Nihon Parkerizing Co., LTD., Tokyo, Japan

Filed Nov. 3, 1987, Ser. No. 116,087
Claims priority, application Japan, Nov. 10, 1986, 61-265656
Int. Cl.[4] C23C *22/80*
U.S. Cl. 148—6.15 R 2 Claims

1. A method for drawing iron or steel wire rod in which the iron or steel wire rod is treated with a sequence comprising descaling, contacting said wire rod with a surface conditioning chemical composition comprising colloidal titanium compound having titanium within 0.001–0.5 g/l and 0.1–50 g/l alkaline phosphate, drying said wire rod and then contacting said surface conditioned wire rod with a dry a powdered metal soap lubricant.

4,808,246

COMPOSITE MATERIAL IN ROD, TUBE, STRIP, SHEET OR PLATE SHAPE WITH REVERSIBLE THERMOMECHANICAL PROPERTIES AND PROCESS FOR ITS PRODUCTION

Joachim Albrecht, Milligen, Switzerland, and Thomas Duerig, Fremont, Calif., assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Division of Ser. No. 586,837, Mar. 6, 1984, Pat. No. 4,637,962. This application Sep. 26, 1986, Ser. No. 911,772
Claims priority, application Switzerland, Mar. 14, 1983, 1383/83
Int. Cl.[4] C23C *30/00*
U.S. Cl. 148—11.5 Q 6 Claims



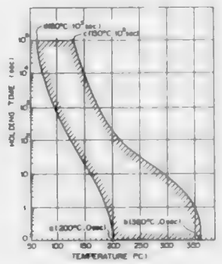
1. A process for the production of a composite material with reversible thermomechanical properties, comprising joining at least two parts having a memory effect and each of said parts being of at least one shape memory alloy having a two-way effect, by rolling, compression molding, extrusion, welding, soldering, diffusion joining or powder metallurgy.

4,808,247

PRODUCTION PROCESS FOR ALUMINUM-ALLOY ROLLED SHEET

Toshio Komatsubara, and Masaru Matsuo, both of Fukuya, Japan, assignors to Sky Aluminium Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1987, Ser. No. 16,821
Claims priority, application Japan, Feb. 21, 1986, 61-36761; May 26, 1986, 61-120573; Nov. 17, 1986, 61-273638
Int. Cl.[4] C22F *1/04*
U.S. Cl. 148—2 21 Claims



1. A process for producing an aluminum-alloy rolled sheet for forming, comprising the steps of:
forming an alloy ingot of an aluminum alloy which consists essentially of, in % by weight, from 0.4 to 2.5% of Si, Mg and Cu in an amount depending on the Si content as follows:
(a) in the case of $0.4\% \leqq Si \leqq 1.0\%$, $0.1\% \leqq Mg < 0.4\%$ and $0.3\% < Cu \leqq 1.5\%$;
(b) in the case of $1.0\% < Si \leqq 1.8\%$, $0.1\% \leqq Mg < 0.25\%$ and $0.3\% < Cu < 1.5\%$; and
(c) in the case of $1.8\% < Si \leqq 2.5\%$, $0.1\% \leqq Mg < 0.25\%$ and $0\% \leqq Cu \leqq 1.5\%$,
and from 0.05 to 0.4% Fe, the balance being aluminum and unavoidable impurities;
homogenizing the alloy ingot at a temperature of from 450° to 580° C. for a period of from 1 to 48 hours;
subsequently, hot-rolling optionally followed by cold-rolling until a requisite sheet thickness is obtained;
solution heat treating by holding the rolled sheet at a temperature of from 500° to 580° C. for a period of at least 5 seconds, followed by rapid cooling; and
aging at room temperature.

4,808,248

PROCESS FOR THERMAL AGING OF ALUMINUM ALLOY PLATE

Malcolm W. Ozelton, Torrance; James W. Bohlen, Fountain Valley; Gregory V. Scarich, Hermosa Beach; James J. Scutti, Rancho Palos Verdes, and Stephen W. Averill, Redondo Beach, all of Calif., assignors to Northrop Corporation, Hawthorne, Calif.

Filed Oct. 10, 1986, Ser. No. 917,630
Int. Cl.[4] C22C *21/06*
U.S. Cl. 148—12.7 A 2 Claims

1. In a method of producing an aluminum alloy product prepared from an 8090 Al-Li-Cu-Mg-Zr alloy cast ingot wherein the cast ingot is hot worked into a wrought product then solution heat treated, quenched, stretched 2 to 4 percent to the T351 condition, the improvement comprising subsequently subjecting the product to a thermal aging treatment by a single exposure to a temperature of about 170° C. +/−2° C. for about 32 +/−0.5 hours to obtain improved fracture toughness and fatigue resistance.

4,808,249

METHOD FOR MAKING AN INTEGRAL TITANIUM ALLOY ARTICLE HAVING AT LEAST TWO DISTINCT MICROSTRUCTURAL REGIONS

Daniel Eylon, Dayton, and Francis H. Froes, Xenia, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 6, 1988, Ser. No. 190,800
Int. Cl.[4] C21D *1/00*
U.S. Cl. 148—133 16 Claims



1. A method for producing an integral titanium alloy article having at least two regions, each region having a distinct microstructure, which comprises the steps of
(a) providing a suitable mold for the article;
(b) introducing a first, non-hydrogenated titanium alloy in powder form into a first portion of said mold;
(c) introducing a second, hydrogenated titanium alloy in powder, form into a second portion of said mold;
(d) hot compacting said first and second alloys in said mold to produce a substantially fully dense article; (e) heating the resulting article to a temperature between the beta-transus temperatures of the two alloys; and,
(f) cooling the thus-heated article.

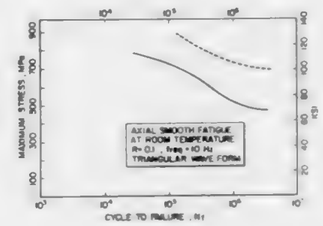
4,808,250

METHOD FOR REFINING MICROSTRUCTURES OF BLENDED ELEMENTAL TITANIUM POWDER COMPACTS

Francis H. Froes, Xenia, and Daniel Eylon, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 4, 1987, Ser. No. 128,840
Int. Cl.[4] C22F *1/18*
U.S. Cl. 148—20.3 8 Claims

1. A method for improving the microstructure of an article made by powder metallurgy of blended elemental titanium alloy powder which comprises, in combination, the steps of hydrogenating the consolidated article at a temperature of about 780° to 1020° C. to a hydrogen level of about 0.50 to 1.50 weight percent, cooling the thus-hydrogenated article to room



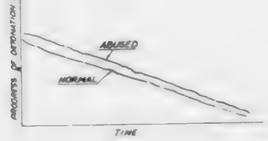
temperature at a controlled rate, heating the thus-cooled, hydrogenated article to a temperature of about 650° to 750° C., applying a vacuum to dehydrogenate the article and cooling said article to room temperature at a controlled rate.

4,808,251

WATER-IN-OIL EMULSION EXPLOSIVE COMPOSITIONS CONTAINING ORGANOPHILIC SMECTITE CLAY

Pushpito K. Ghosh, New Bombay; Dhirendra N. Bhattacharyya; Rama S. Iyer, both of Bombay; Sadhakar V. Chikale, New Bombay; Arun K. Chattopadhyay, Bihar; Sasanka S. Paul, Bihar, and Vattipalli M. Rao, Bihar, all of India, assignors to Iel Limited, West Bengal, India

Filed Dec. 28, 1987, Ser. No. 138,600
Int. Cl.[4] C06G *45/00*
U.S. Cl. 149—2 8 Claims



1. An improved water-in-oil emulsion explosive composition which comprises one or more inorganic oxidizer salts selected from ammonium nitrate, calcium nitrate, sodium nitrate, potassium nitrate and mixtures thereof, one or more carbonaceous fuels, one or more conventional emulsifiers and from 0.1% to 5% by weight based on the weight of the composition of an inorganic additive which is an organophillic smectite clay wherein said organophillic smectite clay is a clay which has been pre-treated with methanol or other appropriate polar liquid.

4,808,252

SHAPED DISPOSABLE DIAPERS WITH ELASTICALLY CONTRACTIBLE WAISTBANDS

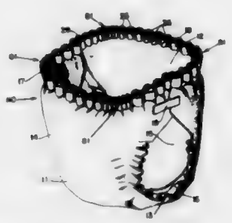
Glen R. Lash, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 21,074, Mar. 3, 1987, Pat. No. 4,710,189, which is a continuation of Ser. No. 756,416, Jul. 18, 1985, abandoned, which is a continuation of Ser. No. 476,734, Mar. 18, 1983, abandoned. This application Aug. 6, 1987, Ser. No. 82,412
Int. Cl.[4] B29C *61/02*; B32B *31/20*
U.S. Cl. 156—73.1 5 Claims

1. A method of making shaped disposable diapers comprising the steps of:

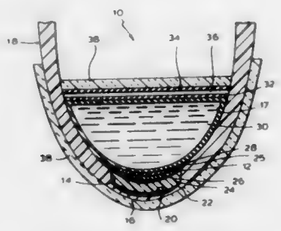
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(1) providing a disposable diaper having at least one waistband, said disposable diaper comprising an absorbent element, said waistband comprising an elongate elastomeric material having a heat unstable state and a heat stable and elastic stable, said elastomeric material being in its heat unstable state;



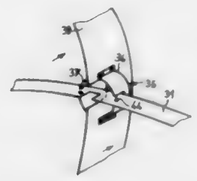
(2) forming said disposable diaper into a preselected configuration by providing said diaper with at least one fold, said at least one fold intersecting said elastomeric material;
(3) restraining said diaper in said preselected configuration;
(4) heating said elastomeric material to such an extent as to cause it to change from its heat unstable state to its heat stable and elastic state; and
(5) cooling said elastomeric material.

4,808,253
METHOD AND APPARATUS FOR PERFORMING A REPAIR ON A CONTOURED SECTION OF A COMPOSITE STRUCTURE
Charles C. Minshe, Gordon, Ga., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Nov. 6, 1987, Ser. No. 118,184
Int. Cl.[4] B32B *35/00*
U.S. Cl. 156—98 **23 Claims**



1. A method for performing a repair to a damaged area on a contoured section of a composite structure, comprising the steps of:
(a) supporting the contoured section of the composite structure to be repaired;
(b) removing the damaged area from the contoured section of the composite structure to be repaired;
(c) laying up a repair patch over the damaged area of the composite structure;
(d) placing a release patch over the repair patch;
(e) installing a conformal thermocouple over the repair patch so that conformal thermocouple is in direct communication with and completely conforms to the exact shape of the contoured section so as to act as a vehicle for the transfer of heat and pressure to the repair patch;
(f) applying heat to the repair patch via the conformal thermocouple;
(g) applying a pressure to the repair patch via the conformal thermocouple;
(h) applying insulation to the contoured section of the composite structure so as to reduce heat loss; and
(i) curing the repair patch.

4,808,254
METHOD FOR ASSEMBLING THE CONSTITUTIVE ELEMENTS OF AN ANTENNA REFLECTOR
Jean Georgel, Boulogne; Jacques Mouvoisin, Argenteuil, and Valdo Trubert, Poissy, all of France, assignors to Thomson CSF, Paris, France
Filed May 30, 1986, Ser. No. 868,670
Claims priority, application France, May 30, 1985, 85 08164
Int. Cl.[4] B32B *31/04*
U.S. Cl. 156—245 **5 Claims**

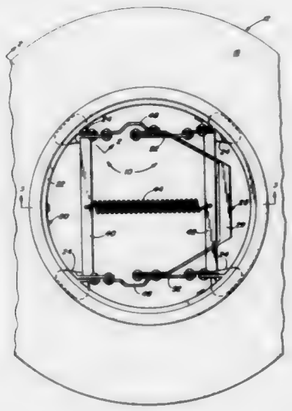


1. A method of assembling an interlocking antenna support structure having a plurality of interlocking nodes, comprising the steps of:
positioning a cylinderical mold around each of a plurality of selected ones of said interlocking nodes; by, for each cylindrical mold:
(a) positioning a first half-cylinder mold portion on a first support structure member, a slot in said first half-cylinder mold portion engaging a second support structure member substantialy perpendicular to said first support member; and
(b) positioning a second half-cylinder mold portion on said first support member on an opposite side of said first support member from said first half-cylinder mold portion, said second half-cylinder mold portion havign a slot which engages said second support member; and
injecting a glue into each said node.

4,808,255
THERMALLY STABLE REACTIVE HOT MELT URETHANE ADHESIVE COMPOSITION HAVING A THERMOPLASTIC POLYMER, A COMPATIBLE, CURING URETHANE POLYESTER POLYOL PREPOLYMER AND A TACKIFYING AGENT
Virginia C. Markevka, Maplewood; John M. Zimmel, St. Paul; Elizabeth R. Messman, Minneapolis; William L. Bunnelle, Stillwater, and Jeffrey M. Swoboda, White Bear Lake, all of Minn., assignors to H. B. Fuller Company, St. Paul, Minn.
Filed May 7, 1987, Ser. No. 47,685
Int. Cl.[4] C09J *5/02*
U.S. Cl. 156—307.3 **13 Claims**

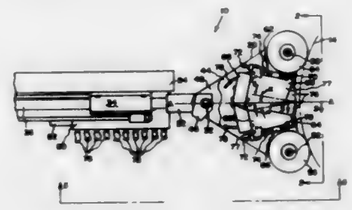
1. A reactive hot melt urethane adhesive composition having extended pot stability, bond heat stability, green strength and cured bond strength which comprises:
(a) a urethane prepolymer composition comprising the reaction product of an isocyanate compound and a polyesterpolyol prepared by reacting a polyfunctional carboxylic acid compound and an aliphatic or cycloaliphatic diol or triol compound;
(b) about 1 to 200 parts by weight per each one hundred parts of the prepolymer of a structural thermoplastic ethylene vinyl monomer copolymer composition having a melt index of about 0.2 to 1000 and a vinyl monomer content of about 10 to 60 wt-%; and
(c) about 1 to 200 parts by weight per each one hundred parts by weight of the prepolymer of a compatible aliphatic, aromatic or aliphatic-aromatic tackifying resin.
12. A method of bonding at least two surfaces which comprises applying to a bondline that can join two surfaces an effective bonding amount of the adhesive of claim 1 and curing the adhesive.

4,808,256
TIRE RECAPPING APPARATUS
Gilbert L. Hill, Troy, N.C., assignor to Oliver Rubber Company, Oakland, Calif.
Filed Mar. 3, 1988, Ser. No. 163,700
Int. Cl.[4] B29D *30/56*
U.S. Cl. 156—394.1 **10 Claims**



1. A retreading curing ring device for mounting on a tire retreading assembly that includes a tire carcass defining a retread area and integral sidewalls having inner circular beads adjacent their free ends, a free layer of uncured rubber positioned on said tread area, a preformed tread strip covering said uncured rubber layer and a flexible envelope surrounding such tread strip and said sidewalls and extending downwardly toward said circular beads, said curing ring device being positioned adjacent one of said sidewalls for securing such envelope to such tire for curing, said curing ring device comprising:
a circular body member for engaging a portion of the envelope and the circular tire bead;
guide means adjacent said circular body member for concentrically aligning said tire carcass relative to said circular body member;
a plurality of moveable backup means spaced inwardly from said circular body member and at predetermined spaced apart circumferential locations relative to said circular body member and adapted to engage the inside of said tire sidewall in its bead area;
a single handle means;
linkage means interconnecting said backup means and said circular body member and controllable by said handle means for moving said circular body member and backup means together, thereby pressing and sealing said envelope against the bead portion of the tire.

4,808,257
TREAD SPLICER
William A. Rex, Mogadore, and Robert S. Riggs, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 14, 1986, Ser. No. 918,353
Int. Cl.[4] B29D *30/28*
U.S. Cl. 156—421 **5 Claims**



1. A multiple blade tread splicer for pressing together the ends of a tire tread strip wrapped around tire breaker belts on a tire breaker building drum comprising a frame member for positioning radially outward of said tire breaker building drum, a first row of splicing blade assemblies mounted on a first portion of said frame member, a second row of splicing blade assemblies mounted on a second portion of said frame member at a position spaced from said first portion of said frame member, each of said splicing blade assemblies of said first row and said second row having a splicing blade movable into pressing engagement with said tire tread strip at a location at the ends of said tire tread strip and an overlapping splicing blade in the other row of said splicing blade assemblies, each of said splicing blade assemblies of said first row and said second row having a separate pneumatic cylinder and piston assembly for pressing said splicing blade into engagement with said tire tread strip and control means connected to each said cylinder and piston assembly to limit the number of cylinder and piston assemblies which are actuated to a selected group of said overlapping splicing blade assemblies in said first row and said second row for limiting the pressure of said splicing blades against said drum and to selectively actuate said selected group for individual separate movement of each of said selected group to provide movement of the blades individually and with other blades of said overlapping blade assemblies of said first row and said second row, said control means being operable with said tread splicer in the assembled condition whereby the desired pressure for application to selected portions of said ends of said tire tread strip is provided to splice said ends together.

4,808,258
PLASMA PROCESSING METHOD AND APPARATUS FOR CARRYING OUT THE SAME
Toru Otsubo, Fujisawa; Susumu Aiuchi, Yokohama; Takashi Kamimura, Yokohama; Minoru Noguchi, Yokohama, and Toru Fujii, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 18, 1984, Ser. No. 662,014
Claims priority, application Japan, Oct. 19, 1983, 58-194311; Jun. 29, 1984, 59-133117
Int. Cl.[4] C23F *01/02;* **H01L** *21/306*
U.S. Cl. 156—643 **30 Claims**

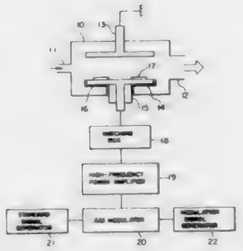
1. A plasma processing method comprising the steps of:
introducing a processing gas into a reaction chamber having a sample disposed therein to keep a pressure inside said reaction chamber to a predetermined value;
applying to said processing gas a plurality of different high-frequency voltage waveforms provided by a high-frequency power source for ionizing said processing gas to generate charged particles so that a distribution of values

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of a group of the charged particles with respect to ion energy of the charged particles periodically has at least two maximum values at a surface of the sample, said different voltage waveforms being determined by a voltage amplitude and a duty ratio; and

processing the sample disposed inside said reaction chamber;

wherein one of said plurality of different voltage waveforms for ionizing said processing gas to generate charged particles provides an energy distribution determined by a modulated voltage amplitude corresponding to an energy value of said charged particles and by a duty ratio corresponding to a group of said charge particles, and wherein a combination of said plurality of voltage waveforms provides such a distribution that a mean maximum energy value of said charged particle is allotted to each of a plurality of different predetermined ion energy regions wherein a predetermined amount of charged particles are possessed by each of said regions.

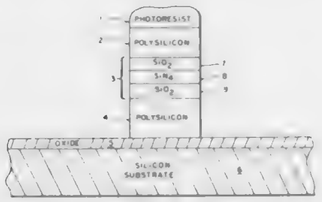


4,808,259

PLASMA ETCHING PROCESS FOR MOS CIRCUIT PREGATE ETCHING UTILIIZING A MULTI-STEP POWER REDUCTION RECIPE

Don W. Jillie, Jr., Cupertino; Gerald Yin, San Jose, and Glen Wada, Fremont, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 25, 1988, Ser. No. 147,450
Int. Cl.[4] H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **21 Claims**



1. A method for pregate etching of a metal-oxide-semiconductor (MOS) thin film comprising the steps of:

plasma etching said thin film at a first power level;

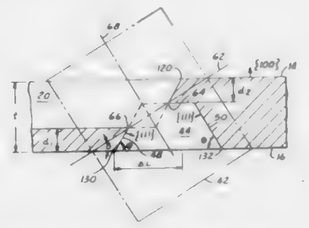
plasma etching said thin film at a second power level, said second power level being lower than said first power level.

4,808,260

DIRECTIONAL APERTURE ETCHED IN SILICON

Edward N. Sickafus, Grosse Ile, and Mati Mikkor, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 5, 1988, Ser. No. 152,718
Int. Cl.[4] C23F *1/00*
U.S. Cl. 156—644 **15 Claims**



1. A method for anisotropically etching an aperture into a monocrystaline substrate such that the angle of the aperture plane with respect to the nominal crystaline planes of the substrate may be preselected, said method comprising the steps of:

dimensioning said substrate with top and bottom planar surfaces substantially parallel to said nominal crystaline planes, the spacing between said top and bottom planar surfaces being trigonometrically related to said preselected angle of said aperture plane;

anisotropically etching a first etchant pit through said top planar surface and against said nominal crystaline planes to a preselected distance from said bottom planar surface which is trigonometrically related to said preselected angle of said aperture plane, said first etchant pit having plane surface sides along intersecting crystaline planes to said nominal crystaline planes, the intersection of said plane surface sides with said top planar surface defining a first pair of longitudinal edges and a first pair of transverse edges of said first etchant pit; and

anisotropically etching a second etchant pit through said bottom planar surface and against said nominal crystaline planes to a preselected distance from said top planar surface which is trigonometrically related to said preselected angle of said aperture plane, a portion of said second etchant pit intersecting a portion of said first etchant pit to define said aperture, said second etchant pit having plane surface sides along said intersecting crystaline planes, the intersection of said plane surface sides with said bottom planar surface defining a second pair of longitudinal edges and a second pair of transverse edges of said second etchant pit, one of said second pair of transverse edges being longitudinally offset from an opposing one of said first pair of transverse edges by a preselected longitudinal offset trigonometrically related to said angle of said aperture plane, such that said angle of said aperture plane is greater than zero degrees.

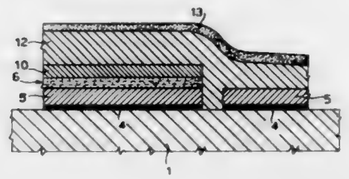
4,808,261

FABRICATION PROCESS FOR EPROM CELLS WITH OXIDE-NITRIDE-OXIDE DIELECTRIC

Gabriella Ghidini, Piacenza, and Giuseppe Crisenza, Trezzo Sull'adda, both of Italy, assignors to SGS Microelettronica S.p.A., Catania, Italy

Filed Apr. 20, 1987, Ser. No. 40,152
Claims priority, application Italy, Apr. 29, 1986, 20253 A/86
Int. Cl.[4] H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—653 **4 Claims**

1. A process for fabricating EPROM cells comprising (a) depositing a dielectric with a triple oxide-nitride-oxide layer on a first layer of polysilicon laid over a substrate having a gate oxide, (b) depositing an additional layer of polysilicon on the dielectric to protect the dielectric from a protective mask, (c) applying a protective mask directly onto said additional polysilicon layer, said mask capable of covering selected portions of said dielectric, (d) removing said additional polysilicon layer and said dielectric from portions of the cell surface not protected by the mask, (e) removing said protective mask, and (f) depositing a second layer of polysilicon.

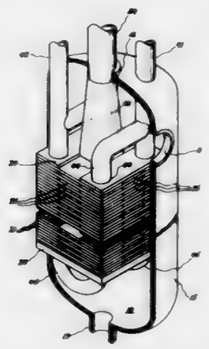


4,808,262

METHOD FOR DEVOLATILIZING POLYMER SOLUTIONS

Vinay P. Aneja, Schenectady, and John P. Skilbeck, Delmar, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 808,985, Dec. 16, 1985, abandoned. This application Dec. 7, 1987, Ser. No. 129,812
Int. Cl.[4] B01D *1/00, 3/06*
U.S. Cl. 159—47.1 **13 Claims**



1. A method for removing volatile components from a polymer solution comprising at least 25 weight percent polymer, said method comprising:

(A) uniformly feeding said solution of polymer through a zone of indirect heat exchange which comprises a plurality of channels, each having a substantially uniform surface to volume ratio in the range of about 4 to 50, height of about 0.05 to 0.5 inches, a width of about 1 to 4 inches, and a length of about 0.5 to 12 inches, wherein the polymer solution is heated in said channels to a temperature above the vaporization temperature of said volatile components and below the boiling point of the polymers within the solution, wherein a uniform pressure of about 2 atmospheres to about 200 atmospheres is applied to the polymer solution in each channel during heating, such that vaporization of the volatile components is substantially prevented while said solution is in the channels;

(B) passing the solution from the heat exchange zone into a vaporization chamber at a pressure at which at least 25% of the volatile components of said polymer solution are vaporized upon exiting the zone of indirect heat exchange; and

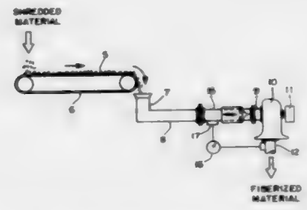
(C) recovering the devolatilized polymer solution.

4,808,263

METHOD FOR FIBERIZING WASTEPAPER USING AN INLINE CONTROL VALVE FOR MAKE-UP AIR

Douglas E. Honer, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 4, 1988, Ser. No. 177,568
Int. Cl.[4] D21B *1/08*
U.S. Cl. 162—4 **4 Claims**



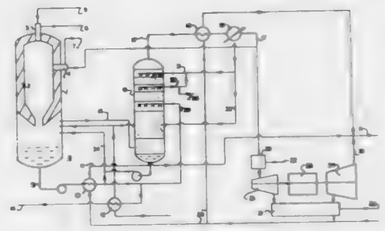
1. A method of fiberizing shredded fibrous material comprising feeding a mixture of air and suspended pieces of the shredded fibrous material to a feed inlet of a fiberizer through a hollow inline control valve said fiberizer having an outlet for fiberized material, and a pressure differential exists between the inlet and the outlet of the fiberizer, monitoring the change in pressure between the inlet and outlet of the fiberizer, and adjusting the air flow by said control valve, said control valve having a plurality of radially equally spaced apart ports each generally triangular in shape which make-up air is drawn into the fiberizer, wherein the size of the port openings is continuously adjusted in response to the pressure differential between the inlet and the outlet of the fiberizer.

4,808,264

PROCESS FOR CHEMICALS AND ENERGY RECOVERY FROM WASTE LIQUORS

Jean-Erik Kignell, Backvägen 10, Upplands Väsby, Sweden (S-194 40)

PCT No. PCT/SE86/00249, § 371 Date Jan. 28, 1987, § 102(e) Date Jan. 28, 1987, PCT Pub. No. WO86/07396, PCT Pub. Date Dec. 18, 1986
PCT Filed May 30, 1986, Ser. No. 15,137
Claims priority, application Sweden, Jun. 3, 1985, 8502731
Int. Cl.[4] D21C *11/12*
U.S. Cl. 162—30.1 **13 Claims**



1. A process for recovering chemicals and energy from cellulose treatment waste liquors containing organic matter comprising:

(i) introducing said waste liquor into a pressurized gasifica-

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tion reactor while being atomized and subjected to flash-pyrolysis thereby forming CO, CO_2, H_2, H_2S, Na_2CO_3 and Na_2S;

(ii) introducing a gas selected from the group consisting of oxygen or an oxygen containing gas into said reactor in order to support endothermal pyrolysis reactions by combustion of a part of the gas formed by the pyrolysis of the organic matter present in said liquor;

(iii) maintaining a temperature of at least 800° to 1300° C. and a pressure from 3 to 150 bars in said reactor to achieve complete gasification of the organic content of the waste liquor and to form droplets of melted inorganic chemicals comprising Na_2CO_3 and Na_2S;

(iv) transporting said melt of chemicals out of said reactor into a quenching chamber by means of high velocity gas flow obtained during said gasification and cooling said gas and melt of chemicals through direct contact with an aqueous quench liquid;

(v) washing the cooled gas from step (iv) with an alkaline solution in order to dissolve the chemical content thereof and in order to remove the sulfur bearing compounds from the pyrolysis gas; and

(vi) removing said remaining gas and using it as a fuel for generating power.

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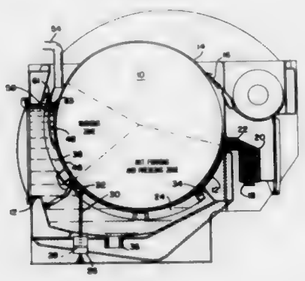
METHOD OF WASHING PULP IN A PRESSURE PULP WASHER ADDING TWO WASHING LIQUIDS

Oscar Lathi; Frederick S. Lewis, both of Nashua, and Lawrence A. Carlsmith, Amherst, all of N.H., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Division of Ser. No. 893,988, Aug. 7, 1986, abandoned. This application Nov. 23, 1987, Ser. No. 124,167

Int. Cl.⁴ D21C *9/02, 9/06*

U.S. Cl. 162—60 **3 Claims**



1. A method of washing a pulp mat on the outside of a permeable rotatable drum mounted in a vat and a washing baffle also mounted in the vat and having a first inside surface spaced from the drum by a narrow gap to provide a narrow annulus extending from its upstream end partially along the outside surface of the drum and a second inside surface downstream from the first inside surface, connected to the first inside surface and extending partially along the outside surface of the drum to its downstream end with the second inside surface spaced from the drum by an enlarged gap to provide an enlarged annulus comprising the steps of: moving the pulp mat by rotating athe drum, form the upstream end of the narrow gap to the downstream end of the enlarged gap, washing the mat with liquid from a first liquid source by flowing said liquid into said upstream end of the narrow gap, along the narrow annulus and through the pulp mat into the drum; and washing the mat with liquid from a second liquid source by flowing said liquid into said downstream end of the enlarged gap, along the enlarged annulus and through the pulp mat into the drum.

4,808,266

PROCEDURE AND DEVICE FOR THE ELIMINATION OF LIQUID FROM A LAYER FORMED ESPECIALLY THROUGH A PAPER PROCUDING PROCESS

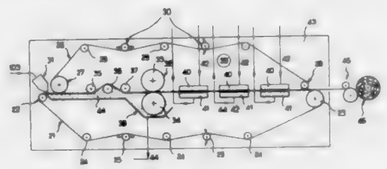
André Faurie, Arcachon, France, assignor to La Cellulose Du Pin, Bordeaux, France

Continuation of Ser. No. 809,047, Dec. 16, 1985, abandoned. This application May 12, 1987, Ser. No. 51,218

Claims priority, application France, Dec. 17, 1984, 84 19245

Int. Cl.⁴ D21F *11/00*

U.S. Cl. 162—102 **6 Claims**



1. A process for the continuous removal according to a paper production process of at least a portion of the liquid in a layer formed by pouring from a headbox, on a moving, continuous, liquid-porous formation support, of a liquid suspension comprising highly absorbent cellulose fibers having a polymerized olefinic monomer grafted thereon and having hydrolyzable functional groups, and said liquid to be removed comprising an alcohol selected from the group consisting of ethyl alcohol, methyl alcohol, isopropyl alcohol and mixtures thereof, said suspension having a solid matter content of less than about 10% by weight, said liquid being removed by gravitational dripping and/or by suction, by pressing, and evaporation, to form a paper layer of said grafted cellulose fibers, the improvement comprising that all of these liquid removal operations bring the layer to a solid matter concentration greater than about 30% and are performed on a single porous substantially horizontal formation support, and wherein the evaporation of a part of the liquid in the layer deposited on said formation support is achieved by passing a nitrogen flux through the layer and further wherein the layer is sandwiched between the formation support and a continuous porous upper support during the entire liquid removal treatment.

4,808,267

WATERPROOF PHOTOGRAPHIC PAPER SUPPORT

Alois-Bernhard Kerkhoff, Bissendorf; Rudolf Wanka, Osnabrück, and Wolfgang Storbeck, Belm, all of Fed. Rep. of Germany, assignors to Felix Schoeller, Jr. GmbH & Co. KG, Osnabrück, Fed. Rep. of Germany

Filed Feb. 27, 1987, Ser. No. 19,580

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1986, 3606806

Int. Cl.⁴ D21H *1/10, 3/02*

U.S. Cl. 162—13 **10 Claims**

1. A waterproof photographic paper support including paper coated with polyolefin resin, said paper support having been formed from a paper pulp composition comprising:

paper fiber material;

a fatty acid sizing agent selected from the group consisting of a fatty acid and a salt of a fatty acid;

an aluminum salt;

anionic and cationic polyacrylamides having a ratio of anionic polyacrylamide to cationic polyacrylamide of between about 40 to 60 and 60 to 40, said anionic polyacrylamide having an acrylic acid content of between about 5 and 20 weight percent based on the total weight of the anionic polyacrylamide; and

an epoxidized fatty acid amide.

4,808,268

APPARATUS FOR CLEANING COKE OVEN LEVELING DOORS AND LEVELING DOOR FRAMES

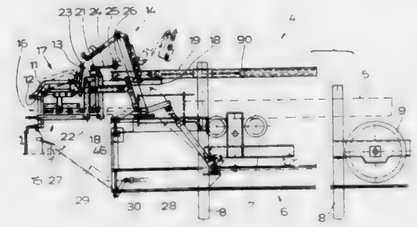
Karl Feldhaus, Gelsenkirchen, Fed. Rep. of Germany, assignor to Gewerkschaft Schalker Eisenhütte, Gelsenkirchen, Fed. Rep. of Germany

Continuation of Ser. No. 822,298, Jan. 24, 1986, abandoned. This application Jan. 22, 1987, Ser. No. 67,415

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1985, 3502488

Int. Cl.⁴ C10B *43/02*

U.S. Cl. 202—241 **9 Claims**



1. A coking oven with at least one coking chamber, comprising

said coking chamber of said coking oven having a leveling door frame around a leveling hole in one side of said coking chamber and a leveling door closing against said leveling door frame, said leveling door having a closing device and being hinged to swing outwardly and upwardly to open,

a coke pushing machine for leveling coke in said chamber, said coke pushing machine having mounted thereon

means for opening and closing said leveling door of said coking chamber

a leveling device, and

a cleaning apparatus for cleaning the leveling door and the leveling door frame of said coking chamber,

said coke pushing machine being located on said side of said coking chamber in which said leveling hole is provided and being movable in a longitudinal direction along said side thereof to be positioned in alignment with said coking chamber,

said means for opening and closing said leveling door on said coke pushing machine being such as to swing said leveling door of said chamber out and up to an open position and to keep said leveling door in said open position for leveling and cleaning,

said leveling device comprising a leveling rod and first moving means supporting said leveling rod on said coke pushing machine, said first moving means moving said leveling rod in relation to said coke pushing machine along a straight path of motion from a retracted position on said coke pushing machine straight towards and into said leveling hole for performing leveling in said coking chamber when said coke pushing machine is positioned in alignment with said coking chamber and said leveling door is open, and for withdrawing said leveling rod straight out of said leveling hole back into said retracted position after performance of leveling, and

said cleaning apparatus comprising

a main carriage placed on said coke pushing machine and mounted on second moving means for being moved relative to said coke pushing machine along a straight path of motion towards and away from said leveling hole when said leveling door is open,

a swiveling carrier hinged on a vertical side of main carriage to be swung horizontally between a first position at the side and clear of said path of motion of said leveling rod and a second position opposite said leveling hole and in said path of motion of said leveling rod,

positioning means movably mounted on said swiveling carrier, and

cleaning means mounted on said positioning means and thus being movable with respect to the swivelling carrier for positioning with respect to said leveling door frame and said leveling door for cleaning said leveling door frame and said leveling door of said coking chamber,

wherein said means for opening and closing said leveling door has a rod linkage that is pivotable in a vertical plane and a gripping claw pivotably articulated on said rod linkage and pivotable relative to said rod linkage in a vertical plane, for gripping said closing device of said leveling door, said rod linkage being disposed at the side and clear of said path of motion of said leveling rod and said rod linkage having an extension arm overlapping said path of motion of said leveling rod, said extension arm carrying said gripping claw,

wherein leveling and cleaning are performed at different times while said leveling door is kept open by said means for opening and closing said leveling door,

wherein when a cleaning operation is to be performed for said leveling door frame and said leveling rod is withdrawn into said retracted position, said swiveling carrier is swung into said second position, said cleaning means by way of said positioning means is positioned with respect to said leveling door and said leveling door frame, and said cleaning means is operated to perform cleaning, and

wherein a control slot is placed fixedly and stationarily on said coke pushing machine, said swivelling carrier comprising a pivot lever that is rigidly connected to said swivelling carrier, a free end of said pivot lever riding in said stationary control slot so that when said main carriage is moved towards and away from said leveling hole said swivelling carrier is automatically swung between said first and second positions.

4,808,269

METHOD FOR CONTROLLING AN OXYGEN CONCENTRATION SENSING DEVICE

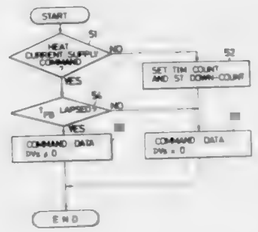
Tomohiko Kawanabe; Masahiko Asakura; Noritaka Kushida; Hiroshi Hasebe, all of Wako, and Tesuo Yamada, Nagoya, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and NGK Spark Plug Co., Ltd., Nagoya, both of, Japan

Continuation of Ser. No. 909,534, Sep. 22, 1986, abandoned. This application Jan. 4, 1988, Ser. No. 142,296

Claims priority, application Japan, Sep. 30, 1985, 60-218501

Int. Cl.⁴ G01N *27/46*

U.S. Cl. 204—1 T **1 Claim**



1. In a method of controlling an oxygen concentration detecting device including an oxygen concentration sensor having oxygen pump and sensor cell elements spaced from each other to form a restricted region between said elements, each of said elements being made of an oxygen-ion conductive solid electrolytic member and a pair of electrodes sandwiching said electrolytic member, said sensor including heater means for

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heating said oxygen pump and sensor cell elements under energization by a heater current supplied thereto, pump current supply means for supplying a pump current to said oxygen pump element in response to a pump current supply command while regulating the magnitude of said pump current so as to reduce deviations between a sensor voltage appearing across the electrodes of said sensor cell element and a reference voltage; detecting means for producing an oxygen concentration signal based on the magnitude of said pump current, said signal representing the oxygen concentration of an oxygen-containing gas introduced into said restricted region; and heat current supply means for supplying a heat current to said heater means in response to a heater current supply command, the improvement which comprises:

a first step of initiating the production of said heater current supply command while interrupting the supply of said pump current;

a second step of detecting the termination of a predetermined time period subsequent to the initiation of said heater current supply command; and

a third step of initiating said pump current supply command only upon the termination of said predetermined time period detected in said second step to assure that no pump current is supplied to said oxygen pump element during said predetermined time period so as to cease production of said oxygen concentration signal during said predetermined period and to commence the production of said oxygen concentration signal upon the lapse of said predetermined time period whereby the detection of said oxygen concentration occurs only after said sensor voltage has achieved a constant value and said pump current is proportional to the oxygen concentration of the oxygen-containing gas introduced into said restricted region.

4,808,270

PROCESS AND APPARATUS FOR THE PREPARATION OF ETHER

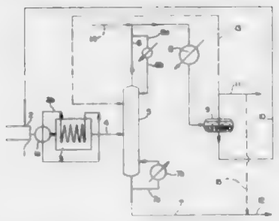
Hans-Juergen Wernicke, Geretsried; Reinhard Glatthaar, and Nikolaus Buckl, both of Munich, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 781,811, Sep. 3, 1985, abandoned. This application Jan. 21, 1987, Ser. No. 5,820

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1984, 3435936

Int. Cl.[4] B01D *3/14; C07C 41/42*

U.S. Cl. 203—39 **20 Claims**



1. In a process for the production of tertiary alkyl methyl ether (TAME) comprising etherifying a C_5 olefin-containing hydrocarbon feed stream with methyl alcohol in a reactor; fractionally distilling resultant reaction product formed during the etherifying into an overhead fraction containing essentially unreacted hydrocarbons and unreacted alcohol, and a bottom fraction containing essentially the ether; condensing the overhead fraction; and separating the alcohol from the condensed overhead fraction, the improvement which comprises cooling the condensed overhead fraction to below the single phase saturation temperature to form immiscible liquid phases, one containing essentially the alcohol and the other containing essentially the hydrocarbons, and withdrawing the immiscible phases separately from each other, with the provision that water is not added in said separating step to separate the alcohol from the C_5 hydrocarbon so as to form an aqueous phase containing the alcohol which is thereafter distilled into water and alcohol fractions.

20. In a process for the production of tertiary amyl methyl ether (TAME) compriaing etherifying an olefin-containing, essentially C_5 hydrocarbon feed stream with methyl alcohol in a reactor; fractionally distilling resultant reaction product formed during the etherifying into an overhead fraction containing essentially unreacted hydrocarbons and unreacted methyl alcohol and a bottom fraction containing essentially the ether; condensing the overhead fraction; and separating the methyl alcohol from the condensed overhead fraction, the improvement which comprises cooling the condensed overhead fraction to below the single phase saturation temperature to form only two immiscible liquid phases, one containing essentially the methyl alcohol and the other containing essentially the hydrocarbons, and withdrawing the immiscible phases separately from each other with the provision that water in a proportion of between 0.01 and 2% by weight of the overhead fraction is admixed to the overhead fraction prior to phase separation, said water providing increased separability of the two immiscible phases and most of the water transferring into the methanol phase upon condensation, said water being present in said methanol phase in a substantially smaller weight proportion compared to the methanol.

4,808,271

ELECTROPLATING METHOD FOR PRODUCING ULTRALOW-MASS FISSIONABLE DEPOSITS

Francis H. Ruddy, Monroeville, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 18, 1986, Ser. No. 897,554

Int. Cl.[4] G01T *3/00;* **C25C** *1/22;* **C25D** *3/54*

U.S. Cl. 204—1.5 **9 Claims**

1. A method for producing an isotopically pure, ultralow-mass fissionable deposit which can be accurately calibrated and used as a nuclear reactor dosimeter, comprising the steps of:

(a) holding a radioactive parent until the radioactive parent reaches secular equilibrium with a daughter formed by the radioactive decay of the parent;

(b) chemically separating the daughter from the parent;

(c) electroplating the daughter on a substrate;

(d) accurately determining the amount of daughter present by measuring its decay rate; and

(e) holding the electroplated daughter until the daughter decays to the ultralow-mass fissionable deposit whose mass shall then be known since the amount of the daughter was previously determined.

4,808,272

METHOD OF CONSTRUCTING A MOLD FOR MAKING GAME BALLS

Robert P. Molitor, Niles, Mich., assignor to Spalding & Evenflo Companies, Inc., Tampa, Fla.

Division of Ser. No. 876,506, Jun. 20, 1986. This application Dec. 18, 1987, Ser. No. 134,675

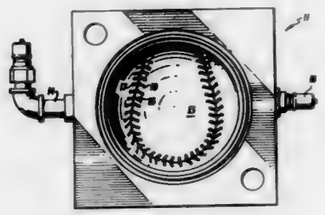
Int. Cl.[4] C25D *1/10*

U.S. Cl. 204—6 **2 Claims**

1. A method of constructing a mold for making balls having simulated stitching and stitch holes on the outer surface thereof, said method comprising the steps of

inserting pins of a predetermined length in the stitch holes of a stitched leather ball;

depositing metallic mold material on the surface of said ball so as to cover said pins;



dividing the metal/master assembly into mating halves, each half being symmetrical with respect to the stitching on said ball, and removing the master.

4,808,273

METHOD OF FORMING COMPLETELY METALLIZED VIA HOLES IN SEMICONDUCTORS

Chang-Hwang Hua, Palo Alto; Ding-Yuan S. Day, Sunnyvale, and Simon S. Chan, Belmont, all of Calif., assignors to Avantek, Inc., Santa Clara, Calif.

Filed May 10, 1988, Ser. No. 192,343

Int. Cl.[4] C25D *5/02*

U.S. Cl. 204—15 **17 Claims**



1. A method for forming metallized via holes in a semiconductor wafer having first and second sides comprising the steps of:

(a) forming electrically interconnected conductive pads on said first side of said wafer;

(b) forming holes through said wafer from said second side to said first side, in alignment with said conductive pads, to thereby expose the underside of said pads;

(c) electroplating the interior surfaces of said holes, using said interconnected pads as a cathode.

4,808,274

METALLIZED SUBSTRATES AND PROCESS FOR PRODUCING

Pascaline H. Nguyen, Marlboro, N.J., assignor to Engelhard Corporation, Menlo Park, N.J.

Filed Sep. 10, 1986, Ser. No. 906,345

Int. Cl.[4] C25D *5/02*

U.S. Cl. 204—15 **19 Claims**

1. A metallized substrate comprising a dielectric substrate, a metal layer produced from a metallo organic composition comprising at least one precious metal resinate in an amount of from about 4 to 25 percent, at least one film forming in an amount of from about 0.01 to 1.0 percent, at least one base metal resinate in an amount of from about 0.1 to 3 percent and a suitable medium, and a conductive metal layer thereon.

4,808,275

METHOD FOR FORMING CORROSION RESISTANT COATING ON A DISC BRAKE

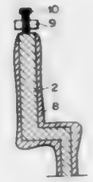
Takashi Okuzu, Tokyo; Yoshio Otsuka, Yamato, and Kazuo Hoshino, Isehara, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 843,750, Mar. 25, 1986, abandoned. This application Nov. 2, 1987, Ser. No. 117,897

Claims priority, application Japan, Mar. 26, 1985, 60-59366

Int. Cl.[4] C25D *5/02;* **F16D** *65/10;* **B32B** *15/02*

U.S. Cl. 204—16 **12 Claims**



1. A method for forming a corrosion resistance coating on the surface of a rotor of a disc brake, compriaing the steps of:

mixing ceramic particles in a plating solution containing ions of nickel, wherein said amount of ceramic particles is within a range from 80 to 120 g per liter of said plating solution;

surrounding outer periphery of said rotor with an annular metal jig;

passing said rotor and said metal jig through said plating solution mixed with said ceramic particles to accomplish electroplating of nickel and ceramic particles on the surfaces of said rotor and said metal jig so that corrosion resistance coating of said rotor is obtained.

4,808,276

METHOD FOR CHECKING IN A MOVING MODE THE CONTINUITY OF A METAL COVERING ON A METAL WIRE OF DIFFERENT NATURE

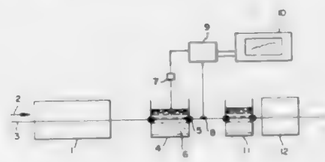
Jacques Lefebvre, Voiron; Philippe Gimenez, Grenoble; Gabriel Colombier, Saint Egreve; Armand Golay, Moirans, and Jean S. Safrany, Nancy, all of France, assignors to Aluminium Pechiney, Paris, France

Filed Feb. 22, 1987, Ser. No. 19,667

Claims priority, application France, Jan. 6, 1987, 87 00053

Int. Cl.[4] C25D *5/04, 21/12*

U.S. Cl. 204—28 **3 Claims**



1. Method for checking and obtaining in a moving mode the continuity of a metal covering on a metal wire of different nature belonging to the group of a wire being treated by a current strength and issuing from a covering bath and wire, the treatment of which is achieved and coming from a storage wheel consisting in:

bringing continuously the coated wire in contact with a volume of an electrolyte solution chemically and physically inert with respect of the wire and in which the sensitive part of a reference electrode is immersed;

sliding the wire issuing from the volume against an electrical contact;

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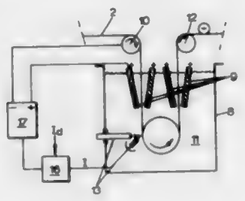
measuring the electrical potential variations between the electrode and the contact; and
when the potential current oscillates, noting the poorly covered wire and increasing the current strength on the wire being treated.

4,808,277

METHOD FOR THE CONTINUOUS ELECTROLYTIC PLATING OF A METAL STRIP WITH A METALLIC PLATING LAYER

Johannes H. Sluyters, Zeist, Netherlands, assignor to Hoogovens Groep B.V., Ijmuiden, Netherlands

Filed May 23, 1988, Ser. No. 197,512
Claims priority, application Netherlands, Jun. 4, 1987, 8701307
Int. Cl.[4] C25D 7/06
U.S. Cl. 204—28 11 Claims



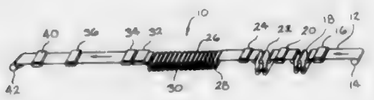
1. Method for the continuous electrolytic plating of a metal strip with a metallic plating layer, comprising the steps of
(i) passing the strip continuously through an electrolytic cell having an anode and an electrolyte, said strip acting as cathode in the cell, while performing electrolysis in the cell so that said plating layer is deposited on the strip from the electrolyte, and
(ii) monitoring the plating layer on the strip during its formation in the cell, by directing a substantially parallel beam of electromagnetic radiation onto the strip at a location which in the direction of movement of the strip is after the commencement of the electrolysis in the cell, and measuring the intensity of the resulting radiation scattered from the strip in a predetermined direction, said measured intensity providing information about the formation of the plating layer on the strip.

4,808,278

METHOD AND APPARATUS FOR PRODUCING ONE-SIDE ELECTROPLATED STEEL STRIP WITH ENHANCED PHOSPHATABILITY

Timothy R. Roberts, Middletown; David M. Smith, Fairfield; Alan F. Gibson, Middletown, and Douglas J. Robbins, Hamilton, all of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Jan. 15, 1988, Ser. No. 144,216
Int. Cl.[4] C25D 7/06
U.S. Cl. 204—28 13 Claims



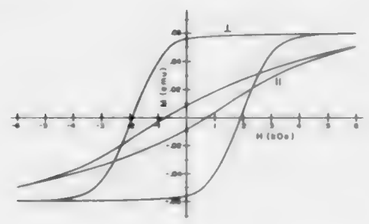
1. A method of making a one-side electroplated steel strip on a coating line, the non-electroplated side of the strip having good chemical conversion coating characteristics, the coating line including an electrolytic pickler and a plating unit, the pickler including a pickling anode, the plating unit including a plating anode, an electrolyte, and a plating metal dissolved in the electrolyte, comprising the steps of:
passing the non-electroplated side of a strip adjacent said pickling anode in said pickler,
applying a current through said pickling anode to cathodically pickle said non-electroplated side of said strip,
passing said strip through said plating unit,
applying a current through said plating anode to deposit said plating metal on the elctroplated side of said strip,
whereby said cathodically pickled surface resists staining and etching by said electrolyte.

4,808,279

PROCESS FOR PREPARING MAGNETIC RECORDING MATERIAL

Martin Moskovits, Toronto, Canada, and Beat Schmidhalter, Basel, Switzerland, assignors to The University of Toronto Innovations Foundation, Toronto, Canada

Filed Oct. 2, 1986, Ser. No. 914,260
Int. Cl.[4] C25D 11/20
U.S. Cl. 204—28 13 Claims



1. A process for preparing magnetic recording material comprising the steps of:
cleaning an aluminum or aluminum metal containing substrate;
anodizing the cleaned metal substrate in an acid bath, to produce a pitted or porous oxide substrate surface;
rinsing the anodized substrate, substantially to remove therefrom acid residues remaining from the anodizing step;
subjecting the substrate in contact with a liquid solution of a salt of at least one ferromagnetic metal to electrolysis with partially rectified alternating current to deposit the metal into the substrate in small-particle, ferromagnetic form of particle diameters in the range of 30to 350 Å, while adjusting and controlling the frequency of said alternating current within the range 200–500 Hz, to obtain discrete particles in the pores aggregated in an anisotropic configuration; and
removing excess liquid solution from the so-treated substrate.

4,808,280

METHOD FOR ELECTROLYTIC COLORING OF ALUMINIM OR ALUMINUM ALLOYS

Yuji Hisoda, Kawasaki, Japan, assignor to Fujisash Company, Kanagawa, Japan

Filed Mar. 23, 1987, Ser. No. 29,442
Claims priority, application Japan, Apr. 1, 1986, 61-72454
Int. Cl.[4] C25D 11/22
U.S. Cl. 204—37.6 15 Claims



1. In a method for electrolytic coloring of an anodized alu-

minum or aluminum alloy workpiece, the improvement comprising preliminarily treating the aluminum or aluminum alloy workpiece in an electrolyte by applying a voltage of substantially positive voltage wave form in the form of a first asymmetrical alternating current voltage in which the positive voltage is larger than the negative voltage and, thereafter, electrolytically coloring the aluminum or aluminum alloy workpiece in an electrolyte containing metal salts, by applying a second asymmetrical alternating current voltage having positive and negative waves and in which the positive voltage is smaller than the negative voltage and both the positive and negative waves are doubled.

4,808,281

PHOSPHATE COATING COMPLEX METAL SURFACES

Richard P. Tiess, Pontiac; Su-Chee S. Wang, Sterling Heights, and Dexter D. Snyder, Birmingham, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 27, 1988, Ser. No. 212,352
Int. Cl.[4] C25D 11/00
U.S. Cl. 204—56.1 6 Claims

1. In the method of forming a substantially amorphous, low friction, wear resistant iron phosphate coating on the surface of an iron-based substrate including the principle step of anodizing said surface in a liquid medium comprising dialkyl hydrogen phosphate, the improvement comprising enhancing the throwing power of said medium by substantially pervading said medium with hydrogen-rich cation exchange resin particles having a free moisture content between about 9% and 33% by weight.

4,808,282

ALKALINE EARTH METAL COMPOUNDS AND ALKALI METAL SUBSTANCES VIA ELECTROCHEMICAL PROCESS

Thomas D. Gregory, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 5, 1987, Ser. No. 482
Int. Cl.[4] C25B 1/14, 3/04
U.S. Cl. 204—58.5 20 Claims

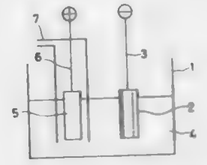
1. A process for preparing a product of an alkaline earth metal compound having at least one BVB-heteromoiety selected from a group consisting of borohydride, borodeuteride, cyanoborohydride (cyano-trihydridoborate), cyanoborodeuteride, tetraflouro-borate, tetrachloroborate, tetrabromoborate, tetra-iodoborate, chlorotrifluoroborate, tetrahydrido-aluminate, tetrachloroaluminate, hexafluorophosphate, hexafluoroarsenate and hexaluoroantimonate, beryllium triethylborohydride, magnesium triethylborohydride, magnesium triethylborodeuteride, magnesium tri-sec-butylborohydride, magnesium triisobutylborohydride, magnesium trisiamylborohydride, magnesium thexyllimonylborohydride, magnesium trimethoxyborohydride, magnesiium triisopropoxyborohydride, calcium tetraethylborate, magnesium tetraethylborate, magnesium triethyl-nhexylborate, magnesium riethyl-n-propoxyborate, magnesium triethylthioxyethylborate, magnesium triethyl-N-methylanilinoborate, magnesium triethylpyrrolylborate, magnesium trisiamylpyrrolylorate, strontium triethylpyrrolylborate, barium triethylpyrrolyborate, radium triethylpyrrolyborate, magnesium thexyllimonylboroethide, magnesium thexyllimonylboropyrrolylide, magnesium tetraphenylborate, beryllium borohydride, beryllium tetrafluoroborate, magnesium borohydride, magnesium borodeuteride, magnesium cyanoborohydride, magnesium cyanoborodeuteride, magnesium tetrafluoroborate, magnesium chlorotrifluoroborate, magnesium tetrahydridoaluminate, magnesium tetrachloroaluminate, magnesium hexafluorophosphate, magnesium hexafluoroarsenate, magnesium hexafluoroantimonate, magnesium trifluoromethanesulfonates, calcium borohydride, calcium tetrafluoroborate, calcium tetrachloroborate, calcium hexafluorophosphate, calcium trifluoromethanensulfonates, strontium borohydride, strontium tetrafluoroborate, strontium tetrafluoroborate, stontium tetrachloroborate, strontium hexafluorophosphate, stontium trifluoromethanesulfonates, barium borohydride, barium tetrafluoroborate, barium tetrabromoborate, barium hexafluorophosphate, barium trifluoromethanesulfonates, radium borohydride, radium tetrafluorborate, radium tetraiodoborate, radium hexafluorophosphate, and radium trifluoromethanesulfonates in an electrochemical cell, said cell having
(1) a sacrificial alkaline earth metal anode,
(2) a liquid electrolyte, which contains a solvent that is generally inert and at least a residual alkali metal moiety and a BVB-heteromiety, and
(3) a cathode,
by applying an electromotive force between the anode and the cathode, provided that if the alkaline earth metal compound having at least one BVB-heteromoiety is a product selected from the group consisting of magnesium borohydride, magnesium borodeuteride, calcium brohydride and calcium borodeuteride, the solvent is selected from the group consisting of a thioether, a cyclic alkyl ether, an alkylene carbonate, an alkyl carbonyl nitrile, a cyclic ester, a dialkyl fromamide, a dialkyl sulfoxide, a trialkyl amine, a dialkylaryl amine, a diarylalkyl amine and a triarylamine, and said cathode contains no mercury and thereafter
separating the alkaline earth metal compound from the cell and recovering the alkaline earth metal compound from the electrolyte.

4,808,283

METHOD OF PRODUCING A HIGH PURITY ALUMINUM-LITHIUM MOTHER ALLOY

Masayasu Toyoshima; Yoshiaki Watanabe, and Yoshiaki Orito, all of Nagoya, Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Apr. 5, 1988, Ser. No. 177,999
Claims priority, application Japan, Jan. 18, 1988, 63-6842
Int. Cl.[4] C25C 3/36
U.S. Cl. 204—71 6 Claims



1. A method of producing a high purity aluminum-lithium mother alloy which comprises electrolyzing mixed molten salts consisting essentially of lithium chloride and potassium chloride, using one or more hollow cylindrical solid aluminum cathodes, and thereby producing an aluminum-lithium alloy essentially free from calcium and alkali metals other than lithium on said cathodes.

4,808,284

PROCESS FOR THE RECOVERY OF ALKANOLAMINES FROM THEIR HEAT-STABLE SALTS FORMED DURING ABSORBENT THERMAL REGENERATIVE STEP OF GAS CONDITIONING PROCESSES

Stephen A. Bedell, Lake Jackson, and Susan S. Kuan Tsai, Pearland, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 29, 1988, Ser. No. 149,777
Int. Cl.[4] C25B 3/00, 1/00; C25F 7/02
U.S. Cl. 204—72 4 Claims

1. In an alkanolamine sorbent gas conditioning process for the removal of acid gases from natural and synthetic gas streams containing one or more of said acid gases ans in which

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process heat stable salts of alkanolamine consisting of formates, sulfites, oxalates, thiocyanates and chlorides of alkanolamines are formed, the principle process units of said process being an absorber and a thermal regenerator, the improvement which consists of

(a) treating a portion, a side tream of less than the total, of the lean regenerated amine sorbent solution produced in the thermal regenerator of said gas conditioning process, in an electrochemical cell or cells each cell comprised of

(i) a container separated into two compartments by an anion exchange membrane, one of said compartments, the cathode compartment, having an electroconductive expanded metal plate cathode connected to a power source and the other compartment, the anode compartment, having an anode similarly connected to a power source, the latter electrode, the anode, is selected from the group consisting of platinium or an electrically conductive metal coated with a platinium coating, platinized, both of which are capable of operating at high current density in an electrochemical cell and stable for at least 5000 hours of use,

(b) feeding the side stream identified in (a) to the cathode compartment as the catholyte and

(c) withdrawing from said cathode compartment a lower concentration heat stable salt lean sorbent having less concentration of heat stable salts than the lean sorbent side stream entering said compartment,

(d) mixing the so treated lower concentration heat stable salt lean sorbent with the portion of the lean regenerated amine identified in (a) not treated in the electrochemical cell and returning the combined streams to the absorber in said process, said anode compartment containing an anolyte being an aqueous solution of an alkali metal salt capable of reacting with the afore described anions of said heat stable salts, and

(e) maintaining the concentration of ionized alkali metal in said anode compartment at a level to neutralize said anions of said heat stable salts in said stream,

(f) periodically discarding a portion of said anolyte and

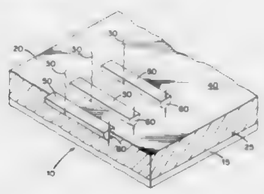
(g) adding make up volumes of anolyte composition to said anode compartment to maintain said concentration.

4,808,285

METHOD OF MAKING MICRO-OPTICAL COMPONENTS ON POLYDIACETYLENE OPTICAL DEVICES

Yung-Jui Chen, Weston; Boris S. Elman, Brighton, and Gary M. Carter, Lexington, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 16, 1986, Ser. No. 852,873
Int. Cl.[4] B01J *19/68*
U.S. Cl. 204—157.15 **6 Claims**



1. A method of making a micro-optical component on a polydiacetylene optical device comprising the following steps:

Step 1—positioning an e-beam means over a surface of a polydiacetylene optical device, said surface being polydiacetylene having an index of refraction;

Step 2—exposing said surface of the polydiacetylene optical device to an e-beam having a fluence and an energy at a predetermined location on said surface of said polydiacetylene optical device to form a micro-optical pattern, said fluence comprising a scanning rate and a current; and

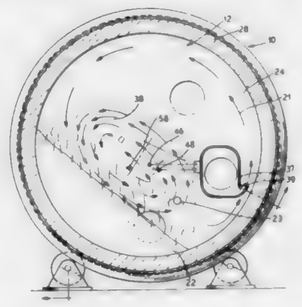
Step 3—controlling said fluence and energy of said e-beam to change said index of refraction of said exposed polydiacetylene surface at said predetermined location and at a predetermined depth to form a micro-optical component on said polydiacetylene optical device.

4,808,286

APPARATUS AND METHOD FOR MAXIMIZING PRODUCTION OF HEAT, GAS, AND ELECTRICITY THROUGH THE ACCELERATION OF HYDROGEN DISSOCIATION

J. F. Angelo, II, P.O. Box 55275, Little Rock, Ark. 72225

Filed Mar. 23, 1987, Ser. No. 29,267
Int. Cl.[4] C10B *47/20, 49/06;* B01J *1/10*
U.S. Cl. 204—157.15 **18 Claims**



1. A rotary kiln system for inducing and accelerating hydrogen dissociation in a cloud generated from feedstock capable of being carbonized and fed into a chamber defined by the rotary kiln comprising:

means for thermally stimulating the feedstock to generate the cloud;

means for localizing the cloud within an area of the chamber, the means including means for rotating a retort defining the chamber about its longitudinal direction in a first direction and means for introducing air tangentially into a peripheral portion of the chamber not occupied by the feedstock in a second direction that is opposite to the first direction;

means for electrically stimulating the localized cloud; and

means for photonically stimulating the localized cloud.

4,808,287

WATER PURIFICATION PROCESS

Ernst F. Hark, Rte. 7, Box 513, Conroe, Tex. 97384

Filed Dec. 21, 1987, Ser. No. 136,406
Int. Cl.[4] C02F *9/00*
U.S. Cl. 204—182.5 **9 Claims**

1. A method for purifying water comprising:

prefiltering the water by passing it through a one to five micron filter;

passing the water flowing from the prefiltration through an activated charcoal filter;

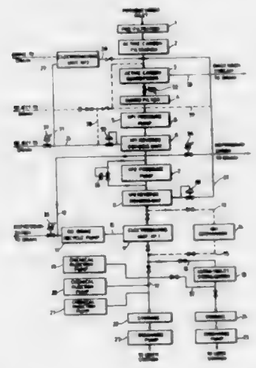
passing the water from the activated charcoal filter through a second activated charcoal filter;

passing the water from the second charcoal filter through a guard filter, the quard filter beinq one to five microns in size:

pressurizing the water from the guard filter to between 30 and 400 pounds per square inch by means of a first pressure pump:

subjecting the water leaving the first pressure pump to a first reverse osmosis treatment to remove dissolved particles;

pressurizing the water leaving the reverse osmosis treatment to between 0 and 400 pounds per square inch by means of a second pressure pump;



subjecting the pressurized water from the second pressure pump to a second reverse osmosis treatment; and

recycling the brine from the second reverse osmosis treatment to a ooint before the first reverse osmosis treatment.

4,808,288

ELECTROPHORETIC GEL FOR SEPARATING HEMOGLOBIN VARIANTS

Kathi Jo Ulfelder, Santa Ana, and William A. Gerske, Placentia, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 588,849, Mar. 12, 1984, abandoned. This application Nov. 13, 1985, Ser. No. 798,133
Int. Cl.[4] B01D *57/02;* C07K *3/14;* G01N *27/26*
U.S. Cl. 204—182.8 **15 Claims**

1. An electrophoretic gel consisting essentially of at least one marine hydrocolloid processed from the class Rodophycea and from about 0.05 to about 0.09M of a buffer selected from the group consisting of adipic acid, glutaric acid, itaconic acid, maleic acid, malic acid, malonic acid, succinic acid, succinamic acid and tricarbalyllic acid.

4,808,289

RESID HYDROTREATING WITH HIGH TEMPERATURE FLASH DRUM RECYCLE OIL

Norman K. McDaniel, Dickinson; Nicholas C. Vasti, Webster; Norman R. Woods, League City, and Robert E. Boening, Galveston, all of Tex., assignors to Amoco Corporation, Chicago, Ill.

Filed Jul. 9, 1987, Ser. No. 71,477
Int. Cl.[4] C01G *65/04*
U.S. Cl. 208—210 **3 Claims**

1. A hydrotreating process, comprising the steps of:

mixing recucled flash drum oil with nonhydrotreated virgin resid oil in a feed drum; while concurrently

heating said nonhydrotreated virgin resid oil with said recycled flash drum oil;

feeding said feed oil comprising said nonhydrotreated virgin resind oil and said recycled flash drum oil to a reactor train comprising a series of ebullated bed reacctors, said recycled flash drum oil comprising by weight from about 50% to about 70% gas oiland from about 30% to about 50% hydrotreated heavy oil;

conveying a hydrotreating catalyst to said reactor train;

injecting feed gases comprising hydrogen and methane into said ebullated bed reactors;

ebullating and hydrotreating said feed oil with said feed gases in the presence of said hydrotreating catalyst at a hydrotreating temperature in said ebullated bed reactors to produce an upgraded product stream comprising hydrotreated resid oil and effluent tail gases comprising hydrogen, hydrogen sulfide, ammonia, water, and methane;

separating said product stream in a separator into an overhead stream of gases and oil vapors and a bottom stream of separator oil;

feeding a stream consisting essentially of separator oil to a flash drum;

flashing and separating said separator oil in said flash drum into a stream of gases and oil vapors and a bottom stream of flash drum oil;

fractionating and separating a portion of said flahs drum oil in an atmospheric tower into fractions of naphtha and atomospheric hydrotreated reside oil;

separating said atmospheric hydrotgreated resid oil in a vacuum tower into fractions of gases, gas oil, and vacuum resid; and

recyling and passign another portion of said flash drum oil from said flash drum to said feed drum in the absence of previosuly separating and fractionating said recycled flash drum oil in said atmospheric tower and said vacuum tower

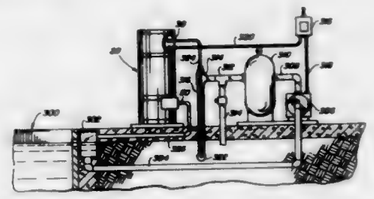
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4,808,290

ELECTROLYTIC POOL CHLORINATOR HAVING BAFFLED CATHODE CHAMBER INTO WHICH CHLORINATED WATER IS DELIVERED

Herbert H. Hillig, 3125 W. Paradise Dr., Phoenix, Ariz. 85029

Filed May 9, 1988, Ser. No. 191,394
Int. Cl.[4] C25B *15/02, 15/08, 9/00, 1/26*
U.S. Cl. 204—229 **20 Claims**



18. An electrolytic pool chlorinator comprising in combination:

a. an anode chamber for containing a brine solution;

b. an anode disposed within said anode chamber;

c. a cathode chamber for containing a catholyte;

d. an ion-permeable selective membrane dividing said cathode chamber from said anode chamber and allowing sodium ions to pass through said membrane from said anode chamber to said cathode chamber while substantially preventing hydroxyl ions within said cathode chamber from passing through said membrane to said anode chamber;

e. a cathode disposed within said cathode chamber proximate to said membrane;

f. an electrical power supply coupled to said anode and to said cathode for imposing a direct current electrical potential thereacross and for liberating chlorine gas at said anode and hydrogen gas at said cathode;

g. a brine tank containing a quantity of water and salt to form a brine solution, said brine tank being in fluid communication with said anode chamber for supplying the brine solution thereto;

h. means for supplying water to brine tank as water and salt are consumed therefrom, said means maintaining the level of fluid within said brine tank at a first predetermined height;

i. an access pipe having a lower end in fluid communication with said anode chamber and extending to an opposing

upper end, the opposing upper end including an overflow opening at a second predetermined height above said first predetermined height; and

j. a flow path conduit having an upper end in fluid communication with the overflow opening of said access pipe and having a lower end in fluid communication with said cathode chamber, the addition of salt to said brine tank causing the brine solution within said anode chamber to rise upwardly through said access pipe above said first predetermined height and to overflow through the overflow opening of said access pipe through said flow path conduit into said cathode chamber, thereby removing contaminants from the anode chamber as salt is added to said brine tank.

4,808,291

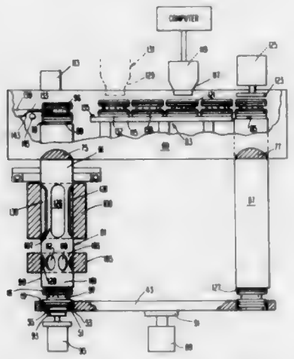
APPARATUS FOR COATING COMPACT DISKS

Peter R. Denton, and David Boyarsky, both of Cherry Hill, N.J., assignors to Denton Vacuum Inc., Cherry Hill, N.J.

Filed Sep. 9, 1987, Ser. No. 94,684

Int. Cl.[4] C23C 14/56

U.S. Cl. 204—298 **5 Claims**



1. An arrangement for coating substrates which are held by individual carrier means and which carrier means are continuously step moved into and out of a coating chamber, comprising in combination: a plurality of pairs of first and second O-rings respectively formed and disposed to fit a first O-ring above a second O-ring with each located around the periphery of an associated one of said carrier means; first vertical hollow cylinder means having first and second ends and having sidewall means and having apertures in at least one of said sidewall means, said first vertical hollow cylinder means designed to have a said carrier means, with said first and second O-rings, fitted therein to provide a double seal to prevent gasses from passing between said carrier means and said sidewall means, said apertures in said side walls being tapered with a sufficient taper such that said first and second O-rings do not come in contact with sharp edges when moving past said apertures; means for loading said carrier means designed and disposed to move said carrier means with said first and second O-rings into said first vertical hollow cylinder means whereby a train of said carrier means is moved through said first vertical hollow cylinder means; vacuum pump means disposed to be in close proximity to said at least one section of said first vertical hollow cylinder means to create a vacuum in said at least one section to thereby degas substrates held by a said carrier means located in said at least one section; transport means designed and disposed to move a said carrier means which has passed through said first vertical hollow cylinder means; and vacuum chamber coating means designed to house said transport means, said vacuum chamber coating means further designed to house means to materially coat said substrates, said means to materially coat said substrates disposed with respect to said transport means to materially coat said substrate which are being moved by said transport means; and means to remove said carrier means from said transport means and from said vacuum chamber coating means.

4,808,292

ARRANGEMENT FOR STABILIZING A GAS-REFERENCE ELECTRODE

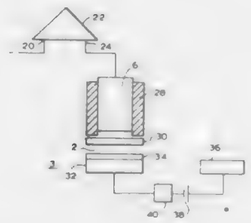
Manfred Kessler, Schlehenstr. 14, and Jens Höper, Moorbachweg 28, both of 8520 Erlangen, Fed. Rep. of Germany

Filed Oct. 24, 1986, Ser. No. 923,725

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1985, 3537919

Int. Cl.[4] G01N 27/26, 27/30, 27/40, 27/46

U.S. Cl. 204—403 **24 Claims**



1. An arrangement for stabilizing a gas-reference electrode in a device for measuring electrochemical activities in a hydrogen and oxygen containing electrolyte present in a space, comprising a reference electrode of a nobel metal; a lipophile membrane covering a surface portion of the reference electrode and being arranged in said space to contact said electrolyte; a source of gas arranged in said space opposite said reference electrode to supply gas toward the same, said gas source including a source electrode of a nobel metal, which is in contact with said electrolyte to release the gas therefrom; and another lipophile membrane covering at least a surface portion of said source electrode opposite said first mentioned lipophile membrane, said other lipophile membrane being permeable to the gas released from the electrolyte by the action of the source electrode and being in contact with the electrolyte.

4,808,293

OXYGEN SENSOR AND METHOD OF MAKING SUCH SENSOR

Hiroshi Fukuda; Takeshi Nagai, both of Nara, and Kenzo Ohji, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 18, 1987, Ser. No. 135,093

Claims priority, application Japan, Dec. 19, 1986, 61-304115; Dec. 19, 1986, 61-304130; Apr. 23, 1987, 62-100386; Apr. 23, 1987, 62-100388

Int. Cl.[4] G01N 27/58

U.S. Cl. 204—410 **20 Claims**

1. An oxygen sensor comprising:

(a) an oxygen ion conductive solid electrolyte plate having first and second opposite surfaces;

(b) first and second electrodes fixedly extending on the first and second surfaces of the electrolyte plate respectively;

(c) an annular spacing frame hermetically secured to the first surface of the electrolyte plate and surrounding the first electrode, the spacing frame having an opening, wherein a height of the opening as measured with respect to the electrolyte plate is essentially equal to the thickness of the spacing frame; and

(d) a sealing plate hermetically secured to the spacing frame and defining a chamber in conjunction with the electrolyte plate and the spacing frame, the chamber accommodating the first electrode and opening into an environment only via a window defined by the opening in the spacing frame, the window allowing oxygen molecules to flow from the environment into the chamber by diffusion.

19. A method of manufacturing an oxygen sensor, comprising the steps of:

(a) forming an electrode on a surface of an oxygen conductive solid electrolyte plate;

(b) after the electrode is formed on the surface of the electrolyte plate, printing a predetermined pattern of glass paste on the surface of the electrolyte plate, wherein the predetermined pattern of the glass paste surrounds the electrode and wherein the glass paste comprises organic binder and glass particles;

(c) placing a sealing plate on the printed pattern of the glass paste; and

(d) firing an assembly of the electrolyte plate, the pattern of the glass paste, and the sealing plate, and thereby converting the pattern of the glass paste to a corresponding pattern of fired glass film and hermetically securing the electrolyte plate and the sealing plate to the pattern of the fired glass film, wherein the electrolyte plate, the sealing plate, and the pattern of the fired glass film define a chamber accommodating the electrode.

4,808,294

PROBE FOR MEASURING THE PARTIAL PRESSURE OF OXYGEN IN A GASEOUS ATMOSPHERE IN RELATION TO A REFERENCE ATMOSPHERE

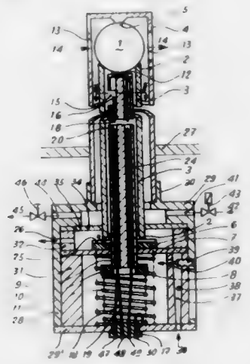
Pierre Beuret, and Jacques Beuret, both of Route de Bure 21, Porrentruy, Switzerland (CH-2900)

Filed Apr. 10, 1987, Ser. No. 36,756

Claims priority, application Switzerland, Apr. 17, 1986, 1543/86

Int. Cl.[4] G01N 27/46

U.S. Cl. 204—427 **15 Claims**



1. A probe for measuring the partial pressure of oxygen in a gaseous atmosphere in relation to a reference atmosphere, comprising:

a solid-electrolyte reaction member having a shape which is symmetrical about a plane containing an axis of rotation of said reaction member, said shape being such that said reaction member has a widest portion;

a support tube having a diameter, said support tube being made from ceramic and including first supporting means located at an open end of said support tube supporting said reaction member on one side thereof and an interior chamber connecting said open end of said support tube to an opposite end of said support tube, whereby the reference atmosphere can flow through said interior chamber of said support tube and contact said reaction member;

a sleeve disposed coaxially about said support tube and in spaced relationship thereto such that an annular passageway is formed between said sleeve and said support tube, one end of said sleeve being closed and having second supporting means supporting said reaction member on an opposite side thereof, said sleeve including orifices which are aligned with said reaction member so as to permit the gaseous atmosphere to flow into said annular passageway and contact said reaction member and said sleeve being removable from said support tube, whereby said sleeve can be removed in order to permit the replacement of said reaction member; and

urging means for urging said support tube towards said reaction member such that said first supporting means is pressed into direct contact with an abutting portion of said reaction member so as to cause said reaction member and said first supporting means to cooperate with each other and with each other only to form a washerless gas-tight seal between said annular passageway and said interior chamber of said support tube, whereby the gaseous atmosphere is separated from the reference atmosphere by said seal, said first supporting means including an endless bevelled surface having a contour which matches the contour of said abutting portion of said reaction member to form a positive seat for said reaction member and thereby facilitate the formation of said seal, said bevelled surface being formed in a terminal edge of said open end of said support tube such that said widest portion of said reaction member is located externally of said support tube, and said widest portion of said reaction member being wider than said diameter of said support tube.

4,808,295

TWO STAGE PROCESS FOR THE PRODUCTION OF A HIGH BENZENE AROMATIC PRODUCT

Margaret Nemet-Mavrodis, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 89,194, Aug. 25, 1987. This application Dec. 16, 1987, Ser. No. 133,773

Int. Cl.[4] C10G 35/06; G07C 12/00

U.S. Cl. 208—65 **9 Claims**

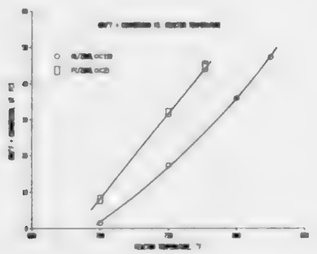
1. A process for producing aromatic compounds containing a high proportion of benzene which comprises passing a feed containing at least 50 weight percent of C_2 to C_{10} aliphatic hydrocarbons to a first stage reaction zone where it is contacted under conversion conditions with a catalyst comprising an aluminosilicate zeolite characterized by a Constraint Index within the approximate range of 1 to 12 and a degree of acidity indicated by an alpha value of at least 3, and passing the effluent from the first stage reaction zone directly to a second stage reaction zone where it is contacted under conversion conditions with a catalyst comprising platinum and either a zeolite having a Constraint Index in the approximate range of 1 to 12, or a potassium form of zeolite L in which the number of protonic acid sites have been reduced by exchange with barium, strontium or calcium, said second stage catalyst having a low degree of acidity as indicated by an alpha value of no higher than about 1.

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4,808,296
PROCESS FOR DEWAXING HYDROCARBON FEEDSTOCK

Nai Y. Chen, Titusville, N.J., and Dennis E. Walsh, Richboro, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 789,217, Oct. 18, 1985, abandoned. This application Feb. 24, 1987, Ser. No. 18,112
Int. Cl.[4] C10G *47/20, 45/54*
U.S. Cl. 208—111 12 Claims



1. A process for hydroisomerizing a wax-containing hydrocarbon feedstock comprising:

contacting said wax-containing hydrocarbon feedstock with a catalyst including a zeolite characterized by a Constraint Index of from about 1 to about 12, and an alpha value of from about 5 to about 50 based on zeolite, in combination with a Platinum metal hydrogenation-dehydrogenation component at a temperature of from about 400° to about 900° F. and at a pressure of from about 200 to 2000 psig.

4,808,297
PROTECTIVE SLURRY MIXTURE

Hong C. Chen, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 585,100, Mar. 1, 1984, abandoned. This application Oct. 30, 1987, Ser. No. 115,229
Int. Cl.[4] C10G *35/10, 35/14*
U.S. Cl. 208—164 11 Claims

1. A slurry mixture used in transferring porous catalyst particles from a catalyst reservoir at a temperature in the range of from room temperature to about 200° F. to a reactor site of higher temperature in the range of up to 1000° F. and lower pressure which mixture comprises a suspension of the porous catalyst particles in a carrier fluid wherein the critical temperature of the carrier fluid is above the temperature of the reactor site, the boiling point at atmospheric pressure of the carrier fluid is lower than the temperature of the reactor site and the critical pressure of said fluid is below the ambient pressure of the reactor site.

4,808,298
PROCESS FOR REDUCING RESID HYDROTREATING SOLIDS IN A FRACTIONATOR

Lawrence B. Peck, Houston, Tex.; Robert D. Buttke, Lisle, Ill.; George L. Ott, Naperville, Ill., and Jeffry A. Cox, Warrenville, Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 877,283, Jun. 23, 1986, abandoned. This application Aug. 24, 1987, Ser. No. 88,674
Int. Cl.[4] C10G *7/00, 45/16*
U.S. Cl. 208—212 8 Claims

2. A hydrotreating process, comprising the steps of:

feeding hydrogen-rich gases and a feedstock comprising a resid oil to a reactor train comprising a series of three ebullated bed reactors;

conveying a hydrotreating catalyst to said reactor train;

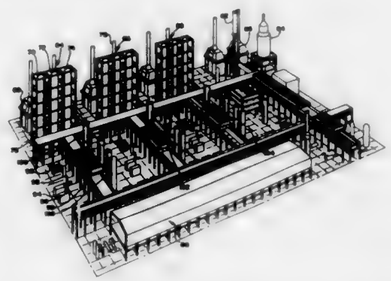
ebullating said hydrogen-rich gases and resid oil together in the presence of said hydrotreating catalyst in said ebullated bed reactors to produce hydrotreated oil containing asphaltenic solids;

conveying said hydrotreated oil to a separator;

separating said hydrotreated oil in said separator into a low solid stream of light hydrotreated oil containing a lesser concentration of said asphaltenic solids than said influent conveyed hydrotreated oil, and a solids-enriched stream of heavy hydrotreated oil containing a greater concentration of said asphaltenic solids than said influent conveyed hydrotreated oil;

decreasing the pressure of said solids-enriched stream;

conveying said solids-enriched decreased pressure stream to fractionators comprising an atmospheric tower and a vacuum tower;



separating said solids-enriched stream in said atmospheric tower into at least one atmospheric stream of distillate, an atmospheric stream of gas oil, and an effluent stream of atmospheric resid oil containing a greater concentration of said asphaltenic solids than said solids-enriched stream;

conveying said atmospheric resid oil to said vacuum tower;

separating said atmospheric resid oil in said vacuum tower into at least one vacuum stream of gas oil and a bottom stream of vacuum resid oil; and

reducing the precipitation of asphaltenic solids in said fractionators and concurrently decreasing the concentration of asphaltenic solids in the resid oil discharged from said fractionatbrs by injecting decanted oil into at least one of said fractionators.

4,808,299
REMOVAL OF COPPER AND IRON FROM OIL

Edward G. Latimer, Bartlesville, and Richard W. Jones, Dewey, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 14, 1988, Ser. No. 181,285
Int. Cl.[4] C10G *29/06*
U.S. Cl. 208—251 R 20 Claims

1. A demetallizing process which comprises contacting

a feed comprising substantially liquid hydrocarbons and also metal impurities selected from the group consisting of copper impurities, iron impurities and mixtures of copper and iron impurities with

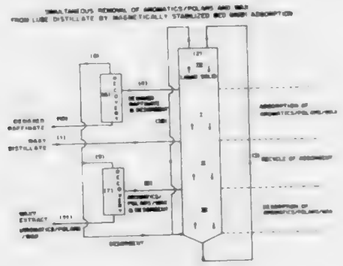
a treating agent comprising water and at least one dissolved substance selected from the group consisting of water-soluble alkali metal silicates,

under such treating conditions as to remove at least a portion of said metal impurities from said feed.

4,808,300
SIMULTANEOUS REMOVAL OF AROMATICS AND WAX FROM LUBE DISTILLATE BY AN ADSORPTION PROCESS

Keith C. Yao, Sarnia, Canada, assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Feb. 13, 1987, Ser. No. 14,726
Int. Cl.[4] C10G *25/60*
U.S. Cl. 208—307 14 Claims



1. A method for simultaneously removing wax and aromatic/polar materials from oil distillates comprising contacting the oil distillate with a combined adsorbent comprising a mixture of a hydrophobic molecular sieve which is a non-polar non-acidic sieve material having a pore diameter of about 5 to 7 Å and a large-pore polar adsorbent, said large-pore polar adsorbent being selected from silica, alumina, silica-aluminas having pore diameters of from 10 to 1000 Å, silica to alumina ratios of from 0.01 to 100 and surface area of from 10 to 600 m^2/gram wherein the large pore polar adsorbent constitutes from 5 to 95 weight percent of the combined adsorbent mixture.

4,808,301
FLOTATION DEPRESSANTS

Robert D. Hansen, and Richard R. Klimpel, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 4, 1987, Ser. No. 116,757
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—167 12 Claims

1. A process for concentrating iron-containing mineral values of an ore in a reverse flotation system which comprises subjecting said ore, having gangue material and said iron-containing mineral values, in the form of an aqueous slurry, to a froth flotation process with the addition to the flotation system of (1) a gangue material collector and (2) as a differential depressant for iron-containing mineral values, an effective amount of polyacrylic acid or a salt thereof to differentially depress the flotation of the iron-containing mineral values and recovering concentrated iron-containing mineral values from the flotation underflow.

4,808,302
WATER PURIFIER VALVE

Richard W. Beall, Jr., 229 4th Pl., Manhattan Beach, Calif. 90266

Filed Apr. 20, 1987, Ser. No. 40,077
Int. Cl.[4] B01D *13/00*; C02F *1/44*
U.S. Cl. 210—117 7 Claims

1. In a control valve for a reverse osmosis water purifier system, said water purifier system comprising a reverse osmosis water purifier element and a pressure resistant storage tank; said pressure resistant storage tank having a bladder therein dividing said storage tank into two chambers, one chamber within said tank being a pure water chamber, the other chamber of said tank being a squeeze chamber; said reverse osmosis water purifier element having inlet means for pressurized tap water and outlet means for waste water, said control valve comprising;

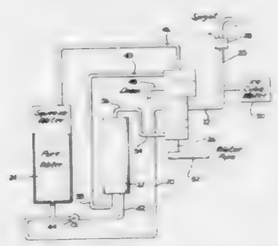
a check valve means having an inlet connected to said pure water chamber and an outlet connected to a pure water delivery line comprising a shut off valve means, said check valve means maintaining an elevated pressure in said outlet of said check valve means and said pure water delivery line when said shut off valve means is shut off such that a flow of pure water through said pure water delivery is prevented;

a pilot valve means operating in response to the water pressure at said outlet of said check valve means such that said pilot valve opens at a first pressure at said outlet of said check valve means and closes at a second pressure at said outlet of said check valve means, said second pressure being greater than said first pressure;

a squeeze valve having an inlet passage connected to said waste water outlet means of said reverse osmosis water purifier element and an outlet connected to said squeeze chamber of said storage tank;

a diverter valve having an inlet connected by a first passage means to said outlet of said squeeze valve, said diverter valve opening and closing in response to the water pressure at said outlet of said check valve such that said diverter valve opens at approximately said second pressure and closes at approximately said first pressure;

said pilot, squeeze, and diverter valves each comprising a sealing member which seats on a valve seat;



said sealing member of said squeeze valve comprising port means therethrough radially outwardly of said valve seat of said squeeze valve;

said control valve further comprising a second passage means for effecting communication between said squeeze valve, at a side of its sealing member remote from its valve seat and said pilot valve radially - inwardly of and beneath said valve seat of said pilot valve; such that said squeeze valve opens in response to the opening of said pilot valve and closes in response to the closing of said pilot valve; the improvement comprising:

a third passage means for communicating between said outlet of said squeeze valve and said pilot valve means at the same side of said sealing means of said pilot valve means as said pilot valve seat but at a region outwardly of said pilot valve seat, such that the pressure of the water at the outlet of said squeeze valve means biases said pilot valve sealing means away from said pilot valve seat; and

a fourth passage means for communicating from an outlet of said diverter valve means to a drain outlet, said drain outlet connected to a drain means, such that when such diverter valve means opens in response to a rise in the pure water pressure at said outlet of said check valve, water can pass from said outlet of said squeeze valve and from said third passage means through said diverter valve means to said drain means;

whereby closure of said squeeze and pilot valves in response to an increase in the presence of said pure water at said outlet of said check valve while pure water is flowing

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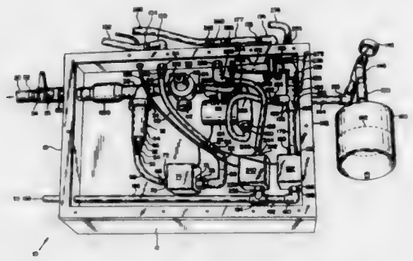
through said delivery line as a result of flow resistance in said delivery line is prevented.

4,806,303

PRODUCE HYDRATION SYSTEM

Tim L. Edwards, Oregon City, and James A. Amodt, Canby, both of Oreg., assignors to Fractal, Inc., Clackamas, Oreg.

Filed Aug. 21, 1986, Ser. No. 898,928
Int. Cl.[4] B01D *36/00;* **B05B** *12/02, 15/00*
U.S. Cl. 210—138 **25 Claims**



1. A system for supplying water from a water to produce materials in a display rack comprising:

water delivery means for supplying water from said source onto said produce in said display rack, said water delivery means comprising flow control means for supplying said water to said produce at selected time intervals, pressurization means for pressurizing said water prior to said delivery of said water to said produce, and means for storing pressurized water within said system until said flow control means allows said water to be released from said systems, whereby said pressurized water is then instantly delivered to said produce; and

drippage control means operatively connected to said water delivery means to prevent residual water drippage onto said produce in said rack when said water delivery means is not delivering water.

25. A system for supplying water from a water source to produce materials in a display rack comprising:

filter means for collecting and removing foreign particulate materials from said water received from said source, said filter means comprising an inlet means for communicating with said water source to receive water therefrom, said water flowing from said inlet means into the interior of said filter means, said interior comprising strainer means for removing foreign particulate materials from said water, said water passing through said strainer means and through a water flow outlet means in said filter means, with said particulate materials being retained by said strainer means and thereafter directed through a particulate drain outlet means in said filter means so as to permit the removal of said particulate materials from said filter means;

water delivery means comprising a conduit in fluid communication with said water flow outlet means of said filter means for directing filtered water therefrom into a tank comprising means therein for pressurizing said water within said tank, and a water flow control valve comprising an inlet means in fluid communication with said conduit at a position between said tank and filter means and an outlet means in fluid communication with an external water delivery line, said external water delivery line comprising a plurality of water dispensing outlet means each comprising restriction means therein for controlling the flow of water through said dispensing outlet means, whereby said water flow control valve, when open, permits water to flow from said filter means and said tank into said through said external water delivery line and through said dispensing outlet means therein, said restriction means causing said water to be delivered to said produce in said rack in a mist-like spray, said restriction means also causing an increase in water pressure to occur within said external water delivery line;

drippage control means operatively connected to said water delivery means for preventing residual water drippage onto said produce when said water delivery means is not delivering water, said drippage control means comprising a drippage control valve having an inlet means in fluid communication with said external water delivery line and an outlet means in fluid communication with a water drain line, whereby water within said external water delivery line flows through said drippage control valve and through said water drain line when said drippage control valve is open and said water flow control valve is closed, said flow through said drippage control valve resulting from said increased water pressure within said external water delivery line caused by said restriction means therein;

automatic filter cleaning means operatively connected to said filter means for removing said particulate materials from said filter means at selected time intervals during the operation of said system, said automatic filter cleaning means comprising a filter purge valve having an inlet means in fluid communication with said particulate drain outlet means in said filter means and an outlet means in fluid communication with a particulate drain line, whereby foreign particulate materials passing through said particulate drain outlet means in said filter means are permitted to flow through said filter purge valve into said particulate drain line and out of said system when said drippage control and filter purge valve are open, and said water flow control valve is closed; and

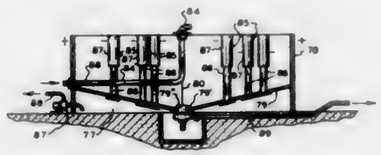
timer control means operatively connected to said flow control valve, drippage control valve, and filter purge valve for controlling the operation thereof.

4,808,304

APPARATUS FOR THE DEWATERING OF PHOSPHATE SLIMES

Troy M. Deal, 277 Trismen Ter., Winter Park, Fla. 32789

Continuation of Ser. No. 860,884, May 8, 1986, abandoned, which is a division of Ser. No. 734,487, May 16, 1985, Pat. No. 4,608,179, which is a continuation of Ser. No. 543,346, Oct. 9, 1983, abandoned. This application Mar. 3, 1988, Ser. No. 166,757
Int. Cl.[4] C02F *1/46;* **C10G** *33/02*
U.S. Cl. 210—170 **7 Claims**



1. In a closed loop system for the dewatering of slimes having fill, dewatering and removal stages, an impoundment component for the sequential stages of storage, dewatering and removal of fresh plant colloidal compositions for landfill and other purposes, means for discharging the composition into the impoundment to raise the level in the impoundment, floating buoyant means supported on and moving with the level of the composition during the fill, dewatering and removal stages of the composition within and being processed in the impoundment, said buoyant means reducing the surface exposure of the composition to the environment, and electrokinetic dewatering means supported by said buoyant means and moving therewith

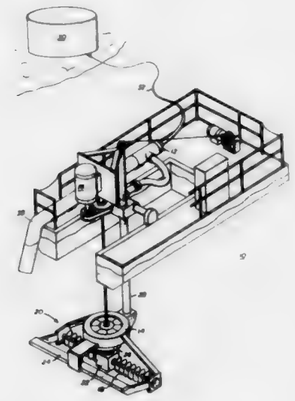
as a unit to improve the natural dewatering rate when activated.

4,808,305

APPARATUS FOR SLUDGE POND TREATMENT

James D. Arnold, P.O. Box 5403, Beaumont, Tex. 77702

Filed Oct. 9, 1986, Ser. No. 916,876
Int. Cl.[4] C02F *1/52;* **B01F** *3/12*
U.S. Cl. 210—170 **3 Claims**



3. An apparatus for in situ treatment of sludge ponds including the liquid and sediment therein comprising:

(a) a barge;

(b) a sludge pump extending downward from said barge so that said sledge pump interacts with the sludge pond liquid and sediment;

(c) an auger located proximately to said sludge pump to direct the sediment toward said sludge pump;

(d) a discharge line through which said sludge pump conducts the sludge pond liquid and sediment back into the sludge pond;

(e) a mixing valve in said discharge line, said mixing valve receiving sludge treating and solidification agents through a first flexible conduit attached to said mixing valve;

(f) a second flexible conduit having proximal and distal ends, said second flexible conduit receiving flow from said first flexible conduit at said proximal end, said distal end being free, said second flexible conduit being contained within said mixing valve and said discharge line; so that when the sludge treating and solidification agents are transmitted through said second flexible conduit, said distal end of said second flexible conduit is allowed to move randomly thereby enhancing mixing of the sludge pond liquid and sediment with the sludge treating and solidification agents, said second flexible conduit being flexible enough to collapse upon itself when the sludge treating and solidification agents are not being transmitted therethrough, thereby preventing the sludge pond liquid and sediment from backflowing through said first flexible conduit.

4,808,306

APPARATUS FOR MAGNETICALLY TREATING FLUIDS

John Mitchell, deceased, late of Rye, N.Y., and by Charles E. Amont, executor, 33 Pondview Rd., Rye, N.Y. 10580

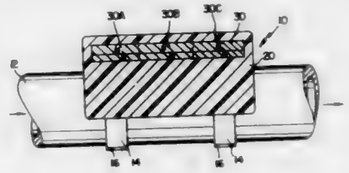
Continuation-in-part of Ser. No. 906,975, Sep. 10, 1986, Pat. No. 4,755,288. This application Aug. 28, 1987, Ser. No. 90,943
Int. Cl.[4] C02F *1/48;* **F02B** *75/10*
U.S. Cl. 210—222 **19 Claims**

1. A magnetic force field generator adapted to be mounted onto a conduit for treating a fluid flowing through said conduit, said generator having a magnetic force field of alternating polarity, said generator including:

a non-magnetic housing having a longitudinally extending passage for receiving said conduit;

means for securing said housing to said conduit; and

a unitary magnet embedded in said housing positioned in the same longitudinal plane as said conduit, said magnet having a plurality of discrete sections with each section having two poles with one pole aligned adjacent said conduit and with the opposite pole aligned remote from said conduit, each section being of a pole and polarity opposite the pole and polarity of each adjacent section, wherein each section is adapted to generate a discrete magnetic force field in said conduit as said fluid flows through said conduit.

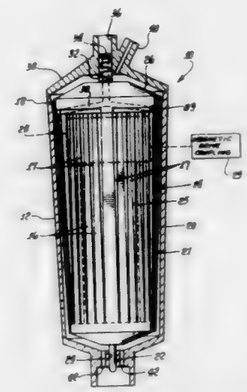


4,808,307

COUETTE MEMBRANE FILTRATION APPARATUS FOR SEPARATING SUSPENDED COMPONENTS IN A FLUID MEDIUM USING HIGH SHEAR

Richard J. Fischel, Minneapolis, Minn., and Robert C. Brumfield, Anaheim, Calif., assignors to Haemonetics Corporation, Braintree, Mass.

Division of Ser. No. 812,936, Dec. 23, 1985, Pat. No. 4,755,300. This application Feb. 16, 1988, Ser. No. 155,816
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—321.68 **63 Claims**



1. An apparatus for filtering a fluid suspension containing particles of living matter origin capable of being damaged if subjected to shear stress above a predetermined level, comprising

a first surface of revolution,

a membrane comprising a second surface of revolution coaxial with and spaced form he first surface said first and second surface forming a means for defining a shear gap of predetermined radial dimensions between the surfaces,

said dimensions increasing along axial lengths of said surfaces,

inlet means for introducing the fluid suspension into the gap,

means for rotating one of said surfaces about its axis of revolution relative to the other surface at an angular velocity such that shear stress below said level is imposed on the fluid suspension in the gap, whereby fluid is separated from the fluid suspension and passes through pores define by the membrane,

first outlet means for collecting fluid passing through the membrane, and other outlet means for removing fluid form the gap remotely from said inlet means, the viscosity of the fluid remaining in the gap increasing in a direction toward said other outlet means,

and said means defining said shear gap to have gap radial dimensions between said first and said second surfaces increasing in said direction toward the other outlet means in such relation to aid viscosity increase in said direction that the shear stress in the fluid suspension at and along the membrane surface is maintained substantially constant.

4,808,308

CLARIFYING FILTER-CENTRIFUGE AND METHOD OF FILTERING SUSPENSIONS

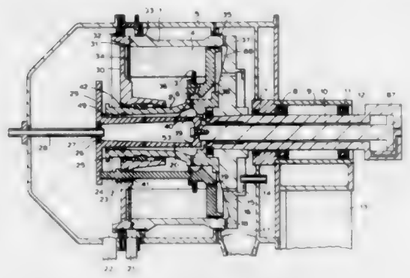
Wilfried Flory, Germersheim, Fed. Rep. of Germany, assignor to DrM.Dr.Müller AG, Männedorf, Switzerland

Filed Sep. 11, 1986, Ser. No. 906,920

Claims priority, application Switzerland, Sep. 16, 1985, 4005/85-4

Int. Cl.⁴ B04B *7/16, 3/00, 11/00*

U.S. Cl. 210—370 19 Claims



1. A clarifying-filter centrifuge, comprising feed means for feeding a suspension to be filtered in the centrifuge; discharge means for discharging a filtrate from the centrifuge; a driving shaft; drive means for rotating said driving shaft; a drum driven by said shaft; a cover (3) closing said drum at an end face thereof; and filter means mounted on said cover and extending normal to an axis of rotation of said shaft, said drum including an outer sleeve (1) having an interior and an inner sleeve (2) also having an interior and being coaxial with said outer sleeve and including a thrust body (38); said driving shaft including a hollow shaft (10) and an inner shaft (12); and means for an axial displacement of said inner shaft in said hollow shaft, said drum being connected to said hollow shaft, said feed means feeding the suspension axially into the interior of said inner sleeve wherein the suspension is precondensed, accelerated and pre-centrifuged; said inner sleeve including means defining a distributing channel communicating with the interior of said inner sleeve; said thrust body being provided with distributing means connecting the distributing channel of said inner sleeve with the interior of said outer sleeve so that the pre-centrifuged and accelerated suspension is again centrifuged and fed into the interior of said outer sleeve and is axially deflected by said thrust body towards said filter means by which the centrifuged suspension is separated from solids and the filtrate is discharged through said discharge means.

4,808,309

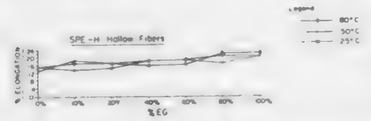
VARIABLE LENGTH MEMBRANE MODULE

Richard F. Beaupre, Enfield, Conn.; Richard P. Guptill, Pittsburgh, Pa., and Martin D. Hillmar, Beacon, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 4, 1988, Ser. No. 140,516

Int. Cl.⁴ B01D *13/01*

U.S. Cl. 210—321.89 12 Claims



1. A variable length membrane module for separating liquids in solution, said membrane module comprising:

(a) a series of hollow fiber membranes arranged to have fluids pass therethrough and potted together at both ends to be maintained in position, separate and spaced apart from each other;

(b) a tubing arranged to surround said series of hollow fiber membranes over said potted ends;

(c) an outer tube encasing said series of potted hollow fiber membranes and tubing; and

(d) a pair of nuts positioned over said outer tube and arranged to secure and seal said series of fiber membranes when turned clockwise and when turned counter clockwise to loosen the seal on said assembly of fiber membranes to allow them to be stretched taut to have a proper flow of fluid through said fiber membranes and membrane module.

4,808,310

APPARATUS FOR LIQUID TREATMENT OF PULP WITH VAPOR SEPARATION

Alf I. Lindström, Sundsbruk, Sweden, assignor to Sunds Defibrator Aktiebolag, Sweden

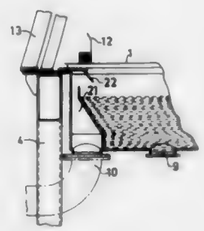
PCT No. PCT/SE87/00168, § 371 Date Nov. 13, 1987, § 102(e) Date Nov. 13, 1987, PCT Pub. No. WO87/06281, PCT Pub. Date Oct. 22, 1987

PCT Filed Apr. 1, 1987, Ser. No. 124,939

Claims priority, application Sweden, Apr. 8, 1986, 8601568

Int. Cl.⁴ D21C *9/06*

U.S. Cl. 210—401 7 Claims



1. Apparatus for the liquid treatment of a pulp suspension, comprising a liquid-permeable belt for receiving said pulp suspension, said belt having a longitudinal axis and including an upper surface and a lower surface, treatment liquid supply means for supplying treatment liquid onto said upper surface of said belt, at least one container defined by outer container walls and having a bottom and being arranged at said lower surface of said belt for collecting liquid penetrating said belt, whereby a liquid level is maintained within said at least one container, said at least one container extending transversely of said longitudinal axis of said belt and across substantially the entire width thereof, said at least one container further including a liquid outlet for discharging said liquid from said at least one container, a vapour outlet located at the bottom of said at least one container for discharging vapours generated within said at least one container therefrom and an internal passageway extending from said vapour outlet to a predetermined location at an upper portion of said at least one container above said liquid level within said at least one container for discharging said vapours therefrom, said internal passageway being partially defined by at least one of said outer container walls.

4,808,311

CRYSTAL GROWTH PROCESS FOR PREPARING INORGANIC DYNAMIC MEMBRANES

Joseph P. Barone, Westford, Mass., assignor to Millipore Corporation, Bedford, Mass.

Filed Nov. 3, 1986, Ser. No. 926,927

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—490 5 Claims



1. A composite membrane comprising a porous inorganic substrate and a integral particle porous filim directly bound only to one surface of said substrate, said particle porous film being bonded together by crystal growth to form a integral film.

4,808,312

CELLULOSE ESTER HOLLOW FIBER MEMBRANE FOR PLASMA SEPARATION

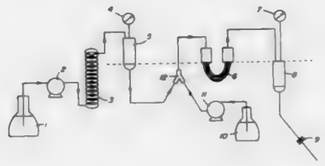
Mitsuru Suzuki; Makoto Ohno, and Isamu Yamamoto, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Aug. 26, 1986, Ser. No. 900,584

Claims priority, application Japan, Jun. 10, 1986, 61-134035

Int. Cl.⁴ B01D *13/00, 13/01*

U.S. Cl. 210—500.23 3 Claims



1. A hollow fiber membrane made of a cellulose ester for separation of plasma, which comprises a hollow fiber membrane having a heat stability sufficient to substantially precude deformation when assembled in a module which is sterilized in on autoclave, and having a membrane thickness of not more than 75 μm, and having void volume (x, % by volume) of the membrane and a rate of ultrafiltration (y, ml/m².hr.mmHg) satiafying the following formula:

$$55x-2500 \leqq y \leqq 48x+600$$

wherein $x \geqq 60$,

and further having a β-lipoprotein sieving coefficient (sc) of not less than 0.95.

4,808,313

LIQUID SEPARATION MEMBRANE FOR PERVAPORATION

Akira Michizuki; Yoshio Sato; Hisashi Ogawara, all of Kurashiki, and Syuzo Yamashita, Kiyonosu, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Division of Ser. No. 815,453, Dec. 31, 1985. This application Jan. 7, 1987, Ser. No. 1,727

Claims priority, application Japan, Jan. 8, 1985, 60-443; Jan. 30, 1985, 60-14583; Mar. 29, 1985, 60-63429

Int. Cl.⁴ B01D *13/00, 39/16*

U.S. Cl. 210—500.28 3 Claims

1. An organic liquid separation membrane for pervaporation composed of a salt of alginic acid or a salt of an alginic acid derivative having carboxylic groups at least some of which are crosslinked with polyvalent metal ions by ion exchange.

4,808,314

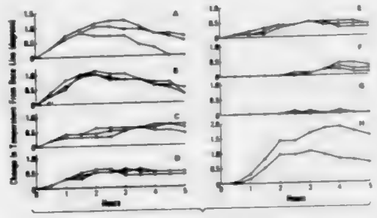
METHOD FOR REDUCING BACTERIAL ENDOTOXIN CONTAMINATION IN SOLUTIONS OF MACROMOLECULES

Thomas E. Karplus, Sydney, Australia; Richard J. Ulevitch, Del Mar, and Curtis B. Wilson, San Diego, both of Calif., assignors to Scripps Clinic and Research Foundation, La Jolla, Calif.

Filed Sep. 18, 1987, Ser. No. 98,299

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—638 27 Claims



1. A method of reducing a bacterial endotoxin contaminant in an aqueous composition containing a biologically useful macromolecule comprising the steps of:

(a) admixing an endotoxin-contaminated biologically useful macromolecule with a dialyzable surfactant in an aqueous medium to form an aqueous admixture, said surfactant exhibiting no net electric charge at the pH value of said aqueous admixture and being present in said admixture at a concentration greater than said surfactant's critical micelle concentration;

(b) contacting said aqueous admixture with a water-insoluble solid phase endotoxin sorbant comprising a solid phase matrix linked to an endotoxin sorbing agent to form a solid-liquid phase admixture;

(c) maintaining said contact for a time period sufficient for said endotoxin to bind to said sorbant and form a second solid-liquid phase admixture whose liquid phase contains water, said macromolecule and a reduced weight ratio of endotoxin to macromolecule as compared to the weight ratio present in said aqueous admixture;

(d) separating the solid and liquid phases of said second solid-liquid phase admixture;

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(e) dialyzing said surfactant from said liquid phase at a time no earlier than step (c) to provide a liquid phase that contains said macromolecule and is substantially free of surfactant; and

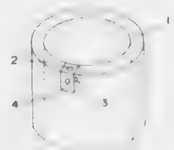
(f) thereafter recovering the liquid phase that is substantially free from surfactant.

4,808,315

POROUS HOLLOW FIBER MEMBRANE AND A METHOD FOR THE REMOVAL OF A VIRUS BY USING THE SAME

Sei-ichi Manabe, Ibaraki, and Masao Satsui, Moriyama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 7, 1987, Ser. No. 82,730
Int. Cl.[4] B01D *13/01*
U.S. Cl. 210—645 11 Claims



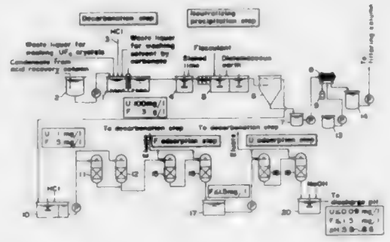
1. A method for the removal of a virus contained in an aqueous solution, which comprises providing a porous hollow fiber membrane comprising a porous polymer wall having a substantially annular cross-section and a hollow space defined by the inner wall surface of said porous polymer wall which hollow space extends in the longitudinal direction of said porous polymer wall, said porous polymer wall having pres which form through-passages passing from the inner wall surface to the outer wall surface of sid polymer wall, and wherein the inner and outer wall surfaces of said porous polymer wall have an in-a-plane average pore diameter of 0.01 to 10 μm, said in-a-plane average pore diameter being an average pore diameter as measured in a plane perpendicular to a radial direction of said annular cross-section, and said porous polymer wall has an in-a-plane porosity of not less than 10% measured in every plane perpendicular to a radial direction of said annular cross-section, said in-a-plane porosity varying continuously between said inner wall surface and said outer wall surface, wherein said in-a-plane porosity increases in the vicinity of each of said inner and outer wall surfaces and exhibits at least one minimum value between said inner and outer wall surfaces, said in-a-plane porosity at each of said inner and outer wall surfaces being at least 1.5 time the lowest value of the in-a-plane porosity within said porous polymer wall, and contacting the aqueous protein solution containing the virus with the inner or outer wall surface of the porous polymer wall of said membrane sufficiently while applying a transmembrane pressure, to cause the virus contained in the aqueous protein solution to be captured in the porous hollow fiber membrane while allowing the aqueous protein solution to permeate through the porous hollow fiber membrane.

4,808,316

PROCESS FOR TREATING WASTE WATER CONTAINING URANIUM AND FLUORINE

Keiichiro Otomura; Yoshikazu Ogura, both of Kurayoshi; Yoshiaki Echigo, Uji; Mutsunori Yamao, Uji, and Tadashi Ishikura, Uji, all of Japan, assignors to Unitika Ltd., Hyogo and Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, both of, Japan

Filed Feb. 4, 1987, Ser. No. 11,864
Claims priority, application Japan, Feb. 18, 1986, 61-33588
Int. Cl.[4] C02F *9/00*
U.S. Cl. 210—664 7 Claims



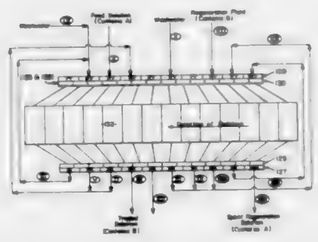
1. A process for treating waste water containing uranium and fluorine, comprising a neutralization step carried out by adding slaked lime to the waste water containing uranium and fluorine to form a precipitate and a supernatant, separating and removing the precipitate and an adsorption step carried out by contacting the supernatant from said neutralizing precipitation step with a zirconium hydroxide-containing chelating resin which can selectively adsorb fluorine ions and another phosphonic acid containing chelating resin which can selectively adsorb uranyl ions to thereby absorb and remove the fluorine and uranyl ions remaining in said supernatant, and returning eluates of the ions adsorbed by said chelating resins and waste liquors for washing and regeneration of these resins to said neutralizing precipitation step.

4,808,317

PROCESS FOR CONTINUOUS CONTACTING OF FLUIDS AND SOLIDS

W. Wes Berry, Lakeland, Fla.; Rae A. Schmeda, Littleton, and Holly S. Kibler, Boulder, both of Colo., assignors to Advanced Separation Technologies Incorporated, St. Petersburg, Fla.

Division of Ser. No. 713,492, Mar. 19, 1985, Pat. No. 4,764,276, which is a continuation-in-part of Ser. No. 635,837, Jul. 30, 1984, Pat. No. 4,522,726. This application Apr. 9, 1987, Ser. No. 36,502
Int. Cl.[4] B01D *15/02*
U.S. Cl. 210—660 9 Claims



1. A process for continuously contacting fluids with solid particular material comprising the steps of:

(a) placing solid particular material into a plurality of chambers;

(b) continuously advancing said plurality of chambers simultaneously along a continuous path at a uniform rate, said chambers having individual inlet ports and outlet ports;

(c) positioning stationary supply ports to cooperate with said inlet ports and positioning stationary discharge ports to cooperate with said outlet ports;

(d) supplying a treatment fluid to each chamber in sequence while the chamber advances along said path, the fluid being conducted individually to the chambers through a supply port and an inlet port;

(e) collecting the treatment fluid from each chamber in sequence while the chamber advances along said path, the fluid being conducted individually from the chambers through an outlet port and a discharge port;

(f) supplying a regenerating fluid to each chamber in sequence while the chamber advances along said path, the fluid being conducted individually to the chambers through a supply port and an inlet port;

(g) collecting the regenerating fluid from each chamber in sequence while the chamber advances along said path, the fluid being conducted individually from the chambers through an outlet port and a discharge port; and

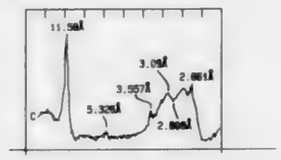
(h) conducting treatment fluid from the discharge port of one chamber to the supply port of the next preceding chamber, said fluid being conducted through said inlet port and said chamber and said outlet port to said discharge port.

4,808,318

PROCESS FOR CESIUM DECONTAMINATION AND IMMOBILIZATION

Sridhar Komarneni, Altoona, and Rustum Roy, State College, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 25, 1988, Ser. No. 185,222
Int. Cl.[4] G21F *9/12, 9/16*
U.S. Cl. 210—682 6 Claims



1. A process for separating and recovering cesium ions from a feed solution comprising:

contacting the feed solution containing cesium together with other metal ions with a modified phlogopite which is a hydrated, sodium phlogopite mica whereby the cesium ions are selectively taken up by the modified phlogopite, and separating the phlogopite containing the cesium ions from the feed solution, thereby recovering the cesium ions.

4,808,319

METHOD FOR REMOVING A SLIME DEPOSIT FROM PACKING MATERIAL INSIDE A TOWER

Robert G. McNally, Auburn, and Thomas F. Klumpp, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 9, 1988, Ser. No. 192,278
Int. Cl.[4] B01D *3/26;* C02F *1/04*
U.S. Cl. 210—741 6 Claims

1. A method for destroying and removing a slime material deposit that accumulates on packing material contained inside a vapor-liquid contact tower, comprising the steps of:

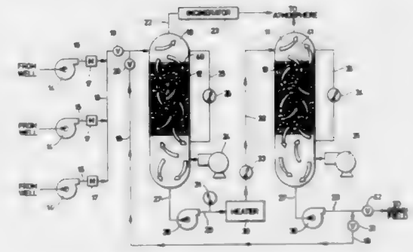
introducing a liquid phase that includes a water phase and a volatile components phase into a tower containing a packing material, and flowing the liquid phase through the packing material;

introducing an air phase into the tower and flowing the air phase through the packing material in a direction countercurrent to the flow of the liquid phase;

removing a major portion of the volatile components phase from the liquid phase, to provide a decontaminated water phase;

discharging the volatile components phase from the tower;

accumulating a slime material deposit on the packing material during the flow of the liquid phase and air phase through the packing material;



taking periodic readings of a pressure differential that exists across the packing material inside the tower, to determine a point at which the slime deposit should be removed from the packing material;

stopping the flow of the liquid phase and air phase into the tower;

passing the decontaminated water phase through a heater means and heating said water phase to a temperature of from about 150° F. to 200° F.;

recycling the heated, decontaminated water phase from the heater means back into the tower and through the packing material, to destroy the slime material deposit;

removing the destroyed slime material from the packing material; and

discharging the destroyed slime material from the tower.

4,808,320

FABRIC SOFTENING COMPOSITIONS BASED ON LECITHIN AND METHODS FOR MAKING AND USING SAME

Alain Jacques, Blegny, and Patrice Pirotton, Esseux, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 896,912, Aug. 14, 1986, abandoned. This application Sep. 24, 1986, Ser. No. 910,928
Int. Cl.[4] D06M *13/34*
U.S. Cl. 252—8.8 3 Claims

1. A method for imparting softness to textile fabrics which comprises contacting the fabrics with the composition prepared by adding lecithin at a temperature of from about 45° C. to 80° C. to an alkaline aqueous solution at a temperature of from about 45° C. to about 80° C. and thereafter adding sufficient acid to reduce the pH to from about 6.5 to about 7.5.

3. In a method of imparting softness to fabrics during the rinse cycle of an automatic laundry washing machine, the improvement comprising adding the composition of claim 1 in an amount sufficient to provide from about 0.36 to about 22 grams of lecithin per kilogram of fabrics in the washing machine.

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4,808,321

MONO-ESTERS AS FIBER AND FABRIC TREATMENT COMPOSITIONS

Darlene R. Walley, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 1, 1987, Ser. No. 45,975
Int. Cl.[4] D06M *11/00*
U.S. Cl. 252—8.8 9 Claims

1. A liquid fabric softening and antistatic composition, comprising:

(a) a liquid carrier; and dispersed therein,

(b) at least about 1% by weight of submicron particles of a softener compound of the formula

$$[R]_2-\overset{\oplus}{N}(R')-CH_2CH(R'')-O-C(O)R'''X^{\ominus}$$

wherein each R is a short-chain alkyl or hydroxyalkyl group, or mixtures thereof; R' is a C_{16}–C_{18} hydrocarbyl group, R'' is a hydrogen or short-chain hydrocarbyl group; R''' is a C_{13}–C_{15} hydrocarbyl substituent; and X is a counterion;

(c) said composition being formulated at a pH of about 3.0±0.5 and being substantially free of amines in order to enhance the hydrolytic stability of said softener compound.

4,808,322

SKIN CLEANSING-CREAM CONDITIONING BAR

James H. McLaughlin, 7 Widgeon La., Little Compton, R.I. 02837

Filed Mar. 10, 1988, Ser. No. 166,330
Int. Cl.[4] A61K *7/50*; C11D *9/26, 9/48, 10/04*
U.S. Cl. 252—121 21 Claims

1. A non-foaming, skin cleansing-conditioning bar consisting essentially of about 14% to 38% by weight of an anionic surfactant material selected from the group consisting of a sodium or potassium salt of a C-12–C-18 saturated monocarboxylic acid and mixtures of said sodium or potassium salt with a water-soluble, non-soap, anionic detergent selected from the group consisting of sodium and potassium salts of C-8–C-18 acyl isethionates, C-8–C-18 alkyl sulfates, C-10–C-20 alkyl sulfonates, C-8–C-18 alkyl monoglyceride sulfates, C-8–C-16 alkylbenzene sulfonates and C-8–C-18 alkyl polyethenoxy ether sulfates containing one to twelve ethenoxy groups in the molecule and mixtures thereof in a weight ratio of said monocarboxylic acid salt to said detergent of 18:1 to about 2.5:1; about 40% to 72% by weight of a water-insoluble emollient selected from the group consisting of a C-14–C-18 alkanol and mixtures of said alkanol with a C-14–C-18 alkanoic acid wherein the weight ratio of said alkanol to said alkanoic acid is in the range of about 23:1 to 0.6:1; the weight ratio of said emollient material to said surfactant material being from about 5:1 to about 1.3:1; 0% to 25% of a starch-derived filler; and 2% to 12% by weight of water; said bar having a pH in the range of 6 to 9.5 measured as a 1% by weight aqueous solution and yielding a satisfactory volume of a non-foaming, cleansing-conditioning cream of moderate viscosity when the wetted bar is rotated and manipulated between the wetted hands of the user.

19. A method of cleansing and conditioning the skin comprising the steps of (a) forming a non-foaming, cleansing-conditioning cream by rotating and manipulating a wetted bar between the wetted hands of the user, said bar having the composition set forth in claim 1; (b) applying the cleansing-conditioning cream of step (a) to the skin to be cleansed and conditioned; (c) massaging said cream into the skin with the user's hands and fingers; and (d) rinsing the cream-treated skin with water.

4,808,323

NON-DELETERIOUS DRY FILM LUBRICANT COATING COMPOSITION, RUBBER SEALING ELEMENT COATED THEREWITH; AND METHOD OF

Eugenia T. Fisher, Ann Arbor, Mich., and William D. Best, Huntington Beach, Calif., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Oct. 1, 1986, Ser. No. 914,197
Int. Cl.[4] C10M *105/12*
U.S. Cl. 252—15 16 Claims

1. A non-deleterious coating composition for the deposition of a dry film lubricant coating on a rubber sealing element comprising:

(a) 1 to 10% by weight of a component selected from the group consisting of waxes and normally solid aliphatic alcohols;

(b) 1 to 10% by weight of a lubricating oil; and

(c) the balance being a solvent for waxes and normally solid aliphatic alcohols and lubricating oils;

said solvent, when applied to said rubber sealing element, in said coating composition, evaporating from said coating composition before any substantial degradation of the physical properties of said rubber sealing element occurs.

4,808,324

LUBRICANT SYSTEM FOR SHEET AND SECTION ROLLING MILLS

Jacques Périard, Sion; Hans R. Staub, Eggerwil, and Marco Lanini, Sion, all of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Filed Mar. 31, 1987, Ser. No. 32,010
Claims priority, application Switzerland, Apr. 4, 1986, 1322/86
Int. Cl.[4] C10M *125/02, 125/00*
U.S. Cl. 252—23 6 Claims

1. Lubricant system for sheet and section rolling mills, said lubrication system consisting of (a) a lubricating component which is a solid lubricant, said component (A) being selected from the group consisting of graphite, MoS_2, CaF_2, BN and a mixture of at least two of said solid lubricants, (B) a component which is an organic water-insoluble adhesive, which decomposes at a temperature of up to 300° C. and has a softening point of from 20° to 180° C., said component (B) being a hydrocarbon resin selected from the group consisting of (i) at least one resin from the cumarone-indene resin family, (ii) a terpene resin, (iii) a colophonium derivative, (iv) a polyamide resin having a mean molecular weight of 6000 to 9000, (v) a mixture of at least two hydrocarbon resins (i), (ii), (iii) and (iv), (vi) a mixture of at least one of hydrocarbon resins (i), (ii), (iii), and (iv) with at least one wax, at least one paraffin or both, the waxes and paraffins forming not more than 50 percent by weight of the total quantity of said component (B), and (vii) a mixture of (a) aliphatic petroleum resins, aromatic petroleum resins or both, said petroleum resins containing 4 to 10 C atoms in the basic molecules, and (b) at least one member selected from the group consisting of hydrocarbon resin (i), hydrocarbon resin (ii), hydrocarbon resin (iii), hydrocarbon resin (iv), a wax and a paraffin, the waxes and paraffins forming not more than the total weight of the total quantity of said component (B), (C) a component which is a thickening agent for aqueous suspensions, said component (C) being at least one member selected from the group consisting of an alginate, a cellulose, polyethylene oxide, carrageen, cellulose ether, a gum, a pectin, a polyacrylamide, a polyacrylic acid, polyethylene glycol, a polyvinyl alcohol, polyvinyl acetate, polyvinylpyrrolidone, starch, starch paste, cellulose paste, a polysaccharide, waterglass and a high-plasticity clay, the clay forming as an inorganic substance, not more than 20 percent by weight of component (C), and (D) water as a carrier medium, there being 25 to 95 percent by weight of said component (A) based upon the total weight of said components (A), (B) and (C), there being 75 to 5 percent by weight of said components (B) and (C) based upon the total weight of said components (A), (B) and (C), component (B) being present in an amount which is effective as an adhesive in said lubrication system, there being 5 to 30 percent by weight of said components (A), (B) and (C) based upon the total weight of said component (D), and said components (A), (B) and (C) forming a suspension with said component (D).

4,808,325

MANNICH DISPERSANT VI-IMPROVER BLENDED WITH PHENOLIC COMPOUND FOR IMPROVED STORAGE STABILITY

Yoon S. Song, Lisle, and Robert J. Bassler, Naperville, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Mar. 30, 1987, Ser. No. 31,355
Int. Cl.[4] C10M *159/16*
U.S. Cl. 252—51.5 A 27 Claims

1. An improved dispersant and VI-improving Mannich composition suitable as a lubricating oil additive and having reduced susceptibility to viscosity increase during storage, consisting essentially of the following admixed components: (a) a hydrocarbyl; and (b) a Mannich condensation product obtained by reacting under Mannich conditions an oxidized polymer, an amine, and a formaldehyde-yielding reagent, in a non-reactive solvent, wherein said Mannich reaction product includes the solvent.

4,808,326

RESIN-BONDED MAGNETIC COMPOSITION AND PROCESS FOR PRODUCING MAGNETIC MOLDING THEREFROM

Katsumi Tanino, Takaoka; Yukio Nakazawa, and Takeo Kizaki, both of Toyama, all of Japan, assignors to Takeuchi Press Industries Co., Ltd., and Toyama Prefecture, both of Toyama, Japan

PCT No. PCT/JP86/00288, § 371 Date Feb. 9, 1987, § 102(e) Date Feb. 9, 1987, PCT Pub. No. WO86/07489, PCT Pub. Date Dec. 18, 1986
PCT Filed Jun. 9, 1986, Ser. No. 26,369
Claims priority, application Japan, Jun. 10, 1985, 60-125363
Int. Cl.[4] G11B *5/68*
U.S. Cl. 252—62.54 2 Claims

1. A magnetic molding composition consisting essentially of a mixture of 80 to 95 weight % of ferromagnetic powder, 5 to 20 weight % of highly heat-resistant thermosetting resin powder and 0.1 to 1 weight % of at least one metal chelate compound, wherein said resin powder is at least one resin powder selected from the group consisting of: (1) a prepolymer obtained by reacting a bisimide compound of an unsaturated dicarboxylic acid with a polyamine compound having at least two amino groups in the molecule, (2) a mixture of said prepolymer and an epoxy resin having at least two epoxy groups in the molecule, (3) a polyparabanic acid resin and (4) a mixture of said polyparabanic acid resin and said epoxy resin, and wherein said metal chelate compound is selected from the group consisting of Al-acetylacetonate, Co-acetylacetonate, Fe-acetylacetonate, Mn-acetylacetonate, Ni-acetylacetonate, Zn-acetylacetonate and Zr-acetylacetonate.

4,808,327

COMPOSITIONS OF PARTICULATE MAGNETIC OXIDES WITH A DEFECT SPINEL STRUCTURE, PREPARATION THEREOF AND APPLICATION THEREOF

Abel Rousset, Ramonville St Agne; Christiane B. Salvaing, Toulouse; Paul Mollard, Domene; Michel Gougeon, Toulouse, and Philippe Tailhades, Mazamet, all of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris and Universite Paul Sabatier (Toulouse III), Toulouse, both of, France

PCT No. PCT/FR86/00337, § 371 Date Jan. 1, 1987, § 102(e) Date Jan. 1, 1987, PCT Pub. No. WO87/02173, PCT Pub. Date Apr. 9, 1987
PCT Filed Sep. 30, 1986, Ser. No. 62,609
Claims priority, application France, Sep. 30, 1985, 85 14439
Int. Cl.[4] C04B *35/26*
U.S. Cl. 252—62.56 16 Claims

1. A particulate magnetic oxide composition made of particles having a defect spinel structure, consisting essentially of (i) iron (III) oxide, (ii) an oxide of at least one bivalent metal selected from the group consisting of cobalt, iron, copper, zinc, magnesium, nickel, manganese and cadmium, and (iii), in the form of an oxide thereof, at least one adjuvant or substituent selected from the group consisting of an alkali metal, an alkaline earth metal, boron, aluminum, gallium, germanium, tin, arsenic, indium, antimony, bismuth, lead, the 3d and 4d transition metals other than those already mentioned and a rare earth elements, wherein the weight of said at least one bivalent metal represents between 1 and 10 percent of the weight of said composition, and wherein the weight of said at least one adjuvant or substituent represents between 0.2 and 5 percent of the weight of said composition, with the proviso that when an alkali metal or tin is present, at least one other adjuvant or substituent is also present.

4,808,328

IODINE-BASED ANTISEPTIC CLEANSER COMPOSITION

Keith W. Flohr, Reston, Va., assignor to Joseph N. Cooper, Alexandria, Va.

Filed May 8, 1987, Ser. No. 47,345
Int. Cl.[4] C11D *3/02, 3/48*; A61K *33/18*
U.S. Cl. 252—106 10 Claims

1. A concentrated antiseptic cleanser composition comprising:

(a) about 1.0 to about 10.0% (wt per vol) of iodine as an antiseptic agent;

(b) about 2.0 to about 10.0% (wt per vol) of an organic sulfonate detergent as a cleansing agent;

(c) about 20.0 to about 60.0 vol % of a lower alcohol as a solvent;

(d) about 0.01 to about 3.0% (wt per vol) of a buffer;

(e) about 0.01 to about 1.0% (wt per vol) of a chelating agent;

(f) 0 to about 1.5% (wt per vol) of a mild abrasive cleansing agent;

(g) 0 to about 15.0% (wt per vol) of a fragrance; and,

(h) the remainder, water by vol %, wherein the pH of said composition is from about 7.9 to about 8.5.

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CLEANING PREPARATION FOR GLASS

Heinz-Dieter Soldanski, Essen; Martin Kalbe, Moenchengladbach, and Bernd-Dieter Holdt, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 16, 1987, Ser. No. 26,100

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1986, 3609734

Int. Cl.[4] C11D *7/50, 7/24;* C09D *9/00;* C23G *5/02*

U.S. Cl. 252—162 14 Claims

1. A paste-form cleaning preparation for a glass, ceramic or enamel surface having a viscosity of from about 10,000 to about 40,000 mPas at about 20° C. comprising;

(a) from about 2 to about 30% by weight of a hydrocarbon solvent having a boiling point in the range of from about 120° to about 250° C.,

(b) from 0 to about 10% by weight of organic solvent selected from the group consisting of alcohols, ketones and glycol ethers having a boiling point in the range of from about 55° to about 250° C., the organic solvent content making up less than half the hydrocarbon solvent content,

(c) from about 5 to about 40% by weight of microcrystalline calcium carbonate wherein more than about 98% by weight of the particles of said calcium carbonate are smaller than 300 μm,

(d) from about 0.2 to about 2.5% by weight of silicone oil having a viscosity of from about 20 to about 1000 mPas at about 20° C.,

(e) from about 0.05 to about 2% by weight of nonionic or anionic emulsifier for oil-in-water emulsions,

(f) from about 0.1 to about 3% by weight of polyacrylic acid having an average molecular weight of from about 0.8×10^6 to about 5×10^6,

(g) from 0 to about 2% by weight of alkalizing agent selected from the group consisting of alkaline reacting alkali metal salts, ammonia and alkanolamines,

(h) from 0 to about 3% by weight other standard auxiliaries, and

(i) ad 100% by weight of water.

4,808,330

NON-TOXIC DETERGENT FOR CLEANING FRUIT AND VEGETABLES

C. S. Chang, No. 60 Ming-Shen East Road, Taipei, Taiwan

Filed Apr. 26, 1988, Ser. No. 186,142

Int. Cl.[4] A23B *7/156, 7/16;* C11D *7/26, 7/50*

U.S. Cl. 252—170 3 Claims

1. A non-toxic detergent composition effective for removing pollutants such as residual toxicities, bacteria and fungi from food surface comprising:

(1) from 15 to 30 weight percent of sodium chloride;

(2) from 10 to 35 weight percent of ethanol;

(3) from 8 to 25 weight percent of coconut oil; and

(4) the balance essentially water.

4,808,331

AZEOTROPE OR AZEOTROPE-LIKE COMPOSITION OF 1,1,2,-TRICHLORO-1,2,2-TRIFLUOROETHANE, TRANS-1,2-DICHLOROETHYLENE AND CYCLOPENTANE

James G. Bart, Oxford, Pa., and John P. Burns, Claymont, Del., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed May 24, 1988, Ser. No. 198,022

Int. Cl.[4] C11D *7/30, 7/50*

U.S. Cl. 252—172 6 Claims

1. An azeotrope or azeotrope-like composition wherein the azeotrope or azeotrope-like components consist essentially of about 56 to about 66 weight percent 1,1,2-trichloro-1,2,2-trifluoroethane, about 32 to about 40 weight percent trans-1,2-dichloroethylene and about 1 to about 9.5 weight percent cyclopentane.

4,808,332

ACRYLIC COPOLYMERS EXHIBITING NONLINEAR OPTICAL RESPONSE

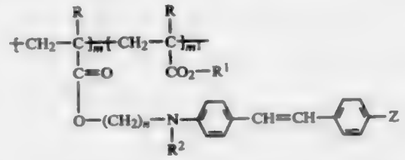
Ronald N. DeMartino, Wayne, and Hyun-Nam Yoon, New Providence, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Oct. 9, 1987, Ser. No. 106,301

Int. Cl.[4] C08F *20/70, 261/06;* C09K *19/52*

U.S. Cl. 526—312 11 Claims

1. An isotropic acrylic copolymer which is characterized by recurring monomeric units corresponding to the formula:



where m and m[1] are integers which total at least 10, and the m monomer comprises between about 10–90 mole percent of the total m+m[1] monomer units; R is hydrogen or C_1–C_4 alkyl, C_6–C_{10} aryl, halo or haloalkyl substituent; n is an integer between about 1–12; R[1] is a C_1–C_6 alkyl substituent; R[2] is hydrogen or a C_1–C_4 alkyl substituent; and Z is a nitro or cyano substituent.

4,808,333

ANISOTROPIC COMPOUNDS HAVING NEMATIC PHASE AND LIQUID CRYSTAL MIXTURES

Tuong Huynh-ba, Pully, and Maged A. Osman, Zurich, both of Switzerland, assignors to Merck Patent GmbH, Darmstadt, Fed. Rep. of Germany

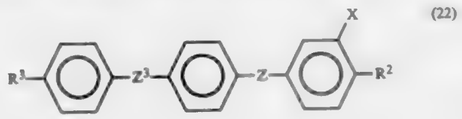
Continuation-in-part of Ser. No. 457,567, Jan. 13, 1983, abandoned. This application Jul. 24, 1985, Ser. No. 758,792

Claims priority, application Switzerland, Jan. 14, 1982, 198/82; Jan. 19, 1982, 292/82; May 4, 1982, 2725/82

Int. Cl.[4] C09K *19/54, 19/12, 19/06, 19/34, 19/30*

U.S. Cl. 252—299.66 9 Claims

1. A liquid crystal mixture containing at least two anisotropic compounds at least one having the formula



wherein

Z is selected from the group consisting of a single bond and a —CH_2CH_2—group,

X is selected from the group consisting of fluorine, chlorine, and methyl,

R[2] and R[3] are selected from the group consisting of C_1–C_{12}-alkyl, C_1–C_{12}-alkoxy, C_1–C_{12}-alkanoyloxy, and C_1–C_{12}-alkylamino, and

Z[3] is selected from the group consisting of a single bond and a —CH_2CH_2—group.

4,808,334

PRODUCTION OF STERILE COMPOSITE EMULSION

Mitsuo Enaki, Izumisano; Makoto Kobayashi, and Tsuguo Izumi, both of Sennan, all of Japan, assignors to Fuji Oil Company, Ltd., Osaka, Japan

Filed Jul. 8, 1987, Ser. No. 71,256

Claims priority, application Japan, Jul. 11, 1986, 61-164268

Int. Cl.[4] A23D *3/00;* B01J *13/00*

U.S. Cl. 252—314 1 Claim

1. A process for producing a sterile composite emulsion which comprises separately treating oil and/or aqueous phases and primary emulsion thereof by ultra-high temperature heating sterilization at 130° to 150° C. for 2 to 60 seconds and then aseptically mixing, emulsifying and homogenizing them.

4,808,335

OXIDATION AND CORROSION RESISTANT DIESEL ENGINE LUBRICANT

Rodney L. Sung, Fishkill; Benjamin H. Zoleski, Beacon, and Ronald L. O'Rourke, Hyde Park, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

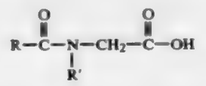
Filed Nov. 2, 1987, Ser. No. 115,330

Int. Cl.[4] C10M *105/22*

U.S. Cl. 252—47.5 20 Claims

1. A diesel engine lubricating oil composition comprising a major amount of a hydrocarbon lubricating oil and from 0.1–5.0 weight percent of the reaction product obtained by reacting at a temperature range of 50° C.–200° C. substantially equimolar amounts of:

(a) an N-acyl sarcosine reactant of the formula:



wherein R is a C_8–C_{24} alkyl radical and R′ is H or a C_1–C_6 alkyl radical; and

(b) a substituted or unsubstituted heterocyclic azole reactant.

4,808,336

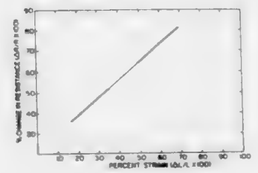
MEASUREMENT OF STRAIN EMPLOYING A PIEZORESISTIVE BLEND OF A DOPED ACETYLENE POLYMER AND AN ELASTOMER

Michael Rubner, Chelmsford, and Enid K. Sichel, Lincoln, both of Mass., assignors to GTE Laboratories, Incorporated, Waltham, Mass.

Division of Ser. No. 624,946, Jun. 27, 1984, Pat. No. 4,708,019. This application Aug. 17, 1987, Ser. No. 86,379

Int. Cl.[4] H01B *1/00*

U.S. Cl. 252—500 3 Claims



1. A disposable fuse comprising an irreversible piezoresistive blend consisting essentially of an elastomer having a doped electrically conductive polyacetylene uniformly and homogeneously blended within said elastomer, the polyacetylene being formed by polymerizing acetylene gas in the presence of a catalyst, said blend containing at least about 40 weight percent polyacetylene.

4,808,337

HOT PRESSING OF BELLOWS LIKE CANISTERS

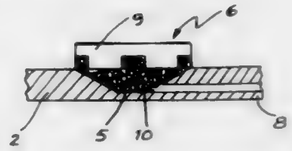
Eric J. Ramm, 10 Immarna Street, Lilli Pilli, N.S.W. 2229; Wilhelmus J. Bukyx, 12 Newland Place, Engadine, N.S.W. 2233; John G. Padgett, 45 Waratah Road, Engadine, N.S.W. 2233, and Alfred E. Ringwood, 3 Vancouver Street, Redhill, A.C.T. 2603, all of Australia

Filed Jul. 14, 1986, Ser. No. 884,981

Claims priority, application Australia, Jul. 16, 1985, PH01496

Int. Cl.[4] G21F *9/16, 9/12*

U.S. Cl. 252—628 9 Claims



1. A method of forming synthetic rock incorporating radioactive waste wherein precursor materials for the synthetic rock mixed with radioactive waste are placed in a metal canister, the wall of which includes a bellows like wall structure, the method comprising heating the canister and its contents and maintaining a sufficiently elevated temperature during the application of axial pressure to the canister to cause the formation of synthetic rock and the discharge of gases, and characterised by using a canister including a discharge duct connected to an exhaust gas processing system for discharging gases from within the canister.

4,808,338

CERTAIN 3-OXO-4-(SUBSTITUTED OXY OR SUBSTITUTED THIO)CYCLOHEX-1-ENYL-2-SUBSTITUTED BENZOATE INTERMEDIATES

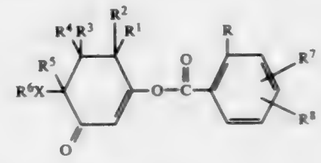
David L. Lee, Martinez, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 86,268, Aug. 20, 1987, which is a continuation-in-part of Ser. No. 919,280, Oct. 16, 1986, abandoned. This application Feb. 1, 1988, Ser. No. 150,875

Int. Cl.[4] C07C *153/11*

U.S. Cl. 265—397.7 R 1 Claim

1. A compound of the structural formula



wherein

X is oxy, thio, sulfinyl or sulfonyl;

R is halogen, C_1–C_2 alkyl; C_1–C_2 alkoxy; trifluoromethoxy; difluoromethoxy; nitro; cyano; C_1–C_2 haloalkyl; R^eSO_n— wherein n is 0 or 2 and R^e is C_1–C_2 alkyl; trifluoromethyl or difluoromethyl;

R[1] is hydrogen, C_1–C_4 alkyl, or phenyl;

R[2] is hydrogen or C_1–C_4 alkyl; or

R[1] and R[2] together are C_2–C_5 alkylene;

R[3] is hydrogen, C_1–C_4 alkyl, or phenyl with the proviso that R[1] and R[3] are not both phenyl;

R[4] is hydrogen or C_1–C_4 alkyl;

R[5] is hydrogen or C_1–C_4 alkyl;

R[6] is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, or phenyl;

R[7] and R[8] independently are (1) hydrogen; (2) halogen; (3)

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C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) R^bSO_n— wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) —NR^cR^d wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)$— wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) —$SO_2NR^cR^d$ wherein R^c and R^d are as defined; and (13) —$N(R^c)C(O)R^d$ wherein R^c and R^d are as defined.

4,808,339

BENZOQUINONE DERIVATIVES

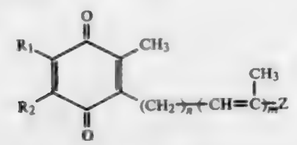
Shinji Terao, Toyonaka; Hisayoshi Okazaki, Kyoto, and Isuke Imada, Izumi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 717,098, Mar. 28, 1985, Pat. No. 4,751,303, which is a division of Ser. No. 484,232, Apr. 12, 1983, Pat. No. 4,526,719. This application Mar. 18, 1988, Ser. No. 168,321

Int. Cl.[4] C07C *50/06*

U.S. Cl. 260—396 R **9 Claims**

1. A compound of the formula



wherein R_1 and R_2 are the same or different and each is methyl or methoxy; n is an integer of 0 to 21; m is 0 or 1, and Z is a group of the formula $-(CH{=}CH)_l COR_7$ wherein l is an integer of 1 to 4 and R_7 is hydroxy, methoxy or methyl.

4,808,340

PROCESS FOR PREPARING METHYL 4-OXO-5-TETRADECYNOATE

Shuji Senda, and Tetsuo Onuta, both of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 21, 1987, Ser. No. 136,041

Claims priority, application Japan, Dec. 19, 1986, 61-305030

Int. Cl.[4] C11C *3/04*

U.S. Cl. 260—410.9 **9 Claims**

1. A process for preparing methyl 4-oxo-5-tetradecynoate, which comprises reacting monomethyl succinate with an alkyl chlorocarbonate in the presence of a base to form an acid anhydride and reacting the acid anhydride with a Grignard reagent of 1-decyne.

4,808,341

PROCESS FOR THE SEPARATION OF MERCAPTANS CONTAINED IN GAS

Guy Desgranchamps, Lons, France, assignor to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Dec. 1, 1983, Ser. No. 557,112

Claims priority, application France, Dec. 2, 1982, 82 20178

Int. Cl.[4] C07C *139/00*

U.S. Cl. 260—504 R **33 Claims**

1. A process for the removal of mercaptans from a gas stream which comprises:

(a) contacting the gas stream with a hydrocarbon absorption oil, in an absorption zone, to remove at least a portion of the mercaptans from the gas stream and form a hydrocarbon oil containing mercaptans;

(b) contacting the hydrocarbon oil containing mercaptans with an aqueous solution of an oxidizing agent in a reaction zone to react at least a portion of the mercaptans, in the hydrocarbon oil containing mercaptans, to sulfonic acid and form an aqueous solution containing sulfonic acid and a hydrocarbon absorption oil.

4,808,342

PRODUCTION OF SULFONATED AMINES

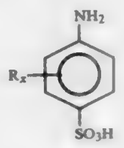
Richard B. Lund, Jackson, and Milo C. Pass, Saraland, both of Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 9, 1986, Ser. No. 849,619

Int. Cl.[4] C07D *143/58*

U.S. Cl. 260—508 **6 Claims**

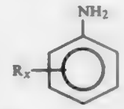
1. In a process for the production of a sulfonated aromatic amine of the formula:



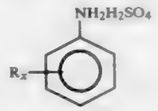
where R is H, CH_3, C_2H_5, halogen or



x is the integer 0 to 2; which comprises the steps of reacting an aromatic amine of the formula



with concentrated sulfuric acid to form an intermediate aromatic amine hydrogen sulfate of the formula



then heating this amine sulfate to cause rearrangement thereof with the formation of a sulfonate group and the elimination of a mole of water, the orientation of said sulfonate group being para- or ortho- to the regenerated amine group;

wherein the improvement comprises adding said aromatic amine to said concentrated sulfuric acid in the presence of a sufficient excess of concentrated sulfuric acid so that the molar ratio of the amine to the sulfuric acid is 1:2.0 to 1:2.5, the amount and concentration of said sulfuric acid being selected so that the exotherm of the reaction of said amine with the sulfuric acid to form the amine sulfate will maintain the temperature of the reaction mixture between the rearrangement temperature for the amine hydrogen sulfate and the decomposition temperatures of said amine hydrogen sulfate and amine sulfonate; distilling and collecting from said reaction mixture the water formed during said sulfonate formation; then upon completion of said distillation, cooling said reaction mixture to below the rearrangement temperature; diluting said cooled mixture with water to reduce the acid concentration thereof, thus causing said aromatic amine sulfonate which is insoluble in such lower acid concentration to precipitate, separating and washing, with said distilled water, said precipitated amine sulfonate and collecting same, and recycling the resulting acid filtrate together with wash waters and any

incompletely or unreacted amine to the initial reaction mixture after said filtrate is reconcentrated with oleum to concentrated H_2SO_4.

4,808,343

PROCESS FOR ISOLATING PARAFFINSULFONATES WITH A LOW ALKALI METAL SULFATE CONTENT AND SULFURIC ACID FROM PARAFFIN-SULFOXIDATION REACTION MIXTURES WITHOUT OBLIGATORY PRODUCTION OF SODIUM SULFATE

Rudolf Pistorius, Hilmstetten, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 16, 1987, Ser. No. 120,859

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1986, 3639464

Int. Cl.[4] C07C *143/02*

U.S. Cl. 260—513 R **3 Claims**

1. A process for isolating alkanesulfonates having a low alkali metal sulfate content and sulfuric acid from paraffinsulfoxidation reaction mixtures with the aid of alcohols, wherein the reaction mixture, freed from sulfur dioxide, is mixed in a mixer/settler vessel (reference numeral 1 of the Drawing) with a C_4–C_8-alcohol and the lower phase from a mixer/settler vessel (reference number 2 of the Drawing), the dilute sulfuric acid lower phase which separates out is removed, the upper product phase remaining is transferred, together with the lower phase from a mixer/settler vessel (reference numeral 4 of the Drawing), into mixer/settler vessel (reference number 2 of the Drawing), the lower phase obtained in the latter is transferred into mixer/settler vessel (reference numeral 1 of the Drawing), the remaining upper product phase from mixer/settler vessel (reference numeral 2 of the Drawing), together with the lower phase from a mixer/settler vessel (reference numeral 5 of the Drawing) and the upper phase from said mixer/settler vessel (4) are transferred into a mixer/settler vessel (reference numeral 3 of the Drawing), the upper phase obtained in said mixer/settler vessel (3), together with the amount of alkali metal hydroxide which is necessary for neutralization, is transferred into said mixer/settler vessel (5), the lower phase obtained in said mixer/settler vessel (3) is transferred into said mixer/settler vessel (4) at the same time as an amount of the product phase (reference numeral 2 of the Drawing) such that a pH of 0.5 to 7 is maintained in the latter vessel, the lower phase obtained in the said settler vessel (4) is transferred into said mixer/settler vessel (2), the lower phase obtained in said mixer/settler vessel (5), together with the said product phase (2), is transferred into said mixer/settler vessel (3), and the upper phase obtained in said mixer/settler vessel (5), is adjusted to a pH of 3 to 9 by adding part of the said product (2) and concentrated by evaporation to recover the alkanesulfonate.

4,808,344

PROCESS FOR RECOVERING AND PURIFYING UNREACTED ACRYLONITRILE FROM THE WASTE STREAM IN THE MANUFACTURE OF 2-ACRYLAMIDO-2-METHYL PROPANE SULFONIC ACID

Douglas J. Hallenburg; Alan C. Clark, both of Mentor, and James L. Hambrick, Chesterland, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 896,545, Aug. 13, 1986, abandoned. This application Feb. 10, 1988, Ser. No. 154,666

Int. Cl.[4] B01D *3/10*; C07C *121/32, 143/02*

U.S. Cl. 260—513 N **14 Claims**

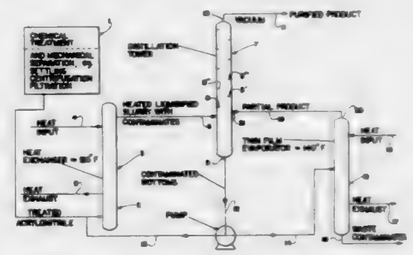
1. A process for purifying unreacted contaminated acrylonitrile, comprising the steps of:

reacting, in a reaction vessel, a reactant with an excess of acrylonitrile;

recovering unreacted acrylonitrile, in a contaminated form, from the vessel;

treating the unreacted contaminated acrylonitrile with a base and removing salts formed to provide a treated acrylonitrile;

heating the treated acrylonitrile in a heat exchanger under



vacuum to a temperature above the melting point of the treated acrylonitrile but below about 172° F. to provide a heated fluid material;

placing the fluid material in a distillation tower and distilling the fluid material under vacuum; and

removing from the tower, acrylonitrile which has a boiling point below that of the treated acrylonitrile.

4,808,345

PROCESS FOR THE PREPARATION OF TETRACHLOROTEREPHTHALOYL DICHLORIDE BY MEANS OF THE CHLORINATION OF TEREPHTHALOYL DICHLORIDE WITH GASEOUS CHLORINE

Enrico Pestoglio, Brescia; Sandra Parodi, Nuvolento; Giuseppe Ghielmetti, Milan; Liborio Cassia, Brescia, all of Italy, assignor to CAFFARO S.p.A. Societa per l'Industria Chimica ed Elettrochimica, Milan, Italy

Filed Apr. 28, 1986, Ser. No. 856,335

Int. Cl.[4] C07C *63/30*

U.S. Cl. 260—544 D **8 Claims**

1. In a process for the chlorination of terephthaloyl dichloride to produce tetrachloroterephthaloyl dichloride, wherein the improvement comprises chlorinating terephthaloyl dichloride in the vapor phase with gaseous chlorine in the presence of activated charcoal as a catalyst in microgranular form suitable for fluidization, at a temperature in the range of between 230° to 240° C. so that less than 500 ppm of hexachlorobenzene byproduct is produced.

4,808,346

CARBONATED BEVERAGE DISPENSING APPARATUS AND METHOD

Marshall C. Streeger, Lake Forest, Ill., assignor to Streeger & Associates, Ill.

Continuation-in-part of Ser. No. 724,944, Apr. 28, 1985, abandoned, which is a continuation of Ser. No. 309,834, Oct. 8, 1981, abandoned, which is a continuation of Ser. No. 578,169, May 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 482,981, Jun. 25, 1974, abandoned, which is a continuation of Ser. No. 273,509, Jul. 20, 1972, abandoned. This application Feb. 13, 1987, Ser. No. 14,927

Int. Cl.[4] A23L *2/38*

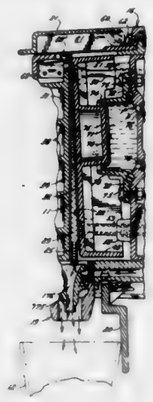
U.S. Cl. 261—18.1 **38 Claims**

34. A carbonated beverage dispensing system comprising an actuating unit, a flexible walled packet containing a predetermined individual serving quantity of a flavoring constituent and having a rupturable discharge end, said actuating unit having a platen that is movable between a retracted position in which said packet is positionable in said actuating unit with the discharge end thereof downwardly directed and an actuated

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position forcefully pressing against said packet, means for moving said platen from said retracted position to a first ready position in which said platen is in inclined relation and in close proximity to said packet in a predetermined relatively short period, means for moving said platen from said first ready position to said actuated position in a predetermined relatively longer period and in a manner that causes rupturing of the discharge end of said packet and expels the contents downwardly therefrom, and means for dispensing a predetermined quantity of carbonated water for mixing with the expelled contents of said packet to form a carbonated beverage.

36. A method of dispensing a carbonated beverage comprising the steps of providing predetermined individual serving quantities of a flavoring constituent in individual generally flat sided packets each having a rupturable discharge end, said discharge end of said packet is formed with relatively strong



permanently sealed areas which define an unsealed discharge spout, and an arcuate shaped sealed area surrounding said discharge spout for defining an unsealed chamber communicating with said discharge spout, whereby upon application of predetermined external pressure to the container said arcuate shaped sealed area will rupture to permit the controlled discharge of the packaged substance through said unsealed chamber and discharge spout, positioning one of said packets in a carbonated beverage dispenser with the discharge end downwardly directed, advancing a laterally movable platen against a side of said packet to forcefully compress the contents therein downwardly in a manner that ruptures the discharge end of said packet and expels the contents in a downward direction, and simultaneously dispensing a predetermined quantity of carbonated water for mixing with the expelled contents of the packet to form an individual serving of a carbonated beverage.

4,808,347

FAN DRIVEN AIR FRESHENER

Andrew R. Dawn, 713 Calle Contenta, San Clemente, Calif. 92672

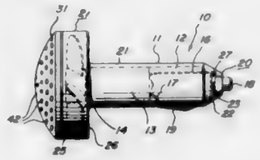
Filed Mar. 24, 1988, Ser. No. 173,179
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—30 **15 Claims**

1. An apparatus for freshening air within confined spaces comprising:

(a) a housing having an elongated cylindrical end portion adapted to be inserted into an electrical power socket, said housing having external electrical contacts adapted to conductively contact internal electrical contacts within said socket,

(b) an electrical motor contained within said housing, the input terminals of said motor being electrically coupled to said external contacts in a manner providing electrical power to said motor when said housing is plugged into said power socket,

(c) an air displacing element fastened to the output shaft of said motor, said air displacing element being enclosed within said housing,



(d) a perforated end cap covering said end of said housing opposite of said end containing external electrical contacts, said end cap adapted to removably attach to said housing and providing a space between said air displacing element and said perforations in said end cap for a thin sheet of odor absorbing, scent dispersing material.

4,808,348

MICROGRAVITY CARBONATOR

Arthur G. Rudick; Kenneth G. Smazik, both of Marietta, and Leonard F. Antao, Atlanta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed May 14, 1987, Ser. No. 49,569
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—82 **27 Claims**



1. A carbonator system for producing carbonated water comprising:

holding tank means for holding at least water and carbon dioxide;

a movable piston separating said holding tank means into two chambers, including a first chamber for holding a propellant fluid and a second chamber for holding carbon dioxide and water; and

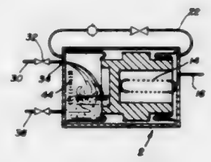
control means for controlling flow of propellant fluid into and out of said first chamber and selectively controlling flow of carbon dioxide and water into said second chamber, the flow of carbon dioxide and water being selectively controlled independently of each other by said control means, at least one of said carbon dioxide and water being received in said second chamber as said propellant fluid is discharged from said first chamber, said control means permitting said water and carbon dioxide to be held in said second chamber for a sufficient time to form carbonated water, the carbon dioxide being completely absorbed in the water when said carbonated water is formed thereby avoiding formation of a headspace in said second chamber, and said control means selectively controlling discharge of carbonated water formed from said water and carbon dioxide from said second chamber.

4,808,349

NON-VENTING, SPRING ASSISTED MICROGRAVITY CARBONATOR AND METHOD OF OPERATION

Arthur G. Rudick, Marietta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Feb. 12, 1988, Ser. No. 155,607
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—82 **16 Claims**



1. A carbonator for producing carbonated water comprising:

tank means for holding at least carbon dioxide gas and carbonated water;

a movable piston separating said tank means into a first and second chamber, said first chamber receiving carbon dioxide gas at a predetermined pressure;

means for selectively permitting communication between said first chamber and said second chamber, said means for permitting communication having an opened and closed position, said opened position permitting said carbon dioxide gas in said first chamber to move to said second chamber, said closed position preventing communication between said first and second chamber;

means for urging said piston to move so as to reduce volume of said first chamber when said means for permitting communication is opened, movement of said piston forcing said carbon dioxide gas from said first chamber to said second chamber;

conduit means introducing water at a selected pressure into said second chamber, said conduit means introducing said water into said second chamber after said second chamber has been filled with carbon dioxide gas at a predetermined pressure, said water and said carbon dioxide gas forming carbonated water due to said pressures of said water and said carbon dioxide gas; and

second conduit means discharging said carbonated water from said second chamber, said movable piston simultaneously moving with said discharging in order to reduce volume of said second chamber in order that said carbon dioxide gas remains in solution, said first chamber simultaneously receiving carbon dioxide gas as said movable piston is moving to reduce the volume of said second chamber.

11. A method for carbonating water comprising the steps of:

providing a carbonator having a movable piston which separates said carbonator into a first and second chamber;

supplying carbon dioxide gas to the first chamber;

placing said first and second chambers in communication such that pressure within each chamber is equalized;

moving said piston to reduce volume of said first chamber;

forcing said carbon dioxide gas from said first chamber to said second chamber in response to movement of said piston;

terminating communication between said chambers after said first chamber is filled with carbon dioxide gas, said carbon dioxide gas being at a predetermined pressure;

introducing water into said second chamber after said terminating, said water being at a selected pressure;

mixing said carbon dioxide gas and said water in said second chamber to form carbonated water, said mixing being accomplished due to said pressure of said water and said carbon dioxide gas;

discharging said carbonated water from said second chamber;

moving said piston simultaneously with said discharging to reduce volume of said second chamber;

maintaining undischarged carbonated water in said second chamber in solution due to said moving of said piston to reduce the volume of said second chamber; and

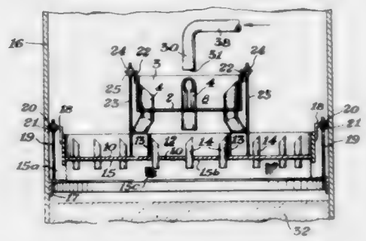
refilling said first chamber with carbon dioxide gas simultaneously with said moving of said piston to reduce the volume of said second chamber.

4,808,350

LIQUID DISTRIBUTOR APPARATUS FOR HIGH TURNDOWN RATIOS AND MINIMUM FOULING

Lanny A. Robbins, and George R. Killat, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 26, 1987, Ser. No. 89,718
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—96 **28 Claims**



1. In an apparatus for distributing a downflowing liquid in a vapor-liquid contact column, the apparatus comprising a lower distributor unit comprising a plate spaced above a packed bed with means for distributing fluid flow uniformly across the packed bed of the vapor-liquid contact column, an improvement comprising:

a predistributor unit comprising a plate and an upstanding wall member fastened along one edge to the plate and defining the periphery of the plate such that an open-top compartment is formed, a plurality of drip tubes being installed in the compartment, the drip tubes being defined by upstanding tubular members which extend above and below the plate and which are fastened to the plate, each drip tube having at least one lengthwise slot therein that extends from the plate to the top of the drip tube;

the predistributor unit being mounted horizontally inside the column above the packed bed, such that the predistributor unit is oriented above the lower distributor unit, and at least one of the predistributor unit's drip tubes is in liquid connection with the lower distributor unit;

wherein the downflowing liquid enters the predistributor unit, flows downwardly through the drip tubes therein into the lower distributor unit, and then flows downwardly onto the packed bed.

4,808,351

PROCESS FOR MANUFACTURING A MOLDED PROSTHETIC DEVICE

Debi P. Mukherjee, Brookfield, Conn., and Kurt A. Feichtinger, Ringwood, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 25, 1985, Ser. No. 715,547
Int. Cl.[4] B29C *45/00, 71/02*
U.S. Cl. 264—22 **4 Claims**

1. An improved process for manufacturing an annealed prosthetic device from a synthetic bioabsorbable polymer containing a glycolic acid ester linkage comprising placing a solid amount of the polymer in a molding machine; melting

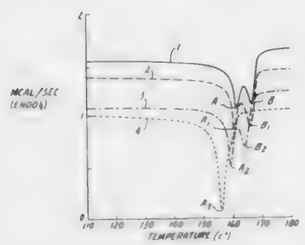
said polymer by subjecting it to a temperature of from about 240° to 255° C.; transporting the polymer melt to an orifice; injecting said melt from said orifice into a closed mold cavity; holding said polymer in said mold cavity; removing the molded prosthetic device from said cavity; and annealing said device, the improvement comprising holding said polymer in said mold cavity for less than about one minute at a temperature from above 70° to about 90° C. whereby a dimensional change of said device during the annealing step is less than about 0.48 percent.

4,808,352

CRYSTALLINE VINYLIDENE FLUORIDE

Sadersheo K. Bhateja, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 3, 1985, Ser. No. 783,410
Int. Cl.[4] B29C 71/04
U.S. Cl. 264—22 **17 Claims**



7. A method of enhancing the piezoelectric and pyroelectric coefficient of poly(vinylidene fluoride) film comprising the steps of

(a) providing an essentially unoriented form of said film;

(b) irradiating said film with high energy radiation for a time sufficient to induce an increase in crystallinity, in said film, siad irradiation occurring at a temperature between the glass transition temperature and the melting temperature of said film;

(c) orienting said film in at least a first direction parallel to a first major axis of said film; and

(d) poling said film.

4,808,353

PROCESS FOR PREPARING AN ARTIFICIAL BIOLOGICAL MEMBRANE

Masao Namba, Yokohama; Tatsuo Kinoshita, Kanagawa, and Mineo Watase, Shizuoka, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 534,235, Sep. 21, 1983, abandoned. This application Jan. 8, 1986, Ser. No. 816,966
Claims priority, application Japan, Sep. 24, 1982, 57-164870
Int. Cl.[4] C08J 5/00, 3/00, 3/18
U.S. Cl. 264—28 **5 Claims**

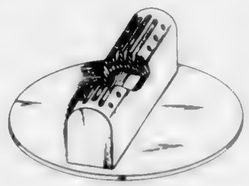
1. A process for preparing an artificial biological membrane suitable for surgical use comprising polyvinyl alcohol selected from the group consisting of diaphragm, pericardium, dura mater and membrane for the prevention of adhesion between living tissues, which process comprises a freezing step of freezing an aqueous solution containing 6 wt% or more of a polyvinyl alcohol having a degree of hydrolysis of not less than 95 mol% and an average polymerization degree of not less than 700 at a temperature of not higher than −3° C. to obtain a frozen mass, a thawing step of thawing said frozen mass at a temperature of not higher than 55° C., and at least one additional cyclic processing step including said freezing and thawing steps, said aqueous solution of said polyvinyl alcohol containing at least one of an inorganic substance and an organic substance which does not hinder gelation of said polyvinyl alcohol.

4,808,354

METHOD OF MAKING ELECTRICAL DISCHARGE MACHINING ELECTRODES

Richard C. Nickols, East Hartford, Conn., assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed Jun. 22, 1987, Ser. No. 64,358
Int. Cl.[4] B29C 43/02, 45/00; B29L 31/34
U.S. Cl. 264—29.5 **6 Claims**



1. A method of making an electrical discharge machining electrode comprising:

(a) forming an electrode shell having walls by molding with minimized void formation a mixture of carbon particles in which the carbon particles range in size from about 1 micron to about 20 microns, with a mean particle size from about 10 microns to about 12 microns, and an organic binder into a shell having all said walls with a thickness of about 0.05 inch to 0.3 inch which is thin enough to allow gas to escape from all of said walls during the thermal processing of step b without deforming the shell;

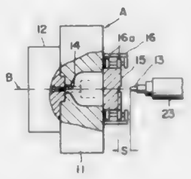
(b) thermally processing said shell to convert the carbon-organic binder mixture into a unitary graphite electrical discharge machining electrode.

4,808,355

METHOD OF CHANGING THE RESIN IN AN INJECTION MOLDING MACHINE USING A NOZZLE TOUCH PLATE

Takashi Kamiyama; Osamu Segawa, and Mitsuaki Eshima, all of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 903,216, Sep. 2, 1986, abandoned. This application May 5, 1988, Ser. No. 193,132
Claims priority, application Japan, Sep. 9, 1985, 60-137890[U]
Int. Cl.[4] B29C 45/24
U.S. Cl. 264—39 **1 Claim**



1. A method of controlling an injection molding machine comprising a stationary plate, a metal mold mounted on one side of said stationary plate, an injection nozzle of an injection cylinder reciprocated toward and away from said metal mold, and a nozzle touch plate provided on another side of said stationary plate to be movable in a direction perpendicular to the direction of reciprocation of said injection nozzle between a retracted position and an advanced position between said metal mold and said injection nozzle, said method comprising the steps of:

holding said touch plate at said retracted position during normal operation of said injection molding machine so as to permit said injection nozzle to inject a resin of one type into said metal mold; and then

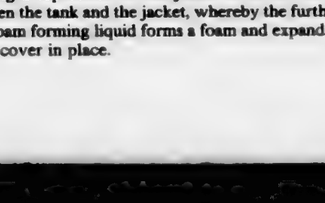
moving said touch plate to said advanced position and causing said injection nozzle to touch against said touch plate while changing the type of said resin increasing the back-pressure in the injection cylinder when said injection nozzle engages against said touch plate.

4,808,356

METHOD FOR INSULATING A WATER HEATER

Eugene L. West, Grand Rapids, and Robert J. Marciakewicz, Plainwell, both of Mich., assignors to Bradford-White Corporation, Philadelphia, Pa.

Filed Jun. 19, 1986, Ser. No. 876,095
Int. Cl.[4] B29C 67/22
U.S. Cl. 264—46.5 **4 Claims**



3. A method of insulating with foam a water heater having an inner water tank and an outer jacket and having control mechanisms mounted on said tank which are intended not to be contacted by said foam, which method comprises;

providing a foaming apron having inner and outer flexible sheets, said sheets being connected to one another at the bottom and being open at the top and along its longitudinally extending end edges,

attaching said apron to an upper portion of said tank and positioning said apron along the wall of said tank and around said control mechanisms mounted on said tank, said apron having sealed cut-out portions protecting said control mechanisms from fluid foam to be introduced between said sheets;

positioning said jacket around said tank and said apron;

separating the inner and outer sheets to facilitate the introduction of foam between said sheets;

causing a removable spacer to contact the top of the tank and the top of the jacket at locations around their peripheries;

introducing a foam forming liquid between the inner and outer flexible sheets in a limited quantity into the space between said tank and said jacket, and directing said foam forming liquid into a lower portion of said space, said limited liquid quantity forming foam being sufficient only to fill a lower portion of said space between said tank and said jacket;

causing said limited quantity of foam partially to solidify in said lower portion of said space;

removing a spacer from the top of the tank and the top of the jacket;

while maintaining the top of the tank and top of the jacket open and free of connection to each other, and with their centered relationship maintained by the thickened foam in the lower portion of said space, introducing an additional quantity of foam forming liquid into said open space, and

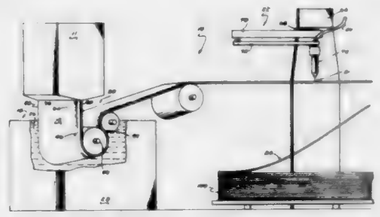
securing a top cover to said jacket to cover the space between the tank and the jacket, whereby the further charge of foam forming liquid forms a foam and expands with the top cover in place.

4,808,357

PROCESS FOR FORMING SHAPED INTERLAYER BLANKS

David P. Bourcier, Ludlow, and Robert A. Esposito, Amherst, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 17, 1987, Ser. No. 121,197
Int. Cl.[4] B29C 47/04, 47/90
U.S. Cl. 264—151 **6 Claims**



1. A process for forming discrete, shaped plastic interlayer blanks comprising the steps of:

(a) extruding thermoplastic polymer melt into an endless, distortable sheet having substantially parallel edges and an integral gradient color band extending along one side graduated in color intensity from relatively deep adjacent one edge of the sheet fading to extinction at a cutoff line laterally of said one edge, the melt forming a region of the sheet laterally of the color band extruding at a greater thickness than the thickness of the melt forming the portion of the sheet containing the color band;

(b) stretching the side of the sheet containing the region formed from the greater thickness melt more than the other side while continuing extrusion in order to shape the sheet into an arcuate form extending in the direction of extrusion, said sheet after shaping having substantially uniform thickness and different radii along each edge, the edge of greater radius being on the side formed from the greater thickness melt;

(c) quenching the sheet to set the polymer;

(d) advancing the shaped sheet to a cutting station; and

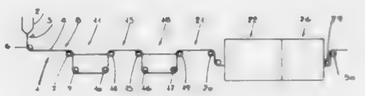
(e) cutting shaped quadrilateral sections out of said sheet having said gradient color band extending along one longitudinal side to form said blanks.

4,808,358

PROCESS TO OBTAIN MOLECULAR ORIENTATIONS IN PERPORATED PLATES MADE OF EXTRUDED PLASTIC MATERIAL

Mario Beretta, Sirtori, Italy, assignor to R D B Plastotecnica S.p.A., Vigano' Brianza, Italy

Filed Apr. 15, 1987, Ser. No. 38,510
Claims priority, application Italy, Aug. 7, 1986, 21443 A/86
Int. Cl.[4] B29C 55/04, 55/14
U.S. Cl. 264—156 **5 Claims**



1. A process to obtain molecular orientations in perforated extruded plastic plates, comprising the following steps:

(a) a first heating at the end of which the plastic material is brought to an extrusion temperature approaching its plasticization temperature;

(b) extruding of the plastic material in the form of a perforated plate;
(c) a first cooling of the perforated plate;
(d) a second heating during which the perforated plate is brought to a longitudinal orientation temperature ranging midway between the extrusion temperature and the temperature of the first cooling step;
(e) longitudinal stretching of the perforating plate during which the molecular orientation of the material located between holes aligned transversely to the plate takes place;
(f) a second cooling at the end of which the plate is brought to a temperature approaching room temperature;
(g) a third heating at the end of which the perforated plate reaches a longitudinal stabilization temperature ranging between the temperature of the second heating and the temperature of the first cooling; and
(h) a third cooling of the perforated plate at a room temperature.

4,808,359

PROCESS FOR THE PREPARATION OF CAST FILM

Theodorus J. van der Molen, Vijlen, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Jul. 30, 1986, Ser. No. 890,606
Claims priority, application Netherlands, Aug. 6, 1985, 8502191
Int. Cl.[4] B29C *47/06, 47/86*
U.S. Cl. 264—171 **16 Claims**

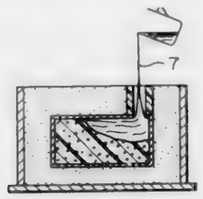
1. Process for the preparation of cast highly monoaxially oriented film comprising the steps of:
(a) melting a polymer feed composition of low density polyethylene having a melt index of from 2 to 100 dg/min;
(b) extruding said molten polymer feed composition through a die gap of 1.5–10 mm in a rectangular die, the temperature of said polymer feed composition at the die being less than 200° C.; and
(c) thereafter cooling said extruded composition to solidify the polymer;
wherein said film exhibits an x-ray diffraction analysis of the 110 reflection band having a max/min intensity ratio of at least 20, and an angle α of at most 20° between the average orientation direction of the polymer molecules and the film extrusion direction.

4,808,360

METHOD OF PRODUCING MOLD FOR SLIP CASTING AND METHOD OF MOLDING SLIP CASTING

Tatsuo Natori, Kashiwa; Takashi Shimaguchi, Ibaraki; Toshihiro Yamada, Ibaraki, and Kazuaki Yokoi, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 27, 1987, Ser. No. 43,178
Claims priority, application Japan, Jul. 28, 1986, 61-175622
Int. Cl.[4] B28B *1/26, 7/34;* B29C *41/16*
U.S. Cl. 264—221 **29 Claims**



1. A method of producing a mold having a cavity for slip casting comprising the steps of:
preparing a pattern made of an organic material soluble in a predetermined solvent A;
providing a coating on at least a portion of the surface of said pattern, which coating is made of material soluble in another predetermined solvent B, wherein said solvent B is at least one material selected from the group consisting of water, alcohol, and acetone, but insoluble in said solvent A;
surrounding said pattern and said coating with a molding material;
contacting said pattern with said solvent A so as to contract said pattern; and
removing the material of said pattern to the outside of said molding material; thereby forming a mold cavity;
wherein said mold material contains a binder soluble in said solvent B.

4,808,361

METHOD FOR FORMING AN IN-MOLD COATED FIBER REINFORCED PART

Jose' M. Castro; Elliott J. Straus, and Henry Shanoski, all of Akron, Ohio, assignors to Gencorp Inc., Akron, Ohio

Filed Mar. 16, 1987, Ser. No. 26,414
Int. Cl.[4] B29C *43/20*
U.S. Cl. 264—255 **2 Claims**

1. In a method of forming an in-mold coated fiber reinforced part in a heated compression mold having two parts forming a cavity for molding, said method comprising placing a curable glass fiber reinforced thermosetting resin composition on one of said heated halves of said mold and applying heat and pressure to form a glass-fiber reinforced part, applying a thermosetting in-mold coating composition to at least one surface of said part and applying heat and pressure to said coated part, and removing said coated fiber reinforced part from the mold, the improvement comprising:
(1) forming a glass fiber reinforced part by closing the mold with a pressure sufficient to force the glass fiber reinforced thermosetting resin composition to flow between the mold parts to conform to the configuration defined by the closed mold at a pressure of from about 820 to about 1200 psi for from about 5 to about 12 seconds and subsequently reducing the pressure to from about 80 to about 330 psi for from about 30 to about 100 seconds to effect about 90% cure of said composition, all at a temperature of from about 147° to about 151° C.,
(2) applying a thermosetting in-mold coating composition on the outer surface of the fiber reinforced part and applying pressure and completing the cure of said fiber reinforced part, and
(3) maintaining the difference in temperature between nonuniformities across the molding surfaces of said mold halves at less than about 5° C. during the molding and curing steps.

4,808,362

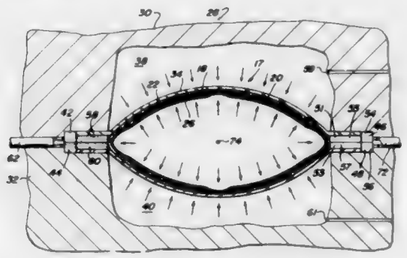
HOLLOW REINFORCED FIBER STRUCTURE FORMED BY RESIN TRANSFER MOLDING

Richard B. Freeman, Wilmington, Del., assignor to The Budd Company, Troy, Mich.

Filed Jun. 4, 1987, Ser. No. 58,106
Int. Cl.[4] B29C *43/18*
U.S. Cl. 264—257 **10 Claims**

1. A method of forming a hollow fiber structure comprising the steps of:
a. providing a two-piece mold in open positions having inner cavity surfaces conforming to said fiber structure to be formed;
b. providing a flexible expandable member
c. placing fiber material around said expandable member;
d. inserting expandable means in said mold and securing at the mold surfaces outside the mold cavity;
e. inserting said fiber material with said expandable member into said mold in proximity to said expandable means to position said fiber material between said expandable member and said expandable means;

f. closing said mold;
g. applying pressure to force said expandable means against said fiber reinforced material;
h. injecting resin into said fiber material,



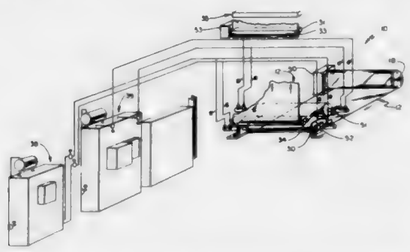
i. decreasing the pressure applied to said expandable means and applying pressure to expand said expandable member and move said fiber material to conform to said inner cavity surfaces of said mold, and
j. curing said fiber material to form said hollow fiber structure.

4,808,363

COMPOSITE WEB DECURLING APPARATUS AND METHOD

Joseph C. Walsh, Longmont, and James W. Jensen, Boulder, both of Colo., assignors to Adolph Coors Company, Golden, Colo.

Filed Sep. 4, 1987, Ser. No. 93,808
Int. Cl.[4] B29C *55/02, 53/18, 61/00, 61/02*
U.S. Cl. 264—288.4 **9 Claims**



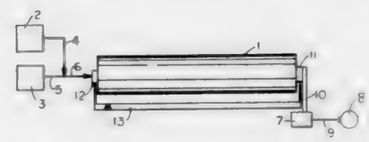
1. A method of eliminating the curl from a laminated composite web of the type having a relatively thin film layer adhered to a relatively thick paper layer for eliminating the tendency of the web to curl toward the film layer side thereof subsequent to being stored on a spool with the film layer of the web positioned inwardly of the paper layer of the web, the film layer and paper layer each having an exposed surface and an attached surface said attached surfaces of said layers being adhered together, said paper layer having an outwardly positioned thickness portion which terminates at said exposed surface thereof, an inwardly positioned thickness portion which terminates at said attached surface thereof and an intermediately positioned thickness portion positioned between said outwardly positioned thickness portion and said inwardly positioned thickness portion, said outwardly positioned thickness portion being relatively stretched, said inwardly positioned thickness portion being relatively shrunk, said intermediately positioned thickness portion being relatively unstretched and unshrunk, said film layer being relatively shrunk through storage of the composite web on the spool, comprising the steps of:
(a) drawing the web from an unwind spool at a relatively constant rate;
(b) at a first station positioned downstream of said unwind spool, heating the film side of the web to a temperature whereat the web becomes noneslastically deformable;
(c) at a second station positioned immediately downstream of said first station, applying heat to the exposed surface of the paper layer sufficient to cause relative shrinking of the outer thickness portion thereof and relative stretching of the inner thickness portion thereof whereby the tendency of the web to curl inwardly is eliminated.

4,808,364

ROTATIONAL POLYMERIZATION MOLDING

Harry W. Blust, Hockessin, and Tuyen T. Nguyen, Newark, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 593,007, Mar. 23, 1984, abandoned. This application Dec. 20, 1985, Ser. No. 811,189
Int. Cl.[4] B29C *41/04*
U.S. Cl. 264—310 **9 Claims**



1. A method of forming rigid cross-linked polymeric solid articles having one or more chambers therein from a liquid monomer solution comprising:
(a) providing a liquid monomer solution, and rotational molding means, said molding means having an inner chamber wall defining an inner chamber, said liquid monomer solution comprising tantalum catalyst, dicyclopentadiene, and activator of a metathesis-catalyst system, said tantalum catalyst comprising tantalum said solution not comprising an amount of moderator effective to delay substantial polymerization ten seconds or more, said solution being effective to allow distribution of said liquid monomer within said rotational molding means to substantially the shape of the article being formed in from ten seconds to one minute and prior to any substantial rise in viscosity of said liquid monomer due to polymerization;
(b) conveying said solution into said rotational molding means, the amount of said solution within said molding means being insufficient to fill said inner chamber;
(c) rotating said rotational molding means, the rate of rotation being at least sufficient to substantially evenly distribute said solution along said inner chamber wall prior to a substantial increase in viscosity of said solution due to polymerization; thereby forming at least one chamber in said solution;
(d) continuing said rotation while said solution polymerizes to form a rigid solid article of cross-linked polymer comprising polymerized units of dicyclopentadiene, said article having at least one chamber therein.

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4,808,345

METHOD FOR REDUCING EDGE CURL ON GREEN SHEETS

Benedikt M. J. Kellner, Wappingers Falls, and Salvatore J. Scillia, Marlboro, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 923,860, Oct. 24, 1986, abandoned. This application May 26, 1988, Ser. No. 199,214
Int. Cl.[4] B29C 71/00; C04B 41/81; F26B 21/08; F27D 7/02
U.S. Cl. 264—343 13 Claims

1. A process for reducing edge curl in ceramic green sheets comprising the steps of:

(a) stacking at least two of said ceramic green sheets and placing said stacked ceramic green sheets into a treatment chamber maintained substantially at a selected temperature and at a selected high relative humidity of between 90% and 95% for a sufficient time to relax the stresses in said ceramic green sheets placed in said chamber and to saturate said ceramic green sheets with water; and

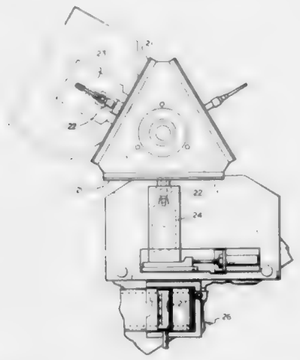
(b) placing said saturated ceramic green sheets in a controlled enviroment at substantially a desired temperature at a relative humidity lower than said high relative humidity for a period of time required to remove from said ceramic green sheets the excess water picked up during step (a) to thereby cause said ceramic green sheets to become sufficiently rigid and free of edge curl such that subsequent machine handling of said ceramic green sheets by automated equipment is not hindered by the form of said ceramic green sheets.

4,808,366

IN-MOLD LABELING OF INJECTION BLOW MOLDED HOLLOW PLASTIC ARTICLES

Ronald S. Kaminski, Bowling Green; William F. Sido, and Casimir W. Nowicki, both of Sylvania, all of Ohio, assignors to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Filed Oct. 1, 1987, Ser. No. 103,313
Int. Cl.[4] B29C 49/06, 49/24
U.S. Cl. 264—509 13 Claims



1. A method of applying a label on a container which is made by injection molding a parison and thereafter blowing a parison to the confines of the mold which comprises,

providing a mold which has an open end when closed about a core and having a parison thereon,

positioning a label adjacent the open end of the closed blow mold in which a core rod is positioned having a parison thereon,

wrapping the label about a vacuum mandrel,

inserting the vacuum mandrel with the label thereon into the open end of the closed mold,

releasing vacuum on the vacuum mandrel such that the label is released within the mold,

removing the mandrel from within the open end of the closed mold,

closing the end of the mold,

and blowing the parison outwardly to provide a container having a label thereon.

4,808,367

PROCESS FOR PREPARATION OF A SYNTHETIC FIBER BUNDLE

Shiro Hosona, Iwakuni; Masatoshi Kashiwagi, Yuu, and Hiroyuki Arita, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, ltd., Tokyo, Japan

Filed Sep. 24, 1985, Ser. No. 779,434
Claims priority, application Japan, Sep. 25, 1984, 59-198669
Int. Cl.[4] B29B 7/14
U.S. Cl. 264—555 17 Claims



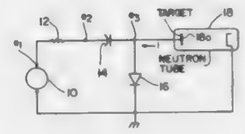
1. A process for the preparation of a synthetic fiber bundle, which comprises (1) melt-kneading (a) a non-water-swelling or a water-insoluble thermoplastic resin, (b) water and (c) an assistant for assisting dispersion of water into the thermoplastic resin in an extruder having a screw groove under such conditions that a shearing force does not act in a direction parallel to the direction of said screw groove, but acts two-dimensionally other than in the parallel direction, (2) effecting a phase inversion of the kneaded composition to form a dispersion consisting of a phase of a great number of independent columns of molten resin arranged in the direction of the screw groove and a filling phase of water filling clearance among these columns, and (3) extruding the kneaded composition from an orifice under such conditions that fillshing of water substantially prevented, whereby a fiber bundle in which a great number of fine single filaments having a diameter smaller than 200 μm are gathered substantially in parallel to one another is formed from every orifice hole.

4,808,368

HIGH VOLTAGE SUPPLY FOR NEUTRON TUBES IN WELL LOGGING APPLICATIONS

D. Russell Humphreys, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 15, 1982, Ser. No. 418,150
Int. Cl.[4] G01T 1/18
U.S. Cl. 376—118 7 Claims



1. A neutron well logging system for generating short bursts of neutrons including:

a probe containing a neutron tube having a target electrode,

said tube generating neutrons when a negative voltage exceeding a desired target voltage is applied to said electrode;

high voltage supply means for generating a composite voltage, said voltage comprising a pulse train having a fixed period between adjacent pulses superimposed on a substantial negative DC bias voltage, the negative peak of the voltage exceeding the desired target voltage for a substantially shorter time than the fixed period and the most positive portion of the voltage being less than zero volts; and

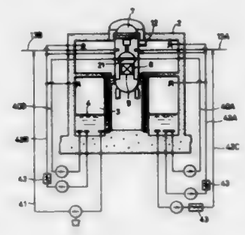
means for connecting the output of said supply means to said target electrode.

4,808,369

EMERGENCY CORE COOLING APPARATUS

Shoso Yamamori; Tetsuo Horiuchi; Kenji Tominaga; Hiroshi Goto, and Satoshi Miura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Engineering Co., Ltd., Ibaraki, both of, Japan

Continuation of Ser. No. 26,842, Mar. 17, 1987. This application May 4, 1988, Ser. No. 188,704
Claims priority, application Japan, Mar. 19, 1986, 61-59169
Int. Cl.[4] G21C 15/18
U.S. Cl. 376—282 20 Claims



1. An emergency core cooling apparatus having a plurality of high-pressure emergency core cooling systems adapted to supply a coolant to the interior of a reactor vessel, and a plurality of low-pressure emergency core cooling systems adapted to supply a coolant to the interior of a core-surrounding cylindrical shroud provided in said reactor vessel, characterized in that the elevation of the coolant discharge ports, which are in said reactor vessel, of all of said high-pressure emergency core cooling systems is higher than that of those, which are in said shroud, of all of said low-pressure emergency cooling systems.

4,808,370

CONNECTION OF A HOT GAS LINE TO THE CORE BARREL OF A GAS-COOLED HIGH-TEMPERATURE NUCLEAR REACTOR

Dieter Stanzebach, and Helmut Swars, both of Bergisch Gladbach, Fed. Rep. of Germany, assignors to Interatom GmbH, Bergisch-Gladbach, Fed. Rep. of Germany

Filed May 21, 1986, Ser. No. 866,060
Claims priority, application Fed. Rep. of Germany, May 23, 1985, 3518609
Int. Cl.[4] G21C 13/04
U.S. Cl. 376—291 6 Claims

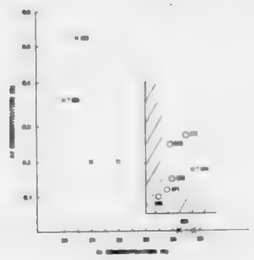
1. Gas-cooled, high-temperature nuclear reactor, comprising a metallic core barrel, a graphite or carbon block lining disposed in said core barrel, a hot gas line including an outer pressure-confining metallic pipe and a ceramic flow guidance pipe, insulation separating said metallic pipe from said ceramic pipe, a stub concentric with said hot gas line, means for detachably connecting said stub to said core barrel, said metallic pipe being tightly disposed in said stub, means for detachably fastening said metallic pipe to said stub, a sleeve, means for detachably fastening said sleeve to said lining, a bellow compensator being disposed in said stub and having one end tightly fastened to said stub and another end, and means for connecting said other end to said sleeve, said ceramic pipe and said sleeve being formed of carbon fiber-reinforced carbon.

4,808,371

EXTERIOR PROTECTIVE MEMBER MADE OF AUSTENITIC STAINLESS STEEL FOR A SHEATHING HEATER ELEMENT

Toshihiko Tsuiuchi; Rikio Numata, both of Kawasaki, and Yoshito Fujiwara, Chigasaki, all of Japan, assignors to Nippon Yakin Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1987, Ser. No. 83,234
Claims priority, application Japan, Nov. 18, 1986, 61-267411
Int. Cl.[4] C22C 38/50
U.S. Cl. 420—54 6 Claims



1. The exterior protective member for sheathing heaters made of an austenitic stainless steel consisting of, by weight, 19 to 23% Ni, from greater than 23% but not more than 25% Cr, not more than 1% Mn, not more than 0.7% Si, not more than 0.3% Ti, not more than 0.03% C, not more than 2% Co., not more than 0.3% Al, not more than 0.03% REM and the balance being Fe and incidental impurities and wherein the Ti/C ratio is more than 5.

4,808,372

IN SITU PROCESS FOR PRODUCING A COMPOSITE CONTAINING REFRACTORY MATERIAL

Michael J. Kocsak, Philadelphia, Pa., and K. Sharvan Kumar, Baltimore, Md., assignors to Drexel University, Philadelphia, Pa.

Filed Jan. 23, 1986, Ser. No. 821,755
Int. Cl.[4] C22C 32/00
U.S. Cl. 420—457 43 Claims

1. An in situ process for producing a composite with improved homogeneity comprising a refractory material dispersed in a matrix, the process comprising

providing a molten composition comprising a matrix liquid;

providing at least one refractory material-forming component selected from the group consisting of refractory boride-forming components and refractory carbide-forming components in the molten composition;

introducing a gas into the molten composition;
providing a reactive component selected from the group consisting of boron containing components and carbonaceous components for reaction with the refractory material-forming component;
whereby the refractory material-forming component reacts with the reactive component in the matrix liquid to form a refractory material dispersed in the matrix liquid; and
cooling the liquid composite to form a solid composite material.

4,808,373

MULTIPLE-SUBSTANCE ALLOY FOR TARGETS OF CATHODE SPUTTERING APPARATUS

Dieter Hoffman, Bruchköbel; Wolf-Dieter Münz; G. A. Holst Siewert, both of Freigericht, and Horst Dietrich, Bieberguemünd, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 20, 1986, Ser. No. 921,235
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1986, 3631830
Int. Cl.[4] C22C 5/02
U.S. Cl. 420—507 3 Claims

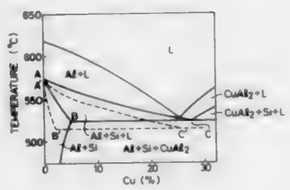
1. A multiple substance alloy used to sputter coat a substrate comprising:
(a) a gold content in an amount of 90 to 98 percentage by weight of the multiple substance alloy; and
(b) a non-gold alloy content comprising a metallic component consisting of aluminum in an amount of 0.5 to 10 percentage by weight of the multiple substance alloy and the balance copper to produce a standard gold color.

4,808,374

METHOD FOR PRODUCING ALUMINUM ALLOY CASTINGS AND THE RESULTING PRODUCT

Yoji Awano; Yoshihiro Shimizu, and Junichi Takahatake, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Continuation of Ser. No. 612,946, May 23, 1984, abandoned.
This application Dec. 22, 1986, Ser. No. 945,241
Claims priority, application Japan, May 23, 1983, 58-90448; Feb. 9, 1984, 59-22401; Mar. 30, 1984, 59-64601
Int. Cl.[4] C22C 1/02
U.S. Cl. 420—537 14 Claims



1. A process for producing an aluminum alloy casting comprising the following steps:
melting an Al—Si or Al—Si—Cu alloy containing 4 to 24 wt % of silicon, iron and other incidental impurities, the balance being aluminum;
heating the melt at a temperature between 825° C. and 950° C; and
pouring the melt into a mold and solidfying the melt.

4,808,375

PROCESS FOR PRODUCING ALUMINIUM-SILICON ALLOY WITH CONTENT OF SILICON OF 2-22% BY MASS

Vadim P. Ivcheukov; Nikolai A. Kalezhsky, both of Leningrad; Eduard A. Isiderov; Viktor G. Sirotenko, both of Riga; Viktor S. Shusterov, Leningrad; Gennady A. Pakhomov, Bratsk; Fedor K. Teplyakov, Bratsk, and Oleg S. Khromovskikh, Bratsk, assignors to L Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Aljuminievoi, Magnievoi I Elektrodnoi Promyshlennosti, Leningrad and Spetsialnoe Konstrukterskoe Bjuro Magnitnoi Gidrodinamiki Instituta Fiziki Akademii Nauk Latvijskoi SSR, Riga, both of, U.S.S.R.

Filed Mar. 4, 1987, Ser. No. 25,166
Int. Cl.[4] C22C 1/02
U.S. Cl. 420—548 3 Claims

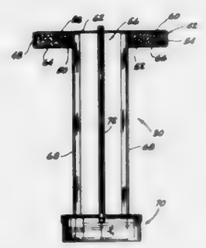
1. A process for producing an aluminum-silicon alloy with a content of silicon of 2-22% by mass comprising charging crystalline silicon onto the sole of a reverberatory furnace, the charged crystalline silicon having a cone shape; casting liquid aluminium onto the sole of said reverberatory furnace to form a molten bath with the silicon at a temperature of from 780° to 820° C.; agitating the resulting aluminum-silicon melt by a shaped jet of the same melt, said melt jet being directed into the base of the cone of the charged crystalline silicon; and casting the resultant melt into a mold to produce an aluminum-silicon alloy in a solid state.

4,808,376

METHOD OF ALLOYING ALUMINUM AND CALCIUM INTO LEAD

Anthony W. Worcester, Oakville; Kai Ravnborg, Herculaneum, both of Mo., and Carlos E. Aguirre, Downingtown, Pa., assignors to The Doe Run Company, Herculaneum, Mo.

Filed Aug. 10, 1987, Ser. No. 83,822
Int. Cl.[4] C22C 11/02, 1/00
U.S. Cl. 420—564 18 Claims



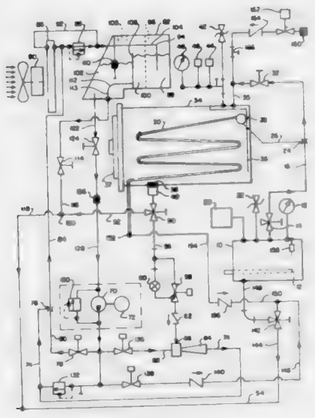
1. A method of alloying calcium and aluminum into lead comprising the step of:
melting lead in a vessel;
introducing simultaneously a mixture of calcium-containing granules and powdered aluminum into the lead at a point under the surface of the molten lead;
holding the calcium-containing granules and powdered aluminum under the surface of the molten lead for sufficient time for alloying to occur.

4,808,377

SELF-CONTAINED, CLOSED LOOP STEAM STERILIZER

Robert W. Childers, Erie; Thomas G. Cook, Fairview; David A. Karle, McKean; Ronald P. Krahe, Girard; George E. Sparber, Lincsville, and Gerald L. Yeaney, Erie, all of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Jul. 26, 1985, Ser. No. 759,539
Int. Cl.[4] A61L 2/06
U.S. Cl. 422—26 5 Claims



1. A steam sterilizer comprising:
a pressure and vacuum sealable sterilizer chamber;
dedicated steam generating means disposed externally of said chamber for supplying steam to said chamber;
means for evacuating said chamber;
water storage means having an inlet and an outlet;
heat exchanging means in communication with the inlet of said water storage means;
a single means for withdrawing a water from said water storage means and for supplying water under pressure to one or more of said stream generating means, said evacuating means and said heat exchanging means; and
said steam generating means, said water storage means, said heat exchanging means and said chamber being disposed in a first closed loop relationship to define at least one in-series pathway through all of the elements of said first closed loop.

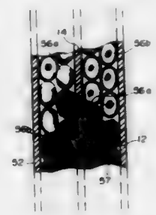
5. In a method of operating a self contained, closed loop steam sterilizer having a sterilizer chamber, integral steam generating means and means surrounding the chamber for transferring heat thereto, which includes the steps of supplying steam from said steam generating means to said heat transfer means for heating said sterilizer chamber and supplying steam to said sterilizer chamber for sterilizing goods located therein, the improvement comprising a method for assuring the return to said steam generating means of any condensate formed in said heat transfer means comprising the steps of:
providing said heat transfer means with a flow path for fluids that assures gravity flow of liquids therein;
orienting said steam generating means to provide a water level therein below the lowermost portion of said heat transfer means; and
providing conduit means between said steam generating means and the uppermost portion of said heat transfer means.

4,808,378

BLOOD OXYGENATOR

Hikaru Nakanishi, Kawasaki; Masahiro Kamiya, Bunkyo; Katsuyuki Kawana, Yokohama, and Hiroaki Ishizuka, Kasukabe, all of Japan, assignors to Senko Medical Instrument Mfg. Co., Ltd., Japan

Continuation of Ser. No. 797,825, Nov. 14, 1985, abandoned.
This application Apr. 10, 1987, Ser. No. 37,117
Int. Cl.[4] A61M 1/14
U.S. Cl. 422—48 10 Claims



1. In a blood oxygenator comprising an elongated hollow housing having an inner peripheral surface defining an elongated chamber; at least one elongated fiber assembly disposed within said chamber along an axis thereof and comprising at least one fiber bundle including a plurality of individual hollow fibers of a microporous membrane, opposite ends of said fiber bundle being sealingly secured to the inner peripheral surface of said housing by a potting material; gas inlet and outlet means connected respectively to opposite ends of said housing and communicating respectively with opposite ends of said hollow fibers so that an oxygenating gas can flow from said gas inlet means to said gas outlet means through the interiors of said hollow fibers; and blood inlet and outlet means formed on said housing at axially spaced-apart locations and communicating with said chamber intermediate the opposite ends of said hollow fibers so that blood can flow from said blood inlet means to said blood outlet means axially through said chamber; the improvement wherein each hollow fiber is composed of a microporous membrane which is only gas-permeable, the fiber assembly comprises at least two layers arranged one upon another, each layer comprising at least one spirally-wound fiber bundle having an ellipsoidal cross section, the direction of spiral winding of the fiber bundles in adjacent layers being such that they criss-cross each other, the size of the fibers being such that first hollow spaces are formed along the fibers between adjacent fibers composing the bundle, the size of the bundles being such that second hollow spaces are formed along the fiber bundles between adjacent windings of the fiber bundles and third hollow spaces are formed along the outermost fiber bundle between said outermost bundle and said inner peripheral surface of said elongated hollow housing, the outermost bundle making sealing contact with the inner peripheral surface so as to prevent direct flow of blood along said inner peripheral surface, the second and the third hollow spaces enabling the blood supplied to said elongated chamber to flow therethrough and to be delivered to each of the first hollow spaces formed between the fibers.

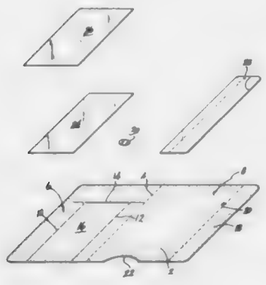
4,808,379

DEVICE FOR OBTAINING STOOL SAMPLES AND DETECTING OCCULT BLOOD

Stephen C. Wardlaw, 128 Sunset Hill Dr., Branford, Conn. 06405, and Robert A. Levine, 31 Pilgrim Ln., Guilford, Conn. 06437

Filed Feb. 8, 1985, Ser. No. 699,748
The portion of the term of this patent subsequent to Feb. 14, 2006, has been disclaimed.
Int. Cl.[4] G01N *21/78, 33/72*
U.S. Cl. 422—56 2 Claims





1. A stool sampling device in the form of a multilayered pliant product, said device comprising:

(a) an impermeable pliant sheet divided generally into first and second halves;

(b) means forming an access door in said first half of said impermeable sheet which is operable to create an opening therein;

(c) a stool receptor sheet adhesively secured to said first half of said impermeable sheet and overlying said access door, said receptor sheet being impregnated with a guaiac reagent which reacts with blood constituents when subjected to an oxidizing developer reagent to cause the guaiac reagent to undergo a characteristic color change;

(d) a performance/control monitor disposed on said second half of said impermeable sheet spaced apart from said receptor sheet, said performance/control monitor comprising a reactant which will, when it is in contact with said guaiac reagent while being subjected to an oxidizing developer reagent, react with the guaiac reagent and cause said guaiac reagent to undergo its characteristic color change, said monitor being positioned so that it will be brought into contact with said receptor sheet only when said impermeable sheet is folded so as to bring said first and second halves into face-to-face contact with each other;

(e) means associated with said impermeable sheet to hold said monitor in contact with said receptor sheet when said first and second halves of said impermeable sheet are thus brought into face-to-face contact; and

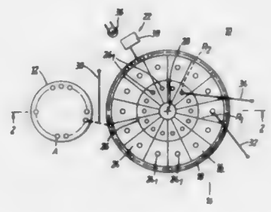
(f) a cover sheet overlying said impermeable sheet, said receptor sheet, and said monitor, said cover sheet including means defining openings therein positioned so as to allow deposition of stool on said receptor sheet through said openings, and said cover sheet being peelably removable from said impermeable sheet.

4,808,380

AUTOMATIC CHEMICAL ANALYZING APPARATUS

Tomiharu Mieskune, Otawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Feb. 24, 1987, Ser. No. 17,614
Claims priority, application Japan, Feb. 21, 1986, 61-35042
Int. Cl.[4] G01N *35/04*
U.S. Cl. 422—64 2 Claims



1. An automatic chemical analysis apparatus consisting essentially of:

a plurality of reaction cuvettes each adapted to contain a sample to be analyzed, each sample corresponding to a predetermined test item, said cuvettes arranged in an annular array;

means for advancing said reaction cuvettes successively along a reaction line defined by said annular cuvettes array;

a plurality of reagent containers each containing a different reagent solutoin, said reagent containers being mounted on concentric turntables disposed concentrically inside of said cuvettes array;

means for dispensing a selected reagent directly from a selected of any of said reagent containers mounted on said concentric turntables to a selected reaction cuvette of the annular array surrounding said selected reagent container in correspondence to the test item of the sample contained in the selected cuvette when said selected cuvette is positioned at a reagent dispensing position; and

photometric means disposed adjacent said annular array which concentrically surrounds said concentric turntables on which said reagent containers are mounted for optically measuring the reaction products of each of said plurality of reaction cuvettes.

4,808,381

FLUID TRANSFER DEVICE

Gordon L. McGregor, Wilmington, Del., and David A. White, Folcroft, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 494,300, May 13, 1983, abandoned. This application Aug. 1, 1983, Ser. No. 519,099
The portion of the term of this patent subsequent to Apr. 28, 2003, has been disclaimed.
Int. Cl.[4] G01N *1/10*
U.S. Cl. 422—100 5 Claims

1. A device for facilitating the transfer of the contents of a tubular receptacle having an axis to a fluid suction member, the suction member having a suction chamber and stem communicating with the chamber, the receptacle having an open end sealably closed by an injectable closure, said device comprising:

a cannula having an axis and adapted to pierce a closure and having a passageway adapted to pass

a suction member stem through the closure and vent the interior of 9 receptacle to the atmosphere,

the cannula having an outer shroud with an axis, said shroud adapted to slide over an open receptacle end to guide the cannula during piercing,

the cannula having a pointed tip defined by a generally planar cut slanted to the cannula axis to form an acute angle for piercing the closure,

the cannula being positioned parallel to and off-center from the shroud axis in a position opposite to the direction of the taper of the point of the cannula to compensate for the sideways movement created during piercing the closure and to cause the cannula tip to be located approximately on the receptacle axis after piercing.

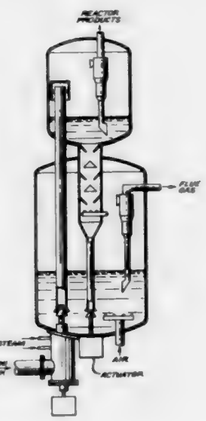


4,808,382

PROCESS FOR MIXING CRACKING CATALYST WITH A FLUID HYDROCARBON

Robert R. Cartmell, Crown Point, Ind., and Carl J. Horecky, Elmhurst, Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 934,746, Nov. 25, 1986, Pat. No. 4,711,766, which is a division of Ser. No. 629,070, Jul. 9, 1984, Pat. No. 4,624,836. This application Aug. 28, 1987, Ser. No. 90,534
Int. Cl.[4] F27B *15/08, 15/02;* B01J *8/08;* G65D *7/00*
U.S. Cl. 422—140 4 Claims



1. A process for immediately and intimately mixing a fluidizable cracking catalyst with a fluid hydrocarbon in a riser reactor situated within a chamber containing said cracking catalyst comprising the steps of:

(a) passing a fluid hydrocarbon feedstock through a plug valve having: (i) a generally upright tubular valve stem, adapted to carry the feedstock (ii) a hollow plug secured to said valve stem which is engageable with a means defining an access opening at the upstream end of said riser reactor;

(b) retracting said plug valve from said means defining an access opening and aspirating said catalyst into said riser by the flow of the hydrocarbon feedstock into the riser, and moving said plug valve in a reciprocating fashion to permit and control the flow of the cracking catalyst from said chamber to said access opening into said riser reactor;

(c) atomizing the fluid hydrocarbon feedstock through a nozzle means secured to said plug valve prior to passing the feedstock to the riser reactor and mixing with the cracking catalyst; and

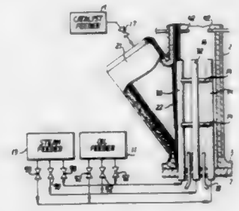
(d) passing a bleed medium through a first bleed medium conduit into an upper annular compartment defined by a stationary guide tube positioned concentrically and externally around a portion of said tubular valve stem and through a second bleed medium conduit into a lower annular compartment defined by said stationary guide tube positioned concentrically and externally around a portion of said tubular valve stem wherein said annular compartments are separated by at least one bushing, and wherein said upper annular compartment is bounded at its upper end by an upper bushing, wherein said lower annular comartment is bounded at its lower end by a lower bushing.

4,808,383

FCC REACTOR MULTI-FEED NOZZLE SYSTEM

Frank M. Buyan, Yardley, Pa., and Mark S. Ross, Lawrenceville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 615,485, May 30, 1985, Pat. No. 4,650,566. This application Nov. 4, 1985, Ser. No. 794,801
Int. Cl.[4] B01J *8/18*
U.S. Cl. 422—140 6 Claims



1. An apparatus for feeding oil, steam and catalyst to a riser for the fluid catalytic cracking of a hydrocarbon feed comprising:

a riser formed as a vertically disposed elongated tubular conduit having an upstream end and a downstream end, said upstream end feeding into a reactor vessel;

a plurality of upwardly extending nozzles spaced about a lower portion of said riser;

means for feeding catalyst to said downstream end of the riser;

means for feeding oil and steam into a lower end of each of said nozzles; and

means for separately controlling the flow rate of oil and steam into each of said nozzles independent of the flow rate of oil and steam into others of said nozzles to obtain a substantially uniform catalyst to oil ratio across a crossection of said riser.

4,806,384

RECOVERY OF TUNGSTEN, SCANDIUM, IRON, AND MANGANESE FROM TUNGSTEN BEARING MATERIAL

Clarence D. Vanderpool, Towanda; Judith A. Ladd, Sayre; Martin B. MacInnis, Towanda, and Mary A. Fedorchak, Rome, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 877,566, Jun. 23, 1986, abandoned. This application Dec. 21, 1987, Ser. No. 145,634
The portion of the term of this patent subsequent to Nov. 25, 2003, has been disclaimed.
Int. Cl.[4] C01G 41/00
U.S. Cl. 423—21.1 20 Claims

1. A process for separating tungsten, from scandium, iron, and manganese in tungsten bearing material, said process comprising:

(a) digesting said material in sufficient sulfuric acid at a temperature of at least about 80° C. for a sufficient time in the presence of coal as a reducing agent to form a digestion solution containing the major portion of the scandium, iron and manganese and a digestion residue containing the major portion of the tungsten; and

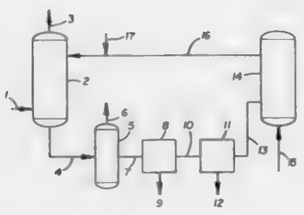
(b) separating said digestion solution from said digestion residue.

4,806,385

PROCESS FOR THE REMOVAL OF H_2S FROM FLUID STREAMS USING A WATER SOLUBLE POLYMERIC CHELATE OF AN OXIDIZING POLYVALENT METAL

Robert R. Grinstead, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

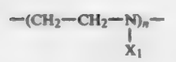
Continuation-in-part of Ser. No. 837,926, Mar. 10, 1986. This application Feb. 18, 1987, Ser. No. 15,906
Int. Cl.[4] C01B 17/16, 31/20, 11/02
U.S. Cl. 423—226 7 Claims



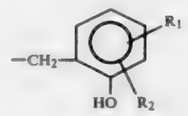
1. A cyclic process for the removal of H_2S from a gas stream comprising H_2S, which process comprises:

(A) contacting the gas stream in a contacting zone with an aqueous reaction solution at between about 10° and 90° C. for a time sufficient to oxidize $S^=$ to elemental sulfur the reaction solution itself consisting of an amount of water-soluble organic polymeric chelate effective to oxidize the $S^=$ to elemental sulfur containing an oxidizing polyvalent metal selected from an organic polymeric chelate having a molecular weight of between about 1,000 and 500,000 daltons of the formula:

(i)

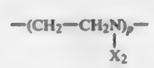


wherein X_1 in each polymer unit is independently selected from —H or from a substituent R— selected from —CH_2COOH, —CH_2CH_2COOH, —CH_2—P(=O) $(OH)_2$, or

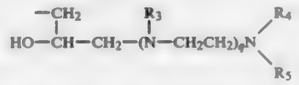


wherein R_1 and R_2 are each independently —CH_3, —SO_3H, —Cl, —H, or —COOH and n is an integer between about 5 and 20,000;

(ii)

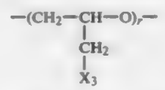


wherein X_2 in each polymer unit is selected from —H or a substituent selected from —$CH_2CH(OH)CH_2OH$, —$CH_2CH(OH)CH_2Cl$ or

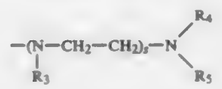


wherein R_3, R_4 and R_5 are each independently selected from R as defined hereinabove, p is an integer between about 5 and 20,000; and q is an integer selected from 0, 1, 2, 3 or 4;

(iii)

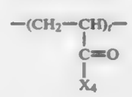


wherein X_3 in each polymer unit is independently selected from —OH, —Cl or a substituent:

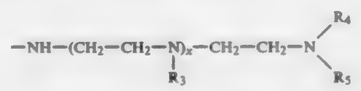


wherein R_3, R_4 and R_5 are as defined hereinabove; r is an integer between about 10 and 20,000, and s is an integer between about 1 and 4;

(iv)

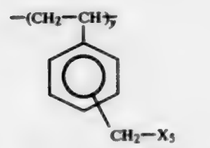


wherein X_4 in each polymer unit is independently selected from —OH, —OCH_3, —OCH_2CH_3 or a substituent:

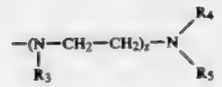


wherein R_3, R_4 and R_5 are as defined hereinabove, t is an integer between about 10 and 20,000; and x is an integer between 1 and 4;

(v)

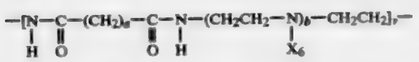


wherein X_5 in each polymer unit is independently selected from —OH, —Cl or a substituent:

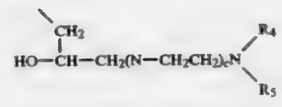


wherein R_3, R_4 and R_5 are as defined hereinabove; y is an integer between about 10 and 20,000, and z is an integer between about 1 and 4;

(vi)

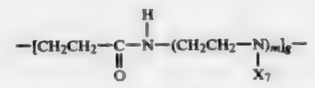


wherein X_6 in each polymer unit is independently selected from —$CH_2CH(OH)CH_2OH$, —$CH_2CH(OH)CH_2Cl$, or

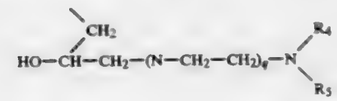


wherein v is between about 10 to 10,000, a is 6, b is 1 to 4, c is 1 to 4; and R_3, R_4 and R_5 are as defined hereinabove;

(vii)

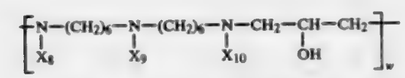


wherein X_7 in each polymer unit is independently selected from —H or a substituent selected from —$CH_2CH(OH)CH_2OH$, —$CH_2CH(OH)CH_2Cl$, or

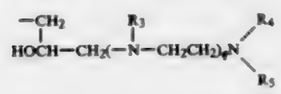


wherein m is an integer from 1 to 4, g is between 10 and 10,000, q and R_3, R_4 and R_5 are as defined hereinabove; or

(viii)



wherein X_8, X_9 and X_{10} in each polymer unit are each independently selected from —H or a substiment selected from —$CH_2CH(OH)CH_2Cl$, —$CH_2CH(OH)CH_2OH$, or



q, R_3, R_4 and R_5 are defined hereinabove, w is between about 10 and 10,000; or

(ix) mixtures of polymeric chelates (i) to (viii); with the proviso that the overall ratio of —H, —OCH_3, —OCH_2CH_3, —Cl, or —OH to substituent in each of X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9 or X_{10} in each polymeric chelant (i to viii) hereinabove is between about 10/90 and 90/10;

(B) separating the gas stream and the resulting aqueous phase containing sulfur and polymeric chelated-metal complex produced in step (A);

(C) separating the sulfur from the aqueous phase separated in step (B);

(D) treating the aqueous solution produced in step (C) by membrane separation means effective to remove water and other monomeric reaction products present having a molecular weight of less than 500 daltons from the aqueous solution;

(E) contacting the concentrated aqueous solution produced in step (D) with an oxidizing agent under reaction conditions effective to oxidize the polyvalent metal in chelate form; and

(F) recycling the concentrated aqueous solution from step (E) to the contacting zone of step (A).

4,808,386

PARTIAL OXIDATION OF SULFUR-CONTAINING SOLID CARBONACEOUS FUEL

Mitri S. Najjar, Hopewell Junction, and Roger J. Corbeels, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 20,307, Mar. 2, 1987, which is a continuation-in-part of Ser. No. 62,018, Jun. 15, 1987. This application Sep. 24, 1987, Ser. No. 100,673
Int. Cl.[4] B01D 53/34; C10J 3/46
U.S. Cl. 423—226 25 Claims

1. In a process for the simultaneous partial oxidation and desulfurization of a sulfur and silicate-containing comminuted solid carbonaceous fuel comprising (basis solid fuel) about 0.2 to 8.0 wt. % sulfur and about 0.1 to 30 wt. % of silicate compounds including iron silicate and calcium silicate the improvement comprising: (1) reacting in the free-flow unobstructed down-flowing vertical refractory lined reaction zone of a partial oxidation gas generator a feed mixture comprising said solid carbonaceous fuel entrained in a gaseous or liquid carrier and supplemental iron-containing material with a controlled amount of free-oxygen containing gas and a temperature moderator so that an equilibrium oxygen concentration is provided in the gas phase in the reaction zone with a partial pressure which is less than about 10^{-7} atmosphere, the O/C atomic ratio is in the range of about 0.5 to 1.3, the H_2O/solid carbonaceous fuel weight ratio in the range of about 0.2 to 1.0, the total atoms of iron in the reaction zone is in the range of about 1.3 to 3.0 times the atoms of sulfur in the solid carbonaceous fuel plus about 0.5 to 2.0 times the atoms of silicon in the ash, and about 70 to 99.8 wt. % of the carbon in said solid carbonaceous fuel is converted into carbon oxides; thereby producing a raw effluent gas mixture which is discharged through a central vertical outlet in the bottom of said reaction zone, said effluent gas stream comprising H_2, CO, CO_2, at least one gas selected from the group consisting of H_2O, N_2, CH_4, and A, less than about 0.6 mole % of H_2S+COS, and entrained molten slag in admixture with iron oxysulfide particulate matter and the silicates of calcium and iron; wherein the partial oxidation and

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desulfurization reactions take place at a temperature which is above 1900° F. and which is about 10° to 200° F. above the fluid temperature of the slag and at a pressure in the range of about 2 to 250 atmospheres; and wherein substantially not more than 5.0 wt. % of the slag comprises elemental iron; and there is substantially no formation of additional calcium silicates in the gas generator from the silicates in said solid carbonaceous fuel, and at least 30 wt. % of the sulfur in the solid carbonaceous fuel in the reaction zone is converted into said iron-oxysulfide particulate matter which leaves the reaction zone along with said molten slag; and (2) cooling and cleaning the hot raw gas from (1).

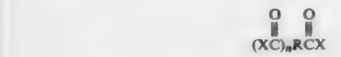
4,808,387

STABILIZATION OF VANADIUM TETRACHLORIDE

Sudhin Datta, Scotch Plains, N.J., and Trazollah Ouhadi, Liege, Belgium, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed May 15, 1987, Ser. No. 50,945
Int. Cl.[4] C01G *31/04*
U.S. Cl. 423—265 **14 Claims**

1. A method of stabilizing vanadium tetrachloride against decomposition into vanadium trichloride which comprises incorporating therein an amount of an acyl halide effective to preclude said decomposition, wherein said acyl halide is of the formula



$$(XC)_nRCX$$

in which R is a bond or a C_{1-6} alkyl, alkylene, aryl or arylene group, n is 0 or 1 and X is halogen, and wherein the amount of said acyl halide ranges from about 0.1 to 10 mol % of vanadium.

4,808,388

FOAMABLE CREAMS

Rolf D. Beutler; Thomas Wimmer, both of Frankfurt am Main, and Gushild Angst, Bad Camberg, all of Fed. Rep. of Germany, assignors to Merz + Co. GmbH & Co., Frankfurt, Fed. Rep. of Germany

Filed Aug. 18, 1987, Ser. No. 86,565
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1986, 3628531
Int. Cl.[4] A61K *7/00*
U.S. Cl. 424—47 **7 Claims**

1. A foamable cream, suitable for forming a cosmetic mousse, comprising an oil-in-water cream emulsion and a propellant therein, characterized in that the cream emulsion prior to admixture with the propellant consists essentially of a mixture of between about 2 and 9 percent by weight of a dermatologically-acceptable nonionic emulsifying agent, between about 4.5 and 21 percent by weight of an oil portion, and between about 0.5 and 4.5 percent by weight of a consistency-providing agent, the balance being water to 100 percent by weight, has a viscosity between about 200 and 500 mPas, and by the fact that the propellant consists essentially of nitrous oxide or carbon dioxide.

4,808,389

METHOD AND COMPOSITION FOR PREVENTION AND TREATMENT OF ORAL DISEASE

Perry A. Ratcliffe, 7125 E. Lincoln Dr., Scottsdale, Ariz. 85253

Continuation of Ser. No. 17,241, Dec. 29, 1986, Pat. No. 4,696,811. This application Jul. 22, 1987, Ser. No. 76,369
The portion of the term of this patent subsequent to Aug. 25, 2004, has been disclaimed.
Int. Cl.[4] A61K *7/20, 33/20*
U.S. Cl. 424—53 **9 Claims**

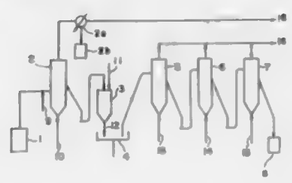
1. A method for reducing gingivitis, said method comprising the step of killing and reducing the number of streptococcus mutans and other gram positive bacteria plus bacteroides gingivalis to a 90% level through topical application to the gingiva within the oral cavity of a solution containing stabilized chlorine dioxide in a concentration in the range of 0.005% to 0.2% for a period of 20 seconds.

4,808,390

PROCESS FOR CONVERTING UF_6 INTO UO_2

Hiroshi Tanaka, and Akio Umemura, both of Saitama, Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1986, Ser. No. 869,665
Claims priority, application Japan, Jun. 4, 1985, 60-121292
Int. Cl.[4] C01G *43/025, 43/06*
U.S. Cl. 423—261 **3 Claims**



1. A process for conversion of UF_6 to UO_2 comprising the steps of

(a) pyrohydrolizing gaseous UF_6 in a fluidized bed with steam to obtain UO_2F_2 particles at temperatures of less than about 400° C.,

(b) reacting said UO_2F_2 particles with ammonia-containing solution to convert said particles to ammonium diuranate (ADU) particles at temperatures of less than about 90° C.,

(c) drying and dehydrating said ADU particles at temperatures of less than about 200° C., and

(d) reducing said dehydrated ADU particles with hydrogen or a mixture of hydrogen/steam to convert said particles to UO_2 powders at temperatures of less than about 700° C.

4,808,391

OXIDATION-REDUCTION PROCESS FOR ENHANCING THE COLOR OF AND STABILIZING WET PROCESS PHOSPHORIC ACID

David D. Leavitt, Lawrence, Kans.; Ken E. Kranz, Kansas City, Mo.; Greg A. Gorman, Bonner Springs, Kans., and Norman L. Stewart, Jr., Lake Alfred, Fla., assignors to Farmland Industries, Inc., Kansas City, Mo.

Filed May 1, 1987, Ser. No. 46,030
Int. Cl.[4] C01B *15/16*
U.S. Cl. 423—321 R **22 Claims**

1. A process for preparing color-enhanced and stabilized wet-process phosphoric acid comprising the steps of:

providing a quantity of black-colored wet-process phosphoric acid which has a P_2O_5 concentration of from about 58–72%, and contains incidental carbonaceous and metallic impurities therein;

subjecting said quantity of phosphoric acid to an initial oxidation step in order to produce a decarbonized, oxidized acid, said initial oxidation step including the steps of heating the acid to a temperature of from about 400 to 525° F., agitating the acid, and adding an oxidizing agent to the acid,

said initial oxidation step being carried out until the acid changes color from black and when diluted 1:100 by weight with deionized water exhibits an EMF of greater than about 700 mv, as compared with a standard solution of 0.01M potassium dichromate having an EMF of 600 mv;

thereafter subjecting the initially oxidized acid to a secondary reduction step for reducing the dark-colored oxidized metal complexes in the acid and producing a stabilized green color in the acid,

said secondary reduction step being carried out until the acid again changes color and when diluted 1:100 by weight with deionized water exhibits an EMF of less than about 700 mv, as compared with said standard solution.

4,808,392

PROCESS FOR PRODUCING SILANES

Masayoshi Itoh; Hirobaru Miyagawa, both of Yokohama; Masami Murakami, Zushi; Tomohiro Abe, Yokosuka; Kaoru Inoue, Yokohama, and Keiichi Ikeda, Chigasaki, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 901,771, Aug. 29, 1986, abandoned. This application Jun. 29, 1987, Ser. No. 68,759
Claims priority, application Japan, Sep. 3, 1985, 60-193250; Sep. 3, 1985, 60-193251; Sep. 3, 1985, 60-193252; Sep. 3, 1985, 60-193253; Sep. 3, 1985, 60-193254
Int. Cl.[4] C01B *33/04*
U.S. Cl. 423—347 **4 Claims**

1. Process for producing silanes represented by the general formula Si_nH_{2n+2} wherein n is 1 or 2, which comprises:

(a) preparing a silicon-magnesium alloy containing at least one element selected from the group consisting of Li, Na, K, Ca, Ba, Ti, Zr, Nb, Cr, Mo, Mn, Fe, Co, Ni, Pd, Cu, Ag, Zn, Cd, Al, Sn, Pb, Bi, Se, S and C, as a third component, said third component element being contained in an amount of at least 0.2 percent on the thr gram-atom basis of silicon;

(b) reacting the alloy containing the third component element with an acid in an ammonia solvent; and

(c) thus, varying the ratio of Si_2H_6 formed to SiH_4 formed.

4,808,393

PROCESS FOR MANUFACTURE OF FERRIC NITRATE

C. Charles Lewchalermwong, Charlotte, N.C., assignor to Mineral Research and Development Corp., Charlotte, N.C.

Filed Sep. 18, 1987, Ser. No. 98,090
Int. Cl.[4] C01B *21/48*
U.S. Cl. 423—395 **3 Claims**

1. A process for the manufacture of an aqueous ferric nitrate solution comprising a high soluble ferric iron concentration and low in insoluble ferric oxide, said process being carried out at a critical reaction temperature less than the ferric nitrate-to-ferric oxide decomposition temperature, and producing nitrogen oxide gas as a by-product,

wherein said process comprises the steps of

(a) continuously gravity-flowing nitric acid through a bed of pieces of metallic iron, the continuous flow being controlled to provide a nitric acid-iron surface contact time sufficiently long to produce ferric nitrate, but sufficiently short that said ferric nitrate is washed from the iron surface before a passivating coating is formed thereon, and then

(b) cycling through said bed of iron pieces by employing said continuous, controlled gravity flow, until said aqueous ferric nitrate solution is produced, unreacted nitric acid-containing effluent collected from said bed of metal, said effluent being increasingly enriched in ferric nitrate and further depleted in unreacted nitric acid by the cycling.

4,808,394

CATALYTIC OXIDATION OF CARBON MONOXIDE

John H. Kolts, Bartlesville, Okla., and Simon G. Kukes, Naperville, Ill., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 8, 1987, Ser. No. 94,462
Int. Cl.[4] C01B *31/20*
U.S. Cl. 423—437 **38 Claims**

1. A process for oxidizing carbon monoxide comprising the step of

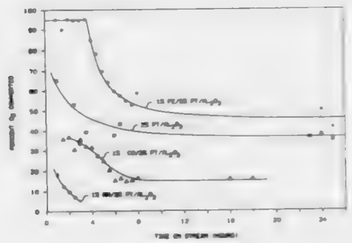
contacting a gas mixture comprising CO and O_2 with a catalyst composition consisting essentially of alumina that has been treated with ammonium thiocyanate and at least one noble metal selected from the group consisting of platinum and palladium,

under such reaction conditions as to at least partially convert said CO and O_2 to CO_2;

wherein said catalyst composition has been prepared by a preparation process comprising the steps of

(a) impregnating a support material comprising alumina with a solution comprising water and dissolved ammonium thiocyanate;

(b) heating the material obtained in step (a) under such conditions as to at least partially dry said material obtained in step (a);



(c) contacting the substantially dried material obtained in step (b) with a solution comprising at least one dissolved compound of at least one noble metal selected from the group consisting of platinum and palladium;

(d) heating the material obtained in step (c) under such conditions as to substantially dry said material obtained in step (c) and to at least partially cover said at least one compound of at least one noble metal to at least one of oxides of Pt, oxides of Pd, Pt metal and Pd metal; and

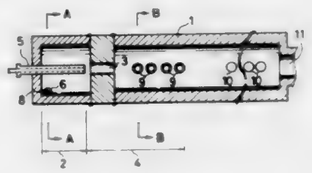
(e) heating the material obtained in step (d) in a reducing gas atmosphere at a temperature in the range of from about 550° to about 700° C., under such conditions as to activate said material obtained in step (d) and to form said catalyst composition.

4,808,395

HIGH-QUALITY COLORING CARBON BLACK AND PROCESS FOR ITS PRODUCTION

Shoshichi Yoshimura; Makoto Ishiza, both of Kitakyushu; Hiromu Kobayashi, Yokohama, and Hozo Yamazaki, Kitakyushu, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Dec. 19, 1986, Ser. No. 943,491
Claims priority, application Japan, Dec. 26, 1985, 60-296134
Int. Cl.[4] C08K *3/04*
U.S. Cl. 423—447.3 **4 Claims**



1. High-quality coloring carbon black having a specific surface ara (S_{BET}), an area average diameter (D_a) and a pore volume (AV_{Hg}) which make both the roughness factor (RF)

and aggregate factor (AF) as calculated by the following equations, negative values:

$$RF = S_{BET} - 28710/(D_a) + 1450$$

$$AF = AV_{Hg} + 14 \times (D_a) - 290$$

where S_{BET} is the specific surface area (m^2/g) of the carbon black as measured by a BET nitrogen absorption method, D_a is the area average diameter (m μm) of the carbon black as measured by an electron microscopic measuring method, and AV_{Hg} is the pore volume (cc/100 g) of the carbon black as measured by a mercury porosimeter, provided D_a is at most 17 mμm.

4,808,396

OZONE DECOMPOSING AGENT

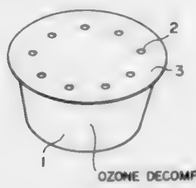
Ichiroh Shibasaki, Tokyo, and Sakae Shimizu, Chigasaki, both of Japan, assignors to Ricoh Company, Ltd. and Japan Liquid Crystal Co., Ltd., both of Tokyo, Japan

Filed Aug. 19, 1987, Ser. No. 86,784

Claims priority, application Japan, Aug. 28, 1986, 61-202268

Int. Cl.[4] B01D *53/34;* **C01B** *13/00;* **C09K** *15/00*

U.S. Cl. 423—579 **21 Claims**



1. An ozone decomposing agent comprising at least one terpenoide capable of decomposing ozone, a liquid alcohol for dissolving therein said terpenoide, sodium bis(4-t-butylphenyl)phosphate, and a solvent for dissolving therein sodium bis(4-t-butylphenyl)phosphate.

4,808,397

PROCESS FOR PREPARING FINE PARTICLES OF METAL OXIDES

Enrico Albizzati, Arona; Emiliano M. Ceresa, Sordevolo, and Luciano Zanin etta, Arona, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jul. 27, 1987, Ser. No. 78,068

Claims priority, application Italy, Jul. 31, 1986, 21335 A/86

Int. Cl.[4] C01G *25/02, 23/04;* **C01B** *33/113, 35/10*

U.S. Cl. 423—608 **11 Claims**

1. A process for preparing spheroidal particles of an oxide compound selected from the group consisting of Ti, Al, Zr, Si and B, having an average diameter of less than 3 microns, comprising:

preparing an emulsion in a perfluoropolyether of a hydrolyzable liquid compound of an element selected from the group consisting of Ti, Al, Zr, Si and B;

reacting the emulsion with water, with water vapor or with a mixture, in any ratio, of water with a liquid miscible or immiscible with water, said liquid not interfering with the reaction of the oxide compound with water, to obtain an oxide hydrate;

recovering said oxide hydrate, drying and calcining said oxide hydrate to an oxide.

4,808,398

NARROW SIZE DISTRIBUTION ZINC OXIDE

Robert H. Heistand, II, E. Walpole, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 14, 1985, Ser. No. 701,472

Int. Cl.[4] C01G *9/02*

U.S. Cl. 423—622 **10 Claims**

1. A process for the preparation of ZnO spheroidal particles of narrow siz distribution, the process comprising contacting a hydrocarbyl zinc hydrocarboxide, wherein the hydrocarboxide moiety is a polyglycol ether moiety, with water in the presence of a reaction medium under reaction conditions such that there are formed zinc oxide particles having a mean diameter of from about 0.1 to about 0.3 μm and a standard deviation of less than about 30 percent of the mean particle size.

4,808,399

COMPOSITION FOR DIAGNOSING THE TRANSPORT FUNCTION OF THE FALLOPIAN TUBE AND A METHOD FOR PREPARING SAID COMPOSITION

Frantisek Rypácek; Jan Uher, and Jaroslav Drobník, all of Praha, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Czechoslovakia

Filed Dec. 11, 1986, Ser. No. 940,300

Claims priority, application Czechoslovakia, Dec. 11, 1985, 9078-85

Int. Cl.[4] A61K *9/22, 9/24, 9/26, 9/52;* **G01N** *1/00, 3/48*

U.S. Cl. 424—2 **9 Claims**

1. A diagnostic preparation for use in investigation of the transport function of a female fallopian tube, comprising a suspension of particles in a vehicle, wherein

said particles (1) have a spherical shape with a diameter from about 10 to about 600 um, (2) are formed from a soft hydrophilic gel based on a crosslinked, nontoxic, biodegradable polymer selected from (a) polysaccharides which contain glucose bound predominantly throughb 1,4 glycoside bonds, (b) polyamino acids derived from glutamic acid or aspartic acid, and (c) polypeptides which are soluble derivatives of collagen or elastin, and (3) retain their shape and size in the environment of a peritoneal cavity and a uterotubal tract for at least 80 hours and subsequently degrade to nontoxic products within 5 to 60 days in such an environment, and

said vehicle is a physiologically acceptable vehicle suitable for parenteral injection.

4,808,400

ANTICALCULUS ORAL COMPOSITION

Abdul Gaffar, Princeton, and Thomas G. Polefka, Somerset, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 775,851, Sep. 13, 1985, Pat. No. 4,627,977. This application Dec. 8, 1986, Ser. No. 938,938

The portion of the term of this patent subsequent to Dec. 9, 2003, has been disclaimed.

Int. Cl.[4] A61K *7/16, 7/18*

U.S. Cl. 424—52 **20 Claims**

1. In a method of inhibiting dental calculus by applying to the teeth an oral composition containing in an orally acceptable vehicle one or a mixture of linear molecularly dehydrated polyphosphate salts comprising water soluble alkali metal tripolyphosphates an essential anticalculus agents, and an amount of a fluoride ion source sufficient to supply about 25 ppm to about 2,000 ppm of fluoride ion, the improvement wherein salivary hydrolysis of P—O—P bonds in said tripolyphosphate salts by phosphatase enzymes is inhibited consisting essentially of including in said composition an effective inhibiting amount therefor within the range of about 0.05 to about 3 wt. % of a water soluble alkali metal or ammonium synthetic anionic linear polymeric polycarboxylate.

4,808,401

ANTICALCULUS ORAL COMPOSITION

Abdul Gaffar, Princeton, and Thomas G. Polefka, Somerset, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 775,851, Sep. 13, 1985, Pat. No. 4,627,977. This application Dec. 8, 1986, Ser. No. 938,948

The portion of the term of this patent subsequent to Dec. 9, 2003, has been disclaimed.

Int. Cl.[4] A61K *7/16, 7/18*

U.S. Cl. 424—52 **20 Claims**

1. In a method of inhibiting dental calculus by applying to the teeth an oral composition containing in an orally acceptable vehicle one or a mixture of linear molecularly dehydrated polyphosphate salts comprising water soluble alkali metal hexametaphosphates as essential anticalculus agents, and an amount of a fluoride ion source sufficient to supply about 25 ppm to about 2,000 ppm of flouride ion, the improvement wherein salivary hydrolysis of P—O—P bonds in said hexametaphosphates by phosphatase enzymes is inhibited consisting essentially of including in said composition an effective inhibiting amount therefor within the range of about 0.05 to about 3 wt. % of a water soluble alkali metal or ammonium synthetic anionic linear polymeric polycarboxylate.

4,808,402

METHOD AND COMPOSITIONS FOR MODULATING NEOVASCULARIZATION

Samuel J. Lefkovich, Skokie; Peter J. Polverini, Evanston, both of Ill., and H. Michael Shepard, San Francisco, Calif., assignors to Northwestern University, Evanston, Ill. and Genentech, Inc., San Francisco, Calif.

Filed May 29, 1987, Ser. No. 56,554

Int. Cl.[4] A61K *31/74*

U.S. Cl. 424—423 **15 Claims**

1. A method for accelerating the neovascularization of a wound which comprises applying to the wound an angiogenically effective dose of a composition comprising tumor necrosis factor.

4,808,403

USE OF N,N-DIETHYL-M-TOLUAMIDE AND/OR THE ETHYL ESTER OF 2-METHYL-3-PENTENOIC ACID AS INSECT ATTRACTANTS

Richard A. Wilson, Westfield, N.J.; Jerry F. Butler, Gainesville, Fla.; Donald Withycombe, Lincroft, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ira Katz, West Long Branch, N.J., and Kenneth R. Schrankel, Tinton Falls, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y. and The University of Florida, Gainesville, Fla.

Filed Mar. 17, 1987, Ser. No. 26,979

Int. Cl.[4] A01N *25/00*

U.S. Cl. 424—84 **1 Claim**

1. A method of attracting *Musca domestica L.* (Diptera:Muscidae) to an insect trap comprising the step of exposing the environment surrounding said trap to an insect attractant-containing polymer which consists of a mixture of a polymer and from about 1% up to about 45% by weight of said polymer of the ethyl ester of 2-methyl-3-pentenoic acid, said polymer being compatible with said ethyl ester of 2-methyl-3-pentenoic acid.

4,808,404

LIVE VACCINE FOR COCCIDIOSIS UTILIZING COCCIDIAL SPOROZOITES

Balbir S. Bhogal, Midlothian, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Filed Jan. 11, 1988, Ser. No. 141,953

Int. Cl.[4] A61K *35/68, 39/002*

U.S. Cl. 424—88 **15 Claims**

1. A composition for vaccinating warm-blooded animals against coccidiosis disease comprised of a suspension of live excysted coccidial sporozoites in aqueous medium, physiologically balanced with respect to isotonicity and pH, containing at least one water-soluble viscosity enhancing polymeric substance selected from hydrosols, gels, gelatins, cellulose, cellulose derivatives and polysaccharide gums in amount sufficient to significantly prolong viability of said sporozoites.

4,808,405

P-ANISOYL STREPTOKINASE/PLASMINOGEN COMPLEX

Richard A. G. Smith, Dorking, and John G. Winchester, Guildford, both of England, assignors to Beecham Group p.l.c., England

Continuation of Ser. No. 813,044, Dec. 24, 1985, abandoned, which is a continuation of Ser. No. 201,578, Oct. 28, 1980, abandoned. This application Aug. 29, 1986, Ser. No. 902,429

Claims priority, application United Kingdom, Nov. 5, 1979, 7938279

Int. Cl.[4] A61K *37/47, 37/547;* **C12N** *11/00, 9/70*

U.S. Cl. 424—94.3 **12 Claims**

1. p-anisoyl streptokinase/plasminogen complex without internal peptide bond cleavage.

4,808,406

PREPARATION OF CUPRIC HYDROXIDE COMPOSITIONS

Norman C. Brinkman, Houston, Tex., assignor to Kocide Chemical Corporation, Houston, Tex.

Continuation of Ser. No. 678,291, Dec. 5, 1984, abandoned. This application Aug. 28, 1986, Ser. No. 901,965

The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.

Int. Cl.[4] A01N *59/20*

U.S. Cl. 424—140 **31 Claims**

1. The method of producing stable cupric hydroxide—cupric carbonate composition comprising the steps of:

(a) adding a 0.5 to 2 molar aqueous solution of copper sulfate salt to an aqueous solution of 1 to 6 moles of alkali metal carbonate solution thereby forming a precipitate of basic copper carbonate and basic copper sulfate mixture, until the pH of the resulting mixture is in the range of greater than 5 to about 6 with carbon dioxide evolution beginning about pH 8.5;

(b) adding an aqueous solution of alkali metal hydroxide to the mixture of step (a) to a pH in the range of about 10.0 to about 10.8, to form a solid cupric hydroxide—cupric carbonate composition and

(c) recovering and drying solid cupric hydroxide—cupric carbonate composition, said recovered and dried solid cupric hydroxide—cupric carbonate composition having a particle size of less than 1.0 micrometers.

4,808,407

WATER-SOLUBLE COPPER SALTS

Richard W. Hein, Hudson, and Anthony Alkaitis, deceased, late of Cleveland Hts., both of Ohio (by Audrey V. Alkaitis, executrix), assignors to Mooney Chemicals, Inc., Cleveland, Ohio

Filed Aug. 14, 1987, Ser. No. 85,453

Int. Cl.[4] A01N *59/20, 55/02*

U.S. Cl. 424—141 **34 Claims**

1. A method of preparing water-soluble copper salts of carboxylic acids comprising the steps of

(A) providing a mixture comprising

(A-1) as a copper source, copper metal, a copper oxide or mixtures thereof,

(A-2) at least one organic monocarboxylic acid containing about 10 to about 30 carbon atoms,

(A-3) at least one alkanolamine compound characterized by the formula

$R_1(R_2)NH$

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wherein R_1 is a hydroxyalkyl group and R_2 may be hydrogen or a hydroxyalkyl group, and

(A-4) water,

(B) treating the mixture with oxygen at a temperature up to about the reflux temperature of the mixture until the desired water-soluble copper salt is obtained, and

(C) recovering the copper salt as an aqueous solution.

29. A method of preserving wood which comprises contacting the wood with an effective amount of the aqueous solution of a copper salt prepared in claim 1.

4,808,408

MICROCAPSULES PREPARED BY COACERVATION

Richard W. Baker, Palo Alto, Calif., and Yasuo Ninomiya, Ibaraki, Osaka, Japan, assignors to Bend Research, Inc., Bend, Oreg.

Continuation-in-part of Ser. No. 493,706, May 11, 1983, abandoned. This application Aug. 26, 1985, Ser. No. 770,004

Int. Cl.⁴ H01N *25/34;* **A61K** *9/50;* **B01J** *13/02*

U.S. Cl. 424—408 **8 Claims**

1. In a complex coacervation process for microencapsulating a core ingredient that is partially soluble in the walls of microcapsules comprising the steps of

(a) forming an emulsion of said core ingredient in an aqueous solution of a first ionizable colloid,

(b) forming an aqueous solution of a second ionizable colloid of opposite electrical charge to that of said first ionizable colloid,

(c) forming a mixture by combining the emulsion of step (a) with the aqueous solution of step (b),

(d) cooling said mixture of step (c) to cause gelation of microcapsule walls around droplets of said core ingredient, and

(e) hardening said microcapsule walls, the improvement comprising the steps of

(1) forming a coacervation adjuvant/core ingredient mixture prior to step (a) by mixing with said core ingredient a coacervation adjuvant selected from the group consisting of an ionizable colloid, an ionic surfactant and an ionizable long-chain organic compound,

(2) substituting the coacervation adjuvant/core ingredient mixture formed in step (1) for the core ingredient of step (a), and

(3) between steps (d) and (e), adding from 5 to 20% by weight of a water-soluble wax derivative selected from the group consisting of derivatives of any of lanolin, carnauba, beeswax, paraffin, polyether-esters and chlorinated naphthalenes, all of said steps being conducted without pH adjustment, without the addition of an inorganic salt, without dilution, and without phase inversion.

6. A long-lasting mosquito repellent composition comprising a pharmaceutically acceptable vehicle and microcapsules, said microcapsules being made by, in the following order, the steps of

(a) forming a coacervation adjuvant/mosquito repellent mixture by mixing a coacervation adjuvant selected from the group consisting of an ionizable colloid, an ionic surfactant and an ionizable long-chain organic compound with a mosquito repellent,

(b) forming an emulsion by emulsifying said coacervation adjuvant/mosquito repellent mixture in an aqueous solution of a first ionizable colloid selected from the group consisting of gelatin, gum arabic, gum karaya, gum tragacanth, casein, carrageenan, and carboxymethylcellulose,

(c) forming an aqueous solution of a second ionizable colloid of opposite electrical charge to that of the first ionizable colloid, said second ionizable colloid being selected from the group consisting of gelatin, gum arabic, casein, carrageenan, and carboxymethylcellulose,

(d) forming a mixture by combining the emulsion of step (b) with the aqueous solution of step (c),

(e) cooling said mixture of step (d) to cause gelation of microcapsule walls around droplets of said mosquito repellent,

(f) adding to said cooled mixture of step (e) from 5 to 20% by weight of a water-soluble wax derivative selected from the group consisting of derivatives of any of lanolin, carnauba, beeswax, paraffin, polyether-esters and chlorinated naphthalenes, and

(g) hardening said microcapsules walls, all of said steps being conducted without pH adjustment, without the addition of an inorganic salt, without dilution, and without phase inversion.

4,808,409

LOW CARIOGENIC SWEETENING AGENTS

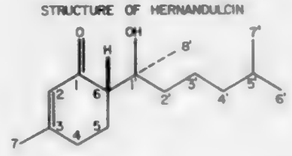
Alan D. Kinghorn; Cesar M. Compadre, both of Chicago, and John M. Pezzuto, Glen Ellyn, all of Ill., assignors to Board of Trustees, University of Illinois, Urbana, Ill.

Filed Aug. 16, 1984, Ser. No. 641,526

Int. Cl.⁴ A61K *7/16;* **C07C** *49/713*

U.S. Cl. 424—439 **10 Claims**

STRUCTURE OF HERNANDULCIN



1. Racemic 6-(1',5'-dimethyl-1-hydroxyhex-4'-en-1'-yl)-3-methyl-2-cyclohexen-1-one.

4,808,410

PHARMACEUTICAL COMPOSITIONS CONTAINING DYCLONINE HCl AND PHENOL

James V. Sorrentino, Wilton; William J. Kelleher, Storrs, and Jeanne O. Moye, Fairfield, all of Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.

Filed Dec. 16, 1987, Ser. No. 133,834

Int. Cl.⁴ A61K *13/00*

U.S. Cl. 424—435 **5 Claims**

4. A lozenge comprising from about 1 to about 3 milligrams of dyclonine hydrochloride and from about 10 to about 50 milligrams of phenol.

4,808,411

ANTIBIOTIC-POLYMER COMPOSITIONS

Mou-Ying F. Lu, Lake Bluff, and Saul Borodkin, Libertyville Township, Lake County, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jun. 5, 1987, Ser. No. 58,499

Int. Cl.⁴ A61K *9/28, 9/16*

U.S. Cl. 424—441 **16 Claims**

6. A composition comprising particles of an ionic complex of from about 25% to about 95% of erythromycin or a derivative thereof, and from about 5% to about 75% of a carbomer, the particles having a mean diameter of less than about 2000 microns.

12. A granule for compression in the forming of tablets, comprising particles according to claim 6 and pharmaceutically acceptable tableting agents.

16. A chewable tablet made from granules according to claim 12.

4,808,412

RUMEN-STABLE COMPOSITIONS

E. Phillip Smith, Bloomtville, and Stephen H. Wu, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 11, 1987, Ser. No. 61,755

Int. Cl.⁴ A61K *9/00*

U.S. Cl. 424—442 **18 Claims**

1. A post-rumen effective composition for oral administration to ruminants comprising between about 0.01 percent and about 50 percent by weight of a bioactive agent molecularly dispersed with between about 50 percent and about 99.99 percent by weight of a basic polymer, said bioactive agent being miscible with the basic polymer, and said basic polymer being defined as follows:

a physiologically acceptable polymeric substance that is a polymer, copolymer, terpolymer, or mixture thereof that is resistant to a pH of greater than about 5 and soluble or swellable at a pH of less than about 3.5 at the normal temperature of the rumen;

said polymeric substance having basic amino groups of aliphatic type or said polymeric substance having basic amino groups of the aromatic type in which the basic amino groups are attached directly to the aromatic ring or is part of the aromatic ring structure;

the amount of said basic amino groups in the polymeric substance is that amount capable of generating sufficient ionized groups to render the polymeric substance soluble or swellable at about pH 3.5 or below, but at about pH 5.0 or above, the amount of basic amino groups is insufficient to solubilize the polymeric substance;

the nitrogen content of the polymeric substance is between about 1 percent to about 25 percent by weight, and wherein said basic polymer is selected from the group consisting of poly(2-vinylpyridine);

poly(4-vinylpyridine);

poly(2-methyl-5-vinyl-pyridine);

poly(2-ethyl-5-vinylpyridine);

copoly(2-vinylpyridine/styrene);

copoly(2-methyl-5-vinylpyridine/styrene);

imidazoline modified copoly(styrene-acrylo-nitrile);

a terpolymer of methylmethacrylate, 2-(4-morpholino)ethylacrylate, and stearylmethacrylate;

copoly(tert-butylaminoethyl methyacrylate/methyl methacrylate 75/25);

cellulose propionate morpholinobutyrate;

cellulose acetate diethylaminohydroxypropyl ether;

diethylaminomethylcellulose;

1-piperidyl-ethyl-hydroxyethylcellulose;

benzylamino-ethyl-hydroxy-ethylcellulose;

cellulose acetate diethylaminoacetate; and

polyvinyl-N,N-diethylaminoacetacetal.

4,808,413

PHARMACEUTICAL COMPOSITIONS IN THE FORM OF BEADLETS AND METHOD

Yatindra M. Joshi, Piscataway; William R. Bachman, North Brunswick, and Nemichand B. Jain, Moamouth Junction, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 43,584, Apr. 28, 1987, abandoned. This application Dec. 31, 1987, Ser. No. 140,281

Int. Cl.⁴ A61K *9/14, 9/26, 9/52*

U.S. Cl. 424—458 **35 Claims**

1. A modified release formulation in the form of an extruded-spheronized beadlet from which medicament is released at a controlled rate, said beadlet comprising a medicament, an organic carboxylic acid to facilitate spheronization, to impart hardness to the beadlet and aid in obtaining a desired narrow particle size distribution of beadlets, and a non-lipophilic non-fat binder, said medicament being present in a weight percent of from about 3 to about 60%, and said organic carboxylic acid being present in an amount within the range of from about 5 to about 50% by weight of said beadlet, said beadlet having a hardness of at least about 2 Strong-Cobb units.

25. The formulation as defined in claim 1 comprising a plurality of beadlets contained within a capsule.

4,808,414

AMIDE PENETRATION ENHANCERS FOR TRANSDERMAL DELIVERY OF SYSTEMIC AGENTS

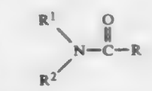
James V. Peck, Costa Mesa, and Gevork Minaskanian, Irvine, both of Calif., assignors to Nelson Research & Development Co., Irvine, Calif.

Continuation-in-part of Ser. No. 912,947, Sep. 29, 1986. This application Nov. 19, 1986, Ser. No. 932,651

Int. Cl.⁴ A61F *13/00*

U.S. Cl. 424—449 **10 Claims**

1. In a method for topically administering systemically active agents through the skin or mucosal membranes of humans and animals, the improvement comprising the topical administration of effective amounts of a systemically active agent and a membrane penetration enhancer having the structural formula



wherein R^1 and R^2 are independently selected from the group consisting of alkyl and cycloalkyl radicals comprising from 1 to 20 carbon atoms and R is selected from the group consisting of alkyl and cycloalkyl radicals comprising from 1 to 30 carbon atoms; provided, however, that the total number of carbon atoms in said compound is 15 or more and the total number of carbon atoms in R^1 and R^2 is 5 or more.

4,808,415

COMPOSITION FOR THE EXTEMPORARY PREPARATION OF FORMULATIONS FOR TOPICAL APPLICATIONS FOR PHARMACEUTICAL AND COSMETIC USE

Giovanni Gazzani, Appiano Gentile, Italy, assignor to Crinos Industria Farmacobiologica Spa, Como, Italy

Continuation of Ser. No. 9,436, Feb. 2, 1987, abandoned. This application May 16, 1988, Ser. No. 195,582

Claims priority, application Italy, Feb. 4, 1986, 19284 A/86

Int. Cl.⁴ A61K *7/00, 7/32*

U.S. Cl. 424—488 **12 Claims**

6. A composition in the form of a topical gel, cream or lotion formed by the addition of water to an at least essentially anhydrous composition comprising at least one active ingredient, carboxymethylstarch and water insoluble cellulose, said carboxymethylstarch and said cellulose in the anhydrous composition being in solid and dry form.

4,808,416

PREPARATION OF A SLOW-RELEASE DRUG

Takehisa Hata, Kyoto; Hisami Yamaguchi; Satoshi Ueda, both of Hyogo, and Masatera Kodani, Osaka, all of Japan, assignors to Laboratories Delagrange, Paris, France

PCT No. PCT/FR86/00306, § 371 Date Jul. 9, 1987, § 102(e) Date Jul. 9, 1987, PCT Pub. No. WO87/01588, PCT Pub. Date Mar. 26, 1987

PCT Filed Sep. 12, 1986, Ser. No. 50,765

Claims priority, application Japan, Sep. 12, 1985, 60-202855

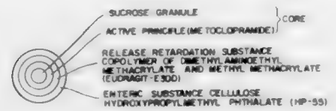
Int. Cl.⁴ A61K *9/16*

U.S. Cl. 424—497 **1 Claim**

1. Slow-release preparation comprising, in sequence, a core of a granule having deposited thereon metoclopramide; a first

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shell of a copolymer of ethyl acrylate and methyl methacrylate in an effective amount of ensure uniform dissolution of said



metoclopramide upon oral ingestion; and a second shell of an enteric coating of cellulose hydroxypropylmethylphthalate.

4,808,417

FEED ADDITIVE FOR FISH CULTIVATION

Takashi Masuda, Tokyo, Japan, assignor to Toa Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1987, Ser. No. 130,283

Claims priority, application Japan, Dec. 27, 1986, 61-309105; Dec. 27, 1986, 61-309106

Int. Cl.⁴ A23K *1/18*

U.S. Cl. 426—2 **20 Claims**

1. A feed additive for fish cultivation which contains a combination comprising, as active components, a proteinase, a lipase, and a viable mixture of three kinds of bacteria consisting of lactic acid producing bacteria, saccarificating bacteria, and butyric acid producing bacteria, wherein the bacteria are capable of coexisting in a symbiotic relationship and wherein the components of the combination are present in a proportion effective to improve the digestion and absorption by fish of fish feed supplemented therewith.

4,808,418

HETEROGENOUS CHEWING GUM COMPOSITION AND METHOD OF PREPARATION

Jose F. Zamudio-Tena, Morristown, and Allan H. Graff, Randolph, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 30, 1987, Ser. No. 68,672

Int. Cl.⁴ A23G *3/30*

U.S. Cl. 426—5 **24 Claims**

1. A heterogenous chewing gum composition having long lasting flavor duration and a marbleized appearance comprising:

a heterogenous mixture comprising;

a first gum base;

a second gum base;

an effective amount of a flavoring agent;

an effective amount of a sweetener; and

optionally, an effective amount of a bulking agent;

wherein said first gum base and said second gum base have a difference in their Instron Hardness Values of about 5%;

wherein said first gum base and said second gum base are in a weight ratio of about 20%:80% to about 80%:20%; and

wherein the amount of gum base present is about 5% to about 60% by weight of the final chewing gum composition.

4,808,419

AUTOMATED METHOD FOR A SEMI-SOLID FERMENTATION USED IN THE PRODUCTION OF ANCIENT QUALITY RICE VINEGAR AND/OR RICE WINE

Edward J. Hsu, 50 E. Concord Ave., Kansas City, Mo. 64112

Filed Feb. 2, 1987, Ser. No. 10,186

Int. Cl.⁴ C12G *1/00*; C12J *1/02*

U.S. Cl. 426—13 **37 Claims**

1. A large scale, semi-solid fermentation process for the manufacture of ancient quality rice vinegar or rice wine product comprising the steps of:

soaking a quantity of washed rice in water;

cooking and gelatinizing the rice by direct contact with live steam;

preparing a rice-wine mash with a starch content of at least about 30% by mixing the cooked rice with a first addition of an enzyme which will liquify the rice,

maintaining the temperature of the rice-enzyme mixture at a level from about 70° C. to about 90° C. to liquify and gelatinize the rice;

increasing the temperature of the mixture to at least about 115° C. to 130° C. for a time period to effect additional gelatinization, liquification, and sterilization of the rice,

cooling the mixture to a temperature in the range of about 70° C. to 90° C.; and

mixing a second addition of enzyme with the mixture to effect post-sterilization liquification of the rice with the starch content thereof remaining at least about 30%;

inoculating a quantity of wheat substrate with a fungus that will convert at least a part of the substrate to flavor enhancing peptides and to thereby produce a wheat-koji;

adding a quantity of said wheat-koji to said rice-wine mash to impart a unique aroma, flavor and umami to said mash; and

adding a *Saccharomyces cerevisiae* yeast culture to the mash to effect fermentation thereof;

continuing fermentation of the mash with said yeast in the presence of the wheat-koji until an ethanol content of at least abut 18% is obtained whereby flavor enhancing peptides produced by fungal conversion of the rice and fermentation products of the rice further augment the unique aroma, flavor and umami imparted to the final product.

4,808,420

FRESH ROOT VEGETABLES WITH PROLONGED SHELF LIFE

John O. Springler, Plainsboro; Avigdor Orr, Highland Park, and Seymour G. Gilbert, Piscataway, all of N.J., assignors to DNA Plant Technology Corporation, Cinnaminson, N.J.

Continuation of Ser. No. 650,776, Sep. 13, 1984, Pat. No. 4,670,275. This application Nov. 12, 1986, Ser. No. 930,503

The portion of the term of this patent subsequent to Jun. 2, 2004, has been disclaimed.

Int. Cl.⁴ A23B *7/148*

U.S. Cl. 426—106 **2 Claims**

1. The product prepared by a process for maintaining a fresh root vegetable in viable form which comprises:

(a) peeling the surface of a fresh root vegetable having endogenous microflora present therein,

(b) providing the vegetable in uniform sized pieces,

(c) subjecting the vegetable having endogenous microflora present therein to elevated temperature and time conditions effective to reduce the endogenous microflora concentration in colony forming units (CFU)/g by a factor greater than 10^2 while maintaining the vegetable in a viable form and substantially maintaining the sensory qualities of color, taste and texture of the fresh root vegetable,

(d) rapidly cooling the heat treated vegetable to below about 25° C. in less than about two minutes,

(e) subjecting the vegetable to a vacuum of about 1 to about 12 inches Hg absolute for about 2 to about 10 minutes,

(f) breaking the vacuum in the presence of water,

(g) removing surface water from the vegetable, and

(h) providing the vegetable in a sealed container effective to prevent microbial recontamination of the vegetable and having a gas permeability effective to maintain the vegetable in a viable condition,

wherein the vegetable is a carrot.

4,808,421

FORMED POLYMER FILM PACKAGE FOR MICROWAVE COOKING

Abraham H. Mandenhall, Morris County, N.J., and Joseph E. Irace, St. Louis County, Mo., assignors to Packaging Concepts, Inc., St. Louis, Mo.

Filed Feb. 24, 1987, Ser. No. 17,841

Int. Cl.⁴ B65D *81/34*, *75/08*, *75/12*

U.S. Cl. 426—107 **6 Claims**



1. For use in a microwave oven, a folded package holding cookable food products to be heated for consumption, said package being substantially formed of a polymer film, said polymer film having a pair of side edges and being folded to form a tube having overlapping side edges, and said package being of the tubular formed type having a series of walls and having a formed bottom panel, said walls comprising a front panel, a back panel, and inwardly folded gusseted side panels, said panels being disposed such that the package can be substantially flattened with the gussets closed and the front and back panels substantially arranged in contiguity with each other along a center section and between said gussets, said package having an upper edge, said package also having said bottom panel providing lower closure for the package, and with said food products to be cooked resting within the package and substantially upon the said bottom panel, said panels formed from said polymer film, at least one of said wall panels in combination with the bottom panel having a manufacturer's joint formed therein, the manufacturer's joint extending the height of the tubular formed package before the formation of its formed bottom panel, said manufacturer's joint disposed approximate said overlapping side edges of the polymer film forming the folded package, a narrow paper strip disposed within the manufacturer's joint and intermediate the said overlapping side edges of the polymer film forming the package, said paper strip being adhesively secured by means of a heat resistant adhesive within the said joint to said overlapping side edges of the polymer film, said heat resistant adhesive being a polyvinyl acetate, and said formed joint being heat resistant to the microwave energy generated during usage of the said package while microwave heating of said food products, said package being substantially fully transparent.

4,808,422

CENTER-FILLED FOOD PRODUCTS

Wendell Ward, Carrollton; Surinder Kumar, Plano; Melba Mack, Dallas; Lewis Keller, Watauga, and Margaret Fitzwater, Lewisville, all of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

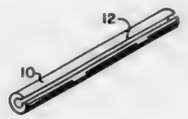
Continuation of Ser. No. 618,225, Jun. 7, 1984, Pat. No. 4,613,509. This application Mar. 19, 1986, Ser. No. 841,256

The portion of the term of this patent subsequent to Sep. 23, 2003, has been disclaimed.

Int. Cl.⁴ A21D *13/00*

U.S. Cl. 426—143 **20 Claims**

1. A center-filled snack food product comprising; a rigid, generally cylindrical shell having a wall of puff extruded edible material with a shelf-stable moisture content, the shell being a highly porous, puffed, multi-cellular body, the shell having open ends and a length and diameter sufficient for a product of edible size, the shell containing a semi-solid edible food substance filling which is substantially stable at ambient temperature, the filling being within the shell, the shell including an



open longitudinal gap extending from one end of the shell to the other, exposing the filling to outside the shell.

4,808,423

PROCESS FOR PREPARING A COATED FOODSTUFF

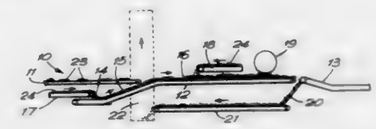
Nils E. Hansson, Bjuv, Sweden, assignor to Nestec S.A., Vevey, Switzerland

Filed Oct. 30, 1986, Ser. No. 925,281

Claims priority, application European Pat. Off., Jan. 22, 1986, 86100821.7

Int. Cl.⁴ A23P *1/08*

U.S. Cl. 426—273 **8 Claims**



1. A process for preparing a frozen pre-fried food product comprising coating a foodstuff with a batter, coating particles of fresh root vegetables with a predusting flour and tempering the flour-coated vegetables to approximately a freezing temperature, coating the battered foodstuff with the tempered flour-coated vegetables, frying the vegetable coated foodstuff and then deep-freezing the fried coated foodstuff.

4,808,424

PROCESS FOR COATING FOODSTUFFS WITH PARTICULATE MATERIAL

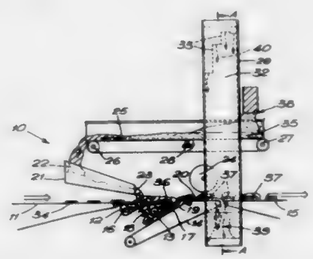
Lars G. A. Wedell, Anstorp, Sweden, assignor to Nestec S.A., Vevey, Switzerland

Division of Ser. No. 937,236, Dec. 3, 1986, Pat. No. 4,762,083. This application Jul. 8, 1988, Ser. No. 216,780

Claims priority, application European Pat. Off., Jan. 23, 1986, 86100864.7

Int. Cl.⁴ A23B *4/10*

U.S. Cl. 426—289 **9 Claims**



1. A process for coating a foodstuff with particulate material comprising:

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transporting particulate material on a first horizontal conveyor;

transporting a foodstuff on a second horizontal conveyor positioned below the first conveyor in a direction opposite that of the first conveyor, the second conveyor comprising at least first, second and third successive endless belts each having a horizontal upper run and a gap between each successive pair of belts, the second belt having an inclined portion extending to a position below the first belt;

feeding the particulate material from the first conveyor onto the foodstuff on the first belt for coating the foodstuff on an upper side;

transporting the coated foodstuff to the upper run of the second belt while excess particulate material falls off the first belt through the gap between the first and second belts onto the inclined portion of the second belt for being conveyed to the upper run of the second belt for forming a layer onto which the coated foodstuff is transported for being coated on a bottom side after being transported from the first belt to the upper run of the second belt;

transporting the coated foodstuff to the third belt with further excess particulate material falling through the gap between the second and third belts onto an inside wall of a drum through which the first and second conveyors travel; and

rotating the drum for transporting the further excess particulate material to a position above the first conveyor upon which the further excess particulate material falls by gravity.

4,808,425

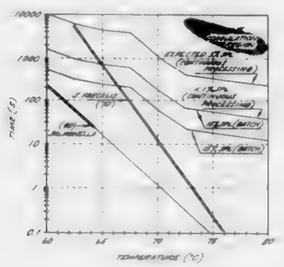
METHOD FOR THE ULTRAPASTEURIZATION OF LIQUID WHOLE EGG PRODUCTS

Kenneth R. Swartzel; Hershell R. Ball, Jr., and Mohammad-Hossein Hamid-Samimi, all of Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Sep. 8, 1986, Ser. No. 904,744

Int. Cl.[4] A23L *3/00*

U.S. Cl. 426—399 **26 Claims**



1. A method of ultrapasteurizing a liquid whole egg product, comprising passing the liquid whole egg product as a continuous stream through a pasteurizing apparatus, during which the liquid whole egg product is heated to a predetermined real temperature, by contacting said liquid whole egg product to a heated surface wherein the total thermal treatment received by the liquid whole egg product is described by an equivalent temperature and an equivalent time defining a point above the 5% SPL (BATCH) line of FIG. 3, but insufficient to cause coagulation of the liquid whole egg product.

4,808,426

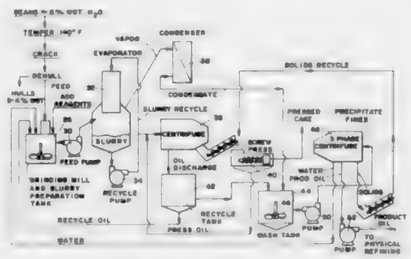
VEGETABLE OIL EXTRACTION PROCESS

Hans R. Strop, and Richard R. Perry, both of Strongsville, Ohio, assignors to EPE Incorporated, Strongsville, Ohio

Filed Apr. 23, 1986, Ser. No. 855,127

Int. Cl.[4] C11B *1/00, 3/00*

U.S. Cl. 426—417 **55 Claims**



1. A method of extracting a vegetable oil from a vegetable oil-bearing material, selected from the group consisting of vegetable oil bearing seeds and plant material comprising:

adding at least one reagent to reduce the phospholipid content in the vegetable oil extracted from the oil-bearing material to form a mixture;

adding an oil of the same type as will be extracted from the oil-bearing material to said mixture to form a slurry;

heating said slurry; and,

subsequently extracting a resultant oil from said slurry, said resultant oil exhibiting a phospholipid content less than 20 ppm measured as elemental phosphorous.

4,808,427

TUBER TREATMENT

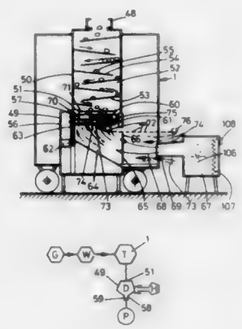
James S. Melvin, Aberdeen, Scotland, assignor to Aberdeen Biotech Limited, Glasgow, Scotland

Filed Mar. 10, 1987, Ser. No. 24,315

Claims priority, application United Kingdom, Mar. 11, 1986, 8605943

Int. Cl.[4] A01J *21/00*

U.S. Cl. 426—521 **13 Claims**



1. A method of reducing bacterial and other diseases in potato tubers and improving the keeping properties thereof which method comprises the steps of grading potato tubers according to size, bringing substantially soil-free size-graded potato tubers of a similar size, at a temperature at or below ambient temperature, to a thermal treatment zone; introducing said tubers into a body of thermal treatment fluid having a thermal capacity substantially larger than that of said introduced tubers such that said introduced tubers have a substantially negligible effect on the temperature of said fluid which fluid is at a temperature of from 45° to 85° C., so as to substantially wholly surround the individual tubers with said fluid, and retaining said tubers in said fluid for a period of time sufficient to substantially kill at least some microorganisms without significantly damaging the tuber tissue; withdrawing the heated tubers from said fluid and passing the withdrawn tubers substantially directly, through a drying zone, in which drying zone said tubers are substantially surrounded by an induced air flow having a temperature of at least 40° C., for a period of time sufficient substantially to dry the outer surfaces of said tubers, without significantly damaging the tuber tissue and then bringing to a cooling zone.

5. An apparatus suitable for use in the treatment of tubers and other like vegetable material of generally similar form, which apparatus comprises a vessel having a water holding zone, an endless conveyor means formed and arranged for conveying said tubers along a conveying path having a substantial portion within said water holding zone between a conveyor loading station and a conveyor discharge station; water circulation means formed and arranged for circulating water through said conveyor path portion, water heating means formed and arranged for heating, in use of the apparatus, said water being circulated and temperature control means formed and arranged for maintaining, in use of the apparatus the temperature of said water at from 45° to 85° C.; conveyor drive control means formed and arranged for controlling the speed of said conveyor means so as to determine the transit time between said loading and discharge stations, said conveyor means having tuber support and retaining means of generally open-work structural form so as to permit water flow therethrough to substantially all sides of said tubers, said conveyor means being further formed and arranged so as to roll said tubers at least along a substantial part of said conveyor path portion, a second conveyor means formed and arranged for conveying the tubers substantially directly, from said discharge station through a drying zone provided with an air flow induction means formed and arranged for inducing an air flow around tubers passing through said drying zone in use of the apparatus, and heater means formed and arranged for heating said induced air flow so as to maintain an air flow temperature of at least 40 degrees C. around said tubers in use of the apparatus.

4,808,428

FLAVORED SLUSH SNACK

Stephanie L. Forsstrom, Monroe, and Susan Pettigrew, Suffern, both of N.Y., assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Filed Mar. 18, 1988, Ser. No. 169,857

Int. Cl.[4] A23L *2/121*

U.S. Cl. 426—569 **10 Claims**

1. A flavored slush snack composition consisting essentially of, by weight, 22 to 33% dextrose, 1 to 5% fructose, flavor, food acid, preservative, and the balance water, the total soluble solids of the composition being in the range of 25 to 35%, and the acid being present in an amount sufficient to provide a pH characteristic of the flavor.

4,808,429

ENCAPSULATION

Christopher P. Freeman, Bedford, England, assignor to Internationale Octrooi Maatschappij "Octropa" BV, Rotterdam, Netherlands

Continuation of Ser. No. 717,146, Mar. 28, 1985, abandoned. This application Aug. 7, 1987, Ser. No. 82,993

Claims priority, application United Kingdom, Mar. 28, 1984, 8407947

Int. Cl.[4] A23K *1/04*

U.S. Cl. 426—647 **10 Claims**

1. A process for the encapsulation of lipid material within a protective dehydrated proteinaceous matrix for use as an animal feedstuff ingredient, which process consists essentially of the steps of:

(a) homogenizing undenatured slaughterhouse blood, essentially free from any anti-coagulating agents, with lipid material in the molten state containing by weight more than 20% free fatty acids;

(b) allowing the resulting dispersion or emulsion to set to a firm gel prior to dehydration; and

(c) drying said firm gel.

4,808,430

METHOD OF APPLYING GEL COATING TO PLANT SEEDS

Yasushi Kosuo, Sanoso, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Feb. 11, 1988, Ser. No. 154,358

Claims priority, application Japan, Feb. 27, 1987, 62-043150; Jun. 18, 1987, 62-150243

Int. Cl.[4] A01G *5/06;* **A01N** *1/00;* **B05D** *3/12*

U.S. Cl. 427—4 **3 Claims**



1. In a method of processing a plant seed wherein a coating treatment is applied to a plant seed with an aqueous alkali salt solution of an aqueous gel to form a coating layer thereon and said coating layer is reacted with an aqueous solution of a divalent or trivalent metal salt to render said coating layer insoluble to water, the improvement comprising the steps of

(a) preparing a nozzle including a nozzle body formed with a cylindrical aperture vertically formed therein and a cylindrical cutting plunger inserted in said cylindrical aperture, said cylindrical cutting plunger having a large diameter piston section at an upper portion thereof to be slidingly fitted in said cylindrical aperture and a small diameter valve section to define an annular space thereabout within said cylindrical aperture, said large and small diameter sections forming a stepped portion therebetween, said cylindrical aperture having a reduced diameter at a lower end thereof to form a valve seat for the small diameter valve section to rest thereat, said cylindrical cutting plunger having a central channel bored therethrough:

(b) charging said annular space with said aqueous alkali salt solution of an aqueous gel;

(c) pressurizing said charged solution to exert a pressure on said stepped portion such that said cylindrical cutting plunger is raised to move away from said valve seat and to define an annular opening thereat and that said charged solution flows out said annular opening;

(d) reducing the pressure of the solution within the annular space to cause the raised cutting aperture to descend such that the small diameter valve section closes the valve seat while allowing said flowing out solution to sag to form a hollow part having a central chamber in communication with said central channel;

(e) dropping a plant seed through the central channel onto said central chamber;

(f) pressurizing again said charged solution to raise the cylindrical cutting plunger and open the valve seat such that the solution is discharged to close the central chamber, thus encapsulating said dropped plant seed with an air bubble therein; and

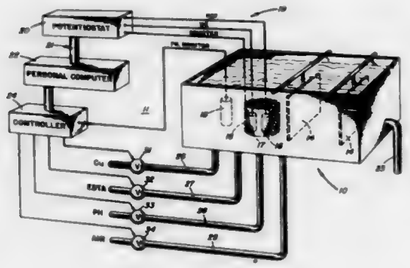
(g) reducing the pressure of the solution within the annular space to cause the raised cutting plunger to descend such that the small diameter section closes the valve seat to cut

off said encapsulated plant seed from the charged solution within the annular space.

4,808,431
METHOD FOR CONTROLLING PLATING ON SEEDED SURFACES

Robert G. Rickert, Endwell, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 8, 1987, Ser. No. 130,590
Int. Cl.[4] B05D 1/18
U.S. Cl. 427—8 **8 Claims**

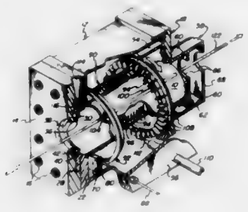


1. A method for preparing an electroless plating bath for plating parts having a seeded surface, said bath comprising a plurality of chemical constituents, including air, which are controlled to achieve a desired plating condition comprising:
measuring the open circuit potential of said bath Emix;
adjusting some of said bath chemical constituent concentration levels within a predetermined range until a first Emix potential between a working electrode and a reference electrode immersion in said bath is reached;
removing air from said bath, whereby said bath open circuit Emix potential reaches a second Emix below an Emix level which produces undesirable nodules on parts in said bath;
inserting seeded parts to be plated in said bath;
re-establishing a flow of air in said bath, whereby said Emix potential decreases during plating of said parts.

4,808,432
ELECTROSTATIC COATING APPARATUS AND METHOD

Bedrich Hajek, New Haven, Conn., assignor to Electrostatic Technology Incorporated, New Haven, Conn.

Filed Aug. 18, 1986, Ser. No. 897,624
Int. Cl.[4] B05D 1/06
U.S. Cl. 427—32 **24 Claims**

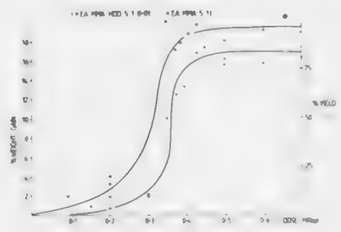


18. A method for producing a coating upon a workpiece, comprising the steps of:
A. creating a generally cylindrical volume of moving gas in which mass transfer is substantially limited to radial inward flow;
B. creating a helical flow of gas-suspended particles, so as to produce a generally tubular cloud of helically moving particles coaxially with and proximally within said cylindrical volume of gas, said cylindrical volume and said tubular cloud being created independently of a workpiece;
C. effecting electrostatic charging of said particles of said cloud; and
D. conveying a workpiece along a path substantially on the common axis of said cylindrical volume of gas and said cloud, and at an electrical potential that is effectively opposite to the charge on said charged particles, so as to electrostatically attract said charged particles from said cloud and produce a deposit thereof upon said workpiece.

4,808,433
TREATMENT OF ARCHIVAL MATERIAL

Christopher C. Mollett, Near Chester; Christine E. Butler, Leatherhead, and Michael L. Burstall, Guildford, all of England, assignors to The British Library, London, England

Filed Sep. 12, 1986, Ser. No. 907,549
Claims priority, application United Kingdom, Sep. 12, 1985, 8522631; Jan. 7, 1986, 8600293; Feb. 7, 1986, 8603104
Int. Cl.[4] B05D 3/06
U.S. Cl. 427—36 **47 Claims**



7. A process for the treatment of archival material comprising paper, which comprises the radiation-induced polymerisation, within the paper, of a monomer mixture comprising
(i) a mono-unsaturated vinyl monomer component comprising
(a) as major component an acrylic acid ester of the general formula

$$CH_2{=}CH{-}COOR'$$

where R′ represents a group of the general formula $C_{n'}H_{2n'+1}$ or $C_{n'}H_{2n'}OH$ in which n′ represents an integer from 1 to 10; and
(b) as minor component an ester of an α-lower alkyl-substituted acrylic acid of the general formula

$$CH_2{=}CR^2{-}COOR''$$

in which R″ represents a group of the general formula

$$-C_nH_{2n+1},\ -C_nH_{2n}X,\ \text{or}\ -CH_2C_mH_{2m-1}$$

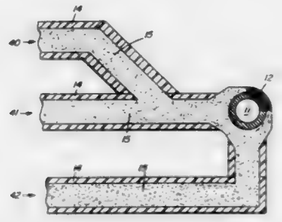
in which
n represents an integer from 1 to 16,
X represents OH, a halogen atom or an unsubstituted or mono- or di-lower alkyl-substituted amino group, and
m represents an integer from 2 to 15, and
R^2 represents a lower alkyl radical, and
(ii) one or more multi-unsaturated acrylate monomers, irradiation being carried out with γ-radiation or X-rays in the presence of the monomers, and the process being carried out in a substantially non-aqueous substantially solvent

free system and with the avoidance of saturation of the archival material.

4,808,434
PROCESS FOR APPLICATION OF OVERLAY CONDUCTORS TO SURFACE OF PRINTED CIRCUIT BOARD ASSEMBLIES

Reginald B. P. Bennett, Oakville; Allan R. Drake, Brampton, and Roger C. Flun, Kanata, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 30, 1987, Ser. No. 102,696
Claims priority, application Canada, Jul. 6, 1987, 541394
Int. Cl.[4] B05D 3/06, 5/12
U.S. Cl. 427—54.1 **18 Claims**



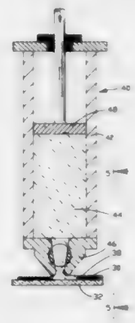
1. A process for applying an overlay conductor on a surface of a printed circuit board comprising the steps of: applying a first layer of dielectric material to a predetermined width along a predetermined path between at least a pair of connection land areas on the surface of a printed circuit board, applying a solderable silver polymer ink over the dielectric material to a width narrower than the latter and over only a portion of each of the land areas, at least partially curing the silver polymer ink by exposure to a source of heat, applying a silver solder paste over at least the silver polymer ink overlaying each of the land areas and over at least a portion of each land area adjacent the portions covered with silver polymer ink, and causing the silver solder paste to reflow by exposure to a source of heat.

4,808,435
SCREEN PRINTING METHOD FOR PRODUCING LINES OF UNIFORM WIDTH AND HEIGHT

Michael E. Cropp; Phillip De Prada, both of Poughkeepsie, and Kamaleah S. Desai, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1987, Ser. No. 34,972
Int. Cl.[4] B05D 5/12, 1/32, 3/12
U.S. Cl. 427—97 **15 Claims**

1. An improved method of screen printing fine lines of electrically conductive paste on a substrate, comprising,
obtaining a substrate capable of absorbing solvent from a conductive paste to be applied,
placing a mask having the desired pattern of line shaped openings on the substrate,
applying conductive paste to the mask such that conductive paste is screened in the openings in the mask in contact with the substrate and such that a thin layer of conductive paste is formed over the top surface of the mask, the thin layer capable of maintaining the paste in the openings fluid by supplying solvent, thereby allowing the paste to flow through the openings when the mask is lifted, and removing the mask from the substrate before the conductive paste dries thereby leaving a line pattern of paste with a well-defined, symmetrical, smooth profile, with a relatively low height on said substrate.



4,808,436
METHOD FOR EQUILIBRATING POLYAMIDE MAGNET WIRE COATINGS AND ENAMEL COMPOSITIONS

Francois A. Lavallee, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Division of Ser. No. 106,695, Oct. 8, 1987, Pat. No. 4,775,726, which is a division of Ser. No. 945,159, Dec. 22, 1986, Pat. No. 4,716,190. This application Jan. 26, 1988, Ser. No. 148,477
Int. Cl.[4] B05D 5/12
U.S. Cl. 427—120 **2 Claims**

1. A method of making an electrically insulated magnet wire comprising passing a magnet wire substrate through and in contact with an enamel applicator, containing an organic solvent solution of an electrically insulation solution thereby applying a thin uniform layer of the electrically insulating enamel to the wire, then passing the coated wire through a curing oven causing the solvents to be evaporated from the enamel and curing said enamel onto the wire, wherein the enamel comprises an equilibrated a reaction product of a polyamide resin, a titanium catalyst and a solvolytic agent.

4,808,437
METHOD FOR PRODUCING MAGNETIC RECORDING MEDIUM

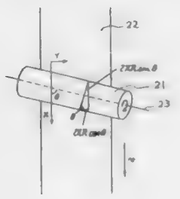
Akira Kisoda, Moriguchi; Hiroshi Suzuki, Kadoma; Tomiharu Hosaka, and Masanaru Hasegawa, both of Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 6, 1988, Ser. No. 141,262
Claims priority, application Japan, Jan. 7, 1987, 62-1244
Int. Cl.[4] H01F 10/02; B05D 5/12
U.S. Cl. 427—130 **2 Claims**

1. A method of producing a magnetic recording medium, said method comprising the steps of:
providing a recording medium comprising a substrate, a magnetic layer comprising magnetic powder disposed on at least one surface of the substrate, and a track comprising recorded signals that are defined on said at least one surface thereof and are also reproduceable therefrom in a tracking direction that extends obliquely to a feeding direction of the recording medium, an oblique tracking angle being defined between said tracking direction and longitudinal feeding direction;
feeding the recording medium at a feeding velocity in said feeding direction; and

polishing said magnetic layer by running abrasive thereover in an abrading direction and at a predetermined abrading speed, an abrading angle being defined between the abrading direction and a direction extending perpendicular to said feeding direction, and

said tracking angle, said abrading speed, said abrading angle and said feeding speed satisfying the equation



$$\tan \eta = P \cos \theta / v - P \sin \theta$$

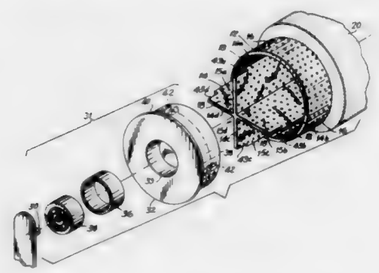
wherein η represents said tracking angle in degrees, P represents said abrading speed in m/sec, θ represents said abrading angle in degrees, and v represents said feeding speed in m/sec.

4,808,438

APPARATUS AND METHOD FOR PRINTING A MARBLE MOTIF

Vladimir Rozenshtein, 159 Beach 123rd St., Rockaway Park, N.Y. 11694

Filed Feb. 1, 1988, Ser. No. 150,930
Int. Cl.[4] B05D *5/06, 1/28;* **B05C** *17/02*
U.S. Cl. 427—260 **11 Claims**



1. A marbleizer comprising:

holding means, including a hand gripping portion;

a hollow cylindrical roller rotatably mounted in said holding means for rotation about a longitudinal axis and defining a first set of perforations;

partitioning means disposed within said roller to divide the hollow of said roller into a plurality of compartments adapted to receive different colored paints, said partitioning means defining a second set of perforations permitting limited fluid communication between said compartments; and

a porous absorbent material positioned over said roller and in fluid communication with said first set of perforations;

whereby the different colored paints stored in said compartments slowly seep through said second set of perforations to partially mix the paints, and the partially mixed paints slowly seep through said first set of perforations to moisten said porous absorbent material.

10. A method for printing a marble motif comprising the steps of:

separately loading different colored paints in compartments adapted to receive the different colored paints; and

partially mixing the different colored paints in the compartments while simultaneously applying the partially mixed paints to a surface to print a marble motif.

4,808,439

PROCESS AND APPARATUS FOR APPLYING AND IMPREGNATING FLEECE MATERIALS WITH VISCOUS LIQUIDS

Klaus Basfeld, Walsrode, Fed. Rep. of Germany, assignor to Wolff Walsrode Aktiengesellschaft, Walsrode, Fed. Rep. of Germany

Filed Oct. 27, 1987, Ser. No. 114,172
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1986, 3638189
Int. Cl.[4] B05D *3/12;* **B05C** *1/00, 3/12;* **D01F** *2/06*
U.S. Cl. 427—356 **10 Claims**



6. In a process for coating and impregnating fleece materials wherein a viscous liquid is applied using dies, the improvement comprising: moving the fleece material in a transport direction and applying the viscous liquid on one side of the fleece material by a first die and at least one second die disposed downstream of the first die in the transport direction.

4,808,440

PROCESS FOR THE SURFACE TREATMENT OF POLYMER ARTICLES TO PROVIDE FOR BETTER ADHERENCE OF PAINTS

Emmett L. Tasset, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 28, 1987, Ser. No. 114,322
Int. Cl.[4] B05D *1/02, 1/18, 1/28, 7/02*
U.S. Cl. 427—372.2 **14 Claims**

1. A process for treating the surface of a polyurethane article to provide a surface to which paint will adhere more readily which comprises contacting the surface of said article for a minimum of 10 seconds with a solution of phosphoric acid in an organic solvent, said solvents being selected from lower molecular weight esters, ketones and alcohols, and said phosphoric acid being present in said solvent at a concentration within the reange of from about 0.1 to about 1.0 weight percent, subsequently heating at an elevated temperature for a time sufficient to dry the so-treated article.

4,808,441

METAL ARTICLES HAVING CORROSION-RESISTANT EPOXY COATINGS

Mohinder S. Chattha, Livonia, and Harendra S. Gandhi, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 15, 1987, Ser. No. 50,126
Int. Cl.[4] B05D *3/02;* **B32B** *15/08, 27/38;* **F01N** *7/16*
U.S. Cl. 427—386 **16 Claims**

1. A method of providing a corrosion protective coating on

a motor vehicle exhaust system component comprising a metal substrate, which method comprises:

applying a coating in a thickness of at least about 0.5 mils of an epoxy-amine composition to a surface of said metal substrate; and

subjecting the coated substrate to an elevated temperature sufficient to cure said composition to a cured coating, said epoxy-amine composition comprising:

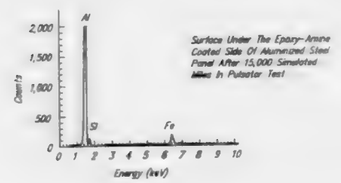
(A) epoxy resin component;

(B) aromatic amine component;

(C) optionally, acid component selected from polycarboxylic acid and anhydrides thereof; and

(D) optionally, polyol component,

wherein said component (B) and said component (A) are employed in relative amounts which provide about 0.5 to about 1.5 reactive amine hydrogens per each epoxide group in said composition, and components (A), (B), (C) and (D) are employed in relative amounts which, in said cured coating, result in less than about 20 percent of moieties bridging adjacent carbon atoms being ester moieties, based on the total of all moieties bridging adjacent carbom atoms in said cured coating which are not direct covalent bonds, said epoxy resin component (a) being selected from epoxy resins having (i) a number average molecular



weight between about 200 and 10,000, and (ii) at least two 1,2 epoxide groups per molecule, and (b) comprising aromatic polyepoxide resin in sufficient portion that at least 50 percent of all carbon atoms present in said epoxy resin component are aromatic carbon atoms, and said aromatic amine component (a) being selected from aromatic amines having (i) a number average molecular weight between about 100 and about 10,000, (ii) at least one reactive amine group and at least two reactive amine hydrogens per molecule, and (iii) at least one phenyl ring per molecule, and (b) comprising at least about 90 weight percent aromatic polyamine having (i) at least two reactive amine groups per molecule and (ii) at least two phenyl rings per molecule wherein adjacent phenyl rings are bridged by moieties independently selected from a direct covalent bond, O, S, SO, SO_2, PO_2, CO, CONH, COO, and CR_1R_2, wherein R_1 and R_2 are independently hydrogen or alkyl of 1 to 4 carbon atoms, and wherein (i) at least 80 percent of said reactive amine groups present in said aromatic amine component are directly attached to said phenyl rings present in said aromatic amine component and (ii) at least 50 percent of all carbons atoms present in said aromatic amine component are aromatic carbon atoms.

4,808,442

COMPOSITION SUITABLE FOR USE IN POLYMER CROSS-LINKING PROCESSES

Johannes P. J. Verlaan, Deventer, and Leonardus B. G. M. Nijhoe, Enter, both of Netherlands, assignors to Akzo NV, Arnhem, Netherlands

Filed Dec. 30, 1986, Ser. No. 947,857
Claims priority, application Netherlands, Jan. 23, 1986, 8600140
Int. Cl.[4] C08J *3/24;* **B32B** *25/02*
U.S. Cl. 427—393.5 **7 Claims**

1. A process for cross-linking a polymer with the aid of a radical forming cross-linking agent, said process comprising subjecting a mixture of the polymer, the cross-linking agent and optional additives to treatment with a composition suitable to prevent surface stickiness of the cross-linked end product, wherein said composition is comprised of:

(a) a solid, finely divided, film forming polymer having a particle size in the range of 1–100 microns,

(b) finely divided rubber filler having a particle size in the range of 1–100 microns, and

(c) an organic peroxide having a half-life period of decomposition of at least 15 minutes at 100° C.

the amounts of a, b and c being 5–75% by weight, 5–75% by weight and 5–70% by weight, respectively, calculated on the amount of (a+b+c), the amount of said composition used being such that components a, b and c of said composition are present on the surface of the mixture in an amount ranging from 1 to 40 grams of (a+b+c) per square meter of surface area;

and cross-linking the treated mixture.

4,808,443

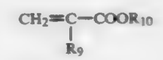
AQUEOUS OVERCOATING COMPOSITION AND USE OF THE SAME IN PRINTING METHOD

Masaya Minamoto, Osaka; Mitsuru Kojima, Hyogo; Toshiharu Sagara, Hyogo, and Yorio Takeda, Hyogo, all of Japan, assignors to Sakata Shokai, Ltd., Osaka, Japan

Division of Ser. No. 683,192, Dec. 18, 1984, abandoned. This application Jul. 24, 1987, Ser. No. 78,024
Claims priority, application Japan, Dec. 28, 1983, 58-249596
Int. Cl.[4] B05D *1/36*
U.S. Cl. 427—407.1 **10 Claims**

1. A printing method which comprises coating an aqueous overcoating composition on a wet surface just printed with an oil-based ink in a thin film, so as to greatly accelerate the setting and drying of said oil based ink, said composition comprising:

(a) an aqueous dispersion of a resin composed of an acrylic copolymer having an acid value of 50 or less which is obtained by emulsion-polymerizing a polymerizable monomer mixture comprising at least one of acrylic acid esters and methacrylic acid esters both represented by the formula:



wherein R_9 is a hydrogen atom or a methyl group and R_{10} is a straight or branched aliphatic hydrocarbon group of 1 to 18 carbon atoms or an alicyclic hydrocarbon group, and

(b) 1 to 8% by weight, based on said composition, of at least one compound selected from the group consisting of:

(A) a (poly)alkylene glycol dialkyl ether represented by the formula (I)



(I)

wherein R_1 and R_2 each are an alkyl group of 1 to 4 carbon atoms, X_1 is an oxyalkylene group of 2 to 4 carbon atoms and n is an integer of 1 to 4,

(B) an alkylene glycol monoalkyl ether represented by the formula (II)



(II)

wherein R_3 is an alkyl group of 4 to 12 carbon atoms and X_2 is an oxyalkylene group of 2 to 8 carbon atoms,

(C) an alkylene glycol monoester represented by the formula (III)

(III)

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wherein R_4 is an alkyl group of 3 to 11 carbon atoms and X_2 has the same definition as given above,

(D) an alkylene glycol ether ester represented by the formula (IV)

$$R_5—COO—X_2—R_6 \quad (IV)$$

wherein R_5 is an alkyl group of 1 to 11 carbon atoms, and R_6 is an alkyl group of 1 to 12 carbon atoms but when R_5 is an alkyl group of 1 to 2 carbon atoms, R_6 shall not be an alkyl group of 1 to 3 carbon atoms, wherein X_2 has the same definition as given above, and

(E) a dialkyl ester of a dicarboxylic acid represented by the formula (V)

$$R_7OOC—X_3—COOR_8 \quad (V)$$

wherein R_7 and R_8 each are an alkyl group of 1 to 8 carbon atoms and X_3 is an alkylene or alkenylene group of 1 to 10 carbon atoms,

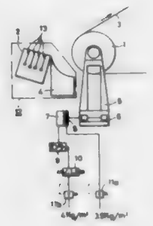
and being capable of forming a film at the ambient temperature of a printing operation.

4,808,444

METHOD AND APPARATUS FOR COATING WEBS

Takeshi Yamazaki; Nobuyuki Yoshida, and Yasuhiro Iizuka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 22, 1987, Ser. No. 99,854
Claims priority, application Japan, Sep. 22, 1986, 61-222208
Int. Cl.[4] B05D *1/26, 1/30, 1/34*
U.S. Cl. 427—420 **4 Claims**



1. A coating method for applying coating composition from a relatively heavy hopper having attendantly high inertia to a web continuously travelling around a relatively light backing roller and translatable therewith, said backing roller having attendantly low inertia, said method comprising the steps of;

bringing said relatively heavy hopper close to said web at a first speed to minimize a distance between said hopper and said web within a range in which said coating composition from said hopper is not applied to said web; and thereafter moving said relatively light backing roller close to said hopper at a second speed greater than said first speed to apply said coating composition to said web.

4,808,445

COATING APPARATUS AND METHOD

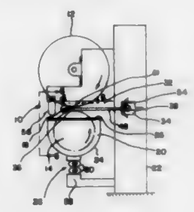
Haruyoshi Fujiwara, and Toshihiro Toyofuku, both of Hiroshima, Japan, assignors to Beloit Corporation, Beloit, Wis.

Filed Aug. 26, 1987, Ser. No. 89,473
Int. Cl.[4] B05D *1/28;* B05C *1/08*
U.S. Cl. 427—428 **11 Claims**

11. A method of applying a coating material to the surface of a paper web, said method comprising the steps of:

rotating an applicator roll within a coated pan filled with the coating material such that the coating material is carried by the applicator roll from the coater pan towards a gap defined by the applicator roll and a cooperating backing roll;

rotating a nip roll such that the nip roll rotates in the same direction of rotation as the applicator roll with the nip roll riding on the applicator roll; and



moving the applicator roll relative to the backing roll such that the nip roll riding on the applicator roll defines a variable nip section between the nip roll and the cooperating backing roll so that a smooth layer of coating material is applied to the surface of the paper web during passage of the web through the nip section.

4,808,446

ARTIFICIAL GRASSY PLANT

Henry Weitz, Prosperity House, 8A Granville Road, Kowloon, Hong Kong

Filed Mar. 15, 1988, Ser. No. 168,144
Int. Cl.[4] A41G *1/00*
U.S. Cl. 428—17 **5 Claims**



1. An artificial grassy plant comprising: a die-cut synthetic sheet member having a series of substantially parallel blade-like leaf portions integral, at one end, with a transverse connecting strip portion and extending substantially perpendicular to the latter; a tubular connector open at least at a lower end; an adhesive strip at least as long as said transverse connecting strip portion and being adhesively secured along the latter, said transverse connecting strip portion with said adhesive strip secured therealong being wound repeatedly about said tubular connector and secured on the latter by said adhesive strip with successive turns of said wound connecting strip portion and adhesive strip being conterminous and with said one end of each of said leaf portions being substantially at the level of the upper end of said tubular connector so that all of said blade-like leaf portions are bunched together at said one end about said tubular connector and extend from the latter in a substantially erect formation; and an elongated stem member inserted in said tubular connector through said lower open end for mounting said bunched together blade-like leaf portions on said stem member.

4,808,447

PRESERVED FLOWERS AND OTHER SUBSTRATES

Marion A. Baker, 18161 Windsor Dr., Orange, Calif. 92667

Continuation-in-part of Ser. No. 922,538, Oct. 23, 1986, abandoned. This application Jun. 11, 1987, Ser. No. 61,916
Int. Cl.[4] A01N *3/00*
U.S. Cl. 428—17 **16 Claims**

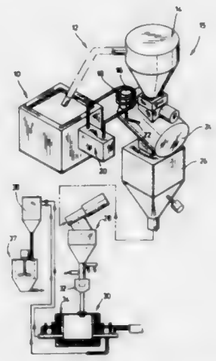
1. The process of obtaining preserved flower blooms and other natural predominantly carbohydrate products such as flower stems, leaves and vegetables which are free standing and have a natural fresh appearance maintained over prolonged periods which compriaes removing most or substantially all of the water present in the substrate, said substrate including naturally occurring active hydrogen compounds as part of its structure, exposing the substantially dried substrate to a polyisocyanate crosslinking compound containing a plurality of isocyanate groups which are complementary reactive with the said active hydrogen groups to form a high molecular weight three dimensional cross-linked polymeric network between the active hydrogen groups of said substrate and the polyisocyanate compound.

4,808,448

ANTI-STATIC ARTICLES

Harold S. Cox, Greenford, England, assignor to Roboserve Limited, Greenford, England

Continuation-in-part of Ser. No. 563,580, Dec. 20, 1983, abandoned, and Ser. No. 563,620, Dec. 20, 1983, abandoned, and Ser. No. 563,610, Dec. 20, 1983, abandoned. This application Dec. 11, 1985, Ser. No. 807,811
Claims priority, application Canada, Dec. 23, 1982, 418528
Int. Cl.[4] C08J *9/22, 9/24*
U.S. Cl. 428—36.5 **24 Claims**



1. A static-free cup or container consisting of fully expanded polystyrene beads of fused together to form the cup or container, each expanded bead coated with anti-static agent suitable for use in association with comestibles and having been expanded in a hot air moisture-free (pre-expander or mold) environment, wherein a coating of anti-static agent spaces each bead from its adjacent bead and presents with the coatings of the other beads, the interior and exterior surfaces of the cups or containers coated with anti-static agent over their entire surfaces, the static agent consisting of at least one agent selected from:

(a) a fatty acid dialkyloamide;

(b) a higher fatty acid ester of polyglycerol (HLB≧5);

(c) an alkyl sulphate;

(d) a quaternized ethoxylated amine;

(e) a higher amine oxide;

(f) an aliphatic sulphonate;

(g) a citric acid ester of a monoglyceride (HLB≧5);

(h) alkyl dimethyl betaines;

(i) a sarcosinate;

(j) a fatty acid ester of a lactylate (HLB≧5).

4,808,449

METHOD FOR APPLYING A DRIED COATING OF BIOLOGICALS TO THE INTERIOR OF A CONTAINER

Gary B. McAlister, Beacon Falls, Conn., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Aug. 25, 1986, Ser. No. 900,193
Int. Cl.[4] B01L *3/02;* B05D *7/22;* B65D *23/02*
U.S. Cl. 428—34.1 **29 Claims**

1. A medical container having an inner surface and a coating of porous particles on said inner surface, said porous particles being formed by atomizing a solution of said anticoagulant in a solvent to coat a layer of droplets of the solution on said inner surface and reducing the pressure on said inner surface sufficient to cause rapid evaporatioon of said solvent, said droplets being large enough not to dry before pressure reduction and small enough to cause rapid evaporation of said solvent under the reduced pressure.

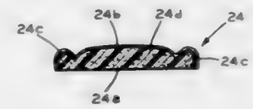
7. A process for coating an interior surface of a medical container comprising atomizing a solution of an anticoagulant in a solvent therefor so as to form a layer of distinct droplets on said interior surface, and reducing the pressure within the container to a point sufficient to cause rapid evaporation of the solvent from the droplets, the evaporation being sufficient to cause freezing of the droplets, sublimation of the solvent and formation of a coating of porous particles.

4,808,450

SIDE BODY MOLDING FOR ATTACHMENT TO A VEHICLE BODY

Robert R. Guy, North Royalton, Ohio, assignor to Sterling Engineered Products Inc., Maumee, Ohio

Division of Ser. No. 531,415, Sep. 12, 1983, Pat. No. 4,600,461. This application Jul. 10, 1986, Ser. No. 884,101
Int. Cl.[4] B60R *13/04*
U.S. Cl. 428—31 **8 Claims**



4. A side body molding of predetermined cross sectional design for attachment to a vehicle body comprising: a core of foamed thermoplastic material having a first surface area and an opposite surface for attachment to the vehicle body; and an outer skin of substantially non-porous thermoplastic material superimposed on and integrally sealed to said first surface of the core and including an exposed surface having a glossy finish, said skin and core being simultaneously shaped and integrally sealed together after superimposition to provide said predetermined cross sectional design.

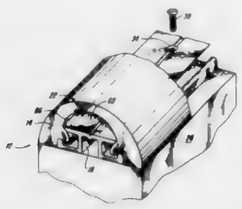
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4,808,451

FLUSH FITTING PROTECTIVE STRIP ASSEMBLY

David S. McCue, Marblehead, Mass., and Roland Gebhardt, New York, N.Y., assignors to Boston Metal Products Corporation, Medford, Mass.

Filed May 4, 1987, Ser. No. 46,836
Int. Cl.[4] E04F *19/02*; B60J *11/00*
U.S. Cl. 428—31 17 Claims



1. A protective strip assembly comprising, in combination, a mounting member and an elongated strip of resilient material secured in and partially surrounding the mounting member;

a. The resilient strip comprising:

(1) a body having a semi-cylindrical outer surface partially surrounding the mounting member and having a pair of circumferentially facing edge portions; and

(2) a pair of oppositely disposed, radially inwardly extending latch members, each located between a point away from the mid-line of the semi-cylindrical body and the closest edge portion; and

b. The mounting member comprising:

(1) a web portion having a pair of oppositely disposed web latch extensions extending generally across a chord of the semi-cylindrical body;

(2) at least one leg member extending from the web portion away from the semi-cylindrical body;

(3) a pair of oppositely disposed base members:

(i) each extending from a leg member, away from each other;

(ii) each terminating in a base latch portion;

wherein each of the pair of web latch extensions mates with the semi-cylindrical body adjacent the radially extending latch member, between the radially extending latch member and the midline of the semi-cylindrical body, and each of the pair of base latch portions mates with the semi-cylindrical body adjacent the radially extending latch member, between the radially extending latch member and the closest end portion.

4,808,452

MULTI-PANE THERMALLY INSULATING CONSTRUCTION

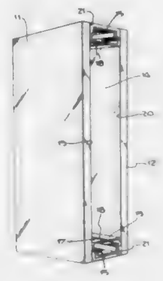
John McShane, North Hollywood, Calif., assignor to Products Research & Chemical Corp., Glendale, Calif.

Division of Ser. No. 930,782, Nov. 14, 1986, Pat. No. 4,756,783.
This application May 18, 1988, Ser. No. 172,560
Int. Cl.[4] E06B *3/66*
U.S. Cl. 428—34 8 Claims

1. A multi-pane thermally insulating construction in which one or more chambers provided by two or more spaced argon gas impermeable transparent panes are filled with argon gas, said panes having inner edge margins, the combination of: spacing means for spacing said panes at said inner edge margins, and a seal having low permeability to argon gas between said spacing means and each of said inner edge margins, said seal comprising a solid elastomer of a cured polymer composition consisting essentially of

(a) from about 90 mole percent to about 25 mole percent of thioether mercaptan terminated disulfide polymer of the formula $HS(RSS)_mR'SH$;

(b) from about 10 mole percent to about 75 mole percent of diethyl formal mercaptan terminated polysulfide polymer of the formula $HS(RSS)_nRSH$; wherein in the formulae R is $—C_2H_4—O—CH_2H_4—$; R' is alkyl thioether of from 4 to 20 carbon atoms and the value of m and n is such that



the diethyl formal mercaptan terminated polysulfide and the thioether mercaptan terminated disulfide polymer have an average molecular weight of between about 1000 and about 4000.

4,808,453

PHARMACEUTICAL ELASTOMERIC COATING

Val. G. Romberg, 7930 Beverly Blvd., Upper Darby, Pa. 19082; Patty H. Kiang, 3563 Arcola Rd., Collegeville, Pa. 19426, and Wayne T. Curry, 1035 Belleview Ave., Pottstown, Pa. 19464

Filed Apr. 13, 1987, Ser. No. 37,959
Int. Cl.[4] B27N *5/02*
U.S. Cl. 428—36.8 6 Claims

1. An elastomeric stopper for use with a container with pharmaceutically pure contents therein comprising an elastomeric base and a continuous polyparaxylylene coating on said base to reduce the coefficient of friction of said stopper to less than 1.0 and substantially prevent metal ion extractions from said base, said coating ranging from about 0.5 microns to about 2.0 microns in thickness.

4,808,454

ACTIVE AGENT-CONTAINING LAMINATED MATERIAL

Hachiro Saitoh, Yokosuka, Japan, assignor to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Sep. 16, 1986, Ser. No. 908,108
Int. Cl.[4] A61L *9/04*; B32B *31/00, 27/08*
U.S. Cl. 428—42 13 Claims

1. An active agent-containing laminated material which is prepared by

(1) laminating the polyolefin side of a first impermeable film, said first impermeable film having been previously laminated with a polyolefin film, to one side of a molten web of active agent-containing polyolefin composition,

(2) laminating a second impermeable film, having no polyolefin film laminated thereto, to the other side of said molten web of active agent-containing polyolefin composition, said second impermeable film being capable of being repeatedly peeled off and readhered to the web of active agent-containing polyolefin composition of said laminated material, and

(3) pressing the laminated films together,

said active agent-containing polyolefin composition comprising:

(a) 10 to 100 parts by weight of carboxyl group-containing ethylene based copolymer of at least 7% by weight in the content of carboxyl group-containing monomer;

(b) 90 parts by weight or less of low density polyethylene having a melt index of at least 30 g/10 min.; and

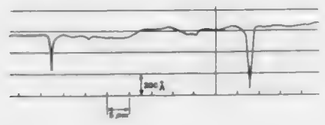
(c) at least 0.005 parts by weight of an active agent or agents relative to 100 parts by weight of said polymers (a) plus (b).

4,808,455

MAGNETIC RECORDING DISC AND PROCESS FOR PRODUCING THE SAME

Toshiaki Wada, Takatsuki; Yoshiaki Katsuyama, Yamatotakada, and Junichi Nakaoka, Amagasaki, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Filed Nov. 19, 1986, Ser. No. 932,367
Claims priority, application Japan, Nov. 20, 1985, 60-260768
The portion of the term of this patent subsequent to Sep. 1, 2004, has been disclaimed.
Int. Cl.[4] G11B *5/82, 5/72*
U.S. Cl. 428—64 21 Claims



1. A magnetic recording disc, which comprises:

(a) a substrate member of a nalumina-based ceramic material containing therein micropores witha size of 5 μm or below and having a relative theoretical density of 90% or higher;

(b) a glass coating layer having a thickness of from 3 μm to 200 μm, having a surface roughness (R_z) of 180 angstroms or below and a softening point of 400°–900° C., containing no more than 50 per 100 cm^2 micropores having a size exceeding 0.2 μm, and being free from strain with a Beilby layer thickness of no more than 50 angstroms;

(c) a magnetic thin coating film disposed on the surface of said glass coating layer; and

(d) a protective coating film formed on said magnetic thin film.

17. A process for pro lucing a magnetic recording disc, which comprises the steps of:

(a) forming a glass coating layer of a glass having a softening point of from about 400°–900° C. to a thickness in a range of from 5 μm to 220 μm on the surface of an alumina-based ceramic substrate containing therein micropores with a size of 5 μm or below having a relative theoretical density of at least 90% or above;

(b) then, subjecting said glass coating layer on said substrate to mechanochemically polishing process to render it to have a surface roughness (R_z) of 180 angstroms or less, to contain no more than 50 micropores having a size exceeding 0.2 μm per 100 cm^2, to be free from strain with a Beilby layer thickness of no more than 50 angstroms, and to have layer thickness in a range of from 3 μm to 200 μm; and

(c) further coating the surface of said glass coating layer with a magnetic thin film and protective film.

4,808,456

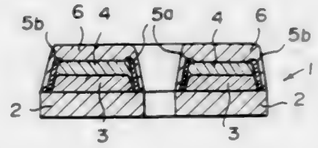
MAGNETO-OPTICAL RECORDING MEDIUM AND METHOD OF MAKING THE SAME

Takashi Yamada; Masaaki Nomura; Ryoichi Yamamoto, and Akira Nahara, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 30, 1987, Ser. No. 102,848
Claims priority, application Japan, Oct. 17, 1986, 61-247129
Int. Cl.[4] G11B *7/24*
U.S. Cl. 428—65 10 Claims

1. A magneto-optical recording medium comprising a substrate, and a magneto-optical recording layer formed of a rare earth metal-transition metal alloy and a dielectric protective layer which are overlaid in this order on the substrate,

wherein the improvement comprises the provisions of a rare



earth metal layer overlaid substantially only on at least one edge face of said magneto-optical recording layer, said edge face being substantially parallel to the thickness direction of the recording layer.

4,808,457

HEAVY GAS-FILLED MULTILAYER INSULATION PANELS

Richard W. Kruck, Sodus Township, and Omer N. Cur, St. Joseph Township, both of Berrien County, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 19, 1986, Ser. No. 897,978
Int. Cl.[4] E04B *1/76*
U.S. Cl. 428—69 16 Claims

1. For a refrigeration unit cabinet, a modular thermal insulation panel having a plurality of gas-filled, thin, transversely extensive uninterrupted cavities separated by a plurality of substantially parallel sheets within a hermetically sealed impermeable outer envelope, comprising:

first and second similarly shaped and sized frame members formed of a first material having low thermal conductivity and each having an inner and outer face, said outer faces thereof defining an outer overall transverse shape and size of said panel;

frame separation means formed of a second material having low thermal conductivity for firmly maintaining said first and second frame members parallel and spaced-apart from each other to define an interior space therebetween;

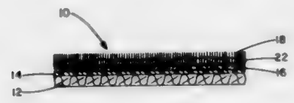
a plurality of thin sheets of a first thermally insulating material, said sheets being stretched out and supported by said frame separation means to be parallel to each other between said first and second frame members;

interlocking sheet spacer means formed of a third material having low thermal conductivity for spacing said sheets from each other, said spacer means contacting only the peripheries of said sheets, whereby only a low thermal conduction path normal to said thin sheets is allowed peripherally across the thickness of each of said spacer means, to establish said plurality of thin transversely uninterrupted cavities extending between adjacent pairs of said thin sheets; and

envelope means for hermetically enveloping said first and second frame members with said thin sheets and spacers sandwiched therebetween, without supporting the same while containing said gas primarily within said plurality of thin transversely extensive cavities between said sheets and said sheet spacer means.

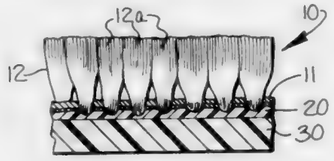
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4,808,458
TEXTURED SUEDE
Keith A. Watt, Toledo, and William E. Bachman, Sylvania, both of Ohio, assignors to Genscorp Inc., Akron, Ohio
Filed Feb. 8, 1988, Ser. No. 153,687
Int. Cl.[4] B32B *33/00*
U.S. Cl. 428—90 20 Claims



1. A suede fabric lamina, comprising:
a synthetic or natural fabric coated with a polymer having a flock adheaive applied thereto, flock fibers electrostatically deposited on said flock adhesive, and
an effective amount of a thermoplastic infusing compound contiguous with said flock adheaive and impregnating said flock fibers and residing at the bottom portion of said flock fibers, said thermoplastic infusing compound having been abraded so that said flocked fabric has a suede-like finish.

4,808,459
CARPET WITH POLYVINYLIDENE CHLORIDE LATEX TUFT-LOCK ADHESIVE COATING
Vernon C. Smith, Huntersville, and Ruth C. Roberts, Salisbury, both of N.C., assignors to Collins & Aikman Corporation, New York, N.Y.
Filed Sep. 16, 1987, Ser. No. 97,604
Int. Cl.[4] B32B *27/30*
U.S. Cl. 428—95 15 Claims

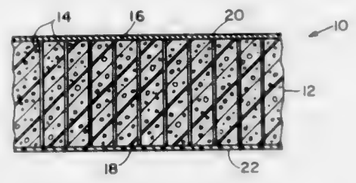


1. A pile carpet comprising:
a primary backing,
pile yarns extending from the front of said primary backing to form pile tufts, and having portions extending through the primary backing to the rear thereof, and
a tuft-lock coating carried by the rear of said primary backing and securing said pile yarns to said primary backing, said tuft-lock coating comprising a copolymer of vinylidene chloride with at least one acrylic monomer, said copolymer having a glass transition temperature of 0° C. or less, and said coating having thermoplastic adhesive properties capable of subsequent activation for bonding of the carpet to a secondary backing.

4,808,460
LAMINATED STRUCTURES CONTAINING AN INORGANIC CORRUGATED OR HONEYCOMB MEMBER
Kenneth Chyung, Painted Post; Steven B. Dawes, Corning; Kishor P. Gadkaree, Big Flats; Robert M. Morena, Caton, and Mark P. Taylor, Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Jun. 2, 1987, Ser. No. 57,531
Int. Cl.[4] B32B *3/12*
U.S. Cl. 428—116 11 Claims

1. A laminated structure consisting essentially of:
(a) a light weight interior member selected from the group consisting of a corrugated body and a honeycomb body composed of a glass-ceramic or a ceramic;
(b) an exterior member composed of a glass-ceramic or a ceramic; and
(c) a bonding member for joining together said interior member and said exterior member composed of a high temperature glass-ceramic prepared from a thermally crystallizable glass; wherein the coefficients of thermal expansion of said interior member, said exterior member, and said bonding member are closely compatible, and the temperature interval T_g–T_{Cryst} of said bonding member is about 100°–150° C.

4,808,461
COMPOSITE STRUCTURE REINFORCEMENT
Joseph S. Boyce, Hanover; Roland R. Wallis, Jr., Allston, and Daniel E. Bullock, Pittsfield, all of Mass., assignors to Foster-Miller, Inc., Waltham, Mass.
Filed Dec. 14, 1987, Ser. No. 132,347
Int. Cl.[4] B32B *3/26, 7/04*
U.S. Cl. 428—119 22 Claims

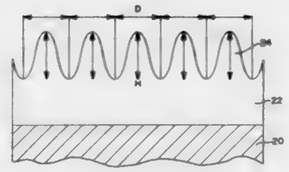


1. Translaminar reinforcement structure for Z-direction reinforcement of a composite structure comprising
a body of thermally decomposable material that has opposed surfaces,
a plurality of reinforcing elements in said body extending generally perpendicularly to one of said opposed surfaces, and
pressure intensifying structure on the other opposed body surface for applying driving force to said reinforcing elements for insertion into a composite structure as said body of thermally decomposable material is subjected to elevated temperature.

4,808,462
SOLAR CELL SUBSTRATE
Susumu Yaba, Yokohama, Japan; Christopher M. Walker, Boulder, Colo.; Stephen Muhl, Lakewood, Colo., and Arun Madan, Golden, Colo., assignors to Glasstech Solar, Inc., Colo.
Filed May 22, 1987, Ser. No. 52,991
Int. Cl.[4] B32B *17/06*; H01L *31/04*
U.S. Cl. 428—142 5 Claims

1. A solar cell substrate, comprising a transparent glass substrate having at least one surface and an electrically conductive layer of a tranparent conductive material formed thereon by atmospheric pressure chemical vapor deposition,

said conductive layer having a surface topography including a plurality of polygonal projections extending in a direction opposite said one surface of the substrate and said polygonal



projections having diameters in the range from 0.1 to 0.3 μm and height/diameter ratios of at least 0.6 over more than eighty percent of the surface topography.

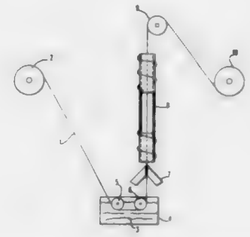
4,808,463
SUBSTRATE FOR MAGNETIC DISKS
Okabayashi Yoshikatsu, and Matsuda Osamu, both of Kagoshima, Japan, assignors to Kyocera Corporation, Kyoto, Japan
Continuation-in-part of Ser. No. 687,185, Dec. 27, 1984, abandoned. This application Jul. 22, 1986, Ser. No. 888,794
Claims priority, application Japan, Dec. 27, 1983, 58-245826
Int. Cl.[4] B32B *7/02*; G11B *5/70*
U.S. Cl. 428—215 21 Claims



1. A substrate for magnetic disks comprising a support including at least a polycrystalline ceramic material having a crystalline particulate diameter of no greater than 100 μm and a glaze layer formed on at least one surface of said support, said glaze layer being coated with a magnetic recording material, wherein said support and said glaze layer have substantially the same thermal expansion coefficient and said support and said glaze layer can withstand temperatures up to 500° C. with substantially no dimensional instability wherein the glaze layer has a thickness of not greater than 150μm.

4,808,464
INSULATING FERROMAGNETIC AMORPHOUS METAL STRIPS
Norman M. Pavlik, Wilkinsburg, and John Sefko, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Division of Ser. No. 076,974, Jul. 23, 1987, Pat. No. 4,759,949. This application Apr. 8, 1988, Ser. No. 186,263
Int. Cl.[4] B32B *15/04, 15/18, 17/06*
U.S. Cl. 428—216 5 Claims

1. A ferromagnetic amorphous metal strip insulated with a coating of glass where said coating is about 0.001 to about 0.02 mils thick.



2. A strip according to claim 1 wherein said strip is about 0.5 to about 1.5 mils thick.

4,808,465
COMPOSITE MATERIAL
Jeffrey A. Vane, 12 Cleveland Grove, Northcroft Park, Newbury, Berkshire RG13 1XF, England
Filed Nov. 19, 1987, Ser. No. 122,377
Claims priority, application United Kingdom, Nov. 20, 1986, #8627786
Int. Cl.[4] B32B *15/08, 15/14*
U.S. Cl. 428—233 13 Claims

1. A self-supporting flame resistant composite material comprising at least one layer of lead material and at least one layer of flame resistant fibrous material, the layers having been bonded together to provide a self-supporting structure said lead material comprising a layer or mat of non-woven lead strands and said flame resistant fibrous material comprising a layer or mat of non-woven glass fibers.

10. A reinforced plastics article comprising a composite material consisting of at least one layer of lead material and at least one layer of flame resistant fibrous material, the layers having been bonded together to provide a self-supporting structure, said composite material having been impregnated with a synthetic resinous material.

4,808,466
DEODORANT SHEET
Motoharu Kotani; Shinzo Ishikawa, both of Himeji, and Keishi Sato, Saita, all of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan
Filed Aug. 12, 1987, Ser. No. 84,144
Claims priority, application Japan, Oct. 9, 1986, 61-240999
Int. Cl.[4] B32B *7/00, 9/00*
U.S. Cl. 428—254 13 Claims

1. A deodorant sheet, which comprises, a porous base sheet having a coating layer provided thereon, wherein the coating layer comprises 1 to 30 g per 1 m^2 of a deodorant, 0.03 to 1 g per 1 m^2 of a biological activity-inhibiting substance and a resin in an amount of 1 to 5 times as much as the total weight of the deodorant and the biological activity-inhibiting substance.

5. The deodorant sheet as claimed in claim 1, wherein the porous base sheet is a fibrous material, a porous film or a foamed plastic sheet.

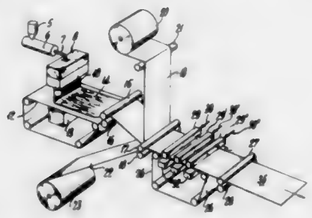
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4,808,467

HIGH STRENGTH HYDROENTANGLED NONWOVEN FABRIC

Stuart P. Sunkind, Greer; Susan L. K. Martucci, Simpsonville, and Joseph Israel, Greenville, all of S.C., assignors to James River Corporation of Virginia, Richmond, Va.

Filed Sep. 15, 1987, Ser. No. 97,157
Int. Cl.[4] B32B 27/34
U.S. Cl. 428—284 14 Claims



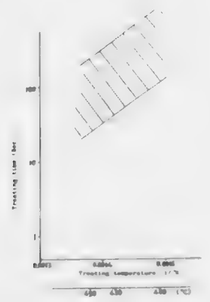
1. A high strength nonwoven fabric comprising a continuous filament bonded base web and a wet laid second fibrous web consisting essentially of 50 to 90 weight percent wood pulp and 10 to 50 weight percent staple length fibers intimately hydroentangled with one another and with said base web.

4,808,468

POLYIMIDE FILM AND ITS MANUFACTURING METHOD

Hitoshi Nojiri; Katahiro Kitai; Yoshihide Ohnari; Masaro Kidoh, all of Ohtsu, and Tsuneo Yamamoto, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 21, 1987, Ser. No. 88,326
Claims priority, application Japan, Sep. 1, 1986, 61-205576; Sep. 1, 1986, 61-205577
Int. Cl.[4] B32B 7/00
U.S. Cl. 428—220 20 Claims



1. A polyimide film characterized in that its residual content of volatiles is reduced to not more than 0.45 weight % based on the film.

4,808,469

ENERGY ABSORBING POLYURETHANE COMPOSITE ARTICLE

Maurice Hiles, 234 Silver Valley Blvd., Munroe Falls, Ohio 44262

Filed May 9, 1985, Ser. No. 732,389
Int. Cl.[4] B32B 3/26, 7/10, 27/40
U.S. Cl. 428—318.6 19 Claims



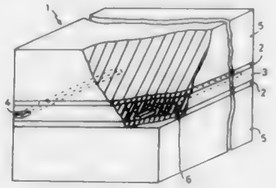
1. A light weight energy absorbing and damping device having a predetermined configuration and an overall density of less than 1 which is a composite of a polyurethane foam element, and at least one polyurethane viscoelastic element, each said visco-elastic element being permanently bonded to said foam by the formation of urethane bonds at the interface between said foam element and each said visco-elastic element in a portion of the device through which energy is normally transmitted.

4,808,470

HEATING ELEMENT AND METHOD FOR THE MANUFACTURE THEREOF

Georges Geuskens; Robert Deltour, both of Brussels, and Thierry Vallier, Court-St-Etienne, all of Belgium, assignors to Compagnie Internationale de Participation et D'Investissement Cipart S.A., Luxembourg

Filed Jan. 5, 1987, Ser. No. 58,312
Claims priority, application Belgium, Jan. 6, 1986, 216753
Int. Cl.[4] B32B 15/08
U.S. Cl. 428—323 4 Claims



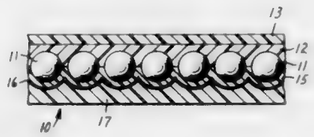
1. A heating element which comprises (1) at least one electrically insulating support sheet which is stable at the temperature of use of the element, (2) at least one electrically conductive layer applied on one face of the support sheet and consisting of a thermohardened synthetic silicone resin which is stable up to a temperature of about 500° C., which is soluble in organic solvents before it is thermohardened and in which hollow particles of carbon black of less than 0.2 microns are dispersed so as to cause the resin layer to be electrically conductive, said conductive layer being obtained from a solution containing at least one of said organic solvent, the synthetic silicon resin before it is thermohardened and the hollow particles and (3) two metallic conductors in contact with said layer and parallel to each other, said conductors being suitable for connection with a source of electric power, said conductive layer having a square resistance from 40 to 400 ohms, the weight of said conductive layer being comprised between 0.01 and 0.1 gram per cm^2 of the surface of the resin-coated support sheet.

4,808,471

FLAT TRANSPARENT TOP COAT FOR RETROREFLECTIVE SHEETING

Raymond E. Grunzinger, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 45,270, Apr. 30, 1987, abandoned, which is a continuation of Ser. No. 707,199, Mar. 1, 1985, abandoned. This application Jan. 4, 1988, Ser. No. 142,326
Int. Cl.[4] G02B 5/12
U.S. Cl. 428—325 14 Claims



1. Retroreflective sheeting have a flat, transparent, tough, solvent-resistant, abrasion-resistant and weather-resistant top coat made form a mixture of hydroxy-functional acrylic polyol and aliphatic polyfunctional isocyanate which serves as curing agent for the polyol, said top coat having a toughness index, defined as the multiplication product of the elongation and tensile strength of the top coat in, respectively, percent and kilograms per square centimeter, of at least 6175.

4,808,472

FLUOROPOLYETHERS CONTAINING END GROUPS ENDOWED WITH ANCHORING CAPACITY

Gerardo Caporiccio, Milan; Ezio Strepparola, Treviglio, and Mario A. Scarati, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Division of Ser. No. 687,844, Dec. 31, 1984, Pat. No. 4,721,795.
This application Oct. 23, 1987, Ser. No. 111,607
Claims priority, application Italy, Jan. 19, 1984, 21481 A/84
Int. Cl.[4] G11B 5/71
U.S. Cl. 428—336 2 Claims

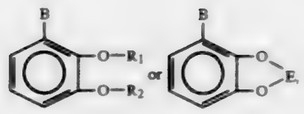
1. Magnetic recording media provided with a coating on the whole surface thereof having a thickness of from a few tens to a few thousands of Angstrom units, and comprising at least one compound selected from the class of compounds having the formula:

$$RO(C_3F_6)_m—(CFXO)_n—CFX—L, \quad (I)$$

and

$$R''CFXO—(C_3F_6O)_x—(CFXO)_y—(C_2F_4O)_z—CFX—L, \quad (II)$$

where
R=—CF_3, —C_2F_5, —C_3F_7,
X=F, —CF_3,
R''=F, —CF_3, —C_2F_5,
m=an integer from 3 to 100,
n=an integer, either finite or equal to zero, where m+n ranges from 3 to 100, provided that, if n is finite, then m/n ranges from 5 to 20 and R is preferably —CF_3, while if n=zero, R is preferably —C_2F_5 or —C_3F_7,
x=an integer, either finite or equal to zero,
y,z=finite integers, such that x+y+z ranges from 5 to 200, while x+z ranges from 5 to 0.5, provided that when x=zero, z/y ranges from 1 to 0.5 and y+z ranges from 5 to 200, while x is preferably F, and R''=L,
L=a group of A—Y, where
A=—CH_2O—, —CH_2—O—CH_2, —CF_2, —CF_2O—,
Y=an organic radical having one of the following formulas:



where
R^1, R_2=C_1–C_3 alkyl,
E=—CHR_3— or —CH_2—CHR_3—,
R_3=H or an alkyl C_1–C_3, and
B=H or a radical —OR_3.

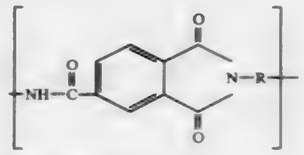
4,808,473

POLYAMIDE-IMIDE AROMATIC SULFONE POLYMER FILMS

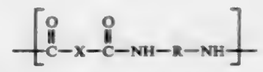
Gary T. Brooks, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 787,252, Oct. 15, 1985, abandoned, which is a continuation of Ser. No. 595,276, Mar. 30, 1984, abandoned. This application Jan. 4, 1987, Ser. No. 58,188
The portion of the term of this patent subsequent to Apr. 8, 2003, has been disclaimed.
Int. Cl.[4] B32B 5/16; B22B 27/00
U.S. Cl. 428—336 12 Claims

1. An extruded film having a thickness of about 0.5 to about 10 mils comprising about 0.1 to about 50 percent by weight of an aromatic sulfone polymer, and about 99.9 to about 50 percent by weight of an amide-imide phthalamide copolymer comprising recurring amide-imide units A:



and recurring amide units B:



wherein the molar ratio of A to B units is about 80 to about 20 to about 20 to about 80, wherein R is a divalent aromatic hydrocarbon radical of from about 6 to about 20 carbon atoms or two divalent hydrocarbons joined directly or by stable linkages selected from the group consisting of —O—, methylene, —CO—, —SO_2— and X is a divalent aromatic radical.

4,808,474

PRESSURE-SENSITIVE ADHESIVE TAPE HAVING IMPROVED TOUGHNESS

Alan J. Sipinen, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 860,557, May 7, 1986, abandoned. This application Mar. 25, 1987, Ser. No. 27,341
Int. Cl.[4] C09J 7/02; A61F 13/16; B32B 27/08
U.S. Cl. 428—343 5 Claims

1. A disposable diaper having attached thereto as a closure means a pressure-sensitive adhesive tape comprising:
(a) a backing of a substantially untensilized, tough, ductile film, said film comprising a blend of crystalline isotactic polypropylene and a compatible polymer having a flexural modulus lower than that of said isotactic polypropylene, said film having

(1) a longitudinal yield tensile strength of at least about 160 kg/cm^2;
(2) a transverse yield tensile strength of at least about140 kg/cm^2;
(3) a longitudinal tear strength of at least about 50 gm/ply; and
(4) a tensile impact toughness of greater than about 20 mm/sec.; and
(b) a coating of a pressure-sensitive adhesive on one side of said film.

4,808,475

HIGHLY ELECTROCONDUCTIVE GRAPHITE CONTINUOUS FILAMENT AND PROCESS FOR PREPARATION THEREOF

Kiichiro Matsumura, Nara; Akio Takahashi, Kasatsu, and Jun Tsukamoto, Otsu, all of Japan, assignors to Director-General of Agency of Industrial Science & Technology, Tokyo, Japan

Division of Ser. No. 596,549, Apr. 4, 1984, Pat. No. 4,666,736. This application Feb. 10, 1987, Ser. No. 12,840
Claims priority, application Japan, Apr. 5, 1983, 58-58734
Int. Cl.[4] D02G *3/00*
U.S. Cl. 428—367 **11 Claims**

1. A highly electroconductive graphite continuous filament comprising a carbon filament as a substrate and a graphite layer having a layer spacing d (0, 0, 2) of not larger than 3.363 angstroms as an outer skin layer, said graphite layer having an electrical conductivity of at least 1.1×10^4 (S/cm).

8. An intercalated graphite continuous filament obtained by intercalation of a highly electroconductive graphite continuous filament comprising a continuous carbon filament as a substrate and a graphite layer having a layer spacing d (0, 0, 2) of not larger than 3.363 angstroms and an electrical conductivity of at least 1.1×10^4 (S/cm).

4,808,476

METHOD FOR PROTECTING HEAT SENSITIVE SUBSTRATES FROM FIRE AND EXCESSIVE HEAT AND RESULTING ARTICLE

John P. Mikus, Springdale; Robert W. Heber, Bethel Park; Thomas A. Ward, Gibsonia, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 19, 1987, Ser. No. 63,935
Int. Cl.[4] B32B *27/36*
U.S. Cl. 428—413 **26 Claims**

1. A method for protecting heat sensitive substrates from fire and excessive heat comprising:
I. applying to the substrate a layer of a char forming intumescent curable composition comprising:
(a) an epoxide group containing material, at least 20 weight percent of said material having an oxirane funtionality greater than 2;
(b) a curing agent adapted to cure the epoxide group containing material wherein at least 20 weight percent of said curing agent is comprised of an aralkyl polyamine containing material;
(c) an additive component comprising a mixture of materials adapted to proved a source of:
(i) phosphorous,
(ii) zinc,
(iii) boron and
(iv) an expansion gas upon thermal decomposition,
said curable composition being capable of forming a carbonaceous char upon exposure to heat or flame;
II. allowing the intumescent curable composition to at least partially cure.

4,808,477

URETHANE MODIFIED NYLON MAGNET WIRE ENAMEL

Joseph J. Harber, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Division of Ser. No. 945,160, Dec. 22, 1986, Pat. No. 4,725,458. This application Oct. 23, 1987, Ser. No. 112,845
Int. Cl.[4] B05D *5/12*; B32B *15/02, 15/08*
U.S. Cl. 428—389 **2 Claims**

1. A magnet wire having at least one layer of electrically insulating enamel comprising the reaction product of an equilibrated polyamide resin, a blocked polyisocyanate and a hydroxylated polyester wherein the equilibrated polyamide resin is the reaction product of a solvolytic agent having at least one active hydrogen and a polyamide resin in the presence organic titanate catalyst.

2. A method of making an electrically insulated magnet wire comprising drawing a magnet wire substrate through an enamel applicator, thereby applying a thin film of magnet wire enamel to said substrate in which the enamel composition comprises the reaction product of a polyamide resin, an organic titanate catalyst and a solvolytic agent having at least one active hydrogen admixed with a blocked polyisocyanate and a hydroxylated polyester, passing the coated magnet wire through a curing mechanism to cure the enamel.

4,808,478

CHEMICALLY TREATED GLASS FIBERS FOR REINFORCING THERMOSETTING POLYMERS

David E. Dana, Pittsburgh, Pa.; Richard A. Davis, Shelby, N.C.; Howard J. Hudson, Whitaker, and Steven J. Morris, Freeport, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 5, 1986, Ser. No. 904,728
Int. Cl.[4] D02G *3/00*; B32B *9/00*
U.S. Cl. 428—391 **13 Claims**

1. Chemically treated glass fibers having on a substantial portion of their surfaces a moisture-reduced residue of an aqueous chemical treating composition consisting essentially of:
a. vinyl acetate-organo silane copolymer having up to about 1 weight percent of organo silane for the copolymer where the copolymer is pre-crosslinked and where the copolymer is the sole film forming polymer and where the copolymer is present in an effective sole film forming polymeric amount to provide a pre-cured polymeric film forming material for the glass fibers,
b. methacryloxy alkyltrialkoxy silane coupling agent present in an effective coupling agent amount,
c. amino organo silane coupling agent present in an effective coupling agent amount,
d. cationic lubricant present in an effective lubricating amount,
e. polyoxyethylene present in an amount in the range of about 0.05 to about 0.4,
f. antistatic agent present in an effective antistat amount,
g. a wax selected from the group consisting of aqueous wax dispersions and aqueous wax emulsions present in an effective dry lubricating amount,
h. water present in an effective amount to give a total solids content for the aqueous chemical treating composition ranging from 1 to about 30 weight percent, where the chemically treated glass fibers have an amount of the moisture-reduced residue in the range of 2.2 to 3 weight percent of the glass fibers.

4,808,479

WARP YARN SIZING COMPOSITION AND METHOD FOR MAKING AND USING SAME

Charles J. Fox, Atlanta, Ga., assignor to Penick & Ford, Limited, Cedar Rapids, Iowa

Filed Sep. 23, 1987, Ser. No. 100,086
Int. Cl.[4] B32B *27/00*; C08L *3/00*
U.S. Cl. 428—394 **6 Claims**

1. A method of preparing a sized warp yarn said method comprising:
(a) preparing a mixture comprising a noncongealing hydrophilic starch derivative exhibiting a five gram alkali fluidity of from about 10 milliliters to about 97 milliliters and a thin boiling starch;
(b) heating the mixture to at least 165° to form a warp yarn sizing paste;
(c) slashing a warp yarn with the paste of step (b); and
(d) removing excess paste from the slashed warp yarn.

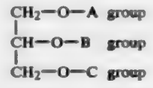
4,808,480

POLYMERIZABLE HETEROCYCLIC DISULFIDE-BASED COMPOUNDS AND MEMBRANES MADE THEREFROM

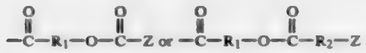
Steven L. Regen, Allentown, Pa., assignor to Lehigh University, Bethlehem, Pa.

Filed Nov. 25, 1986, Ser. No. 934,766
Int. Cl.[4] A61K *9/66*; B01J *13/02*; C07D *339/02*
U.S. Cl. 428—402.2 **13 Claims**

1. A compound of the structure



wherein one of said A, B and C groups is a liposome forming head group adapted to forming vesicles, and the remaining A, B and C groups have the structure Q wherein Q is



wherein R_1 is a hydrocarbon radical containing 1 to 26 carbons R_2 is a hydrocarbon radical containing 1 to 26 carbons, z is a heterocyclic carbon/disulfide.

12. A vesicle formed from a compound of claim 1.

4,808,481

INJECTION MOLDING GRANULES COMPRISING COPPER COATED FIBERS

Bruce A. Luxon, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 31, 1986, Ser. No. 925,848
Int. Cl.[4] B32B *9/00, 15/00*; D04H *1/58*
U.S. Cl. 428—407 **20 Claims**

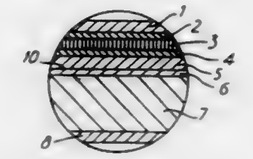
1. An injection molding compound comprising elongated granules, each of said granules containing a bundle of elongated composite fibers which have a fiber core and at at least one relatively thick, uniform and firmly adherent, electrically conductive layer comprising copper on said core, said fibers extending generally parallel to each other longitudinally of the granule and substantially uniformly dispersed throughout said granule in a thermally stable, film forming non-crosslinkable thermoplastic adhesive which substantially disperses on contact with hot molten plastic, said fibers being present in an amount from 67.5–97.5% by volume and said adhesive being present in an amount of from 2.5–32.5% by volume.

4,808,482

MULTI-LAYER PLASTICS STRUCTURES AND APPARATUS AND METHODS FOR THEIR MANUFACTURE

Terence A. Benge, Farringdon, and Cyril M. Prince, Witney, both of United Kingdom, assignors to Metal Box Public Limited Company, England

Division of Ser. No. 631,195, Jul. 16, 1984, Pat. No. 4,652,325. This application Feb. 6, 1987, Ser. No. 11,895
Claims priority, application United Kingdom, Jul. 16, 1983, 8319348
Int. Cl.[4] B32B *9/04*
U.S. Cl. 428—411.1 **10 Claims**



1. An asymetric multi-layer plastics sheet structure which comprises:
(a) a barrier layer of a polymer material;
(b) first and second skin layers of a skin polymer, disposed one on either side of said barrier layer and bonded thereto said barrier layer and said first and second skin layers having been coextruded and forming a first multi-layer sheet component;
(c) a reconstituted reclaim layer;
(d) third and fourth skin layers of said skin polymer, disposed one on either side of said reclaim layer and bonded thereto;
said third and fourth skin layers and said reclaim layer having been extruded and forming a second multi-layer sheet component;
(e) an interface at which said first and third skin layers are bonded together by extrusion lamination of the said first and second multi-layer sheet components; said sheet structure thereby comprising at least six layers;
(f) said reconstituted reclaim layer comprising waste material of said sheet structure;
(g) the reclaim layer having a volume which is generally in excess of 30% of the total volume of the sheet structure up to generally 60% of the total volume of the sheet structure; and
(h) said sheet structure thereby comprising at least six discrete layers and having said first skin layer spaced from a medial line of said sheet structure.

4,808,483

PRIMER COMPOSITIONS

Katsuyoshi Nakanuji, and Ryuzo Mikami, both of Ichihara, Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

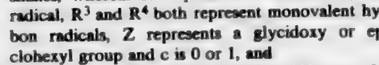
Division of Ser. No. 555,756, Nov. 28, 1983, abandoned. This application Jul. 9, 1984, Ser. No. 629,138
Claims priority, application Japan, Mar. 18, 1983, 58-45709
Int. Cl.[4] B32B *9/04*; B05D *3/10*
U.S. Cl. 428—447 **27 Claims**

1. A primed substrate, when primed with a composition comprising
(A) 100 parts by weight of silicone-modified epoxy resin which contains epoxy groups and silicon-bonded alkoxy groups and which is produced by the condensation reaction of
(a) an alkoxy-containing silicon compound with the average unit formula $R_a^1SiX_bO_{(4-a-b)/2}$ wherein R^1 represents a monovalent hydrocarbon group, X represents an alkoxy group, a is 0, 1, or 2, b is 1, 2, 3 or 4 and the value of a +b is from 1 to 4 with

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(b) an epoxy resin which contains both epoxy and hydroxyl groups in each molecule,

(B) 1 to 200 parts by weight, based on 100 parts of component (A), of an epoxy-containing organosilicon compound selected from epoxy functional silanes with the general formula



mixtures of such silanes and, partial hydrolyzates of such silanes, wherein R^2 represents a divalent hydrocarbon radical, R^3 and R^4 both represent monovalent hydrocarbon radicals, Z represents a glycidoxy or epoxycyclohexyl group and c is 0 or 1, and

(C) 0.1 to 100 parts by weight, based on 100 parts of component (A), of an organotitanium acid ester.

4,808,484

PEELABLE PROTECTIVE FILM

Kunio Yamada; Kohzoh Miyazaki, both of Chiba; Yoshitaka Oowatari, Saitama; Yoshio Egami, and Toshio Houma, both of Kanagawa, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka and Japan Butyl Co., Ltd., Kanagawa, both of, Japan

Filed Aug. 26, 1987, Ser. No. 89,455

Int. Cl.⁴ B32B *27/30*

U.S. Cl. 428—522 3 Claims

1. A peelable protective film processed from a composition comprising 100 parts by weight of an ethylene/methyl methacrylate copolymer, from 0.01 to 0.1 part by weight of an inorganic filler, and from 0.01 to 1.0 part by weight of a slip agent.

4,808,485

MICROSTRUCTURALLY TOUGHENED METAL MATRIX COMPOSITE ARTICLE AND METHOD OF MAKING SAME

Karl M. Prewo, Vernon; Vincent C. Nardone, Meriden, and James R. Strife, South Windsor, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 5, 1988, Ser. No. 152,780

Int. Cl.⁴ B22F *3/00*

U.S. Cl. 428—582 6 Claims



1. A process for making a composite article, comprising:

providing a metallic container, said metallic container having a substantially continuous inner surface which extends along a first axis from an open end of the container to a closed end of the container,

positioning a plurality of longitudinally extending metallic tubes along the first axis within the metallic container so that the tubes and the container define a plurality of discrete void spaces which extend along the first axis of the container, and

introducing a quantity of a particulate mixture, into each of the void spaces to substantially fill each of the void spaces, said particulate mixture comprising a mixture of metallic particles and ceramic particles, and

consolidating the metallic container, the metallic tubes, and the particulate mixture at elevated temperature and pressure to form the composite article.

4,808,486

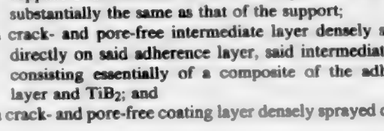
PRODUCTION METHOD OF MACHINE PARTS AND THE MACHINE PARTS THUS PRODUCED

Harutoshi Yamamoto; Zenichi Mochizuki, and Sadasue Sakomoto, all of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 759,101, Jul. 25, 1985, Pat. No. 4,693,293. This application Jul. 6, 1987, Ser. No. 70,059

Int. Cl.⁴ B32B *15/01*

U.S. Cl. 428—609 9 Claims



1. A cylinder for a molding machine comprising a metal main portion, a corrosion and wear-resistant metal inner portion, and a separating metal plate interposed between and metallurgically fused to the metal main portion and to the metal internal portion of the cylinder.

4,808,487

PROTECTION LAYER

Heiko Gruenr, Beinwil am See, Switzerland, assignor to Plasmainvent AG, Im Oberleh 2, Zug, Switzerland

PCT No. PCT/EP86/00225, § 371 Date Jan. 15, 1987, § 102(e) Date Jan. 15, 1987, PCT Pub. No. WO86/06106, PCT Pub. Date Oct. 23, 1986

PCT Filed Apr. 17, 1986, Ser. No. 942,842

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1985, 3513882

Int. Cl.⁴ B32B *15/04*

U.S. Cl. 428—610 6 Claims



1. A layered protective structure applied to a metallic support by a vacuum plasma projection process, said protective structure comprising:

a crack- and pore-free adherence layer densely sprayed directly on the metallic support, said adherence layer consisting essentially of a material whose chemical composition is basically that of the material of the metallic support and which has a thermal expansion co-efficient substantially the same as that of the support;

a crack- and pore-free intermediate layer densely sprayed directly on said adherence layer, said intermediate layer consisting essentially of a composite of the adherence layer and TiB_2; and

a crack- and pore-free coating layer densely sprayed directly on said intermediate layer, said coating layer consisting essentially of TiB_2;

wherein said adherence layer is about 20 to 200 μm thick, said intermediate layer is about 0.02 to 5 mm thick, and said coating layer is about 20 to 500 μm thick.

4,808,488

HYBRID SUPERCONDUCTIVE WIRES OR RIBBONS COMPRISING A CHEVREL PHASE AND ANOTHER SUPERCONDUCTIVE PHASE

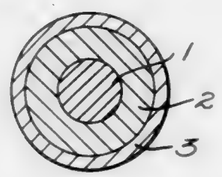
Roger A. Chevrel, Vigneux; Marcel M. Sergent, and Maryvonne F. Hirrien, both of Rennes, all of France, assignors to Centre Nationale de la Recherche Scientifique (CNRS), Paris, France

Filed May 22, 1987, Ser. No. 52,931

Claims priority, application Luxembourg, May 22, 1986, 86073

Int. Cl.⁴ H01L *39/12, 39/24*

U.S. Cl. 428—614 6 Claims



1. A hybrid superconductive wire or ribbon comprising at least two layers surrounding a core wherein said wire or ribbon comprises two superconductive materials, one of said superconductive materials being a Chevrel phase and the other of said superconductive materials being different from a Chevrel phase, and wherein each of said superconductive materials constitutes one of said layers, or one of said superconductive materials consitutes the core, and the other of said superconductive materials constitutes one of said layers.

4,808,489

METHOD OF PRODUCING MAGNETIC DISC

Toshiro Abe, Tokyo, and Toshikazu Nishihara, Zama, both of Japan, assignors to Victor Company of Japan, Ltd., Japan

Division of Ser. No. 913,710, Sep. 30, 1986, Pat. No. 4,776,938. This application Oct. 8, 1987, Ser. No. 106,141

Claims priority, application Japan, Oct. 7, 1985, 60-221860; Oct. 7, 1985, 60-221861

Int. Cl.⁴ G11B *5/64;* **H01F** *10/00*

U.S. Cl. 428—336 4 Claims



1. A magnetic disc comprising:

a disc-shaped substrate;

a non-magnetic underlayer formed on a substantially flat surface of said substrate, said non-magnetic underlayer being made of a non-magnetic material and having grains thereof oriented in a circumferential direction of said substrate; and

a magnetic layer formed on said non-magnetic underlayer, said magnetic layer being made of a magnetic material and having a magnetic easy axis thereof oriented in the circumferential direction of said substrate due to a grain orientation of said non-magnetic underlayer.

4,808,490

PLASMA SPRAYED FILM RESISTOR HEATER

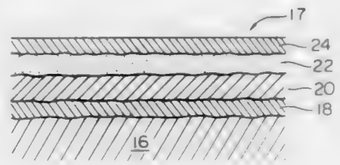
Yasuo Tsukuda, Tokyo, and Hisao Hara, Saitama, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Continuation of Ser. No. 636,850, Dec. 26, 1984, abandoned. This application Oct. 29, 1986, Ser. No. 924,260

Claims priority, application Japan, Dec. 28, 1983, 58-248718

Int. Cl.⁴ B05D *3/06;* **B32B** *9/00, 15/00*

U.S. Cl. 428—699 2 Claims



1. A plasma sprayed film resistor heater comprising

a blasted metal substrate,

a bonding layer of an Al-Mo-Ni alloy or a Ni-Cr-Al alloy formed on said metal substrate, said bonding layer having a thickness of 10 to 100 μm,

an insulating layer of Al_2O_3 or Al_2O_3-M_2O formed on said bonding layer, said insulating layer having a thickness of 50 to 500 μm, and

a resistor layer formed on said insulating layer, said resistor layer comprising NiCr particles uniformly dispersed in, and partially in contact with each other, in an insulating ceramic matrix of Al_2O_3 or Al_2O_3-M_2O.

4,808,491

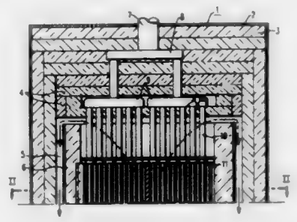
CORNER HEATING IN RECTANGULAR SOLID OXIDE ELECTROCHEMICAL CELL GENERATORS

Philip Reichner, Plum Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 16, 1988, Ser. No. 156,065

Int. Cl.⁴ H01M *8/10*

U.S. Cl. 429—13 10 Claims



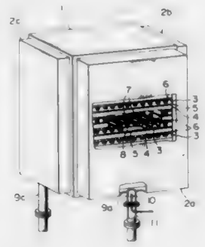
1. In a solid oxide electrochemical cell generator of a rectangular design, having four sides meeting at four corners, and containing a multiplicity of electrically connected electrochemical cells, where a fuel gas is passed over one side of said cells, an oxygen-containing gas is passed into said cells, and fuel and oxygencontaining gas are reacted to form an exhaust gas, the improvement which comprises: channels for passing at least a portion of said exhaust gas over the outside of the periphery of said multiplicity of cells, said channels being located so that more of the heat in said exhaust gases flows at the corners of said generator than over the remainder of the sides of said generator.

4,808,492

FUEL CELL USING LIQUID ELECTROLYTE

Norihira Uosumi; Koji Asakawa; Yoshiyuki Kubota, all of Hitachi; Atsushi Miki, Katsuta, and Yasuyuki Tsutsumi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1987, Ser. No. 130,185
Claims priority, application Japan, Dec. 10, 1986, 61-292313
Int. Cl.[4] H01H *8/08*
U.S. Cl. 429—34 44 Claims



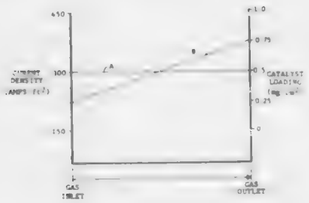
1. A fuel cell using a liquid electrolyte, which comprises at least one unit cell comprising a matrix for retaining a liquid electrolyte and a pair of gas diffusible electrodes each having a gas flow passage and provided at both sides of the matrix and in direct contact with the matrix, and a pair of gas supply-discharge means for supplying and discharging a necessary gas to and from the gas passages of the corresponding gas-diffusible electrodes of the unit cell, at least one of the gas passages of the gas-diffusible electrodes being communicated with the matrix through at least one liquid electrolyte passage, at least one demister being provided in the gas flow passage and on the liquid electrolyte passage exposed in the gas flow passage, and a means for generating liquid electrolyte mist being provided on the supplying side of at least one of the gas supply-discharge means.

4,808,493

FUEL CELL, A FUEL CELL ELECTRODE, AND A METHOD FOR MAKING A FUEL CELL ELECTRODE

Richard D. Breault, Coventry, Conn., assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed Jun. 16, 1987, Ser. No. 62,666
Int. Cl.[4] H01M *4/86*
U.S. Cl. 429—42 8 Claims



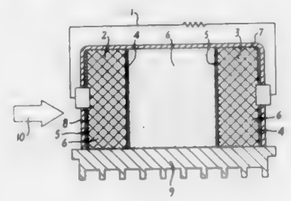
1. A fuel cell electrode, consisting essentially of:
a porous substrate,
a layer supported on one surface of the substrate, said layer comprising a mixture of a hydrophobic polymer and a catalyst and said layer having a catalyst loading per unit area of the surface that increases along one axis of the surface, said catalyst selected from the group consisting of platinum and alloys of platinum, whereby said electrode provides a substantially uniform current density and substantially uniform heat flux across the surface during use.

4,808,494

THERMALLY ACTUATED HYDROGEN SECONDARY BATTERY

David N. Palmer, Tolland; John S. Cartwright, Enfield, and James K. O'Neill, Tolland, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 838,676, Mar. 12, 1986, abandoned, which is a continuation-in-part of Ser. No. 790,463, Oct. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 681,859, Dec. 14, 1984, abandoned. This application Jun. 15, 1987, Ser. No. 62,478
Int. Cl.[4] H01M *10/39*
U.S. Cl. 429—101 36 Claims



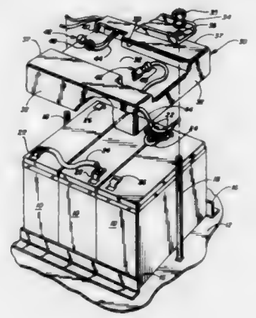
1. A thermally actuated hydrogen secondary battery which comprises:
(a) a porous anode having a thermally actuated anode-active solid reversible hydrogen-containing inorganic compound which deintercalates hydrogen ions (H^+) in a discharge cycle when exposed to thermal energy and having a first porous catalytic oxide film selected from the group consisting of ruthenium dioxide, rhenium dioxide and iridium dioxide on a side thereof capable of converting hydrogen ions into hydrogen molecules in a discharge cycle and having a second porous catalytic metal film selected from the group consisting of palladium and platinum black on another side thereof capable of converting hydrogen molecules into hydrogen ions in a charge cycle;
(b) a porous cathode having a hydrogen ion-intercalatable cathode-active material which intercalates hydrogen ions (H^+) in a discharge cycle when the anode is exposed to thermal energy and having a first porous catalytic metal film selected from the group consisting of palladium and platinum black on a side thereof capable of converting hydrogen molecules into hydrogen ions in a discharge cycle and having a second porous catalytic oxide film selected from the group consisting of ruthenium dioxide, rhenium dioxide and iridium dioxide on another side thereof capable of converting hydrogen ions into hydrogen molecules in a charge cycle, said first porous catalytic metal film on said porous cathode facing said first porous catalytic oxide film on said porous anode; and
(c) a porous solid electrolyte between and within the porous anode and the porous cathode, said porous solid electrolyte containing at least one gas selected from the group consisting of hydrogen and helium for the diffusion of hydrogen molecules between the anode and the cathode, said porous solid electrolyte being a polymer complex of trifluoromethane sulfonic acid with a linear polymer.

4,808,495

SHOCK-PROTECTED BATTERY COVER ASSEMBLY

Richard Goldstein, Northbrook, Ill., assignor to Perma Power Electronics, Inc., Chicago, Ill.

Filed Nov. 9, 1987, Ser. No. 118,454
Int. Cl.[4] H01M *2/04*
U.S. Cl. 429—175 11 Claims



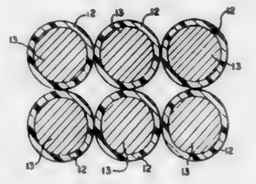
1. A battery cover assembly for a battery of given dimensions and having a pair of battery output terminals disposed adjacent to a given face thereof, said assembly comprising:
an insulated battery cover configured to nestingly engage at least a portion of said given battery face;
a pair of lead-carrying electrical power connectors having insulating bodies with electrically-conducting tip portions therein configured for engagement with said terminals, said cover being provided with apertures configured to insertingly accept said tip portions of said power connectors for connection to said terminals, said cover including arresting means responsive to engagement of said power connectors to said terminals for obstructingly hindering removal of said battery cover.

4,808,496

ELECTRODE CONSTRUCTION FOR SOLID STATE ELECTROCHEMICAL CELL

Henry F. Hope, and Stephen F. Hope, both of Huntingdon Valley, Pa., assignors to MHB Joint Venture, Dayton, Ohio

Filed Mar. 13, 1987, Ser. No. 25,475
The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.
Int. Cl.[4] H01M *6/18*
U.S. Cl. 429—192 14 Claims



1. A solid state electrochemical cell having at least two electrodes, one of which is an anode and one of which is a cathode, and a polymeric electrolyte, wherein at least one of said electrodes is comprised of a multiplicity of spheres, each sphere consisting of an active electrode material core encapsulated in an electronic and ionic conducting polymer film forming an electronic and ionic conducting network.

4,808,497

ORGANIC ELECTROLYTE FOR NONAQUEOUS CELLS

George E. Blomgren, Lakewood, and Violeta Z. Leger, North Olmsted, both of Ohio, assignors to Eveready Battery Company, St. Louis, Mo.

Filed Dec. 28, 1983, Ser. No. 566,305
Int. Cl.[4] H01M *6/14*
U.S. Cl. 429—194 13 Claims

1. A nonaqueous electrolyte solution for nonaqueous cells comprising a solute dissolved in a solvent, said solvent comprising at least one diether in which two oxygen atoms are separated by two carbon atoms in the sequence $O_1C_1C_2O_2$ and in which two or three contiguous atoms of the sequence are contained in a ring system of five, six or seven members in which the remaining ring atoms are carbon, or carbon and hetero atoms, with the proviso that when the oxygen atom O_1 or O_2, or oxygen atoms O_1 and O_2, are not included in the ring structure, a methyl group is bonded to said oxygen atom or atoms;
said electrolyte solution containing at least one cosolvent selected from the group consisting of sulfolane; 3-methyl sulfolane; tetrahydrofuran; 2-methyltetrahydrofuran; 1,3-dioxolane; 3-methyl-2-oxazolidone; propylene carbonate; γ (gamma)-butyrolactone; γ (gamma)-valerolactone; ethylene glycol sulfite; dimethylsulfite; dimethyl sulfoxide; and 1,1- and 1,2-dimethoxyethane.

4,808,498

ALUMINUM ALLOY AND ASSOCIATED ANODE

Gary P. Tarcy, Plum Borough, and Robert M. Mazgaj, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 21, 1987, Ser. No. 136,007
Int. Cl.[4] H01M *4/46*; C22C *21/00*
U.S. Cl. 429—218 15 Claims

10. A battery assembly comprising:
a housing;
an anode disposed within said housing;
a cathode disposed within said housing;
support-means disposed within said housing for supporting said anode and said cathode in a relative spaced relationship;
said anode consisting essentially of at least about 0.01 to 0.2 percent gallium;
at least about 0.01 to 0.2 percent indium;
at least about 0.01 to 0.2 percent lead;
the balance being aluminum; and
said anode characterized by high voltage and low corrosion characteristics when employed with a caustic electrolyte.

4,808,499

LITHIUM SECONDARY BATTERY

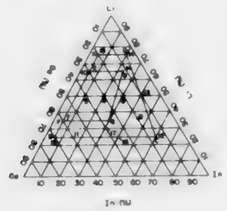
Ryo Nagai, Nara; Kazumi Yoshimitu, Ibaraki; Kozo Kajita, Shiga, and Noboru Odani, Takatsuki, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Continuation of Ser. No. 739,657, May 31, 1985, abandoned. This application Sep. 16, 1987, Ser. No. 97,394
Claims priority, application Japan, May 31, 1984, 59-112260; Sep. 8, 1984, 59-188575; Sep. 17, 1984, 59-195335
Int. Cl.[4] H01D *4/58*
U.S. Cl. 429—218 10 Claims

1. A lithium secondary battery having a lithium ion electrical conductive electrolyte, a positive electrode, positive electrode activating material and a negative electrode comprising solid Li-Ga-In alloy wherein the composition of Li-Ga-In alloy

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for the negative electrode is defined by the area surrounded by E(Li 65%, Ga 30% and In 5%), F(Li 35%, Ga 60% and In



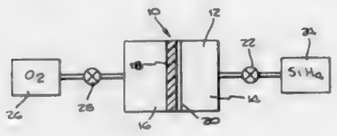
5%), G(Li 35%, Ga 35% and In 30%) and H(Li 65%, Ga 12% and In 23%) on the triangular coordinate as shown in FIG. 2.

4,808,500

STABILIZING HYDROPHILIC GELATIN HOLOGRAMS HAVING IMPROVED RESISTANCE TO SWELLING

John E. Wreede, Monrovia, and Edward T. Knobbe, Playa Del Rey, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 20, 1987, Ser. No. 123,496
Int. Cl.[4] G03H 1/04
U.S. Cl. 430—1 **32 Claims**



1. In a hologram comprising a layer of photosensitive, hydrophilic gelatin on at least a portion of a substrate, said gelatin having interstitial spaces dispersed throughout said gelatin layer, said gelatin layer being susceptible to swelling when said gelatin is exposed to moisture, said swelling resulting in changes in the optical characteristics by said hologram, wherein the improvement comprises:

migrating a first reactant into the interstitial spaces within said gelatin layer; and

migrating a second reactant into the interstitial spaces within said gelatin layer wherein said first and second reactants react to form a solid reaction product within said interstitial spaces to thereby form a filled gelatin zone having increased resistance to swelling when exposed to moisture.

4,808,501

METHOD FOR MANUFACTURING AN OPTICAL FILTER

Carl A. Chialli, Randolph, Mass., assignor to Polaroid Corporation, Patent Dept., Cambridge, Mass.

Continuation-in-part of Ser. No. 787,254, Oct. 15, 1985, abandoned. This application May 15, 1987, Ser. No. 50,743
Int. Cl.[4] G03F 9/00
U.S. Cl. 430—7 **21 Claims**

1. A method for making a color filter having a plurality of colored filter elements, which method comprises the steps of

(a) forming, onto a support, a solvent-coating of a dye-containing positive photoresist composition and drying said solvent coating to an adherent layer, said composition comprising a photoresist resin and a dye; said dye being soluble in the solvent of said photoresist composition and constituting in excess of 10% up to about 50% of said composition, on a dry weight basis; said dye having substantially the same polarity as said resin, thereby interacting sufficiently with said resin and being sufficiently compatible therewith as not to form a separate phase from said coated photoresist composition; said dye providing the desired dye density and the predetermined absorption and transmission properties characteristic of the predetermined color desired in filter elements to be prepared from said photoresist composition; said dye being sufficiently transmission of radiation used for exposure of said photoresist composition as to permit desired control of the solubility of said photoresist composition in areas of exposure and the formation on development, of a pattern of said filter elements having said predetermined absorption and transmission properties;

(b) exposing predetermined portions of said layer to radiation adapted to increase the solubility of said layer in the exposed areas;

(c) developing said exposed areas to form said pattern of filter elements; and

(d) repeating steps (a) to (c) with a different color dye in said composition.

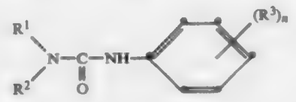
4,808,502

PHOTOGRAPHIC RECORDING MATERIAL COMPRISING A MAGENTA DYE IMAGE FORMING COUPLER COMPOUND

Paul B. Merkel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 99,171, Sep. 21, 1987. This application Jul. 25, 1988, Ser. No. 223,586
Int. Cl.[4] G03C 7/38, 7/32
U.S. Cl. 430—17 **20 Claims**

16. A color photographic record comprising a magenta dye formed by a coupling reaction between a magenta dye image-forming coupler and oxidized silver halide developing agent, which recording material comprises, in association with the dye, a urea compound having the structural formula:



wherein;

R^1 is an alkyl or an aryl group;

R^2 is hydrogen or an alkyl group;

R^3 is an alkyl or an alkoxy group or an electron-withdrawing group with the proviso that R^3 is not a 5-mercaptotetrazole group; and

n is from 0 to 3.

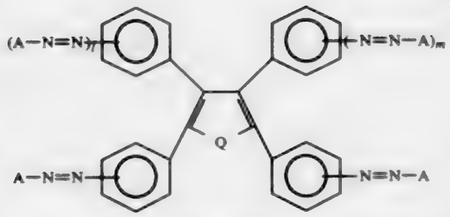
4,808,503

ELECTROPHOTOGRAPHIC RECEPTORS WITH CHARGE GENERATING AZO-SUBSTITUTED TETRAPHENYL-THIOPHENE OR THIOPHENE 1,1-DIOXIDE

Yasuyuki Yamada; Hisato Itoh; Tsutomu Nishizawa, all of Yokohama, and Akihiro Yamaguchi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

PCT No. PCT/JP87/00353, § 371 Date Aug. 28, 1987, § 102(e) Date Aug. 28, 1987, PCT Pub. No. WO87/07736, PCT Pub. Date Dec. 17, 1987
PCT Filed Jun. 4, 1987, Ser. No. 110,757
Claims priority, application Japan, Jun. 5, 1986, 61-129082
Int. Cl.[4] G03G 5/06
U.S. Cl. 430—75 **16 Claims**

1. An electrophotographic photoreceptor wherein at least one azo compound represented by the following general formula (I):



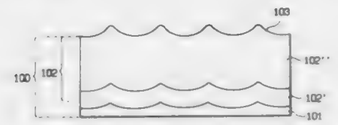
wherein A means a coupler residuum, Q denotes a sulfur atom or $>SO_2$, and l and m stand independently for 1 or 0, is contained in a photosensitive layer provided on an electrically-conductive base.

4,808,504

LIGHT RECEIVING MEMBERS WITH SPHERICALLY DIMPLED SUPPORT

Mitsuru Honda; Atsushi Kolke, both of Chiba; Kyosuke Ogawa, Miye, and Keiichi Murai, Chiba, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1986, Ser. No. 911,355
Claims priority, application Japan, Sep. 25, 1985, 60-210258; Oct. 2, 1985, 60-219913; Oct. 8, 1985, 60-224461; Oct. 15, 1985, 60-227649; Oct. 16, 1985, 60-228739
The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.
Int. Cl.[4] G03G 5/082, 5/10, 5/14
U.S. Cl. 430—31 **33 Claims**



1. A light receiving member comprising:

(a) a support having an uneven-shaped surface of a plurality of spherical dimples, each of said spherical dimples having an identical radius of curvature R and an identical width D, wherein the ratio D/R of said width D to said radius of curvature R being from 0.03 to 0.07; and

(b) a light receiving layer having a free surface on the support, said light receiving layer being a multi-layered structure having an inner layer and an outer layer; said inner layer being composed of an amorphous material containing silicon atoms, at least one kind of atom selected from the group consisting of germanium atoms and tin atoms, and at least one kind selected from the group consisting of hydrogen atoms and halogen atoms; and said outer layer being composed of an amorphous material containing silicon atoms as the main constituent and at least one kind selected from the group consisting of hydrogen atoms and halogen atoms and containing neither germanium atoms nor tin atoms.

33. An electrophotographic process comprising:

(1) applying an electric field to the light receiving member of claim 1; and

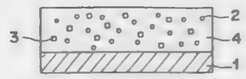
(2) applying an electromagnetic wave to said light receiving member thereby forming an electrostatic image.

4,808,505

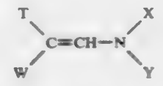
PHOTOSENSITIVE MEMBER WITH ENAMINE CHARGE TRANSPORT MATERIAL

Hideaki Ueda, Kawanishi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

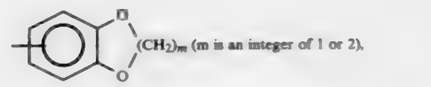
Filed Apr. 7, 1987, Ser. No. 35,183
Claims priority, application Japan, Apr. 8, 1986, 61-80780; Apr. 16, 1986, 61-88491; Apr. 16, 1986, 61-88492; May 12, 1986, 61-108050; May 12, 1986, 61-108052; May 12, 1986, 61-108053; May 20, 1986, 61-115916; May 20, 1986, 61-115917; May 20, 1986, 61-115918
Int. Cl.[4] G03G 5/09
U.S. Cl. 430—83 **16 Claims**



1. A photosensitive member having a photosensitive layer containing a charge generator and an enamine compound represented by the general formula (I) as a charge transporting material;



wherein, X and Y independently represents alkyl group, aryl group, aralkyl group, condensed polycyclic group, or heterocyclic group, each of which may have a substituent, providing that at least one of X and Y is a condensed polycyclic group, heterocyclic group, alkyl aryl group, di-substituted aminoaryl group or group represented by a formula:



and T and W independently represent hydrogen, an alkyl group, aryl group, aralkyl group, condensed polycyclic group and heterocyclic group, each of which except for hydrogen may have a substituent, except that the both T and W are not hydrogen.

4,808,506

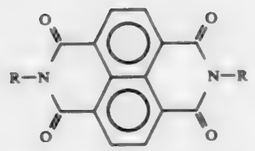
PHOTOCONDUCTIVE IMAGING MEMBERS WITH IMIDAZOLE PERINONES

Rafik O. Loutfy, Willowdale; Peter M. Kazmaier, Mississauga; Ah-Mee Hor, Mississauga, and Richard A. Burt, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

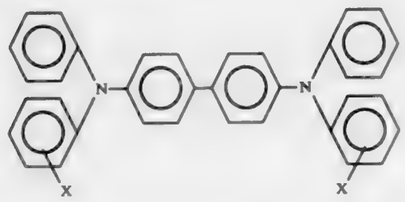
Filed Aug. 17, 1987, Ser. No. 86,333
Int. Cl.[4] G03G 5/06
U.S. Cl. 430—59 **30 Claims**

1. An improved layered photoresponsive imaging member comprised of a supporting substrate; a photogenerator layer comprised of a perinone as represented by the following formula

VOL 1099 ISS 4 FE 28 1989 UMI



wherein R is selected from the group consisting of hydrogen substituent, alkyl, aryl, substituted alkyl, and substituted aryl; and an aryl amine hole transport layer comprised of molecules of the following formula:



dispersed in a resinous binder and wherein X is selected from the group consisting of halogen and alkyl.

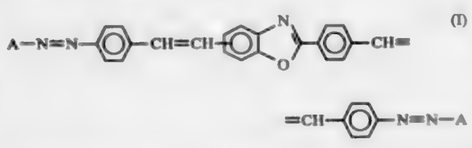
4,808,507

ELECTROPHOTOGRAPHIC PHOTORECEPTOR 2-PHENYL-BENZOOXAZOLE BISAZO BASED

Yasuyuki Yamada; Hisato Itoh; Tsutomu Nishizawa, all of Yokohama, and Akihiro Yamaguchi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Aug. 28, 1987, Ser. No. 90,284
Claims priority, application Japan, Sep. 1, 1986, 61-203736
Int. Cl.[4] G03G 5/14
U.S. Cl. 430—73 **9 Claims**

1. In an electrophotographic photoreceptor including an electrically-conductive base and a photosensitive layer provided on the base, the improvement wherein the photosensitive layer contains at least one bisazo compound represented by the following general formula (I):



(I)

wherein A means a coupler residuum.

4,808,508

NEGATIVE WORKING COLOR PROOFING PROCESS COMPRISING DIAZO COMPOUND AND POLYVINYL ACETAL/POLYVINYL ALCOHOL/POLYVINYL ACETATE RESIN

Stephan J. W. Platzer, Califon, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Jul. 1, 1986, Ser. No. 880,770
Int. Cl.[4] G03C 7/00, 5/34; G03F 7/08
U.S. Cl. 430—143 **23 Claims**

1. A method for forming a colored image which comprises:

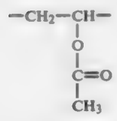
(A.) providing a photosensitive element which comprises, in order:

(i) a substrate having a release surface; and

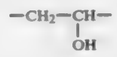
(ii) a photosensitive layer on said release surface, which photosensitive layer comprises a light sensitive, negative working, polymeric diazonium compound; a resinous binder composition, which composition contains at least 20% of a resin having the general formula

—A—B—C—

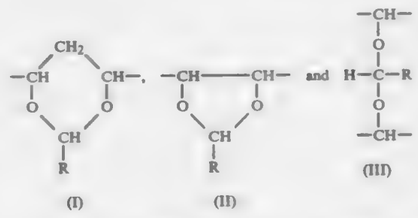
wherein a plurality of each of components A, B, and C occur in ordered or random sequence in the resin and wherein A is present in said resin at about 5% to about 20% by weight and comprises groups of he formula



B is present in said resin at about 4% to about 30% by weight and comprises groups of the formula



and C is present in said resin at about 50% to about 91% by weight and comprises acetal groups consisting of groups of the formulae



(I) (II) (III)

wherein R is lower alkyl or hydrogen, and wherein said group I. is present in component C from about 75% to about 85%; group II. is present in component C from about 3 to about 5%; and group III. is present in component C from about 10% to about 22%; and at least one colorant; and

(iii) an adhesive layer in direct contact with said photosensitive layer, which adhesive layer comprises a thermoplastic polymer and which adhesive layer is nontacky at room temperature, thermally activated and can be transferred at temperatures between 60° C. and 90° C.; and

(B.) either

(i) laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and removing said substrate by the application of peeling forces; and imagewise exposing said photosensitive layer to actinic radiation; or

(ii) imagewise exposing said photosensitive layer to actinic radiation; and laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and removing said substrate by the application of peeling forces; or

(iii) laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and imagewise exposing said photosensitive layer to actinic radiation; and removing said substrate by the application of peeling forces; and

(C.) removing the nonexposed areas of said photosensitive layer with a suitable liquid developer, which removing is conducted at a temperature at which said adhesive layer is substantially nontacky.

4,808,509

DIFFUSION TRANSFER IMAGING METHOD AND RECEPTOR SHEET FOR MAKING PERSONAL IDENTIFICATION DOCUMENTS

Ladovicus H. Vervloet, Kessel; Willy P. De Smedt, Mechelen, and Leon L. Vermeulen, Herenthout, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Sep. 11, 1987, Ser. No. 95,402
Claims priority, application European Pat. Off., Sep. 23, 1986, 86201640.9
Int. Cl.[4] G03C 5/54, 5/04
U.S. Cl. 430—237 **6 Claims**

1. A method of making a personal identification document exhibiting textual data and a portrait of the person, wherein said method comprises the steps of forming a monochrome photographic textual image in a monochrome photographic silver halide material, forming a colour photographic portrait image in a colour photographic silver halide material, producing from these images corresponding monochrome and coloured diffusion transfer images in image-receiving layers on opposite sides of a common receptor sheet, said receptor sheet bearing the resulting diffusion transfer images constituting a said personal identification document.

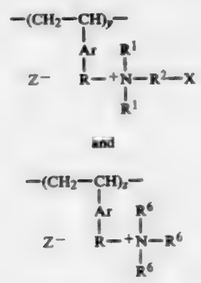
4,808,510

PHOTOGRAPHIC ELEMENT AND PATTERNABLE MORDANT COMPOSITION

Robert A. Snow, Pittsford; Hugh G. McGuckin, Rochester; Ignazio S. Ponticello, Pittsford; Robert C. Daly, Rochester; Laurel J. Pace, Rochester; Sandra K. Fischer, Rochester, and Michael J. Haarahan, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 20, 1987, Ser. No. 87,485
Int. Cl.[4] G03C 1/76
U.S. Cl. 430—287 **11 Claims**

1. A photographically negative-working patternable mordant composition consisting essentially of a triplet sensitizer exhibiting an intersystem crossing efficiency from its singlet to triplet states of greater than 20 percent capable of absorbing radiation in the visible and near ultraviolet portions of the spectrum and, responsive to energy received from said triplet sensitizer, a photocrosslinkable polymer for providing both mordanting and crosslinking sites comprised of repeating units of the formula:



and

wherein

Ar is a phenylene linking group;

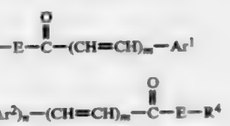
R is a methylene group;

R^1 is independently in each occurrence a lower alkyl group;

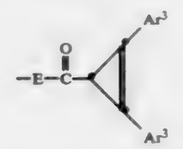
R^2 is a divalent linking group;

R^6 is independently in each occurrence a hydrocarbon group or an oxy substituted hydrocarbon group containing from 1 to 16 carbon atoms, provided that in at least two occurrences R^6 contains from 1 to 3 carbon atoms;

X is a photocrosslinking group comprised of an activated vinyl moiety chosen from the class consisting of



and



Ar^1 and Ar^3 are independently selected aromatic moieties containing from 6 to 10 carbon atoms;

Ar^2 is a divalent aromatic moiety containing from 6 to 10 carbon atoms;

E is an oxy or imino moiety;

m is 1 or 2;

n is 0 or 1;

R^4 is an aryl group containing from 6 to 10 carbon atoms or an alkyl group containing from 1 to 6 carbon atoms;

y represents 20 to 100 percent of the total repeating units of the polymer;

z represents 0 to 80 percent of the total repeating units of the polymer; and

Z is a charge balancing counter ion;

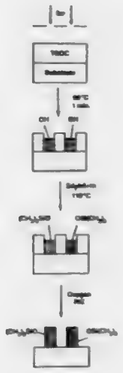
said sensitizer being present in a concentration of from about 0.1 to 100 percent, based on the weight of said polymer.

4,808,511

VAPOR PHASE PHOTORESIST SILYLATION PROCESS

Steven J. Holmes, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1987, Ser. No. 51,354
Int. Cl.[4] G03C 5/00
U.S. Cl. 430—325 **3 Claims**



1. A vapor phase photoresist silylation process comprising the steps of:

coating a substrate with a photoresist film that contains a masked reactive functionality;
imagewise exposing said film to radiation under conditions that cause unmasking of the reactive functionality in the exposed regions of the film;
treating said exposed film with a silylating agent having the formula SiR_4 wherein one of said R groups is an acetate group;
and developing the resulting image by RIE to obtain a negative tone relief image.

4,808,512

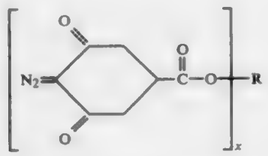
PROCESS OF DEEP ULTRA-VIOLET IMAGING LITHOGRAPHIC RESIST COMPOSITIONS

George Schwartzkopf, Franklin Township, Somerset County, N.J., assignor to J. T. Baker Inc., Phillipsburg, N.J.

Division of Ser. No. 914,473, Oct. 2, 1986, Pat. No. 4,752,551.
This application Mar. 18, 1988, Ser. No. 170,430
Int. Cl.[4] G03F 7/26
U.S. Cl. 430—326 13 Claims

1. A process for forming a lithographic resist image comprising image-wise exposing a film cast on a substrate to deep UV light of less than about 300 nm and dissolving the exposed portion of said film with a basic solution, wherein the film cast on the substrate comprises a film cast from a castable resist composition comprising:

(a) a lithographic resist composition comprising a base soluble film-forming polymer and in admixture therewith a photosensitive solubilization inhibiting amount of a photosensitive solubilization inhibition agent which is a 4-diazo-3,5-dioxocyclohexane carboxylic acid ester compound of the formula



wherein:
x is an integer of from 1 to 3 and equal to the valence or functionality of the radical R, and
R is a radical selected from the group consisting of the residue of a mono-, di-, tri- functional alkanol or silicon-containing alkanol and is attached to the oxy atom of the caboxyl group through a carbon atom, in
(b) a film-forming solvent having a boiling point of from about 120° to 210° C.

4,808,513

METHOD OF DEVELOPING A HIGH CONTRAST, POSITIVE PHOTORESIST USING A DEVELOPER CONTAINING ALKANOLAMINE

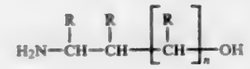
Richard M. Lazarus, Mission Viejo; Kenneth L. Bell, Irvine, and Carla M. Bauer, LaVerne, all of Calif., assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Apr. 6, 1987, Ser. No. 35,413
Int. Cl.[4] G03C 5/18
U.S. Cl. 430—331 6 Claims

1. A method for developing an image-wise exposed quinone diazide positive-working photoresist without forming irregular deposits on the edges of unexposed portions of said photoresist, comprising the steps of:

A. providing said exposed photoresist;
B. providing a developer composition consisting essentially of an aqueous solution of a tetraalkylammonium hydroxide present in an amount effective to enable said composition to develop said photoresist; and an alkanolamine having the following structure:





wherein n is zero or one, each R is independently selected from hydrogen, methyl, or ethyl, and the weight ratio of said primary alkali to said alkanolamine is less than about 1:9;

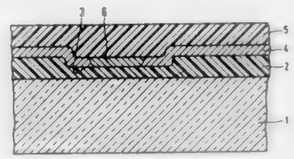
C. developing said photoresist with said developer until the exposed portions of said photoresist are cleared; and
D. rinsing said developer from said photoresist.

4,808,514

METHOD FOR THE OPTICAL RECORDING OF INFORMATION AND AN OPTICAL RECORDING ELEMENT USED IN THE METHOD

Dirk J. Gravesteijn, and Carolus J. van der Poel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 831,781, Feb. 21, 1986, Pat. No. 4,647,944. This application Dec. 17, 1986, Ser. No. 942,659
Claims priority, application Netherlands, Nov. 5, 1985, 8503235
The portion of the term of this patent subsequent to Mar. 3, 2004, has been disclaimed.
Int. Cl.[4] G03C 1/72
U.S. Cl. 430—495 3 Claims



1. A method for the optical nonreversible recording of information in which a recording element which comprises a substrate and a recording layer provided thereon is exposed to laser light which is modulated in accordance with the information to be recorded, in which an optically readable change in structure occurs in the recording layer in the exposed places which is read by means of laser light via the substrate on the basis of reflection differences with the surroundings, characterized in that an amorphous recording layer having the composition

$$[R_x—Sb_{1-x}]_yQ_{1-y} \qquad \text{(formula 1)}$$

wherein
R is selected from the group formed by Ga and In,
Q is selected from the group formed by Se and Te,
x=0.46–0.54
y=0.94–1.00
or mixtures thereof provided on a snythetic resin substrate in a maximum thickness of 150 nm is exposed to infrared laser light having a wavelength of 750–900 nm which is pulsated in accordance with the binary (digital) information to be recorded with a pulse time of at most 200 ns, a crystalline area (bit) with maximum dimensions of a few micrometers being formed in the amorphous layer in the exposed places.

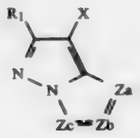
4,808,515

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Masakazu Morigaki, and Nobuo Seto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

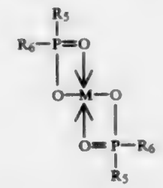
Filed Sep. 24, 1986, Ser. No. 911,172
Claims priority, application Japan, Sep. 24, 1985, 60-208585
Int. Cl.[4] G03C 7/38, 7/32
U.S. Cl. 430—551 21 Claims

1. A silver halide color photographic material comprising a support having thereon at least one silver halide emulsion layer, the silver halide color photographic material containing at least one pyrazoloazole type coupler represented by the general formula (I) described below and at least one compound represented by the general formula (II) described below



(I)

wherein R_1 represents a hydrogen atom or a substituent; X represents a hydrogen atom or a group capable of being released upon a coupling reaction with an oxidation product of an aromatic primary amine developing agent; Za, Zb and Zc each represents a methine group, a substituted methine group, =N— or —NH—, one of the Za—Zb bond and the Zb—Zc bond being a double bond and the other being a single bond; when the Zb—Zc bond is a carbon-carbon double bond, the Zb—Zc bond may be a part of a condensed aromatic ring; R_1 or X may also form a polymer including a dimer or more; and when Za, Zb or Zc is a substituted methine group, the substituted methine group may form a polymer including a dimer or more, with the proviso that when Za and Zb are nitrogen atoms and Zc is a methine group or a substituted methine group, X is not a hydrogen atom,



(II)

wherein M represents a nickel atom, a cobalt atom, a manganese atom, a copper atom, a iron atom a zinc atom, a palladium or a platinum atom; R_5 and R_6, which may be the same or different, each represents an alkyl group, an aryl group, an alkoxy group, an alkylthio group, an aryloxy group or an arylthio group.

4,808,516

PHOTOGRAPHIC EMULSION AND ELEMENT

Anthony D. Gingello, and Hermano P. Rocha, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 21, 1987, Ser. No. 76,095
Int. Cl.[4] G03C 1/10
U.S. Cl. 430—591 4 Claims

1. A photographic emulsion comprising silver halide, a spectral sensitizing dye comprising a rhodanine heterocyclic ring, and in a speed and contrast increasing amount from 40 to 450 mg of rhodanine per mole of the silver halide.

4,808,517

BIOASSAY FOR TOXIC SUBSTANCES

George A. Bloodin, and John M. Harkin, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Dec. 27, 1985, Ser. No. 813,686
Int. Cl.[4] C12Q 1/00, 1/48, 1/34, 1/26, 1/32
U.S. Cl. 435—4 27 Claims



1. A method of assaying for toxicants in an environmental sample comprising the steps of:

combining in a common receptacle (a) a suspension of submitochondrial particles formed from the inner membranes of mitochondria and carrying competent mitochondrial enzymes thereon, (b) an assay medium including a substrate, the conversion of which by mitochondrial enzymes can be detected by spectrophotometric detection of one of the substrate and its enzymatic reaction product, and (c) a quantity of the environmental sample to be tested; and

measuring spectrophotometrically the conversion of the substrate to determine the effect of the sample on the activity of the enzymes in the suspension particles.

4,808,518

RECOVERY OF CYTOMEGALOVIRUS ANTIGEN AND USE THEREOF IN AN ASSAY

Preston H. Dorsett; Robert F. Naegele, both of Memphis, and Terry S. Ratcliffe, Bartlett, all of Tenn., assignors to University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Feb. 11, 1985, Ser. No. 700,806
Int. Cl.[4] G01N 33/543, 133/546
U.S. Cl. 435—5 19 Claims

1. A composition for use in an agglutination assay for detection of CMV antibody, comprising:

solid particles sensitized with CMV antigen, said CMV antigen having been obtained by extracting the CMV antigen from cells containing CMV antigen with an aqueous salt solution hypertonic with respect to the osmolarity of the cells.

8. A process for producing a particulate support sensitized with CMV antigen, comprising:

contacting cells containing CMV antigen with an aqueous salt solution hypertonic with respect to the osmolarity of the cells to extract CMV antigen from the cells; treating extracted CMV antigen with a detergent; and supporting treated CMV antigen on a solid particulate support.

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4,808,519

METHOD OF DETECTING NUCLEIC ACID SEQUENCES

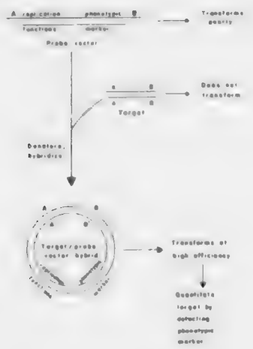
James L. Hartley, Frederick, and Mark S. Berninger, Gaithersburg, both of Md., assignors to Life Technologies, Inc., Gaithersburg, Md.

PCT No. PCT/US84/00525, § 371 Date Nov. 22, 1985, § 102(e) Date Nov. 22, 1985, PCT Pub. No. WO85/04663, PCT Pub. Date Oct. 24, 1985

PCT Filed Apr. 6, 1984, Ser. No. 804,647

Int. Cl.[4] C12Q *1/68;* **C07H** *21/00;* **C12N** *15/00*

U.S. Cl. 435—6 **27 Claims**



3. A method for determining the presence, in a mixture of DNA, of a target nucleic acid containing a particular base sequence $X_1X_2X_3 \ldots X_m \ldots Y_1Y_2Y_3 \ldots Y_n$, said method requiring the use of a probe-vector having a long strand and a short strand or just a long strand, wherein the long strand comprises the sequence $X'_mX'_{m-1} \ldots X'_3X'_2X'_1 \ldots Z'_1Z'_2Z'_3 \ldots Z'_p \ldots Y'_sY'_{n-1} \ldots Y'_3Y'_2Y'_1$, and the short strand comprises the sequence $Z_1Z_2Z_3 \ldots Z_p$, where m, n, p and k are integers and wherein

for any k, X'_k is the base complementary to X_k, Y'_k is the base complementary to Y_k, and Z'_k is the base complementary to Z_k, the ends of said long strand of said probe-vector being substantially complementary to sections of said target nucleic acid,

m and n are sufficiently large so that when said probe-vector is added to said target nucleic acid under hybridizing conditions, stable hybridization will occur between the ends of said long strand of said probe-vector and the said substantially complementary section of said target DNA forming thereby a circular hybrid, the probe-vector being circularized if the particular target sequence is present and has hybridized to said prove-vector, and

the regions $Z_1Z_2Z_3 \ldots Z_p$ and $Z'_1Z'_2Z'_3 \ldots Z'_p$ of said probe vector strands contain a replicon and confer a detectable phenotype such that bacteria transformed by said hybrid are detectable and distinguishable from untransformed bacteria by detection of said phenotype,

said method comprising the following steps:

(A) introducing said probe-vector to the sample containing nucleic acids, said nucleic acids being single stranded or being made single stranded before or after the addition of probe-vector, said mixture of sample and probe-vector comprising the test mixture;

(B) adjusting the conditions of the test mixture to hybridization conditions, such conditions being favorable for the formation of circular hybrids between said long strand and short strand or only with said long strand together with said target if said target is present in the sample, but such conditions being unfavorable for the formation of hybrids between non-target nucleic acids and probe-vector, the test mixture after hybridization comprising the hybridization mixture;

(C) introducing said hybridization mixture to bacterial cells, said bacterial cells being predisposed to transformation by circular DNA molecules but not by linear DNA molecules, said introduction being made under conditions which allow transformation by said circular hybrid but not by linear probe-vector, said bacterial cells lacking the detectable phenotype conferred by said probe-vector, said mixture of bacterial cells and hybridization mixture comprising the transformation mixture;

(D) adjusting the conditions of the transformation mixture to allow detection of the phenotypic marker, said phenotypic marker being exhibited only by transformed cells, such a mixture comprising the detection mixture; and

(E) detecting the phenotypic marker in the detection mixture.

4,808,520

LABELLING OF OLIGONUCLEOTIDES

Nanibhushan Dattagupta, New Haven, and William J. Knowles, Hamden, both of Conn., assignors to Molecular Diagnostics, Inc., West Haven, Conn.

Filed Mar. 15, 1985, Ser. No. 712,481

Int. Cl.[4] C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **7 Claims**

1. A method of making an oligonucleotide probe which consists essentially of hybridizing a template primer pair of oligonucleotides of equal lengths, each of said oligonucleotides of the template primer pair being shorter than the desired probe and being complementary with one another over only a portion of their lengths at opposite ends, contacting the hybridized oligonucleotide pair with an enzyme and one or more nucleoside triphosphates, the one or more nucleoside triphosphates permitting extension of one of the oligonucleotides, whereby one of the oligonucleotides is extended selectively in one direction until it is coterminal with the other oligonucleotide.

4,808,521

DOUBLE-LABELED ENZYMEIMMUNOASSAY METHODS

Gerald J. Allen, Windlesham, England, assignor to Serono Diagnostics Partners, Braintree, Mass.

Filed Jan. 22, 1986, Ser. No. 821,428

Claims priority, application United Kingdom, Jan. 23, 1985, 8501671

Int. Cl.[4] G01N *33/53, 33/543, 33/566;* **C12Q** *1/00*

U.S. Cl. 435—7 **17 Claims**

1. A method of performing an immunoassay of a ligand in a liquid sample wherein two independently measureable enzyme labels are separately conjugated to two or more components or populations of components of the assay system and, after completion of the complexing reaction, substantially all of the first enzyme label and a proportion of the second enzyme label are removed from the assay mixture, the proportion of the second label removed being related to the amount of the said ligand and the assay determined from a measurement of said proportion of the second label being normalised by comparison with a measurement of the total first label removed.

4,808,522

ENZYME IMMUNOASSAYS USING INORGANIC PYROPHOSPHATASE

Iosif G. Atabekov; Svetlana M. Avaeva; Alexandr A. Baikov; Alexandr V. Kulikich; Olga A. Mizenina; Vladimir N. Kasho, and Irina N. Smirnova, all of Moscow, U.S.S.R., assignors to Moskovsky Gosudarstvennax Universitet Imeni M. V. Lomonoso VA, U.S.S.R.

Filed Apr. 23, 1986, Ser. No. 855,507

Int. Cl.[4] G01N *33/535;* **C12Q** *1/42*

U.S. Cl. 435—7 **3 Claims**

1. A method for the determination of an antigen in a sample comprising the steps of:

preparing a conjugate by cross-linking an inorganic pyrophosphatase with antibodies reactive with said antigen to be determined;

binding any antigen that may be present in said sample to a solid phase;

reacting a solution of said conjugate with the antigen bound to the solid phase;

separating the resulting solid and liquid phases;

reacting one of said solid or liquid phase with a salt of pyrophosphoric acid;

adding a color reagent to said separated solid or liquid phase;

wherein the color reagent comprises a strong 3–7.5N inorganic acid containing the following components, % by mass: a salt of molybdic acid-0.75–4.5, a surfactant-0.05–0.3, and malachite green dye-0.025–0.25; determining the presence or the amount of said antigen from the resulting change in color.

4,808,523

CONSTITUTIVE PRODUCTION OF HUMAN IFN-β1 BY MAMMALIAN CELLS TRANSFORMED BY THE IFN-β1 GENE FUSED TO AN SV40 EARLY PROMOTER

Michel Revel, Rehovot, and Menachem Rubinstein, Givat Shmuel, both of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed Nov. 7, 1984, Ser. No. 669,259

Int. Cl.[4] C12P *21/00;* **C12N** *15/00, 5/00*

U.S. Cl. 435—68 **11 Claims**

1. A Chinese hamster ovary cell designated CHO-β_1-5-9 and deposited with the Pasteur Institute under Order No. I-340 which is resistant to >50 nM methotrexate comprising the selectable marker pSVDHFR and a pSVEIF DNA molecule which contains a sequence encoding human fibroblast interferon IFN-beta 1 fused about 60 base pairs downstream from the SV40 early start gene, the cell being capable of being cultured in a culture medium so as to constitutively express the sequence encoding human fibroblast interferon IFN-beta 1, produce an IFN-beta 1 glycoprotein at yields greater than 50,000 units/10^6 cells/24 hours, and secrete the IFN-beta 1 glycoprotein into the culture medium.

11. The plasmid designated pSVEIF and deposited with the Pasteur Institut in the host cell line designated CHO-β1-5-9 under Order No. I-340.

4,808,524

TEST KIT AND METHOD FOR THE DETERMINATION OF STREPTOCOCCUS A ANTIGEN

Brian A. Snyder, and Paul B. Contestable, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 98,431, Sep. 18, 1987, abandoned. This application Dec. 11, 1987, Ser. No. 131,618

Int. Cl.[4] C12Q *1/14*

U.S. Cl. 435—36 **16 Claims**

10. A method for the determination of Streptococcus A antigen in a biological specimen comprising:

A. contacting a biological specimen suspected of containing Streptococcus A organisms with a water-insoluble substrate having thereon a dried, binder-free coating of a first extraction reagent which is necessary for nitrous acid extraction of antigen from said organisms,

B. substantially simultaneously with contacting step A, contacting said specimen with an aqueous solution of a second extraction reagent which is necessary for said nitrous acid extraction.

C. incubating the resulting extraction solution for up to 5 minutes at a temperature up to about 90° C.,

D. neutralizing said extraction solution,

E. in a test device, contacting said neutralized extraction solution with an immunoreactive reagent for said antigen comprising water-insoluble particles having antibodies to said antigen attached thereto to form a agglutinated reaction product of said antibodies and said antigen,

F. separating said agglutinated reaction product from unreacted materials, and

G. determining the amount of either said agglutinated reaction product or said unreacted materials.

4,808,525

SITE SPECIFIC CLEAVAGE OF DNA

Michael McClelland, New York, N.Y., and Louis G. Kessler, Dallas, Tex., assignors to University of Georgia Research Center, Athens, Ga.

Continuation of Ser. No. 696,794, Jan. 31, 1985. This application Sep. 11, 1987, Ser. No. 96,765

Int. Cl.[4] C12P *19/34, 21/00;* **C07H** *15/12;* **C12Q** *1/60*

U.S. Cl. 435—91 **21 Claims**

1. A method for site specific cleavage of a double-stranded DNA molecule at a recognition sequence not less than eight base pairs long, comprising:

(a) contacting said double-stranded DNA molecule, which has a least two methylase recognition sequences, with at least one sequence specific methylase to produce a methylated double-stranded DNA molecule having a newly created DNA specific methylation dependent restriction endonuclease recognition sequence which partly overlaps with at least two of said methylase recognition sequences and said overlapping sequences having a combined length of not less than eight base pairs; and

(b) contacting said methylated double-stranded DNA molecule with a methylation dependent DNA specific restriction endonuclease, under conditions sufficient for cleavage of the double-stranded DNA molecules by said restriction endonuclease.

4,808,526

CONTINUOUS PROCESS FOR ETHANOL PRODUCTION BY BACTERIAL FERMENTATION

Hugh G. Lawford, Mississauga, Canada, assignor to George Weston Limited, Toronto, Canada

Continuation of Ser. No. 722,492, Apr. 12, 1985. This application May 20, 1985, Ser. No. 735,914

Int. Cl.[4] C12P *7/06;* **C12N** *1/20, 1/38*

U.S. Cl. 435—161 **21 Claims**

1. A continuous process for the production of ethanol, which comprises

feeding an aqueous substrate solution substantially continuously to a fermentation medium containing a submerged culture of an organism of the genus Zymomonas;

cultivating said organism under anaerobic conditions in an aqueous nutrient medium containing potassium and assimilable carbon, nitrogen and phosphorus until a recoverable quantity of ethanol is produced;

wherein said nutrient medium is limited in assimilable nitrogen such that the rate of growth of said organism is limited by the availability of assimilable nitrogen, and said nutrient medium contains said limiting nutrient in a concentration proportional to dilution rate, such that limiting nutrient concentration is increased as dilution rate increases and is decreased as dilution rate decreases;

and wherein said process is conducted as a nutrient-limited fermentation and under conditions such that biomass expresses its maximal value for both q_s and q_p under conditions of nutrient limitation and said process is conducted at a lower biomass concentration and a higher specific rate of ethanol formation that a similar process conducted with a nutrient medium containing nitrogen in excess;

and wherein each of said processes is carried out at the same fermentation temperature, dilution rate and concentration of assimilable carbon.

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4,808,527

CONTINUOUS PROCESS FOR ETHANOL PRODUCTION BY BACTERIAL FERMENTATION

Hugh G. Lawford, Mississauga, Canada, assignor to George Weston Limited, Toronto, Canada

Continuation of Ser. No. 722,492, Apr. 12, 1985. This application May 20, 1985, Ser. No. 735,915
Int. Cl.[4] C12P 7/06; C12N 1/20, 1/38
U.S. Cl. 435—161 21 Claims

1. A continuous process for the production of ethanol, which comprises

feeding an aqueous substrate solution substantially continuously to a fermentation medium containing a submerged culture of an organism of the genus Zymomonas;

cultivating said organism under anaerobic conditions in an aqueous nutrient medium containing potassium and assimilable carbon, nitrogen and phosphorus until a recoverable quantity of ethanol is produced;

wherein said nutrient medium is limited in assimilable nitrogen such that the rate of growth of said organism is limited by the availability of assimilable nitrogen, and said nutrient medium contains said limiting nutrient in a concentration proportional to concentration of substrate in said substrate solution, such that limiting nutrient concentration is increased as substrate concentration increases and is decreased as substrate concentration decreases;

and wherein said process is conducted as a nutrient-limited fermentation and under conditions such that biomass expresses its maximal value for both q_s and q_p under conditions of nutrient limitation and said process is conducted at a lower biomass concentration and a higher specific rate of ethanol formation than a similar process conducted with a nutrient medium containing nitrogen in excess;

and wherein each of said processes is carried out at the same fermentation temperature, dilution rate and concentration of assimilable carbon.

4,808,528

ANTIBODY COMPOSITION FOR THE DETECTION OF MALIGNANT CELLS WITH METASTATIC CELL ACTIVITY

Kari Tryggvason, Isteristie 10 B, 90230 Oulu 23, Finland, and Lance A. Liotta, 5621 Sonoma Rd., Bethesda, Md. 20817

Continuation of Ser. No. 496,230, Jun. 19, 1983, Pat. No. 4,677,058. This application Jun. 26, 1987, Ser. No. 67,598
Int. Cl.[4] G01N 33/574, 33/577
U.S. Cl. 435—172.2 9 Claims

1. Antibody compositions for the detection of malignant cells with metastatic cell activity, said compositions comprising antibodies specific to type IV collagenase enzyme antigens.

7. Monoclonal antibodies that bind specifically to type IV collagenase enzyme antigen.

4,808,529

ENZYMES IMMOBILIZED ON POLYAMIDES OR CELLULOSE HYDRATE

Peter Doppelfeld, Leverkusen, Fed. Rep. of Germany; Gary Oosta, Elkhart, Ind.; Alexander Riebel, Leverkusen, and Karl-Wilhelm Schranz, Odenthal, both of Fed. Rep. of Germany, assignors to Miles Inc., Elkhart, Ind.

Filed Feb. 24, 1986, Ser. No. 832,230
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1985, 3508908; Aug. 14, 1985, 3529094
Int. Cl.[4] C12N 11/12, 11/08; C12Q 1/32, 1/28
U.S. Cl. 435—179 1 Claim

1. The process for forming a carrier-bound protein which comprises

impregnating a membrane carrier of polyamide or cellulose hydrate having functional groups from the group consisting of carboxyl groups, amino groups, sulphonic acid groups, imino groups, thio groups, hydroxyl groups, pyridyl groups, and phosphoryl groups with an enzyme from the group consisting of peroxidase, glucose oxidase, diaphorase and glucose dehydrogenase,

drying the impregnated carrier,

coating the resulting dried carrier with a luminol solution having an adjusted pH value of 9.7, and

then drying the luminol coated carrier.

4,808,530

PROTEIN IMMOBILIZATION BY ADSORPTION OF A HYDROPHOBIC AMIDINE PROTEIN DERIVATIVE TO A HYDROPHOBIC SURFACE

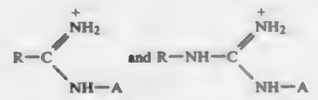
Gary E. Means, and Kamaruzzaman Ampon, both of Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Sep. 5, 1986, Ser. No. 904,160
Int. Cl.[4] C12N 11/08, 11/02; C07K 17/08
U.S. Cl. 435—180 19 Claims

1. An immobilized biologically active protein composition consisting essentially of:

(a) a hydrophobic surface; and adsorbed thereon through hydrophobic and noncovalent interaction thereto,

(b) a hydrophobic moiety R of a derivative of a biologically active protein of the structure selected from the group consisting of



wherein R is selected from the group of hydrophobic moieties consisting of aryl, alkylaryl, arylalkyl, and arylalkyloxyethylene ethers, alkyl, and alkylaryl, arylalkyl, and arylalkyloxyethylene ethers, alkyl, and cycloalkyl, and A is the biologically active protein less at least one primary amine group which provides the -NH- connected to A in the foregoing structure.

4,808,531

NEW RESTRICTION ENZYME AND PROCESS FOR PRODUCING THE SAME

Akira Obayashi, Uji; Nobutsugu Hirsoka, Makoo; Keiko Kita, Kyoto, and Hiroshi Nakajima, Ootsu, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

Filed Jul. 18, 1985, Ser. No. 756,380
Claims priority, application Japan, Aug. 31, 1984, 59-183157
Int. Cl.[4] C12N 9/14, 9/00; C12P 21/00; C12R 1/1
U.S. Cl. 435—195 2 Claims

1. Substantially pure restriction endonuclease Mfl I substantially identical with that produced from *Microbacterium flavum* IAM 1642, FERM BP-938 and having the following properties:

(a) Action and substrate specificity Capable of recognizing the base sequence as shown below on a double-stranded DNA molecule and cleaving the DNA chain at the arrow-marked positions, but showing no such action when A is methylated

5'—Pu ↓ GATCPy—3'

3'—PyCTAG ↑ Pu—5'

wherein A represents adenosine, G guanosine, T thymidine, C cytidine, Pu adenosine or guanosine, and Py thymidine or cytidine,

(b) Optimal pH range; 8.0–8.5,

(c) Stable pH range; 6.0–9.5,

(d) Optimal temperature; approx. 45° C.,

(e) Salt Concentration; The activity is maintained at NaCl and KCl concentrations up to 40 mM, but is retarded at higher levels, and

(f) $MgCl_2$ Concentration; The enzyme is kept active in the presence of 7 to 20 mM $MgCl_2$.

4,808,532

CONTINUOUS HUMAN CELL LINES AND METHOD OF MAKING SAME

Martha R. Stampfer, Oakland, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 1, 1985, Ser. No. 750,124
Int. Cl.[4] C12N 5/00; C12Q 1/68, 1/02, 1/18
U.S. Cl. 435—240.2 4 Claims

1. A biologically pure cell culture comprising a continuous human cell line derived from normal human mammary epithelial cells by means of treatment with a chemical carcinogen and selected from the group consisting of the cell lines having ATCC deposit numbers CRL8798 and CRL 8799.

4,808,533

METHOD OF PREVENTING T-CELL BLASTOGENESIS

Hans-Ake Fabricius, Breisach, and Eckart U. Köttgen, Freiburg, both of Fed. Rep. of Germany, assignors to Shaaksville Corporation NV, Netherlands, Netherlands Antilles

Division of Ser. No. 514,197, Jul. 15, 1983, Pat. No. 4,661,447, which is a division of Ser. No. 255,251, Apr. 17, 1981, Pat. No. 4,406,830. This application May 3, 1985, Ser. No. 730,042
Int. Cl.[4] C12N 5/00, 9/99
U.S. Cl. 435—240.2 2 Claims

1. A method for preventing T-cell blast formation comprising adding a serine esterase enzyme inhibiting alkylating agent to a system containing Interleukin-1, T-cell growth factor, and peripheral blood T-cell lymphocytes, thereby preventing T-cell blastogenesis.

4,808,534

METHOD AND APPARATUS FOR THE MICROBIOLOGICAL PRODUCTION OF SINGLE-CELL PROTEIN

Josef H. Schick, Mozartstr 10, 5000 Koeln 70, Fed. Rep. of Germany, and José Garrido Màrquez, Gral. Pardinas 82, Madrid, Spain

Continuation of Ser. No. 293,929, Aug. 18, 1981, abandoned, which is a continuation of Ser. No. 169,369, Jul. 16, 1980, abandoned, which is a continuation of Ser. No. 868,430, Jan. 10, 1978, abandoned. This application Jul. 15, 1986, Ser. No. 885,957
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1977, 2700698; Jan. 10, 1977, 2700697
Int. Cl.[4] C12N 1/32
U.S. Cl. 435—247 22 Claims

1. A process for the microbiological production of single-cell protein on an ethanol substrate in a fermentation column, comprising the steps of:

supplying ethanol metabolizing yeasts which have been cultivated at temperatures of 20° to 40° C. under aerobic conditions to said fermentation column in a dilute nutrient medium having a pH value of 2.5 to 4;

constantly circulating a mixture comprised of said yeasts, said ethanol substrate and said nutrient medium into, through and out of the fermentation column during said process by pumping the mixture through the fermentation column;

tangentially introducing the mixture into a zone which is enriched with oxygen gas in said column during said step of circulating;

introducing oxygen into said column immediately below said zone;

forming said introduced oxygen into oxygen bubbles in the range of 1 to 7 microns; and

supplying said oxygen bubbles upwardly to said zone substantially perpendicular to said tangentially introduced mixture to mix the oxygen bubbles with said mixture so as to form a stable dispersion of said mixture and said oxygen bubbles which can be conducted through said chamber at a relatively high speed without breaking up and effectively without the development of foam.

4,808,535

ACINETOBACTER SPECIES AND ITS USE IN REMOVING ORGANIC SULFUR COMPOUNDS

Jeseflr D. Isbister, Potomac, Md., assignor to Atlantic Research Corporation, Alexandria, Va.

Filed Aug. 5, 1986, Ser. No. 893,231
Int. Cl.[4] C12N 1/20; C10G 32/00
U.S. Cl. 435—252.1 5 Claims

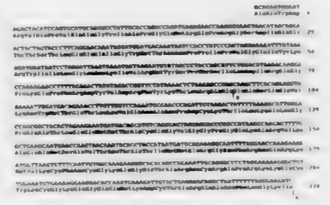
3. A process for removing organic sulfur compounds from a carbonaceous substrate comprising treating said substrate with a culture of Acinetobacter species CB2 ATCC #53515.

4,808,536

IMMUNOCHEMICAL METHOD FOR DETECTION OF ANTIBODY AGAINST HTLV-III CORE PROTEIN BASED UPON RECOMBINANT HTLV-III GAG GENE ENCODED PROTEIN

Nancy T. Chang, Houston, Tex., and John Ghrayeb, Thorndale, Pa., assignors to Centocor, Inc., Malvern, Pa.

Filed Feb. 27, 1986, Ser. No. 834,212
Int. Cl.[4] G01N 33/545; B65D 69/00; C12Q 1/70
U.S. Cl. 435—5 21 Claims



1. A method of detecting antibody against HTLV-III core protein in a biological fluid, comprising the steps of:

a. providing an antigen immunoadsorbent comprising a solid phase to which is attached a HTLV-III core antigen which is a chimeric antigen comprising an amino acid sequence beginning at amino acid number 1 through 99, and extending to amino acid number 228, as shown in FIG. 5, the chimeric antigen being immunoreactive with antibody against HTLV-III core protein;

b. incubating the immunoadsorbent with a sample of the biological fluid to be tested under conditions which allow antibody in the sample to complex with the antigen immunoadsorbent;

c. separating the immunoadsorbent from the sample; and

d. determining antibody bound to the immunoadsorbent as an indication of antibody against HTLV-III core protein in the sample.

4,808,537

METHANOL INDUCIBLE GENES OBTAINED FROM PICHIA AND METHODS OF USE

David W. Stroman, Bartlesville, Okla.; Paul F. Brust; Steven B. Ellis, both of Jolla, Calif.; Thomas R. Gingeras, Encinitas, Calif.; Michael M. Harpold, and Juerg F. Tschopp, both of San Diego, Calif., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 30, 1984, Ser. No. 666,391
Int. Cl.[4] C12P 21/00; C12N 15/00, 1/16; C12Q 1/68
U.S. Cl. 435—6 24 Claims

22. A method for isolating the p76 gene from a methanol assimilating yeast, said method comprising:

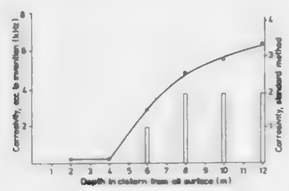
(a) digesting total DNA with at least one restriction enzyme to give digested DNA;
(b) size fractionating said digested DNA by agarose electrophoresis;
(c) denaturating and binding the size fractionated DNA from step (b) to nitrocellulose filter to give bound DNA;
(d) hybridizing said bound DNA with labeled p76 gene from *Pichia pastoris;*
(e) identifying the unique size fragment of bound DNA which cross-hybridizes with the labeled p76 gene from *P. pastoris;*
(f) size fractionating additional DNA which has been digested in accordance with step (a) to recover for cloning the unique size fragment of DNA identified in step (e).

4,808,538

METHOD AND DEVICE FOR MEASURING THE CORROSIVITY OF LIQUIDS

Roger Roffey; Göran Olofsson; Anders Norqvist, all of Umeå, and Göran Hultén, Bygdeå, all of Sweden, assignors to Försvarets Forskningsanstalt, Stockholm, Sweden

PCT No. PCT/SE85/00128, § 371 Date Nov. 18, 1985, § 102(e) Date Nov. 18, 1985, PCT Pub. No. WO85/04254, PCT Pub. Date Sep. 26, 1985
PCT Filed Mar. 21, 1985, Ser. No. 821,554
Claims priority, application Sweden, Mar. 21, 1984, 8401581
Int. Cl.[4] G01N *17/00*
U.S. Cl. 436—6 **7 Claims**



1. Method for measuring the corrosivity of a corrosive liquid comprising the steps of:
coating a piezoelectric crystal with a layer of a corrodible material;
cleaning and activating the coating layer of corrodible material by exposing said coating layer to a sulphide solution for a period of time sufficient to provide a thin, reproducible sulphide layer on said coating layer thereby making said coating layer more sensitive to corrosive compounds in the corrosive liquid;
determining the natural oscillation frequency (ν_1) of the coated and activated piezoelectric crystal;
exposing the crystal to the corrosive liquid;
determining the natural oscillation frequency (ν_2) of the crystal after exposure to the corrosive liquid for a certain period of time;
determining the change in the natural oscillation frequency ($\nu_1-\nu_2$) of the crystal; and
determining the mass change on the surface of the crystal and thus of the content of corrosive compounds in the liquid from said change in natural oscillation frequency.

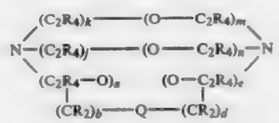
4,808,539

COMPOUNDS, REAGENTS AND PROCEDURES FOR DETERMINING CATIONS

Eddy Chapoteau, Brooklyn; Bronislaw P. Czech, Peekskill; Carl R. Gebauer, Cromwood; Koon-Wah Leong, Ossining, and Anand Kumar, Southfields, all of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

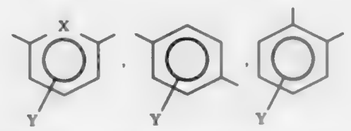
Filed Apr. 15, 1987, Ser. No. 38,843
Int. Cl.[4] G01N *33/20*
U.S. Cl. 436—74 **22 Claims**

1. A method for determining cations in an aqueous sample having an ion to be detected in the presence of an interfering ion which interfaces with detection of said ion to be detected, said method comprising:
(a) preparing a reagent mixture consisting essentially of (i) a surfactant; (ii) a chromogenic cryptand of formula I

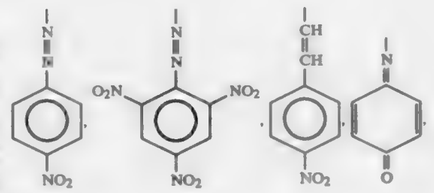


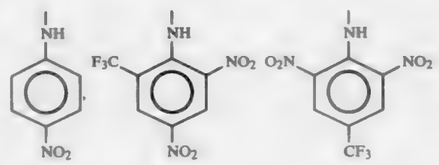
(I)

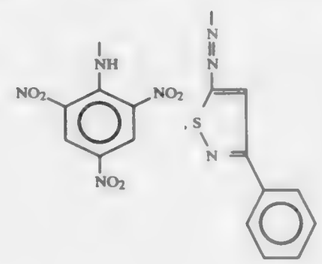
wherein
k and j, either same or different, are equal to 1 to about 5;
m and n, either same or different, are equal to 0 to about 4;
a and e, either same or different, are equal to 0 to about 2;
b and d, either same or different, are equal to 0 to about 5;
R, either same or different, is hydrogen, lower alkyl, lower alkylidene, lower alkenyl, allyl, or aryl; and
—Q— is



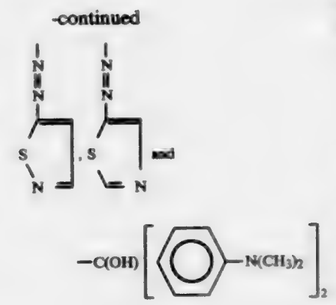
wherein X is CH, N, or COH; and Y includes



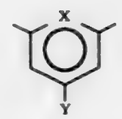




-continued



except that when Q is



wherein Y is selected from the group consisting of p-nitrophenylazo, 3-phenylisothiazalyl-5-azo, isothiazolyl-5-azo, thiazolyl-5-azo, 2,4,6-trinitrophenylazo, p-nitrostyryl, p-benzoquinonemonoimino and bis-p-dimethylaminophenyl)hydroxymethyl, then the following condition cannot be present: that simultaneously be is equal to 0 or 1, d is equal to 0 or 1, j is equal to 1, n is equal to 1 or 2, a is equal to 1, e is equal to 1, k is equal to 1 and m is equal to 2; (iii) a buffer; (iv) a solvent medium and (v) a non-chromogenic interfering cation complexing compound mask;
(b) adding the reagent mixture to a device consisting of a dimensionally stable, uniformly porous, diffusely reflective single or multi-layer formed of a polymeric matrix;
(c) evaporating the solvent medium of the reagent mixture;
(d) adding said sample to the device;
(e) measuring the reflectance of the device; and
(f) comparing the reflectance so measured with the reflectance of a standard composition containing a known concentration of cations.

4,808,540

METHOD FOR CHROMATOGRAPHICAL ANALYSIS OF ANIONS

Akiyoshi Miyanaga, Yokohama, and Masao Umino, Atsugi, both of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed May 29, 1987, Ser. No. 55,330
Claims priority, application Japan, May 31, 1986, 61-124671
Int. Cl.[4] G01N *30/14*
U.S. Cl. 436—150 **9 Claims**



1. A method for the chromatographical analysis of anions in an aqueous solution employing an ion-chromatography system having a separating column, a cation exchange column and an electroconductivity detector, comprising the following steps:
introducing a test sample, which is an aqueous solution containing anions, into the separation column packed with an anion exchange resin while an eluant fluid containing an amine compound as an electron donor is passed through the separation column to separate the anions in the sample and elute the anions from the separation column;
passing the eluant fluid containing the separated and eluted anions from the separation column to the cation exchange column packed with a cation exchange resin substituted with a metal ion as an electron acceptor, to react the amine compound in the eluant fluid with the metal ion to form a complex; and
passing the eluant fluid from the cation exchange column to the electroconductivity detector to detect the anions in the eluant fluid;
the counter ion of said amine compound having a larger complex-forming constant to the metal ions than the complex-forming constant of the counter ion of the anions to be analyzed to the metal ion, and said compound having a larger complex-forming constant to the metal ion than the complex-forming constant of the hydroxyl ion, which is the counter ion of the amine compound, to the metal ion.

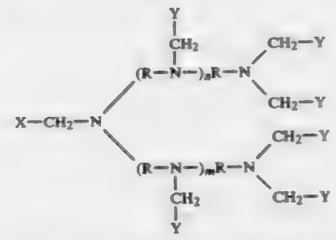
4,808,541

DETERMINATION METHOD UTILIZING REAGENTS COVALENTLY LABELLED WITH ESSENTIALLY NON-FLUORESCENT LANTHANIDE CHELATES IN COMBINATION WITH TIME-RESOLVED FLUORESCENCE SPECTROSCOPY AND THE REAGENTS TO BE USED IN THE METHOD

Heikki Mikola; Veli-Matti Mukkala, and Ilkka Hemmilä, all of Turku, Finland, assignors to LKB Produkter AB, Bromma, Sweden and Wallac OY, Turku, Finland

Continuation of Ser. No. 679,047, filed as PCT SE84/00089 on Mar. 13, 1984, published as WO84/03698 on Sep. 27, 1984, abandoned. This application Feb. 20, 1987, Ser. No. 16,789
Claims priority, application Sweden, Mar. 15, 1983, 8301395
Int. Cl.[4] G01N *33/566*
U.S. Cl. 436—501 **8 Claims**

1. In a method for following bio-specific affinity reactions for detecting an analyte by the use of a bio-organic molecule covalently labelled with a lanthanide chelate, said lanthanide chelate being measured by releasing the lanthanide and formation of a fluorescent lanthanide chelate that is determined by time-resolved fluorescence spectroscopy, the improvement being the use of a chelating group that has been bound covalently to said bio-organic molecule by reaction of said molecule with a compound having the structure:



or with a lanthanide chelate thereof in which the lanthanide is the same as in the fluorescent chelate, wherein R is a straight or branched alkylene group having 2 to 8 carbon atoms; n and m are each 0 or 1; Y is a carboxylic acid group or a phosphonic acid group; and X is an active functional group which allows covalent coupling to said bio-organic molecule, with the provision that X can change place with one of the Ys.

4,808,542

PROCESS FOR THE STABILIZATION OF PN JUNCTIONS

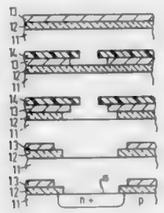
Hansjoerg Reichert; Ludwig Scharf, and Margarete Deckers, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 10, 1987, Ser. No. 84,525

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1986, 3627209

Int. Cl.⁴ H01L *21/425*

U.S. Cl. 437—20 **17 Claims**



1. A method for the stabilization of a PN junction, the method comprising the steps of:

(a) providing an oxide layer on a semiconductor substrate located above an area of a first doping type;

(b) producing a nitride layer on the oxide layer;

(c) patterning the nitride layer photolithographically by means of a photoresist to produce at least one exposed area of the nitride layer and etching the at least one exposed area to form at least one window in the nitride layer;

(d) chemically etching the oxide layer via the at least one window to remove at least one exposed portion of the oxide layer while producing an overlapping nitride region around the window;

(e) re-etching, subsequent to the step of chemical etching of the oxide, the overlapping nitride region;

(f) via the window, implanting particles of a second doping type, which is opposite to those of the first doping type, followed by a diffusion; and,

(g) subsequently removing the photoresist from the nitride.

4,808,543

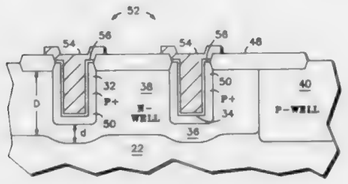
WELL EXTENSIONS FOR TRENCH DEVICES

Louis C. Parrillo; Richard W. Mauntel, both of Austin, Tex., and John M. Barden, Albuquerque, N. Mex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 7, 1986, Ser. No. 860,734

Int. Cl.⁴ H01L *29/92*

U.S. Cl. 437—38 **8 Claims**



1. A method for making a semiconductor integrated circuit in a semiconductor substrate comprising the steps of:

forming at least one doped well region of one conductivity type in the face of the semiconductor substrate, the doped well region having a bottom;

forming a plurality of trenches in the doped well region using a masking pattern, each trench having a bottom; and

forming at least one impurity region of the same conductivity type as the doped well region, the impurity region located at the bottom of the trenches, and extending below the bottom of the doped well region; comprising the steps of:

first, distributing an impurity of the same conductivity type as the doped well region solely into the bottom of the trenches using the same masking pattern used to form the trenches; and

second, driving in the impurity to form a concentration of impurity around the bottom of each of the trenches so that the resultant impurity regions expand the bottom of the doped well regions.

4,808,544

LDD STRUCTURE CONTAINING CONDUCTIVE LAYER BETWEEN GATE OXIDE AND SIDEWALL SPACER

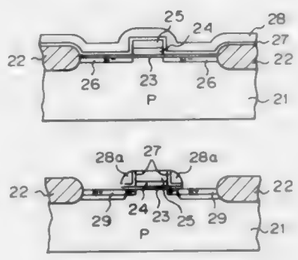
Hiroshi Matsui, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1988, Ser. No. 174,494

Claims priority, application Japan, Mar. 6, 1987, 62-70381

Int. Cl.⁴ H01L *29/60*

U.S. Cl. 437—44 **1 Claim**



1. A method for manufacturing a semiconductor device comprising the steps of:

(a) forming respectively a field oxide film and a gate oxide film on a predetermined area of a silicon substrate;

(b) forming a gate electrode layer on the gate oxide film;

(c) accumulating a conductive material layer on the field oxide film, the gate oxide film and the gate electrode layer;

(d) accumulating a silicon oxide film on the conductive layer;

(e) forming a sidewall spacer insulating film on a sidewall of the gate electrode layer by reactively ion-etching the silicon oxide film; and

(f) preserving the conductive layer only beneath the side wall spacer insulating film by reactively ion-etching the conductive layer.

4,808,545

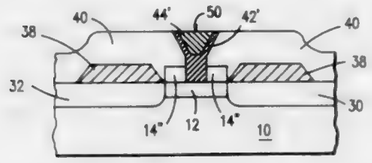
HIGH SPEED GAAS MESFET HAVING REFRACTORY CONTACTS AND A SELF-ALIGNED COLD GATE FABRICATION PROCESS

Karanam Balasubramanyam, Hopewell Junction; Robert R. Joseph, Poughkeepsie, and Robert B. Renbeck, Stantsburg, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1987, Ser. No. 40,014

Int. Cl.⁴ H01L *21/31*

U.S. Cl. 437—41 **20 Claims**



1. Process for forming a MESFET comprising: providing a GaAs substrate having a lightly doped shallow surface layer of a given conductivity type covered by a first insulator layer:

forming a submicron-wide mask having bottom and top portions on said first insulator;

utilizing said mask, (a) implanting in said substrate ions of said conductivity type forming source and drain regions self-aligned to said mask structure and (b) removing said first insulator not covered by said mask strucure to limit said first insulator to lie over the channel region of said MESFET;

reducing the width of the bottom portion of said mask to correspond with the desired MESFET gate length;

forming a conductive material over said source and drain regions;

nonconformally depositing a second insulator on the resulting structure;

removing said mask to expose the portion of said first insulator thereunder;

etching said exposed portion of said first insulator to uncover a gate region in said substrate, and forming over said channel region submicron spacers of said first insulator self-aligned to said gate region and said source and drain regions; and

forming a gate metal in said gate region.

4,808,546

SOI PROCESS FOR FORMING A THIN FILM TRANSISTOR USING SOLID PHASE EPITAXY

Masahiro Moniwa, Hachioji; Masanobu Miyao, Tokorozawa; Shoji Shukuri, Koganei; Eiichi Murakami, Kokubunji; Terunori Warabisako, Tokyo; Mamo Tamura, Tokorozawa; Nobuyoshi Natsuaki, Higashiyamato; Kiyonori Ohyu, Hachioji; Tadashi Suzuki; Yunichi Madokoro, both of Kokubunji, and Yasuo Wada, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 2, 1987, Ser. No. 9,476

Claims priority, application Japan, Jan. 31, 1986, 61-17922

Int. Cl.⁴ H01L *21/265, 21/26*

U.S. Cl. 437—41 **24 Claims**

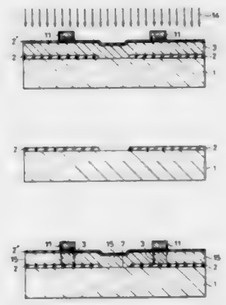
1. A process for fabricating a semiconductor device, comprising:

the step of forming an insulating film having apertures on the principal surface of a single-crystal semiconductor substrate;

the step of forming an amorphous semiconductor film extending from the exposed surface of said semiconductor substrate onto said insulating film;

the step of forming a mask on such regions of said amorphous semiconductor film as will have a low impurity concentration, said mask constituting an electrode of said semiconductor device;

the step of doping those regions of said amorphous semiconductor film, which are not covered with said mask, with an impurity, the regions that are doped forming impurity-doped regions of the semiconductor device; and



the step of annealing said amorphous semiconductor film to form the doped portions of said amorphous semiconductor film into single-crystal semiconductor films through the solid-phase epitaxial growth while electrically activating the impurity atoms, so as to simultaneously provide the single-crystal semiconductor films and the impurity-doped regions of the semiconductor device.

4,808,547

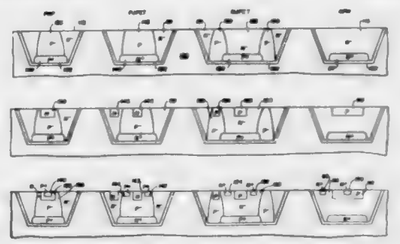
METHOD OF FABRICATION OF HIGH VOLTAGE IC BOPOLAR TRANSISTORS OPERABLE TO BV_{CBO}

James D. Beason, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 883,279, Jul. 7, 1986, Pat. No. 4,729,008, which is a continuation of Ser. No. 447,945, Dec. 8, 1982, abandoned. This application Dec. 9, 1987, Ser. No. 130,521

Int. Cl.⁴ H01L *21/70*

U.S. Cl. 437—54 **6 Claims**



1. A method of fabricating a bipolar and junction field effect transistor comprising:

simultaneously forming by the introduction of a first conductivity type dopant a channel region of said junction field effect transistor and a collector region of said bipolar transistor having the same depth and impurity concentration;

simultaneously forming a top gate region of said junction field effect transistor in said channel region and a base region of said bipolar transistor in said collector region of a second conductivity type opposite said first conductivity type; and

simultaneously forming source and drain regions of said junction field effect transistor in said channel region and an emitter region of said bipolar transistor in said base region of said first conductivity type.

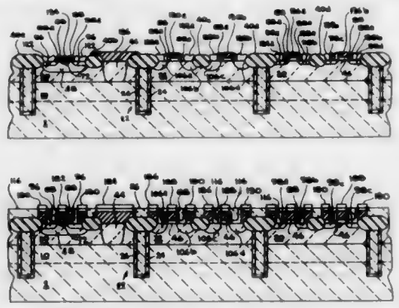
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4,808,548

METHOD OF MAKING BIPOLAR AND MOS DEVICES ON SAME INTEGRATED CIRCUIT SUBSTRATE

Mammen Thomas, San Jose, and Matthew Weinberg, Mountain View, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 777,149, Sep. 18, 1985. This application Nov. 23, 1987, Ser. No. 123,823
Int. Cl.[4] H01L *21/70, 27/00, 21/265*
U.S. Cl. 437—57 **19 Claims**



1. A process for producing an improved integrated circuit structure containing at least one bipolar device and at least one MOS device which comprises:

(a) forming a single layer of polysilicon on a substrate;

(b) forming on said substrate an emitter having a raised contact portion formed from said polysilicon layer, a raised collector contact portion formed from said polysilicon layer, and a gate having a raised contact portion formed from said polysilicon layer;

(c) forming an insulating spacer adjoining the sidewall of said raised emitter contact portion and an insulating spacer adjoining the sidewall of said raised gate contact portion;

(d) forming base contact means having a conductive path portion adjacent the insulating spacer adjoining said raised emitter contact portion;

(e) forming a source contact means having a conductive path portion adjacent said insulating spacer adjoining said raised gate portion; and

(f) forming a drain contact means having a conductive path portion adjacent said insulating spacer adjoining said raised gate portion.

19. A process for forming a highly planarized integrated circuit structure comprising one or more bipolar devices and one or more MOS devices which comprises the steps of:

(a) forming a buried layer in a semiconductor substrate;

(b) growing an epitaxial layer of silicon over said buried layer;

(c) forming at least one isolation zone in said structure to separate adjoining active devices;

(d) forming a gate oxide over at least a portion of the surface of said epitaxial layer;

(e) removing said gate oxide from the surface of a portion of said epitaxial layer defining base emitter, collector, source, and drain contact regions;

(f)) forming a sinker in a portion of said epitaxial layer to provide an electrical contact to said buried layer;

(g) forming an intrinsic base in one portion of said epitaxial layer separated from said sinker by an isolation zone;

(h) forming source and drain regions in another portion of said epitaxial layer;

(i) forming a layer of doped polysilicon over said structure;

(j) masking said polysilicon to define raised base, source, drain, emitter, collector, and gate contact portions and removing the remainder of said polysilicon;

(k) forming insulating spacers adjoining the sidewall of said raised polysilicon contact portions;

(l) removing said spacers from the sidwalls of said raised source, drain, and base contact portions leaving said spacers on the sidewalls of said raised polysilicon emitter, collector, and gate contact portions;

(m) removing gate oxide from further portions of said substrate surface to expose portions of said epitaxial layer corresponding to source and drain regions;

(n) forming a metal silicide over said emitter, collector, and gate contact portions, said source and drain regions, said intrinsic base region, and over the top and exposed sidewall surfaces of said raised source, drain, and base contact portions;

(o) forming a layer of an insulating material over said structure;

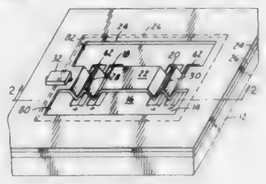
(p) planarizing said structure to remove sufficient insulating material to expose the top portion of said raised source, drain, base, emitter, collector, and gate contact portions to form a highly planarized structure.

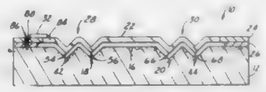
4,808,549

METHOD FOR FABRICATING A SILICON FORCE TRANSDUCER

Mati Mikkor, Ann Arbor, and Edward N. Sickafus, Grosse Ile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 27, 1988, Ser. No. 199,892
Int. Cl.[4] H01L *27/20, 21/70*
U.S. Cl. 437—60 **13 Claims**





13. A method for fabricating a force transducer having parallel plates to measure the change in capacitance therebetween in response to an applied force wherein the movement of the plates is rectilinear in response to the applied force, said method comprising the steps of:

preparing a n-silicon substrate having nominal crystalline planes and a top planar surface substantially parallel to said nominal planes;

anisotropically etching a pair of V-shaped parallel grooves along said top planar surface forming a first plate between said parallel grooves, each of said V-shaped grooves having side walls lying substantially in the monocrystalline planes;

doping said first plate to form an n-type conductor region along said first plate;

forming a p-epitaxial silicon layer over said grooved top planar surface;

forming an n-epitaxial layer of doped silicon over said p-epitaxial layer following the contour of said grooved top planar surface to define a pair of V-shaped members opposite said pair of grooves and a second plate between said pair of V-shaped members;

etching an opening through said n-epitaxial layer such that said second plate is connected to said n-epitaxial layer only through said pair of V-shaped members;

applying a positive voltage to both said n-silicon substrate and said n-epitaxial layer with respect to said p-epitaxial layer;

anisotropically etching said p-epitaxial layer to suspend said second plate and said pair of V-shaped members over said top planar surface; and

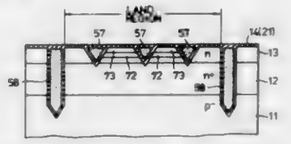
coupling electronic detecting to both said first capacitive plate and said second capacitive plate to detect capacitive changes between said plates in response to the applied force.

4,808,550

METHOD OF PRODUCING ISOLATION GROOVE STRUCTURE

Toshitaka Fukushima, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 908,209, Sep. 17, 1986, abandoned. This application Jul. 8, 1988, Ser. No. 217,072
Claims priority, application Japan, Sep. 17, 1985, 60-208948
Int. Cl.[4] H01L *29/06, 21/461*
U.S. Cl. 437—67 **4 Claims**



1. A method for producing an isolation groove structure comprising the steps of:

providing a semiconductor substrate comprising a substrate base having a first type of conductivity, a buried layer formed on said substrate base and having a second type of conductivity that is opposite to that of said first type of conductivity and an epitaxial layer formed on said buried layer and having said second type of conductivity and an impurity concentration that is lower than that of said buried layer;

forming in said semiconductor substrate by reactive ion etching, a first groove portion having a generally U-shaped cross section and wide walls which are substantially straight and parallel to each other;

simultaneously forming in said semiconductor substrate by anisotropic etching, second and third groove portions having generally V-shaped cross sections, said second groove portion being formed at the bottom of said first groove portion, thereby presenting a deep isolation groove extending to said substrate base, said third groove portion being formed at a location different from that of said first groove portion and presenting a shallow isolation groove not reaching said substrate base; and

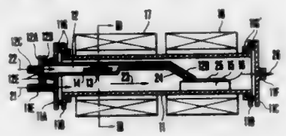
oxidizing said deep isolation groove and said shallow isolation groove, so that elements on said semiconductor substrate are isolated thereby.

4,808,551

METHOD FOR HALIDE VPE OF III-V COMPOUND SEMICONDUCTORS

Hidefumi Mori, Tokyo; Nobuyori Tsuzuki, Kanagawa, and Mitsuo Yamamoto, Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Corporation, Tokyo, Japan

Continuation of Ser. No. 12,836, Feb. 10, 1987, abandoned. This application Aug. 30, 1988, Ser. No. 239,045
Claims priority, application Japan, Feb. 14, 1986, 61-28974
Int. Cl.[4] H01L *21/205, 21/223*
U.S. Cl. 437—81 **25 Claims**

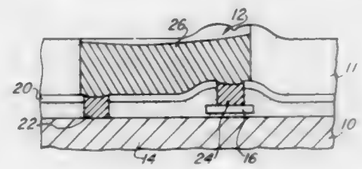


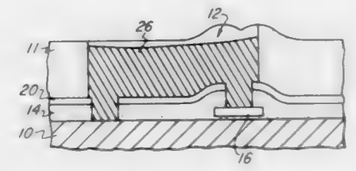
4,808,552

PROCESS FOR MAKING VERTICALLY-ORIENTED INTERCONNECTIONS FOR VLSI DEVICES

Dirk N. Anderson, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 774,764, Sep. 11, 1985, abandoned. This application Jun. 2, 1987, Ser. No. 57,631
Int. Cl.[4] H01L *21/285, 21/318*
U.S. Cl. 437—187 **3 Claims**





1. A method of forming an interconnecting path between two conducting areas at a face of a semiconductor body including mutilevel oxide layers and intermediate conductor layers, said method comprising the steps of:

depositing a silicon nitride layer over said multilevel oxide layers;

patterning said silicon nitride layer and said multilevel oxide layers and etching holes through said silicon nitride layer and at least one of said multilevel oxide layers to expose said conductive areas;

applying a thick silicon oxide layer on said face, said thick layer having a thickness greater than the width of said path;

anisotropically etching said thick layer to leave a vertical-walled trench in said thick layer in the form of said path between said conductive areas and to expose said conductive areas at ends of said path, said trench having a depth determined by said silicon nitride layer acting as an etch stop;

conformally depositing by chemical vapor deposition a metal layer on said face to fill said trench;

removing excess metal of said metal layer from said face in areas spaced from the trench to leave sufficient metal of said metal layer in said trench to form said interconnecting path.

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4,808,553

SEMICONDUCTOR DEVICE MANUFACTURING METHOD

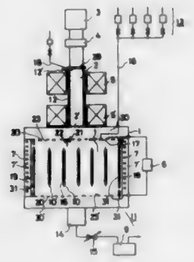
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory, Kanagawa, Japan

Division of Ser. No. 929,449, Nov. 12, 1986, abandoned. This application Nov. 10, 1987, Ser. No. 118,894

Claims priority, application Japan, Nov. 12, 1985, 60-253299; Nov. 18, 1985, 60-259194

Int. Cl.[4] H01L *21/203*

U.S. Cl. 437—100 **3 Claims**



1. A semiconductor device manufacturing method by chemical vapor reaction comprising the steps of:

introducing a non-reactive gas into a first portion of a vacuum chamber;

subjecting said non-reactive gas to a magnetic field;

applying microwaves to said non-reactive gas to excite said non-reactive gas and energize, under the existence of said magnetic field, charged particles of said non-reactive gas;

mixing said non-reactive gas so energized with a reactive gas introduced into a second portion of said vacuum chamber to energize said reactive gas; and

subjecting said reactive gas so energized to a glow discharge enhanced chemical vapor reaction of silicon and germanium, whereupon, by virtue of the dual energizing of said reactive gas, said reactive gas decomposes to deposit a Si_xGe_{1-x} $(0<X<1)$ semiconductor layer on a substrate placed in said vacuum chamber.

4,808,554

SEMICONDUCTOR DEVICE MANUFACTURING METHOD

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory, Kanagawa, Japan

Division of Ser. No. 929,449, Nov. 12, 1986, abandoned. This application Nov. 10, 1987, Ser. No. 118,893

Claims priority, application Japan, Nov. 12, 1985, 60-253299; Nov. 18, 1985, 60-259194

Int. Cl.[4] H01L *21/203*

U.S. Cl. 437—101 **16 Claims**

1. A semiconductor device manufacturing method by chemical vapor reaction comprising the steps of:

evacuating a vacuum chamber by evacuating means;

introducing a non-reactive gas into a first portion of said vacuum chamber;

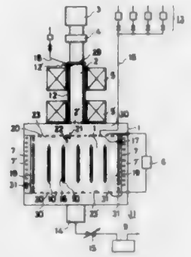
subjecting said non-reactive gas to a magnetic field;

applying microwaves to said non-reactive gas to excite said non-reactive gas and energize under the existence of said magnetic field, charged particles of said non-reactive gas;

mixing said non-reactive gas so energized with a reactive gas introduced into a second portion of said vacuum chamber to energize said reactive gas; and

subjecting said reactive gas so energized to a glow discharge enhanced chemical vapor reaction of silicon and carbon, whereupon, by virtue of the dual energizing of said reactive gas, said reactive gas decomposes to deposit a Si_xC_{1-x} $(0<X<1)$ semiconductor layer on a substrate placed in said vacuum chamber;

wherein said chemical vapor reaction is carried out at a negative pressure which is maintained at less than



10^{-2}–10^{-5} Torr by the cooperation of a vacuum pump and a turbo molecular pump, whereby said vacuum pump operates to reduce the pressure to a level at which said turbo molecular pump then operates to reduce the pressure in said vacuum chamber to less than 10^{-2}–10^{-5} Torr.

4,808,555

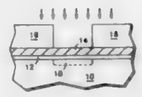
MULTIPLE STEP FORMATION OF CONDUCTIVE MATERIAL LAYERS

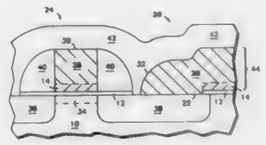
Richard W. Maunfel; Stephen J. Cosentino; Louis C. Parrillo, all of Austin, Tex., and Patrick J. Holly, Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 10, 1986, Ser. No. 884,113

Int. Cl.[4] H01L *21/283*

U.S. Cl. 437—191 **7 Claims**





1. A process providing an integrated circuit having a two-stage conductive material layer, comprising the steps of:

providing a semiconductor substrate;

forming a gate dielectric layer over the semiconductor substrate;

forming at a temperature below 900° C. a first thin layer of conductive material over the gate dielectric layer;

performing an intermediate process step upon the first thin layer of conductive material; and

forming at a temperature below 900° C. a second thick layer of conductive material over the first thin layer of conductive material, wherein the conductive material of the second layer is the same as the first layer,

in the absence of a required reactive step between the first layer and the second layer to form the conductive material layer and in the absence of an intervening dielectric layer.

4,808,556

FLUOROPHOSPHATE OPTICAL GLASS

Naruhito Sawanobori, Yono; Shinobu Nagahama, Kamikabe, and Nobuyoshi Baba, Yono, all of Japan, assignors to Sumita Optical Glass Mfg. Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1987, Ser. No. 116,680

Claims priority, application Japan, Dec. 8, 1986, 61-292092

Int. Cl.[4] C03C *3/247, 4/00*

U.S. Cl. 501—44 **1 Claim**

1. A fluorophosphate optical glass having optical constants, a refractive index (nd) of 1.42 to 1.47 and an Abbe number (νd) of 90 to 97 and consisting essentially of 3 to 8 mole % of P_2O_5, 0.1 to 2 mole % of Al_2O_3, 1 to 7 mole % of BaO, 35.5 to 41 mole % of AlF_3, 8 to 13 mole % of MgF_2, 16 to 26 mole % of CaF_2, 15 to 21 mole % of SrF_2, 3.5 to 10 mole % of BaF_2 and 1 to 6 mole % of NaF.

4,808,557

SINTERED TITANIUM CARBO-NITRIDE CERAMICS

Tadahiko Watanabe; Kazuhisa Shoba, both of Saga; Yuko Tsuya; Yuji Enomoto, both of Ibaraki; Junshiro Hayakawa, Fukuoka; Osamu Yagishita, Fukuoka; Hideki Yamamoto, Fukuoka, and Eiichi Sudoh, Fukuoka, all of Japan, assignors to Kyushu Director of Institute, Itaru Todoroki, Saga and Tokyo Kokyu Rozai Co., Ltd., Fukuoka, both of, Japan

Continuation of Ser. No. 810,466, Dec. 18, 1985, abandoned. This application Jun. 30, 1987, Ser. No. 68,740

Claims priority, application Japan, Dec. 24, 1984, 59-270943; Apr. 16, 1985, 60-82033

Int. Cl.[4] C04B *35/56*

U.S. Cl. 501—87 **26 Claims**

1. A sintered ceramic material useful as a cutting tool or wear resistant machine part consisting of 1 to 90 weight% chromium carbide and 99 to 10 weight% titanium carbo-nitride, all weight percents being based on the total amount of sintered ceramic material, wherein the mole ratio of carbon to nitrogen in the titanium carbo-nitride ranges from 1:9 to 9:1.

4,808,558

CERAMIC FOAMS

Eugene S. Park, Hockessin, Del., and Steven D. Poste, Kingston, Canada, assignors to Lanxide Technology Company, LP, Newark, Del.

Filed Aug. 26, 1987, Ser. No. 89,376

Int. Cl.[4] C04B *38/00*

U.S. Cl. 501—80 **14 Claims**



1. A method of producing a ceramic article comprising:

(a) providing a precursor metal foam body comprised of metallic ligaments interconnected randomly in three dimensions to constitute an open-cell reticulated structure, the external surfaces of said ligaments defining open channels interconnected randomly in three dimensions;

(b) treating said precursor metal foam body, at a temperature below the melting point of said metal, for forming on the surface of said ligaments a support coating which maintains the integrity of the open-cell structure when said body is heated to a temperature above the melting point of the metal;

(c) heating the treated body in the presence of an oxidant to a temperature above the melting point of the metal but below the melting point of an oxidation reaction product of the precursor metal and the oxidant to melt the precursor metal and reacting said molten precursor metal with the oxidant to form the oxidation reaction product within and optionally beyond said support coating, to form an open-cell ceramic foam comprising the open-cell reticulated structure of said metal body; and

(d) cooling said body and recovering said ceramic article.

4,808,559

METHOD OF MANUFACTURING A CATALYST FOR HYDRATION OF OLEFINS TO ALCOHOLS

August Sommer, and Dietrich Schlueter, both of Herne, Fed. Rep. of Germany, assignors to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Feb. 1, 1988, Ser. No. 151,194

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1987, 3709401

Int. Cl.[4] B01J *21/04, 21/06*

U.S. Cl. 502—63 **14 Claims**

1. A method of manufacturing a catalyst comprised of argillaceous minerals and silica gel for the hydration of a C_{2-3} olefin to form the corresponding alcohol, comprising the steps of:

(i) obtaining a montmorillonite-containing clay support material, said support material comprising not more than 3 wt. % impurities, said impurities comprising quartz, feldspar and mica impurities and said material containing up to 0.5 wt. % K_2O;

(ii) acid treating said support material, whereby said acid treated support material comprises 10–20 wt. % Al_2O_3 and has a specific surface area of 200–400 m^2/g;

(iii) adding 20–40 wt. %, based on the overall dry weight, of fine-grained silica gel to said acid treated support material to prepare a mixture, wherein said silica gel has a particle size distribution substantially in the range of 30–60 microns, a pore volume of 0.9–1.7 ml/g and a specific surface area of 200–500 m^2/g;

(iv) pressure forming and calcining said mixture to prepare a formed support material;

(v) acid treating said formed support material, whereby said acid treated formed support material comprises 1–4 wt. % Al_2O_3 and has a specific surface area of 180–250 m^2/g and a pore volume of 0.8–1.5 ml/g; and

(vi) impregnating said acid treated formed support material with phosphoric acid.

4,808,560

CATALYST FOR SIMULTANEOUS DESULFURIZATION AND DEWAXING OF RESIDUA

Stephen M. Oleck, Moorestown, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 733,410, May 13, 1985, abandoned, which is a continuation of Ser. No. 307,555, Oct. 1, 1981, abandoned. This application Dec. 24, 1985, Ser. No. 814,090

Int. Cl.[4] B01J *29/30, 29/36*

U.S. Cl. 502—66 **12 Claims**

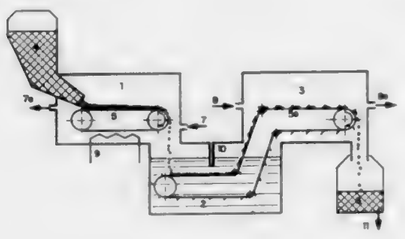
1. A catalytic composition for simultaneously desulfurizing and dewaxing petroleum residua having significant sulfur content, comprising from about 1% to about 10% by weight a nickel or cobalt oxide or sulfide component and from about 2 to about 20% by weight molybdenum, the mole ratio of said nickel or cobalt oxide or sulfide to molybdenum being from about 0.25 to about 2.0, on a base selected from the group consisting of alumina, silica, silica-alumina or mixtures thereof, said base having admixed therewith a crystalline zeolite having the structure of ZSM-5, ZSM-11, ZSM-12, ZSM-35 or ZSM-38, having a crystal framework density of not less than about 1.6 grams/cubic centimeter in an amount equal to between about 15 and less than 65 percent by weight of the catalyst composition, having a surface area between about 199 and about 276 m^2/g and having an average pore diameter between about 75 and about 119 Angstroms, for simultaneously reducing sulfur content and pour point of petroleum residua.

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4,808,561
SUPPORTED POLYMERIZATION CATALYST
Howard C. Welborn, Jr., Houston, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.
Continuation of Ser. No. 747,615, Jun. 21, 1985, abandoned. This application Mar. 18, 1988, Ser. No. 170,485
Int. Cl.[4] C08F *4/64, 4/68*
U.S. Cl. 502—104 **16 Claims**

10. A method for preparing an olefin polymerization supported catalyst comprising the supported reaction product of at least one metallocene of a metal of Group 4b of the Periodic Table and an alumoxane, the aluminum to transition metal molar ratio being in the range of 100:1 to 1:1, said method comprising adding to a slurry of the support which is a porous inorganic metal oxide of a Group 2a, 3a, 4a, or 4b metal, in an inert hydrocarbon solvent, an alumoxane in an inert hydrocarbon solvent and a metallocene in an amount of from about 0.001 to about 10 millimoles of said metallocene per gram of support.

4,808,562
PROCESS FOR ACTIVATING AND STABILIZING CATALYST COMPOSITIONS
Hans-Peter Kubersky, Solingen, and Hans-Georg Rollberg, Duesseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany
Continuation of Ser. No. 811,088, Dec. 19, 1985, abandoned. This application Jul. 30, 1987, Ser. No. 80,192
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1984, 3447782
Int. Cl.[4] B01J *31/34, 31/28/31, 26*
U.S. Cl. 502—172 **28 Claims**



1. A process for the preparation of an activated catalyst composition comprising the steps of

A. contacting a shaped particulate catalyst starting material comprising at least one of Cu, Zn, Cr, or an oxide, hydroxide, carbonate, or basic carbonate thereof with a reducing gas in an activation zone at a temperature in the range of from about 200° C. to about 350° C. to produce an activated particulate catalyst for the reduction of a fatty acid or ester thereof to the corresponding alcohol;

B. impregnating the activated particulate catalyst in an impregnation zone in the presence of said reducing gas with a melted impregnating solid consisting essentially of a fatty alcohol or fatty alcohol mixtures at a temperature of from about 50° C. to about 120° C., said melted solid being inert to the activated catalyst and having a melting point of at least about 40° C.;

C. separating the impregnated activated particulate catalyst from the melted impregnating solid after substantially complete impregnation of the catalyst; and

D. solidifying the impregnating melted solid present on the catalyst;

wherein the activation zone temperature is at least about 80° C. higher than the impregnation zone temperature, and the activated catalyst is at a higher temperature than the melted impregnating solid on contact therewith.

4,808,563
MOLYBDENUM-TUNGSTEN-CONTAINING CATALYST FOR METHANE CONVERSION PROCESS
Louis J. Velenyi, Lyndhurst, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio
Division of Ser. No. 843,095, Mar. 24, 1986, Pat. No. 4,695,668. This application Aug. 19, 1987, Ser. No. 87,534
Int. Cl.[4] B01J *21/08, 23/02, 23/28, 23/30*
U.S. Cl. 502—241 **15 Claims**

1. A catalyst comprising a molybdenum-tungsten-containing complex represented by the formula

$$Mo_aW_bM_cA_dO_e$$

wherein

M is selected from the group consisting of one or more metals selected from any of Groups IB, IIB, IVB, VB or VIII of the Periodic Table and/or one or more of Y, Cr, Mn, Re, B, In, Ge, Sn, Pb, Th or U, or a mixture of two or more of the metals in said group;

A is at least one metal selected from the group consisting of alkali metals, alkaline earth metals, Lanthanide series metals, Tl, or a mixture of two or more of the metals in said group;

a is a number in the range of from about 1 to about 200;

b is a number in the range of from about 1 to about 200;

with the proviso that either Mo or W is in excess of the other, the ratio of a:b being about 90:1 or about 1:90 1:4;

c is a number such that the ratio of c:(a+b) is in the range of from 0:100 to about 10:100;

d is a number such that the ratio of d:(a+b) is in the range of from 0:100 to about 75:100; and

e is the number of oxygens needed to fulfill the valence requirements of the other elements.

4,808,564
CATALYST FOR THE PURIFICATION OF EXHAUST GASES
Shinichi Matsumoto, Aichi; Naoto Miyoshi, Nagoya, and Masayasu Sato, Osaka, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Dec. 8, 1987, Ser. No. 129,850
Claims priority, application Japan, Dec. 24, 1986, 61-310638
Int. Cl.[4] B01J *21/04, 23/10, 32/00*
U.S. Cl. 502—303 **6 Claims**

1. A catalyst for the purification of exhaust gases, comprising a support substrate, a catalyst carrier layer formed on said support substrate and catalyst ingredients carried on said catalyst carrier layer,

wherein said catalyst carrier comprises alumina and oxides of rare earth elements including oxides of lanthanum and cerium, the molar fraction of lanthanum atoms to the total rare earth atoms is 0.05 to 0.20, and the ratio of the number of the total rare earth atoms to the number of aluminum atoms is 0.05 to 0.25.

4,808,565
THERMAL IMAGING MATERIAL
David R. Whitcomb, Maplewood, and Jon A. Bjork, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 896,765, Aug. 14, 1986, abandoned. This application Jul. 7, 1987, Ser. No. 73,889
Int. Cl.[4] B41M *5/18*
U.S. Cl. 503—211 **20 Claims**

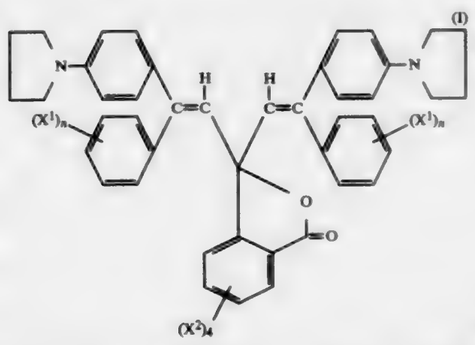
1. A colorless thermographic material comprising a transparent film-forming binder, an organic solvent soluble colorless catechol in solid solution in said binder, and colorless or substantially colorless microparticles of a ferric iron compound selected from ferric organophosphates, ferric organophosphinates, and ferric organophosphonates dispersed in said binder, said catechol being in intimate contact with said iron compound, being non-reactive with said iron compound at room temperature, and being reactive with said iron compound at temperatures above 60° C.

4,808,566
RECORDING MATERIAL
Masanobu Takashima; Ken Iwakura; Masato Satowara, and Katsumi Matsuoka, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 3, 1987, Ser. No. 92,846
Claims priority, application Japan, Sep. 3, 1986, 61-207547; Jul. 11, 1987, 62-164686; Jul. 29, 1987, 62-189496
Int. Cl.[4] B41M *5/16, 5/18, 5/22*
U.S. Cl. 503—217 **19 Claims**

1. A recording material comprising an electron-donating colorless dye and an electron-accepting compound wherein said colorless dye is a dimer composed of 3-(4-substituted aminoaryl)-3-(substituted indol-3-yl)-phthalide moieties connected via an alkylene or alkenylene group having from 1 to 20 carbon atoms which may contain therein one or more of an oxygen atom or a nitrogen atom.

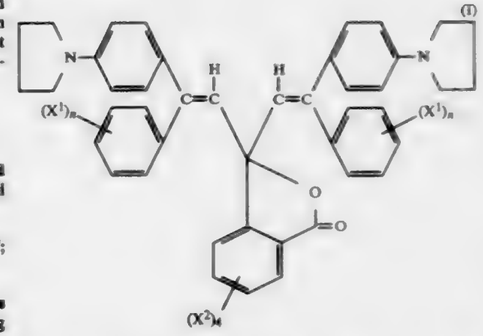
4,808,567
DIVINYL COMPOUNDS AND CHROMOGENIC RECORDING-MATERIAL PREPARED BY USING THEREOF
Hajime Kawai; Yoshiharu Fujino, both of Tsuzuki; Youji Shimizu, Kyoto; Seiichi Nioda, Kyoto; Kazuhiko Gondai, Kyoto, and Katsuhiko Tsunemitsu, Kyoto, all of Japan, assignors to Yamada Chemical Co., Ltd., Kyoto-fu, Japan
Filed Apr. 13, 1987, Ser. No. 37,669
Claims priority, application Japan, Apr. 15, 1986, 61-87619; Feb. 2, 1987, 62-23361
Int. Cl.[4] B41M *5/16, 5/18, 5/22;* **C07D** *405/06*
U.S. Cl. 503—220 **56 Claims**

1. A divinyl compound represented by the formula (I):



wherein X^1 is selected from the group consisting of an alkyl group of not more than six carbon atoms, an alkoxy group of not more than eight carbon atoms, an alkoxy-alkoxy group of not more than six carbon atoms in total, a phenoxy group, a cycloalkoxy group of not more than eight carbon atoms, a haloalkoxy group of not more than eight carbon atoms, an alkenyloxy group of not more than eight carbon atoms, a benzyloxy group and a halogen atom; X^2 represents a halogen atom; and n represents an integer of 0, 1, 2 or 3, wherein X^1 of $(X^1)_n$ can be the same or different when n is not less than 2 and X^2 of $(X^2)_4$ can be the same or different.

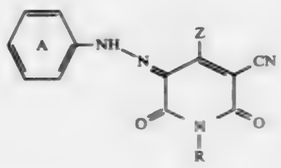
29. A recording material comprising a material containing a divinyl compound represented by the formula (I) as a chromogenic agent:



wherein X^1 is selected from the group consisting of an alkyl group of not more than six carbon atoms, an alkoxy group of not more than eight carbon atoms, an alkoxy-alkoxy group of not more than six carbon atoms in total, a phenoxy group, a cycloalkoxy group of not more than eight carbon atoms, a haloalkoxy group of not more than eight carbon atoms, an alkenyloxy group of not more than eight carbon atoms, a benzyloxy group and a halogen atom; X^2 represents a halogen atom; and n represents an integer of 0, 2 or 3, wherein X^1 of $(X^1)_n$ can be the same or different when n is not less than 2 and X^2 of $(X^2)_4$ can be the same or different.

4,808,568
THERMAL TRANSFER PRINTING
Peter Gregory, Bolton, and Roy Bradbury, Farnworth, both of England, assignors to Imperial Chemical Industries PLC, London, England
Filed May 5, 1987, Ser. No. 46,187
Claims priority, application United Kingdom, May 27, 1986, 8612668
Int. Cl.[4] B41M *5/035, 5/26*
U.S. Cl. 503—227 **9 Claims**

1. A thermal transfer printing sheet comprising a substrate having a coating comprising a binder and a dye of the formula:



wherein

Ring A is unsubstituted or carries, in the 2- or 4-position with respect to the azo link, at least one group selected from $—CX_3$, X^1, CN, NO_2, —OCO.Y, —CO.Y, —CO.H, $—OSO_2.Y$ and $—SO_2.Y$, provided that A is substituted when Z is CH_3 and R is C_{2-4}-alkyl;

X & X^1 are each independently halogen;

Y is selected from R^1, $—OR^1$, SR^1 and $—NR^1R^2$;

R^1 is selected from C_{1-12}-alkyl, C_{1-12}-alkyl interrupted by one or two groups selected from —O—, —CO—, O.CO— and —CO.O—, C_{3-7}-cycloalkyl, mono- or bi-cyclic aryl and C_{1-3}-alkylene attached to an adjacent carbon atom on Ring A;

R^2 is selected from H, C_{1-12}-alkyl, C_{3-7}-cycloalkyl and mono- or bi-cyclic aryl;

Z is C_{1-12}-alkyl or phenyl; and

R is selected from C_{2-12}-alkyl unbranched in the alpha-position,, C_{2-12}-alkyl unbranched in alpha-position and interrupted by one or two groups selected from —O—, —CO—, O.CO— and —CO.O—, phenyl, C_{1-4}-alkyl-phenyl, biphenyl and biphenyl interrupted by a group selected from —O—, —CO—, O.CO— and —CO.O—, each of which is free from hydrogen atoms capable of intermolecular hydrogen bonding.

4,808,569

FRAGRANCE ADDITIVE

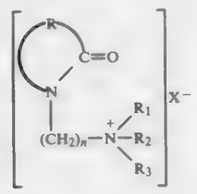
Ratan K. Chaudhuri, Butler; Michael W. Helioff, Westfield, and Robert B. Logia, Oakland, all of N.J., assignors to GAF Corporation, Wayne, N.J.

Continuation-in-part of Ser. No. 67,195, Jun. 29, 1987, and a continuation-in-part of Ser. No. 922,923, Oct. 24, 1986, Pat. No. 4,732,990. This application Oct. 22, 1987, Ser. No. 111,311

Int. Cl.[4] A61K *7/46*

U.S. Cl. 512—2 **20 Claims**

1. The complex of a quaternary lactam having the formula:



wherein n is an integer having a value of from 1 to 3; R is alkylene containing from 3 to 6 carbon atoms and is optionally substituted with lower alkyl; R_1 is alkyl containing from 8 to 22 carbon atoms; R_2 and R_3 are each independently alkyl containing from 1 to 22 carbon atoms and X^- is an anion, with a volatile, odoriferous fragrance containing a compound having an acidic hydrogen atom and from 3 to 50 carbon atoms wherein the weight ratio of fragrance to quaternary lactam is between about 1:0.05 and about 1:10.

4,808,570

COMPOSITIONS AND METHOD FOR IMPROVING WOUND HEALING

Dov Michaeli, San Francisco, Calif., assignor to University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 583,159, Feb. 24, 1984, Pat. No. 4,745,098. This application Aug. 15, 1986, Ser. No. 897,103

The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.

Int. Cl.[4] A61K *37/00, 31/725*

U.S. Cl. 514—2 **24 Claims**

1. A method for promoting the healing of a surface wound, which method comprises, applying to the wound surface a suspension, itself comprised of an admixture of:

(1) collagen fibrils in a major amount; and

(2) a minor amount of a glycosaminoglycan, wherein the glycosaminoglycan is chemotactic for fibroblasts or endothelial cells, wherein the collagen is not covalently cross-linked to the glycosaminoglycan and the suspension of collagen fibrils and glycosaminoglycan is applied repeatedly to the wound surface during the healing process.

4,808,571

Patent Not Issued For This Number

4,808,572

α-HYDROXY THIOETHERS

Andreas Beck, Freiburg, Fed. Rep. of Germany; Werner Breitenstein, Basel, Switzerland; Andreas von Sprecher, Oberwil, Switzerland; Robert W. Lang, Pratteln, Switzerland, and Konrad Oertle, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

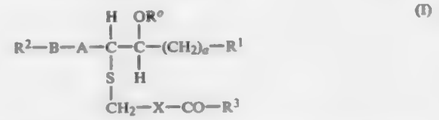
Filed Dec. 1, 1986, Ser. No. 936,671

Claims priority, application Switzerland, Dec. 6, 1985, 5228/85

Int. Cl.[4] C07C *149/243;* A61K *31/22*

U.S. Cl. 514—18 **29 Claims**

1. A compound of the formula



(I)

in which the general symbols have the following meanings:

a is an integer of from 1 to 7,

R^o represents hydrogen or C_{1-7}-alkanoyl,

R^1 represents C_{1-3}-alkyl which may be substituted at the terminal carbon atom by hydroxy, by benzoyloxy, by C_{1-7}-alkanoyloxy, by a halogen atom having an atomic number of at most 17, or by methoxy, or represents C_{1-3}-perfluoroalkyl,

R^2 represents an aliphatic radical having from 5 to 15 carbon atoms,

A represents ethylene or alternatively, if R^1 represents a halogenated radical and/or B represents phenylene, then A is a single bond or vinylene,

B represents a single bond or phenylene,

R^3 represents hydroxy, C_{1-7}-alkoxy or an amino group or substituted amino group of the formula



wherein R_o^3 is hydrogen or C_{1-4}-alkyl, and R_b^3 is hydroxy, C_{1-7}-alkoxy, or amino,

—X— represents a single bond, a methylene group or a group of the formula R_4-NH-CH-(—Xo—)

wherein R_4 is hydrogen or the acyl radical of (a) γ-glutamyl or (b) an alkanoic acid having a maximum of 7 carbon atoms, or R_4 is trifluoroacetyl, and

salts of such compounds having salt-forming properties.

4,808,573

CARBOXYALKYL DIPEPTIDES AND ANTI-HYPERTENSIVE USE THEREOF

Elijah H. Gold; Bernard R. Neustadt, both of West Orange, and Elizabeth M. Smith, Verona, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

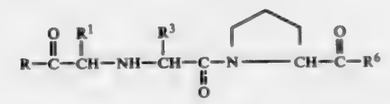
Continuation-in-part of Ser. No. 258,484, Apr. 28, 1981, abandoned, which is a continuation-in-part of Ser. No. 201,649, Oct. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 199,896, Oct. 23, 1980, abandoned. This application Mar. 23, 1987, Ser. No. 29,293

Claims priority, application European Pat. Off., Oct. 15, 1981, 81108348.4

Int. Cl.[4] A61K *31/40;* C07D *207/16*

U.S. Cl. 514—19 **14 Claims**

1. A compound represented by the formula



and the pharmaceutically acceptable salts thereof, wherein R and R^6 are the same or different and are hydroxy or lower alkoxy;

R^1 is benzyloxylower alkyl or benzylthiolower alkyl; and

R^3 is hydrogen, lower alkyl or aminolower alkyl.

4,808,574

COMPOSITION INHIBITING PATHOLOGICAL ADDICTION TO ALCOHOL

Izrail I. Brekhman; Alexandr E. Bulanov; Mira I. Poloshentseva, all of Vladivostok; Levan A. Mudzhiri, Tbilisi; Gia G. Alkhazashvili, Tbilisi; Elena I. Kalatozishvili, Tbilisi; Igor V. Dardymov, Vladivostok; Gennady N. Benditko, Vladivostok, and Eleonora I. Khasina, Vladivostok, all of U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Sadovodstva, Akademii Nauk; Vinogradarstva I Vinodelia, Tbilisi and Institut Biologii Morya Dalnevostochnogo Nauchnogo Tsentra, Vladivostok, all of, U.S.S.R.

Filed Dec. 3, 1986, Ser. No. 937,606

Int. Cl.[4] A61K *31/20, 45/06, 31/375*

U.S. Cl. 514—23 **9 Claims**

1. A composition inhibiting the development of a pathological addiction to alcohol and having a stress-protecting effect which comprises the following ingredients, mg/g:

leukoanthocyanes	219–270
catechins	153–187
flavonols	81–99
lignin	68–83
reducing sugars	216–264
pectin	18–22
organic acids	76.5–93.5
sterols	4.5–5.5
methylsterols	1.35–1.65
dimethylsterols	1.98–2.42
lignans	13.5–16.5
lignan glycosides	9–11
phenolic aldehydes	4.5–5.5
alkylferulates	4.5–5.5.

4,808,575

12,13-OXODERIVATIVES OF MACROLIDES

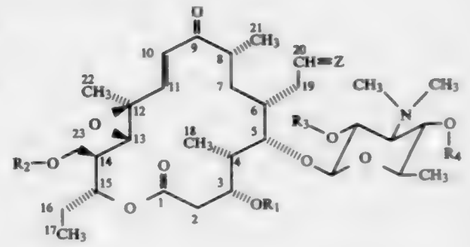
Alan K. Mallams, West Orange, and Randall R. Rossman, Nutley, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jan. 23, 1986, Ser. No. 877,879

Int. Cl.[4] A61K *31/70;* C07H *17/08*

U.S. Cl. 514—30 **15 Claims**

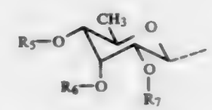
1. A compound having the formula I



wherein

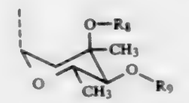
R_1=(C_2–C_7) alkanoyl; or (C_2–C_7) alkanoyl substituted by chloro, lower alkoxy, phenyl, biphenyl, phenoxy or biphenoxy; or benzoyl or phenylbenzoyl; or benzoyl or phenylbenzoyl or phenoxy or biphenoxy substituted by one or more of halogen, nitro, lower alkoxy, or lower alkyl;

R_2=(C_2–C_7) alkanoyl; or (C_2–C_7) alkanoyl substituted by chloro, lower alkoxy, phenyl, biphenyl, phenoxy or biphenoxy; or benzoyl or phenylbenzoyl; or benzoyl or phenylbenzoyl or phenoxy or biphenoxy substituted by one or more of halogen, nitro, lower alkoxy, or lower alkyl; or



R_3=H or (C_2–C_7) alkanoyl; or (C_2–C_7) alkanoyl substituted by chloro, lower alkoxy, phenyl, biphenyl, phenoxy or biphenoxy; or benzoyl or phenylbenzoyl; or benzoyl or phenylbenzoyl or phenoxy or biphenoxy substituted by one or more of halogen, nitro, lower alkoxy, or lower alkyl;

R_4=(C_2–C_7) alkanoyl; or (C_2–C_7) alkanoyl substituted by chloro, lower alkoxy, phenyl, biphenyl, phenoxy or biphenoxy; or benzoyl or phenylbenzoyl; or benzoyl or phenylbenzoyl or phenoxy or biphenoxy substituted by one or more of halogen, nitro, lower alkoxy, or lower alkyl or



R_5=H or (C_2–C_7) alkanoyl; or (C_2–C_7) alkanoyl substituted by chloro, lower alkoxy, phenyl, biphenyl, phenoxy or biphenoxy; or benzoyl or phenylbenzoyl; or benzoyl or phenylbenzoyl or phenoxy or biphenoxy substituted by one or more of halogen, nitro, lower alkoxy, or lower alkyl;

R_6 is H or methyl and R_7 is methyl;

R_8 is H or (C_2–C_7) alkanoyl; or (C_2–C_7) alkanoyl substituted by chloro, lower alkoxy, phenyl, biphenyl, phenoxy or

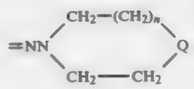
VOL 1099 ISS 4 FE 28 1989 UMI

biphenoxy; or benzoyl or phenylbenzoyl; or benzoyl or phenylbenzoyl or phenoxy or biphenoxy substituted by one or more of halogen, nitro, lower alkoxy, or lower alkyl;

R_9 is (C_2–C_7) alkanoyl; or (C_2–C_7) alkanoyl substituted by chloro, lower alkoxy, phenyl, biphenyl, phenoxy or biphenoxy; or benzoyl or phenylbenzoyl; or benzoyl or phenylbenzoyl or phenoxy or biphenoxy substituted by one or more of halogen, nitro, lower alkoxy, or lower alkyl;

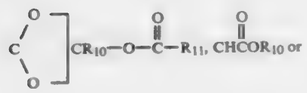
Z is oxygen, dimethoxy

$=NNH-$aralkyl, $=NNHCNH_2$, $=NNHCNH_2$ or

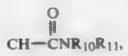


wherein

n is 0, 1 or 2 and Q is $CR_{10}R_{11}$, NR_{10}, oxygen, S, SO_2, $CR_{10}OR_{11}$,



$CR_{10}-O-C-R_{11}$, $CHCOR_{10}$ or



$CH-CNR_{10}R_{11}$,

wherein

R_{10} and lower alkyl, aralkyl, R_{11} are independently hydrogen, lower alkyl, aralkyl, X-substituted aralkyl, aryl and X-substituted aryl wherein X is independently halogen, trifluoromethyl, lower alkoxy or (C_2–C_7)alkanoyl; and wherein aryl is substituted by phenyl or biphenyl;

or a pharmaceutically acceptable acid addition salt thereof.

4,808,576

REMOTE ADMINISTRATION OF HYALURONIC ACID TO MAMMALS

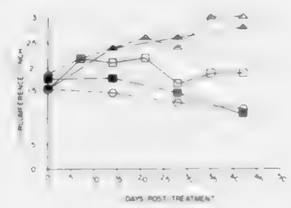
Richard H. Schultz, Lenexa; Terry H. Wollen, Wellsville; Nathan D. Greene, Leawood, all of Kans.; Karen K. Brown, Kansas City, Mo., and John O. Mozier, Stanley, Kans., assignors to Mobay Corporation, Pittsburgh, Pa.

Filed Apr. 28, 1986, Ser. No. 856,732

Int. Cl.[4] A61K *31/715*

U.S. Cl. 514—54 **35 Claims**

1. A process for reducing the inflamation, pain or other result of trauma in irritated mammalian tissue comprising administering an effective dose of hyaluronic acid or a pharmacologically acceptable salt thereof at an effective site in or on the body of the mammal remote from said tissue.



4,808,577

METHOD FOR PREVENTING COLORATION OF AQUEOUS PREPARATIONS OF CEFMENOXIME

Yasushi Morita, Takasaki, Japan, assignor to Senju Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jun. 15, 1987, Ser. No. 61,377

Claims priority, application Japan, Jun. 26, 1986, 61-150085

Int. Cl.[4] A61K *31/69, 31/545*

U.S. Cl. 514—64 **9 Claims**

1. An aqueous cefmenoxime composition inhibited against discoloration comprising 0.01 to 20 parts of boric acid or a salt thereof per part by weight of cefmenoxime or a salt thereof, wherein the concentration of cefmenoxime or a salt thereof is in the range of 0.01 to 10% (w/v), and the concentration of the boric acid or a salt thereof is in the range of 0.01 to 5% (w/v).

4,808,578

6-ALKYLIDENE 10 β-ALKYNYLESTRENE DERIVATIVES AND PHARMACEUTICAL METHODS FOR THEIR USE

Franco Faustini; Enrico di Salle; Vittoria Villa, and Paolo Lombardi, all of Milan, Italy, assignors to Farmitalia Carlo Erba S. R. L., Milan, Italy

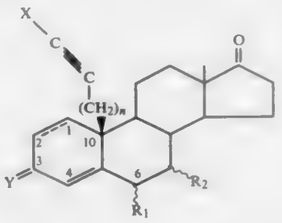
Filed Dec. 15, 1986, Ser. No. 941,348

Claims priority, application United Kingdom, Dec. 24, 1985, 8531747

Int. Cl.[4] A61K *31/56;* **C07J** *1/00*

U.S. Cl. 514—177 **9 Claims**

1. A compound of formula (I)



(I)

wherein

X is hydrogen, C_1–C_4 alkyl or halogen;

n is zero, 1 or 2;

Y is an oxo group or a methylene group;

the symbol ≡ indicates a single bond or a double bond;

R_1 is a C_1–C_6 alkylidene group; and

R_2 is hydrogen.

8. A method of inhibiting hormone-dependent tumors or prostatic hyperplasia in a patient in need of such inhibition, said method comprising administering to said patient an effective amount of the compound of claim 1.

4,808,579

NOVEL MONOCYCLE β-LACTAM ANTIBACTERIALS

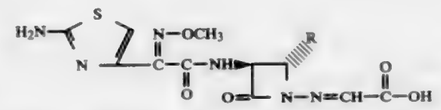
William V. Carrea, Pearl River, N.Y., and Robert H. Leonard, Paramus, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 13, 1987, Ser. No. 120,282

Int. Cl.[4] C07D *417/12;* **A61K** *31/425*

U.S. Cl. 514—210 **5 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R is hydrogen or methyl and the pharmacologically acceptable cationic salts thereof.

4. The method of treating bacterial infections in a mammal which comprises administering to said mammal a pharmacologically effective amount of a compound of claim 1.

4,808,580

NAPHTHO[1,2-b][1,4]THIAZEPIN-4(5H)-ONES AND USE THEREOF IN TREATMENT OF ISCHEMIA AND BLOOD PRESSURE LOWERING

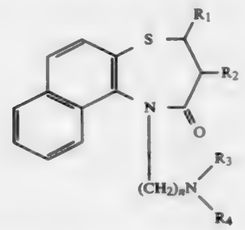
Erno Mohacsi, Summit, and Jay P. O'Brien, Cedar Grove, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 17, 1987, Ser. No. 134,282

Int. Cl.[4] A61K *31/33;* **C07D** *281/14*

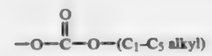
U.S. Cl. 514—211 **38 Claims**

1. A compound of the formula:

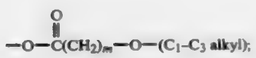


I

wherein R_1 is phenyl substituted with 1 to 3 substituents selected from the group consisting of lower alkoxy and halogen; R_2 is hydroxy, lower alkoxy, lower alkanoyloxy, lower cycloalkylcarbonyloxy,

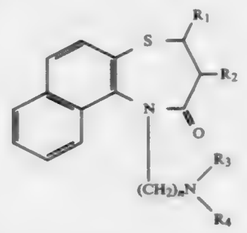


or



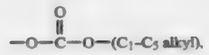
R_3 and R_4 are independently lower alkyl, phenyl lower alkyl, or together form a piperidine or pyrrolidine ring; n is 2 to 4; m is 1 to 2; or a pharmaceutically acceptable acid addition salt thereof.

34. A method of inducing calcium antagonist activity which comprises administering to a warm-blooded animal in need of such treatment, an effective amount of a compound of the formula

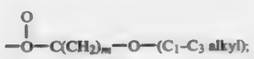


I

wherein R_1 is phenyl substituted with 1 to 3 substituents selected from the group consisting of lower alkoxy and halogen; R_2 is hydroxy, lower alkoxy, lower alkanoyloxy, lower cycloalkylcarbonyloxy,



or



R_3 and R_4 are independently lower alkyl, phenyl lower alkyl, or together form a piperidine or pyrrolidine ring; n is 2 to 4; m is 1 to 2; or a pharmaceutically acceptable acid addition salt thereof.

4,808,581

IMIDAZOLYL- INDOLYLPROPANONES AS 5-HT$_3$ RECEPTOR ANTAGONISTS

Alexander W. Oxford, Hertfordshire, and David J. Cavalla, London, both of England, assignors to Glaxo Group Limited, United Kingdom

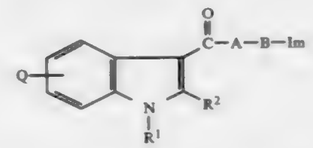
Continuation-in-part of Ser. No. 99,405, Sep. 22, 1987, abandoned, which is a continuation of Ser. No. 26,179, Mar. 16, 1987, abandoned. This application Jan. 22, 1988, Ser. No. 147,204

Claims priority, application United Kingdom, Mar. 17, 1986, 8606579; Jul. 23, 1986, 8617995; Jan. 23, 1987, 8701494

Int. Cl.[4] A61K *31/55;* **C07D** *403/06*

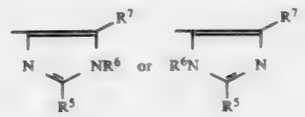
U.S. Cl. 514—212 **23 Claims**

1. A compound of formula (I):



(I)

or a physiologically acceptable salt or solvate thereof, wherein Im represents an imidazolyl group of formula:



R^1 represents a hydrogen atom, or a group selected from C_{1-6}alkyl, C_{3-6}alkenyl, C_{3-10}alkynyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, phenyl, phenylC_{1-3}alkyl, $—CO_2R^8$, $—COR^8$, $—CONR^8R^9$ or $—SO_2R^8$ (wherein R^8 and R^9, which may be the same or different, each represents a hydrogen atom, a C_{1-6}alkyl or C_{3-7}cycloalkyl group, or a phenyl or phenylC_{1-4}alkyl group, in which the phenyl group is unsubstituted or substituted by one of more C_{1-4}alkyl, C_{1-4}alkoxy or hydroxy groups or halogen atoms, with the proviso that R^8 does not represent a hydrogen atom when R^1 represents a group $—CO_2R^8$ or $—SO_2R^8$);

R^2 represents a hydrogen atom or a C_{1-6}alkyl, C_{3-6}alkenyl, C_{3-7}cycloalkyl, phenyl or phenylC_{1-3}alkyl group;

A-B represents the group $R^3R^4C—CH_2$ or $R^3C═CH$;

R^3 and R^4, which may be the same or different, each represents a hydrogen atom or a C_{1-6}alkyl group;

one of the groups represented by R^5, R^6 and R^7 represents a hydrogen atom or a C_{1-6}alkyl, C_{3-7}cycloalkyl, C_{3-6}alkenyl, phenyl or phenylC_{1-3}alkyl group, and each of the other two groups which may be the same or different, represents a hydrogen atom or a C_{1-6}alkyl group;

Q represents a hydrogen or a halogen atom or a hydroxy, C_{1-4}alkoxy, phenylC_{1-3}alkoxy or C_{1-6}alkyl group or a group $—NR^{10}R^{11}$ or $CONR^{10}R^{11}$ (wherein R^{10} and R^{11}, which may be the same or different, each represents a hydrogen atom or a C_{1-4}alkyl or C_{3-4}alkenyl group, or together with the nitrogen atom to which they are attached form a saturated 5 or 7 membered ring);

and with the proviso that when A-B represents the group $R^3C═CH$, Q represents a hydrogen atom and R^1 represents a hydrogen atom or a C_{1-6}alkyl, C_{3-6}alkenyl, C_{3-10}alkynyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, phenyl or phenylC_{1-3}alkyl group.

20. A method of treating a condition caused by disturbance of "neuronal" 5HT function which comprises administering to a patient an effective amount of a compound of formula (I) as defined in claim **1** or a physiologically acceptable salt or solvate thereof to relieve said condition.

4,808,582

NEW CINNAMOIC COMPOUNDS, THE PROCESS FOR PREPARING SAME AND THE USE THEREOF IN THERAPEUTICS

Alain Y. Platel, Puteaux; Guy R. Bourgery, Colombes, and Patrick G. Guerret, Rueil Malmaison, all of France, assignors to Delalande S.A., Courbevoie, France

Continuation of Ser. No. 654,250, Sep. 25, 1984, abandoned. This application Mar. 19, 1987, Ser. No. 28,092

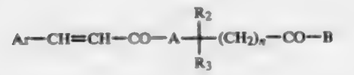
Claims priority, application France, Sep. 30, 1983, 83 15580

The portion of the term of this patent subsequent to Jan. 27, 2004, has been disclaimed.

Int. Cl.[4] A61K *31/40, 31/445, 31/495;* **C07D** *207/14, 211/32, 211/58, 241/04, 401/06*

U.S. Cl. 514—212 **16 Claims**

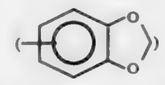
7. A method for enhancing the memory which comprises internally administering to a patient a therapeutically effective amount of a compound of formula:



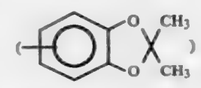
(I')

wherein:

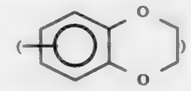
Ar represents a phenyl nucleus; a phenyl nucleus substituted by one halogen atom, by one or three alkoxy groups with 1 to 4 carbon atoms or by one or two hydroxy groups; a 1,3-benzodioxol



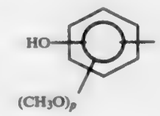
2,2-dimethyl-1,3-benzodioxol



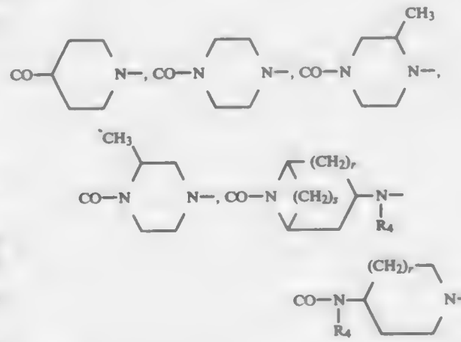
or 1,4-benzodioxanyl



group; or a group of structure

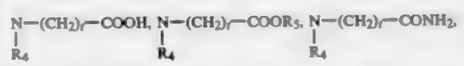


in which p is 1 or 2; CO—A— represents one of the following groups:



where r is 0 or 1; s is 0, 2 or 3; and R_4 is hydrogen or C_1–C_4 alkyl;

B represents a group chosen from the following: pyrrolidino; piperidino; morpholino; hexamethyleneimino;

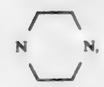


where t is 1, 2, 3 or 4, R_4 is hydrogen or C_1–C_4 alkyl;

R_2 and R_3 each represents hydrogen or C_1–C_4 alkyl R_5 is C_1–C_4 alkyl, not however, representing simultaneously an alkyl group having more than one carbon atom; and n is 0, 1, 2 or 3; including the enantiomers and diastereoisomers forms and the trans (E) and cis (Z) forms; as well as the addition salts with organic or mineral acids or bases, the hydrates and the N-oxides of compounds (I);

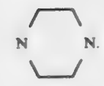
B however not being able to represent:

the pyrrolidino, piperidino, morpholino or hexamethyleneimino when $R_2=R_3=H$, n=O and A=



and

the pyrrolidino, piperidino, morpholino or hexamethyleneimino when Ar is 2, 3, 4-trimethoxyphenyl or 3, 4, 5-trimethoxyphenyl, the set (R_2, R_3, n)=(CH_3, H, O), (H, H, 1), (H, H, 2) or (H, H, 3) and A=



4,808,583

SOLUTIONS OF LACTIC ACID SALTS OF PIPERAZINYLQUINOLONE- AND PIPERAZINYL-AZAQUINOLONE-CARBOXYLIC ACIDS

Klaus Grohe, Odenthal, and Robert Lassmenn, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 862,343, May 12, 1986, which is a division of Ser. No. 644,834, Aug. 27, 1984, Pat. No. 4,705,789. This application Jul. 9, 1987, Ser. No. 71,459

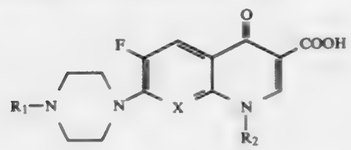
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1983, 3333719

Int. Cl.[4] A61K *31/50, 31/495*

U.S. Cl. 514—254 **6 Claims**

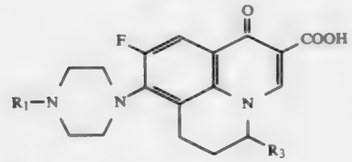
1. An aqueous storage stable solution which can be converted into an injection or diffusion solution consisting essentially of (a) a lactic acid salt of a piperazinylquinolone- or piperazinyl-azaquinolone-carboxylic acid of the formula

(I)



or

(II)



in which

X denotes N, C—H or C—F,

R_1 denotes hydrogen, methyl, ethyl or β-hydroxyethyl,

R_2 denotes cyclopropyl or ethyl and

R_3 denotes hydrogen, methyl or ethyl, and (b) and excess acid selected from the group consisting of methanesulphonic acid, propionic acid, succinic acid and hydrochloric acid, the excess acid being present in an amount which does not lead to precipitates and constituting about 0.01 to 90% based on the solution.

4,808,584

QUINOLINECARBOXYLIC ACID DERIVATIVES AND ANTIBACTERIAL AGENT CONTAINING THE SAME

Masahiro Tagachi, Hirakata; Hirosato Kondo, Suita; Yoshimasa Inoue, Osaka; Yoshihiro Kawahata, Minoo, and Goro Tsukamoto, Toyonaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

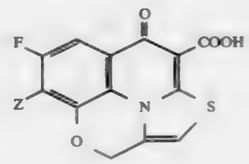
Filed Apr. 7, 1988, Ser. No. 178,603

Claims priority, application Japan, Apr. 7, 1987, 62-85319; Oct. 19, 1987, 62-264681

Int. Cl.[4] A61K *31/535;* **C07D** *498/16*

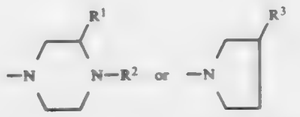
U.S. Cl. 514—229.5 **11 Claims**

1. A compound of derivative represented by the formula (I):



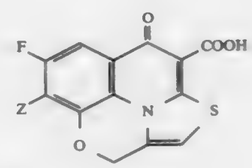
(I)

wherein Z is



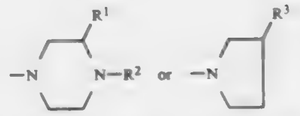
in which R^1 is hydrogen atom or a lower alkyl, R^2 is hydrogen atom, hydroxyl or a lower alkyl and R^3 is hydrogen atom, hydroxyl or an amino, or a pharmaceutically acceptable salt thereof.

11. An antibacterial composition comprising as an active ingredient an effective amount of a compound of the formula (I):



(I)

wherein Z is



in which R^1 is hydrogen atom or a lower alkyl, R^2 is hydrogen atom, hydroxyl or a lower alkyl and R^3 is hydrogen atom, hydroxyl or an amino, or a pharmaceutically acceptable salt thereof, in admixture with a conventional pharmaceutically acceptable carrier or diluent.

4,808,585

SOLUTIONS OF LACTIC ACID SALTS OF PIPERAZINYLQUINOLONE- AND PIPERAZINYL-AZAQUINOLONE-CARBOXYLIC ACIDS

Klaus Grohe, Odenthal, and Robert Lassmann, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

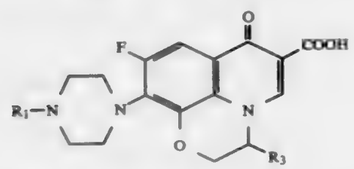
Division of Ser. No. 644,834, Aug. 27, 1984, Pat. No. 4,705,789. This application May 12, 1986, Ser. No. 862,343

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1983, 3333719

Int. Cl.[4] A61K *31/535*

U.S. Cl. 514—230.2 3 Claims

1. An aqueous storage stable solution which can be converted into an injection or diffusion solution consisting essentially of (a) a lactic acid salt of a piperazinylquinolonecarboxylic acid of the formula



in which

R_1 denotes hydrogen, methyl, ethyl or β-hydroxyethyl,

R_3 denotes hydrogen, methyl or ethyl,

and (b) and excess acid selected from the group consisting of methanesulphonic acid, propionic acid, succinic acid, hydrochloric acid and lactic acid in an amount which does not lead to precipitates and constituting about 0.01 to 90% based on the solution.

4,808,586

SUBSTITUTED BENZIMIDAZOLES AND BENZOTHIDIAZOLES HAVING ANTI-ASTHMATIC AND/OR ANTI-INFLAMMATORY ACTIVITIES

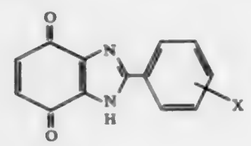
Jeffrey B. Medwid, Rockland County, and Lawrence W. Torley, Orange County, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 23, 1987, Ser. No. 124,536

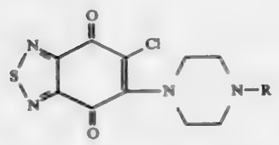
Int. Cl.[4] A61K *31/495, 31/41;* C07D *417/04, 235/10*

U.S. Cl. 514—254 9 Claims

1. A compound selected from the group consisting of those of the formula:



(I)



(II)

wherein X is hydrogen, fluoro, chloro, bromo or m-trifluoromethyl and R is alkanoyl(C_1–C_3), carboalkoxy(C_2–C_4), m-trifluoromethylphenyl or 2-benzoxazolyl and the pharmacologically acceptable acid-addition salts thereof.

7. A method of treating asthma and allergic diseases in a mammal which comprises administering to said mammal an effective amount of a compound of claim 1.

9. A method of treating inflammation in a mammal which comprises administering to said mammal an effective amount of a compound of claim 1.

4,808,587

5-SUBSTITUTED PYRIDO[2,3-D]PYRIMIDINE-2,4-DIONES

Kouichiro Ge; Yoshiyuki Kurimoto, and Norihiko Kitanowa, all of Hyogo, Japan, assignors to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

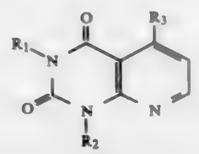
Filed Apr. 8, 1987, Ser. No. 35,798

Claims priority, application Japan, Apr. 16, 1986, 61-89064

Int. Cl.[4] C07D *471/04;* A61K *31/505*

U.S. Cl. 514—258 15 Claims

1. A pyrido[2,3-d]pyrimidine compound having the following formula (I):



(I)

wherein each R_1 and R_2, which may be the same or different, is a lower alkyl group; and R_3 is halogen, hydroxy, nitro, amino, hydroxdyamino, hydrazino, azido, a lower alkenylamino group or a lower alkylamino group which may optionally have hydroxy; or a pharmaceutically acceptable salt thereof with the proviso that when $R_1$and R_2 are methyl, R_3 is not amino. salt thereof.

4,808,588

HETEROCYCLIC UREAS AND CARBONATES USEFUL AS PHARMACEUTICALS

Francis D. King, Harlow, England, assignor to Beecham Group, p.l.c., Brentford, England

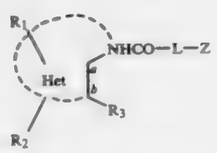
Filed Jul. 30, 1987, Ser. No. 80,436

Claims priority, application United Kingdom, Jul. 31, 1986, 8618700; Nov. 12, 1986, 8627072; Feb. 18, 1987, 8703813

Int. Cl.[4] A61K *31/46;* C07D *451/04*

U.S. Cl. 514—212 8 Claims

1. A compound of formula (I), or a pharmaceutically acceptable salt thereof:



(I)

wherein:

Het is monocyclic heteroaryl having two adjacent carbon atoms, a and b, depicted in formula (I) selected from the group consisting of pyridine, pyrimidine, pyrazine, pyrrole, imidazole, thiophene, furan, oxazole and thiazole;

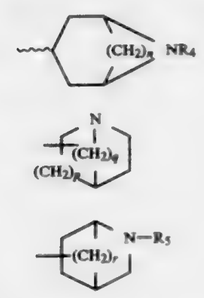
R_1 and R_2 are independently selected from hydrogen, halogen, CF_3, C_{1-6} alkyl and C_{1-6} alkoxy;

R_3 is hydroxy, C_{1-6} alkoxy, C_{3-7} alkenyl-methoxy, phenoxy or phenyl C_{1-4} alkoxy in which either phenyl moiety may be substituted by one or two C_{1-6} alkyl, C_{1-6} alkoxy or halo; CO_2R_6 wherein R_6 is hydrogen or C_{1-6} alkyl, $CONR_7R_8$ or $SO_2NR_7R_8$ wherein R_7 and R_8 are independently hydrogen or C_{1-6} alkyl or together are C_{4-6} polymethylene, NO_2, $(CH_2)_mOR_9$ wherein m is 1 or 2 and R_9

is C_{1-6} alkyl or $S(O)_nR_{10}$ wherein n is 0, 1 or 2 and R_{10} is C_{1-6} alkyl;

L is NH or O;

Z is a group of formula (a), (b) or (c):



(a)

(b)

(c)

wherein n is 2 or 3; p is 1 or 2; q is 1 to 3; r is 1 to 3; and R_4 or R_5 is C_{1-4} alkyl.

4,808,589

PYRIMIDONE DERIVATIVES

Thomas H. Brown, Tewin, United Kingdom, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

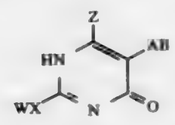
Filed Feb. 9, 1983, Ser. No. 465,090

Claims priority, application United Kingdom, Feb. 20, 1982, 8205075

Int. Cl.[4] C07D *401/06, 401/12;* A61K *31/505*

U.S. Cl. 514—269 29 Claims

1. A compound of formula (I):



(I)

or a pharmaceutically acceptable salt thereof, where

W is 2-furanyl or 2-thienyl optionally substituted in the 5-position with $R^1R^2N(CH_2)_a$—; 2-pyridyl optionally substituted in the 4- or 6- position with $R^1R^2N(CH_2)_a$—; phenyl substituted in the 3- or 4-position with $R^1R^2N(CH_2)_a$—; 4-imidazolyl optionally substituted in the 5-position with methyl or bromine; 2-pyridyl optionally substituted in the 3-position with C_{1-4} alkyl, C_{1-4} alkoxy, halogen, amino or hydroxy; 2-thiazolyl or 2-guanidino-4-thiazolyl;

X is $(CH_2)b$ in which b is from 3 to 6, or $(CH_2)_dS(CH_2)_e$ in which d and e are the same or different and are from 1 to 3 or, when W is substituted phenyl, or 2-pyridyl substituted in the 4- or 6- position with $R^1R^2N(CH_2)_a$—, $O(CH_2)_f$ in which f is from 2 5 and $(CH_2)_f$ is attached to the pyrimidone ring;

Z is hydrogen or C_{1-4} alkyl;

A is C_1–C_5 alkylene or $(CH_2)_pA^1(CH_2)_q$—where A^1 is oxygen or sulphur and p and q are such that their sum is from 1 to 4;

B is pyridyl optionally substituted with one or more C_{1-4} alkyl, or C_{1-4} alkoxy or hydroxy groups or halogen atoms or with N-oxo or phenyl optionally substituted with one or more C_{1-4} alkyl or Chd 1-4 alkoxy groups or halogen atoms or B is 6-(2,3-dihydro-1,4-benzodioxinyl) or 5-(1,3-benzodioxolyl) or B is 2-furanyl or 2-thienyl optionally substituted in the 5-position with $R^1R^2N(CH_2)_a$—; phenyl substituted in the 3- or 4-position with $R^1R^2N(CH_2)_a$— or 3-pyridyl substituted in the 5- or 6- position or 4-pyridyl substituted in the 2-position by $R^1R^2N(CH_2)_a$—;

R^1 and R^2 can be the same or different and are hydrogen or C_{1-4} alkyl or together form 1,4-butanediyl, 1,5-pentanediyl, 1,6-hexanediyl or 1,7-heptanediyl; and a is 1 to 4.

4,808,590

ANTIVIRAL, ANTITUMOR AND ANTIFUNGAL COMPOSITIONS AND THEIR METHODS OF USE

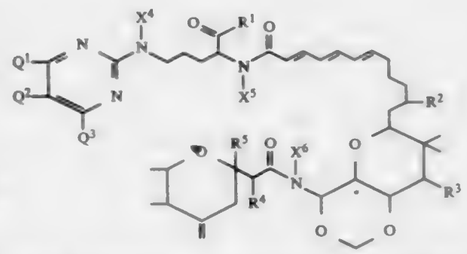
Tatuo Higa, Okinawa, Japan; Shinichi Sakuma, Vero Beach, Fla., and Sue S. Cross, Ft. Pierce, Fla., assignors to Harbor Branch Oceanographic Institution, Inc., Ft. Pierce, Fla.

Division of Ser. No. 74,977, Jul. 17, 1987. This application Jul. 15, 1988, Ser. No. 219,215

Int. Cl.[4] A61K *31/505;* C07D *405/14*

U.S. Cl. 514—272 8 Claims

1. A compound according to the formula:



wherein X^4 is hydrogen, hydroxyl, lower acyl or lower alkyl, X^5 and X^6 are the same or different and are hydrogen or lower alkyl, R^1 is hydrogen, hydroxyl, lower alkyl or lower alkoxy, R^2–R^5 are the same or different and are hydrogen, hydroxyl, lower alkoxy, or lower acyloxy and Q^1–Q^3 are the same or different and are hydrogen, nitro, amino, lower acylamino or lower alkyl and derivatives thereof wherin at least one of the double bonds have been reduced.

7. A pharmaceutical composition comprising, as an active ingredient, an effective pharmaceutical amount of a compound of claim 1 and a non-toxic pharmaceutically acceptable carrier or diluent.

4,808,591

ANTIULCER 8-(2-PYRIMIDYLSULFINYL)QUINOLINES

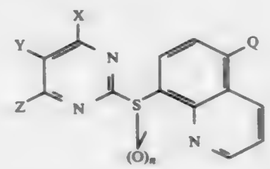
Conrad Santini, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 16, 1988, Ser. No. 156,371

Int. Cl.[4] A61K *31/47;* C07D *401/12*

U.S. Cl. 514—274 12 Claims

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof wherein Q is hydrogen, fluoro, chloro, nitro, amino, trifluoromethyl, alkanoylamino of two to four carbon atoms, alkoxy of one to five carbon atoms, alkyl of one to five carbon atoms or dialkylamino said alkyl having one to four carbon atoms; X is hydrogen, alkyl of one to five carbon atoms or alkoxy of one to five carbon atoms; Y is hydrogen, fluoro, chloro, bromo, alkoxy of one to five carbon atoms or alkyl of one to five carbon

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atoms; Z is hydrogen, alkyl of one to five carbon atoms, alkoxy of one to five carbon atoms, phenoxy, benzyloxy, cycloalkyloxy of five to seven carbon atoms, amino, alkylamino having one to four carbon atoms, dialkylamino said alkyl having one to four carbon atoms, anilino, N-alkylanilino said alkyl having one to four carbon atoms, benzylamino, N-alkylbenzylamino said alkyl having one to four carbon atoms, morpholino, piperidino or pyrrolidino; and n is an integer of 0 to 1.

12. A method of treating gastric ulcers by inhibiting parietal cell H^+/K^+ ATPase in a mammalian subject in need of such treatment which comprises administering to said subject a parietal cell H^+/K^+ ATPase inhibiting amount of a compound according to claim 1, wherein n is 1.

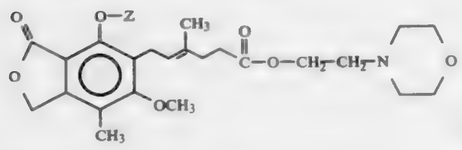
4,808,592

METHOD OF TREATING DISEASES BY ADMINISTERING MORPHOLINOETHYLESTER OF MYCOPHENOLIC ACID AND DERIVATIVES THEREOF

Peter H. Nelson, Los Altos; Chee-Liang L. Gu, Sunnyvale; Anthony C. Allison; Elsie M. Eugui, both of Belmont, and William A. Lee, Menlo Park, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 8,717, Jan. 30, 1987, Pat. No. 4,753,935.
This application Sep. 4, 1987, Ser. No. 93,459
Int. Cl.[4] A61K *31/535*
U.S. Cl. 514—233.5 **2 Claims**

1. A method of treating inflammatory, and psoriatic diseases in mammals, which comprises administering to a mammal suffering therewith a therapeutically effective amount of a compound represented by the formula:



wherein:

Z is hydrogen or —C(O)R, where R is lower alkyl or aryl; or a pharmaceutically acceptable salt thereof.

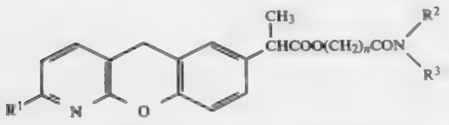
4,808,593

BENZOPYRANOPYRIDINEACETIC ACID ESTER COMPOUNDS AND THEIR PHARMACEUTICAL USES

Takanori Oe, Oita; Kazuyuki Kawasaki, Fukuoka; Michio Terasawa, and Tomonori Imayoshi, both of Oita, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Mar. 28, 1988, Ser. No. 173,909
Claims priority, application Japan, Mar. 27, 1987, 62-73485
Int. Cl.[4] C07D *491/052;* **A61K** *31/44*
U.S. Cl. 514—291 **4 Claims**

1. A benzopyranopyridineacetic acid ester compound of the general formula:



wherein R_1, R_2 and R_3 independently represent hydrogen or C_{1-4} alkyl having 1 to 4 carbon atoms; and n represents the integer 1 or 2.

4. A method of improving or treating inflammation, pain, fever, arthritis or rheumatism comprising administering to a subject in need of improvement or treatment on a therapeutically effective amount of a benzopyranopyridineacetic acid ester compound as claimed in claim 1.

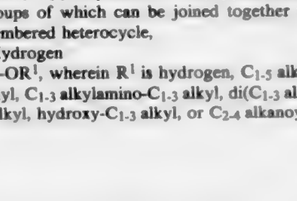
4,808,594

IMIDOPYRIDINES USEFUL IN THERAPY

Pascal George, Vtry sur Seine, and John Allen, Voisins le Bretonneux, both of France, assignors to Synthelabo, France

Filed Nov. 3, 1987, Ser. No. 116,217
Claims priority, application France, Nov. 7, 1986, 86 15533
Int. Cl.[4] A61K *31/435;* **C07D** *471/04*
U.S. Cl. 514—300 **4 Claims**

1. An imidazopyridine of formula (I)



(I)

in which:

either X is CH_3 and Y is CH_2OR,
or X is CH_2OR and Y is CH_3,
R is a C_{1-6} alkyl group,
R_1 is a C_{1-3} alkyl group, and
R_2 is a C_{1-3} alkyl group.

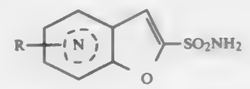
4,808,595

FUROPYRIDINE SULFONAMIDES AND THEIR OPTHALMOLOGICAL COMPOSITIONS

Jacob M. Hoffman, Jr., North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 129,202, Dec. 7, 1987, abandoned, which is a continuation of Ser. No. 946,228, Dec. 24, 1986, abandoned. This application May 5, 1988, Ser. No. 190,319
Int. Cl.[4] A61K *31/435;* **C07D** *491/048*
U.S. Cl. 514—302 **12 Claims**

1. A compound of the structural formula:



or N-oxide, or an opthalmologically acceptable salt thereof wherein:



is a pyrido, dihydropyrido or tetrahydropyrido group with the N at the 4-, 5-, 6- or 7-position; and

R is

(1) C_{1-5} alkyl, either straight chain, branched chain or cyclic and either unsubstituted or substituted with hydroxy, amino, C_{1-5} alkylamino or di(C_{1-5}alkyl)amino, the alkyl groups of which can be joined together to form a 5–7 membered heterocycle,

(2) Hydrogen

(3) $—OR^1$, wherein R^1 is hydrogen, C_{1-5} alkyl, amino-C_{1-3} alkyl, C_{1-3} alkylamino-C_{1-3} alkyl, di(C_{1-3} alkyl) amino-C_{1-3} alkyl, hydroxy-C_{1-3} alkyl, or C_{2-4} alkanoyl,

(4)



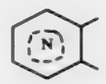
wherein m is 0–3 and n is 0, 1 or 2,

(5) $—N(R^1)_2$ wherein the R^1 groups can be the same or different, or joined together to form a 5–7 membered heterocycle

(6) halo selected from the group consisting of chloro, bromo and fluoro,

(7) $—NO_2$, or

(8) oxo-; and if



represents a dihydro- or tetrahydropyrido- the N can be substituted with R^1 or $—CONH_2$.

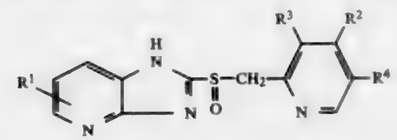
4,808,596

IMIDAZO[4,5-B]PYRIDINE COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Naoto Matsuishi, Kawaguchi; Haruki Takeda, Kamisato; Kenichi Iizumi, Mitaka; Kiyokazu Murakami, Yokohama, and Akira Hisamitsu, Omiya, all of Japan, assignors to Tokyo Tanabe Company, Ltd., Japan

Filed Jul. 24, 1987, Ser. No. 77,686
Claims priority, application Japan, Jul. 25, 1986, 61-173551; May 30, 1987, 62-133534
Int. Cl.[4] A61K *31/435;* **C07D** *471/04*
U.S. Cl. 514—303 **13 Claims**

1. An imidazo[4,5-b]pyridine compound of the formula



where R^1 is a straight-chain or branched alkoxy group of 1 to 8 carbon atoms which may be substituted with a cycloalkyl group of 3 to 6 carbon atoms or R^1 is a fluoroalkyloxy group of 2 to 4 carbon atoms, R^2 is a hydrogen atom, a methyl group or a methoxy group, and R^3 and R^4 are each a hydrogen atom or a methyl group and may be the same or different.

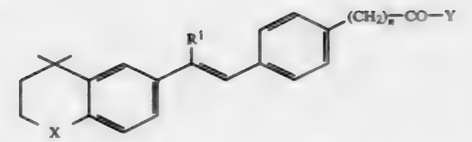
4,808,597

METHOD FOR INHIBITING THE DEGRADATION OF CARTILAGE

William W. Hoffman, Mystic, and Allen R. Kraska, East Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 511,037, Jul. 5, 1983, abandoned. This application Jun. 2, 1988, Ser. No. 201,500
Int. Cl.[4] A61K *31/35, 31/38, 31/47*
U.S. Cl. 514—311 **12 Claims**

1. A method of inhibiting the degradation of cartilage in a joint of a mammalian subject afflicted with an arthritic disease, which comprises administering to said subject a cartilage degradation inhibiting amount of a compound of the formula



or a pharmaceutically-acceptable acid-addition salt thereof or a pharmaceutically-acceptable base salt thereof, wherein

X is selected from the group consisting of O, S, SO, SO_2 and NR^2;

R^1 is selected from the group consisting of H and CH_3;

Y is selected from the group consisting of OH, OR^3 and NHR^4; and

n is zero or one; wherein

R^2 is selected from the group consisting of H, CH and $CO-CH_3$;

R^3 is selected from the group consisting of alkyl having 1 to 5 carbons and phenyl;

and R^4 is selected from the group consisting of H, alkyl having 1 to 5 carbons, phenyl, hydroxyphenyl and 5-tetrazolyl.

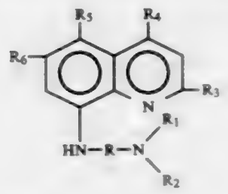
4,808,598

METHOD FOR INDUCING PROTECTION IN AN ANIMAL AGAINST CYANIDE POISONING USING 8-AMINOQUINOLINES

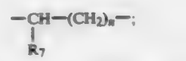
Craig J. Canfield, Upper Marlboro; Melvin H. Heiffer, Bethesda, both of Md., and Don W. Korte, Jr., San Francisco, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 30, 1986, Ser. No. 880,476
Int. Cl.[4] A61K *31/47;* **C07D** *215/40*
U.S. Cl. 514—312 **13 Claims**

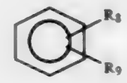
1. A method for inducing protection in an animal against poisoning resulting from exposure to toxic levels of cyanide comprising orally administering to said animal a therapeutically effective amount of a compound having the formula:



wherein R represents



R_1 and R_2 represent hydrogen, methyl or ethyl; R_3 represents hydrogen, alkyl having 1 to 4 carbon atoms or alkoxy having 1 to 4 carbon atoms; R_4 represents hydrogen or alkyl having 1 to 4 carbon atoms; R_5 represents hydrogen, alkyl having 1 to 7 carbon atoms, alkoxy having 1 to 7 carbon atoms, phenyl, phenoxy, or substituted phenyl or phenoxy groups having the formula



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R_6 represents hydrogen, alkyl having 1 to 4 carbon atoms, or alkoxy having 1 to 4 carbon atoms; R_7 represents hydrogen, methyl or ethyl; R_8 and R_9 represent chloro, bromo, fluoro, trifluoromethyl or methoxy groups; n represents the integers 3, 4, 5, 6 and 7; or pharmaceutically acceptable salts thereof wherein the salt forming acid or acid-hydrate is selected from the group consisting essentially of hydrochloric acid, phosphoric acid, nitric acid, sulfamic acid, sulfuric acid, maleic acid, fumaric acid, citric acid, beta-resorcylic acid and hydrobromic acid.

4,808,599

BENZO[B]THIOPHENE- AND BENZO[B]FURANCARBOXAMIDE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS AND USE

Marie-Christine Dubroeucq, Enghien-les-Bains, and Christian Renault, Taverny, both of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

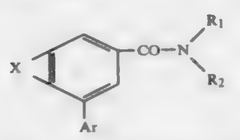
Filed Jun. 5, 1987, Ser. No. 58,780

Claims priority, application France, Jun. 5, 1986, 86 08110

Int. Cl.[4] A61K *31/38, 31/445;* **C07D** *333/68, 409/02*

U.S. Cl. 514—320 **11 Claims**

1. A compound of formula:

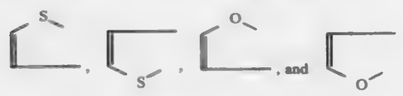


(I)

in which R_1 and R_2, which may be identical or different, each represent a straight- or branched-chain alkyl group of 1 to 4 carbon atoms, a cycloalkylalkyl group having 1 to 3 carbon atoms in the alkyl and 3 to 6 carbon atoms in the cycloalkyl, or a phenyl group, and R_1 and R_2, together with the nitrogen atom to which they are attached, may also form a piperidine ring,

Ar represents phenyl, thienyl, or phenyl substitutedby one or two substituents selected from the group consisting of halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro, and trifluoromethyl groups, and

X< represents one of the following linkages:



including, when the group NR_1R_2 contains at least one asymmetric carbon atom, its racemic forms and stereoisomers.

10. A pharmaceutical composition useful as an anxiolytic, antianginal or immunomodulatory agent comprising 2 to 100 mg of a compound as claimed in claim 1 in combination with one or more compatible and pharmaceutically acceptable adjuvants or diluents.

4,808,600

FUNGICIDAL PYRIDYL CYCLOPROPANE CARBOXAMIDES

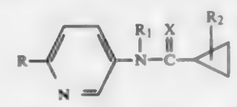
Don R. Baker, Orinda, and Keith H. Brownell, San Jose, both of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

Division of Ser. No. 36,542, Apr. 15, 1987, Pat. No. 4,766,134, which is a continuation-in-part of Ser. No. 29,116, Mar. 23, 1987, abandoned, which is a continuation of Ser. No. 859,152, May 2, 1986, abandoned. This application May 13, 1988, Ser. No. 193,621

Int. Cl.[4] A01N *43/40;* **C07D** *213/64*

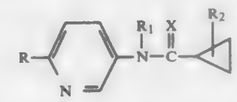
U.S. Cl. 514—346 **15 Claims**

1. A compound having the structural formula



in which R is selected from the group consisting of C_1–C_3 alkoxy and C_1–C_3 haloalkoxy, R_1 is —H; and R_2 is selected from the group consisting of —H, 1—CH_3 and 2—CH_3; X is O or S; or a fungicidally acceptable organic or inorganic salt thereof.

9. The method of controlling fungi comprising applying to the area where control is desired, a fungicidally effective amount of a compound having the formula



in which R is selected from the group consisting of C_1–C_3 alkoxy and C_1–C_3 haloalkoxy, R_1 is —H; and R_2 is selected from the group consisting of —H, 1—CH_3 and 2—CH_3; X is O or S; or a fungicidally acceptable organic or inorganic salt thereof.

4,808,601

ANALGESIC AND ANTIINFLAMMATORY 1,3-DIACYL-2-OXINDOLE COMPOUNDS

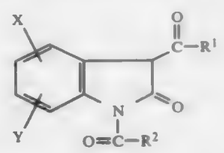
Saul B. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 1,261, Jan. 7, 1987, Pat. No. 4,752,609, which is a division of Ser. No. 747,194, Jun. 20, 1985, Pat. No. 4,690,943, which is a continuation-in-part of Ser. No. 652,372, Sep. 19, 1984, abandoned. This application May 19, 1988, Ser. No. 196,187

Int. Cl.[4] A61K *31/42;* **C07D** *413/06*

U.S. Cl. 514—374 **6 Claims**

1. A 1,3-diacyl-2-oxindole compound of the formula:



and the pharmaceutically-acceptable base salts thereof; wherein

X is selected from the group consisting of hydrogen, fluoro, chloro, bromo, alkyl having 1 to 4 carbons, cycloalkyl having 3 to 7 carbons, alkoxy having 1 to 4 carbons, alkylthio having 1 to 4 carbons, trifluoromethyl, alkylsulfinyl having 1 to 4 carbons, alkylsulfonyl having 1 to 4 carbons, nitro, phenyl, alkanoyl having 2 to 4 carbons,

benzoyl, thenoyl, alkanamido having 2 to 4 carbons, benzamido and N,N-dialkylsulfamoyl having 1 to 3 carbons in each of said alkyls; and Y is selected from the group consisting of hydrogen, fluoro, chloro, bromo, alkyl having 1 to 4 carbons, cycloalkyl having 3 to 7 carbons, alkoxy having 1 to 4 carbons, alkylthio having 1 to 4 carbons and trifluoromethyl;

R^1 is $—(CH_2)_n—Q—R^*$;

wherein n is zero, 1 or 2; Q is a divalent radical derived from a compound selected from the group consisting of oxazole and isoxazole; and R^* is hydrogen or alkyl having 1 to 3 carbons;

and R^2 is alkyl having from 1 to 5 carbons.

4. An analgesic or antiinflammatory composition, which comprises a pharmaceutically-acceptable carrier and an effective analgesic or antiinflammatory effective amount of a 1,3-diacyl-2-oxiindole compound according to claim 1 and wherein the weight ratio of the pharmaceutically-acceptable carrier to the 1,3-diacyl-2-oxindole compound is in the range from 1:4 to 4:1.

4,808,602

DERIVATIVES BASED UPON PYRIDO-MENADIONE ADDUCTS AND USE THEREOF AS FEED PREMIXES

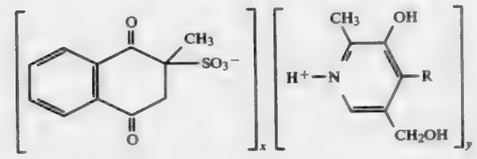
Enrico Bruschi, Genoa, Italy, assignor to Heterochemical Corporation, Valley Stream, N.Y.

Continuation-in-part of Ser. No. 834,322, Feb. 27, 1986, abandoned. This application Feb. 9, 1987, Ser. No. 12,019

Int. Cl.[4] C07D *211/72, 211/84;* **A61K** *31/44*

U.S. Cl. 514—347 **6 Claims**

1. A compound of the formula



wherein x is two, y is one and R is $—CH_2N^+H_3$ or x is one, y is one and R is $—CH_2OH$ or —CHO.

5. An animal feed premix containing a carrier and from about 4 to about 64 grams per pound of total premix of a compound according to claim 1.

4,808,603

3,5-DIACYL-2,6-DIALKYL-4-ARYL-1,4-DIHYDROPYRIDINES, THEIR USE, AND PHARMACEUTICAL COMPOSITIONS THEREOF

Kurt Eichenberger, Therwil, and Hans Kuhnis, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

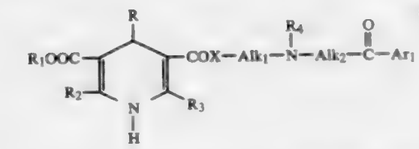
Filed Aug. 7, 1986, Ser. No. 895,604

Claims priority, application Switzerland, Aug. 14, 1985, 3504/85

Int. Cl.[4] C07D *213/55;* **A61K** *31/44*

U.S. Cl. 514—356 **19 Claims**

1. A compound of the formula:



(A)

wherein R is phenyl substituted by 1 to 2 substituents selected from the group consisting of nitro, cyano, carbonyl, lower-alkoxy carbonyl and carbamyl;

Ar_1 is halophenyl;

R_1, R_2 and R_3 are each independently lower alkyl;

R_4 is hydrogen, lower alkyl or benzyl;

X is oxygen;

Alk_1 is

(a) $(CH_2)_n$ in which n is 2–6 or

(b) $—(CH_2)_{n1}$ which is substituted by phenyl, which phenyl is itself unsubstituted or substituted by a substituent selected from lower alkyl, hydroxy, lower alkoxy, halo-lower alkoxy, halogen, carboxy, lower alkoxyoarbonyl, and cyano, and nl is 2–4;

Alk_2 is $(CH)_m$ in which m is 2–6 or a pharmaceutically acceptable acid addition salt thereof.

17. A method for the treatment of cardiovascular pathological conditions, selected from the group consisting of *Angina pectoris* and its sequelae, vascular spasms, central and preipheral circulatory disorders, high blood pressure, arrhythmiae and cardiac insufficiency, in a patient in need thereof comprising administering to said patient a pharmaceutically effective amount of a compound claimed in claim 1 or a pharmaceutically acceptable acid addition salt thereof.

4,808,604

N-(SUBSTITUTED PHENYL) TETRAZOL-5-YL CARBOXAMIDES AND ANTI-ALLERGIC USE THEREOF

Andreas Beck, Freiburg, Fed. Rep. of Germany; Alfred Sallmann, Bottmingen, and Paul Wenk, Allschwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

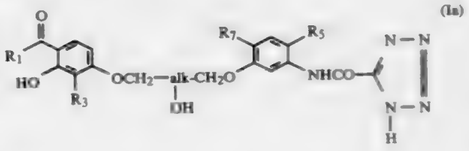
Continuation of Ser. No. 801,013, Nov. 22, 1985, abandoned. This application Jun. 1, 1987, Ser. No. 58,699

Claims priority, application Switzerland, Oct. 3, 1985, 4288/85

Int. Cl.[4] C07D *257/04;* **A61K** *31/41*

U.S. Cl. 514—381 **10 Claims**

1. A compound of the formula



(Ia)

in which

R_1 is lower alkyl having not more than 4 C atoms;

R_3, is linear lower alkyl having not more than 4 C atoms; and

(a) R_5 is lower alkyl, R_6 is hydrogen, and R_7 is hydrogen, halogen of atomic number not greater than 35 or cyano; or

(b) R_5 is hydrogen, R_6 is cyano, and R_7 is hydrogen; and

alk is terminally attached methylene or ethylene, or a pharmaceutically acceptable salt thereof.

10. A method of treatment of allergies in a mammal in need of the same, which comprises administering to said mammal an effective antiallergic amount of a compound or pharmaceutically acceptable salt according to claim 1.

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4,808,605

TETRAHYDRONAPHTHALENE DERIVATIVES AS CALCIUM ANTAGONISTS

Quirico Branca; Roland Jaunin; Hans P. Märki, all of Basel; Fränzi Marti, Riehen, and Henri Ramuz, Birsfelden, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

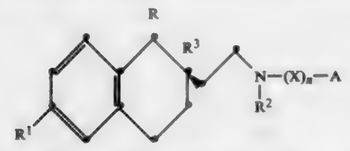
Filed Nov. 10, 1987, Ser. No. 119,114

Claims priority, application Switzerland, Nov. 14, 1986, 4565/86

Int. Cl.[4] A61K *31/415;* **C07D** *413/06*

U.S. Cl. 514—394 **21 Claims**

19. A method of treating or preventing angina petcoris, ischaemia, arrhydthmias, high blood pressure and cardiac insufficiency which comprises administering to a warm-blooded animal in need of such treatment, a calcuim antagonistically effective amount of a compound of the formula



I

wherein R is lower-alkyl, R^1 is halogen, R^2 is C_1–C_{12}-alkyl, R^3 is hydroxy, lower-alkoxy, lower-alkylcarbonyloxy, lower-alkoxy-lower alkylcarbonyloxy, lower-alkylaminocarbonyloxy; or, arylaminocarbonyloxy or aryl-lower-alkylaminocarbonyloxy wherein aryl is phenyl or phenyl mono- or multiplysubstituted by halogen, trifluoromethyl, lower-alkyl, lower-alkoxy, nitro or amino; X is C_1–C_{18}-alkylene which can be interrupted by 1,4-phenylene or interrupted or lengthened by 1,4-cyclohexylene, A is di- or tri-substituted 2-imidazolyl attached via an ethylene group wherein the substituents are selected from the group consisting of lower alkyl and phenyl; or a substituted or unsubstituted heterocycle selected from the group consisting of benzimidazolyl, benzimidazolonyl, imidazo[4,5-c]pyridinyl, imidazo[4,5-c]pyridinonyl, bezthiazoyl, benzodiazepine-2,5-dion-1-yl and pyrrolo[2,1-c][1,4]benzodiazepine-5,11-dion-10-yl wherein the substitutents are selected from the group consisting of C_1–C_{12}-alkyl, phenylloweralkyl, halo, morpholinoethyl and pyridylmethyl and wherein the last two of said heterocycles may be partially hydrogenated; and n is the number 0 or 1, in the form of a racemate or an optical antipode, an N-oxide, or a phamraceutically usable acid addition salt thereof.

4,808,606

ALKENYLAZOLES, A PROCESS FOR THEIR FREPARATION AND THEIR USE

Herbert Siegel, Hofheim am Taunus; Wolfgang Raether, Dreieich, and Walter Dittmar, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

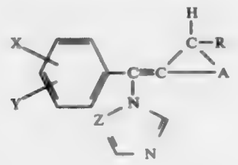
Filed Sep. 22, 1986, Ser. No. 909,697

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1985, 3533823

Int. Cl.[4] A01N *43/653, 43/50;* **C07D** *249/08, 233/60*

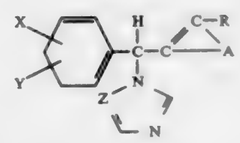
U.S. Cl. 514—383 **4 Claims**

1. A compound of the formula Ia/Ib



Ia

-continued



Ib

in which

X and Y are identical or different and represent H, (C_1–C_4)-alkyl, phenyl, F, Cl, Br, (C_1–C_4)-alkoxy or (C_1–C_4)-alkylthio,

Z represents CH or N,

R represents H or (C_1–C_4)-alkyl or, if A is a bridged $(CH_2)_m$ chain having m=4 and 3 bridge carbon atoms, represents a methylene group attached to the middle bridge carbon atom,

A is a $(CH_2)_n$ chain in which n=1–10 and which can be unsubstituted or substituted by (C_1–C_4)-alkyl and phenyl, or A represents a bridged $(CH_2)_m$ chain having m=3 or 4 and 1–5 bridge carbon atoms, and

physiologically acceptable salts with acids and stereoisomers thereof.

4,808,607

IMIDAZOLE ANALOGS OF MEVALONOLACTONE AND DERIVATIVES THEREOF FOR USE IN INHIBITING CHOLESTEROL BIOSYNTHESIS AND LOWERING BLOOD CHOLESTEROL LEVEL

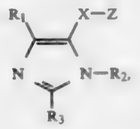
James R. Wareing, Randolph, N.J., assignor to Sandoz Pharm. Corp., E. Hanover, N.J.

Continuation-in-part of Ser. No. 079,194, Jul. 29, 1987, Pat. No. 4,755,606, which is a division of Ser. No. 863,267, May 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 736,679, May 22, 1985, Pat. No. 4,668,794. This application Nov. 20, 1987, Ser. No. 123,511

Int. Cl.[4] A61K *31/415;* **C07D** *233/64*

U.S. Cl. 514—400 **27 Claims**

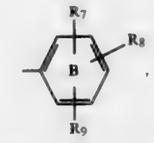
1. A compound of the formula



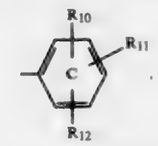
or a pharmaceutically acceptable acid addition salt thereof, wherein R_1 is C_{1-6}alkyl not containing an asymmetric carbon atom, C_{3-7}cycloalkyl, adamantyl-1 or



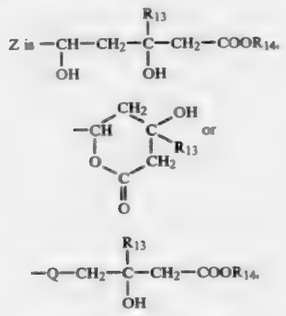
wherein R_4, R_5 and R_6 are as defined below, R_2 is C_{1-6}alkyl not containing an asymmetric carbon atom, C_{3-7}cycloalkyl, adamantyl-1 or



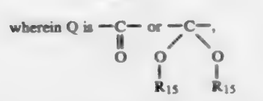
wherein R_7, R_8 and R_9 are as defined below, R_3 is hydrogen, C_{1-6}alkyl not containing an asymmetric carbon atom, C_{3-7}cycloalkyl, adamantyl-1, styryl or



wherein R_{10}, R_{11} and R_{12} are as defined below, is —(CH_2)m—, —CH=CH—, —CH=CH-CH_2— or —CH_2—CH=CH—, wherein m is 0, 1, 2 or 3, and

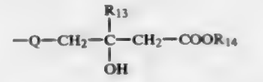


Z is —CH(OH)—CH_2—C(OH)(CH_2—$COOR_{14}$)—

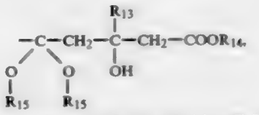


wherein Q is —C(=O)— or —C(OR_{15})(OR_{15})—,

wherein each R_{15} is primary or secondary C_{1-6}alkyl not containing an asymmetric carbon atom, the two R_{15}'s being the same, or the two R_{15}'s taken together are —(CH_2)q—, wherein q is 2 or 3, R_{13} is hydrogen or C_{1-3}alkyl, and R_{14} is hydrogen, R_{16} or M, wherein R_{16} is a physiologically acceptable ester group, and M is a cation, with the proviso that Z may be



only when (i) X is —CH=CH— or —CH_2—CH=CH—, (ii) R_{13} is C_{1-3}alkyl or (iii) both (i) and (ii), wherein each of R_4, R_7 and R_{10} is independently hydrogen, C_{1-3}alkyl, n-butyl, i-butyl, t-butyl, C_{1-3}alkoxy, n-butoxy, i-butoxy, trifluoromethyl, fluoro, chloro, bromo, phenyl, phenoxy or benzyloxy, each of R_5, R_8 and R_{11} is independently hydrogen, C_{1-3}alkyl, C_{1-3}alkoxy, trifluoromethyl, fluoro, chloro, bromo, —$COOR_{17}$, —$N(R_{19})_2$, phenoxy or benzyloxy, wherein R_{17} is hydrogen, R_{18} or M, wherein R_{18} is C_{1-3}alkyl, n-butyl, i-butyl, t-butyl or benzyl, and M is as defined above, and each R_{19} is independently C_{1-6}alkyl not containing an asymmetric carbon atom, and each of R_6, R_9 and R_{12} is independently hydrogen, C_{1-2}alkyl, C_{1-2}alkoxy, fluoro or chloro, with the provisos that not more than one substituent on each of Rings A, B and C independently is trifluoromethyl, not more than one substituent on each of Rings A, B and C independently is phenoxy, and not more than one substituent on each of Rings A, B and C independently is benzyloxy, with the provisos that (1) when Z is



the compound is in free base form and either (i) R_{14} is R_{16} and each R_{17} is independently R_{18} or (ii) R_{14} is M and each R_{17} is independently R_{18} or M and (2) when (i) R_{14} or at least one R_{17} is M or (ii) R_{14} and at least one R_{17} are M, the compound is in free base form.

2. A compound according to claim 1, or a pharmaceutically acceptable acid addition salt thereof, wherein each M is independently a pharmaceutically acceptable cation.

25. A method of treating atherosclerosis comprising administering to a mammal in need of such treatment an effective amount of a compound according to claim 2, or a pharmaceutically acceptable acid addition salt thereof, said effective amount being an amount effective for the treatment of atherosclerosis.

4,808,608

TETRAHYDROCARBAZOLE 1-ALKANOIC ACIDS, PHARMACEUTICAL COMPOSITIONS AND USE

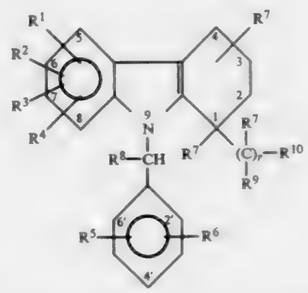
Yvan Guindon; Christiane Yoakim, both of Montreal; John W. Gillard, Baie d'Urfe, and Yves Girard, Ile Bizard, all of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 001,739, Jan. 9, 1987, abandoned, which is a continuation-in-part of Ser. No. 821,726, Jan. 23, 1986, abandoned. This application Jul. 21, 1987, Ser. No. 76,424

Int. Cl.[4] A61K *31/40;* **C07D** *209/86, 209/88*

U.S. Cl. 514—411 **12 Claims**

1. A compound of the formula:



I

wherein:

R^1, R^2, R^3, R^4, R^5 and R^6 are each independently selected from:

(1) hydrogen;

(2) alkyl having 1 to 6 carbon atoms;

(3) alkenyl having 2 to 6 carbon atoms;

(4) —$(CH_2)_nM$

wherein n is 0 to 3 and M is

(a) OR^{13};

(b) halogen;

(c) CF_3;

(d) SR^{13};

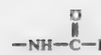
(e) $COOR^{14}$;

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wherein R^{16} is C_1 to C_6 alkyl, benzyl or phenyl;
(h) $—NR^{14}R^{14}$;
(i) $—NHSO_2R^{17}$ wherein R^{17} is C_1 to C_6 alkyl, 4-methylphenyl, phenyl, or CF_3;
(j) $—SOR^{13}$;
(k) $—CONR^{14}R^{14}$;
(l) $—SO_2NR^4R^{14}$;
(m) $—SO_2R^{13}$;
(n) NO_2;
(o) N_3;
with at least one of R^5 and R^6 being $—SR^{13}$, $—S(O)R^{13}$, $—S(O)_2R^{13}$;
R^7 is H or alkyl of 1 to 6 carbons;
R^8 is H or alkyl of 1 to 6 carbon atoms;
each R^9 is independently H, OH, C_1 to C_4-O-alkyl or alkyl of 1 to 4 carbons;
R^{10} is COOH;
r is 1 to 2;
each R^{13} independently is H; C_1 to C_6 alkyl; benzyl; phenyl or substituted phenyl wherein the substituents are C_1 to C_3 alkyl, halogen, CN, CF_3, $COOR^{14}$, CH_2COOR^{14}, C_1 to C_3 alkoxy, or C_1 to C_4 perfluoroalkyl;
each R^{14} is independently H, phenyl, benzyl or C_1 to C_6 alkyl; and,
each R^{15} independently is H, $(CH_2)_mCOOR^{14}$ wherein m is 0 to 4, C_1 to C_6 alkyl, CF_3, phenyl, or substituted phenyl wherein substituted phenyl is as defined above in the definition of R^{13};
or a pharmaceutically acceptable salt thereof.

11. A method of inhibiting leukotriene synthesis in a mammal, which comprises administering to a mammal an effective amount of a compound of claim 1.

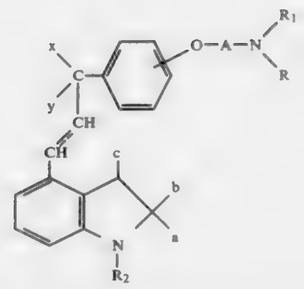
4,808,609

AMINO-(HYDROXY)ALKOXY-4-PHENYLPROPYL INDOLES HAVING ANTIARRYTHMIC ACTIVITY

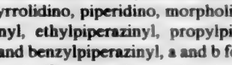
Francois Clemence; Jacques Guillaume, both of Paris, and Gilles Hamon, Montrouge, all of France, assignors to Roussel Uclaf, Paris, France

Filed Jun. 25, 1986, Ser. No. 878,195
Claims priority, application France, Jun. 27, 1985, 85 09785
The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.
Int. Cl.⁴ A61K *31/40*; **C07D** *209/04*
U.S. Cl. 514—415 **21 Claims**

1. A compound selected from the group consisting of hydroxyalkoxy-4-phenylpropyl-indoles of the formula



wherein R and R_1 are individually selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, cycloalkylalkyl of 4 to 7 carbon atoms and aralkyl of 7 to 12 carbon atoms optionally substituted with 1 to 3 members of the group consisting of halogen, methyl, ethyl, methoxy, ethoxy, $—CF_3$, $—NO_2$, $CH_3S—$ and $—NH_2$ or R_1 and R together with the nitrogen atom to which they are attached form a heterocycle selected from the group consisting of pyrrolidino, piperidino, morpholino, piperazinyl, methylpiperazinyl, ethylpiperazinyl, propylpiperazinyl, phenylpiperazinyl and benzylpiperazinyl, a and b form =0 and c is hydrogen or a and c form a carbon-carbon bond and b is hydrogen, the dotted line is an optional double bond, A is



m is 1, 2 or 3, R_2 is selected from the group consisting of hydrogen and alkyl of 1 to 5 carbon atoms, x is selected from the group consisting of hydrogen and —OH and y is hydrogen or x together with y is =0 and their non-toxic, pharmaceutically acceptable acid addition salts.

15. A method of inducing antiarrhythmic activity in warm-blooded animals comprising administering to warm-blooded animals an antiarrhythmically effective amount of at least one compound of claim 1.

4,808,610

MOMETASONE FUROATE ANTI-INFLAMMATORY CREAM COMPOSITION USING HEXYLENE GLYCOL

Farah J. Munayyer, West Caldwell, N.J., and Joel A. Sequeira, New York, N.Y., assignors to Schering Corporation, Kenilworth, N.J.

Filed Oct. 2, 1986, Ser. No. 914,227
Int. Cl.⁴ C07D *31/58*
U.S. Cl. 514—172 **6 Claims**

1. A topical pharmaceutical composition for the treatment of inflammation comprising:
(a) 0.01 to 0.25 percent Mometasone Furoate
(b) 5 to 20 percent hexylene glycol
(c) 1.0 to 5 percent water
(d) 2.0 to 10.0 percent white wax
(e) 4 to 12 percent of a lipophilic emulsifier having a HLB below 5
(f) 0.7 to 4 percent of a hydrophilic emulsifier having a HLB above 11
(g) 0.2 to 2.0 percent Titanium dioxide
(h) 5 to 20 percent aluminum starch octenylsuccinate
(i) 40 to 70 percent white petrolatum
(j) sufficient acid to adjust the pH of the water to pH 2.5 to ±0.2.

4,808,611

USE OF INTERLEUKIN-1 TO INDUCE DEVELOPMENT OF MULTIPOTENT HEMOPOIETIC CELL POPULATIONS

David J. Cosman, Seattle, Wash., assignor to Immunex Corporation, Seattle, Wash.

Filed Jul. 30, 1986, Ser. No. 891,929
Int. Cl.⁴ A61K *37/00*
U.S. Cl. 514—12 **10 Claims**

1. A method of inducing proliferation and differentiation of hemopoietic stem cells in a mammal, comprising administering to the mammal an effective quantity of interleukin-1 (IL-1) in conjunction with an effective quantity of a colony stimulating factor.

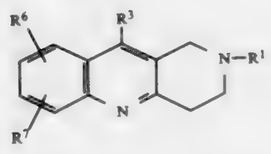
4,808,612

2-ARYLBENZO(B)X1,6)NAPHTHYRIDINES AS INHIBITORS OF INTERLEUKIN 1

Jerauld S. Skotnicki, Chadds Ford, and Steven C. Gilman, Newtown Square, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 7, 1987, Ser. No. 47,970
Int. Cl.⁴ A61K *31/44*
U.S. Cl. 514—290 **12 Claims**

1. A method for the treatment of inflammatory conditions and of collagenase-induced tissue destruction in warm-blooded animals which comprises the administration thereto of an anti-inflammatory/collagenase inhibitory amount of a compound having the formula



wherein
R^1 is phenyl or naphthyl, or phenyl or naphthyl substituted with halo, lower alkyl, lower alkyl carbonyl, benzoyl, carboxy, lower alkoxycarbonyl, OR^2, $N(R^2)_2$, $CON(R^2)_2$, SO_3R^2, $SO_2N(R^2)_2$, phenylsulfonyl, lower alkylsulfonyl, cyano, nitro or trifluoromethyl;
R^2 is hydrogen, lower alkyl or phenyl;
R^3 is halo, R^4NNHR^5, NR^4R^5, OR^5, SR^5, $R^4NCH_2CH_2OCH_3$ or $SCH_2CH_2CH_2NCH_2$;
R^4 is hydrogen or lower alkyl;
R^5 is hydrogen, lower alkyl, lower alkanoyl, lower cycloalkyl or phenyl; and
R^6 and R^7 are each independently, hydrogen, halo, nitro, lower alkoxy, lower alkyl, cyano, trifluoromethyl, phenyl, carboxy or lower alkoxycarbonyl.

4,808,613

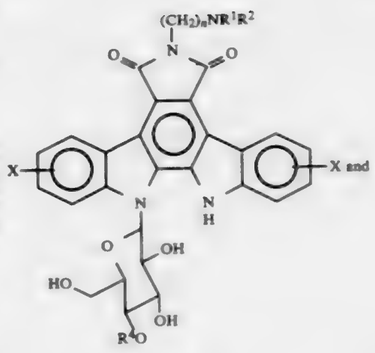
REBECCAMYCIN DERIVATIVE CONTAINING PHARMACEUTICAL COMPOSITION

Takushi Kaneko, Guilford; Henry S. Wong, Durham, both of Conn., and Jacob J. Utzig, Buffalo, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

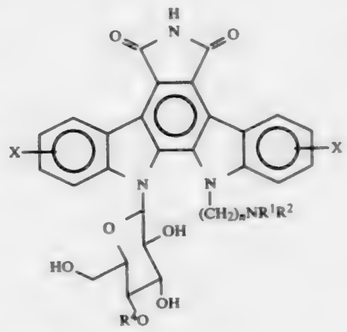
Continuation of Ser. No. 933,428, Nov. 21, 1986, abandoned. This application Mar. 18, 1988, Ser. No. 169,785
Int. Cl.⁴ A61K *31/40*
U.S. Cl. 514—42 **1 Claim**

1. A pharmaceutical composition comprising a tumor growth-inhibiting amount of about 0.5–90% by weight based on total weight of composition of at least one compound selected from the group of compounds having the formulas

Formula II



Formula III



wherein
n is an integer from 1 to 6;
R^1 and R^2, independently, are selected from hydrogen, unsubstituted and substituted C_1–C_6 alkyl, aralkyl having 1 to 3 carbons in the alkyl moeity and unsubstituted phenyl or phenyl substituted with 1 to 3 alkyl, alkoxy, hydroxy, halo, carboxyl, alkoxycarbonyl and amino and mon- and di-lower-alkylamino groups in the aryl moiety, and aryl selected from unsubstituted phenyl and phenyl substituted with 1 to 3 alkyl, alkoxy, hydroxy, halo, amino, mono- and dialkylamino, nitro, carboxyl, alkoxycarbonyl and cyano groups provided that both R^1 and R^2 are not each aryl and, when taken together, R^1 and R^2 may be selected from $—(CH_2)_4—$ and $(CH_2)_2—R^3—(CH_2)_2—$ to form a 5- or 6-membered ring together with the N-atom wherein R^3 is selected from CH_2, NH, O and S;
X is selected from H, F, Cl, Br, C_1–C_3 alkyl, OH, carboxyl, alkoxycarbonyl and alkoxy wherein the alkyl moiety is C_1–C_3 alkyl, and benzyloxy; and
R^4 is selected from H and CH_3; and pharmaceutically acceptable acid addition and base salts thereof, and a pharmaceutically acceptable carrier.

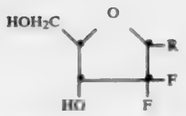
4,808,614

DIFLUORO ANTIVIRALS AND INTERMEDIATE THEREFOR

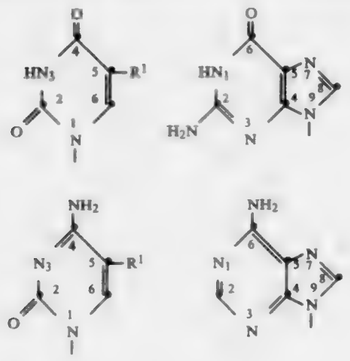
Larry W. Hertel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

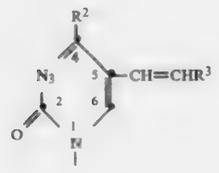
Division of Ser. No. 677,146, Dec. 4, 1984, Pat. No. 4,692,434, which is a continuation-in-part of Ser. No. 473,883, Mar. 10, 1983, Pat. No. 4,526,988. This application Jun. 4, 1987, Ser. No. 58,219
Int. Cl.⁴ A61K *31/505*, *31/52*
U.S. Cl. 514—45 **14 Claims**

1. A nucleoside of the formula



wherein R is a base selected from the group consisting of





wherein

R^1 is hydrogen, methyl, bromo, fluoro, chloro, or iodo;

R^2 is hydroxy;

R^3 is hydrogen, bromo, chloro or iodo.

13. A method of treating Herpes viral infections in mammals comprising administering to a mammal in need of such treatment an anti-Herpes viral effective amount of a compound of claim 1.

4,808,615

FLEA AND TICK INFESTATION CONTROL COMPOSITION CONTAINING CHLORPYRIFOS AND VINYL ACETATE/CROTONIC ACID/VINYL NEODECANOATE COPOLYMER

Bruce S. Ott, Belle Mead; Joseph Hans, East Windsor, and Frederick F. Kohlhepp, Princeton Junction, all of N.J., assignors to Carter-Wallace, Inc., New York, N.Y.

Filed Apr. 19, 1985, Ser. No. 725,219

Int. Cl.⁴ A01N *57/00*

U.S. Cl. 514—89 **2 Claims**

1. A liquid composition for direct application to the skin and hair of canine animals for the prevention and control of flea and tick infestation consisting of a solution of about 1.00% by weight of a terpolymer of vinyl acetate/crotonic acid/vinyl neodecanoate containing about 10% crotonic acid and 90% of a mixture of vinyl acetate and vinyl neodecanoate, about 98.5% by weight ethanol, about 0.25% by weight chlorpyrifos and about 0.25% by weight of a fragrance.

4,808,616

6-SUBSTITUTED ANDROSTA-1,4-DIENE-3,17-DIONES

Franco Buzzetti, Monza; Natale Barbugian, Milan; Paolo Lombardi, Milan, and Enrico di Salle, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

Filed Jul. 7, 1986, Ser. No. 882,364

Claims priority, application United Kingdom, Jul. 9, 1985, 8517360

Int. Cl.⁴ A61K *31/56;* **C07J** *1/00*

U.S. Cl. 514—177 **7 Claims**

1. 6-methylenandrosta-1,4-diene-3,17-dione.

2. A compound selected from the group consisting of:
1-methyl-6-methylenandrosta-1,4-diene-3,17-dione;
1-ethyl-6-methylenandrosta-1,4-diene-3,17-dione;
4-methyl-6-methylenandrosta-1,4-diene-3,17-dione;
4-ethyl-6-methylenandrosta-1,4-diene-3,17-dione;
4-fluoro-6-methylenandrosta-1,4-3,17-dione;
4-chloro-6-methylenandrosta-1,4-diene-3,17-dione;
6-ethylidenandrosta-1,4-diene-3,17-dione;
6-propylidenandrosta-1,4-diene-3,17-dione;
4-fluoro-1-methyl-6-methylenandrosta-1,4-diene-3,17-dione;
4-chloro-1-methyl-6-methylenandrosta-1,4-diene-3,17-dione;
1-methyl-6-ethylidenandrosta-1,4-diene-3,17-dione, and
4-fluoro-6-ethylidenandrosta-1,4-diene-3,17-dione.

3. A pharmaceutical composition containing a suitable carrier and/or diluent and, as an active principle, a therapeutically effective amount of a compound of claim 1 or 2, or a pharmaceutically acceptable salt thereof.

4,808,617

LYOPHILIZED OR PRECIPITATED CEPHALOSPORIN ZWITTERION AND SALT COMBINATION

Murray A. Kaplan, Syracuse, N.Y.; Nageswara R. Palepu, Dublin, Ohio, and Joseph B. Bogardus, Manlius, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 810,160, Dec. 18, 1985, abandoned. This application Jan. 9, 1987, Ser. No. 1,945

Int. Cl.⁴ A61K *31/545;* **C07D** *501/46*

U.S. Cl. 514—202 **16 Claims**

1. Temperature stable broad spectrum antibiotic composition which on dilution to injectable concentration provides a pH of about 3.5 to about 7 without the use of buffering agents or bases, said composition consisting essentially of (a) the amorphous solid formed by lyophilization or cosolvent precipitation of an aqueous solution of (i) 7-[-(2-aminothiazol-4-yl)-α-(Z)-methoximinoacetamido]-3-[(1-(methyl-1-pyrrolidinio)-methyl]-3-cephem-4-carboxylate zwitterion and (ii) a salt wherein the cation is selected from the group consisting of sodium, lithium, calcium, and magnesium and the anion is selected from the group consisting of chloride, bromide, and iodide, the molar ratio of zwitterion to salt in said solution ranging from about 0.5:1 to about 2:1, or (b) solvates thereof.

4,808,618

SUBSTITUTED 1,3-DIALKYLPYRIDO[4,3-D]PYRIMIDINE-2,4-DIONES

Kouichiro Go; Yoshiyuki Kurimoto, and Norihiko Kitamura, all of Hyogo, Japan, assignors to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

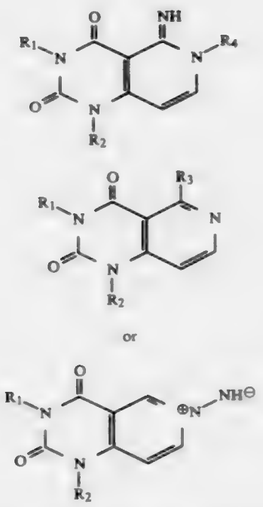
Filed Apr. 8, 1987, Ser. No. 35,797

Claims priority, application Japan, Apr. 16, 1986, 61-89065

Int. Cl.⁴ A61K *31/505;* **C07D** *471/04*

U.S. Cl. 514—258 **11 Claims**

1. A pyrido[4,3-d]pyrimidine compound of the formula



wherein each R_1 and R_2, which may be the same or different, is a lower alkyl group; R_3 is halogen, hydroxy, amino, hydroxyamino, hydrazino or a lower alkylamino group which may optionally have hydroxy, amino or a lower alkylamino group and R_4 is hydrogen, amino, or a lower alkyl group which may optionally have hydroxy, amino or a lower alkylamino group; or pharmaceutically acceptable salt thereof.

4,808,619

DI/TETRA-HYDROQUINOLINES

John M. Evans; Geoffrey Stemp, both of Harlow, England; Charles D. Nicholson, and Dieter Angerbach, both of Grosaa, Fed. Rep. of Germany, assignors to Beecham Group p.l.c., England

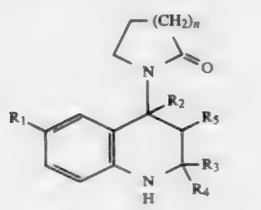
Continuation-in-part of Ser. No. 717,177, Mar. 25, 1985, abandoned. This application Jul. 30, 1986, Ser. No. 892,139

Claims priority, application United Kingdom, Jul. 27, 1983, 8320184; Dec. 23, 1983, 8334415; PCT Int'l Appl., Jul. 18, 1984, PCT/GB/00252; United Kingdom, Jul. 31, 1985, 8519306; Nov. 13, 1985, 8527994

Int. Cl.⁴ A61K *31/47;* **C07D** *215/18, 215/42*

U.S. Cl. 514—278 **18 Claims**

1. A compound of formula (I):



(I)

wherein:

n is 1 or 2;

R_1 is chloro, bromo, C_{1-6} alkylcarbonyl or cyano;

one of R_3 and R_4 is hydrogen or C_{1-4} alkyl and the other is C_{1-4} alkyl or R_3 and R_4 together are C_{2-5} polymethylene; and either;

R_5 is hydroxy, C_{1-3} alkoxy or C_{1-8} acyloxy; and

R_2 is hydrogen and the cyclic amide moiety and R_5 are trans; or R_5 and R_2 together form a bond.

4,808,620

PYRAZOLOPYRIDINE COMPOUNDS, THEIR PREPARATION AND USE AS PLATELET AGGREGATION INHIBITORS

Takanori Oe, Oita; Kazuyuji Kawasaki, Fukuoka; Michio Terasawa; Tomonori Imayoshi, both of Oita, and Yukihiro Yasunaga, Fukuoka, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

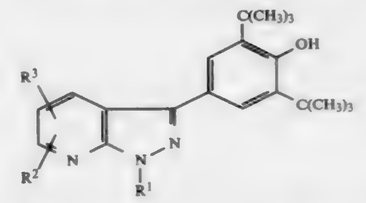
Filed Jul. 22, 1987, Ser. No. 76,504

Claims priority, application Japan, Jul. 22, 1986, 61-172479

Int. Cl.⁴ A61K *31/38, 31/395, 31/435;* **C07D** *471/04*

U.S. Cl. 514—303 **4 Claims**

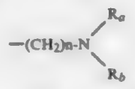
1. A pyrazolopyridine compound of the formula:



(I)

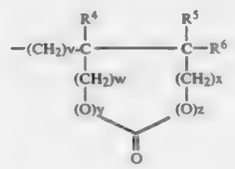
and a salt thereof, wherein R^1 is hydrogen; straight or branched chain alkyl having 1 to 20 carbon atoms; straight or branched chain alkenyl having 2 to 8 carbon atoms; straight or branched chain alkynyl having 2 to 8 carbon atoms; cycloalkyl having 3 to 7 carbon atoms; phenyl; substituted phenyl which is substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, straight or branched chain alkyl having 1 to 20 carbon atoms, straight or branched chain alkoxy having 1 to 10 carbon atoms and straight or branched alkyl having 1 to 8 carbon atoms which is substituted by at least one halogen; heteroaryl selected from the group consisting of furyl, thienyl, pyridyl, pyrazolyl, imidazolyl, pyrazinyl, benzimidazolyl, oxazolyl, thiazolyl and indolyl; substituted heteroaryl selected from the group consisting of furyl, thienyl, pyridyl, pyrazolyl, imidazolyl, pyrazinyl, benzimidazolyl, oxazolyl, thiazolyl and indolyl which is substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, straight or branched chain alkyl having 1 to 20 carbon atoms, straight or branched chain alkoxy having 1 to 10 carbon atoms and straight or branched chain haloalkyl having 1 to 8 carbon atoms in the heteroaromatic nucleus; straight or branched chain alkyl having 1 to 10 carbon atoms which is substituted by at least one halogen; hydroxyalkyl in which the alkyl moiety is a straight or branched chain alkyl having 1 to 8 carbon atoms; alkoxyalkyl in which the alkoxy moiety and the alkyl moiety each are straight or branched chains having 1 to 8 carbon atoms; acyloxyalkyl in which he acyl moiety is alkanoyl having 2 to 18 carbon atoms, benzoyl, substituted benzoyl which is substituted by at least one substituted selected from the group consisting of halogen, amino, nitro, hydroxy, straight or branched chain alkyl having 1 to 20 carbon atoms, straight or branched chain alkoxy having 1 to 10 carbon atoms and straight or branched chain haloalkyl having 1 to 8 carbon atoms on the benzene ring, heteroarylcarbonyl selected from the group consisting of furoyl, thenoyl, nicotinoyl, isonicotinoyl, pyrazolyl-carbonyl, imidazolylcarbonyl and benzimidazolylcarbonyl, or substituted heteroarylcarbonyl in which the heteroarylcarbonyl is selected from the group consisting of furoyl, thenoyl, nicotinoyl, isonicotinoyl, pyrazolylcarbonyl, imidazolylcarbonyl and benzimidazolylcarbonyl which is substituted by at least one subsituent selected from the group consisting of halogen, amino, nitro, hydroxy, straight or branched chain alkoxy having 1 to 10 carbon atoms and straight or branched chain haloalkl having 1 to 8 carbon atoms on the heteroaryl nucleus,

and the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms; carboxyalkyl in which the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms; alkoxycarbonylalkyl in which the alkoxy moiety and the alkyl moiety each are straight or branched chains having 1 to 8 carbon atoms; cyanoalkyl in which the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms; carbamoylalkyl in which the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms; mono- or di-substituted carbamoylalkyl in which the substituent(s) to the nitrogen atom of the carbamoyl moiety is (are) selected from the group consisting of hydrogen, straight or branched chain alkyl having 1 to 8 carbon atoms, phenylalkyl in which the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms, substituted phenylalkyl in which the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms and which is substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, straight or rbanched chain alkyl having 1 to 20 carbon atoms, straight or branched chain alkoxy having 1 to 10 carbon atoms and straight or branched chain haloalkyl having 1 to 8 carbon atoms on the phenyl nucleus, and heterocycle selected from the group consisting of 1-pyrrolidinyl, 2-oxo-1-pyrrolidinyl, and piperidino, to be formed together with the adjacnet nitrogen atom of the carbonoyl moiety and the alkyl moiety is the carbomoyl alkyl is straight or branched chain alkyl having 1 to 8 carbon atoms; alkoxycarbonyloxyalkyl in which the alkoxy moiety and the alkyl moiety each are straight or branched chains having 1 to 8 carbon atoms; carbamoxyalkyl in which the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms; mono- or di-substituted carbamoyloxyalkyl in which the substitutent(s) to the nitrogen atom of the carbamoyl moiety is (are) selected from the group consisting of hydrogen, straight or branched chain alkyl having 1 to 8 carbon atoms, phenylalkyl in which the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms, substituted phenylalkyl in which the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms and which is substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, straight or branched chain alkyl having 1 to 20 carbon atoms, straight or branched chain alkoxy having 1 to 10 carbon atoms and straight or branched chain halozlkyl having 1 to 8 carbon atoms on the phenyl nucleus, and heterocycle selected from the group consisting of 1-pyrrolidinyl, 2-oxo-1-pyrrolidinyl, and piperidino, to be formed together with the adjacent nitrogen atom of the carbamoyl and the alkyl moiety in the carbanoylalkyl is straight or branched chain alkyl having 1 to 8 carbon atoms; alkylthiolkyl in which the alkylthio moiety and the alkyl moiety each are straight or branched chains having 1 to 8 carbon atoms; phenylalkyl in which the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms; substituted phenylalkyl in which the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms and which is substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, straight or branched chain alkyl having 1 to 20 carbon atoms, straight or branched chain haloalkyl having 1 to 10 carbon atoms and straight or branched chain haloalkyl having 1 to 8 carbon atoms on the phenyl nucleus; heteroarylalkyl in which the heteroaryl moiety is selected from the group consisting of furyl, thienyl, pyridyl, pyrazolyl, imidazolyl, pyrazinyl, benzimidazolyl, oxazolyl, thiazolyl and indolyl and the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms; substituted heteroarylalkyl in which the substituted heteroaryl moiety is selected from the group consisting of furyl, thienyl, pyridyl, pyrazolyl, imidazolyl, pyrazinyl, benzimidazolyl, oxazolyl, thiazolyl and indolyl which is substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, straight or branched chain alkyl having 1 to 20 carbon atoms, straight or branched chain alkoxy having 1 to 10 carbon atoms and straight or branched chain haloalkyl having 1 to 8 carbon a atoms on the heteroaryl nucleus, and the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms; cycloalkylalkyl in which the cyloalkyl moiety is cyclic alkyl aaving 3 to 7 carbon atoms and the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms; a group of the formula;



(a)

where each of R_a and R_b is hydrogen, straight or branched chain alkyl having 1 to 20 carbon atoms, phenylalkyl in which the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms, substituted phenylalkyl in which the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms and which is substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, straight or branched chain alkyl having 1 to 20 carbon atoms, straight or branched chain alkoxy having 1 to 10 carbon atoms and straight or branched chain halozlkyl having 1 to 8 carbon atoms on the phenyl nucleus, or R_a and R_b together with the adjacent nitrogen atom form a heterocycle selected from the group consisting of 1-pyrrolidinyl, 2-oxo-1-pyrrolidinyl, and piperidino, and n is an integer of 1 to 8; alkanoyl having 2 to 18 carbon atoms; alkoxycarbonyl in which the alkoxy moiety is alkoxy having 1 to 10 carbon atoms; acyloxyalkanoy in which the acyl moiety is alkanoyl having 2 to 18 carbon atoms, benzoyl, substituted benzoyl which is substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, straight or branched chain alkyl having 1 to 20 carbon atoms, straight or branched chain alkoxy having 1 to 10 carbon atoms and straight or branched chain haloalkyl having 1 to 8 carbon atoms on the benzene ring, heteroarylcarbonyl selected from the group consisting of furoyl, thenoyl, nicotinoyl, isonicotinoyl, pyrazolylcarbonyl, imidazolylcarbonyl and benzimidazolylcarbonyl, substituted heteroarylcarbonyl in which the heteroarylcarbonyl selected from the group consisting of furoyl, thenoyl, nicotinoyl, isonicotinoyl, pyrazolylcarbonyl, imidazolylcarbonyl and enzimidazolylcarbonyl which is substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, straight or branched chain alkoxy having 1 to 10 carbon atoms and straight or branched chain haloalkyl having 1 to 8 carbon atoms on the heteroaryl nucleus, and the alkanoyl moiety is alkanoyl having 2 to 18 carbon atoms; benzoyl, substituted benzoyl which is substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, straight or branched chain alkyl having 1 to 20 carbon atoms, straight or branched chain alkoxy having 1 to 10 carbon atoms and straight or branched chain haloalkyl having 1 to 8 carbon atoms on the benzene ring; heteroarylcarbonyl selected from the group consisting of furoyl, thenoyl, nicotinoyl, isonicotinoyl, pyrazolylcarbonyl, imidazolylcarbonyl and benzimidazolylcarbonyl; substituted heteroarylcarbonyl in which the heteroarylcarbonyl is selected from the group consisting of furoyl, thenoyl, nicotinoyl, isonicotinoyl, pyrazolylcarbonyl, imidazolylcarbonyl and benzimidazolylcarbonyl which is substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, straight or branched chain alkoxy having 1 to 10 carbon atoms and straight or branched chain haloalkyl having 1 to 8 carbon atoms on the heteroaryl nucleus; or a group of the formula;



(b)

where each of R^4, R^5 and R^6 is hydrogen or straight or branched chain alkyl having 1 to 20 carbon atoms, or R^4 and one of R^5 or R^6 together form a single bond, and each of v, w, x, y and z is an integer of 0 and 1 to 4; and

each of R^2 and R^3 is hydrogen, halogen, straight or branched chain alkyl having 1 to 20 carbon atoms, or straight or branched chain alkyl having 1 to 10 carbon atoms which is substituted by at least one halogen.

3. A pharmaceutical composition for treatment of inflammation, pain, fever, allergy, arthritis, rheumatism and platelet aggregation which comprises, an antiinflammatory, analgesic, antipyretic, antiallergic, antiarthritic, antirheumatic and platelet aggregation inhibitory effective amount, respectively, of the pyrazolopyridine compound or pharmaceutically acceptable salt thereof as defined in claim 1, and a pharmaceutically acceptable additive therefor.

4,808,621

TRANS-6-[2-(N-HETEROARYL-3,5-DISUBSTITUTED)-PYRAZOL-4-YL)-ETHYL]- OR ETHENYL]TETRAHYDRO-4-HYDROXYPYRAN-2-ONE INHIBITORS OF CHOLESTEROL BIOSYNTHESIS

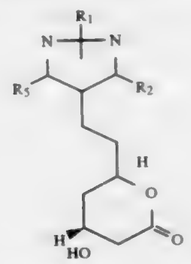
Bruce D. Roth, Ann Arbor, and Drago R. Sliskovic, Ypsilanti, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 882,327, Jul. 7, 1986, abandoned. This application May 18, 1987, Ser. No. 48,473

Int. Cl.[4] C07D 405/04, 405/06; A61K 31/44

U.S. Cl. 514—341 5 Claims

1. A compound of structural Formula I



I

wherein R_1 is 2-, 3-, or 4-pyridinyl, and wherein R_1 is attached to one of the nitrogen atoms of the pyrazole nucleus;

R_2 is alkyl of from one to three carbon atoms or trifluoromethyl;

R_5 is



where R_3; is alkyl of from one to three carbon atoms, chlorine or fluorine, and R_4 is hydrogen, alkyl of from one to three carbon atoms, chlorine, or fluorine; or a ring-opened hydroxy acid derived therefrom or a pharmaceutically acceptable salt thereof.

4,808,622

CIRCULATION ACTIVE METHIONINE-SUBSTITUTED 1,4-DIHYDROPYRIDINES

Günther Kinast; Eckhard Schwenner; Stanislav Kazda, all of Wuppertal; Andreas Knorr, Erkrath, and Michael Kayser, Hagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 7, 1987, Ser. No. 1,496

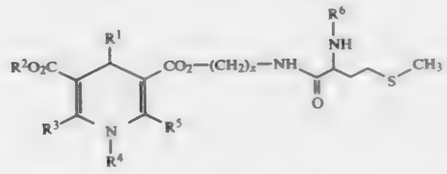
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1986, 3600594

The portion of the term of this patent subsequent to Dec. 27, 2005, has been disclaimed.

Int. Cl.[4] C07D 211/86; A61K 31/455

U.S. Cl. 514—356 17 Claims

1. A methionine-substituted dihydropyridine of the formula



in which

R^1 represents benzooxadiazolyl, phenyl, naphthyl or phenyl or naphthyl substituted by 1 or 2 identical or different substituents from the group consisting of phenyl, straight-chain or branched alkyl having 1 to 8 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, alkoxy having 1 to 4 carbon atoms, halogen, trifluoromethyl, trifluoromethoxy, difluoromethoxy, tetrafluoroethoxy, nitro, cyano, azido or SO_m-azido, in which m denotes a number from 0 to 2 and alkyl contains 1 to 4 carbon atoms with, optionally, 1 to 3 flourine atoms,

R^2 represents a straight-chain, branched or cyclic, saturated or unsaturated, hydrocarbon radical which up to 20 carbon atoms, is optionally interrupted in the chain by one oxygen atom or one sulphur atom and/or is optionally substituted by halogen, cyano, hydroxyl, lower alkanoyloxy or nitro, or by a phenyl, phenoxy, phenylthio or phenylsulphonyl group each of which is optionally substituted by halogen, cyano, dialkylamino each having 1 to 2 carbon atoms in each alkyl group, alkoxy having 1 to 4 carbon atoms, alkyl having 1 to 4 carbon atoms, trifluoromethyl or nitro, or R^2 is substituted by an amino group, this amino group carrying two identical or different substituents from the group consisting of alkyl having up to 4 carbon atoms, alkoxyalkyl having up to 4 carbon atoms, phenyl and phenyl-lower alkyl,

R^3 and R^5 are identical or different and each represents hydrogen, a straight-chain, branched or cyclic alkyl radical having up to 6 carbon atoms, a phenyl or benzyl radical, or one of the substituents R^3 or R^5 represents an alkyl radical which has up to 6 carbon atoms and is substituted by acetoxy or benzoyloxy, alkoxy or dialkoxy, each having up to 3 carbon atoms in each alkyl group, hydroxyl, amino or aminoalkoxy having up to 6 carbon atoms, or represents the formyl or nitrile group,

R^4 denotes hydrogen or a straight-chain or branched alkyl radical which has 1 to 4 carbon atoms and is optionally interrupted in the chain by one oxygen atom, or represents a phenyl or benzyl radical,

R^6 represents hydrogen or an amino protective group selected from the group consisting of vinyl, allyl, tert.-butyloxycarbonyl, benzyl, benzyloxycarbonyl, 2-nitro- or 4-nitro-benzyl, 2-nitro- or 4-nitro-benzyloxycarbonyl, 4-methoxyphenyl, formyl, benzoyl, acetyl, chloroacetyl, trichloroacetyl, trifluoroacetyl, methyloxycarbonyl, allyloxycarbonyl, trimethyl-, triethyl- or triphenylsilyl, tert.-butyl-dimethylsilyl, 2,4-dimethoxybenzyl, 2,4-dime-

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thoxybenzyloxycarbonyl, 4-methoxybenzyl, 4-methoxymethyloxyphenyl, bis(4-methoxyphenyl)methyl, tert.-butoxycarbonylmethyl, allyloxycarbonylmethyl, methoxymethyl, methylthiomethyl, methoxyethoxymethyl, methyl, 2-(methylthiomethoxy)ethoxycarbonyl and tetrahydropyranyl, and

X represents a number from 2 to 16, or a physiologically acceptable salt thereof.

4,808,623

5-AMINO-3-HALOGENOALKYL-1-ARYL-PYRAZOLES, COMPOSITION CONTAINING THEM, AND METHOD OF USING THEM TO COMBAT INSECTS

Pieter Ooms, Krefeld, and Benedikt Becker, Mettmann, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

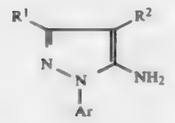
Filed Feb. 24, 1988, Ser. No. 160,038

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1987, 3706993

Int. Cl.[4] A01N *43/56;* **C07D** *231/38*

U.S. Cl. 514—404 **11 Claims**

1. A 5-amino-3-halogenoalkyl-1-aryl-pyrazole of the formula



(I)

in which

R^1 represents halogenoalkyl,

R^2 represents cyano, hydroxycarbonyl, carbamoyl, thiocarbamoyl, alkoxycarbonyl, N-alkylcarbamoyl or N,N-dialkylcarbamoyl, or represents alkenyloxycarbonyl, N-alkenylcarbamoyl, N,N-dialkenylcarbamoyl, alkinyloxycarbonyl, N-alkinylcarbamoyl, N,N-dialkinylcarbamoyl or N-arylcarbamoyl and Ar represents substituted phenyl, with the exception of the 4-nitrophenyl radical.

10. A method of combating insects which comprises applying to such insects or to an insect habitat an insecticidally effective amount of a compound according to claim 1.

4,808,624

PHARMACOLOGICALLY ACTIVE SUBSTITUTED BENZAMIDES

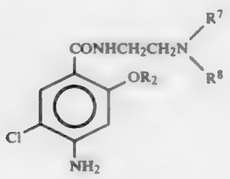
Ivo Monkovic, Fayetteville, and David Willner, Dewitt, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 625,742, Jun. 28, 1984, abandoned. This application May 6, 1985, Ser. No. 729,513

Int. Cl.[4] A61K *31/275, 31/165;* **C07F** *121/52, 103/22*

U.S. Cl. 514—523 **9 Claims**

1. A compound of Formula I having the formula

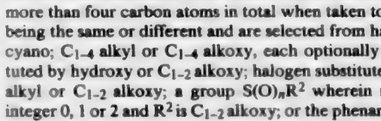


I

wherein

R^7 and R^8 are the same or different and are (lower) alkyl;

R^2 is



q is an integer of from 0 to 4;

R^9 is hydrogen or (lower) alkyl;

R^{12} and R^{13} are the same or different, and are hydrogen, (lower)alkyl, (lower)alknyl, (lower) alkoxy(lower)alkyl or cycloalkyl containing from 5 to 7 carbon atoms inclusive;

or a nontoxic pharmaceutically acceptable salt, hydrate, solvate or quaternary ammonium salt thereof.

4. The compound of claim 1 which is 4-amino-5-chloro-2-cyanomethyloxy-N-[2-(diethylamino)ethyl]benzamide, or a nontoxic pharmaceutically acceptable salt, hyrdate ester or quaternary ammonium salt thereof.

8. A method of alleviating nausea and vomiting in a warm-blooded mammal in need thereof, which comprises administering to said mammal an effective antiemetic amount of at least one compound of claim 1, or a salt, hydrate or solvate thereof, in a pharmaceutically acceptable carrier.

4,808,625

PHENANTHRENE DERIVATIVES

Kenneth W. Bair, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 659,268, Oct. 10, 1984, Pat. No. 4,719,055, which is a continuation-in-part of Ser. No. 499,865, Jun. 1, 1983, abandoned. This application Aug. 28, 1987, Ser. No. 90,578

Claims priority, application United Kingdom, May 16, 1984, 8313571

Int. Cl.[4] A61K *31/135;* **C07C** *93/00, 87/64, 87/78*

U.S. Cl. 514—654 **9 Claims**

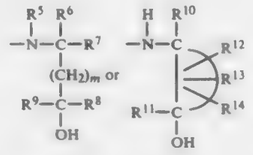
1. A pharmaceutical formulation containing a compound of formula (I)

$$ArCH_2R^1 \quad (I)$$

or a monomethyl or monoethyl ether thereof, the compound of formula (I) including its ethers containing no more than 30 carbon atoms in total); ethers, esters thereof; acid addition salts thereof;

wherein Ar is a phenanthrene ring optionally substituted by one or two substituents. The substituents will contain not more than four carbon atoms in total when taken together being the same or different and are selected from halogen; cyano; C_{1-4} alkyl or C_{1-4} alkoxy, each optionally substituted by hydroxy or C_{1-2} alkoxy; halogen substituted C_{1-2} alkyl or C_{1-2} alkoxy; a group $S(O)_nR^2$ wherein n is an integer 0, 1 or 2 and R^2 is C_{1-2} alkoxy; or the phenanthrene ring is optionally substituted by a group NR^3R^4 containing not more than 5 carbon atoms wherein R^3 and R^4 are the same or different and each is a C_{1-3} alkyl group;

R^1 contains not more than eight carbon atoms and is a group



wherein m is 0 or 1;

R^5 is hydrogen;

R^6 and R^7 are the same or different and each is hydrogen or

C_{1-3} alkyl optionally substituted by hydroxy (proving that at least one hydroxy group is present);

R^8 and R^9 are the same or different and each is hydrogen or C_{1-3} alkyl;



is a five- or six-membered saturated carbocyclic ring;

R^{10} is hydrogen, methyl or hydroxymethyl;

R^{11}, R^{12} and R^{13} are the same or different and each is hydrogen or methyl;

R^{14} is hydrogen, methyl, hydroxy, or hydroxymethyl with a pharmaceutically acceptable carrier in the form of a tablet, capsule, syrup, or a solution for injection excluding 2-methyl-2-((9-phenanthrylmethyl)amino)-1,3-propanediol and 2-methyl-2-((2-phenanthrylmethyl-)amino)-1,3-propanediol.

4,808,626

USE OF 2,5-ANHYDRO-D-MANNITOL AS A FOOD INTAKE MODIFIER

Mark I. Friedman, Merion; Michael G. Tordoff; Michael J. DiNovi, both of Philadelphia, and Robert J. Rafka, Ardmore, all of Pa., assignors to Monell Chemical Senses Center, Philadelphia, Pa.

Filed Sep. 23, 1986, Ser. No. 910,698

Int. Cl.[4] A61K *31/045*

U.S. Cl. 514—738 **7 Claims**

1. A method of altering the food intake of a mammal comprising intravenous administration of 2,5-anhydro-D-mannitol to said mammal in an amount sufficient to alter the food intake of said mammal.

4,808,627

METHOD OF PREVENTING OR TREATING TOXEMIA IN PREGNANCY USING A THROMBOXANE A_2 RECEPTOR ANTAGONIST

Martin L. Ogletree, Newtown, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 16, 1987, Ser. No. 133,838

Int. Cl.[4] A61K *31/34*

U.S. Cl. 514—469 **17 Claims**

1. A method for preventing or treating toxemia during pregnancy, in a mammalian species, which comprises administering to a mammalian species in need of such treatment an effective amount of a thromboxane A_2 receptor antagonist.

4,808,628

AMIDE DERIVATIVES AND THEIR USE AS FUNGICIDES

Margaret C. Shephard, and Patrick J. Crowley, both of Berkshire, England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 768,837, Aug. 23, 1985, Pat. No. 4,728,665. This application Nov. 12, 1987, Ser. No. 119,779

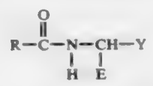
Claims priority, application United Kingdom, Sep. 7, 1984, 8422592

Int. Cl.[4] A61K *31/08, 31/095, 31/10, 31/165, 31/22, 31/275, 31/415, 31/34;* **C07C** *149/20, 69/52, 67/02, 153/05, 102/00, 103/00, 103/22*

U.S. Cl. 514—513 **5 Claims**

1. An amide derivative of the formula (I):

Formula I



or a tautomeric form thereof, wherein R is a phenyl group substituted in the 4-position by a group of R^1XCH_2—, where R^1 is C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, C_1–C_4 alkylcarbonyl, or H, and X is oxygen or sulphur; E is CN, or $CSNH_2$ or $CONH_2$; and Y is C_1–C_4 alkoxy, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy.

5. A compound according to claim 1 wherein E is CN, Y is ethoxy or propargyloxy and R is: 4-$C_2H_5OCH_2.C_6H_4$; 4-$CH_3OCH_2.C_6H_4$; 4-$CH_2{=}CHCH_2OCH_2.C_6H_4$ or 4-$CH{\equiv}CCH_2OCH_2.C_6H_4$.

4,808,629

SAFE ANTILEUKEMIA DRUG, SAL

Yaguang Liu, 30 Seaman Ave., #4A, New York, N.Y. 10034

Division of Ser. No. 737,949, May 28, 1985, Pat. No. 4,675,318. This application May 14, 1987, Ser. No. 62,073

Int. Cl.[4] A61K *31/19, 31/015*

U.S. Cl. 514—557 **2 Claims**

1. A process for producing Oleanolic acid comprising

a. extracting ground fruits of a plant selected from a group consising of *Ligustrum lucidum* Ait, *Hemsleys amabilis* Diels and *Sweritia milensis* with 95% ethanol at room temperature for 24 hrs;

b. separating the ground fruits from the filtrate;

c. refluxing twice the ground fruits with fresh 95% ethanol for 6 hrs to yield filtrates;

d. combining filtrates from steps b and c and distilling the filtrates under reduced pressure to yield a solid residue;

e. dissolving the solids in ethanol and adjusting the pH to 11;

f. filtering and adjusting pH to 1; and

g. crystallizing the Oleanolic acid, separating and washing the crystal repeatedly with water till the wash water is neutral.

4,808,630

METHOD OF TREATING PSYCHOTIC ILLNESSES

Gregory M. Straw, Fairfax, Va., assignor to United States of America, Washington, D.C.

Continuation of Ser. No. 4,008, Jan. 16, 1987, abandoned. This application Feb. 16, 1988, Ser. No. 158,035

Int. Cl.[4] A61K *31/445*

U.S. Cl. 514—317 **17 Claims**

1. A method for treating a patient having a psychotic illness, comprising administering to the patient a combination of haloperidol and a retinoid in a combined amount effective for treating the psychotic illness.

4,808,631

AROMATIC ACID DERIVATIVES

Michael Klaus, Weil am Rhein, Fed. Rep. of Germany, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

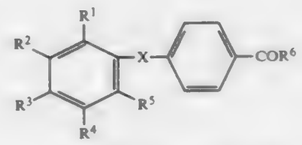
Filed Oct. 14, 1987, Ser. No. 108,337

Claims priority, application Switzerland, Nov. 7, 1986, 4438/86

Int. Cl.[4] A61K *31/195*

U.S. Cl. 514—561 **3 Claims**

1. A method of treatment of inflammatory and rheumatic diseases which comprises administering to a warm-blooded host in need of such treatment an effective amount of a compound of the formula



I

wherein R^1, R^2, R^3, R^4 and R^5, independently, are hydrogen, alkyl or C_{3-7}-cycloalkyl or two adjacent residues R^1 to R^5 taken together with the adjacent carbon atoms of the phenyl

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ring form a 5- to 7-membered ring optionally substituted by one or more lower alkyl groups; X is a residue —NH—CO— or —CO—NH—; R^6 is hydroxy, lower-alkoxy or $—NR^8R^9$; and R^7, R^8 and R^9, independently, are hydrogen or lower-alkyl, or, wherein R^6 is hydroxy, a pharmaceutically acceptable salt thereof.

4,808,632

FLUORANTHENE DERIVATIVES

Kenneth W. Bair, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 661,674, Oct. 17, 1984, Pat. No. 4,720,587, which is a continuation-in-part of Ser. No. 496,853, May 23, 1983, Pat. No. 4,532,344. This application Jul. 30, 1987, Ser. No. 79,352

Claims priority, application United Kingdom, May 16, 1984, 8405584

Int. Cl.[4] C07C *87/78, 87/455*

U.S. Cl. 514—727 **9 Claims**

1. A pharmaceutical composition in the form of a tablet or capsule containing 2-((3-Fluoranthenylmethyl)amino)-2-methyl-1,3-propanediol or a pharmaceutically acceptable salt thereof together with a pharmaceutically acceptable carrier therefor.

4,808,633

VESICULATED POLYMER GRANULES

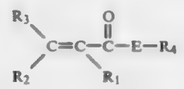
Loreen D. Ferguson, Mississauga; Peter C. Hayes, and Tadas S. Macas, both of Toronto, all of Canada, assignors to C-I-L Inc., North York, Canada

Filed Sep. 8, 1987, Ser. No. 95,419

Int. Cl.[4] C08L *67/06*

U.S. Cl. 521—63 **5 Claims**

1. Vesiculated granules of cross-linked carboxylated polyester resin prepared by the free radical polymerication of a dispersion comprising an ethylenically unsaturated monomer; a carboxylated unsaturated polyester resin having an acid value of from 5–50 mg KOH/g; water; and a base; characterized in that said dispersion further comprises an alkyl acryloyl derivative of the formula:



where R_1, R_2 and R_3 are selected from H and CH_3; E is NH or O; $R_4$is C_{1-6} alkyl substituted with Z; wherein Z is NR_5R_6; wherein $R_5$is C_{1-4} alkyl and R_6 is H; or R_5 and R_6 are indepepndently C_{1-3}alkyl; and quaternary C_{1-3} alkyl salts of said alkyl acryloyl derivative.

4,808,634

LOW DENSITY SILICON FOAM

Richar J. Uriarte, Clifton Park, and David C. Gross, Schenectady, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

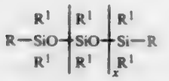
Filed Mar. 24, 1988, Ser. No. 172,727

Int. Cl.[4] C08J *9/02*

U.S. Cl. 521—87 **40 Claims**

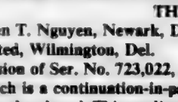
1. A foamable composition comprising:

(a) 100 parts by weight of a vinyl-containing polysiloxane of the formula:



where R and R^1 are selected from substituted or unsubstituted hydrocarbon radicals of from 1 to 20 carbon atoms, such that the polymer contains from 0.0002 to 3% by weight vinyl and x varies such that the viscosity of the polymer varies from 100 to 1,000,000 centipoise at 25° C.;

(b) from 1 to 50 parts by weight of a hydride polysiloxane of the formula:



where R^2 is selected from the group consisting of independently, hydrogen, alkyl radicals of from 1 to 8 carbon atoms, aryl radicals of from 1 to 8 carbon atoms, haloalkyl radicals of 3 to 8 carbon atoms and simultaneously, a single —O— to form a cyclic polymer and R^3 is selected from the group consisting of alkyl radicals of from 1 to 8 carbon atoms, aryl radicals of from 1 to 8 carbon atoms, and fluoroalkyl radicals of 3 to 8 carbon atoms, where the hydride polysiloxane has a hydrogen content varying from 0.3 to 1.6% by weight and z and y vary such that the polymer has a viscosity varying from 1 to 500 centipoise at 25° C.;

(c) a hydroxyl source selected from organic alcohol or organic alcohol in combination with water, or hydroxylated organosiloxane in an amount to provide a molar ratio of from about 0.02/1 to about 15/1 of hydroxyl radicals to silicon-bonded hydrogen atoms of component (b);

(d) from about 1 to about 250 parts per million of platinum ctalyst; and

(e) and amount of ketoxime compound effective to lower foam density of the formula:

where each R^4 is independently a substituted or unsubstituted monovalent hydrocarbon of from 1 to about 10 carbon atoms or both R^4 groups combined are fused for a single substituted or unsubstituted divalent hydrocarbon of from 1 to about 15 carbon atoms, X is hydrogen, a substituted or unsubstituted silyl, or a substituted or unsubstituted hydrocarbon of from 1 to 5 carbon atoms.

4,808,635

METHOD FOR MAKING A DICYCLOPENTADIENE CROSS-LINKED POLYMER AND THE PRODUCT THEREOF

Tuyen T. Nguyen, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 723,022, Apr. 15, 1985, Pat. No. 4,703,068, which is a continuation-in-part of Ser. No. 554,467, Nov. 23, 1983, abandoned. This application Jun. 10, 1987, Ser. No. 60,293

Int. Cl.[4] C08F *32/06*

U.S. Cl. 521—150 **14 Claims**

1. A transparent cross-linked polymer product comprising at least 80 percent by weight metathesis catalyst polymerized units of dicyclopentadiene, said polymer product comprising cross-linked substantially transparent polymer having a percent haze of less than 25 percent and a luminous transmittance of at least 30 for at least one of the tristimulus values, said metathesis catalyst comprising pentavalent tantalum.

4,808,636

PROCESS FOR PRODUCING POLYURETHANE ELASTOMER AND COMPOSITION AS STARTING MATERIAL THEREFOR

Joichi Saito; Hiroshi Wada, both of Yokohama; Shigehito Shibata, Sagamihara; Takashi Watabe, Yokohama; Kiyoshi Tanabe, Yokohama, and Nobuaki Kanii, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Apr. 22, 1988, Ser. No. 184,671

Claims priority, application Japan, Apr. 24, 1987, 62-100093; Sep. 14, 1987, 62-228444

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—163 **20 Claims**

1. A process for producing a non-cellular or microcellular polyurethane elastomer by reaction injection molding by using a high molecular weight active hydrogen compound component (A), a chain extender component (B) and a polyisocyanate compound component (C) as starting materials, wherein the component (A) is used in an amount of from 55 to 95% by weight based on the total amount by weight of the components (A and (B), the component (B) is used in an amount of from 5 to 45% by weight based on the total amount by weight of the components (A) and (B), and the component (C) is used in an amount of from 0.8 to 1.3 times in equivalent relative to the total equivalent of the components (A) and (B), and wherein

(I) said high molecular weight active hydrogen compound component (A) comprises

(1) at least one polyoxyalkylene polyol (a-1) having an average molecular weight per hydroxyl group of from 800 to 4000 and an average number of hydroxyl groups per molecule of from 2 to 8 and containing at least 5% by weight of oxyethylene groups at the terminal portions of its molecules,

(2) a high molecular weight amine (a-2) having from 2 to 8 active hydrogen containing groups selected from the group consisting of primary amino groups, secondary amino groups and hydroxyl groups, provided that at least one of the active hydrogen-containing groups is an amino group selected from the group consisting of primary amino groups and secondary amino groups, and an average molecular weight per active hydrogen-containing group of from 800 to 4000, and optionally

(3) a high molecular weight polyol (a-3) other than the polyalkylene polyol (a-1), wherein the total number of the primary amino groups and the secondary amino groups is from 2 to 55% based on the total number of the active hydrogen-containing groups in the constituents (a-1), (a-2) and (a-3), and the constituent (a-3) is in an amount of from 0 to 30% by weight based on the total amount by weight of the constituents (a-1), (a-2) and (a-3); and

(II) said chain extender component (B) comprises

(1) a low molecular weight polyol (b-1) having from 2 to 4 hydroxyl groups and a molecular weight of at most 400,

(2) at least one diamine (b-2) selected from aromatic and alicyclic compounds and having two primary amino groups and no amino group directly bonded to an aromatic ring, and optionally

(3) a chain extender (b-3) other than the constituents (b-1) and (b-2), having from 2 to 4 active hydrogen-containing groups selected from the group consisting of primary amino groups, secondary amino groups and hydroxyl groups, and a molecular weight of at most 400,

wherein the constituent (b-1) is in an amount of from 55 to 98% by weight based on the total amount by weight of the constituents (b-1), (b-2) and (b-3), the constituent (b-2) is in an amount of from 2 to 35% by weight based on the total amount by weight of the constituents (b-1), (b-2) and (b-3), and the constituent (b-3) is in an amount of from 0 to 40% by weight based on the total amount by weight of the constituents (b-1), (b-2) and (b-3).

4,808,637

SUPERABSORBENT COMPOSITION AND PROCESS

Franklin Boardman, Englishtown, and John M. Lesniak, Hazlet, both of N.J., assignors to Johnson & Johnson Patient Care, Inc., New Brunswick, N.J.

Filed May 14, 1987, Ser. No. 49,877

Int. Cl.[4] C08J *9/00*

U.S. Cl. 521—50.5 **20 Claims**

1. An ionically cross-linked poly (potassium) acrylate superabsorbent composition, which is substantially fully neutralized and water insoluble and which has a low residual monomer content of less than 200 ppm.

4,808,638

THIOLENE COMPOSITIONS ON BASED BICYCLIC 'ENE COMPOUNDS

Walter J. Steinkraus, Wayzata, Minn.; John Woods, Dublin, Ireland; John M. Rooney, South Glastonbury, Conn.; Anthony F. Jacobine, Meriden, Conn., and David M. Glaser, New Britain, Conn., assignors to Loctite Corporation, Newington, Conn.

Continuation-in-part of Ser. No. 917,962, Oct. 14, 1986, abandoned. This application Sep. 21, 1987, Ser. No. 99,676

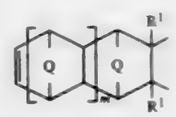
Int. Cl.[4] C08G *75/04*

U.S. Cl. 522—24 **23 Claims**

1. A curable thiol-ene formulation, said formulation being cureable to a crosslinked polymer and comprising:

(a) a polythiol,

(b) a 'ene compound having a plurality of 'ene groups of the formula,



where Q is CR^1_2, O, S, NR^1 or SO_2, R^1 is H or alkyl, and m is 0–10, said compound free of allyl, methallyl or 1-propenyl groups, wherein the thiol plus 'ene functionality is greater than four and

(c) an effective amount of a free radical initiator.

4,808,639

LIQUID CURABLE ADHESIVE COMPOSITION COMPRISING A POLYESTER RESIN AND A MICROENCAPSULATED PEROXIDE CURING AGENT

Milton Chernack, West Hempstead, N.Y., assignor to Production Previews, Inc., New York, N.Y.

Continuation of Ser. No. 886,303, Jul. 16, 1986, abandoned. This application Jul. 22, 1987, Ser. No. 77,007

Int. Cl.[4] C08K *9/10, 9/12;* C08L *63/00;* C08G *63/76*

U.S. Cl. 523—211 **7 Claims**

1. A liquid curable adhesive composition having a prolonged pot life comprising a polyester resin as a liquid curable resin; and microencapsulated peroxide as a curing agent dispersed throughout said resin in an amount sufficient to cure said resin, said microcapsules being rupturable upon the application of pressure for releasing said agent and curing said adhesive composition; said resin and said curing agent being nonreactive with said microcapsules.

4,808,640

THERMOSETTING RESIN COMPOSITIONS

Yoshitsugu Morita, and Shoichi Shida, both of Chiba, Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1987, Ser. No. 29,037
Claims priority, application Japan, Apr. 1, 1986, 61-74561
Int. Cl.[4] C08L 83/04
U.S. Cl. 523—433 **8 Claims**

1. A curable thermosetting resin composition comprising
(A) 100 parts by weight of a curable thermosetting resin;
(B) from 0.1 to 100 parts by weight, based on the weight of said composition following curing, of a material obtained by curing a reaction mixture comprising
(a) 100 parts by weight of an organopolysiloxane exhibiting a viscosity of at least 0.010 Pa.s at 25 degrees C., where the organic groups bonded to silicon are identical or different monovalent hydrocarbon radicals,
(b) from 0 to 100 parts by weight of a filler,
(c) from 0.3 to 40 parts by weight of a curing agent for said organopolysiloxane, and
(d) from 0.1 to 20 parts by weight of an alkoxy group-containing organosilicon compound represented by the formula $R^1_aSi(OR^2)_{4-a}$ where R^1 is a monovalent hydrocarbon radical or a monovalent organofunctional group consisting essentially of an epoxy, amino, methacryloxy or mercapto group that is bonded to the silicon atom of said organosilicon compound through at least one carbon atom and a is 1, 2 or 3, and
(e) from 0.001 to 5 parts by weight of a compound of either aluminum or zirconium, where said compound is an alkoxide, a phenoxide, a carboxylate, or a derivative of said compound wherein one or more of the alkoxide, phenoxide or carboxylate groups is replaced by an organic ligand which is of either a betadiketone or a o-hydroxyketone, with the proviso that when said curing agent is a hydrolyzable group-containing organosilane, ingredients (d) and (e) are added as a preformed heat reaction product,

and where ingredient (B) is dispersed in the form of a fine powder in ingredient (A).

2. A composition according to claim 1 wherein the thermosetting resin comprising ingredient (A) is an epoxy resin, phenolic resin, imide resin or silicone resin.

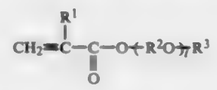
4,808,641

CONCRETE ADMIXTURE

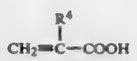
Hideo Yagi, and Toru Takeuchi, both of Sakura, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jul. 14, 1987, Ser. No. 73,145
Claims priority, application Japan, Jul. 31, 1986, 61-182881
Int. Cl.[4] C04B 24/00
U.S. Cl. 524—5 **4 Claims**

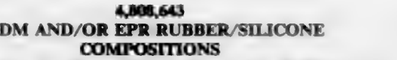
1. An admixture to be used in preparing a fresh concrete, which comprises 90 to 95 parts by weight of component A comprising a copolymer prepared by polymerizing 10 to 95 parts by weight of a compound of the general formula:



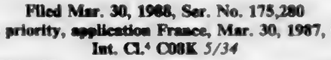
wherein R^1 is hydrogen or methyl, R^2 is lower(C2 to C4) alkylene, R^3 is hydrogen or lower(C1 to C5) alkyl and l is an integer of 1 to 100, and 90 to 5 parts by weight of a compound of the general formula:



wherein R^4 is hydrogen or methyl, or a salt thereof, 0.05 to 5 parts by weight of component B comprising a compound of the general formula:



wherein R^5 is hydrogen or alkanoyl, R^6 is hydrogen or alkyl, m is an integer of 1 to 99 and n is an integer of 1 to 15, and further wherein m+n is an integer of 2 to 100 and the units



appear randomly, and 0.01 to 10 parts by weight of component C comprising at least one compound selected from the group consisting of polyoxyethylene alkyl ether sulfate or polyoxyethylene alkylphenyl ether sulfate or a salt thereof, polyoxyethylene alkyl ether phosphate or polyoxyethylene alkylphenyl ether phosphate or a salt thereof, and alkylbenzenesulfonic acid or a salt thereof.

4,808,642

CHLORINE-CONTAINING RESIN MOLDING AND MATERIAL FOR USE THEREWITH

Hideki Kitada; Masami Takahashi; Toshiyuki Yagi; Masaaki Sukeda, and Tadashi Nakayama, all of Osaka, Japan, assignors to Takiron Co., Ltd., Osaka, Japan

Filed Apr. 25, 1986, Ser. No. 856,683
Claims priority, application Japan, Apr. 26, 1985, 60-91633; Feb. 24, 1986, 60-38643; Feb. 24, 1986, 61-38644; Mar. 14, 1986, 61-57735
Int. Cl.[4] C08K 5/00; C09D 3/76
U.S. Cl. 524—87 **8 Claims**

1. An opaque chlorine-containing resin for molding, the improvement comprising that the resin for said molding is stabilized by aminocarboxylic ester and an epoxy compound and contains as a coloring agent a denatured acryl modifier which contains no metallic ion, said denatured acryl modifier being selected from the group consisting of a copolymer of methymethacrylate with acrylic ester, a polymer of methylmethacrylate after copolymerization of styrene with alkylacrylate, a copolymer of styrene with acrylacrylate after polymerization of methylmethacrylate, and a polymer obtained after polymerization of methylmethacrylate, thereafter polymerization of styrene with alkylacrylate and finally further polymerization of methylmethacrylate.

4,808,643

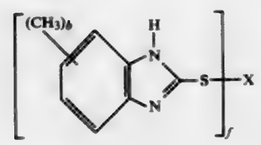
EPDM AND/OR EPR RUBBER/SILICONE COMPOSITIONS

Guy Lemoine, Le Havre; Robert Lacas, Montivilliers, and Meyer Soria, Villeurbanne, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie and Compagnie de Raffinage et de Distribution Total France, Levallois-Perret, both of, France

Filed Mar. 30, 1988, Ser. No. 175,280
Claims priority, application France, Mar. 30, 1987, 87 04591
Int. Cl.[4] C08K 5/34
U.S. Cl. 524—87 **10 Claims**

1. A rubber/silicone composition of matter, comprising:
(A) 100 parts of a mixture of:
(A_1) 95 to 30 parts of an ethylene-propylene-diene terpolymer or an ethylene-propylene copolymer, or admixture thereof, and
(A_2) 5 to 70 parts of a diorganopolysiloxane resin having a viscosity of at least 10^6 mPa.s at 25° C.;
(B) 0.5 to 10 parts of a compound of the formula:

(1)



in which b=0 or 1, X is a metal cation or the hydrogen atom, f is an integer ranging from 1 to 3 and is equal to the number of positive charges borne by the cation, and f=1 if X is the hydrogen atom;
(C) 0.1 to 10 parts of an aromatic secondary amine compound;
(D) 5 to 200 parts of an inorganic filler material;
(E) 0.1 to 30 parts of a diorganopolysiloxane oil having a viscosity of from 10 to 5,000 mPa.s at 25° C., in which the organic radicals are methyl, vinyl, phenyl or 3,3,3-trifluoropropyl radicals, at least 50 mole % of the organic radicals being methyl radicals; and
(F) 0.1 to 7 parts of an organic peroxide.

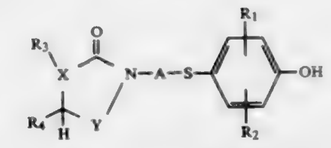
4,808,644

SUBSTITUTED (4-HYDROXYPHENYLTHIOALKYL) DERIVATIVES

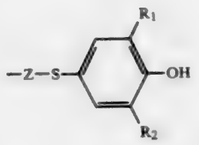
John D. Spivack, Spring Valley; Ramanathan Ravichandran, and Stephen D. Pastor, both of Yonkers, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 674,217, Nov. 23, 1984, Pat. No. 4,692,532. This application Jan. 29, 1987, Ser. No. 8,444
Int. Cl.[4] C08K 5/34; C07D 233/80, 481/04
U.S. Cl. 524—94 **4 Claims**

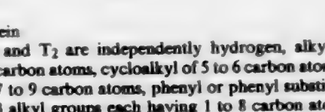
1. A composition of matter comprisng an organic material subject to oxidative thermla and actinic degradation stabilized with an effective stabilizing amount of a compound of the formula



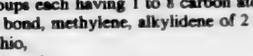
wherein R_1 and R_2 iondependently are alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl or phenyl substituted by alkyl of 1 to 12 carbon atoms,
R_3 and R_4 independently are hhydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl, phenyl substituted by alkyl of 1 to 12 carbon atoms or the group



or together can also form cycloalkyl of 5 to 6 carbon atoms, phenyl pyrrolidine or piperidine;
A is alkylene of 1 to 18 carbon atoms or substituted alkylene fo the formula $(R_5)(R_6)C>$ wherein R_5 and R_6 independently are hydrogen, alkyl of 1 to 12 carbon atoms or phenyl;



X is —CH— or nitrogen;



Y is $-CH_2-$ or —C—; and

and
Z is A or a direct bond.

4,808,645

6-(1-HYDRO-2,2,6,6-TETRAALKYL-PIPERIDINE-4-OXY)-DIBENZODIOXAPHOSPHEPIN AND DIOXAPHOSPHOCIN PROCESS STABILIZERS

Ramanathan Ravichandran, Yonkers, and John D. Spivack, Spring Valley, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 98,757, Sep. 17, 1987, abandoned, which is a continuation of Ser. No. 9,116, Jan. 29, 1987, abandoned, which is a continuation of Ser. No. 728,363, Apr. 29, 1985, abandoned. This application Mar. 30, 1988, Ser. No. 180,662
Int. Cl.[4] C08K 5/34; C07F 9/65
U.S. Cl. 524—99 **18 Claims**

1. A compound of formula I

(I)

wherein
T_1 and T_2 are independently hydrogen, alkyl of 1 to 20 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, aralkyl of 7 to 9 carbon atoms, phenyl or phenyl substituted by 1 to 3 alkyl groups each having 1 to 8 carbon atoms,
E is a direct bond, methylene, alkylidene of 2 to 12 carbon atoms or thio,
L is hydroxyl, and
R is hydrogen or methyl.

4,808,646

MALEIMIDE-MALEAMIC ACID RESIN SOLUTION

Ronald H. Dahms, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

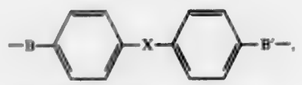
Continuation-in-part of Ser. No. 944,158, Dec. 18, 1986. This application Jan. 15, 1987, Ser. No. 62,805
Int. Cl.[4] C08F 226/06
U.S. Cl. 524—104 **11 Claims**

1. An actone-soluble bismaleimide composition comprising a mixture of at least one bismaleimide and a solubilizing amount of at least one maleamic acid, wherein said bismaleimides and maleamic acids are of the formula

where A is —B—.



or



where B, B' and X are independently —O—, —SO_2—, —CO—, or



R_3 and R_4 being independently hydrogen, C_1–C_3 alkyl, or halogenated C_1–C_3 alkyl and n ranges from 0 to 6; and where R_1 and R_2 are independently the maleamic acid group, —NH-COCH=CHCOOH or the maleimide group,



and wherein less than about 35% of the R1 and R2 groups are maleamic acid groups.

4,808,647

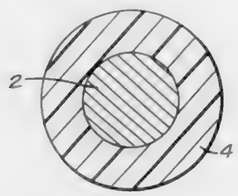
CROSSLINKABLE FLAME RETARDANT COMPOSITION OF POLYOLEFIN AND POLYPHENYLENE ETHER

Visvaldis Abolins, Delmar, N.Y.; Joseph E. Betts, Westport, Conn.; Fred F. Holub, Schenectady, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Selkirk, N.Y.

Continuation of Ser. No. 525,782, Aug. 23, 1983, abandoned. This application Jul. 18, 1986, Ser. No. 888,561

Int. Cl.[4] C08K *5/52, 5/51, 5/36*

U.S. Cl. 524—141 **15 Claims**



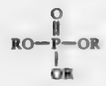
1. A heat or radiation curable flame retardant composition, comprising an admixture of

(a) at least 20 parts by weight of a nonrubbery crosslinkable olefinic polymer based on 100 parts of the combined polymers in the composition;

(b) a flame retardant combination consisting of

(i) at least 5 parts of a polyphenylene ether resin based on 100 parts of (a) and (b) (i) combined,

(ii) an organic phosphate compound having the formula



where R is the same or different and is alkyl, cycloalkyl, aryl, alkyl substituted aryl, halogen substituted aryl, aryl substituted alkyl, halogen, or a combination of any of the foregoing, provided at least one R is aryl, and

(iii) a stable brominated material consisting essentially of a tetrabromobisphenol A oligomeric polycarbonate alone or in combination with a synergist which enhances the flame retardancy of (b) (iii); and

(c) an effective amount of a crosslinking agent, and wherein component (a) is present in an amount greater than component (b) (i).

4,808,648

ENHANCED OIL RECOVERY COMPOSITION

Wen-Ching Hsieh, Chino Hills, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 20, 1984, Ser. No. 673,421

Int. Cl.[4] C08K *5/41*

U.S. Cl. 524—156 **18 Claims**

1. A stable latex composition comprising:

water;

at least one polymer comprising from about 45 to about 65 weight percent ethylacrylate monomer residue, from about 10 to about 45 weight percent methylacrylic acid monomer residue, and from about about 20 to about 30 weight percent acrylic acid monomer residue;

from about 2 to about 10 parts per 100 parts of monomer of at least 1 nonylphenol polyethylene oxide ether sulfate, wherein the polyethylene oxide adduct of the nonylphenol polyethylene oxide ether sulfate is comprised of at least about 20 moles of ethylene oxide monomer residue; and

wherein the polymer and the nonylphenol polyethylene oxide ether sulfate are present at an amount sufficient to provide a viscosity less than about 50 centipoise at about 70° F.

4,808,649

BETA-KETOESTER SUBSTITUTED DIORGANOPOLYSILOXANES AND PVC STABILZERS COMPRISED THEREOF

Michel Gay, and Edith Canivenc, both of Lyons, France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Aug. 12, 1987, Ser. No. 84,220

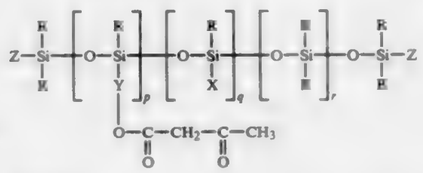
Claims priority, application France, Aug. 12, 1986, 86 11785

Int. Cl.[4] C08K *5/24*

U.S. Cl. 524—264 **7 Claims**

1. A diorganopolysiloxane of the formula

(1)



in which:

the symbols R are radicals wherein at least 80% of the number of radicals represented by R are methyl radicals with the remainder being selected from at least one of a C_1–C_4 alkyl, 3,3,3-trifluoropropyl, vinyl or phenyl radical;

the symbols Y, which may be identical or different, are selected from the group of C_1–C_{18} straight chain alkylene radicals, C_1–C_{18} branched chain alkylene radicals, C_1–C_{18} straight chain alkylene radicals with a polyethylene oxide segment, C_1–C_{18} branched chain alkylene radicals with a polyethylene oxide segment, C_1–C_{18} straight chain alkylene radicals with a polypropylene oxide segment and C_1–C_{18} branched chain alkylene radicals with a polypropylene oxide segment;

the symbols X, which may be identical or different, are each a Y—OH or Y—OCOR' radical, wherein Y is as defined above and R' is a C_1–C_{18} straight or branched chain alkenyl or alkyl radical;

the symbols Z, which may be identical or different, are each a radical R as defined above, a radical



wherein Y is as defined above, or OR', wherein R' is as defined above;

p is an integer ranging from 1 to 50;

q is an integer ranging from 0 to 30; and

r is an integer ranging from 0 to 500.

4,808,650

HIGH CLARITY POLYOLEFIN COMPOSITIONS AND CLARIFYING ADDITIVE THEREIN

George R. Titus, Raleigh, and Joel L. Williams, Cary, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Mar. 14, 1988, Ser. No. 168,054

Int. Cl.[4] C08K *5/15*

U.S. Cl. 524—108 **2 Claims**

1. A composition comprising a polyolefin and from about 0.4% to about 0.6% by weight 3,4,3',4'-tetrafluorodibenzylidene sorbitol.

4,808,651

SOLUTIONS OF FLUOROPOLYMERS, AND THEIR USE

Peter Blickle, Kelkheim; Klaus Hintzer; Gernot Löhr, both of Burgkirchen, and Werner Schwertfeger, Langgöns, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 15, 1987, Ser. No. 96,653

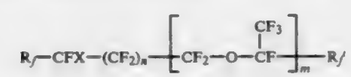
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1986, 3631561

Int. Cl.[4] C08J *5/06*

U.S. Cl. 524—366 **25 Claims**

1. A solution of a fluoropolymer in a halogen-containing solvent, wherein the solvent has the formula (I)

(I)



in which

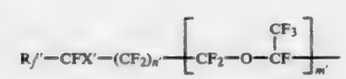
R_f denotes F or perfluoroalkyl having 1–3 carbon atoms,

X denotes hydrogen, F, Cl, Br or I,

n denotes an integer from 0–10,

m denotes a number from 0–5, and

R_f equals —CF_2—O—CFY—CF_2Y, —CFY—CF_2Y or —CF_2Y, or denotes



in which R_f', n' and m' have the same meaning as R_f, n and m, X' denotes hydrogen, Cl, Br or I, and Y denotes Cl or Br, with the proviso that the boiling point of this solvent at atmospheric pressure is at most 190° C. if at least one of the radicals X, X' or Y does not represent hydrogen, and with the further proviso that, where R_f equals —CFY—CF_2Y or CF_2Y, m denotes only 0.

4,808,652

CROSSLINKER COMPOSITIONS COMPRISING AMINO RESINS, EPOXIES AND STYRENE ALLYL ALCOHOL COPOLYMERS

Kenneth J. Gardner, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 8, 1988, Ser. No. 203,978

Int. Cl.[4] C08L *63/02;* **C08K** *5/05*

U.S. Cl. 524—376 **14 Claims**

1. A composition of matter comprising from about 40 to about 70 parts by weight of an etherified amino resin, from about 15 to about 40 parts by weight of an epoxy resin and from about 5 to about 20 parts by weight of a styrene allyl alcohol copolymer, wherein the amino resin is added to a solution of styrene allyl alcohol copolymer the epoxy resin is then added and the mixture is heated to a temperature in the range of 60° to 120° C. until a clear solution is obtained.

4,808,653

COATING COMPOSITION CONTAINING HYDROGEN SILSESQUIOXANE RESIN AND OTHER METAL OXIDE PRECURSORS

Loren A. Haluska; Keith W. Michael, both of Midland, and Leo Tarhay, Sanford, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 938,677, Dec. 4, 1986, Pat. No. 4,753,855. This application Mar. 10, 1988, Ser. No. 166,587

Int. Cl.[4] C08K *5/04*

U.S. Cl. 524—398 **11 Claims**

1. A composition of matter comprising a solvent solution of a mixture of hydrogen silsesquioxane resin and a metal oxide precursor selected from the group consisting of an aluminum alkoxide, titanium alkoxide, and zirconium alkoxide.

4,808,654

FILLERS

Nicholas Rolfe, Frodsham; Richard D. A. Woode, Northwich, and Roger N. Rothon, Guilden Sutton, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jul. 1, 1986, Ser. No. 880,731

Claims priority, application United Kingdom, Jul. 4, 1985, 8516989; Sep. 30, 1985, 8524057

Int. Cl.[4] C08K *3/10, 3/26*

U.S. Cl. 524—424 **8 Claims**

1. A solid or fluid matrix containing, as a filler, a material of empirical composition $MgO(CO_2)_b(H_2O)_c$, where b is any value in the range 0.5 to 1.1 and c is any value in the range 0 to 2, and which has an amorphous content of at least 75% by weight.

4,808,655

AQUEOUS BINDER DISPERSIONS FOR THE PREPARATION OF PAINTS AND FINISHES

Erich Gulbins, Heidelberg; Graham E. McKee, Weinheim, and Gregor Ley, Wattenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 28, 1987, Ser. No. 90,450

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1986, 3629581

Int. Cl.[4] C08L *51/00*

U.S. Cl. 524—504 **4 Claims**

1. An aqueous binder dispersion for the preparation of paints

VOL 1099 ISS 4 FEB 28 1989 UMI

and finishes, the said binder consisting essentially of the following components:

(A) from 0.5 to 50% by weight, based on the binder, of a phenolic resin precondensate;

(B) from 20 to 70% by weight, based on the binder, of a copolymer containing

(b_1) at least one comonomer selected from the group consisting alkyl acrylates and alkyl methacrylates as the predominant copolymerized unit(s), and

(b_2) at least one comonomer selected from the group consisting of vinylesters of C_2–C_4 carboxylic acids, C_1–C_4-dialkylmaleates and fumarates, vinylaromatics, acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, vinyl ethers of 3 to 10 carbon atoms, vinyl halides, and polyolefinically unsaturated compounds, as the additional copolymerized unit(s), said copolymer (B) containing from 0.1 to 50%, based on (B), of one or more functional groups selected from the group consisting of the glycidyl, carbonyl, N-methylol, N-alkoxymethyl, amino and hydrazo groups; and

(C) from 10 to 70 by weight, based on the binder, of a graft elastomer consisting of diene polymer latex particles grafted with a copolymer containing at least one comonomer selected from the group consisting of styrene, acrylonitrile, C_1–C_6-alkylacrylates, and C_1–C_6-alkyl methacrylates, as the predominant copolymerized unit(s).

4,808,656

HIGH SOLIDS COATING COMPOSITIONS

Charles M. Kania, Tarentum, and Samuel Porter, Jr., Natrona Heights, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 4, 1987, Ser. No. 45,332

Int. Cl.[4] C08L *61/00*

U.S. Cl. 524—512 **15 Claims**

1. A curable high solids coating composition containing at least 60 percent by weight resin solids and capable of being deposited as a non-yellowing clear coat comprising a reactive acrylic polymer formed from polymerizing:

(A) from 10 to 60 percent by weight of a polymerizable alpha, beta-ethylenically unsaturated monomer containing a functional group which participates in the curing of the coating composition,

(B) from 40 to 90 percent by weight of a polymerizable alpha, beta-ethylenically unsaturated monomer free of functional groups;

said acrylic polymer being prepared in organic solvent by solution polymerization techniques in the presence of a t-amylperoxy compound and a 2,4-diaryl-1-alkene.

4,808,657

RUBBERY ADHESIVE CEMENTS

Robert J. Brown, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 587,711, Mar. 8, 1984, abandoned. This application Oct. 3, 1986, Ser. No. 914,574

Int. Cl.[4] C08L *7/00, 9/00, 9/02, 15/02*

U.S. Cl. 524—518 **13 Claims**

1. A rubbery adhesive cement comprising:

(A) a solvent amenable to ready evaporation,

(B) a vulcanizable rubbery polymer blend dissolved in said solvent wherein said blend is comprised of, based on 100 parts thereof;

(a) 5 to 50 parts by weight of at least one rubbery conjugated diene polymer having 25% to 55% side chain unsaturation and having a Mooney viscosity of from 80 to 150 ML4 at 100° C. as measured according to ATM D1646, and correspondingly

(b) 50 to 95 parts by weight of at least one other rubbery polymer and

(c) an unreactive tackifying resin in an amount effective to contribute to the desired adhesiveness of said rubbery adhesive cement.

4,808,658

AMINOURETHANES, PREPARATION AND USE THEREOF

Gerd Walz, Wiesbaden; Michael Hönel, Mainz; Gerhard Brinciöpke, Frankfurt am Main; Walter Sprenger, Dieburg; Manfred Finke, Kelkheim, and Rüdiger Lenz, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst AG, Fed. Rep. of Germany

Continuation of Ser. No. 13,404, Feb. 11, 1987, abandoned. This application Mar. 29, 1988, Ser. No. 174,726

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1986, 3604434; Jul. 19, 1986, 3624454

Int. Cl.[4] C08G *18/38*

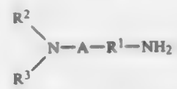
U.S. Cl. 524—591 **22 Claims**

1. An aminourethane comprising structural units derived from (α) polyamines of the formula (I)



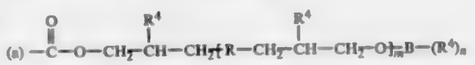
(I)

in which R^1 denotes a divalent hydrocarbon radical of 2 to 18 carbon atoms, and A is a chemical bond or $—(R^1—NH)_r—R^1—NH—$, in which r is zero or a whole number from 1 to 6 and R^1 has the above meaning, structural units derived from (β) oligomeric or polymeric compounds which contain at least two (1) terminal 2-oxo-1,2-dioxolane groups, and structural units derived from compounds (acting as chain stoppers) (γ) of the group consisting of partially blocked polyisocyanates, monoepoxides and of amines of the formula (I')



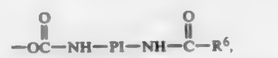
(I')

in which R^1 and A have the above meaning, and R^2 and R^3 denote alkyl of 1 to 8 carbon atoms or hydroxyalkyl of 1 to 8 carbon atoms in the alkyl radical, and R^2 and R^3 can also form a cyclic ring compound, or R^2 denotes hydrogen and R^3 is at least one of the radicals (a) to (d):

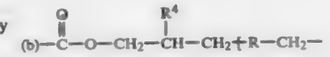


(a)

in which R is selected from the group consisting of a diglycidyl ether and diglycidyl ether optionally containing $—NR^2$ groups wherein R^2 is hydrogen or a divalent hydrocarbon, R^4 represents hydroxyl or the radical

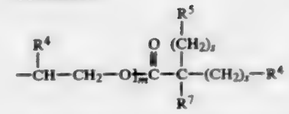


in which PI is the radical of a polyisocyanate, R^6 is the radical of an aliphatic, cycloaliphatic or alkylaromatic monohydric alcohol, of an aminoalcohol, of a ketoxime, of a CH— or NH—acidic compound, B denotes the radical of a polyol, m is a whole number from 1 to 3 and n is a whole number from 1 to 6, or

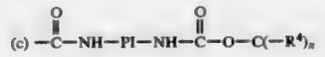


(b)

-continued

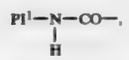


in which R, R^4 and m have the previously mentioned meaning, R^5 is hydrogen or R^4, R^7 denotes an alkyl radical of 1 to 8 carbon atoms and s represents a whole number from 1 to 6,



(c)

(d) the groups $R^8—CHOH—CH_2—O—CO—$ or $R^8—CHOH—CH_2—$ in which R^8 is hydrogen, alkyl of 1 to 18 carbon atoms or radicals of glyidyl esters or ethers or represents the group



in which PI^1 is the radical of a partially blocked polyisocyanate.

4,808,659

ADHESIVE COMPOSITION COMPRISING ORGANOMETALLIC POLYMER

Yoshio Nishihara; Noriyuki Isobe, both of Ube, and Satoshi Kotera, Hirakata, all of Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Dec. 8, 1986, Ser. No. 939,058

Claims priority, application Japan, Dec. 13, 1985, 60-279229; Mar. 31, 1986, 61-70890

Int. Cl.[4] C08J *3/02*; C08G *77/04*

U.S. Cl. 524—701 **10 Claims**

1. An adhesive composition comprising (1) a polymetallocarbosilane or a polycarbosilane and (2) at least one polyorganosiloxane selected from the group consisting of silicone oils, silicone rubbers and silicone varnishes.

4,808,660

LATEX CONTAINING COPOLYMERS HAVING A PLURALITY OF ACTIVATABLE FUNCTIONAL ESTER GROUPS THEREIN

Walter A. Schmeing, Akron, Ohio, and Woodrow W. White, Orlando, Fla., assignors to GenCorp Inc., Akron, Ohio

Continuation-in-part of Ser. No. 848,018, Apr. 3, 1986, abandoned. This application Mar. 12, 1987, Ser. No. 25,249

Int. Cl.[4] C08F *20/38, 20/34*

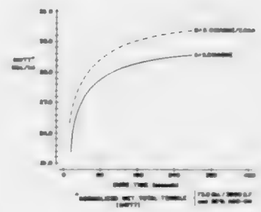
U.S. Cl. 524—812 **4 Claims**

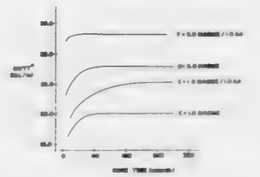
1. A latex, comprising:

an emulsion copolymer in the form of a solid, said emulsion copolymer made by polymerizing (1) at least one latex forming monomer (2) at least one functional type monomer having an activatable methyl, ethyl, propyl, or butyl ester group and a vinyl group with (3) at least one functional anionic type monomer, wherein said latex forming monomer is a conjugated diene, or a conjugated diene and at least one different conjugated diene comonomer having from 4 to 8 carbon atoms, or a conjugated diene and a vinyl substituted aromatic comonomer having from 8 to 12 carbon atoms, or a vinyl ester having a 1 to 8 carbon atom alkyl ester portion, or a vinyl ester having a 1 to 8 carbon atom alkyl ester portion and at least one ester of a mono or a dicarboxylic acid comonomer having from 2 to 12 carbon atoms, or ethylene, or ethylene and a vinyl chloride comonomer, or ethylene and a vinyl ester comonomer having a 1 to 8 carbon atom alkyl ester portion,

wherein the total amount of said functional monomers is from 0.5% to about 15% by weight based upon the total weight of said emulsiion copolymer forming monomers,

wherein the amount of said latex forming monomer is from about 85% to about 99.5% by weight based upon the total weight of said emulsion copolymer forming monomers,





wherein the pH of said latex is from about 2.0 to about 7.0,

wherein said latex contains from about 10 percent to about 60 percent by weight of said copolymer solids,

and wherein said anionic type functional monomer is an acrylamide or a 1 to 2 carbon atom alkyl derivative thereof, a methacrylamide or a 1 to 2 atom alkyl derivative thereof; or combinations thereof.

4,808,661

RUBBER DISPERSED COPOLYMER RESIN

Muse Iwamoto, Yokohama; Norifumi Ito, Kamakura; Kazuo Sagazaki, Yokohama; Tetsuyuki Matsubara, Yokohama, and Toshihiko Ando, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Aug. 25, 1986, Ser. No. 899,867

Claims priority, application Japan, Aug. 27, 1985, 60-186638; Dec. 27, 1985, 60-293192

Int. Cl.[4] C08L *51/04*

U.S. Cl. 525—73 **6 Claims**

1. A rubber dispersed copolymer resin composition comprising:

(a) a dispersed phase which is formed by the occlusion of a copolymer of a styrene monomer, an acrylonitrile monomer, and a maleimide monomer in a rubber, by the graft-copolymerization of said monomers to said rubber, or by the occlusion of a copolymer of said monomers in said graft copolymer, the crosslinking degree index of the dispersed phase being 4 to 11; and

(b) a continuous phase which is formed of a copolymer of an additional portion of said monomers, the reduced viscosity of a 0.5 weight percent solution of the continuous phase forming copolymer in dimethylformamide being 0.5 to 1.0 dl/g at 30° C.;

the portion of said copolymer (GCP) which is occluded and grafted in said dispersed phase being 50 to 100 parts by weight based on 100 parts by weight of rubber;

said rubber being contained in an amount of 3 to 20 weight percent, said GCP being 1.5 to 20 weight percent and said copolymer in the continuous phase being 95.5 to 60 weight percent, said weight percentages being based on the total weight of said resin composition;

wherein the total amount of monomer in both said GCP and said copolymer in the continuous phase is 100 weight percent, said GCP and said copolymer in the continuous phases comprising 30 to 80 weight percent of said styrene monomer, 10 to 50 weight percent of said acrylontrile monomer, 1 to 25 weight percent of said maleimide methacrylic ester monomers and acrylic ester monomers; and said rubber is selected from the group consisting of polybutadiene rubber, acrylonitrile-butadiene copolymer rubber, styrene-butadiene copolymer rubber, acrylic rubber and ethylene-propyrene-diene terpolymer rubber, and is copolymerized after being dissolved in a portion or the whole portion of one or more of the monomers without the use of a rubber latex.

4,808,662

PEELABLE SEALS USING POLYBUTYLENE

Charles C. Hwo, Sugarland, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 879,667, Jun. 27, 1986, Pat. No. 4,759,984. This application Oct. 13, 1987, Ser. No. 107,603

Int. Cl.[4] C08L *23/12, 23/20, 51/06, 23/08*

U.S. Cl. 525—74 **6 Claims**

1. A new composition of matter for producing a peelable heat seal between substrates on which it is carried, comprising a blend of:

(a) about 6 to about 25 weight percent of polybutylene having a melt index of about 0.1 to about 500;

(b) about 2 to about 15 weight percent of polypropylene; and

(c) about 60 to about 92 weight percent of a blend of anhydride modified polyethylene with EVA copolymers; and wherein

said blend, when coated onto nylon at a heat sealing temperature of between about 320° F. and about 410° F. as determined at the sealing jaws, affords a peel strength of about 0.4 to about 5 pounds per inch between blend layers heat sealed at said heat sealing temperatures.

4,808,663

METHOD OF PREPARING ACRYLIC POLYMERS CONTAINING HYDROLYZABLE MOIETIES FROM ORGANOSILANE COMPOUNDS

Wen H. Chang, Gibsonia; Paul J. Prucnal; John R. Peffer, both of Pittsburgh; Edward L. Dufford, Sarver, and Ronald R. Ambrose, Allison Park, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 728,973, Apr. 30, 1985, Pat. No. 4,714,738. This application Aug. 24, 1987, Ser. No. 88,731

The portion of the term of this patent subsequent to Nov. 18, 2003, has been disclaimed.

Int. Cl.[4] C08F *8/00*

U.S. Cl. 525—100 **3 Claims**

1. A method of preparing an ungelled acrylic resin composition, curable in the presence of atmospheric moisture and a catalyst at a temperature of less than or equal to 121 degrees C., by reacting components comprising:

(A) an acrylic polyol; and

(b) an organosilicon-containing material comprising at least 10 percent by weight of said organosilicon-containing material of a compound corresponding to the formula $R\text{-}Si(OR^6)_3$ wherein

R independently represents OR^6, hydrogen, a C_1–C_{10} group joined to Si through an Si-C linkage, or a OR^7 group in which R^7 represents alkyl having at least 4 carbon atoms, aryl, alkylaryl, arylalkyl, aryloxyalkyl, or alkyloxyalkyl, and

R^6 independently represents a C_1–C_3 alkyl group.

4,808,664

MOISTURE CURABLE POLYISOBUTYLENES

John C. Saam, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 11, 1987, Ser. No. 132,449

Int. Cl.[4] C08F *8/00*

U.S. Cl. 525—106 **10 Claims**

1. A moisture curable composition comprising an organosiloxy-terminated isobutylene oligomer exhibiting a number average molecular weight of from 1,000 to 100,000, wherein the terminal units of said oligomer are



at least 95 percent of the non-terminal repeating units of said oligomer are

$$-C(CH_3)_2CH_2-,$$

and any remaining repeating units other than the residue of the initiator-chain transfer agent used to polymerize the isobutylene are derived from ethylenically unsaturated hydrocarbons that are copolymerizable with isobutylene, the R substituents represent identical or different monovalent hydrocarbon radicals or halogenated monovalent hydrocarbon radicals, R' represents an alkylene radical containing from 2 to 10 carbon atoms, X represents a hydrolyzable group that is bonded to silicon by means of an oxygen atom or a nitrogen atom and n represents an integer from 1 to 5, inclusive.

4,808,665

CROSSLINKED BLENDS

Raman Patel, Akron; Yun L. Wang, Wadsworth, and Sabet Abdou-Sabet, Akron, all of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 13, 1987, Ser. No. 107,210

Int. Cl.[4] C08L *23/26, 23/16, 23/04, 9/00*

U.S. Cl. 525—133 **10 Claims**

1. A shaped article comprising a blend of rubber and plastic, wherein the rubber is a homopolymer or copolymer from conjugated diene monomer, or a copolymer of ethylene and propylene with a minor proportion of non-conjugated diene monomer, the rubber is vulcanized with a phenolic curative and is in the form of discrete vulcanized particles dispersed in a continuous phase of the plastic and the plastic is crystalline polymer or copolymer fronm ethylene monomer, the blend having been exposed to free-radical crosslinking after shaping of the article, so as to convert the blend from a thermoplastic to a thermoset.

4,808,666

RUBBER VULCANIZATION SYSTEM

Martin P. Cohen, Akron, and Richard M. D'Sidocky, Ravenna, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 23,328, Mar. 9, 1987, Pat. No. 4,755,320. This application Dec. 28, 1987, Ser. No. 138,278

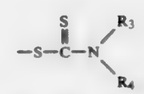
Int. Cl.[4] C08L *9/00*

U.S. Cl. 525—232 **9 Claims**

1. A composition comprising a sulfur vulcanizable diene rubber and a vulcanization composition, said vulcanization composition comprising: (a) a morpholine polysulfide containing from 2 to 5 sulfur atoms and (b) a dithiocarbamyl triazine of the structural formula:



wherein X, Y and Z are the same or different radicals selected from the group consisting of halogen, alkoxy of 1–8 carbon atoms, the radical —S—R wherein R can be from 1–8 carbon atoms, the radical $-N-R^1-R^2$ wherein R^1 and R^2 can be the same or different radicals of 1 to 8 carbon atoms or R^1 and R^2 taken together complete with the nitrogen atom to which they are attached can form a six membered ring which may contain oxygen as a heteroratom, and a dithiocarbamyl radical of the formula:



wherein R^3 and R^4 are the same or different radicals selected from alkyl of 1 to 8 carbon atoms or R^3 and R^4 taken together with the nitrogen atom to which they are attached form a six membered ring which may contain oxygen as a heteroatom: with the proviso that at least one of X, Y or Z is always a dithiocarbamyl radical and (c) sulfur; wherein the weight percent of component (a) can range from 20 to 98%, the weight percent of component (b) can range from 2 to 40% and the weight percent of component (c) can range from 0 to 70% based on the total weight of the composition with the proviso that the weight percent of (a) is always equal to or greater than the weight percent of (b).

4,808,667

METHOD FOR PRODUCING AN α-OLEFIN BLOCK COPOLYMER

Nobuaki Goko; Yumito Uehara, and Yasuhiro Nishihara, all of Kurashiki, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

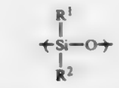
Filed Jul. 20, 1987, Ser. No. 75,619

Claims priority, application Japan, Jul. 22, 1986, 61-172422; Jul. 23, 1986, 61-173456

Int. Cl.[4] C08F *297/08*

U.S. Cl. 525—247 **5 Claims**

1. A method for producing an α-olefin block copolymer, which comprises polymerizing propylene alone or together with a small amount of other α-olefin in the presence of a catalyst comprising a titanium-containing solid catalyst component and an organoaluminum compound, and then polymerizing the resulting propylene polymer with an α-olefin other than propylene, alone or together with propylene in a gas phase without deactivating the catalyst, characterized in that the gas phase polymerization is conducted in the presence of an additive consisting essentially of a polysiloxane in an amount of from 1×10^{-6} to 0.1 by weight ratio relative to the weight of the propylene polymer obtained in the first step, wherein said polysiloxane consists essentially of repeating units of the formula:



wherein each of R^1 and R^2 is a hydrogen atom, an alkyl group having from 1 to 20 carbon atoms, aryl group or a halogen atom, and a degree of polymerization of from 2 to 3,000.

4,808,668

CARBOXYLATE POLYMERS AND PROCESSES FOR THEIR PREPARATION AND USE

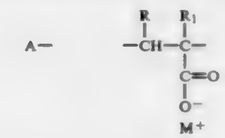
John V. Carioti, Baldwinsville, and Richard M. Jobbins, Marcellus, both of N.Y., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 699,212, Jan. 7, 1985, abandoned. This application Oct. 23, 1986, Ser. No. 921,825

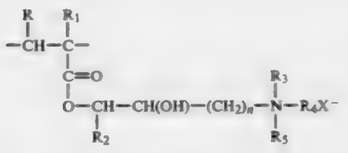
Int. Cl.[4] C08F *8/30, 30/04*

U.S. Cl. 525—329.9 **29 Claims**

1. A high molecular weight, cationic, water-soluble, carboxylate containing polymer comprising the following polymeric units randomly distributed in the polymer



wherein R and R_1 are hydrogen, methyl or ethyl and M^+ is a cation or hydrogen, and



wherein R and R_1 are as defined above, R_2 is selected from the group consisting of hydrogen and alkyl groups having from 1 to 3 carbon atoms; R_3, R_4 and R_5 are alkyl groups having from 1 to 8 carbon atoms; n is an integer of 1 to 4, the total of n and the number of carbon atoms in R_2 not to exceed four, and X is an anion, the percentage of "B" polymer units being at least 50 mole percent based on the total mole amount of "A" and "B" units.

4,808,669

SULFUR VULCANIZATION SYSTEM FOR SATURATED ELASTOMERS HAVING ACTIVE HALOGEN-CONTAINING CURE SITES

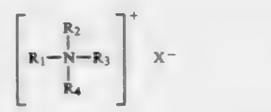
John M. Hoyt, Cincinnati, and Steven D. Blazey, Akron, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 938,667, Dec. 5, 1986, abandoned. This application Jun. 6, 1988, Ser. No. 202,859

Int. Cl.[4] C08F *8/34*

U.S. Cl. 525—330.4 **8 Claims**

1. A composition of matter consisting essentially of a saturated elastomer having an active halogen-containing cure site monomer incorporated therein and selected from the group consisting of copolymers of ethylene and vinyl ester of from 3 to 6 carbon atoms and poly(ethyl acrylate) and copolymers of ethyl acrylate with n-butyl acrylate, 0.05 to 2.5 phr sulfur, and 0.05 to 7 phr quaternary ammonium salt of a mineral acid which corresponds to the formula



wherein R_1, R_2, R_3, and R_4 are hydrocarbon radicals having

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from 1 to 18 carbon atoms and X^- is Cl^-, Br^-, I^-, HSO_4, or $H_2PO_4^-$, or $H_2PO_4^-$.

4,808,670

PROCESS FOR CROSS-LINKING OF COPOLYMERS COMPRISING ETHYLENE AND A HYDROXYALKYL ESTER

Jacques Nury, Pau, and Serge Nawrot, Beaumont-Le-Roger, both of France, assignors to Atochem, France

Continuation of Ser. No. 784,270, Oct. 4, 1985, abandoned. This application Apr. 14, 1987, Ser. No. 38,429
Claims priority, application France, Oct. 10, 1984, 84 15629
Int. Cl.[4] C08F 8/42
U.S. Cl. 525—370 **8 Claims**

1. A process for cross-linking a copolymer consisting essentially of about 60 to 99.5% by weight of ethylene or of a mixture of ethylene with up to an equal part by weight of another ethylenically unsaturated monomer and about 0.5 to 40% by weight of a hydroxyalkyl ester comprising reacting in the absence of solvent said copolymer with about 0.5 to 5% by weight, based on the weight of said copolymer of an organometallic compound of a metal of Group IVA or IVB of the Periodic Table for a time at a temperature between about ambient temperature and 300° C. sufficient to effect cross-linking.

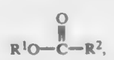
4,808,671

CATALYTIC METHOD OF PREPARING CARBOXY DERIVATIVES OF POLYPHENYLENE ETHERS

Timothy M. Sivavec, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 21, 1988, Ser. No. 184,328
Int. Cl.[4] C08G 65/48
U.S. Cl. 525—397 **19 Claims**

1. A method for preparing a carboxy derivative of a polyphenylene ether which comprises contacting said polyphenylene ether at a temperature in the range of about 225°–350° C. with at least one ester of the formula



(I)

wherein R^1 is an alkyl or fluoroalkyl radical containing about 1–6 carbon atoms or an unsubstituted or substituted aryl radical containing about 6–10 carbon atoms and R^2 is an organic radical containing at least one additional carboxylic acid ester or anhydride group, in the presence of a catalytic amount of at least one triaryl phosphite.

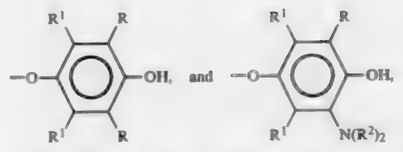
4,808,672

THERMALLY STABLE POLYPHENYLENE ETHER HAVING TERMINAL ANTHRANILATE ESTER GROUPS

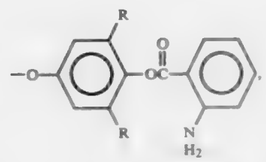
Susan J. Hathaway, Schenectady, N.Y., and Choong Y. Han, Evansville, Ind., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 27, 1987, Ser. No. 77,912
Int. Cl.[4] C08G 65/44
U.S. Cl. 525—397 **4 Claims**

1. A method for improving the thermal stability of polyphenylene ether having terminal groups selected from a class consisting of,



and a mixture thereof, which method comprises heating the polyphenylene ether in the presence of an inert organic solvent at a temperature of from 100° C. to 150° C. and an effective amount of isatoic anhydride until the polyphenylene ether is end capped with anthranilate ester groups, having the formula,



where R is a member selected from the class consisting of halogen, primary or secondary lower alkyl having up to 7 carbon atoms, phenyl, haloalkyl, phenylalkyl, hydrocarbonoxy or halohydrocarbonoxy, where at least two carbon atoms separate the halogen and oxygen atoms, R^1 is a member selected from hydrogen, halogen, primary or secondary lower alkyl, phenyl, haloalkyl, hydrocarbonoxy or halohydrocarbonoxy as defined for R, and R^2 is selected from $C_{(1-8)}$ alkyl radicals.

4,808,673

DIELECTRIC INKS FOR MULTILAYER COPPER CIRCUITS

Kenneth W. Hang, West Windsor Township, Mercer County; Ashok N. Prabhu, East Windsor Township, Mercer County, and Wayne M. Anderson, Hamilton Township, Mercer County, all of N.J., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 914,302, Oct. 2, 1986, abandoned. This application Aug. 20, 1987, Ser. No. 87,584
Int. Cl.[4] C08K 3/34
U.S. Cl. 524—413 **15 Claims**

1. A dielectric ink for mulitlayer integrated circuit fabrication consisting essentially of:

(a) from about 50 to about 75 percent by weight of a devitrifying glass frit consisting essentially of, on a weight basis: from about 15 to about 25 percent of zinc oxide; from about 10 to about 25 percent of magnesium oxide; from about 3 to about 12 percent of an oxide selected from the group consisting of barium oxide and strontium oxide; from about 5 to about 20 percent of aluminum oxide; from about 35 to about 50 percent of silicon dioxide; from 0.5 to about 3 percent of phosphorus pentoxide; and from 1 to about 5 percent of zirconium silicate;

(b) up to about 30 percent by weight of a suitable ceramic filler; and

(c) from about 15 to about 30 percent by weight of a suitable organic vehicle.

4,808,674

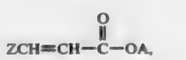
ARYL ESTER-GRAFTED POLYPHENYLENE ETHERS AND PHENYLENE ETHER-AMIDE GRAFT COPOLYMERS PREPARED THEREFROM

Bruce C. Johnson, Saratoga Springs; Thomas W. Hovatter, Schenectady; Steven T. Rice, Schenectady, and Herbert S. Chao, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 24, 1987, Ser. No. 88,634
Int. Cl.[4] C08F 283/08, 71/04
U.S. Cl. 525—397 **18 Claims**

1. A method for preparing a resinous composition which comprises:

preparing an aryl ester-grafted polyphenylene ether by effecting reaction, at a temperature in the range of about 225°–350° C., between a polyphenylene ether and an olefinic aryl ester of the formula



(I)

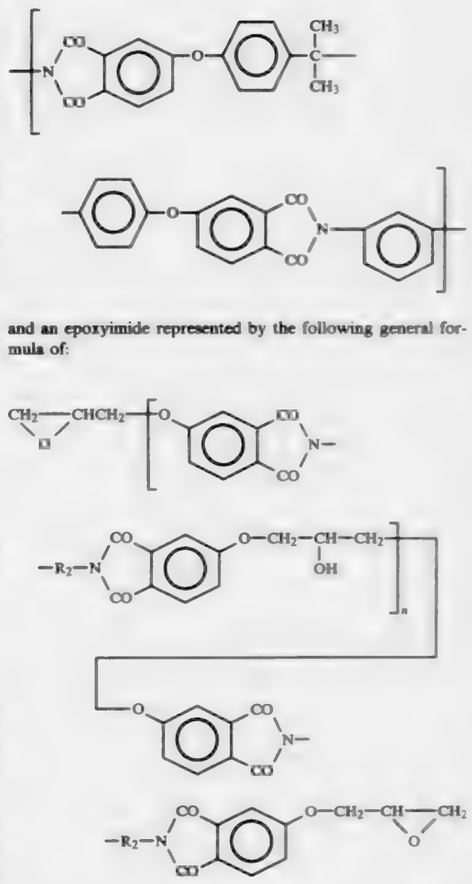
wherein Z is hydrogen or



and A is an aromatic radical; and

heating a mixture comprising at least one lactam, a lactam polymerization catalyst and said aryl ester-grafted polyphenylene ether under polymerization conditions.

and an epoxyimide represented by the following general formula of:



wherein R_2 is a bifunctional organic radical residue selected from the group consisting of diphenylmethane, diphenyl ether, diphenyl sulfone, m-phenylene, p-phenylene and 1,6-hexamethylene; and n is an integer of from 0 to 10; said composition containing said polyetherimide and said epoxyimide in a ratio by weight of from 6:1 to 1:1.

4,808,675

MOISTURE PERMEABLE FILM FOR LAMINATION TO A TEXTILE MATERIAL

Ian C. Twilley, Chester, and Robert A. Lofquist, Richmond, both of Va., assignors to Allied-Signal Inc., Morris Township, N.J.

Filed Dec. 22, 1986, Ser. No. 945,118
Int. Cl.[4] C08G 69/40
U.S. Cl. 525—408 **14 Claims**

1. A water-resistant film for lamination to a textile material, said film having a permeability of at least 0.0008 metric perm-cm. when tested at 20° C. and 65 percent relative humidity and of at least 0.0006 metric perm-cm. when tested at 30° C. and 50 percent relative humidity, said film being formed from a block copolyether amide having a number average molecular weight of from about 15,000 to about 35,000 and containing polymer segments, said segments being prepared by the amination of a polyether formed by treating a polyethylene glycol with an alkylene oxide having at least three carbon atoms.

4,808,676

POLYETHERIMIDE/EPOXYIMIDE RESIN COMPOSITION

Shiro Nishi, Tokorozawa; Shigekazu Sasaki, Iruma, and Yoshinori Hasuda, Koganei, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Oct. 7, 1987, Ser. No. 106,178
Claims priority, application Japan, Oct. 11, 1986, 61-241765; Dec. 19, 1986, 61-303413
Int. Cl.[4] C08L 63/00
U.S. Cl. 525—423 **4 Claims**

1. A polyetherimide/epoxyimide resin composition comprising a polyetherimide having a repeating unit represented by the following general formula of:

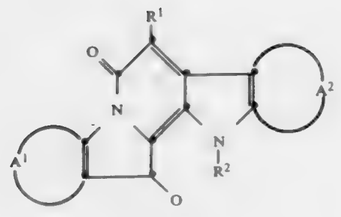
4,808,677

CONDENSATION POLYMER CONTAINING COPOLYMERIZED COLORANTS DERIVED FROM INDIGO AND ARTICLES PRODUCED THEREFROM

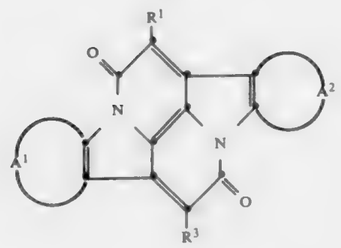
Max A. Weaver; Clarence A. Costas, Jr.; Wayne P. Pruett, all of Kingsport, and Samuel D. Hilbert, Jonesborough, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 8, 1988, Ser. No. 153,635
Int. Cl.[4] C08G 63/20
U.S. Cl. 525—437 **12 Claims**

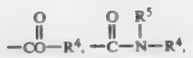
1. A composition comprising molding or fiber grade condensation polymer having reacted therewith or copolymerized therein a coloring amount of the residue of a colorant compound having the formula:



or



wherein
R^1 is



carbonyl halide or an unsubstituted or substituted carbocyclic or hetrocyclic aryl radical;

R^2 is hydrogen or an unsubstituted or substituted alkyl or acyl radical;

R^3 is any of the substituents which R^1 may represent; and

A^1 and A^2 each is the residue of a fused benzene ring;

wherein

R^4 is hydrogen, allyl or an unsubstituted or substituted alkyl, cycloalkyl or aryl radical; and

R^5 is hydrogen or an unsubstituted or substituted alkyl, cycloalkyl or aryl radical; provided the colorant compound bears at least one substituent that is reactive with one of the monomers from which the condensation polymer is derived.

4,808,678

POLYMER BLEND OF CARBON MONOXIDE/OLEFIN COPOLYMER AND A HYDROXYALKYL ETHER

Robert G. Lutz, Santa Rosa, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 13, 1988, Ser. No. 205,972
Int. Cl.[4] C08G *67/02;* **C08F** *283/00*
U.S. Cl. 525—529 **7 Claims**

1. A composition comprising a non-miscible blend of, as a major component, a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon and, as a minor component, a polymeric, predominantly linear, hydroxyalkyl ether of a bis(hydroxyphenyl)alkane.

4,808,679

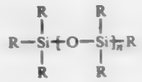
PROCESS FOR CONTROLLING THE MOLECULAR WEIGHT OF POLY(TRIALKYLSILYLPROPYNE) POLYMERS

Michael Langsam, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 19, 1988, Ser. No. 145,854
Int. Cl.[4] C08F *4/62, 30/08*
U.S. Cl. 526—126 **8 Claims**

1. In a process for the polymerization of trialkylsilylacetylene derived monomers by forming a reaction mixture comprising said trialkylsilylacetylene derived monomers, an organic solvent and a catalyst comprising a halide of a transition metal of group Vb or VIb, the improvement for decreasing the molecular weight of the resultant polymer without significantly decreasing conversion which comprises:

adding to the reaction mixture, in a concentration of between about 0.5–25 wt.% based on the total reaction mixture, a compound having the structural formula:



wherein each R is independently methyl, C_{2-4} alkyl or phenyl, and n is from 1 to 100.

4,808,680

POLYMERIZATION OF VINYL AROMATIC MONOMERS USING CYCLOPENTADIENYL ZIRCONIUM CATALYSTS

Gregory F. Schmidt, and Richard E. Campbell, Jr., both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 8, 1987, Ser. No. 59,304
Int. Cl.[4] C08F *4/64, 12/08*
U.S. Cl. 526—160 **7 Claims**

1. A process for the preparation of polymers of vinyl aromatic monomers having a high degree of syndiotacticity comprising contacting one or more vinyl aromatic monomers under polymerization conditions with a catalyst comprising the reaction product of polymethylaluminoxane and a cyclopentadienyl zirconium (IV) complex corresponding to the formula: $CpZrR'_3$, wherein Cp is a π-bonded cyclopentadienyl or substituted cyclopentadienyl ligand having from 5 to 20 carbons, and R is independently each occurrence selected from the ligand group consisting of halides; alkoxides and aryloxides corresponding to the formula: OR'; amides corresponding to the formula: NR'_2; phosphides corresponding to the formula: PR'_2; and β-diketonates corresponding to the formula: R'—C(O)—CH—C(O)—R', and R' is alkyl or aryl of up to 12 carbons.

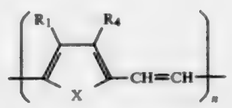
4,808,681

CONDUCTIVE POLY(2,5-FURANYLENE VINYLENE) AND POLY(2,5-THIENYLENE VINYLENE)

Kevin Harper, Pontefract, and William J. W. Watson, Hampton, both of England, assignors to The British Petroleum Company PLC, London, England

Continuation of Ser. No. 797,447, Nov. 13, 1985, abandoned. This application Feb. 11, 1987, Ser. No. 13,144
Claims priority, application United Kingdom, Nov. 17, 1984, 8429111
Int. Cl.[4] C08G *61/00, 83/00*
U.S. Cl. 526—270 **3 Claims**

1. A conductive high molecular weight heterocyclic polymer with band gaps below 2.5 eV in which the repeating unit is of the formula (I):



(I)

wherein X is an oxygen atom; R_1 and R_4 are the same or different substituents selected from H, a C_1–C_4 alkyl, a carbonitrile, a halide, a trihalomethyl and a phenyl group and n has a value greater than 10.

4,808,682

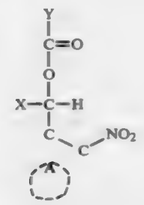
COPOLYMERS HAVING O-NITROCARBINOL ESTER GROUPS, PRODUCTION OF TWO-LAYER RESISTS, AND FABRICATION OF SEMICONDUCTOR COMPONENTS

Reinhold Schwalm, Wachenheim, and Horst Binder, Lampertheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 12, 1988, Ser. No. 142,913
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1987, 3702035
Int. Cl.[4] C08F *20/36;* **G03C** *1/70*
U.S. Cl. 526—279 **16 Claims**

1. A copolymer containing as copolymerized units

(a) from 5 to 50 mol % of one or more compounds of the general formula (I)



where A is an aromatic or hetaromatic, substituted or unsubstituted ring system of 5 to 14 ring members, X is hydrogen, alkyl of 1 to 8 carbon atoms or substituted or unsubstituted aryl or aralkyl, and Y is an ethylenically unsaturated radical of 2 to 6 carbon atoms,

(b) from 95 to 50 mol % of one or more copolymerizable olefinically unsaturated silicon-containing organic compounds,

(c) from 0 to 20 mol % of one or more copolymerizable olefinically unsaturated carboxylic acids of 3 to 6 carbon atoms,

(d) from 0 to 25 mol % of one or more further olefinically unsaturated, copolymerizable organic compounds other than (a), (b) and (c), whose homopolymers are transparent within the wavelength region from 250 to 400 nm, with the proviso that the sum of the percentages mentioned under (a) to (d) is 100 and the copolymer has a silicon content of >6% by weight.

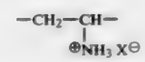
4,808,683

VINYLAMINE COPOLYMER, FLOCCULATING AGENT USING THE SAME, AND PROCESS FOR PREPARING THE SAME

Takaharu Itagaki, Yokohama; Mitsuaki Shirage, Machida; Shigeru Sawayama, Yokohama, and Kobichi Satoh, Zama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

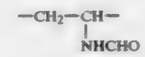
Filed Jan. 16, 1987, Ser. No. 62,755
Claims priority, application Japan, Jan. 19, 1986, 61-143442
Int. Cl.[4] C08F *226/02*
U.S. Cl. 526—307.2 **5 Claims**

1. A vinylamine copolymer having the structural units represented by the general formulae (I), (II) and (III):

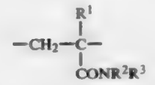


(I)

wherein X represents an anion or hydroxyl ion



(II)



(III)

wherein R^1 represents hydrogen atom or a methyl group, R^2 represents hydrogen atom or an alkyl group having 1 to 4 carbon atoms, and R^3 represents an alkyl group having 1 to 4 carbon atoms or an oxoalkyl group having 4 to 8 carbon atoms in which the molar fraction of the structural unit (I) is 5 to 85% by mole, the molar fraction of the structural unit (II) is 5 to 85% by mole, and the molar fraction of the structural unit (III) is 90 to 5% by mole.

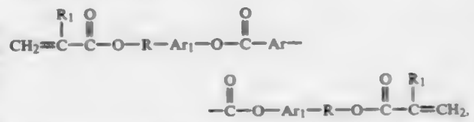
4,808,684

THERMOSET RESIN PRODUCED FROM ANISOTROPIC HEAT-CURABLE ACRYLIC TERMINATED MONOMERS

Robert W. Stackman, Racine, Wis., assignor to Hoechst Celanese Corp., Somerville, N.J.

Division of Ser. No. 748,293, Jun. 24, 1985, Pat. No. 4,683,327. This application Oct. 23, 1986, Ser. No. 922,410
Int. Cl.[4] C08F *22/10*
U.S. Cl. 526—321 **17 Claims**

1. A molded article formed from a heat-curable acrylic-terminated monomer capable of forming an anisotropic melt phase of the formula:



wherein Ar is a divalent radical comprising at least one aromatic ring, Ar_1 is a divalent radical selected from the group consisting of phenylene, naphthalene, biphenylene and mixtures thereof, R is selected from the group consisting of an alkylene group having from one to four carbon atoms and an oxyalkylene group having from one to four carbon atoms, and R_1 is selected from the group consisting of hydrogen and methyl, wherein hydrogen atoms present on the aromatic rings in said divalent radicals Ar and Ar_1 may be replaced by substitution selected from the group consisting of an alkyl group having one to four carbon atoms, an alkoxy group having one to four atoms, halogen, phenyl, and mixtures thereof, which

has been subjected to curing conditions for a time sufficient to accomplish substantial crosslinking.

4,808,685

PROCESS FOR THE PREPARATION OF POLYSILANES

Roberto Bortolin, Brighton, United Kingdom, assignor to Dow Corning, Ltd., Barry, Wales

Filed Dec. 3, 1987, Ser. No. 128,231
Claims priority, application United Kingdom, Dec. 11, 1986, 8629594
Int. Cl.[4] C08G 77/06
U.S. Cl. 528—14 **12 Claims**

1. A process for the preparation of polysilanes of the general formula $(RSi)_n$ wherein each R is independently selected from the group consisting of alkyl, aryl, alkaryl and aralkyl groups having from 1 to 18 carbon atoms and n is at least 8 which comprises the step of reacting a mixture consisting essentially of a silane or silanes of the general formula $RSiX_3$, wherein R is as defined above and X denotes a halogen atom, with an alkali metal in an organic liquid medium in which the silane or silanes are soluble.

4,808,686

SILICONE-POLYIMIDES, AND METHOD FOR MAKING

James A. Cella, Clifton Park, N.Y.; Patrick E. Gallagher, Pittsfield, Mass., and Gary K. Shank, Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 18, 1987, Ser. No. 63,350
The portion of the term of this patent subsequent to Sep. 1, 2004, has been disclaimed.
Int. Cl.[4] C08G 77/04
U.S. Cl. 528—27 **15 Claims**

1. Flame retardant extrudable silicone polyimide having improved flexibility and useful as a wire-coating insulator comprising by weight from about 40 to 90% of arylimide units chemically combined with from 10 to about 60% of polydiorganosiloxane having an elongation of at least 100% and a flexural modulus (psi) of from about 28,500 to 150,000.

4,808,687

NOVEL ORGANOPOLYSILOXANES DERIVED FROM BIS-SILYL SUBSTITUTED HETEROCYCLIC COMPOUNDS

Stephanie A. Burns, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jan. 4, 1988, Ser. No. 140,710
Int. Cl.[4] C08G 71/22
U.S. Cl. 528—30 **12 Claims**

1. An organopolysiloxane comprising repeating units of the formula



where each of the substituents represented by R is individually selected from hydrocarbyl, halogenated hydrocarbyl or mixtures thereof, and Q represents 2,5-furyldiyl or 2,5-pyrrylidyl.

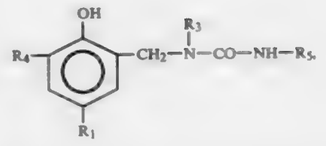
4,808,688

SELF-CROSSLINKING CATIONIC PAINT BINDERS CONTAINING BIURET GROUPS

Willibald Paar, Graz, Austria, assignor to Vianova Kunstharz, A.G., Werndorf, Austria

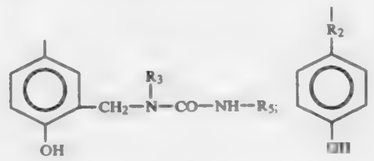
Filed Apr. 18, 1988, Ser. No. 182,358
Claims priority, application Austria, Apr. 17, 1987, 967/87
Int. Cl.[4] C08G 18/80
U.S. Cl. 528—45 **11 Claims**

1. Process for producing self-crosslinking cationic paint binders, water-dilutable upon protonation, comprising reacting (A) a phenol condensate of the formula

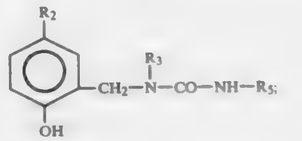


wherein

R_1 is a hydrogen atom, an alkyl radical, or one of the radicals



or



R_2 is the radical $—CH_2—$ or



R_3 is an alkyl radical, a hydroxyalkyl radical, or a tertiary aminoalkyl radical,

R_4 is a hydrogen atom or, with R_1=H, a hydrogen atom or the radical $—CH_2—N(R_3)—CO—NH—R_5$, and

R_5 is the radical of a diisocyanate semi-blocked with a monofunctional compound,

with (B) 0.1 to 1.0 mole, calculated on the hydrogen atoms at the urea groupings of component (A), of at least one semi-blocked diisocyanate, the reaction conditions being controlled to form biuret groups, and the quantity of basic groups being chosen whereby the final product has an amine value of at least 25 mg KOH/g.

4,808,689

PROCESS FOR PRODUCING POLYURETHANE POLYACETAL ELASTOMERS AND THE PRODUCT SO PRODUCED

Lawrence E. Katz, Orange, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Nov. 23, 1987, Ser. No. 124,319
Int. Cl.[4] C08G 18/00
U.S. Cl. 528—48 **24 Claims**

1. A process for producing a polyurethane polyacetal elastomer comprising:

(a) reacting a dihydroxy-terminated polyacetal homopolymer with an alkylene diisocyanate in the presence of a urethane-forming catalyst in a reaction to produce an isocyanate-terminated prepolymer, said homopolymer having a weight average molecular weight of between about 20,000 and about 50,000 as measured against a polystyrene standard by gel permeation chromatography and being produced by polymerizing-a 4-lower alkyl substituted-1,3-dioxolane, said reaction employing between about 55 mole percent and about 70 mole percent of said alkylene diisocyanate based upon the total amount of said alkylene diisocyanate and said homopolymer employed, and

(b) reacting said isocyanate-terminated prepolymer with a dihydroxy-terminated polyacetal copolymer in the presence of a solvent and a urethane-forming catalyst to provide said elastomer, said copolymer having a weight average molecular weight of between about 100,000 and about 200,000 as measured against a polystyrene standard by gel permeation chromatography and being the reaction product of a formaldehyde-providing compound and 1,3-dioxolane, said copolymer being employed in an amount of between about 30 and about 50 mole percent based upon the total amount of said copolymer and said isocyanate-termninated prepolymer employed.

4,808,690

HIGH HEAT DISTORTION TEMPERATURE TRANSPARENT POLYURETHANES

Edwin C. Slagel, Simi Valley, Calif., assignor to Loral Corporation, New York, N.Y.

Filed Feb. 29, 1988, Ser. No. 161,801
Int. Cl.[4] C08G 18/10
U.S. Cl. 528—60 **19 Claims**

1. A transparent, high heat distortion temperature polyurethane, comprising:

a polyurethane, said polyurethane made from a polyol curing agent and a prepolymer, said prepolymer made from a polyisocyanate and at least one multifunctional hydroxy containing intermediate, said hydroxy containing intermediate being a polyhydric alcohol having from 2 to 8 hydroxyl groups and a total of from 2 to 12 carbon atoms, or a polyester polyol made from a lactone having from 4 to 9 carbon atoms and said polyhydric alcohol, or a polyester polyol made from a polycarboxylic acid having from 2 to 4 carboxylic acid groups and containing from 2 to 12 carbon atoms and said polyhydric alcohol, or combinations thereof, said hydroxy containing intermediate having an effective low hydroxyl equivalent weight so that said polyurethane has a heat distortion temperature of at least 280° F. at 264 psi, said polyol curing agent having a low hydroxyl equivalent weight, and said polyol curing agent being a polyhydric alcohol having from 2 to 8 hydroxyl groups and a total of from 2 to 12 carbon atoms, a polyester polyol made from a lactone having from 4 to 9 carbon atoms and said polyhydric alcohol, or a polyester polyol made from a polycarboxylic acid having from 2 to 4 carboxylic acid groups and containing from 2 to 12 carbon atoms and said polyhydric alcohol, or combinations thereof.

4,808,691

POLYETHER-POLYCARBONATE DIOLS AND PROCESSES FOR THEIR PRODUCTION AND USE

Klaus König, Odenthal, and James M. Barnes, Wermelskirchen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Fed. Rep. of Germany

Filed May 11, 1988, Ser. No. 193,303
Claims priority, application Fed. Rep. of Germany, May 21, 1987, 3717060
Int. Cl.[4] C08G 18/32
U.S. Cl. 528—76 **13 Claims**

1. A hydroxyl-terminated polyether polycarbonate having a molecular weight of from 500 to 12,000 containing hexamethylene groups as ether groups in which the ratio of ether groups to carbonate groups is from 1 to 1:5.

4,808,692

PREPARATION OF ADVANCED EPOXY RESINS FROM EPOXY RESINS AND DIHYDRIC PHENOLS IN THE PRESENCE OF PHOSPHONIUM COMPOUNDS

Ha Q. Pham, Rickwood, and Loan A. Ho, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 18, 1988, Ser. No. 157,671
Int. Cl.[4] C08G 59/02
U.S. Cl. 528—89 **24 Claims**

1. In a precatalyzed epoxy resin composition which is essentially free of epoxy resin curing agents and which contains (A) at least one relatively low molecular weight epoxy resin having an average of more than one but not more than about 2 vicinal epoxy groups per molecule; and (B) at least one phosphonium catalyst; the improvement which comprises employing as the phosphonium catalyst, a cycloalkyl triphenyl phosphonium compound.

13. In a process for the preparation of advanced epoxy resins by reacting (A) at least one epoxy resin having an average of more than one but not more than about 2 vicinal epoxy groups per molecule; with (B) at least one compound having about 2 aromatic hydroxyl groups per molecule; in the presence of (C) a triphenyl phosphonium catalyst; the improvement which comprises employing as the triphenyl phosphonium catalyst, a cycloalkyl triphenyl phosphonium compound.

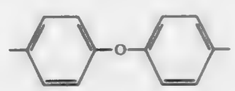
4,808,693

ARYL ETHER KETONE COPOLYMERS

Klaus J. Dahl, Atherton; Viktors Jansons, Los Gatos, and Stephen Moore, Redwood City, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 775,888, Sep. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 692,606, Jan. 17, 1985, abandoned, which is a continuation of Ser. No. 643,222, Aug. 20, 1984, abandoned. This application Jun. 17, 1986, Ser. No. 875,122
Int. Cl.[4] C08G 8/02
U.S. Cl. 528—125 **15 Claims**

1. A poly(aryl ether ketone) having recurring units of the formula

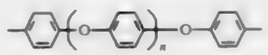


(A)



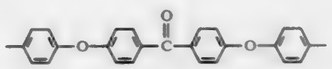
(B)

and a third unit selected from the group consisting of



(C)

and



(D)

wherein n is 1 or 2, the total number of (A) and (C) or (D) recurring units being substantially equal to the number of B recurring units.

4,808,694

POLY(ARYLENE SULFIDE SULFONE) POLYMER CONTAINING ETHER GROUPS

James T. Edmonds, Jr.; Jon Gelbek; Rex L. Bobsein, all of Bartlesville, and Jim J. Straw, Nowata, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 14, 1988, Ser. No. 168,111

Int. Cl.[4] C08G *23/00*; H05K *1/03*; C08L *81/04*

U.S. Cl. 528—125 **27 Claims**

1. A process comprising:

(a) reacting in an organic solvent a dihalo aromatic sulfone with an aromatic diphenol at a mole ratio of about 8/1 to about 20/1 in the presence of an alkali metal base to form a mixture comprising dihalo-terminated oligomers, and subsequently

(b) adding a sulfur source selected from the group consisting of hydrogen sulfide, alkali metal hydrosulfides, alkali metal sulfides, acyclic and cyclic thioamides and mixtures, thereof, to the mixture resulting from (a) and continuing the reaction at a temperature and for a sufficient time to form a recoverable polymeric solid, characterized as having a polymer melt temperature in excess of 250° C.

4,808,695

CROSS-LINKED POLYMER FROM AROMATIC DICARBOXYLIC ACID ANHYDRIDE IMIDE

Michael E. B. Jones, Chester, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Apr. 17, 1987, Ser. No. 39,459

Claims priority, application United Kingdom, Apr. 29, 1986, 8610469

Int. Cl.[4] C08G *73/10*

U.S. Cl. 528—322 **20 Claims**

1. A cross-linked product produced by the reaction of a polyimide reactant with a polyamine reactant wherein the functionality of one of the aforesaid reactants is at least two and the functionality of the other reactant is more than two, wherein said polyimide is derived from an aromatic dicarboxylic anhydride.

4,808,696

METHOD FOR MAKING ORGANOBIS(THIOETHER)S, AND PRODUCTS OBTAINED THEREFROM

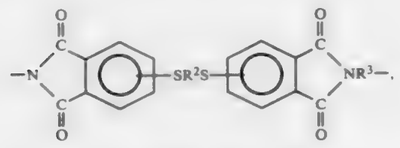
Tohru Takekoshi, Scotia; Patricia P. Anderson, Albany, and Thomas L. Evans, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 1, 1987, Ser. No. 56,511

Int. Cl.[4] C08G *69/26*

U.S. Cl. 528—353 **10 Claims**

1. Crystalline aromatic polyimides having alkylene disulfide groups comprising chemically combined units of the formula,



where R^2 is a $C_{(1-10)}$ divalent alkylene radical, and R^3 is a divalent $C_{(6-27)}$ aromatic hydrocarbon radical, or a divalent $C_{(6-27)}$ aromatic hydrocarbon radical substituted with radicals neutral during intercondensation.

4,808,697

CATALYTIC PROCESS FOR PREPARING POLYMERS OF SULFUR DIOXIDE AND OLEFIN

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

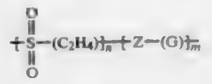
Continuation-in-part of Ser. No. 918,422, Oct. 14, 1986, abandoned. This application Mar. 3, 1988, Ser. No. 164,161

Claims priority, application Netherlands, Oct. 15, 1985, 8502817

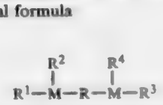
Int. Cl.[4] C08G *75/18*

U.S. Cl. 528—384 **18 Claims**

1. A process for preparing a linear alternating polymer having the general formula



wherein Z is at least one moiety selected from SO_2 or CO, G is the moiety of at least one ethylenically unsaturated hydrocarbon of at least 2 carbon atoms polymerized through the ethylenic unsaturation, n is an integer of at least 1, and m is an integer of zero or greater, which process comprises contacting sulfur dioxide, ethylene, with or without carbon monoxide, and with or without at least one ethylenically unsaturated hydrocarbon of at least 3 carbon atoms, in the presence of a catalyst obtained from (1) a compound of a Group VIII metal selected from palladium, cobalt and nickel, (2) a bidentate ligand of the general formula



wherein each M is a Group Va element selected from the group consisting of phosphorus, arsenic, and antimony, R^1, R^2, R^3, and R^4 independently are hydrocarbon or substituted hydrocarbon wherein the substituents are polar, R is a divalent organic bridging group of at least two carbon atoms, and (3) an anion of a non-hydrohalogenic acid having a pKa of less than 6, under conditions effective to prepare a linear alternating polymer.

4,808,698

PRODUCTION OF AROMATIC SULFIDE/SULFONE POLYMERS

Rex L. Bobsein, and Earl Clark, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 30, 1987, Ser. No. 103,480

Int. Cl.[4] C08G *75/20*

U.S. Cl. 528—388 **36 Claims**

1. In a process for the production of an aromatic sulfide/sulfone polymer comprising contacting

(a) at least one organic amide,

(b) at least one sulfur-containing compound selected from the group consisting of alkali metal sulfides and alkali metal hydrosulfides,

(c) water, and

(d) at least one dihaloaromatic sulfone under polymerization conditions of time and temperature sufficient to produce an aromatic sulfide/sulfone polymer, and wherein the molar ratio of said organic amide to said sulfur-containing compound is subject to variation within the range of about 2:1 to about 24:1, the improvement comprising employing a molar ratio of said organic amide to said water of about 0.4:1 to about 1.3:1.

4,808,699

PROCESS FOR PREPARING POLYMERS OF CARBON MONOXIDE AND ETHYLENE UNDER SPECIFIED PRESSURES

Johannes A. M. Van Broekhoven, and Michael J. Doyle, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

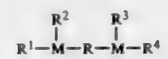
Filed Mar. 24, 1987, Ser. No. 29,838

Claims priority, application Netherlands, Mar. 24, 1986, 8600744

Int. Cl.[4] C08G *67/02*

U.S. Cl. 528—392 **26 Claims**

1. A process for preparing a linear alternating polymer which process comprises contacting ethylene and carbon monoxide in the presence of a catalyst, at a total pressure within the range of 100 to about 250 bar and an ethylene/carbon monoxide partial pressure ratio from about 0.75 to about 3, wherein the catalyst comprises (1) a compound of a Group VIII metal selected from the group consisting of palladium, cobalt, and nickel, (2) an anion of a non-hydrohalogenic acid with a pKa less than 6 and (3) a bidentate ligand of the general formula



wherein M is selected from the group consisting of phosphorus, arsenic or antimony, R is a bivalent organic bridging group containing at least two carbon atoms in the bridge and R^1, R^2, R^3 and R^4 are substituted or unsubstituted hydrocarbon groups, and under conditions suitable to prepare a linear alternating polymer.

4,808,700

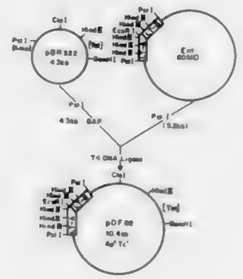
IMMUNOGENIC CONJUGATES OF NON-TOXIC *E. COLI* LT-B ENTEROTOXIN SUBUNIT AND CAPSULAR POLYMERS

Porter W. Anderson, Rochester, N.Y., and John D. Clements, New Orleans, La., assignors to Praxis Biologics, Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 628,873, Jul. 9, 1984, abandoned, which is a continuation-in-part of Ser. No. 511,048, Jul. 5, 1983, Pat. No. 4,673,574, which is a continuation-in-part of Ser. No. 298,102, Aug. 31, 1981, abandoned. This application Aug. 10, 1984, Ser. No. 639,293

Int. Cl.[4] C07K *17/00, 15/00*; A61K *39/02*; C12Q *1/68*; C12N *15/00, 1/00, 5/00*

U.S. Cl. 530—403 **10 Claims**



1. A conjugate of a PRP polysaccharide fragment, having reducing terminal groups derived from the capsular polysaccharide of *Haemophilus influenzae* type b by selective acidic hydrolysis of a portion of the ribosyl ribitol linkages therein, and a bacterial binding subunit, which binding subunit is a non-toxic polypeptide, having one or more immunoreactive and antigenic determinants of an LT-B subunit of the heat-labile enterotoxin of *Escherichia coli* (LT-BNT).

4,808,701

CYCLIC PEPTIDES HAVING APPETITE REGULATING ACTIVITY

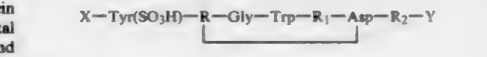
Waleed Danho, Wayne; Joseph Triscari, Bloomfield, and Vincent S. Madison, Mountain Lakes, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 30, 1987, Ser. No. 31,632

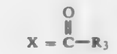
Int. Cl.[4] C07K *7/50, 7/64*

U.S. Cl. 530—317 **16 Claims**

1. A peptide of the formula



wherein



R = Lys, Orn
R_1 = Met, Nle
R_2 = Phe, N-methyl-Phe
R_3 = lower alkyl
Y = NH_2, $NHCH_3$
or the pharmaceutically acceptable salts thereof.

4,808,702

DECAPEPTIDES PRODUCED FROM BIOADHESIVE POLYPHENOLIC PROTEINS

J. Herbert Waite, 21 East St., Collinsville, Conn. 06022

Division of Ser. No. 820,143, Jan. 21, 1986, Pat. No. 4,687,740, which is a division of Ser. No. 587,132, Mar. 7, 1984, Pat. No. 4,585,585. This application Jun. 1, 1987, Ser. No. 55,450

The portion of the term of this patent subsequent to Apr. 29, 2003, has been disclaimed.

Int. Cl.[4] C07C *103/52*; C12P *21/06*

U.S. Cl. 530—328 **4 Claims**

1. A composition prepared by a method which comprises the steps of:

(a) isolating bioadhesive proteins from mussel phenol glands;

(b) enzymatically digesting said bioadhesive protein; and

(c) recovering said decapeptides.

4,808,703

NOVEL 3-(4'-AMINOBUTYLAMINO) PROPYLAMINOBLEOMYCIN DERIVATIVES

Hamao Umezawa, Tokyo; Akio Fujii, Kamakura; Yasuhiko Muraoka, Tokyo; Tokuji Nakatani, Ina; Takeyo Fukuoka, Yono, and Katsutoshi Takahashi, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenku Kai, Tokyo, Japan

Filed Jun. 21, 1984, Ser. No. 622,884

Claims priority, application Japan, Jun. 27, 1983, 58-114257

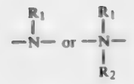
Int. Cl.[4] C07C *103/52*

U.S. Cl. 530—322 **5 Claims**

1. An aminopropylaminobleomycin derivative expressed by the following formula



wherein [BX] represents a residue remaining after removing a hydroxyl group from the carboxyl group of bleomycinic acid, A represents a group of the formula



in which R_1 represents (i) a hydrogen atom, (ii) an alkyl group having 1 to 10 carbon atoms, or (iii) an methyl which may be substituted at least one of a phenyl group and a cycloalkyl group having 5 to 13 carbon atoms, said substituents being each unsubstituted or substituted in more than one position by one or more substituents selected from the class consisting of a halogen atom, a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxy group having 1 to 4 carbon atoms or a benzyl group, B represents a group of the formula



in which R_3 and R_4 each represents (i) a hydrogen atom, (ii) an alkyl group having 5 to 10 carbon atoms, or (iii) a methyl which is substituted by at least one of a phenyl group and a cycloalkyl group, said substituents being each unsubstituted or substituted in more than one position by one or more substituents selected from the class consisting of a halogen atom, a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxy group having 1 to 4 carbon atoms and a benzyloxy group, with the proviso that at least one of R_3 and R_4 is a group other than a hydrogen atom, and a pharmaceutically effective inorganic acid addition salt thereof, provided that when A is NH and one of R_3 and R_4 is hydrogen, the other R_3 or R_4 is not a methyl substituted by one phenyl group.

4,808,704

MONOCLONAL ANTIBODIES TO CELL SURFACE ANTIGENS OF HUMAN MALIGNANT MELANOMA

Lloyd J. Old, New York, N.Y.; Herbert F. Oettgen, New Canaan, Conn.; Hisami Ikeda, Asahikawa, Japan; Lucy T. C. Li, New York; Kenneth O. Lloyd, Bronx, both of N.Y., and Wolfgang G. Dippold, Mainz, Fed. Rep. of Germany, assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 307,060, Sep. 30, 1981, abandoned. This application May 22, 1986, Ser. No. 868,872

The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.

Int. Cl.[4] A61K *39/395*; **C12N** *5/00, 15/00*; **C12P** *21/00*

U.S. Cl. 530—387 **7 Claims**

1. A monoclonal antibody panel capable of determining the presence of human malignant melanoma comprising at least one monoclonal antibody immunologically reactive with melanoma gp150 antigen and selected from the group consisting of J_{11}, N_9, R_{23}, Q_{14} and Q_{24} and at least one monoclonal antibody immunologically reactive with melanoma gp95 antigen and selected from the group consisting of M_{17}, L_1, L_{10}, R_{19}, I_{12} and K_5.

4,808,705

STABLE FORMULATIONS OF RICIN TOXIN A CHAIN AND OF RTA-IMMUNOCONJUGATES AND STABILIZER SCREENING METHODS THEREFOR

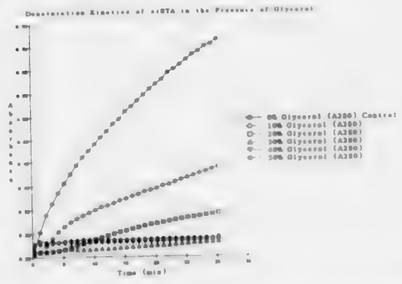
Robert Ferris, Walnut Creek, Calif., assignor to Cetus Corporation, Emeryville, Calif.

Filed Dec. 19, 1986, Ser. No. 944,347

Int. Cl.[4] C07K *15/00*; **A61K** *39/395*

U.S. Cl. 530—391 **46 Claims**

1. A stable lyophilized pharmaceutical composition of matter suitable for parenteral administration to animals or humans comprising a therapeutically effective amount of an RTA-immunoconjugate dissolved in an inert carrier medium comprising a stabilizer that effectively prevents the precipitation and aggregation of said RTA-immunoconjugate upon resuspension and agitation after addition of a physiologically acceptable solution thereto, "wherein the stabilizer is selected from the group consisting of glycerol, albumin, and dextran sulfate."



4,808,706

FIBRE-REACTIVE, FLUORO-TRIAZINE CONTAINING DYESTUFFS

Herbert Seiler, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

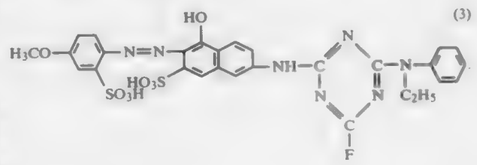
Continuation of Ser. No. 408,565, Aug. 16, 1982, abandoned, which is a continuation of Ser. No. 171,634, Jul. 24, 1980, abandoned, which is a continuation of Ser. No. 938,286, Aug. 30, 1978, abandoned. This application Feb. 14, 1984, Ser. No. 580,032

Claims priority, application Luxembourg, Sep. 6, 1977, 78082

Int. Cl.[4] C09B *62/085, 62/08, 62/09, 62/095*

U.S. Cl. 534—638 **2 Claims**

1. The dye of the formula



(3)

4,808,707

CHITOSAN ALGINATE CAPSULES

Mary M. Daly, West Chester, Pa; Robert W. Keown, Wilmington, and Dietrich W. Knorr, Newark, both of Del., assignors to University of Delaware, Newark, Del.

Filed Jun. 8, 1987, Ser. No. 59,342

Int. Cl.[4] A61K *9/62*; **C12N** *11/10*; **C08B** *25/00*

U.S. Cl. 536—3 **3 Claims**

1. A capsule of chitosan alginate wherein said alginate is 10 to 60% esterified with 1,2-propylene glycol to increase the permeability of the walls of said capsule.

4,808,708

PHOSPHORSULFIDE DERIVATIVES OF DEOXYNUCLEOSIDES OR DEOXYNUCLEOTIDES AND THEIR USES

Tadao Yoshida, and Kaoru Kimura, both of Nagoya, Japan, assignors to Tosgosei Chemical Industry Co., Ltd., Tokyo, Japan

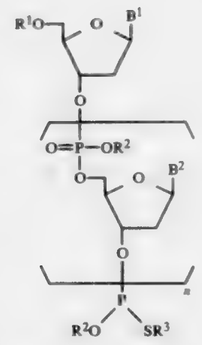
Filed Oct. 30, 1986, Ser. No. 925,890

Claims priority, application Japan, Nov. 2, 1985, 60-245326; Jul. 8, 1986, 61-158719; Jul. 23, 1986, 61-171825; Aug. 1, 1986, 61-190002

Int. Cl.[4] C07H *17/00*

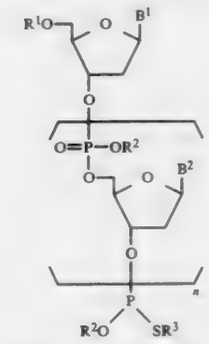
U.S. Cl. 536—27 **13 Claims**

1. A phosphorsulfide of a deoxynucleoside or deoxynucleotide of general formula (I):



(I)

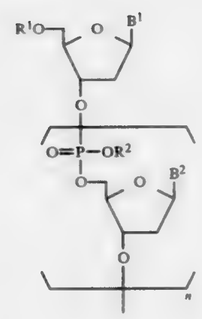
wherein R^1 is a hydroxy-protecting group; R^2 is a phoshate-protecting group; R^7 is a hydroxy-protecting group which is or is not bonded to a polymer-support; B^1, B^2, B^3 and B^4 may be the same or different and each are a base residue which does or does not have a protecting group; n is zero or an integer; and m is zero or an integer, provided that when n or m is 2 or larger, respective B^2 or B^4 may be the same or different which comprises reacting a phosphorsulfide of a deoxynucleoside or deoxynucleotide of general formula (I):



(I)

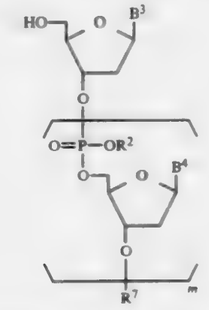
wherein R^1 is a hydroxy-protecting group; R^2 is a phosphate-protecting group; R^3 is an aryl group; B_1 and B_2 may be the same or different and each are a base residue which may have a protecting group; and n is zero or an integer, provided that when n is 2 or larger, the respective B^2 may be the same or different.

11. A process for the preparation of a deoxynucleotide or an oligodeoxynucleotide of general formula (XXIV):



(XXIV)

wherein R^1, R^2, B^1 and B^2 and n have the meanings as defined above and R^3 is an aryl group with a deoxynucleoside or deoxynucleotide compound of general formula (XXV):



(XXV)

wherein R^2, R^7, B^3, B^4 and m have the meanings as defined

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above in the presence of a trialkylstannyl azole compound of general formula (XXVI) and a base of general formula (XXVII):

$$R^8{}_3SnX \quad \text{(XXVI)}$$

$$R^9NR^{10}{}_2 \quad \text{(XXVII)}$$

wherein R^8 is an alkyl group; R^9 is hydrogen atom or an alkyl or aryl group; R^{10} is an alkyl group or R^{10} together with the adjacent nitrogen atom represent a heterocyclic group which may contain one or two additional heteroatoms selected from nitrogen, oxygen and sulfur atoms; and X is an azolyl group, followed by oxidizing the resulting reaction product.

4,808,709

MATRIX POLYMER AND ITS PREPARATION

Yasuhiko Onishi, 39-4, Kosora-cho, Seto-shi, Aichi-ken, Japan

Filed Aug. 13, 1986, Ser. No. 895,925

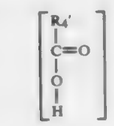
Int. Cl.⁴ C07G 7/00; C08B 37/02; G02C 7/04; C08F 16/38

U.S. Cl. 536—112 **18 Claims**

1. A cationic dextran compound matrix-copolymer comprising a unit derived from a cationic dextran of the following formula (A)

$$[C_6H_7O_2(OH)_{3-a}(OX)_a]_x.H_2O \quad \text{(A)}$$

wherein X is a $-(CH_2)_nR_1$ organic radical where R_1 is a member of the class consisting of $-NH_2$ radical, $-N(CH_3)_2$ radical, $-N(C_2H_5)_2$ radical, $-N^+(C_2H_5)_3$ radical, $-C_6H_4.NH_2$ radical, and $-CO.C_6H_4.NH_2$ radical, $-COR_2$ radical where R_2 is $-CH_2.NH_2$ or $-C_6H_4.NH_2$, $-CH_2CH(OH).CH_2R_3$ radical where R_3 is $-NH_2$, $-N(CH_3)_2$, $-N(C_2H_5)_2$, and $-N^+(C_2H_5)_3$, n is a natural number of 1 to 3, a is a positive number having a value of $0<a\leqq 3$, and x is a natural number having a value of 5 or more; and a unit derived from a polymerizable unsaturated acid of the following formula (B)



(B)

wherein R_4' is a C_2–C_{16} organic radical having the



bond derived from the $>C=C<$ bond

4,808,710

18-PHENYLOESTRANE DERIVATIVES

Hendrik P. de Jongh, Oss, and Martinus J. van den Heuvel, Vught, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

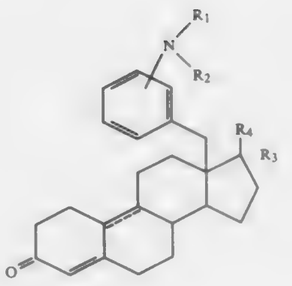
Filed Jul. 16, 1987, Ser. No. 74,442

Claims priority, application Netherlands, Jul. 23, 1986, 8601903

Int. Cl.⁴ C07J 33/00, 1/00

U.S. Cl. 540—30 **4 Claims**

1. 18-phenylsteroids from the oestrane series having the general formula:



wherein

R_1 and R_2 each separately represent H or a (1–4 C) hydrocarbon radical or together represent a (2–6 C) hydrocarbon radical,

R_3 represents H or a (1–4 C) hydrocarbon radical, optionally having an OH substituent,

R_4 represents OH or an ester or ether group, or together with R_3 represents O or a heterocyclic ring system containing O, and wherein the broken line indicates an optionally present double bond between the carbon atoms at position 9 and 10 of the skeleton.

4,808,711

CEPHALOSPORIN DERIVATIVES

Shigeo Shimizu; Hiroyuki Takano, and Fujio Yagihashi, all of Mukawa, Japan, assignors to Sankei Pharmaceutical Co., Ltd. and Nippon Pharmaceutical Development Institute Co., both of Tokyo, Japan

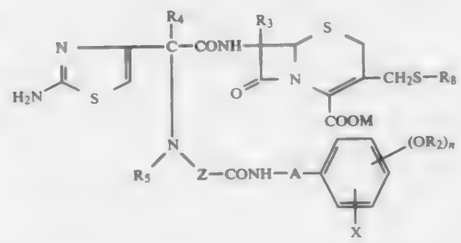
Filed Jan. 17, 1986, Ser. No. 819,831

Claims priority, application Japan, Jan. 21, 1985, 60-8587; Jan. 25, 1985, 60-11986

Int. Cl.⁴ C07D 501/36; A61K 31/545

U.S. Cl. 540—227 **9 Claims**

1. A β-lactam compound represented by the formula:



wherein A is a group represented by the formula —NHCO—, —NHCONHCO—, —NHCOCH=CH— or



where R_6 is a hydrogen atom or a lower alkyl group; R_2 is independently a hydrogen atom, a lower alkanoyl group, or a lower alkoxy carbonyl group; R_3 is a hydrogen atom or a methoxy group; X is a hydrogen atom, a hyroxyl group, a lower alkonoyloxy group, a lower alkoxy carbonyloxy group, a halogen atom, a lower alkoxy group or a nitro group; n is an integer of 1 or 2; M is a hydrogen atom, a protective group selected from the group consisting of a diphenylmethyl group, a t-butyl group, a p-nitrobenzyl group and a trimethylsilyl group or an easily hydrolyzable group in a human body se-

lected from the group consisting of an acetoxymethyl group, an α-acetoxethyl group, a pivaroyloxymethyl group, an α-ethoxycarbonyloxymethyl group, an α-methoxycarbonyloxymethyl group, an α-methoxycarbonyloxyethyl group, an α-ethoxycarbonyloxyethyl group, a 1-indanyl group, a phthalidyl group and a 5-methyl-2-oxo-1,3-dioxol-4-yl-methyl group; R_8 is an unsubstituted 5- to 6-membered nitrogen and/or sulfur-containing heterocyclic group having 1–4 hetero atoms in a ring or a 5- or 6-membered, nitrogen-containing heterocyclic group having 1 to 4 hetero atoms in a ring substituted by at least one of lower alkyl, lower alkoxy, carboxy-lower alkyl, sulfoxyl-lower alkyl, di-lower alkyl amino-lower alkyl, carboxy, amino, lower alkanoyl amino, or hydroxy lower alkyl group, R_4 and R_5 are each hydrogen atoms or combined with each other to form additional direct bond; Z is a direct bond or a carbonyl group when R_4 and R_5 are hydrogen atoms, or a formula: —O—B— where the oxygen atom is bonded to nitrogen atom and B is a straight, branched or cyclic alkylene group when R_4 and R_5 are combined with each other to form additional direct bond, or its pharmaceutically acceptable salt.

4,808,712

PROCESS FOR PREPARING CEPHALOSPORIN COMPOUNDS

Shigeru Torii, Okayama, Japan, assignor to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 609,080, May 1, 1984, Pat. No. 4,665,166. This application Oct. 14, 1986, Ser. No. 918,248

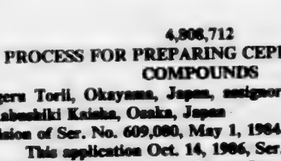
Claims priority, application Japan, Sep. 2, 1982, 57-153569

The portion of the term of this patent subsequent to May 12, 2004, has been disclaimed.

Int. Cl.⁴ C07D 501/36; A61K 31/545

U.S. Cl. 540—229 **5 Claims**

1. A process for preparing a cephalosporin compound of the formula



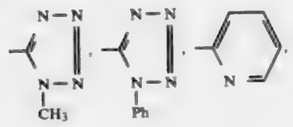
(V)

wherein

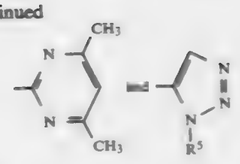
R^1 represents an alkyl having 1 to 4 carbon atoms, alkenyl having 2 to 6 carbon atoms: phenyl; naphthyl; phenyl substituted on the aromatic ring with one or two lower alkyls, one halogen, nitro or lower alkyloxy; benzyl; naphthylmethyl; phenylmethyl substituted on the phenyl ring with one lower alkyl, halogen, nitro or lower alkyloxy; phenoxymethyl; or phenoxymethyl substituted on the phenyl ring with one lower alkyl, halogen, nitro or lower alkyloxy;

R^2 represents carboxyl, COOR' or CONHR' wherein R' is methyl, 2,2,2-trichloroethyl, diphenylmethyl, benzyl, p-nitrobenzyl, isobutyl or tert-butyl,

Y is $-SR^4$ wherein R^4 is alkyl having 1 to 4 carbon atoms; or phenyl optionally substituted with one lower alkyl, halogen, nitro or lower alkoxy; or an aromatic heterocyclic group selected from the group consisting of



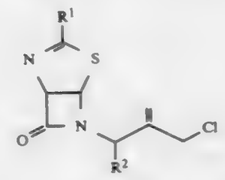
-continued



wherein R^5 is lower alkyl;

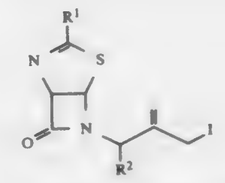
said process comprising the steps of

(1) reacting a thiazolinoazetidinone compound of the formula



(I)

wherein R^1 and R^2 are as defined above with an alkali metal iodide in a solvent capable of dissolving the compound of the formula (I) and the alkali metal iodide to produce a thiazolinoazetidinone compound of the formula



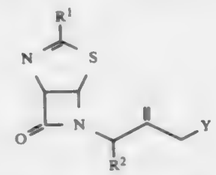
(VI)

wherein R^1 and R^2 are as defined above;

(2) reacting the compound of the formula (VI) with a nucleophilic reagent of the formula

$$M-Y \quad \text{(VII)}$$

wherein M is an alkali metal atom, and Y represents $-SR^4$ in which R^4 is as defined above in an organic solvent capable of dissolving the compound of the formula (VI) and the nucleophilic reagent of the formula (VII) to give a thiazolinoazetidinone compound of the formula



(II)

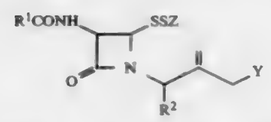
wherein R^1, R^2 and Y are as defined above;

(3) reacting the compound of the formula (II) in a water-containing organic solvent having a water content of about 1 to about 500 moles of water per mole of the compound of the formula (II) with a sulfur-containing compound of the formula

$$Z-S-X \quad \text{(III)}$$

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wherein Z represents phenyl optionally substituted with three or five halogen atoms or with one nitro group, or Z is 2-pyridyl, 2-benzothiazolyl, 1,3,4-thiadiazole-2-yl or 5-methyl-1,3,4-thiadiazole-2-yl and X represents a halogen atom to produce an azetidinone compound of the formula



(IV)

wherein R^1, R^2, Y and Z are as defined above; and

(4) reacting ammonia with the compound of the formula (IV) in an inert aprotic polar solvent so that the compound of the formula (IV) is subjected to ring closure to give the compound of formula (V).

4,808,713

ANTHYPERTENSIVE PYRIDAZO [1,2-A][1,2]DIAZEPINES

Michael R. Attwood, Hitchin; Cedric H. Hassall, Harpenden; Robert W. Lambert, Welwyn; Geoffrey Lawton, and Sally Redshaw, both of Hitchin, all of Great Britain, assignors to Hoffman-La Roche Inc., Nutley, N.J.

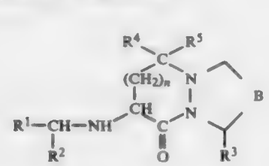
Division of Ser. No. 936,003, Nov. 28, 1986, Pat. No. 4,772,701, which is a division of Ser. No. 697,559, Feb. 1, 1985, Pat. No. 4,658,024, which is a division of Ser. No. 493,876, May 12, 1983, Pat. No. 4,512,924. This application Jan. 10, 1988, Ser. No. 205,405

Claims priority, application United Kingdom, May 12, 1982, 8213850

Int. Cl.[4] C07D *471/06*

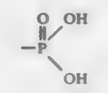
U.S. Cl. 540—487 **9 Claims**

1. Compounds of the formula



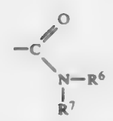
I

wherein B represents a vinylene group, R^1 represents a hydrogen atom or an alkyl, aralkyl, amino-alkyl, monoalkylamino-alkyl, dialkylamino-alkyl, acylamino-alkyl, phthalimido-alkyl, alkoxycarbonylamino-alkyl, aryloxycarbonylamino-alkyl, aralkoxycarbonylamino-alkyl, alkylaminocarbonylamino-alkyl, arylaminocarbonylamino-alkyl, aralkylaminocarbonylamino-alkyl, alkylsulphonylamino-alkyl or arylsulphonylamino-alkyl group, R^2 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group or a group of the formula



(i)

or

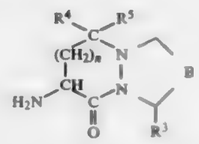


(ii)

R^3 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group, R^4 and R^5 each represent a hydrogen atom or R^4 and R^5 together represent an oxo group, R^6 and R^7 each represent a hydrogen atom or an alkyl or aralkyl group or R^6 and R^7 together with the nitrogen atom to which they are attached represent a 5-membered or 6-membered heteromonocyclic ring which may contain a further nitrogen atom or an oxygen or sulphur atom, and n stands for 2,

and pharmaceutically acceptable salts thereof.

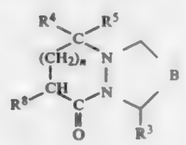
7. A compound of the formula



IV

wherein B represents a vinylene group, R^3 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group, R^4 and R^5 each represent a hydrogen atom or R^4 and R^5 together represent an oxo group and n stands for 2.

9. A compound of the formula



XVIIa

wherein B represents a vinylene group, R^3 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group, R^4 and R^5 each represent a hydrogen atom or R^4 and R^5 together represent an oxo group, R^8 represents a phthaloylamino group and n stands for 2.

4,808,714

SUBSTITUTED DITHIOCARBAMYLUREA ACCELERATORS

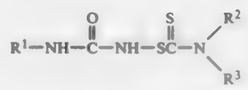
Joseph F. Stieber, Prospect, Conn., assignor to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Continuation of Ser. No. 832,278, Feb. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 585,072, Mar. 1, 1984, Pat. No. 4,631,316. This application Aug. 6, 1987, Ser. No. 83,912

Int. Cl.[4] C07D *279/12, 207/46*

U.S. Cl. 544—58.4 **3 Claims**

1. A compound of the formula:



wherein

R^1 is phenyl, or phenyl substituted with one or more members of the group consisting of:

fluorine,

chlorine,

bromine,

isocyanato,

C_1–C_2 alkyl,

C_1–C_2 alkoxy,

C_1–C_2 alkylthio,

NR^4R^5 wherein R^4 and R^5 are methyl,

$COOR^6$ wherein R^6 is C_1–C_2 alkyl, and

$NHCOOR^7$ wherein R^7 is C_1–C_2 alkyl; and

R^2 and R^3 are each independently C_1–C_{12} alkyl, C_5–C_6 cycloalkyl or benzyl; or

R^2 and R^3 taken together are tetramethylene, pentamethylene, oxydiethylene or thiodiethylene.

4,808,715

4-QUINAZOLINYLAMINO AND 4-CINNOLINYLAMINO BENZENESULPHONIC ACIDS AND AMIDES

John T. A. Boyle, Cookham, and Richard S. Todd, Near Slough, both of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

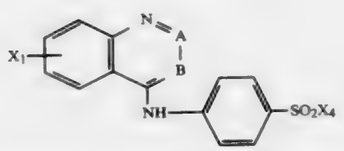
Division of Ser. No. 916,984, Oct. 9, 1986, Pat. No. 4,734,510, which is a division of Ser. No. 744,364, Jun. 13, 1985, Pat. No. 4,640,920. This application Jan. 6, 1988, Ser. No. 141,178

Claims priority, application United Kingdom, Jun. 14, 1984, 8415174; Dec. 19, 1984, 8432091

Int. Cl.[4] C07D *237/28, 239/94*

U.S. Cl. 544—235 **1 Claim**

1. A compound having the formula:



(VI)

and the pharmaceutically acceptable salts thereof, wherein X_1 is selected from halogen and trifluoromethyl; X_4 is selected from —OH and $—NR_1R_5$; R_1 is selected from hydrogen and lower alkyl; R_5 is selected from hydrogen and a group having the formula —Q—Z; Q represents lower alkylene; one of A and B is CH whilst the other one of A and B is N; and Z is a halogen atom or C_1–C_6 alkanesulphonyloxy, or substituted or unsubstituted benzenesulphonyloxy.

4,808,716

9-(PHOSPONYLMETHOXYALKYL) ADENINES, THE METHOD OF PREPARATION AND UTILIZATION THEREOF

Antonín Hol, and Ivan Rosenberg, both of Praha, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Czechoslovakia

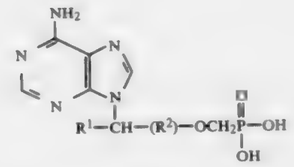
Filed Apr. 25, 1986, Ser. No. 856,299

Claims priority, application Czechoslovakia, Apr. 25, 1985, 3017-85

Int. Cl.[4] C07D *9/65, 473/34*

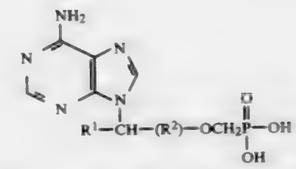
U.S. Cl. 544—244 **2 Claims**

1. A 9-(phosphonylmethoxyalkyl)adenine having the formula I



wherein R^1 is hydrogen and R^2 is selected from the group consisting of methylene, ethylene, propylene, ethylidene, and 1,2-O-isopropylidene-1,2-di-hydroxypropylene; and the salts thereof with alkali metals or ammonia.

2. A 9-(phosphonylmethoxyalkyl)adenine of the formula



wherein R^1 is selected from the group consisting of methyl and hydroxymethyl and R^2 is selected from the group consisting of methylene, ethylene, propylene, ethylidene, methoxyethylene, benzyloxyethylene, tetrahydropyranyl-2-oxyethylene, (1-ethoxyethoxy)ethylene and 1,2-O-isopropylidene-1,2-dihydroxypropylene; and the salts thereof with alkali metals or ammonia.

4,808,717

THERMOSETTING RESIN COMPOSITION

Yasuhisa Saito, Higashiosaka; Kunimasa Kamio, Saito; Shuichi Kanagawa, Nishama, and Yutaka Shioui, Hirakata, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

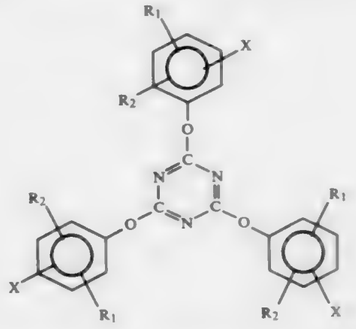
Filed May 4, 1987, Ser. No. 45,431

Claims priority, application Japan, Sep. 17, 1986, 61-2187757; Sep. 19, 1986, 61-223455

Int. Cl.[4] C07D *251/34*

U.S. Cl. 544—219 **1 Claim**

1. An s-triazine compound represented by the formula



wherein each of R_1 and R_2 is hydrogen, C_1–C_5 alkyl, or C_1–C_5 alkoxy, and X is $—CH_2CH=CH_2$ or $—CH=CHCH_3$.

4,808,718

FUSED POLYCYCLIC AND BRIDGED COMPOUNDS USEFUL AS CALCIUM CHANNEL BLOCKERS

George D. Hartman, Lansdale; Wasyl Halczenko, Hatfield, and Brian T. Phillips, Telford, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

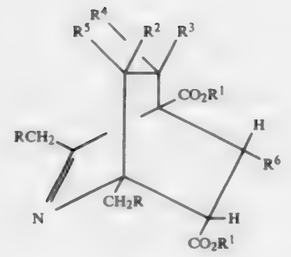
Filed May 6, 1986, Ser. No. 860,353

Int. Cl.[4] C07D *221/22, 471/08, 491/08, 513/08*

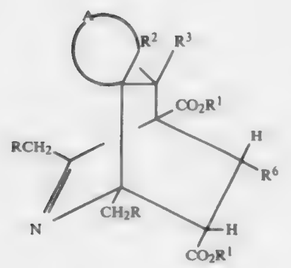
U.S. Cl. 546—14 **6 Claims**

1. A compound having the formulae:

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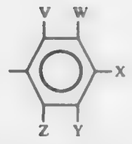


and



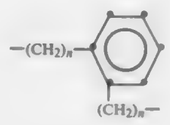
wherein:
R can be
(a) hydrogen;
(b) C_1–C_6 alkyl;
(c) C_2–C_8 alkenyl;
(d) C_1–C_8 alkyloxy;
(e) C_1–C_8 hydroxyalkyl;
(f) C_3–C_8 cycloalkyl;
(g) C_7–C_{14} phenylalkyl;
R^1 can be
(a) C_1–C_8 alkyl;
(b) C_2–C_8 alkenyl;
(c) C_1–C_8 hydroxyalkyl;
(d) C_1–C_8 dihydroxyalkyl;
(e) C_2–C_8 alkoxyalkyl;
(f) C_1–C_8 aminoalkyl wherein the amino group is NR^7R^8 in which R^7 and R^8 can each independently be H, C_1–C_8 alkyl, C_7–C_{14} phenylalkyl or R^7 and R^8 together with the N atom can form a 5- or 6-membered heterocycle selected from the group consisting of piperidinyl, morpholinyl, thiomorpholinyl, pyrrolidinyl, piperazinyl or N'-C_1–C_4-alkylpiperazinyl;
R^2, R^3, R^4 and R^5 can each independently be
(a) hydrogen;
(b) C_1–C_8 alkyl;
(c) $-(CH_2)_nSi(C_1$–$C_4alkyl)_3$ wherein n is 0–4;
(d) C_7–C_{14} phenylalkyl;
(e) unsubstituted or mono- or di-substituted phenyl wherein the substituents are C_1–C_4 alkyl, OH, C_1–C_4 alkoxy, halo (F, Cl, Br), cyano, nitro, haloalkyl of C_1–C_8;
(f) a heterocycle selected from the group consisting of pyridine, quinoline, isoquinoline, indole, furan, benzofuran, thiophene, benzothiophene, pyrrole, pyrimidine, pyrazine and the mono- and di-substituted analogs thereof wherein the substituents are C_1–C_4 alkyl, C_1–C_4 alkoxy, OH, halo (F, Cl, Br), cyano, nitro, CF_3, C_2F_5;
R^6 is

I

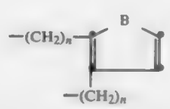


wherein V, W, X, Y and Z can each independently be
(a) hydrogen;
(b) C_1–C_8 alkyl;
(c) C_1–C_8 alkoxy;
(d) haloalkyl of C_1–C_8;
(e) cyano;
(f) nitro;
(g) halo (Br, Cl, F);
A is

Ia
(a) $-(CH_2)_n-CR=CR-(CH_2)_m-$
(b) $-(CH_2)_n-C\equiv C-(CH_2)_p-$
(c) $-(CH_2)_n-B-(CH_2)_m-$
(d)



(e)

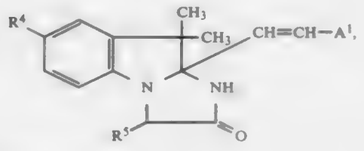


wherein n and m are independently 0–4, p is 2–5, R is as defined above, and B is O, S, or NR^7 wherein R^7 is as defined above; and, the pharmaceutically acceptable salts thereof.

4. A compound which is:
dimethyl 1,3-dimethyl-5-phenyl-8-[(trimethylsilyl)methyl]-2-azabicyclo[2.2.2]oct-2-ene-4,6-dicarboxylate.

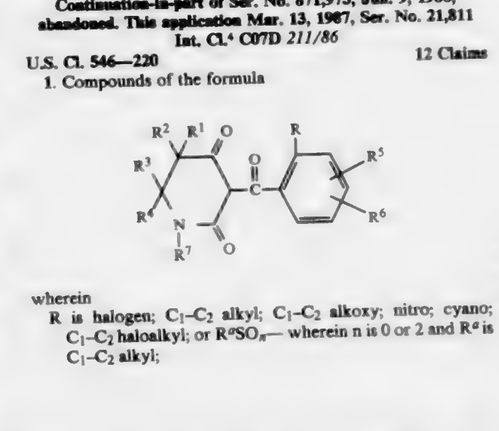
4,808,719
1H-IMIDAZO[2,3-A]INDOL-2-ONES AS COLOR-FORMING AGENTS
Hubertus Psaar, and Roderich Raue, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Jun. 9, 1987, Ser. No. 60,189
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1986, 3622009
Int. Cl.⁴ C07D *487/04*
U.S. Cl. 546—165 5 Claims

1. A compound of the formula



(II)

wherein
R^4 denotes hydrogen, chlorine, C_1–C_4-alkyl, trifluoromethyl, nitro, C_1–C_4-alkoxy, C_1–C_4-alkylsulphonyl, C_1–C_4-alkoxycarbonyl or cyano,
R^5 denotes hydrogen or C_1–C_4-alkyl and
A^1 denotes a radical of the formula



wherein
R^6 and R^7 independently of one another denote hydrogen, halogen, C_1–C_4-alkoxy or C_1–C_4-alkyl,
R^8, R^9 and R^{12} independently of one another denote C_1–C_4-alkyl, cyano-, chlorine- or C_1–C_4-alkoxy-substituted C_2–C_4-alkyl or benzyl,
R^9 furthermore denotes phenyl or phenyl substituted by C_1–C_4-alkoxy,
R^{12} furthermore denotes hydrogen,
R^{10} denotes C_1–C_4-alkyl or phenyl,
R^{11} denotes hydrogen, C_1–C_4-alkyl or phenyl and
n denotes 0, 1, 2, 3 or 4.

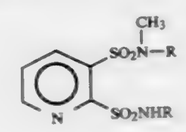
4,808,720
CERTAIN 3-BENZOYL-4-OXOLACTAMS
Jeff K. Curtis, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.
Continuation-in-part of Ser. No. 871,973, Jun. 9, 1986, abandoned. This application Mar. 13, 1987, Ser. No. 21,811
Int. Cl.⁴ C07D *211/86*
U.S. Cl. 546—220 12 Claims

1. Compounds of the formula

wherein
R is halogen; C_1–C_2 alkyl; C_1–C_2 alkoxy; nitro; cyano; C_1–C_2 haloalkyl; or R^aSO_n— wherein n is 0 or 2 and R^a is C_1–C_2 alkyl;
R^1 is hydrogen or C_1–C_4 alkyl;
R^2 is hydrogen or C_1–C_4 alkyl; or
R^1 and R^2 together are alkylene having 2–5 carbon atoms;
R^3 is hydrogen or C_1–C_4 alkyl;
R^4 is hydrogen or C_1–C_4 alkyl; or
R^3 and R^4 together are carbonyl; and
R^5 and R^6 independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) R^bSOm— wherein m is the the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) —NR^cR^d wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)$— wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) —$SO_2NR^cR^d$ wherein R^c and R^d are as defined; and (13) —$N(R^c)C(O)R^d$ wherein R^c and R^d are as defined;
R^7 is C_1–C_4 alkyl or phenyl; and
their salts.

4,808,721
HERBICIDAL PYRIDINESULFONYLUREAS
Paul H. Liang, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 39,491, Apr. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 939,428, Dec. 8, 1986, abandoned. This application Aug. 28, 1987, Ser. No. 90,589
Int. Cl.⁴ C07D *213/71*
U.S. Cl. 546—293 2 Claims

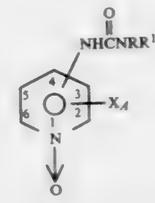
1. A 3-pyridinesulfonamide, represented by the formula



wherein
R is H or $C(CH_3)_3$.

4,808,722
PYRIDINYLUREA N-OXIDE COMPOUNDS AND AGRICULTURAL USES
Robert N. Hearle, II, East Windsor, N.J., assignor to FMC Corporation, Philadelphia, Pa.
Filed Oct. 31, 1985, Ser. No. 793,372
Int. Cl.⁴ C07D *213/75*; A01N *47/30*
U.S. Cl. 71—94 16 Claims

1. Pyridinylurea N-oxide compounds of the formula:



and acid addition salts thereof; wherein R is isopropyl, tert. butyl, or neopentyl; R^1 is hydrogen or methyl; each X independently is halogen, alkyl(C_1–C_6), haloalkyl(C_1–C_6), hydroxy, alkoxy(C_1–C_6), 2-pyridinyl, alkyl(C_1–C_6)thio or alkyl(C_1–C_6)sulfonyl; A is 1 to 4; and wherein the $NHCONRR^1$ group is bonded to the pyridinyl ring in the 4-position.

4,808,723

PROCESS FOR THE PREPARATION OF BENZOTHIAZOLES

Rainer Hamprecht, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

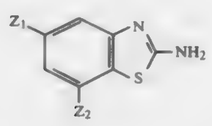
Filed Jan. 3, 1984, Ser. No. 567,480

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1983, 3301869; Oct. 18, 1983, 3337859

Int. Cl.⁴ C07D 277/82

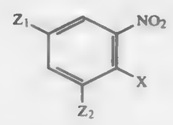
U.S. Cl. 548—164 **4 Claims**

1. A process for the preparation of a benzothiazole of the formula



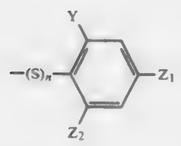
in which Z_1 and Z_2 each independently is hydrogen, Cl, Br, NO_2, CF_3, CN, —CO-alkyl, —SO_2-alkyl, —SO_2-phenyl, —CO_2-alkyl, —$CON(alkyl)_2$ or —SO_2—$N(alkyl)_2$, the alkyl radicals having 1–6C atoms, but Z_1 and Z_2 are not both simultaneously hydrogen,

comprising reacting (a) a compound of the formula



in which

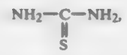
X is chlorine, bromine, SH, SCN or a radical of the formula



Y is NO_2 or NH_2, and

n is 1 or 2,

with (b)



$NH_4^+SCN^-$ and a mixture of H_2NCN or H_2S,

(b) being employed in at least a 5% excess relative to 1 equivalent of (a).

4,808,724

2-AMINOTHIAZOLYL-CONTAINING β-LACTAM ANTIBIOTICS

Michael Boberg; Karl G. Metzger, both of Wuppertal, and Hans-Joachim Zeiler, Velbert, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

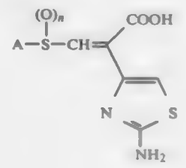
Division of Ser. No. 884,328, Jul. 10, 1986, Pat. No. 4,735,938. This application Sep. 30, 1987, Ser. No. 103,240

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224866

Int. Cl.⁴ G07D 277/40

U.S. Cl. 548—194 **1 Claim**

1. A compound of the formula



in which

n is 1 or 2, and

A denotes hydroxyl, alkyl with up to 18 C atoms, which is optionally substituted by halogen, hydroxyl, C_1–C_4-alkoxy, $OCOR^2$, thio, a group



a group



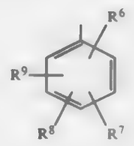
nitro, cyano, hydroxycarbonyl, C_1–C_4-alkoxycarbonyl, aminocarbonyloxy, or sulpho,

wherein

R^2 denotes branched or unbranched C_1–C_4-alkyl,

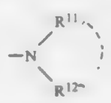
m can be 0, 1 or 2 and

R^2 and R^3 are identical or different and can be hydrogen, C_1–C_5-alkyl or C_1–C_5-alkanoyl, or A denotes a radical of the formula



wherein

R^6, R^7, R^8 and R^9 independently of one another denote hydrogen, halogen, alkyl with up to 6 carbon atoms, aryl, a group $—OCOR^{10}$, a group



nitro, cyano, $(C_1$–$C_4)$-alkoxy $(C_1$–$C_4)$-alkyl-thio, hydroxycarbonyl, $(C_1$–$C_4)$-alkoxycarbonyl, aminocarbonyloxy, sulpho, or wherein R^{10} denotes branched or unbranched alkyl with up to 6 carbon atoms, and wherein R^{11} and R^{12} are identical or different and can be hydrogen, alkyl or alkanoyl, each with up to 6 C atoms in the alkyl part.

4,808,725

PROCESS FOR THE PREPARATION OF THE (−)-ANTIPODE OF (E)-1-CYCLOHEXYL-4,4-DIMETHYL-3-HYDROXY-2-(1,2,4-TRIAZOL-1-YL)-PENT-1-ENE

Udo Kraatz, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

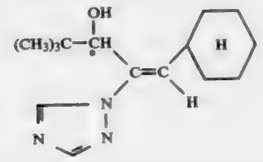
Filed Mar. 12, 1987, Ser. No. 25,297

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1986, 3609152

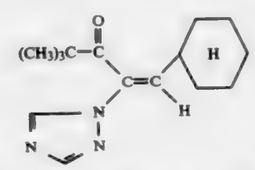
Int. Cl.⁴ C07D 249/08

U.S. Cl. 548—262 **5 Claims**

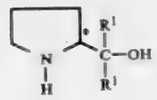
1. A process for the preparation of the (−)-antipode of (E)-1-cyclohexyl-4,4-dimethyl-3-hydroxy-2-(1,2,4-triazol-1-yl)-pent-1-ene of the formula



which comprises reacting the (E)-isomer of 1-cyclohexyl-4,4-dimethyl-2-(1,2,4-triazol-1-yl)-pent-1-en-3-one of the formula



(a) with boron hydride in the presence of an optically active proline derivative of the formula



in which

R^1 is phenyl or benzyl, or

(b) with a complex borohydride in the presence of an acid addition salt of the optically active proline derivative, in the presence of a diluent at a temperature between about −70° C. and +60° C.

4,808,726

PROCESS FOR PREPARATION OF GUANIDINE DERIVATIVE

Isao Hashimoto, Iwakuni; Ikuo Tomino, Ohtake; Hosji Kato, Waki; Noriaki Kihara, Iwakuni, and Teruaki Mukaiyama, Tokyo, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

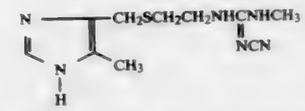
Filed Sep. 1, 1987, Ser. No. 91,849

Claims priority, application Japan, Sep. 1, 1986, 61-203639

Int. Cl.⁴ C07D 233/54

U.S. Cl. 548—342 **17 Claims**

1. A process for the preparation of N-cyano-N′-methyl-N″-(2-(5-methyl-4-imidazolylmethyl thio)ethyl)guanidine represented by the following formula (I):



(I)

which comprises reacting N-cyano-N′-methyl-N″-(2-(butane-2,3-dionyl)thioethyl)guanidine with an ammonium salt of a carboxylic acid and a source of formaldehyde selected from the group consisting of formaldehyde, formalin, paraformaldehyde and trioxane, wherein the molar ratio of the ammonium salt of the carboxylic acid to the N-cyano-N′-methyl-N″-(2-(butane-2,3-dionyl)thioethyl)-guanidine is from 2 to 20 and the molar ratio of the source of formaldehyde to the N-cyano-N′-methyl-N″-(2-(butane-2,3-dionyl)thioethyl)guanidine is from 1 to 10.

4,808,727

IMIDAZOLIUM HYDROGEN CARBONATES

Helmut Link, Basel, Switzerland, assignor to Hoffmann-LaRoche Inc., Nutley, N.J.

Filed Sep. 29, 1987, Ser. No. 102,067

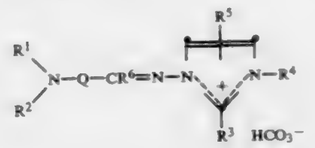
Claims priority, application Switzerland, Oct. 3, 1986, 3955/86

Int. Cl.⁴ C07D 233/66, 233/04, 413/00, 403/00

U.S. Cl. 548—337 **29 Claims**

1. A compound of the formula

I



wherein the symbol Q is unsubstituted phenylene or naphthylene, or phenylene or naphthylene substituted by one or two substituents selected form the group consisting of lower alkyl, lower alkoxy, lower alkylthio, lower alkanoyl, lower alkoxycarbonyl, phenyl, halogen, trifluoromethyl, hydroxy, nitro and cyano, R^1 and R^2, independently, are hydrogen or lower alkyl, R^3 is hydrogen, lower alkyl, lower hydroxyalkyl, lower alkoxyalkyl, lower haloalkyl, lower alkylthio, lower alkoxy or the group $—(A)_n—Ra$, R^4 is a saturated or partially unsaturated lower hydrocarbon group, a group of the formula —NRR′ wherein R and R′, independently, are hydrogen or lower alkyl, or the group —N═CRc—Rb, —CHRcRd, —NH—CHRcRd, —NH—CO—Re or —CHRc—Co—Re, R^5 is hydrogen, lower alkyl, lower hydroxyalkyl, lower alkoxyalkyl, lower haloalkyl, unsubstituted phenyl or naphthyl, or phenyl or naphthyl substituted by one, two or three substituents selected form the group consisting of lower alkylamino, di(lower alkyl)-amino, lower alkyl, lower alkoxy, lower alkylthio, lower

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alkanoyl, lower alkoxycarbonyl, phenyl, halogen, trifluoromethyl, hydroxy, nitro and cyano, R^6 is hydrogen or lower alkyl, Ra and Rb each are unsubstituted phenyl or naphthyl, or phenyl or naphthyl substituted by one, two or three substituents selected form the group consisting of lower alkylamino, di(lower alkyl)amino, lower alkyl, lower alkoxy, lower alkylthio, lower alkanoyl, lower alkoxycarbonyl, phenyl, halogen, trifluoromethyl, hydroxy, nitro and cyano, or a group of the formula —NRR′ wherein R and R′, independently, are hydrogen or lower alkyl, Rc is hydrogen or lower alkyl, Rd is unsubstituted phenyl or naphthyl, or phenyl or naphthyl substituted by one, two or three substituents selected form the group consisting of lower alkylamino, di(lower alkyl)amino, lower alkyl, lower alkoxy, lower alkylthio, lower alkanoyl, lower alkoxycarbonyl, phenyl, halogen, trifluoromethyl, hydroxy, nitro and cyano, Re is hydrogen, a saturated or partially unsaturated lower hydrocarbon group optionally attached via an oxygen atom or unsubstituted phenyl or naphthyl, or phenyl or naphthyl substituted by one, two or three substituents selected form the group consisting of lower alkyamino, di(lower alkyl)amino, lower alkyl, lower alkoxy, lower alkylthio, lower alkanoyl, lower alkoxycarbonyl, phenyl, halogen, trifluoromethyl, hydroxy, nitro and cyano, or a group of the formula —NRR′ wherein R and R′, independently, are hydrogen or lower alkyl, A is vinylidene or lower alkylene, n is the number 0 or 1 and the dotted line is an additional double bond.

4,808,728

PRODUCTION OF INDOLEPYRUVIC ACID AND THE 5-HYDROXY DERIVATIVE THEREOF

Giovanna De Lucs; Giovanni Di Stazio; Andrea Margonelli; Mario Materazzi, and Vincenzo Politi, all of Rome, Italy, assignors to Polifarma S.p.A., Rome, Italy

PCT No. PCT/IT86/00045, § 371 Date Mar. 2, 1987, § 102(e) Date Mar. 2, 1987, PCT Pub. No. WO87/00169, PCT Pub. Date Jan. 15, 1987

PCT Filed Jun. 24, 1986, Ser. No. 33,099

Claims priority, application Italy, Jun. 28, 1985, 48295 A/85

Int. Cl.⁴ C07D *209/18*

U.S. Cl. 548—502 **8 Claims**

1. A process for the production of indolepyruvic acid or the 5-hydroxy derivative thereof comprising:

reacting typtophan or 5-hydroxytryptophan, respectively, or a lower alkyl ester thereof, with a pyridine aldehyde in an essentially anhydrous polar organic solvent in the presence of a tertiary amine base; and

hydrolyzing the resulting reaction mixture with a strongly acidic aqueous solution to obtain a precipitate consisting essentially of indolepyruvic acid or its 5-hydroxy-derivative, respectively.

4,808,729

LEUKOTRIENE LTD_4 AND LTB_4 ANTAGONISTS

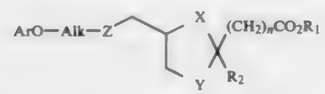
James R. Deason, Wilmette; Michael A. Stealey, Libertyville, and Richard M. Weier, Lake Bluff, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Sep. 24, 1987, Ser. No. 100,685

Int. Cl.⁴ C07D *327/04, 339/02*

U.S. Cl. 549—30 **63 Claims**

1. A compound of the formula



and the pharmaceutically acceptable salts and geometrical and optical isomers thereof wherein:

X, Y, and Z are each independently O or S with S optionally oxidized to S=O;

Alk is alkylene or hydroxyalkylene containing 1–6 carbon atoms;

R_1 is hydrogen or lower alkyl;

n is 0 to 5;

R_2 is hydrogen, lower alkyl, cycloalkyl, $-(CH_2)_n-CO_2R_1$, phenyl, phenyl substituted with halo, lower alkyl or lower alkoxy; and

Ar is 5,6,7,8-tetrahydro-1-naphthalenyl, phenyl, or phenyl substituted with lower alkyl, hydroxy, lower alkoxy, or lower alkanoyl.

4,808,730

SYNTHESIS OF CISPLATIN ANALOGS

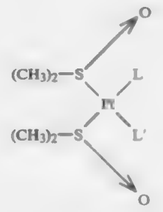
Panayota Bitha, Pomona; Joseph J. Hlavka, Tuxedo Park, and Yang-I Lin, Tappan, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 23, 1987, Ser. No. 65,441

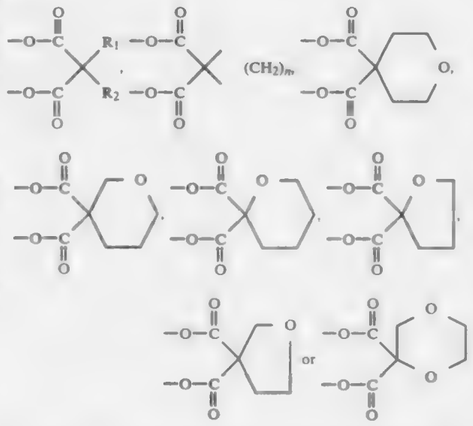
Int. Cl.⁴ C01G *55/00;* **C07D** *307/12, 309/06, 309/12*

U.S. Cl. 549—211 **4 Claims**

1. A compound of the formula:



wherein L and L′ are monobasic carboxylates selected from the group consisting of acetate, hydroxyacetate and propionate or L and L′ taken together is a dibasic carboxylate of the formulae:



wherein R_1 and R_2 are each individually hydrogen or alkyl(-C_1–C_5) and n is 2, 3, 4 or 5.

4,808,731

METHOD FOR MAKING OXYDIPHTHALIC ANHYDRIDE

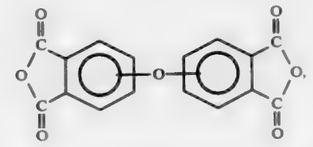
Donald R. Berdahl, Scotia, and Pamela A. Matach, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 4, 1988, Ser. No. 164,283

Int. Cl.⁴ C07D *307/89*

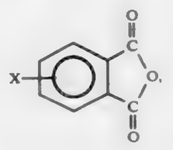
U.S. Cl. 549—241 **8 Claims**

1. A method for making oxydiphthalic anhydride having the formula,

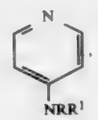


which consists of:

(1) agitating a mixture comprising a substituted phthalic anhydride of the formula,



a nonpolar organic solvent, and an effective amount of a dialkylaminopyridine having the formula,



at a temperature in the range of from 150° C. to 250° C. to produce a mixture comprising oxydiphthalic anhydride, and

(2) recovering the oxydiphthalic anhydride from the mixture of (1),

where R and R^1 are members selected from the same or different $C_{(1-8)}$ alkyl radicals, and X is a member selected from the class consisting of nitro and fluoro.

4,808,732

AMINO-TETRAALKYLBENZOYLPHTHALIC ACIDS

Josef Pfeifer, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

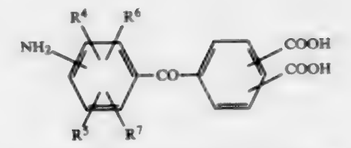
Continuation of Ser. No. 895,601, Aug. 7, 1986, abandoned, which is a division of Ser. No. 795,591, Nov. 6, 1985, Pat. No. 4,629,685. This application Oct. 28, 1987, Ser. No. 115,544

Claims priority, application Switzerland, Nov. 16, 1984, 5457/84

Int. Cl.⁴ C07D *307/77*

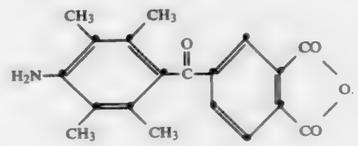
U.S. Cl. 549—244 **4 Claims**

1. An amino-tetraalkylbenzoylphthalic acid of the formula



in which R^4, R^5, R^6 and R^7 are alkyl of 1 to 4 carbon atoms, or the polyimide forming derivatives thereof selected from the group consisting of the esters, amides, halides and anhydrides.

4. The acid anhydride according to claim 1 which is



4,808,733

CERTAIN 4-OXO-3-BENZOYLVALEROLACTONES AND THIOLACTONES

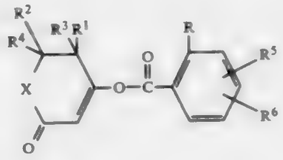
Christopher G. Knudsen, Berkeley; William J. Michaely, Richmond; Donald R. James, El Sobrante, and Hsiao-Ling M. Chia, Moraga, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 871,975, Jun. 9, 1986, Pat. No. 4,741,755. This application Dec. 21, 1987, Ser. No. 135,216

Int. Cl.⁴ C07D *309/30*

U.S. Cl. 549—292 **1 Claim**

1. An intermediate compound having the structural formula



wherein

X is oxygen or sulfur;

R is halogen; C_1–C_2 alkyl; C_1–C_2 alkoxy; nitro; cyano; C_1–C_2 haloalkyl; or R^aSO_n— wherein n is 0 or 2 and R^a is C_1–C_2 alkyl;

R^1 is hydrogen or C_1–C_4 alkyl;

R^2 is hydrogen or C_1–C_4 alkyl;

R^3 is hydrogen or C_1–C_4 alkyl;

R^4 is hydrogen or C_1–C_4 alkyl; or

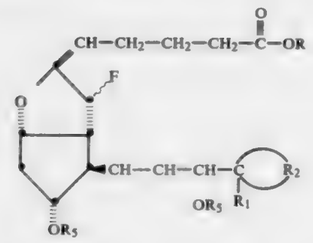
R^1 and R^3 together are alkylene having 2–5 carbon atoms; or R^2 and R^4 together are alkylene having 2–5 carbon atoms; and

R^5 and R^6 independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) R^bSO_n— wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) —NR^cR^d wherein R^c and R^d independently are hydrogen or C_1–C_4 alky; (11) $R^aC(O)$— wherein R^3 is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) —$SO_2NR^cR^d$ wherein R^c and R^d are as defined; and (13) —$N(R^c)C(O)R^d$ wherein R^c and R^d are as defined.

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4,808,734
16-CYCLOALKYL-7-FLUORO-PROSTACYCLINS
George W. Holland; Perry Rosen, both of North Caldwell, N.J.; Hans Maag, Menlo Park, Calif., and Ferdinand Lee, Teaneck, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Dec. 1, 1986, Ser. No. 936,569
Int. Cl.[4] C07D *307/935*
U.S. Cl. 549—465 13 Claims

1. A prostacyclin selected from the group consisting of a compound of the formula



I-A

wherein R is hydrogen or lower alkyl; R_5 is hydrogen or lower alkanoyl; R_1 is fluoro and R_2 taken together with its attached carbon atom forms a cycloalkyl ring of from 3 to 7 carbon atoms and the dotted bond is optionally hydrogenated; pharmaceutically acceptable salts, optical antipodes, diasteroisomers and racemates thereof.

4,808,735
PROCESS FOR THE REDUCTION OF THE KETENE TRIMER CONTENT IN RAW DIKETENE
Renzo Bergamin, Raron, and Wilhelm Quittmann, Visp, both of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland
Filed Apr. 5, 1988, Ser. No. 177,609
Claims priority, application Switzerland, Apr. 16, 1987, 1489/87
Int. Cl.[4] C07D *303/00*
U.S. Cl. 549—329 4 Claims

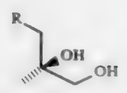
1. Process for the reduction of the ketene trimer portion in the raw diketene, comprising mixing the diketene with an amount, which corresponds to the amount of ketene trimer in the diketene, of a compound of the general formula:

$$R(XH)_n$$

wherein R is H, an aliphatic hydrocarbon radical with 1 to 18 C atoms or an aromatic hydrocarbon radical, X is oxygen or sulfur, or XH is a COOH group, and n is 1 to 2, heating the mixture to temperatures of 50° to 130° C., and distilling off the diketene from the mixture.

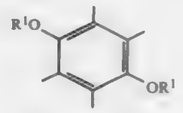
4,808,736
PROCESS FOR THE PREPARATION OF HYDROQUINONE DERIVATIVES AND D-α-TOCOPHEROL
Richard Barner, Witterswil, and Josef Hübscher, Seon, both of Switzerland, assignors to Hoffmann-LaRoche Inc., Nutley, N.J.
Filed Aug. 10, 1987, Ser. No. 83,764
Claims priority, application Switzerland, Aug. 25, 1986, 3408/86
Int. Cl.[4] C07D *311/72*; C07C *41/01*
U.S. Cl. 549—408 6 Claims

1. A process for the preparation of d-α-tocopherol which process comprises reacting a compound of the formula



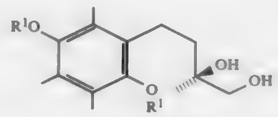
I

wherein R is a leaving group,
with a compound of the formula



II

wherein R^1 is an ether protecting group,
in the presence of an alkali metal hydride or alkaline earth metal hydride and a phase transfer catalyst and, converting a thus-obtained compound of the formula



III

wherein R^1 is as described above into d-α-tocopherol.

4,808,737
PROCESS FOR PRODUCING 2-HYDROXY-4-METHYLTETRAHYDROPYRAN
Noriaki Yoshimura, and Yasuo Tokitoh, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan
Filed Oct. 22, 1986, Ser. No. 921,383
Claims priority, application Japan, Nov. 5, 1985, 60-248466
Int. Cl.[4] C07D *309/10*
U.S. Cl. 549—423 7 Claims

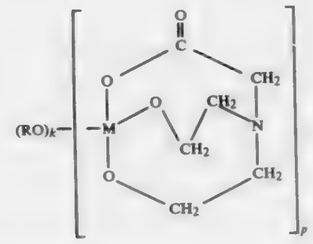
1. A process for producing 2-hydroxy-4-methyltetrahydropyran by reacting 3-methyl-3-buten-1-ol with a hydrogen-carbon monoxide mixed gas in the presence of a rhodium compound, characterized in that the rhodium compound is used in a concentration of 0.01–0.1 milligram atom (on the rhodium atom basis) per liter and that the reaction is carried out in the simultaneous presence of a tris(alkyl substituted phenyl) phosphite of the formula $P(OR)_3$ wherein three Rs are the same or different and each is an alkyl substituted phenyl, in an amount of 110–500 moles per gram atom of rhodium, said tris(alkyl substituted phenyl) phosphite having an electronic parameter (ν-value) of 2080–2090 cm^{-1} and a steric parameter (θ-value) of 135°–190°.

4,808,738
ETHYLENE OXIDE PROCESS
Aan M. Lauritzen, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Division of Ser. No. 926,025, Oct. 31, 1986, Pat. No. 4,766,105.
This application Apr. 20, 1988, Ser. No. 184,531
Int. Cl.[4] C07D *301/10*
U.S. Cl. 549—536 125 Claims

1. In a process for the production of ethylene oxide wherein ethylene is contacted in the vapor phase with an oxygen-containing gas at ethylene oxide forming conditions at a temperature ranging between about 180° C. and 330° C. in the presence of a silver metal-containing catalyst, the improvement which comprises using a catalyst comprising a catalytically effective amount of silver, a promoting amount of alkali metal, a promoting amount of rhenium and a promoting amount of a rhenium co-promoter selected from sulfur, molybdenum, tungsten, chromium and mixtures thereof supported on a suitable support.

4,808,739
CROSS-LINKING TITANIUM & ZIRCONIUM CHELATES & THEIR USE
Donald E. Putzig, Newark, and Kenneth C. Smeltz, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 10, 1987, Ser. No. 31,921
Int. Cl.[4] C07F *3/06, 7/28*
U.S. Cl. 556—55 7 Claims

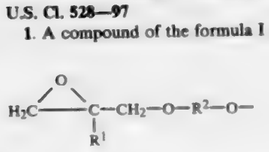
1. A water-soluble N,N-bis-(2-hydroxyethyl)glycine/metal chelate represented by the formula:



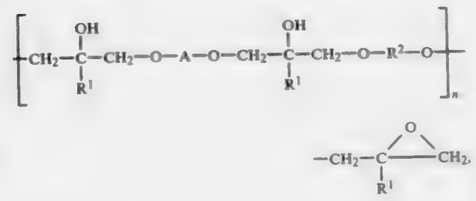
wherein R is H or alkyl (1–12 C.); M is Ti or Zr; k is a number in the range between 0 and 1, p is a number in the range between 1 and 2, and k+p=2.

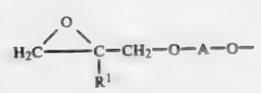
4,808,740
SO-CALLED ADVANCED EPOXIDE RESINS BASED ON CYCLOHEX-1-YLMETHYLENEDIPHENOL DERIVATIVES OR BICYCLO(2.2.1)HEPT-1-YLMETHYLENEDIPHENOL DERIVATIVES
Martin Roth, Giffers, and Charles E. Monnier, Villars-sur-Glâne, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Jan. 25, 1988, Ser. No. 147,389
Claims priority, application Switzerland, Jan. 30, 1987, 352/87
Int. Cl.[4] C08G *59/02, 59/24*
U.S. Cl. 528—97 9 Claims

1. A compound of the formula I or II



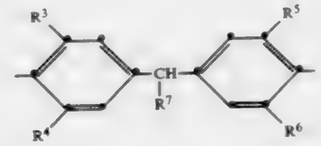
(I)





(II)

in which A is a radical

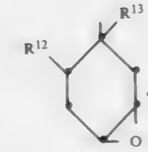


R^1 is hydrogen or methyl, R^2 is the radical of an aliphatic, cycloaliphatic, aromatic or araliphatic diol after both of the hydroxyl groups have been removed, R^3, R^4, R^5 and R^6 independently of one another are hydrogen, C_1–C_6alkyl, chlorine or bromine, R^7 is a radical of the formula III, IV, V or VI

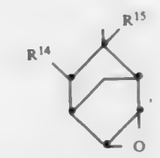


(III)

(IV)



(V)



(VI)

R^8, R^{10}, R^{12} and R^{14} are hydrogen, C_1–C_6alkyl or phenyl, R^9, R^{11}, R^{13} and R^{15} are hydrogen or C_1–C_6alkyl and the average value of n (number average) is a number from 1 to 20, it being possible for the radicals R^1 to R^{15}, within a given molecule, to assume different meanings within the scope of the definitions given.

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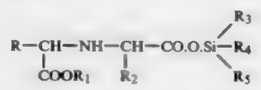
4,808,741

PROCESS FOR PREPARING CARBOXYALKYL DIPEPTIDES

Jan Oudenes, Thornhill, Canada, assignor to Torcan Chemical Ltd., Aurora, Canada

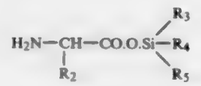
Filed Dec. 29, 1986, Ser. No. 947,236
Claims priority, application Spain, Dec. 30, 1985, 550.527
Int. Cl.[4] C07F 7/10
U.S. Cl. 556—418 **8 Claims**

1. A process of preparing silylated organic compounds of general formula:



(II)

said compounds of formula (II) being readily hydrolyzable to the corresponding substituted amino acid compound ready for reaction with another amino acid compound to form a dipeptide derivative, in which R represents phenalkyl, R_1 represents lower alkyl, phenyl or benzyl, R_2 represents lower alkyl, lower alkylamino or N-substituted lower alkylamino, and R_3, R_4 and R_5 are independently selected lower alkyl groups, which comprises reacting a silylated amino-acid of the general formula:



in which R_2, R_3, R_4 and R_5 have the meanings given above, with a phenalkyl ester of the general formula:



in which R and R_1 have the meanings given above, and X is chlorine, bromine or iodine.

4,808,742

METHOD FOR REMOVING ACIDS FROM ORGANOPHOSPHATE FUNCTIONAL FLUIDS

Hubert L. Fleming, Mars, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 894,257, Aug. 7, 1986, Pat. No. 4,751,211. This application Dec. 28, 1987, Ser. No. 138,316
Int. Cl.[4] C07F 9/09
U.S. Cl. 558—150 **18 Claims**

1. A method for reducing the acidity of organophosphate functional fluids, comprising the steps of

(a) contacting an organophosphate functional fluid with particles of a solid composite adsorbent comprising alumina and Y zeolite, and

(b) separating the functional fluid from the adsorbent.

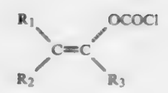
4,808,743

VINYL CHLOROFORMATES AND PREPARATION

Mark Bowman; Roy Olofson, both of State College, Pa.; Thierry Malfroot, Saintry-sur-Seine, and Jean-Pierre Senet, Herbeauvilliers-Buthiers, both of France, assignors to Societe Nationale des Poudres et Explosifs, Cedex, France

Continuation-in-part of Ser. No. 896,605, Aug. 13, 1986, Pat. No. 4,786,745. This application Feb. 13, 1987, Ser. No. 14,286
Claims priority, application France, Aug. 23, 1985, 85 12652
Int. Cl.[4] C07C 68/02, 69/07
U.S. Cl. 558—141 **12 Claims**

1. A vinyl chloroformate of formula:



in which:

R_1 and R_2 are the same or different and each is chlorine, bromine or an alkyl radical, linear or branched, of 1–4 carbon atoms, the radicals R_1 and R_2 being capable of forming together with the carbon atom to which they are attached a cycloaliphatic ring of 4–8 carbon atoms;

R_3 represents:

hydrogen when at least one of R_1 and R_2 radicals is alkyl;

a linear or branched alkyl of 1–4 carbon atoms or said R_3 radical forms with said R_2 radical and the carbon atoms to which they are attached an unsubstituted hydrocarbon ring of 5–8 carbon atoms or a hydrocarbon ring of 5–8 carbon atoms substituted by oxygen atoms forming a ketone group in the ring;

an aryl radical which is unsubstituted or substituted by alkyl groups of up to 8 carbon atoms;

the radical cyano—C≡N;

or a phosphonate radical of formula:



in which R_4 and R_5 are the same or different, and each is a linear or branched alkyl of 1–4 carbon atoms.

4,808,744

PHOSPHONATE CONTAINING PHOSPHONATES

Thomas A. Hardy, Thousand Oaks, Calif., and Edward N. Walsh, New City, N.Y., assignors to Akzo America Inc., New York, N.Y.

Continuation of Ser. No. 737,128, May 23, 1985, abandoned. This application Mar. 2, 1987, Ser. No. 20,829
Int. Cl.[4] C07F 9/40
U.S. Cl. 558—163 **8 Claims**

1. A compound of the formula:

$(RO)_2P(O)Z$

wherein

R is $(R_2O)_2P(O)R_3$—;

R_2 is alkyl, aryl or haloaryl;

R_3 is alkylene; and

Z is



where R_{13} and R_{14} are the same or different and are hydrogen, alkyl, haloalkyl, aryl or haloaryl.

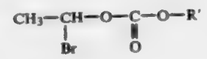
4,808,745

PROCESS FOR THE PREPARATION OF 1-BROMOETHYL HYDROCARBONYL CARBONATES AND NEW 1-BROMOETHYL HYDROCARBONYL CARBONATES

Thierry Malfroot, Saintry sur Seine; Marc Pitteu, Itteville, and Jean-Pierre Senet, La Chapelle La Reine, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris Cedex, France

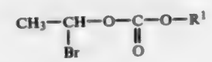
Continuation of Ser. No. 796,555, Nov. 8, 1985, Pat. No. 4,697,032. This application Mar. 23, 1987, Ser. No. 28,964
Claims priority, application France, Nov. 23, 1984, 84 17847
Int. Cl.[4] C07C 69/96
U.S. Cl. 558—277 **2 Claims**

1. The compound 1-bromoethyl hydrocarbonyl carbonate of formula:



wherein R′ is isopropyl.

2. The compound 1-bromoethyl hydrocarbonyl carbonate of formula:



wherein R^1 is octyl.

4,808,746

PREPARATION OF TRIFLUOROMETHYLBENZONITRILE FROM TRIFLUOROMETHYLBENZALDEHYDE

Yasunobu Nishimura, Kasuifukuoka; Toshikazu Kawai, Kawagoe, and Yoshikazu Sugimori, Kasuifukuoka, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Dec. 7, 1987, Ser. No. 129,309
Claims priority, application Japan, Dec. 8, 1986, 61-290393
Int. Cl.[4] C07C 120/00
U.S. Cl. 558—314 **7 Claims**

1. A method of preparing trifluoromethylbenzonitrile by reaction of trifluoromethylbenzaldehyde with hydroxylamine at an elevated temperature,

characterized in that said reaction is carried out in an organic solvent selected from the group consisting of nitrobenzene, nitrotoluene, chloronitrobenzene and diphenyl ether, and that water formed by the reaction is substantially continuously distilled out of the reaction system,

wherein, said organic solvent is used in an amount of 30 to 400 parts by weight per 100 parts by weight of said trifluoromethylbenzaldehyde, and

wherein, the temperature of the reaction system is gradually raised as water is dissipated, the maximum temperature of the reaction system being not higher than 200° C.

4,808,747

PROCESS FOR PRODUCING ALKYLIDENE COMPOUNDS AND ARYLIDENE COMPOUNDS

Walter K. Homann, Dülmen, Fed. Rep. of Germany, assignor to Hüls AG, Marl, Fed. Rep. of Germany

Filed Mar. 14, 1985, Ser. No. 711,712
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1984, 3423249
Int. Cl.[4] C07C 120/00
U.S. Cl. 558—374 **8 Claims**

1. In the process for producing alkylidene compounds and arylidene compounds by reacting the corresponding CH-acidic compounds with carbonyl compounds, the improvement comprising:

carrying out the reaction at a temperature of between about 10° to 150° C. in the presence of a catalytic amount of a metal compound at a catalyst concentration between about 0.001 and 1 mole percent based on said CH-acidic compound and in the presence of about 1 to 40% water referred to the weight of said metal compound wherein said CH-acidic compounds are selected from the group consisting of malonic acid, malonic acid ester, malonic acid dinitrile, cyanacetic acid, cyanacetic ester and nitromethane, said carbonyl compounds are selected from the group consisting of acetaldehyde, propionaldehyde, butyraldehyde, valeraldehyde, 2-methylvaleraldehyde, capronaldehyde, laurylaldehyde, benzaldehyde, 2-phenylpropanal, 3-phenylpropanal, acetone, methylethylketone, methylbutylketone, cyclohexanone and 4-tert.-butylcyclohexanone and said metal compound is selected from the group consisting of calcium acetate, calcium propionate, lead acetate, lead propionate, aluminum acetate, aluminum propionate, copper acetate, copper propionate, zinc acetate, zinc propionate, cadmium acetate, cadmium propionate, chromium acetate, chromium propionate, manganese acetate, manganese propionate, iron acetate, iron propionate, cobalt acetate, cobalt propionate, nickel acetate, nickel propionate and mixtures thereof.

4,808,748

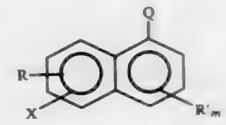
TRIFLUOROMETHYLATION PROCESS

Ronny W. Lin, and Robert L. Davidson, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 12, 1985, Ser. No. 808,304
Int. Cl.[4] C07F 120/00
U.S. Cl. 558—378 **20 Claims**

1. In a process for preparing a trifluoromethylaromatic compound by reacting an aromatic bromide or iodide with a trifluoroacetate in the presence of cuprous iodide and a dipolar aprotic solvent, the improvement which comprises employing potassium trifluoroacetate as the trifluoroacetate.

4. The process of claim 1 wherein the aromatic halide is a halonaphthalene corresponding to the formula:



wherein R and R′ are independently selected from chloro, fluoro, nitro, hydroxy, and alkyl and alkoxy substituents containing 1–6 carbons; Q is —CN or —COOR″; R″ is saturated hydrocarbyl; X is bromo or iodo; and m is 0 or 1.

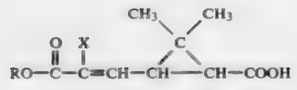
4,808,749

CYCLOPROPANE CARBOXYLIC ESTERS AND ACIDS

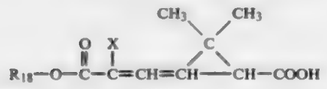
Jacques Martel, Bondy; Jean Tessier, Vincennes, and André Tèche, Paris, all of France, assignors to Roussel Uclaf, Paris, France

Continuation of Ser. No. 756,374, Jul. 18, 1985, abandoned, which is a division of Ser. No. 655,202, Sep. 26, 1984, abandoned, which is a division of Ser. No. 495,481, May 17, 1983, Pat. No. 4,489,093, which is a continuation-in-part of Ser. No. 306,780, Sep. 29, 1981, abandoned. This application Nov. 18, 1986, Ser. No. 932,179
Claims priority, application France, Oct. 1, 1980, 80-21017; Nov. 22, 1982, 82-19516
Int. Cl.[4] C07C 121/46, 53/134
U.S. Cl. 558—434 **2 Claims**

1. A compound having a formula selected from the group consisting of

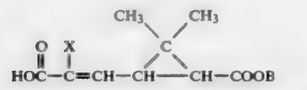


II



II_A

and

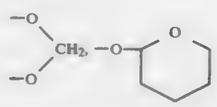


IV

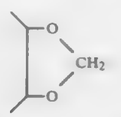
wherein R is selected from the group consisting of (a) alkyl of 1 to 8 carbon atoms of 1 to 8 carbon atoms, alkenyl and alkynyl of 2 to 8 carbon atoms and alkyl of 1 to 8 carbon atoms, alkenyl and alkynyl of 2 to 8 carbon atoms and cycloalkyl of 3 to 8 carbon atoms and cycloalkyl or cycloalkylalkyl of 3 to 8 carbon atoms substituted with at least one member of the group consisting of halogen —OH, —SH, —OR′, —SR′, —NO_2,



—CN, —SO_3H, —PO_4H_2,



$COAlK_1$, —SO_2AlK_2, —SO_3AlK_3, aryl and aryl substituted with at least one member of the group consisting of —OH, alkoxy of 1 to 8 carbon atoms, alkyl of 1 to 8 carbon atoms, halogen, —CF_3, —OCF_3, —SCF_3 and



R′ is alkyl of 1 to 8 carbon atoms, R″ and R‴ are individually selected from the group consisting of hydrogen and alkyl of 1 to 8 carbon atoms, AlK_1, AlK_2 and AlK_3 are individually alkyl of 1 to 18 carbon atoms (b) aryl of 6 to 14 carbon atoms and aryl of 6 to 14 carbon atoms substituted with at least one substituent selected from the group consisting of —OH, alkoxy of 1 to 8 carbon atoms, alkyl of 1 to 8 carbon atoms, halogen, —OCF_3, —CF_3 and —SCF_3 and (c) heterocycle selected from the group consisting of pyridinyl, furanyl, thiophenyl, oxazolyl and thiazolyl (d) pyridinyl, furanyl, thiophenyl oxazolyl and thiazolyl, all substituted with at least one member of the group consisting of —OH, alkoxy of 1 to 8 carbon atoms, alkyl of 1 to 8 carbon atoms, halogen, —CF_3, —OCF_3 and —SCF_3, B is selected from the group consisting of alkyl of 1 to 18 carbon atoms, alkenyl and alkynyl of 2 to 8 carbon atoms, cycloalkyl of 3 to 18 carbon atoms, X is halogen, R_{18} is alkyl of 1 to 18 carbon atoms, X_1 is fluorine, chlorine or bromine and the ethylenic double bond has the E geometry and the cyclopropane moiety has the (1R, cis) structure.

2. A compound of claim 1 selected from the group consisting of E isomer of (1R, cis) 2,2-dimethyl-3-[2-fluoro-3-oxo-3-(1,1-dimethylethoxy)-1-propenyl]-cyclopropane carboxylic acid, the E isomer of (1R, cis) 2,2-dimethyl-3-[2-bromo-3-oxo-3-ethoxy-1-propenyl]-cyclopropane carboxylic acid, (1R, cis, E) 2,2-dimethyl-3-[2-fluoro-3-oxo-3-methoxy-1-propenyl]-cyclopropane carboxylic acid, the E isomer of (1R, cis) 2,2-dimethyl-3-[2-chloro-3-oxo-3-(2-butoxy)-1-propenyl]-cyclopropane carboxylic acid, the E isomer of (1R, cis) 2,2-dimethyl-3-[2-bromo-3-oxo-3-(2-butoxy)-1-propenyl]-cyclopropane carboxylic acid, benzyl (1R, cis, E) 2,2-dimethyl-3-[2-fluoro-3-oxo-3-hydroxy-1-propenyl]-cyclopropane carboxylic acid, (S)-cyano-3-phenoxy-4-fluoro-benzyl (1R, cis, E) 2,2-dimethyl-3-[2-fluoro-3-oxo-3-hydroxy-1-propenyl]-cyclopropane carboxylate and the E isomer of (1R, trans) 2,2-dimethyl-3-[2-bromo-3-oxo-3-ethoxy-1-propenyl]-cyclopropane carboxylic acid.

4,808,750

FLUOROPHENOXYPHENOXYPROPIONATES AND DERIVATIVES THEREOF

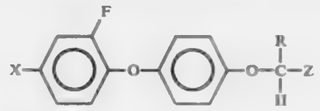
Richard B. Rogers, Midland, Mich., and B. Clifford Gerwick, III, Clayton, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 765,401, Aug. 12, 1985, Pat. No. 4,725,683. This application Jul. 14, 1986, Ser. No. 885,360

Int. Cl.⁴ C07C *69/76*

U.S. Cl. 560—062 **29 Claims**

1. A racemic mixture or an at least partially resolved enantiomer of a herbicidally effective compound of the formula



wherein

X represents —Cl, —F, —CF_3, —I, —Br, —OCF_3, —CF_2Cl, —CF_2H or —CF_2CCl_2H;

R represents C_1–C_3 alkyl; and

Z represents an organic moiety containing N, O or S atoms, a metallic cation, an ammonium cation or an organic amine cation and is or can be hydrolyzed, oxidized, or both hydrolyzed and oxidized in plants or soil to a carboxyl moiety that is in undissociated, dissociated, or in both undissociated and dissociated forms.

4,808,751

METHOD FOR REACTIVATING A GROUP VIII NOBLE METAL CATALYST FOR USE IN THE PURIFICATION OF CRUDE TEREPHTHALIC ACID

Hobe Schroeder, Warrenville, and Ricky L. Wittman, Montgomery, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Mar. 29, 1988, Ser. No. 174,850

Int. Cl.⁴ C07C *51/42, 63/26;* B01J *23/96, 20/20*

U.S. Cl. 562—487 **19 Claims**

1. In combination with a method for producing purified terephthalic acid comprising: oxidizing p-xylene in the liquid-phase with an oxygen-containing gas in a solvent at an elevated temperature and pressure and in the presence of an oxidation catalyst comprising cobalt, manganese, and bromine components to form crude terephthalic acid and impurities comprising 4-carboxybenzaldehyde, color bodies and color-forming precursors; reducing in the liquid phase in a purification reactor at least a portion of the aforesaid impurities in the resulting crude terephthalic acid in solution at an elevated temperature and pressure and in the presence of hydrogen and a bed of a particulate purification catalyst comprising at least one insoluble Group VIII noble metal; withdrawing the solution from the purification reactor; and crystallizing and separating the purified terephthalic acid from the solution;

a method for reactivating the purification catalyst, comprising:

(a) after the solution of purified terephthalic acid is withdrawn from the purification reactor, contacting the purification catalyst with hot water at a temperature in the range of from about 200° C. to about 350° C. for from about 0.5 to about 10 hours;

(b) contacting the purification catalyst with cool water at a temperature in the range of from about 3° C. to about 100° C. for from about 0.5 to about 10 hours; and

(c) contacting the purification catalyst with a concentrated alkaline solution of from about 12 to about 30 weight percent of a salt or hydroxide of ammonium or an alkali or alkaline earth metal for from about 1 to about 10 hours.

4,808,752

PROCESS FOR THE PREPARATION OF 2-AMINOPHENYL THIOETHERS

Theodor Papenfuhs, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

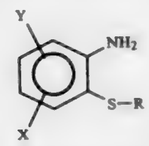
Filed Jul. 31, 1986, Ser. No. 892,598

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1985, 3528033

Int. Cl.⁴ C07C *85/145, 85/24*

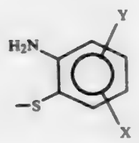
U.S. Cl. 564—414 **10 Claims**

1. A process for the preparation of 2-aminophenyl thioethers of the formula (1)

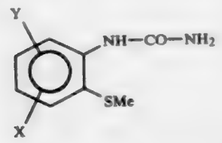


(1)

in which R represents an $alkyl_{C1-C6}$ group which can be substituted by hydroxyl, $alkoxy_{C1-C4}$, carboxyl, -COO-$alkyl_{C1-C4}$, $alkenyl_{C2-C6}$ or phenyl groups or by the radical

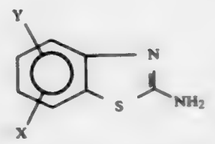


and X and Y are each a hydrogen or halogen atom or an $alkyl_{C1-C6}$, $alkoxy_{C1-C6}$ or nitro group, wherein the salts of the formula (4)



(4)

in which X and Y have the abovementioned meanings and Me denotes an alkali metal atom or the equivalent amount of an alkaline earth metal atom, which are obtainable in a known manner by reacting 2-aminobenzothiazoles of the formula (3)



(3)

in which X and Y have the abovementioned meanings, with alkali metal or alkaline earth metal hydroxides in an alkali-stable, substantially anhydrous solvent, are reacted with an alkylating agent of the formula (2)

R—Z (2)

in which R has the abovementioned meaning and Z represents a halogen atom, or of the formula (2a)

$(R'O)_2SO_2$ (2a)

in which R′ denotes an $alkyl_{C1-C4}$ group, or of the formula (2b)

$Z\text{-}alkylene_{C2-C6}Z$ (2b)

in which Z has the abovementioned meaning, or with an alkylene C_2 or C_3-oxide at temperatures of 0° to 100° C. in the presence or absence of water, with the proviso that if the reaction with said alkylating agent is carried out in the absence of water, water is added immediately after said reaction.

4,808,753

CARBOCYCLIC DERIVATIVES

Kenneth W. Bair, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 801,060, Nov. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 673,531, Nov. 20, 1984, abandoned. This application Jan. 20, 1988, Ser. No. 146,221

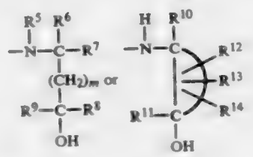
Int. Cl.⁴ C07C *87/28*

U.S. Cl. 564—387 **7 Claims**

1. A compound of the formula

$ArCH_2R^1$

or a pharmaceutically acceptable acid addition salt thereof wherein R^1 contains not more than eight carbon atoms and is a group



wherein

m is 0 or 1;

R^5 is hydrogen;

R^6 and R^7 are the same or different and each is hydrogen or C_{1-5} alkyl optionally substituted by hydroxy;

R^8 and R^9 are the same or different and each is hydrogen or C_{1-3} alkyl;

—C—C— is a five- or six-membered saturated carbocyclic ring;

R^{10} is hydrogen, methyl or hydroxymethyl;

R^{11}, R^{12} and R^{13} are the same or different and each is hydrogen or methyl;

R^{14} is hydrogen, methyl, hydroxy, or hydroxymethyl and Ar is Benzo[c]phenanthrene.

4,808,754

SPIROBIINDANE BIS-AMINOPHENOXY ETHERS

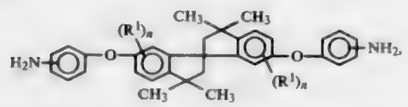
Thomas L. Guggenheim, Scotia, N.Y.; Joseph W. Gulles, Ft. Collins, Colo., and Sharon J. McCormick, Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 27, 1987, Ser. No. 20,264

Int. Cl.⁴ C07C *147/107*

U.S. Cl. 564—428 **4 Claims**

1. A spirobiindane bis-aminophenoxy ether having the formula



wherein each R^1 is independently C_{1-4} primary or secondary alkyl or halo, the NH_2 groups are in the m- or p-positions and n is 0–3.

4,808,755

LUBRICANT COMPOSITIONS, NOVEL GLUCAMINE DERIVATIVES AND COMPLEX COMPOUNDS CONTAINING SAME

Hermann O. Wirth, Bensheim, and Hans-Helmut Friedrich, Lautertal, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

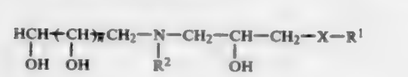
Division of Ser. No. 876,953, Jun. 20, 1986, Pat. No. 4,732,691. This application Dec. 23, 1987, Ser. No. 137,268

Claims priority, application Switzerland, Jun. 21, 1985, 2648/85; Jul. 2, 1985, 2818/85

Int. Cl.⁴ C07C *149/24*

U.S. Cl. 564—501 **4 Claims**

1. A compound of the formula



wherein n is 2, 3 or 4, X is —S—, —O— or —O—CO—, R^1 is C_1–C_{22}-alkyl and R^2 is a group of the formula —CH_2—CH(OH)—CH_2—X—R^1, wherein X and R^1 have the given meanings or, if X is —S—, R^2 is also hydrogen, C_1–C_8alkyl, or C_2–C_4alkyl which is substituted by an —OH group.

4,808,756

METHOD FOR PRODUCTION OF α,ω-DIALDEHYDES

Yasuo Tokitoh, and Noriaki Yoshimura, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

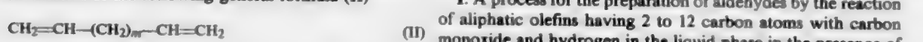
Filed Oct. 6, 1987, Ser. No. 104,988

Claims priority, application Japan, Apr. 7, 1986, 61-80347

Int. Cl.⁴ C07C *45/50*

U.S. Cl. 568—454 **15 Claims**

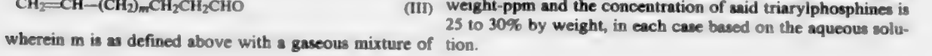
1. A process for producing an α,ω-dialdehyde of the following general formula (IV)



(IV)

wherein E^1 and E^2 each independently represents a ethylene group or ethylidene group; m is a whole number of 2 to 6 which comprises:

(i) a hydroformylation step which comprises reacting an α,ω-diolefin of the following general formula (II)

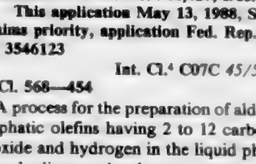


(II)

wherein m is as defined above or an α,ω-alkenal of the following general formula (III)

(III)

wherein m is as defined above with a gaseous mixture of hydrogen and carbon monoxide in a mixture of water and sulfolane with a weight ratio of sulfolane to water in the range of 15/85 through 75/25 in the presence of a rhodium compound and, based on each gram-atom of rhodium in said rhodium compound, 10 to 300 moles of a monodentate phosphine of the general formula (I)



(I)

wherein R^1 is a saturated C_{1-8} aliphatic hydrocarbon group, a saturated alicyclic hydrocarbon group or a substituted or unsubstituted aromatic hydrocarbon group; R^2 is a hydrogen atom, a methyl group, a methoxy group or a halogen atom; n is a whole number of 0 or 1, x is a whole number of 0, 1 or 2; y and z each is a whole number of 0, 1, 2 or 3 (provided that y and z are not concurrently equal to 0 and that $x+y+z=3$; A is



or —$C(CH_3)_2$COOM and B is —SO_3M or COOM, (where M is an alkali metal;

(ii) an extraction step which comprises extracting the reaction mixture obtained in the above step (i) with a saturated alicyclic hydrocarbon of 5 to 10 carbon atoms in a mixed gas atmosphere of hydrogen and carbon monoxide at a temperature not less than 40° C. to separate it into an extract layer containing the dialdehydes and an extraction residue; and

(iii) a recycling step which comprises recycling the extraction residue containing the catalyst as obtained in the above step (ii) to the hydroformylation step (i).

4,808,757

PROCESS FOR THE PREPARATION OF ALDEHYDES

Boy Cornils, Hofheim; Werner Konkol, Oberhausen; Hanswilhelm Bach; Wilhelm Gick, both of Duisburg; Ernst Wiebus, Oberhausen; Helmut Bahrmann, Hamminkeln-Brunen, and Heinz-Dieter Hahn, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 944,427, Dec. 19, 1986, abandoned. This application May 13, 1988, Ser. No. 193,956

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1985, 3546123

Int. Cl.⁴ C07C *45/50*

U.S. Cl. 568—454 **16 Claims**

1. A process for the preparation of aldehydes by the reaction of aliphatic olefins having 2 to 12 carbon atoms with carbon monoxide and hydrogen in the liquid phase in the presence of water, rhodium, and at least one water-soluble salt of a sulfonated or carboxylated triarylphosphine, wherein the concentration of said rhodium in the aqueous phase is 450 to 800 weight-ppm and the concentration of said triarylphosphines is 25 to 30% by weight, in each case based on the aqueous solution.

4,808,758

HYDROFORMYLATION PROCESS

Hanswilhelm Bach, Duisburg; Boy Cornils, Hofheim; Wilhelm Gick, Duisburg; Heinz-Dieter Hahn, Oberhausen; Werner Konkol, Oberhausen, and Ernst Wiebus, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 25, 1987, Ser. No. 125,596

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1986, 3640614

Int. Cl.⁴ C07C *45/50*

U.S. Cl. 568—454 **8 Claims**



1. In a hydroformylation process for the preparation of aldehydes by reacting aliphatic olefins of 2 to 12 carbon atoms with carbon monoxide and hydrogen at temperatures of 20° to 150° C. and pressures of 0.1 to 20 mPa in the liquid phase and in the presence of an aqueous solution of a catalyst containing originally 50 to 800 wt. ppm of rhodium and 25 to 30 wt. % of complex-forming, sulfonated or carboxylated triarylphosphines, in each case based on the aqueous solution, the improvement comprising adding fresh phosphine solution to maintain the original phosphine concentration until the total concentration of complex-forming phosphines and secondary and degradation products of the phosphines not capable of forming complexes amounts to about 35 to 45 wt. % based on the aqueous solution.

4,808,759

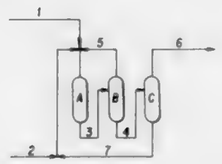
PROCESS FOR THE CATALYTIC TRANS-HALOGENATION OF A POLY-IODO-BENZENE

Giuseppe Paparatto, Milan, Italy, assignor to Montedipe S.p.A., Milan, Italy

Filed Aug. 5, 1987, Ser. No. 81,798

Int. Cl.⁴ C07C *17/158, 21/24, 25/02*

U.S. Cl. 570—202 **12 Claims**



1. A process for the manufacture of mono-iodo-benzene by a catalytic trans-halogenation of a poly-iodo-benzene, characterized in that said poly-iodo-benzene is reacted at 250° to 450° C. with benzene and oxygen or oxygen-containing gas, in the presence of a zeolite of the X or of the Y type, at least partially exchanged with an alkali metal, with thallium or with a rare earth.

4,808,760

TELOMERS PREPARED FROM CHLOROTRIFLUOROETHYLENE AND 1,2-DIBROMO-2-CHLOROTRIFLUOROETHANE

Bobby F. Daniels; Michael J. Pifolt, both of Grand Island, and David Y. Tang, East Amherst, all of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Jan. 6, 1986, Ser. No. 816,183

Int. Cl.⁴ C07C *17/26, 19/08*

U.S. Cl. 570—139 **3 Claims**

1. A process for preparing a distribution of telomers of structural formula



where n is in the range of 1 to 10, said telomer being further characterized by the absence of adjacent —CFCl— groups, comprising reacting chlorotrifluoroethylene with $CBrClFCF_2Br$ in the presence of a catalyst system comprising $CuBr_2$ and copper, said reaction being conducted in a common solvent for the reactants and catalysts.

4,808,761

DEMETHANOLIZATION OF AQUEOUS CH_3OH/HCL SOLUTIONS

Bernard Durand, Claix, and Jean-Jacques Masini, Chaponost, both of France, assignors to Atochem, Puteaux, France

Filed Oct. 1, 1986, Ser. No. 914,077

Claims priority, application France, Oct. 1, 1985, 85 14552

Int. Cl.⁴ C07C *17/16*

U.S. Cl. 570—258 **7 Claims**

1. A process for the preparation of methyl chloride, comprising (i) catalytically reacting methanol with hydrochloric acid, in liquid or gaseous phase,

(ii) cooling the reaction mixture and separating methyl chloride and an aqueous CH_3OH/HCl solution therefrom, and

(iii) maintaining said aqueous solution in the liquid phase, in the absence of catalyst, at a temperature of from 50° to 150° C. under a pressure of less than about 8 bars and for a time sufficient to effect demethanolization, whereby a crude methyl chloride is recovered therefrom.

4,808,762

INSECTICIDAL CYCLOPROPYL-SUBSTITUTED DI(ARYL) COMPOUNDS

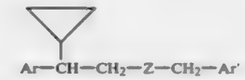
Gary A. Meier, Robbinsville; Scott M. Sieburth, Princeton; Thomas G. Cullen, Milltown, all of N.J., and John F. Engel, Washington Crossing, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 041,551, Sep. 23, 1987, abandoned. This application Sep. 9, 1987, Ser. No. 94,617

Int. Cl.⁴ A01N *43/40*; C07D *409/12*

U.S. Cl. 514—336 **36 Claims**

1. A compound of the formula



in which Ar is a phenyl or thieynl group which may be substituted by (C_{1-6})alkyl, halo, (C_{1-4})haloalkyl, (C_{1-4})alkoxy, (C_{1-4})haloalkoxy, or by a substituent having the structure —A—(CR^1R^2)—A— where R^1 and R^2 are independently hydrogen, halogen, or (C_{1-2})alkyl, n is 1 or 2, and each A is O or CH_2 and is bonded to an adjacent carbon atom of the aro-

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matic ring; Z is oxygen, sulfur, or methylene; and Ar' is phenoxylphenyl, 2-methyl[1,1'-biphenyl]-3-yl, or 6-phenoxy-2-pyridyl each optionally substituted with halo or lower alkyl.

4,808,763

PROCESS FOR UPGRADING LIGHT PARAFFINS

Victor K. Shum, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Aug. 5, 1987, Ser. No. 82,031
Int. Cl.[4] C07C *12/02*
U.S. Cl. 585—415 **11 Claims**

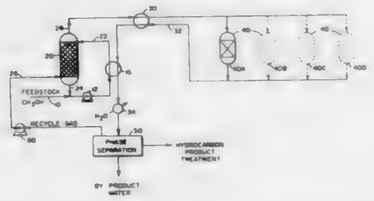
1. A process for converting a gaseous hydrocarbon feed containing paraffinic hydrocarbons to aromatic hydrocarbons which comprises contacting the feed under conversion conditions with a catalyst composition comprising a gallosilicate molecular sieve, a platinum metal component and a chloride component present in an amount ranging from about 0.1 to about 10 wt. % based on the total weight of the composition.

4,808,764

METHANOL-GAS SATURATOR FOR CATALYTIC CONVERSION SYSTEM

Dietmar R. A. Frenseth, Plainsboro, N.J.; Alan E. Rogers, Wycombe, Pa., and John C. Zahner, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 13, 1983, Ser. No. 484,656
Int. Cl.[4] C07C *1/20*
U.S. Cl. 585—640 **15 Claims**



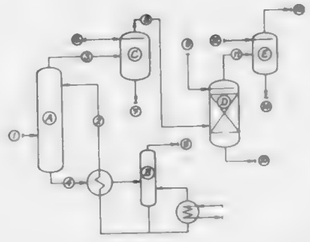
1. A process for catalytically converting methanol to gasoline boiling range hydrocarbons by contacting methanol in a gaseous stream with an acid crystalline zeolite catalyst of the ZSM-5 type in a reaction system comprising:
(a) feeding a heated liquid methanol stream to a multi-phase gas-liquid saturator contact unit at an inlet temperature substantially below the methanol feedstock boiling point under superatmospheric process pressure;
(b) contacting the methanol feedstock in a contact tower with sufficient compressed recycle gas from the reactor system to partially vaporize methanol feedstock, thereby forming a gaseous methanol-recycle stream, said contact tower having an upper liquid reactor feedstream inlet above a counter-current contact section, a lower recycle gas inlet, an upper gas outlet for removing vaporized methanol in mixture with recycle gas, and a lower liquid outlet for unvaporized methanol, whereby vaporized methanol can enter the catalyst zone only with recycle diluent gas;
(c) heating and introducing the gaseous methanol-recycle stream directly to the ZSM-5 catalytic reactor system to convert methanol to gasoline hydrocarbon product and a gaseous by-product;
(d) cooling reactor system effluent in heat exchange relationship with the liquid methanol stream in step (a) to heat the liquid methanol and recover liquid hydrocarbon product;
(e) separating gaseous by-product from the liquid hydrocarbon product; and
(f) compressing and recycling gaseous by-product from step (e) to step (b).

4,808,765

SULFUR REMOVAL FROM HYDROCARBONS

Roscoe L. Pearce, Cypress, and Richard A. Wolcott, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 17, 1987, Ser. No. 74,841
Int. Cl.[4] C07C *7/11*; C01B *31/26*
U.S. Cl. 585—860 **13 Claims**



1. A method for treating liquid and gaseous hydrocarbon streams containing H_2S, CO_2 and COS to remove a substantial portion of said H_2S and COS, and slip a substantial portion of the CO_2 which comprises:
contacting said hydrocarbon stream containing H_2S, CO_2 and COS with a solution of methyldiethanolamine, which is a selective absorbent for H_2S with respect to CO_2, and which solution also contains diisopropanolamine, an organic liquid COS absorbent which absorbent converts by hydrolysis the COS to H_2S and CO_2.

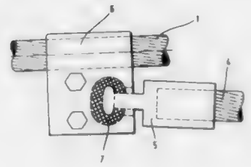
4,808,766

OSCILLATION DAMPENER FOR AERIAL ELECTRICAL TRANSMISSION LINES AND LINE EQUIPPED THEREWITH

Walter F. Bückner, Augustenstr. 8, 7068 Urbach, and Martin Schuster, Esslingen, both of Fed. Rep. of Germany, assignors to Walter F. Bückner, Urbach, Fed. Rep. of Germany

Filed Jun. 19, 1987, Ser. No. 63,880
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1986, 3620727
Int. Cl.[4] H02G *7/14*
U.S. Cl. 174—42 **22 Claims**





1. An apparatus for attachment to an aerial transmission line cable suspended by a hanger from a tower for dampening oscillations of said aerial transmission line cable, comprising:
an auxiliary cable for connection to said aerial transmission line cable, said auxiliary cable having a fitting connected to one end thereof, said fitting having an elastically molded element; and
a first clamp having a first portion for attachment to said aerial transmission line cable on one side of said hanger and a second portion housing said elastically molded element, and a second clamp having a first portion for attachment to said aerial transmission line cable on the other side of said hanger and a second portion attached to said auxiliary cable.

8. An aerial transmission line cable and dampening system, comprising:
an aerial transmission line cable suspended from a hanger; and
an apparatus for providing dampening of oscillations of said aerial transmission line cable;
said apparatus including an auxiliary cable having a fitting connected to one end thereof, said fitting having an elastically molded element; and a first clamp having a first portion attached to said aerial transmission line cable on one side of said hanger and a second portion housing said elastically molded element, and a second clamp having a first portion attached to said aerial transmission line cable on the other side of said hanger and a second portion attached to said auxiliary cable, said auxiliary cable being positioned below and approximately parallel to said aerial transmission line cable.

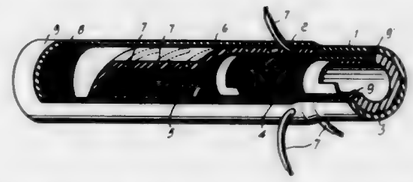
4,808,767

FLEXIBLE HOSE ASSEMBLY FOR DIVING SUITS

Giuseppe Colbachini, Via Fossona, 77, 35030 - Cervarese Santa Croce, Padova, Italy

Filed Nov. 18, 1987, Ser. No. 122,198
Claims priority, application Italy, Dec. 16, 1986, 22716 A/86
Int. Cl.[4] F16L *11/12*; B63C *11/20*
U.S. Cl. 174—47 **2 Claims**

1. A flexible hose for supplying air to persons wearing diving suits or the like protecting garments comprising: a resilient tube-like core element; a metal coil embedded in the wall of said tube-like core element; a sublayer made of an odorless mixture lining said tube-like core element; a first reinforcing fabric layer disposed between said sublayer and said tube-like core element; a rubber layer encompassing said tube-like core element having electric cables wound and embedded therein; a



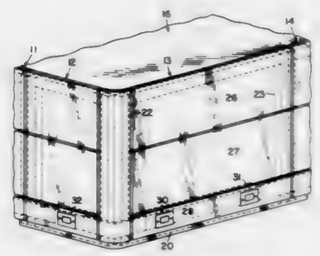
second reinforcing fabric layer disposed between said resilient tube-like core element and said rubber layer; an anti-abrasive rubber layer encompassing said anti-tear fabric layer; and wherein said electric cables have respective free ends projecting at given spaced locations from said flexible hose from said rubber layer through said anti-tear fabric layer and said anti-abrasive layer.

4,808,768

UTILITY ROUTING SYSTEM FOR MODULAR PANELS

Donald J. Streci, Deerfield, Ill., assignor to Richard E. Cragher, Oriole-Morton Grove, Ill., a part interest

Filed Feb. 5, 1987, Ser. No. 11,289
Int. Cl.[4] H02G *3/28*
U.S. Cl. 174—48 **17 Claims**



1. An enclosed electrical conductor routing system for standardized modular panels having a plurality of frame widths, comprising: a first plurality of baseline boxes having a predetermined length adapted to receive an electric receptacle, said first plurality of boxes being adapted to be connected to a first standard panel frame having a predetermined width, a second plurality of baseline boxes having a predetermined length greater than the first baseline boxes adapted to be connected to standard panel frames having a predetermined width greater than the width of the first panel frames, a plurality of fixed and equal length rigid tubular connectors interconnecting some of the first baseline boxes to one another, a plurality of the same connectors interconnecting some of the second baseline boxes to one another, and a plurality of the same connectors interconnecting some of the first baseline boxes to some of the second baseline boxes whereby the system can be installed without bending or cutting, said baseline boxes having front and rear walls and an end wall at each end thereof, each of said baseline boxes having at least one opening on each end wall thereof offset from the center of the end wall immediately adjacent one of the front and rear walls, said rigid tubular connectors being constructed to connect to the baseline boxes

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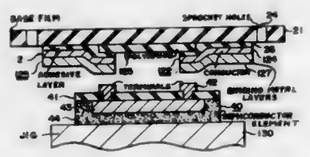
at the baseline box end wall openings to avoid interference with panel frames.

4,808,769

FILM CARRIER AND BONDING METHOD USING THE FILM CARRIER

Hirotaka Nakano, Yokohama, and Tsunekazu Yoshino, Kamakura, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 25, 1987, Ser. No. 101,245
Claims priority, application Japan, Sep. 25, 1986, 61-224764; Oct. 16, 1986, 61-244164; Oct. 30, 1986, 61-256823
Int. Cl.⁴ H05K *1/00, 3/34*
U.S. Cl. 174—68.5 **18 Claims**



1. A film carrier comprising:
a base film;
a plurality of conductors formed on base film, and
a plurality of layers formed on the conductors, each being made of a bonding metal having a melting point of approximately 195° C. and a softening point of approximately 165° C.

17. A bonding method comprising the steps of:
positioning a film carrier having a base film, a plurality of conductors formed on the base film, and a plurality of bonding metal layers formed on the conductors, each said bonding metal layer being made of a bonding metal having a melting point of approximately 195° C. and a softening point of approximately 165° C., so that said bonding metal layers align with the terminals of an electronic part;
half melting said bonding metal layers at a temperature so that said bonding metal layers are neither liquid nor solid
compression bonding said heated bonding metal layers to said terminal of an electronic part, said electronic part being in solid form, thereby electrically connecting the conductors of said film carrier to the terminals of the electronic part.

4,808,770

THICK-FILM COPPER CONDUCTOR INKS

Ashok N. Prabhu, East Windsor Township, Mercer County; Kenneth W. Hang, West Windsor Township, Mercer County, and Edward J. Coulon, Princeton Township, Mercer County, all of N.J., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 914,303, Oct. 2, 1986, abandoned. This application Aug. 20, 1987, Ser. No. 87,583
Int. Cl.⁴ H05K *1/00;* **H01B** *1/06*
U.S. Cl. 174—68.5 **6 Claims**

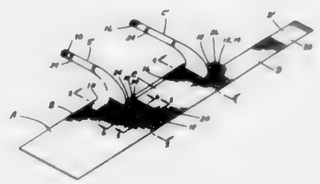
1. A multilayer, copper-based integrated circuit structure comprising a circuit board having thereon at least two patterned layers of copper conductor separated by a dielectric layer having vias filled with copper contacting said copper conductor layers, said copper conductors comprising from about 70 to about 95 weight percent copper powder and from about 5 to about 30 weight percent glass frit selected from the group consisting of zinc-calcium-aluminum silicate glasses and zinc-magnesium-barium-aluminum-zirconium-phosphosilicate glasses which do not flow at temperatures below about 700° C.

4,808,771

HINGE-LINE MULTILAYER CABLE AND METHOD

Lawrence W. Orr, Jr., 103 Maple Wind La., Simpsonville, S.C. 29681

Filed Nov. 23, 1987, Ser. No. 124,019
Int. Cl.⁴ H01B *7/08, 13/00*
U.S. Cl. 174—72 R **14 Claims**



1. A woven electrical transmission cable having a plurality of electrical conductors for programmed termination in either a single layer or multilayer configuration, comprising:
(a) a plurality of woven longitudinal electrical conductors which include longitudinal electrical conductors extending in a warp direction woven with warp and weft yarns in a prescribed weave pattern;
(b) a hinge-line woven between each of said woven sections about which adjacent woven sections may be folded generally flat upon each other in a superposed position to form a stacked multilayer cable; and
(c) a plurality of conductor branches broken out from said woven sections at successive selected lengths of said cable in which said longitudinal conductors are unbound with said warp and weft yarns for making programmed termination, and said warp and weft yarns continuing to be woven in the other of said woven sections at successive selected lengths of said cable.

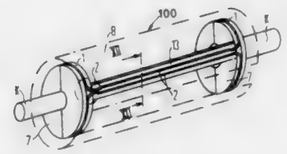
7. A method of constructing a woven electrical transmission cable having a plurality of electrical conductors for programmed termination in either a single layer or multilayer configuration, comprising:
(a) weaving warp and weft yarns in a prescribed weave pattern to bind a plurality of electrical conductors extending in a warp direction to create a plurality of woven cable sections in said cable;
(b) weaving a plurality of individual woven cable sections which are discrete across the width of said cable and extend longitudinally in said cable;
(c) weaving weft and warp yarns in adjacent sections 180 degrees out of phase with respect to each other so that one section is weaving while an adjacent section is not weaving;
(d) criss-crossing top and bottom picks of said weft yarn between adjacent sections to form a hinge-line; and
(e) forming conductor branches by breaking out the electrical conductors from each woven cable section at successive lengths of said cable in a generally unbound configuration in which they are not woven with said warp and weft yarns while continuing to weave said warp and weft yarns in the other of said cable sections at successive lengths of said cable.

4,808,772

CABLE JOINT WITH END BODIES AND A LONGITUDINALLY SLOTTED SLEEVE

Klaus Pichler, Ottorfing; Dieter Kunze, Neuried; Jan Rost, Traubing, and Wolfgang Haeder, Eichenau, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Division of Ser. No. 918,471, Oct. 14, 1986, Pat. No. 4,733,019. This application Dec. 14, 1987, Ser. No. 132,429
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1985, 3536599
Int. Cl.⁴ H02G *15/113*
U.S. Cl. 174—92 **23 Claims**



1. In a cable joint having a pair of end bodies with sealing glands for cables extending therethrough and a sleeve having a longitudinally extending slot with two edge portions, said sleeve being wrapped around the spaced apart end bodies and held there by a closing means engaging said sleeve, the improvements comprising an internal member extending between a periphery of one end body and a periphery of the other end body and being adjacent said slot, and a sealing system having a single, continuous endless ring sealing element having two longitudinal sealing portions and two annular sealing portions, said sealing element being positioned with an annular portion being disposed between a periphery of each end body and the sleeve and the two longitudinal sealing portions being positioned between the internal member and the two edge portions of the sleeve, means for holding the member and edge portion in a clamped engagement on the longitudinal portions of the sealing system to seal the slot, said sealing element being of an elastic material constructed to be sufficiently flexible so that the closing means and closing elements can be constructed as simple as possible and can be actuated by utilizing conventional tools for obtaining the necessary closing pressure.

4,808,773

LOW IMPEDANCE CABLE

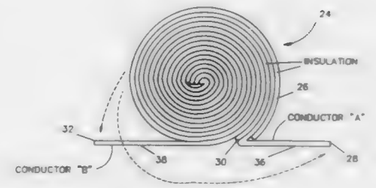
Earl F. Crandall, Windham, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 1, 1987, Ser. No. 103,832
Int. Cl.⁴ H01B *11/00*
U.S. Cl. 174—113 R **6 Claims**

1. A cable for transmitting, with minimum distortion, signals having high frequency components, said cable having ultra low impedance and comprising a first elongated electrical conductor layer, a first elongated electrical insulator layer, a second elongated conductor layer, a second elongated electrical insulator layer, said electrical conductor layers comprising a plurality of wires disposed side-by-side in electrical contact along the length of a said elongated electrical insulator layer, said layers being superposed and wound in a spiral to form an elongated conductor with said first conductor layer being inside of said second conductor layer and constituting the signal conductor, and electrical connections at each end of said elongated conductors for each of said first and second conducting layers.

4. The method of forming a cable for transmitting, with minimum distortion, signals having high frequency components for ultra-low impedance electrical interconnections comprising the steps of:
(a) disposing an elongated first electrical conductor layer comprising a plurality of wires side-by-side in electrical contact on and along the length of an elongated first electrical insulator layer;
(b) disposing an elongated second electrical insulator layer on the first electrical conductor layer;
(c) disposing an elongated second electrical conductor comprising a plurality of wires side-by-side in electrical





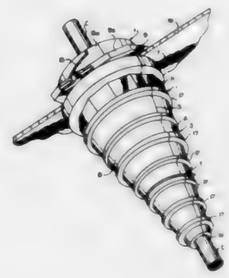
contact on and along the length of the second elongated electrical insulator layer;
(d) winding the layers in combination from one side to the other to form the cable as a spiral in cross section; and
(e) forming electrical connections at each end of said first and second elongated electrical conductors for each of the two conducting layers.

4,808,774

STRAIN RELIEF DEVICE

Robert A. Crane, Windham, Me., assignor to GTE Products Corporation, Stamford, Conn.

Filed Oct. 19, 1987, Ser. No. 109,637
Int. Cl.⁴ H02G *3/18, 3/22*
U.S. Cl. 174—135 **4 Claims**



1. A strain relief device adapted to receive wires which extend into an aperture of a service box, said device comprising:
a molded plastic structure formed of a cylindrical segment and a conical segment, said cylindrical segment being disposed at the base of said conical segment, each of said segments being hollow;
abutment means disposed on said structure, said abutment means arranged to urge against the perimeter of the aperture in said service box;
at least one section line disposed through a sidewall of said structure, said section line extending from the top of said conical segment to the bottom of said cylindrical segment

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and through said abutment means, whereby said member is split into at least two sections;

a molded plastic collar joining said sections together, said collar being disposed around said structure and co-acting with said abutment means to hold said device in said aperture, said collar being formed of two portions, the insides of said portions being adapted to urge against said cylindrical segment of said structure;

a land molded on the inner of said collar;

a channel molded on the outer side of said cylindrical segment, said channel having a spiral configuration;

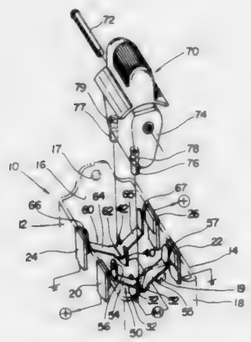
a step molded on the end of said channel, said land being arranged to be disposed in said channel, whereby when said land is disposed in said channel and said collar is twisted, the land will enter said step, and the two sections of said structure are urged together and locked with the yielding action of the molded plastic.

4,808,775

REVERSING SWITCH

Hiroshi Satoh, Sakado, and Minoru Mohri, Tokorozawa, both of Japan, assignors to Toyo Denso Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1987, Ser. No. 80,763
Int. Cl.[4] H01H *9/00, 21/02*
U.S. Cl. 200—1 V **7 Claims**



1. A reversing switch comprising:

a pair of substantially V-shaped swinging contact plates formed of an elastic conductive material, each of said swinging contact plates including vertical projections at the distal ends of the V-shaped contact plate, a normally open movable contact on one of the vertical projections, and a normally closed movable contact on the other of said vertical projections for each said V-shaped contact plate;

a pair of fixed contacts for each of said substantially V-shaped swinging contact plates, said pair of fixed contacts being provided to oppose each of said normally open movable contacts and said normally closed movable contacts, said fixed contacts being vertically oriented and in substantially parallel alignment with said vertical projections of said pair of substantially V-shaped swinging contact plates to form two normally open fixed contacts and two normally closed fixed contacts, wherein each of said normally open fixed contacts is connected to a power source and each of said normally closed fixed contacts is connected to the ground;

intermediate conductive supporting means engaged with each said swinging contact plates for biasing one of said swinging contact plates toward said normally closed fixed contact and for biasing a remaining one of said swinging contact plates away from said normally open fixed contact plate, wherein said intermediate supporting means is positioned on a side of a "V" formed in each of said swinging contact plates which will bias said plates in a predetermined direction; and

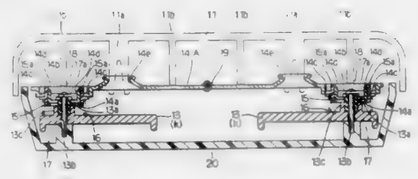
a knob member pivotably mounted to rest within said swinging contact plates and having means for deforming an arm of each said swinging contact plates upon pivotal actuation of said knob, whereby said means for deforming forces said normally closed movable contact to slide on the surface of said normally closed fixed contact, thereby removing any debris present between said normally closed movable contact and said normally closed fixed contact.

4,808,776

HORN SWITCH MECHANISM ON STEERING WHEEL

Misoru Niwa, Ichinomiya, and Takahiro Hashiba, Ama, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jan. 15, 1988, Ser. No. 144,233
Claims priority, application Japan, Jan. 21, 1987, 62-11568
Int. Cl.[4] H01H *9/00*; B60Q *5/00*; B62D *1/04*
U.S. Cl. 200—61.55 **5 Claims**



1. A horn switch mechanism mounted on a steering wheel having a boss, spokes and a ring, each being formed of a metal core member covered with a covering, comprising:

(a) a stationary contact plate;

(b) a movable contact plate disposed upwardly away from said stationary contact plate;

(c) a horn pad connected to and covering said movable contact plate;

(d) spring means disposed between said movable contact plate and said stationary contact plate for normally urging said movable contact plate away from said stationary contact plate;

(e) a plurality of tubular projections projecting upwardly from said stationary contact plate, each having an outside diameter and an inside diameter, said movable contact plate having plurality of bores each having a diameter substantially equal to the inside diameter of a respective said projection, each said bore being disposed in axial registry with the corresponding one of said projections; and

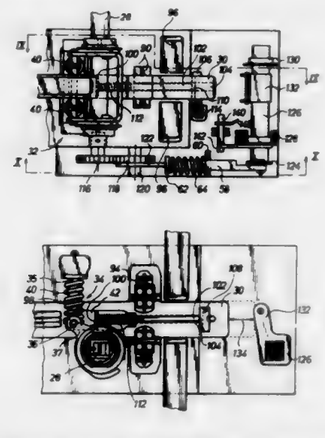
(f) a plurality of spacers each having a radially outwardly extending flange provided at an upper portion thereof, and each said spacer being inserted downwardly through a respective said bore of said movable contact plate onto a respective said projection and fastened so as to be secured fixedly to said stationary contact plate, said flange of each said spacer being disposed in engagement with an upper surface of said movable contact plate at a respective peripheral edge defining a respective said bore, for restricting a further upward movement of said movable contact plate in a direction axially away from said stationary contact plate as is tending to be caused by said spring means, upper ends of respective ones of said projections of said stationary contact plate each forming a first contact member, and respective lower surfaces of said movable contact plate each forming a second contact member adapted to engage a respective said first contact member.

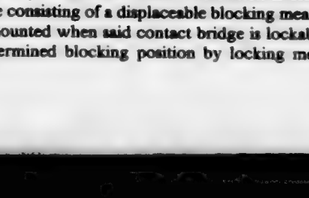
4,808,777

ELECTRIC SWITCH

Erik Kindberg, Tästrup, and Jan Lythcke-Jorgensen, Holte, both of Denmark, assignors to Aktieselskabet Laur. Knudsen Nordisk Elektricitets Selskab, Copenhagen, Denmark

Continuation of Ser. No. 789,123, Oct. 18, 1985, abandoned. This application Oct. 2, 1987, Ser. No. 104,585
Claims priority, application Denmark, Oct. 25, 1984, 5105/84
Int. Cl.[4] H01H *9/20*
U.S. Cl. 200—323 **9 Claims**





1. An electric power switch of the type including a switch housing, a manual control handle and at least two fixed contacts, one of which is electrically connected to an input terminal and the other connected to an output terminal, comprising:

longitudinally displaceable bar means including a moveable contact bridge having contact members for electrically connecting said fixed contacts in a first position and disconnecting said fixed contacts in a second position, said bar means being constrained against movement other than longitudinal movement of a guideway defined in said housing;

toggle means for moving said bar means between said first and second positions including first and second pivotable arms connected by a carrier means and an elbow joint, said carrier means protruding through a transversed opening in said contact bridge which limits movement of the carrier means with respect to said contact bridge;

ejector means for biasing said contact bridge away from said first position, said ejector means including a compression spring; and

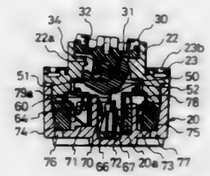
latching or locking means for retaining said ejector means in a position wherein said spring is tensed and ready for operation; whereby said opening is of such an extent in the displacement direction of the contact bridge that a predetermined slip exists between the carrier means and the contact bridge, said slip being utilized for compressing a spring that releases its spring energy when a dead center position of the elbow joint has been passed, and whereby the extension of the opening is defined in both ends thereof in such a manner that the carrier means causes the contact bridge to follow when the spring is compressed to a maximum and dead center has been passed, the improvement consisting in that a predetermined limiting surface inside the transverse opening in said contact bridge is engaged by said carrier when said switch is closed, said surface consisting of a displaceable blocking means moveably mounted when said contact bridge is lockable into a predetermined blocking position by locking means that are arranged to be released when a fault is detected, and wherein the opening in the contact bridge extends so far to the other side of the moveable locking member that the toggle means and carrier means can remain in their position when the ejector means is displacing the contact bridge in order to disconnect the moveable contacts from the fixed contacts.

4,808,778

SWITCHING APPARATUS HAVING A ROCKING ELEMENT

Shiori Fujiyoshi, Tokyo, Japan, assignor to Jinbo Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 854,814, May 5, 1906, abandoned. This application Aug. 13, 1987, Ser. No. 85,292
Claims priority, application Japan, Jun. 26, 1985, 60-137670
Int. Cl.[4] H01H *3/20*
U.S. Cl. 200—33.9 **7 Claims**



1. An improved switching apparatus, comprising:

a casing body;

an upper lid member attached to said casing body;

a switching element disposed within said casing body;

a movable contactor engaged by the switching element, said movable contactor having a movable contact attached thereto;

a fixed contact located opposite the movable contact;

an operable element inserted into said upper lid member, a substantial part of an upper portion of the operable element being supported by the upper lid member, and a lower portion of the operable element being engaged with the switching element so that said operable element and said switching element rotate in opposite directions;

a face plate; and

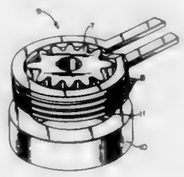
a retainer spring having first and second members which are bent in opposite directions, the first member of the retaining spring holding the operable element to the upper lid member in a rocking manner, the second member of the retaining spring detachably connecting the face plate to the operable element.

4,808,779

SINGLE CYCLE, SINGLE FREQUENCY INDUCTION CONTOUR HARDENING PROCESS

Gary C. Cogley, Powell, Ohio, assignor to Industrial Electric Heating, Inc., Warren, Ohio

Filed Apr. 7, 1988, Ser. No. 178,582
Int. Cl.[4] H05B *6/14*
U.S. Cl. 219—10.43 **5 Claims**



1. A process of contour hardening a gear by induction heat

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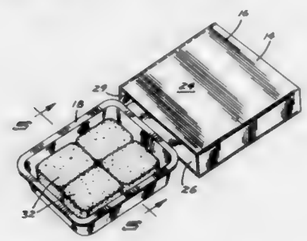
treatment, the process using a single frequency of induction current without preheating said gear, comprising the steps of:
(a) mounting said gear on a rotatable spindle concentric with, and substantially surrounded by, the inductor coil of a high-frequency current generator;
(b) rotating said gear in close proximity to said inductor coil, and concentric therewith, at a sufficiently rapid rate such that said gear completes at least three complete rotations in the period during which said inductor coil is supplied with current;
(c) supplying said inductor coil with alternating current of predetermined frequency and current in a single pulse of current for a predetermined duration;
(d) quenching said gear with cooling means providing thereby case hardening of said gear.

4,808,780

AMPHOTERIC CERAMIC MICROWAVE HEATING SUSCEPTOR UTILIZING COMPOSITIONS WITH METAL SALT MODERATORS

Jonathan Seaborne, Corcoran, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Sep. 10, 1987, Ser. No. 94,972
Int. Cl.[4] H05B *6/80*
U.S. Cl. 219—10.55 E **20 Claims**



1. A package article for food to be heated by microwave energy in a microwave oven comprising:
a tray for holding a food item having a top and bottom surface,
a substantially planar microwave heating susceptor disposed within said tray, said microwave heating susceptor fabricated from a ceramic composition, comprising:
(a) a ceramic binder;
(b) a ceramic susceptor material which absorbs energy and having a residual lattice charge; and
(c) a metal salt temperature profile moderator, wherein the compound is unvitrified, and wherein the susceptor is in intimate physical contact with the food item and ranges in thickness from about 0.3 to 8 mm.

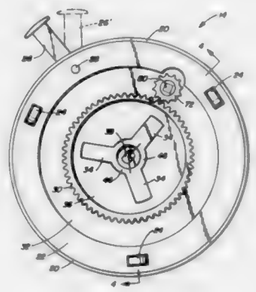
4,808,781

DIRECTLY DRIVEN MICROWAVE OVEN TURNTABLE TOP

Yiu-Ching Liu, 973 Shulman Ave., Santa Clara, Calif. 95050

Filed Mar. 16, 1988, Ser. No. 169,747
Int. Cl.[4] H05B *6/78*
U.S. Cl. 219—10.55 F **14 Claims**

1. A portable microwave oven turntable comprising,
a base having a horizontal bottom and upwardly extending sides to form a base interior,
a motor means disposed within said base interior,
a central drive shaft attached to said base to form a vertical axis of rotation, said motor means disposed to turn said drive shaft,
a means for governing the rotational speed of said central drive shaft,
a circular base cover member connected to said upwardly extending sides of the base, said base cover member combining with the bottom and sides of the base to form said base interior into a sustantially enclosed volume, as said base cover member having an inner circumference defining a central aperture, as id central drive shaft having an upper portion projecting through said central aperture in proximity to said inner circumference,



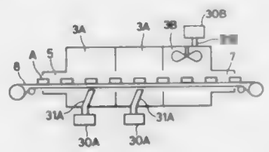
a drive gear position atop said base cover member, said drive gear axially fixed to said upper portion of the central drive shaft, said drive gear having an upper surface having a plurality of upwardly prominent arms, each arm spaced apart from adjacent arms, and
a circular tabletop rested atop said arms of said drive gear in a freely removable manner, said tabletop having a substantially planar platform and a plurality of projections extending downwardly from a surface of said tabletop adjoining the arms, a plurality of said projections in rotational transfer engagement with said arms.

4,808,782

MICROWAVE IRRADIATING STERILIZATION PROCESS

Yoshihiro Nakagawa; Takeo Tomatsuri; Ikuo Ozaki; Kiichiro Hirose; Yukie Sato, and Tamami Ohzeki, all of Tokyo, Japan, assignors to Toppan Printing Co., Ltd., Japan

Filed Nov. 19, 1987, Ser. No. 122,788
Claims priority, application Japan, Nov. 26, 1986, 61-281484; Dec. 29, 1986, 61-203237[U]; Mar. 12, 1987, 62-57442; Sep. 29, 1987, 62-244566
Int. Cl.[4] H05B *6/78;* **G01N** *33/02*
U.S. Cl. 219—10.55 M **14 Claims**



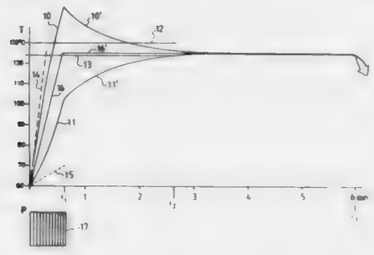
1. A process for sterilizing by microwave irradiation a material in a sealed microwave permeable package, said process comprising the steps of: placing said package into the cavity of a heat and pressure resisting support so that said package is maintained at a normal pressure and does not transfer heat to said support; conveying said support with said package therein through microwave irradiation areas; and alternately irradiating said package with local heating waveguides to locally irradiate the peripheral portions of said package and overall heating waveguides to irradiate the entire package, thereby effecting the substantially uniform heating of said material in said package.

4,808,783

HEAT STABLE MICROWAVE ENERGY STERILIZATION METHOD

Lennart Stenström, Trosa, Sweden, assignor to Alfastar AB, Sweden

PCT No. PCT/SE87/00092, § 371 Date Oct. 27, 1987, § 102(e) Date Oct. 27, 1987, PCT Pub. No. WO87/05460, PCT Pub. Date Sep. 11, 1987
PCT Filed Feb. 25, 1987, Ser. No. 124,112
Claims priority, application Sweden, Mar. 3, 1986, 8600941
Int. Cl.[4] H05B *6/78*
U.S. Cl. 219—10.55 M **13 Claims**



1. In a continuous method of heating a product having at least one faster microwave heating portion and at least one slower microwave heating portion to a uniform predetermined temperature sufficient to sterilize the product without loss of odor, taste, texture, color or vitamin content quality, said method comprising transporting said product through a plurality of microwave fields comprising a first higher energy microwave field and one or more successively lower energy microwave fields,
the improvement comprising the steps of
attenuating said first microwave field to an energy level sufficient to heat said faster microwave heating portions of said product to said predetermined temperature,
attenuating said one or more successively lower energy microwave fields to energy levels sufficient both to maintain the temperature of said faster microwave heating portions at said predetermined temperature and heat said slower microwave heating portions to said predetermined temperature; and
continuing the transport of said product through said successively lower energy microwave fields until said slower microwave heating portions of said product reach said predetermined temperature.

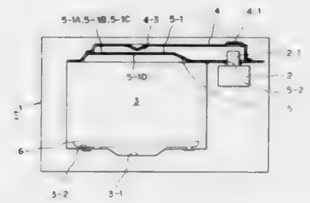
4,808,784

HIGH FREQUENCY DISPERSING DEVICE IN A MICROWAVE OVEN

Heungchan Ko, Kyungkido, Rep. of Korea, assignor to Sam Sung Electronic Co., Ltd., Kyungkido, Rep. of Korea

Filed Jan. 5, 1988, Ser. No. 140,788
Claims priority, application Rep. of Korea, Mar. 14, 1987, 2361/87
Int. Cl.[4] H05B *6/72*
U.S. Cl. 219—10.55 F **6 Claims**

1. A high frequency dispersing device in a microwave oven having a bottom surface of a heating chamber comprising:
a concave portion disposed at said bottom surface;
a magnetron having an antenna;
a waveguide having a base plate disposed above the heating chamber, an elevated surface plate which rises upwardly from said base plate and an upper plate connected to said base plate;
said waveguide including:
a cavity portion which guides high frequency energy generated by said magnetron into said heating chamber;
a stub portion disposed on said upper plate above said magnetron antenna which protrudes upwardly to a predetermined height; and
a conically shaped protrusion portion disposed on said upper plate which protrudes downwardly toward said heating chamber; and



said elevated surface plate including several openings having different widths and shapes which are located at a predetermined distance from the magnetron antenna.

4,808,785

METHOD AND APPARATUS FOR MAKING DIFFUSED COOLING HOLES IN AN AIRFOIL

Richard J. Vertz, Congers, and Reza K. Mosavi, Mossey, both of N.Y., assignors to Chromalloy Gas Turbine Corporation, Orangeburg, N.Y.

Division of Ser. No. 929,780, Nov. 13, 1986, Pat. No. 4,762,464.
This application Apr. 21, 1988, Ser. No. 184,420
Int. Cl.[4] B23H *9/10, 5/00;* **B23K** *26/02*
U.S. Cl. 219—69 M **9 Claims**



1. An improved method of forming cooling holes in an airfoil having inner and outer surfaces, said method comprising the steps of:
(a) initially laser-driling holes from the outer surface to the inner surface;
(b) attaching to an electrodischarge machining apparatus an electrode having a body and at least one tooth attached to said body, said tooth being generally triangular with its base adjacent said body and with its apex projecting from said body and having a diffuser-shaping surface which is substantially planar; and
(c) applying the diffuser-shaping surface of said electrode to the outer surface of the airfoil in an electrodischarge-machining operation wherein said apex at least partially laps the outer end of the laser-drilled hole and penetrates the airfoil to a depth at which the laser-drilled hole is diffused at its outer-surface end.

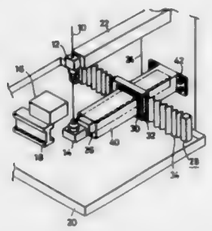
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4,808,786

WIRE ELECTRODE TYPE ELECTRIC DISCHARGE MACHINING DEVICE WITH PREVENTABLE APPLICATION OF EXTERNAL FORCE TO ITS LOWER ARM

Masaru Shiraki; Makoto Tanaka; Jun Aramaki, and Masaaki Ouizuka, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1987, Ser. No. 105,774
Claims priority, application Japan, Oct. 7, 1986, 61-238531; Oct. 7, 1986, 61-238532; Oct. 7, 1986, 61-238533
Int. Cl.[4] B23H 7/10
U.S. Cl. 219—69 W 12 Claims



12. A wire electrode type electric discharge machining device, comprising:

a wire electrode confronting a workpiece with a small space therebetween, wherein electric discharge is caused to take place in the small space to machine said workpiece;

upper wire guide means for slidably supporting said wire electrode above said workpiece;

lower wire guide means for slidably supporting said wire electrode below said workpiece;

driving means for supporting and moving said workpiece relative to said wire electrode in the horizontal direction;

a lower arm for holding said lower wire guide at a position confronting said upper wire guide means; and

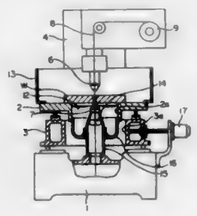
a protecting cover for covering said lower arm with a space therebetween.

4,808,787

WIRE-CUT ELECTRICAL DISCHARGE MACHINING EQUIPMENT

Shoji Futamura, Kawasaki, Japan, assignor to Institute of Technology Precision Electrical Discharge Works, Japan

Filed Nov. 17, 1987, Ser. No. 122,046
Claims priority, application Japan, Nov. 17, 1986, 61-273190; Mar. 10, 1987, 62-54963; May 15, 1987, 62-118369; Jun. 29, 1987, 62-162025
Int. Cl.[4] B23H 7/02
U.S. Cl. 219—69 W 9 Claims



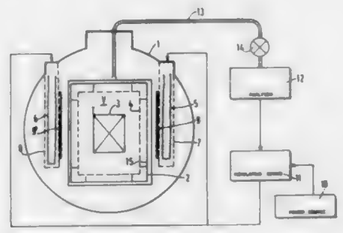
1. A wire-cut electrical discharge machining apparatus having upper and lower tables which are disposed on a bed and movable in such directions as to intersect orthogonally with each other, and a wire electrode which is movably stretched so that a workpiece placed on said upper table can be machined by an electrical discharge produced between said wire electrode and said workpiece, and characterized in that a through hole is provided at least in said upper table, and upper and lower wire guides are provided above and below said workpiece, said lower wire guide being positioned inside or below said through hole, so that said wire electrode can be discharged out of said apparatus via said lower wire guide.

4,808,788

OVEN FOR THE VACUUM BRAZING OF ALUMINUM

Jean Bares, Thiais, France, assignor to Le Traitement Sous Vide, France

Filed Oct. 21, 1987, Ser. No. 110,805
Claims priority, application France, Oct. 22, 1986, 86 14637
Int. Cl.[4] B23K 1/04
U.S. Cl. 219—85 E 3 Claims



1. An oven for vacuum brazing of pieces made of a metal such as aluminum or aluminum alloys, the said oven comprising:

i—a sealed enclosure provided with a sealed door and enclosing a composition of gases;

ii—a thermal enclosure defining a central volume v inside which the said pieces can be disposed, the said thermal enclosure being located inside the sealed enclosure and delimiting therewith an intercalate volume;

iii—first heating means disposed inside the said central volume v so as to heat the said pieces to a brazing temperature;

iv—means for pumping gases contained inside the sealed enclosure;

v—means for supporting magnesium elements in the said intercalated volume;

vi—second heating means independent from said first heating means, which are located in the said intercalated volume, so as to raise the magnesium elements to a temperature at which a Getter effect begins,

wherein said thermal enclosure is pervious to said gases and forms a thermal insulating screen between the central volume and the intercalated volume.

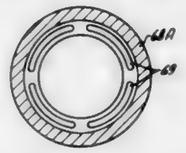
4,808,789

DIODE-PUMPED-LASER INSTRUMENTATION SYSTEM

Hrand M. Muncheryan, 1735 Morningside, Orange, Calif. 92667

Filed Feb. 4, 1987, Ser. No. 10,817
Int. Cl.[4] B23K 26/00
U.S. Cl. 219—121.6 17 Claims

1. A semiconductor-diode-pumped-laser instrumentation system, comprising a housing means containing therein: a laser-generating means provided with a radiant semiconductor-diode means in contiguity thereof and disposed at one end of said housing means, an electric supply means in said housing means and connected to said radiant semicondutor-diode means to energize said diode means to produce a radiation therefrom for optically pumping said laser-generating means to emission of laser radiation, a thermal means disposed in adjacent relation to said laser-generating means and receiving an electric current from said electric supply means to temperature-condition said laser-generation means, a Q-switching means disposed on the path of said laser radiation emanating from said laser-generating means to produce an optical gain in said laser radiation, a radiant energy-conducting means connected to one end thereof to said Q-switching means for conducting a Q-switched laser radiation therefrom to a harmonic-wave-generating element connected at the other end thereof, with said harmonic-wave-generating element positioned in a radiation-receiving relation thereto for frequency-multiplying



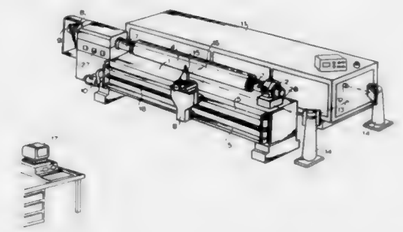
the laser-radiation beam received therefrom, a position-variable optical means disposed therein in the path of said laser-radiation beam projecting from said harmonic-wave-generating element for varying the intensity of said laser-radiation beam; said housing means being provided with a hollow, coniform section formed adjacent to said position-variable optical means to receive therefrom said laser-radiation beam and to direct it therethrough upon an object positioned externally thereto for laser-processing said object; and, means in said housing means to conduct a gaseous element therethrough to and from said object.

4,808,790

PROCESS AND APPARATUS FOR THE PRODUCTION OF A SCREEN PRINTING STENCIL

Siegfried Rückl, Kufstein, Austria, assignor to Schablonentechnik Kufstein Gesellschaft M.B.H., Kufstein-Schaftenau, Austria

Division of Ser. No. 923,154, Oct. 10, 1986. This application Apr. 13, 1988, Ser. No. 181,304
Claims priority, application Austria, Feb. 12, 1985, A 406/85
Int. Cl.[4] B23K 9/00
U.S. Cl. 219—121.68 5 Claims



1. A process for producing a screen-printing stencil comprising the steps of:

mounting a foil perforated in a regular pattern on a stencil-stretching arrangement and coating said foil with a coating material blocking the perforations of said foil;

stretching said foil on said arrangement; and

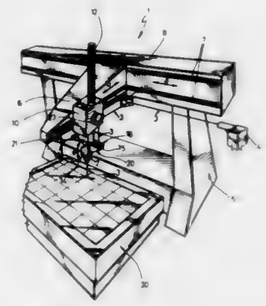
training a laser beam selectively at locations of said coating for removing said coating in a predetermined pattern to unblock perforations where the coating is removed.

4,808,791

METHOD FOR PROCESSING LARGE CAST IRON DIES, PARTICULARLY FOR VEHICLE SHEET-METAL PRESSING, AND THE APPARATUS FOR ITS IMPLEMENTATION

Luciano Psozzo; Guido Contrafatto, and Paolo Gay, all of Turin, Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Dec. 21, 1987, Ser. No. 135,307
Claims priority, application Italy, Dec. 19, 1986, 67947 A/86
Int. Cl.[4] B23K 26/08
U.S. Cl. 219—121.78 3 Claims



1. A method for processing large cast iron dies, particularly for sheet metal pressing for vehicle construction, characterised in that in those die regions which are most subject to wear in relation to the specific use of the die, this latter is subjected to localised heating beyond the sustenization temperature by the application of a laser beam which is transferred along said region by moving it in such a manner that it always remains orthogonal to the surface of said regions so as to rigorously follow their profile; said heating being effected by means of a laser beam focusing head having five capabilities of movement and with such parameters as to produce in correspondence with said die regions a localised martensitic transformation to a depth of at least 1 mm and a surface hardness exceeding 400 HB.

4,808,792

FISHING LURE RECONDITIONING APPARATUS

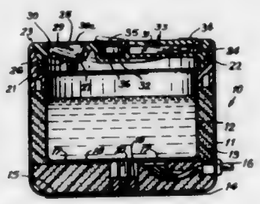
James A. Austrian, New York, N.Y., assignor to Brainwaves, Inc., New York, N.Y.

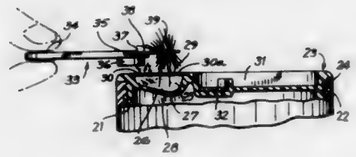
Filed Dec. 7, 1987, Ser. No. 129,461
Int. Cl.[4] F22B 1/28
U.S. Cl. 219—271 6 Claims

1. Apparatus for the reconditioning of feathered fishing lures and the like comprising, in combination, a container having an open mouth portion, an electrical heating element mounted beneath said container, a cap member removably mounted in closing relation of said mouth portion, a grate formed on an external surface of said cap member, a plurality of vent openings formed in said grate, a cup member formed interiorly of said cap member in surrounding relation of said vent openings and defining a cooling chamber interposed between said container and said vent openings, at least one duct passage formed in said cup member and communicating said chamber with said container, said duct passage being coaxially aligned with cer-

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tain of said openings in said grate and laterally offset from others of said openings whereby steam emitted from said duct





passage through said certain openings induce air flow into said chamber through said others of said openings.

4,808,793

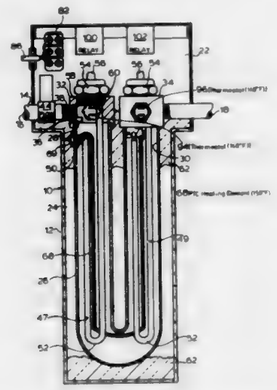
TANKLESS ELECTRIC WATER HEATER WITH INSTANTANEOUS HOT WATER OUTPUT

Bohdan Hurko, Louisville, Ky., assignor to EverHot Corporation, Indianapolis, Ind.

Filed Nov. 13, 1986, Ser. No. 929,896

Int. Cl.[4] H05B *1/02, 3/82;* **F24H** *1/10*

U.S. Cl. 219—306 **13 Claims**



1. A tankless water heater having instantaneous hot water output and comprising:

a. an open ended hollow insulated housing fitted with a folded tubular conduit, having a separate metal-sheathed electrical resistance heating element inserted into each end of the tubular conduit, and a cap member sealed to each end of the tubular conduit and serving to mount the first and second heating elements therein;

b. a water inlet conduit joined to a first cap member, and a water outlet conduit joined to the other cap member;

c. a temperature-sensing thermostat mounted in each cap member, and having a preset temperature of about 140° F., and connected in series with the adjacent heating element mounted on the respective cap member, and a water flow meter mounted in the water inlet conduit and in series with each thermostat;

d. a third, continuously energized independently of said metal-sheathed heating elements, self-regulating PTC heating cable in heat exchange relationship with the folded tubular conduit, for maintaining the water temperature therein at a predetermined temperature at about 150° F., whereby the electrical resistance of this heating cable increases as the temperature increases, and the heat output drops to a level that is just enough to replenish the heat losses, and maintain the water within the folded conduit at a temperature of about 150° F., so that the water heater will always supply hot water, when water is caused to flow from the water outlet conduit.

4,808,794

THERMOSTATICALLY CONTROLLED ELECTRIC IMMERSION HEATING ELEMENT

Joseph F. Foreman, Hannibal, and John S. Rhoads, New London, both of Mo., assignors to Watlow Industries, Inc., Hannibal, Mo.

Filed Jul. 10, 1987, Ser. No. 72,106

Int. Cl.[4] H05B *3/82, 1/02*

U.S. Cl. 219—331 **4 Claims**



1. An electric heater for heating fluid, such as liquid in a dishwasher, comprising an elongate heating element of flattened configuration in transverse cross section having opposing generally parallel wide faces and opposite narrow side edges connecting the faces, flange means secured to said heating element for mounting the heating element on a generally vertical wall in an operating position in which at least one reach of said heating element extends as a cantilever generally horizontally from the wall a maximum distance from said flange means with the opposing wide faces of the heating element disposed in generally vertical planes, a tubular housing, a temperature sensing element in the housing for controlling the operation of the heating element in response to the temperature of the heating element, and means for securing said housing in heat transfer contact with one of said at least one reach of the heating element, said heat transfer contact being substantially continuous along substantially the entire length of the reach and along one side edge of the reach constituting its upper edge when the heating element is in said operating position.

4,808,795

METHOD OF CONTINUOUSLY OVERHEATING LARGE VOLUMES OF GAS

Jan Thörnblom, Borgvilgen, Sweden, assignor to SKF Steel Engineering AB, Hofors, Sweden

Filed Aug. 5, 1987, Ser. No. 82,629

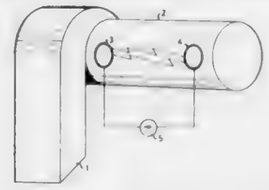
Claims priority, application Sweden, Aug. 11, 1986, 8603398

Int. Cl.[4] H05B *7/18*

U.S. Cl. 219—383 **6 Claims**

1. A method of continuously heating large volumes of a gas having an initial temperature of 800°–1300° C. which comprises passing the gas at a flow rate of 15–100 m/s through a cylindrical pipe, said cylindrical pipe having two electrodes

located on its axis and spaced apart from each other, and heating the gas passing through the cylindrical pipe by imparting to



the gas 0.1–0.5 kWh/m^3 of energy from an electric arc generated between the two electrodes.

4,808,796

APPARATUS FOR MONITORING TEMPERATURE DEPENDENT CHANGES

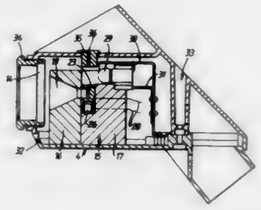
John F. Brooks, Billericay, and Paul L. Farnese, Southend-on-Sea, both of England, assignors to Electrothermal Engineering Ltd., Southend-on-Sea, England

Filed Jun. 6, 1986, Ser. No. 871,519

Claims priority, application United Kingdom, Jun. 7, 1985, 8514384

Int. Cl.[4] H05B *1/02*

U.S. Cl. 219—385 **25 Claims**



1. A monitoring apparatus comprising a heating arrangement for heating a substance to be monitored, the heating arrangement comprising:

a block of heating insulating material defining within it a cavity;

a heat sink member in said cavity;

electrical heating means for said member;

the member and block being perforated to provide an insertion passage for insertion of a sample tube of a substance to be heated; and

control means for said electrical heating means to provide two modes of operation, wherein each mode provides different rates of temperature rise of the heat sink member with time wherein the block and member one additionally perforated to provide a viewing passage intersecting the insertion passage whereby the heating of the substance may be observed by the user.

4,808,797

ELECTRIC HOTPLATE

Felix Schreder, Oberderlingen, and Josef Krist, Eppingen, both of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Geräte Blanc u. Fischer, Fed. Rep. of Germany

Filed Jul. 29, 1987, Ser. No. 79,576

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1986, 3629549

Int. Cl.[4] H05B *3/70*

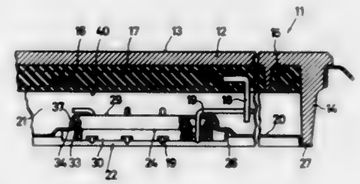
U.S. Cl. 219—458 **14 Claims**

1. An electric hotplate, comprising:

a hotplate body with heating resistors embedded on an underside of the hotplate body,

a cover plate covering the underside of the hotplate body,

a bushing for passage of connecting leads through the cover plate, the bushing being made from thermally stable insulating material, the bushing being inserted in an opening of the cover plate and having a plate-like shape with several passage openings, the passage openings being open to



either side of the cover plate and receiving the connecting leads, the bushing being directly fixed to the cover plate in the vicinity of the opening in the cover plate by clamping means which positively clamp the bushing to the cover plate, thereby fixing the bushing in all directions by engagement between the bushing and the cover plate, whereby the connecting leads can be inserted through the passage openings of the bushing after the bushing is fixed to the cover plate.

4,808,798

RADIANT HEATER FOR COOKING APPLIANCES

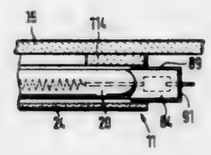
Gerhard Goessler, and Felix Schreder, both of Oberderlingen, Fed. Rep. of Germany, assignors to E.G.O. Elektro-Geräte Blanc u. Fischer, Fed. Rep. of Germany

Division of Ser. No. 777,365, Sep. 18, 1985, Pat. No. 4,700,051. This application Sep. 24, 1987, Ser. No. 85,341

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1984, 3434839; Feb. 4, 1985, 3503648

Int. Cl.[4] H05B *3/74*

U.S. Cl. 219—464 **15 Claims**



1. A radiant heater for cooking appliances with a cooking surface, the radiant heater comprising:

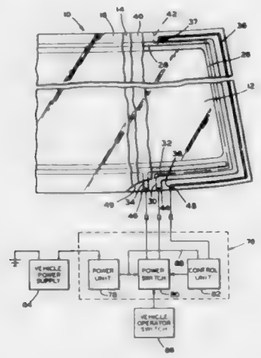
an insulator having a rim directed toward a cooking surface;

at least one electric light radiator heating element, which operates at an elevated temperature above 2,200° F. (approximately 1200° C.) and whose radiation spectrum is mainly in the visible range, the electric light radiator heating element being situated between the cooking surface and the insulator, and having an electrical heating resistor enclosed in a tube of transparent material having closed ends with end faces, at least one of the closed ends projecting into a recess of the rim; and,

a radiation shield provided at an edge region of the radiant heater, the radiation shield shielding the end faces of the electric light radiator heating element and thereby protecting an area of a cooking appliance located outside the radiant heater.

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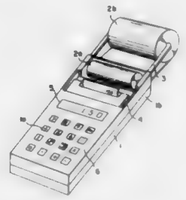
4,808,799
CRACK DETECTING WINDOW PANEL AND METHOD OF PRODUCING SAME
Richard D. Schave, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio
Filed Nov. 9, 1987, Ser. No. 118,238
Int. Cl.[4] H05B *3/06*
U.S. Cl. 219—522 24 Claims



1. A window assembly adapted to be electrically heated, comprising:
(a) a first transparent sheet having a major surface;
(b) a pair of spaced apart bus bars overlaid on and adhered to said major surface of said first sheet and each having a connector section adapted to be connected to an electrical power supply;
(c) a transparent electrically conductive film adhered to said major surface and electrically connected between said bus bars;
(d) at least one sense line overlaid on and adhered to said major surface, said sense line being connected to one of said bus bars at a predetermined location spaced from said connector section of said one bus bar for sensing a voltage applied to said one bus bar and said sense line adapted to be connected to a device for controlling an electrical power supply connected to said bus bars; and
(e) a second transparent sheet adhered to said first transparent sheet.

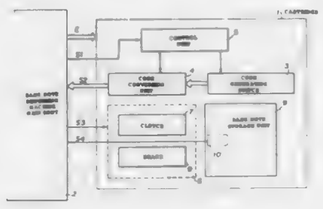
4,808,800
PRINTER-EQUIPPED ELECTRONIC DEVICE
Nobuyuki Nishijima, Mie; Kazunori Kominato, Yamatokoriyama, and Hiroaki Matsuda, Nabari-shi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 12, 1987, Ser. No. 61,417
Claims priority, application Japan, Jun. 13, 1986, 61-90702[U]
Int. Cl.[4] G06C *5/02, 29/00*
U.S. Cl. 235—58 C F 9 Claims

1. A printer equipped electronic device comprising:
an electronic device main cabinet having a printer built therein;
a first roll of paper on which to print-out data by said printer set inside said cabinet of said device;
a second roll of paper on which to print-out data by said printer set outside said cabinet of said device;
a first paper passage for leading to said printer the paper from said first paper roll set inside said electronic device cabinet;
a second paper passage for leading to said printer the paper from said second paper roll set outside said electronic device cabinet; and



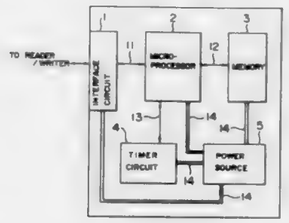
a partition plate for separating said second paper passage from said first paper passage.

4,808,801
BANK NOTE CARTRIDGE IDENTIFICATION SYSTEM FOR CASH DISPENSER
Masakatu Nakagawa, Kusatsu, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan
Filed Jan. 10, 1985, Ser. No. 743,151
Claims priority, application Japan, Jun. 11, 1984, 59-120929
Int. Cl.[4] G05F *15/30, 7/04*
U.S. Cl. 235—379 3 Claims



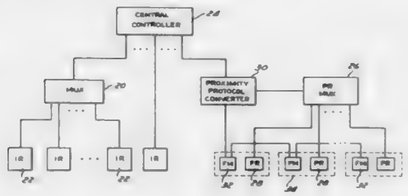
1. A bank note cartridge identification system, for at least one bank note dispensing machine and a plurality of bank note cartridges which can be fitted to said dispensing machine, said system comprising:
(a) a code setting means comprising an attendant-operable code generating switch, incorporated in each one of said cartridges, for setting an identification code by an attendant, said identification code comprising data indicating a denomination of bank notes loaded in said cartridges;
(b) a signal generating means, incorporated in each one of said cartridges, for generating a signal representative of said identification code set by said setting means and for transmitting it to said dispensing machine, when one of said cartridges is fitted to said dispensing machine; and
(c) a checking means, incorporated in said dispensing machine, for checking said signal, outputted by said generating means, representative of said identification code set by said setting means, by comparing said signal with a signal supplied to said checking means by an operations center, said operations center further supplying information to said dispensing machine with respect to (i) identification codes of particular ones of said cartridges which are fitted therein and which contain bank note denominations to be dispensed and (ii) a number of bank notes to be dispensed from each of said particular cartridges in order to control the sum of money to be dispensed to a customer.

4,808,802
METHOD AND SYSTEM FOR PROTECTING INFORMATION RECORDED IN INFORMATION MEDIUM
Mitsunari Kano, Seto, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 29, 1987, Ser. No. 79,048
Claims priority, application Japan, Aug. 25, 1986, 61-198725
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—380 10 Claims



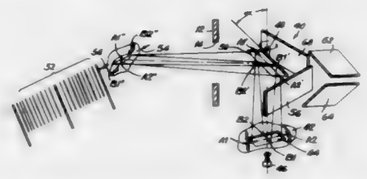
1. An information carrying medium, comprising:
storage means for pre-storing information to be protected;
timer means for constantly keeping the time lapse after activation thereof in terms of the current time;
control means for examining whether said current time reaches a limit time for erasing the information to be protected, when said current time reaches said limit time; and
power supply means for supplying electric power to said storage means, said timer means and said control means.

4,808,803
SECURITY SYSTEM
Louis H. Magier, Chatsworth; Hei-Pen Yang, Van Nuys, and John Hor, Temple City, all of Calif., assignors to Figgi International, Inc., Richmond, Va.
Filed Aug. 24, 1987, Ser. No. 89,342
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—382 7 Claims



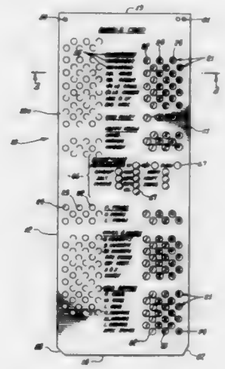
1. A security system in which access is selectively granted based upon identification data produced by a card presented to a card reader, said system comprising:
a central controller with a memory;
an insertion-type card reader coupled to said central controller, said insertion-type card reader receiving identification data from a card and transmitting the identification data to said central controller; and
a proximity-type card reader coupled to said central controller, said proximity type card reader receiving identification data from a card and transmitting the identification data to said central controller,
said central controller checking said memory after the receipt of identification data from one of said card readers to determine whether access should be granted.

4,808,804
BAR CODE SYMBOL READERS WITH VARIABLE SPOT SIZE AND/OR WORKING DISTANCE
Mark J. Krichever, Hauppauge; Boris Metlitsky, Stony Brook, and Jerome Swartz, Setauket, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.
Filed Jan. 28, 1987, Ser. No. 7,775
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—462 22 Claims



1. In a laser scanning system for reading symbols, a combination comprising:
(a) a housing having an exit port;
(b) laser means in the housing for generating a laser beam;
(c) scanning means in the housing for scanning the laser beam in scans across successive symbols located exteriorly of the housing; and
(d) optical means in the housing for directing the scanning beam along an optical path through the exit port, and for optically forming the scanning beam with a cross-sectional beam spot of a predetermined waist size and at a predetermined distance from the exit port of the housing, said optical means including means for changing the predetermined waist size of the beam spot during scanning.

4,808,805
MENU DEVICE
H. C. Harbers, Templeton, Calif., assignor to Escorp, Inc., San Luis Obispo, Calif.
Filed Oct. 8, 1986, Ser. No. 916,942
Int. Cl.[4] G06K *19/06*
U.S. Cl. 235—490 30 Claims



1. A menu device, comprising
(a) a card,
(b) successive rows of indicia on the card listing items to be selected,
(c) rows of bubbles on the card in alignment with said rows of indicia, the bubbles having positions on the card representative of numbers of items to be selected,
(d) each bubble having a first position projecting upwardly

from the plane of the card, and a second position into which it is displaced relative to the plane of the card, by finger pressure, to indicate selection of a number of said items corresponding to bubble position on the card,

(e) the bubbles being arrayed in two columns, one column of bubbles to the right of indicia on one side of the card, and another column of bubbles to the right of indicia on the opposite side of the card,

(f) there being at least three bubbles in each row, the three bubbles positioned to represent 1, 2 and 4 items to be selected.

4,808,806

OPTICAL SYSTEM FOR USE IN FOCUS DETECTING APPARATUS

Osamu Shindo, and Ryota Ogawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1987, Ser. No. 122,713

Claims priority, application Japan, Nov. 18, 1986, 61-275039

Int. Cl.⁴ G01J *1/20*

U.S. Cl. 250—201 **3 Claims**



1. In an optical system for use in a focus detecting apparatus that includes a pair of diaphragm stops and a pair of optical splitting elements disposed just behind said diaphragm stops, both pairs being symmetrical with respect to the principal axis of light, and which detects the focus position by detecting the relative positional mismatch between the refocused images of an object, the improvement wherein the optical axis of each of said optical splitting elements is positioned away from the center of aperture of each of said diaphragm stops with respect to the principal axis of light so as to compensate for any transverse chromatic aberration that may develop in said focus detecting apparatus.

4,808,807

OPTICAL FOCUS SENSOR SYSTEM

Ronald S. Hershel, Albany, Oreg., assignor to General Signal Corp., Stamford, Conn.

Filed Dec. 4, 1986, Ser. No. 937,767

Int. Cl.⁴ G01J *1/20*

U.S. Cl. 250—201 **4 Claims**

1. An optical focusing system comprising

object grating means located in the focal plane of an object for diffracting a light beam into a plurality of diffracted light beams where each of said diffracted light beams has a respective interference order,

image grating means,

projection optic means for focusing said diffracted beams having said respective interference orders to said image grating means,

said object or image grating means being laterally movable with respect to one another in the plane of the grating means, said object and image grating means sized so that the period of one is the same as the other as seen through said system such that the period is large enough so that the +1, zero and −1 orders are transmitted by the system,

detector means for producing varying first and second control signals corresponding respectively to interference between +1 and −1 orders from said object grating means and corresponding orders from said image grating means generated by the zero object order incident on said image grating means where the phase difference between said varying first and second control signals is proportional to the focus offset between said grating means,



control means responsive to said first and second control signals for generating a focus offset signal representative of the direction and amount of focus offset of said object, thereby providing a focus control capability.

4,808,808

FOCUS DETECTING OPTICAL SYSTEM INCLUDING TWO PRISMS FOR LIGHT REFRACTION

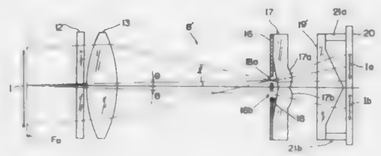
Toshihiko Karasaki, Sakai; Tokuji Ishida, Daito; Masataka Hamada, Osaka; Toshio Norita, Sakai, and Nobuyuki Taniguchi, Nishinomiya, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 20, 1987, Ser. No. 5,088

Claims priority, application Japan, Jan. 20, 1986, 61-10491

Int. Cl.⁴ G01J *1/20*

U.S. Cl. 250—201 **13 Claims**



1. A focus detecting optical system, comprising:

a condenser lens disposed in a vicinity of or rearwardly of a predetermined focal plane of a photographic lens;

image forming lens means disposed rearwardly of said condenser lens and including a pair of image forming lens sections disposed symmetrically relative to a main optical axis;

a light blocking member disposed forwardly of said image forming lens means and having an opening for regulating a luminous flux coming into said image forming lens means;

first prism means disposed between said image forming lens means and said light blocking member and adapted for refracting the luminous flux in a direction departing from the main optical axis;

second prism means disposed rearwardly of said first prism means and adapted for refracting the luminous flux in a direction towards the main optical axis; and

a light receiving element array disposed rearwardly of said second prism means, said light receiving element array having formed thereon images by said image forming lens means;

whereby a focus detecting operation is carried out by comparing one of the images formed on said light receiving element array and formed of the luminous flux carried through said condenser lens, said first prism means, one of said image forming lens sections and said second prism means with the other of the images formed on said light receiving element array and formed of the luminous flux carried through said condenser lens, said first prism means, the other of said image forming lens sections and said second prism means.

4,808,809

DEVICE FOR OPTICALLY DETECTING THE PRESENCE OR ABSENCE OF AN OBJECT ON AN OPTICAL PATH INCLUDING A VARIABLE I-V CHARACTERISTIC CIRCUIT TO EFFECT IN A POSITIVE FEEDBACK RELATIONSHIP BETWEEN THE RADIATION SOURCE AND THE RADIATION DETECTOR

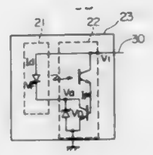
Wataru Hayakawa, Odawara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 26, 1986, Ser. No. 935,172

Claims priority, application Japan, Nov. 27, 1985, 60-266928

Int. Cl.⁴ G01J *1/32*

U.S. Cl. 250—205 **22 Claims**



1. A device for optically detecting the presence or absence of an object on an optical path, comprising:

a first terminal adapted for applying thereat a first reference voltage signal;

a second terminal adapted for applying thereat a second reference voltage value through a load;

a radiation source circuit coupled between said first and second terminals, said radiation source circuit including a series connection of a radiation source for emitting radiation by electrical excitation and variable current-voltage (I–V) characteristics means for passing the radiation source excitation current therethrough and being responsive to a control signal for controlling its I–V characteristic; and

a radiation detector circuit including a radiation detector positionally disposed for defining said optical path from said radiation source to the radiation detector and for receiving the radiation emitted from said radiation source through the optical path, said radiation detector circuit generating an output corresponding to said control signal for controlling said variable I–V characteristic such that when a light quantity incident on said radiation detector is increased said variable I–V characteristic means is controlled to allow a higher current flow therethrough.

4,808,810

PREAMPLIFIER FOR AN OPTICAL RECEIVER

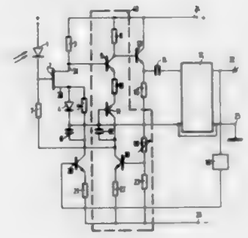
Willem Van Doorn, Hilversum, Netherlands, assignor to AT&T and Philips Telecommunications B.V., Hilversum, Netherlands

Filed Sep. 23, 1987, Ser. No. 99,943

Claims priority, application Netherlands, Sep. 24, 1986, 8602408

Int. Cl.⁴ H01J *40/14*

U.S. Cl. 250—214 A **3 Claims**



1. An optical high-impedance amplifier circuit for processing signals over a wide dynamic and automatically operating control range comprising a photodiode, a field-effect transistor, a preamplifier including output terminals and a differential amplifier including an output amplifier, said photodiode being connected to the gate electrode of said field-effect transistor, said preamplifier including a current source and a variable impedance,

(1) said variable impedance connected to the source electrode of said field-effect transistor and coupled to said controllable current source,

(2) said controllable current source having a control input, an output of said output amplifier being connected to said control input via a peak detector,

(3) and said current stabilization circuit connected to said field-effect transistor to set the current through the main current path of said field-effect transistor to a substantially constant value, said differential amplifier connected to the output terminals of said preamplifier.

4,808,811

LIGHT INTEGRATING CIRCUIT FOR USE IN A LIGHT MEASURING DEVICE WHICH IS ACCURATE FOR BOTH LOW AND HIGH LIGHT VALUES

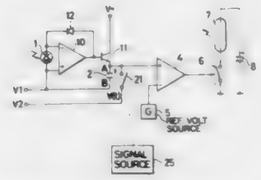
Toshiyuki Kamakura, Kanagawa; Hiroyuki Kataoka, Tokyo, and Kouichi Ohmori, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 753,243, Jul. 9, 1985, abandoned. This application Oct. 9, 1987, Ser. No. 107,879

Claims priority, application Japan, Jul. 9, 1984, 59-141791; Jul. 9, 1984, 59-141792; Jul. 9, 1984, 59-141793

Int. Cl.⁴ G01J *1/00*; **G03B** *7/08*

U.S. Cl. 250—214 L **7 Claims**



1. A light measuring device comprising:

(a) a light measuring circuit having a light receiving element

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and producing a logarithmically compressed signal of a current produced according to the light received by said light receiving element;

(b) expanding means for producing an expanded current obtained by expanding an output of said light measuring circuit;

(c) capacitor means for performing an integration operation of the expanded current produced by said expanding means, said capacitor means having a first output terminal connected to said expanding means and a second output terminal arranged to receive a first potential;

(d) start means for starting the integration operation of said capacitor means; and

(e) input means for inputting a second potential different from said first potential, to the first output terminal of said capacitor means prior to the start of the integration operation by said start means, an output from the second output terminal of said capacitor means gradually changing from the second potential toward the first potential with the start of the integration operation.

4,808,812

COMPOSITE TYPE LIGHT SENSOR HAVING PLURAL SENSORS WITH DIFFERENT LIGHT RECEIVING ANGLE OPTICAL CHARACTERISTICS

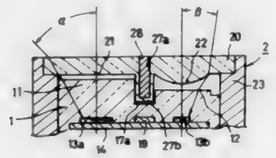
Akira Tanaka, Utsunomiya; Shigeru Kimura, Yokohama; Toshiaki Ikeda, Yokohama; Toru Tanabe, Yokohama; Seiichi Seto, Hiratsuka, and Takao Seto, Yokohama, all of Japan, assignors to Honda Motor Co., Ltd. and Stanley Electric Co., Ltd., both of Tokyo, Japan

Filed Jan. 11, 1987, Ser. No. 62,442

Claims priority, application Japan, Jan. 19, 1986, 61-143902

Int. Cl.⁴ H01J *3/14*

U.S. Cl. 250—216 **17 Claims**



1. A composite-type light sensor comprising:

a sensor portion including at least two light-receiving elements integrally molded as a single unit into a light-transmitting resin to form a single unit sensor portion; and

a case portion for receiving said sensor portion therein, said case portion including respective different light-receiving means having respective different light receiving angle optical characteristics;

said light-transmitting molded resin of said sensor portion defining different light-receiving portions in front of respective ones of said light-receiving elements, said different light-receiving portions having respective different light receiving angle optical characteristics;

said different light-receiving portions of said sensor portion being arranged adjacent respective different light-receiving means of said case portion to receive light from said respective light-receiving means of said case portion; and

said light-receiving means of said case portion and said light-receiving portions of said sensor portion cooperatively providing said light-receiving elements with respective different light-receiving angle optical characteristics.

4,808,813

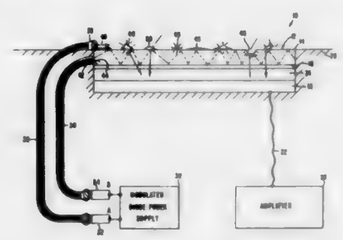
SELF CONTAINED SURFACE CONTAMINATION SENSOR FOR DETECTING EXTERNAL PARTICULATES AND SURFACE DISCONTINUITIES

Robert J. Champetier, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 5, 1986, Ser. No. 859,563

Int. Cl.⁴ H01J *5/16*; **G01N** *21/16*

U.S. Cl. 250—227 **15 Claims**



1. Apparatus self contained with an optical element for detecting both surface discontinuities associated with the optical element and particulate matter on a surface of the optical element, comprising:

means for generating electromagnetic radiation positioned adjacent the optical element;

a pair of optical waveguides coupled to the generating means for receiving the radiation and coupled to the optical element and positioned with respect thereto for directing the radiation respectively into the interior thereof and at an angle to the surface thereof, respectively for sensing the surface discontinuities and the particulate matter and thereby for providing respective indicia thereof; and

means for detecting the respective indicia.

4,808,814

OPTICAL SYSTEM FOR SENSING FRACTURES IN A STRUCTURAL COMPONENT

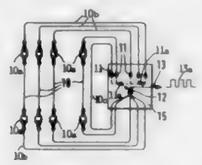
Bernd Hofer, Lemwerder, and Samir Malek, Leuchtenburg, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Muenchen, Fed. Rep. of Germany

Filed Aug. 28, 1987, Ser. No. 90,566

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1986, 3629430

Int. Cl.⁴ H01J *5/16, 40/14*

U.S. Cl. 250—227 **12 Claims**



1. A system for sensing fractures, comprising aircraft structural components including a cockpit, a plurality of light conductors attached to said aircraft structural components in such locations that at least one of said light conductors is interrupted by a fracture in the respective aircraft structural component, a computer information central processing unit arranged in said cockpit, an interface between said light conductors and said central processing unit, each of said light conductors forming a normally closed fracture sensing loop having a light input end connected to said interface and a light signal output end also connected to said interface, light source means (11,32) arranged for sequentially passing light into each input end of said normally closed fracture sensing loops, light monitoring means (12,33) operatively arranged for sequentially receiving a light signal at said output ends of said normally closed fracture sensing loops for ascertaining whether light condition through any particular fracture sensing loop has been interrupted by a fracture as signified by the absence of a light signal output, means arranged for energizing said light source means, means for sequentially interrogating said light monitoring means, whereby a fracture signal is produced by the absence of a light signal output when a light conductor fracture sensor has been interrupted by a fracture, indicator means in said cockpit for indicating a fracture, and a single output conductor connecting said interrogating means to said central processing unit for transmitting to said central processing unit signals as an indication that a fracture of the respective fracture sensing light conductor loop has occurred.

4,808,815

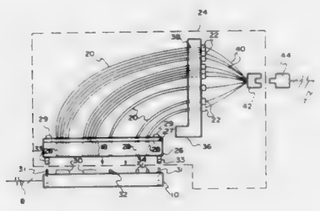
APPARATUS FOR TESTING LIGHT-EMITTING DEVICES USING PROBE MEANS HAVING A PRESELECTED PATTERN ARRANGEMENT

Frank J. Langley, Concord, Mass., assignor to GenRad, Inc., Waltham, Mass.

Filed Mar. 23, 1987, Ser. No. 29,451

Int. Cl.⁴ G02B *6/14*

U.S. Cl. 250—227 **14 Claims**



1. An apparatus for optically testing one or more light-emitting devices, said devices being arranged in a fixed pattern, said apparatus comprising:

A. retaining means, said retaining means for securing one or more probe means, said probe means being arranged in a preselected pattern which corresponds with said fixed pattern such that each said probe means may optically test a predetermined light-emitting device;

1. each of said probe means including a light-conducting fiber and a detector, said fiber having first and second ends, said first end of said fiber for receiving light emitted by said predetermined light-emitting device, said second end of said fiber being coupled to a detector means, each of said probe means having an adjustable spatial resolution,

2. said detector means for producing an output signal in response to light conducted by said fiber, said output signal having a magnitude that is related to the intensity of said light.

4,808,816

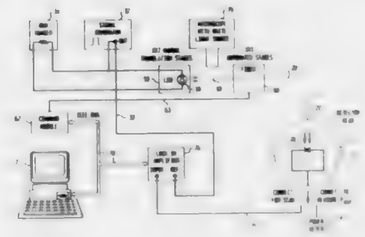
LED AND PIN DIODE CHARACTERIZATION BY PRODUCING A SCHEMATIC PROFILE OF RELATIVE INTENSITIES

Steven L. Flickinger, Hummelstown; Pamela R. Gutterman, Camp Hill, and Wayne B. Hadley, Palmyra, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 13, 1987, Ser. No. 120,266

Int. Cl.⁴ H01J *5/16, 40/14*

U.S. Cl. 250—227 **27 Claims**



1. An apparatus for characterizing the intensity coupling between a light emitting semiconductor device and an optical fiber, said apparatus comprising:

a signal generator for applying a driving current to said light emitting device,

translation means on which an input end of said optical fiber is mounted, said translation means being capable of moving said input end of said optical fiber along any of three mutually perpendicular axes,

control means for applying electronic signals to said translation means to cause said translation means to move said input end of said fiber to particular positions,

detecting means for detecting the intensity of radiation coupled into said fiber from said device at said positions for comparison relative to a maximum coupled intensity, wherein the maximum coupled intensity is obtained by locating the fiber at an initial position along said axes,

recording means for recording relative intensities, wherein each relative intensity is a comparison of a corresponding detected intensity and the maximum coupled intensity, and

producing means for producing a schematic profile of the relative intensities to indicate a distribution of the intensity coupling between the fiber and the device.

4,808,817

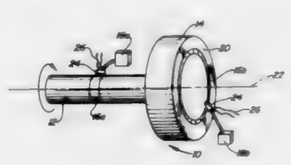
ROTATIONAL ACCELERATION DETECTOR WITH MICRODOT CODING

Keith E. Short, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 23, 1987, Ser. No. 124,072

Int. Cl.⁴ G01D *5/34*

U.S. Cl. 250—231 SE **14 Claims**

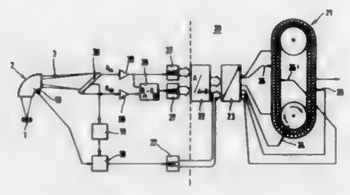


1. A system for detecting angular, radial and axial accelera-

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tions of rotating machinery parts and the like to facilitate vibrational analysis of the parts, comprising:
an annular array of micro dots disposed on the rotating machinery part generally concentric with the axis of rotation thereof;
stationary high resolution photodetector means located for reading micro dot patterns of movement of said annular array thereof as the array tangentially passes the photodetector means; and
conditioning means coupled to the photodetector for conditioning a signal received from the photodetector means.

4,808,818
METHOD OF OPERATING A MASS SPECTROMETER AND A MASS SPECTROMETER FOR CARRYING OUT THE METHOD
Gerhard Jung, Dolmenhorst, Fed. Rep. of Germany, assignor to Finnigan MAT GmbH, Bremen, Fed. Rep. of Germany
Filed Apr. 21, 1987, Ser. No. 40,982
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1986, 3613768
Int. Cl.⁴ B01D *59/44*
U.S. Cl. 250—282 **7 Claims**

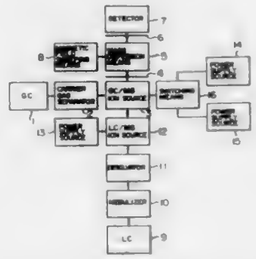


1. A method of operating a mass spectrometer with a location-resolving detector sensitive to the impingement of ions, a controllable mass analyzer and a computer with a memory, the mass analyzer being controlled in a scanning operation over a mass spectrum and at least one partial region of the mass spectrum to be investigated being recorded for analysis by the location-resolving detector, the method comprising the steps of:
(a) determining an instantaneous mass value, m_0, associated with a center location of said detector, from instantaneous scanning parameters of said analyzer when a said ion impinges on said detector;
(b) determining from a signal from said detector the impingement location of said ion on said detector and from said impingement location the relative mass deviation, $\Delta m/m_O$, of the mass of said ion from said mass value, m_O;
(c) calculating immediately after the above two steps the mass value, m, of said ion by:

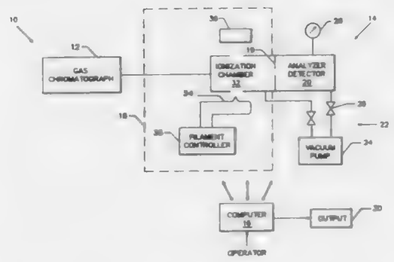
$$m = m_O + (\Delta m/m_O \times m_O).$$

4,808,819
MASS SPECTROMETRIC APPARATUS
Hiroshi Hirose, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 2, 1988, Ser. No. 151,533
Claims priority, application Japan, Feb. 3, 1987, 62-23310
Int. Cl.⁴ B01D *59/44*
U.S. Cl. 250—288 **1 Claim**

1. A mass spectrometric apparatus, which comprises a liquid chromatograph, a first ion source for ionizing separated sample components from the liquid chromatograph, a gas chromatograph, a second ion source for ionizing separated sample components from the gas chromatograph, a means for selectively actuating the first and second ion sources, thereby selectively forming ions of the separated sample components from the liquid chromatograph in the first ion source and ions of the separated sample components from the gas chromatograph in the second ion source, a means for focussing the ions selectively formed in the first and second ion sources onto a predetermined position, a means for mass dispersing the focussed ions and a means for detecting the mass dispersed ions.

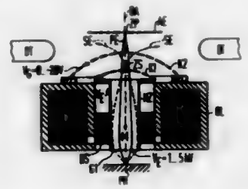


4,808,820
ELECTRON-EMISSION FILAMENT CUTOFF FOR GAS CHROMATOGRAPHY + MASS SPECTROMETRY SYSTEMS
David A. Blau, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sep. 23, 1987, Ser. No. 99,935
Int. Cl.⁴ B01D *59/44*
U.S. Cl. 250—281 **16 Claims**



1. A system comprising:
a filament for emitting electrons through thermal emission when sufficient current flows through said filament, said emitted electrons having sufficient energy to ionize molecules in an ambient gas characterizable by an ambient pressure;
a power supply for supplying a current through said filament so that electrons are emitted therefrom, said power supply being electrically coupled to said filament, said current having an emission component corresponding to emitted electrons from said filament and a supply component corresponding to the portion of said current not accounted for by said emitted electrons;
temperature means for sensing a drop in the temperature of said filament; and
deactivation means for turning off the supply of power through said filament in response to a detection by said temperature means of a drop in temperature of said filament, said deactivation means being coupled to said temperature means and to said power supply;
whereby, filament burnout due to contamination by ionized molecules is minimized since ionizing emissions are deactivated when said ambient pressure exceeds a threshold as detected by a drop in the temperature of said filament.

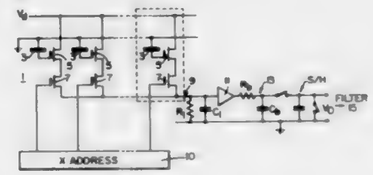
4,808,821
SPECTROMETER OBJECTIVE FOR ELECTRON BEAM MENSURATION TECHNIQUES
Hans-Peter Feuerbaum, Munich, and Juergen Frosien, Ottobrunn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jan. 16, 1986, Ser. No. 874,698
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1985, 3521464
Int. Cl.⁴ H01J *37/05*
U.S. Cl. 250—305 **10 Claims**



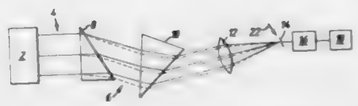
1. A spectrometer objective for particle beam measuring instruments, comprising:
a magnetic lens for receiving and focusing a beam of primary electrons along an optical axis onto a specimen to cause emission of secondary electrons;
a deflection system arranged within said magnetic lens;
a first electrode means for accelerating the secondary electrons triggered at the specimen in the direction of said magnetic lens;
a second electrode means comprising a first electrode and a second electrode;
said first electrode forming a part of the surface of a first sphere having a first radius and said second electrode forming a portion of the surface of a second sphere having a second radius;
said first sphere and said second sphere having a common center which lies on the optical axis within said magnetic lens in a region free of electrical fields;
said common center of said first and second spheres lying in the middle of said deflection system;
means for charging said first and second electrodes with potentials such that an electrical field decelerating the secondary electrons builds up in the spatial region between said first and second electrodes; and
a detector system for detecting the secondary electrons, said detector system assigned to said second electrode means.

4,808,822
THERMAL DETECTOR
Paul A. Manning, and Rex Watton, both of Malvern, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Apr. 11, 1985, Ser. No. 781,661
Claims priority, application United Kingdom, Apr. 16, 1984, 8409783
Int. Cl.⁴ H01L *25/00*; **G01J** *1/00*; **H01J** *40/14*
U.S. Cl. 250—332 **10 Claims**

1. A thermal detector including:
(1) a row of thermal detector elements disposed to receive radiation from a scene,
(2) a row output line arranged to relay detector element signals to a common row output,
(3) a respective power amplifier associated with each detector element, each power amplifier being arranged to amplify detector element signals for output to the row output line and to decouple detector element capacitance from that of the row output line,
(4) modulating means arranged to modulate radiation from the scene such that each detector element experiences alternate light and dark time intervals and becomes illuminated in sequence along the row,
(5) addressing means synchronised with the modulating means and arranged to address the power amplifiers sequentially and sample their signals to the common row output to provide alternate light and dark sets of signals, and
(6) a band pass filter arranged to receive light and dark sets of signals from the common row output, the filter having transmission characteristics to pass detector element output signals and including both an anti-aliasing low pass filter and a high pass filter arranged to extract respective difference signals from each detector element's light and dark output signals.



4,808,823
THERMAL IMAGERS
William T. Moore, Buckhurst Hill, and Alan S. Stuart, Loughton, both of United Kingdom, assignors to Rank Pullin Controls Limited, United Kingdom
Filed Aug. 11, 1987, Ser. No. 84,045
Claims priority, application United Kingdom, Aug. 13, 1986, 8619738
Int. Cl.⁴ G02B *26/10, 5/04*
U.S. Cl. 250—334 **15 Claims**



1. A thermal imager comprising thermal detector means; scanning means for scanning a thermal image across said detector means; and an anamorphic optical system between said scanning means and said detector means; said anamorphic optical system comprising first and second optical means arranged in series and satisfying the equation:

$$C_2 = M_2 C_1$$

where C_1 and C_2 represent respectively errors introduced by the first and second optical means as a function of variation of refractive index with a parameter and M_2 represents a magnification factor of the second optical means to compensate at least partly for said errors.

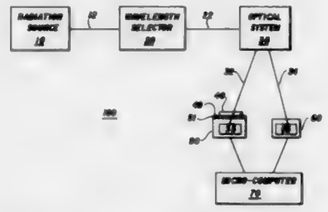
VOL 1099 ISS 4 FEB 28 1989 UMI

4,808,824

COMPOSITIONAL STATE DETECTION SYSTEM AND METHOD

Abbas M. Sinnar, 6111 Triangle Dr., Columbia, Md. 21044

Filed Sep. 17, 1987, Ser. No. 97,691
Int. Cl.[4] G01J *1/00*
U.S. Cl. 250—339 20 Claims



1. A method of determining the compositional state and any transition between states of a chemical compound comprising the steps of:

(a) simultaneously applying at least two discrete energy wavelengths within the electromagnetic energy spectrum to (1) said chemical compound for providing a test signal, and, (2) at least one energy detector for providing an energy wavelength reference, each of said discrete energy wavelengths being selected from a wavelength spectrum of absorption for said chemical compound;

(b) detecting said two discrete energy wavelengths passing through or reflected from said chemical composition;

(c) establishing the amount of energy absorbed by said chemical compound at each of said discrete energy wavelengths; and,

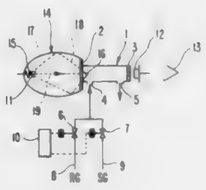
(d) determining (1) transitional changes between two states of said chemical compound and (2) a thickness dimension of said chemical compound for each of said two state by (1) comparing said absorbed energy at each of said discrete energy wavelengths with the absorption characteristics of said chemical compound at each of said discrete energy wavelengths for each of said two states and (2) computing said thickness dimensions from a predetermined relationship for said energy absorbed.

4,808,825

FLUID ANALYZER

Kimio Miyatake; Takao Imaki, and Masahiko Fujiwara, all of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Dec. 22, 1986, Ser. No. 946,183
Claims priority, application Japan, Dec. 23, 1985, 60-290258
Int. Cl.[4] G01J *1/00*; G01N *21/00*
U.S. Cl. 250—343 5 Claims



1. A fluid analyzer comprising:

a light source;

a cell for receiving fluid to be analyzed and reference fluid and positioned to receive light from the light source;

a detector positioned for receiving an output from said cell; and

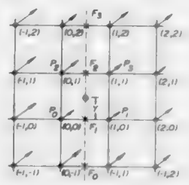
a light source body having inner reflective walls with a curved profile in the direction extending between said light source and said cell for forming a first focal point at one end thereof and a second focal point at the other end thereof, said light source being positioned in said light source body substantially coincident with said first focal point, and the other end of said light source body extending around the end of said cell which is toward said light source and with said second focal point within said cell, said curved profile having a shape for reflecting light scattered from said light source only one time into said cell.

4,808,826

SMOOTH DOT DENSITY SPATIAL DISTORTION CORRECTION IN PHOTON IMAGING DEVICES

Chun B. Lim, Solon; Richard Chaney, Cuyahoga Falls; Felix Jih; Tim Johnson, both of Cleveland, all of Ohio, and Steven E. King, Springfield, Va., assignors to Technicare Corporation, Solon, Ohio

Filed Apr. 8, 1986, Ser. No. 849,324
Int. Cl.[4] G01T *1/20*; G06F *15/42*
U.S. Cl. 250—363 S 7 Claims



1. In an imaging system employing a scintillation camera, a method of correcting for spatial distortion comprising the steps of:

(a) establishing a grid of spatial correction vectors at predetermined loci over the field of the camera; and

(b) during operation, applying a spatial correction for each scintillation event by developing a correction function having continuity of slope in a region surrounding the apparent location of the event, characterized in that said region extends beyond the set of correction vectors next adjacent the apparent location of the event.

4,808,827

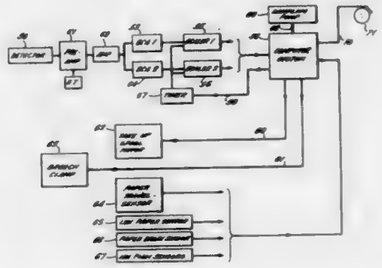
METHOD AND APPARATUS FOR MONITORING THE CONCENTRATION OF AIRBORNE ACTINIDE PARTICLES

Paul B. Woollam, Dursley, United Kingdom, assignor to Central Electricity Generating Board, London, England

Filed Nov. 24, 1986, Ser. No. 934,668
Claims priority, application United Kingdom, Nov. 25, 1985, 8528989
Int. Cl.[4] G01T *1/36, 1/24*
U.S. Cl. 250—370.02 28 Claims

1. A method of monitoring the airborne radioactivity concentration represented by actinides, comprising the steps of drawing a sample stream of air from the region to be monitored, preferentially separating by size particles from the stream which are characteristic of actinide bearing particles from particles characteristic of the majority of natural dust particles and collecting said particles characteristic of actinide bearing particles onto the surface of a collection medium at a collecting position to provide a collected sample of particles, transferring the collection medium with said sample of particles collected thereon to a detecting position, detecting at the detecting position the relative energy of the α radioactive

emissions from the collected sample on the collection medium, providing indications of the respective count rates of emissions detected having energies in each of a first energy window embracing the characteristic energies of actinide α emissions and excluding the characteristic energies of α emissions from ^{214}Po (RaC') and a second energy window embracing said characteristic energies of α emissions from Rac' and excluding



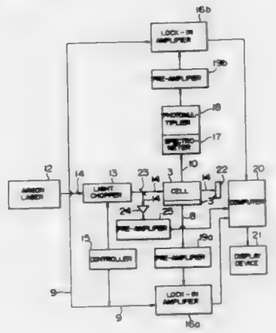
said characteristic energies of actinide α emissions, determining from said indications the variation with time of at least the respective count rate for the said first energy window for the same collected sample, and calculating, from said count rate indications and said variation, a value for the count rate for α emissions from actinide bearing particles in the collected sample.

4,808,828

METHOD OF AND APPARATUS FOR SIMULTANEOUS DETERMINATION

Takehiko Kitamori; Haruo Fujimori, both of Hitachi, and Kazunichi Suzuki, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1986, Ser. No. 937,050
Claims priority, application Japan, Dec. 2, 1985, 60-269269
Int. Cl.[4] G01N *21/64*
U.S. Cl. 250—458.1 14 Claims



1. A method of simultaneous determination of trace constituents, comprising the steps of:

irradiating a solution containing trace constituents with an intensity-modulated electromagnetic wave having a predetermined wavelength;

detecting the magnitude of a photoacoustic signal generated by said trace constituents which have been irradiated with the intensity-modulated electromagnetic wave;

detecting the intensity of light radiation from said trace constituents which have been irradiated with the intensity-modulated electromagnetic wave, and detecting the emission spectrum of said electromagnetic-wave irradiated trace constituents; and

calculating the concentrations of said trace constituents from the detected magnitude of said photo-acoustic signal, the detected intensity of said light radiation, and calibration curves each formed for known concentrations of one of said trace constituents, and identifying said trace constituents by the detected emission spectrum, and wherein

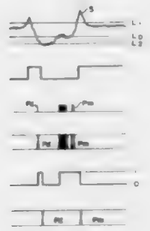
said step of calculating the concentrations of said trace constituents includes a step of determination of said trace constituents by solving simultaneous equations with variables of the magnitude of photoacoustic signal and the intensity of emitted light with respect to concentration of each trace constituent.

4,808,829

MARK POSITION DETECTION SYSTEM FOR USE IN CHARGED PARTICLE BEAM APPARATUS

Masahide Okumura, Sagamihara; Takashi Matsuzaka, Kokubunji; Genya Matsuoka, Ome; Kazumi Iwadate, Iechara; Tadahito Matsuda, Atsugi, and Ryuichi Yamaguchi, Zama, all of Japan, assignors to Hitachi Ltd. and Nippon Telegraph and Telephone Corp., both of Tokyo, Japan

Filed Jun. 17, 1987, Ser. No. 63,018
Claims priority, application Japan, Jun. 18, 1986, 61-140069
Int. Cl.[4] G01N *23/22*
U.S. Cl. 250—491.1 4 Claims



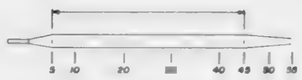
1. A mark position detection system for use in a charged particle beam apparatus, comprising:

detection means for detecting electrons generated at a mark when the mark is scanned with a charged particle beam, to obtain a mark signal; and

signal processing means for comparing the mark signal from the detection means with a first predetermined threshold level L_0 to find the position of the charged particle beam at a time point at which the mark signal traverses the first predetermined threshold level L_0 so as to detect the position of the mark,

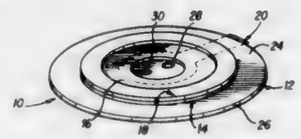
said signal processing means being arranged such that when the mark signal traverses the first predetermined threshold level L_0 and traverses at least one of a second predetermined threshold level L_1 higher than the first predetermined threshold level L_0 and a third predetermine threshold level L_2 lower than the first predetermined threshold level L_0, it is determined that the position of the charged particle beam at a point at which the mark signal traverses the first predetermined threshold level L_0 is the position of the mark.

4,808,830
INFRARED BEAM PROJECTOR
Warren Burgis, 8646 - 11th Avenue, Burnaby, British Columbia, Canada (V3N 2P8)
Filed Jun. 15, 1987, Ser. No. 61,662
Int. Cl.[4] G02B *5/00*
U.S. Cl. 250—505.1 **18 Claims**



1. A light beam projector, comprising:
a hollow cylindrical tube;
a light source positioned at one end within said tube; and
an aperture located at the opposite end of said tube, said tube having a light absorbing liner extending along said tube from said light source to said aperture, such that most light emitted by said source which diverges away from a central horizontal axis defined by said tube, before said aperture, will be absorbed by said liner and any remaining light centered about said axis will be emitted through said aperture.

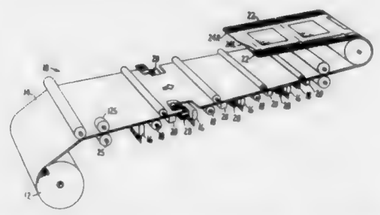
4,808,831
CONTAINER FOR WET AND DRY RADIOACTIVE SAMPLES
Orres P. Whiddon, Gaithersburg, Md., assignor to Biocan, Inc., Washington, D.C.
Filed Mar. 25, 1987, Ser. No. 29,969
Int. Cl.[4] G21F *5/02*
U.S. Cl. 250—506.1 **50 Claims**



1. A container for low energy radioactive samples comprising:
a substantially planar carrier member having first and second opposed sides and an aperture formed therethrough;
means for retaining a radioactive sample in said container and simultaneously for permitting low energy radiation from radioactive decay of the sample to exit therethrough, said means being connected to one side of said carrier member defining a cavity therewith, said cavity only being accessible via said aperture in said carrier member; and
means removably attached to another side of said carrier member, opposite said one side, for sealing said aperture.

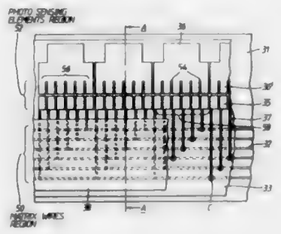
4,808,832
REGISTRATION SYSTEM FOR A MOVING SUBSTRATE
David E. Doggett, Sunnyvale, Calif., assignor to Synergy Computer Graphics Corp., Sunnyvale, Calif.
Continuation of Ser. No. 906,259, Sep. 11, 1986, abandoned. This application May 20, 1988, Ser. No. 198,624
Int. Cl.[4] G01B *11/00*; G01N *21/86*; G05B *1/06*
U.S. Cl. 250—548 **18 Claims**

3. A registration system for maintaining accurate correspondence between an image on a moving substrate and the action of an operating element with respect to the image, the registration system comprising:
(a) a series of equally spaced non-reflective, non-transmissive timing marks formed on the substrate;
(b) means for illuminating the timing marks;
(c) a comparison optical device comprising a series of equally spaced non-reflective, non-transmissive bars and transparent spaced formed on a transparent medium, the spacing configuration of the bars and spaces corresponding to the spacing configuration of the timing marks, the comparison optical device being mounted such that the timing marks pass in alignment with the bars when the substrate is moving so that the timing marks move from being substantially coincident with the bars to being aligned substantially midway between the bars with a result that the intensity of light coming from the illuminated timing marks and passing through the comparison optical device is a maximum when the timing marks and bars are substantially coincident and is a minimum when the timing marks are aligned midway between the bars;



(d) detector means for sensing the intensity of light passing through the comparison optical device when the substrate is moving thereby the detector means generates an output signal having a voltage cycle rate corresponding to the illumination cycle rate caused by the passage of the timing marks with respect to the bars of the comparison optical device; and
(e) electronic means for receiving the output signal and for generating a pulsed firing signal having a pulse rate corresponding to the voltage cycle rate
the pulsed firing signal being provided to the operating element to activate the operating element in correspondence with the image on the substrate and in correspondence to the passage of individual timing marks with respect to the bars of the comparison optical device.

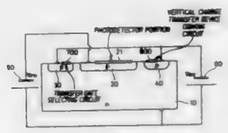
4,808,833
IMAGE SENSORS USING A PHOTO-SENSING ELEMENT ARRAY AND MATRIX WIRES METHODS OF MANUFACTURING SAME
Tamio Saito, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 12, 1986, Ser. No. 941,079
Claims priority, application Japan, Dec. 27, 1985, 60-294055
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 **17 Claims**



1. An image sensor, comprising:

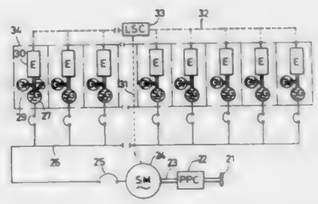
a substrate;
first wires formed in parallel on a first region of said substrate;
a semiconductor layer formed on said first region covering said first wires and formed on a second region of said substrate adjacent said first region, said semiconductor layer being continuously formed on said substrate from said first region to said second region;
a plurality of first electrodes having a predetermined alignment and electrically connected to said semiconductor layer in said second region, said plurality of first electrodes being formed on said semiconductor layer in said second region;
a plurality of electrode portions electrically connected to said semi conductor layer of said second region and formed on said semiconductor layer in said second region, groups of said electrode portions each having a common second electrode formed on said semiconductor layer, said plurality of electrode portions having said predetermined alignment and positioned facing said first plurality of electrodes interposing a space between said plurality of first electrodes and said plurality of electrode portions wherein said electrode portions, said first electrodes and said semiconductor layer positioned therebetween comprise photo-sensing elements; and
a plurality of second wires formed on said semiconductor layer and extended from said first electrodes, and second wires electrically connecting said first electrodes to said first wires via through holes formed in said semiconductor layer.

4,808,834
SOLID-STATE IMAGE SENSOR
Masafumi Kimata, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 26, 1987, Ser. No. 20,194
Claims priority, application Japan, Feb. 26, 1986, 61-41285
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 **9 Claims**



1. A solid-state image sensor comprising:
a semiconductor substrate (10) of a first conductivity type,
at least one first semiconductor region (20) of a second conductivity type opposite to said first conductivity type, formed on said semiconductor substrate,
a photodetector portion (21) formed on said first semiconductor region, said photodetector portion including at least
a plurality of photodetectors (101–103, 111–113, 121–123) arranged in row and column directions in a two-dimensional manner for detecting light and generating signal charges,
a plurality of transfer gates arranged in row and column directions in a two-dimensional manner and connected to said photodetectors, respectively, for selectively reading out said signal charges from said photodetectors,
a plurality of vertical charge transfer devices connected to each column of said transfer gates, respectively, for transferring said signal charges provided from said transfer gates, and
a horizontal charge transfer device (500) connected to said vertical charge transfer devices for transferring said signal charges from said vertical charge transfer devices,
second semiconductor regions (30, 40) of the second conductivity type formed on said semiconductor substrate, spaced apart from said first semiconductor region,
driver circuit portions (700, 800) formed on said second semiconductor region for driving said transfer gates and said vertical charge transfer devices,
first power supply means (50) for setting the potential in said first semiconductor region to a first potential, and
second power supply means (60) for setting the potential in said second semiconductor region to a second potential having the same polarity as that of said first potential and an absolute value which is larger than that of said first potential.

4,808,835
POWER GENERATION CASSETTE TYPE POWER PLANT FOR MARINE ELECTRIC PROPULSION AND A CONTROLLER THEREOF
Masanari Tsuji; Yuji Tani; Akira Zaitsu; Kojiro Shimamoto; Masaaki Hashii; Ikuo Donoue; Hiromi Suzuki, and Yoshihito Sakakibara, all of Kobe, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 12, 1987, Ser. No. 61,144
Claims priority, application Japan, Jul. 3, 1986, 61-102579[U]
Int. Cl.[4] H02J *3/38*
U.S. Cl. 290—4 A **6 Claims**



1. A load share controller for power generators in a power generation cassette type power plane for marine electric propulsion including a multiplicity of power generation units and in which the power generators of the power generation units are operated in parallel with each other comprising:
an upper grade load share controller dividing the control of the power generators into a plurality of groups each consisting of at least one power generator and each regarded as one large-capacity power generator, the output power of said large-capacity power generator being determined from the sum total of rated output power of the individual power generators operating in the group and in which load shared to each of the large-capacity power generators of total power consumed in loads connected to the plant is determined from a ratio of output of the individual large-capacity power generator to the sum total of output of the large-capacity power generators, and
a lower grade load share controller for determining the load, which is shared to each of said large-capacity power generators and determined by said upper grade load share controller, on the basis of a ratio of output of the individual power generators to the output of said large-capacity power generator consisting of the individual power generators in the group.

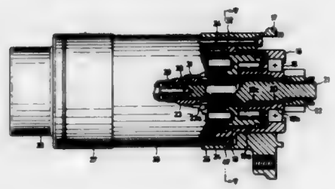
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4,806,836

COAXIAL ENGINE STARTER

Shuzo Isozumi; Kazuhiro Odahara, and Toshinori Tanaka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1988, Ser. No. 182,594
Claims priority, application Japan, Apr. 22, 1987, 60-100650; Apr. 24, 1987, 60-62960
Int. Cl.[4] F92N *15/00*
U.S. Cl. 290—48 5 Claims



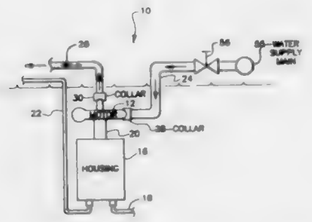
1. A coaxial engine starter comprising an electric motor including a yoke, an armature and a hollow armature shaft, an output shaft arranged coaxially with said armature shaft, a planet reduction gear mechanism disposed between said armature shaft and said output shaft for reducing a rotational speed of said armature shaft and rotating said output shaft at a reduced rotational speed, an electromagnetic switch having a plunger ganged with a rod for selectively coupling said output shaft to said planet reduction gear mechanism, a front bracket including an internal gear of said planet reduction gear mechanism and a bearing receiving a radial load and bolt means for securing said front bracket, said electromagnetic switch and said yoke of said motor to an engine bracket, all together.

4,806,837

SUBMERSIBLE ELECTRICAL POWER SUPPLY

Brian P. Matthies; Richard Murriaua, and Daniel Gravitz, all of San Diego, Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 18, 1986, Ser. No. 830,396
Int. Cl.[4] F03B *13/08*
U.S. Cl. 290—54 6 Claims



1. An electrical energy supply which is submersible in water, comprising:

means for producing a force, wherein said force is produced solely in response to fluid pressure;

means for converting said force to electrical energy;

housing means for containing said force converting means, said housing means being impermeable to water, wherein said housing means is submerged during operation of said force converting means; and

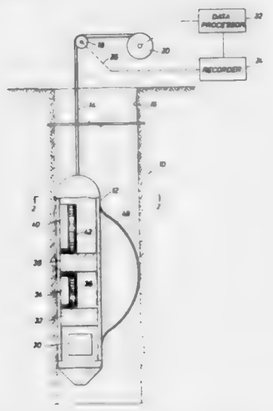
means for transmitting said electrical energy to a device which functions in water, wherein all of said transmitting means is submerged in said water during transmission of said electrical energy.

4,808,818

COLLIMATED THERMAL NEUTRON POROSITY TOOL

Randy Gold, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 672,024, Nov. 16, 1984. This application Jun. 8, 1987, Ser. No. 59,453
Int. Cl.[4] G01V *5/00*
U.S. Cl. 250—266 3 Claims



1. A thermal neutron detector system adapted to be lowered in a cased or uncased borehole comprising:

(a) a pressure housing having a cylindrical wall and adapted to be lowered in a borehole and to enclose means therein to form output signals provided to a logging cable;

(b) near and far thermal neutron detector means in said housing, and including means mounting said detector means immediately adjacent to the wall of said housing and off center with regard to an elongate axis thereof;

(c) said near and far thermal neutron detector means both being

(1) elongate cylindrical chambers,

(2) having a sensitive interior volume filled with helium 3 and being responsive to thermal neutrons;

(3) between spaced ends thereof;

(d) Thermal neutron shield means fitting partially about each of said cylindrical detector means and isolating the spaced ends thereof and also having an elongate partially cylindrical portion to leave an unshielded window portion located along the length of said detector means and wherein said window portion is positioned adjacent to the wall of said housing so that said thermal neutron shield means shields against thermal neutrons impinging on said detector means passing through centeral positions of said housing, said thermal neutron shield means comprising a semicircular cross section cadmium sleeve snugly and concentrically fitted about said cylindrical detector means and encircling about one half thereof and wherein said window portion comprises approximately one half of a circumference therearound, said window portion extending lengthwise along said cylindrical chambers, said thermal neutron shield means being formed of a form fitted layer of cadmium foil of approximately uniform thickness and having a circular end covering sized equal to the cylindrical chamber diameter;

(e) two circular second shield means separate from said thermal neutron shield means and extending fully transverse of said housing to isolate said near far detector means above and below said detector means; and

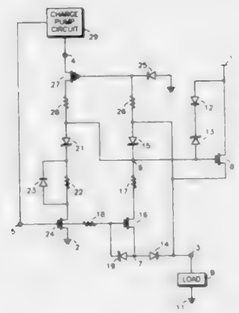
(f) means on the exterior or said housing for decentralizing said housing in the borehole, said means operative to decentralize said housing to thereby position said detector means close to the formation penetrated by the borehole to position said detector means to detect thermal neutrons from the formation entering through said window portions, said window portions comprising approximately one half the circumference of said detector means.

4,808,839

POWER FIELD EFFECT TRANSISTOR DRIVER CIRCUIT FOR PROTECTION FROM OVERVOLTAGES

William C. Duan, Scottsdale, and Philip W. McEntarfer, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1988, Ser. No. 177,209
Int. Cl.[4] H03K *17/08, 17/16, 17/687, 3/013*
U.S. Cl. 307—296.4 22 Claims



1. A circuit comprising:

a load terminal;

a first supply voltage terminal;

a second supply voltage terminal;

a driver voltage terminal for receiving a driver voltage;

first means coupled between said first supply voltage terminal and said load terminal and to said driver voltage terminal for providing a current to said load terminal in response to said driver voltage wherein the magnitude of the current depends on the magnitude of the driver voltage; and

second means coupled between said second supply voltage terminal and said driver voltage terminal and to said load terminal for preventing said first means from providing the current when the magnitude of the voltage on said load terminal is less than the magnitude of the voltage on said second supply voltage terminal, or when said second supply voltage terminal is inadvertently uncoupled from said second means.

4,808,840

DYNAMIC EDGE-TRIGGERED LATCH

Paul W. Chung, San Jose, and Niantsu N. Wang, Milpitas, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

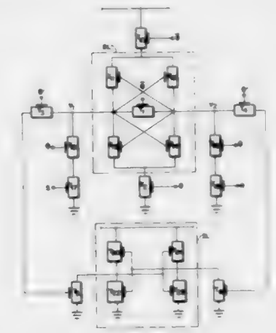
Filed Nov. 20, 1987, Ser. No. 123,498
Int. Cl.[4] H03K *3/013, 3/295, 3/15, 3/86*
U.S. Cl. 307—290 14 Claims

1. An apparatus for producing an edge-triggered signal for use in an edge-triggered latch, comprising:

dynamic sensing means responsive to a trigger signal and a data signal for detecting the voltage level of said data signal;

means for producing a pulse delayed with respect to the trigger signal;

dynamic buffer means coupled to said sensing means for amplifying said detected voltage level; and



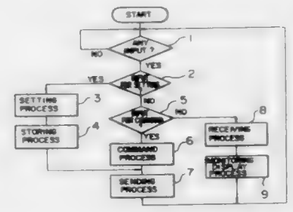
means responsive to said pulse for gating the amplified detected voltage signal into one of two logic levels recognizable by the latch.

4,808,841

CENTRALIZED CONTROL SYSTEM FOR HOME ELECTRIC APPLIANCES

Yukihiro Ito, Tochigi; Takeshi Imaizumi, Matsudo; Tadayuki Takahara, Kasuma, and Yoshimi Miyamoto, Tochigi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 12, 1987, Ser. No. 119,487
Claims priority, application Japan, Nov. 12, 1986, 61-267541
Int. Cl.[4] H02J *1/00*; H04M *11/04*
U.S. Cl. 307—11 6 Claims



1. A centralized control system for home electric appliances comprising:

a controller for implementing centralized simultaneous control and monitoring of the operation of a plurality of electric appliances; and

a plurality of terminal units linked to said controller through a communication medium for directly controlling operation of said electric appliances;

wherein said controller includes setting means for setting a designation of electric appliances to be simultaneously controlled and for setting control plans for said simultaneously controlled electric appliances, first memory means for storing set values set by said setting means, command means for entering a simultaneous control command, and first transmission means for sending a signal including said set values and/or said simultaneous control command to terminal units corresponding to said simultaneously controlled electric appliances; and

wherein each terminal unit includes first reception means for receiving said signal from said controller and for analyzing said signal, second memory means for storing set

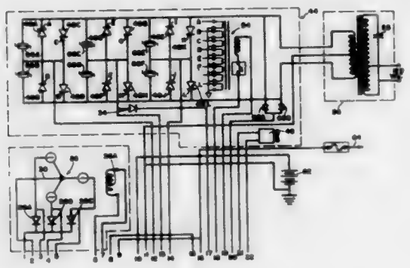
values if said signal represents set values, and for storing a control plan which controls operation of a simultaneously controlled electric appliance, and control means for referring to said second memory means to obtain a control plan corresponding to said simultaneous control command and for controlling the operation of said simultaneously controlled electric appliance in accordance with said control plan if said signal represents a simultaneous control command.

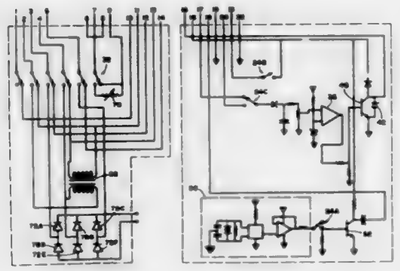
4,808,842

DUAL VOLTAGE GENERATOR SYSTEM

William L. Hughes, 1016 E. Airport Rd., Stillwater, Okla. 74074

Filed Mar. 30, 1988, Ser. No. 175,420
Int. Cl.[4] H02P 9/30
U.S. Cl. 307—43 6 Claims





1. A system for providing a regulated low voltage DC source and a regulated higher voltage AC source at a preselected frequency, such as 60 Hz., from the same windings of an alternator rotated at various speeds comprising:
- a three phase WYE connected engine driven alternator providing three output posts and a neutral post and having a field circuit;
- a half wave rectifier means connected at each said output post of said alternator providing a low voltage DC source;
- a cycloconverter means having a three phase input and a single phase output, said three phase input being connected to said alternator output posts;
- a transformer having a primary and a secondary winding and having the primary connected to the output of said cycloconverter single phase output;
- a capacitor across said transformer secondary matched to the inductance of said transformer secondary to provide resonance at said preselected frequency;
- a clock circuit providing an AC control voltage at said preselected frequency, the clock being connected to said cycloconverter;

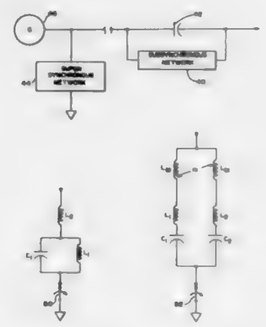
means to control said cycloconverter in response to said clock circuit to provide said AC output voltage thereof at said preselected AC frequency; and
- voltage regulator means connected to said alternator field circuit and responsive to the voltage output of said cycloconverter circuit to control the output voltage of said transformer.

4,808,843

METHOD AND MEANS FOR DAMPING SUPERSYNCHRONOUS OSCILLATIONS IN AN AC POWER SYSTEM

Ronald A. Hedin, Dunwoody, Ga., assignor to Electric Power Research Institute, Palo Alto, Calif.

Continuation of Ser. No. 721,729, Apr. 10, 1985, Pat. No. 4,724,333. This application Nov. 2, 1987, Ser. No. 115,363
Int. Cl.[4] H02M 1/12; H02J 3/01
U.S. Cl. 307—105 6 Claims



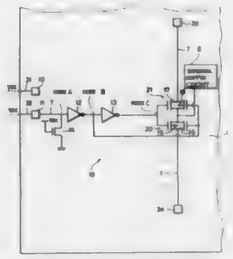
1. Apparatus for damping supersynchronous oscillations in an AC power line operating at a system frequency comprising a parallel tuned circuit and switch means for serial interconnection between said power line and a system neutral potential, said tuned circuit having a serial resonant frequency above said system frequency and a parallel antiresonant frequency at said system frequency.

4,808,844

SEMICONDUCTOR DEVICE

Hideyuki Ozaki; Kazutoshi Hirayama; Kazuyasu Fujishima, and Hideto Hidaka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1987, Ser. No. 32,624
Claims priority, application Japan, Apr. 17, 1986, 61-88716
Int. Cl.[4] H04Q 9/00; H03K 17/693, 17/16, 5/01
U.S. Cl. 307—243 13 Claims



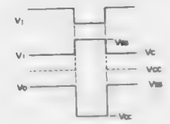
1. In a semiconductor device comprising a plurality of first bonding pads provided on a semiconductor chip for transmitting and receiving an identical signal to and from an external apparatus, and an internal buffer circuit for transmitting and receiving said signal to and from said plurality of first bonding pads, said plurality of first bonding pads and said internal circuit being formed on the same semiconductor chip, circuitry for reducing capacitance at said first bonding pads as viewed from said external apparatus, comprising:
- a second bonding pad provided on said semiconductor chip for receiving an external control signal, and
- selection circuitry provided between said plurality of first bonding pads and said internal buffer circuit for connecting only a selected one of said plurality of first bonding pads to said internal buffer circuit in response to said control signal supplied through said second bonding pad so that capacitance at the unselected bonding pad is isolated from the selected bonding pad.

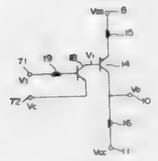
4,808,845

HIGH VOLTAGE PULSE GENERATING SEMICONDUCTOR CIRCUIT WITH IMPROVED DRIVING ARRANGEMENT

Masayoshi Suzuki, and Naoyuki Izuki, both of Hitachiota, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1986, Ser. No. 937,051
Claims priority, application Japan, Dec. 2, 1985, 60-269260
Int. Cl.[4] H03K 3/01, 17/60; G06G 7/12
U.S. Cl. 307—270 28 Claims





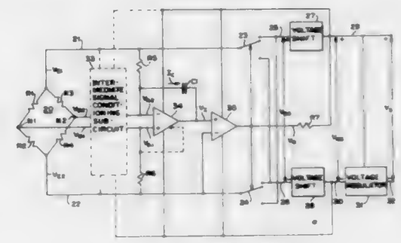
1. A semiconductor electronic circuit comprising:
first and second impedance means;
current source means coupled between said first and second impedance means so that said current source means and said first and second impedance means constitute a series circuit, said series circuit being coupled between a first voltage source terminal having a first voltage level applied thereto and a second voltage source terminal having a second voltage level applied thereto;
drive means having an input terminal and coupled
to drive said current source means, said drive means
including transistor circuit means possessing output current-output voltage characteristics for the drive means such that an output current of said drive means is substantially zero for a zero output voltage or for output volages within a predetermined vicinity of a zero output voltage, and is not zero for output voltages other than zero voltage or voltages not in the predetermined vicinity of a zero output voltage, wherein the output of said semiconductor electronic circuit is derived from one end of said current source means; and
means for applying a clamp voltage to said transistor circuit means, said clamp voltage being at a voltage level between the first and second voltage levels applied to said first and second voltage source terminals, an input signal to the semiconductor electronic circuit being applied across said input terminal of said drive means and said clamp voltage applying means so that the input signal is superposed on said clamp voltage and so that the voltage of the output of said drive means applied to said current source is clamped to
said clamp voltage depending upon said characteristics of said drive means.

4,808,846

BRIDGE-TO-FREQUENCY CONVERTER

Johan H. Huijsing, Schipluiden, Netherlands, assignor to North American Philips Corporation, Signetics Division, Sunnyvale, Calif.

Filed Sep. 12, 1986, Ser. No. 907,295
Int. Cl.[4] H03K 13/02; H03L 7/00
U.S. Cl. 307—271 15 Claims



1. A circuit employed with a resistance bridge formed with a group of bridge resistors subject to an effect that causes a change in resistance of at least one of the resistors, the bridge providing a pair of bridge signals that are representative of the change in resistance and are thereby representative of the effect, the circuit comprising:
- first and second energizing lines that respectively transmit first and second energizing voltages to the bridge;
- intermediate means, including an integrator, for converting the bridge signals into a charging current and for integrating the charging current to produce an integrated voltage;
- a comparator for comparing the integrated voltage with the second energizing voltage to produce an output voltage representative of the comparison;
- first and second main supply lines for differentially transmitting a main supply voltage; and
- switching means responsive to the output voltage for coupling the first and second energizing lines either to the first and second supply lines, respectively, when the output voltage is greater than the second energizing voltage or to the second and first supply lines, respectively, when the output voltage is less than the second energizing voltage, the polarity of the charging current varying with the polarity of the difference between the energizing voltages so that the output voltage is at an output frequency representative of the effect.

4,808,847

TEMPERATURE-COMPENSATED VOLTAGE DRIVER CIRCUIT FOR A CURRENT SOURCE ARRANGEMENT

Henricus J. Van Kessel, Son, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

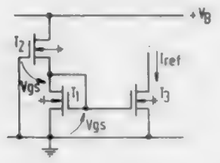
Continuation of Ser. No. 9,429, Feb. 2, 1987, abandoned. This application Jun. 10, 1988, Ser. No. 208,852
Claims priority, application Netherlands, Feb. 10, 1986, 8600306
Int. Cl.[4] G05F 1/567
U.S. Cl. 307—297 9 Claims

1. A circuit arrangement for supplying a drive voltage to an enhancement mode field effect transistor having a gate elec-

trode and coupled as a current source whose channel is coupled between a first supply voltage terminal and an output terminal, said circuit arrangement comprising:

a first depletion mode field effect transistor having a gate electrode and operated in the non-saturated mode, whose channel is coupled between the first supply voltage terminal and a junction point; and

a second depletion mode field effect transistor having a gate electrode and operated in the saturated mode, whose channel is coupled between said junction point and a second supply voltage terminal, drive voltage for the current source field effect transistor being supplied from said junction point to the gate of the current source field



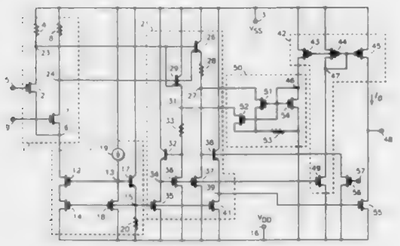
effect transistor, the gate of the first field effect transistor being connected to said junction point, the gate of the second field effect transistor being connected to the first supply voltage terminal, and the channel width/channel length ratios k_1 and k_2 of the first and second field effect transistors respectively and threshold voltages V_{TD} thereof being chosen to be such that, at the desired current supplied by the current source, the temperature-dependent variation of the gate-source voltage of the first transistor, at least within a selected temperature range, substantially corresponds to the temperature-dependent variation required of the source-gate voltage of the current source field effect transistor for the output current thereof to be maintained substantially constant.

4,808,848

COMPARATOR CIRCUIT

Ira Miller, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 7, 1988, Ser. No. 164,665
Int. Cl.[4] H03K *5/24*
U.S. Cl. 307—355 **16 Claims**



1. A comparator circuit comprising:

an input terminal;

an output terminal;

first means coupled to said input terminal for providing a first signal and a second signal in response to an input signal applied to said input terminal;

second means coupled to said output terminal for providing an output signal at said output terminal;

third means coupled between said first means and said second means providing a third signal in response to said first and second signals, said second means providing said output signal in response to said third signal, said third signal being shifted in voltage level from said first and second signals;

fourth means coupled to said output terminal for providing a first current to said output terminal and mirroring the first current to a first node; and

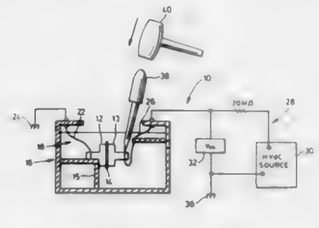
fifth means coupled between said first node and said third means for adjusting the magnitude of said third signal in response to the first current at said first node.

4,808,849

PHYLLOSILICATE ELECTRETS AND A METHOD FOR THEIR MANUFACTURE

Ion I. Inculet, and Robert M. Quigley, both of Ontario, Canada, assignors to Canadian Patents and Development Limited/-Societe Canadienne des Brevets et D'Exploitation Limitee, Ontario, Canada

Filed Feb. 3, 1988, Ser. No. 151,758
Claims priority, application Canada, Feb. 3, 1987, 528911
Int. Cl.[4] G11C *13/02;* **H01S** *4/00;* **B03C** *3/02*
U.S. Cl. 307—400 **19 Claims**



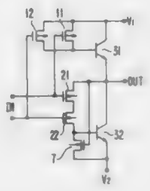
1. An electret comprising an inherently charged material comprising phyllosilicate minerals, said material having at least one modified surface, said surface having external neutralizing ions removed therefrom or added thereto.

4,808,850

COMPOSITE CIRCUIT OF BIPOLAR TRANSISTORS AND FIELD EFFECT TRANSISTORS

Ikuro Masuda; Masahiro Iwamura, both of Hitachi, and Motohisa Nishihara, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 633,476, Jul. 23, 1984, Pat. No. 4,661,723. This application Jan. 2, 1987, Ser. No. 129
Claims priority, application Japan, Jul. 25, 1983, 58-134433
Int. Cl.[4] H03K *19/02, 19/094, 17/60*
U.S. Cl. 307—446 **4 Claims**



1. A NAND gate circuit comprising:

a plurality of input terminals;

an output terminal;

a first bipolar transistor having its emitter-collector current path coupled between a first supply voltage terminal and said output terminal;

a second bipolar transistor having its emitter-collector current path coupled between said output terminal and a second supply voltage terminal;

a first plurality of MOS transistors, each having its drain-source current path coupled in parallel between said first supply voltage terminal and a base of said first bipolar transistor, each of said first plurality of MOS transistors having a control electrode coupled to one of said plurality of input terminals;

a second plurality of MOS transistors, each having its drain-source current path coupled in series between said output terminal and a base of said second bipolar transistor, each of said second plurality of MOS transistors having a control electrode coupled to one of said plurality of input terminals; and

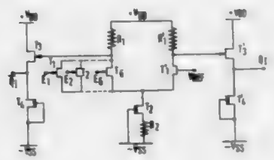
a first MOS transistor having its drain-source current path coupled between said base of said second bipolar transistor and said second supply voltage terminal, and having a control electrode coupled to said output terminal.

4,808,851

ECL-COMPATIBLE SEMICONDUCTOR DEVICE HAVING A PREDIFFUSED GATE ARRAY

Bernard Chantepie, Gif-Sur-Yvette, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 13, 1987, Ser. No. 14,502
Claims priority, application France, Feb. 18, 1986, 86 02150
Int. Cl.[4] H03K *19/094*
U.S. Cl. 307—450 **5 Claims**



1. A semiconductor device comprising a gallium arsenide substrate, a prediffused array of elementary gates provided on said substrate to form an integrated circuit designated as a "custom made circuit", wherein the elementary gates comprising the elements of the prediffused array form OR/NOR gates in accordance with source-coupled FET logic (SCFL) and comprise both internal gates for the "custom made circuit" and external gates compatible with ECL logic, the external gates directly connecting the circuit thus formed to an external semiconductor device realized in accordance with ECL logic, said external gates being constituted by two interconnected circuit blocks, a first block P_I comprising an internal gate and a second block P_E, the first block P_I comprising a transistor T_1' connected to a direct voltage supply V_{DD} through a load R' controlled by a reference signal V_{REF} and coupled by its source to a cascade of 1 to 6 transistors $T_1 \ldots T_6$, whose commonly-connected drains are connected to the voltage supply V_{DD} through a load R, whose gates receive the control signals $E_1 \ldots E_6$, the commonly-connected sources of the transistors T_1' and $T_1 \ldots T_6$ being supplied with current from a direct voltge $-V_{SS}$ on the one hand having the same absolute value as the voltage V_{DD} and on the other hand such that:

$$-V_{SS} < V_{REF} < V_{DD}$$

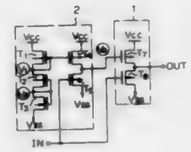
by means of a field effect transistor T_2 and of a load R_2 constituting a current source, and is then constituted by two buffer stages constituted by a follower transistor T_3 and T_3', respectively, connected to a transistor T_4 and T_4', respectively, connected as level translators, the drain of the follower transistor T_3 or T_3' being connected to the direct voltage supply V_{DD} and the gate of the follower transistor T_3 or T_3' being controlled by the signal derived from the commonly-connected drain of the transistors $T_1 \ldots T_6$ and T_1', the outputs $\overline{Q}_I$ and Q_I of the NOR and OR, respectively, being available at the source of the transistor T_3 on the one hand and at the source of the transistor T_3' on the other hand.

4,808,852

INPUT CIRCUIT HAVING LEVEL SHIFT

Kuninitsu Kousaka, Kawasaki, and Kunihiko Gotoh, Kunitachi, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 836,060, Mar. 4, 1986. This application Dec. 2, 1987, Ser. No. 127,567
Claims priority, application Japan, Mar. 6, 1985, 60-042708
Int. Cl.[4] H03K *19/094, 19/017, 5/153*
U.S. Cl. 307—451 **4 Claims**



1. A semiconductor integrated circuit operatively connected to receive an input signal, comprising:

an inverter circuit including a pair of first and second transistors having different conductivities; and

a level shift circuit, operatively connected to directly receive the input signal and operatively connected to said inverter circuit, for level shifting the input signal and supplying the level shifted input signal to said inverter circuit, said first transistor having a gate operatively connected to receive the level shifted input signal from said level shift circuit, having a source connected to a power supply and having a drain, and said second transistor having a gate operatively connected to directly receive the input signal, having a drain connected to said drain of said first transistor and having a source, said level shift circuit performing a level shift operation such that, when the input signal is received and has a transition level for discriminating a logic level in said inverter circuit, the level of said input signal is shifted to approximately a threshold level of said first transistor.

4,808,853

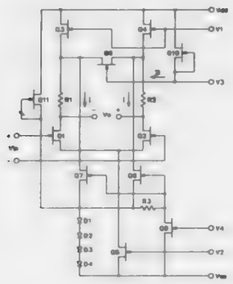
TRISTATE OUTPUT CIRCUIT WITH SELECTABLE OUTPUT IMPEDANCE

Stewart S. Taylor, Beaverton, Oreg., assignor to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Nov. 25, 1987, Ser. No. 125,272
Int. Cl.[4] H03K *17/16, 19/094, 19/02*
U.S. Cl. 307—473 **6 Claims**

1. A tristate output circuit for providing an output voltage signal to a constant impedance transmission line in response to an input voltage signal and first, second, and third control signals, comprising:

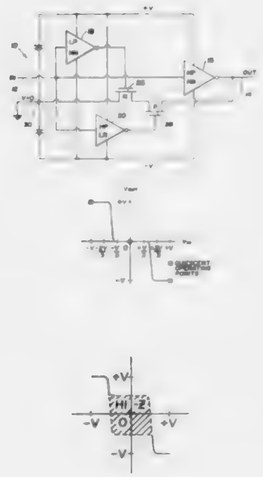
a source of first supply voltage;
a source of second supply voltage;
first and second resistors each having resistance suitably matched to the characteristic impedance of the transmission line;
first transistor means having a control terminal and first and second load terminals for conducting a first load current between its first and second load terminals;
second transistor means having a control terminal and first and second load terminals for conducting a second load current between its first and second load terminals;
the second load terminals of said first and second transistor means being coupled together, the input voltage signal being applied across the control terminals of said first and second transistor means for controlling the magnitudes of the first and second load currents, and the output voltage signal being produced in accordance with a potential between the first load terminals of said first and second transistor means;



first means for selectively coupling the first load terminal of said first transistor means to said source of first supply voltage through said first resistor and for selectively coupling the first load terminal of said second transistor means to said source of first supply voltage through said second resistor, selective coupling by said first means being controlled by the first control signal applied as an input thereto;
second means for selectively coupling the second load terminals of said first and second transistor means to the source of second supply voltage, selective coupling by said second means being controlled by the second control signal applied as input thereto; and
third means for selectively coupling the first load terminal of said first transistor means to the first load terminal of said second transistor means through said first and second resistors in series, selective coupling by said third means being controlled by said third means being controlled by said third control signal applied as input thereto.

4,808,854
TRINARY INVERTER
Frederick G. Reiangel, Buffalo, N.Y., assignor to LTV Aerospace & Defense Co., Buffalo, N.Y.
Filed Mar. 5, 1987, Ser. No. 21,976
Int. Cl.[4] H03K *17/66, 17/13, 17/687, 19/094*
U.S. Cl. 307—473 **7 Claims**

1. A trinary inverter for use in inverting signals in a logic circuit having relatively positive (+V), negative (−V), and zero logic signal voltage values, comprising:
an input terminal for receiving an input signal;
an output terminal for providing an output signal;
a reference terminal at the zero signal value;
first inverter branch means, connected to the input terminal and responsive to the input signal, for inverting the input signal into the output signal and applying it to the output terminal when the input signal is outside the range of nominally −2V/3 to +2V/3 voltage values;
second inverter branch means, connected to the input terminal and responsive to the input signal, for producing a switching signal which transitions from +V to −V when the input signal rises through +V/2;
third inverter branch means, connected to the input terminal and responsive to the input signal, for producing another switching signal which transitions from +V to −V when the input signal rises through −V/2; and

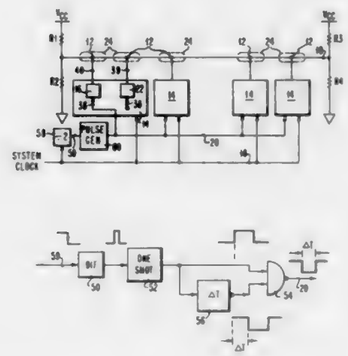


switch means, responsive to the switching signals and interconnecting the output terminal, the second inverter branch means, the third inverter branch means and the reference terminal, for communicating the signal value of the reference terminal to the output terminal in responses to switching signals which correspond to input signals in the range of nominally −V/3 to +V/3, and insolating the reference terminal from the output terminal in response to switching signals which correspond to input signals outside the range of nominally −2V/3 to +2V/3.

4,808,855
DISTRIBUTED PRECHARGE WIRE-OR BUS
Stacey G. Lloyd, Aloha, Oreg., assignor to Intel Corporation, Santa Clara, Calif.
Filed Dec. 16, 1987, Ser. No. 133,324
Int. Cl.[4] H03K *3/013, 3/355, 5/05, 17/04*
U.S. Cl. 307—480 **9 Claims**

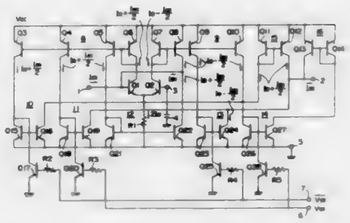
1. For use with a wire-OR bus circuit including a bus wire (10), and a plurality of bus-coupled circuits, connected to said bus wire at different points along its length, a bus-coupled circuit comprising:
a first input (38) for receiving a data signal to be transmitted on said bus wire, said data signal including at least two voltage levels, said signal making transitions between said levels at prescribed times;
a first output (39) coupled to said bus wire (10) at a first point along its length;
signal amplifier means (34), coupling said first input (38) and said first output (39), for amplifying said data signal prior to presentation to said bus wire; and,
a bus precharge circuit (16);

said bus precharge circuit having a second input (36) for receiving a control signal (20);
said bus precharge circuit having a second output (40), connected to said bus wire (10) at a second point along its length, for presenting electrical precharge pulses to said bus wire in response to said control signal (20);



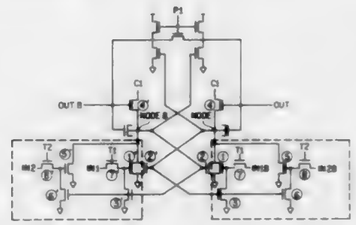
said electrical precharge pulses being applied to said bus wire in synchronism with said data signal in such a way that said electrical precharge pulse is applied to said bus wire (10) at approximately the instant of time of an expected data signal transition.

4,808,856
LOW VOLTAGE PHASE COMPARATOR
Hiroshi Tanigawa, Saitama, Japan, assignor to Toko, Inc., Japan
Filed Sep. 16, 1987, Ser. No. 97,612
Claims priority, application Japan, Sep. 19, 1986, 61-221181
Int. Cl.[4] H03D *13/00;* **H03K** *9/06*
U.S. Cl. 307—511 **2 Claims**



1. A phase comparator, comprising:
a differential amplifier having a first and a second input terminal to which an input signal and a reference signal are applied respectively;
a first and a second active load circuit, said load circuits being driven by said differential amplifier to provide output signals which are reversed in phase from each other, said first active load circuit including a first and a second output stage, said second active load circuit including a third and a fourth output stage;
a first and a second transistor provided at the first and the second output stages of said first active load circuit respectively;
a third and a fourth transistor provided at the third and the fourth output stages of said second active load circuit;
a first, a second, a third and a fourth current mirror circuit connected to the collectors of said first, second, third and fourth transistors at said first, second, third and fourth output stages, respectively;
a fifth current mirror circuit including a bias stage and an output stage including a transistor, said bias stage being connected to the collector of the transistor at the output stage of said first current mirror circuit, the output stage of said fifth mirror circuit being connected to the transistor at the output stage of said third current mirror circuit;
a sixth current mirror circuit including a bias stage and an output stage which comprises a transistor having its collector connected to the collector of the transistor at the output stage of said fifth current mirror circuit, the bias stage of said sixth mirror circuit being connected to the transistor at the output stage of said second current mirror circuit, the output stage of said sixth mirror circuit being connected to the collector of the transistor at the output stage of said fourth current mirror circuit;
an output terminal connected to a connection point between the collectors of the transistors at the output stages of said fifth and sixth current mirror circuits; and
means interconnecting said bias stages and providing that said first and said third current mirror circuits or said second and said fourth current mirror circuits are alternately rendered operative to output a signal at said output terminal corresponding to a phase shift between said input signal and said reference signal.

4,808,857
SENSE AMPLIFIER CIRCUIT FOR SWITCHING PLURAL INPUTS AT LOW POWER
Atsushi Naito; Kiyoshi Nakatsuka; Takashi Inui, and Tomohiro Suzuki, all of Miho, Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 53,456, May 22, 1987, abandoned. This application Jun. 2, 1988, Ser. No. 203,608
Claims priority, application Japan, May 30, 1986, 61-125455
Int. Cl.[4] H03K *19/094, 17/693*
U.S. Cl. 307—530 **5 Claims**



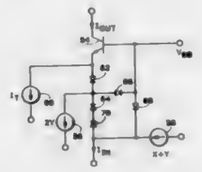
1. A sense amplifier circuit comprising: at least first and second transistors connected in parallel; a third transistor responsive to signals on the respective sources of said first and second transistors to provide a true output; at least fourth and fifth transistors connected in parallel; a sixth transistor responsive to signals on the respective sources of said fourth and fifth transistors to provide an inverse of the true output; and selectable first and second true inputs and respective first and second inverse inputs; said selectable first true input and it inverse being supplied respectively to the gates of said fourth and first transistors through a respective first pair of transfer gates, and said selectable second true input and its inverse being supplied respectively to the gates of said fifth and second transistors through a respective second pair of transfer gates.

4,808,858

DUAL LIMIT PROGRAMMABLE LINEAR SIGNAL LIMITER

John F. Stoops, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 25, 1988, Ser. No. 148,253
Int. Cl.[4] H03K 5/08
U.S. Cl. 307—544 3 Claims



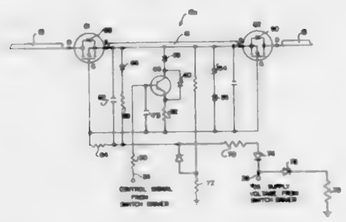
1. A current limiter comprising:
a. a transistor having a base, a collector, and an emitter, the collector providing the output current, the base being coupled to a reference voltage source;
b. a series diode having an anode and a cathode, the anode being coupled to the emitter of said transistor to form a port for receiving a trickle current; and
c. a diode switching matrix coupled to the cathode of said series diode and coupled to the reference voltage source, said diode switching matrix having ports for receiving first and second reference currents, and an input current.

4,808,859

BROADBAND ELECTRONIC SWITCH

Baruch Even-or, Chalfont, and Robert L. Rauck, Hatfield, both of Pa., assignors to American Electronic Laboratories, Inc., Lansdale, Pa.

Filed Jan. 9, 1987, Ser. No. 1,947
Int. Cl.[4] H03K 17/60, 17/687
U.S. Cl. 307—571 5 Claims



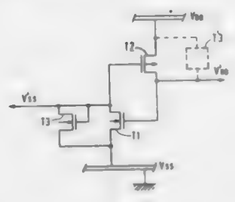
1. A broadband electronic switch, comprising:
(a) first and second solid state switch means in series with a signal path for a signal to be switched, each switch means comprising a field-effect transistor having an open state and a closed state,
(b) means electrically connected to each switch means for reducing the ohmic resistance of the switch means and signal harmonic content generated by the switch means in the closed state, and
(c) switch control means electrically connected to each switch means for selectably placing both switch means in the open and closed states, the switch control means having non-inductive means for attenuating signal leakage from the signal path into the switch control means when the switch means are in the open state and for minimizing transition time between the switch means open and closed states, the non-inductive means comprising a bipolar transistor connected in common-emitter configuration between the source and gate terminals of the first and second switch means, the collector of the bipolar transistor being connected to a source of deep negative voltage through a third field-effect transistor having its drain electrode coupled to the base of the bipolar transistor and its source electrode connected to said source of deep negative voltage, and having its gate electrode connected to a switching signal source.

4,808,860

FILTER CIRCUIT FOR A MOS-TYPE INTEGRATED DEVICE, AND AN INTEGRATED DEVICE COMPRISING SUCH A FILTER CIRCUIT

Jean-Michel J. Labrousse, Paris, and Christian Paquet, Fontenay aux Roses, both of France, assignors to U. S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 26,225, Mar. 16, 1987, abandoned. This application May 9, 1988, Ser. No. 196,837
Claims priority, application France, Mar. 25, 1986, 86 04226
Int. Cl.[4] H03K 17/687, 3/33, 3/01, 17/16
U.S. Cl. 307—572 4 Claims



1. A filter circuit for use in an integrated device of the type comprising a plurality of MOS transistors, each having a gate, and having a positive power terminal VDD and a reference voltage power terminal VSS, said filter circuit comprising first and second complementary MOS transistors, each of these two complementary MOS transistors having a gate, a source and a drain, the gate of each of said two transistors being connected to the drain of the other of said two transistors, the source of said first transistor being connected to VSS and its drain comprising a first output terminal for providing a first filtered voltage output V'SS which is approximately equal to VSS, and the source of said second transistor being connected to VDD and its drain comprising a second output terminal for providing a second filtered voltage output V'DD which is approximately equal to VDD, said first and second filtered voltages being selectively applied to the gates of said plurality of transistors of the integrated device.

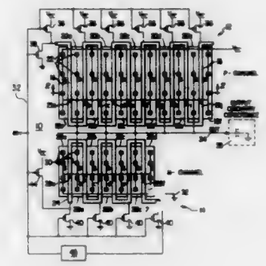
4,808,861

INTEGRATED CIRCUIT TO REDUCE SWITCHING NOISE

George J. Ehai, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 29, 1986, Ser. No. 901,918
Int. Cl.[4] H03K 17/687, 5/13
U.S. Cl. 307—579 10 Claims

1. A transistor circuit comprising:
a substrate having semiconductor surface areas forming a plurality of transistor regions;
a gate having a length and a predetermined resistance along said length and being disposed adjacent said semiconductor surface areas such that a gate signal applied to a first end region of said gate propagates along the length of said gate in a predetermined time interval, the propagation of said gate signal along said gate causing conduction of ones of said transistor regions;
a conducting device connected to a second end region of said gate to allow a transient current to pass from said first end region of said gate through said conducting device to cause a voltage drop across said gate, said voltage drop reducing the amount of current conducted by ones of said transistor regions; and
a switching device connected to said conducting device, said switching device operable to inhibit or enable current through said conducting device, said switching device comprising a capacitor having first and second terminals said capacitor connected to said conducting device such that said conducting device will conduct in response to a change in said signal on said first terminal.



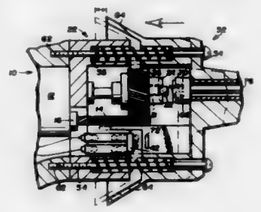


4,808,862

MOTORIZED TOOL WITH EASILY REPLACEABLE SWITCH

Joseph J. Carvalho, and Sequndo R. Magill, Jr., both of Honolulu, Hi., assignors to Joseph J. Carvalho, Kailua, Hi.

Filed Oct. 20, 1987, Ser. No. 110,967
Int. Cl.[4] B23B 45/2; H02K 7/14; F16D 11/00
U.S. Cl. 310—50 20 Claims



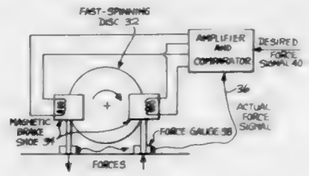
3. A motorized tool, comprising:
a motor housing having a switch aperture and a motor aperture;
a motor mounted in said motor aperture;
a switch detachably mounted in said switch aperture;
a movable cover for said switch aperture;
a nosepiece having a tool assembly aperture removably mounted on said motor housing;
a tool assembly movably mounted in said nosepiece and projecting through said tool assembly aperture; and
means interconnecting said motor and said tool assembly for activating said tool assembly when said motor is energized.

4,808,863

ACTIVE CONTROL SYSTEM AND METHOD FOR REDUCING ENGINE NOISE AND VIBRATION

Anders O. Andersson, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 15, 1987, Ser. No. 73,617
Int. Cl.[4] F16F 15/03; G05D 19/00; H02P 15/00; H02K 7/00
U.S. Cl. 310—51 1 Claim



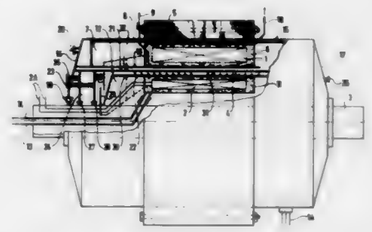
1. A system for generating vibratory energy comprising in combination:
an electrical amplifier for driving a rotary machine comprising a disk;
a plurality of magnetic brake shoes coupled to said disk;
means including an electromechanical amplifier for reducing the size and weight of said electrical amplifier driving said rotary machine;
said electrical amplifier coupled to said plurality of magnetic brake shoes for providing a modulated current through said plurality of magnetic brake shows thereby producing eddy currents in said disk; and,
magnetic brake shoe force gauge means for providing feedback input to regulate the control current passing through said plurality of magnetic brake shoes to produce a required torque.

4,808,864

SUPERCONDUCTING ELECTRIC ROTATING MACHINE AND ITS THERMAL INSULATION

Yves Brunet, Gieres, and Pascal Tixador, Grenoble, both of France, assignors to Alsthom, Paris, France

Filed Sep. 21, 1987, Ser. No. 98,835
Claims priority, application France, Sep. 25, 1986, 86 13406
Int. Cl.[4] H02K 9/00
U.S. Cl. 310—52 2 Claims



1. An electric rotating machine having a stator and a rotor with superconducting windings placed within separate cryogenic enclosures, wherein the cryogenic enclosures of the stator and of the rotor are placed within evacuated thermal insulation enclosures separated by a low-pressure annular

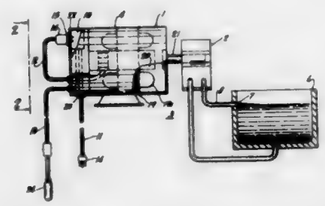
clearance space, wherein the wall providing a separation between the evacuated thermal insulation enclosure of the stator and the annular clearance space is a tube attached at the ends thereof to two end-shields of the machine by attachment means which admit of axial expansion, and wherein said attachment means is comprised of annular ridges on said tube end shields surrounding opposite ends of said tube respectively, sealing rings disposed between said ridges and the opposite ends of said tube and flexible braided wire elements of a material having good thermal conductivity connected between said end shields and said ends of said tube.

4,808,865

FAULT DETECTOR FOR ELECTRIC MOTOR AND CONTROL

James L. King, Troy, Ohio, assignor to A.O. Smith Corporation, Milwaukee, Wis.

Filed Oct. 8, 1987, Ser. No. 106,187
Int. Cl.[4] H02K *11/00*; H02J *1/00*
U.S. Cl. 310—71 10 Claims



1. An electric motor apparatus adapted to be interconnected to an incoming power supply line, comprising a motor having a motor winding means for operating the motor, an electronic control unit having a power input means for connection to a motor power supply, a connecting cable means having a releasable connector on a first end releasably connected to said electronic control unit and having an opposite and direct connected to said motor winding means for controlled and selected energizing of said winding means to control the operating mode of the motor, said releasable connector defining an alternate power input means for supplying power directly to said motor independent of said electronic control unit, and a test means including a display load means and a releasable connector corresponding to the releasable connector on said first end of cable means for connection to said control unit

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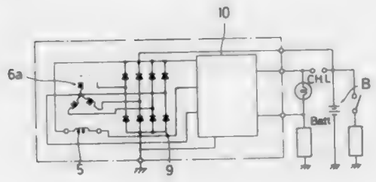
4,808,866

VEHICLE GENERATOR WITH SHORT-CIRCUIT DAMAGE PREVENTION

Takashi Kawanoe; Kiyoshi Tachiya, and Hideyuki Ioka, all of Kiryu, Japan, assignors to Mitsuba Electric Manufacturing Co., Ltd., Gunma, Japan

Filed Aug. 7, 1987, Ser. No. 82,590
Claims priority, application Japan, Aug. 7, 1986, 61-185894
Int. Cl.[4] H02K *13/04, 23/26*
U.S. Cl. 310—68 D 3 Claims

1. A vehicle generator comprising:
a rotor core;
a coil bobbin packaged within said rotor core;
a rotor coil wound around said coil bobbin for permitting a direct current to flow therethrough;
a stator;
a stator coil wound around said stator;
brushes;
slip rings in contact with said brushes for permitting the direct current to flow;
a rectifier for rectifying an alternating current generated; and
a regulator set to force a direct current yielded as a result of said rectification to flow to a battery when said battery is charged to less than its prescribed capacity, while being set to force said direct current to ground when said battery is charged to or beyond its prescribed capacity;



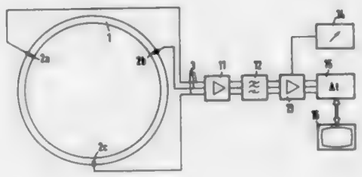
said rotor coil being wound around said coil bobbin such that an initial winding end of said rotor coil is connected with said regulator while a final winding end of said rotor coil is connected directly with said battery.

4,808,867

DETECTING LOCAL OVERHEATING IN LIQUID-COOLED WINDINGS OF ELECTRIC MACHINES

Arnold Wichmann, Mülheim/Ruhr, and Peter Grunewald, Essen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 8, 1987, Ser. No. 1,344
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1986, 3600421
Int. Cl.[4] G01N *25/14*; G01R *31/08*; H02K *9/24, 9/20*
U.S. Cl. 310—68 C 17 Claims



1. Method for determining overheating in liquid-cooled windings of electric machines, which comprises acoustically monitoring cooling liquid with at least two mutually spaced apart sound pickups, determining noises generated by bubbles forming in the case of local overheating if the boiling point of the cooling liquid is exceeded and noises generated by bubbles dissolving again, and additionally measuring propagation time differences of possible bubble noises, permitting localization of the point of overheating.

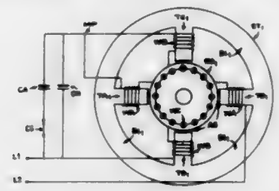
4,808,868

SINGLE AND POLYPHASE ELECTROMAGNETIC INDUCTION MACHINES HAVING REGULATED POLAR MAGNETIC SYMMETRY

Gary D. Roberts, Lindon, Utah, assignor to S.P.C. Holding Co., Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 900,700, Aug. 27, 1986. This application Aug. 12, 1987, Ser. No. 83,137
Int. Cl.[4] H02K *11/00*; H02P *1/44*
U.S. Cl. 310—68 R 38 Claims

1. An electromagnetic induction machine comprising:
a rotatable, magnetically excitable rotor;
a stationary stator operatively associated with said rotor;
at least two windings electrically connected in series and each winding defining a pair of magnetic poles disposed proximate said rotor in said stator; and
capacitor means in parallel combination with one of said windings and said combination in series with the other one



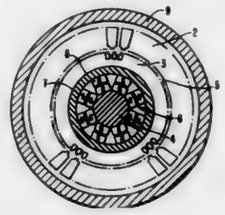
of said windings, the size of the capacitor being such that a quasi-parallel resonant circuit is formed with said one winding and a quasi-series resonant circuit is formed with said other one of said windings.

4,808,869

INTEGRAL MAGNETIC TORQUE LIMITING COUPLING/MOTOR

Norman L. Kopp, Caledonia, Ill., assignor to Sundstrand Corp., Rockford, Ill.

Filed Nov. 18, 1987, Ser. No. 122,344
Int. Cl.[4] H02K *49/10*; F16D *7/00*
U.S. Cl. 310—78 17 Claims



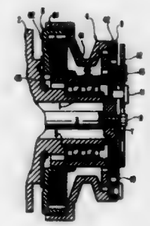
1. An apparatus for isolating momentum of a motor from a drive means through which the motor drives a movable load to prevent the motor from damaging the drive means when there is a sudden change in speed of the movable load and drive means causing a torque on the drive means above a maximum torque which may be safely applied to the drive means, said apparatus comprising a magnetic torque limiting coupling for transferring torque between said motor and said drive means having first and second rotatable members for driving connection with said motor and said drive means, respectively, said first and second members being located in spaced relationship and rotatably coupled to one another by magnetic means, said magnetic means having a magnetic strength which exceeds the maximum sustained torque which said motor develops during normal operation so as to transfer torque without interruption during normal operation of the motor but which permits slippage to occur between said first and second members of said coupling to prevent a torque above said maximum safe torque from being applied to said drive means by said motor to thereby protect the drive means from being damaged by the motor in the event of a sudden change of speed of the movable load and the drive means.

4,808,870

ELECTROMAGNETIC CLUTCH WITH IMPACT ABSORBING CONNECTOR

Hideyuki Genda, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Oct. 1, 1987, Ser. No. 103,344
Claims priority, application Japan, Oct. 6, 1986, 61-152437[U]
Int. Cl.[4] H02K *5/24*; F16D *3/12, 3/77, 27/10*
U.S. Cl. 310—78 11 Claims





1. In an electromagnetic clutch including a first rotatable member for connection to an external driving source, said first rotatable member being rotatably supported on a first bearing and having an axial magnetic end plate, a second rotatable member for connection to a driven member, an annular magnetic member connected to said second rotatable member through a plurality of leaf springs so as to be capable of axial movement and facing said axial end plate of said first rotatable member with an axial gap therebetween, a third rotatable member connected to said second rotatable member to limit the axial movement of said annular magnetic member, and electromagnetic means associated with said first rotatable member and said annular magnetic member for transmitting rotational force from the external driving source to the other of said rotatable members by attracting said annular magnetic member to said magnetic end plate, said leaf springs being arranged to absorb rotational force when said second rotatable member is rotated with said first rotatable member, the improvement comprising securing and absorbing means fixedly disposed between said annular magnetic member and said third rotatable member for securing said annular magnetic member t said third rotatable member and for absorbing vibration and impact noise at the time of attraction in the axial direction of said annular magnetic member to the magnetic end plate of said first rotatable member.

4,808,871

DRAINING DEVICE FOR A ROTATING ELECTRIC MACHINE

Akira Morishita; Satoru Suzuki, and Tatsuo Yabe, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

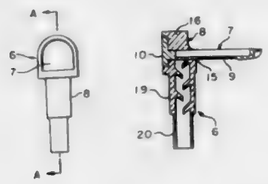
Filed Oct. 19, 1987, Ser. No. 109,513
Claims priority, application Japan, Oct. 24, 1986, 61-254216
Int. Cl.[4] H02K *5/22*
U.S. Cl. 310—89 6 Claims

1. A draining device for a rotating electric machine comprising:
a rotating electric machine having a rear bracket, a draining

hole formed in the outer surface of the rear bracket, and a supporting piece fitted onto said outer surface of the rear bracket to cover said drain hole in a bridge form,

said draining device comprising:

a molded body which is provided with a draining passage and a through hole in a wall portion of said draining passage and which is adapted to be inserted in a space formed between said supporting piece and said outer



surface of the rear bracket so as to be in closecontact with said outer surface and to cover said draining hole, and

a tubular body having an inner bore and made of an elastic material which is assembled with said molded body to communicate said through hole with said inner bore of the tubular body, said tubular body having a lateral hole formed therein within which is positioned said molded body.

4,808,872

ELECTRIC MACHINE WITH A SHEET METAL PACKET CARRYING A WINDING AND A METHOD OF MAKING SAME

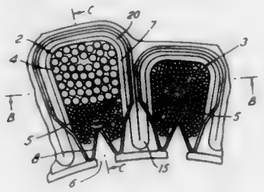
Egon Lund, Sønderborg, and Poul Petersen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Mar. 28, 1988, Ser. No. 173,864

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1987, 3712226

Int. Cl.⁴ H02K 3/34

U.S. Cl. 310—215 **10 Claims**



9. An electric machine having a stator that includes an axial extending sheet metal packet, the packet including an axial end plate and having wall portions that define a plurality of axial extending, circumferentially spaced, radially inwardly opening grooves, including a first groove and a circumferentially adjacent second groove, an electric insulating material plate abutting against the end plate, extending axially outwardly of the end plate and having a plurality of recesses extending axially therethrough and opening radially inwardly, the recesses including a first and a second recess opening to the first and second groove and in cross section being of a shape substantially the same as the cross sectional shape of the first and second groove respectively, the insulating plate including a web portion abutting against the end plate and having a web part extending circumferentially between the first and second recesses and being of circumferential dimensions substantially the same as the corresponding spacing of the first and second grooves and a rib part joined to the web part to extend axially outwardly thereof, the rib part having circumferentially opposite surfaces that converge axially outwardly in a direction away from the web part and being of maximum circumferential dimensions narrower than the corresponding dimensions of the web part and a separate winding liner in each groove and abutting against the circumferentially adjacent rib part surface.

4,808,873

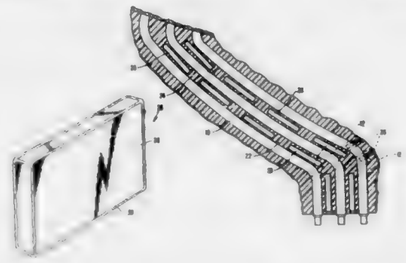
SUPPORT ARRANGEMENT INCLUDING SPACER ELEMENTS FOR DIAMOND AREA OF DYNAMOELECTRIC MACHINE

Charles M. Rowe, Orlando, and Henry M. Holly, III, Winter Park, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 31, 1987, Ser. No. 91,223

Int. Cl.⁴ H02K 3/46

U.S. Cl. 310—260 **19 Claims**



1. A filler material for supporting a series of coil end portions forming a diamond area of a dynamoelectric machine, said end portions having coefficient of thermal expansion characteristics and being elongated and arranged in a generally parallel, laterally spaced relationship to present respective elongated vent areas between adjacent coil end portions, said filler material comprising:

a resin filler having coefficient of thermal expansion characteristics which are not the same as the coefficient of thermal expansion characteristics of the coil end portions, said resin filler being disposed in said vent areas between adjacent coil end portions; and

a plurality of elongated spacer blocks disposed within the resin filler in each of said vent areas, the spacer blocks in each vent area being arranged in spaced, end-to-end relationship and having sufficient volume and coefficient of thermal expansion characteristics to prevent excessive build up of temperature during the curing of the resin filler and decrease the overall coefficient of thermal expansion of the filler material whereby to adjust the coefficient of thermal expansion characteristics of the filler material so that the such characteristics more closely match the coefficient of thermal expansion characteristics of the coil end portions.

4,808,874

DOUBLE SAGGITAL STROKE AMPLIFIER

Paul H. Stahlhuth, Mission Viejo, Calif., assignor to Ford Aerospace Corporation, Newport Beach, Calif.

Filed Jan. 6, 1988, Ser. No. 141,237

Int. Cl.⁴ H01L 41/08

U.S. Cl. 310—328 **7 Claims**

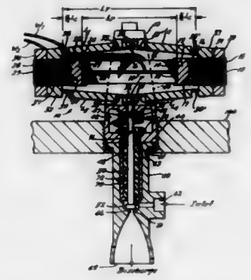
1. A double saggital stroke amplifier, comprising:

an electroexpansive actuator energizable with a predetermined value of voltage to responsively expand in length by a predetermined amount;

a relatively rigid reference support frame;

means providing a first saggital linkage having first and second ends connected to respective ends of said electroexpansive actuator and the midpoint of said first linkage connected to said support frame;

means providing a second saggital linkage having first and second ends connected to respective ends of said electroexpansive actuator and the midpoint of said second linkage being free to move in response to said electroexpansive actuator and with respect to the fixed midpoint of said first linkage.



4,808,875

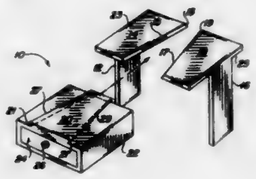
LOCKER SHELF AND DRAWER ASSEMBLY

John C. Edwards, 9432 E. Placita Cascada, Tucson, Ariz. 85715

Filed Feb. 5, 1988, Ser. No. 152,542

Int. Cl.⁴ A47B 67/02

U.S. Cl. 312—245 **17 Claims**



12. A locker shelf assembly removably secured interiorly of a semi-enclosed locker container having a floor, two opposite sides, and a front and a rear, the locker shelf assembly comprising:

a composite shelf spatially suspended above the floor of the container, said composite shelf defining:

(a) a left shelf portion having opposite first and second sides;

(b) a right shelf portion having opposite first and second sides; and

(c) a center shelf portion having opposite sides, each said left and right shelf portions first sides frictionally engaging said center shelf portion, and each said second sides of said left and right shelf portions forcibly engaging an opposite side of the semi-enclosed container; and

a pair of side pieces attached to said composite shelf, both said side pieces engaging the floor of the locker to suspend said shelf spatially above the floor.

4,808,876

METAL HALIDE LAMP

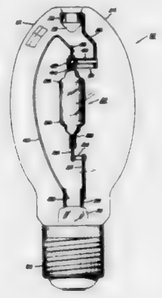
Park French, Aurora; Mary B. Gotti, Macedonia; John J. Karikas, Shelby, and Gilbert H. Rolling, Chardon, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 4, 1986, Ser. No. 825,727

Int. Cl.⁴ H01J 61/30, 61/34

U.S. Cl. 313—25 **48 Claims**

1. An arc tube for a metal vapor discharge lamp for operation in a power range of about 150–400 watts, at a color temperature of about 5200° K. and at any angle from vertical to about 20° above horizontal with only small changes in color and efficacy, which comprises a cylindrical, hollow, vitreous, light transmissive envelope terminating at each end in an area of reduced cross section with each of said areas of reduced cross section comprising a narrow, generally hemispherically shaped neck portion joined to a larger, generally hemispherically shaped arc tube end portion which expands rapidly, but smoothly to the full diameter of said arc tube wherein the radius of said end portion is greater than the radius of said neck portion and each of said end portions surrounds an electrode



made of tungsten wire contained within and which extends through each end of said arc tube through generally cylindrical stem means attached to said neck portion which seals each end of said arc tube with said electrode having an overwind extending towards said stem means, said stem means having a diameter smaller than said neck portion, wherein said arc tube contains mercury, an inert gas and, optionally, up to 3% Cd, along with metal halides of holmium iodide, thulium iodide, cesium dysprosium iodide and thallium iodide, with the external surface of at least the bottom neck portion of said arc tube coated with a heat reflective coating and wherein said electrodes within said arc tube contain thorium oxide.

4,808,877

LOW-PRESSURE SODIUM DISCHARGE LAMP HAVING A COLLAR-LIKE HEAT SHIELD

Adriaan Nettee, and Karel R. Verveckes, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 821,108, Jan. 21, 1986. This application Sep. 29, 1987, Ser. No. 104,541

Claims priority, application Netherlands, Feb. 15, 1985, 8500432

Int. Cl.⁴ H01J 61/34, 61/52

U.S. Cl. 313—25 **12 Claims**

1. A low-pressure sodium discharge lamp comprising:

a U-shaped gas-tight discharge tube having seals at its free ends and a sodium-containing filling.

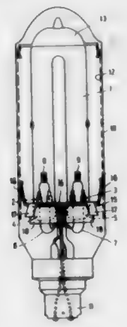
electrodes arranged in the discharge tube near the free ends between which a discharge is maintained during lamp operation;

a gas-tight outer bulb which is arranged to surround the discharge tube and having a lamp cap;

current-supply conductors extending through the seals and electrically connecting each electrode to the lamp cap; and

a support for the discharge tube comprising a disc-shaped portion having openings through which the seals of the discharge tube extend, and means for fixing the support within the outer bulb, said support comprising at least one

collar-like heat shield at least partially surrounding one of said seals for reducing heat loss from said one seal, said



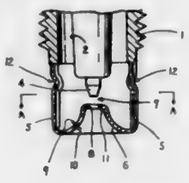
heat shield being spaced from said one seal and extending for substantially the length of said one seal.

4,808,878

IGNITION PLUG FOR INTERNAL COMBUSTION ENGINES TO CAUSE INSTANT COMBUSTION

Takeaki Kashiwara, 411, 3-37 Nagayoshidodo 3-chome, Hirano-ku, Osaka; Ryohei Kashiwara, Nishimura Bldg. Room No. 302,85-6, Oaseri-Nishimachi-cho, Sakai, and Hideaki Kashiwara, 3-Ba 611,151-30,Makajima Ninomaru-cho, Fushimi-ku, Kyoto, all of Japan

Filed Jun. 24, 1986, Ser. No. 877,755
Claims priority, application Japan, Jul. 3, 1985, 60-147042
Int. Cl.[4] H01T *13/20*
U.S. Cl. 313—141 **13 Claims**



3. An ignition plug for internal combustion engines to cause instant combustion, comprising: A hollow grounded electrode having a truncated conical form with a top at a narrow end and a bottom at a wider end, said top having a gas hole located thereon, wherein said top is disposed face to face with a center electrode in such a way that the electrodes' respective axis falls on the same line and the spark gap lies between the top of said center electrode and the top of said grounded electrode, and wherein said bottom is disposed towards a piston, said ignition plug further comprising a stay for connecting said grounded electrode to a casing for the ignition plug.

4,808,879

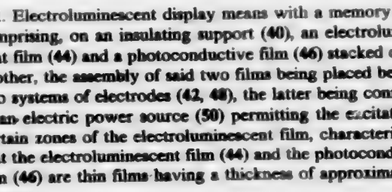
POST-DEFLECTION ACCELERATION AND SCAN EXPANSION ELECTRON LENS SYSTEM

Scott A. Maxson, and John H. Somebora, both of Portland, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 5, 1987, Ser. No. 58,725
Int. Cl.[4] H01J *29/70*
U.S. Cl. 313—421 **15 Claims**

1. In an electron discharge tube having a deflection structure that deflects an electron beam with first and second deflection sensitivities in respective first and second nonparallel directions transverse to a beam axis, an acceleration and scan expansion lens positioned between the deflection structure and a target structure such that the electron beam exiting the deflection structure propagates along the beam axis through the lens and toward the target structure, the lens comprising:

a tubular electrode element positioned adjacent a mesh electrode structure that includes a dome-shaped mesh element, different ones of the tubular electrode element and the dome-shaped mesh element being of rotationally symmetric shape and of elliptical shape in a plane aligned transversely of the beam axis, the elliptical shape being



defined by major and minor axes that are aligned with and whose lengths correspond to the deflection sensitivities in the first and second directions; and

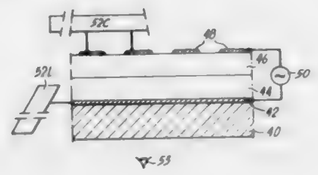
biasing means for applying between the mesh electrode structure and the tubular electrode element a potential difference that cooperates with the lengths of the major and minor axes to provide in the first and second directions electron beam acceleration and deflection magnification components corresponding to the first and second deflection sensitivities.

4,808,880

DISPLAY MEANS WITH MEMORY EFFECT COMPRISING THIN ELECTROLUMINESCENT AND PHOTOCONDUCTIVE FILMS

Pascal Thioulouse, Paris, France, assignor to Centre National D'Etudes des Telecommunications, Issy-les-Moulineaux, France

PCT No. PCT/FR85/00361, § 371 Date Aug. 13, 1986, § 102(e) Date Aug. 13, 1986, PCT Pub. No. WO86/03871, PCT Pub. Date Jul. 3, 1986
PCT Filed Dec. 11, 1985, Ser. No. 905,345
Claims priority, application France, Dec. 18, 1984, 84 19353
Int. Cl.[4] H05B *33/22*
U.S. Cl. 313—507 **7 Claims**



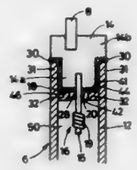
1. Electroluminescent display means with a memory effect comprising, on an insulating support (40), an electroluminescent film (44) and a photoconductive film (46) stacked on one another, the assembly of said two films being placed between two systems of electrodes (42, 48), the latter being connected to an electric power source (50) permitting the excitation of certain zones of the electroluminescent film, characterized in that the electroluminescent film (44) and the photoconductive film (46) are thin films having a thickness of approximately 1 micron.

4,808,881

CERAMIC ENVELOPE DEVICE FOR HIGH-PRESSURE DISCHARGE LAMP

Mikio Kariya, and Hirotsugu Inamiya, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Dec. 21, 1987, Ser. No. 135,255
Claims priority, application Japan, Dec. 24, 1986, 61-310621
Int. Cl.[4] H01J *61/36, 61/30*
U.S. Cl. 313—624 **7 Claims**



1. A ceramic envelope device for a high-pressure metal-vapor discharge lamp, comprising:

a translucent ceramic tube having longitudinally spaced opposite ends;

a pair of electrically conductive end caps which close said opposite ends of said translucent ceramic tube, respectively, each of said end caps having an engaging portion which engages the corresponding one of said opposite ends of the translucent ceramic tube;

a pair of oppositely located discharge electrodes, each of which is supported at a first end thereof by a corresponding one of said end caps such that a second end of said each discharge electrode opposite to said first end thereof protrudes from an inner surface of said corresponding end cap in a longitudinally inward direction in said ceramic tube;

an electrical insulator provided for at least one of said pair of end caps, said electrical insulator covering at least the inner surface of the corresponding one of said at least one end cap; and

a sealing member disposed to maintain fluid-tightness between said engaging portion of each of said at least one end cap for which said electrical insulator is provided, and the corresponding end of said ceramic tube;

wherein said electrical insulator includes a peripheral portion which covers a peripheral portion of said inner surface of said each of said at least one end cap, and the end of said translucent ceramic tube sealed by said sealing member includes a contact portion which contacts said peripheral portion of said electrical insulator, thereby entirely isolating said sealing member from an inner space in which said second end of said discharge electrodes protrudes.

4,808,882

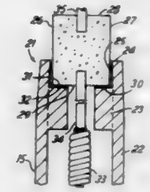
HIGH PRESSURE DISCHARGE LAMP WITH OVERHUNG END ARC TUBE AND CERMET ENDS

Keith E. Parker, Rearsby, and Martin G. Scott, Leicester, both of England, assignors to Thorn Emi plc, London, England

Filed Aug. 4, 1986, Ser. No. 892,818
Claims priority, application United Kingdom, Aug. 3, 1985, 8519582
Int. Cl.[4] H01J *61/36, 61/30*
U.S. Cl. 313—625 **15 Claims**

1. An arc tube for a high pressure discharge lamp, the arc tube comprising a tubular wall made of a light-transmissive, ceramic material; a ceramic sealing member positioned inwardly with respect to an end of the tubular wall and being sealed to an internal surface thereof, the sealing member having an outer face and a central bore,

and a cermet member comprising a block of an electrically conductive cermet material having a first end and a second end and an electrical lead-in member and an electrode-supporting shank set into said first end and said second end respectively, the block being so positioned that said electrode-supporting shank extends through said



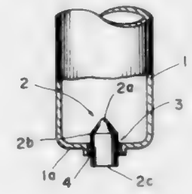
bore into the interior of the arc tube and said second end of the block is sealed to said outer face of the sealing member thereby to seal said end of the arc tube.

4,808,883

DISCHARGE LAMP DEVICE HAVING SEMICONDUCTOR CERAMIC CATHODE

Shouichi Iwaya; Hitoshi Masumura, and Muneaitsu Hamada, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 28,589, Mar. 20, 1987, abandoned. This application Mar. 22, 1988, Ser. No. 171,228
Claims priority, application Japan, Jun. 11, 1986, 61-135248; Jul. 15, 1986, 61-168590[U]; Jul. 15, 1986, 61-168591[U]; Jul. 15, 1986, 61-168592[U]; Jul. 15, 1986, 61-168593[U]
Int. Cl.[4] H01J *61/06*
U.S. Cl. 313—632 **15 Claims**



1. A discharge lamp device comprising a tube, and a cathode disposed in said tube, said cathode being composed of a material selected from the group consisting of a valence-compensated semiconductor ceramic material, a forcibly reduced semiconductor ceramic material, and a valence-compensated and forcibly reduced semiconductor ceramic material.

4,808,884

HIGH ORDER DIGITAL PHASE-LOCKED LOOP SYSTEM

Richard W. Hull, Laguna Hills, Calif.; Donald E. Tolach, Albuquerque, N. Mex., and James H. P. Wang, Anaheim, Calif., assignors to Western Digital Corporation, Irvine, Calif.

Filed Dec. 2, 1985, Ser. No. 803,664
Int. Cl.[4] H03D *3/24*
U.S. Cl. 375—120 **18 Claims**

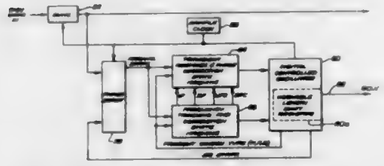
1. A digital phase-locked loop system for providing a digital output signal synchronized with a stream of data pulses, comprising:

variable oscillator means for generating a digital output signal comprises of alternating high and low level pulse windows in which each window is comprised of a plurality of successive segments of equal duration, wherein the oscillator means is alterable to control the number of

segments in each window in a sequence of windows to provide one of a plurality of predetermined set output frequencies;

phase detection means for determining the position of each data pulse relative to the segments of a window in which it occurs; and

processing means, responsive to the phase detection means, for controlling the oscillator means to (a) alter the set



output frequency as a function of the positions of a minimum of three consecutive data pulses with respect to the segments of the windows in which they occur and (b) alter the number of segments in an individual window as a function of the position of a data pulse with respect to the segments of said individual window and as a function of the positions of a minimum of two data pulses with respect to the segments of windows in which they occur.

4,808,885

ELECTRIC INCANDESCENT LAMP FOR SERIES ARRANGEMENT HAVING AN ELECTRICALLY CONDUCTIVE VITREOUS BODY CONNECTING OXIDE COATED CURRENT-SUPPLY CONDUCTORS

Wolf-Dieter Bauch, Niederzier; Rolf Gervehaeyer, Gellenkirchen, and Heinrich B. Marker, Jülich, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1987, Ser. No. 63,616

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1986, 3620373

Int. Cl.[4] H01K *1/70, 3/08, 1/20*

U.S. Cl. 315—122 **11 Claims**



1. An incandescent lamp, comprising:

(a) an outer envelope sealed in a gas tight manner;

(b) a pair of metallic current-supply conductors extending through said outer envelope to the exterior, said current-supply conductors being spaced apart over their entire length;

(c) a filament connected to said current-supply conductors; and

(d) means for electrically shunting said current-supply conductors when said filament burns through, said means comprising one of said current-supply conductors having an oxide coating over a portion of its length, and a vitreous body fused to said one current-supply conductor at said oxide coating and to the other current-supply conductor, said body being electrically conductive at the voltage applied across said current-supply conductors during lamp operation, and said oxide coating having a thickness such that no current flows between said current-supply conductors through said vitreous body during lamp operation but upon burn-through of said filament said oxide coating breaks down allowing current flow from one current-supply conductor through said vitreous body to the other current-supply conductor.

4,808,886

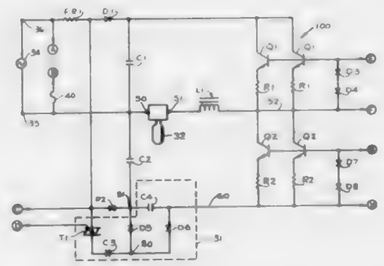
SWITCHED CAPACITIVE BALLASTS FOR DISCHARGE LAMPS

Michael S. Lathom, Rte. 1, Box 567, Clayton, Wash. 99110; Bruce B. Gallikson, 1513 W. Jackson, Spokane, Wash. 99205, and Bruce P. Sweat, 3015 E. 16th, Spokane, Wash. 99203

Filed Aug. 26, 1985, Ser. No. 769,482

Int. Cl.[4] H05B *37/00, 39/00, 41/14*

U.S. Cl. 315—227 R **84 Claims**



1. A ballast circuit for controlling electrical current flow through an electrical discharge lamp from an electricity source providing alternating electrical current having positive potential portions and negative potential portions, comprising:

positive electrical charge storage means connected to receive current from said electricity source during said positive potential portions;

negative electrical charge storage means connected to receive current from said electricity source during said negative potential portions;

at least one positive switching means connected between said positive electrical charge storage means and said lamp, and connected between said electricity source and said lamp;

at least one negative switching means connected between said negative electrical charge storage means and said lamp and connected between said electricity source and said lamp; and

switching control means for controlling said positive switching means into a nonconductive mode during said positive potential portions and into a conductive mode during said negative potential portions, and for controlling said negative switching means into a nonconductive mode during said negative potential portions and into a conductive mode during said positive potential portions.

4,808,887

LOW-PRESSURE DISCHARGE LAMP, PARTICULARLY FLUORESCENT LAMP HIGH-FREQUENCY OPERATING SYSTEM WITH LOW INDUCTANCE POWER NETWORK CIRCUIT

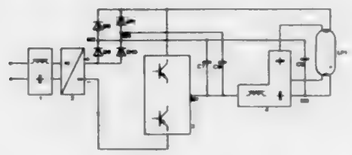
Hans-Jürgen Fillmrich, Munich, and Anton Zachtrigal, Taufkirchen, both of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft für elektrische Glühlampen m.b.H., Munich, Fed. Rep. of Germany

Filed Jul. 6, 1987, Ser. No. 69,857

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1986, 3623749

Int. Cl.[4] H05B *41/29;* **H02M** *1/12, 7/538*

U.S. Cl. 315—247 **5 Claims**



1. In combination with a fluorescent lamp (LP1, LP2),

a low inductance power network circuit, adapted to be connected to a power line circuit (U) at power line voltage and frequency, including

a power rectifier (2) having output terminals (P1, P2) which form positive (P1) and negative (P2) lamp circuit input terminals, respectively;

an input capacitor (C2) connected across said lamp circuit input terminals (P1, P2);

a push-pull transistor frequency generator (3) having two alternately conducting transistors (T1, T2) and having a common junction (M1);

and an operating circuit for the transistors, including

said lamp, an oscillator transformer (RK), including first (RK1), second (RK2) and third (RK3) windings, the second and third windings being, respectively, connected to the base of a respective transistor (T1, T2) and the first winding being connected between said common junction (M1) and a first electrode (E1, E3) of the lamp electrodes, and

a series resonance circuit (4) having a series inductance (L1, L1') defining two terminals and having a first terminal connected to the common junction (M1) of the transistors (T1, T2) and a second terminal (M3, M3') connected through a series coupling capacitor (C5, C5') and through lamp filaments of the lamp electrodes (E1, E2, E3, E4) to a resonance capacitor (C6, C6') in the preheating circuit of the lamp (LP1, LP2),

and comprising a harmonic filter including

a first and a second diode (D8, D9), serially connected in forward current passing direction and defining a first diode junction (M2) between said first and second diodes;

a first coupling capacitor (C7) coupling said first diode junction to said common junction (M1) between said transistors (T1, T2);

a second coupling capacitor (C8, C8') coupling said first diode junction (M2) to said second terminal (M3, M3') of the series inductance (L1, L1');

third and fourth diodes (D10, D11), serially connected in forward current passing direction and defining a second diode junction (M4) between said third and fourth diodes, said third and fourth diodes being connected in parallel to said first and second diodes (D8, D9);

a third coupling capacitor (C9) coupling said second diode junction (M4) to the common junction (M1) between said transistors (T1, T2) of said push-pull transistor frequency generator (3); and

wherein said first and second serially connected diodes, and said third and fourth serially connected diodes (D8, D9; D10, D11) are connected between one (P1) of said lamp circuit input terminals (P1, P2) and a second electrode (E2, E4) of the lamp electrodes.

4,808,888

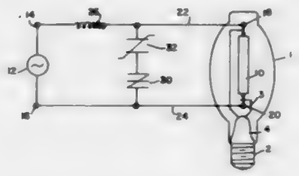
STARTING CIRCUIT FOR GASEOUS DISCHARGE LAMPS

Elliot F. Wyner, Peabody, Mass., and Fredrick W. Paget, Mill Valley, Calif., assignors to GTE Products Corporation, Danvers, Mass.

Filed Nov. 28, 1986, Ser. No. 936,218

Int. Cl.[4] H01J *7/44*

U.S. Cl. 315—289 **13 Claims**



1. An electric discharge lamp starting and operating apparatus comprising:

an electric discharge lamp including an arc tube with a pair of electrodes disposed therein, an envelope surrounding said arc tube and having a lamp base disposed at one end thereof, means for supporting said arc tube, and means for connecting said arc tube through said envelope to a power supply;

a pair of input terminals for connection to an alternating current supply;

a pair of output terminals for connection across said lamp;

a ballast inductor connected between one of said input terminals and one of said output terminals;

a connection between the other of said input terminals and the other of said output terminals; and

a high voltage starting pulse means providing a high voltage pulse to said lamp electrically connected in shunting relationship to said lamp between said input terminals and said output terminals and disposed entirely within said lamp base, said high voltage pulse means comprising a non-linear dielectric element means and a semiconductor switch means connected in series, said high voltage starting pulse means not including a device for interrupting power to said series connected non-linear dielectric element means and said semiconductor switch means during lamp operation.

4,808,889

CIRCUIT FOR FLUORESCENT LIGHT POWER SUPPLY IN A BOREHOLE TELEVISION PROBE

Glenn T. Durfee, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex. and Gas Research Institute, Chicago, Ill.

Continuation of Ser. No. 868,992, May 30, 1986, abandoned. This application Dec. 9, 1987, Ser. No. 130,401

Int. Cl.[4] H05B *37/02*

U.S. Cl. 315—291 **11 Claims**

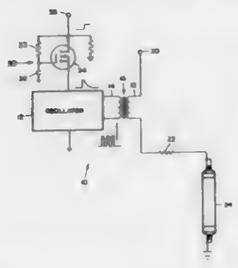
1. A lighting system comprising:

means for producing ultraviolet light, said means having a starting voltage necessary to ionize said means;

first means for providing electric power to said means for producing ultraviolet light, said first means for providing electric power comprising source of direct current, having sufficient output to maintain continuous operation of said means for producing ultraviolet light:

second means comprising a source of alternating current

including an oscillator for providing high voltage, low current electric power to said means for producing ultraviolet light, said second means for providing electric power having sufficient output to initiate operation of said means for producing ultraviolet light, without lowering said starting voltage, when combined with the output of said first means for providing electric power, said second means for providing electric power being separate and distinct from said first means for providing electric power, and said second means for providing electric power not



being directly connected to said first means for providing electric power;

means for combining the output of said first and second means for providing electric power in series for a period of time sufficient to initiate operation of said means for producing ultraviolet light and disabling said second means of electric power after operation of said means for producing ultraviolet light has been initiated; and

means for controlling the combined output of said first and second means for providing electric power.

4,808,890

CATHODE-RAY TUBE

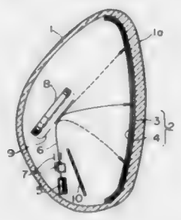
Eiichi Yamazaki, Ichihara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 13, 1986, Ser. No. 895,915

Claims priority, application Japan, Sep. 20, 1985, 60-206407

Int. Cl.[4] H01J 29/70, 29/76

U.S. Cl. 315—366 **14 Claims**



1. A cathode-ray tube in a bulb comprising:

an anode target region formed on the inner surface of said bulb;

an electron gun for emitting an electron beam; and

a reflecting electrode for generating a planar reflecting electro-potential surface which reflects the electron beam from said electron gun, said electrode being positionally disposed to directly face both an oncoming electron beam emitted from said electron gun and said anode target and including a plurality of resistors interconnected in a mesh configuration, and wherein controllable potential levels are applied across a plurality of pairs of diagonally opposite resistor terminal portions of said mesh configuration for generating a planar reflecting electro-potential surface having a controllable orientation with respect to the face of said reflecting electrode so as to effect scanning of said electron beam over the entire anode target region from said planar reflecting potential surface.

4,808,891

HIGH VOLTAGE GENERATOR

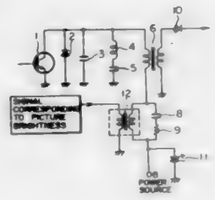
Kiyoshi Watanabi, Yokohama, and Kazuyoshi Takizawa, Hiratsuka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 947,082, Dec. 29, 1986, abandoned. This application Jun. 22, 1988, Ser. No. 208,840

Claims priority, application Japan, Dec. 27, 1985, 60-292609; Jun. 13, 1986, 61-135916

Int. Cl.[4] H01J 29/70, 29/72, 29/76

U.S. Cl. 315—411 **7 Claims**



1. A high voltage generator comprising a flyback transformer having a primary winding and a secondary winding, a horizontal deflection circuit connected to the primary winding of said flyback transformer and including a horizontal output transistor, a damper diode, a horizontal deflection coil and a resonance capacitor, a rectifier diode connected to the secondary winding of said flyback transformer, a resonance circuit connected in series with at least one of said primary and secondary windings of said flyback transformer and including a capacitor, a resistor and an element whose inductance value changes depending on the value of a current flowing therethrough, and control means coupled to said element for controlling said value of said current so that a resonance frequency of said resonance circuit is a harmonic frequency of a horizontal frequency when a high voltage load current rectified by said rectifier diode is near zero and increases in response to an increase of said high voltage load current.

4,808,892

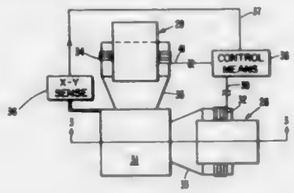
BI-DIRECTIONAL DRIVE MOTOR SYSTEM

John D. Dreibelbis, Chalfont, Pa., assignor to Kulick and Soffa Ind. Inc., Willow Grove, Pa.

Continuation of Ser. No. 808,653, Dec. 13, 1985, abandoned. This application Dec. 18, 1987, Ser. No. 134,702

Int. Cl.[4] H02K 41/02

U.S. Cl. 318—135 **20 Claims**



1. A bi-directional drive motor system for positioning an X-Y load platform in a predetermined X and Y position comprising:

a load platform having an X-Y movable top stage,

a first bi-directional drive motor located beside and rigidly connected to said movable top stage through a first coil support for force movement in only an X direction,

a second bi-directional drive motor located beside and rigidly coupled to said movable top stage through a second coil support for force movement in only a Y direction,

said bi-directional drive motors comprising a magnetic core assembly, magnet means and a y or an x force coil assembly,

said magnetic core assembly having a pair of outer pole pieces and a center pole piece connected by end pole piece means,

air gaps between said outer pole pieces and said center pole pieces,

said X force coil assembly having a coil mounted on said first coil support connected to said movable top stage and being free to be moved in the Y direction,

said Y force coil assembly having a coil mounted on said second coil support coupled to said movable top stage and being free to be moved in the X direction,

said force coils being positioned in said air gaps, and

control means for individually actuating said X and Y force coils independently to position said top stage of said load platform in a predetermined X and Y position.

4,808,893

STARTER PROCEDURE FOR PERMANENT MAGNET MOTORS

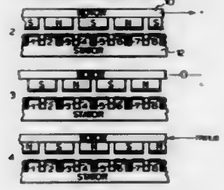
Patrick E. Cavanagh, Toronto, Canada, assignor to Magbenite Inc., Vancouver, Canada

Filed Nov. 6, 1986, Ser. No. 927,446

Claims priority, application United Kingdom, Nov. 8, 1985, 8527657

Int. Cl.[4] H02P 6/02

U.S. Cl. 318—254 **12 Claims**



1. A method of controlling a brushless D.C. motor comprising a permanent magnet rotor having a plurality of magnetic poles and a stator bearing windings arranged to interact with the magnetic field produced by the rotor permanent magnet magnetic poles to produce torque from D.C. current applied to said windings, which comprises the steps of:

arranging said stator windings in a plurality of series connected circuits which overlap one with another and are pulsed with current to establish electromagnetic poles of differing polarity,

ceasing application of current to said windings and activating one of said circuits to brake said rotor to a stop with the electromagnetic poles of the stator and the magnetic poles of the rotor in an attractive relationship, and

reestablishing application of current to another of said circuits to establish an attractive stator pole ahead of a rotor pole and a repulsive stator pole behind the same rotor pole, whereby said motor may be stopped and restarted always to rotate in the same direction.

6. In a brushless D.C. motor comprising a permanent magnet rotor having a plurality of magnet poles and a stator bearing windings to establish stator poles arranged to interact with the magnetic field produced by the permanent magnet magnetic poles of the rotor to produce torque from D.C. current applied to said windings, the number of said stator poles being twice the number of rotor poles, said windings being arranged in two series-connected circuits which overlap one another and are pulsed with current to establish poles of differing polarity, the improvement which comprises circuit means connecting said series-connected circuits together through a double-pole double-throw switch which is arranged to be actuated upon switch off of current to said circuits through a main power switch, whereby alternating counter EMF produced in one of said two series-connected circuits, by the relative rotation of the rotor to the stator is converted to pulsed direct current to induce a magnetic field on the stator poles in the other circuit to brake and stop the rotor with the stator poles attracting the rotor pole.

4,808,894

POWER WINDOW DEVICE

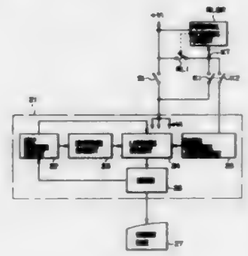
Ken Mizuta, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Japan

Continuation-in-part of Ser. No. 902,923, Aug. 29, 1986, abandoned. This application Nov. 13, 1987, Ser. No. 120,712

Claims priority, application Japan, Sep. 4, 1985, 60-135811[U]

Int. Cl.[4] B60R 25/00

U.S. Cl. 318—266 **3 Claims**



1. A power window device comprising:

a drive motor for driving a windowpane of a car in an opening direction and a closing direction;

a switch operating arrangement for selectively operating said drive motor to open or close the windowpane;

a separate switch which is normally open having one terminal connected to a power source in said car;

switch closing means for detecting when a door lock key is used to lock a door of said car and for closing said separate switch in response thereto;

drive means responsive to the closing of said separate switch for operating said drive motor to drive the windowpane in the closing direction; and

means cooperating with said switch closing means for reopening said separate switch after a predetermined period of time sufficient to obtain closing of the windowpane.

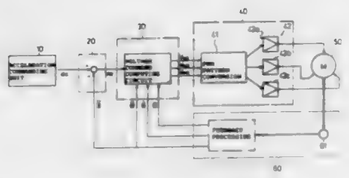
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4,806,895

ACCELERATION CONTROL APPARATUS

Jun Fujita; Yoshinori Nakanishi; Etsuzi Oda, and Kazutaka Yamashita, all of Numazu, Japan, assignors to Toshiba Machine Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1987, Ser. No. 126,926
Int. Cl.[4] H02P 1/00
U.S. Cl. 318—384 8 Claims



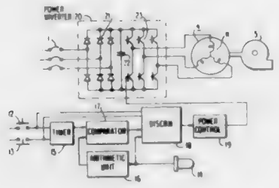
1. An acceleration control apparatus comprising:
an acceleration commanding unit;
a signal generator connected to a motor for generating a signal indicative of an actual value of acceleration of said motor;
a comparator circuit for generating an acceleration deviation signal by comparing an acceleration command value supplied from said acceleration commanding unit and said actual value of acceleration supplied from said signal generator;
a voltage command computing circuit for calculating a voltage command value on the basis of an acceleration deviation signal output from said comparator circuit; and
a driving control circuit for generating electrical signals suitable for driving and controlling said motor on the basis of said voltage command value of said voltage command computing circuit,
whereby acceleration is controlled on the basis of the comparison of said acceleration command value and said actual value of acceleration.

4,806,896

CONTROL DEVICE FOR HEATING DEEP-SEA ELECTRIC MOTOR OIL

Yoshio Katsuragi, and Hatsuo Ohta, both of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1988, Ser. No. 172,151
Claims priority, application Japan, Mar. 23, 1987, 62-69401
Int. Cl.[4] H02P 7/40
U.S. Cl. 318—436 5 Claims



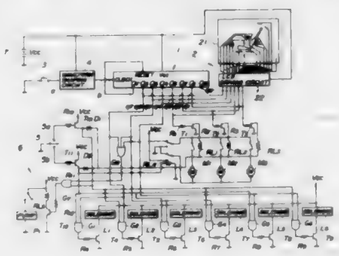
1. A control device for an electric motor (4) installed in a submersible vessel and filled with oil (51) exposed to external sea water pressure, comprising:
(a) a power circuit (20) for supplying variable power to a primary winding (11) of said motor;
(b) a pressure detector (14) for detecting the sea water pressure when said vessel is submerged;
(c) a timer (15) for counting time elapsed after stopping said motor;
(d) an arithmetic unit (16) responsive to an input signal from said pressure detector for calculating the time required for the temperature of the oil to drop to a predetermined value (K) corresponding to the sea water pressure when the motor is stopped;
(e) a comparator circuit (17) for comparing the time calculated by said arithmetic unit and the time counted by said timer, and for outputting a signal when the two times are coincident;
(f) a signal discrimination circuit (18) for outputting a heating mode signal in response to inputs from said pressure detector and said comparator circuit; and
(g) a power control circuit (19) responsive to an input from the signal discrimination circuit for causing sufficient power to be supplied to said primary winding of the motor to maintain the oil at said predetermined temperature value and thereby facilitate a subsequent motor startup by preventing the oil from becoming more viscous.

4,808,897

APPARATUS FOR CONTROLLING A SEAT FOR VEHICLES

Masatsugu Saito, Yamato; Chikamasa Ikeda, and Seiei Takeda, both of Yokohama, all of Japan, assignors to Ikeda Bussan Co., Ltd. and Niles Parts Co., Ltd., both of, Japan

Filed Mar. 5, 1986, Ser. No. 836,523
Int. Cl.[4] G05B 19/42
U.S. Cl. 318—568 10 Claims



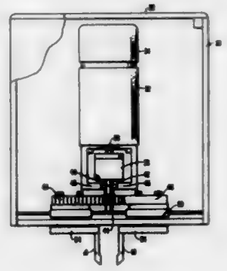
1. An apparatus for controlling a plurality of position and posture control modes of a seat of a vehicle comprising:
mode selecting means for automatically cyclically switching, upon command, to one of a plurality of control modes for said seat with respect to the position and the posture of said seat;
a displaying section for displaying a selected one of said control modes in accordance with the output from said mode selecting means;
a selecting switch connected to the input of said mode selecting means for initiating cyclical switching of said selected one of said control modes;
an increasing/decreasing switch for providing a control signal for controlling the amount of control on said selected control mode with respect to the position and posture of said seat, said increasing/decreasing switch being operative for each selected control mode; and
a control section responsive to said increasing/decreasing switch for controlling the position and posture of vehicle's seat in accordance with the output signal from said mode selecting switch and the control signal from said increasing/decreasing switch.

4,808,898

GRIPPER ASSEMBLY FOR ROBOT ARM

Keith Pearson, 450 Harvard Ave., No. 4D, Santa Clara, Calif. 95051

Filed Sep. 30, 1987, Ser. No. 102,994
Int. Cl.[4] G05B 19/42
U.S. Cl. 318—568 13 Claims



1. In a robotic system including a robot arm, a gripper assembly comprising:
a movable support;
a pair of finger mounts;
a pair of fingers coupled to respective ones of said finger mounts;
shifting means, shiftably coupling said finger mounts to said movable support, for movement of said finger mounts toward and away from each other, said shifting means including a DC servo motor having a drive shaft, and rack and pinion means, coupling said drive shaft to said finger mounts, for shifting said finger mounts toward and away from each other as a function of the rotation of said drive shaft drive shaft in opposed directions;
servo means, coupled to the servo motor for driving the finger mounts toward and away from each other, whereby a component to be moved can be gripped by said fingers; and
control means for controlling the actuation of said servo means.

4,808,899

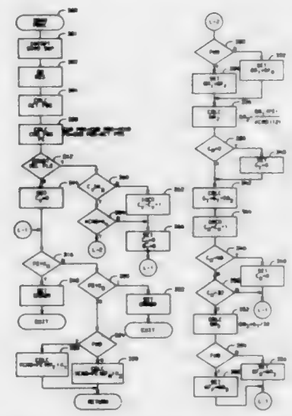
METHOD AND APPARATUS FOR AUTOMATIC SERVO GAIN ADJUSTMENT FOR MACHINE CONTROL

David C. Swope, North Bend, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 2, 1987, Ser. No. 20,820
Int. Cl.[4] G05B 5/01, 13/02
U.S. Cl. 318—619 8 Claims

1. A method of servocontrol of motion wherein velocity of a motor is controlled in response to a velocity command signal derived from a change in position signal commanding a change in position and in actual position signal representing a measured position, the method comprising the steps of:
(a) producing an actual following error signal representing a difference between the measured position and the commanded change in position;
(b) producing a desired following error signal in response to the commanded change in position, the desired following error signal representing a following error expected for a desired servomechanism gain at a rate of change in position determined by the command change in position; the
(c) producing a gain signal in response to a ratio of actual following error signal to the desired following error signal; and
(d) producing the velocity command signal in a respone to the actual following error signal and the gain signal.

5. An apparatus for servocontrol of motion wherein velocity of a motor is controlled in response to a velocity command signal derived from a change in position signal commanding a change in position and an actual position signal representing a measured position, the apparatus comprising:
(a) means for producing an actual following error signal representing a difference between the measured position and the commanded change in position;
(b) means for producing a desired following error signal in response to the commanded change in position, the desired following error signal representing a following error



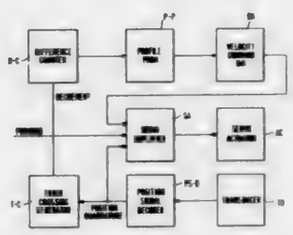
expected for a desired servomechanism gain at a rate of change of position determined by the commanded change in position;
(c) means for producing a gain signal in response to a ratio of the actual following error signal to the desired following error signal; and
(d) means for producing the velocity command signal in response to the actual following error signal and the gain signal.

4,808,900

BI-DIRECTIONAL DIFFERENCE COUNTER

Wilhelm Ohlinger, Jon Jose, and Nicholas M. Warner, Livermore, both of Calif., assignors to Unisys Corp., Detroit, Mich.

Filed Mar. 2, 1987, Ser. No. 20,405
Int. Cl.[4] G05B 11/18; G11B 21/10
U.S. Cl. 318—603 10 Claims



1. A disk drive servo-control system including counter means C that is decremented by track-crossing signals T-C generated as a servo arm A is moved toward a destination track T_d and away therefrom, the counter means C being decremented responsive to the track crossing signals T-C as the arm moves toward track T_d and being incremented as the arm moves away therefrom; and wherein

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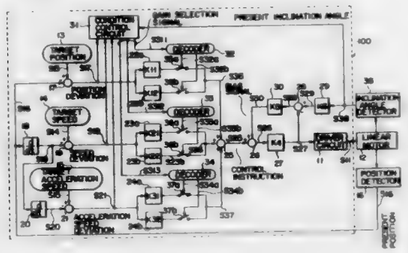
means are provided for detecting position signals (P) and position quadrature signals (Q); plus compare means CR adapted to detect crossings, receiving signals P and Q generating track-crossing signals T-C P>+Q and whenever P>−Q, applying these track crossing signals T-C to increment or decrement said Counter means C, so that the contents thereof always represent the number of track-crossings between the current position of Arm A and destination track T_d, even if overshoot occurs.

4,808,901

CONTROL APPARATUS FOR LINEAR MOTOR

Takao Sakamoto, Shimoda, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1987, Ser. No. 132,423
Claims priority, application Japan, Dec. 19, 1986, 61-304979
Int. Cl.[4] G05B *11/00*
U.S. Cl. 318—687 **28 Claims**



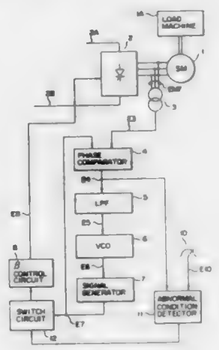
1. A control apparatus for a linear motor, comprising:
linear motor means having a moving piece which is movable in response to a drive signal;
position detecting means, coupled to said linear motor means, for generating a present position signal representing a present position of said moving piece;
target position setting means for generating a target position signal representing a target position of said moving piece;
position deviation detecting means, coupled to said position detecting means and to said target position setting means, for generating a position deviation signal representing a difference between the target position signal and the present position signal;
inclination angle detecting means, coupled to said linear motor means, for generating an inclination angle signal representing an angle between a moving direction of said moving piece and a horizontal plane of the earth;
control instruction means, coupled to said position deviation detecting means and to said inclination angle detecting means, for modifying the position deviation signal according to a characteristic corresponding to the inclination angle signal, and for generating a control instruction signal; and
driving means, coupled to said control instruction means and to said linear motor means, for generating the drive signal corresponding to the control instruction signal, said driving means including:
bias signal generating means, coupled to said inclination angle detecting means, for generating a bias signal corresponding to the inclination angle signal; and
means for amplifying a sum of the control instruction signal and the bias signal, and outputting the drive signal.

4,808,902

CONTROL APPARATUS FOR BRUSH-LESS MOTOR

Masanori Miyazaki, Tokorozawa, and Akihiko Kuroiwa, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 23, 1988, Ser. No. 197,327
Claims priority, application Japan, May 26, 1987, 62-127110
Int. Cl.[4] H02P *5/40*
U.S. Cl. 318—798 **15 Claims**



1. A control apparatus for a brush-less motor, comprising:
inverter means for energizing the brush-less motor;
β control means for controlling an operation of said inverter means, in accordance with an internal control signal;
detector means for detecting a counterelectromotive force generated by said brush-less motor, and providing an EMF signal representing said counterelectromotive force;
PLL means for comparing a phase of said EMF signal with that of said internal control signal, and controlling said β control means by said internal control signal, such that a phase difference between said internal control signal and said EMF signal becomes minimal; and
check means, coupled to said PLL means and said β control means, for checking an amount of the phase difference between said internal control signal and said EMF signal, and when a checked amount of the phase difference is found to have reached or exceeded a predetermined amount, modifying the operation of said β control means so that a commutation failure of said inverter means is prevented.

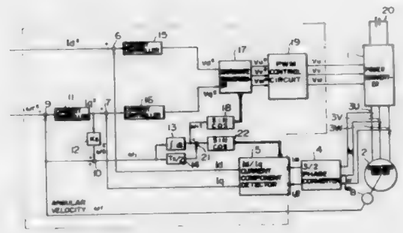
4,808,903

VECTOR CONTROL SYSTEM FOR INDUCTION MOTORS

Takayuki Matsui, Hitachi; Toshiaki Okuyama; Takashi Sakegawa, both of Ibaraki, and Junichi Takahashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1988, Ser. No. 181,313
Claims priority, application Japan, Apr. 13, 1987, 62-88828
Int. Cl.[4] H02P *5/40*
U.S. Cl. 318—800 **62 Claims**

1. A vector control method for a three-phase ac induction motor comprising the steps of:
applying an exciting current command value and a torque current command value in a rotating magnetic field coordinate system;
detecting an actual exciting current value and torque current value;
detecting a deviation between said exciting current command value and said detected exciting current value and a deviation between said torque current command value and said detected actual torque current value;
producing three phase ac voltage command values in a stator coordinate system tending to reduce said deviations to zero; and
determining voltages and a frequency for driving said induction motor in accordance with said three phase ac voltage command values;
said actual exciting current value and torque current value detecting step further comprising,



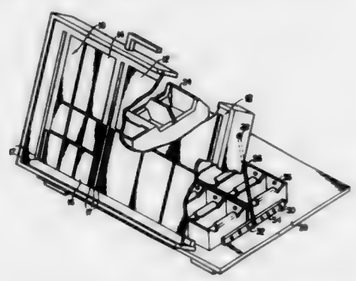
integrating a value of each of selected two phase ac inputs of three phase ac inputs of said induction motor and then sampling the integrated values at a predetermined period;
subjecting each of said sampled values of the integrated two phase ac inputs to a definite integration at said predetermined period; and
transforming said definite integrated values respectively to an actual exciting current value and torque current value in a rotating magnetic field coordinate system.

4,808,904

PORTABLE PHOTOVOLTAIC BATTERY RECHARGER

Alain M. Ricaud, Bethesda, and Flore Artigliere, Frederick, both of Md., assignors to Solarex Corporation, Rockville, Md.

Filed Jan. 25, 1988, Ser. No. 147,548
Int. Cl.[4] H02J *7/00*; H01M *10/44*; H01L *31/04*
U.S. Cl. 320—2 **7 Claims**



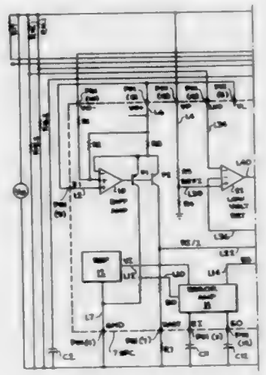
1. A portable photovoltaic battery recharger for simultaneously recharging a plurality of rechargeable batteries having different sizes and respective optimum charging current levels, comprising:
a plurality of photovoltaic solar cell arrays corresponding to the number of different battery sizes, each of the cell arrays having a plurality of individual solar cells, each cell of a respective array having a selectively chosen surface area for generating said respective optimum charging current levels when insolated;
battery receptacle means for holding said plurality of rechargeable batteries in a recharging position; and
circuit means for connecting said plurality of photovoltaic solar cell arrays to said battery receptacle means to charge each of said different size batteries with said respective optimum charging current level.

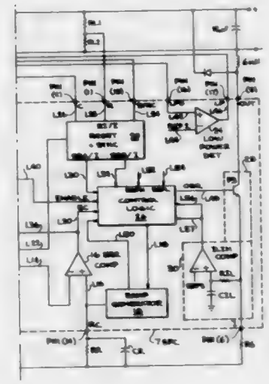
4,808,905

CURRENT-LIMITING CIRCUIT

Shallop J. Chen, Milpitas, Calif., and Jan Johansson, Boleta, Sweden, assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 5, 1986, Ser. No. 893,138
Int. Cl.[4] G05F *1/46*
U.S. Cl. 323—222 **5 Claims**





1. In a subscriber power controller device for converting a high voltage at an S interface into a stable, regulated low voltage to be used by integrated circuits in an ISDN terminal equipment, said controller device including control logic means for generating an output signal to control the duty cycle of an output transistor in an output driver circuit, the improvement comprising:
means for generating a high reference voltage;
means for generating a low reference voltage;
synchronization means for generating a synchronizing signal;
means for generating a signal indicative of the regulated low voltage;
ramp generator means for generating a ramp signal;
error comparator means for comparing the signal indicative of the regulated low voltage with the ramp signal to provide an error signal;
said control logic means being responsive to the ramp signal, the error signal, the high reference voltage, the low refer-

ence voltage, and the synchronizing signal for generating the output signal, said output signal being a pulse train in which each pulse thereof is variable in width dependent upon the error signal;

current-limiting means responsive to output current of the output transistor for generating a current-limiting signal when the output current exceeds a certain preset limit;

said current-limiting means being formed of a comparator having a non-inverting input, an inverting input, an output, an external resistor, and a low-pass filter;

said external resistor being connected to the emitter of the output transistor for converting the output current to a sensed voltage;

said low-pass filter including a resistor and a capacitor, said resistor having one end connected to the capacitor and to the non-inverting input of the comparator, the other end of said resistor being connected to receive the sensed voltage;

said comparator having its inverting input connected to a reference voltage for setting the certain preset limit; and

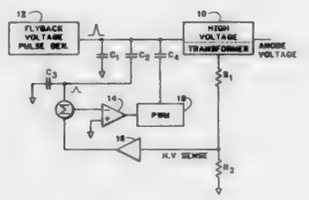
said control logic means being responsive to said current-limiting signal for automatically terminating each pulse of the pulse train in the output signal on a pulse-by-pulse basis when the output current exceeds the preset limit.

4,808,906

HIGH VOLTAGE REGULATOR FOR CRT ANODE VOLTAGE SUPPLY

Steven F. Lippa, Tualatin, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 15, 1988, Ser. No. 182,272
Int. Cl.[4] G05F 1/613
U.S. Cl. 323—223 **12 Claims**



1. In a cathode ray tube anode voltage supply comprising a deflection flyback pulse generator coupled to a high voltage transformer network, a voltage regulator, comprising:

(a) a capacitive divider connected to an output of said pulse generator;

(b) a summing amplifier coupled to said capacitive divider;

(c) feedback circuit means coupled between said high voltage transformer network and said summing amplifier for sensing the voltage output of said high voltage transformer network;

(d) an electronic switching means connected to an output of said summing amplifier for producing variable width pulses wherein the width of each said pulse is a function of variations in voltage at the output of said high voltage transformer network; and

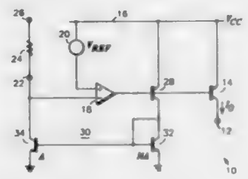
(e) shunt means coupled to the output of said flyback pulse generator for altering the peak amplitude of pulses generated thereby in response to the output of said electronic switching means.

4,808,907

CURRENT REGULATOR AND METHOD

William E. Main, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 17, 1988, Ser. No. 194,752
Int. Cl.[4] G05F 3/20
U.S. Cl. 323—316 **11 Claims**



1. A current regulator, comprising:

a voltage source for providing a reference voltage;

an output stage for providing an output current;

circuit means for providing bias drive to said output stage to control the magnitude of said output current, said circuit means having a first input coupled to said voltage source and a second input at which is produced a voltage that is directly proportional to said reference voltage;

a current source for supplying a reference current to said second input of said circuit means the magnitude of which is a function of said voltage appearing at said second input of said circuit means; and

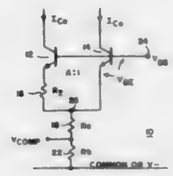
feedback circuit means responsive to said output stage for providing a feedback signal to said second input of said circuit means that is a function of said magnitude of said output current such that the bias drive to said output stage is varied to regulate said output current to a value that is proportional to said reference current, said feedback circuit means including a current mirror.

4,808,908

CURVATURE CORRECTION OF BIPOLAR BANDGAP REFERENCES

Stephen R. Lewis, Reading, and A. Paul Brokaw, Burlington, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Feb. 16, 1988, Ser. No. 156,178
Int. Cl.[4] G05F 3/16
U.S. Cl. 323—313 **4 Claims**



1. In a solid-state regulated voltage supply of the type including first and second transistors operated at different current densities and connected with associated circuitry to develop a current with a positive temperature coefficient (TC) proportional to the difference in the respective base-to-emitter-voltages of said transistors, said current passing through at least first and second resistors to develop in the first resistor a first corresponding voltage and in the second resistor a second corresponding voltage, the second resistor having a TC that is substantially more positive than the TC of the first resistor, and the second corresponding voltage having a corresponding positive TC substantially exceeding the TC of the first corresponding voltage, the voltage supply including means combining said first and second corresponding voltages with a negative TC voltage derived from the base-to-emitter-voltage of one of the first and second transistors, to provide a composite temperature compensated output voltage, the improvement comprising:

the resistance values of the first and second resistors being such as to cause the voltage V_{comp} at the junction of the first and second resistors, at the ambient temperature T_o to be described by the formula

$$V_{comp}T=To = \frac{V_{To}(M-1)(1+CT_o)}{2CT_o}$$

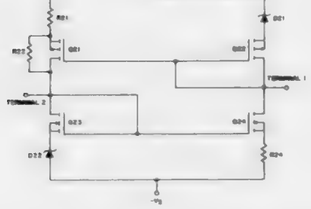
where M is the "curvature factor" of V_{BE} for the semiconductor process used to make the transistors; C is the first order temperature coefficient of the material used for the second resistor, referenced from zero degrees Kelvin; and V_{To}-kTo/q, where k is the Boltzmann constant and q is the electronic charge.

4,808,909

BIAS VOLTAGE AND CONSTANT CURRENT SUPPLY CIRCUIT

Dennis N. Eddleman, Tucson, Ariz., assignor to Apex Microtechnology Corporation, Tucson, Ariz.

Filed Oct. 15, 1987, Ser. No. 108,745
Int. Cl.[4] G05F 3/16
U.S. Cl. 323—313 **13 Claims**



8. A circuit for providing a reference or bias voltage, said circuit also providing a constant current device, said circuit comprising:

a circuit path including;

a first constant voltage component for providing a voltage source,

a first constant current component coupled in series with said first constant voltage component, and

first amplifier means coupled in series with said first constant voltage component and said first constant voltage component; and

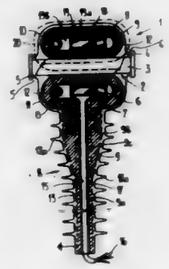
feedback means receiving a control signal determined by a voltage across said first constant voltage component and first constant current component, said feedback means responsive to said control signal for applying a feedback signal to said first amplifier means for maintaining a voltage level across said first constant voltage component and said first constant current component substantially constant.

4,808,910

HIGH VOLTAGE MEASUREMENT TRANSFORMER FOR SUSPENSION FROM A HIGH VOLTAGE SWITCHING APPARATUS

Erich Kessi, Unterentfelden, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed Mar. 3, 1986, Ser. No. 835,350
Claims priority, application Switzerland, Mar. 14, 1985, 1136/85
Int. Cl.[4] H01F 40/06
U.S. Cl. 323—358 **23 Claims**



1. A high voltage switching apparatus having a high voltage measurement transformer constructed conjointly with a current converter component in a head portion of the high voltage measurement transformer, comprising:

two primary terminals provided for the current converter component;

electrical and mechanical attachment means provided on the high voltage measurement transformer and situated proximate to one of said two primary terminals;

means for detachably attaching said high voltage measurement transformer by said electrical and mechanical attachment means provided on the high voltage measurement transformer to a predeterminate portion of the high voltage switching apparatus;

said high voltage measurement transformer being constructed as an independent detachable component; and

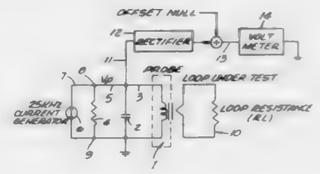
said electrical and mechanical attachment means suspending said high voltage measurement transformer from said predeterminate portion of said high voltage switching apparatus in a region of said one of the two primary terminals of said current converter component.

4,808,911

LOOP RESISTANCE TEST APPARATUS

Richard W. Oaks, Tucson, Ariz., assignor to Hughes Aircraft Company, Los Angeles, Calif.

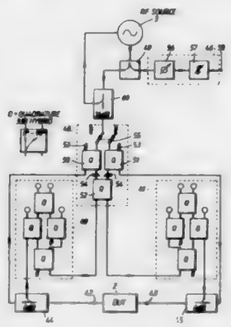
Filed Jul. 22, 1987, Ser. No. 76,528
Int. Cl.[4] G01R 27/02
U.S. Cl. 324—57 Q **1 Claim**



1. An apparatus for measuring the resistance of a closed circuit without breaking said circuit comprising:

detachable means for connecting said apparatus to said circuit without breaking said circuit;
means for inducing, in the circuit whose resistance is to be measured, an electrical current through said detachable connector means;
means for resonating said connector means;
means for providing maximum connector circuit resistance when said loop resistance is infinite;
means linked to said resonating means for nulling voltages arising from coupling losses between the connector means and said closed loop circuits; and
means for detecting and displaying the resistance of said tested circuit.

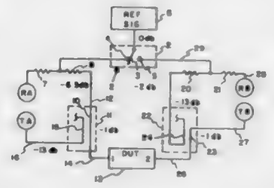
4,808,912
SIX-PORT REFLECTOMETER TEST ARRANGEMENT AND METHOD INCLUDING CALIBRATION
Christopher M. Potter, Stevenage, and George Hjipieris, Hitchin, both of United Kingdom, assignors to Marconi Instruments Limited, St. Albans, United Kingdom
Filed Dec. 31, 1986, Ser. No. 948,055
Claims priority, application United Kingdom, Jan. 17, 1986, 8601108; Apr. 16, 1986, 8609227
Int. Cl.[4] G01N *22/00*
U.S. Cl. 324—58 B 9 Claims



1. A test arrangement comprising
a six-port network having an input port;
a test port connectable to a device under test;
a high frequency signal source;
test signal path means connecting said signal source to the input port of said six-port network and to said test port;
a termination generator having an input coupled to said signal source by a calibration signal path different from said test signal path, and an output, said termination generator having means for selectively altering its impedance for modifying said high frequency signal, and
means for directly coupling the modified high frequency signal at the output of said termination generator to said test port, said modified high frequency signal simulating a device under test having a reflection coefficient which is selectably greater or less than unity thereby enabling calibration of said test arrangement.

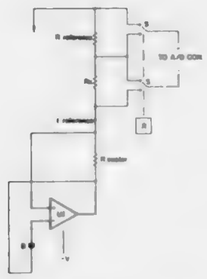
4,808,913
ASYMMETRICAL COUPLING CIRCUIT
Martin I. Grace, San Jose, Calif., assignor to Wiltron Company, Morgan Hill, Calif.
Filed Mar. 31, 1988, Ser. No. 175,956
Int. Cl.[4] G01R *27/04*
U.S. Cl. 324—58 B 3 Claims

1. An asymmetrical coupling circuit for use in a network analyzer comprising:
a first and a second directional coupler, each of said couplers having a through-arm and a coupling arm;
first means for coupling a device under test to a source of a reference signal via said through-arm of said first coupler;
second means for coupling said device under test to a first signal measuring circuit via said coupling arm of said first coupler;



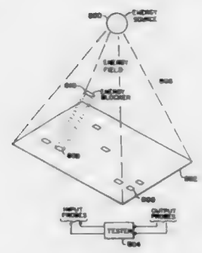
third means for coupling said device under test to said source via said coupling arm of said second coupler; and
fourth means for coupling said device under test to a second signal measuring circuit via said through-arm of said second coupler.

4,808,914
RESISTANCE MEASURING OHMS CONVERTER CIRCUIT EMPLOYING A CONSTANT CURRENT SOURCE
Shlomo S. Talmor, Syosset, N.Y., assignor to Harris Corporation, Melbourne, Fla.
Filed Oct. 17, 1985, Ser. No. 788,236
Int. Cl.[4] G01R *27/02*
U.S. Cl. 324—62 12 Claims



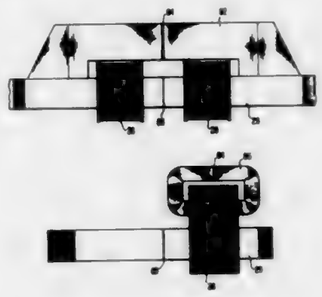
1. An ohms converter circuit for measuring an unknown resistor Rx by passing a current of known magnitude Iref therethrough and measuring the voltage drop thereacross, comprising:
a. a scaler resistor Rscaler, coupled in series with the unknown resistor Rx, having the current of known magnitude Iref passing therethrough to develop a voltage drop thereacross;
b. a floating potential connected in a loop circuit;
c. a differential amplifier coupled with the voltage across the scaler resistor Rscaler placed across the output and one differential input of the differential amplifier and the voltage across the floating potential placed across the output and a second differential input of the differential amplifier to form said loop circuit, to differentially measure the voltages across the scaler resistor and said floating potential and provide an output indicative thereof which determines Iref, such that the voltage drop across the floating potential and the current Iref through said scaler resistor remains constant at a known magnitude, said current of known magnitude Iref also passing serially through the unknown resistor Rx;
d. an inverting amplifier coupled between the output of said differential amplifier and a common coupling to said scaler resistor Rscaler and said floating potential, for providing enhanced voltage compliance and for voltage isolation in the event of the accidental application of a high voltage to the circuit;
e. a voltage measuring means for measuring the voltage across Rx to provide a precise measurement of Rx, by knowing Vx and Ix which is equal to Iref;
f. a reference resistor Rref coupled in series with the unknown resistor Rx; and
g. means for switching said voltage measuring means across either the unknown resistor Rx or said reference resistor Rref, for measuring the voltage across either the unknown resistor Rx or said reference resistor Rref, with the measurement of the voltage across Rref providing a precise measurement of Iref, by knowing Vref and Rref, and the measurement of the voltage across Rx providing a precise measurement of Rx.

4,808,915
ASSEMBLY OF ELECTRONIC COMPONENTS TESTABLE BY A RECIPROCAL QUIESCENT TESTING TECHNIQUE
Robert J. Russell, Boston, Mass., assignor to Honeywell Bull, Inc., Billerica, Mass.
Continuation of Ser. No. 564,977, Feb. 3, 1984, abandoned, which is a division of Ser. No. 315,594, Oct. 30, 1981, Pat. No. 4,556,848. This application Sep. 2, 1986, Ser. No. 903,342
The portion of the term of this patent subsequent to Dec. 3, 2002, has been disclaimed.
Int. Cl.[4] G01R *15/12, 31/28*
U.S. Cl. 324—73 R 6 Claims



1. An electronic assembly to be tested by a reciprocal quiescence testing technique, said electronic assembly comprising:
A. a plurality of electronic components;
B. external quiescent control means including one of a selected intensity and wave length light or a magnetic field or air pressure or X-rays or a microwave for putting each of said plurality of electronic components in a quiescent state, said each of said plurality of electronic components including:
logic means for receiving first signals from other electronic components of said plurality of electronic components, said logic means including:
internal transducer switch means including a photo sensitive switch or a read switch or an air passive sensitive switch or an X-ray sensitive switch or a microwave sensitive switch respectively and responsive to said external quiescent control means in a first state for generating a control signal in a first state and responsive to said external control means in a second state for generating said control signal in a second state;
said logic means being responsive to said control signal in said first state and said first signals for generating second signals in a queiscent state, and responsive to said control signal in said second state and said first signal for generating said second signals in a functional state; and
C. testing means coupled to said electronic assembly for applying said external quiescent control means in said second state to one of said plurality of electronic components and applying said external quiescent control means in said first state to said other electronic components of said plurality of electronic components of said plurality of said other electronic components being said first signals to said one of said plurality of electronic components, said testing means including test measurement means for testing said one of said plurality of electronic components in isolation by applying logic levels to said first signals of said one of said plurality of electronic components for verifying the logic levels of said second signals.

4,808,916
POWER SUPPLY MAGNETIC SHUNT FOR TRANSMISSION LINE SENSOR MODULE
William R. Smith-Vaniz, Darien, Conn., assignor to Niagara Mohawk Power Corporation, Syracuse, N.Y.
Filed Nov. 14, 1986, Ser. No. 930,693
Int. Cl.[4] G01R *21/12, 1/36*
U.S. Cl. 324—110 5 Claims



5. A device for monitoring at least one parameter of a high voltage power transmission line conductor for carrying alternating current, said device including means for removably attaching said device to said conductor, a coil for measuring current in said conductor and a power supply separate from said current measuring coil, said power supply comprising:
a first saturable magnetic core linked to said line conductor and having induced therein alternating magnetic flux generated by said alternating current;
said first magnetic core being arranged in said device to surround said line conductor when said device is mounted on said conductor, said first magnetic core including a first air gap that is small in relation to the cross section of said first magnetic core to provide a relatively high inductance at low levels of current in said conductor;
a winding on a portion of said first magnetic core, said portion linking said winding to said conductor whereby alternating current is induced in said winding by said alternating magnetic flux; and
means for limiting current induced in said winding including means for providing a shunt magnetic path for said first magnetic core;
said means for providing a shunt magnetic path comprising a second magnetic core linked to said first magnetic core by said winding, said second magnetic core including a second air gap that is large relative to said first air gap to provide a relatively high reluctance at high levels of current in said conductor.

4,808,917

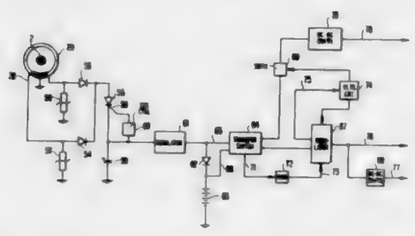
TRANSMISSION LINE SENSOR APPARATUS OPERABLE WITH NEAR ZERO CURRENT LINE CONDITIONS

Roosevelt A. Fernandes, Liverpool, N.Y., and Richard L. Sieron, Fairfield, Conn., assignors to Niagara Mohawk Power Corporation, Syracuse, N.Y.

Continuation-in-part of Ser. No. 484,681, Apr. 13, 1983, Pat. No. 4,689,752, and Ser. No. 564,924, Dec. 23, 1983, Pat. No. 4,636,955, and Ser. No. 669,589, Nov. 8, 1984, abandoned. This application Nov. 5, 1985, Ser. No. 795,167

Int. Cl.⁴ G01R *1/20*

U.S. Cl. 324—127 **19 Claims**



15. A device mounted on a power transmission line for monitoring a parameter of said power transmission line comprising:

means for measuring said parameter;

processing means for operating on said measured parameter;

transmitting means coupled to said processing means for periodically transmitting said measured parameter at a selected frequency;

means for deriving energy from said transmission line for powering said processing means, said means for deriving energy producing a first voltage;

energy storage means for powering said processing means, said energy storage means producing a second voltage;

means for float charging said energy storage means from said means for deriving energy from said transmission line;

transfer means responsive to said first and second voltages for causing said processing means to be powered by said means for deriving energy when said first voltage is greater than said second voltage, and for causing said processing means to be powered by said energy storage means when said first voltage is less than said second voltage;

control means coupled to said transmitting means for controlling the frequency of said periodic transmissions; and

said control means being responsive to said transfer means causing the processing means to be powered by the energy storage means for reducing the frequency of said period transmission.

4,808,918

WATTHOUR METER COMPRISING A HALL SENSOR AND A VOLTAGE-FREQUENCY CONVERTER FOR VERY LOW VOLTAGES

Miro Rozman, Bled, Yugoslavia, assignor to Iskra-Sozd Elektrokovinske Industrije n.sol.o., Ljubljana, Yugoslavia

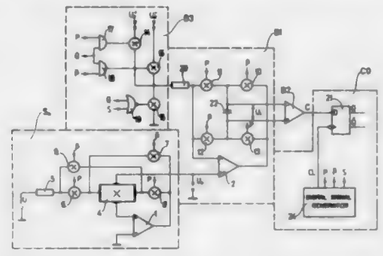
Filed Apr. 9, 1987, Ser. No. 36,772

Claims priority, application Yugoslavia, Apr. 9, 1986, 564/86; Feb. 12, 1987, 209/87

Int. Cl.⁴ G01R *21/08, 15/10*

U.S. Cl. 324—142 **18 Claims**

1. In a watthour meter comprising a sensor circuit having an input terminal and a Hall sensor providing an output voltage U_H proportional to energy measured at the input terminal and a voltage-frequency converter for conversion of said output voltage, including an integrator having a first operational amplifier connected to the sensor and a capacitor with opposite terminals, a compensation circuit, a coupling resistor connecting the compensation circuit to the integrator supplying thereto a compensating charge, a comparator having an output and a pair of inputs connected to said terminals of the capacitor and a control circuit connected to the output of the comparator, the improvement residing in said sensor circuit (S_H, S_H', S_H'') further including two pairs of controlled switches (6,7) and (8,9), an input resistor (5) connected to one of the switches (6,9) of each of said two pairs, and a second operational amplifier (1) having an inverting input, a noninverting input and an output connected to the other of the switches (7,8), said integrator further including two pairs of controlled switches



(10,11;110,111) and (12,13;112,113) respectively connected to the terminals of the capacitor (22;122), one of the switches (10,13;110,113) of each of the two pairs of the switches of the integrator being connected to the output of the second operational amplifier (2;102), the other of the switches (11,12;111,112) of the integrator being connected to the inverting input of the second operational amplifier (2;102) and to the coupling resistor (20;120), said control circuit including means producing polarity reversing signals (P, P', $\bar{P}$, $\bar{P}'$, R, $\bar{R}$) for controlling the switches (6,8) and (7,9) of the sensor circuit and the switches (11,13;111,113) and (10,12;110,112) of the integrator.

4,808,919

ADJUSTABLE DEVICE FOR MEASURING THE CHARACTERISTICS OF A MICROWAVE COMPONENT

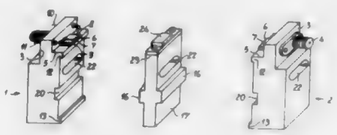
Bitoune Sylviane, Igny; Francois Grossier, Limours; Maurice LeCreff, Garches; Gérard Raiala, Evry, and Dominique Geffroy, Courcouronnes, all of France, assignors to Thomson Hybrides et Microondes, Paris, France

Filed Dec. 21, 1987, Ser. No. 135,232

Claims priority, application France, Dec. 23, 1986, 86 18087

Int. Cl.⁴ G01R *31/02*

U.S. Cl. 324—158 F **8 Claims**



1. A device for measuring the characteristics of microwave components, said device comprising:

(a) a first access block having a first side and a second side, at least the second side of said first access block being electrically conductive;

(b) a second access block having a first side and a second side, at least the first side of said second access block being electrically conductive, the first side of said second access block facing the second side of said first access block;

(c) a first coaxial connector projecting from a first face on the first side of said first access block;

(d) a second coaxial connector projecting from a second face on the second side of said second access block;

(e) a first ceramic wafer disposed on a third face on the second side of said first access block;

(f) a second ceramic wafer disposed on a fourth face on the first side of said second access block;

(g) a first microstrip formed on said first ceramic wafer, said first microstrip being in electrical contact with the central conductor of said first coaxial connector;

(h) a second microstrip formed on said second ceramic wafer, said second microstrip being in electrical contact with the central conductor of said second coaxial connector; and

(i) a plurality of insert blocks, each one of said plurality of insert blocks being sized and shaped so that it can be individually held between the second side of said first access block and the first side of said second access block and to support a microwave component, the characteristics of which are to be measured, in register with said first and second microstrips, said plurality of insert blocks differing in thickness,

wherein:

(j) the positional relationship of said first and second access blocks is adjustable in a first direction depending on the thickness of the one of said plurality of insert blocks held between the second side of said first access blocks an the first side of said second access blocks;

(k) the positional relationship of said first and second access blocks is adjustable in a second direction, perpendicular to the first direction, by movement of said first and second access blocks relative to the one of said plurality of insert blocks held between the second side of said first access block and the first side of said second access block; and

(l) said first and second access blocks and the one of said plurality of inset blocks held between the second side of said first access block and the first side of said second access block can be held in a positional relationship selected so that said first and second microstrips are in register with the microwave component.

4,808,920

METHOD FOR MONITORING A TACHOMETER SIGNAL

Jürgen Brümlinger; James Holmes, both of Stuttgart, and Albrecht Sieber, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE86/00108, § 371 Date Dec. 5, 1986, § 102(e) Date Dec. 5, 1986, PCT Pub. No. WO86/06172, PCT Pub. Date Oct. 23, 1986

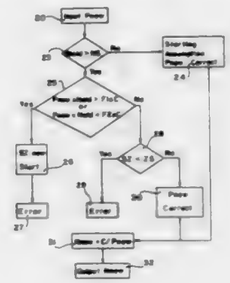
PCT Filed Mar. 14, 1986, Ser. No. 10,139

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1985, 3513937

Int. Cl.⁴ G01P *3/56*

U.S. Cl. 324—161 **6 Claims**

1. A method for monitoring a tachometer signal by means of a tachometer generating a succession of tachometer signals and a device for monitoring tachometer signals connected to said tachometer, the method comprising the steps of determining an upper and a lower threshold values for each tachometer signal generated by the tachometer, said upper and lower threshold values being formed in each case in dependence upon a computed preceding tachometer signal, and comparing a new generated tachometer signal with said upper and lower threshold values, whereby if said new generated tachometer signal exceeds said upper threshold value or falls below said lower



threshold value an erroneous reaction is released on said monitoring device.

4,808,921

PARAMAGNETIC GAS ANALYZER USING DC AND AC MAGNETIC FIELDS

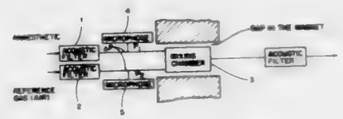
Jorgen Christensen, Birkerod, Denmark, assignor to Aktieselskabet Brusl & Kjar, Naerum, Denmark

Filed May 20, 1987, Ser. No. 52,613

Claims priority, application Denmark, May 27, 1986, 2476/86

Int. Cl.⁴ G01N *27/74*; G01R *33/12*

U.S. Cl. 324—204 **4 Claims**



1. Apparatus determining the concentration of a paramagnetic gas by measuring its pressure when subjected to an AC magnetic field, said apparatus comprising an AC electromagnet with an almost closed ferromagnetic circuit, a permanent magnet and a gap, a chamber positioned within said gap inlet and outlet lines for the gas to be analyzed as well as a gas of known magnetic susceptibility and means for measuring differential gas pressures in the respective lines created when the gas to be analyzed and the gas of known magnetic susceptibility are subjected to a combined AC and DC magnetic field generated by the electromagnet having an AC current winding and the permanent magnet wherein the DC magnetic field is superimposed onto the AC magnetic field by the permanent magnet.

4,808,922

MAGNETIC FIELD PRODUCING DEVICE FOR DETERMINING THE CONCENTRATION OF A PARAMAGNETIC SUBSTANCE PASSED THROUGH A ROTATING CELL CHAMBER

Alfred Eder, Wulfertshausen, and Scato Alberda, Gross Schonkenberg, both of Fed. Rep. of Germany, assignors to Dragerwerk AG., Fed. Rep. of Germany

Filed Dec. 18, 1986, Ser. No. 944,257

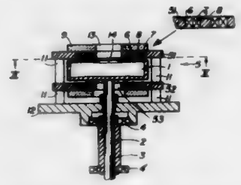
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1985, 3544967

Int. Cl.⁴ G01N *27/74*; G01R *33/12*

U.S. Cl. 324—204 **4 Claims**

1. A device for determining the concentration of a substance with paramagnetic properties such as oxygen in a substance mixture comprising a body defining a hollow cell having an upper side and a lower side and having at least one control

substance chamber and at least one measuring substance chamber through which a substance to be measured is passed, a housing, means in said housing for rotatably supporting said cell body for rotation therein, at least four devices each producing a magnetic field, and a plurality of measuring field coils each of said measuring field coils being associated with a corresponding one of said devices, respective pairs of said devices and corresponding measuring coils being arranged on both sides of said cell fixed to said housing and positioned symmetrically to the axis of said cell body axis of rotation, the magnetizing polarity of the devices being arranged with the magnetizing polarity of their respective measuring field coils in an alternating orientation.

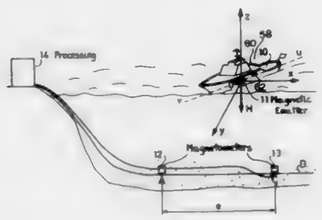


4,808,923

SYSTEM FOR CALCULATING THE PATH OF A NAVAL VESSEL

Gilles Ponsenc, Brest, France, assignor to Thomson CSF, Paris, France

Continuation of Ser. No. 631,750, Jul. 17, 1984, abandoned. This application Dec. 24, 1986, Ser. No. 946,632
Claims priority, application France, Aug. 4, 1983, 83 12899
Int. Cl.[4] G01B *7/14*
U.S. Cl. 324—207 **11 Claims**



1. Apparatus for determining the location of a naval vessel, comprising:

magnetic source means adapted to be connected to said vessel, for emitting an alternating magnetic field which has a predetermined orientation with respect to the vessel,;

two magnetometers, adapted to be fixed to a sea bed below the water through which said vessel navigates, for detecting and measuring at least two components of the emitted alternating magnetic field; and

location calculation means, coupled to said two magnetometers, for calculating the location of said vessel from the measured components of the emitted alternating magnetic field.

4,808,924

CIRCUMFERENTIALLY COMPENSATING EDDY CURRENT PROBE WITH ALTERNATELY POLARIZED TRANSMIT COILS AND RECEIVER COILS

Valentino S. Cecco; Richard McIlquham, and F. Leonard Sharp, all of Deep River, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Feb. 19, 1987, Ser. No. 16,752
Int. Cl.[4] G01N *27/90*; G01R *33/12*
U.S. Cl. 324—220 **12 Claims**



1. A circumferentially compensating eddy current probe for detecting localized flaws in a tube having a central axis and made of an electrically conductive material, while compensating for circumferential structural variations therein, comprising

a first coil assembly and second coil assembly;

the said first coil assembly having an even number of substantially identical first coils to be located adjacent to the tube under inspection and symmetrically about and in a first plane perpendicular to the central axis, the said first coils having axes which form an angle θ_1, with the said central axis and alternate first coils being electromagnetically polarized in two opposite directions along their axes;

transmitter energizing means coupled to said first coil assembly for energizing the said first coil assembly;

the said second coil assembly having the same even number of substantially identical second coils to be located adjacent to the tube under inspection and symmetrically about and in a second plane perpendicular to the central axis, the said second coils having axes which form an angle θ_2 with the said central axis and alternate second coils being electromagnetically polarized in two opposite directions along their axes; and

receiver sensing means coupled to said second coil assembly for sensing current generated in the said second coil assembly;

the said first coil assembly and the said second coil assembly being angularly displaced from each other about the said axis to position each of the coils in one of the coil assemblies at midpoint of two adjacent coils in the other of the coil assemblies;

so that when energized, the said first coil assembly generates magnetic fields in the tube in the said two opposite directions of the coils and the said second coil assembly senses distortions in the magnetic fields and produces a circumferentially compensated output indicating essentially the presence of localized flaws in the tube.

4,808,925

THREE MAGNET CASING COLLAR LOCATOR

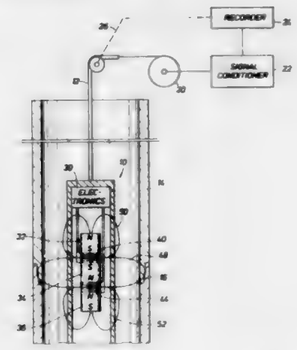
Gary K. Baird, Richmond, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 19, 1987, Ser. No. 122,967
Int. Cl.[4] G01N *27/72, 27/82*; H01F *21/00*
U.S. Cl. 324—221 **6 Claims**

1. A casing collar locator, comprising:

(a) a non magnetic downhole tool body sized and adapted to be lowered axially in a well borehole;

(b) three serially positioned permanent bar magnets carried interiorly of said body and abutting at opposing poles wherein the center magnet forms a magnetic field directed outwardly therefrom and the magnetic field is focused radially outwardly by the remaining two magnets to magnetically interact with tubular member threaded joints in the well borehole; and



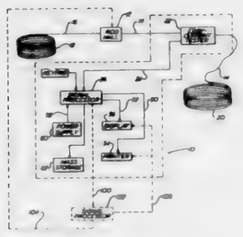
(c) detection coil means wound over said magnets and located at the juncture of said opposing poles of said magnets to detect changing magnetic field signals from the threaded joints coupled thereto by the focused magnetic field.

4,808,926

EDDY CURRENT APPARATUS AND METHOD FOR CONTROLLING A ROD MILL ON THE BASIS OF FAULTS DETECTED PER UNIT TIME

Randall C. Graham, Nashville, and James D. Smith, Jr., Fairview, both of Tenn., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Aug. 18, 1986, Ser. No. 897,226
Int. Cl.[4] G01N *27/90*; B21B *37/00*; B21C *51/00*; G01D *9/00*
U.S. Cl. 324—226 **22 Claims**



12. Apparatus for controlling a rod mill for drawing wire from a rod, comprising:

an eddy-current tester for testing the wire drawn in the rod mill from the rod for providing fault signals in the presence of tested faults in the wire;

means for counting the number of fault signals provided on a per unit time basis and providing count signals having magnitudes indicative thereof after each unit time elapses;

means for determining the rate of increase of said count signal magnitude and providing a rate signal indicative thereof;

means for comparing the magnitude of said rate of increse signal to a signal having a selected magnitude; and

means for providing a rod mill shutdown signal in the presence of said rate of increase signal magnitude being greater than said signal having a selected magnitude.

4,808,927

CIRCUMFERENTIALLY COMPENSATING EDDY CURRENT PROBE WITH ALTERNATELY POLARIZED RECEIVER COIL

Valentino S. Cecco; Richard McIlquham, and F. Leonard Sharp, all of Deep River, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Feb. 19, 1987, Ser. No. 16,748
Int. Cl.[4] G01N *27/90*; G01R *33/12*
U.S. Cl. 324—220 **4 Claims**



1. A circumferentially compensating eddy current probe for detecting localized flaws in a tube having a central axis and made of an electrically conductive material, while compensating for circumferential structural variations therein, comprising:

a first coil assembly and a second coil assembly to be located inside the tube under inspection;

the said first coil assembly having at least one first coil arranged in a plane perpendicular to the central axis and to be located adjacent to the tube under inspection, the at least one first coil having an axis parallel to the central axis to generate at least one magnetic field of a substantially toroidal shape in and through the tube in the direction of the central axis;

the said second coil assembly having an even number of substantially identical second coils to be located between the said first coil assembly and the tube under inspection and symmetrically thereabout and in the said plane perpendicular to the central axis in the said magnetic field of the toroidal shape where radial and axial components of the said magnetic field exist, the said second coils having diameters larger than the width of the first coil and having axes perpendicular to the said central axis and being electromagnetically polarized alternately along their axes so that the second coil assembly senses distortions in the magnetic fields and produces a circumferentially compensated output indicating essentially the presence of localized flaws in the tube.

4,808,928

METHOD FOR RAPID ACQUISITION OF SPIN RESONANCE DATA FOR A SPATIALLY RESOLVED INVESTIGATION OF AN OBJECT

Jens Frahm; Wolfgang Hänicke, and Klaus-Dietmar Merboldt, all of Goettingen, Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Goettingen, Fed. Rep. of Germany

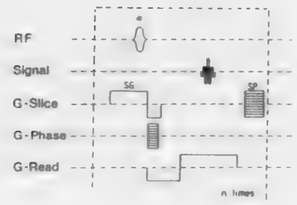
Filed Nov. 5, 1987, Ser. No. 117,795
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1986, 3637998
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—309 **24 Claims**

1. A method of rapid acquisition of spin resonance data for a space-resolved investigation of a region of an object which comprises atomic spins exhibiting a predetermined spin-lattice relaxation time T_1, a predetermined spin-spin relaxation time T_2 and a predetermined effective spin-spin relaxation time T_2^*, said method comprising

(a) positioning said region in a homogeneous magnetic field to align said spins into a predetermined direction,

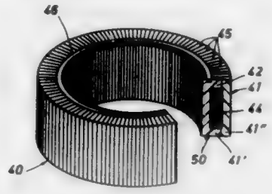
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(b) applying a selective radio-frequency pulse (RF) to said region to tilt said spins by a predetermined flip angle out of said predetermined direction,
(c) applying to said region at least a slice-selection magnetic field gradient (G-slice) in a first (slice) direction and an encoding magnetic field gradient (G-phase) in a second (phase) direction,
(d) performing at least once the following series of steps after the termination of said radio frequency pulse:
(aa) reversing the polarity of the slice selection gradient,
(bb) maintaining the reversed slice selection gradient for a predetermined period of time to refocus dephased magnetization during radio frequency excitation,
(cc) switching off the slice selection gradient before detection of a gradient echo (step e),
(dd) applying a read gradient (G-read) of a predetermined polarity and a predetermined duration to said object region,
(ee) reversing the polarity of said read gradient to produce a gradient echo signal,
(ff) maintaining the read gradient of reversed polarity for a predetermined period of time;
(e) detecting the gradient echo produced by the polarity reversal of the read gradient,
(f) switching off the read gradient, said steps (b) to (f) comprising one partial experiment,



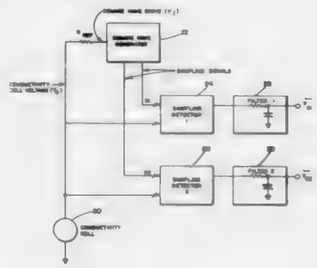
(g) repeating a plurality n of times the steps (b) to (f), wherein
(gg) a predetermined interval is allowed between the read gradient switching off time (step f) of a given partial experiment, and the application of the radio-frequency pulse (RF) of a subsequent partial experiment, said interval being essentially shorter than said spin-lattice relaxation time (T_1),
(hh) no more than three magnetic field gradients are applied which are essentially normal to each other,
(ii) each encoding gradient (G-phase and/or G-slice for three-dimensional measurements) is switched off before the detecting step (e),
characterized in that
(h) an additional slice gradient pulse (SP) is applied after the detecting step e) of a partial experiment and before the radio frequency pulse (RF) of the next following partial experiment, said additional slice gradient pulse (SP) having a predetermined amplitude-time integral, and
(i) said amplitude-time integral of said additional slice gradient pulse (SP) is varied monotonically step by step in the course of said repeating of said partial experiments to partial experiment within at least a portion of a total experiment.

4,808,929
SHIELDED INDUCTION SENSOR FOR WELL LOGGING
Richard W. Oldiga, Huffman, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.
Continuation of Ser. No. 551,239, Nov. 14, 1983, abandoned. This application May 19, 1987, Ser. No. 53,589
Int. Cl.[4] G01V 3/18; H01Q 1/52
U.S. Cl. 324—339 **15 Claims**



1. An induction sensor adapted for use in a well logging system, comprising:
a support member;
a sensor conductor coiled coaxially around said support member;
a plurality of shielding conductors coiled essentially orthogonally around the support member and the sensor conductor, each of said shielding conductors having ends and being angularly spaced from each other, said shielding conductors collectively defining at their ends a nonconducting gap, said gap being disposed coaxially around said support member and orthogonally to each of said shielding conductors thereby creating in each shielding conductor less than a complete three hundred sixty degree loop about the support member;
means disposed within said gap for firmly holding the ends of each of said shielding conductors; and
a ground wire disposed coaxially about said support member and electrically connected to each of said shielding conductors.

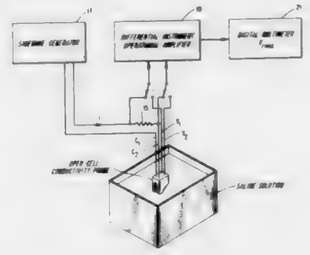
4,808,930
TECHNIQUE OF COMPENSATING FOR CAPACITIVE EFFECTS IN CONDUCTIVITY MEASUREMENTS
Donald F. Kaiser, Parsippany, N.J., assignor to Beckman Industrial Corporation, Cedar Grove, N.J.
Filed Sep. 3, 1986, Ser. No. 903,388
Int. Cl.[4] G01N 27/48; G01R 27/22
U.S. Cl. 324—442 **14 Claims**



1. A circuit for providing an output representative of a conductivity sensed by a cell which produces a cell signal which is affected by a capacitance, comprising:
excitation means coupled to the cell for providing time-varying excitation to the cell;

sampling means coupled to the cell for sampling the cell signal during first and second different time intervals wherein the sampling performed during the first and second different time intervals is of time duration less than a half cycle of the time-varying excitation; and
measurement means coupled to the sampling means for measuring the cell signal as sampled during the first and second time intervals and providing the output substantially corrected for the effect of the capacitance.

4,808,931
CONDUCTIVITY PROBE
Sung C. Ling, Silver Spring, Md., assignor to General Technology, Inc., Silver Spring, Md.
Filed Apr. 13, 1987, Ser. No. 37,817
Int. Cl.[4] G01N 27/02, 27/20
U.S. Cl. 324—444 **20 Claims**



1. An open-cell conductivity sensor comprising
a first current electrode;
a second current electrode spaced from and opposite said first current electrode, said first and second current electrodes being situated on a common axis;
a first ring-shaped voltage electrode surrounding said first current electrode and having said common axis as a center line;
a second ring-shaped voltage electrode surrounding said second current electrode and having said common axis as a center line;
means for developing an alternating current across said current electrodes, and producing a potential field between said current electrodes which is sensed by said voltage electrodes; and
means for sensing the potential across said voltage electrodes;
said alternating current developing means being responsive to said sensing means to maintain in-phase potential across said voltage electrodes at a substantially constant value, the amount of current required to maintain said in-phase potential at a constant value being linearly proportional to the conductivity of a medium between said first and second current electrodes.

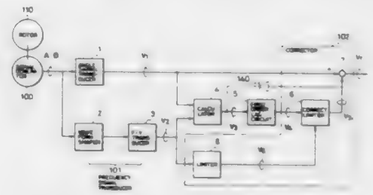
4,808,932
ROTOR FAULT AND LOCATION DETECTOR FOR INDUCTION MOTORS
Max W. Schulz, Jr., Scotia; Stephen E. Grabkowski, and Gerald B. Kliman, both of Schenectady, all of N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed May 15, 1987, Ser. No. 50,992
Int. Cl.[4] G01R 31/02
U.S. Cl. 324—545 **23 Claims**

1. A method of detecting rotor faults in an induction motor, the motor including a stator and a rotor, the rotor including a multiplicity of rotor bars, the method comprising the steps of:
generating a flux signal corresponding to the magnetic flux at a predefined flux detection point in the motor which is affected by the flux around each rotor bar in the motor as the rotor revolves;
generating a synchronization signal once each revolution of the rotor, said synchronization signal occurring when a predefined position on said rotor is closest to said flux detection point;
filtering said flux signal to reject signals in a predefined frequency band around and including the frequency at which the rotor bars pass said flux detection point; and



synchronously time averaging the output of said filtering step, using said synchronization signal as the synchronization reference for said averaging;
whereby statistically significant peaks in the output of said averaging step indicate the presence of a rotor bar fault, and the location of such peaks corresponds to the location of rotor bar faults with respect to said predefined position on said rotor.

4,808,933
ROTATING SPEED MEASURING APPARATUS HAVING A CORRECTOR FOR LOW AND HIGH SPEEDS USING ANGLE AND FREQUENCY TRANSDUCERS
Sumio Kobayashi, Funabashi; Mutsuo Tokashiki, Narashino; Hiroyuki Tomita; Tadashi Okawa, both of Funabashi, and Hiroshi Sugai, Sakura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 11, 1987, Ser. No. 13,545
Claims priority, application Japan, Feb. 19, 1986, 61-32931
Int. Cl.[4] G01P 3/44, 3/56
U.S. Cl. 324—163 **12 Claims**



1. A rotating signal generator apparatus which generates a signal corresponding to a rotational speed of a rotor, comprising:
a signal generator which supplies a sinusoidal wave at a frequency corresponding to a rotational speed of the rotor;
an angle signal transducer which supplies a first signal at a magnitude corresponding to at least one rising and falling angle of the sinusoidal wave from said signal generator;
a frequency signal transducer which supplies a second signal at a magnitude corresponding to the frequency of said sinusoidal wave from said signal generator;
a calculator which calculates a difference between the first signal and the second signal; and
a corrector which corrects the first signal with the output of said calculator only in a range in which the rotational speed of the rotor is high.

4,808,934
POSITION SENSOR FOR DETECTING ANGULAR POSITION

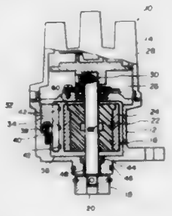
Toshio Yokoyama; Iwao Shimane, and Tsuneo Konno, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1987, Ser. No. 27,831

Claims priority, application Japan, Mar. 19, 1986, 61-40729[U]; Jun. 9, 1986, 61-86617[U]; Jun. 9, 1986, 61-86618[U]; Jun. 9, 1986, 61-86620[U]

Int. Cl.⁴ G01B *7/30*

U.S. Cl. 324—208 **16 Claims**



1. An angle-of-rotation sensor provided with a magnetic rotating member which rotates synchronously with the rotation of a subject shaft to be measured, and magneto electric transducer means arranged in opposition to said magnetic rotating member, the improvement comprising:

said magnetic rotating member is comprised of a shaft fixed coaxially within a tubular magnetic ring by resin, and rotational movement prevention means is provided for preventing slip occurring between the magnetic ring and the shaft,

wherein at least one end of the magnetic ring is provided with inset portions into which the resin extends to form said rotational movement prevention means,

wherein the edge face of at least one end of the magnetic ring slopes inwards toward the center of the ring, and projecting portions are provided at suitable locations on the edge face.

4,808,935
ELECTRIC SET-POINT TRANSMITTER

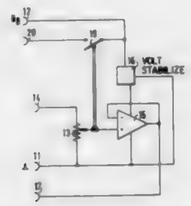
Heinz Ungermann, Linsengericht; Wolfgang Sauerschell, Oberursel, and Wilfried Heumann, Neu-Anspach, all of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 28, 1986, Ser. No. 924,095

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1985, 3538232

Int. Cl.⁴ H03K *5/22;* **H02G** *3/00*

U.S. Cl. 328—146 **6 Claims**



1. An electric set-point transmitter for an automotive vehicle, particularly a vehicle having a gas-pedal system, the transmitter including an actuating element comprising gas pedal means, the transmitter including also a variable resistance element which is driven by and mechanically connected to the actuating element for varying resistance in accordance with position of the gas pedal means, the transmitter producing an output electric voltage which indicates a position of the gas pedal means, the transmitter further comprising

an impedance transformer having an input terminal and an output terminal, the transformer being connected at its input terminal to the resistance element for outputting at the transformer output terminal the output electric voltage which indicates the position of the gas pedal means, the transformer output terminal serving as an output of the electric set-point transmitter, said resistance element and said transformer constituting an electric circuit formed as a single structural unit; and wherein

said electric circuit comprises means connected to a power supply terminal of said impedance transformer for protecting the circuit from incorrect polarity of an operating current fed to the electric circuit.

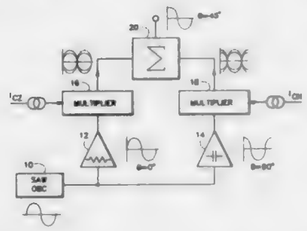
4,808,936
CONTINUOUSLY VARIABLE CLOCK DELAY CIRCUIT

James S. Lamb, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 25, 1988, Ser. No. 172,875

Int. Cl.⁴ H03K *15/135, 17/26;* **G06G** *7/20*

U.S. Cl. 328—155 **6 Claims**



1. A clock-delay circuit for a sinusoidal clock output wave comprising:

(a) a first amplifier means responsive to said output wave for producing a first amplified signal in phase with said output wave;

(b) a second amplifier means responsive to said output wave for producing a second amplified signal shifted in phase with respect to said output wave;

(c) multiplier means responsive to said second amplified signal for altering the amplitude thereof in response to a control signal;

(d) summing means for combining the respective outputs of said multiplier means and said first amplifier means to produce a delayed output wave; and

(e) third amplifier means responsive to said output wave for producing a third amplified signal shifted 180 degrees in phase with respect to said output wave, and a second summing means for combining said third amplified signal and the output of said multiplier means to produce a phase-altered output wave.

4,808,937
PHASE-LOCKED LOOP FOR A MODEM

German E. Correa, and Cynthia J. Correa, both of Alpharetta, Ga., assignors to Hayes Microcomputer Products, Inc., Norcross, Ga.

Filed Jul. 15, 1986, Ser. No. 885,927

Int. Cl.⁴ H03K *5/13, 5/22*

U.S. Cl. 328—155 **7 Claims**

1. An apparatus for generating an output signal which is phase-locked to an input signal, comprising:

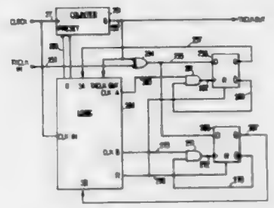
a reference clock;

programmable clock means responsive to said reference clock and to error correction information for generating said output signal;

comparator means for providing a first signal responsive to said output signal and said input signal;

first sampling means for providing a first sampled signal by sampling said first signal at first sampling points;

second sampling means for providing a second sampled signal by sampling said first signal at sampling points, said



second sampling points being displaced from said first sampling points by a predetermined sampling time offset; and

processing means responsive to said first sampled signal and said second sampled signal for providing said error correction information to said programmable clock means.

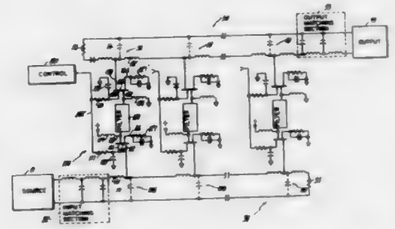
4,808,938
IMPEDANCE-MATCHED SIGNAL SELECTING AND COMBINING SYSTEM

Samuel Levinson, Norwalk, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 13, 1987, Ser. No. 120,440

Int. Cl.⁴ G06G *7/28;* **H04N** *5/22*

U.S. Cl. 328—156 **4 Claims**



1. A switchable circuit for transforming a complex rf input signal having at least two frequency components in a predetermined frequency range to an rf output signal having a predetermined combination of said at least two components, in which a circuit input impedance remains substantially constant for different switched combinations of said at least two frequency components comprising:

an input transmission line having an input line impedance;

at least two frequency selection modules connected in parallel to said input transmission line, for selecting and passing therethrough rf signals in a predetermined frequency sub-range about a predetermined one of said at least two frequency components to form a component signal centered about one of said at least two frequency components;

an output transmission line, having an output line impedance, connected in parallel to said at least two frequency selection modules;

control means for sending at least one enable signal to said at least two frequency selection modules for switching said frequency selection modules between active and inactive states, whereby component signals from selected ones of said at least two frequency selection modules combine in said output transmission line to form said output signal;

at least two switchable input means, responsive to said enable signal and within each of said at least two frequency selection modules, for controllably passing a signal from said input transmission line into said frequency selection module, said switchable input means having an input impedance large compared with said input line impedance and invariant with respect to the active or inactive state of said frequency selection module;

filter means having a predetermined component frequency characteristic within each of said at least two frequency selection modules and connected to said switchable input means, for passing therethrough rf signals in a frequency sub-range and blocking signals outside said frequency sub-range;

switchable output means, responsive to said enable signal and connected between said filter and said output transmission line, and having an output impedance large compared with said output line impedance, for transmitting rf signals passed by said filter means to said output transmission line.

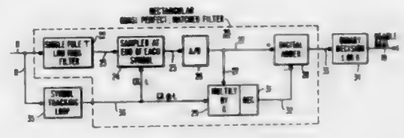
4,808,939
VARIABLE RATE RECTANGULAR MATCHED FILTER

Samuel C. Kingston, Salt Lake City, Utah, assignor to Unisys Corporation, Blue Bell, Pa.

Filed Apr. 4, 1988, Ser. No. 177,284

Int. Cl.⁴ H03B *1/00, 5/00;* **H04L** *7/00*

U.S. Cl. 328—167 **12 Claims**



1. A variable rate quasi perfect matched filter comprising:

a low pass filter coupled to a symbol data stream,

sampler means coupled to the output of said low pass filter to provide samples of said symbol data stream at the end of each symbol time,

analog to digital converter means coupled to the output of said sampler means to provide digital data sample output signals,

filter correction means coupled to the output of said analog to digital converter means for compensating for degradation to the signals of the output of said low pass filter,

digital adder means coupled to the output of said analog to digital converter means and to said filter correction means for providing matched filter output signals, and

clock means coupled to the input symbol data stream for providing output clock signals at said sampler means and at said filter correction means and for adjusting the near perfect rectangular matched filter to variable input data rates.

4,808,940
ELECTRIC BEAM ACCELERATOR

Eijiro Toyota, Tokyo, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP86/00458, § 371 Date May 12, 1987, § 102(e) Date May 12, 1987, PCT Pub. No. WO87/01556, PCT Pub. Date Mar. 12, 1987

PCT Filed Sep. 10, 1986, Ser. No. 54,595

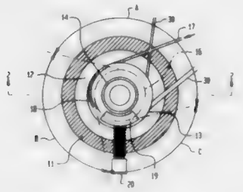
Claims priority, application Japan, Sep. 10, 1985, 60-199692

Int. Cl.⁴ H05H *13/00*

U.S. Cl. 328—233 **5 Claims**

1. An electron beam accelerator which can derive radiant light generated by revolving electrons inflector for guiding electrons to said equilibrium orbit; characterized in that said accelerator comprises drive means for driving said inflector in

the directions perpendicular to the plane defined by said equilibrium orbit, and that said inflector can retire to a position



where said radiant light may not strike it owing to said drive means.

4,808,941

SYNCHROTRON WITH RADIATION ABSORBER

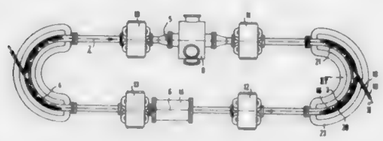
Helmut Marsing, Neunkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 14, 1987, Ser. No. 108,486

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1986, 3636841

Int. Cl.[4] H05H *13/02*

U.S. Cl. 328—235 **3 Claims**



1. In a synchrotron for accelerating charged particles on a trajectory, which synchrotron comprises:

(a) straight track portions including associated means for particle injection and acceleration;

(b) curved track sections including superconducting, vertically spaced, curved dipole magnets arranged in a cryogenic vessel about said trajectory, and;

(c) the trajectory of said curved track sections being surrounded by a chamber including at least one exit opening for tangential radiation emission,

an improvement wherein:

(d) an absorber is arranged in each of said chambers of the curved track sections and conformed about the outer most curved portion of said trajectory;

(e) said absorber including at least one exit opening for passage of said tangential radiation emission;

(f) each of said chambers being provided with at least one radiation tube for said tangential radiation emission, which radiation is emitted through said exit opening of said absorber; and

(g) in each of said chambers, respective support structures being provided behind said absorber and in the vertical space between said dipole magnets to maintain the vertical spacing therebetween.

4,808,942

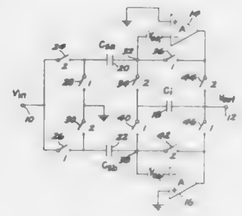
CONTINUOUS MODE AUTO-ZERO OFFSET AMPLIFIER OR INTEGRATOR

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 4, 1988, Ser. No. 177,242

Int. Cl.[4] H03F *1/02, 1/14*

U.S. Cl. 330—9 **10 Claims**



1. A continuous mode auto-zero offset amplifier comprising:

an input terminal, an output terminal, and first and second circuit paths extending between said input terminal and said output terminal;

first and second operational amplifiers respectively connected in said first and second circuit paths, each of said first and second operational amplifiers having a summing junction and an input capacitor connected to said summing junction;

a feedback capacitor; and

switching means for coupling to a reference voltage in an alternate manner one or the other input capacitor of said first and second amplifiers, for coupling said output terminal in an alternate manner to one or an other output of said first and second amplifiers, and for coupling said feedback capacitor in an alternate manner between the output and the summing junction of one or the other of said first and second amplifiers, respectively, so as to charge the input capacitor of said first and second amplifiers, respectively, to an error voltage in an alternate manner.

4,808,943

SWITCHING CIRCUIT OF AMPLIFIER OUTPUT

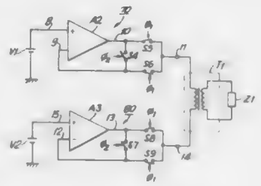
Tatsuo Hayakawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 9, 1988, Ser. No. 154,154

Claims priority, application Japan, Feb. 9, 1987, 62-28508

Int. Cl.[4] H03F *1/34*

U.S. Cl. 330—51 **4 Claims**



1. A switching circuit comprising:

first and second input terminals;

first and second output terminals;

a first amplifier having a first non-inverting input node connected to said first input terminal, a first inverting input node and a first output node;

a first switch inserted between said first output node and said first inverting input node;

a second switch inserted between said first output node and said first output terminal;

a third switch inserted between said first output terminal and said first inverting input node;

a second amplifier having a second non-inverting input node connected to said second input terminal, a second inverting input node and a second output node;

a fourth switch inserted between said second output node and said second inverting input node;

a fifth switch inserted between said second output node and said second output terminal;

a sixth switch inserted between said second output terminal and said second inverting input node;

a load connected between said first and second output terminals; and

a controller controlling said first to sixth switches in a condition that on and off of said first and fourth switches are in opposite to said second, third, fifth and sixth switches.

4,808,944

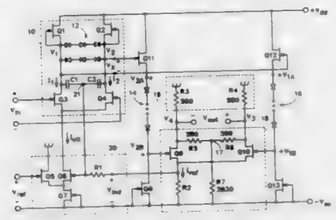
HIGH ACCURACY DIFFERENTIAL OUTPUT STAGE

Stewart S. Taylor, Beaverton, Oreg., assignor to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Nov. 23, 1987, Ser. No. 123,841

Int. Cl.[4] H03F *3/45*

U.S. Cl. 330—253 **9 Claims**



1. A differential output stage responsive to an input signal and a reference signal comprising:

first means for producing first output signals, wherein one of the first output signals changes from a first level to a second level and another of the first output signals changes from a second level to a first level in response to a change in level of the input signal, and wherein a sum of magnitude of the first output signals is controlled by a control signal applied as input thereto;

second means responsive to the first output signals for producing second output signals, wherein one of the second output signals changes from a third level to a fourth level and another of the second output signals changes from a fourth level to a third level when the first output signals change between the first and second levels, and for producing an indicating signal that is a measure of a sum of magnitudes of the second output signals; and

third means for generating said control signal of magnitude adjusted in accordance with a magnitude difference between the indicating signal and the reference signal.

4,808,945

VARIOLOSSER

Fred D. Waldhauer, La Honda, and Carlos A. Baez, San Mateo, both of Calif., assignors to Resound Corporation, Palo Alto, Calif.

Filed Feb. 23, 1988, Ser. No. 159,772

Int. Cl.[4] H03F *3/45*

U.S. Cl. 330—254 **13 Claims**

1. An improved variable gain circuit comprising:

input means for inputting an audio input signal;

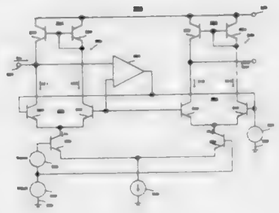
output means for outputting an audio output signal;

an operational amplifier having inverting and non-inverting inputs and an output wherein one of said inputs is connected to said input means;

a source of reference potential;

first and second sources of controlling currents;

a first differential cell having inverting and noninverting inputs, an output and a first control current terminal, wherein one input of said first differential cell is connected to said output of said operational amplifier, and the other of said inputs is connected to said source of reference potential, and said output of said first differential cell is connected to one of said inputs of said operational amplifier in negative feedback relation, and further wherein said



first control current terminal is connected to said first source of controlling current; and

a second differential cell having inverting and noninverting inputs, an output and a second control current terminal, wherein none input of said second differential cell is connected to said output of said operational amplifier and the other of said inputs is connected to said source of reference potential, said output of said second differential cell connected to said output means, and said second control current terminal connected to said second source of controlling current, wherein the current gain of said variable gain circuit is substantially the ratio of said second to said first controlling current.

4,808,946

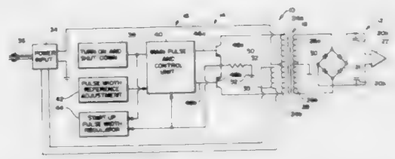
LIGHTWEIGHT, HIGH POWER AUDIO AMPLIFIER AND POWER SUPPLY

Robert W. Carver, 330 Avenue "A", Snohomish, Wash. 98290, and M. Robert McKinley, 17714 Palatine Ave. N., Seattle, Wash. 98133

Filed Dec. 22, 1986, Ser. No. 945,650

Int. Cl.[4] H03F *3/04*

U.S. Cl. 330—297 **51 Claims**



1. An apparatus for amplifying an audio signal having an amplitude which varies at an audio frequency, said apparatus comprising:

(a) audio amplifier means for amplifying the audio signal to produce an output corresponding to the audio signal, said amplifier means comprising an audio signal receiving means for receiving the audio signal and a power receiving means for receiving electrical energy for producing the output, said amplifier means comprising power capacitor means adapted to be charged to a substantially constant voltage level within a predetermined voltage range;

(b) a power transformer having a primary winding and a secondary winding, said secondary winding being opera-

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tively connected to said power receiving means to charge said capacitor means to said substantially constant voltage level within said voltage range,

(c) power supply and control means adapted to be connected to a source of electrical power that provides power at a voltage source level within a predetermined voltage range, and operatively connected to said primary winding to provide pulses of electrical energy of predetermined time periods of duration for said primary winding, with each pulse being of a substantially constant voltage level, said power supply and control means comprising:

(i) a D.C. power supply to supply power at a substantially constant voltage,

(ii) switch means operatively connected between said D.C. power supply and said primary winding for operating in

a conductive state to cause said pulses of electrical energy to be delivered to said primary winding, and having a nonconductive state,

(iii) sensing means responsive to a value related to magnitude of current passing through said transformer to provide a control value related to the magnitude of power demands of the amplifier means,

(iv) control means responsive to said sensing means to cause said switch means to be conductive and nonconductive alternately to cause said pulses of electrical energy from said D.C. power source to pass through said primary winding to energize said secondary winding, in a manner that pulses of lesser duration are provided during periods of lower power requirements of the amplifier means, and pulses of greater duration are provided during periods of greater power demands of the amplifier means,

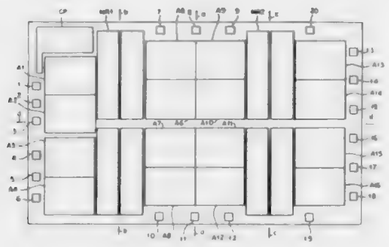
whereby under conditions where said voltage source level varies, said power supply and control means provides power pulses of adequate duration to supply the power demands of the amplifier means.

4,808,947

INTEGRATED ACTIVE FILTER WITHOUT EXTERNAL COMPONENTS

Roberto Gaidano; Marco Gandini, and Mario Sartori, all of Torino, Italy, assignors to CSELT - Centro Studi E Laboratori Telecomunicazioni SPA, Torino, Italy

Filed Apr. 8, 1987, Ser. No. 35,984
Claims priority, application Italy, Apr. 10, 1986, 53252 A/86
Int. Cl.⁴ H03F *3/04*
U.S. Cl. 330—307 9 Claims



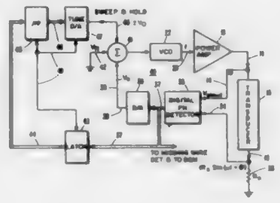
1. An integrated circuit selectively programmable to form an active filter without external circuit components, said integrated circuit comprising 2^m amplifying modules where m is an integer between 2 and 4, inclusive, p resistive matrices where p is 1 when m is other than 4 and is 2 when m=4, and a bias circuit, r of said amplifying modules being positioned in a first column separated a second column of r amplifying modules by a respective one of said resistive matrices, where r=4 when m is other than 2 and r=2 when m=2, said second column of amplifying modules being separated from a third column of 4 amplifying modules when m=4 by a second of said resistive matrices, a resistive matrix being selectively connectable to all of the modules of the columns between which the resistive matrix is located and having identical resistors selectively connectable in series and in parallel to program said modules selectively and form integrators selectively therefrom, said integrated circuit having sixteen of said amplifying modules, two resistive matrices and said bias circuit, four of said amplifying modules being disposed in each of said first and third columns, and eight of said amplifying modules being disposed in said second column in two adjacent rows of four amplifying modules each.

4,808,948

AUTOMATIC TUNING SYSTEM FOR ULTRASONIC GENERATORS

Dipakkumar I. Patel, Elkins Park, and Randall S. Giampa, Horsham, both of Pa., assignors to Kulicke and Soffa Industries, Inc., Willow Grove, Pa.

Filed Sep. 28, 1987, Ser. No. 101,839
Int. Cl.⁴ H03L *7/00*
U.S. Cl. 331—4 9 Claims



1. Apparatus for automatically tuning an ultrasonic power supply generator to the resonant frequency of a transducer comprising:

a voltage controlled oscillator (VCO),

a power amplifier coupled to the output of said VCO,

a transducer coupled to the output of said power amplifier,

a phase detector coupled to the output of the power amplifier and to a current sensor in series with said transducer power supply,

a processor coupled to the output of said phase detector for generating offset voltages,

a summing circuit coupled to the output of said processor and to the output of said phase detector,

said processor being programmed to supply different offset voltages to sweep said VCO through a range of predetermined frequencies which cover the resonant frequency of said transducer and to determine the resonant frequency of said transducer and the offset voltage required to maintain said VCO at the resonant frequency of said transducer.

4,808,949

INTEGRATED HYPERFREQUENCY CIRCULATOR

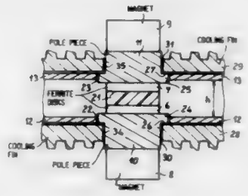
Gérard Forterre, Colombes, France, assignor to Thomson Hybrides et Microondes, Paris, France

Filed Feb. 9, 1988, Ser. No. 153,915
Claims priority, application France, Feb. 13, 1987, 87 01865
Int. Cl.⁴ H01P *1/39*
U.S. Cl. 333—1.1 9 Claims

1. An integrated hyperfrequency wave-guide circulator having wave-guide junction, a gyrator placed at a center of symmetry of the wave-guide junction, and cooling plates applied to a pair of main faces of the wave-guide junction, said circulator comprising:

the pair of main faces of the wave-guide junction provided with mounting through holes, one facing the other, said holes located at the center of symmetry of the wave-guide junction;

said gyrator passing through the wave-guide junction through said through holes formed in the main faces of said wave-guide junction, said gyrator comprising at least one magnet, a first pole piece adjacent said magnet, a first ferrite adjacent said first pole piece, a second ferrite, at least a first a solid dielectric interposed between said first and second ferrites, and a second pole piece adjacent said



second ferrite, wherein each of the pole pieces of the gyrator comprises a projecting flange having a diameter larger than a remaining cylindrical portion of the gyrator located between the flanges of said pole pieces, each flange having one face which is external with respect to the wave-guide junction and coplanar with the external surface of a respective main face of the wave-guide junction; and

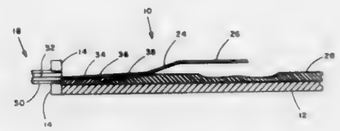
said cooling plates abutting against the external faces of said flanges of said pole pieces thereby to hold the gyrator immobile in the wave-guide junction.

4,808,950

ELECTROMAGNETIC DISPERSIVE DELAY LINE

John T. Apostolos, Merrimack; Chester E. Stromswold, Nashua, and Robert H. Carrier, Durham, all of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 6, 1986, Ser. No. 916,072
Int. Cl.⁴ H01P *9/00*
U.S. Cl. 333—157 18 Claims



1. A linear dispersive delay line, comprising:

A. a surface-electromagnetic-wave guide comprising an elongated dielectric body having a propagation path therethrough for conducting surface electromagnetic waves therealong, the dielectric body having a smallest cross-sectional dimension perpendicular to the propagation path which dimension varies with distance along the propagation path in such a manner that the wave guide is dispersive, in that the wave guide has a substantially linear relationship to frequency of the time required for an electromagnetic wave to propagate through the wave guide, throughout a frequency band wider than that throughout which an elongated surface-electromagnetic-wave guide of the same dielectric material but of uniform cross section would;

B. an input coupler for launching signals received thereat as surface electromagnetic waves into the dielectric body; and

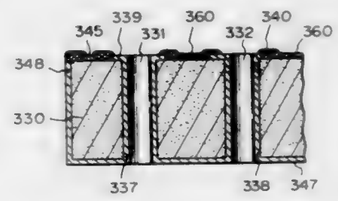
C. An output coupler for providing a signal representative of the surface electromagnetic waves received thereat from the dielectric body.

4,808,951

DIELECTRIC FILTER

Osamu Yamato; Hiroyuki Horii; Tetuji Takino; Takanori Yamazaki; Yoshimitu Sakurai; Hisao Matsukura, and Ichiro Iwase, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 11, 1987, Ser. No. 48,633
Claims priority, application Japan, May 12, 1986, 61-106820
Int. Cl.⁴ H01P *1/20*
U.S. Cl. 333—202 15 Claims



1. A filter having an input means and an output means therein, comprising:

means comprised of a dielectric material having top and bottom surfaces, the dielectric means having a plurality of holes defined by interior surfaces in the dielectric means extending from the top surface to the bottom surface thereof, the interior surfaces of each of the holes being covered with a first conductive material;

a second conductive material provided on the dielectric means, the second conductive material being electrically connected to the first conductive material at the bottom surface and unconnected to the first conductive material at the top surface; and

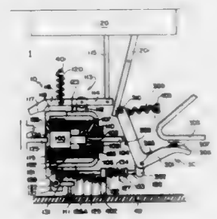
means for preventing deterioration of a characteristic of the filter due to humidity comprising an epoxy resin material coating on the top surface, whereby the epoxy resin material prevents the filter from deteriorating the characteristic thereof due to humidity.

4,808,952

MAGNETIC TRIGGER FOR A SELECTIVELY OPERATIVE SWITCH

Jörg Berner, Rupperswil; Markus Anliker, Grüsichen; Willy Feller, Rombach, and Werner Broer, Oberentfelden, all of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed Dec. 14, 1987, Ser. No. 132,834
Claims priority, application Switzerland, Dec. 23, 1986, 05203/86
Int. Cl.⁴ H01H *75/10*
U.S. Cl. 335—41 12 Claims



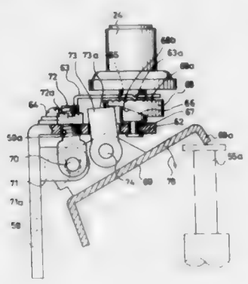
1. A magnetic triggering apparatus for a selectively operative switch, comprising:

a plunger-type armature containing a plunger for operating upon contacts of the selectively operative switch;

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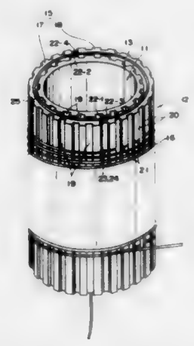
a magnetic coil for actuating said plunger-type armature and said plunger for operating upon said contacts of said selectively operative switch in the presence of a current flowing through said magnetic coil and at least corresponding to a predetermined threshold current;
a pivotable armature arranged at said magnetic coil;
said pivotable armature being operatively associated with said plunger-type armature;
said magnetic coil defining a magnetic flux;
said pivotable armature defining a magnetic return path for a magnetic return flux of the magnetic flux defined by said magnetic coil;
a switch lock mechanism for locking said selectively operative switch in a predetermined switching state;
tripping means operatively associated with said switch lock mechanism; and
said tripping means acting upon said switch lock mechanism for locking said selectively operative switch in said locked predetermined switching state.

4,808,953
CIRCUIT BREAKER
Tsukasa Ito; Yoshinori Mochizuki; Yasuo Genbe; Hiroshi Fujii, and Hideaki Moriwaki, all of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 17, 1987, Ser. No. 98,034
Claims priority, application Japan, Sep. 18, 1986, 61-222514; Sep. 18, 1986, 61-144504[U]; Sep. 18, 1986, 61-144506[U]
Int. Cl.[4] H01H 75/10, 77/06
U.S. Cl. 335—42 **4 Claims**



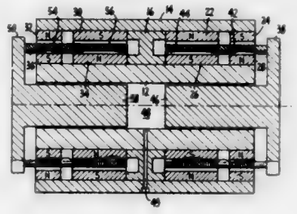
1. A circuit breaker having a housing comprising:
a first conductor having a fixed contact fixedly mounted in said housing,
a second conductor having a movable contact movably mounted in said housing for movement in a first direction into and out of engagement with said fixed contact, said first direction being generally perpendicular to a reference plane in which said fixed contact is disposed,
electromagnetic tripping means having a movable iron core for moving said movable contact from engagement with said fixed contact,
thermal tripping means for moving said movable contact from engagement with said fixed contact, said thermal tripping means being disposed side by side with said electromagnetic tripping means in relation to said reference plane,
adjusting means for said electromagnetic tripping means comprising a cam mounted to be rotated about an axis by an adjusting dial, and
arm means engaging said cam and said movable iron core for moving said movable iron core of said electromagnetic tripping means,
the improvement comprising;
said adjusting means being disposed with said axis substantially perpendicular to said reference plane with said adjusting means disposed a greater distance from said reference plane than said thermal tripping means is disposed from said reference plane whereby said adjusting means is disposed above said thermal tripping means, and
said arm means includes an arm mounted on a fulcrum pin for rotation thereabout, said fulcrum pin being mounted movably for adjustment.

4,808,954
SUPERCONDUCTING COIL APPARATUS
Daisuke Ito, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed May 23, 1988, Ser. No. 197,406
Claims priority, application Japan, May 26, 1987, 62-128823
Int. Cl.[4] H01F 7/22
U.S. Cl. 335—216 **16 Claims**



1. A superconducting coil apparatus, having superconducting wires and soaked in a cooling medium so that said superconducting wires in touch with the cooling medium is cooled, said apparatus comprising:
a first coil unit including a cylindrical first former having a first groove formed in spiral on an outer surface thereof, and a first coil element constituted by part of a superconducting wire fitted in said first groove to form a spiral shape, said first former having a first fluid passage formed on the outer surface thereof to permit the cooling medium to flow therethrough to come in contact with said superconducting wire; and
a second coil unit including a cylindrical second former having a second groove formed in spiral on an outer surface thereof and disposed concentrically outside said first former, and a second coil element constituted by another part of a superconducting wire fitted in said second groove to form a spiral shape, said second former composed of a plurality of former segments which are assembled into a cylindrical foam, each segment having a plurality of recess portions formed on the outer surfaces thereof and defining said second groove when said segments are assembled into said second former, and a second fluid passage formed on the outer surfaces of said segments to permit the cooling medium to flow therethrough to come in contact with said superconducting wire.

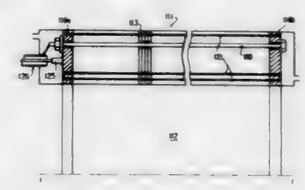
4,808,955
MOVING COIL LINEAR ACTUATOR WITH INTERLEAVED MAGNETIC CIRCUITS
Mikhail Godkin, San Diego, and Jack Kimble, Rancho Santa Fe, both of Calif., assignors to BEI Electronics, Inc., San Francisco, Calif.
Filed Oct. 5, 1987, Ser. No. 105,400
Int. Cl.[4] H01F 7/08
U.S. Cl. 335—222 **14 Claims**



1. In a moving coil linear actuator of the type that includes a core and a cylindrical shell disposed around the core to define an annular space therebetween and a spacer mounted between the core and the shell to close the actuator at one of its ends and wherein a coil assembly is disposed for linear movement within the annular space, the improvement comprising
a magnetic circuit arrangement that includes a first pair of annular magnets of opposite polarity mounted in proximity to the closed end of the actuator, one magnet of the first pair being mounted on the outer wall of the core and the other magnet of the first pair being mounted on the inner wall of the shell, and a second pair of annular magnets of opposite polarity mounted in spaced apart relation to the first pair and in proximity to the open end of the actuator, one magnet of the second pair being mounted on the outer wall of the core and the other magnet of the second pair being mounted on the inner wall of the shell, the magnets of the first pair being twice the length of the second pair such that multiple interleaved magnetic circuits are defined by the first pair and the second pair; and
a pair of spaced apart coil windings formed on the coil assembly and connected to a current source, the lengths and spacing of the first and second windings corresponding to the lengths and spacing of the first and second pairs of magnets, respectively, the first and second windings being wound on the coil assembly so that current flow in the two windings is in opposite directions to correspond to the polarities of the first and second pairs of magnets, respectively.

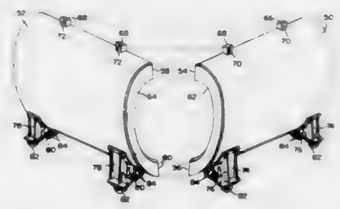
4,808,956
CORELESS SOLENOIDAL MAGNET
Guy Aubert, Grenoble, France, assignor to Thomson-CGR, Paris, France
PCT No. PCT/FR85/00340, § 371 Date Aug. 13, 1986, § 102(e) Date Aug. 13, 1986, PCT Pub. No. WO86/03881, PCT Pub. Date Jul. 3, 1986
PCT Filed Nov. 29, 1985, Ser. No. 905,319
Claims priority, application France, Dec. 14, 1984, 85 19193
Int. Cl.[4] H01F 5/00
U.S. Cl. 335—299 **8 Claims**

1. A solenoidal magnet having at least one Bitter type coil, including essentially a substantially helical winding formed by a stack, with interpositioning of insulators, of conducting disks each having a cut so as to form a turn, said turns being connected to each other, which magnet further includes at least one conductor ensuring the return of the current to one of the axial ends of the magnet, arranged so as to distribute the flow



of said current longitudinally over a cylindrical surface coaxial with said coil.

4,808,957
MAGNETIC SHIELD APPARATUS
Hiroshi Furukawa, Kawachi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jan. 8, 1988, Ser. No. 203,855
Claims priority, application Japan, Jan. 10, 1987, 62-143231
Int. Cl.[4] H01F 7/00
U.S. Cl. 335—301 **7 Claims**



1. A magnetic shield apparatus for shielding against magnetic leakage escaping from cylindrical magnetic field generating means having a columnar cavity, for generating a static magnetic field along an axial direction of said cavity, said magnetic shield apparatus comprising:
a plurality of magnetic shielding means for shielding against magnetic leakage escaping from said magnetic field generating means, said plurality of magnetic shielding means being sequentially joined, with the joint portions thereof extending along the axial direction of said cavity, so as to surround said magnetic field generating means;
a plurality of movable means supporting said plurality of magnetic shielding means, respectively; and
fixing means for fixing said magnetic shielding means in such a way that said magnetic shielding means surround said magnetic field generating means.

4,808,958
LINEAR VARIABLE DIFFERENTIAL TRANSFORMER WITH IMPROVED SECONDARY WINDINGS
Richard P. Hewitt, Hemet; Timothy A. Shoemaker, Romoland, and Paul F. Kitlas, Dana Point, all of Calif., assignors to Bourns Instruments, Inc., Riverside, Calif.
Continuation-in-part of Ser. No. 77,138, Jul. 23, 1987. This application Sep. 3, 1987, Ser. No. 92,829
Int. Cl.[4] H01F 21/06
U.S. Cl. 336—136 **13 Claims**

1. A linear variable differential transformer (LVDT), of the type including a hollow, tubular bobbin with first and second ends, a ferromagnetic core adapted for linear motion within said bobbin, a primary coil of wire wound around the exterior of said bobbin along a substantial portion of the length thereof,

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and first and secondary coils of wire wound around said primary coil, wherein the improvement comprises:

said first secondary coil having a first starting point near said first end of said bobbin, said first secondary coil having sufficient continuous length to overlay substantially the entire length of said primary coil;

said secondary coil having a second starting point near said second end of said bobbin, said secondary coil having sufficient continuous length to overlay substantially the entire length of said primary coil; and



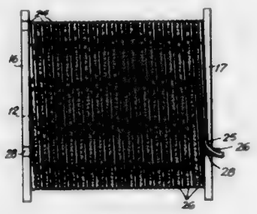
wherein said first and second secondary coils cross over each other at a cross-over point between said first and second bobbin ends, so that said first secondary coil overlaps said second secondary coil between said cross-over point and said second bobbin end, and said secondary coil overlaps said first bobbin end, said overlapping first and second secondary coils crossing over each other substantially at the axial position of said cross-over point a plurality of times, thereby forming an interleaving of said first and second secondary coils near each of said first and second bobbin ends.

4,808,959

ELECTRICAL COIL WITH TAP TRANSFERRING TO END-LAYER POSITION

Adrian M. Weissman, South Orange, N.J., assignor to MagnaTek Universal Manufacturing, Paterson, N.J.

Filed Mar. 31, 1988, Ser. No. 175,951
Int. Cl.[4] H01F *15/10, 41/10*
U.S. Cl. 336—189 **21 Claims**



1. A coil, comprising:

winding support means for supporting a base layer of wire including a first predetermined number of turns wound in a precision pattern about said support means;

a wire tap layer wound about said support means, the wire wound at an average pitch ratio substantially equal to a second predetermined number of turns for said tap layer divided into said first predetermined number of turns;

a tap of wire taken from an end of said wire tap layer; and

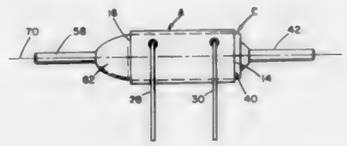
a subsequent wire layer wound over and in an opposite direction to said tap layer, the wire wound at an average pitch ratio substantially equal to said first predetermined number of turns divided by the difference between said first predetermined number of turns and said second predetermined number of turns in said tap layer.

4,808,960

THERMAL CUTOFF HEATER

Ronald A. Nixon, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Nov. 6, 1987, Ser. No. 118,016
Int. Cl.[4] H01H *85/00, 61/02, 37/76*
U.S. Cl. 337—4 **14 Claims**



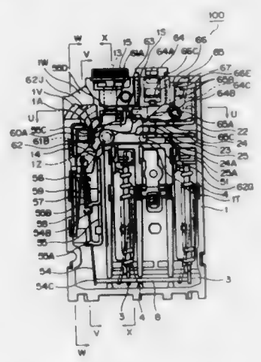
1. A conductive thermal cutoff including a housing containing thermal means for interrupting current flow through said cutoff responsive to a predetermined temperature, resistance heater means on said housing for heating said thermal means, said resistance heater means comprising a high resistance metal foil resistance heater circuit bonded to one surface of a flexible dielectric tape having its opposite surface adhered to said housing.

4,808,961

THERMALLY-SENSIBLE OVERCURRENT PROTECTIVE RELAY INCLUDING CONTACT TOGGLE MECHANISM

Yuji Sako; Kiyohide Tsutsumi, both of Aichi, and Shigeharu Ootsuka, Gifu, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 16, 1987, Ser. No. 110,085
Claims priority, application Japan, Oct. 17, 1986, 61-159002[U]
Int. Cl.[4] H01H *61/00, 71/16*
U.S. Cl. 337—49 **4 Claims**



1. A thermally-sensitive overcurrent protective relay where the bending motion of a bimetal (3) bent in response to a main circuit current is transmitted to a snapping inversion mechanism with a toggle mechanism to actuate normally-closed contacts (56,59) having a movable contact element and a fixed contact element and normally-open contacts (24,25) having a movable contact element and a fixed contact element in an interlocking manner, comprising:

a contact reset mechanism (62,64) having a reset bar (64) and communicating means for transmitting a snapping inversion motion between said normally-closed contacts (56,59) and said normally-open contacts (24,25), said communicating means including a first lever (62) where a first arm (62B) of said first lever (62) is engaged with one end of said a movable contact element (56) of said normally-closed contacts (56,59), while a second arm (62C) of said first lever (62) is engaged with said normally-open movable contact element (25), said first lever (62) being pivotally supported substantially at its center portion (62A), the snap inversion of the movable contact element (56) of said normally-closed contacts (56,59) is transmitted to said normally-open contacts (24,25) by means of rotation of said first lever (62), and said normally-open contacts (24,25) are displaced and reset by said reset bar (64) in the direction opposite to the snap inversion; and

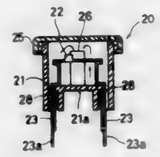
a reset/interruption mechanism having a second lever (63) with a first arm (63B) and a second arm (63C) extending in a first direction and a second direction respectively from a tubular portion (63A) serving as a bearing means for the center portion (62A) of said first lever (62), where said first arm (63B) of said second lever (63) is engaged with said fixed contact element (59) of said normally-closed contacts (56,59) while said second arm (63C) of said second lever (63) is disposed opposite to said reset bar (64), and said second lever (63) is disposed opposite a motion of said reset bar (64) in a recovery direction so as to open said normally-closed contacts (24,25).

4,808,962

FUSE

Tomohiro Ikeda, Shizuoka, Japan, assignor to Yazaki Corporation, Japan

Filed Nov. 30, 1987, Ser. No. 126,488
Int. Cl.[4] H01H *85/02, 85/14*
U.S. Cl. 337—203 **7 Claims**



1. A fuse comprising:

a housing formed of synthetic resin, and said housing including a peripheral wall having an inner surface, an upper portion, and an upper opening;

a housing cover for covering said upper opening of the housing;

a fuse-element, which is melted by an excessive electric current flowing therethrough, fixedly disposed in said housing; and

at least one channel forming member disposed on the inner surface of the peripheral wall, said channel forming member having a longitudinal groove forming an air passage that communicates between the inside and the outside of said housing in order to discharge heated air heated by said fuse-element to the outside of said housing.

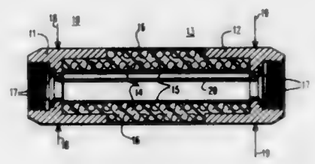
4,808,963

REPLACEABLE HIGH CURRENT DRAW OUT FUSEHOLDER

Joseph M. Stuzzi, Athens, and James R. Sellers, Watkinsville, both of Ga., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 24, 1987, Ser. No. 137,707
Int. Cl.[4] H01H *85/14, 85/02*
U.S. Cl. 337—246 **8 Claims**

1. A fuseholder comprising two electrically conductive contacts having an insulating tube connected thereto and disposed therebetween, the tube containing a cycloaliphatic epoxy resin impregnated glass fiber member having a glass free, smooth, hard, cycloaliphatic epoxy resin inner surface resistant to electrical arcing, and a glass free, smooth, hard,



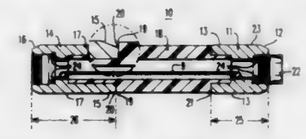
cycloaliphatic epoxy resin outer surface resistant to abrading contacting metallic components in use, where a metallic fuse element is connected to the contacts through the interior of the tube.

4,808,964

EROSION RESISTANT HIGH CURRENT DRAW-OUT FUSEHOLDER

Joseph M. Stuzzi, Athens, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 24, 1987, Ser. No. 137,790
Int. Cl.[4] H01H *85/16, 85/02*
U.S. Cl. 337—252 **11 Claims**



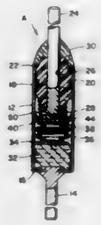
1. A fuseholder comprising first and second electrically conductive metal fuse contacts having outer chamfers thereon, and an insulating tube therebetween, the improvement characterized in that the second metal fuse contact is an extended contact having an inner chamfer, the top of the insulating tube has a sharp edge and discontinuity near the second fuse contact inner chamfer, and the ratio of the first fuse contact exposed length second, extended fuse contact exposed length is from 1:1.3 to 1:2.5.

4,808,965

THERMAL PROTECTOR

Mark A. Cesky, Lexington, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Nov. 6, 1987, Ser. No. 118,022
Int. Cl.[4] H01H *37/76, 85/00*
U.S. Cl. 337—408 **10 Claims**



1. A thermal protector comprising a pair of independent

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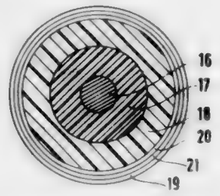
thermal responsive devices connected in series, one of said pair of devices being responsive to elevated temperatures by increasing in resistance, the other of said pair of devices being responsive to elevated temperatures by opening a circuit, said one device being responsive to temperatures lower than said other device, said other device having a pair of separable contacts that move relatively away from one another when said other device is activated in response to elevated temperatures, and said one device being interposed between said contacts.

4,808,966

LASER-MARKABLE ELECTRIC CABLE

Jean-Pierre Ferlier, Yerres, and Michel Maréchal, Combs la Ville, both of France, assignors to Filotex, Draveil, France

Filed Aug. 5, 1987, Ser. No. 81,957
Claims priority, application France, Aug. 5, 1986, 8611319
Int. Cl.[4] H01C 3/06
U.S. Cl. 338—214 **13 Claims**



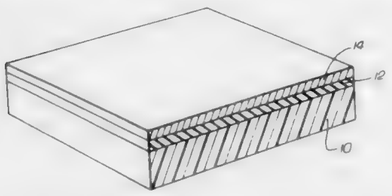
1. An insulated electric cable suitable for being marked by a laser beam and including an outer surface layer enabling such marking to be performed and an underlayer immediately underlying said outer surface layer, said outer surface layer being of a contrasting color relative to the color of said underlayer, said outer surface layer being a layer which is thin relative to said underlayer and of a material which is not substantially more absorbent at the laser beam wavelength than is necessary to effect its own pyrolysis, said underlayer being of a material highly absorbent at the laser beam wavelength and of sufficient thickness such that the laser beam is fully dissipated therein without penetrating therethrough and destroying the underlayer, whereby during marking, the outer, thin surface layer is destroyed through its entire thickness by the laser beam so as to reveal the underlayer.

4,808,967

CIRCUIT BOARD MATERIAL

James M. Rice, Santa Monica, and Bruce P. Mahler, Thousand Oaks, both of Calif., assignors to Ohmega Electronics, Culver City, Calif.

Filed May 29, 1985, Ser. No. 738,835
Int. Cl.[4] H01C 1/012
U.S. Cl. 338—309 **10 Claims**



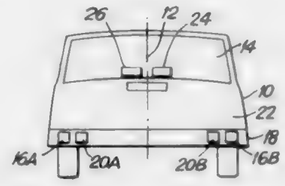
5. A composition for an electrical resistance material layer in a multilayered printed circuit board comprising electroplated nickel-phosphorous containing up to about 30 percent by weight of phosphorus and wherein at least the top about ten atomic layers are sulfur free.

4,808,968

AUTOMOTIVE WARNING AND BRAKE LIGHT ARRANGEMENT

Harold A. Caine, 484 Kent Ct., Oceanside, N.Y. 11572

Filed Oct. 26, 1987, Ser. No. 113,544
Int. Cl.[4] B60Q 1/26
U.S. Cl. 340—71 **19 Claims**



1. A combination warning and brake light arrangement for an automotive vehicle, comprising:

a first lamp adapted to be mounted substantially centrally of a leading vehicle rear end in the vicinity of a rear window, for emitting red light of sufficient intensity to alert a driver of a following vehicle of the application of the leading vehicle's brakes;

a second lamp adapted to be mounted in close proximity to said first lamp, for emitting amber/yellow light to warn the driver of the following vehicle of the presence of the leading vehicle and to focus the attention of said driver in the region of said rear window at which said first lamp is located; and

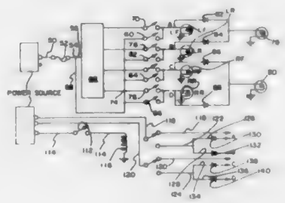
switching means arranged with an ignition system and a braking system of the leading vehicle and coupled to said first and said second lamps, for energizing said first lamp only when the brakes of the leading vehicle are activated and for energizing said second lamp continuously when said brakes are not activated and said ignition system is in an ON state.

4,808,969

MOTOR VEHICLE PARKING DEVICE

Lance Human, c/o Dr. V. Benatar, M.Bch.B., F.R.C.S, F.R.C.O.g., M.D., 8635 W. 3d St., Ste. 780 W., Los Angeles, Calif. 90048

Filed Apr. 3, 1987, Ser. No. 33,839
Int. Cl.[4] B60Q 1/48
U.S. Cl. 340—95 **4 Claims**



1. A complete motor vehicle parking device for mounting on a car, or the like, comprising:

a plurality of transparent plates bearing the letter "P" thereon; and means for illuminating at least one of said plurality of transparent plates bearing the letter "P" and thereby rendering said letter "P" clearly visible, said

means for illuminating comprising a flasher unit means, a first conductor means electrically connected to said flasher unit means, a fuse means positioned in said first conductor means, a left front parking light means, a left rear parking light means, a right front parking light means, a right rear parking light means, a second conductor means connecting to said first conductor means between said fuse means and said flasher unit means, a third conductor means interconnecting electrically said flasher unit means with said left front parking light means and having a first switch means for controlling the flow of electricity from the flasher unit means to the left front parking light means, a fourth conductor means interconnecting electrically said flasher unit means with said left rear parking light means and having a second switch means for controlling the flow of electricity from the flasher unit means to the left rear parking light means, a fifth conductor means interconnecting electrically said flasher unit means with said right front parking light means and having a third switch means for controlling the flow of electricity from the flasher unit means to the right front parking light means, a sixth conductor means interconnecting electrically said flasher unit means with said right rear parking light means and having a fourth switch means for controlling the flow of electricity from the flasher unit to the right rear parking light means, said second conductor means connecting electricity to said third conductor means between said first switch means and said left front parking light means and having a fifth switch means for controlling the flow of electricity, a seventh conductor means connecting from said second conductor means to said fourth conductor means between said second switch means and said left rear parking light means and having a sixth switch means for controlling the flow of electricity, an eight conductor means connecting from said second conductor means to said fifth conductor means between said third switch means and said right front parking light means and having a seventh switch means for controlling the flow of electricity, a ninth conductor means connecting from the second conductor to said sixth conductor means between said fourth switch means and said right rear parking light means and having an eighth switch means for controlling the flow of electricity, a tenth conductor means connecting from said third conductor means between said left front parking light means and the juncture of said second conductor means to said third conductor means and further connecting to said fourth conductor means between the juncture of said seventh conductor means to said fourth conductor means, said tenth conductor means including a first diode means and a second diode means; a first indicator signal light electrically attached to said tenth conductor means between said first and second diode means, an eleventh conductor means connecting from said fifth conductor means between said right front parking light means and the juncture of said eighth conductor means to said fifth conductor means to said sixth conductor means and further connecting between said right rear parking light and the juncture of said ninth conductor means to said sixth conductor means, said eleventh conductor means including a third diode means and a fourth diode means, a second indicator signal light electrically attached to said eleventh conductor means between said third and fourth diode means.

4,808,970

DECODING DEVICE FOR CMI CODE

Jean-Pierre Arnaune, Draveil, France, assignor to Societe Anonyme de Telecommunications, Paris, France

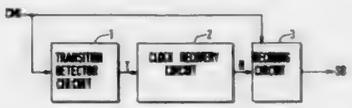
Filed Jun. 4, 1986, Ser. No. 870,381
Claims priority, application France, Apr. 28, 1986, 86 06096
Int. Cl.[4] H03N 5/04
U.S. Cl. 341—73 **4 Claims**

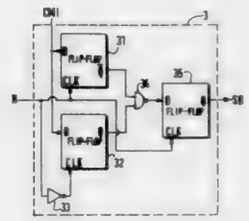
1. A decoding device for receiving a coded succession of bits and outputting a decoded succession of bits, said coded succession being obtained by coding a succession of bits to be coded by converting each bit to be coded into a coded pair comprising two successive bits, a bit to be coded having one of two values which are associates, one of said two values having a single bit pair of different coded bits and the other of said two values having alternate bit pairs of identical coded bits, said decoding device comprising:

a transition detection means for (i) receiving said coded succession of bits, (ii) detecting therein transitions between prohibited bit pairs having successive different bits opposite in order to the bit order in said single pair of different coded bits, and (iii) generating an output signal responsive to detection of said transition between said prohibited bit pairs,

an oscillator for generating a periodic output signal,

a time shift comparator, receiving said output signal from said transition detection means and said output signal from said oscillator, for determining a time shift between (i) each occurrence of one of said transitions between said prohibited bit pairs and (ii) a next rising edge of said output signal of said oscillator and for synchronizing said oscillator at a frequency dependent upon said time shift,





a frequency divider, receiving said output signal of said transition detection means and said output signal of said oscillator, for providing a low level clock signal after each detected transition between said prohibited bit pairs, and

a decoder means receiving said coded succession of bits and said clock signal from said frequency divider, for decoding pairs of bits which have their first bit occurring during a rising edge of said clock signal,

wherein said time shift comparator comprises:

(a) a first signal generation means connected to said transition detection means and said oscillator, for generating a first signal having a first level during said time shift and having a second level at all other times,

(b) a second signal generation means, connected to said first signal generation means and to said oscillator, for generating a second signal having said second level during a predetermined time period after passage of said first signal from said first level to said second level and having said first level at all other times,

(c) an analog adder for adding said first signal and said second signal, and

(d) a low pass filter connected to said adder.

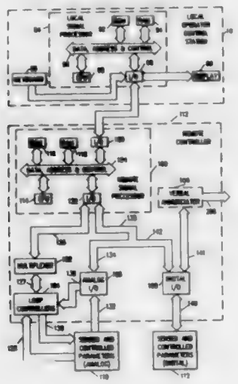
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4,808,971

ALARM APPARATUS

Randall C. Graham, Nashville, Tenn., and James L. Phillips, Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Oct. 7, 1987, Ser. No. 105,777
Int. Cl.[4] G08B *19/00*
U.S. Cl. 340—521 1 Claim



1. Apparatus for monitoring a plurality of sensed parameters relative to a magnet wire fabrication process, comprising:

an operator control station for locally monitoring the process, having a local signal processor, a keyboard and a display, said local signal processor responsive to operator input signals received via said keyboard for providing display format signals at an output of said signal processor for displaying screens on said display in a selected format; and

a digital input/output I/O device, responsive to a plurality of sensed digital signals at a first input thereof for providing said sensed digital signals at an output thereof;

a plurality of cassette tape players, each responsive to one of said sensed digital signals from said digital I/O device, for providing individualized verbal message signals in response to the presence of a sensed digital signal in a state indicative of an abnormal process condition; and

a remote signal processor, responsive to said sensed digital signals provided at said digital I/O device output for storing each of said sensed digital signals and for storing, for each of said digital signals, an associated time tag signal indicative of the time received, and for providing each of said stored digital signals along with each's associated time tag signal at an output thereof;

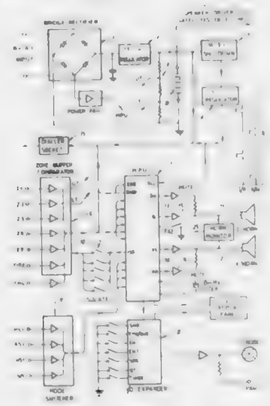
said local signal processor, responsive to an operator input signal indicative of a request for a display of alarms in the order in which they occurred and responsive to said stored digital signals along with said associated time tag signals, for ordering said stored digital signals in a time sequence beginning with the earliest associated time tag signal and continuing with the next earliest, and so on, until ending with the last time tag signal, and for providing alarm order display format signals and said ordered digital signals to said display for display thereof in said selected format in said ordered time sequence.

4,808,972

SECURITY SYSTEM WITH FALSE ALARM INHIBITING

David Nicholls, Burwood, Australia, assignor to Cadin Electronics Pty. Ltd., Victoria, Australia

Filed May 28, 1987, Ser. No. 55,151
Claims priority, application Australia, May 29, 1986, PH6165
Int. Cl.[4] G08B *13/00, 25/00, 27/00*
U.S. Cl. 340—541 13 Claims



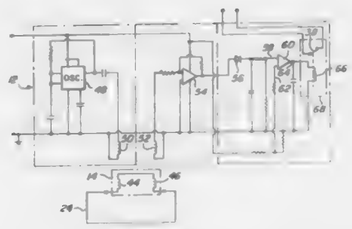
1. An alarm system comprising means for receiving at least one detection input signal adapted to cause activation of the alarm system, means for inhibiting activation of said alarm system when a first detection input signal is received and means for removing said inhibition and allowing activation of said alarm system when another detection input signal is received within a predetermined time of said first detection input signal's being received, a first alarm device located essentially indoors on the premises to be protected, a second alarm device located outdoors on the premises to be protected, said inhibition means allowing activation of said first alarm device only, said second alarm device being activated if a further detection input signal is received within said predetermined time.

4,808,973

WINDOW TAPE ALARM INTERLOCK DEVICE

Avinadav Siev, 179-20 Croydon Rd., Jamaica Estates, N.Y. 11432-2206; Morel Groper, 72 Eli Cohen Street, Naharia, Israel; Abron Siev, 97A Einstein Street, and Rami Siev, 22 Buria Street, both of Haifa, Israel

Filed Oct. 2, 1987, Ser. No. 104,264
Int. Cl.[4] G08B *13/08, 13/04*
U.S. Cl. 340—545 3 Claims



1. A contactless window tape interlock device comprising:

a. a power supply;

b. an electrically operated alarm;

c. a strip of electrically conductive material bonded to the surface of each window pane to be protected such that when any of said window panes are broken, said strip bonded to that window pane is torn, thereby interrupting the electrical conductivity of said strip;

d. two secondary coils mounted to each frame containing said window panes wherein said secondary coils are electrically connected with each other and with said strip of electrically conductive material;

e. a source of alternating electrical voltage for each of said windows;

f. a detector of alternating voltage for each of said windows, wherein said detectors are connected with said electrically operated alarm such that the activation of any of said detectors causes said alarm to activate; and

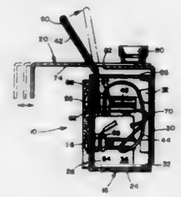
g. two primary coils mounted to each window casement such that each of said primary coils is in magnetic proximity to a corresponding secondary coil wherein one of said primary coils is connected to said alternating current source and the other of said primary coils is connected to said detector such that any change in the coupling between said primary and said secondary coils or any interruption of conductivity in said conductive strip causes a change in the electrical signal inputted to said detector, thereby causing said alarm to activate.

4,808,974

DOOR ALARM

Richard E. Cantley, 1469 Shelley St., NE., North Canton, Ohio 44721

Filed Jul. 1, 1987, Ser. No. 68,328
Int. Cl.[4] G08B *13/08*
U.S. Cl. 340—546 9 Claims



1. An improved security device adapted to be mounted on the top edge of an inwardly swinging door, said device including:

(a) a housing having a hollow interior;

(b) bracket means for mounting the housing on the door;

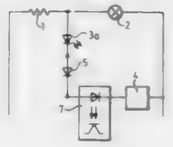
(c) alarm means mounted within the hollow interior of the housing, said alarm means including an actuation lever projecting outwardly beyond the housing, a battery, an audible buzzer operable by the battery, a set switch operable by a manually activated plunger for opening and closing an electric circuit between the buzzer and said battery through the actuation lever, and a plurality of conductors electrically connecting said buzzer to the battery, set switch and actuation lever, said lever including a spring steel strip, one end of which is attached within the housing to a strip of conductive material, said one end being separated from said conductive strip by dielectric material, said spring steel strip being movable between alarm ON and OFF positions and biased toward the alarm ON position, said spring steel strip further being biased toward engagement with an inside frame of a door when the security device is mounted on the door, wherein an opposite end of the spring steel strip which projects outwardly from the housing engages the inside frame of the door for moving said spring steel strip to the alarm OFF position when the door is closed, said spring steel strip moving to the alarm ON position upon inward movement of the door, so that an electrical circuit is completed between the battery and buzzer when said opposite end of the spring steel strip is urged by its bias upon inward movement of the door to the alarm ON position causing said one end of the spring steel strip to contact the strip of conductive material to complete said circuit to actuate the buzzer.

4,808,975

ARRANGEMENT FOR CHECKING AND INDICATING THE MALFUNCTION OF A LAMP IN MONITORING AND SWITCHING SYSTEMS

Hermann Hochhaus, and Erhard Wilder, both of Neumünster, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 20, 1987, Ser. No. 28,416
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1986, 3609385
Int. Cl.[4] H08B *21/00*
U.S. Cl. 340—641 9 Claims



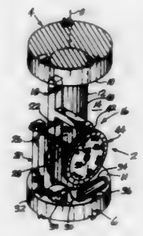
1. In an arrangement for monitoring and reporting a malfunctioning indicator lamp in control, switching safety and indicator systems, comprising an indicator lamp connected in a circuit to be monitored via a series resistor, and the series connection of a visual indicator and an electronic circuit, whose conduction is controlled in dependence on the operating state of said indicator lamp, connected in parallel with the bridging said indicator lamp; the improvement wherein: said electronic circuit is composed of a bi-directional voltage or temperature dependent semiconductor device or resistor which can handle reverse polarity voltages equally well in both directions; and said arrangement further comprises a protective diode connected in series with said visual indicator and said electronic circuit, and a coupling circuit means, connected in series with said visual indicator, for generating a galvanically decoupled signal.

4,808,976

TORQUE INDICATOR

Walter J. Kiefer, Seattle, and Michael R. Cross, Everett, both of Wash., assignors to Kiefers, Ltd., Lynnwood, Wash.

Continuation of Ser. No. 50,681, May 18, 1987. This application Jan. 27, 1988, Ser. No. 211,760
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—665 8 Claims

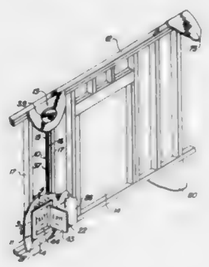


1. A torque indicator comprising:

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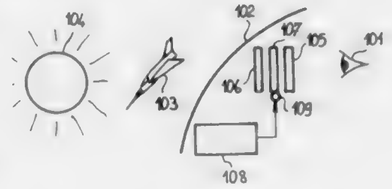
(a) a torsion member;
(b) a first element attached to the torsion member and having a first mounting surface protruding outwardly from the torsion member;
(c) a second element attached to the torsion member and having a second mounting surface protruding outwardly from the torsion member, the second mounting surface being spaced from the first mounting surface;
(d) a first contact mechanism mounted to the first mounting surface and carrying a first contact disposed between the first and second mounting surfaces;
(e) a second contact mechanism mounted to the second mounting surface and carrying a second contact disposed between the first and second mounting surfaces, the first and second contacts configured and arranged to move toward each other when torque is applied to the torsion member;
(f) selector means for altering the distance between the first contact and the second contact, and for providing a signal whenever the first contact touches the second contact.

4,808,977
ELECTROMECHANICAL EVACUATION EXIT INDICATING FLAG
Terry J. Hedrick, P.O. Box 326, Crandall, Tex. 75114
Filed Aug. 20, 1987, Ser. No. 87,401
Int. Cl.[4] G08B *17/10, 5/24*
U.S. Cl. 340—691 20 Claims



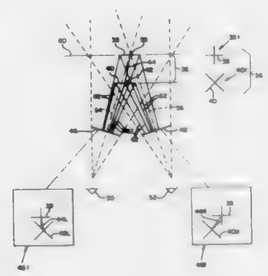
1. An apparatus for indicating an emergency exit in case of fire in a building having a floor, a wall and a ceiling, the exit being formed in the wall, comprising:
an alarm means having an electrically energized signal device, said alarm means being mounted adjacent the ceiling;
an exit indicator flag;
means movably securing said flag to the wall such that said flag is movable relative to the wall between a concealed position and a visible position;
means urging said exit indicator flag toward said visible position;
an electrically activated latch assembly secured to the wall, said latch assembly being adapted to detachably secure said exit indicator flag in said concealed position; and
actuating means operably associated with said alarm means and said latch assembly to actuate said latch assembly when said signal device is energized.

4,808,978
DISPLAY SYSTEM COMPRISING A TRANSPARENT EMISSIVE SCREEN
Michel Vernay, Paris, France, assignor to Sintra, Asnieres, France
Filed Nov. 4, 1985, Ser. No. 794,789
Claims priority, application France, Nov. 6, 1984, 84 16874
Int. Cl.[4] G02B *23/00*
U.S. Cl. 340—705 4 Claims



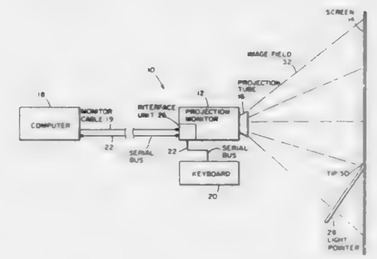
1. A display system of the type comprising a transparent emisive display screen allowing light information to be displayed and placed in an optical path intended to transport the image of an external scene, further comprising at least a first polarizing filter placed in the same optical path between said external scene and said screen, at least a second polarizing filter placed in the optical path and means for variably crossing the polarizing filters with respect to each other so as to adjust the luminosity of the image of the external scene seen through said first and second polarizing filters without obscuring the information displayed on the screen wherein the means for crossing the filters comprise a photoelectric cell disposed outside the optical path of said first and second polarizing filters for measuring the luminosity of the external scene and for controlling a motor for rotating one of the polarizing filters.

4,808,979
CURSOR FOR USE IN 3-D IMAGING SYSTEMS
Richard J. DeHoff, and Peter W. Hildebrandt, both of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
Filed Apr. 2, 1987, Ser. No. 33,291
Int. Cl.[4] H04N *13/00*
U.S. Cl. 340—709 16 Claims



1. A cursor for indicating position within a three-dimensional space on a display device in a graphics imaging system, said cursor comprising:
an image on said display device, said image extending from a reference point on a reference plane to a particular position being indicated and having one or more depth cue features, said image including:
a reference symbol located at said reference point on said reference plane;
a pointer symbol located pointing to said particular position; and
a tether symbol connecting said reference symbol and said pointer symbol,
whereby said depth due features vary along the length of said tether symbol and allow an obeerver to register properly the position of said image within said three-dimensional space.

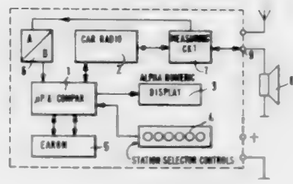
4,808,980
ELECTRONIC LIGHT POINTER FOR A PROJECTION MONITOR
Donald E. Drumm, Billerica, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.
Filed Oct. 22, 1987, Ser. No. 112,199
Int. Cl.[4] G09G *3/02*
U.S. Cl. 340—707 14 Claims



4. A computer display system comprising
a computer;
a projection video display monitor for projecting raster scanned image data, coupled to said computer;
a screen for displaying said image data;
a light pointer, the pointer including means for detecting a raster scan trace at a selected location near the surface of the screen of the projection display monitor and means for generating a timed electrical signal in response to the raster scan trace;
interface means, coupled to the light pointer and the computer, for translating the timed electrical signal into position signals representative of the selected location on the screen;
the computer generating cursor signals adapted for controlling the position of a cursor on the screen of the projection display monitor in response to said position signals; whereby said light pointer designates a high resolution cursor on said screen, said high resolution cursor having a resolution close to one pixel.

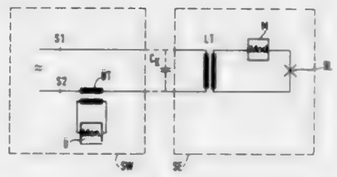
4,808,981
AUTOMOTIVE ELECTRONIC COMMUNICATION APPARATUS WITH THEFT DISABLING, PARTICULARLY CAR RADIO OR SIMILAR AUTOMOTIVE AUDIO EQUIPMENT
Peter Selbold, Diekholzen, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany
Filed Mar. 29, 1988, Ser. No. 174,714
Claims priority, application Fed. Rep. of Germany, May 21, 1987, 3717054
Int. Cl.[4] G08B *13/14*
U.S. Cl. 340—568 12 Claims

1. Automotive electronic communication apparatus with theft disabling, particularly car radios or similar automotive audio equipment, comprising
a memory (5) for storing
(a) a selected code word, and
(b) an impedance value;
input means (1, 4) for entering code words into the memory;
means (1) for preventing operation of the communication apparatus (2) until the selected code word is entered for storage into the memory after removal of the radio,
and comprising
measuring means (7, 7') coupled to an accessory terminal (9) of the communication apparatus (2) and measuring impedance of accessory equipment (8) connected to said terminal; and



comparator means (1) coupled to the communication apparatus (2) and controlling operation thereof, said comparator means comparing the impedance of the accessory equipment (8) coupled to said accessory terminal (9) with the impedance value stored in the memory (5) and
(i) upon coincidence, permitting operation of the communication apparatus (2), and
(ii) upon non-coincidence, inhibiting operation of the communication apparatus
until the selected code word, stored in the memory, is again entered into the input means (1, 4).

4,808,982
FACILITY FOR MONITORING THE OPERATION OF A SIGNAL LAMP
Hans J. Knapp, Korntal, Fed. Rep. of Germany, assignor to Alcatel N.V., Amsterdam, Netherlands
Filed Aug. 1, 1986, Ser. No. 892,686
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1985, 3527828
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—641 7 Claims



1. Apparatus for monitoring the operation of a signal lamp located in an outdoor installation connected by a supply circuit to a remotely located interlocking station, comprising
a lamp transformer forming part of said outdoor installation and having its primary winding in series with the supply circuit and supplying power to the signal lamp from its secondary winding,
a modulator which modulates the lamp current in a distinctive, predetermined manner connected in series with the signal lamp and with the secondary winding of the transformer, whereby said supply circuit is supplied with a predetermined distinctive signal if and only if lamp current is flowing through said secondary winding, through said modulator and through the signal lamp, and
a monitoring circuit located in the interlocking station which is coupled to a portion of the supply circuit within

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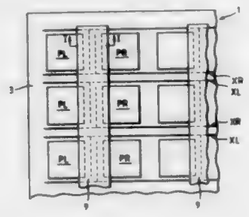
the interlock station and responds to the predetermined distinctive signal and which delivers a fault message indicative of a failure in the signal lamp or its associated circuitry if the monitoring circuit does not detect said corresponding predetermined distinctive signal in the interlocking station portion of the supple circuit.

4,808,983

FLAT-PANEL DISPLAY AND A PROCESS FOR ITS MANUFACTURE

John D. Benjamin, Malvern; Adrian L. Mears, Cheltenham, and John C. White, Colwall, all of England, assignors to The Secretary of State for Defence in Her Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 16, 1985, Ser. No. 691,887
Claims priority, application United Kingdom, Feb. 1, 1984, 8402654
Int. Cl.[4] G02F 1/13
U.S. Cl. 340—719 11 Claims



1. A display comprising:
(a) a first substrate bearing an electrode pattern comprising pixel activation electrodes and pixel address electrodes arranged to define a two-dimensional pixel array,
(b) a plurality of discrete single-crystal integrated circuits which are (i) formed independently of display construction, (ii) arranged on said first substrate with nearest neighbor separation greater than linear dimensions of said integrated circuits, (iii) electrically connected between the pixel activation electrodes and pixel address electrodes and disposed such that the pixel activation electrodes are at least partly unobscured by said integrated circuits, and (iv) arranged to activate at least one of said pixel activation electrodes in response to corresponding pixel address signals,
(c) a second substrate bearing a pixel activation electrode layer arranged facing said electrode pattern of said first substrate, said second substrate being supported on said plurality of integrated circuits to define an interelectrode spacing between said first substrate and said second substrate, and
(d) a liquid crystal material (i) filling said interelectrode spacing other than where said plurality of integrated circuits are located and (ii) arranged to be optically responsive to signals form the integrated circuits appearing across the pixel activation electrodes of the first and second substrates respectively.

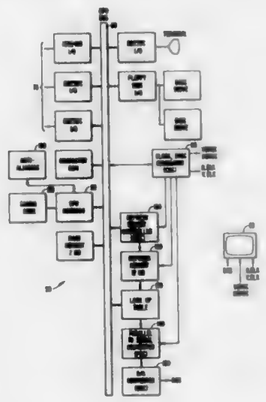
4,808,984

GAMMA CORRECTED ANTI-ALIASED GRAPHIC DISPLAY APPARATUS

John W. Trueblood, Escondido, Calif., and Masami Mizuno, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 5, 1986, Ser. No. 859,634
Int. Cl.[4] G09G 1/14
U.S. Cl. 340—723 18 Claims

1. In a computer generated graphic display system of the type which generates image display data of a colored vector on a colored background, including data representing the intensity of each pixel of the display, a raster scan graphic display for displaying the image data, and anti-aliasing means for controlling the brightness of each displayed pixel to smooth out "stair-step" effects inherent in raster scan graphic displays, the improvement comprising gamma correction means supplied



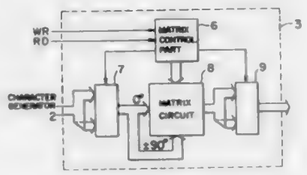
with the anti-aliased display data of the colored vector for correcting for non-linearity in the relationship between the pixel intensity data and the actual intensity of the corresponding pixel of the raster scan display independently of the background color.

4,808,985

CHARACTER PATTERN CONVERTING CIRCUIT

Jiro Tamura, and Tadashi Kasai, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 18, 1987, Ser. No. 50,477
Claims priority, application Japan, May 30, 1986, 61-123788
Int. Cl.[4] C09G 1/06
U.S. Cl. 340—727 3 Claims



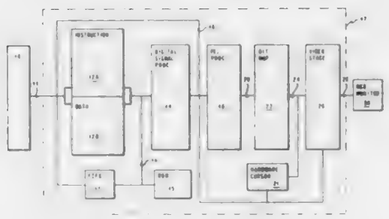
1. A character pattern converting circuit for converting a character pattern received from a character generator and expressed in the form of a dot matrix, and for delivering said converted character pattern, said character pattern converting circuit comprising:
(a) a first switching circuit for switching the order of bits constituting the character pattern issued from said character generator in conformity with a mode of conversion;
(b) a matrix circuit connected to said first switching circuit and including shift registers arranged in the form of a matrix, said shift registers being adapted to shift, upon permitting the character pattern from said first switching circuit to be entered in succession in the row or column direction thereof and delivered in the row direction, respectively bits constituting the character pattern simultaneously or selectively in conformity with said mode of conversion;
(c) a second switching circuit connected to said matrix circuit for switching the order of the bits constituting the character pattern provided from said matrix circuit in conformity with said mode of conversion; and
(d) a matrix control part connected to said first and second switching circuits and said matrix circuit for selecting said mode of conversion and for controlling writing of the character pattern into said matrix circuit via said first switching circuit and for controlling reading of the character pattern from said matrix circuit via said second switching circuit.

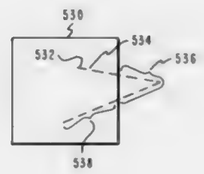
4,808,986

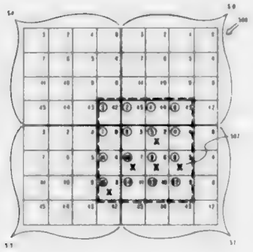
GRAPHICS DISPLAY SYSTEM WITH MEMORY ARRAY ACCESS

Robert L. Mansfield, Austin, Tex.; Marc Segre, Rhinebeck, N.Y.; Alexander K. Spencer, Austin, and Joe C. St. Clair, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 12, 1987, Ser. No. 13,840
Int. Cl.[4] G09G 1/14
U.S. Cl. 340—747 22 Claims







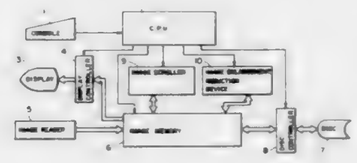
1. A graphics display system comprising:
means for receiving graphics information to be displayed;
memory means for storing said graphics information to be displayed in a memory array including a portion directly corresponding to an image area for display and said memory means for providing a single access operation to said array during a memory cycle time period;
means connected to said receiving means and said memory means for providing graphics information to any N by M portion of the memory means array during a single one of said memory cycle time periods wherein N and M are integers each greater than 1 wherein said N by M portion can be located at any position in said memory array; and
display means connected to the memory means for displaying said graphics information in said image area array portion.

4,808,987

IMAGE DATA FILE STORAGE AND RETRIEVAL SYSTEM FOR AN IMAGE DATA FILING SYSTEM

Haruo Takeda, Kawasaki; Kuniaki Tabata, Tokyo, and Masao Nakamura, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 18, 1984, Ser. No. 682,939
Claims priority, application Japan, Dec. 21, 1983, 58-239759
Int. Cl.[4] G09G 1/00
U.S. Cl. 340—721 12 Claims



1. An image data file storage system comprising:
image data file means for storing a plurality of images which are to be retrieved;
image input means for inputting an image to be stored in said image data file means;
image display means having a display screen for displaying the input image from said image input means;
instruction means for specifying processing to be performed with respect to the input image displayed on said display screen;
first means for changing at a designated magnification a whole size of the input image being displayed on said display screen to vary the magnification of an image inputted by the image input means according to the size of the image inputted by the input means; and
second means for extracting at least a part of the displayed input image which has been changed in size by said first means and for storing said input image and said extracted image in said image data file means as one of said images to be retrieved and as an index image for retrieving said input image, a group of index images read out of said image data file means being displayed at one time on said display screen as index information for designating one of said images to be retrieved at the time of retrieving the image.

4,808,988

DIGITAL VECTOR GENERATOR FOR A GRAPHIC DISPLAY SYSTEM

Gregory M. Burke, and Michael E. Jones, both of San Diego, Calif., assignors to Megatek Corporation, San Diego, Calif.

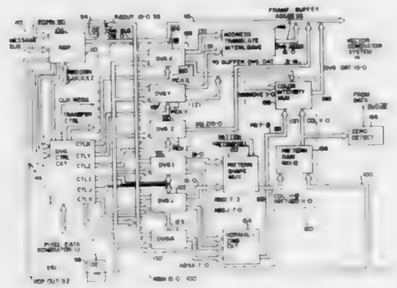
Filed Apr. 13, 1984, Ser. No. 600,106
Int. Cl.[4] G09G 1/00
U.S. Cl. 340—744 20 Claims

1. A digital vector generator system comprising:
a plurality of spatial vector generators coupled to receive position information representing a visual image and to generate in response thereto data defining a sequence of

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pixel coordinate points defining a line within a display image; and

at least one visual characteristic vector generator coupled to receive visual characteristic information representing the visual image and to operate synchronously with the spatial vector generators to generate in response to the received visual characteristic information visual characteristic vector information corresponding to each pixel coordi-



nate point defined by the data generated by the spatial vector generators; and

means for generating a video signal coupled to receive the sequence of pixel coordinate points from each of the spatial vector generators and the visual characteristic vector information from the at least one visual characteristic vector generator and generating a video signal representing the video image in response thereto.

4,808,989

DISPLAY CONTROL APPARATUS

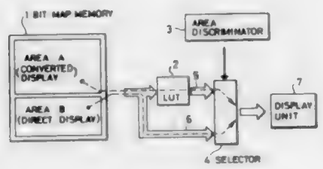
Kuniaki Tabata, Tokyo; Tetsuo Machida, Sagamihara; Masatoshi Hino, Yokohama, and Kunihiro Nomura, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1985, Ser. No. 809,905

Claims priority, application Japan, Dec. 22, 1984, 59-269664

Int. Cl.⁴ G09G *1/00*

U.S. Cl. 340—750 **9 Claims**



1. A control apparatus for a raster scan type display comprising a display unit, a bit map memory for storing picture element data in a plurality of locations to be read out successively for display in synchronism with scanning in said display unit, a look-up table connected to receive the picture element data read out of said bit map memory for converting said picture element data into video signals, means for holding information specifying at least one area of said bit map memory, means operatively connected to said holding means for determining whether a location in said bit map memory currently accessed for display is in the area specified by said area specifying information or not, and means for selectively sending in response to a determination by said determining means the picture element data directly from said bit map memory or the converted video signals from said look up table to said display unit.

4,808,990

LIQUID CRYSTAL DISPLAY ASSEMBLY

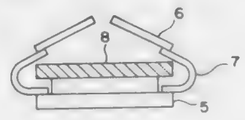
Koshi Kamigaki, and Toshimichi Katsube, both of Yamatokoriyama, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 9, 1984, Ser. No. 669,843

Claims priority, application Japan, Nov. 11, 1983, 58-175296[U]; Nov. 11, 1983, 58-175297[U]; Nov. 11, 1983, 58-175298[U]; Nov. 11, 1983, 58-175299[U]

Int. Cl.⁴ G09G *3/00*

U.S. Cl. 340—784 **14 Claims**



1. A liquid crystal display assembly which comprises

a liquid crystal cell,

at least two drive circuit boards, at least two flexible printed circuit boards, each of said of flexible printed circuit boards providing electrical connection between the liquid crystal cell and one end of each of said drive circuit boards, and

a chassis sandwiched between the liquid crystal cell and the drive circuit boards, through the flexible nature of the printed circuit boards, the other end of each of said drive circuit boards being fixed to said chassis.

4,808,991

METHOD AND APPARATUS FOR LIQUID CRYSTAL DISPLAY WITH INTERMEDIATE TONE

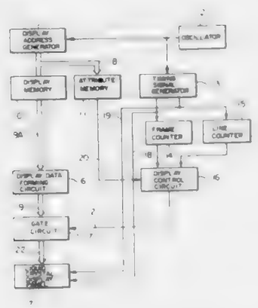
Tsuguji Tachiuchi, Odawara; Hiroyuki Mano, Kawasaki, and Tersmi Takashi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 12, 1987, Ser. No. 2,198

Claims priority, application Japan, Jan. 13, 1986, 61-3621

Int. Cl.⁴ G09G *3/36*

U.S. Cl. 340—793 **7 Claims**



1. In a method for displaying a display pattern by use of a liquid crystal display panel wherein the display pattern includes a character or figure in an intermediate tone and is composed of a plurality of parallel display lines forming a frame and there being a plurality of frames produced on a sequential basis, said method comprising the steps of:

(a) producing a display address;

(b) producing display data of said display pattern for each display line in response to said display address;

(c) producing a display inhibit signal for intermittently prohibiting said display data from being displayed on said liquid crystal display panel at an interval different from a multiple of a period of an alternating voltage applied to said liquid crystal panel in response to information relating to an attribute of said display pattern;

(d) said display inhibit signal being produced such that the display lines on which said display data is prohibited from being displayed on said liquid crystal display panel during one frame are different than the display lines on which said display data is prohibited from being displayed on said liquid crystal display when a succeeding frame is displayed; and

(e) displaying said display data on said liquid crystal display panel when said display inhibit signal is absent, or preventing said display data from being displayed on said liquid crystal display panel when said display inhibit signal is present.

4,808,992

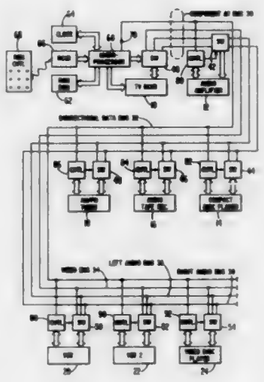
COMPONENT AUDIO/VIDEO SYSTEM WITH AUTOMATIC TURN-OFF OF PERIPHERAL DEVICES

Billy W. Beyers, Jr., Greenfield, and James E. Halley, Indianapolis, both of Ind., assignors to RCA Licensing Corporation, Princeton, N.J.

Filed May 8, 1987, Ser. No. 47,881

Int. Cl.⁴ H04Q *3/00*

U.S. Cl. 340—825.24 **3 Claims**



3. For use in a component audio/video system including a plurality of source components for supplying audio or video signals or both and one or more recording components for recording supplied signals, signal coupling means including signal switching means for selectively interconnecting inputs and outputs of said components in response to control signals, said components receiving said control signals for controlling the operation thereof and supplying status signals indicating the operating modes of said components, said status signals including a stop status signal indicating that a respective recording component selected for supplying a source signal has finished supplying said source signal or indicating that a respective source component selected for recording a source signal has run out of recording medium, said control signals being received and said status signals being supplied via a data bus, apparatus comprising:

control means for generating said control signals, said control means generating control signals for causing said switching means of said coupling means to selectively interconnect one of said source and recording components in one of a plurality of selectable different configurations and for initiating the operation of the components of the selected configuration to record one or more of said audio or video source signals, said control means generating control signals for causing the termination of the operation of predetermined ones of the components of said selected configuration in response to a stop status signal generated by at least one of the components of said selected configuration and in accordance with the selected configuration

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4,808,993

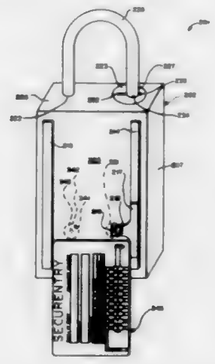
ELECTRONIC SECURE ENTRY SYSTEM, APPARATUS AND METHOD

Keith S. Clark, Sunnyvale, Calif., assignor to DataTrak, Inc., Mountain View, Calif.

Continuation of Ser. No. 864,806, Jul. 14, 1986, abandoned, which is a division of Ser. No. 661,343, Oct. 16, 1984, Pat. No. 4,609,788, which is a continuation-in-part of Ser. No. 537,425, Sep. 29, 1983, abandoned. This application Sep. 30, 1987, Ser. No. 105,484

Int. Cl.⁴ H04M *11/00*; G06K *7/08*

U.S. Cl. 340—825.31 **17 Claims**



1. In a card having longitudinal and transverse axes for use in a security system having a sensor, a plurality of metallic elements, said elements being spaced apart in one direction to form first and second spaced apart columns which are symmetrically positioned about the longitudinal axis said elements being spaced apart in another direction to form a plurality of spaced apart parallel rows which are symmetrically positioned about the transverse axis, at least one element being present in each of said rows, the elements which are present providing a non-erasable predetermined code assinged to the card and opaque sheets formed of a substantially rigid material disposed on opposite sides of said metallic elements and serving to conceal said metallic elements from view of the human eye, said sheets being formed of a non-metallic material to permit sensing of the metallic elements by use of the sensor.

4,808,994

LOGIC INTERCHANGE SYSTEM

Robert E. Riley, P.O. Box 1024, Ridgeland, Miss. 39157

Filed Aug. 27, 1987, Ser. No. 89,838

Int. Cl.⁴ H04Q *1/00*

U.S. Cl. 340—825.57 **9 Claims**

1. A controller system comprising the combination of

a control location having a plurality of programmable control modules, each said module having an input device connected thereto for supplying to said module an input signal capable of having only two states;

a plurality of programmable controlled modules, each said controlled module having an output device connected thereto for performing a specified function, said controlled modules being physically separated from said control location;

each said control and controlled module being substantially

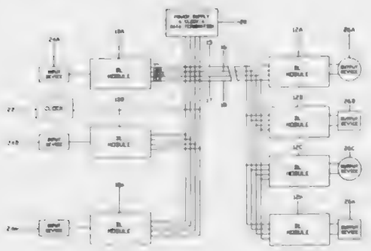
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identical to each other said control and controlled module apart from programming,

a cable having no more than four operative wires interconnecting all of said control modules and all of said controlled modules and spanning the physical separation therebetween;

means connected to one of the wires in said cable for producing and delivering to said control and controlled modules a sequence of clock pulses of uniform duration periodically interrupted by an interval of no clock pulses to synchronize the operation of said modules; and

encoding/decoding means including a clock pulse counter in each of said control and controlled modules programmed to permit each said module to respond to a preselected



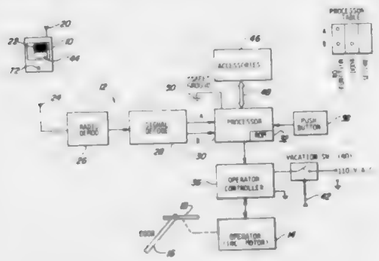
count of said counter to thereby assign to each said module a unique code and thereby uniquely operatively associate each of said control modules with preselected one or ones of said controlled modules programmed to respond to the same count so that a control module responds to an input signal supplied to said control module by the input device connected thereto by producing and coupling to said four-wire cable a control signal at the count unique to said control module and so that said control signal generated by said one control device is recognized and acted upon by only said selected one or ones of said controlled modules programmed to respond to the same count to produce output signals for causing said output device or devices connected thereto to perform said specified functions.

4,808,995

ACCESSORY-EXPANDABLE, RADIO-CONTROLLED, DOOR OPERATOR WITH MULTIPLE SECURITY LEVELS

John E. Clark, Ann Arbor, and Dean C. Duhame, Roseville, both of Mich., assignors to Stanley Automatic Openers, Detroit, Mich.

Filed May 2, 1966, Ser. No. 858,651
Int. Cl.[4] H04Q *7/02*; G06F *7/04*
U.S. Cl. 340—825.69 **6 Claims**



1. A door operator-controller system of the type comprising a door operable to be moved between open and closed positions, a motor, a motor controller adapted to be connected to a power supply and operatively associated with the motor for controlling the movements of said door, a radio receiver/decoder for triggering operation of said motor controller when a preselected code is received thereby, and a transmitter for radio communication with said receiver and having a door button which is actuable to produce normal operation of said system by sending said preselected code to said receiver, wherein the improvement comprises:

said transmitter transmitting said preselected code alternating with a blanking interval of approximately the same length of time as said preselected code in response to actuation of said door button, and further including a secure button and means for transmitting said preselected code alternating with a blanking interval or approximately two tenths the length of time as said preselected code in response to actuation of said secure button;

vacation switch means for selectively connecting and disconnecting said controller to and from its power supply; and

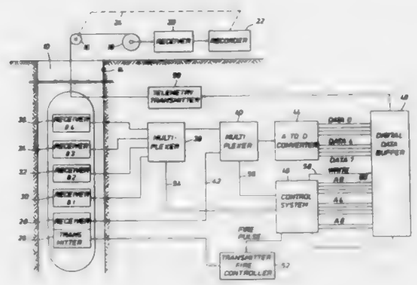
a security means connected to said receiver/decoder for toggling between a secure mode and a non secure mode in response to receipt of said preselected code alternating with a blanking interval of approximately two tenths the length of time as said preselected code and for operating said door in response to receipt of said preselected code alternating with a blanking interval of approximately the same length of time as said preselected code only when in said non secure mode.

4,808,996

SIMULTANEOUS DIGITIZING APPARATUS FOR AN ACOUSTIC TOOL

Mark D. Zimmer, Katy, Tex., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 869,790, Jun. 2, 1986, Pat. No. 4,684,947, Continuation of Ser. No. 530,283, Sep. 8, 1983, abandoned. This application Jul. 27, 1987, Ser. No. 78,135
The portion of the term of this patent subsequent to Aug. 4, 2004, has been disclaimed.
Int. Cl.[4] G01V *1/40, 1/16*
U.S. Cl. 340—858 **6 Claims**



1. For use in a well borehole to obtain multiple simultaneous data signals from N acoustic receivers carried by an elongated acoustic logging sonde sized and adapted for passage in a well borehole and suspended by a well logging cable having at least one data conductor, the multiple simultaneous digital signals formed in response to a single acoustic energy pulse from an acoustic transmitter carried by the sonde, a data collection and digitizing system comprising:

(a) N acoustic receivers carried in said acoustic logging sonde for forming N time overlapping analog acoustic logging output signals from said N receivers where N is an integer;

(b) first multiplexing means having N inputs connected to the outputs of the N acoustic receivers;

(c) second multiplexing means connected to said first multiplexing means;

(d) digital converter means operating at a first rate and connected to said second multiplexing means for forming a time based series of digital words representative of the outputs of said N receivers;

(e) digital data buffer means in said sonde connected to said digital converter means for retaining in a formatted order a series of digital words from said converter means;

(f) control means connected to said first and second multiplexing means for controlling operation of said first and second multiplexing means to form a series of digital words representative of the N acoustic logging output signals;

(g) timing means incorporated with said control means to time digitizing by said digital converter means to operate both said first and second multiplexing means to form a series of digital words representing N acoustic logging output signals; and

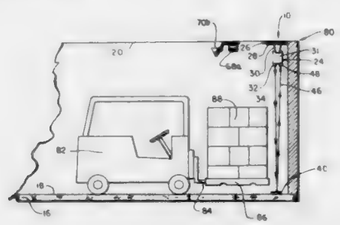
(h) telemetry transmitting means for telemetering said series of digital words from said buffer means along said at least one data conductor in the cable at a second transmitting rate which is slower than said first converter operating rate such that a single acoustic energy pulse from said acoustic transmitter generates N digital representations of the acoustic energy received at said N acoustic receivers corresponding to the arrival at each receiver of a single acoustic energy pulse.

4,808,997

PHOTOELECTRIC VEHICLE POSITION INDICATING DEVICE FOR USE IN PARKING AND OTHERWISE POSITIONING VEHICLES

George J. Barkley, and Roberta Barkley, both of 283 Wooded La., North Barrington, Ill. 60010

Filed May 21, 1987, Ser. No. 53,151
Int. Cl.[4] G08G *1/04*
U.S. Cl. 340—942 **11 Claims**



1. A vehicle position indicating device for assisting in parking and otherwise positioning a vehicle in a predetermined space on a supporting surface having an overhead structure spaced upwardly from said supporting surface and affording clearance for the vehicle,

said device comprising photoelectric control means having overhead mounting means for mounting said photoelectric control means on the overhead structure,

said photoelectric control means including light emitting means and means positioning said last-mentioned means for emitting and directing a beam of identifiable light in a generally downward direction toward the supporting surface and along a beam forming a boundary of said space,

said photoelectric control means comprising photoelectric transducer means and means directing said last-mentioned means in a generally downward direction for receiving upwardly reflected identifiable light constituting a reflection of said beam and for producing reflection related electrical signals corresponding to said reflected identifiable light,

said reflected identifiable light constituting at least a partial continuation of said beam,

the vehicle being movable along said supporting surface for intercepting the beam and thereby causing a change in said reflected identifiable light reaching said transducer means whereby said transducer means produces a corresponding change in the refection related electrical signals,

amplifier means for receiving said reflection related electrical signals and producing an output signal in response to said change in the reflection related electrical signals,

one-shot timing means for receiving each output signal and producing a corresponding one-shot energization signal having a predetermined time duration,

alarm means for producing a sensory alarm,

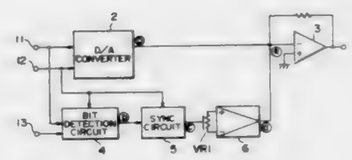
and relay means for receiving each one-shot energization signal and correspondingly energizing the alarm means for a time interval corresponding to the time duration of the one-shot energization signal.

4,808,998

DISTORTION REDUCTION CIRCUIT FOR A D/A CONVERTER

Yuji Yamada, Mitaka, Japan, assignor to Kabushiki Kaisha Kenwood, Tokyo, Japan

Filed Aug. 28, 1987, Ser. No. 90,544
Claims priority, application Japan, Sep. 4, 1986, 61-134852[U]
Int. Cl.[4] H03M *1/00*
U.S. Cl. 341—118 **3 Claims**



1. A digital-analog converter with a correction function of converting an input digital signal sequence of words to an output analog signal, each word having a plurality of bits, the converter comprising:

digital-analog converting means for converting each word of the input digital signal sequence to analog signal;

correction signal generating means comprising

(a) means for detecting a bit at a predetermined bit position in each word of the input digital signal sequence and generating a bit signal upon the detection of bit,

(b) means in response to the bit signal for generating a correction signal; and

means for combining the analog signal from said digital-analog converting means with the correction signal from said correction signal generating means to produce the output analog signal,

wherein said correction signal generating means further comprises means for synchronizing the correction signal with the analog signal at said combining means.

4,808,999

TOWED DECOY WITH FIBER OPTIC LINK

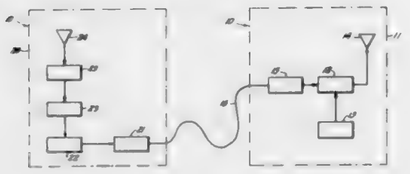
Donald Toman, Pleasantville, N.Y., assignor to Loral Corp., Yonkers, N.Y.

Filed Feb. 18, 1988, Ser. No. 156,968
Int. Cl.[4] G01S *7/38*
U.S. Cl. 342—15 **3 Claims**

1. In a radar decoy system for protecting a vehicle against

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hostile radar detection by means of a decoy device which is physically interconnected in spaced relation relative to the protected vehicle by a flexible cable means, the improvement comprising: an rf receiving means on said vehicle for receiving hostile signals, an rf exciting means on said vehicle responsive to said received signals, an rf transmitting means on said decoy device, and means interconnecting said exciting means and said



transmitting means, said last-mentioned means including a laser modulator, a laser transmitter receiving the output of said modulator, a fiber-optic link incorporated into said flexible cable means receiving the output of said laser transmitter, and a laser receiver on said decoy device interconnected to said fiber-optic link and receiving transmitted signals therefrom, said laser receiver being interconnected to said transmitter means.

4,809,000

TRANSOM MEMBER FOR SLIDING DOORS

Noel Carroll, Sherbrooke Road, Sherbrooke, Victoria, Australia

Filed Jun. 25, 1982, Ser. No. 391,903
Claims priority, application Australia, Sep. 4, 1981, PF0592; Dec. 2, 1981, 78157/81; Dec. 2, 1981, 78158/81
Int. Cl.[4] G01S 13/04; E05F 15/20
U.S. Cl. 342—61 **16 Claims**



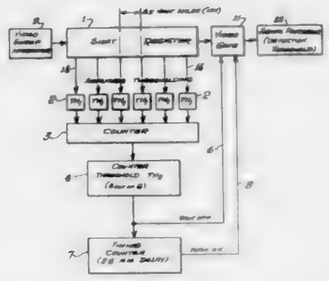
1. A transom member for a sliding door having an elongate support member and a cover member formed of material opaque to visible radiation, the cover member being secured to the support member a cavity being defined between the support member and cover member with the cover member being mounted relative to the support member so as to provide and permit easy access to the cavity, sensing means for sensing approach of a person towards the transom member being provided, said sensing means including an energy detector for detecting energy from a person approaching the transom member, said sensing means being positioned within said cavity with said detector being positioned to receive said energy through said cover member, the location of the sensing means within the cavity not being apparent from external visual inspection of the transom member.

4,809,001

LAND MASS BLANKING APPARATUS (U)

Harry Urkowitz, Philadelphia, Pa., and Richard P. Perry, Haddon Heights, N.J., assignors to United States of America as represented by the Secretary of the Navy

Filed Jun. 20, 1975, Ser. No. 589,659
Int. Cl.[4] G01S 7/30
U.S. Cl. 342—94 **6 Claims**



1. Range-responsive apparatus for selectively blanking the application of a series of relatively high strength video return signals to a gate radar signal processor comprising:
shift register means having an input continuously receiving said radar return signals and an output, said register having a particular input-to-output capacity and a particular rate of advancing said return signals from said input to said output, said capacity and said advance rate being fixed in accordance with the time interval required to fill the register to capacity with a series of signals derived from a predetermined radar range extent; and said register further being provided with a plurality of taps disposed with regard to said rate of advance to provide a series of tapped outputs for signals received from fixed increments of said predetermined range extent,
means coupling said register output to said signal processor gate,
amplitude threshold means for each of said tapped outputs,
counting means coupled to said threshold means, and
count-responsive means for controlling said radar signal processor gate,
said amplitude threshold means being set to responds to the presence of signal inputs having a strength exceeding a particular predetermined background noise level for generating exceedance signals applied to and counted by said counting means; and said count-responsive means being responsive to said count for generating a gate "shut-off" signal when said count reaches a particular number and also for initiating a gate 'turn-on' signal when said count does not reach said number, whereby said signal processor is blanked when a series of high-strength radar return signals produces a particular count.

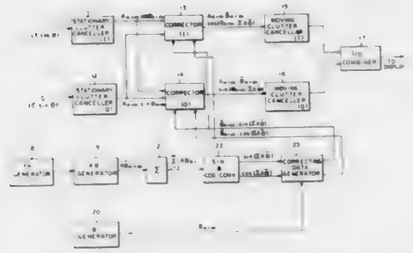
4,809,002

MOVING TARGET INDICATOR

Fusaji Togashi, and Toshihiko Hagisawa, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 13, 1985, Ser. No. 701,170
Claims priority, application Japan, Feb. 14, 1984, 59-25513
Int. Cl.[4] G01S 13/54
U.S. Cl. 342—160 **24 Claims**

1. A moving target indicator apparatus for removing stationary and moving clutter from a radar received signal received in response to a transmitted signal having a varied transmit repetition time comprising:
a first clutter removing means for removing stationary clutter from said radar received signal and generating a first signal having varying amplitude and phase components;
a correction means responsive to said first clutter removing means for correcting the moving clutter of said first signal having varying amplitude and phase components and



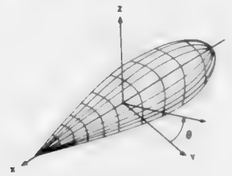
producing a corrected signal having a constant amplitude and a constant phase based upon the varied transmit repetition time; and
a second clutter removing means responsive to said correction means for removing the moving clutter from said corrected signal and generating a second signal.

4,809,003

ALMOND TEST BODY

Allen K. Dominek, Columbus, Ohio; Melvin C. Gilreath, Hampton, and Richard M. Wood, Virginia Beach, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 23, 1988, Ser. No. 197,191
Int. Cl.[4] G01S 7/40
U.S. Cl. 342—165 **1 Claim**



1. An almond test body comprising:
the family of surface analytically defined by:

$$Y=A_1[(1-(x/R_1)^2)^{\frac{1}{2}}-\cos\alpha]\cos\theta$$

$$Z=B_1[(1-(x/R_1)^2)^{\frac{1}{2}}-\cos\alpha]\sin\theta$$

cross-sections for $x \geqq 0$;

$$Y=A_2[(1-(x/R_2)^2)^{\frac{1}{2}}]\cos\theta$$

$$Z=B_2[(1-(x/R_2)^2)^{\frac{1}{2}}]\sin\theta$$

cross-sections for $x \leqq 0$
where,

$$0° \leqq \theta \leqq 360°$$

and, where the constants L, R_1, R_2 A_1, A_2, B_1 and B_2 satisfy

$$L=R_2+\sin\alpha_1 R_1$$

$$1=R_1^2/R_2^2(1-\cos\alpha_1)$$

where,

$$0.0<\alpha_1<90°$$

$$A_1=R_1^2/R_2^2A_2$$

$$B_1=R_1^2/R_2^2B_2$$

where,

$$2 \leqq A_2/B_2 \leqq 20$$

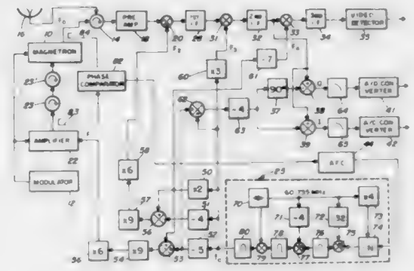
L=total body length; and
R_2=rear portion body length (blunt end).

4,809,004

CRYSTAL CONTROLLED MAGNETRON

Ray L. Brandao, Ft. Lauderdale; Henri Baras, Coral Springs; Arezki Mansour, Boca Raton, and Steven R. Sweet, Margate, all of Fla., assignors to Allied-Signal Inc., Morris Township, N.J.

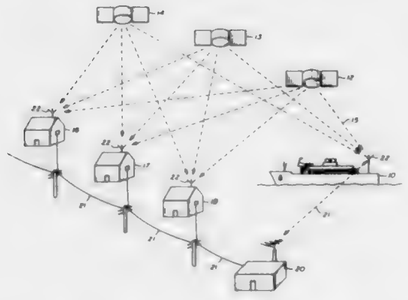
Filed Nov. 23, 1987, Ser. No. 124,203
Int. Cl.[4] H03B 9/10; G01S 7/02, 7/42
U.S. Cl. 342—199 **19 Claims**



11. In a radar system, having a microwave transmitter including a microwave generator having a natural frequency of oscillation; and
a microwave receiver of the superheterodyne type, said receiver including:
a local oscillator;
a mixer for combining target return signals from transmitter output signals with output from said local oscillator for generation of an i.f. signal;
a first i.f. amplifier; and
means for detecting the output of said first i.f. amplifier;
the improvement comprising:
a source of stable, variable frequency signals;
first means for multiplying the frequency of the signal from said variable frequency source by a first constant to generate a signal at a frequency F_1 within the operating frequency range of said microwave generator;
means for injecting said F_1 frequency signal into said microwave generator to control the frequency of said microwave generator;
means for comparing the phase of the output of said microwave generator with the phase of said F_1 frequency signal to determine the phase difference therebetween, said phase difference bring indicative of a difference between said natural frequency of oscillation of said microwave generator and said F_1 frequency;
means for varying the frequency of said variable frequency source in response to said phase difference and thereby to maintain said F_1 frequency substantially equal to said natural frequency of said microwave generator; and
second means for multiplying the frequency of the signal from said variable frequency signal source by a second

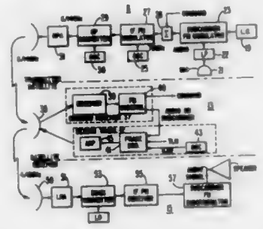
constant to generate a signal at a frequency F_2, said second means comprising said local oscillator;
said F_2 frequency signal being applied to said mixer together with said target return signals, said i.f. signals generated by said mixer having a frequency equal to the difference in frequency between said F_1 frequency and said F_2 frequency.

4,809,005
MULTI-ANTENNA GAS RECEIVER FOR SEISMIC SURVEY VESSELS
Charles C. Counselman, III, Belmont, Mass., assignor to Western Atlas International, Inc., Houston, Tex.
Continuation of Ser. No. 35,662, Apr. 6, 1987, which is a continuation-in-part of Ser. No. 852,016, Apr. 14, 1986, which is a continuation-in-part of Ser. No. 353,331, Mar. 1, 1982. This application Jan. 21, 1988, Ser. No. 147,123
Int. Cl.[4] H04B 7/185
U.S. Cl. 342—352 **9 Claims**



1. A method of determining ship towed sensor position information from code modulated, overlapping spread spectrum signals transmitted by a plurality of GPS satellites and modulated by satellite specific codes, comprising the steps of:
receiving a first composite of satellite signals related to ship position;
forming identical, synchronous, digital representations of the composite in a plurality of satellite tracking channels;
developing estimates in each tracking channel of group delay and phase delay, with respect to a common time base, of a satellite specific, code modulated component of the composite;
detecting a component in each channel by logical combination of the composite representation with a model of the component generated synchronously from the common time base in accordance with the estimates;
updating the estimates in accordance with the detected components to form time series of phase and group delay observations for each channel;
receiving a second composite of satellite signals related to sensor position;
forming a digital representations of the second composite;
developing an estimate of delay, with respect to the common time base, of a satellite specific, code modulated components of the second composite;
detecting said component by logical combination of the second composite representations with a model of the component generated synchronously from the common time base in accordance with the related estimate;
updating the estimate in accordance with the detected component to form time series of observations related to the second composite; and
processing the obeservations to determine sensor position.

4,809,006
SATELLITE COMMUNICATIONS USING THE TELEMETRY TRACKING AND CONTROL SYSTEM
Tariq B. Dar, Morrisville, Pa., assignor to General Electric Company, East Windsor, N.J.
Filed May 30, 1986, Ser. No. 868,958
Int. Cl.[4] H04B 7/185
U.S. Cl. 342—352 **7 Claims**

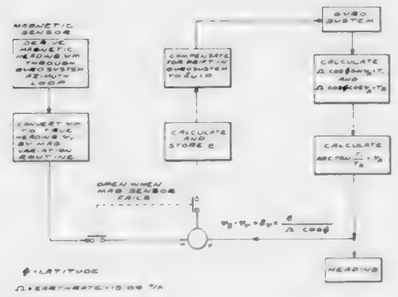


1. In a command, ranging, and telemetry arrangement including:
a pair of command, ranging, and telemetry ground stations, each including: a ranging tone generator, means for modulating said ranging tone on a ranging tone subcarrier, means for combining said modulated ranging tone subcarrier with a command signal, means for transmitting said combined modulated ranging tone subcarrier and said command signal on an up-link carrier, means for receiving a down-link carrier, and means for recovering from said down-link carrier said modulated ranging tone subcarrier and for detecting said ranging tone; and
a satellite including means for receiving said up-link carrier and for recovering said modulated ranging tone subcarrier and said command signal therefrom, and further including a source of said down-link carrier and means for transmitting said recovered modulated ranging tone subcarrier on said down-link carrier;
whereby said satellite receives said modulated ranging tone subcarrier and retransmits it at the down-link frequency, and said retransmitted ranging tone subcarrier is received by the ground station from which it was transmitted and by the other ground station;
an improvement for providing audio communications between said command, ranging, and telemetry ground stations comprising:
at least a first of said ground stations further including means for providing a band limited audio signal, and means for modulating said band limited audio signal on said ranging tone subcarrier in place of said ranging tone; and
at least said other of said command, ranging, and telemetry ground stations further including means for detecting said audio signals from said modulated ranging tone subcarrier and means coupled to said detecting means for applying said audio signal to a utilization device.

4,809,007
NAVIGATION METHOD
Wolfgang Hasseepiug, Freiburg, Fed. Rep. of Germany, assignor to Litef GmbH, Breisgau, Fed. Rep. of Germany
Filed Mar. 2, 1987, Ser. No. 20,851
Claims priority, application European Pat. Off., Mar. 3, 1986, 86102742.3
Int. Cl.[4] G01S 5/02
U.S. Cl. 342—417 **6 Claims**

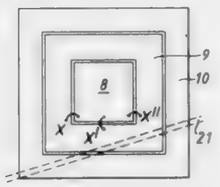
1. A method for determining the course of an aircraft of the type that includes at least one gyro and an external calibrated magnetic course sensor in the event of failure of said magnetic course snsor, said method comprising the steps of:

(a) measuring true north course by means of said magnetic sensor; and
(b) measuring local magnetic variation; then
(c) correcting said true north course by combining said magnetic variation with said measured true north course; and
(d) determining the differential angle from gyro drift, the earth's rotation and latitude; and



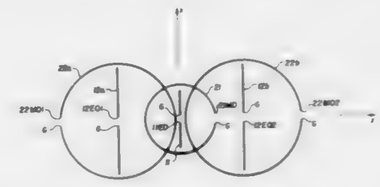
(e) independently continuously determining course angle ψ_A from said corrected true north course and said differential angle; then
(f) storing said independent course angle; and then;
(g) calculating true north course by correcting said independent course with, the differential angle determined prior to failure of said magnetic course sensor.

4,809,008
BROADBAND MICROSTRIP ANTENNA
David J. Gunton, Stakeford, England, assignor to British Gas plc, London, England
Filed Dec. 30, 1986, Ser. No. 947,898
Claims priority, application United Kingdom, Dec. 30, 1985, 8531859
Int. Cl.[4] H01Q 1/38
U.S. Cl. 343—700 MS **3 Claims**



1. A broadband antenna assembly comprising:
a ground plane;
plural dielectric layers including a first dielectric layer disposed on one side of said ground plane;
a feed line disposed adjacent said first dielectric layer and separated from said ground plane by said first dielectric layer;
said plural dielectric layers including a second dielectric layer disposed adjacent said feed line and sandwiching said feed line between said first and second dielectric layers;
a plurality of radiators disposed adjacent a side of said second dielectric layer opposite said feed line and separated from said feed line by said second dielectric layer;
said feed line defining an orthogonal projection which crosses at least one of said radiators assymmetrically so as apparently to divide said at least one radiator assymmetrically, wherein any radiator which is not crossed by the orthogonal projection of said feed line is connected to a radiator that is crossed by the orthogonal projection of said feed line;
said radiators having respective sizes selected such that said radiators have respective frequency response bands, which bands merge to produce an overall bandwidth dependent on the total number of radiators;
each radiator having an outer boundary defining an orthogonal projection, wherein the radiator having an outer boundary circumscribing the largest area is disposed adjacent the ground plane and separated therefrom by said first dielectric layer, said feed line and said second dielectric layer; and
the orthogonal projection of the outer boundary of each radiator circumscribing the orthogonal projections of the outer boundaries of all those radiators having outer boundaries circumscribing smaller areas.

4,809,009
RESONANT ANTENNA
Dale M. Grimes, 2548 Sleepy Hollow Dr., State College, Pa. 16803, and Craig A. Grimes, 2104 Cullen Ave., Apt. 206, Austin, Tex. 78758
Filed Jan. 25, 1988, Ser. No. 148,007
Int. Cl.[4] H01Q 21/00
U.S. Cl. 343—726 **13 Claims**



1. A planar antenna system comprising first loop means connected as a magnetic quadrupole, second loop means connected as a magnetic dipole, first linear means connected as an electric quadrupole, second linear means connected as an electric dipole, and means for driving said magnetic quadrupole and said magnetic dipole in time quadrature with said electric quadrupole and said electric dipole.

4,809,010
LOW PROFILE WIRELESS COMMUNICATION SYSTEM AND METHOD
Ferril A. Losee, Provo, Utah, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 308,080, Oct. 2, 1981. This application Jun. 23, 1982, Ser. No. 393,044
Int. Cl.[4] H01Q 1/04
U.S. Cl. 343—719 **76 Claims**



1. A wireless low profile communication system including a transmitter/receiver for generating and processing electromagnetic signals, the system comprising:
a portable current driver comprising conductor means and means for selectively translating said conductor means between a transportable configuration and an operational configuration, such that when in said operational configu-

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ration said conductor means is positioned in proximity to the earth's surface, said conductor means comprising means for capacitively coupling said conductor means to the earth along at least a portion of said conductor means so that said conductor means exhibits substantial capacitive coupling to the earth such that a closed current loop is formed by said conductor means in combination with the earth, said conductor means having a sufficient overall length so that the closed current loop has a perimeter which is greater than one wavelength of said electromagnetic signals when propagating through the earth, whereby the earth and said conductor means function together as a vertical plane polarized antenna; and

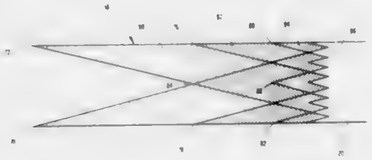
means for connecting the transmitter/receiver to the conductor means.

4,809,011

ELECTRONICALLY STEERABLE ANTENNA APPARATUS

Kaiser S. Kunz, Las Cruces, N. Mex., assignor to Kunz Associates, Inc., Albuquerque, N. Mex.

Filed Jun. 14, 1985, Ser. No. 744,755
Int. Cl.[4] H01Q *19/06*
U.S. Cl. 343—754 **22 Claims**



1. An electronically steerable antenna comprising:

an input matching section having at least two input matching portions tapered in the longitudinal direction for providing a broad band matching characteristic, wherein the second matching portion is shorter than the first matching portion by a ratio set by the index of refraction;

an electrooptic deflector for refracting an electromagnetic wave coupled to said input matching section; and

an output matching section having at least two output matching portions tapered in the longitudinal direction for providing a broad band matching characteristic, wherein the second matching portion is shorter than the first matching portion by a ratio set by the index of refraction, coupled to said electrooptic deflector.

4,809,012

DIRECTION FINDING EQUIPMENT

David A. Tong, 6 Arncliffe Road, Leeds 16, England

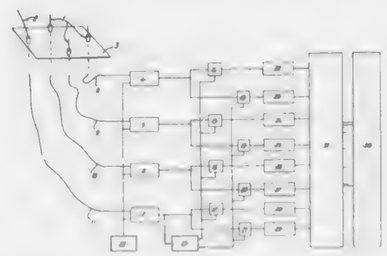
Filed May 27, 1987, Ser. No. 54,758
Claims priority, application United Kingdom, May 27, 1986, 8612753
Int. Cl.[4] H01Q *21/00*
U.S. Cl. 343—853 **7 Claims**

1. Radio direction finding equipment comprising:

a. an array of antennas for receiving radio signals, one said antenna being of reference antenna of greater sensitivity than the other said antennas;

b. at least one radio receiving means connected to said antennas so as to produce signal outputs derived respectively from the radio signals received by the different said antennas;

c. difference means connected to said at least one radio receiving means so as to produce difference outputs derived respectively from phase differneces between the said signal output derived from the radio signals received by the said reference antenna and the said signal outputs derived from the radio signals received by the said other antennas; and



d. processing means for processing said difference outputs to provide information to the direction of the received radio signals.

4,809,013

TELEVISION CONTEST-ENTERING DEVICE

Chiliang Cho; Antonio Cho, and Viktor Cho, all of Zürich, Switzerland, assignors to Cope Praezisionsapparate AG, Zurich, Switzerland

Filed Aug. 27, 1986, Ser. No. 900,783
Claims priority, application European Pat. Off., Aug. 27, 1985, 85110767.2
Int. Cl.[4] G01D *9/00*
U.S. Cl. 346—19 **10 Claims**



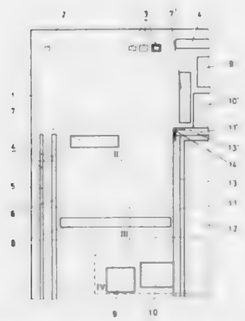
1. A television contest-entering device for the tamperproof recording and storing of entries in television contests, comprising: a recording medium in the form of paper tape (**10**) and having a zone secured by a lock and which is combined with a time printer comprising a computer (**19**), a quartz clock (**22**), a printing mechanism (**20, 23, 24**) and a battery (**21**) for the recording of the contest entry, the paper tape (**10**) being accessible for the written recording of the contest entry on an area through a window (**2**) over it; a keybutton (**29**) which can be depressed, after the contest entry has been recorded on the paper tape (**10**), for imprinting on the latter the clock time and for advancing the paper tape (**10**) by means of a feed mechanism (**44–56**) by a length corresponding to the area written on and into a secured zone of the recording medium; a ratchet wheel (**45**) with a check pawl (**46**) which prevents backward motion of the feed mechanism after its forward motion; and a safety lock which secures a cover (**16**), adapted to be flipped up, of the case of the recording medium.

4,809,014

APPARATUS FOR AND METHOD OF POSITIONING AND SYNCHRONIZING A WRITING LASER BEAM

Meinrad Kempter, Lyss, Switzerland, and Elko Doering, Morigen, Fed. Rep. of Germany, assignors to Lasarray Holding AG, Thundorf, Switzerland

Filed Sep. 22, 1987, Ser. No. 108,444
Claims priority, application Switzerland, Sep. 22, 1986, 03781/86
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 L **7 Claims**



1. A semiconductor chip to be formed by a first writing laser beam directed across a surface of said semiconductor chip and adapted to use a second scanning laser beam as is also scanned across said surface, said semiconductor chip comprising:

(a) first and second intersecting edges; and

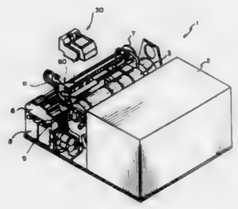
(b) a recognition pattern scanned by said scanning laser beam to provide reflected radiation to be detected and to thereby provide signals for the control of the related movement of said semiconductor chip and said writing laser beam, said recognition pattern including a pair of first enter codes disposed respectively along said first and second edges, each of said first enter codes including a synchronization mark and a step recognition mark.

4,809,015

CONTINUOUS INK JET PRINTER HAVING MODULAR PRINT HEAD ASSEMBLY

Bruce A. Bowling, Beavercreek; Douglas J. Buma, Springboro; Bruce W. Gamble, Fairborn, all of Ohio, and Robert D. Donaldson, Mount Airy, N.C., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 14, 1988, Ser. No. 168,094
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—75 **3 Claims**



1. In continuous ink jet printer apparatus, a modular print head system comprising:

(a) a nest assembly attached to said printer apparatus and including ink supply and return line ports, a catcher return port, charge plate and resonator power terminals and means for supporting and accurately positioning a print head module;

(b) a print head module including ink supply and return line coupling devices each having valve means constructed for engage-opening cooperation with a respective port of said nest, catcher coupling means, charge plate and resonator connector means constructed to interfit with respective terminals of said nest assembly, and index means for cooperating with said support and positioning means of said nest assembly; and

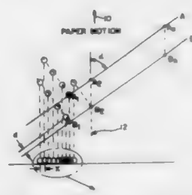
(c) camming means mounted on said nest assembly and movable to engage a supported module into an operative condition, coupled to said ports with said check valves open and with said resonator and charge plate connector means electrically coupled to their respective power supply terminals.

4,809,016

INKJET INTERLACE PRINTING WITH INCLINED PRINTHEAD

Marco Padalino, Dallas County, Tex., assignor to Ricoh Company, Ltd., Tokyo, Japan and Ricoh Systems, Inc., San Jose, Calif.

Filed Mar. 2, 1989, Ser. No. 20,955
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—75 **16 Claims**



1. An inkjet printer for printing on a web moving in a given direction, a plurality of print positions being defined across the width of the web, said printer comprising

orifice means for generating a row of drop streams, said orifice means for forming a single print row along a line perpendicular to the direction of motion of the paper comprising first and second parallel rows of orifices arrayed along lines at an oblique angle to the direction of motion of the paper and to the print row to be formed thereby,

charging means for selectively charging each drop in said drop streams to one of a plurality of charge levels,

gutter means extending along said rows of drop streams for capturing non-printing drops of said drop streams, and

deflection plate means for generating a drop deflection field substantially perpendicular to said rows of drops, and of a controlled magnitude such that the drops in said first and second rows of drop streams are directed to strike said web in interlaced positions along a single print row on said web, drops from adjacent orifices in one of said rows striking non-adjacent drop positions along said single print line.

4,809,017

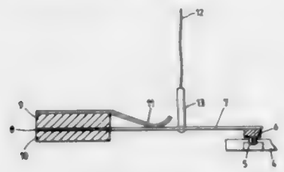
INK JET PRINTING HEAD

Ian M. Fost, Cambridgeshire, England, assignor to Domino Printing Sciences PLC, Cambridge, England

Filed Jan. 7, 1988, Ser. No. 141,530
Claims priority, application United Kingdom, Jan. 7, 1987, 8700203
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—75 **10 Claims**

1. An ink jet printing head having a chamber for pressurized

fluent marking material, a substantially linear array of outlet nozzles leading from said chamber, and a plurality of closure elements adapted to be selectively displaceable by respective actuators to open and close respective ones of said nozzles; wherein said closure elements are provided on respective



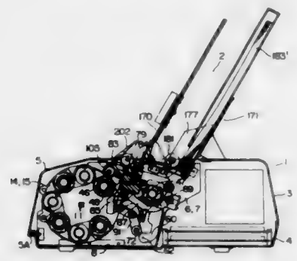
flexible strips (7), each of which is fixed at one end thereof and has said closure element at said other end thereof and is displaceable by a respective actuator acting on said strip between said ends, at least some of said strips interdigitating with one another at said other ends from opposite sides of said substantially linear array of nozzles.

4,809,018

THERMAL TRANSFER PRINTER

Kenji Nakamura; Kenichi Hironaka; Nobuyuki Tottori; Junichi Matsumoto, all of Hitachi; Katsumi Imaizumi, Kitaibaraki; Syoji Yokoyama, Hitachi; Yukio Nakata, Kawasaki; Akira Nakajima, Tokyo; Yuuji Aoyagi; Tomohiko Yanagita, both of Hitachi; Tomio Seto, Takahagi; Tetsuji Takegoshi, and Takeo Houma, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 29, 1987, Ser. No. 8,353
Claims priority, application Japan, Jan. 29, 1986, 61-15708
Int. Cl.⁴ G01D *15/10;* **E41J** *3/20*
U.S. Cl. 346—76 PH **4 Claims**



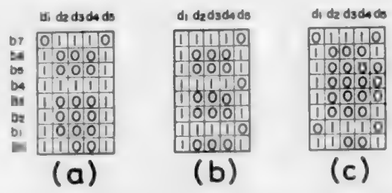
1. A thermal transfer printer comprising a platen and a thermal head for transferring ink to a transfer paper sheet from an ink film by pinching a transfer paper sheet and an ink film between the platen and the thermal head so that the ink is transferred from said film to said transfer paper sheet as said film is heated by said thermal head, wherein said film is constituted by a take-up roll and a supply roll, means for arranging said platen and said thermal head such that they can be spaced from each other by an amount which is greater than the maximum diameter of either one of said rolls and for bringing said platen and thermal head together from said spaced position so as to pinch a portion of an ink film and a transfer paper sheet positioned therebetween, and means for mounting said film on said printer, said means for mounting including means for passing one of said rolls through the clearance between said platen and said thermal head when said platen and thermal head are in said spaced position so as to increase the distance between said rolls of said film and so as to lay said film whereby said platen and said thermal head can be brought together so as to pinch the portion of said film positioned therebetween together with said transfer paper sheet, and whereby, for demounting said film, said platen and said thermal head can be spaced from each other in said spaced position and said one of said rolls can be passed back through the clearance between said platen and said thermal head so as to decrease said distance between said rolls.

4,809,019

CHARACTER GENERATOR FOR THERMAL PRINTERS

Tomoyuki Hagazuma, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

Continuation of Ser. No. 323,028, Nov. 19, 1981, abandoned. This application Jun. 22, 1987, Ser. No. 65,106
Claims priority, application Japan, Nov. 20, 1980, 55-163609
Int. Cl.⁴ G01D *15/10*
U.S. Cl. 346—76 PH **15 Claims**



1. A character generator in a printer for forming characters by an arrangement of dots formed in a matrix of rows and columns, said printer having a predetermined number of thermal printing elements arranged along side one another for selectively forming dots in a row on a heat-sensitive paper, power means for moving said printing elements across said paper into respective column positions of said matrix, and activating means for selectively activating said printing elements by supplying a level of power thereto as they are placed into said respective column positions for forming a character, said character generator including

first means for storing information indicating which of said printing elements are to be activated in each column position thereof; and

second means for storing information available directly with the information of said first means for indicating a level of power to be applied to said printing elements by said activating means,

said first and second means consisting essentially of a unitary semiconductor memory device storing said information in binary form, wherein the information of said first means indicates whether or not each one of said printing elements should be activated and the information of said second means indicates whether said activating means should supply power at a first level or a lower level.

4,809,020

CONTROL APPARATUS FOR ELECTRONIC IMAGE PRINTER

Martin A. Agulnek, Sharon, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 138,063, Dec. 28, 1987, abandoned. This application Jun. 15, 1988, Ser. No. 207,287
Int. Cl.⁴ G01D *15/00*
U.S. Cl. 346—107 R **16 Claims**

1. An electronic image printing apparatus for printing images on image recording material, said apparatus comprising:

a housing assembly;

means disposed in said housing assembly for advancing the image recording material relative to said housing assembly in at least a first printing direction;

at least one light beam producing means operable for producing a light beam in response to respective energization thereof;

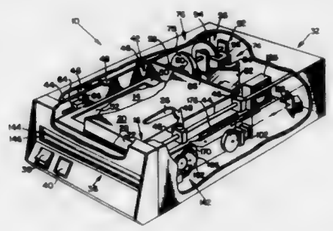
light beam scanning means operable for scanning the light beams in a second printing direction transverse to said first printing direction across a scanning line on the image recording material;

means for displaceably driving said light beam scanning means;

means for providing a periodic control signal responsive to said displacement by said driving means, the frequency of said periodic control signal being representative of the scanning speed of the light beam in said second printing direction; and for providing at least a start signal representative of commencement of a printing cycle;

means responsive to said control and start signals for providing at least a fixed time interval for said light beam producing means for each scanning line;

means responsive to said control signals for providing a predetermined number of pixel-to-pixel exposure time interval signals for each scanning line, each of said expo-



sure time interval signals having a time duration equivalent in time to a maximum exposable time interval during which said light beam producing means is energizable, said exposure time interval signals having a preselected frequency ratio relative to the frequency of said control signals;

means for providing image information data signals for successive pixels on successive lines on the image recording material, said information data signals representing the amount of current to be supplied to said light beam producing means for successive pixels on successive lines on the image recording material;

means responsive to successive ones of said image information data signals and to corresponding successive ones of said pixel exposure time interval signals for energizing said light beam producing means; and,

optical means for directing the light beam onto the image recording material.

4,809,021

APPARATUS AND METHOD FOR GENERATING IMAGES BY PRODUCING LIGHT SPOTS OF DIFFERENT SIZES

Frank T. Check, San Jose, Calif., and Ronald P. Sansone, Weston, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 472,559, Mar. 7, 1983, abandoned, Continuation-in-part of Ser. No. 391,029, Jun. 22, 1982, Pat. No. 4,386,272, which is a continuation of Ser. No. 240,532, Mar. 14, 1981, abandoned, which is a division of Ser. No. 130,278, Mar. 14, 1980, Pat. No. 4,310,757, which is a division of Ser. No. 922,596, Jul. 7, 1978, Pat. No. 4,214,157. This application Jan. 12, 1988, Ser. No. 144,704
Int. Cl.⁴ G01D *9/42, 15/18, 15/10;* **B41J** *3/00*
U.S. Cl. 346—108 **11 Claims**

1. Apparatus for printing characters on a record medium in accordance with input data, comprising:

an electronic printer having means for producing dot matrix patterns on a record medium and for intermeshing dots of at least three different sizes,

a microprocessor connected to said electronic printer,

a data input connected to said microprocessor, and

a look-up table connected to said microprocessor that contains information of the characters to be printed on the



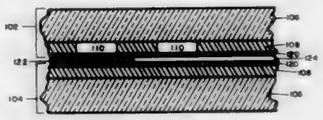
record member by said printer in the form of different dot sizes, whereby characters with smoother edges may be produced by said electronic printer by intermeshing dots of at least three different sizes.

4,809,022

DIRECT READ AFTER WRITE OPTICAL STORAGE MEDIUM

Richard L. Wilkinson, El Toro, and John S. Winslow, Altadena, both of Calif., assignors to Optical Disc Corporation, Cerritos, Calif.

Filed Jun. 27, 1983, Ser. No. 508,498
Int. Cl.⁴ G01D *15/34*
U.S. Cl. 346—135.1 **1 Claim**



1. A DRAW disc compatible with the IEC standard for optical videodiscs, comprising:

a transparent substrate;

a first layer of delectric material in the range of 2300 Å to 2500 Å in thickness on one surface of said substrate, said material having an absorption coefficient for light of a wavelength of 4880 Å of between 2×10^{-4}/Å and 6×10^{-4}/Å, said material having a threshold energy for light of a wavelength of 4880 Å above which it decomposes into primarily gaseous products; and

an essentially flat reflective layer of electrically conductive material in excess of 200 Å in thickness on the opposite side of said first layer from said substrate,

said disc being between 75% and 85% reflective of light having a wavelength of 6328 Å.

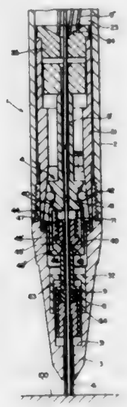
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4,809,023

AUTOMATIC PENCIL DEVICE FOR AUTOMATIC DRAFTING AND WRITING MACHINES

Engelbert Brunner, Zirndorf, and Karl Kaiser, Wendelstein, both of Fed. Rep. of Germany, assignors to J. S. Staedtler GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Aug. 5, 1983, Ser. No. 520,633
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1982, 3229458
The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.
Int. Cl.[4] G01D *15/16*; B43L *13/00*; B41J *11/20*
U.S. Cl. 346—139 R 13 Claims



1. An automatic pencil device, particularly for an automatic drafting apparatus and the like, comprising a casing having a writing point at an end thereof and mountable in a bracket of a drafting apparatus which bracket is movable to bring the pencil device into a working position and a rest position, a clamp sleeve fixed within said casing, a clamping member axially movable within said clamp sleeve for clamping releasing a lead during use of the pencil device, an axially movable lead guide tube which projects outwardly of the writing point in the rest position of the pencil device, a lead brake mounted within said lead guide tube, means for defining a non-self-locking contact zone between said clamping member and said clamp sleeve, and a force transmitting connection between said clamping member and said lead guide tube comprising a compression spring and a thrust member urged by said compression spring against said lead guide tube and to contact portions of said clamping member in the rest position such that a force is transmitted to close the clamping member when the lead guide tube moves axially inwardly while assuming the working position and to open when the lead guide tube moves axially outwardly to the rest position.

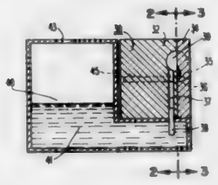
4,809,024

INK JET HEAD WITH LOW COMPLIANCE MANIFOLD/RESERVOIR CONFIGURATION

Thomas W. DeYoung, Stormville, N.Y., and John A. McCormick, Brookfield Ctr., Conn., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Continuation of Ser. No. 661,794, Oct. 16, 1984, abandoned. This application Aug. 17, 1987, Ser. No. 87,986
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R 20 Claims

1. Ink jet apparatus, comprising:
an ink jet chamber portion containing a plurality of ink jet chambers, each chamber having a restrictor inlet and an exit orifice,
reservoir means for holding a supply of ink under pressure, said reservoir means having a substantially infinite fluidic compliance and at least one portion located in close proximity to and beneath said chamber portion, and
ink feed means for feeding ink from said reservoir means to said chambers, including a manifold adjacent to and in fluidic communication with each said chamber restrictor



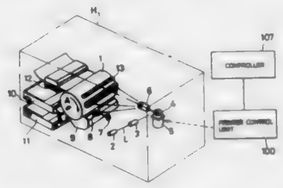
inlet and a feed tube connecting said reservoir with said manifold, said feed tube and manifold having substantially matching cross-sectional areas to provide a substantially low resistance to fluid flow of ink therethrough,
whereby said ink feed means effectively presents said substantially infinite fluidic compliance of said reservoir to each said restrictor inlet.

4,809,025

RECORDING APPARATUS

Akio Noguchi, Ebina, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1987, Ser. No. 119,739
Claims priority, application Japan, Nov. 14, 1986, 61-269065
Int. Cl.[4] G01D *15/14*
U.S. Cl. 346—154 18 Claims



1. A recording apparatus comprising:
drive means for driving a motor which is rotated at a constant speed for image formation;
detection means for detecting revolutions of said motor driven by said drive means; and
control means for outputting a control signal for image formation,
wherein said detection means detects the revolutions of said motor when a drive operation of said drive means is started, and said control means changes an output timing of the control signal for starting the image formation in accordance with the detected revolutions.

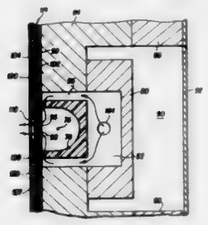
4,809,026

ELECTROSTATIC PRINTING UTILIZING A HEATED AIR FLOW

Alan H. Boyer, East Sullivan; Graham D. Walter, Peterborough, and Robert A. Moore, Amherst, all of N.H., assignors to Markem Corporation, Keene, N.H.

Filed Jul. 29, 1986, Ser. No. 890,305
Int. Cl.[4] G01D *15/00*
U.S. Cl. 346—155 22 Claims

1. An electrostatic print head system comprising:
(a) an ion modulated electrostatic print head,
(b) means for supplying a heated air flow having a temperature in the range of from about 120° F. (49° C.) to about 200° F. (93° C.), and



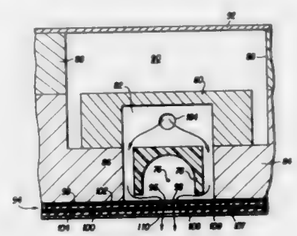
(c) means for directing the heated air flow at, near or through the print head to reduce the accumulation of chemical deposits in the print head.

4,809,027

OFFSET ELECTROSTATIC PRINTING UTILIZING A HEATED AIR FLOW

Alan H. Boyer, East Sullivan; Graham D. Walter, Peterborough, and Robert A. Moore, Amherst, all of N.H., assignors to Markem Corporation, Keene, N.H.

Filed Jul. 29, 1986, Ser. No. 890,304
Int. Cl.[4] G01D *5/00*
U.S. Cl. 346—159 14 Claims



1. An offset electrostatic printer comprising:
(a) an ion modulated electrostatic print head for forming latent electrostatic images,
(b) a dielectric imaging member comprising a layer of dielectric material,
(c) means for developing a latent electrostatic image on the dielectric imaging member,
(d) means for transferring a developed electrostatic image from the dielectric imaging member to an image receiving surface,
(e) means for supplying a heated air flow having a temperature in the range of from about 120° F. (49° C.) to about 200° F. (93° C.), and
(f) means for directing the heated air flow at, near or through the print head and at or near the dielectric imaging member to reduce the accumulation of chemical deposits in the print head.

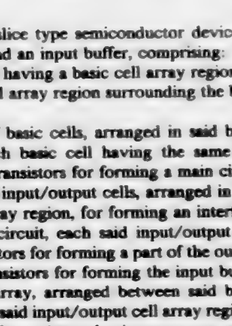
4,809,028

PHOTOPLOTTING APPARATUS

Theodore G. Gagnon, Garrettsville, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Sep. 29, 1987, Ser. No. 102,453
Int. Cl.[4] G01D *9/42*; G03B *41/00*
U.S. Cl. 346—108 22 Claims

10. A light pen for mounting as the drawing element of a graphics plotter comprising a housing for containing a source of electrical power and containing an electrically driven light source, an electrical switch for electrically connecting and disconnecting said lgiht source to said source of electrical power, said switch being normally open and being closed



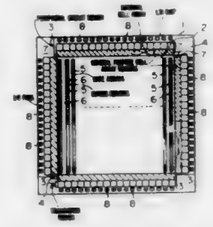
when said source of light is urged against a photosensitive sheet mounted in a graphics plotter, said housing having an aperture opposite e aid light source for transmission of the light be am out of said housing, and means for mounting said light pen on a graphics plotter.

4,809,029

GATE ARRAY LARGE SCALE INTEGRATED CIRCUIT DEVICE

Nobutake Matsumura, and Shinji Sato, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 928,693, Nov. 7, 1986, abandoned, which is a continuation of Ser. No. 496,531, Apr. 19, 1983, abandoned. This application Aug. 21, 1987, Ser. No. 88,983
Claims priority, application Japan, Apr. 23, 1982, 57-67139
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—900 13 Claims



1. A master slice type semiconductor device including an output buffer and an input buffer, comprising:
a master chip having a basic cell array region and an input-/output cell array region surrounding the basic cell array region;
a plurality of basic cells, arranged in said basic cell array region, each basic cell having the same structure and including transistors for forming a main circuit;
a plurality of input/output cells, arranged in the input/output cell array region, for forming an interface circuit for said main circuit, each said input/output cell including first transistors for forming a part of the output buffer and second transistors for forming the input buffer; and
a transistor array, arranged between said basic cell array region and said input/output cell array region, including a plurality of transistors having an arrangement different

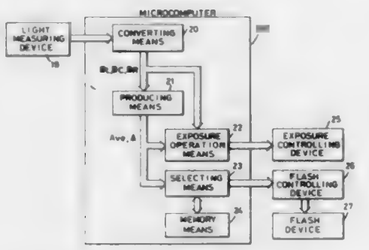
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from the arrangement of said transistors in said basic cells, the output buffer circuit being formed by said transistors of said input/output cells and said transistors of said transistor array.

4,809,030
CAMERA

Tadao Takagi, Yokohama, and Toru Fukahara, Isehara, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 18, 1987, Ser. No. 98,394
Claims priority, application Japan, Sep. 24, 1986, 61-225570; Sep. 29, 1986, 61-230450
Int. Cl.[4] G03B *15/05, 7/00, 7/28*
U.S. Cl. 354—414 **12 Claims**

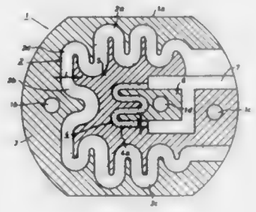


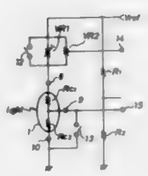
1. A camera comprising:
(a) measuring means for dividing an object field to be photographed into a plurality of areas, measuring luminances of at least some of said plurality of areas and producing a plurality of measurement outputs conforming to the luminances of said at least some areas;
(b) producing means for producing a first information signal conforming to a maximum luminance difference and a second information signal conforming to a mean luminance value on the basis of said plurality of measurement outputs, said maximum luminance difference indicating a difference between a maximum value and a minimum value in the measured luminances corresponding to said at least some areas, said mean luminance value indicating a mean value of said measured luminances corresponding to said at least some areas;
(c) control means for calculating an exposure value for exposure of a film on the basis of said plurality of measurement outputs corresponding to said at least some areas, and performing an exposing operation of the film;
(d) memory means in which a plurality of comparative levels are stored;
(e) selecting means for selecting one of said plurality of comparative levels on the basis of said first and second information signals;
(f) flash emitting means for emitting flash toward the object field in response to the start of the exposing operation by said control means;
(g) means for calculating an integrated value of at least a part of light from the object field at a time subsequent to the start of the exposing operation by said control means; and
(h) stop means for detecting that said integrated value and said selected one of said plurality of comparative levels have assumed a predetermined relationship, and stopping the flash emitting operation of said flash emitting means.

4,809,031
PHOTOMETER FOR USE IN A CAMERA

Touru Sakaguchi, Itabashi; Akira Takahashi, Kawashi, and Akira Ueno, Shinjuku, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 11, 1987, Ser. No. 131,731
Claims priority, application Japan, Dec. 11, 1986, 61-293474; Dec. 11, 1986, 61-189835[U]
Int. Cl.[4] G03B *7/08*
U.S. Cl. 354—429 **4 Claims**



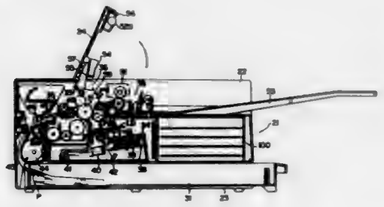


1. A photometer in a camera having a plurality of light receiving portions on an identical substrate for conducting photo-metering for portions each corresponding to a marginal area and a central area of a picture plane in the camera, comprising:
a first light receiving portion comprising a narrow zigzag stripe-like photoconductive material disposed to cover most of a marginal portion of the substrate corresponding to the marginal area of the picture plane;
a first electrode in contact with an outer circumference of the first light receiving portion;
a second light receiving portion comprising a narrow zigzag stripe-like photoconductive material about as a central portion of the substrate corresponding to the central area of the picture plane;
a second electrode in contact with an outer circumference of the second light receiving portion and in contact with an inner circumference of the first light receiving portion;
a third electrode in contact with an inner circumference of the second light receiving portion; and
switching means for making a short-circuit between the second and first electrodes when a voltage is applied between the first and third electrodes, wherein a signal indicative of brightness of an object is produced from the third electrode if the short-circuit is made by the switching means, and a back-light signal indicative of extent of back-light of the object is produced from the second electrode if the short-circuit is not made by the switching means.

4,809,032
PRINTING APPARATUS

Yoshitsugu Nakatomi, Yokosuka, and Goro Oda, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 2, 1987, Ser. No. 127,373
Claims priority, application Japan, Dec. 10, 1986, 61-292481; Dec. 10, 1986, 61-292482
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 TR **5 Claims**

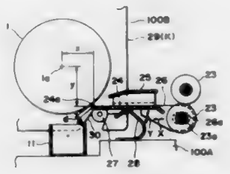


1. A printing apparatus comprising:
means for forming an image on an image carrier;
means for transferring the image formed on said image carrier by said image forming means to a sheet, so that an image is transferred onto a lower surface of the sheet;
means for conveying the sheet carrying the image on the lower surface thereof such that the lower surface faces down, said conveying means having first and second members facing each other and cooperating to clamp and convey the sheet;
means for stacking the sheet conveyed by said conveying means; and
means for supporting at least one of said transfer means and said first member to be movable between a first position at which said transfer means faces said image carrier to achieve the image transfer from said image carrier to the sheet and said first member faces said second member so as to cooperate with each other, and a second position at which said transfer means and said first member do not face said image carrier and said second member, respectively.

4,809,033
IMAGE FORMING APPARATUS AND PROCESS CARTRIDGE THEREFOR

Isao Ikemoto, Kawasaki; Shinji Kanemitsu; Morikazu Mizutani, both of Tokyo; Hajime Kitajima, and Shigeyoshi Onoda, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1987, Ser. No. 63,078
Claims priority, application Japan, Jun. 19, 1986, 61-143708
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 SH **21 Claims**

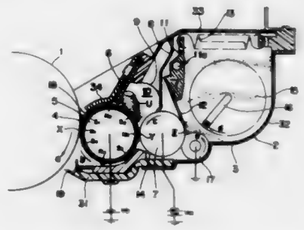


1. An image forming apparatus wherein an image formed on an image bearing member is transferred onto a transfer material, comprising:
means for feeding the transfer material to an image transfer station wherein the image is transferred from the image bearing member onto the transfer material;
a guiding member for guiding the transfer material fed from said feeding means to the transfer station in a guiding direction;
a guide supporting means for supporting said guiding member for movement in said guiding direction and in a crossing with said guiding direction; and
an image bearing member supporting member for supporting said image bearing member for movement between a first position wherein said image forming apparatus is operable and a second position which is different from said first position, said image bearing member supporting member having an engaging portion for engagement with a part of said guiding member to correctly position said guiding member when said image bearing member supporting member takes its first position.

4,809,034
DEVELOPING DEVICE

Hiroshi Marusaki, Ibaraki; Hiroshi Mizuno, Ikoma; Akihito Ikegawa, Sakai, and Kenichi Etsu, Takatsuki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1987, Ser. No. 51,377
Claims priority, application Japan, May 21, 1986, 61-117929
Int. Cl.[4] G03G *15/08*
U.S. Cl. 355—3 DD **10 Claims**



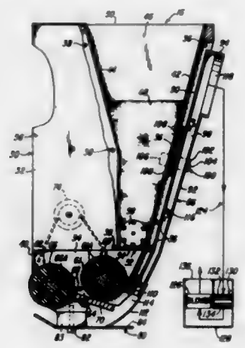
1. A developing device for developing a latent image formed on a latent image-bearing membeer, said device comprising:
a developing sleeve confronting the latent image-bearing member and between which a developing region is defined, said developing sleeve for transporting toner to the developing region and including a plurality of magnets for attracting toner to the outer peripheral surface of said sleeve;
a casing in which a toner reservoir is defined for containing toner;
a toner supply roller disposed between said toner reservoir and said developing sleeve and in contact with toner when the toner is contained in said toner reservoir, said toner supply roller for transporting toner from said toner reservoir to said developing sleeve;
a rotary means disposed in said toner reservoir and contacting said toner supply roller and said casing in which said toner reservoir is defined, said rotary means for urging toner contained in said toner reservoir toward said toner supply roller when said toner reservoir is filled with toner while contacting said toner supply roller and said casing; and
charge erasing means for removing electric charge from electrically charged, toner that has been transported by said toner supply roller, at the location at which said rotary means contacts said casing.

4,809,035

ION DEPOSITION PRINTER WITH IMPROVED TONING UNIT ASSEMBLY INCLUDING APPARATUS FOR SEPARATING AND REMOVING NON-MAGNETIC LUBRICATING PARTICLES

Joseph M. Allen, Jr., 1186 S. Main St., West Milton, Ohio 45383

Filed Jul. 7, 1987, Ser. No. 70,707
Int. Cl.⁴ G03G *15/08*
U.S. Cl. 355—3 DD **10 Claims**



1. In an ion deposition printer having a toning unit assembly and an image drum, the improvement wherein said toning unit assembly comprises:

a toning unit housing having means forming a toner hopper having a toner outlet opening at its lower end and having a rear wall;

means forming an unwanted particle chamber in the lower rear corner of said toning unit housing beneath said outlet opening, said means including a deflector plate at the bottom of said toning unit housing;

means for conveying toner from said hopper to said image drum comprising a toner roller positioned to receive toner descending from said opening;

an air manifold housing defining a plenum chamber and including a front wall and a rear wall, the lower ends of said front wall and said rear wall of said manifold housing being mutually spaced to form an inlet between them that opens to said unwanted particle chamber in said toning unit housing, said manifold housing further having an outlet that opens at the upper end of its said rear wall;

means mounting said manifold housing on said toning unit housing with said front wall of said manifold housing closely adjacent said rear wall of said toning unit housing;

means providing a seal between said rear wall of said toning unit housing and the lower end of said front wall of said manifold housing;

said means forming an unwanted particle chamber further comprising a reilient plate connected to and depending from said rear wall of said manifold housing and resiliently pressing against the top surface of said deflector plate; and

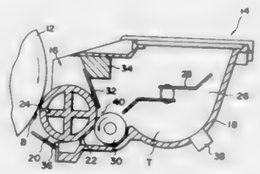
negative air pressure means connected by hose to said outlet for separating non-magnetic particles from the toner being conveyed from said hopper to said image drum and drawing said non-magnetic particles through said inlet, said plenum chamber, and said outlet.

4,809,036

ELECTROSTATIC IMAGE APPARATUS UTILIZING DISTORTION FREE DEVELOPMENT MEANS

Mitsuo Yamashita, and Shinji Nakagawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 19, 1987, Ser. No. 109,397
Claims priority, application Japan, Oct. 20, 1986, 61-249027
Int. Cl.⁴ G03G *15/08*
U.S. Cl. 355—3 DD **10 Claims**



1. A developing apparatus comprising:

movable developing means carrying a developing agent on its surface and adapted to transfer, during its movement, the developing agent to a photosensitive drum, thereby to form an electrostatic latent image, said movable development means being supported for rotation by a shaft in the center thereof;

layer-forming means adapted to press the developing agent against the surface of said developing means, to form a layer of developing agent thereon said movable developing means being positioned a predetermined distance from said photosensitive drum, said photosensitive drum and said layer forming means being located oppositely each other in relation to said movable developing means, the shaft of said movable developing means positioned therebetween; and

rigidity-adding means provided relative to the rear surface of said developing means, to endow said developing means with additional structural strength.

4,809,037

COLOR IMAGE RECORDER RECORDING DIFFERENT COLORS WITH DIFFERENT RECORDING UNITS AND PREVENTING RECORDING OPERATION IN THE CASE OF IMPROPER COLOR BALANCE

Yukio Sato, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1986, Ser. No. 861,872
Claims priority, application Japan, May 17, 1985, 60-104059; May 17, 1985, 60-104060; May 17, 1985, 60-104061
Int. Cl.⁴ G03G *15/01*
U.S. Cl. 355—4 **14 Claims**

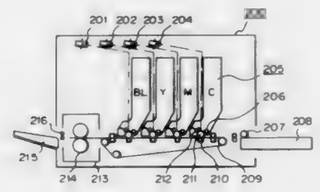
1. An image forming apparatus comprising:

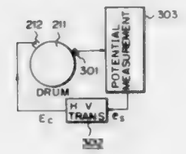
plural recording means for recording plural images on the same recording material, each of said recording means comprising a photosensitive member; latent image forming means for forming an electrostatic latent image on said photosensitive member; developing means for developing said latent image formed on said photosensitive member; and transfer means for transferring a developed image on said photosensitive member onto a recording material;

detecting means for detecting a surface condition of each photosensitive member of said plural recording means; and

control means for determining whether or not the surface condition is adequate in accordance with an output of said detecting means, and for controlling a recording operation of said plural recording means in accordance with a determination result of the adequacy of the surface condition,

wherein said control means prohibits said recording operation in case said control means determines that the surface condition of said photosensitive member of at least one of said plural recording means is inadequate.



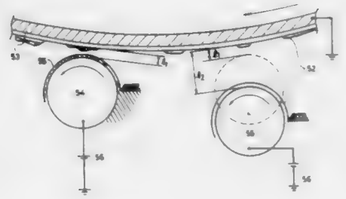


4,809,038

COLOR ELECTROPHOTOGRAPHIC APPARATUS AND METHOD

Hajime Yamamoto, Iberaki, and Yuji Takashima, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 24, 1986, Ser. No. 910,985
Claims priority, application Japan, Sep. 26, 1985, 60-212926; Sep. 26, 1985, 60-212927; Oct. 31, 1985, 60-244482
Int. Cl.⁴ G03G *15/01*
U.S. Cl. 355—4 **7 Claims**



1. A color electrophotographic apparatus comprising:

latent image forming means for forming plural electrostatic latent images respectively corresponding to image signals of different colors on a surface of a photoconductor, plural toners of different colors which have the same polarity as said photoconductor,

plural developing means which are disposed in the vicinity of said photoconductor, respectively contain said toners of different colors corresponding to said different color image signals, and respectively develop said images with said toners without cotact with said photoconductor under a direct electric field,

toner image forming means for forming plural toner images of different colors on the surface of said photoconductor, by a repeating cycle of making electric chargings on the surface of said photoconductor, activating said latent image forming means so as to light expose an image corresponding to respective image signals of the different colors on the surface of said photoconductor and activating a respective developing means so as to develop said exposed image by a respective toner corresponding to said image signal, and

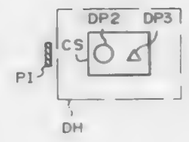
reversal flying preventing means for preventing reversal flying of toner of the image from said photoconductor to at least one of said developing means which is not developing said image while said image passes before said developing means.

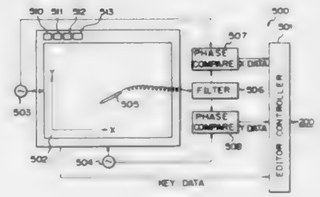
4,809,039

ELECTROSTATIC IMAGE RECORDING APPARATUS WITH A SHIFTABLE REFERENCE IMAGE

Kiniyasu Ishii, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 20, 1987, Ser. No. 123,322
Claims priority, application Japan, Nov. 20, 1986, 61-277742; Jan. 20, 1987, 62-11180
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 R **10 Claims**





1. A device installed in an image recording apparatus for controlling developer density, comprising:

a charge carrier;

a reference latent image potential forming means for forming a reference latent image potential in a relatively small area of the charge carrier;

a record latent image potential forming means for forming on the charge carrier a record latent image potential corresponding to an image which is to be recorded;

a developing means for producing visible images each corresponding to a respective one of the reference latent image potential and record latent image potential which are produced on the charge carrier;

a developer density adjusting means for adjusting density of a developer which is stored in the developing means;

an optical sensing means located downstream of the developing means to face the charge carrier;

a transferring means for transferring the visible image of the record latent image potential to a predetermined recording medium;

an inputting means for inputting shift data which is representative of a position for transferring the visible image of the record latent image potential to the recording medium; and

a control means for setting a record latent image potential form timing, a transfer timing and a reference latent image potential form timing based on the input shift data, and

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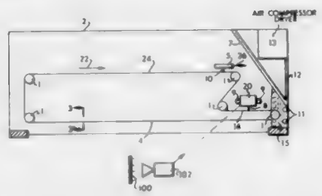
controlling the reference latent image forming means at said reference latent image potential form timing, the record latent image potential forming means at said record latent image potential form timing, and the transferring means at said transfer timing, and controlling the developer density adjusting means based on density of the visible image of the reference latent image potential which is sensed by the optical sensing means.

4,809,040

SINGLE TONER COLOR IMAGE DISPLAY APPARATUS AND METHOD

Alain J. Regnault, 4 Rue Des Tartres, and Didier Auray, 5 Rue des Tartres, both of Ruell-Malmaison 92500, France

Filed Apr. 30, 1987, Ser. No. 44,584
Claims priority, application France, Apr. 30, 1986, 86 06255
Int. Cl.⁴ G03G *15/00, 15/01;* **G03B** *27/52;* **G01D** *15/06*
U.S. Cl. 355—5 **10 Claims**



1. A system for displaying graphic or pictorial intelligence, including half tones and the like, comprising:
an endless belt having an electrically insulating externally facing surface;
electrostatic charge writing head means for depositing an electrostatic charge pattern on said belt in correspondence to a desired image to be formed thereupon;
developing station means for depositing toner upon said electrostatic image to render same visible;
means for moving said belt past said writing head means and said developing station means and to a viewing position whereat said display may be seen by a user;
an electrostatic charge erasing station including electrode means for depositing charge to neutralize the previously formed charge pattern on said belt so as to enable said previously formed charge pattern to be readily removed from the belt;
a casing surrounding said belt, writing head means and developing station means, said casing including a transparent wall at said viewing position to enable said developed image to be viewed by the user;
means for filling said casing with a gas having a slight overpressure in comparison to atmospheric pressure; and
means for drying said gas.

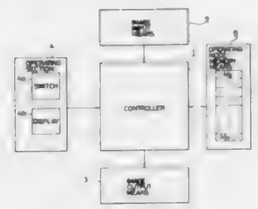
4,809,041

IMAGE FORMING APPARATUS WITH STORAGE OF PROCESSING MODES

Masahiro Funada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1987, Ser. No. 11,754
Claims priority, application Japan, Feb. 12, 1986, 61-26942; Feb. 12, 1986, 61-26943; Feb. 12, 1986, 61-26944; Feb. 12, 1986, 61-26945
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 C **24 Claims**

1. An image processing apparatus comprising:
mode setting means for setting an image processing mode;
processing means for processing an image based on a processing mode set by said mode setting means;
memory means for storing the processing mode set by said mode setting means in order to enable said processing mode to be repeatedly set; and



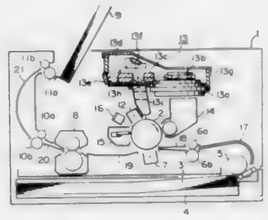
control means for causing a plurality of processing modes most lately executed to be registered.

4,809,042

LIGHT BEAM SCANNING DEVICE AND ELECTRONIC PHOTOGRAPHIC RECORDING DEVICE USING THE SAME

Yoshifumi Homma, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 29, 1987, Ser. No. 67,015
Claims priority, application Japan, Jun. 27, 1986, 61-149537; Jun. 27, 1986, 61-149538; Sep. 18, 1986, 61-218049; Sep. 18, 1986, 61-218050
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—8 **19 Claims**



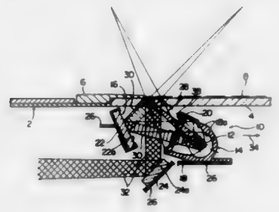
1. An optical scanning system comprising:
means supporting a scanned medium;
a light source outputting a light beam towards the scanned medium supported by said means;
sweeping means deviating and sweeping the light beam emitted by said light source;
optical focusing means located on the optical path between said sweeping means and said scanned medium and focusing the light beam outputted by said sweeping means on the scanned surface of said scanned medium; and
optical path deviating means located between said optical focusing means and said scanned medium and folding the light beam outputted by said optical focusing means so that the light beam reaches the scanned surface of said scanned medium;
wherein said optical focusing means is provided with a plurality of single lenses separated from each other and said optical path deviating means includes a reflecting mirror, which reflects the light beam passing through said plurality of single lenses and outputted so as to traverse the space between said plurality of single lenses and to reach said scanned medium.

4,809,043

DOCUMENT SCANNING OPTICAL DEVICE

Takehiro Minami, Sakai, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Apr. 21, 1987, Ser. No. 41,735
Claims priority, application Japan, Apr. 30, 1986, 61-64130[U]
Int. Cl.⁴ G03B *27/54*
U.S. Cl. 355—67 **6 Claims**



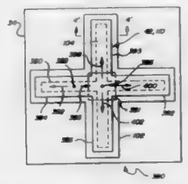
1. In a document scanning optical device comprising a document illuminating means having an illuminating lamp, a main reflecting means partly surrounding the illuminating lamp, and a subsidiary reflecting means disposed opposite to the illuminating lamp and the main reflecting means, said document illuminating means illuminating a document via a first illuminating light path extending in a first direction to the document without reflection by said subsidiary reflecting means and at the same time illuminating the document via a second illuminating light path extending in a second direction to the document after reflection by said subsidiary reflecting means, the improvement comprising:
means for adjusting the difference between a first quantity (L_1) of light illuminating the document via said first illuminating light path and a second quantity (L_2) of light illuminating the document via said second illuminating light path to be not more than 15% of the sum of the first quantity (L_1) and the second quantity (L_2), said adjusting means comprising said subsidiary reflecting means having a larger reflectance than said main reflecting means.

4,809,044

THIN FILM OVERVOLTAGE PROTECTION DEVICES

Roger W. Pryor, Bloomfield Hills; Napoleon P. Formigoni, Birmingham, and Stanford R. Ovshinsky, Bloomfield Hills, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 899,446, Aug. 22, 1986, abandoned. This application Nov. 26, 1986, Ser. No. 936,553
Int. Cl.⁴ H01L *45/00, 29/44, 29/46, 29/86*
U.S. Cl. 357—2 **26 Claims**



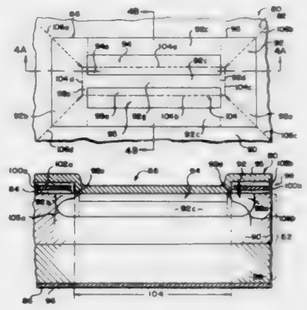
1. A solid-state overvoltage protection apparatus of the type having a plurality of spaced electrodes and a body of threshold switching material disposed therebetween, said body having a high electrical resistance to provide a blocking condition for substantially blocking current therethrough at operating voltages below a first nominal voltage level and a lower electrical resistance at overvoltages above said nominal voltage level to provide a conducting condition for conducting current therethrough, the improvement comprising in combination:
means for providing an elongated current conduction path of substantially uniform distance between said electrodes through said body confined to an elongated cross-sectional area of said body transverse to the direction of current flow, said cross-sectional area having an effective length along the major dimension of said area which is at least about ten times greater than the maximum effective width of said area,
whereby relatively large currents associated with overvoltages which may flow therethrough are distributable over said elongated area.

4,809,045

INSULATED GATE DEVICE

Hamza Yilmaz, Dewitt, N.Y., assignor to General Electric Company, Fairfield, Conn.

Filed Sep. 30, 1985, Ser. No. 781,381
Int. Cl.⁴ H01L *29/78, 49/00*
U.S. Cl. 357—23.4 **14 Claims**



1. A semiconductor device formed in and on a substrate having a major surface, said device comprising:
a first region within said substrate of a first conductivity type, said first region having a first surface area adjacent said major surface;
a second region within said substrate of a second conductivity type opposite of said first conductivity type, said second region bounding said first region within said substrate and having a second surface area adjacent said major surface;
an insulating layer disposed over said first and second surface areas, said insulating layer including a contact window formed in said insulating layer over a first portion of said first surface area and a second portion of said second surface area which is adjacent to and extends along said first portion of the first surface area, the ratio of the area of said second portion to the area of said first portion being greater than or equal to one-third, and said contact window having at least part of its edge located over said second surface area;
a first electrode layer disposed in said contact window and making ohmic contact with said first and second portions of said first and second regions respectively; and
a gate electrode overlying a portion of said insulating layer.

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4,809,046

SEMICONDUCTOR MEMORY DEVICE

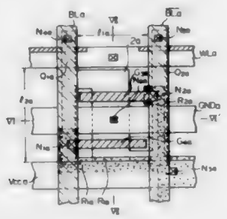
Keizo Aoyama, Yamato; Takahiko Yamanchi, and Teruo Seki, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 471,522, Mar. 2, 1983, abandoned. This application Oct. 6, 1986, Ser. No. 915,967

Claims priority, application Japan, Mar. 3, 1982, 57-32236; Mar. 3, 1982, 57-32233; Mar. 3, 1982, 57-32234

Int. Cl.⁴ H01L *27/02*

U.S. Cl. 357—41 **13 Claims**



1. A semiconductor memory device, comprising:
a semiconductor substrate;
a first insulating layer formed on the semiconductor substrate;
a group of word lines formed on and insulated from said semiconductor substrate;
a group of pairs of bit lines formed on and insulated from said semiconductor substrate;
a group of power supply lines formed on and insulated from said semiconductor substrate;
a group of ground lines formed on and insulated from said semiconductor substrate;
a plurality of static-type memory cells arranged in rows and columns, each comprising MIS transistors cross-coupled with each other, each of said memory cells being provided at a cross point between one of said word lines and one of said pairs of bit lines, each of said MIS transistors having a drain region and a gate electrode;
a plurality of gate-electrode wiring lines connecting and acting as the gate electrodes of said MIS transistors;
a first conductive layer formed on said first insulating layer, on said semiconductor substrate and for forming said gate-electrode wiring lines;
a second insulating layer formed on said first conductive layer and on said first insulating layer;
a second conductive layer, formed on said second insulating layer on said first conductive layer, for forming said ground lines which extend across said bit lines, respectively;
a third insulating layer formed on said second conductive layer and on said second insulating layer; and
a third conductive layer formed on the third insulating layer and for forming said groups of pairs of bit lines.

4,809,047

INSULATED-GATE SEMICONDUCTOR DEVICE WITH IMPROVED BASE-TO-SOURCE ELECTRODE SHORT AND METHOD OF FABRICATING SAID SHORT

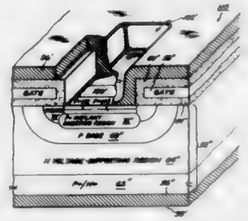
Victor A. K. Temple, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 810,809, Dec. 19, 1985, abandoned, which is a continuation of Ser. No. 529,198, Sep. 6, 1983, abandoned. This application Sep. 17, 1987, Ser. No. 98,756

Int. Cl.⁴ H01L *29/78*

U.S. Cl. 352—23.4 **26 Claims**

1. An insulated-gate semiconductor device with an improved base-to-source electrode short, comprising:
a semiconductor wafer having a substantially planar upper surface;
a voltage-supporting layer of one conductivity type included in said wafer;
a base region of opposite conductivity type included in said wafer, overlying said voltage-supporting layer, and having a portion extending into proximity to or to said upper surface;
a source region of said one conductivity type included in said wafer and overlying said base region;
a channel region included in said wafer along said base region at said upper surface and extending between said voltage-supporting layer and said source region;
said substantially planar upper surface including surface portions of said voltage-supporting layer, said channel region and said source region;



a gate insulatingly spaced above said channel region of said wafer, said gate having an aperture therein having a predetermined shape;
a source electrode situated above said wafer and conductively coupled to said source region within the lateral confines of said aperture; and
an implanted shorting region of said opposite conductivity type included in said wafer beneath said aperture adjoining both said source and base regions, having a higher conductivity than said base region, being spaced from said voltage-supporting layer and conductively coupled to said source electrode and having a dopant profile in which the region of maximum concentration of the dopant creating said implanted shorting region is within said wafer and spaced from said upper surface of said wafer.

4,809,048

CHARGE-COUPLED DEVICE HAVING CHANNEL REGION WITH ALTERNATELY CHANGING POTENTIAL IN A DIRECTION PERPENDICULAR TO CHARGE TRANSFER

Masafumi Kimata, and Natsuro Tsubouchi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

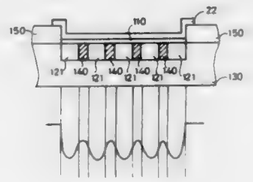
Continuation of Ser. No. 804,072, Dec. 3, 1985, abandoned. This application Feb. 9, 1987, Ser. No. 13,189

Claims priority, application Japan, Dec. 21, 1984, 59-271546

Int. Cl.⁴ H01L *29/78*; **G11C** *19/28*

U.S. Cl. 357—24 **11 Claims**

1. A charge-coupled device having improved low temperature charge transfer efficiency, comprising:
a semiconductor substrate (130) of a first conductivity type,
a channel separation insulation layer (150) formed on said semiconductor substrate (130) and having an opening to define a channel region (10) in said substrate for transferring signal charge, said channel region being contiguous and of a second conductivity type opposite said first conductivity type and formed to have, in operation, a first potential that alternates repetitively between a high and a low value throughout said channel region perpendicular to a direction in which signal charge is transferred, said first potential alternating within a range that is deeper than a second potential in said semiconductor substrate below said channel separation layer (150) to reduce charge trapping in said channel region,
a gate insulating film (110) formed on said channel region (10), and



a plurality of gate electrodes (21, 31 . . . 52) formed at intervals on said gate insulating film (110) in the direction of signal charge transfer.

4,809,049

IMAGE RECORDING APPARATUS

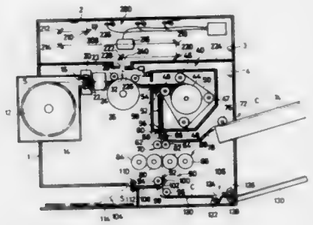
Tagio Okuzawa, and Ken Kawada, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 22, 1987, Ser. No. 99,811

Claims priority, application Japan, Sep. 22, 1986, 61-222210; Oct. 6, 1986, 61-236181; Nov. 20, 1986, 61-275389; Dec. 26, 1986, 61-308766

Int. Cl.⁴ G03B *29/00*

U.S. Cl. 355—28 **12 Claims**



1. An image recording apparatus, comprising:
a first unit for forming an image on a photosensitive material coated on a support, said first unit including an image-forming system and supporting means supporting said support during exposure of said photosensitive material; and
a second unit detachably connectable to said first unit, for treating said exposed photosensitive material by pressure, said second unit including first drive means for driving said support means.

4,809,050

COPYING MACHINE FOR FORMING AN IMAGE OF A DOCUMENT AT VARIOUS MAGNIFICATIONS

Masazumi Ito, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

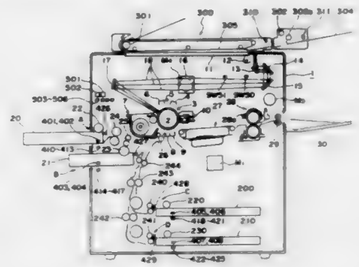
Filed Sep. 10, 1987, Ser. No. 95,145

Claims priority, application Japan, Sep. 11, 1986, 61-215425; Sep. 11, 1986, 61-215426

Int. Cl.⁴ G03G *15/00*; **B65H** *03/44, 07/02*

U.S. Cl. 355—14 SH **16 Claims**

1. A copying machine comprising:
means being capable of forming an image of a various magnifications,
a plurality of copying paper feeding means,
means for detecting the size of a document to be copied,
first designation means for designating a magnification for copying,
means for calculating the most suitable paper size based upon the document size detected by said detection means and the magnification designated by said first designation means,
second designation means for manually designating at least one paper feeding means to be used preferentially among said plurality of paper feeding means,



means for selecting the paper feeding means designated by said second designation means when copying papers contained therein have the size calculated by said calculation means, and
means for selecting one paper feeding means in which copying papers having the size calculated by said calculation means among paper feeding means other than the paper feeding means designated by said second designation means when said copying papers of said size are not contained in the latter.

4,809,051

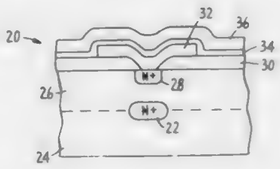
VERTICAL PUNCH-THROUGH CELL

Grigory Kogan, Portland, Oreg., assignor to National Semiconductor Corp., Santa Clara, Calif.

Filed Aug. 6, 1987, Ser. No. 82,797

Int. Cl.⁴ H01L *29/78*

U.S. Cl. 357—24 **4 Claims**

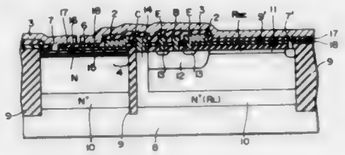


1. A vertical punch-through cell comprising:
(a) a silicon substrate;
(b) an epitaxial silicon layer overlying the substrate;
(c) an N+ buried column line formed at the interface between the substrate and the epitaxial layer;
(d) an N+ diffusion region formed above and spaced apart from the buried column line at the surface of the epitaxial layer;
(e) a field oxide layer formed over the epitaxial layer and having a contact opening formed therein over the N+ diffusion region;
(f) a polysilicon layer formed on the surface of the field oxide layer to extend through the contact opening to make contact with the N+ diffusion region;

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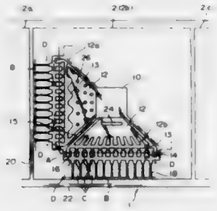
(g) a layer of dielectric material formed over the polysilicon layer; and
(h) a layer of conductive material formed over the layer dielectric material.

4,809,052
SEMICONDUCTOR MEMORY DEVICE
Yasushiro Nishioka, Hachioji; Takeo Shiba, Kodaira; Hiroshi Shinriki, Tokyo; Kiichiro Mukai, Hachioji; Akihisa Uchida, Tachikawa; Ichiro Mitamura; Keiichi Higeta, both of Ome; Katsumi Ogiue, Tokyo; Kunihiko Yamaguchi, Sayama, and Noriyuki Sakuma, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 7, 1986, Ser. No. 860,413
Claims priority, application Japan, May 10, 1985, 60-97766; Aug. 2, 1985, 60-169800; Nov. 25, 1985, 60-262434
Int. Cl.[4] H01L *27/10, 29/48, 29/40*
U.S. Cl. 357—45 17 Claims



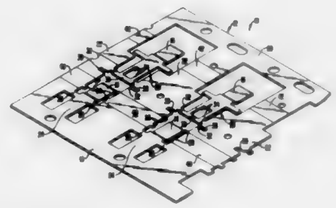
1. A semiconductor memory device comprising a digit line, a word line crossing the digit line, a first insulating film disposed between said digit line and said word line, two transistors in cross connection with each other, a load and a Schottky barrier diode connected in parallel with each other between each of said transistors and said word line wherein at least a part of said Schottky barrier diode is provided under said digit line, and a second insulating film disposed between said Schottky barrier diode and said digit line.

4,809,053
SEMICONDUCTOR DEVICE AND LEAD FRAME USED THEREFOR
Fumio Kuraishi, Nagano, Japan, assignor to Shinko Electric Industries Co., Ltd., Nagano, Japan
Filed Aug. 12, 1987, Ser. No. 84,203
Claims priority, application Japan, Aug. 12, 1986, 61-189262
Int. Cl.[4] H01L *23/48, 23/02*
U.S. Cl. 357—70 6 Claims



1. A semiconductor device comprising:
a lead frame made of a metal strip including:
a rectangular stage;
at least one heat spreader extending outward from said rectangular stage for irradiating heat, said heat spreader having a substantially trapezoidal shape and having an edge which is one of a wave-shape, concave-shape, or convex-shape, for fixedly molding the heat spreader with a plastic material; and
a plurality of leads, each having inner and outer lead portions, inner ends of the inner lead portions being arranged along one or more sides of a rectangular area which is parallel to the periphery of said rectangular stage, said at least one heat spreader extending toward the inner ends of said inner lead portions from the periphery of said rectangular stage;
a semiconductor chip mounted on said stage and having a plurality of terminals;
means for electrically connecting said terminals of said semiconductor chip to respective ones of said inner lead portions; and
said plastic material for integrally molding said semiconductor chip, said connecting means, and said lead frame, so that at least said outer lead portions protrude outside said plastic material integrally molding said semiconductor chip.

4,809,054
SEMICONDUCTOR LEAD FRAME
Kurt Waldner, 12260 Saratoga Dr., Saratoga, Calif. 95070
Filed Jul. 25, 1986, Ser. No. 889,655
Int. Cl.[4] H01L *23/48*
U.S. Cl. 357—70 10 Claims

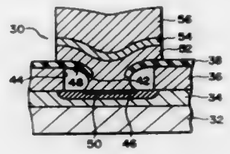


1. A lead frame comprising:
a one-piece body having a pair of spaced, generally parallel side strips and a pair of spaced cross strips spanning the distance between and integral with the side strips, said body further including a pair of spaced, aligned pads and means coupling the pads to the body to position the pads between the cross strips, said coupling means including a leg coupled with one of the pads and extending parallel with the cross strip, said leg being bendable intermediate its ends about an axis extending transversely of the longitudinal axis of the leg to cause the leg to be doubled upon itself and to cause said one pad to be moved from an initial position spaced from and generally aligned with the other pad to a final position, in overlying spaced relationship to the other pad, whereby a semiconductor chip between the pads can be bonded to the pads to form therewith an electronic component.

4,809,055
SEMICONDUCTOR DEVICE HAVING AN ELECTRODE AND A METHOD OF MANUFACTURING THE SAME
Masaru Ishibashi, Yokohama; Takeshi Tsubata, Kawasaki, and Kazumi Sasaki, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 854,474, Apr. 22, 1986, abandoned. This application May 5, 1988, Ser. No. 191,747
Claims priority, application Japan, Apr. 23, 1985, 60-85489
Int. Cl.[4] H01L *23/54, 23/14*
U.S. Cl. 357—71 15 Claims

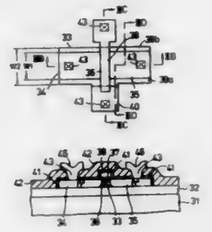
1. A semiconductor device having an electrode, comprising:
(a) a semiconductor substrate;
(b) a first insulating layer formed on the semiconductor substrate, the first insulating layer having an opening formed by removing a predetermined region thereof;
(c) an impurity region formed on the surface of said semiconductor substrate, said impurity region being aligned with said opening;

(d) a second insulating layer of Si_3N_4 formed on said first insulating layer and having a notch and an arcuated portion, said notch being located substantially in the center of said opening, and said arcuated portion being formed by arcuating a periphery of said notch toward the semiconductor substrate and being doped with an impurity, the



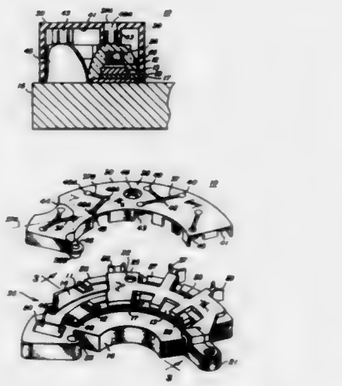
impurity concentration having its peak value on the side of the semiconductor, rather than at the central portion of the second insulating layer; and
(e) an electrode portion having a first portion formed on the arcuated portion and a second portion extending through the notch from the first portion, contacting the semiconductor substrate, and leaving a space under said arcuated portion.

4,809,056
SEMICONDUCTOR DEVICE HAVING A SILICON ON INSULATOR STRUCTURE
Takehide Shirato, Hiratsuka, and Nobuhiko Anzho, Yokohama, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan
Filed Oct. 24, 1986, Ser. No. 922,907
Claims priority, application Japan, Oct. 31, 1985, 60-244433
Int. Cl.[4] H01L *23/48, 29/46, 29/54, 29/62*
U.S. Cl. 357—71 11 Claims



1. A semiconductor device having a silicon on insulator structure comprising:
an insulator layer;
an insular body formed on said insulator layer, said insular body being made of a single crystal silicon doped to a first type semiconductor;
a first region of the first type semiconductor provided in said insular body;
first and second doped regions doped to a second type semiconductor respectively provided in said insular body on both sides of said first region, said first and second doped regions reaching a bottom of said insular body and having a width smaller than a width of said insular body;
a second region doped to the first type semiconductor formed along at least one side of said first and second doped regions, said second region being in contact with said first region; and
a contact region doped to the first type semiconductor formed in contact with said second region, said contact region having an impurity density greater than those of said first and second regions,
said first region being applied with a fixed voltage via said contact region.

4,809,057
ELECTRICAL COMPONENT ASSEMBLY AND METHOD OF MANUFACTURE THEREOF
Alfred G. Ocken, Franklin Park, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 18, 1986, Ser. No. 943,529
Int. Cl.[4] H01L *23/32*
U.S. Cl. 357—76 20 Claims



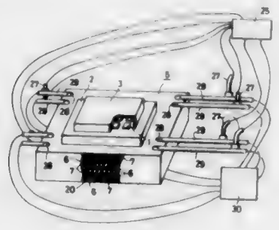
1. An electrical component assembly comprising:
a plurality of electrical components and electrical interconnections mounted on a support carrier; a protective cover mounted to said support carrier and effectively positioned at least partially about said components and electrical interconnections to provide mechanical protection to at least some of said components;
said cover having fluid flow channels therein and at least one effective opening in each of said channels, each of said openings being adjacent to and associated with at least one of said components and electrical interconnections;
and an environmental sealing material provided, in an initial fluid state, over said at least one of said components and electrical interconnections via said cover channels and said openings, whereby said channels and openings in said protective cover operate as guide mechanisms for applying said sealing material.

4,809,058
INTEGRATED CIRCUIT DEVICE
Takao Funamoto; Ryuichi Kajiwara; Mitsu Kotou; Takeshi Matsumoto; Tomohiko Shida; Hiroshi Wachi, all of Hitachi; Kazuya Takahashi, Katsuta; Masatoshi Watanabe, Hitachi; Minoru Yamada, Iruma; Kelichirou Nakanishi, Kokubunji, and Katuo Sugawara, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 15, 1986, Ser. No. 941,812
Claims priority, application Japan, Dec. 16, 1985, 60-280960; Jan. 6, 1986, 61-130120
Int. Cl.[4] H01L *23/02, 39/02, 25/04*
U.S. Cl. 357—82 15 Claims

1. An integrated circuit device comprising a wiring substrate on one surface of which integrated circuit chips are mounted; a power source substrate of a laminated structure provided in contact with the other surface of said wiring substrate, and formed by alternately laminating layers of a heat and electri-

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cally conductive metal, for supplying electrical current to the integrated circuit chips, and electrically insulating layers of an electrically insulating material, and bonding together said laminated layers, the laminated structure including a plurality of the layers of a heat and electrically conductive metal and a plurality of the electrically insulating layers; a means for electrically connecting said wiring substrate and said power source substrate to each other; and a heat radiating means inserted in



at least one of said layers of a heat and electrically conductive metal and said electrically insulating layers, of said power source substrate, and adapted to radiate the heat, which occurs in said power source substrate, to the outside thereof, said heat radiating means being inserted in at least one of the layers of a heat and electrically conductive metal and the electrically insulating layers of the power source substrate closest to the wiring substrate.

4,809,059

CHROMA CONTROL CIRCUIT FOR A DIGITAL TELEVISION RECEIVER

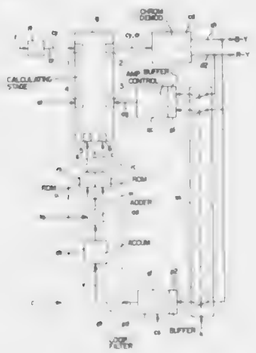
Peter M. Flamm, Freiburg, and Laurin C. Freyberger, Endingen, both of Fed. Rep. of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Dec. 19, 1986, Ser. No. 944,464

Claims priority, application European Pat. Off., Dec. 19, 1985, 85116236.2

Int. Cl.⁴ H04N 9/64

U.S. Cl. 358—27 **18 Claims**



1. A chroma control circuit for a digital television receiver, said circuit comprising:

a system clock having a frequency approximately four times the chrominance-subcarrier frequency and which serves as a sampling clock for digitization of an analog composite color signal to provide a digitized composite color signal comprising a received color burst signal and a received chrominance signal, said system clock having a zero reference phase;

a calculating stage that performs processing operations on said digitized composite color signal to provide burst amplitude control, saturation adjustment and chroma adjustment, said calculating stage providing a color burst output signal and a chrominance output signal;

a chrominance demodulator having an input receiving a composite signal from said calculating stage which includes said color burst output signal and said chrominance output signal, said chrominance demodulator deriving first and second color difference signals, said first color-difference signal being derived as a phase-difference signal from said color-burst output signal;

a loop filter having an input receiving said first color-difference signal and providing a filtered phase difference signal;

a digital oscillator comprising:

an accumulator;

a first read only memory containing sine values;

a second read only memory containing cosine values;

said accumulator having its output coupled to said first and second read only memories;

said filtered phase difference signal being coupled to the accumulator; and

said first and second read only memories having outputs coupled to sine and cosine inputs, respectively, of said calculating stage;

whereby said calculating stage, said chrominance demodulator, said loop filter and said digital oscillator form a phase-locked loop such that said digital oscillator produces a hue adjustment angle having an approximately constant speed of rotation of;

said phase locked loop adjusting the frequency of said color burst output signal to one quarter of the frequency of said system clock and controlling the phase of said color burst output signal such that the phase of said first color difference signal is shifted with respect to said zero reference phase of said system clock by −180° for NTSC television standards and by +/−135° for PAL television standards.

4,809,060

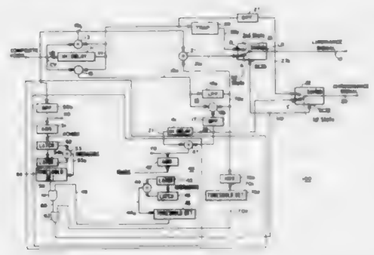
HANGING DOT REDUCTION ARRANGEMENT

Tomoki Saeki, Yokohama, Japan, assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Sep. 10, 1987, Ser. No. 94,774

Int. Cl.⁴ H04N 9/78

U.S. Cl. 358—31 **21 Claims**



1. A television apparatus responsive to a baseband composite input signal for generating an output luminance signal, comprising:

a comb filter coupled to said input signal for generating, in accordance with luminance information that is contained therein, a first luminance signal that is comb filtered;

means, responsive to said input signal, for generating, in accordance with chrominance information that is contained in said input signal, first and second chrominance signals, such that said second chrominance signal is time shifted, relative to said first chrominance signal;

means responsive to said first and second chrominance signals for generating, in accordance with differences therebetween, an inter-line chrominance difference signal;

means coupled to said comb filter and responsive to said inter-line chrominance difference signal for generating a correlation indicative signal when a signal that is generated in said comb filter is correlative with said inter-line chrominance difference signal; and

means coupled to said first luminance signal and responsive to said correlation indicative signal for generating, in accordance with said first luminance signal, said output luminance signal such that said correlation indicative signal causes said output luminance signal to vary.

18. A television apparatus responsive to a composite input signal for generating an output luminance signal comprising:

means, including a comb filter, responsive to said input signal for generating first and second luminance signals that are comb filtered such that during a given video line interval of said input signal, said first and second luminance signals contain luminance information that is obtained from correspondingly different video lines of said input signal;

means, responsive to said input signal, for generating, in accordance with a chrominance component signal that is contained in said input signal, first and second chrominance signals that contain chrominance information of different video lines of said input signal;

means responsive to said first and second chrominance signals for generating, in accordance with differences therebetween, an inter-line chrominance difference signal that is indicative of a difference between a color represented by said first chrominance signal and a color represented by said second chrominance signal;

means coupled to said first and second luminance signals and responsive to said inter-line chrominance difference signal for generating, in accordance therewith, first and second control signals, said first control signal being indicative of an occurrence of hanging dot condition in said first luminance signal and said second control signal being indicative of a corresponding occurrence of hanging dot condition in said second luminance signal; and

means coupled to said first and second luminance signals and responsive to said first and second control signals for generating said output luminance signal in accordance therewith such that, when a hanging dot condition occurs in one of said first and second luminance signals, but not in the other one of said first and second luminance signals, said output luminance signal is generated in accordance with the other one, and vice versa.

4,809,061

IMAGE READOUT METHOD AND APPARATUS

Kenji Suzuki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 835,309, Feb. 21, 1986. This application Feb. 17, 1988, Ser. No. 158,137

Claims priority, application Japan, Feb. 21, 1985, 60-31597; Feb. 21, 1985, 60-31598; Feb. 21, 1985, 60-31599

Int. Cl.⁴ H04N 1/46

U.S. Cl. 358—75 **13 Claims**

9. An image readout apparatus comprising:

a plurality of CCD type image sensors (32, 39, 44) each having a plurality of pixels (320) for photoelectrically converting incident light and storing a signal;

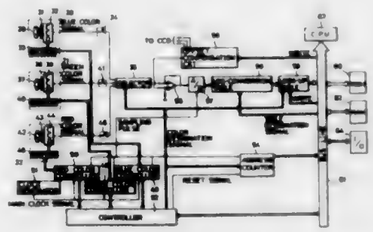
means (33, 40, 45) for driving said image sensors (32, 39, 44) in parallel;

charge storage time setting means (48, 49, 50, 52, 63) for setting a charge storage time independently for each image sensor (32, 39, 44);

means for extending said charge storage time for a predetermined time by preventing, during charge storage, a master clock signal from being input to said driving means for dividing said CCD type image sensor;

signal pickup control means (48, 49, 50, 52, 63) for determining a signal pickup time in such a way that the signal pickup times of said image sensors (32, 39, 44) do not overlap each other;

means for inhibiting during signal pickup said master clock



signal, thereby to delay said signal pickup by a predetermined period of time; and

signal processor means (55, 57, 58, 59) for processing a time sequential signal corresponding to a signal which is sequentially picked up from said image sensors (32, 39, 44).

4,809,062

OPTICAL COLOR LINE SCANNING AND IMAGING DEVICE HAVING A ROLLER DRIVE

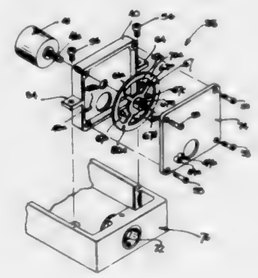
Philip L. Chen, Rancho Palos Verdes, Calif., assignor to Microtek Lab., Inc., Gardena, Calif.

Continuation-in-part of Ser. No. 671,293, Nov. 14, 1984, Pat. No. 4,667,253, and a continuation-in-part of Ser. No. 839,612, Mar. 14, 1986, abandoned. This application Nov. 25, 1987, Ser. No. 125,202

The portion of the term of this patent subsequent to May 19, 2004, has been disclaimed.

Int. Cl.⁴ H04N 1/46, 1/028, 1/10

U.S. Cl. 358—75 **2 Claims**



1. An optical line scanning and imaging system for generating electrical signals corresponding to successive linear elements of colored material which may include picture or document information comprising:

a light source,

means for successively driving linear elements of said material past said light source to form line images of said material including a set of drive rollers, fixed plate means for rotatably supporting said set of drive rollers, motor means for rotatably driving said set of drive rollers, a set of idler rollers, and floating bracket means for rotatably supporting said idler rollers in opposing relationship to said drive rollers,

first spring means for resiliently urging the floating bracket means and therewith the idler rollers linearly towards the drive rollers,

second spring means for resiliently urging the floating

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bracket means and therewith the idler rollers linearly away from the drive rollers,

pivotally supported arm means for actuating said first spring means so as to urge said idler rollers linearly toward said drive rollers against the urging action of said second spring means in a first pivotal position of said arm means and for releasing said first spring means so as to permit said second spring means to urge the idler rollers linearly away from said drive rollers in a second pivotal position of said arm means,

means for forming the line images into a flat light beam,

a linear array of detectors,

means running from said light source towards said detectors for channeling said light beam convergently towards said array of detectors,

lens means for focusing the light beam onto said array of detectors,

a color wheel having red, blue and green filters each encompassing a predetermined segment of said wheel,

means for rotatably supporting said wheel in the path of said light beam at a position in said path before said light beam reaches the lens means,

drive means for rotatably driving said color wheel,

a housing surrounding said color wheel, said housing having apertures formed therein to permit said light beam to pass through only one of said color filters at a time as said wheel is rotatably driven,

light source means mounted in said housing on one side of said color wheel,

light detector means mounted in said housing on the side of said color wheel opposite said one side thereof, said light detector means being aligned with said light source means, and

a plurality of apertures formed in said wheel, each of said plurality of apertures being momentarily aligned with said light source means and said light detector means during each rotation of said wheel,

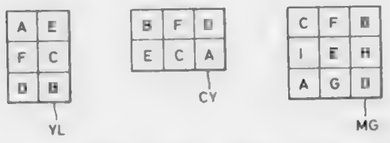
said plurality of apertures being positioned on said wheel so as to permit light to pass from said light source means to said light detector means at the start of each rotation of said wheel and as the red, green and blue filters first appear opposite the apertures formed in said housing.

4,809,063

MULTICOLOR PRINTING METHOD USING RECTANGULAR DITHER MATRICES OF DIFFERENT SIZE, SHAPE, AND ARRANGEMENT OF THRESHOLD VALUES TO MINIMIZE OVERLAP OF DIFFERENTLY COLORED INKS AT LOWER GRADATIONS

Haruhiko Moriguchi, and Inui Toshiharu, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 26, 1988, Ser. No. 203,567
Claims priority, application Japan, Nov. 9, 1983, 58-210617
Int. Cl.[4] H04N *1/46, 1/40*
U.S. Cl. 358—75 **3 Claims**



1. In a multi-gradation, multicolor printing method comprising the steps of generating separate color signals corresponding to a plurality of separable colors in an original image, generating a plurality of binary signals each corresponding to one of the colors by binarizing each color signal using a corresponding one of a plurality of dither patterns each comprising an arrangement of a plurality of threshold values, and performing multi-gradation, multicolor printing by recording each one of the colors using a correspondingly colored one of a plurality of inks in accordance with a corresponding one of said plurality of binary signals, the improvement comprising:

employing rectangular dither patterns which differ in size and in arrangement of said plurality of threshold values for each of said color signals so as to minimize overlapping of said plurality of inks at least at lower gradations.

3. In a multi-gradation, multicolor printing method comprising the steps of generating separate color signals corresponding to a plurality of separable colors in an original image, generating a plurality of binary signals each corresponding to one of the colors by binarizing each color signal using a corresponding one of a plurality of dither patterns each comprising an arrangement of a plurality of threshold values, and performing multi-gradation, multicolor printing by recording each one of the colors using a correspondingly colored one of a plurality of inks in accordance with a corresponding one of said plurality of binary signals, the improvement comprising:

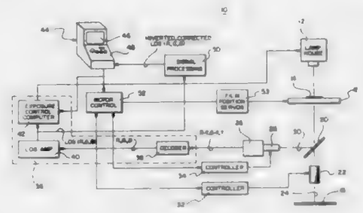
employing rectangular dither patterns which differ in shape and in arrangement of said plurality of threshold values for each of said color signals so as to minimize overlapping of said plurality of inks at least at lower gradations.

4,809,064

ENLARGING PHOTOGRAPHIC PRINTER

Shaun M. Amos; Richard J. Backus, both of Rochester, and Thomas C. Jessop, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1987, Ser. No. 122,995
Int. Cl.[4] H04N *7/18;* **G03B** *13/28*
U.S. Cl. 358—76 **31 Claims**



1. A method of imaging a selected region of a transparency onto a selected medium, comprising the steps of:

projecting said transparency onto first and second zoom lenses, each of said first and second zoom lenses having an adjustable magnification;

defining, by adjusting the magnification of said first zoom lens, said selected region of said transparency; and

adjusting, as a function of the magnification of said first zoom lens, the magnification of said second zoom lens so as to image said selected region of said transparency onto said selected medium.

4,809,065

INTERACTIVE SYSTEM AND RELATED METHOD FOR DISPLAYING DATA TO PRODUCE A THREE-DIMENSIONAL IMAGE OF AN OBJECT

Lowell D. Harris, Wildwood, and Charles R. Smith, Libertyville, both of Ill., assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Dec. 1, 1986, Ser. No. 936,156
Int. Cl.[4] H04N *13/00*
U.S. Cl. 358—88 **13 Claims**

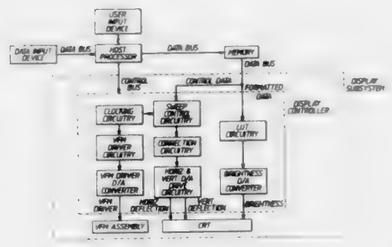
4. A method for processing a plurality of two-dimensional arrays of input data wherein each array of input data corresponds to a plane of sample data in an object and each corresponds to the value of an attribute of the object at a particular location therein, the method for producing and displaying high-quality three-dimensional images of the object, and for interactively modifying and transforming the data to produce and display resultant transformed images in response to user commands comprising the steps of:

(a) initializing the system comprising the substeps of receiving the arrays of input data representing the two-dimensional planes of samples of an attribute of the object;

formatting the received arrays of input data to obtain image data arrays representative of the plurality of sample planes, each of said image data arrays including a plurality of image datum, each of said image datum corresponding to a different location within the object and including sample magnitude bits having a value determined by the sample of the attribute of the object at said corresponding location, and transformation control bits, and setting up look-up tables in accordance with the user commands;

(b) compressing each of said image data arrays at different degrees of compression to obtain a singly compressed data array and a doubly compressed data associated with each of said image data arrays;

(c) selecting detail level arrays comprising selected ones of said singly compressed data arrays or said double compressed data arrays in response to a user command to display selected corresponding image data arrays;



(d) modifying the values of the transformation control bits of said selected detail level arrays in response to, and in accordance with, said user commands to obtain modified image data arrays, each of said modified image data arrays comprising a plurality of modified image datum;

(e) transforming said modified image data arrays to obtain corresponding transformed data arrays, each of said transformed data arrays including a two-dimensional raster of pixel values, said step of transforming including the substeps of selecting for each modified image datum a look-up table and transforming the value of each of said modified image datum according to said selected look-up table to obtain a corresponding transformed image datum having a brightness magnitude value;

(f) forming a block of control data corresponding to a different one of each of said transformed data arrays wherein each of said control blocks comprises address data necessary to locate the transformed image data array representative of a corresponding raster, synchronization data indicative of a pixel display interval to begin displaying the transformed data representative of said corresponding raster, and deflection data necessary to correct for anomalous perspective in the display of said corresponding transformed image data array; and

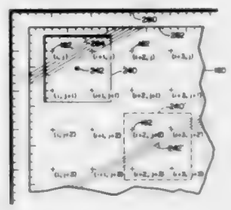
(g) displaying a selected transformed image data array according to said corresponding block of control data.

4,809,066

METHOD OF IMAGE MENSURATION WITH SELECTIVELY VISIBLE AND INVISIBLE RESEAU GRID MARKS

Franz W. Leberl; Sean Curry, both of Boulder, and Milan Karspeck, Loveland, all of Colo., assignors to Vexcel Corporation, Boulder, Colo.

Filed Aug. 3, 1987, Ser. No. 83,022
Int. Cl.[4] H04N *7/18*
U.S. Cl. 358—107 **3 Claims**



1. The method of image mensuration, comprising the steps of:

positioning a reseau with precisely spaced grid marks thereon on an exposed surface of an object containing the image and under a solid state camera that is capable of converting illuminated images to digital data;

illuminating the reseau grid marks and digitizing the image of the grid marks within the camera's view with the object image not illuminated, and storing the digitized data, including spatial location, of the grid marks in a computer memory;

removing the grid marks from the capability of the solid state camera to view them;

illuminating the object image and digitizing the object image within the camera's view, and storing the digitized data of the object image in a computer memory;

correlating the digital data of the spatial positions of the grid mark images in relation to the digital data of the object images by reference to the camera position in relation to both the grid marks image and the object image; and

displaying the digitized object image on a computer-controlled visual display device; and

mensurating the displayed image in a scale calibrated by the computer with respect to the digitized reseau grid marks image.

4,809,067

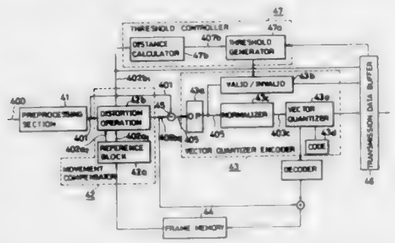
METHOD AND APPARATUS FOR ENCODING TRANSMITTING AND RECEIVING IMAGE BY PULSE CODE MODULATION

Hiroaki Kikuchi; Kenichi Asano; Okikazu Tanao, and Naofumi Goda, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1987, Ser. No. 53,627
Claims priority, application Japan, May 26, 1986, 61-120371; Jun. 17, 1986, 61-140890; Dec. 9, 1986, 61-293144; Dec. 24, 1986, 61-309573; Dec. 26, 1986, 61-313197
Int. Cl.[4] H04N *7/13*
U.S. Cl. 358—135 **8 Claims**

1. An image encoding/transmitting apparatus using a differential pulse code modulation system in which an estimated error signal and a threshold value are compared with each other to generate a movement detection signal and a differential signal and the movement detection signal and the differential signal are quantized and thereafter subjected to a transmission and a reception; wherein the polarity of the differential signal is judged in said encoding/transmitting apparatus, a

polarity is assigned to the threshold value based on the judgment, the differential signal is corrected depending on the



threahold value with the polarity, and the resultant corrected differential signal is quantized and thereby is communicated.

4,809,068

CLOCK SIGNAL GENERATING CIRCUIT FOR TELEVISION RECEIVER

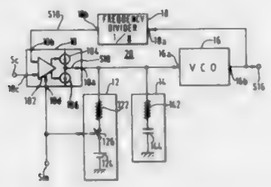
Hiroshi Nagai, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Feb. 18, 1988, Ser. No. 157,385

Claims priority, application Japan, Feb. 18, 1987, 62-23401[U]

Int. Cl.[4] H04N *5/04, 5/06*

U.S. Cl. 358—148 **11 Claims**



1. A clock signal generating circuit for a television receiver, the receiver generating a composite synchronizing signal and a masking signal for controlling the operation of the circuit, the composite synchronizing signal including at least two partial signals, comprising:

voltage controlled oscillator means for generating an output oscillation signal having a predetermined frequency;

means for supplying a reference voltage corresponding to a predetermined center frequency of the oscillation signal to the oscillator means;

phase comparator means for comparing the phase of the oscillation signal output from the oscillator means with the phase of one of the two partial signals and generating a phase error signal corresponding to the difference in phase between the oscillation signal and the one of the two partial signals for adjusting the frequency of the oscillation signal;

mask means responsive to the masking signal for interrupting the comparison by the phase comparator means for a period of time corresponding to the period of another one of the two partial signals;

switch means for interrupting the supply of the reference voltage to the oscillator means during the period when the mask means is interrupting the comparison; and

means for maintaining the voltage supplied to the oscillator means at a level corresponding to the voltage supplied at the time of the interruption by the switch means and the mask means.

4,809,069

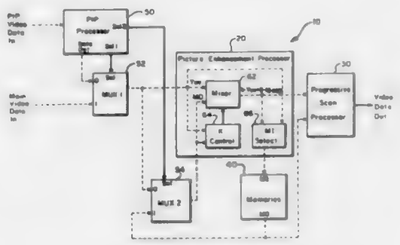
MULTIFUNCTION MEMORY FOR DIGITAL TELEVISION

Edwin R. Meyer, and Saiprasad V. Naimpally, both of Knoxville, Tenn., assignors to North American Philips Corporation, New York, N.Y.

Filed Mar. 10, 1988, Ser. No. 166,279

Int. Cl.[4] H04N *5/208, 5/272*

U.S. Cl. 358—166 **20 Claims**



1. A television processing section, comprising:

(a) a picture enhancement processor for receiving at least current video data from a main video data source, said picture enhancement processor comprising a mixer, a parameter control means, and a memory select means;

(b) a progressive scan processor, and

(c) a memory means for use with both said picture enhancement processor and said progressive scan processor, wherein,

said progressive scan processor is arranged to receive said current video data from said picture enhancement processor and delayed video data from said memory means,

said memory means is arranged to receive said current video data from said memory select means of said picture enhancement processor, to delay said current video data, and to release said delayed video data to said progressive scan processor and to said mixer of said picture enhancement processor.

4,809,070

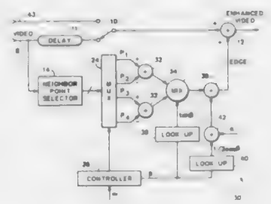
METHOD AND APPARATUS FOR ADDING TEXTURING HIGHLIGHTS TO A VIDEO SIGNAL

David E. Lake, Jr., Penn Valley, Calif., assignor to The Grass Valley Group, Inc., Grass Valley, Calif.

Filed Nov. 6, 1987, Ser. No. 117,261

Int. Cl.[4] H04N *5/14*

U.S. Cl. 358—166 **16 Claims**



13. A method of processing a signal representative of a rectangularly-sampled video component field $f_{u,v}$, comprising:

forming a rectangular array of values $s_{u,v}$ representing the polarity of edges in the field $f_{u,v}$, and

combining the array $s_{u,v}$ with a rectangularly-sampled video field $g_{u,v}$ by using the array $s_{u,v}$ as a mixing coefficient to control mixing of the field $g_{u,v}$ with at least one other field $p_{u,v}$.

4,809,071

TELEVISION CAMERA DEVICE AND X-RAY TELEVISION APPARATUS USING THE SAME

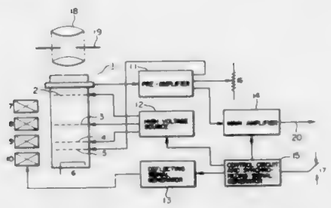
Hisatake Yokouchi, Tokyo; Masanori Maruyama, Tokorozawa; Fumitaka Takahashi, and Masayuki Tomeoka, both of Kashiwa, all of Japan, assignors to Hitachi, Ltd. & Hitachi Medical Corp., Tokyo, Japan

Filed Dec. 15, 1986, Ser. No. 941,641

Claims priority, application Japan, Dec. 16, 1985, 60-280946; Feb. 21, 1986, 61-35162

Int. Cl.[4] H04N *5/34;* **H01J** *31/38*

U.S. Cl. 358—111 **14 Claims**



6. An X-ray television apparatus comprising:

X-ray source means for irradiating an object with X-rays;

an image intensifier receivng an X-ray image of the object for converting the X-ray image into a visible image;

a television camera provided with an image pickup tube having at least 1000 scanning lines and disposed so that the visible image is received by the image pickup tube, the image pickup tube having a cathode for emitting an electron beam and a target plate of photoconductive type and a mesh electrode;

control means for operating the image pickup tube in a first operation mode to enanble imaging without occurrence of the water fall phenomenon, in which the number of scanning lines scanned by said electron beam is at least 1000, the number of frame per second scanned by said electron beam is less than 30, a maximum signal current is greater than or equal to 300 nA, and an electric field intensity in a region between the target plate and the mesh electrode is greater than or equal to 5.3 KV/cm so as to enable proper imaging with slow scanning at high resolution without occurrence of the water fall phenomenon; and

a monitoring device for displaying an image obtained by the television camera.

4,809,072

METHOD AND APPARATUS FOR GENERATING A VIDEO WIPE BORDER SIGNAL

Winfried Pohl, Büttelborn, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 3, 1987, Ser. No. 117,012

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1986, 3637936

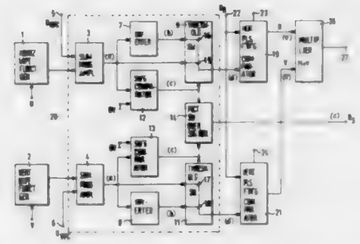
Int. Cl.[4] H04N *5/272*

U.S. Cl. 358—183 **4 Claims**

1. Method of generating a video bordering signal in a manner dependent upon horizontal and vertical scan frequency wipe signals that generate a wipe boundary geometrical figure between display of two different picture contents and are subject to variation by fading control voltages for fading from one to another of said picture contents, comprising the steps of:

comparing said horizontal and vertical wipe signals as respectively modified by horizontal and vertical fading control signals, with a reference potential to produce inverted horizontal and vertical wipe signals during an interval between successive passages of the time course of potential of each of said wipe signals through the value of said reference potential and at the same time producing both a horizontal and a vertical switching pulse signal during each said interval;

deriving picture switchover pulse signals from said horizontal and vertical switching pulse signals and utilizing the flanks of each said picture switchover pulse signal to switch in respectively opposite directions, between video signals respectively of said two different picture contents;



combining said wipe signals outside of said interval with said inverted wipe signals within said interval and comparing the resulting combined signal to a border-width determining adjustable potential (U_R) to produce pulse-shaped horizontal and vertical bordering signals, and

multiplying together said horizontal and vertical bordering signals to produce a bordering signal suitable for keying a selected bordering color tone to insert it as a border between two picture contents switched by the flanks of said picture switchover pulse signal.

4,809,073

SOLID STATE IMAGE PICKUP WHICH HAS DETECTING ELEMENTS AND OVERFLOW DRAINS AND GATES FOR THE OVERFLOW DRAINS AS WELL AS A NUMBER OF FIRST VERTICAL SHIFT REGISTERS AND GATES AND A SECOND PLURALITY OF VERTICAL SHIFT REGISTERS

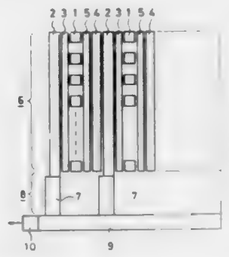
Yoshio Chiba, Kanagawa; Kenichi Aihara, Tokyo, and Fumihiko Sudo, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 11, 1987, Ser. No. 131,581

Claims priority, application Japan, Dec. 11, 1986, 61-295611

Int. Cl.[4] H04N *3/14*

U.S. Cl. 358—213.13 **5 Claims**



1. A solid state image pick-up apparatus for a charge-coupled device type comprising:

(a) a plurality of photo-detecting elements arranged in a matrix which generate charges;

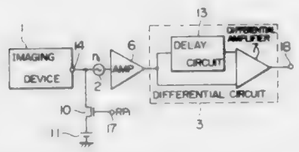
(b) a first plurality of vertical shift registers;
(c) read-out-control gate means arranged between said photo-detecting elements and said first vertical shift registers;
(d) drain means for absorbing some of said charges which are generated in said photo-detecting elements so that said some of said charges do not pass through said read-out-control gate means;
(e) control means for controlling the transfer of some of said charges from said photo-detecting elements to said drain means;
(f) first control pulse generating means for generating and supplying a first control pulse to said control means, whereby said photo-detecting elements are in storage mode during a plurality of time periods in a vertical period and during other time periods, said charges generated in said photo-detecting elements are transferred to said drain means;
(g) second control pulse generating means for generating and supplying a second control pulse to said read-out-control gate means such that said read-out-control means is turned on at the end of each of said time period whereby the charges generated in said photo-detecting elements during each of said time periods are transferred to said first vertical shift registers;
(h) mixing means for mixing said charges which are transferred to said first plurality of vertical shift registers during one vertical period further comprising a second plurality of vertical shift registers arranged to receive charges from said first plurality of vertical shift registers and a horizontal shift register which receives the output of said second plurality of shift registers, the number of said second vertical shift registers being equal to the number of said first vertical shift registers and said mixed charges in said vertical shift registers being transferred to said second vertical shift registers during a vertical blanking interval.

4,809,074

SOLID STATE IMAGER HAVING A SIGNAL PROCESSING CIRCUIT FOR REDUCING NOISE

Takuya Imaide, Yokohama; Hisao Ohdawa, Katsuta, and Masaru Noda, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 16, 1987, Ser. No. 62,681
Claims priority, application Japan, Jun. 16, 1986, 61-138205; Feb. 26, 1987, 62-41526
Int. Cl.[4] H04N *5/335*
U.S. Cl. 358—213.15 20 Claims



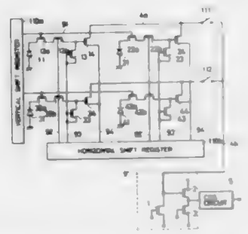
1. In a solid state imager including a plurality of pixels each having a photoelectric transducer element and scanning switches, scanners for scanning said pixels, output means for sequentially outputting pixel voltage signals produced by scanning said pixels, and an amplifier responsive to said voltage signals for sequentially producing amplified pixel signals indicative of pixel information, the improvement comprising:
a reset pulse input terminal for receiving a reset pulse at a predetermined period;
reset means connected to said output means and said reset pulse input terminal for resetting a potential of said output means in accordance with the reset pulse applied to said reset pulse input terminal; and
differential means connected to said amplifier for providing at an output a differential signal in response to one of said pixel signals inputted from said amplifier and the pixel signal immediately preceding said one pixel signal.

4,809,075

SOLID-STATE IMAGING DEVICE HAVING AN AMPLIFYING MEANS IN THE MATRIX ARRANGEMENT OF PICTURE ELEMENTS

Hajime Akimoto, Hachioji; Toshifumi Ozaki, Kogunei, and Shinya Ohba, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1987, Ser. No. 109,319
Claims priority, application Japan, Oct. 17, 1986, 61-245249
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213.18 36 Claims



1. A solid-state imaging device comprising:
a plurality of photoelectric conversion elements accumulating charges corresponding to light information;
a plurality of amplifying means each one having an input and being coupled to receive charges in at least one of said photoelectric conversion means for converting the respective charges accumulated in said photoelectric conversion elements into current or voltage signals and outputting amplified signals thereof;
a transfer means for transferring signals outputted by said plurality of amplifying means to an output end; and
detecting means, coupled to said output end, for detecting with respect to each one of said photoelectric conversion elements the difference between those signals outputted by said plurality of amplifying means corresponding to when charges, indicative of light information, are present at inputs of the respective amplifying means from those signals outputted when light information indicative charges are not present at said inputs.

4,809,076

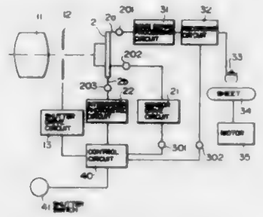
IMAGING APPARATUS USING SOLID STATE IMAGE SENSOR

Yoshihiro Todaka, and Takuya Imaide, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 15, 1987, Ser. No. 38,838
Claims priority, application Japan, Apr. 16, 1986, 61-85924
Int. Cl.[4] H04N *5/238*
U.S. Cl. 358—213.19 14 Claims

14. A photometric circuit for measuring the quantity of light incident to an image sensor having a plurality of photodiode s each comprised of a p-type semiconductor layer and an n-type semiconductor layer where by positive charge carriers are created in said p-type semiconductors layer and negative charge carriers are created in said n-type semiconductor layer in accordance with a quantity of light incident to said photodiode, an image signal output terminal through which an image signal due to first carriers stored in said photodiode and representative of one type of said positive and negative carriers is delivered of response to a drive signal for driving aid image sensor, and a photometric signal output terminal through

which second carriers representative of the other type are delivered to the outside of said image sensor, wherein said photometric circuit includes photometric means, connected to



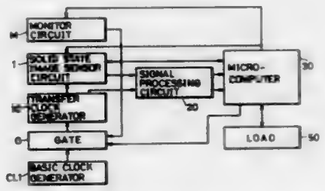
said image sensor, for calculating an incident light quantity on the basis of said second carriers to generate an incident light quantity signal.

4,809,077

SOLID STATE IMAGE SENSOR DRIVE APPARATUS

Toshio Norita, Sakai; Tokuji Ishida, Daito; Masatsuka Hamada, Ikejiri; Toshihiko Karasaki, Sakai, and Nobuyuki Taniguchi, Nishinomiya, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 21, 1987, Ser. No. 41,080
Claims priority, application Japan, Apr. 22, 1986, 61-93157
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213.26 3 Claims



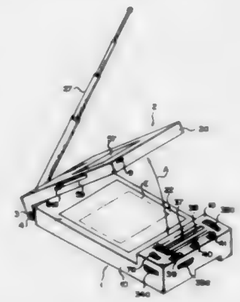
1. A solid state image sensor drive apparatus comprising:
a plurality of light receiving elements for receiving light impinged thereon and outputting electric charges,
electric charge accumulating means for accumulating the electric charge outputted from each of said light receiving elements,
accumulation time control means for controlling the accumulation time of the electric charges in said electric charge accumulating means and generating a stop signal designating the stop of the accumulation,
an analog shift register for storing the electric charges accumulated in said electric charge accumulating means,
transfer means for transferring, in parallel, the electric charges accumulated in said electric charge accumulating means to said analog shift register in response to the stop signal from said accumulation time control means,
data reading means for reading data stored in said analog shift register,
transfer signal generating means for generating a transfer signal for successively transferring to said data reading means the electric charges stored in said analog shift register, and
control means for interrupting and restarting the transmission of the transfer signal from said transfer signal generating means during a period when said data reading means successively reads the electric charges stored in said analog shift register based on the transfer signal.

4,809,078

LIQUID CRYSTAL TELEVISION RECEIVER

Nobol Yabe; Kazumasa Hirata; Shuri Mori, and Ken Yamauchi, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1984, Ser. No. 655,509
Claims priority, application Japan, Oct. 5, 1983, 58-154741[U]; Nov. 30, 1983, 58-184864[U]; Nov. 30, 1983, 58-184865
Int. Cl.[4] H04N *5/74, 5/70*
U.S. Cl. 358—236 23 Claims



18. An improved lighting device for an electronic device having a body comprising a case provided with an electric circuit therein, a liquid crystal display panel provided on the case and a mirror for watching an image on the liquid crystal display panel by the light passing through the display panel, wherein the improvement comprising:
an electroluminescence device detachably provided in the case;
first means for supplying a current from the electric circuit to the electroluminescence device;
second means for positioning the electroluminescence device at a position adjacent the liquid crystal display panel so as to light the panel said liquid crystal display panel being hinged on the case at one end thereof and held in a slanted position.

4,809,079

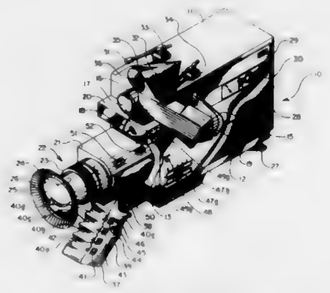
VIDEO RECORDING CAMERA

John M. Blazek, and John R. Tipton, Jr., both of Baltimore, Md., assignors to Leonard Bloom, Towson, Md., a part interest

Division of Ser. No. 60,250, Jun. 10, 1987, Pat. No. 4,764,817. This application Jun. 17, 1988, Ser. No. 208,101
Int. Cl.[4] H04N *5/76*
U.S. Cl. 358—335 20 Claims

1. In a hand-held video recording camera having a lens, an image pickup means operatively arranged to receive image information from the lens for converting the image information into an electric image data output signal, a video recorder for recording signals representing the image data and audio signals, an improvement comprising a source within the hand-held camera of audio signals; and means for assuring that,

whenever the video recorder is restarted to record scenes in interrupted sequence, audio signals from the source within the



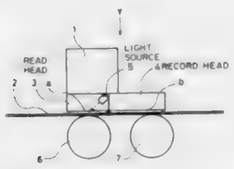
camera start to be recorded at substantially the point of prior interruption.

4,809,080

READ/RECORD HEAD IN FACSIMILE

Matahira Kotani, Nara; Hiroshi Morimoto, Sakurai; Ryoichi Kawai, Nara, and Kenichi Shiraishi, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 22, 1986, Ser. No. 944,211
Claims priority, application Japan, Dec. 23, 1985, 60-289818
Int. Cl.⁴ H04N 1/42
U.S. Cl. 358—256 3 Claims



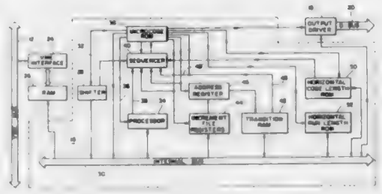
1. A facsimile apparatus which comprises:
a read head for reading information which is to be transmitted from an original paper surface;
a record head for recording received information on a recording paper surface, wherein said read head and said record head are constructed to be integral with each other, and are oriented so that said heads read and record from the same planar surface;
a first roller rotatably mounted on the opposite side of said planar surface from said read head for being brought into pressure contact through said original paper surface with said read head, and
a second roller rotatably mounted on the opposite side of said planar surface from said record head for being brought into pressure contact through said recording paper surface with said record head, wherein said rollers are independently rotatable in both forward and backward directions, and wherein said rollers rotate individually and simultaneously so that said heads can receive a plurality of original papers and recording papers.

4,809,081

METHOD AND APPARATUS FOR DECOMPRESSING ENCODED DATA

Francis P. Linehan, Cheverly, Md., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jun. 10, 1987, Ser. No. 60,301
Int. Cl.⁴ H04N 1/417
U.S. Cl. 358—260 13 Claims



1. A system for decoding input data formed of variable length codes, each variable length code representing a series of data cells with a single value assigned to each of the data cells in the series, said system comprising:
receiving means for receiving an input data block;
decompressor means for decoding a first available code in the input data block to produce an intermediate code;
output means for outputting, in dependence upon the intermediate code, a series of data cells with a single value assigned to each data cell in the series, the single value being varied for adjacent series of data cells;
bus means, operatively connected to said receiving means, said decompressor means and said output means, for transmitting the input data and the intermediate data; and
microcode sequencer means, operatively connected to said receiving means, said decompressor means, said output means and said bus means, for using microcode to control operation of and access to said bus memory by said receiving means, said decompressor means and said output means.

4,809,082

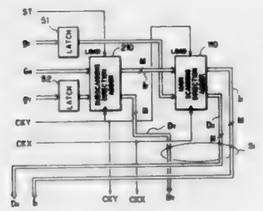
METHOD OF AND APPARATUS FOR GENERATING IMAGE DATA USED TO RECORD AN IMAGE HAVING GRADATION

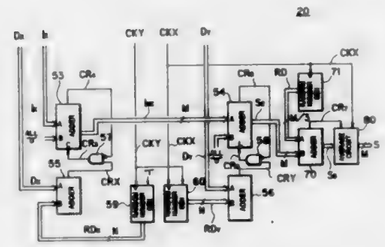
Katsuya Yamaguchi, Kyoto, and Hideaki Kitamura, Ibaraki, both of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Aug. 25, 1987, Ser. No. 89,331
Claims priority, application Japan, Aug. 25, 1986, 61-199841; Aug. 25, 1986, 61-199842; Jun. 23, 1987, 62-157300
Int. Cl.⁴ H04N 1/387
U.S. Cl. 358—283 19 Claims

13. An apparatus for generating image data for recording an image whose gradation levels are continuously changed by an array of pixels having discrete gradation levels on a prescribed recording plane, said apparatus comprising:
first gradation data generating means for generating first gradation data for expressing gradation levels of each pixel of an image to be recorded, said first gradation data including integral parts having data lengths responsive to the number of discrete gradation levels for said recording and decimal parts having arbitrary data lengths;
accumulation means for sequentially accumulating values of said decimal parts along a direction of said pixel array to generate pulses when said accumulated values reach values corresponding to multiples of a prescribed reference value;
composing means for composing said integral parts and said

pulses in a time-series manner to generate second gradation data; and





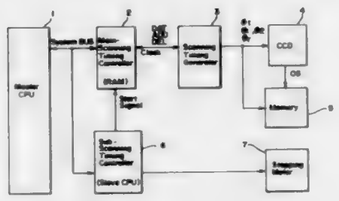
recording image data generating means for generating image data for recording said image on the basis of said gradation data.

4,809,083

IMAGE READING AND/OR RECORDING APPARATUS WITH ENLARGING AND REDUCING FUNCTION

Fumikazu Nagano, Yamatokoriyama, and Seiichi Tanaka, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 21, 1986, Ser. No. 933,386
Claims priority, application Japan, Nov. 27, 1985, 60-268009
Int. Cl.⁴ H04N 1/04
U.S. Cl. 358—287 2 Claims



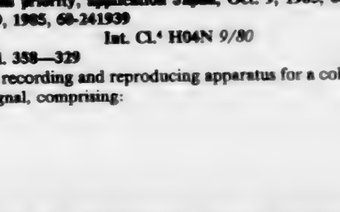
1. An image reading and/or recording apparatus comprising:
means for determining an integral part a and a decimal part d of a value corresponding to a desired magnification Z;
means for forming a single readout pixel by averaging a pieces of basic pixels read out from an original;
means for using said decimal part d as a correction value for each readout pixel and calculating an accumulated correction value with respect to individual readout pixels;
means for deleting one basic readout pixel every time the value from said calculating means exceeds 1; and
means for enlarging or reducing the image at a desired magnification by continuously varying a ratio of a reading resolution to the a recording density in accordance with an output of said deleting means.

4,809,084

APPARATUS FOR PROCESSING VIDEO SIGNAL

Takeshi Morimoto, and Kunio Sekimoto, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

PCT No. PCT/JP86/00042, § 371 Date Oct. 8, 1986, § 102(e) Date Oct. 8, 1986, PCT Pub. No. WO86/04760, PCT Pub. Date Aug. 14, 1986
PCT Filed Feb. 3, 1986, Ser. No. 923,832
Claims priority, application Japan, Feb. 4, 1985, 60-19451; Feb. 8, 1985, 60-23034; Mar. 18, 1985, 60-53910; Mar. 26, 1985, 60-61118; Jun. 10, 1985, 60-125333
Int. Cl.⁴ H04N 9/89
U.S. Cl. 358—324 14 Claims



1. A video signal processing apparatus for use with a video signal recording/reproducing apparatus, said video signal processing apparatus being arranged to decompose an input color composite video signal into constituent signals including a luminance signal and a chrominance signal to be recorded by said video signal recording/reproducing apparatus, said chrominance signal comprising first and second chrominance signal components, and to produce a color composite signal by superimposing a carrier chrominance signal upon a luminance signal reproduced by said video signal recording/reproducing apparatus, said carrier chrominance signal is obtained by modulating a reference color subcarrier with two chrominance signal components reproduced by said video signal recording/reproducing apparatus; characterized by:
(a) superimposing means for superimposing a first signal indicative of phase of a color subcarrier included in said input color composite video signal upon either said luminance signal or said two chrominance signal components both to be recorded;
(b) extracting means for extracting said first signal on reproduction;
(c) phase comparison means for comparing phase between said first signal extracted and said reference color subcarrier; and
(d) phase control means for controlling, in accordance with an output signal from said phase comparison means, phase of said luminance signal and said two chrominance signal components both reproduced.

4,809,085

RECORDING AND REPRODUCING APPARATUS FOR REDUCING CROSS-TALK IN COLOR TELEVISION SIGNAL

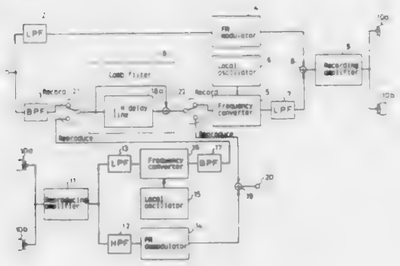
Toshihiro Funahashi, Saija, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 8, 1986, Ser. No. 916,654
Claims priority, application Japan, Oct. 9, 1985, 60-225149; Oct. 29, 1985, 60-241939
Int. Cl.⁴ H04N 9/80
U.S. Cl. 358—329 4 Claims

1. A recording and reproducing apparatus for a color television signal, comprising:

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a first low pass filter for separating a luminance signal from a color television signal to be recorded,
a comb filter for separating a chrominance signal from said color television signal,
switching means for inputting said color television signal for recording to said comb filter during recording and for inputting a reproduced converted chrominance signal to said comb filter during reproducing,
an FM modulator for frequency-modulating said luminance signal to obtain an FM luminance signal of a low carrier wave,
a first converter for converting the frequency of the chrominance signal separated from said color television signal for recording into a low frequency band after filtering by said comb filter during recording, thereby to obtain a low-band-converted chrominance signal such that recorded chrominance signals on neighboring recording tracks have an interleave relation with respect to each other,
a first mixer for mixing said FM luminance signal of a low carrier wave with said low-band-converted chrominance signal,



magnetic heads for recording an output signal of said mixer on a magnetic recording medium, the magnetic heads of neighboring tracks having different azimuth angles with respect to each other,
a high pass filter for separating an FM luminance signal of a low carrier wave from a reproduced signal,
a second low pass filter for separating a low-band-converted chrominance signal from said reproduced signal,
a frequency demodulator for demodulating said reproduced FM luminance signal of said low carrier wave to obtain a reproduced luminance signal,
a second converter for converting the frequency of said reproduced low-band-converterted chrominance signal into a reproduced converted chrominance signal, and
a second mixer for mixing during reproducing said demodulated luminance signal with said reproduced converted chrominance signal which has passed through said comb filter via said switching means during reproducing, thereby to obtain a reproduced color television signal.

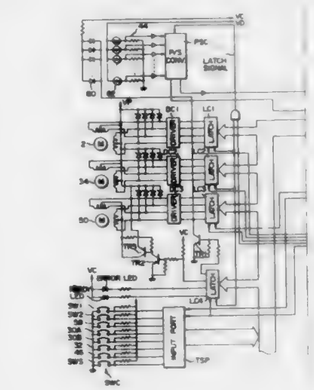
4,809,086

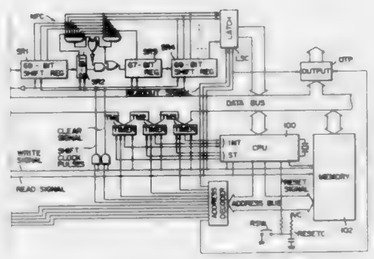
INPUT SCANNING DEVICE

Keiichi Horiya, Numazu, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1987, Ser. No. 85,650
Int. Cl.[4] H04N *1/10*
U.S. Cl. 358—293 12 Claims

1. An input scanning device comprising:
paper holding means for holding paper to be scanned;
paper feeding means for continuously feeding the paper in a first direction at substantially a constant speed;
scanning means for scanning the paper in a second direction substantially perpendicular to the first direction, scanned areas scanned in two successive scanning cycles by said scanning means being partly overlapped on each other;
memory means for storing data supplied from said scanning means; and
control means for deriving column data each formed of a plurality of bits from said scanning means at a regular interval for each column and sequentially storing the





derived column data into said memory means, detecting the overlapped bit number between two successive scanned data by comparing each column data of one of the two successive scanned data and corresponding column data of the other scanned data, and cancelling the detected number of overlapped bits from each column data of one of the two successive scanned areas.

4,809,087

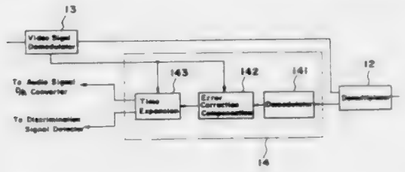
APPARATUS FOR RECORDING A DISCRIMINATIVE SIGNAL

Yasuharu Shimeki, Suita; Hiroshi Matsushima, Hirakata; Masamitsu Ohtsu, Kadoma, and Nobuyoshi Kihara, Amagasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 767,973, Oct. 21, 1985, abandoned, which is a continuation-in-part of Ser. No. 487,835, Apr. 22, 1983, abandoned. This application Nov. 23, 1987, Ser. No. 124,434
Claims priority, application Japan, Apr. 27, 1982, 57-72064
Int. Cl.[4] H04N *5/782*
U.S. Cl. 360—19.1 2 Claims

1. An apparatus for recording a discriminative signal in a magnetic recording and reproducing device having at least one rotating magnetic head for recording and reproducing a video signal and a digital signal in a contiguous manner along each

track which is inclined at an angle relative to the direction of travel of a magnetic tape, said apparatus comprising:
a means for generating, during a recording mode, a discrimination signal having a first section carrying a check code and a second section carrying information, said check code being provided to indicate whether or not to use said information in said second section irrespective of the type of information carried in said second section;
a means for combining, during a recording mode, said discrimination signal in said digital signal; and
a means for controlling, during a reproducing mode, the reproduction operation such that said controlling means determines whether or not the reproduced signal of the



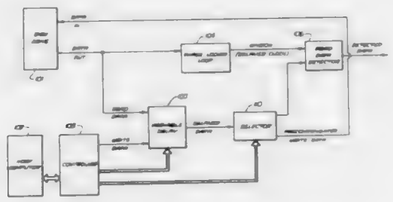
signal in said first section indicates that the information carried in said second section should be used, and such that the information carried in said second section is reproduced when the signal in said first section indicates that the information carried in said second section should be used, and such that the information carried in said second section is not reproduced when the signal in said first section indicates that the information carried in said second section should not be used;
whereby said magnetic tape, recorded either by a type of device which utilizes the information in the second section or a type of device which does not utilize the information in the second section, has a compatibility between said two types of devices.

4,809,088

INTEGRATED SYSTEM FOR IMPLEMENTATION OF READ WINDOW MARGINING AND WRITE PRECOMPENSATON IN DISK DRIVES

Karl M. J. Lofgren, Long Beach, and Ronald E. Wilson, Lake Forest, both of Calif., assignors to Western Digital Corporation, Irvine, Calif.

Filed Dec. 5, 1986, Ser. No. 938,529
Int. Cl.[4] G11B *27/36, 5/09*
U.S. Cl. 360—31 12 Claims



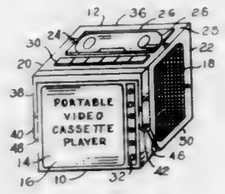
1. An integrated system for implementation of read window shifting and write precompensation functions in connection with a storage device such as a disk drive, comprising:
supply means for providing write information;
reading means for receiving read information from a recording medium in the storage device;
phase shift means, coupled to said supply means and said reading means, for selectively receiving as an input signal read information from the reading means during read window shifting or write information from the supply means during write precompensation, and for generating an output signal having a different phase relative to the phase of the input signal;
writing means for receiving the output signal of the phase shift means and for providing write information carried in the output signal to the storage device;
read detection means for receiving the output signal of the phase shift means and for detecting read information carried in the output signal; and
control means for selectively directing the write information in the output signal of the phase shift means to the writing means and the read information in the output signal to the read detection means.

4,809,089

PORTABLE VIDEO CASSETTE PLAYER

David C. Richie, 4482 Harvard, Detroit, Mich. 48224

Filed Oct. 16, 1987, Ser. No. 109,043
Int. Cl.[4] H04N *5/78*
U.S. Cl. 360—33.1 20 Claims



1. A truly portable video cassette player comprising a video cassette detector for receiving a video cassette having a prerecorded video tape therein and detecting video and audio signals on the video tape, means for broadcasting the detected audio signals connected to the video cassette detector, means for displaying the detected video signals connected to the video cassette detector, and a portable power supply within the portable video cassette player connected to the video cassette detector, to the means for broadcasting the detected audio signals and to the means for displaying the detected video signals for providing operating energy therefore.

4,809,090

RECORDING/REPRODUCING SYSTEM HAVING A MAGNETIC HEAD OF PRECEDING-ERASE TYPE

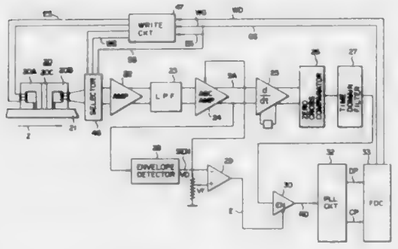
Hiroshi Suzuki, Monroeville, Pa., assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 66,974, Jun. 29, 1987, abandoned. This application Jul. 20, 1988, Ser. No. 222,376
Claims priority, application Japan, Jun. 30, 1986, 61-153531
Int. Cl.[4] G11B *5/02*
U.S. Cl. 360—46 12 Claims

1. A magnetic recording/reproducing system for a magnetic disk apparatus, comprising:
head means having a preceding-erase type magnetic head in contact with a flexible magnetic recording medium, for reading out data stored in said recording medium, and for outputting an analog signal corresponding to the read out data;
converting means for converting the output signal of said head means to digital read data and outputting the digital read data; and

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preventing means for preventing said converting means from outputting said digital read data which corresponds



to read out data from DC erased areas in tracks of said magnetic recording medium.

4,809,091

DISK APPARATUS

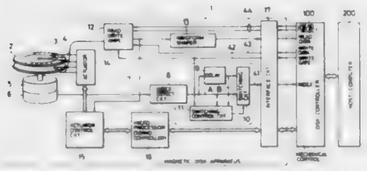
Shyoichi Miyazawa; Satoshi Kawamura, both of Yokohama; Shoichiro Tokyama, Odawara; Akira Ishibashi, Tokyo; Kazutoshi Kato, Narashino, and Junichi Ideda, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Tokico Ltd., both of Tokyo, Japan

Filed Apr. 15, 1987, Ser. No. 38,837

Claims priority, application Japan, Apr. 16, 1986, 61-85981; Jun. 20, 1986, 61-143015; Dec. 10, 1986, 61-292301

Int. Cl.[4] G11B *5/09, 15/04*

U.S. Cl. 360—48 **17 Claims**



1. A disk apparatus for use in a disk drive system having a disk controller which provides control signals on the basis of commands given thereto from a host computer to control the mode of operation of said disk apparatus in writing data on and reading data from tracks on the data surface of a rotary disk, the tracks including a servo area for servo data, said disk apparatus comprising:

read/write means for reading data from and writing data on the tracks on the data surfaces of rotary disks;

control means for accurately positioning said read/write means on a predetermined track in accordance with servo data written in the servo area

on the data surface of the disk; phase detecting means responsive to rotation of the disk for detecting the angular phase of the disk; and

signal selecting and sending means for selectively sending to the disk controller a first signal indicating the start of the servo area of the disk and a second signal indicating the end of the servo area of the disk, in accordance with the output signal of said phase detecting means and control signals from the disk controller.

4,809,092

METHOD AND ARRANGEMENT FOR RECORDING DIGITAL DATA ON A MAGNETIC RECORDING MEDIUM BY USE OF BINARY DATA SIGNALS AND MAGNETIC BIAS SIGNALS

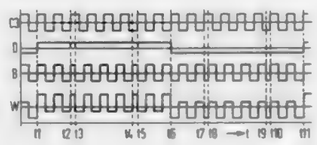
Erik Solhjell, Kongsvikveien, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Filed Jul. 6, 1987, Ser. No. 70,199

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1986, 3633269

Int. Cl.[4] G11B *5/09*

U.S. Cl. 360—66 **16 Claims**



1. A method for recording digital data on a magnetic recording medium by use of binary data signals, which represent the digital data, and magnetic bias signals whose period durations are significantly shorter than a shortest period duration of the data signals, comprising steps of:

synchronizing the magnetic bias signals and the data signals such that signal edges of the data signals occur simultaneously with signal edges of the magnetic bias signals;

shortening time-wise spacings between two successive signal edges for at least two of a plurality of the magnetic bias signals occurring between and spaced from successive signal edges of the data signals so that a total amount of time-wise shortenings of all spacings taken together is equal to half a period duration of the magnetic bias signals, such that directions of signal edges of the magnetic bias signals are identical to directions of corresponding signal edges of the data signals, and such that sums of pulse durations and pulse pauses of the magnetic bias signals are identical; and

overlaying the data signals and the magnetic bias signals with the time-wise shortenings, and supplying them to a magnetic write head for recording on the recording medium.

4,809,093

APPARATUS FOR SELECTIVELY CONTROLLING MAGNETIC TAPE RECORDER'S MUTING OPERATION IN RESPONSE TO DETECTION OF ERRORS IN THE REPRODUCED SIGNAL BY ONE OF TWO HEADS

Makoto Hamabe, Maebashi, and Yasuhiro Yamada, Yokosuka, both of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Jul. 6, 1987, Ser. No. 70,041

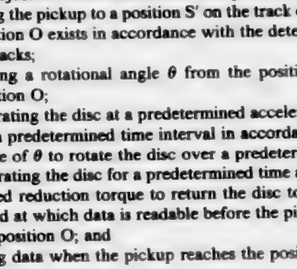
Claims priority, application Japan, Jul. 10, 1986, 61-160922

Int. Cl.[4] G11B *5/09, 20/18*

U.S. Cl. 360—67 **7 Claims**

1. A muting control apparatus adapted to a recording and reproducing system having first and second rotary heads which alternately scan tracks on a magnetic tape, each track storing N (N is a natural number) data blocks of a digital audio signal obtained by encoding a sampled analog audio signal every data block, wherein said muting control apparatus determines whether to mute a reproduced audio signal, by using an error signal which indicates whether each data block of a reproduced digital audio signal has error, said muting control apparatus comprising,

first means for indicating selection of the error signal relative to N−m (m is a natural number satisfying m<N) data blocks reproduced by the second rotary head when all of the first m data blocks of N data blocks reproduced by the first rotary head have errors, and for indicating selection of the error signal relative to N−m data blocks reproduced by the first rotary head when at least one of the first



m data blocks of said N data blocks reproduced by the first rotary head has no error, and

second means for generating a muting control signal indicating whether to mute said reproduced audio signal, by using the error signal which is selected by said first means.

4,809,094

METHOD OF ACCESSING DATA RECORDED ON A DISK AT A HIGH SPEED

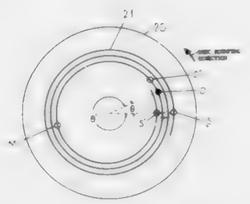
Ryo Akiyama, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd, Kadoma, Japan

Filed Jan. 5, 1987, Ser. No. 58,884

Claims priority, application Japan, Jun. 11, 1986, 61-135720; Jun. 13, 1986, 61-138571

Int. Cl.[4] G11B *27/00*

U.S. Cl. 360—72.1 **24 Claims**



1. A method of accessing data recorded in concentric circular or spiral information tracks on a disc using a pickup for reading data following the information tracks, comprising the steps of:

detecting the number of tracks from a track on which a current position S of the pickup exists to a track on which an objective address data recorded position O exists;

moving the pickup to a position S' on the track on which the position O exists in accordance with the detected number of tracks;

detecting a rotational angle θ from the position S' to the position O;

accelerating the disc at a predetermined acceleration torque for a predetermined time interval in accordance with the value of θ to rotate the disc over a predetermined angle;

decelerating the disc for a predetermined time at a predetermined reduction torque to return the disc to a rotational speed at which data is readable before the pickup reaches the position O; and

reading data when the pickup reaches the position O.

4,809,095

RECORDING AND REPRODUCING APPARATUS SELECTIVELY USING A PLURALITY OF KINDS OF RECORDING MEDIUMS

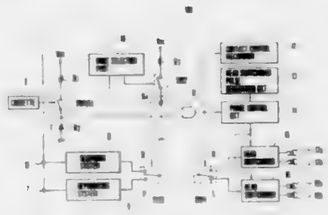
Tatsuzo Ushiro, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 513,235, Jul. 13, 1983, Pat. No. 4,722,015. This application Jun. 4, 1987, Ser. No. 58,041

Claims priority, application Japan, Jul. 19, 1982, 57-125266

Int. Cl.[4] G11B *21/02, 15/14, 5/54*

U.S. Cl. 360—75 **11 Claims**



1. A magnetic recording and reproducing apparatus, comprising:

(a) a first magnetic head;

(b) a second magnetic head having inferior wear reaistance to said first magnetic head and having different magnetic characteristics from that of said first magnetic head;

(c) holding means for holding a magnetic record bearing medium;

(d) discriminating means for discriminating whether the magnetic record bearing medium held by said holding means is a medium on which a predetermined information can be recorded by said first head;

(e) mode changeover means for changing over the apparatus between a recording mode and a reproducing mode; and

(f) control means responsive to said discriminating means and said mode changeover means for inhibiting said second head to contact said medium except when the apparatus is in the recording mode and said discriminating means discriminates that the medium held by said holding means is a medium on which the information cannot be recorded by the first head.

4,809,096

TRACKING CONTROLLING DEVICE USING MULTIPLE PILOT SIGNALS IN MAGNETIC VIDEO SIGNAL RECORDING AND REPRODUCING APPARATUS

Nobuo Azuma; Hikaru Masui, both of Yokohama, and Yoshizumi Watatani, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 23, 1987, Ser. No. 6,121

Claims priority, application Japan, Jan. 24, 1986, 61-13175

Int. Cl.[4] G11B *15/467, 5/588*

U.S. Cl. 360—77.15 **7 Claims**

1. A tracking controlling device for a helical scanning-type video signal magnetic recordig and reproducing apparatus, in which pilot signals constituted by a plurality of signals whose frequencies are changed over for each track are recorded in advance on video signal tracks on said magnetic tape such as to be superimposed on video signals, and said recorded pilot signals are reproduced during a reproducing operation so as to be used for effecting tracking control, said tracking controlling device comprising:

detecting means for respectively separating and detecting pilot signals simultaneously picked up from the tracks adjacent to the track to be reproduced, from the signals reproduced by tracing by a rotating head;

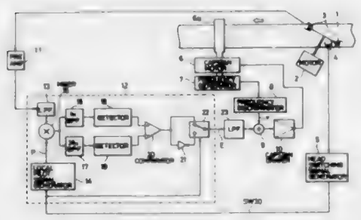
comparing means for comparing the magnitude of the two signals detected by said detecting means and for output-

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ting the signal of either one of the binary levels in corresponding with the magnitude thereof; and

controlling means for controlling the tracking by said rotating head in relation to a recording track by controlling the travelling phase of a magnetic tape by making use of the output signal of said comparing means;

wherein said controlling means for controlling said traveling phase of said magnetic tape and said tracking has means



for detecting the rotational speed of said capstan motor for running said magnetic tape and generating a PWM signal corresponding to said rotational speed, driving means for driving said capstan motor constituted by a power source which is controlled by switching, and switching means for time sharing said PWM signal corresponding to said rotational speed and a tracking error signal output by said comparing means at a preset cycle so as to be switched over and applied to said driving means.

4,809,097

MAGNETIC RECORDING AND REPRODUCING APPARATUS

Toshifumi Fujii, and Jun Kikuchi, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

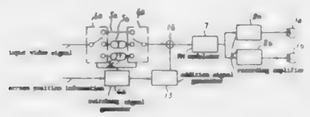
PCT No. PCT/JP85/00695, § 371 Date Aug. 21, 1986, § 102(e) Date Aug. 21, 1986, PCT Pub. No. WO86/03920, PCT Pub. Date Jul. 3, 1986

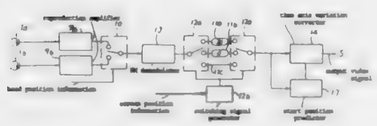
PCT Filed Dec. 19, 1985, Ser. No. 905,318

Claims priority, application Japan, Dec. 21, 1984, 59-271169

Int. Cl.[4] H04N *5/78*

U.S. Cl. 360—9.1 4 Claims





1. A magnetic recording and reproducing apparatus of a helical scanning type for recording and reproducing one field of a video signal with the video signal being divided into a plurali ty of signal portions recorded onto N (N is an integer equal to or greater than 2) tracks with the use of M number of heads (M is an integer equal to or greater than 1) which are provided at an interval of 360°/M on a rotational drum, comprising: delay line means for delaying the signal recorded at the recording end into the nth (n=1, . . . , N) track by a time (n−1) T where T is equal to a predetermined time; and time axis variation corrector means at the reproducing end for correcting the time axis variation of each signal reproduced from each of the N tracks and which join said signal portions together, thereby restoring said one field of said video signal.

4,809,098

TAPE CASSETTE LOADING DEVICE

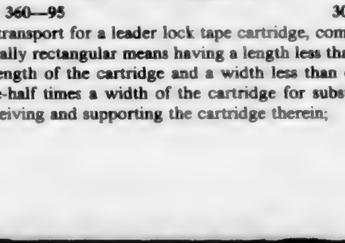
Satoru Koizumi; Daisuke Teshima, and Yoshio Katayama, all of HigashiHiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 1, 1986, Ser. No. 846,956

Claims priority, application Japan, Apr. 25, 1985, 60-62930[U]

Int. Cl.[4] G11B *15/68*

U.S. Cl. 360—92 9 Claims



1. A tape cassette loading device which can store and accurately position a plurality of tape cassettes in the main body of a tape cassette recorder and/or reproducing apparatus comprising:

a tape cassette holder storing member portion of a main body of a tape cassette recorder and/or reproducing apparatus having an entrance opening for the introduction of and storing a tape cassette holder;

a tape cassette holder for storing a plurality of tape cassettes provided with partition plates for separating said tape cassettes;

support members slidably mounted on said partition plates of said tape cassette holder for determining the position of said tape cassettes when said tape cassette holder is loaded into said tape cassette holder storing member; and

positioning means provided on said tape cassette holder storing member of said main body on a wall portion opposite said entrance opening of said storing member, for positioning said tape cassettes at a predetermined position by direct contact of said support members with said positioning means.

4,809,099

TRANSPORT FOR TAPE CARTRIDGE WITH LEADER BLOCK

John F. Murphy, San Diego; William M. Barton, Jr., Encinitas; Lynn C. Jacobs, Fremont; Jeffrey S. McGee, San Diego; William F. Netzebund, San Diego; Roger S. Johnson, Del Mar, and Thomas J. Dinas, San Diego, all of Calif., assignors to Cipher Data Products, Inc., San Diego, Calif.

Continuation of Ser. No. 88,729, Aug. 24, 1987, which is a continuation of Ser. No. 794,503, Nov. 1, 1985, Pat. No. 4,704,645. This application May 16, 1988, Ser. No. 195,408

The portion of the term of this patent subsequent to Nov. 3, 2004, has been disclaimed.

Int. Cl.[4] G11B *5/008, 15/32*

U.S. Cl. 360—95 30 Claims

1. A transport for a leader lock tape cartridge, comprising:

generally rectangular means having a length less than twice a length of the cartridge and a width less than one and one-half times a width of the cartridge for substantially receiving and supporting the cartridge therein;

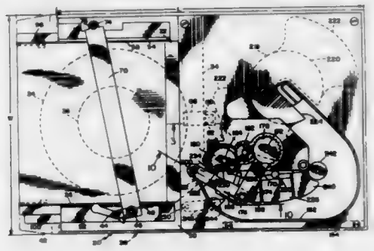
a take-up hub;

means for rotatably supporting the take-up hub inside the cartridge receiving and supporting means in a common plane with a supply reel within said cartridge;

a magnetic tape transducer assembly mounted inside the cartridge receiving and supporting means between said cartridge and take-up hub;

a supply reel motor mounted inside the cartridge receiving and supporting means;

means for providing a first driving connection between the supply eel motor and supply reel inside the cartridge;



a take-up motor mounted inside the cartridge receiving and supporting means;

means for providing a second driving connection between the take-up motor and the take-up hub; and

means confined substantially within a lateral space about equal to that occupied by said said take-up hub for extracting a leader block from the cartridge and threading a length of tape connected to the leader block past the transducer assembly to the take-up hub.

4,809,100

APPARATUS HAVING CASSETTE LOADING AND UNLOADING FUNCTIONS AND AN OPERATION MODE SELECTING FUNCTION

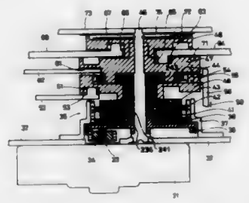
Nobuyuki Tanaka, and Kazunori Akita, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1986, Ser. No. 870,409

Claims priority, application Japan, Jun. 4, 1985, 60-122922

Int. Cl.[4] G11B *15/00*

U.S. Cl. 360—96.1 2 Claims



1. An apparatus for loading and unloading tape cassette and for selecting an operation mode when the cassette is loaded, comprising:

a shaft having an axis;

a motor, providing rotational motion at a motor gear;

speed reducing means disposed rotatably and coaxially with said shaft for receiving rotational input from said motor and providing an output at a reduced speed;

a first cam element disposed rotatably and coaxially with said shaft, said first cam element being rotated by said speed reducing means;

a second cam element disposed rotatably and coaxially with said shaft, said second cam element being rotated by said speed reducing means;

a first link mechanism for loading and unloading said cassette, operation of said first link mechanism being controlled by motion of said first cam element;

an operation mode selecting mechanism, operation thereof being controlled by motion of said second cam element; and

a lock mechanism for stopping selectively the rotation of said first cam element or said second cam element wherein said first link mechanism comprises a horizontal movement mechanism for loading and unloading said cassette in a horizontal direction and a vertical movement mechanism for bringing said loaded cassette into an enabled state for running and for taking said cassette out of said enabled state and said first cam element is provided with a first closed loop-shaped path for horizontal operation including a non-circular portion and a portion shaped as a circular arc with a radius r_{PH} about said axis for guiding the operation of said horizontal movement mechanism and a second closed loop-shaped path for vertical operation having a non-circular portion and first and second portions shaped as circular arcs with corresponding radii, r_{PV} and r_{EV} respectively, about said axis for guiding the operation of said vertical movement mechanism, whereby when either one of said vertical and horizontal movement mechanisms is in operation by engagement with said non-circular portion of its corresponding closed loop, the other of said vertical and horizontal movement mechaaisms is engaged with a circular arc portion of its corresponding closed loop path at a corresponding radius so as to be not effecting cassette movement at that time.

4,809,101

AUTOMATIC STOPPING MECHANISM FOR A TAPE FEEDING DEVICE

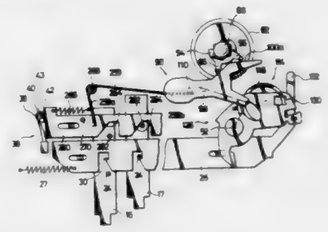
Shinsaku Tanaka, Tokyo, and Tadao Arata, Isesi, both of Japan, assignors to Tanashin Denki Co., Ltd., Japan

Filed Jun. 25, 1987, Ser. No. 66,195

Claims priority, application Japan, Dec. 31, 1986, 61-313107; Mar. 10, 1987, 62-35003[U]

Int. Cl.[4] G11B *15/02, 15/18, 15/22*

U.S. Cl. 360—96.4 13 Claims



1. An automatic stopping mechanism for a tape feeding device which includes a reel receiver, a reel base for rotating said reel receiver through frictional contact therebetween, a constantly rotating capstan, a pinch roller that is selectively brought into contact with said capstan with a tape interposed between and means for selecting one of a plurality of operation modes in which said tape feeding device is to operate, comprising:

a mode maintaining element for cooperating with said means for selecting to maintain the selected operation mode of said tape feeding device;

a cam disk connected to be rotated in one direction by said

capstan and having thereon an eccentric cam face and an engaging element at a position spaced from said eccentric cam face;

a rockable member mounted for rocking motion around a fixed axis and having a cam follower at a position thereof spaced from said fixed axis;

a rotation detecting member mounted in frictional contact with said reel receiver for exerting an urging force in a direction of rotation of said reel receiver to urge said rockable member to contact said cam follower with said eccentric cam face of said cam disk so that said rockable member may be rocked by said eccentric cam face of said cam disk; and

a movable releasing member supporting said cam disk for rotation thereon and movable between a neutral position and an operative position in which a driving force of said cam disk is transmitted to said reel base, said cam disk being located such that when rotation of said reel receiver is stopped and consequently said rockable member is pivoted to and thereafter remains at one of end positions of a range of rocking motion thereof until said engaging element of said cam disk is engaged with said cam follower of said rockable member, further rotation of said cam disk will cause a pushing force of said engaging element to act substantially toward a center of the rocking motion of the rockable member, so that said engaging element is acted upon by the resulting reactive force from said rockable member so that said movable releasing member will be moved away from said operative position to said neutral position and the pinch roller will be separated from the capstan thereby causing said mode maintaining element to cancel the operation mode of said tape recorder.

4,809,102

DISK FILE WITH AIR FILTRATION SYSTEM

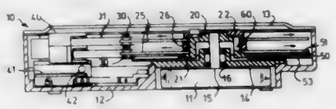
Michael R. Hatchett, Chandlers Ford, and John S. Heath, Winchester, both of United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1987, Ser. No. 43,508

Claims priority, application European Pat. Off., May 8, 1986, 86303515.0

Int. Cl.[4] G11B *5/012*

U.S. Cl. 360—98 **12 Claims**



1. A disk file comprising a disk enclosure;

a disk stack within the enclosure comprising a plurality of annular information storage disks, adjacent disks of which are separated by a radially vented spacer;

a plurality of transducer heads co-operable with the disks for writing information on and/or reading information from the disks;

a rotatable hub assembly for supporting the disk stack for rotation therewith, the hub assembly including vents by way of which and of said vented spacer an axial region of the enclosure adjacent an extreme disk of the stack communicates with the space between adjacent disks whereby, in operation, the rotation of the disks creates a high pressure region at the periphery of the disk stack and a low pressure region adjacent the hub assembly to cause a circulatory air flow around and between the disks via said hub assembly vents and the vented spacer;

and a filter assembly fixedly mounted in said axial region and extending circumferentially around the hub assembly with the filter media facing in the axial direction opposite said disk stack, the arrangement of the filter assembly being such that communication between said axial region of the enclosure and said hub assembly vents is substantially via the filter assembly except for a clearance gap between the filter assembly and the combination of the hub assembly and the extreme disk to permit the latter to rotate freely, wherein the filter assembly has a major planar surface closest to the surface of the extreme disk and at a uniform separation therefrom, the separation between the planar surface of the filter assembly and the extreme disk surface being smaller than the separation between the disks by an amount sufficient at least to reduce inward leakage of air through the clearance gap and to increase air flow through the filter assembly.

4,809,103

HEAD SLIDER WITH AN INTEGRATED FLAT MAGNETIC HEAD

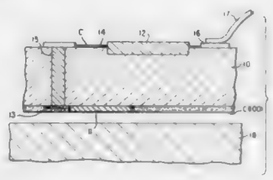
Jean-Pierre Lazzari, Coreac, France, assignor to Commissariat a l'Energie Atomique, Coreac, France

Continuation-in-part of Ser. No. 696,516, Jan. 30, 1985, abandoned. This application Jun. 22, 1987, Ser. No. 63,793

Claims priority, application France, Feb. 3, 1984, 84 01882

Int. Cl.[4] G11B *5/60, 15/64, 17/32, 21/20*

U.S. Cl. 360—103 **1 Claim**



1. A head slider configuration for magnetic recording on a recording media, comprising:

a silicon wafer having a first face which is designed and arranged so that said first face is parallel to said recording media, and a second opposite face parallel to said first face wherein said first and second faces are each crystal planes of orientation 100;

a flat magnetic head including a planar structure integrated within the first face of said silicon wafer and defining a linear media facing surface;

an electronic circuit integrated in said silicon wafer on said second face; and

electrical connection means for connecting said magnetic head and said circuit wherein said electrical connection means passes through said silicon wafer from said first face to said second face.

4,809,104

RECORDING HEAD AND SUPPORT ARM FOR STRETCHED SURFACE RECORDING MEDIUM

James K. Knudsen, and David M. Perry, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

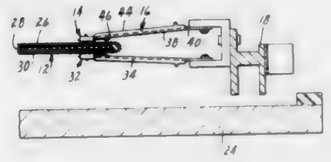
Continuation of Ser. No. 120,748, Nov. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 768,509, Aug. 22, 1985, abandoned. This application Jun. 9, 1988, Ser. No. 206,963

Int. Cl.[4] G11B *5/48, 5/187*

U.S. Cl. 360—104 **7 Claims**

1. A recording head and support arm assembly for positioning a recording head in proximity to a rotating stretched surface recording disk having at least one thin film tensioned on a supporting substrate, said head and support arm assembly comprising;

a magnetic transducer head including a spherical surface adjacent said thin film having a spherical radius numerically equal in units of inches to 4/3 the tension, plus or minus 20 percent, of said film expressed in units of pounds per inch, wherein tension is defined as film stress in units of pounds per square inch multiplied by film thickness in units of inches; a series of parallel grooves in said spherical surface and aligned with the direction of relative movement between said head and said thin film, said head including a recording core disposed substantially at said spherical surface such that said grooves are symmetrically positioned with respect to said core, said head extends transversely to said direction of relative movement between said head and said thin film; and



a support arm mounting said head and resiliently biasing said head toward said thin film, said arm resisting movement of said head in the direction of relative movement between said head and said thin film and permitting limited rotational movement of said head relative to said thin film about an axis parallel to a radius of said disk intersecting said head and an axis parallel to said direction of relative movement between said head an said thin film, said support arm thereby maintaining said head grooves parallel to said direction of relative movement between said the ad and said thin film while permitting rotative movement of said spherical surface relative to said thin film.

4,809,105

FLEXIBLE RECORDING MEDIUM TENSIONING MAGNETIC RECORDING HEAD

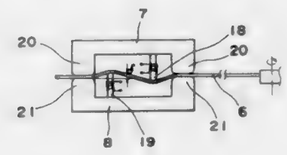
Kiyokazu Imanishi, Higashiosaka; Wataru Watanabe, Osaka, and Kiyoshi Kobata, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 2, 1986, Ser. No. 902,953

Claims priority, application Japan, Sep. 2, 1985, 60-193511

Int. Cl.[4] G11B *5/48, 17/32, 21/20*

U.S. Cl. 360—104 **6 Claims**



1. A magnetic recording and/or reproducing device for recording information on a disc-like magnetic recording medium rotatable around a drive shaft and/or reproducing the information therefrom, said magnetic recording and/or reproducing device comprising:

a set of holding members;

a pair of magnetic head means securely mounted on said holding members respectively for slidably holding a disc-like magnetic recording medium therebetween under a predetermined contact pressure for recording and/or reproducing information thereon, each of said pair of magnetic head means including a magnetic head chip and a slide pad, and each said magnetic head means radially aligning each said slide pad and each said magnetic head chip with respect to the center of rotation of the disc-like magnetic recording medium substantially on a common radial line and substantially within the plane of the disc-like magnetic recording medium;

each said slide pad being spaced from each said magnetic head chip, said slide pads being spaced from each other, and said magnetic chip heads being spaced from each other; and

each said magnetic head chip extending a predetermined amount past the plane in which each said slide pad contacts the disc-like magnetic recording medium for controlledly deforming the disc-like magnetic recording medium substantially radially outwardly with respect to the center of rotation of the disc-like recording medium for high density information recording and/or reproducing.

4,809,106

LEAD SCREW/TRANSDUCER ALIGNING MECHANISM FOR DISK DRIVE APPARATUS

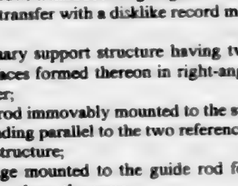
Kazuhiko Inoue, Tokyo, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed Apr. 16, 1987, Ser. No. 39,083

Claims priority, application Japan, Apr. 21, 1986, 61-60430

Int. Cl.[4] G11B *5/55, 21/08*

U.S. Cl. 360—106 **6 Claims**



1. A lead screw/transducer aligning mechanism for an apparatus for data transfer with a disklike record medium, comprising:

(a) a stationary support structure having two planar reference surfaces formed thereon in right-angular relation to each other;

(b) a guide rod immovably mounted to the support structure and extending parallel to the two reference surfaces of the support structure;

(c) a carriage mounted to the guide rod for reciprocating movement along the same;

(d) a transducer mounted to the carriage for joint movement therewith in a radial direction of the record medium;

(e) a sliding base having two right-angular contact surfaces for sliding contact respectively with the two reference surfaces of the support structure;

(f) a transducer positioning motor fixedly mounted to the sliding base;

(g) a lead screw extending parallel to the guide rod and coupled to the motor to be driven thereby, the lead screw being matingly engaged with the carriage for causing the linear travel of the carriage along the guide rod in response to the rotation of the lead screw, the motor and lead screw being movable jointly with the sliding base;

(h) first resilient means for biasing the sliding base against one of the reference surfaces of the support structure;

(i) second resilient means for biasing the sliding base against the other of the reference surfaces;

(j) there being a pair of aligning recesses formed contiguously in the support structure and the sliding base; and

(k) fastener means for fastening the sliding base to the support structure, the fastener means permitting, before fastening the sliding base to the support structure, the sliding base to be adjustably moved back and forth in sliding contact with the reference surfaces of the support structure by means of an aligning tool operatively engaged in

the aligning recesses, the sliding base being maintained in proper contact with the two reference surfaces under the forces of the first and second resilient means during such positional adjustment and subsequent fastening to the support structure.

4,809,107

GUIDE MECHANISM FOR A MAGNETIC HEAD POSITIONING DEVICES

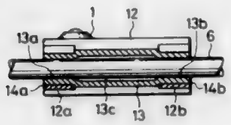
Tadashi Hasegawa, Fukushima, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 838,731, Mar. 11, 1986, Pat. No. 4,783,708. This application Dec. 1, 1987, Ser. No. 129,945

Claims priority, application Japan, Mar. 11, 1985, 60-47672; Mar. 25, 1985, 60-59754

Int. Cl.⁴ G11B *5/55, 21/08*

U.S. Cl. 360—106 **3 Claims**



1. A guide mechanism of a positioning device for a magnetic head moving apparatus, comprising: a cylindrical bearing; a guide rod passing slidably through said bearing, said bearing having at least one cylindrical indentation formed in an inner periphery of a central portion thereof; a movable base; and means for holding said cylindrical bearing to said movable base.

4,809,108

TAPE RUNNING DIRECTION CHANGEOVER MECHANISM WITH AUTOMATIC TAPE HEAD AZIMUTH ALIGNMENT

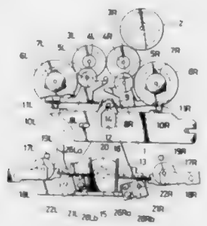
Shinsaku Tanaka, Tokyo, and Toshio Yoshimura, Kawasaki, both of Japan, assignors to Tanashin Denki Co., Ltd., Japan

Filed Dec. 24, 1986, Ser. No. 945,828

Claims priority, application Japan, Oct. 1, 1986, 61-1649[U]

Int. Cl.⁴ G11B *5/56*

U.S. Cl. 360—109 **1 Claim**



1. A tape changeover mechanism for use in a tape recorder to change-over the running direction of the tape, comprising:
- a magnetic head;
- paired reel shafts, capstans and pinch rollers arranged symmetrically at both sides of said magnetic head;
- a magnetic head assembly, said assembly including
  - a support plate means for supporting said magnetic head;
  - a tape running direction changeover member reciprocally movable between said reel shafts for changing over a torque transmission route from one of the reel shafts to the other of the reel shafts to provide reversible tape movement between said reel shafts;
  - a pinch roller changeover member pivotably coupled to said head support plate means at one end thereof and reciprocally coupled to said tape direction changeover member for bringing each of the pinch rollers into or out of contact with their associated capstans responsive to the reciprocal movement of the tape running direction changeover member;
  - a pair of azimuth alignment screw support members pivotably coupled to said head support plate means, one provided on each side of the magnetic head and interlocked with said pinch roller changeover member;
  - a pair of azimuth alignment screws in each of said support members;
  - a magnetic head support strip coupled to the magnetic head;

whereby in accordance with movements of said pair of azimuth alignment screw support members, one or the other alignment screws supported on each of said corresponding support members is brought into contact with a corresponding side of said magnetic head support strip so as to simultaneously control the vertical position and inclination of each side of the magnetic head.

4,809,109

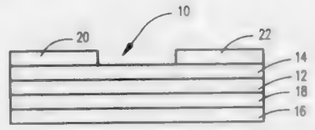
MAGNETORESISTIVE READ TRANSDUCER AND METHOD FOR MAKING THE IMPROVED TRANSDUCER

James K. Howard, Morgan Hill; Michael F. Tooey, San Jose, and Ching H. Tsang, Sunnyvale, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1988, Ser. No. 173,496

Int. Cl.⁴ G11B *5/30, 5/42*

U.S. Cl. 360—113 **8 Claims**



1. A method for making a magnetoresistive read transducer assembly comprising the steps of:
- depositing a thin magnetoresistive layer of ferromagnetic material;
- depositing a thin layer of antiferromagnetic material in direct contact with the magnetoresistive layer; and
- heating said layered structure to a temperature within a predetermined range for a predetermined time to form a ternary antiferromagnetic material at the interface between said magnetoresistive layer and said layer of antiferromagnetic material whereby said ternary antiferromagnetic material produces a high exchange bias field with said magnetoresistive layer and said ternary antiferromagnetic material exhibits an ordering temperature exceeding 300 degrees centigrade.

4,809,110

NARROW CONTOUR HEAD ASSEMBLY

Friedrich R. Hertrich, Boulder, Colo., assignor to Digital Equipment Corporation, Maynard, Mass.

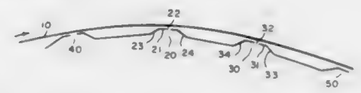
Continuation of Ser. No. 669,410, Nov. 8, 1984, abandoned. This application Oct. 8, 1987, Ser. No. 106,935

Int. Cl.⁴ G11B *5/187*

U.S. Cl. 360—122 **3 Claims**

1. A head assembly for a magnetic tape drive including a transport for moving a magnetic tape along a tape path, said

tape having a natural radius of curvature, a portion of said tape path located in close proximity to the head assembly whereby the head assembly may read or write data upon the tape, said assembly comprising:
- (A) the head assembly having a generally arcuate outer surface which the tape passes adjacent thereto;
- (B) a write island integral with said head assembly and projecting above said head assembly outer surface, said write island having an arcuate top surface spaced from said head assembly outer surface with a radius substantially equal to the natural radius of curvature of the tape, and write island sides that extend between said head assembly outer surface and said write island top surface, said write island



sides being planar and extending downward from the line defined by the end points of the write island top surface by at least 10°; and
- (C) a read island integral with said head assembly projecting above said head assembly outer surface, and spaced away from said write head so that there is an arcuate portion of said head assembly arcuate outer surface therebetween, said read island having an arcuate top surface spaced from said head assembly outer surface with a radius substantially equal to the natural radius of the tape, and read island sides that extend between said head assembly outer surface and said read island top surface, the line defined by the end points of the read island top surface by at least 10°.

4,809,111

MAGNETIC HEAD FOR USE IN VERTICAL RECORDING

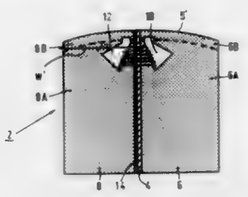
Victor Zieren, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 16, 1987, Ser. No. 40,443

Claims priority, application Netherlands, Jan. 23, 1987, 8700160

Int. Cl.⁴ G11B *5/127*

U.S. Cl. 360—125 **6 Claims**



1. A magnetic head for use in vertical recording, comprising:
- a magnetic pole in the form of a thin film of a soft magnetic material,
- a body constituted by two protective blocks and having a contact surface to mate with a magnetic recording medium, the magnetic pole being enclosed between the protective blocks and extending up to the contact surface, at least one of the protective blocks having a first magnetic portion and a second portion distinct therefrom, a winding aperture being provided in the first portion and causing a flux collect part present between the magnetic pole and the winding aperture and a flux return part to be separated, the second portion extending between the first portion and the contact surface and constituting a boundary for the winding aperture, and at least a winding wound around at least the magnetic pole and the flux collect part through the winding aperture,

characterized in that the protective block in which the two portiosn can be distinguished is formed from one piece and consists up to the contact surface of a ferrite having a high magnetostriction, the ferrite in the first portion having a high magnetic permeability and the ferrite in the second portion having a low magnetic permeability due to internal stresses.

4,809,112

BACK CORE HOLDING CLIP DISPOSED ON INTERIOR SIDE OF BACK CORE

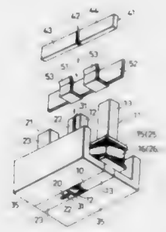
Ichiro Noguchi, Nagaoka, and Shoichi Koyama, Horinouchi, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jan. 27, 1987, Ser. No. 6,937

Claims priority, application Japan, Apr. 11, 1986, 61-54550[U]

Int. Cl.⁴ G11B *5/10, 5/12*

U.S. Cl. 360—125 **3 Claims**



1. A back core holding clip for a magnetic head assembly having a pair of magnetic cores forming on one side of said assembly a magnetic gap for recording and reproducing on a magnetic medium placed horizontally in contact with said one side, said pair of cores having respective leg portions which are spaced apart in a first horizontal direction from each other and extend in parallel in a vertical direction to respective end portions thereof on another side of said assembly opposite from said one medium-contacting side, wherein one of said cores has a coil bobbin positioned on its leg portion, said end portions being spaced apart by a given spacing in the first horizontal direction from each other, and a back core in a bar shape extending in the first horizontal direction across said given spacing and having its ends each held in contact with one side surface of a respective end portion facing in a second horizontal direction perpendicular to the first horizontal direction, so that said back core forms a closed magnetic circuit with said magnetic cores,

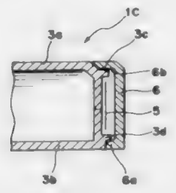
the improvement wherein said back core clip is formed with a face section in a bar shape, said face section having an upper edge and a lower edge, with said face section extending in the first horizontal direction across said given spacing in parallel with said back core and having its ends each abutted in contact with another side surface of a respective end portion facing in the second horizontal direction opposite from said one side surface against which a respective end of said back core is held and having said lower edge of said face section abutted against said coil bobbin, and at least one resilient tongue segment which is disposed at an intermediate position between said end portions and which extends from an interior side of said lower edge of said face section across said back core in the second horizontal direction to said back core and upward, whereby when the back core is depressed from above into the spacing formed by said magnetic cores and said resilient tongue segment said tongue segment clampingly abuts against a back side of said back core so as to clamp it toward said face section with said end portions of said legs pinched in between said back core and said face

section, whereby said back core as positioned against said end portions of said leg portions is left exposed to be checked from said opposite side of said assembly.

4,809,113
TAPE CASSETTE WITH IMPROVED COVER STRUCTURE

Akihiro Nishimura, Higashiosaka; Masao Kawagishi, Nara; Hideki Sakamoto; Masahiko Matsui, both of Katano, and Yoshinori Shioui, Tsuyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 10, 1987, Ser. No. 36,970
Claims priority, application Japan, Apr. 11, 1986, 61-84505
Int. Cl.[4] G11B *23/08*
U.S. Cl. 360—132 **2 Claims**



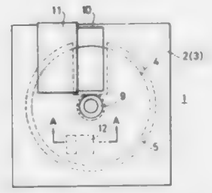
1. A tape cassette which comprises: a cassette main body having a front face with tape slackening preventing members on said front face, projections on the upper and lower edges of said tape slackening preventing members projecting outwardly of said front face, the projections on the lower edges being spaced upwardly from the bottom of said main body; a magnetic tape in said cassette main body and extending along and exposed at said front face of said cassette main body so as to be engagable with said tape slackening preventing members; and a cover member pivotably mounted on said cassette main body about a pivot point offset towards the upper part of said main body from a central portion in the direction of the thickness of said main body and so as to be pivotable between a closed position, where said cover member covers said front face, and an open position, said cover member having a protrusion on the lower edge thereof which, when said cover member is in the closed position, protrudes toward said front face and contacts the front face of said tape slackening preventing members below said projections and is spaced from the under surface of said projections, the forward edge of said projections on said tape slackening preventing members, when said cover member is in the closed position, being spaced from said cover member.

4,809,114
MAGNETIC DISC CARTRIDGE

Kunihira Seto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 911,038, Sep. 24, 1986, abandoned. This application Jul. 6, 1988, Ser. No. 218,517
Claims priority, application Japan, Sep. 24, 1985, 60-144172[U]
Int. Cl.[4] G11B *23/02*
U.S. Cl. 360—133 **2 Claims**

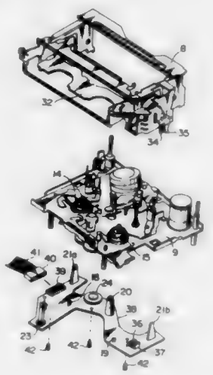
1. A method of forming a magnetic disc cartridge having a disk sheet with a lower surface, comprising the following steps:
providing a first and second wall on opposing sides of said disk sheet, said first wall facing said lower surface of said disk sheet;
supporting said disk sheet between said first and second walls;
providing a lower liner for contacting said lower surface of said disk sheet;
providing a lifter supported by said first wall; and
providing a riser for causing said lower liner to contact said lower surface of said disk sheet with a pressing force, said riser having a pressing force maintaining rate B/A of at least 0.6, where:
A is the pressing force of said riser which is measured at a first temperature and at a first humidity during when said lifter is combined with said cartridge, said first temperature being equal to 25° C. and said first humidity being equal to 65%, and
B is the pressing force of said riser which is measured at said first temperature and at said first humidity after said cartridge has been held at a second temperature and a second humidity for 72 hours, said second temperature being equal to 60° C. and second humidity being equal to 80%.



4,809,115
MAGNETIC RECORDING AND REPRODUCING APPARATUS

Yoshihiro Shibata, Katsuta; Noboru Katokno, Mito, and Hajime Yokota, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 17, 1987, Ser. No. 74,785
Int. Cl.[4] G11B *33/12*
U.S. Cl. 360—137 **2 Claims**

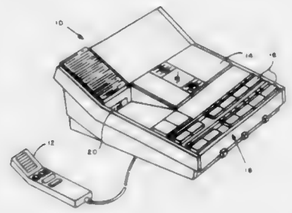


1. In a magnetic recording and/or reproducing apparatus arranged to employ a magnetic tape cassette having a pair of magnetic tape reels and two leader tape portions, each connected to a respective terminal end of a magnetic tape, the improvement comprising one light-emitting element and two light-receiving elements disposed upright on the same printed wiring board for cooperating with one another in detecting said leader tape portions, and one plug mounted also on said printed wiring board and electronically connected to said light-emitting element and said light-receiving elements, said printed wiring board being fixed on a chassis rotatably supporting a pair of reel tables which engage with said reels when said magnetic tape cassette is placed in a recording or reproducing position.

4,809,116
MODULAR DICTATION/TRANSCRIPTION SYSTEM HAVING PLURAL RECORDING MODULES AND A COMMON DISPLAY

John J. Dwyer, Stratford, and David B. Chamberlin, Milford, both of Conn., assignors to Dictaphone Corporation, Stratford, Conn.

Filed Aug. 8, 1986, Ser. No. 894,583
Int. Cl.[4] G11B *15/18, 17/00*
U.S. Cl. 360—137 **30 Claims**

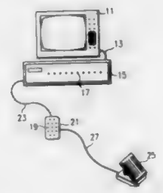


1. A dictation/transcription system for recording and playing back audio messages, comprising:
at least two independently operable recording units each having means for recording messages on a recording medium contained therein;
means associated with each recording unit for generating data relating both to the stored messages and to the dictation/transcription activity of that recording means such as data representing the types of messages, the locations of those messages on the recording medium and the lengths of those messages; and
a common display unit operatively coupled to and supplied with the data generated in two of said recording units and operable in one mode to display the generated data relating to one of said recording units and operable in another mode to display the generated data relating to the other of said recording units.

4,809,117
COMBINATION REMOTE HAND CONTROL/FOOT PEDAL CONTROL SYSTEM FOR VCR

Robert S. Friedman, Dallas, Tex., assignor to Dallas Cowboys Football Club Limited, Irving, Tex.

Filed Feb. 27, 1987, Ser. No. 19,884
Int. Cl.[4] G11B *15/18, 17/00, 19/02*
U.S. Cl. 360—137 **12 Claims**

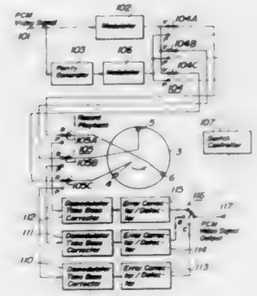


1. A remote control system for operating a video cassette recorder (VCR), comprising:
a hand-operated multi-function remote control unit for generating control signals for operating the VCR and selecting various playback functions while viewing video recordings;
a foot pedal switch connected to said remote control unit for generating a control signal for controlling at least one of said playback functions, and
a communication link connected between said hand-operated remote control unit and said VCR for transmitting control signals generating by said hand-operated remote control unit and said foot pedal switch to the VCR for controlling operation of the VCR.

4,809,118
PCM HELICAL-SCAN MAGNETIC RECORD/PLAYBACK SYSTEMS

Shoso Nakagawa; Katsuya Yokoyama, both of Tokyo, and Hironobu Katayama, Kanagawa, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Continuation-in-part of Ser. No. 710,512, Mar. 11, 1985, abandoned, which is a continuation of Ser. No. 265,345, May 19, 1981, abandoned, which is a continuation of Ser. No. 57,998, Jul. 16, 1979, abandoned. This application Apr. 22, 1986, Ser. No. 854,893
Claims priority, application Japan, Jul. 19, 1978, 53-87132
Int. Cl.[4] H04N *5/78*
U.S. Cl. 360—33.1 **4 Claims**



1. A PCM helical-scan magnetic record/playback system for recording a PCM video signal on a magnetic tape and for playing back the recorded signal, comprising:
means for time-sequentially dividing said PCM video signal into a plurality of signal portions;
means for combining said signal portions with error correction codes relating to the respective signal portions to form a plurality of multi-channel signals;
a drum rotatable about a rotational axis for receiving said magnetic tape on its outer periphery, said magnetic tape being wound around the periphery of said drum over an angle greater than $2\pi/n$ radians with respect to said rotational axis, one rotation of said drum corresponding to one field period of said PCM video signal;
n multi-channel magnetic heads, each having a plurality of magnetic head elements for recording said multi-channel signals, respectively, and for playing back recorded multi-channel signals, where n is an integer greater than two, said n multi-channel heads being disposed about the periphery of said drum with an approximately circumferential spacing of $2\pi/n$ radians and with an axial spacing in the direction of said rotational axis of approximately $1/n$ multiplied by the width of said tape, the magnetic head elements forming each of said multi-channel magnetic heads being slightly spaced at least in the direction of the movement of said magnetic tape with respect to each other whereby, upon rotation of said drum, said magnetic head elements of said multi-channel magnetic heads scan simultaneously n multi-channel tracks which are timingly overlapped with other multi-channel tracks disposed along the width of said magnetic tape, and said error correction codes being allotted to signal portions corresponding to overlapped portions of said multi-channel tracks between periods in which different multi-channel heads successively record and play back said PCM video signal;

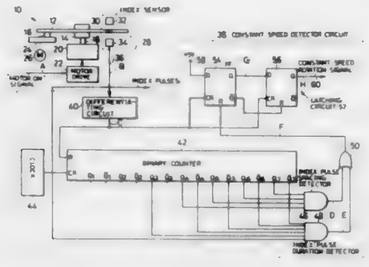
means for recording and playing back said multichannel signals on different multi-channel tracks of said magnetic tape;
means for correcting errors in playing back said multi-channel signals; and
means for combining error-corrected multi-channel signals to form a PCM output video signal corresponding to said PCM video signal.

4,809,119

CIRCUIT ARRANGEMENT FOR THE DETERMINATION OF THE CONSTANT SPEED ROTATION OF A DISKLIKE RECORD MEDIUM

Hiroshi Tsuyaguchi, Tokyo, and Katsuya Enami, Tachikawa, both of Japan, assignors to Teac Corporation, Tokyo, Japan

Filed Nov. 10, 1986, Ser. No. 929,402
Claims priority, application Japan, Nov. 14, 1985, 60-255627
Int. Cl.[4] G11B *12/28*
U.S. Cl. 360—73 **9 Claims**



1. In an apparatus for data transfer with a disklike record medium such as a flexible magnetic disk which is rotated at a predetermined constant speed during data transfer, a system for detecting the rotation of the record medium substantially at the constant speed, comprising:
(a) an index sensor disposed adjacent a predetermined path of an index mark rotatable with the record medium for generating a valid index pulse of less than a predetermined duration each time the index sensor senses the index mark during the rotation of the record medium, so that the time spacing of the valid index pulses represents the speed of rotation of the record medium, there being the possibility, due for example to the mishandling of the record medium, of the index sensor generating invalid index pulses of not less than the predetermined duration; and
(b) a constant speed detector circuit connected to the index sensor for discriminating between the valid and invalid output pulses of the index sensor and for putting out a constant speed signal when at least two valid index pulses are supplied consecutively with less than a predetermined time spacing representative of the roation of the record medium substantially at the constant speed.

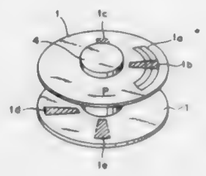
4,809,120

HEAD POSITION CONTROL SYSTEM

Hiromi Ozawa, Kawasaki, Japan, assignor to Fuji Electric Company Ltd., Kanagawa, Japan

Filed Nov. 12, 1986, Ser. No. 929,348
Claims priority, application Japan, Nov. 15, 1985, 60-256204
Int. Cl.[4] G11B *5/596, 27/28*
U.S. Cl. 360—78.14 **16 Claims**

1. A disc storage unit including a plurality of disc surfaces each having a plurality of tracks concentrically arranged thereon for storing data, the plurality of disc surfaces being rotatably driven in common, and a plurality of heads for selectively writing and reading out data respectively into and from respective ones of the plurality of disc surfaces, the positions of the plurality of heads being controllably variable relative to the respective ones of the plurality of disc surfaces, comprising:
a plurality of reference information regions in which is written reference information for determining the positions of said plurality of heads, said plurality of reference information regions being disposed respectively on respective ones of said plurality of disc surfaces on one portion thereof, each of said one portion being disposed on a respective one of said plurality of disc surfaces such that it interrupts each of said plurality of tracks thereon, each of said plurality of reference information regions being angularly offset from one another;
means for producing an index pulse synchronized with the rotation of said plurality of disc surfaces;
means for producing a seek signal during a seek period required for one of said plurality of heads to reach a desired track;
means for producing a seek-time head selection signal for sequentially selecting one of said plurality of heads in synchronism with said index pulse during a single revolution of said plurality of disc surfaces;
means for selecting one of said seek-time head selection signal and an exterior head selection signal, said seek-time head selection signal being selected when said seek signal is present and said exterior head selection signal being selected when said seek signal is not present, said means for selecting outputting the selected one as a head selection signal;
head switching means responsive to said head selection signal for selecting one of said plurality of heads;
means for producing an interior index pulse corresponding to detection of each of said plurality of reference information regions in synchronism with said index pulse;
means for reading a portion of one of said plurality of reference information regions by the selected one of said plurality of heads, the reading occurring in synchronism with said interior index pulse, to obtain information used for correcting a position of the selected one of said plurality of heads; and
means for producing an exterior index pulse in response to said exterior head selection signal when said interior index pulse corresponding to said head selection signal is terminated, to enable the selected one of said plurality of heads to selectively read out and write data respectively from and into a respective one of said plurality of disc surfaces when the interior index pulse corresponding to said head selection signal is terminated.



4,809,121

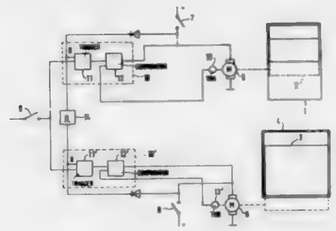
CIRCUIT ARRANGEMENT IN MOTOR VEHICLES

Wolfgang Nehls, Unterschleisheim, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 21, 1987, Ser. No. 87,797
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1986, 3628344
Int. Cl.[4] H02H *3/00*
U.S. Cl. 361—1 **9 Claims**

1. A circuit arrangement in motor vehicles, comprising

equipment components, electric adjusting means for each of said equipment components, a plurality manually actuable switch means and control means which is operable upon initiation thereof to activate the adjusting means for the automatic displacement of the respective equipment component into an



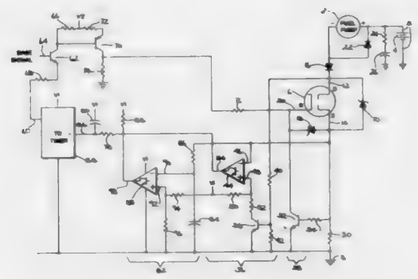
end position, the control means being operable to de-energize all of said adjusting means during the time interval of activation of the adjusting means by the control means upon actuation of any of the switch means even prior to reaching the end position of the equipment component.

4,809,122

SELF-PROTECTIVE FUEL PUMP DRIVER CIRCUIT

Arthur O. Fitzner, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jul. 31, 1987, Ser. No. 80,320
Int. Cl.[4] H02H *3/24*
U.S. Cl. 361—18 **11 Claims**



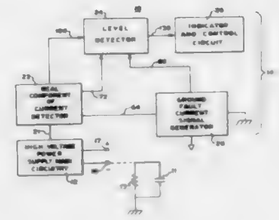
1. A self-protective circuit including a fuel pump energized by a source of electrical potential, comprising semiconductor switch means in series with said fuel pump and said source of electrical potential, said semiconductor switch means having an ON state conducting current and completing a current path from said source of electrical potential through said fuel pump to energize said fuel pump, said semiconductor switch means having an OFF state blocking current to de-energize said fuel pump, and self-protective subcircuit means sensing abnormal conditions of voltage and current or current alone in said semiconductor switch means indicating a probable faulty condition in said fuel pump and turning OFF said semiconductor switch means to de-energize said fuel pump for a cooling-off interval for said semiconductor switch means, and automatically turning said semiconductor switch means back ON after said cooling-off interval to re-energize said fuel pump, without manual intervention by the operator, wherein said self-protective subcircuit means includes overvoltage sensor means sensing abnormal voltage across said semiconductor switch means while current is flowing therethrough, and overcurrent sensor means sensing abnormal current flow through said semiconductor switch means, and wherein:
said overvoltage sensor means comprises a transistor having base drive voltage developed across said semiconductor switch means to bias said transistor into conduction, and means sensing current flow through said semiconductor switch means and operatively coupled to said transistor such that if the sensed current flow through said semiconductor switch means is above a given minimum current flow then conduction of said transistor turns OFF said semiconductor switch means;
said overcurrent sensor means comprises a capacitor charged by current through said semiconductor switch means such that if said capacitor is charged above a given threshold voltage said overcurrent sensor means turns OFF said semiconductor switch means;
said overvoltage sensor means comprises a comparator having inverting and noninverting inputs, one of said inputs being connected to said transistor, the other of said inputs being connected to said semiconductor switch means, said comparator having an output disabling gate drive for said semiconductor switch means in response to a given overvoltage across said semiconductor switch means causing conduction of said transistor as sensed by said one input of said comparator means if there is said minimum current flow through said semiconductor switch means as sensed by said other input of said comparator means;
said overcurrent sensor means comprises a second comparator having inverting and non-inverting inputs, one of said inputs of said second comparator being connected to said capacitor, the other of said inputs of said second comparator being connected to a given reference, said second comparator having an output disabling said gate drive for said semiconductor switch means in response to long term increased current flow through said semiconductor switch means charging said capacitor above said given threshold.

4,809,123

GROUND FAULT DETECTOR FOR HIGH-VOLTAGE DC POWER SUPPLIES

Robert W. Allington, and Larry J. Friling, both of Lincoln, Nebr., assignors to Isco, Inc., Lincoln, Nebr.

Filed Apr. 14, 1986, Ser. No. 851,740
Int. Cl.[4] H02H *3/16*
U.S. Cl. 361—42 **29 Claims**



1. A ground fault detector for a DC power supply comprising:
means for generating an alternating current leakage test signal and applying it to a DC power supply whereby an alternating current leakage current is provided through a leakage impedance;
circuit means adapted to be electrically connected to a DC power supply, for generating a first signal representing at least a portion of the antecedant alternating current leakage current; flowing to electrical common ground of a DC power supply, whereby said first signal has a real and an imaginary component;
means for generating a second signal representing the real component of said first signal, whereby the second signal

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represents the resistive component of the alternating current leakage impedance; and

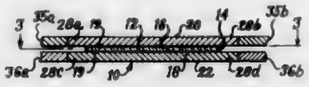
means for generating a third signal when said second signal exceeds a predetermined limit indicating the leakage impedance has fallen below the permissible leakage impedance.

4,809,124

HIGH-ENERGY LOW-VOLTAGE SURGE ARRESTER

James S. Kresge, Pittsfield, Mass., assignor to General Electric Company, King of Prussia, Pa.

Filed Mar. 24, 1988, Ser. No. 172,586
Int. Cl.[4] H02H 9/04
U.S. Cl. 361—58 10 Claims



1. A surge arrester for protecting against high energy and very fast surges imposed upon a line comprising two conductors, each connected between a source and a load, the surges being capable of rising to thousands of amperes in less than 100 nanoseconds, said surge arrester comprising:

(a) a first conductive electrode for connection in series with one of said conductors between said source and said load,

(b) a second conductive electrode for connection in series with the other of said conductors between said source and said load,

(c) metal oxide varistor disk structure having a thickness of several tenths of an inch or less and external surfaces at opposite ends of its thickness,

(d) thin metallic coatings respectively coating said external surfaces,

(e) means for mounting said metal oxide varistor disk structure between said two electrodes with one of said electrodes contacting one of said metallic coatings and the other electrode contacting the other of said metallic coatings, and further characterized by:

(f) said first electrode having a central region and, at generally diametrically-opposed sides of said central region, a source terminal and a load terminal for connection to said one conductor in such a manner that a load current in said one conductor normally flowing between said source and said load flows through said first electrode via a path that extends in series through said source terminal, said central region, and said load terminal,

(g) said second electrode having a central region and, at generally diametrically-opposed sides of said central region, a source terminal and a load terminal for connection to said other conductor in such a manner that said load current in returning through said other conductor normally flows between said load and said source through said second electrode via a path that extends in series through said load terminal, said central region, and said source terminal,

(h) the source terminals of said two electrodes being generally aligned with each other about the periphery of said disk structure,

(i) the distance between the source terminal and the load terminal of each electrode being at least three times the thickness of said disk structure,

(j) the inductance of said two electrodes between the source and load terminals of each electrode coacting with the resistance of said disk structure when the disk structure is rendered conductive by a current surge entering through the source terminal of one electrode to form a low-pass L/R filter that substantially reduces the voltage appearing at the load terminal of said one electrode in comparison to that appearing at the source terminal during passage of said surge,

(k) at least one of said electrodes being sufficiently narrow transversely of the normal current path therethrough that the electrode provides no conductive bypass between the source terminal and the load terminal thereof that is located outside the periphery of said varistor disk structure in the region of said electrode, and

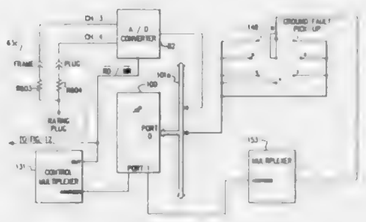
(l) the effective length of any lead between each line conductor and the electrode connected thereto being essentially zero.

4,809,125

CIRCUIT INTERRUPTER APPARATUS WITH A STYLE SAVING RATING PLUG

Joseph J. Matsko, Beaver, and Gary F. Saletta, Penn Township, Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 20, 1987, Ser. No. 17,300
Int. Cl.[4] H02H 3/08
U.S. Cl. 361—93 11 Claims



1. A circuit interrupter apparatus, comprising:

interrupting means disposed in a normally conducting electrical circuit and effective to interrupt current flow through said electrical circuit upon reception of a trip signal;

conditioning means coupled to said electrical circuit to condition a current value proportionate to such current flow, said conditioning means producing a conditioned signal representative of the magnitude of said current value;

operating means effective for deriving at least one operating characteristic from said conditioned signal, said operating means further effective for comparing said at least one operating characteristic to a corresponding at least one preselected tripping parameter and generating said trip signal when said at least one operating characteristic is at least equal to said corresponding at least one tripping parameter;

said at least one preselected tripping parameter including a preselected ground fault pickup value representative of a preselected ground fault current limit value that is allowed to flow in a ground path associated with said electrical circuit;

said operating means further including limiting means receptive of a preselected rating signal proportionate to a maximum current flow that is allowed to flow through said circuit interrupter, said limiting means being effective to determine one rating value for said circuit interrupter as a function of said preselected rating signal, said one rating value having associated therewith, a corresponding upper limited ground fault current limit value, said limiting means further being effective to determine whether said preselected ground fault pickup value is within said upper limited ground fault current limit value associated with said one rating value and accepting said preselected ground fault pickup value when said preselected ground fault pickup value is within said upper limited ground fault current limit value;

said limiting means further being effective to substitute an alternate ground fault pickup value when said preselected ground fault pickup value exceeds said upper limited ground fault current limit value;

said operating means further including a microprocessor having associated therewith, a data bus capable of communicating data thereover and at least one memory element capable of storing said data and a plurality of operating instructions;

said limiting means further including a predetermined number of said operating instructions wherein a first one of said operating instructions performs a determination of said rating value from a reading of a digital representation of said rating signal and a second one of said operating instructions reads a selected setting of said ground fault pickup value; and

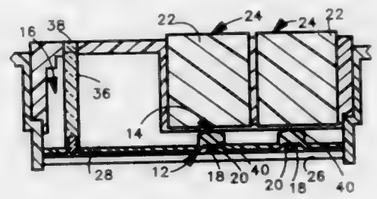
said limiting means further including instructional operations to perform a determination of said ground fault pickup value whereby, when said rating value and said ground fault pickup value do not exceed said upper limited ground fault current limit value, said selected setting of said ground fault pickup value is operated on by said microprocessor.

4,809,126

ELECTROSTATIC DISCHARGE PROOF KEYPAD

Jack L. Barkman, and Gretchen R. Oosterhout, both of Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 5, 1987, Ser. No. 83,497
Int. Cl.[4] H01H 9/02, 13/70; H05F 3/02
U.S. Cl. 361—212 6 Claims



1. A keypad (10) for use in electronic equipment having a circuit board 26, and for preventing the occurrence of electro-static discharge, the keypad comprising:

(a) switch means (12) connected to the circuit board for selecting particular functions of the equipment;

(b) keycap means (24) secured to said switch means for enabling a user to actuate said switch means without causing an electro-static discharge from the user's body to the electronic equipment and to the circuit board;

(c) said keycap means being interposed intermediate the circuit board and the user, for insulating the circuit board from the user;

(d) said keycap means having a sufficient length necessary to prevent any electro-static discharge from taking place, and to eliminate the need for conventional ground paths designed to conduct electro-static discharges through the keypad; and

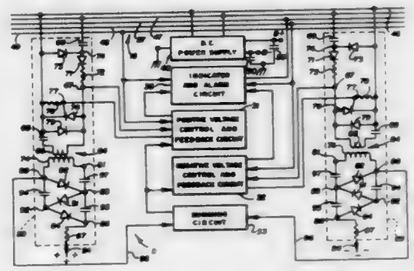
(e) said keypad means having a suitable dielectric composition to prevent the formation of an electro-static discharge therethrough.

4,809,127

SELF-REGULATING AIR IONIZING APPARATUS

Arnold J. Steinman; Michael G. Yost, both of Berkeley, and Donald A. Gehlke, Corona Del Mar, all of Calif., assignors to Ion Systems, Inc., Berkeley, Calif.

Filed Aug. 11, 1987, Ser. No. 85,082
Int. Cl.[4] H01T 23/00; H01H 47/32; H05F 3/00
U.S. Cl. 361—213 18 Claims



1. Air ionizing apparatus having at least one electrode exposed to air which is to be ionized, a direct current high voltage generator connected to said electrode to apply sustained high voltage of a predetermined polarity thereto at least for limited periods of time, a ground return electrical resistance through which a flow of electrical charges of opposite polarity is conducted away from said electrode and said high voltage generator at a rate corresponding to the rate of air ion production by said electrode, and means for preventing outflow of electrical charges of said predetermined polarity from said electrode through said resistance, wherein the improvement comprises:

sensing means for producing an electrical feedback signal, said sensing means being connected to said resistance to sense variations of said flow of electrical charges of opposite polarity by sensing variations of the voltage drop across said resistance whereby the feedback signal has a magnitude that varies in correspondence with variations of the rate of production of ions of said predetermined polarity at said electrode, and

voltage adjusting means for receiving said feedback signal and for causing said high voltage generator to apply higher voltage to said electrode in response to a decrease of said feedback signal and to apply lower voltage to said electrode in response to an increase of said feedback signal.

4,809,128

HEATING ELEMENT OPERATING UNIT AND METHOD

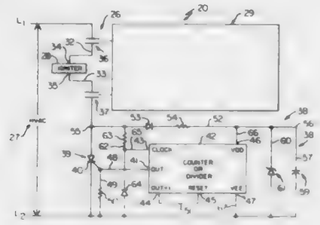
Frederick J. Geary, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jun. 23, 1987, Ser. No. 65,360
Int. Cl.[4] F23Q 7/00
U.S. Cl. 361—264 9 Claims

1. In the combination of a heating element means that is normally adapted to be operated by the continuous full-wave pulses of a certain high voltage alternating current source for a predetermined time period so as to provide a desired function thereof, and control means operatively interconnected to said heating element means and having first means for operatively interconnecting said heating element means to said certain high voltage alternating current source for said predetermined time period so as to provide said desired function thereof, the improvement wherein said control means has second means for operating said heating element means with a certain repeating pattern of skipped complete half-wave pulses of another source of high voltage alternating current for said predetermined time

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period when that other source has a higher voltage than said certain source so that said heating element means will not be



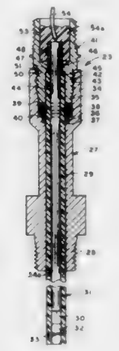
adversely affected by said other source of higher voltage and will still provide said desired functions thereof.

4,809,129

LIQUID LEVEL CONTROL SYSTEM FOR REFRIGERATION APPARATUS

Charles C. Hansen, III, Hinsdale; John A. Yencho, Elmhurst, both of Ill.; William J. Barbier, Hazelwood, Mo.; Curtis H. Knapp, Aurora, and Orval J. Kuhn, Jr., Warrenville, both of Ill., assignors to Hansen Technologies Corporation, Burr Ridge, Ill.

Filed Nov. 6, 1987, Ser. No. 117,305
Int. Cl.[4] G01F *23/26*; G01R *27/26*
U.S. Cl. 361—284 **7 Claims**



1. In a probe for a capacitance bridge liquid level control system, said probe including:

a generally cylindrical elongate steel rod having a pre-determined length,

an electrical conductor of known resistance attached on one end of said elongate rod and operatively connectable to a signal amplifier circuit,

a tubular insulator surrounding said elongate steel rod,

a generally tubular first probe body member having a bore therethrough through which said rod and tubular insulator are positioned, and at least a portion of said bore having a diameter sufficiently larger than a diameter of said tubular insulator to define an annular space between said body bore and said tubular insulator,

a generally tubular second probe body member having a bore therethrough sized to closely fit around a portion of the outside of said tubular insulator and adapted for selective axial movement with respect to said bore on said tubular first probe body, and selectably engageable with said tubular first probe body,

deformable tubular means fitting around said tubular insulator in said annular space between said bore on said first probe body member and said tubular insulator when said second probe body member is moved axially with respect to said first probe body member to compress said deformable tubular means axially causing a reaction radially to deform said insulator inward toward the cylindrical outer surface of said steel rod as a seal therebetween,

and an improvement comprising:

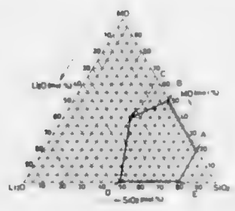
an annular indentation around and directly on said elongate steel rod at a position radially inwardly of said deformable tubular means for receiving a portion of said tubular insulator therein when said second probe body compresses said deformable tubular means to improve the sealing capabilities between said steel rod and said tubular insulator.

4,809,130

LOW TEMPERATURE SINTERED CERAMIC CAPACITOR HAVING A HIGH RESISTIVITY AND BENDING STRENGTH, AND METHOD OF MANUFACTURE

Hirokazu Chazono, Takasaki; Minoru Oshio, Harunamachi; Shunji Murai, Takasaki, and Hiroshi Kishi, Fujioka, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1988, Ser. No. 187,732
Claims priority, application Japan, May 12, 1987, 62-115363
Int. Cl.[4] C04B *35/46*; H01G *4/12, 4/10*
U.S. Cl. 361—321 **9 Claims**



1. A low temperature sintered solid dielectric capacitor comprising a dielectric ceramic body and at least two electrodes in contact therewith, the dielectric ceramic body consisting essentially of:

(a) 100 parts by weight of a major ingredient expressed by the formula,

$$(Ba_{1-v-w}Me_vMg_wO)_k(Zr_{1-x-y}Ti_xSi_y)O_2,$$

where

Me is at least either of strontium and calcium;

v is a numeral in the range of 0.005 to 0.980 inclusive;

w is a numeral in the range of 0.001 to 0.050 inclusive;

x is a numeral in the range of 0.00 to 0.50 inclusive;

y is a numeral in the range of 0.005 to 0.100 inclusive; and

k is a numeral in the range of 0.80 to 1.25 inclusive; and

(b) from 0.2 to 10.0 parts by weight of an additive mixture of lithium oxide, silicon dioxide and at least one metal oxide selected from the group consisting of barium oxide, magnesium oxide, zinc oxide, strontium oxide and calcium oxide, the relative proportions of lithium oxide, silicon dioxide and at least one selected metal oxide constituting the additive mixture being in that region of the ternary diagram of FIG. 3 attached hereto which is bounded by lines sequentially connecting:

the point A where the additive mixture consists of one mole percent lithium oxide, 80 mole percent silicon dioxide, and 19 mole percent metal oxide;

the point B where the additive mixture consists of one mole percent lithium oxide, 49 mole percent silicon dioxide, and 50 mole percent metal oxide;

the point C where the additive mixture consists of 25 mole percent lithium oxide, 35 mole percent silicon dioxide, and 40 mole percent metal oxide;

the point D where the additive mixture consists of 50 mole percent lithium oxide, 49 mole percent silicon dioxide, and one mole percent metal oxide; and

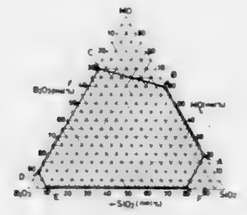
the point E where the additive mixture consists of 19 mole percent lithium oxide, 80 mole percent silicon dioxide, and one mole percent metal oxide.

4,809,131

LOW TEMPERATURE SINTERED CERAMIC CAPACITOR HAVING A HIGH RESISTIVITY AND BENDING STRENGTH, AND METHOD OF MANUFACTURE

Hirokazu Chazono, Takasaki; Minoru Oshio, Harunamachi; Shunji Murai, Takasaki, and Hiroshi Kishi, Fujioka, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1988, Ser. No. 187,741
Claims priority, application Japan, May 12, 1987, 62-115364
Int. Cl.[4] H01G *4/12, 7/00*; C04B *35/50*
U.S. Cl. 361—321 **9 Claims**



1. A low temperature sintered solid dielectric capacitor comprising a dielectric ceramic body and at least two electrodes in contact therewith, the dielectric ceramic body consisting essentially of:

(a) 100 parts by weight of a major ingredient expressed by the formula,

$$(Ba_{1-v-w}Me_vMg_wO)_k(Zr_{1-x-y}Ti_xSi_y)O_2,$$

where

Me is at least either of strontium and calcium;

v is a numeral in the range of 0.005 to 0.980 inclusive;

w is a numeral in the range of 0.001 to 0.050 inclusive;

x is a numeral in the range of 0.00 to 0.50 inclusive;

y is a numeral in the range of 0.005 to 0.100 inclusive; and

k is a numeral in the range of 0.80 to 1.25 inclusive; and

(b) from 0.2 to 10.0 parts by weight of an additive mixture of boric oxide, silicon dioxide and at least one metal oxide selected from the group consisting of barium oxide, magnesium oxide, zinc oxide, strontium oxide and calcium oxide, the relative proportions of boric oxide, silicon dioxide and at least one selected metal oxide constituting the additive mixture being in that region of the ternary diagram of FIG. 3 attached hereto which is bounded by lines sequentially connecting:

the point A where the additive mixture consists of one mole percent boric oxide, 80 mole percent silicon dioxide, and 19 mole percent metal oxide;

the point B where the additive mixture consists of one mole percent boric oxide, 39 mole percent silicon dioxide, and 60 mole percent metal oxide;

the point C where the additive mixture consists of 29 mole percent boric oxide, one mole percent silicon dioxide, and 70 mole percent metal oxide;

the point D where the additive mixture consists of 90 mole percent boric oxide, one mole percent silicon dioxide, and nine mole percent metal oxide;

the point E where the additive mixture consists of 90 mole percent boric oxide, nine mole percent silicon dioxide, and one mole percent metal oxide; and

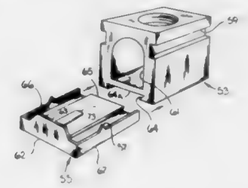
the point F where the additive mixture consists of 19 mole percent boric oxide, 80 mole percent silicon dioxide, and one mole percent metal oxide.

4,809,132

FIELD INSTALLABLE LINE AND LOAD LUG CONNECTORS FOR MOLDED CASE CIRCUIT BREAKERS

Joseph M. Palmieri, Southington; Roger N. Castonguay, Terryville; David Arnold, Chester, and Robert A. Morris, Burlington, all of Conn., assignors to General Electric Co., New York, N.Y.

Filed Oct. 23, 1987, Ser. No. 111,894
Int. Cl.[4] H02B *1/20*
U.S. Cl. 361—353 **12 Claims**



1. A molded case circuit breaker terminal lug arrangement comprising in combination:

a terminal lug metal block and a molded case circuit breaker terminal lug compartment;

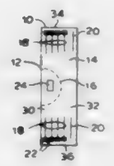
said terminal lug metal block having an elongated slot formed therethrough for receiving a circuit breaker terminal strap, said block including a pair of elongated grooves formed on an outer surface of opposing side walls interfacing with a corresponding pair of rails formed on an inner surface of said molded case circuit breaker terminal lug compartment.

4,809,133

LOW TEMPERATURE MONOLITHIC CHIP

Sadeg M. Faris, Pleasantville; Gert K. G. Hohenwarter, Tarrytown, and Stephen R. Whiteley, Shrub Oak, all of N.Y., assignors to Hypres, Inc., Elmsford, N.Y.

Filed Sep. 26, 1986, Ser. No. 913,108
Int. Cl.[4] H05K *7/20*
U.S. Cl. 361—385 **15 Claims**



1. A monolithic chip comprising:

(a) an elongated substrate having two opposed ends, a high temperature region corresponding to said ends and a low temperature region disposed between said ends;

(b) an electronic device formed on said low temperature region which is operative when its temperature is below a critical level; and

(c) a plurality of conductive transmission lines formed on

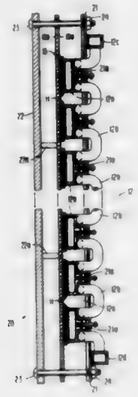
said substrate, said lines being connected to said device and extending into said high temperature region.

4,809,134

LOW STRESS LIQUID COOLING ASSEMBLY

Jerry I. Tustaniwskyj, Mission Viejo, Calif., and James H. Rogerby, Bloomington, Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Apr. 18, 1988, Ser. No. 182,393
Int. Cl.[4] H02B 1/00; H05K 7/20
U.S. Cl. 361—385 **12 Claims**



1. An improved liquid cooled electronic circuit assembly of the type which includes a printed circuit board having two oppositely facing major surfaces, electronic components mounted on one of said two surfaces, and conduits which carry a liquid and touch said electronic components to cool them; wherein the improvement comprises a frame for holding said conduits snugly against said components without overstressing said printed circuit board; said frame being characterized as having: (a) a first set of contacts which engage said conduits; (b) a second set of contacts which engage the surface of said printed circuit board opposite said one surface; (c) said contacts of said second set being spaced apart and located at predetermined distances from the board's perimeter; and, (d) a means for urging said conduits against said electronic components by moving said first and second sets of contacts toward each other with said conduits, said electronic components, and said printed circuit board lying therebetween.

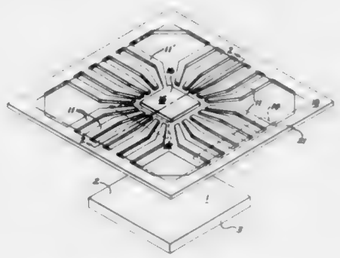
4,809,135

CHIP CARRIER AND METHOD OF FABRICATION

Alexander J. Yerman, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 892,966, Aug. 4, 1986, abandoned. This application Nov. 20, 1987, Ser. No. 124,393
Int. Cl.[4] H01R 9/09
U.S. Cl. 361—404 **16 Claims**

1. A method of forming a ceramic chip carrier package and mounting said package onto a circuit board comprising the steps of:
(a) forming a planar copper lead frame having a plurality of leads, said lead frame being shaped to provide an interior region and a fringe region in which leads are connected together by an integral copper rim;
(b) positioning said frame with said interior region in abutment with a ceramic substrate with said fringe region of said frame extending beyond the periphery of said substrate;
(c) heating said lead frame and substrate in a manner to directly bond said interior region of said frame to the substrate and to leave said fringe region of said frame unbonded;
(d) mounting an integrated circuit chip to the resulting lead frame/substrate combination and electrically coupling terminals on said chip to said leads;
(e) providing a non-conductive circuit board with a planar surface having conductiveruns carried thereon suitable for electrical coupling to said chip;
(f) removing said rim from said frame and bending said leads



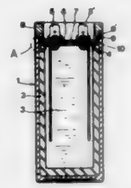
in said fringe region in the direction of said circuit board; and
(g) bonding said leads in said fringe region of said frame to said conductive runs in a manner to space said substrate above the planar surface of said circuit board and to support said substrate on said leads in a compliant manner which enables said substrate to move relative to said circuit board without movement of said interior region of said frame relative to said substrate and without movement of the bonded portions of said fringe portions of said leads relative to said circuit board.

4,809,136

CONDENSER WITH A SECURING RING

Yong-Kyu Choi, Kyungki-do, Rep. of Korea, assignor to Dae Yeong Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 13, 1988, Ser. No. 181,042
Claims priority, application Rep. of Korea, Apr. 20, 1987, 5673/1987
Int. Cl.[4] H01G 9/00
U.S. Cl. 361—519 **2 Claims**



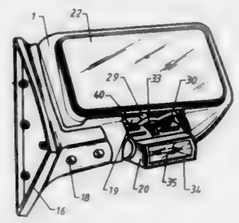
1. An improved condenser including a housing containing wax and electrolyte therein, a lid having a rubber plate thereon, provided a pair of terminals thereon and to be closed an opening of said housing, wherein the improvement comprises a securing ring in the form of a sleeve forming a stepped end in the lower portion thereof for fixedly securing said lid, an aperture provided on the center portion of said lid, and fastening means engaged between the outer surface of said stepped end and the opening of said housing by means of ultrasonic welding process.

4,809,137

BACK-MIRROR FITTED WITH ILLUMINATION LIGHT AT CAR SIDE

Kiyoshi Yamada, 3-2-21-403 Shinsendo, Nishinari-ku, Osaka-shi, Japan

Filed Sep. 21, 1987, Ser. No. 99,125
Claims priority, application France, Jul. 24, 1987, 87 8093
Int. Cl.[4] B60Q 1/24
U.S. Cl. 362—61 **4 Claims**



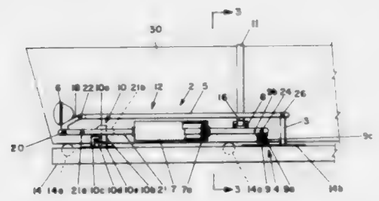
1. Back-mirror fitted with illumination light at car side, comprising a back-mirror case 1 provided with an illumination light insertion opening 2 at lower wall and a steering rod insertion opening 3 at a left side edge, a steering tube formed at one end of a base plate 4 as an integral part thereof being encased in said case 1 together with said base plate 4, a steering rod being pushed into said steering tube 7 and a resilient coil spring 1 inserted around said steering tube 7 being pressed until a clip 13 fits snugly into a clip recess 14, a mechanism case 19 with a mechanism case lid 40 having holes 41, 41' being fixed to said base plate 4 in said case 1, a support frame 30 retaining an illumination light 20 being fixed at one end of a shaft tube 29, and said illumination light 20 being inserted into said illumination light insertion opening 2 so that a knurling member 32 formed at a front end of a driving shaft 31 may engage with a guiding knurling member 33 of said illumination light 20, characterized in that said illumination light 20 may be rotated toward up and down direction by the rotation of said driving shaft 31 and in right and left direction by the rotation of said shaft tube 29.

4,809,138

TAILLIGHT ASSEMBLY FOR BOAT TRAILERS

Fred J. Stovall, 1607 Cynthia St.; St. Mary, Franklin, La. 70538

Filed Jun. 13, 1988, Ser. No. 205,746
Int. Cl.[4] B60Q 1/30
U.S. Cl. 362—61 **9 Claims**



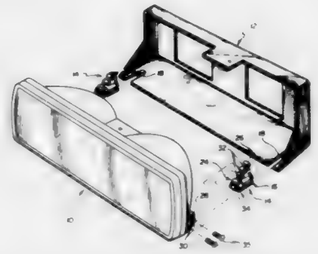
1. A taillight assembly for a boat trailer, comprising:
(a) a taillight for the trailer;
(b) means for mounting the taillight on the trailer;
(c) means for raising the taillight from a first elevation useful in transporting a boat to a second elevation useful for launching the boat, and for lowering the taillight from the second elevation to the first elevation, while keeping the taillight pointed in a horizontal direction rearward of the trailer without manually adjusting the position of the taillight; and
(d) means for holding the taillight at the first and second elevations.

4,809,139

HEADLAMP MOUNTING ASSEMBLY

Francis E. Ryder, and Stephen P. Lisak, both of Arab, Ala., assignors to Ryder Int'l Corporation, Arab, Ala. and Textron Inc., Providence, R.I.

Filed Jul. 28, 1987, Ser. No. 78,600
Int. Cl.[4] B60Q 1/06
U.S. Cl. 362—66 **6 Claims**



1. A slide-type mounting assembly for mounting a headlamp assembly or the like relative to an automobile frame member or the like so as to permit generally vertical and horizontal adjustment of the headlamp assembly relative to the frame member for aiming of the headlamp beam, said frame member having an elongate slot for slidably receiving said mounting assembly and said headlamp assembly defining at least one mounting aperture for coupling to said mounting assembly comprising: a slot engaging member for slidably engaging said elongate slot of said frame member and comprising a pair of spaced apart, parallel and generally horizontal surface portions joined by a transverse support portion and sized to slidably interfit with said slot, and a headlamp engaging member comprising an elongate member pivotally mounted to said slot-engaging member and having mounting means thereon for mounting at least an outer end portion thereof to said headlamp assembly; and pivotal coupling means joining said slot engaging member and said headlamp engaging member and comprising a pair of generally orthogonally oriented hinge-like pivot assemblies for permitting a predetermined degree of pivotal motion of the headlamp engaging member relative to the slot-engaging member about generally vertical and horizontal axes, respectively, so as to permit adjustment of the headlamp assembly for aiming of a headlamp beam relative to said generally vertical and horizontal axes.

4,809,140

VEHICLE SUN VISOR WITH ILLUMINATED MIRROR AND SLIDING PANEL

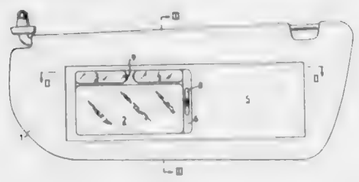
Mats Jönsas, Mora, Sweden, assignor to Autopart Sweden AB, Malung, Sweden

Filed Oct. 29, 1987, Ser. No. 113,920
Claims priority, application Sweden, Oct. 29, 1986, 8604606
Int. Cl.[4] F21V 23/00
U.S. Cl. 362—74 **3 Claims**

1. Vehicle sun visor, comprising an illuminated mirror (2), a sliding panel (6) to cover the mirror when the mirror is not in use, and lighting means beside the mirror, the sliding panel having dimensions such that the lighting means (3, 4) are covered by the panel when the panel covers the mirror, the sliding panel (6) being linearly displaceable in guide grooves (7) in a frame (5) comprising a covered portion which substantially

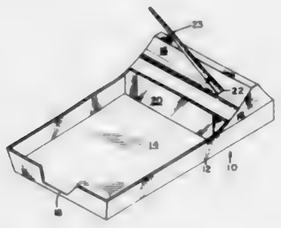
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covers the panel in its open position exposing the mirror (2), the frame being disposed in a recess in the visor but being



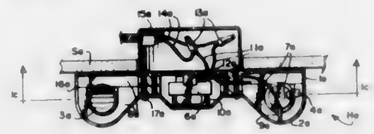
completely exposed on the side of the visor from which the mirror is visible.

4,809,141
ILLUMINATED PAPER TRAY
Norbert Leopoldi, Chicago, and William P. Heiarich, McHenry, both of Ill., assignors to The Cloverline, Inc., Chicago, Ill.
Filed Feb. 11, 1988, Ser. No. 155,128
Int. Cl.[4] F21V *33/00*
U.S. Cl. 362—99 11 Claims



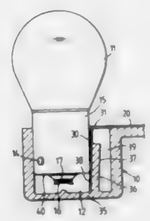
1. A lighted paper tray comprising:
a main housing having a forward well portion thereof in which may be placed individual sheets of paper, said main housing having a rear portion defining a pen-receiving opening, said rear portion and said well portion being separated;
illuminating means mounted in said rear portion of said main housing for illuminating said well portion;
a pen having a tip thereof for insertion into said pen-receiving opening, said tip of said pen having at least a portion thereof that is substantially frusto-conical in shape such that said portion of said tip projects interiorly into said rear portion of said main housing;
said illuminating means comprising electrical circuitry, a light means, and switch means operatively associated with said tip of said pen for alternatively closing and opening said electrical circuitry in response to the removal and insertion of said pen;
said switch means comprising an upstanding pivot post substantially vertically oriented in said rear portion of said main housing, a pivot plate having at least a portion of at least one edge surface thereof connected to a respective surface portion of said rear portion of said main housing for pivotal movement about a horizontal axis, said pivot post being joined to said pivot plate at a portion of said pivot plate spaced from the pivot axis thereof, so that a force applied to said pivot post will cause said pivot plate to pivot about said pivot axis;
said pivot post having an upper surface portion thereof against which said tip of said pen contacts when inserted in said rear portion of said main housing to cause the pivotal movement of said pivot plate about said pivot axis to thereby de-energize said light means.

4,809,142
INTEGRATED LIGHTING DEVICE
Seymour Auerbach, 115 Hesketh St., Chevy Chase, Md. 20015
Filed Sep. 9, 1987, Ser. No. 98,899
Int. Cl.[4] F21S *1/02, 5/00*
U.S. Cl. 362—147 32 Claims



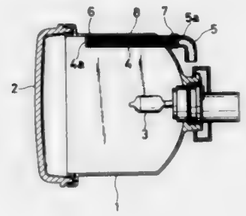
1. An integrated lighting device for mounting to either an electrical box having an electrical energy source or the surface surrounding the electrical energy source comprising:
a light source;
a housing;
means non-removably and fixedly mounting said light source and said housing together;
means for supplying electrical energy from the electrical energy source to the light source including means for modifying the electrical energy supplied to the light source;
means carried by said housing for mechanically connecting said housing to one of the electrical box and the surface surrounding the energy source; and
said electrical energy supplying means for supplying electrical energy between the electrical energy source and said electrical energy modifying means including at least one hardwire electrical connection therebetween and excluding any connection other than a hardwire connection therebetween.

4,809,143
VEHICLE LIGHT ASSEMBLY INCLUDING SEVERAL INCANDESCENT LAMPS
Rolf Feger, Bietigheim-Bissingen, and Gunther Holzmacher, Asperg, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Continuation of Ser. No. 423,680, Sep. 27, 1982, abandoned. This application May 17, 1988, Ser. No. 195,450
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151500
Int. Cl.[4] F21V *21/00*; B60Q *1/00*; H01R *11/22*
U.S. Cl. 362—249 9 Claims



1. In combination with a vehicle light assembly for incandescent lamps having a bottom center contact and a cap contact and wherein the assembly has a non-conductive lamp holder defining multiple cavities, each cavity having a bottom and a side wall, and a first contact spring in each cavity for electrical connection with the bottom center contact of each lamp, the improvement which comprises; a metal sheet conductor fastened to the holder and positioned in a plane perpendicular to a longitudinal axis of the lamps substantially level with the open end of the cavities; a coplanar bendable portion of the sheet conductor associated with each cavity capable of extending into the cavity along the cap contact when bent by the insertion of the lamp into the holder; and a second contact spring integral with the lamp holder associated with each cavity extending up from the bottom of the cavity and located within the cavity at the same distance from the center line of the cavity as the outer surface of the lamp cap so as to form a socket for each lamp, whereby the second contact spring urges the bendable portion of the sheet conductor against the cap contact of the lamp and maintains an electrical connection between them when the lamp is inserted into the socket.

4,809,144
VEHICLE HEADLAMP WITH A VENT HOLE
Tooru Suzuki, Tokyo, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Dec. 2, 1987, Ser. No. 127,807
Claims priority, application Japan, Dec. 11, 1986, 61-191047[U]; Mar. 31, 1987, 62-48822[U]
Int. Cl.[4] F21V *29/00*
U.S. Cl. 362—294 20 Claims



1. A vehicle headlamp comprising:
a lamp housing; and
an elongated container arranged at least partially within said housing, said container having front and rear ends, at least one small opening in eahc of said front and rear ends thereof, and an interior space between said small openings in said front and rear ends and in communication with said small openings in said front and rear ends, at least one small opening of said front end of said container being internal of said lamp housing and communicating with the interior of said lamp housing, said at least one rear end opening communicating with the outside of said lamp housing, and said container having a drying agent therein;
the size of said at least one small front end opening being smaller than that of said at least one small rear end opening.

4,809,145
FREE-STANDING (SELF-SUPPORTING) LAMP SHADE
Martin B. Bennett, 645 East 26th St., Brooklyn, N.Y. 11210
Filed Jan. 21, 1987, Ser. No. 5,605
Int. Cl.[4] F21V *1/04*
U.S. Cl. 362—358 4 Claims

1. An assembly for controlling light transmitted from a means of illumination including shade means;
said means of illumination comprising light source means and support means; said support means including a base portion for rest on a planar surface;
said shade means enclosing said means of illumination wherein said shade means is entirely free from connection with said means of illumination, said shade means having means for the escape of heat and a separate means of



support so as to apply no load to said support means of said means of illumination.

4,809,146
ENCLOSURE WITH INTERLOCKING FRAME JOINTS
David W. Johnson, 1884 Sunset Blvd., San Diego, Calif. 92103
Continuation-in-part of Ser. No. 848,573, Apr. 7, 1986, Pat. No. 4,715,503. This application Dec. 23, 1987, Ser. No. 137,101
The portion of the term of this patent subsequent to Dec. 29, 2004, has been disclaimed.
Int. Cl.[4] F21L *7/00*
U.S. Cl. 362—367 15 Claims



1. An enclosure comprising:
(a) a frame comprising:
(i) reticulated lattice defining orthogonal X, Y, and Z directions;
(ii) said lattice being comprised of a plurality of elongated structural members formed into an X-directional parallel array, a Y-directional parallel array, and a Z-directional parallel array;
(iii) said parallel arrays intersecting one another to define joints between said elongated structural members and each of said joints including two of said members from each said X- Y-, and Z-directional parallel arrays to form said six-member joints, said six-member joints each having three elongated structural members that are only full notched, said full notch being substantially equal to two times the cross-sectional area of each of the three elongated members, two of said members having similar full notches and also having an additional half notch, said half notch being formed at 90 degrees to the full notch and substantially at mid-span of the full notch, the sixth elongated structural member having no notches at said joint and being the key post that holds the remaining five members together as a joint; and,
(iv) each of said joints comprising an interlocking joint held together by the interlocking configurations of the elongated structural members themselves without the use of blocks or sockets at the joints or the use of fasteners or glue at any of the joints;
(b) each of said joints defining a three dimensional inside corner such that six planes orthogonal to said X, Y, or Z

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directions are defined which also intersect four of said corners to define six quadrilateral spaces; and

(c) at least four panels occupying four of said quadrilateral spaces and held in place, at least in part, by said three-dimensional inside corners.

4,809,147

LIGHTING DEVICE

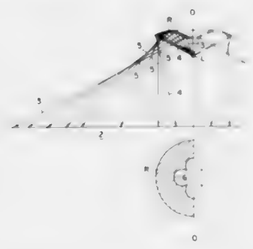
Masataka Negishi, 29-19, Daito 2-Chome, Urawa-Shi, Saitama-Ken, Japan

Continuation of Ser. No. 941,559, Dec. 11, 1986, abandoned, which is a continuation of Ser. No. 731,627, Apr. 18, 1985, abandoned. This application Apr. 25, 1988, Ser. No. 186,777

Claims priority, application Japan, Aug. 19, 1983, 58-151810

Int. Cl.⁴ F21V *7/00*

U.S. Cl. 362—347 **10 Claims**



1. A lighting device comprising: a light source; and a reflector for reflecting light rays emanating from said light source, said light source and said reflector having an optical axis, said reflector having at least a partially continuous reflecting surface of a shape symmetrical with respect to said optical axis, having no focal point and having a shape for causing light rays reflected by a part of the reflecting surface on one side of said optical axis, when viewed in a direction perpendicular to said optical axis, to intersect other light rays reflected by said reflecting surface on the other side of the optical axis at innumerable different points which are distributed in three dimensions both in the direction of said optical axis and transversely thereof and which are positioned symmetrically with respect to said optical axis, said reflecting surface having a shape for reflecting the light rays therefrom as non-parallel rays with a uniform luminous flux distribution.

4,809,148

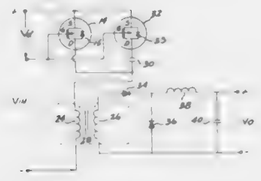
FULL-FLUXED, SINGLE-ENDED DC CONVERTER

Belwinder S. Barn, Burnaby, Canada, assignor to British Columbia Telephone Company, Burnaby, Canada

Filed Oct. 21, 1987, Ser. No. 111,035

Int. Cl.⁴ H02M *3/335*

U.S. Cl. 363—20 **11 Claims**



1. A single-ended DC converter comprising:

a transformer having a core and magnetically coupleable primary and secondary windings wound about said core;

a first controllable switch connected in series with one of said windings; and

a series combination of a capacitor and a second controllable switch connected in parallel with said first controllable switch for allowing bidirectional magnetic flux excursions to be produced in said core.

4,809,149

SINGLE-ENDED DOWN CONVERTER

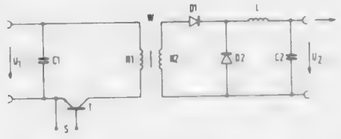
Krahl Burghard, Leinburg, Fed. Rep. of Germany, assignor to U.S. Philips Corp., New York, N.Y.

Filed Jun. 5, 1987, Ser. No. 58,292

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1986, 3619352

Int. Cl.⁴ H02M *3/335*

U.S. Cl. 363—20 **4 Claims**



1. A single-ended down converter comprising: a pair of input terminals for connection to a source of supply voltage and a pair of output terminals for connection to a load, a transformer having a primary winding and a secondary winding, an input circuit coupled to the input terminals and including a pulse width controlled switching element and said transformer primary winding, an output circuit coupled to the output terminals and including the transformer secondary winding, a rectifier diode and a flywheel diode, said rectifier diode having a conductive state and a cut-off state caused by switching of said switching element and having a barrier layer capacitance present during the cut-off state of the rectifier diode whereby demagnitization of the transformer takes place only by means of said barrier layers capacitance during the cut-off state of the rectifier diode.

4,809,150

DC TO DC CONVERTER WITH FEED FORWARD AND FEED BACK REGULATION

Donald Limuti, Kirkland, and James M. Ross, Bothell, both of Wash., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jan. 27, 1988, Ser. No. 148,945

Int. Cl.⁴ H02M *3/335*

U.S. Cl. 363—21 **8 Claims**

1. A DC to DC converter for converting an input voltage which may change in amplitude into an output voltage having a substantially constant amplitude utilizing feed forward control to decrease the time required to compensate for changes in said input voltage, comprising in combination:

(a) means for producing a synchronizing signal;

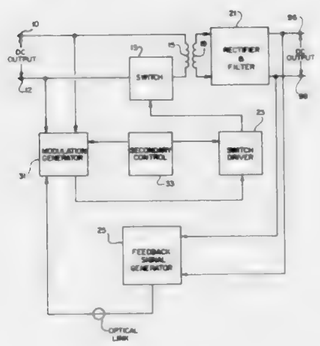
(b) means for generating a pulse width modulated ramp signal in response to said synchronizing signal, said input voltage and a signal which terminates each pulse of said pulse width modulated ramp signal; said pulse width modulated ramp signal having a frequency determined by said synchronizing signal;

(c) means for comparing the amplitude of said pulse width modulated ramp signal to said output voltage to generate a ramp termination signal which selectively terminates each pulse off said pulse width modulated ramp signal;

(d) means responsive to said synchronizing signal and to said ramp termination signal to generate a pulse width modulated signal;

(e) switch means responsive to said pulse width modulated signal to periodically couple the primary winding of a

transformer between the positive and negative input terminals of said DC to DC converter to produce a pulsed electrical signal available at the terminals of the secondary winding of said transformer; and



(f) means coupled to the secondary winding of said transformer to convert said pulsed electrical signal to said output voltage.

4,809,151

SWITCHING REGULATOR HAVING PARALLEL DIODE ISOLATED PRIMARY WINDINGS AND PLURAL SECONDARY WINDINGS

Naoto Ota, Hino, Japan, assignor to Fanuc Ltd., Yamanashi, Japan

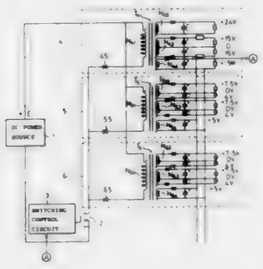
PCT No. PCT/JP87/00118, § 371 Date Oct. 16, 1987, § 102(e) Date Oct. 16, 1987, PCT Pub. No. WO87/05165, PCT Pub. Date Aug. 27, 1987

PCT Filed Feb. 23, 1987, Ser. No. 124,798

Claims priority, application Japan, Feb. 24, 1986, 61-037475

Int. Cl.⁴ H02M *3/335*

U.S. Cl. 363—21 **2 Claims**



1. A switching regulator comprising:

a power supply means;

a switching means;

a main power transformer having a primary winding and a plurality of secondary windings, said primary winding of said main power transformer being connected to said power supply means via said switching means;

a switching control circuit for detecting a voltage of one of said plurality of secondary windings of said main power transformer and controlling a duty ratio of said switching means;

a first diode inserted in series with and in a forward direction to said primary winding of said main power transformer;

at least one subsidiary power transformer having a primary winding, a plurality of secondary windings and a regulating winding, said primary winding of said subsidiary power transformer being connected in parallel with said primary winding of said main power transformer; and

a second diode inserted in series with and in a forward direction to said primary winding of said at least one subsidiary power transformer;

said regulating winding of said at least one subsidiary power transformer being connected to said one of said plurality of secondary windings of said main power transformer.

4,809,152

INTEGRATED DUAL CHARGE PUMP POWER SUPPLY AND RS-232-TRANSMITTER/RECEIVER

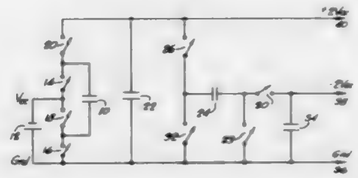
David Bingham, San Jose, and Charles M. Allen, Sunnyvale, both of Calif., assignors to Maxim Integrated Products, Sunnyvale, Calif.

Continuation of Ser. No. 878,233, Jun. 25, 1986, Pat. No. 4,679,134, which is a continuation of Ser. No. 782,953, Oct. 1, 1985, Pat. No. 4,636,930. This application May 12, 1987, Ser. No. 13,648

The portion of the term of this patent subsequent to Jan. 13, 2004, has been disclaimed.

Int. Cl.⁴ H02M *3/18*

U.S. Cl. 363—61 **8 Claims**



1. A circuit for providing a bipolar voltage output at substantially double the voltage of a unipolar voltage input source, including:

first and second voltage input terminals,

first and second positive transfer capacitor connection terminals,

first semiconductor switch means for selectively connecting said first voltage input terminal to said first positive transfer capacitor connection terminal and said second voltage input terminal to said second positive transfer capacitor connection terminal,

first and second positive reservoir capacitor connection terminals, said first positive reservoir capacitor connection terminal connected to a fixed voltage point,

second semiconductor switch means for selectively connecting said first voltage input terminal to said second positive transfer capacitor connection terminal and said first positive transfer capacitor connection terminal to said second positive reservoir capacitor connection terminal,

first and second negative transfer capacitor connection terminals,

third semiconductor switch means for selectively connecting said second voltage input terminal to said first negative transfer capacitor connection terminal and said second positive reservoir capacitor connection terminal to said second negative transfer capacitor connection terminal,

first and second negative reservoir capacitor connection terminals, said first negative reservoir capacitor connection terminal connected to a fixed voltage point,

fourth semiconductor switch means for selectively connecting said first negative transfer capacitor connection terminal to said second negative reservoir capacitor connection terminal and said second negative transfer capacitor connection terminal to said second voltage input terminal,

selection means, coupled to said first, second, third and

fourth semiconductor switch means, for selectively activating said first, second, third and fourth semiconductor switch means,

said circuit integrated on a single piece of semiconductor substrate material.

4,809,153

LOW-INDUCTANCE BUS BAR ARRANGEMENT

Jürgen Bremer; Andreas Fuchs, and Rainer Marquardt, all of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

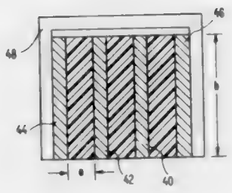
Filed Feb. 26, 1987, Ser. No. 19,048

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1986, 3609065

Int. Cl.⁴ H02M *1/00*

U.S. Cl. 363—141 **1 Claim**





1. In a low-inductance bus bar arrangement (36) used as electrical connection of common components (10, 12, 14, 16, 18, 20) of individual circuits (4, 6, 8) of a circuit arrangement (2) having a modular design, particularly a phase component of a converter, wherein the bus bar arrangement (36) has a low-inductance and is comprised of several bus bars (40, 42, 44, 46) which are in a stacked relation to each other and are electrically separated by a means for insulating from each other, the improvement comprising in that for n individual circuits (4, 6, 8) at least n+1 bus bars (40, 42, 44, 46) are provided for connecting said common components (10, 12, 14, 16, 18, 20) to one another, said n+1 bus bars including two outer bus bars (44, 46) which are connected to each other in an electrically conducting manner to maintain substantially the same inductance between any two bus bars forming one of said n circuits.

4,809,154

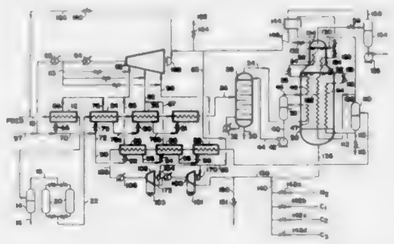
AUTOMATED CONTROL SYSTEM FOR A MULTICOMPONENT REFRIGERATION SYSTEM

Charles L. Newton, Bethlehem, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 10, 1986, Ser. No. 884,122

Int. Cl.⁴ G06F *15/46;* **F25U** *1/02*

U.S. Cl. 364—148 **18 Claims**



1. A method for efficiently operating a liquefied natural gas production facility comprising the steps of:

monitoring key variables representative of the state of operation of said facility;

determining a desired production rate for said facility;

comparing said desired production rate to the value of a key variable representative of the current production rate of said facility;

setting a plurality of controllers to change production to a rate equal to said desired rate; and

controlling and optimizing mixed refrigerant composition and mixed refrigerant compression ratio as well as other plant operating variables with respect to overall efficiency by means of adjusting an operating parameter selected from the group consisting of:

(a) mixed refrigerant make up rate;

(b) mixed refrigerant venting;

(c) mixed refrigerant liquid draining;

(d) compressor turbine speed;

(e) relative mixed refrigerant liquid and vapor flows; and

(f) fuel header pressure.

4,809,155

VERY HIGH SPEED LINE ADAPTER FOR A COMMUNICATION CONTROLLER

Michel L. Costes, Cagnes Sur Mer; Gerard Dalboussiere, Vence, both of France, and Kenneth J. Barker, Cary, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 2, 1987, Ser. No. 33,388

Claims priority, application European Pat. Off., Apr. 30, 1986, 864300157

Int. Cl.⁴ G06F *3/00*

U.S. Cl. 364—200 **8 Claims**

1. High speed line adapter comprising a microprocessor (22) working under control of a stored microcode and a front end scanner (26) attached to at least one full duplex high speed line (9), said adapter being part of a communication controller comprising a central control unit (CCU 1) working under control of a network control program stored in a memory(2), said program allocating a minimum number of buffers in said memory for the reception of frames comprising address, control fields and data, from the line, said adapter being attached to the central control unit through an input/output bus (6) and to the memory through a direct memory access bus (10) and being characterized in that it comprises:

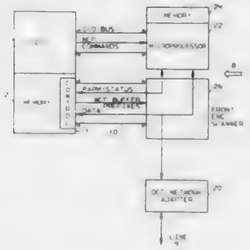
first receiving means (46) connected to the line for receiving the frames and causing the received bits to be arranged into characters comprising a byte of received bits, a bit indicating that a character is ready, and to be checked for

generating an ending condition character for each frame indicating whether the frame was correctly received or not, and providing on their output bus (52), the frame characters and the ending condition character for each received frame,

receive queue buffer mechanism (48) comprising:

a receive queue (100), having a plurality of addressable locations, the content of which may be read through a data out bus 106 and into which characters may be written through a data in bus 104,

input means (FIG. 7) causing the receive queue to be accessed by the first receiving means for writing the frame characters and the ending condition character relative to each received frame when the receive queue is not full and for generating an overrun signal when the receive queue is



full, said signal preventing the subsequent received characters to be written in said receive queue, as long as the queue is full,

output means (FIG. 8).

second receiving means (50) connected to the output means which causes the receive queue to be read upon reception of receive commands from the network control program, when said receive queue is not accessed by the first receiving means for reading the frame characters and ending condition character relative to each frame and sending the address, control and ending condition bits of said characters to the central control unit through the microprocessor and input/output bus (6) and the data bits of said characters directly into the allocated buffers of the central control unit memory (2) through the direct access memory bus (10).

4,809,156

ADDRESS GENERATOR CIRCUIT

John E. Taber, Rolling Hills Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 591,871, Mar. 19, 1984, abandoned. This application May 13, 1987, Ser. No. 51,173

Int. Cl.⁴ G06F *7/00, 9/00*

U.S. Cl. 364—200 **23 Claims**

1. An address generator circuit for generating memory addresses for use in conjunction with a computer system having a central processor and a data memory, said address generator circuit comprising:

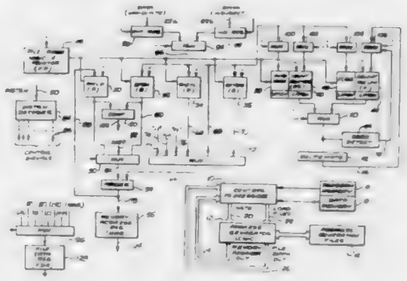
a plurality of address generation files, wherein each of the address generation files contains a plurality of registers for storing a plurality of parameters used in an addressing sequence, and wherein one of said registers in each file is an accumulator register for storing which address in said sequence associated with that file was most recently generated by the address generator circuit;

input means, for receiving both address generation parameters, for transmission to the address generation files, and address generation instructions from the central processor;

output means for supplying memory addresses to the central processor;

address generation file pointer means, for selection of a desired one of said address generation files, in response to control signals received from the central processor; and

address generator logic operative in response to the address generation instructions received in said input means to generate at said output a memory address calculated as a



function of said address generation instructions and the parameters stored in the address generation file selected by said file pointer, wherein the memory address is not calculated as a function of any of the parameter stored in the other address generation files not selected by said file pointer.

4,809,157

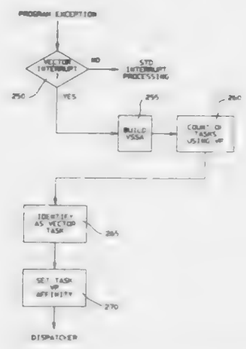
DYNAMIC ASSIGNMENT OF AFFINITY FOR VECTOR TASKS

John H. Ellert, Wappingers Falls; Jeffrey A. Frey, Highland; Yih-shin Tan, Pleasant Valley, and James H. Warnes, Poughkeepsie, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 30, 1985, Ser. No. 781,844

Int. Cl.⁴ G06F *9/00, 9/46*

U.S. Cl. 364—200 **6 Claims**



1. In a central electronic complex including system resources, central processing units in which operating systems are run for controlling the execution of tasks, and a control bit associated with one of said system resources, a method for dynamically assigning a task to a central processing unit by an operating system only if said system resource is installed and available on said central processing unit, said method comprising:

issuing a special instruction in one of said tasks, running in one of said central processing units, said special instruction requiring for its execution use of said system resource;

continuing execution on said one of said central processing units if said control bit is on, indicating that said system resource is installed and available in said central processing unit;

detecting a special instruction operation exception which interrupts execution of said task in said one of said central processing units and which is generated when said special instruction is issued while said control bit is off indicating that said system resource is not installed or available in said one of said central processing units, said bit controlling said task's access to said system resource by indicating whether said processing unit, automatically restricting said task to only current active, on-line central processing units on which said system resource is installed and available by designating restricted CPUs on which said task may be executed in a first task-related field, said restricting being designated as restrictive affinity of said task for said CPUs, and dispatching said task on one of said restricted central processing units and turning on a control bit in said restricted central processing unit on which said task is dispatched.

4,809,158

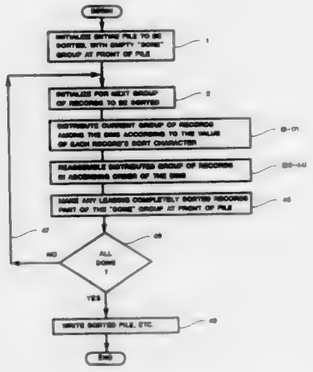
SORTING METHOD AND APPARATUS

Peter B. McCauley, 320 E. 25th St., New York, N.Y. 10010

Filed Oct. 23, 1985, Ser. No. 790,688

Int. Cl.[4] G06F *7/08*

U.S. Cl. 364—200 **16 Claims**



1. In a bin sorting method for computing equipment in which a group of keys are sorted by association with bins, wherein a key consists of the values which govern the sorting process, the steps comprising:

(a) testing by computer comparison for equality between a portion of a key and a corresponding portion of a prior adjacent key;

(b) if said portions are not equal,

i. determining the location of a bin corresponding to said portion of said key, and

ii. associating said key with said corresponding bin thereby ordering said key, and

(c) if said portions are equal, omitting steps (b) i. and (b) ii. and permitting said key to remain adjacent to said prior adjacent key.

4,809,159

CONTROL TOKEN MECHANISM FOR SEQUENCE DEPENDENT INSTRUCTION EXECUTION IN A MULTIPROCESSOR

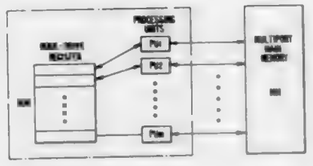
Masahiro Sowa, Gunma, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 693,623, Jan. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 578,875, Feb. 10, 1984, abandoned. This application Jan. 21, 1988, Ser. No. 147,128

Claims priority, application Japan, Feb. 10, 1983, 58-20863

Int. Cl.[4] G06F *13/00, 15/16*

U.S. Cl. 364—200 **14 Claims**



1. A control flow parallel computer system comprising:

a plurality of processors;

a main memory means for storing information and having memory locations accessible by said plurality of processors; and

node drive register means for storing information relating to execution of instructions, said node drive register means being accessible by said plurality of processors, said node drive register means storing a plurality of words, each of said words including a location storing a pointer indicating an instruction to be executed, and a plurality of control token locations for storing control tokens for indicating when the instruction indicated by said pointer is to be executed, each of said control token locations being filled with a control token upon completion of the execution of a prior instruction required to be executed before execution of said instruction indicated by said pointer.

4,809,160

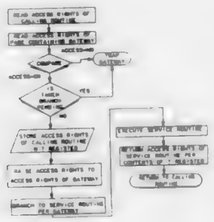
PRIVILEGE LEVEL CHECKING INSTRUCTION FOR IMPLEMENTING A SECURE HIERARCHICAL COMPUTER SYSTEM

Michael J. Mahon, San Jose; Allen Baum, Palo Alto; William R. Bryg, Saratoga, and Terrence C. Miller, Menlo Park, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 28, 1985, Ser. No. 792,702

Int. Cl.[4] G06F *12/14*

U.S. Cl. 364—200 **3 Claims**



1. A method of securing a computer system having a memory and an instruction unit when a calling routine having an original low privilege level desires to call on a service routine

having a higher privilege level than the calling routine is normally permitted to access, said method comprising the steps of:

reading an access rights field contained in a register within the instruction unit to determine current access rights of the calling routine;

reading an access rights field of a page in the memory containing a gateway instruction indicated by the calling routine;

comparing the access rights field in the register within the instruction unit to the access rights field of the page in memory containing the gateway instructions indicated by the calling routine to determine whether the calling route is permitted entry to the page containing the gateway instruction; and

performing the following substeps if the access rights field of the calling routine indicates that the calling routine is permitted entry to the page containing the gateway instruction:

raising the low privilege level of the calling routine to the higher privilege level specified by the gateway instruction,

storing a return address and the low privilege level of the calling routine in a target register of the calling routine, so that the calling routine cannot forge its privilege level,

branching control of the instruction unit from the calling routine to a location of the service routine as specified by the gateway instruction,

executing the service routine, and

returning control to the calling routine at an address specified by the target register with the original low privilege level stored in the target register.

4,809,161

DATA STORAGE DEVICE

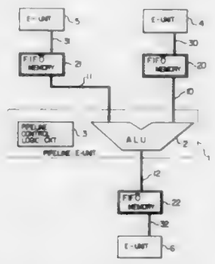
Shunichi Torii, 3-18, Gotenyama-2-chome, Musashino-shi; Shigeo Nagashima, 40-27, Koyasumachi-1-chome, Hachioji-shi, and Koichiro Omoda, 1140, Tokawa, Hadano-shi, all of Japan

Division of Ser. No. 581,077, Feb. 17, 1984, Pat. No. 4,734,850, which is a division of Ser. No. 303,186, Sep. 17, 1981, Pat. No. 4,433,394. This application Nov. 18, 1985, Ser. No. 799,018

Claims priority, application Japan, Sep. 19, 1980, 65-129326

Int. Cl.[4] G11C *19/00*

U.S. Cl. 364—200 **27 Claims**



1. A data storage device, comprising:

a plurality of data banks operable independently from each other and each having a plurality of storage locations for holding data signals; and

control means connected to said data banks for writing data signals of a set of data signals, which are sequentially received on either successive or intermittent clock periods, into respective ones of said storage locations within respective ones of said data banks, the one storage location and the one data bank being predetermined for each data signal in accordance with a predetermined order of storage locations under a condition that two data signals received sequentially are written into different data banks, and for reading data signals of the set of data signals from said data banks according to the order of receipt thereof in such a manner that already written data signals are read out in parallel to writing of remaining data signals of the set of data signals under a condition that only one write or read operation is effected with respect to each data bank during a clock period, wherein said control means includes detect means for detecting whether or not a data signal to be read out next is already available in said data banks and means responsive to said detect means for prohibiting the read operation of the next data signal when the detection result is negative.

4,809,162

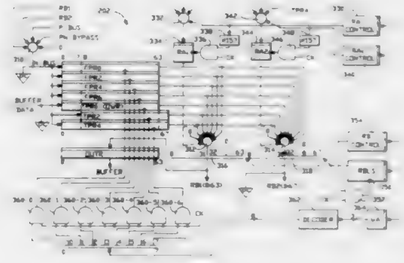
SAVING REGISTERS IN DATA PROCESSING APPARATUS

Stephen S. C. Si, Sunnyvale, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 925,997, Oct. 31, 1986. This application Jan. 4, 1987, Ser. No. 58,047

Int. Cl.[4] G06F *1/04, 9/22*

U.S. Cl. 364—200 **15 Claims**



1. Data processing apparatus for use in association with a functional unit having a first destination latch point for receiving first destination latch point input information, for use in further association with a clock and a control means for generating control signals to operate the functional unit, the control signals being updated once each clock cycle, the control means operating the functional unit such that the first destination latch point input information is required at the first destination latch point on a first given clock cycle, the apparatus comprising:

a first source latch point coupled to the first destination latch point via a first path, the path delay from the first source latch point to the first destination latch point being between n-1 and n clock cycles, $n>1$;

means for latching first source latch point information at the first source latch point on a first setup cycle at least n clock cycles before the first given clock cycle, and for retaining the first source latch point information at the first source latch point through the first given clock cycle; and

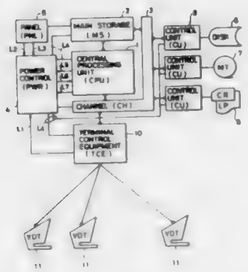
means for preventing a glitch from occurring in the output of the first source latch point in response to interim clock cycles between the first setup clock cycle and the first given clock cycle.

4,809,163

COMPUTER SYSTEM WITH POWER CONTROL BASED ON THE OPERATIONAL STATUS OF TERMINALS

Tsukio Hironawa, Machida; Masaru Ohki, Kodaira, and Yutaka Kawahara, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 610,491, May 15, 1984, abandoned. This application Apr. 14, 1987, Ser. No. 38,307
Claims priority, application Japan, May 18, 1983, 58-86860
Int. Cl.[4] G06F 9/00, 13/00, 13/14, 15/20
U.S. Cl. 364—200 18 Claims



17. A method of automatically controlling on/off status of a main power supply to a central computer system including a plurality of terminal devices which can request processing, comprising the steps, performed entirely by a monitor circuit in computer system in an automatic manner of:

monitoring said plurality of term request processing;

detecting a power-on status of at least one of said plurality of terminal devices;

starting the power supply to said computer system in response to the detection of a power-on status of at least one of said plurality of terminal devices;

detecting a power-off status of all of said plurality of terminal devices;

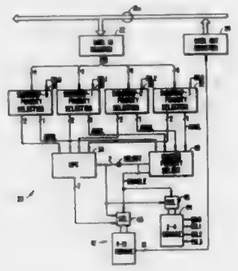
terminating the power supply to all of said plurality of terminal devices in response to the detection of a power-off status of all of said plurality of terminal devices.

4,809,164

PROCESSOR CONTROLLED MODIFYING OF TABLED INPUT/OUTPUT PRIORITY

William T. Fuller, San Jose, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Filed Mar. 26, 1986, Ser. No. 844,911
Int. Cl.[4] G06F 13/26, 9/46, 3/00
U.S. Cl. 364—200 1 Claim



1. In a data processing system including a processor and a plurality of external devices that communicate with the processor over a single I/O bus, where several devices may simultaneously request access to the processor, a priority selection device for applying a sequence of priority selection tables, selected from one of a plurality of possible sequences of selection tables, by the processor, to assign priority to the requesting devices and grant the device with highest priority access to the processor, said priority selection device comprising:

a first register for receiving mode data from the processor to preset said first register to a selected one of a plurality of mode states;

a second register, coupled to the I/O bus, for storing request data indicating the identity of a plurality of requesting devices requesting access to the processor;

a state register responsive to state data for defining said given priority selection table;

a selection unit, responsive to said mode data from said first register, said request data from said second register, and said state data from said state register, for selecting one of the requesting devices indicated by said request data according to the priority selection table defined by said state data wherein said selection unit generates next state data, in response to said mode data and said state data, defining a second given priority selection table;

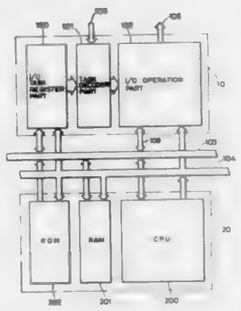
a multiplexer, controlled by said processor, for transferring either said next state data from said selection unit or initial state data from the processor, to said state register.

4,809,165

APPARATUS FOR PROCESSING INPUT/OUTPUT PULSES FOR USE IN MICROCOMPUTERS

Shigeki Morinaga, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 28, 1986, Ser. No. 935,739
Claims priority, application Japan, Nov. 28, 1985, 60-267665
Int. Cl.[4] G06F 13/00, 13/14
U.S. Cl. 364—200 7 Claims



1. An input/output pulse processing apparatus having a plurality of input/output (I/O) pins, coupled to a microcomputer through buses for processing pulses in accordance with a task required by the microcomputer, said apparatus comprising:

I/O task register means having a task register group consisting of a plurality of task registers, each of which store a task microinstruction supplied from the microcomputer through said buses, said microinstructions being necessary for executing a task required by the microcomputer, and an address signal generator for counting an internal clock and producing address signals for accessing the task register group on the basis of the counting result, wherein the task microinstructions are read out successively from the task register group to execute the task required by the microcomputer in accordance with said counting result; wherein each of the task microinstructions includes an instruction code specifying one of a plurality of basic I/O processing operations, a code for specifying at least one register necessary for executing a basic I/O processing operation and a code for specifying at least one of the I/O pins, through which an input signal is taken into or an output signal is delivered from said I/O pulse processing apparatus, and wherein the task required by the microcomputer is completed by a combination of task microinstructions selected and supplied by the microcomputer;

task decoding means connected to said I/O task register means for receiving the successively read-out task microinstructions and for producing control signals by decoding the read-out task microinstructions;

I/O operation means, controllably coupled to said task decoding means, including a register group made up of a plurality of registers, each of which is capable of being specified by control signals produced as the basis of a read-out task microinstruction and performing a register function necessary for the execution of the basic I/O processing operation specified by an instruction code of the read-out task microinstruction, and an arithmetic unit connected to the register group through internal buses for performing an arithmetic operation on the basis of data from the specified registers in accordance with the control signals produced by decoding the read-out task microinstruction in said task decoding means; and

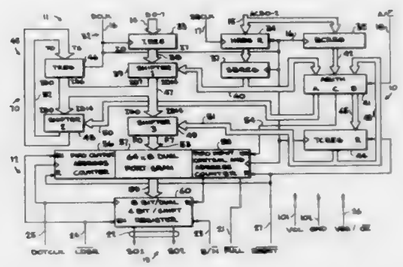
I/O pin selector means selecting at least one of the I/O pins and connecting the selected pin with said task decoding means or said I/O operation means, under control of the control signals produced on the basis of a pin specifying code of the read-out task microinstruction.

4,809,166

DATA ASSEMBLY APPARATUS AND METHOD

Michael Cooper, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 27, 1986, Ser. No. 900,949
Int. Cl.[4] G06F 3/14
U.S. Cl. 364—200 20 Claims



1. An apparatus for assembling words of bit map image data for supply to a raster scanning display, the apparatus receiving a stream of input words and control signals identifying selected bits in corresponding input words at intervals defined by clock signals, comprising:

input means for storing an input word and corresponding control signal in a first interval;

temporary means for storing a plurality of bits of data int first interval;

means, in communication with the input means and the temporary means and having an internal bus, for concatenating a subset of the word in the input means with contents of the temporary means in response to the control signal to supply a multibit string of data to the internal bus;

means, in communication with the means for concatenating and the temporary means, fur supplying a first subset of the multibit string as the plurality of bits to the temporary means in a second interval; and

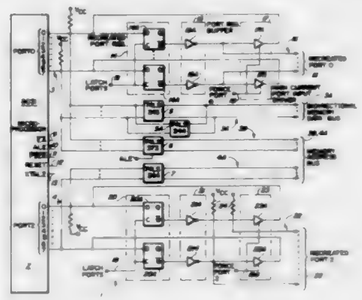
means, in combination with the means for concatenating and having an output bus, for supplying a second subset of the multibit string as an assembled word to the output bus in the second interval.

4,809,167

CIRCUITRY FOR EMULATING SINGLE CHIP MICROCOMPUTER WITHOUT ACCESS TO INTERNAL BUSES

Martin B. Pawloski, Gilbert, and Shekhar Y. Borkar, Mesa, both of Ariz., assignors to Metalink Corporation, Chandler, Ariz.

Continuation of Ser. No. 751,806, Jul. 3, 1985, abandoned. This application Feb. 10, 1988, Ser. No. 157,104
Int. Cl.[4] G06F 9/44
U.S. Cl. 364—200 20 Claims



1. A method of using a first single chip microcomputer that operates in a single chip mode wherein a control input is at a first logic level and causes an internal address bus and an internal data bus to be inaccessible from outside of the first single chip microcomputer, the first single chip microcomputer operating in a microprocessor mode wherein the control input is at a second logic level and causes the internal data bus and the internal address bus to be coupled to an external bus for outputting address and reading and writing data in order to emulate a second single chip microcomputer operating in its single chip mode, the method comprising the steps of:

(a) providing an external register having a plurality of outputs, and a plurality of corresponding inputs connected, respectively, to a plurality of leads of a port of the first single chip microcomputer, and connecting corresponding outputs of the external register to a plurality of recreated external port conductors;

(b) coupling the leads of the port to a plurality of external data bus conductors;

(c) applying the second logic level to the control input;

(d) operating the first single chip microcomputer to write a byte from its internal data bus into an internal latch of the port;

(e) outputting the byte from the internal latch via the leads of the port to the inputs of the external register;

(f) latching the byte into the external register;

(g) applying the first logic level to the control input during a portion of a machine cycle of the first single chip microcomputer wherein an internal CPU thereof would destroy information in an internal register;

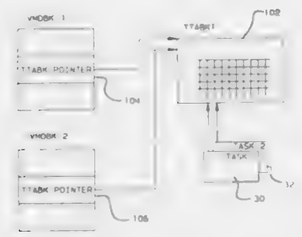
(h) logically ORing a plurality of logic levels occurring on the outputs of the external register with logic levels produced on outputs of an external circuit connected to the recreated external port conductors; and

(i) forcing levels on the recreated external port conductors onto the leads of the port, respectively, while the internal

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CPU of the first single chip microcomputer reads the levels of the leads of the port.

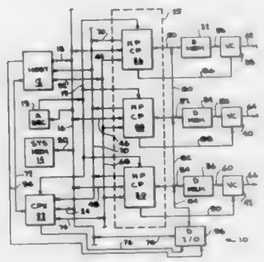
4,809,168
PASSIVE SERIALIZATION IN A MULTITASKING ENVIRONMENT
James P. Hennessy; Damian L. Osisek, both of Woodstock, and Joseph W. Seigh, II, Red Hook, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 17, 1986, Ser. No. 920,002
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—200 **10 Claims**



1. In a multiprocessing system having a control program, in which data objects are shared among processes, a method for serializing references to a data object by the processes so as to prevent invalid references to the data object by any process when an operation requiring exclusive access is performed by another process, comprising the steps of:
(a) permitting said processes to reference data objects on a shared access basis without obtaining a shared lock;
(b) monitoring a point of execution of the control program which is common to all processes in the system, which occurs regularly in the process' execution and across which no references to any data object can be maintained by any process, except references using locks;
(c) establishing a system reference point which occurs after each process in the system has passed said point of execution at least once since the last such system reference point;
(d) requesting an operation requiring exclusive access on a selected data object;
(e) preventing subsequent references by other processes to said selected data object;
(f) waiting until two said system reference points have occurred; and
(g) then performing said requested operation.

4,809,169
PARALLEL, MULTIPLE COPROCESSOR COMPUTER ARCHITECTURE HAVING PLURAL EXECUTION MODES
Adrian Sfarti, Sunnyvale, and Achim Strupat, Irvine, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Apr. 23, 1986, Ser. No. 855,224
Int. Cl.[4] G06F *15/16*
U.S. Cl. 364—200 **28 Claims**

1. A coprocessor for use in a computer system having a host processor, a plurality of said coprocessors and a like plurality of data memories wherein each of said plurality of coprocessors is coupled to said host processor for the receipt of instructions, control signals and data and each of said plurality of coprocessors is coupled to a respective one of the data memories, said coprocessor comprising:
(a) means, responsive to the control signals, for enabling said coprocessor to respond to instructions and data in one of a plurality of instruction execution modes, said enabling means distinguishing between instruction execution modes wherein said coprocessor responds to instructions and data singularly with respect to others of said coprocessors and wherein said coprocessor responds to instructions and data in parallel with others of said plurality of coprocessor; and
(b) means, coupled to said host processor for receiving instructions and data, for executing instructions received with respect to data provided with the instruction and as present in the respective one of the data memories, said executing means including:
(i) means for storing data, said executing means being responsive to the data stored by said storing means and the instruction execution mode enabled by said enabling

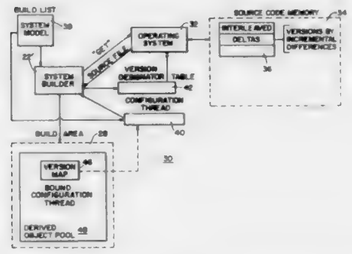


means for qualifying the execution of instructions by said executing means; and
(ii) means for communicating interim result information with others of said plurality of coprocessors when executing an instruction in parallel with others of said plurality of coprocessors, said communication means providing a interim result control signal upon reaching a decision point in the execution of an instruction indicative of the interim results of the execution of said instruction and being responsive to a consensus control signal representing the consensus result of said plurality of coprocessors executing said instruction in parallel at said decision point in the execution of said instruction.

4,809,170
COMPUTER DEVICE FOR AIDING IN THE DEVELOPMENT OF SOFTWARE SYSTEM
David B. Leblang, Wayland; Gordon McLean, Jr., Acton; Howard Spilke, Shrewsbury, and Robert P. Chase, Jr., Boston, all of Mass., assignors to Apollo Computer, Inc., Chelmsford, Mass.
Filed Apr. 22, 1987, Ser. No. 45,180
Int. Cl.[4] G06F *3/00, 15/06*
U.S. Cl. 364—200 **20 Claims**

1. A computer device for building a software system having a sequence of components, the device comprising:
(a) computer means for executing pre-established logic sequences and for reading from and writing to memory;
(b) source code memory means for storing a basic source code for each component of a plurality of software systems, each component comprising a plurality of sequential statements, and for storing, for each basic source code of a component, a sequence of modifications to the respective source code, each modification defining a different version of the respective component and being identified by a version number;
(c) build list means for designating the sequence of said component of a desired software system to be built;
(d) version list means for listing on a rule basis user desired possible versions of each of said components of the desired software system to be built;
(e) version designation means for dynamically designating

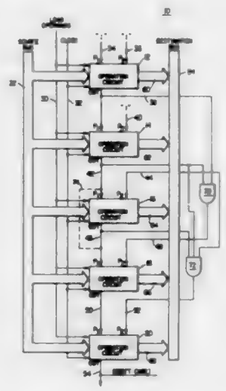
on a component-by-component basis the version number to be currently employed during the building of said desired software system;
(f) GET statement logic sequence means to be executed by said computer means for accessing the source code memory means and for providing on request the next statement in sequence of a designated version of a component in the source code memory means according to the version currently designated by said version designation means;
(g) derived object pool memory means for receiving and holding translated components of said desired software system as the system is being built; and
(h) system build logic sequence means to be executed by said computer means for establishing from said build list means



and said version list means a sequence of components by version numbers, corresponding to rule satisfying versions of the components, to be used to build the desired software system, for periodically setting said version designation means to reflect the version number of a component to be currently translated by any one of different translators supported by the computer means, for sequentially accessing said GET statement logic sequence means to sequentially obtain the rule satisfying versions of the components on a statement by statement basis from the source code memory means, and for using said statements to build from the translated components the desired software system comprising the designated components and rule satisfying versions thereof in said pool memory area.

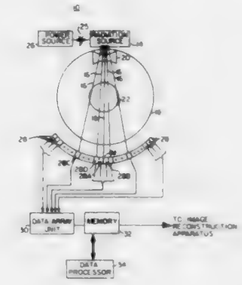
4,809,171
CONCURRENT PROCESSING OF DATA OPERANDS
Harold W. Dozier, Carrollton; Thomas M. Jones, Dallas; Steven J. Wallach, Dallas, and Jeffrey H. Gruger, Dallas, all of Tex., assignors to Convex Computer Corporation, Richardson, Tex.
Continuation of Ser. No. 622,449, Jun. 20, 1984, abandoned. This application Jan. 21, 1988, Ser. No. 147,112
Int. Cl.[4] G06F *9/38*
U.S. Cl. 364—200 **29 Claims**

18. Apparatus for use within a computer to provide concurrent processing of operands wherein each instruction for processing the operands requires a plurality of computer clock cycles for execution, comprising:
a plurality of independent functionally similar operand processing circuits, each of said circuits for processing operands supplied thereto in accordance with at least one of said instructions,
an input bus connected in parallel to the inputs of said operand processing circuits for loading operands into said operand processing circuits,
an output bus connected in parallel to the outputs of said operand processing circuits for receiving resultants produced by said operand processing circuits, and
means for loading said operands from said input bus to said operand processing circuits at the rate of one operand per clock cycle wherein at least two of said operand process-



ing circuits function concurrently to process the operands supplied thereto.

4,809,172
METHOD FOR OBTAINING IMAGE DATA WITH A TOMOGRAPHIC APPARATUS
James F. Hopkinson, Vernon Hills, Ill.; Kyojiro Namba, Tochigi, Japan, and E. Anne Sivers, Elmhurst, Ill., assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Mar. 11, 1987, Ser. No. 24,454
Int. Cl.[4] G06F *15/42*
U.S. Cl. 364—413.16 **31 Claims**



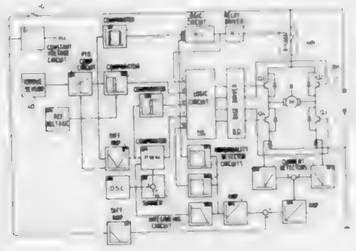
1. A method for obtaining image data with a tomographic apparatus having a radiation source for generating radiation beams, a chamber through which said radiation beams are directed, said chamber having a portion adapted for receipt of an object, a plurality of individual detectors for detecting radiation emerging from said chamber and for generating response signals responsive to said detected radiation, a data acquisition unit for generating data representative of said response signals, a data processor and a memory, wherein said image data is used to reconstruct a tomographic image of a target object, said method comprising the steps of:
determining a correction constant for each of said detectors for use in mitigating against inaccuracies in said representative data obtained using said individual detectors, and storing each said correction constant;
turning on said radiation source to direct said radiation beams through said chamber when said portion of said

chamber contains only air, detecting radiation beams emerging from said chamber and generating response signals thereto, and generating and storing first data representative of said response signals;
placing said target object in said portion of said chamber, turning on said radiation source to direct said radiation beams through said chamber, detecting radiation beams emerging from said chamber and generating response signals thereto, and generating and storing second data representative of said response signals;
differencing said first data and said second data to obtain third data representative of a difference between response signals for each of said detectors, and storing said third data; and
differencing said third data and said correction constants for each of said detectors to obtain image data to reconstruct a tomographic image of said target object.

4,809,173
ELECTRICALLY DRIVEN POWER STEERING APPARATUS

Masanobu Fukami, Aichi, and Naoji Sakakibara, Chiryu, both of Japan, assignors to Aisin Seiki Kabushikikaisha, Aichi, Japan

Filed May 29, 1987, Ser. No. 55,390
Claims priority, application Japan, May 31, 1986, 61-126687
Int. Cl.⁴ B62D *5/04*
U.S. Cl. 364—424.05 **5 Claims**

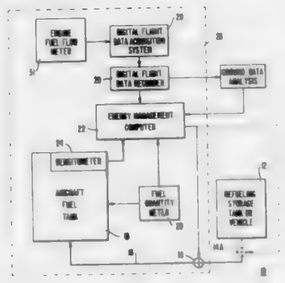


1. An electrically driven power steering apparatus comprising:
a running direction controlling mechanism which determines the direction of a wheel with respect to a car body;
steering means coupled to the controlling mechanism for driving the controlling mechanism;
driving force detector means for detecting a driving force which is applied to the direction control mechanism by the steering means;
an electric drive mechanism including an electric motor which is coupled to the direction controlling mechanism;
means for energizing the electric motor of the electric drive mechanism;
voltage detector means for detecting a voltage output from an onboard power supply;
energization control means responsive to the driving force detected by the driving force detector means for controlling the energization of the motor at a higher power level in response to the detected driving force of an increased magnitude and at a lower power level in response to the detected driving force of a reduced magnitude and responsive to the voltage detector means for controlling the energization of the motor at a power level which is less than the power level corresponding to the detected driving force whenever the voltage detected by the voltage detector means is below a given value;
and energization command means for commanding said energizing means to energize the electric motor of the electric drive mechanism in accordance with the response of the energization control means.

4,809,174
AIRCRAFT ENERGY LOADING METHOD AND APPARATUS

Albert M. Momenthy, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 29, 1986, Ser. No. 857,081
Int. Cl.⁴ G01F *13/00*
U.S. Cl. 364—424.01 **12 Claims**

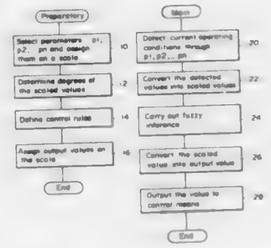


1. A method for loading an aircraft fuel tank with a measured quantity of fuel having sufficient energy content for a selected flight, comprising the steps of:
calculating the total required energy content of fuel sufficient for said selected flight based on aircraft operational characteristics and flight parameters;
determining at discrete intervals the total energy content of fuel in said fuel tank during fuel loading;
comparing said calculated total energy sufficient for said selected flight with said determined total energy content of fuel in said tank during fuel loading to obtain the difference therebetween; and
terminating fuel loading in accordance with said difference.

4,809,175
VEHICLE CONTROL SYSTEM AND METHOD THEREFOR

Takefumi Hosaka; Saitama Arai, and Hiroki Matsui, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1987, Ser. No. 81,869
Claims priority, application Japan, Aug. 6, 1986, 61-186042
Int. Cl.⁴ B60K *31/00*; G06F *15/50*
U.S. Cl. 364—424 **12 Claims**



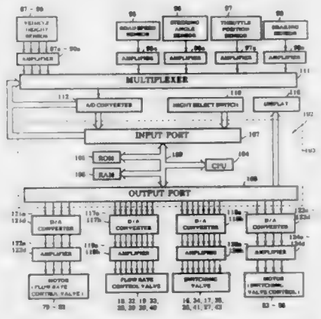
1. A method for controlling vehicle operation, which comprises:

assigning operating conditions of the vehicle on a scale in advance in accordance with a predetermined first principle while establishing degrees thereof;
identifying a position on the scale to determine the degree and carrying out a predetermined calculation with respect to the degree;
selecting or averaging the calculation result in accordance with a predetermined second principle so as to determine a control value corresponding to the selected or averaged value; and
controlling the vehicle operation on the basis of the value.

4,809,176
SYSTEM FOR VEHICLE BODY ROLL CONTROL WITH OVERSHOOT PREVENTION

Nobutaka Oowa; Yasuji Arai; Osamu Yasuike; Hiroyuki Ikemoto, all of Toyota, and Shunichi Doi, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Toyota Central Research and Development Laborstories, Inc., both of Aichi, Japan

Filed Oct. 22, 1986, Ser. No. 921,468
Claims priority, application Japan, Oct. 22, 1985, 60-235655; Oct. 22, 1985, 60-235656; Oct. 22, 1985, 60-235657
Int. Cl.⁴ B60G *17/00*; G06G *15/50*
U.S. Cl. 364—424 **29 Claims**

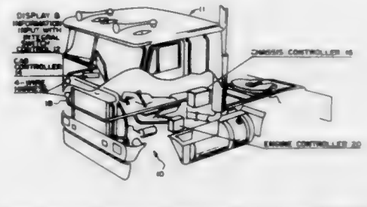


1. For a vehicle comprising a body and a plurality of wheels upon which said vehicle runs, a roll control system of vehicle height adjustment type for height duration maintenance control comprising:
a plurality of actuator assemblies equal in number to the number of said vehicle wheels, each actuator assembly corresponding to one of said vehicle wheels and resiliently suspending said one of said vehicle wheels from the vehicle body, each actuator assembly comprising a pressure chamber, and each actuator assembly increasing and decreasing vehicle height at a location in the vicinity of said actuator assembly's corresponding vehicle wheel as a result of the supply and discharge of working fluid to and from said pressure chamber;
a plurality of working fluid supplying and discharging means, for supplying working fluid to and discharging working fluid from each said pressure chamber;
means for controlling said plurality of working fluid supplying and discharging means by duty ratio control;
a plurality of vehicle height detection means, for sensing heights of the vehicle body over said vehicle wheels; and
computing and control means for:
calculating deviations of the actual vehicle body heights as detected by said vehicle height detection means from standard vehicle body heights;
controlling said working fluid supplying and discharging means according to a first duty ratio as a function of said deviations of said actual vehicle body heights, so as to maintain said deviations of said actual vehicle body heights within predetermined ranges; and
at the completion of height deviation maintenance control, controlling said working fluid supplying and discharging means in reverse order according to a second duty ratio.

4,809,177
MULTIPLEXED ELECTRICAL WIRING SYSTEM FOR A TRUCK INCLUDING DRIVER INTERFACE AND POWER SWITCHING

W. Eric Windle, Antwerp, Ohio, and James W. Kruse, Fort Wayne, Ind., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Aug. 14, 1987, Ser. No. 85,661
Int. Cl.⁴ G06F *15/14*
U.S. Cl. 364—424.01 **56 Claims**



1. A land vehicle electrical system including a battery, battery charging means for energizing the battery, controller means which may assume a number of controller states for regulating the flow of electricity to driven devices, sensor means for monitoring various parameters of operation of the land vehicle and land vehicle components, input means for affecting the controller state and for regulating the flow of electricity to driven devices, and display means for providing information concerning the operation of the land vehicle and land vehicle components, said controller means including a cab controller, a chassis controller and controller memory distributed between said cab controller and said chassis controller, said cab controller including a cab memory, a cab microprocessor to which chassis functions are assigned, cab sensor input means for sensing signals from said sensor means, cab output means for affecting driven devices in accordance with the cab controller state, and cab communication means for receiving and transmitting digital signals, said chassis controller including a chassis memory, a chassis microprocessor to which chassis functions are assigned, chassis sensor input means for sensing signals from said sensor means, chassis output means for affecting driven devices in accordance with the chassis controller state, and chassis communication means for receiving and transmitting digital signals, said chassis controller having substantially identical components as said cab controller; a controller bus coupled between said respective communication means of said cab controller and said chassis controller for exchanging digital data among said system components, said sensor means selectively including analog, switched digital sensors selectively coupled to the respective sensor input means of said cab controller and said chassis controller, said driven devices being operatively connected to the output means of said cab controller, said output means of said chassis controller, and to said input means of said controller means.

4,809,178

OBSTACLE DATA PROCESSING SYSTEM FOR UNMANNED VEHICLE

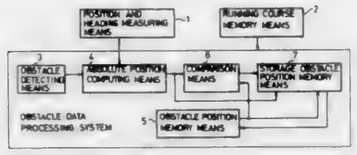
Yoshiki Niwamiya, Nagoya; Gunji Sugimoto, Kariya; Takero Hongo, Nagoya; Keiichi Watanabe, Aichi, and Hideo Arakawa, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed May 20, 1987, Ser. No. 51,831

Claims priority, application Japan, May 22, 1986, 61-118296; May 22, 1986, 61-118295

Int. Cl.[4] G05D *1/02*

U.S. Cl. 364—443 **8 Claims**



7. An obstacle data processing system for a self-controlled unmanned vehicle having a position and heading measuring means for measuring the position and heading of said unmanned vehicle and a running course memory means for storing position data of the position of said vehicle along a course so as to enable said vehicle to run along said course, said system comprising:

obstacle detecting means for detecting an obstacle and for outputting position data of the position of said obstacle in terms of coordinate values on a coordinate system fixed to said vehicle;

absolute position computing means for converting, in accordance with the position and heading measured by said position and heading measuring means at the time when said obstacle is detected, said position data derived from said obstacle detecting means into absolute position data in terms of coordinate values on an absolute coordinate system based on the position of said vehicle and which constitutes a reference for the control of running of said vehicle;

obstacle position memory means for storing the position data of specific obstacles which have been detected and converted into said absolute coordinate system.

4,809,179

CONTROL SYSTEM FOR MOTOR VEHICLE SUSPENSION UNIT

Gary M. Klinger, Canton; Thomas G. Reichenbach, and Shuneo F. Watanabe, both of Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 20, 1987, Ser. No. 5,174

Int. Cl.[4] B60G *17/00*

U.S. Cl. 364—424.05 **13 Claims**

1. A suspension system for a motor vehicle having a body and road wheels supporting said body, with said road wheels being connected to said body on said suspension system, said suspension system comprising:

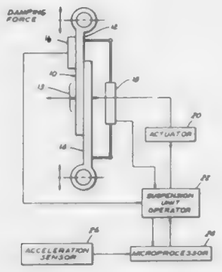
an adjustable suspension unit comprising a damping device and adjustment means for adjusting the damping force produced by said damping device in response to a control signal;

sensor means for predicting acceleration of said vehicle; and

a control system operatively connected to said adjustment means for producing said control signal for controlling the damping of said adjustable suspension unit in response to a predicted acceleration signal from said sensor means so that said suspension unit will resist roll of said body resulting from said acceleration, said control system comprising

means for determining a particular stroke of the cycle in which said suspension unit is operating; and

means for controlling the force produced by said suspension unit during any particular stroke of said suspension unit such that said suspension unit will, if located on that side of said body tending to move downward during a roll movement, apply a net force in an upward direction



against said body, whereas in the event that said suspension unit is located on that side of said body tending to move upward during said roll movement, said suspension unit will be controlled so as to apply a downwardly directed force against said body.

4,809,180

SEAT CONTROL APPARATUS FOR VEHICLE

Masatsugu Saitoh, Ayase, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Apr. 21, 1987, Ser. No. 40,900

Claims priority, application Japan, Apr. 22, 1986, 61-91179

Int. Cl.[4] B60N *1/02; G06F 15/20*

U.S. Cl. 364—424.05 **5 Claims**

1. A seat control apparatus for controlling various seat moving operations in a vehicle, comprising:

an opened/closed door state detecting switch for detectng an opened or closed door state;

a controller for allowng a seat to be rotated and inhibiting said seat from being rotated based on the detection of said opened/closed door state detecting switch;

a manipulating switch included in a key switch which is selectively actuated in a plurality mode for inputting corresponding command signals into said controller;

a first actuating member for causing said seat to be rotated in accordance with a seat rotation control signal produced by said controller;

at least a second actuating member for allowing seat moving operations exclusive of the rotation of said seat in response to a seat rotation inhibit signal produced by said controller wherein the key switch is used for rotating the seat when the open/closed door state detecting switch detects the open door state, and for performing other seat operations exclusive of the rotation of the seat when the open/closed door state detecting switch detects the closed door state.

4,809,181

AUTOMOTIVE YAW-SENSITIVE BRAKE CONTROL SYSTEM

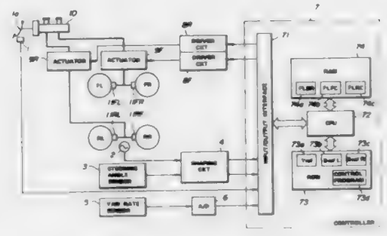
Ken Ito, and Yoshiki Yasuno, both of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 20, 1985, Ser. No. 735,980

Claims priority, application Japan, May 21, 1984, 59-100655

Int. Cl.[4] B60T *8/64*

U.S. Cl. 364—426.01 **29 Claims**



1. A brake control system for a wheeled vehicle comprising:

a first hydraulic brake circuit for applying braking pressure to vehicular front wheels, said first hydraulic circuit including a first braking pressure controlling actuator which operates to increase said braking pressure in a first position, to hold the braking pressure constant in a second position and to decrease the braking pressure in a third position;

a second hydraulic brake circuit for applying braking pressure to vehicular rear wheels, said second hydraulic circuit including a second braking pressure controlling actuator which operates to increase said braking pressure in a first position, to hold the braking pressure constant in a second position and to decrease the braking pressure in a third position;

a first sensor for producing a first sensor signal when the vehicle brakes are applied;

a second sensor for producing a second sensor signal having a value representative of the forces applied in the transverse direction to the vehicle;

a third sensor for producing a third sensor signal having a value representative of a vehicle driving condition, said vehicle driving condition being at least one of a vehicle speed and a steering angle; and

a controller for controlling said first and second actuators independently of each other, said controller deriving a vehicle driving stability factor in response to said first sensor signal and as a function of said second and third sensor signal values and controlling said first and second actuators to one of said first, second and third positions so as to hold said vehicle driving stability factor at a given value.

4,809,182

ANTI-SKID BRAKE CONTROL SYSTEM WITH SIMULTANEOUS LOCKING PREVENTIVE FEATURE

Toshiro Matsuda, Sagamihara, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 23, 1986, Ser. No. 945,562

Claims priority, application Japan, Dec. 23, 1985, 60-287676

Int. Cl.[4] B60T *8/34*

U.S. Cl. 364—426.02 **6 Claims**

1. An anti-skid brake control system for an automotive vehicle comprising:

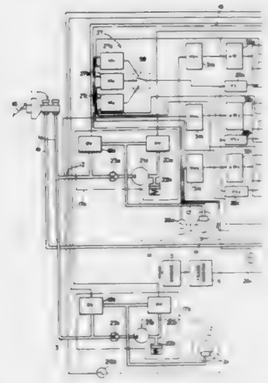
a hydraulic brake circuit including a plurality of wheel cylinders for establishing braking pressure for decelerating vehicular wheels;

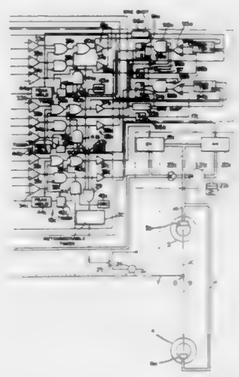
first and second anti-skid brake control valves, each associated at least one of first and second wheel cylinders associated with first and second wheels for adjusting braking pressure therein, each of said anti-skid brake control valves being operable to increase braking pressure in the associated wheel cylinder in a first mode position, and to decrease the braking pressure in the associated wheel cylinder in a second mode position;

first sensor for monitoring rotation speed of said first wheel for producing a first wheel speed indicative signal;

second sensor for monitoring rotation speed of said second wheel for producing a second wheel speed indicative signal;

first means for deriving first control signal for controlling position of said first anti-skid brake control valve based on said first wheel speed indicative signal between said first and second mode positions;





second means for deriving second control signal for controlling position of said second anti-skid brake control valve based on said second wheel speed indicative signal; and

third means for detecting synchronous operation of said first and second anti-skid brake control valves to produce a third control signal for disabling one of said first and second means to operate associated one of said first and second anti-skid brake control valves in said first mode position and to allow the other of said first and second means to operate the associated one of first and second anti-skid brake control values into said first mode position, said third means holding said one of first and second means in the disabled state until braking condition of one of the wheels to be controlled by the other of said first and

second anti-akid brake control values satisfies a predetermined condition which reflects non-locking state of said one wheel.

4,809,183

SPEED CONTROL SYSTEM FOR MOTOR VEHICLES OPERATING IN A CURVED PATH

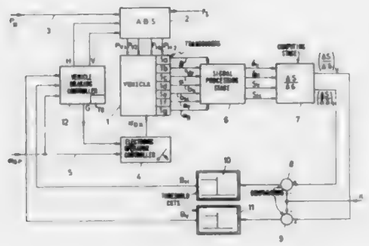
Konrad Eckert, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 25, 1987, Ser. No. 18,622

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1986, 3606797

Int. Cl.[4] B60K *31/00*; **B60T** *8/32*

U.S. Cl. 364—426.04 **25 Claims**



1. Speed control system for a motor vehicle, to control the speed of operation of the vehicle when the vehicle operates in a curved path, comprising

lateral force sensing means (1*d*, 1*e*) secured to the vehicle for sensing lateral forces (S_V, S_H) and deriving sensed lateral force signals;

means receiving said lateral force signals for determining change in lateral forces (ΔS_V, ΔS_H) with respect to time and deriving lateral force change signals;

means (1*a*, 1*b*, 1*c*) for determining the slip angle (δ_V, δ_H) of the vehicle, as the vehicle operates in the path which is curved and deriving a slip angle signal;

means coupled to said slip angle determination means (1*a*, 1*b*, 1*c*) for determining the change of the slip angle and deriving a slip angle change signal;

quotient deriving means (7) coupled to said change in lateral force sensing means and said slip angle change signal deriving means, and receiving said lateral force change signals and said slip angle change signals ($\Delta S_V/\Delta\delta_V$; $\Delta S_H/\Delta\delta_H$) for at least one of said front and rear wheels, respectively;

to obtain a quotient signal representative of the quotient of the lateral force change signals and said slip angle change signals;

comparator means (8) coupled to said quotient deriving means (7) receiving said quotient signal and comparing said quotient signal with a predetermined reference value (K) and deriving a comparison output signal; and

means (12, 2, 4) responsive to said comparison output signal for controlling the speed of the vehicle if the comparison output signal derived from said comparator means (8) is indicative that said quotient has passed the predetermined reference value.

4,809,184

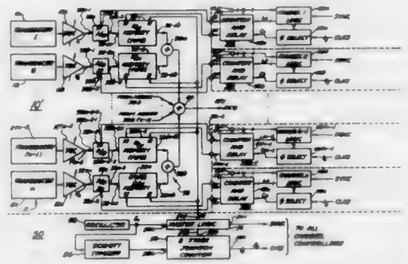
METHOD AND APPARATUS FOR FULLY DIGITAL BEAM FORMATION IN A PHASED ARRAY COHERENT IMAGING SYSTEM

Matthew O'Donnell, Schenectady, N.Y., and Mark G. Magrane, Rancho Cordova, Calif., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 921,516, Oct. 22, 1986, abandoned. This application Dec. 19, 1986, Ser. No. 944,482

Int. Cl.[4] G01N *29/00*

U.S. Cl. 364—413.25 **23 Claims**



13. Front-end receiving apparatus for a coherent imaging system having a sector-scanning phased array of a plurality N of transducers, each different one in a different j-th channel, wherein $1 \leq j \leq N$, and providing a received signal, at a vibratory energy excitation frequency F_u, of a amplitude responsive to the reflectance of media at a range R and a steering angle θ with respect to the array normal, comprising:

each j-th different one of a plurality N of analog-to-digital converter (ADC) means for directly converting the instantaneous amplitude of a j-th channel RF frequency signal F_j to a digital data word responsive to each pulse of a strobe S_j signal for that j-th channel;

each different j-th one of a plurality N of FIFO memory means for storing, responsive to each pulse of a j-th channel write W_j signal, and for presenting, in FIFO order, a next sequential stored data word responsive to each pulse of a read R_d signal;

each different j-th one of a plurality N of channel logic means for independently generating both (a) the j-th channel strobe S_j signal, with a multiplicity of sequential pulses each separated from the adjacent pulses by a time interval T, where T is at least less than the reciprocal of twice the transducer excitation frequency F_u, and with a next strobe pulse, after each of a plurality of synchronization signal pulses, being offset from that associated synchronization signal pulse by a time interval t_{sj} which is a first positive integer channel multiple M_j, selected for each channel and each angle θ, of an offset time interval Δt, where Δt is less than T and is a fixed fraction of the reciprocal of the excitation frequency F_u, but with all strobe S_j signal pulses, after that next offset strobe pulse, being maintained with substantially the time interval T therebetween until another synchronization pulse occurs; and (b) the j-th channel write W_j signal at a time after each strobe pulse and prior to a next sequential strobe pulse for that j-th channel;

master logic means for generating each of a sequence of said read R_d signal pulses at a time to cause each of the plurality N of presented stored data words to have been delayed in storage by a time interval t_{dj} which is a second positive integer multiple P_j, also selected for each channel and each angle θ, of the offset time interval Δt; and

means for combining the data of all N data words substantially simultaneously presented at the N memory means,

responsive to each read R_d signal pulse, to output a word of coherently summated data from the front end.

4,809,185

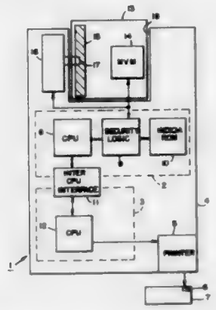
SECURE METERING DEVICE STORAGE VAULT FOR A VALUE PRINTING SYSTEM

Paul C. Talmadge, Ansonia, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 2, 1986, Ser. No. 902,844

Int. Cl.[4] G06F *15/20*

U.S. Cl. 364—464.02 **21 Claims**



15. A data storage module for use in a system for controlling printing means to print a plurality of indicia respectively having a fixed pattern and a given value, wherein said system includes value metering means having data processing means including means for deducting in turn respective given values to be printed from a total value stored in each of two dissimilar memory means, said module comprising:

means for removably connecting said module to said value metering means, a plurality of dissimilar non-volatile memory means adapted to be connected to said first processing means when said module is connected to said metering means, and each of said non-volatile memory means including a record of a total value currently available for printing indicia whereby said record is redundantly stored in said module.

4,809,186

POSTAGE METER FOR METERING MIXED WEIGHT MAIL

Gerald C. Freeman, Darien; Seymour Feialand, Stamford, and Raymond R. Crowley, Newtown, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 19, 1986, Ser. No. 909,152

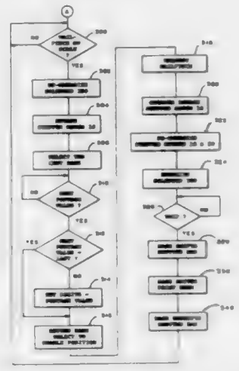
Int. Cl.[4] G06F *15/20*

U.S. Cl. 364—464 **19 Claims**

1. A postage meter having printing means for printing indicia corresponding to predetermined postage amounts on mailpieces and for accounting for said postage amounts when said indicia are printed, said postage meter comprising:

a. means for communicating with a scale and for receiving first and second signals from said scale;

b. preliminary setting means for implementing common, preliminary steps necessary for setting said indicia printing means to correspond to said next postage amount in response to said first signal; and



c. second setting means for setting said indicia printing means to correspond to said next postage amount in response to said second signal.

4,809,187

INSERTION MACHINE WITH POSTAGE CATEGORIZATION

Jerryl Adams, Easton, Pa., assignor to Bell & Howell Company, Skokie, Ill.

Continuation of Ser. No. 502,891, Jun. 9, 1983, Pat. No. 4,571,925. This application Feb. 24, 1986, Ser. No. 832,294

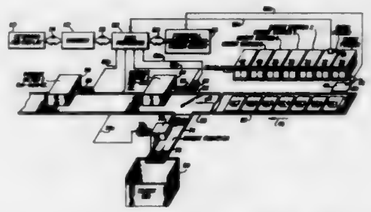
The portion of the term of this patent subsequent to Jul. 25, 2003, has been disclaimed.

Int. Cl.[4] G06F *15/20*; **B65B** *67/02*

U.S. Cl. 364—464.03 **59 Claims**

MICROFICHE APPENDIX INCLUDED

(1 Microfiche, 34 Pages)



1. A machine of a type in which a plurality of feed stations selectively feed items onto an insertion track for inclusion with a group of said items, wherein the improvement comprises:

data processing means including memory means and arithmetic logic means;

sensing means positioned proximate one of said plurality of feed stations, said sensing means being adapted to sense a weight-influencing characteristic of said items and to discriminate on the basis of said characteristic between an item of a first weight and an item of a second weight fed from said feed station;

means for selectively inputting into said data processing memory means with respect to each selected station at least one predetermined value indicative of the per item weight of items held at said station, including the selective inputting into said data processing memory means with respect to said station near which said sensing means is proximate both a first predetermined value indicative of

the per item weight of each of said first weight items held at said station and a second predetermined value indicative of the per item weight of each of said second weight items feedable from said station;

means for determining and storing a number of first weight items and a number of second weight items feedable for inclusion with a group from said station near which said sensing means is proximate;

means including said data processing arithmetic logic means for using said predetermined values indicative of the per item weight of items held in said feed stations to obtain a calculated indication of total weight for each group of items; and,

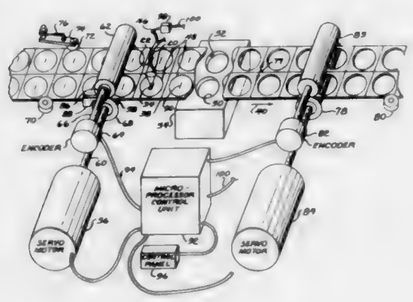
means for using said calculated indication of total weight to determine how each group of items is to be processed by the insertion machine relative to the allocation of postage to an envelope associated with said group of items.

4,809,148

STRIP FEEDING AND CONTROL SYSTEM

Samuel P. Willits, Barrington; Thomas E. Kleeman, W. Dundee, and William L. Mohan, Barrington Hills, all of Ill., assignors to Spartanics, Ltd., Rolling Meadows, Ill.

Filed Oct. 17, 1986, Ser. No. 920,587
Int. Cl.[4] G06F *15/46*; B65H *23/18*
U.S. Cl. 364—469 27 Claims



5. A material moving and computer based control system of the type utilizing feed rollers acting on the material to move it into a machining area, comprising

control panel means connected to said computer based control system for entering one or more selected computer based control system measured material movement lengths,

a servo driven roller to effect material movement and a non-driven pressure roller cooperatively associated with said servo driven roller to move the material,

rotation measuring sensor means coupled to said pressure roller and connected to said computer based control system, said computer based control system being responsive to signals from said rotation measuring sensor means and inputs from said control panel means to thereby measure and signal the length of said material that has passed between said rollers,

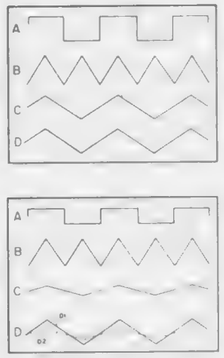
said pressure roller being spaced apart from said servo driven roller a distance less than material thickness whereby said pressure roller is driven only when material is located between said pressure roller and said servo driven roller.

4,809,189

EQUIVALENT TIME WAVEFORM DATA DISPLAY

Brian E. Batson, Lake Oswego, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 9, 1986, Ser. No. 917,629
Int. Cl.[4] G01R *13/22*; G06F *7/00*
U.S. Cl. 364—487 14 Claims



1. In a system including computing means, memory means sequentially storing first data values forming a digital data sequence at a plurality of contiguous memory positions, and display means including a screen for producing a waveform display representing a digital data sequence provided thereto, a method for altering the digital data sequence and the waveform display, the method comprising the steps of:

computing in said computing means according to a predetermined mathematical expression a plurality of second data values;

writing the second data values to non-contiguous ones of said memory positions, thereby replacing ones of said first data values with computed second data values;

providing the digital data sequence stored in said memory means to the display means; and

repeating the steps of computing, writing and providing the digital data sequence.

4,809,190

CALORIMETRY SYSTEM

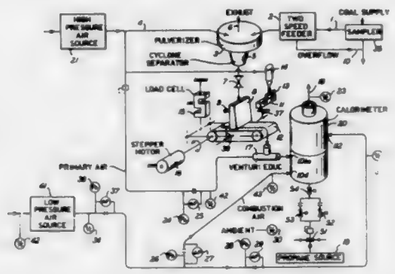
John C. Homer, Chardon; Shahriar Nowshiravani, Mayfield Heights; Steven L. Ross, Cleveland, and Gilbert F. Lutz, Chesterland, all of Ohio, assignors to General Signal Corporation, Stamford, Conn.

Filed Apr. 8, 1987, Ser. No. 36,048
Int. Cl.[4] G01L *3/26*
U.S. Cl. 364—510 23 Claims

1. A calorimetry system for measuring the heating value of a fuel comprising combustion means into which said fuel and oxidizing gas are fed for converting said fuel into combustion gas, means for mixing said combustion gas with a mixing gas to provide a combined gas, means for measuring the temperature of said mixing gas, and said combined gas at the inlet and outlet of said mixing means, respectively, said oxidizing and said mixing gas being parts of a total gas means for measuring the mass feed rate of said fuel fed into said combustion means, means for measuring the mass flow rate of said total gas, computer means for computing the heat flow Q_c of said combustion gas in accordance with the equation

$$Q_c = (m_1 + m_2) \int_{T_1}^{T_2} C_p dT$$

where m_1 is the mass feed rate of the fuel, m_2 is the mass feed rate of the total gas, T_1 is the temperature of said mixing gas at said inlet, and T_2 is the temperature of said combined gas at said outlet, and C_{pf} is the specific heat of said combined gas represented by a polynomial whose coefficients are the



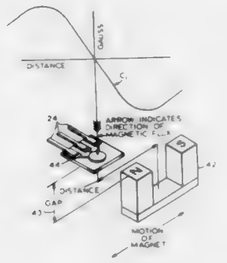
weighted sum of coefficients of similar polynomials that represent the specific heat of constituents of the combined gas over the temperature range T_2-T_1, and said computer means also having means for computing the heating value of said fuel as the ratio of Q_c to m_1.

4,809,191

ROBOTIC POSITION SENSOR

Wayne H. Donnelly, Allston, and Laurence D. Chin, West Newton, both of Mass., assignors to Barry Wright Corporation, Newton Lower Falls, Mass.

Filed Apr. 28, 1987, Ser. No. 44,593
Int. Cl.[4] B65H *43/02*; G01B *5/02*
U.S. Cl. 364—513 6 Claims



1. An electromechanical manipulator, comprising:

gripper means for gripping objects, said gripper means including a body and a plurality of fingers;

sensing means, for sensing the relative position of said plurality of fingers, said sensing means including one Hall effect sensor, and

magnet means, disposed in at least one of said plural fingers, oriented with respect to said at least one Hall effect sensor, in a bipolar slide-by mode arrangement;

wherein said sensing means includes signal processing means for processing signals generated by said sensing means and representative of said relative position of said plurality of fingers, said signal processing means including

signal amplifying means for amplifying signals generated by said sensing means and representative of said relative position of said plurality of fingers, and

signal conditioning means, in communication with said signal amplifying means, for conditioning amplified signals generated by said amplifying means and representative of said relative position of said plurality of fingers, and

wherein said sensing means generates a range of input values representative of a range of finger travel, and wherein said signal conditioning means further includes output range logic means for dividing said range of input values into a predetermined number of corresponding output subranges, and

further comprising display means in association with said signal conditioning means, for displaying the output subrange to which a given input value corresponds,

and wherein said signal conditioning means further includes

setpoint means for establishing a plurality of adjustable output setpoint values, each corresponding to a predetermined input value, and

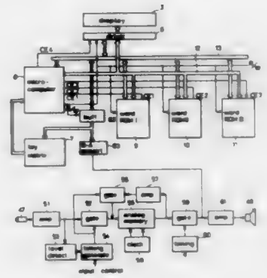
comparator means for (i) comparing a given input value to each of said plurality of output setpoint values, and for (ii) transmitting an output signal indicative of an output setpoint value when said given input value falls within a predetermined threshold of an output setpoint value.

4,809,192

AUDIO OUTPUT DEVICE WITH SPEECH SYNTHESIS TECHNIQUE

Isamu Washizaka, Kyoto; Kosuke Nishimura, Yamatokoriyama, and Mitsuhiro Saiji, Kyoto, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 867,603, May 27, 1986, Pat. No. 4,701,862, which is a continuation of Ser. No. 296,546, Aug. 26, 1981, abandoned. This application Jul. 31, 1987, Ser. No. 80,541
Claims priority, application Japan, Aug. 27, 1980, 55-118649
Int. Cl.[4] G10L *5/00*
U.S. Cl. 364—513.5 2 Claims



1. A method for translating sentences from a first language to a second language and producing a voice output; comprising the steps of:

selecting one standard sentence in said first language from a plurality of standard sentences stored in a first word memory;

sensing an interchangeable word slot in said one standard sentence and producing a first flag signal if such a slot is present;

inputting a replacement word into a bracket buffer if a first flagt signal is produced;

searching said first word memory for said replacement word and producing a first signal if said replacement word is not found;

inputting a voice signal, representative of said replacement word, into a voice buffer through a microphone means and producing a second flag signal indicative of a voice signal being present in said voice buffer if said first signal is produced;

producing a translation signal, said translation signal being a

translation into a second language of said one standard sentence if no flag signals are produced, said translation signal being a translation into a second language of said one standard sentence including said replacement word in said interchangeable slot if only said first flag signal is produced, and said translation signal being a translation of said one standard sentence except for said interchangeable slot if said first and second flag signals are produced;

accessing voice information corresponding to said translation signal from a second memory containing a plurality of standard sentences and words of said second language; and

outputting an audible message, said audible message including said accessed voice information, said audible message also including said voice signal from said voice buffer if said first and second flag signals are produced.

4,809,193

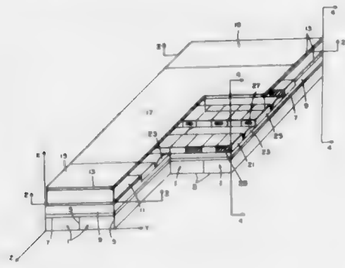
MICROPROCESSOR ASSEMBLIES FORMING ADAPTIVE NEURAL NETWORKS

Alexander N. Jourjine, P.O. Box 425, Cambridge, Mass. 02142

Filed Mar. 16, 1987, Ser. No. 26,479

Int. Cl.[4] G02B *6/10*; **G06F** *13/00*; **H04B** *9/00*; **G06K** *9/62*

U.S. Cl. 364—513 **39 Claims**



1. An integrated electronic circuit assembly forming an adaptive communications network with changeable connectivity pattern, comprising:

an assembly comprising in the order of one thousand or more preprogrammed microprocessors each comprising: a radiant energy detector, a radiant energy source, an analog logical circuit, one or more switches, and a plurality of electrical interconnections;

a common radiant energy data channel into which said radiant energy sources emit and from which said radiant energy sources absorb radiant energy signals;

means for feeding external data into said radiant energy data channel;

means for modulation of the radiant energy emitted by said radiant energy sources according to output codes assigned to each said microprocessor;

means for demodulation of the radiant energy, absorbed by said radiant energy detectors, according to input codes assigned to each said microprocessor to provide decoded inputs which are functions of the aggregate energy in the radiant energy channel from plural microprocessors received by the radiant energy detectors;

means for changing said input codes and output codes according to a rule which depends on the demodulated input of each of said radiant energy detectors;

an array of one or more radiant energy power supply waveguides which simultaneously energize groups of microprocessors selectively to provide a changeable connecting pattern.

4,809,194

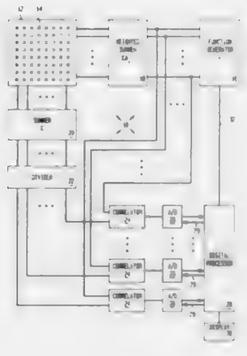
IMAGE PROCESSING SYSTEM AND METHOD USING MODULATED DETECTOR OUTPUTS

Rex J. Crookshanks, Palos Verdes Estates, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 28, 1986, Ser. No. 901,115

Int. Cl.[4] G06F *15/66, 15/70, 15/336*

U.S. Cl. 364—518 **55 Claims**



37. A method of processing image data output from an array of radiation intensity detectors, said method comprising the steps of:

applying a set of modulation functions to modulate the output of said array, said set of modulation functions being mutually orthogonal over a predetermined time period;

summing the modulated outputs;

splitting the summed signal into parallel channels;

correlating the summed signal in each of said parallel channels with a respective of said functions; and

processing the correlated signals to obtain intensity distribution data.

forming an invertible matrix of scalers;

multiplying said vector and said matrix to form a modulation matrix, each element of said modulation matrix being the product of the respective element of said scaler matrix and a time function corresponding to the column position of the element of said modulation matrix;

modulating the output of each detector by the sum of the elements of a respective row of said modulation matrix; and

summing the modulated outputs.

41. A system for analyzing the spatial distribution of a variable referable to an event of interest comprising:

a number of detectors, each adapted for providing an output as a function of said variable;

modulation means for modulating the output of each said detector in response to a respective modulation function;

function generators for providing modulation functions to said modulation means, said function generators being adapted for providing set of modulation functions each of which is a weighted set of orthogonal time functions; and

summing means for summing modulated outputs from said detectors.

4,809,195

STORING AND RECONSTITUTING ANALOG SIGNALS USING DATA COMPRESSION

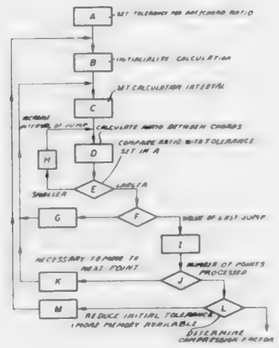
Louis Bechet, Douvaine, France, assignor to Battelle Memorial Institute, Carouge/Geneva, Switzerland

Filed Apr. 25, 1986, Ser. No. 856,154

Claims priority, application Switzerland, Apr. 26, 1985, 1787/85

Int. Cl.[4] G06K *9/34*

U.S. Cl. 364—518 **9 Claims**



1. A method for storing data indicative of an input analog signal in the form of rectangular coordinates X and Y values in a memory and producing an output signal substantially identical to the input analog signal from the stored data, comprising the steps of:

defining an elementary interval (T) on an X-axis of an X-Y coordinate system on which the input analog signal is superimposed and selecting a first series of points separated along the X-axis by interval T, interval (T) providing points which are sufficiently close together to enable them to be connected to form a curve similar to the curve of the input signal;

selecting a second series of points which is a subset of the first series by establishing a threshold ratio between a chord separating two non-consecutive points and the sum of chords separating each of the consecutive points within the two non-consecutive points; and

selecting an interval between these two non-consecutive points to correspond to the maximum ratio below the threshold, in that the address of the points of each group of three non-consecutive points determined in this way is established as well as the number of elementary intervals (T) between them and their respective amplitudes (a_1, 2 and a_3);

storing in a memory, the address and the amplitude, which are the X and Y values, of the isolated points which do not come within a group of three non-consecutive points; and

generating, from the data previously stored in memory, an output analog signal corresponding to the input analog signal by establishing between each group of three-non-consecutive points a parabola with respect to an axis of symmetry corresponding to the axis of the elementary intervals from the equation:

$$Y_{(T)}=AT^2+BT+C$$

in which:

$A=(a_1+a_3-2a_2)/2T^2$

$B=(a_3-a_1)/2T$

$C=a_2$.

4,809,196

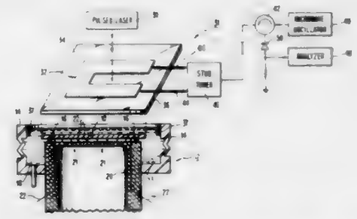
METHOD FOR DESIGNATING/SORTING SEMICONDUCTOR WAFERS ACCORDING TO PREDICTED OXYGEN PRECIPITATION BEHAVIOR

Donald A. Miller, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1986, Ser. No. 849,996

Int. Cl.[4] G01N *21/39, 7/00*

U.S. Cl. 364—550.01 **36 Claims**



1. A method for designation of semiconductor wafers according to predicted oxygen precipitation behavior, for a given set of thermal process steps, comprising the steps of:

measuring a value OX_i of interstitial oxygen in a given wafer in a non-destructive manner prior to performing said given set of thermal processing steps;

measuring the minority carrier lifetime values LT in said given wafer in a non-destructive manner which is free of interference from surface recombination due to uncontrolled fast surface states, with said measurement being performing prior to performing said given set of thermal process steps;

determining a predicted oxygen precipitation value Y for said given wafer from said OX_i value and said LT value for said given wafer; and

physically designating said wafer to indicate a particular value of Y or a range of Y values that are suitable for an intended LSI product application.

4,809,197

ROAD SURFACE DETECTING DEVICE

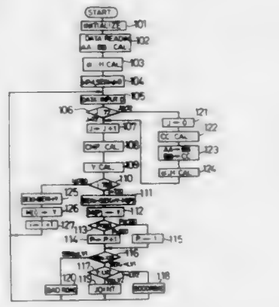
Syuzaburo Tashiro, Okazaki; Toshikazu Ina, Nagoya, and Hisaei Kawai, Toyohashi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 24, 1986, Ser. No. 945,953

Claims priority, application Japan, Dec. 26, 1985, 60-295542

Int. Cl.[4] G01B *5/28*

U.S. Cl. 364—550 **14 Claims**



13. A road surface detecting device for a vehicle having a wheel, comprising:

sensor means adapted to be mounted on the wheel of said

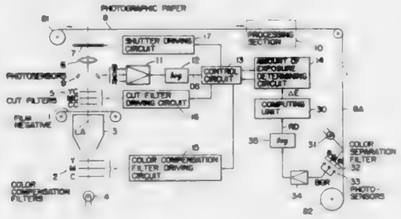
vehicle, for generating a wheel signal indicative of a revolution of the wheel;
means for calculating instantaneous wheel speeds based on said wheel signal;
means for calculating a presumed speed of a vehicle by averaging said instantaneous wheel speeds during a predetermined period of time;
means for generating an absolute difference signal by comparing a subsequent instantaneous wheel speed with the presumed speed;
means for integrating said absolute difference signal for a predetermined time to obtain an integrated value; and
means for comparing said integrated value with a predetermined value and determining said road surface to be in a bad condition when said integrated value is not less than the predetermined value.

4,809,198

METHOD FOR SETTING AND MANAGING CONDITIONS IN PHOTOGRAPHIC PRINTING

Takaaki Terashita, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 6, 1986, Ser. No. 915,793
Claims priority, application Japan, Oct. 15, 1985, 60-229411
Int. Cl.[4] G03B *27/80*
U.S. Cl. 364—525 **14 Claims**



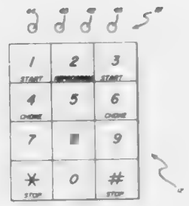
1. A method for setting and managing photographic printing conditions of a photographic printing system in which monocolor light is generated by a light source and an exposure controlling filter, comprising the steps of:
generating monocolor light of R (red), G (green) and B (blue) by means of said light source and said exposure controlling filter;
exposing, under predetermined conditions, a recording material with respect to the respective monocolors of R, G and B;
preparing reference images having stepwise density steps by means of exposures of plural times and a movement of said recording material;
measuring said densities of the respective three colors R, G and B of said reference images;
storing the measured density data in a memory;
determining amounts of exposure necessary for obtaining predetermined densities regarding the R, G and B colors from a predetermined relationship between the amount of exposure and the density;
respectively obtaining differences between said amounts of exposure and said reference amounts of exposure stored in the memory with respect to R, G and B; and
correcting the amount of exposure for photographic printing with respect to R, G and B in accordance with the obtained differences and setting same in said printing system so as to control the printing conditions thereof.

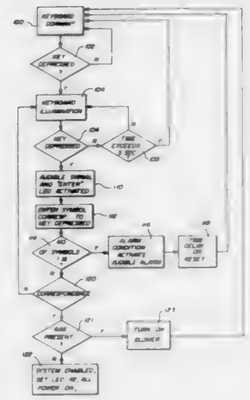
4,809,199

KEYLESS ACCESS AND ENGINE CONTROL SYSTEM

James P. Burgess, Camarillo, Calif., and David J. Pearson, Roseville, Mich., assignors to Electro-Mechanical Products, Rochester, Mich.

Filed Aug. 18, 1986, Ser. No. 897,512
Int. Cl.[4] H04Q *9/00*; **G08B** *19/00*
U.S. Cl. 364—550 **10 Claims**





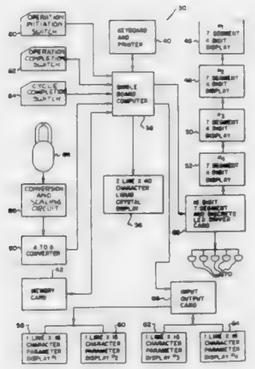
1. A keyless access system for producing signals to permit access to a vehicle, comprising:
an array of manually actuable electrical switches for entering a sequence of switch actuations and producing corresponding actuation signals in response thereto, each said actuation signal having a time duration equal to the duration of the corresponding switch actuation;
a memory for storing data representing at least one access sequence;
a clock; and
a microprocessor connected to said array of electrical switches, said memory, and said clock, and programmed to receive a sequence of actuation signals from said array of switches, to compare said sequence of actuation signals to the data representing said at least one access sequence stored in said memory, and to produce said access signals when said sequence of actuation signals compares properly with the data representing said at least one access sequence stored in said memory, said microprocessor further being programmed to respond to the actuation of a predetermined one of said switches for at least a predetermined time interval by storing new data in said memory, said new data being entered through the array of switches and representing a new access sequence.

4,809,200

APPARATUS AND METHOD FOR INSPECTING AND TESTING INDUSTRIAL POWER SAWS OR THE LIKE

Bill V. Moore, and John A. Jackson, both of Greenville, Miss., assignors to Cooper Industries, Houston, Tex.

Filed Aug. 20, 1986, Ser. No. 898,090
Int. Cl.[4] G06F *15/46*; **B23D** *49/16*; **B23Q** *17/00*
U.S. Cl. 364—551 **11 Claims**



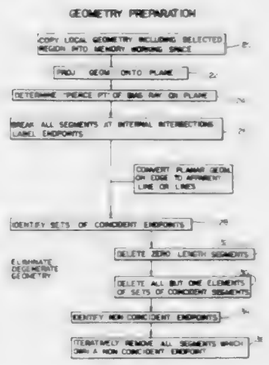
1. An apparatus for use in testing and inspecting a material cutting machine such as a motor driven band saw or the like, said apparatus comprising:
a programmable computing unit including a data entry keyboard and a document printer, said computing unit being programmable to receive, store and reproduce identifying information regarding a machine being tested, said computing unit also being programmed to calculate a cross-sectional area of a work piece being operated on by said machine;
first switch means adapted to be mounted in proximity to said machine for measuring the commencement of an operation to cut a work piece, said first switch means being operably connected to said computing unit to initiate the measurement of a period of time required to make a cut;
second switch means adapted to be mounted in proximity to said machine to signal the completion of a cutting operation, said second switch means being operably connected to said computing unit to generate a signal associated with the completion of the time required to complete a cutting operation
electrical current sensing means adapted to be interposed with electrical current conductor leads connected to a motor associated with said machine;
signal conversion circuit means connected to said current sensing means for producing a signal to said computing unit which may be recorded and reproduced to indicate the current to said motor during a test on said machine;
whereby said programmable computing unit may be commanded to compute and record the actual time required to complete a cutting operation by said machine, the electrical current required to complete said cutting operation and to compute the cutting rate of the machine in terms of work piece cross-sectional area per unit time.

4,809,201

GRAPHIC DISPLAY REGION DEFINING TECHNIQUE

John Keklak, Sommerville, Mass., assignor to Schlamberger Systems, Inc., Ann Arbor, Mich.

Filed Dec. 2, 1985, Ser. No. 803,462
Int. Cl.[4] G09G *1/14*; **G06F** *15/40*
U.S. Cl. 364—518 **21 Claims**



1. A technique for operation a computer aided design system for defining the boundaries of a selected region forming a portion of a geometric design defined by geometric elements, comprising the steps of:
user identification of the region of interest by defining a point within said region;
projecting a ray from said point through said geometric design;
identifying intersection points between said ray and said design;
selecting the geometric element producing a ray intersection closest to said point as a first part of a boundary of said region;
traversing said selected element to a first junction between said element and another of said geometric elements;
turning towards the interior of said region;
traversing elements and turning to the interior of said region until said first part of said boundary is reached.

4,809,202

METHOD AND APPARATUS FOR SIMULATING SYSTEMS DESCRIBED BY PARTIAL DIFFERENTIAL EQUATIONS

Stephen Wolfram, Princeton, N.J., assignor to Thinking Machines Corporation, Cambridge, Mass.

Filed Dec. 27, 1985, Ser. No. 814,348
Int. Cl.[4] G06F *15/328*, *15/16*
U.S. Cl. 364—578 **39 Claims**

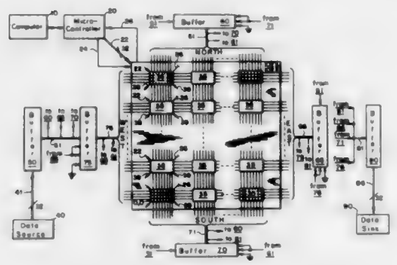
21. A method of simulating the solution or a system of partial differential equations in a space of two or three dimensions using a plurality of digital data process interconnected in an array, said method comprising the steps of:
assigning each said processor to represent a region of said space,
implementing a rule at each processor that specifies outward movement from said region in response to inward movement to said region, said movement being represented by a signal provided from one processor to another,
determining with each processor in accordance with said rule signals representing the outward movement from said region in response to signals representing the inward movement to said region, said signals representing the outward movement being provided to processors repre-

senting neighboring regions of said space as signals representing the inward movement, and

repeating said determining step over a plurality of cycles using as signals representative of inward movement those signals representing the outward movement that were determined by processors representing neighboring regions of said space in a previous cycle.

37. Apparatus for simulating the solution of a system of partial differential equations in a space of two or three dimensions comprising:

a plurality of digital data processors interconnected in an array, each said processor assigned to represent a region of said space and implementing a rule that specifies outward movement from said region in response to inward



movement to said region, said movement being represented by a signal provided from one processor to another,

means for generating with each processor in accordance with said rule signals representing the outward movement from said region in response to signals representing the inward movement to said region, said signals representing the outward movement being provided to processor representing neighboring regions of said space as signals representing the inward movement, and

means for repeating said generating step over a plurality of cycles using as signals representative of inward movement those signals representing the outward movement that were determined by processors representing neighboring regions of said space in a previous cycle.

4,809,203

HYBRID ANALOG-DIGITAL FILTER

Dennis L. Wilson, Palo Alto, and Patrick W. O'Connor, Sunnyvale, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Aug. 25, 1986, Ser. No. 899,839

Int. Cl.[4] G06J *1/00*

U.S. Cl. 364—602 **16 Claims**

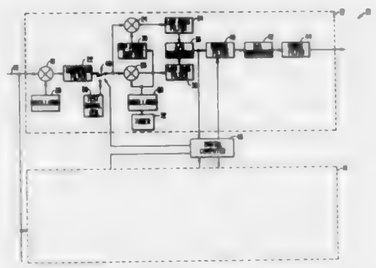
1. An apparatus for filtering an electrical signal comprising:

an analog filter means operative to receive as input said electrical signal and to produce as output an analog output signal;

an analog-to-digital converter coupled to receive said analog output signal of said analog filter means and to produce a digital output signal;

a digital filter coupled to receive digital output signals of said analog-to-digital converter, said digital filter including a plurality of coefficients to be applied to a plurality of frequency components of said electrical signal; and

means, coupled to said digital filter and including means coupled to receive and respond to errors in said analog



output signal from said analog filter means, for altering said coefficients to substantially offset said errors.

4,809,204

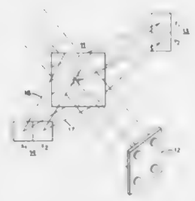
OPTICAL DIGITAL MATRIX MULTIPLICATION APPARATUS

Mario Dagenais, Wellesley; Wayne F. Sharfin, Lexington, and Robert J. Seymour, Wellesley, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 4, 1986, Ser. No. 848,198

Int. Cl.[4] G06F *7/56;* **G02B** *6/00*

U.S. Cl. 364—713 **9 Claims**



1. Apparatus for optical digital matrix multiplication comprising

a first plurality of control means for providing a

first plurality of optical control beams, wherein the number of said optical control beams is substantially equal to the number of said control means, said optical control beams having intensities that are digitally programmable to various multistable states, said control beams being directed along paths excluding a prohibited area;

programmable optical matrix means having a first plurality of pixels oriented thereabout, wherein the number of said pixels is substantially equal to the number of said control beams, said pixels having variable discrete densities dependent upon the intensities of said control beams being directed thereupon;

means for providing a second plurality of light sources for providing a second plurality of focused parallel sheets of light onto said pixels, wherein the number of said sheets of light is substantially equal to the number of said light sources, said sheets of light being directed in directions other than the directions of said control beams;

detecting means oriented in said prohibited area for receiving light transmitted along a third plurality of parallel planes, said parallel planes being orthogonal to said second plurality of parallel sheets of light; and

means for focusing light along each of said planes onto corresponding ones of said detecting means.

4,809,205

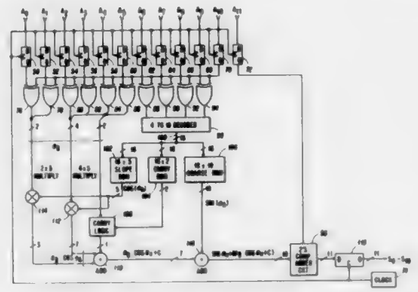
DIGITAL SINE CONVERSION CIRCUIT FOR USE IN DIRECT DIGITAL SYNTHESIZERS

Richard A. Freeman, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 19, 1986, Ser. No. 934,228

Int. Cl.[4] G06F *1/02*

U.S. Cl. 364—721 **10 Claims**



1. A digital sine conversion circuit, comprising:

means for dividing a sine wave quadrant into a plurality of coarse phase angle intervals;

means for dividing each of said coarse intervals into a plurality of intermediate phase angle intervals;

means for storing an amplitude value associated with each coarse phase phase angle interval;

means for storing a slope value associated with each intermediate phase angle interval;

means for storing a carry value associated with each intermediate phase angle interval;

means for providing the phase angle value at each intermediate phase angle interval;

means for multiplying the phase angle value by the slope value at each intermediate phase angle interval to produce a first intermediate value;

means for adding the carry value at each intermediate phase angle interval to the first intermediate value to produce a second intermediate value; and

means for adding the coarse value to said second intermediate value to produce a sine wave amplitude value at each intermediate phase angle interval.

4,809,206

INFORMATION PROCESSING APPARATUS

Atsushi Kiuchi, Kunitachi; Kenji Kaneko, Sagamihara; Jun Ishida; Tetsuya Nakagawa, both of Koganei; Yoshimune Hagiwara, Hachioji, and Hirotada Ueda, Kokubunji, all of Japan, assignors to Hitachi Ltd. and Hitachi VLSI Eng. Corp., Tokyo, Japan

Filed Aug. 20, 1987, Ser. No. 87,346

Claims priority, application Japan, Aug. 29, 1986, 61-202996

Int. Cl.[4] G06F *7/38*

U.S. Cl. 364—724.01 **7 Claims**

1. An information processing apparatus comprising:

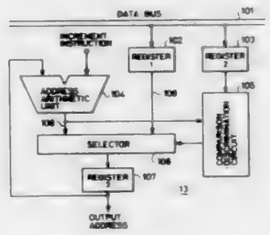
(1) memory means for storing a plurality of data from an initial value to a final value;

(2) address generation means for generating an initial value address to a final value address so as to read out sequentially a plurality of said data from said initial value to said final value from said memory means;

(3) first storage means for storing said initial value address generated from said address generation means;

(4) second storage means for storing a return address exceeding said final value address generated from said address generation means; and

(5) comparison means for receiving, at its first input, the address information from the output of said address generation means and receiving, at its second input, said return address from the output of said second storage means;



wherein when said return address is generated from said address generation means, said initial value address stored in said first storage means is outputted at the output of said address generation means in response to the output of said comparison means.

4,809,207

RECURSIVE FIRST ORDER DIGITAL VIDEO SIGNAL FILTER

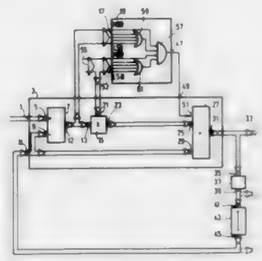
Antonius H. H. J. Nillesen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 14, 1986, Ser. No. 829,574

Claims priority, application Netherlands, Mar. 20, 1985, 8500805

Int. Cl.[4] G06F *15/31*

U.S. Cl. 364—724.03 **2 Claims**



1. A recursive first order digital video signal filter comprising: a combining circuit (3) having a first input (1) coupled to an input for a digital video signal of the filter, a variable transfer circuit and an output (31), means coupling said output via a signal path including a delay circuit (43) and a truncation circuit to a second input (11) of the combining circuit, second means coupling an input of the variable transfer circuit to at least one input of the combining circuit, third means coupling an output of the variable transfer circuit to said output of the combining circuit said variable transfer circuit being operative to control the ratio between transferred portions of signals applied to the first (1) and second (11) inputs, which transferred portions are contained in a signal at the output (31), the truncation circuit being arranged to reduce the number of bits conveyed through the signal path by cancelling a least significant portion of these bits, characterized in that the combining circuit (3) has a third input coupled to an output (47) of a logic circuit (19) coupled to the first (1) and the second (11) input of the combining circuit, said logic circuit, at the occurrent of values of the signal at the second input (11) which do not exceed values of the signal at the first input, adding to the

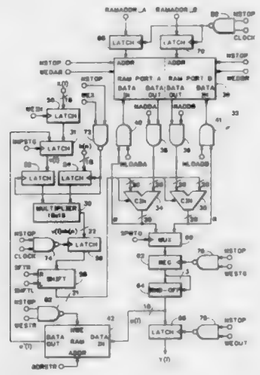
signal at the output (31) of the combining circuit (3) a logic one value at the level of the least significant bit of the bits remaining at the output (39) of the truncation circuit (37) when in the transfer circuit (15) the transfer of the signal at both the first (1) and the second (11) inputs of the combining circuit (3) is unequal to zero, and otherwise the logic zero value.

4,809,208

PROGRAMMABLE MULTISTAGE DIGITAL FILTER

Victor L. Hansen, and Eric Etheridge, both of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 3, 1987, Ser. No. 34,470
Int. Cl.[4] G06F *15/31*
U.S. Cl. 364—724.12 **2 Claims**



1. A multistage digital filter for producing an output data sequence in response to elements of an input date sequence and to elements of a coefficient data sequence, said multistage digital filter comprising:

multiplier means for multiplying elements of a first data sequence by elements of said coefficient data sequence to produce product terms;

first memory means for storing accumulated sum, said first memory means having first and second ports for providing access to said accumulated sums;

first means for accessing through said first port a first accumulated sum stored in said first memory means, and for adding a product term produced by said multiplier to said first accumulated sum, thereby producing a fist output sum;

second means for accessing through said second port a second accumulated sum stored in said first memory means, and for adding a product term produced by said multiplier to said second accumulated sum, thereby producing a second output sum;

third means for selectively replacing said first accumulated output sum in said first memory means with said first output sum and to store said second output sum in place of said second accumulated sum, and for selectively producing elements of a second data sequence according to values of said first and second output sums; and

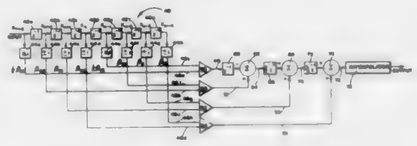
fourth means for selecting between a first portion of the elements of said second data sequence and elements of said input data sequence to form said first data sequence, and for alternately generating said output data sequence including a second portion of the elements of said second data sequence.

4,809,209

MYBRID CHARGE-TRANSFER-DEVICE FILTER STRUCTURE

Stanley A. White, Orange, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 26, 1985, Ser. No. 769,059
Int. Cl.[4] G06F *15/31*
U.S. Cl. 364—724.16 **10 Claims**



1. A signal processor comprising:

a signal input;

a signal output;

a delay line having at least a first and second tap, said first tap being coupled to said signal processor signal input, said delay line having a series of coupled delay elements, each delay element having an input and an output, the output of each successive delay element being coupled to the input of the next successive delay element in said delay line; said delay line having a first delay element having an input coupled to said signal processor signal input;

said input delay line having said delay elements grouped into at least two delay line segments, each delay line segment having at least a first and last delay element, each delay line segment defining a space from one tap location up to, but not including, the next tap location of a thinned FIR filter as fair space to define the value of a filter coefficient for the respective tap;

at least two groups of bit-tap multiplier elements, each group of bit-tap multiplier elements corresponding to a delay line segment, each group of bit-tap multiplier elements having a corresponding bit-tap multiplier for each delay element within a delay line segment, each successive bit-tap multiplier within a group of bit-tap elements having an input coupled to the input of a respective delay line segment delay element input, each bit-tap multiplier element multiplying the input signal value to a respective delay element by a single binary bit of a multibit word comprising the filter coefficient of a thinned FIR filter;

a summer for combining the outputs of said bit-tap multiplier elements;

a plurality of delay elements coupled to the outputs of at least some of said bit-tap elements for delaying those bit tap outputs, the outputs and delayed outputs of said multiplied bit-tap elements being combined together in said summer to form a single processor output signal, said signal processor output signal being coupled to said signal processor signal output.

4,809,210

MULTICHANNEL DIGITAL SIGNAL CORRELATOR OR STRUCTURATOR

Edward R. Pike, and Peter N. Pusey, both of Malvern, England, assignors to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Dec. 17, 1985, Ser. No. 809,782
Claims priority, application United Kingdom, Dec. 17, 1984, 8431037
Int. Cl.[4] G06F *15/31*
U.S. Cl. 364—728 **9 Claims**

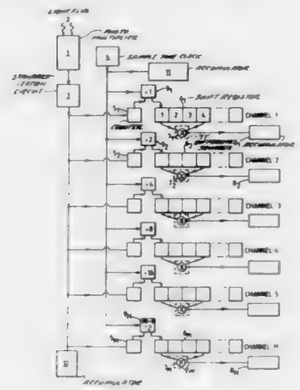
1. A digital signal processor comprising:

means for receiving a digital signal, which is formed of a series of digital numbers, in successive sample time intervals (T);

an accumulator, connected to said receiving means, for counting the total number of said digital signals received;

a plurality of channels each having means connected to said receiving means, for processing said digital signals;

a series of delay circuits, connected to said processing means, for receiving said series of said processed signals as a data input to provide a delayed signal;



an arithmetic, circuit, connected to said delay circuit, for receiving at a first input said processed signals and at a second input the delayed signals;

an accumulator, connected to said arithmetic circuit, for receiving the output of the arithmetic circuit;

means, connected to said means for processing said digital signals, for progressively increasing a channel sample time interval (T_s) in successive ones of said channels; and

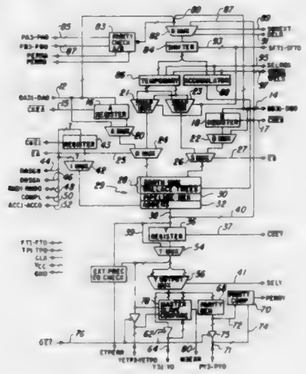
means, connected to said delay circuits, for increasing a delay time (τ) in successive ones of said channels.

4,809,211

HIGH SPEED PARALLEL BINARY MULTIPLIER

John W. Kronlage, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 25, 1986, Ser. No. 912,013
Int. Cl.[4] G06F *7/52*
U.S. Cl. 364—754 **11 Claims**



1. An n×n bit multiplier comprising:

a shifter having a plurality of inputs, each shifter input for receiving multiple bits of data in a first order and a shifter output for outputting multiple bits of data of one of said shifter inputs in said first order or in a shifted order in response to a shifter control signal;

a temporary register having an input coupled to the output of the shifter and an output coupled to first multiplex means;

an accumulator having an input coupled to the output of the shifter and an output coupled an adder;

said temporary register and said accumulator alternatively enabled or disabled by a SELREG control signal to receive the output of said shifter;

first and second multiplex means for respectively receiving the output of the temporary register and a plurality of other inputs and outputting at least two multiplier operands;

a multiplier array for receiving said operands from said first and second multiplex means, and for outputting partial products of said operands; and

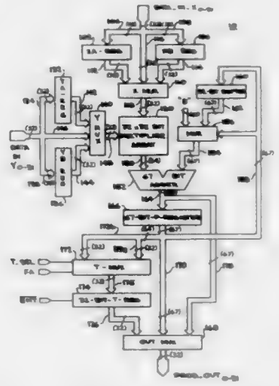
an adder coupled to said multiplier array for receiving said partial products output from the multiplier and the output of the accumulator for outputting the sum or difference of the adder inputs to an output coupled to one of the inputs of said shifter.

4,809,212

HIGH THROUGHPUT EXTENDED-PRECISION MULTIPLIER

Bernard J. New, Los Gatos, and Timothy J. Flaherty, Santa Clara, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 19, 1985, Ser. No. 747,079
Int. Cl.[4] G06F *7/52*
U.S. Cl. 364—757 **10 Claims**



1. A multiplier responsive to an external clock signal and a plurality of external control signals which cyclically processes a multiple-precision multiplicand word and a multiple-precision multiplier word and cyclically generates therefrom at an output an extended-pecision product word, comprising:

means for selectively generating double-precision partial product words from said multiplicand and multiplier words and a most-recently generated said double-precision partial product word;

means responsive to said external clock signal and to predetermined ones of said external control signals connected to said partial product generating means for storing a selected least-significant or next-most significant portion of said partial product words and for generating said selected

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portion at an output delayed by a selected number of periods of said external clock; and

first multiplexer means responsive to predetermined ones of said external control signals connected to said partial product generating means, and to said storage and delay means for selectively conducting the contents of selected portion therefrom to said extended-precision multiplier output;

whereby said extended-precision product word is formed of single-precision ones of said partial product words generated at said multiplier output during successive ones of said external clock periods.

4,809,213

TWO-TRACK CONVOLVER OPERATING WITH ACOUSTIC WAVES AND WITH SUPPRESSION OF SELF-CONVOLUTION SIGNALS

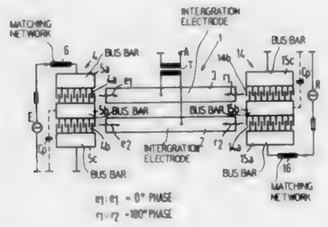
Hans-Peter Grassl, Zorneding, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 20, 1986, Ser. No. 898,373

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1985, 3529901

Int. Cl.⁴ G06G *7/19*

U.S. Cl. 364—821 **8 Claims**



1. A two-track convolver operating with acoustic waves, comprising:

two integration electrodes arranged on a substrate and parallel to one another;

a first input transducer assembly connected to an input signal E and being positioned at one end of the integration electrodes and a second input transducer assembly connected to a reference signal R and arranged adjacent an end of the integration electrodes opposite to the input signal end thereof;

each of the first and second input transducer assemblies comprising first and second individual transducers connected in series with one another, the individual transducers of the respective transducer assemblies being of a same design; and

one of the transducers of each of the transducer assemblies being connected to a reference potential, add these two transducers connected to the reference potential being diagonally arranged with respect to the two integration electrodes.

4,809,214

INFORMATION SEARCHING APPARATUS

Masami Shimakura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1985, Ser. No. 758,734

Claims priority, application Japan, Jul. 31, 1984, 59-158952; Jul. 31, 1984, 59-158953

Int. Cl.⁴ G06F *13/00*

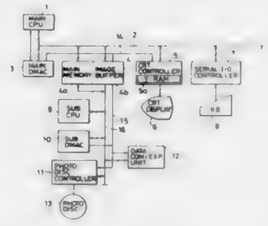
U.S. Cl. 364—900 **12 Claims**

1. An information searching apparatus comprising:

first memory means in which a plurality of image information files are stored;

input means for inputting search information for searching for a desired image information file from among said plurality of image information files in said first memory means;

search means for searching image information files to be read out from said first memory means, corresponding to said search information input by said input means;



second memory means capable of storing a plurality of image information files searched and read out from said first memory means;

transmitting means for transmitting a plurality of image information files searched by said search means in association with a common search information, from said first memory means to said second memory means; and

means for selecting a desired image information file from among said image information files transmitted to said second memory means.

4,809,215

INFORMATION PROCESSING SYSTEM HAVING DECODE, WRITE AND READ MEANS

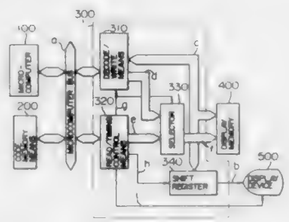
Koozoo Nakamura, Hitachiota; Masaharu Tadaachi, Mito, and Nagaharu Hamada, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 12, 1987, Ser. No. 2,203

Claims priority, application Japan, Jan. 13, 1986, 61-3451

Int. Cl.⁴ G06F *3/153*

U.S. Cl. 364—900 **10 Claims**



1. An information processing system comprising:

decode means for decoding codewords, which are generated by encoding pixel signals using a redundancy suppressing encoding method, to obtain original pixel signals to be stored in a display memory as display data;

a display memory for storing the decoded pixel signals;

write means connected to said decode means for writing the decoded pixel signals into said display memory;

read means for decoding vector codes, which are encoded by a computer into pixel signals, for storing the pixel signals into said display memory, and for reading the pixel signals from said display memory to output the said decoded pixel signals to a display device; and

timing control means for selectively enabling said decode means for decoding said codewords, said write means for writing the decoded pixel signals into said memory, and said read means for accessing said display memory, so that said decode means and said read means may be enabled to operate at the same time, but said write means and said read means are enabled to access said display memory only during different periods of time.

4,809,216

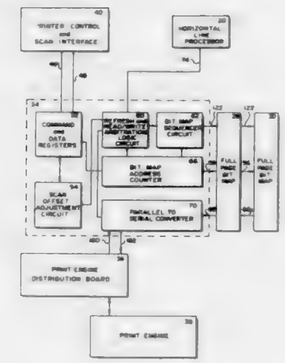
PRINT ENGINE DATA INTERFACE

Charles Lai, Marlborough, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Aug. 25, 1986, Ser. No. 900,057

Int. Cl.⁴ G06F *3/12*

U.S. Cl. 364—900 **13 Claims**



1. A print engine data interface for serially retrieving print image data from selectively addressable locations in at least one full page bit map memory and transferring the data to a print engine, and refreshing the data in the full page bit map memory, the print engine data interface comprising:

(A) a bit map sequencer means for generating either read/-write commands or refresh commands to the full page bit map memory, and a pulsed end read/write signal representative of the progression of the print engine across a scan line in response to receiving a refresh request signal, a print/erase signal, and a read/write signal, and a clock signal;

(B) a refresh and read/write arbitration logic means for generating said refresh request signal, said read/write signal and a converter read/write signal in response to receiving an offset reset signal representative of the start of the progression of the print engine across a scan line, and a comparator signal generated when the print engine has reached the end of a scan line;

(C) a bit map address counter means for generating selected full page bit map memory address to be subjected to said refresh commands or said read/write commands, and for generating said comparator signal in response to receiving said end read/write signal; and

(D) a data conversion unit for accepting date forwarded from the full page bit map memory and converting the data into a data stream for reception by the print engine in response to receiving said converter read/write signal and a print engine clock signal.

4,809,217

REMOTE I/O PORT FOR TRANSFER OF I/O DATA IN A PROGRAMMABLE CONTROLLER

William E. Flora, Willoughby; Mark Laboski, Euclid; Timothy J. Murphy, Parma, all of Ohio, and Alan J. Campbell, New Berlin, Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

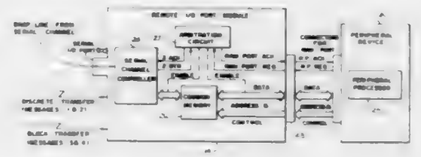
Filed Oct. 31, 1985, Ser. No. 793,588

Int. Cl.⁴ G06F *13/12, 15/16*

U.S. Cl. 364—900 **14 Claims**

MICROFICHE APPENDIX INCLUDED

(4 Microfiche, 242 Pages)



1. A method of accessing a programmable controller system at a location remote from a programmable controller processor, wherein I/O data for monitoring and controlling conditions on controlled equipment is transferred between the programmable controller processor and remote modules through periodic execution of a I/O scan sequence in which remote modules are addressed in sequence at system-mapped I/O addresses, the method comprising:

coupling an external peripheral device to an I/O port on a remote module, wherein the remote module includes a serial communication controller that communicates during the I/O scan sequence through one end of serial communication channel to exchange I/O data with a programmable controller processor at an opposite end of the serial communication channel, the remote module also having a common memory accessible through the I/O port and accessible by the serial communication controller, and the remote module also having an arbitration circuit for controlling access to the common memory;

obtaining access to the common memory through a first group of signals coupled between the external peripheral device and the arbitration circuit, wherein a first signal in the first group is initiated by the external peripheral device and transmitted to the arbitration circuit;

determining the availability of one of a plurality of buffer areas in the common memory for transfer of a block of data between the common memory and the external peripheral device, wherein the plurality of buffer areas are addressed at system-mapped I/O addresses generated during the I/O scan sequence;

determining the availibility of a block of data for transfer between the external peripheral device and one of the plurality of buffer areas in the common memory; and

if one of the plurality of buffer areas and a block of data area available, transferring the block of data between the external peripheral device and the one buffer area in the common memory, the external peripheral device communicating a second group of signals, including address, control and data signals, with the remote module to carry out transfer of I/O data with the common memory; and

releasing access to the common memory by the external peripheral device to permit access to the common memory by the serial communication controller.

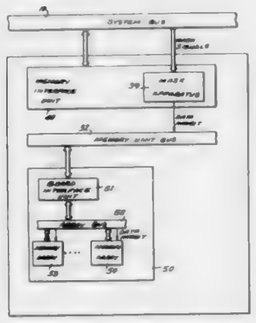
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4,809,218

APPARATUS AND METHOD FOR INCREASED SYSTEM BUS UTILIZATION IN A DATA PROCESSING SYSTEM

Paul J. Natusch, Westford; David C. Somerchia, Shrewsbury, and John F. Henry, Jr. deceased, late of Townsend, all of Mass. (by Beverly A. Henry, administratrix), assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 29, 1986, Ser. No. 823,801
Int. Cl.[4] G06F *12/02*
U.S. Cl. 364—900 **1 Claim**



1. A method for writing a given number of data signal groups to a predetermined number of memory locations in a memory unit from a computer system, said method comprising the steps of:

sending in succession at least said given number of data signal groups to the memory unit from the computer system during successive corresponding clock cycles of said computer system;

sending respective memory storage signals corresonding to respective data signal groups during respective clock cycles on mask lines;

receiving said data signal groups at a memory interface unit;

receiving said respective memory storage signals at a mask unit located within said memory interface unit;

storing said given number of data signal groups in a predetermined number of memory locations in the memory unit in response to said step of receiving said given number of data signal groups and said respective memory storage signals, said step of storing said given number of data signal groups including the substep of determining which of said predetermined number of memory locations will have said given number of data signal groups stored therein and which of said memory locations will be inhibited from storing any of said given number of data signal groups in response to said step of receiving respective memory storage signals sent on said mask lines.

4,809,219

METHOD FOR PROCESSING AN EXPERT SYSTEM RULEBASE ON A SYSTEM HAVING LIMITED MEMORY

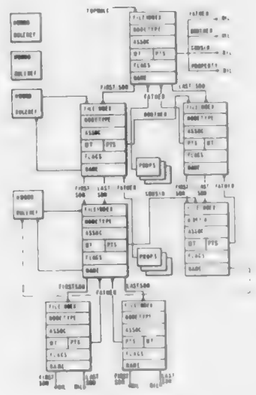
Thomas J. Ashford; Nancy A. Burns, both of Austin; Richard L. Flagg, Round Rock; Christine T. Iwaskiw, Austin, and Roberta P. Starbird, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 26, 1985, Ser. No. 749,076
Int. Cl.[4] G06F *15/18*
U.S. Cl. 364—900 **18 Claims**

1. In a method of tracing a Rulebase of an expert system with a data processing system having a processing unit and a program which functions as an inference engine, a main memory unit which a memory capacity which is less than the size of the Rulebase and a storage unit having a storage media with a storage capacity capable of storing said entire Rulebase and connected to said processing unit for selectively transferring data there between, the improvement comprising the following steps in combination;

(1) segmenting said Rulebase into a plurality of contextual units each of which has a size less than said size of said main memory unit, each said contextual unit having a plurality of Rule trees having a Goal node at its root and a plurality of other nodes at the leaves of said tree, each said node of said Rulebase comprising a data record having a plurality of predefined fields, each said record including at least one field which is interrelated to an identical field in at least one other said record in said Rulebase, each set of said identical related fields defining a different linked list of interrelated records, with each of said sets including a different group of said records, said segmenting step including the step of,

(A) inserting a Rulebase Call action in a preselected field of selected said records of said Rulebase to limit each said contextual unit to a size that can be accommodated by said main memory,



(2) transferring a first contextual unit from said media to said main memory,

(3) tracing in a predetermined order a plurality of said Rule trees in said first unit with said inference engine with each said tree being traced in a back chaining traversal of the nodes of said tree,

(4) interrupting said step of tracing in response to said inference engine detecting said RULEBASE CALL during the processing of said preselected field of one of said selected said records,

(5) transferring a second contextual unit to said main memory from said media in response to said detected RULEBASE CALL,

(6) transferring said first contextual unit to said storage media when the amount of said memory available for said second unit being called is inadequate simultaneously to store said first and second units, and

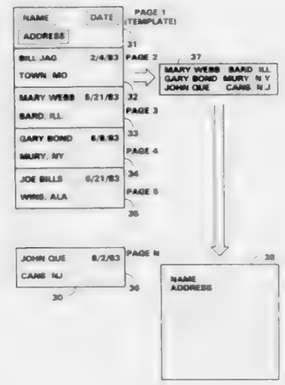
(7) updating selected nodes in said called second unit with data collected during said step of tracing of said first contextual unit prior to said interruption.

4,809,220

ELECTRONIC PROCESSING SYSTEM USING PRINTER AND MICROPROCESSOR TO CREATE FORMS TEMPLATE WITH PRE-PRINTED FORMS

Kenneth A. Carlson, Sterling; John F. LeBrun, Lowell, Mass.; Salvatore Giacomazzo, Stow, and Jonathan D. Saperia, East Pepperell, all of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Continuation of Ser. No. 595,079, Mar. 30, 1984, abandoned. This application Mar. 23, 1987, Ser. No. 29,359
Int. Cl.[4] G06F *3/12, 15/00*
U.S. Cl. 364—900 **15 Claims**



2. A method of operating with pre-printed forms on electronic office processing equipment including a processor, video display, keyboard, memory and printer, and comprising the steps of:

creating a form template on said video display for a pre-printed form, said template comprising blank lines of the same length and in the same relative positions to each other as blanks on the pre-printed forms, and having captions adjacent to each blank line indicating the type of information to be entered thereon,

the form template being created by positioning a form in the printer and, by means of the keyboard through the processor, controlling relative movement of the form in the printer as the processor monitors the form movement to identify the position and length of each blank on said pre-printed form to said processor;

storing the data representing the position and length of each blank on said pre-printed form;

displaying said blanks as blank lines on said video display using said stored data, wherein each said line is of the same length and in the same physical positions to each other as said blanks on said pre-printed form; and

editing the last mentioned display on said video display to add captions adjacent to each blank line indicating the type of information to be entered onto the line, said lines and said captions creating said form template;

retrieving said form template from said memory and displaying it on said video display when it is desired to enter information for said last mentioned pre-printed form;

entering appropriate information onto the blank lines on said form template displayed on said video display; and

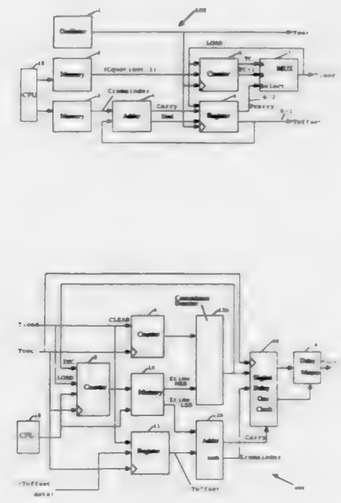
storing the information entered onto the blank lines of said form template displayed on said video display.

4,809,221

TIMING SIGNAL GENERATOR

Paul D. Magliocco, Milpitas, and Steven R. Bristow, San Jose, both of Calif., assignors to Megatest Corporation, San Jose, Calif.

Division of Ser. No. 8,212, Jan. 28, 1987, Pat. No. 4,779,221. This application Apr. 26, 1988, Ser. No. 186,331
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—900 **21 Claims**



1. A timing system comprising:

means for receiving a fixed frequency clock signal;

a first input terminal for receiving a LOAD signal which defines the start of a new period synchronized to the closest previous clock signal;

a second input terminal for receiving an offset value which defines the relationship between said LOAD signal and the actual start of said period to be generated;

a memory for storing a value which defines when an edge is to be generated with respect to the start of a period;

a counter for counting clock signals following receipt of said LOAD signal and providing an output signal indicating the number of said clock signals received since the start of the current period defined by said LOAD signal;

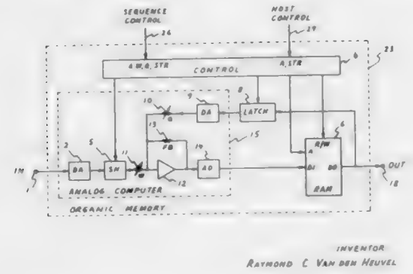
an adder for adding said value stored in said memory and said offset value and providing a quotient output value which defines the integral number of said clock signals after which said edge is to occur, and a remainder value which defines the fraction of a period of said clock signal after said quotient value when said edge is to occur;

a coincidence detector for providing an output signal when said output signal from said counter is equal to said quotient value; and

a programmable delay means having an input lead for receiving said output signal of said coincidence detector and having an output lead for providing a delayed version of said output signal of said coincidence detector, said programmable delay means having its delay programmed by said remainder signal.

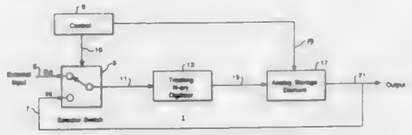
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4,809,222
ASSOCIATIVE AND ORGANIC MEMORY CIRCUITS AND METHODS
Raymond C. Van Den Heuvel, 18618 Celtic St., Northridge, Calif. 91326
Filed Jun. 20, 1986, Ser. No. 876,726
Int. Cl.[4] G11C *7/06, 27/02, 27/00*
U.S. Cl. 365—45 **5 Claims**



1. An Organic-Like Memory, where items of information are enhanced or degraded with each new access, including, but not limited to, the following combination of means and connections:
Standard memory means for storing bits of information
Operational amplifier means in a multiplying and summing configuration for multiplying two separate analog input signals, each by its own assigned gain factor, and then adding the resulting products, said multiplying and summing configuration consisting of means as follows connected to the output and inputs of said operational amplifier means:
Feedback resistor means connected between the output and the inverting input of said operational amplifier means
First controllably variable resistance means connected to one of the inputs of said operational amplifier means
Second controllably variable resistance means connected to one of the inputs of said operational amplifier means
Feedback connection linking the output of said standard memory means to the free end of said first controllably variable resistance means including the following means connected in series in its path:
Latch means whose input is connected to output of said standard memory means for storing one item of information read from said standard memory means
First digital-to-analog converter means whose input is connected to output of said latch means for converting the digital signal stored in said latch means into its analog voltage representation and whose output is connected to the free end of said first controllably variable resistance means
Input connection linking the input of the Organic-Like Memory to the free end of said second controllably variable resistance means including the following means connected in series in its path:
Second digital-to-analog converter means whose input is the input of the Organic-Like Memory for translating an input digital code into a corresponding analog voltage level
Sample-and-hold means whose input is tied to output of said second digital-to-analog converter means for holding said second digital-to-analog connverter means' output voltage at a constant level for a period of time and whose output is connected to the free end of said second controllably variable resistance means
Common connection linking the output of said operational amplifier means to input of said standard memory means including the following in its path:
Analog-to-digital converter means for converting the analog voltage level present at output of said operational amplifier means into a corresponding digital code
Control circuit means for generating the control signals required for the proper operation of said standard memory means, said latch means, said sample-and-hold means, said first controllably variable resistance means, and said second controllably variable resistance means.

4,809,223
APPARATUS AND METHOD FOR LONG TERM STORAGE OF ANALOG SIGNALS
Paul B. Brown, Morgantown, W. Va., assignor to West Virginia University, Morgantown, W. Va.
Filed Jun. 18, 1987, Ser. No. 64,081
Int. Cl.[4] G11C *27/00*
U.S. Cl. 365—45 **22 Claims**

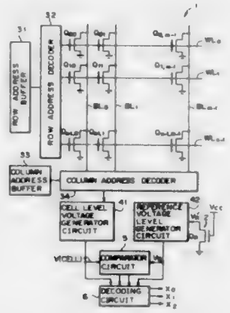


1. Apparatus for storing an approximation of an analog signal for a prolonged period of time comprising:
a tracking n-ary digitizer which converts an applied signal into an n-ary signal having one of n discrete levels where n is at last three, with said one level being the level next greater in magnitude than the level of the applied signal;
an analog storage element which selectively in response to control signals stores as an analog approximation signal, the n-ary signal generated by said tracking n-ary digitizer, said stored analog approximation signal drooping with time;
switching means which selectively in response to a first value of a select signal applies said analog signal to said tracking n-ary digitizer as said applied signal, and in response to a second value of said select signal applies said stored analog approximation signal stored in said analog storage element to said tracking n-ary digitizer as said applied signal; and
control means which generates said select signal with said first value when a new value of said analog signal is to be stored and with said second value otherwise, and which generates said control signals when said selected signal has said first value, and periodically at intervals which are shorter in duration than the time required for said stored analog approximation signal in said analog storage element to droop to the value of the n level next smaller in magnitude than said one level.

4,809,224
READ ONLY MEMORY DEVICE WITH MEMORY CELLS EACH STORING ONE OF THREE STATES
Yasuo Suzuki, Yokohama; Yasuaki Suzuki, and Hiroshi Hirao, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan
Filed Aug. 7, 1987, Ser. No. 82,696
Claims priority, application Japan, Aug. 8, 1986, 61-185246
Int. Cl.[4] G11C *7/00, 11/40*
U.S. Cl. 365—94 **5 Claims**

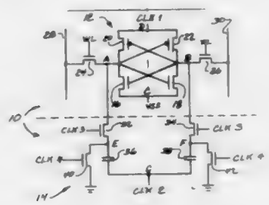
1. A read only memory device comprising:
a plurality of memory cells each storing one of three states;
a cell voltage generating circuit connected to said plurality of memory cells for providing a cell voltage corresponding to the state stored in a selected one of said plurality of memory cells;
a reference cell provided for said plurality of memory cells for providing a reference voltage which is substantially the same as the cell voltage provided by a memory cell storing an intermediate state of the three states; and

a comparator circuit connected to said cell voltage generating circuit and said reference cell for generating a logical



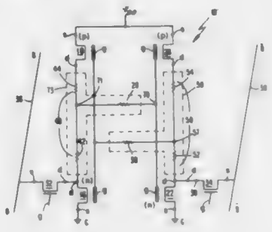
output signal based on the result of a comparison between the cell voltage and the reference voltage.

4,809,225
MEMORY CELL WITH VOLATILE AND NON-VOLATILE PORTIONS HAVING FERROELECTRIC CAPACITORS
Klaus Dimmler, and S. Sheffield Eaton, Jr., both of Colorado Springs, Colo., assignors to Ramtron Corporation, Colorado Springs, Colo.
Filed Jul. 2, 1987, Ser. No. 69,390
Int. Cl.[4] G11C *11/22, 11/24, 11/00, 11/34*
U.S. Cl. 365—145 **8 Claims**



1. A method of operating a memory cell having volatile and nonvolatile portions, said non-volatile portion including first and second ferroelectric capacitors each having first and second plate electrodes, the method comprising the steps of:
storing complementary binary data in said volatile portion, including developing high and low voltages representing the complementary data at first and second nodes of the volatile memory cell portion;
coupling said first and second nodes to the first plate electrodes of the first and second ferroelectric capacitors;
polarizing only one of said ferroelectric capacitors by applying a low voltage to the second plate electrode thereof while the first plate electrode of said capacitor is coupled to said first or second node, said polarizing occurring in a first direction; thereafter
polarizing the second ferroelectric capacitor by raising the voltage on the second plate electrode thereof while the first plate electrode is coupled to said first or second node, said polarizing occurring in a second direction.
7. A method of operating a memory cell including first and second ferroelectric capacitors each having first and second plate electrodes, the method including volatile and nonvolatile operations and comprising the steps of:
storing complementary binary data in a volatile manner, including developing high and low voltages representing the complementary data at first and second nodes within the memory cell;
coupling said first and second nodes to the first plate electrodes of the first and second ferroelectric capacitors;
polarizing only one of said ferroelectric capacitors by applying a high voltage to the second plate electrode thereof while the first plate electrode thereof is coupled to said first or second node, said polarizing occurring in a first direction; thereafter
polarizing the second ferroelectric capacitor by dropping the voltage on the second plate electrode thereof while the first plate electrode is coupled to said first or second node, said polarizing occurring in a second direction.

4,809,226
RANDOM ACCESS MEMORY IMMUNE TO SINGLE EVENT UPSET USING A T-RESISTOR
Agustin Ochoa, Jr., Vista, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Oct. 28, 1987, Ser. No. 113,695
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—156 **7 Claims**



1. A semiconductor memory cell having improved immunity to random errors caused by ion interactions, comprising:
a first complementary pair of transistors having a first common input means and connected in series with each other between first and second voltage sources;
a first voltage divider comprising first and second resistors connected in series between said first complementary pair of transistors;
a second complementary pair of transistors having a second common input means and connected in series with each other between said first and second voltage sources;
a second voltage divider comprising third and fourth resistors connected in series between said second complementary pair of transistors;
a first feedback resistor interconnecting a first node between said third and fourth resistors and said first common input means;
a second feedback resistor interconnecting a second node between said first and second resistors and said second common input means;
first transfer gate means for interconnecting said first complementary pair of transistors and a positive bit line; and
second transfer gate means for interconnecting said second complementary pair of transistors and a negative bit line.

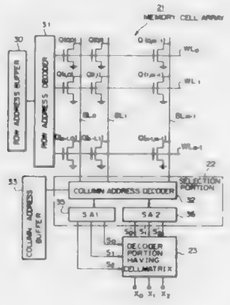
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4,809,227

READ ONLY MEMORY DEVICE HAVING MEMORY CELLS EACH STORING ONE OF THREE STATES

Yasuo Suzuki, Yokohama; Yasuaki Suzuki, and Nobuo Ikuta, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 5, 1987, Ser. No. 82,479
Claims priority, application Japan, Aug. 6, 1986, 61-183329
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—168 **5 Claims**



1. A read only memory device comprising:
a memory cell array having a plurality of memory cells each storing one of three states;
a selection means, connected to said memory cell array, for selecting two memory cells simultaneously from said memory cell array in accordance with an address signal;
a first sense amplifier, connected to one of the two selected memory cells , for producing a three bit output corresponding to the state stored in the one of the two selected memory cells selected by said selection means;
a second sense amplifier, connected to another of the two selected memory cells, for producing a three bit output corresponding to the state stored in said another of the two selected memory cells selected by said selection means; and
a decoder means, connected to said first and second sense amplifiers, for receiving the three bit outputs of said first and second amplifiers and for producing a three bit binary data output corresponding to the states stored in the
two selected memory cells, said decoder means comprising a read only memory receiving said three bit output from said first sense amplifier as a column address and said three bit output from said second sense amplifier as a row address.

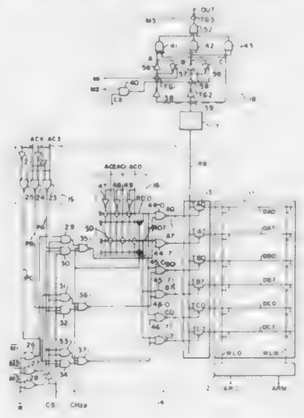
4,809,228

SEMICONDUCTOR MEMORY DEVICE HAVING CONTROLLABLE REDUNDANT SCHEME

Norihiko Iida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 9, 1987, Ser. No. 12,332
Claims priority, application Japan, Feb. 7, 1986, 61-26284
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—189 **10 Claims**

4. A semiconductor memory device comprising a memory array of memory cells, means for receiving at least one control signal representing a first state or a second state, an addressing circuit coupled to said receiving means to receive said at least one signal for selecting a first number of memory cell or cells when said control signal assumes a first state and selecting a second number of memory cells when said control signal assumes a second state, a data determination circuit coupled to said memory array and said receiving means for determinating a state from a data signal by data of said first number of memory cell or cells when said control signal assumes said first state and by data from said second number of memory cells when



said control signal assumes said second state and output means for outputting said data signal.

4,809,229

DATA PROCESSING INTEGRATED CIRCUIT WITH IMPROVED DECODER ARRANGEMENT

Tomoji Nukiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 7, 1985, Ser. No. 763,189
Claims priority, application Japan, Aug. 7, 1984, 59-165265
Int. Cl.[4] G11C *7/00, 8/00*
U.S. Cl. 365—189 **6 Claims**



6. A data processing integrated circuit comprising:
a plurality of address signal lines arranged in parallel;
a first control line arranged in parallel with said address signal lines;
a second control line arranged in parallel with said address signal lines;
a plurality of memory blocks arranged at different locations along said address signal lines, each of said memory blocks including at least one storage unit having a data input terminal, first and second output terminals, first and second control terminals, a data latch circuit having an output coupled to said first output terminal, a first transfer gate coupled between said data input terminal and an input of said data latch circuit, said first transfer gate having a control electrode coupled to said first control terminal, and a second transfer gate coupled between said

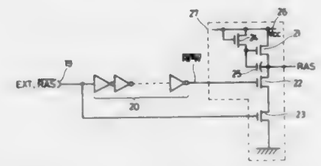
data input terminal and said second output terminal, said second transfer gate having a control electrode coupled to said second control terminal;
and a plurality of selection circuits each provided for a respective one of said memory blocks, each of said selection circuits including first decoding means coupled to said address signal lines and said first control line for selectively rendering the first control terminal of the storage unit of the associated memory block active when said first control line is at an active level and second decoding means coupled to said address signal lines and said second control line for selectively rendering the second control terminal of the storage unit of said associated memory block active when said second control line is at an active level.

4,809,230

SEMICONDUCTOR MEMORY DEVICE WITH ACTIVE PULL UP

Yasuhiro Konishi; Kazuyasu Fujishima; Masaki Kumanoya; Hideshi Miyatake; Hideto Hidaka, and Katsumi Dosaka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1986, Ser. No. 938,065
Claims priority, application Japan, Dec. 6, 1985, 60-275566
Int. Cl.[4] G11C *7/00, 11/40*
U.S. Cl. 365—189 **5 Claims**



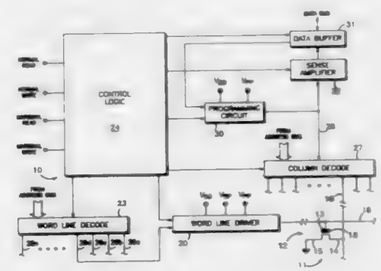
1. A semiconductor memory device comprising:
a plurality of pairs of bit lines;
a plurality of word lines provided to intersect with said plurality of pairs of bit lines;
a plurality of memory cells each provided in correspondence to the intersection point between each said pair of bit lines and each said word line to be connected with said pair of bit lines and said word line;
precharge means provided for each said pair of bit lines to precharge potentials of said pair of bit lies at a first constant potential;
memory cell selection/readout means for selecting a memory cell for reading data by selecting said word line after precharging of said pair of bit lines by said precharge means and reading data from said selected memory cell on said pair of bit lines;
sense amplifier means provided for each said pair of bit lines for detecting potentials of said pair of bit lines upon reading of said data from said selected memory cell to lower the potential of a lower level one of said pair of bit lines to a second constant potential;
means for supplying an external row address strobe signal having a constant duration;
delay means for delaying said external row address strobe signal by a prescribed period;
internal row address strobe signal generating means for generating an internal row address strobe signal having a trailing edge obtained by delaying the trailing edge of said external row address strobe signal by said prescribed period in response to said external row address strobe signal and the output from said delay means, said internal row address strobe signal alternately repeatedly precharge means and an active cycle for the operations of said memory cell selection/readout means and said sense amplifier means; and
active pull-up means provided for each said pair of bit lines for pulling up said potential of said higher level one of said pair of bit lines from starting of the operation of said sense amplifier means to termination of said active cycle defined by said internal row address strobe signal to a third constant potential.

4,809,231

METHOD AND APPARATUS FOR POST-PACKAGING TESTING OF ONE-TIME PROGRAMMABLE MEMORIES

Paul D. Shannon, Austin, Tex.; Hiroyuki Oka, Tokyo, Japan; Paul E. Grimme, Dripping Springs, and Robert W. Sparks, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 12, 1987, Ser. No. 119,528
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—201 **15 Claims**



1. A one-time programmable memory comprising a cell having a threshold voltage which is variable within a known range, programming means for increasing said threshold voltage of said cell to a value above a maximum rated supply voltage of said memory and read means for determining whether said threshold voltage of said cell is below an actual supply voltage, wherein said threshold of said cell may not be decreased after said memory is packaged and wherein the improvement comprises:
said programming means is operable to increase said threshold voltage in increments which are small compared to said known range; and
said read means is operable to determine whether said threshold voltage is below a value substantially different from said actual supply voltage;
whereby said programming means and said read means may be used to verify that said threshold voltage is capable of being increased without increasing said threshold voltage above a minimum rated supply voltage of said memory.

4,809,232

HIGH SPEED, VERY LARGE (8 MEGABYTE) FIRST IN/FIRST OUT BUFFER MEMORY (FIFO)

Alan E. Baumbaugh, Batavia, and Kelly L. Knickerbocker, Aurora, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 16, 1986, Ser. No. 942,140
Int. Cl.[4] G11C *19/28*
U.S. Cl. 365—221 **11 Claims**

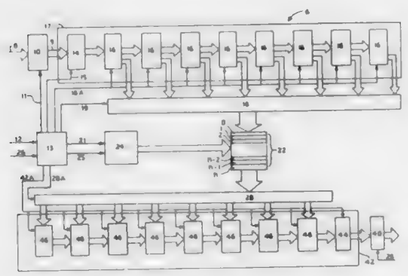
1. A buffer system for storing a stream of data words from a data source and retrieving the data words for delivery to a data processing system comprising:
data packer means for forming a series of (P×M×N)-bit data words from a series, of (P×M) N-bit data words, said

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data packer means adapted to receive the data words from the data source;

memory array means coupled to said data packer means and responsive to the formation of said series of words to receive at least (P×M×N)-bit data words from said data packer means, said memory array means having a plurality of individual data storage addresses for storing said series of (P×M×N)-bit data words;

data unpacker means coupled to said memory array means and adapted to selectively receive (P×M×N)-bit data words from said memory array means for sequentially forming a series of N-bit data words from a corresponding series of (P×M×N)-bit data words stored in said memory array, for transmission to a data processing system;



control means coupled to said data packer means, said memory array means and said data unpacker means for

controlling the transfer of P (M×N) bit data words into and through said data packer means,

controlling the transfer of (P×M×N)-bit data words from said data packer means into individual storage addresses of said memory array means,

controlling the transfer of (P×M×N)-bit data words from the individual storage addresses of said memory array means to said data unpacker means, and

controlling the transfer of P (M×N) bit data words through and out of said data unpacker means.

4,809,233

PSEUDO-STATIC MEMORY DEVICE HAVING INTERNAL SELF-REFRESH CIRCUIT

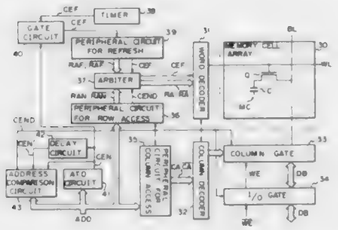
Yoshihiro Takemae, Tokyo, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 18, 1987, Ser. No. 135,102

Claims priority, application Japan, Dec. 19, 1986, 61-301606

Int. Cl.[4] G11C *7/00*

U.S. Cl. 365—222 **9 Claims**



1. A pseudo-static memory device receiving at least an external address signal, said device comprising:

a memory cell array having a memory cell provided at each intersection between a plurality of word lines and a plurality of bit lines;

a first access circuit for carrying out a sequential access of addresses of said word lines to perform a refresh of said memory cell;

a second access circuit for bringing one of said word lines to an accessible state in response to said address signal;

an access selection circuit operatively connected between said first access circuit and said second access circuit for selecting any one of said access circuits in accordance with said access sequence and performing an address access by said selected access circuit to said memory cell array;

a circuit for generating a control signal in response to a change in address of said address signal; and

a delay means operatively connected between said control signal generating circuit and said second access circuit for delaying said control signal by a predetermined time required for performing said refresh of said memory cell, and feeding said delayed control signal to said second access circuit, whereby said second access circuit performs an address access of word lines in response to said delayed control signal when selected by said access selection circuit.

4,809,234

MEMORY DEVICE INCLUDING MEMORIES HAVING DIFFERENT CAPACITIES

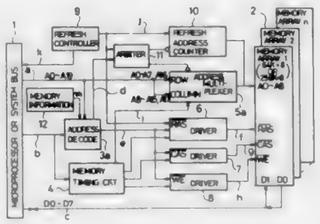
Yutaka Kuwashiro, Kamakura, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed May 6, 1987, Ser. No. 46,424

Claims priority, application Japan, May 23, 1986, 61-77840

Int. Cl.[4] G11C *8/00*

U.S. Cl. 365—230 **8 Claims**



1. A memory device including memories having different capacities, which comprises:

a plurality of memory arrays, each having a plurality of memory elements, placed in a memory address space,

memory array selecting means responsive to address information for designating a given address in said memory address space to select one memory array from said plurality of memory arrays,

address generating means for generating row and column addresses of said selected memory array,

setting means for setting memory element information corresponding to memory capacity of memory elements in each of said memory arrays,

said memory array selecting means responsive to both said address information and said memory element information for decoding corresponding to said memory capacity to select a desired memory array, and

said address generating means responsive to said address information to generate row and column addresses in said memory array which are required by memory elements of maximum capacity.

4,809,235

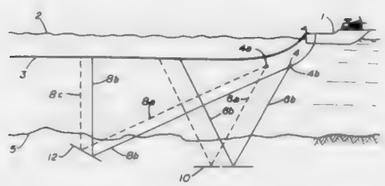
METHOD FOR REMOVING DOPPLER PHASE DISPERSION FROM SEISMIC DATA

William H. Dragoset, Jr., Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Sep. 28, 1987, Ser. No. 101,386

Int. Cl.[4] G01V *1/38*

U.S. Cl. 367—21 **12 Claims**



1. A method of marine seismic exploration comprising:

towing a vibratory seismic source and a detector cable having seismic signal detectors mounted thereon through a body of water at a substantially constant speed;

emitting repeatedly a swept frequency seismic signal with said vibratory seismic source;

detecting said swept frequency seismic signals with said seismic detectors;

recording said detected seismic signals; and

convolving a phase correcting operator developed for said swept frequency signal and said speed with said recorded seismic signals to reduce distortion in said detected seismic signals resulting from reflections of said swept frequency signals from dipping subsurface reflecting interfaces of varying dip angles.

4,809,236

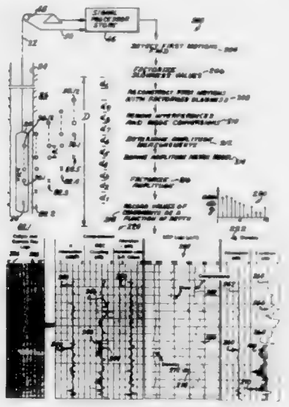
METHOD AND APPARATUS FOR DETERMINING THE MAGNITUDE OF COMPONENTS OF MEASUREMENTS MADE FROM INSIDE A BOREHOLE

Kai Hsu, Danbury, and Ralphe Wiggins, Ridgefield, both of Conn., assignors to Schlumberger Technology Corporation, Ridgefield, Conn.

Filed Oct. 15, 1986, Ser. No. 919,091

Int. Cl.[4] G01V *1/40*

U.S. Cl. 367—28 **29 Claims**



18. A method for determining values of the slowness of an earth formation as a function of depth from time measurements made with a tool having an acoustic pulse transmitter and a plurality of sonic receivers that are spaced from the transmitter and from each other along the tool to produce waveforms in response to detected acoustic energy generated by the transmitter at different borehole depths and at such rate that waveforms from different receivers relate to common depths, comprising the steps of:

detecting first motions in the waveforms related to a desired depth range to produce time measurements representative of the total travel time of an acoustic wave from the transmitter to a sonic receiver:

defining for each said time measurement a plurality of factors that make up said time measurement and include the travel time of the acoustic wave, through the borehole at the transmitter through successive preselectively sized depth intervals of the earth formation located between the transmitter, and the sonic receiver, and through the borehole at the sonic receiver;

defining coefficients for representative of the relative contributions of the different factors that make up each said time measurement so as to define a first matrix of coefficients, one dimension of which is a function of said intervals extending along the depth range and another dimension of which is a function of said measurements as made along said depth range;

first determining values of the interval travel times through the earth formation by combining products of coefficients and measurements related to a common depth;

subtracting the values of the interval travel times from the measurements to form first residual measurements;

secondly determining values of the travel times through the borehole by combining products of coefficients and residual measurements related to a common depth;

subtracting the values of the borehole travel time from the first residual measurements to form second residual measurements:

repeating said determining and subtracting steps by using residual measurements remaining from a preceding determining step:

accumulating depth related values of the earth formation interval travel times as indicative of the slowness of the earth formation as a function of depth.

4,809,237

METHOD FOR MONITORING THE GOODNESS OF THE CEMENT BOND TO A BOREHOLE CASING

Charles B. Vogel; Mike Davis; James O. Guy, all of Houston, and John R. E. Smith, Richmond, all of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Oct. 1, 1987, Ser. No. 103,459

Int. Cl.[4] G01V *1/40*

U.S. Cl. 367—35 **6 Claims**

1. A method for monitoring the goodness of a cement bond to a borehole casing, comprising the steps of:

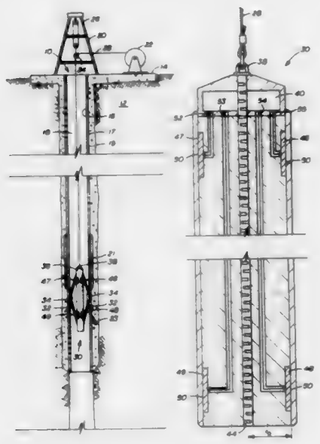
suspending an acoustic logging tool in a cased borehole, the casing being characterized by a transverse-wave propagation velocity of V_m, said logging tool including an acoustic transmitter element and an acoustic receiver element that is spaced apart from said transmitter element, said transmitter and receiver elements being characterized by two orthogonal dimensions, one of which is of a preselected length L;

insonifying said casing at normal incidence thereto with

acoustic radiation from said transmitter element in the spectral region of a frequency component, f, given by

$f = V_m/2L$,

and



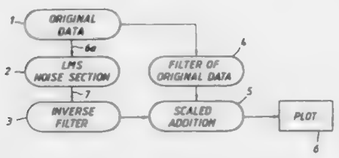
detecting the converted-compresional waves emanating from said casing along the normal thereto at a point along the casing opposite to said receiver element.

4,809,238

METHOD FOR RESTORING THE BACKGROUND APPEARANCE OF TWO-DIMENSIONAL FILTERED SEISMIC DATA

Glen W. Bishop, La Porte, and Scott C. Horabostel, Houston, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Mar. 14, 1986, Ser. No. 839,856
Int. Cl.[4] G01V 1/00
U.S. Cl. 367—46 **17 Claims**



1. A method for filtering two-dimensional seismic data having a coherent energy portion and a random background noise portion, said method comprising the steps of:

generating a noise signal representing said random background noise portion of said seismic data;

filtering said seismic data in a first two-dimensional filter to produce filtered seismic data;

filtering said noise signal in a second two-dimensional filter, said second filter being an inverse filter to said first filter, to produce an inverse-filtered noise signal;

adding said inverse-filtered noise signal to said filtered seismic data to produce background restored, filtered seismic data; and

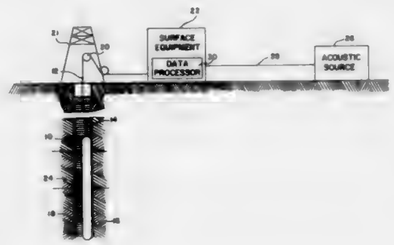
displaying said background restored, filtered seismic data.

4,809,239

METHOD FOR EVALUATING PARAMETERS RELATED TO THE ELASTIC PROPERTIES OF SUBSURFACE EARTH FORMATIONS

Cengiz Esmersoy, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jul. 14, 1987, Ser. No. 73,023
Int. Cl.[4] G01V 1/40
U.S. Cl. 367—57 **9 Claims**



1. A method of estimating velocities and angles of incidence of compressional and shear waves traveling through a subsurface formation traversed by a borehole, said method comprising the steps of:

(a) positioning an acousting source on the surface of the formation, said source positioned such that the source location x relative to the top of the borehole and the borehole depth z relative to the top of the borehole form an imaginary x-z plane intersecting the formation;

(b) securing at least one transducer to a first depth position of an interior wall of the borhole, exciting said source to produce compressional and shear waves through the formation, detecting said waves at said at least one transducer such that a plural-axis measurement of formation displacement is obtained;

(c) repeating said steps of securing, exciting and detecting for a plurality of additional depth positions along the interior wall of the borehole, thereby obtaining vertical seismic profile data thereof;

(d) estimating, for one predetermined depth position chosen from said plurality of vertical seismic profile data depth positions, compressional and shear wave velocities and compressional and shear wave angles of incidence, relative to the x-z plane;

(e) calculating phase shifts of said compressional and shear waves for said predetermined depth position, said phase shifts being a function of said estimated compressional and shear wave velocities and angles of incidence, said phase shifts further being a function of at least one depth position adjacent to said predetermined depth position;

(f) calculating a predetermined error function, said error function being a function of said calculated phase shifts of said compressional and shear waves;

(g) evaluating the value of said predetermined error function such that

(i) if the value of said predetermined error function is within a predetermined tolerance criterion, go to step (h); and

(ii) otherwise, calculate subsequent estimated values of compressional and shear wave velocities and angles of incidence as a function of current values of said compressional and shear wave velocities and angles of incidence, then go to step (e);

(h) record said estimated values of compressional and shear wave velocities and angles of incidence.

4,809,240

METHOD FOR INTERPRETING SEISMIC DATA

Irshad R. Mufti, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 24, 1987, Ser. No. 66,802
Int. Cl.[4] G01V 1/30, 1/34
U.S. Cl. 367—72 **9 Claims**



1. In seismic exploration wherein seismic sources are activated at spaced locations along a line of exploration and the amplitude of reflections of said seismic energy are recorded as a function of time along said line to produce seismograms, a method of interpreting seismic data plotted in a display comprising:

preparing a first perspective plot of a seismic section of said seismograms;

preparing a second perspective plot of said seismic section, said second perspective plot prepared by introducing parallax to said first perspective plot;

producing a stereoscopic view of said first and second perspective plots; and

identifying locations of geophysical characteristics indicative of possible hydrocarbon deposits corresponding to locations on said seismograms by anaylzying said produced stereoscopic view of said first and second perspective plots.

4,809,241

METHOD AND APPARATUS FOR ECHO TRANSIT TIME DETERMINATION

Peter Block, Ottersberg, Fed. Rep. of Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Jun. 5, 1987, Ser. No. 58,932
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1986, 3619253; Feb. 19, 1987, 3705286
Int. Cl.[4] G01S 9/66
U.S. Cl. 367—88 **30 Claims**

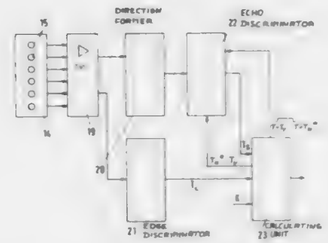
1. A method for determining a transit time of an echo to a receiving location in a receiving lobe extending from the receiving location and having a lobe axis extending at a reception angle relative to a vertical direction in each of a succession of sounding periods, the echo being triggered by exposing a bottom of a body of water to a sonic pulse in each sounding period, the method comprising the steps of, in each sounding period:

intercepting a sonic signal including the echo, at the receiving location with the receiving lobe;

opening a temporal echo expectation window having a temporal length, on at least one side of an echo expectation time, the echo expectation time being a function of the echo propagation of a known sounding depth;

determining a maximum temporal echo length as a function of at least one of an assumed maximum slope of the bottom of the body of water and the reception angle, and dimensioning the temporal length of the window to be greater than the maximum temporal echo length;

receiving the signal intercepted with the receiving lobe in the echo expectation window; and



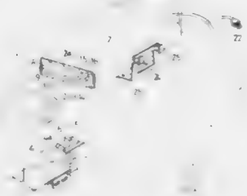
calculating a temporal center of gravity integral of the received signal over the time period of the window to determine the echo transit time of the echo included in the received signal.

4,809,242

APPARATUS FOR PROCESSING FISH DETECTION SIGNALS

Yasuhiko Oka, and Hideya Satoh, both of Yokohama, Japan, assignors to Katoh Electrical Machinery Co., Ltd., Yokohama, Japan

Filed Aug. 31, 1987, Ser. No. 90,893
Int. Cl.[4] G01J 15/96
U.S. Cl. 367—113 **5 Claims**



1. A fish detection signal processor arrangement for use on a boat, comprising in combination:

(a) a transducer (1) for converting an audio signal into an electrical signal, located in a case (4) said case having a front and rear end, the front end being outwardly tapered and an ultrasonic wave transmitter/receiver (4a) therein coupled to said transducer;

(b) a propeller-like paddle wheel (5) with tips to the paddles of said wheel at the rear end with at least one magnet embedded in one of said tips for measuring boat speed as the paddle wheel rotates, also a magnet sensor (6) for detecting a magnet in said paddle wheel tip, also a thermistor for measuring water temperature;

(c) a signal processing unit in case means (2), with a cable (3) extending between the signal processing unit (2) and the transducer;

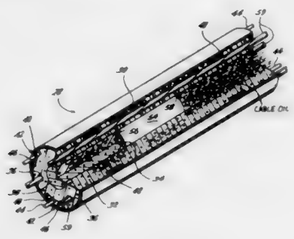
(d) front and rear panels on said case means with switches and knobs for controlling the signal processing unit and the transducer; and, said signal processing unit including:

(e) a receiver (31) coupled to said transducer (1) across said cable (3) including a transmission/reception switching circuit (32), an analog/digital converter (33) coupled to

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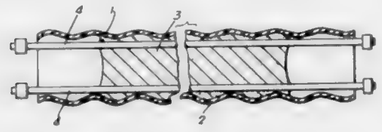
said receiver (31) and a memory (34) coupled to said converter (33), also a converting circuit (36) for converting the output of said memory to a visual input which can be applied to a television set.

4,809,243
STREAMER CABLE
Steven W. Bledsoe, and Alan D. McMurry, both of Friendswood, Tex., assignors to Western Atlas International, Inc., Houston, Tex.
Continuation of Ser. No. 915,060, Oct. 3, 1986, abandoned. This application Nov. 16, 1987, Ser. No. 121,271
Int. Cl.[4] G01V *1/38*
U.S. Cl. 367—154 19 Claims



1. A streamer-cable assembly, comprising:
(a) a streamer-cable jacket;
(b) first and second means disposed within said streamercable jacket for damping internally-propagating tube waves, said second means comprising a resilient tubular capsule axially disposed within said first means;
(c) means disposed within said streamer-cable jacket and adjacent said first damping means for providign longitudinal flexural ridigity to said streamer cable to reduce cable-whip and vibration;
(d) means extending through the flexural rigidity means for reducing tensional stress along the streamer cable;
(e) means disposed within said first and second damping means for detecting transient pressure pulses;
(f) means extending through said damping means for operably interconnecting said detecting means to a remote recording system; and
(g) fluid means disposed within said cable-jacket and said damping means for providing buoyancy to said streamer-cable when deployed in a body of water.

4,809,244
SUPPORT MEMBER FOR PRESSURE SENSOR
Richard J. Peaseck, Lechlade; David R. Fox, Swindon, and Edward B. Atkinson, Ipswich, all of England, assignors to Focas Limited, United Kingdom
Filed Aug. 3, 1987, Ser. No. 90,265
Claims priority, application United Kingdom, Dec. 5, 1985, 8529975
Int. Cl.[4] H04R *17/00*; H01L *41/00*
U.S. Cl. 367—162 16 Claims



1. A support for supporting an elongate piezoelectric pressure sensor, which comprises a generally cylindrical hollow support member of wall thickness T, and mean radius R, and a potting material located in the interior of the support member, the support member having a tensile modulus of elasticity E (at least in the circumferential direction) and the potting material having a bulk modulus of elasticity K_p such that

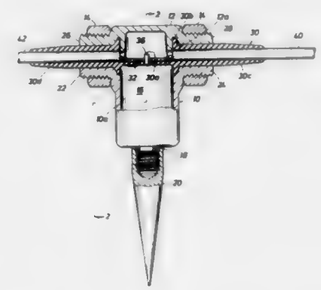
$$2K_p + \frac{E \cdot T}{R} \leq 10\ GPa$$

but such that

$$\frac{E \cdot T}{K_p \cdot R} \geq 0.02,$$

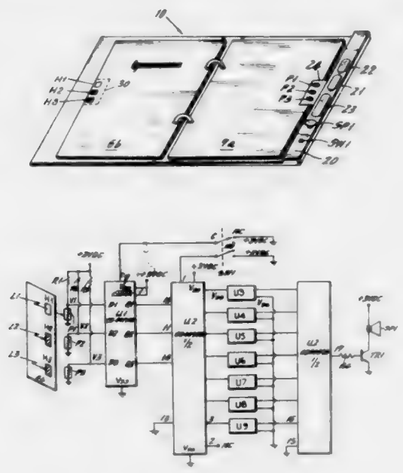
the support member having at least one helical depression on its external surface that extends along the member.

4,809,245
SEISMIC DETECTOR HOUSING ASSEMBLY
James C. Woodall, and S. E. Haggard, both of Houston, Tex., assignors to Mark Products Incorporated, Houston, Tex.
Filed Aug. 17, 1987, Ser. No. 86,387
Int. Cl.[4] G01V *1/16*
U.S. Cl. 367—188 3 Claims



1. A seismic detector housing assembly comprising a housing open at one end, a seismic detector having an outer case with generally flat end walls and a pair of terminals extending out of the case through one end wall, said detector being located in the housing with the terminals extending outwardly from the open end of the housing, a seal member of elastomeric material covering the end of the detector and closing the open end of the housing, said seal member having openings through which the terminals extend, said opening having a diameter such that the elastomeric material of the seal member will form a watertight seal around the terminals when compressed, a printed circuit board located on the opposite side of the seal member from the detector, said printed circuit board having openings through which the terminals extend, said openings being sufficiently large for the printed circuit board to move relative to the terminals along the longitudinal axes of the terminals to allow the seal member to be compressed between the printed circuit board and the detector and to move laterally of the terminals when the board is subjected to a lateral force, and a cup-shaped cap attached to the housing having a cavity enclosing the terminals and an outer edge clamping the seal member between the detector and the printed circuit board with sufficient force to compress the seal member into sealing engagement with the end wall of the detector, the terminals, and the printed circuit board.

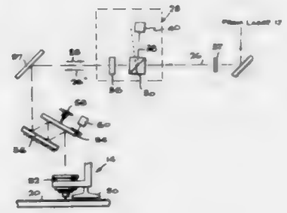
4,809,246
SOUND ILLUSTRATED BOOK HAVING PAGE INDICATOR CIRCUIT
Lih Jeng, 5, Lane 4, Lung-Meng St., Lung-Tan, Taoyuan Hsien, Taiwan
Filed Apr. 24, 1987, Ser. No. 42,466
Int. Cl.[4] G09B *5/06*
U.S. Cl. 434—317 8 Claims



1. A sound illustrated book comprise a plurality of sheets bearing printed matter, an audio sound reproducing circuit having recorded messages related to said printed matter, and a page indicator circuit, characterized in that said page indicator circuit comprises:
a decoder connected to said audio sound reproducing circuit; and
a code generator connected to said decoder, which generates an unique code corresponding to any one of the sheets which is opened; wherein
said unique code is transmitted to said decoder, and a recorded message related to the matter printed on said any one of the sheets is played by said audio sound reproducing circuit according to a decoded signal from said decoder.

4,809,247
VIDEO DISC HEAD TRACKING APPARATUS
James E. Elliott, San Pedro, Calif., assignor to Discovision Associates, Costa Mesa, Calif.
Continuation of Ser. No. 499,923, Apr. 29, 1983, Pat. No. 4,703,467, which is a division of Ser. No. 499,923, Aug. 3, 1981, Pat. No. 4,451,913, which is a continuation of Ser. No. 924,538, Jul. 14, 1978, Pat. No. 4,282,598, which is a continuation-in-part of Ser. No. 812,180, Jul. 1, 1977, abandoned, which is a continuation of Ser. No. 662,238, Feb. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 465,823, May 1, 1974, Pat. No. 3,944,727, which is a division of Ser. No. 299,893, Oct. 24, 1972, Pat. No. 3,829,622. This application Jun. 22, 1987, Ser. No. 64,736
Int. Cl.[4] G11B *7/00*
U.S. Cl. 369—44 6 Claims

1. An improved tracking system for an optical disc playback apparatus adapted to recover information from a plurality of information tracks recorded on a reflective optical disc, said improved tracking system including:
an optical system for directing a beam of radiant energy to impinge upon the reflective optical disc and for directing radiant energy reflected by the disc to a photocell detector configured to output a first signal proportional to the amount of said reflected radiant energy actually received by said photocell detector;
beam steering means for moving said beam of radiant energy in a radial direction relative to the disc to follow a selected one of said information tracks;
servo control means, operatively associated with said beam steering means, for controlling said beam steering means to cause said beam to impinge upon a predetermined edge portion of said selected one of said infomation tracks being followed by said beam, said servo control means including:

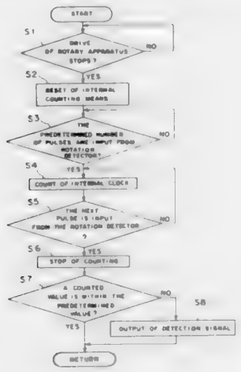


said photocell detector;
bias means for outputting a second signal;
a comparator having a pair of inputs and single output, a first one said inputs being said first signal and the second one of said inputs being said second signal, said single output of said comparator being an error signal representing the difference between said first signal and said second signal, said error signal having a first characteristic when said first signal indicates that said beam is impinging upon more than said predetermined edge portion, and a second characteristic when said first signal indicates that said beam is impinging upon less than said predetermined edge portion.

4,809,248
MEMORY DEVICE INCLUDING A ROTATING DISK AND MEANS FOR DETECTING CHANGE IN FRICTIONAL RESISTANCE BETWEEN THE DISK AND A READ/RECORD HEAD
Masaharu Sengoku, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 28, 1987, Ser. No. 7,466
Claims priority, application Japan, Mar. 5, 1986, 61-47732; Mar. 5, 1986, 61-47733
Int. Cl.[4] G11B *15/52*
U.S. Cl. 369—47 7 Claims

1. A memory apparatus comprised of a rotary apparatus which rotates a disk as the information recording medium, a rotation detector which detects rotating position of said disk and provides a signal, a rotation control apparatus which controls rotation of said rotary apparatus based on the detection result of said rotation detector and a head which records and/or reads the information to be stored in said disk and arranged opposed to the information recording surface of said disk,
said memory apparatus comprising a detecting means which is responsive to an operation command output to said rotary apparatus from said rotation control apparatus and

detects pulse interval of the rotary pulse signal of said rotation detector during the period from input of such



operation command to the receipt of the signal from said rotation detector by said detecting means.

4,809,249

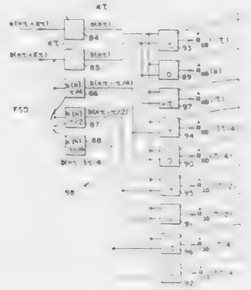
APPARATUS FOR ULTRASOUND FLOW MAPPING

Casper W. Barnes, Newport Beach, Calif., assignor to North American Philips Corporation, New York, N.Y.

Filed Apr. 21, 1986, Ser. No. 854,379

Int. Cl.[4] G01S 7/54

U.S. Cl. 367—100 **3 Claims**



1. In a device which determines the parameters of movement in a media by ultrasound pulse-echo measurements and which comprises at least one ultrasound transducer, means for exciting periodic emission of a pulsed ultrasound signal from said transducer, means for receiving ultrasound echoes which are reflected from said media back to said transducer and for processing such signals in a digital processing channel which generates and acts on discrete samples of A-line signals received from said transducer, said channel comprising, in cascade, means for suppressing signals in said A-lines which originate from fixed regions in said media, flow parameter estimation means, discriminator means, and means for displaying estimates of flow parameters; the improvement wherein:

said flow parameter estimation means comprise a plurality of fractional step delay (FSD) interpolation filters each filter having an input connected to receive and interpolate an output signal from said means for suppressing and a plurality of discrete time correlator means each being connected to correlate an output of a FSD interpolation filter with a discrete sample of said A-line signals.

4,809,250

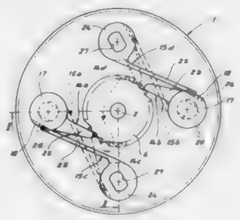
REVERSER MECHANISM FOR AN AUTOMATIC WINDING ARRANGEMENT

Willy Meier, Fontaines, Switzerland, assignor to Fabrique Ebel, Societe Anonyme, Switzerland

Filed Jan. 29, 1988, Ser. No. 150,119

Int. Cl.[4] G04B 5/02

U.S. Cl. 368—208 **5 Claims**



1. A reverser mechanism for automatic winding of a timepiece by an oscillating mass which is able to rotate in a clockwise direction and a counterclockwise direction, said reverser mechanism comprising:

a winding wheel having two faces;

a first ratchet wheel and a second ratchet wheel, each arranged on a corresponding one of each faces and coaxially mounted with said winding wheel;

at least one pawl cooperating with the first ratchet wheel when said oscillating mass rotates in the clockwise direction, and at least one other pawl cooperating with the second ratchet wheel when said oscillating mass rotates in the counterclockwise direction, each of said pawls being loaded by a respective spring; and,

a plurality of pivot means fixed to said winding wheel, each of said pawls being articulately mounted for pivoting on a corresponding one of said pivot means and cooperating with one of said ratchet wheels, and said corresponding pivot means also anchoring the spring loading the pawl cooperating with the other of said ratchet wheels.

4,809,251

PREWRITTEN DATA STORAGE MEDIUM AND OPTICAL SCANNING DEVICE THEREFOR

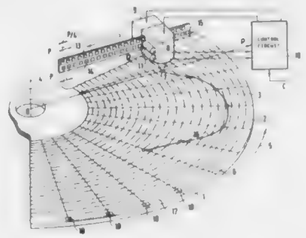
Michel Collomby, Saubens; Daniel Bec, Villeneuve Tolosane, and Jean-Louis Gerard, Ramonville St Agne, all of France, assignors to Alcatel Thomson Gigadisc, Paris, France

Filed Nov. 26, 1986, Ser. No. 935,222

Claims priority, application France, Nov. 27, 1985, 85 17560

Int. Cl.[4] G11B 17/22

U.S. Cl. 369—32 **33 Claims**



1. Data storage medium in the form of a disk comprising:

a reference surface,

a set of adjacent track elements on said reference surface, respective curved axes of said adjacent track elements,

prewritten patterns on said axes,

areas reserved for storing data on said axes alternating with said prewritten patterns,

a common rotation center of said curved axes, a first set of N radii issuing from said common rotation center on which said patterns lie, equi-angularly separated and each defining with said axes sites of intersection, synchronization patterns occupying said sites of intersection,

at least one other set of radii issuing from said common rotation center with a predetermined circumferential offset relative to sub-family of said N radii, and a graduation scale on said radii of said at least one other set consisting of a radial arrangement of specific patterns adapted to interact optically and repeatedly with a focussed reading light spot scanning said reference surface transversely of said tracks in order to sense the sign of radial displacement of said spot within said set of adjacent track elements,

said radial arrangement defining the instantaneous position of said spot relative to said graduation scale when said spot scans said radial arrangement, wherein said graduation scale is adapted to generate through radial scanning of said arrangement two periodic functions with the same period between which there is a substantial phase difference.

4,809,252

MULTI-DISK PLAYER SYSTEM

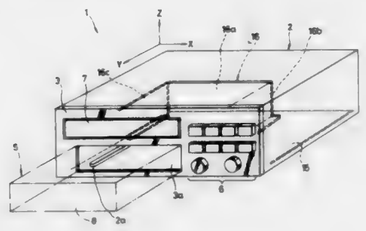
Yuji Ikeda; Tsutomu Miyakawa; Takahiro Okajima, and Masahiko Miyake, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 2, 1986, Ser. No. 914,219

Claims priority, application Japan, Oct. 2, 1985, 60-151041

Int. Cl.[4] G11B 17/28, 5/48

U.S. Cl. 369—34 **11 Claims**



1. A disk holder adapted to be inserted and fitted into a loading means of a disk player, and to supply a disk to said disk player in response to an operation thereof so as to perform playback of said disk, said disk holder comprising:

a housing for holding a plurality of disks;

a plurality of plate shape trays each loading a respective one of said disks on a disk loading face thereof, each of said trays being provided ejectable from and retractable in said housing in directions parallel to said disk loading face; and

flexible members projecting from a principal face of a first one of said trays opposite said disk loading face thereof and confronting said disk loading face of a neighboring one of said trays.

4,809,253

FOCUS CONTROL THROUGH DETECTION OF THE RATE OF ERROR IN DISCS WITH A CONTROL SIGNAL INVERSELY DEPENDENT ON THE ERROR RATE

Dieter Baus, Kehl, and Arthur Kurz, Marbach, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

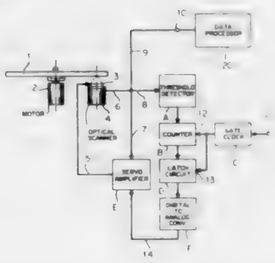
PCT No. PCT/EP86/00029, § 371 Date Sep. 22, 1986, § 102(e) Date Sep. 22, 1986, PCT Pub. No. WO86/04721, PCT Pub. Date Aug. 14, 1986

PCT Filed Jan. 24, 1986, Ser. No. 925,090

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1985, 3503983

Int. Cl.[4] G11B 7/09

U.S. Cl. 369—45 **4 Claims**



1. A focus controller for a device for rotating information disks with errors or defects in or on a substrate of said disks that are remotely scanned, comprising: a focus actuator having a coil controlled by a focus servo amplifier; an optical scanner with output signals for controlling said coil by said servo amplifier; said focus actuator being a component of said optical scanner; said optical scanner having an output composite signal comprised of a data signal and a servo signal; a data processor receiving said data signal and control circuit means receiving said servo signal; detecting and counting means for detecting the type, duration, and frequency of errors, for counting while errors are not detected and outputting a counted value for predetermined periods; digital to analog conversion means for converting digital values from said detecting and counting means into an analog constantly self-adjusting signal to control amplification of said servo amplifier and for causing said self-adjusting signal and thus amplification and focus coupling to be high when the rate of error is low and low when the rate of error is high; said counting means being dependent on criteria of different type, duration, and frequency of errors for said predetermined periods.

4,809,254

DEVICE WITH AN AUTOMATIC RETRACTION MECHANISM

Wilfried Scheffler, Donaueschingen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Jan. 7, 1988, Ser. No. 142,456

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1987, 3702887

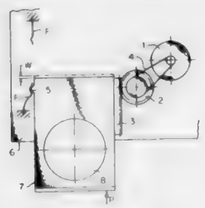
Int. Cl.[4] G11B 17/035

U.S. Cl. 369—75.2 **8 Claims**

1. An arrangement with automatic retraction means, comprising: a housing with a retraction opening: a motor with a rotor; linage means a slide-out compartment for transporting an article, said compartment being driven by said motor through said linkage means: said compartment being shiftable over a predetermined distance upon applying pressure to a front surface of said compartment, movement of said compart-

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ment through said predetermined distance rotating said rotor of said motor and generating an electromagnetic impulse;



control means recognizing said impulse as a start signal for applying voltage to said motor to move said compartment.

4,809,255

DEVICE FOR SECURING COMPACT DISKS ON UPRIGHT PLAYERS

Caspers Johannes, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

PCT No. PCT/EP86/00383, § 371 Date Mar. 2, 1987, § 102(e) Date Mar. 2, 1987, PCT Pub. No. WO87/00673, PCT Pub. Date Jan. 29, 1987

PCT Filed Jun. 28, 1986, Ser. No. 26,849

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1985, 3526370

Int. Cl.[4] G11B *25/04*

U.S. Cl. 369—270 7 Claims



1. An arrangement for securing a compact disk in an upright player, comprising: means for mounting said disk; means for preventing said disk from dropping out of its mounting place and having a pressure application lever and pressure application means; a turntable operating in conjunction with said pressure application lever and said pressure application means; a centering component on said turntable and having a beveled forward edge surrounded by a groove in front of said centering component; said groove having two walls slanting at different angles for holding said compact disk securely in said groove, said pressure application lever actuating said pressure application means for forcing said disk over the bevel of said forward edge and into a centering position free of damage to said disk.

4,809,256

OPTICAL DEMULTIPLEXER

David R. Smith, Woodbridge, and Raymond C. Hooper, Ipswich; both of England, assignors to British Telecommunications public limited company, United Kingdom

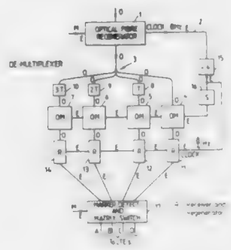
PCT No. PCT/GB86/00127, § 371 Date Dec. 11, 1986, § 102(e) Date Dec. 11, 1986, PCT Pub. No. WO86/05342, PCT Pub. Date Sep. 12, 1986

PCT Filed Mar. 6, 1986, Ser. No. 928,273

Claims priority, application United Kingdom, Mar. 7, 1985, 8505940; Apr. 18, 1985, 8509983; Apr. 18, 1985, 8509984

Int. Cl.[4] H04B *9/00*

U.S. Cl. 370—4 8 Claims



1. An optical demultiplexer for demultiplexing an n channel time division multiplexed optical input signal into n subsidiary optical signals, one corresponding to each of n channels comprising a clock signal generator for generating a clock signal with a frequency related to the bit rate of the optical input signal; n optical sampling devices; an optical splitter optically coupled with the optical sampling devices for feeding a portion of the optical input signal in parallel to each of the n sampling devices; and a control means responsive to the clock signal for regularly actuating each of the sampling devices to pass sample of the optical input signal comprising a respective one, only, of the subsidiary optical signals on a corresponding one of the n channels.

4,809,257

HIERARCHICAL DISTRIBUTED INFRARED COMMUNICATION SYSTEM

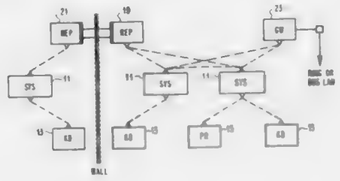
Dieter Gantenbein, Adliswil, Switzerland; Fritz R. Gfeller, Ossining, N.Y., and Eduard P. Mumprecht, Meilen, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1986, Ser. No. 844,436

Claims priority, application European Pat. Off., Apr. 2, 1985, 85 103928.9

Int. Cl.[4] H04B *9/00*

U.S. Cl. 370—4 17 Claims



1. System for interconnecting a plurality of data handling units by infrared signals over a common infrared communication channel, said units including a plurality of stations and associated I/O devices, each said unit comprising at least one infrared transceiver and accessing the common infrared communication channel only in dependence of carrier sense function, characterized in that

each said transceiver is assigned to one of a plurality of hierarchical categories according to its required distance range of coverage within said system, and each transceiver includes means for establishing its infrared transmitting power and/or receiving senaitivity at magnitude(s) uniquely corresponding to its hierarchical category.

4,809,258

CIRCUIT ARRANGEMENT FOR THE INDICATION OF LOOP CLOSURE DURING THE RINGING CONDITION

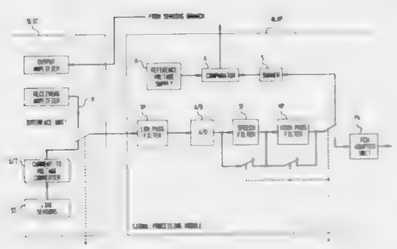
Robert Lechner, Otterfing, and Norbert Wingerath, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 19, 1986, Ser. No. 944,699

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1985, 3545358

Int. Cl.[4] H04Q *11/04*

U.S. Cl. 370—58 10 Claims



1. A circuit arrangement for indicating loop closure during a ringing condition in a subscriber termination line, said subscriber termination line being coupled to an exchange of a digital time multiplex telephone system by way of a subscriber line circuit including a subscriber line interface module providing service for, at least, a supply for ringing signal and signalling, said subscriber line circuit further including a signal processing module for providing, at least, analog to digital conversion, digital to analog conversion, signal comparison, signal summing and filtering, wherein said circuit arrangement further comprises:

switchover means coupled to said signal processing module and said subscriber termination line for applying a signal representative of line current in said subscriber termination line to said signal processing module in said ringing condition, in place of a speech signal present thereat during a speech condition, said signal representative of line current being subjected to analog to digital conversion for providing a digital signal and to filtering in like manner as is said speech signal during said speech condition but without high-pass filtering employed for said speech signal, said digital signal being summed over at least one period of said ringing signal for providing a sum signal, said sum signal being compared with a predetermined threshold level for providing a signal indicative of loop closure when said sum signal exceeds said threshold.

4,809,259

ARRANGEMENT FOR ESTABLISHING WIDE BAND CONNECTION IN A SWITCHING NETWORK

Stig R. E. Jönsson, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

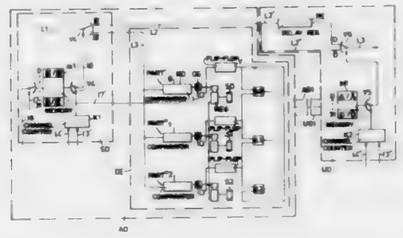
PCT No. PCT/SE86/00256, § 371 Date Feb. 18, 1987, § 102(e) Date Feb. 18, 1987, PCT Pub. No. WO86/07661, PCT Pub. Date Dec. 31, 1986

PCT Filed Jun. 2, 1986, Ser. No. 33,086

Claims priority, application Sweden, Jun. 20, 1985, 8503112

Int. Cl.[4] H04Q *11/04*

U.S. Cl. 370—58 7 Claims



1. Arrangement for establishing a wide band connection in a switching network (G) in telecommunication equipment operating with pulse code modulation and time division multi-plexing, where the connection comprises two or more channels, characterized in that a marking means (M) is disposed at the switching network input such that, during a connection establishment stage, the means achieves markings in a plurality of successive frames of the respective contents in the time slots utilized by the connection channels, and that the marking means (M) assigns to the content in each affected time slot in a first frame a first marking, the content in each affected time slot in a second frame a second marking, and so on, until the number of such successive frames is equal to a maximum time displacement in the switching network, this displacement corresponding to a number of frames plus a constant and that a scanning means (A0) is disposed at the output of the switching network, such that the scanning means detects a pattern formed by said markings and by means of said pattern confirms a possible delay between the respective contents of the channels, due to the connection process in the switching network, and in that the scanning means (A0) controls a means (U0), which equalises delays in the channels such as to ensure that, after the connection establishment stage, the contents of the channels/time slots regain their mutually synchronized positions, in spite of the possible, mutually delay.

4,809,260

TELEPHONE EXCHANGE

David M. Davidson, Codicote; John R. Bungard, London, and Robert Gatward, Woodford Green, all of England, assignors to STC PLC, London, England

Filed Jun. 8, 1987, Ser. No. 59,581

Claims priority, application United Kingdom, Jun. 13, 1986, 8614404

Int. Cl.[4] H04Q *11/04*

U.S. Cl. 370—58 9 Claims

1. An automatic telecommunication switching system in which connections are set up in time division multiplex (TDM) manner using pulse code modulation (PCM), in which;

the system includes group switching units (GSU's) each of which serves a group of system terminals such as subscribers' lines, tie lines and trunks to the remote exchange, and control means associated with each said GSU;

the system also includes a central control processor (CCP) coupled separately to control means of each said GSU and arranged to control the establishment of all calls through

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the system, and digital co-ordinate switching means associated with and under the control of the CCP;

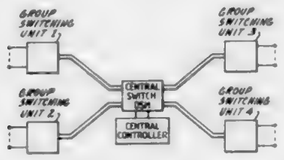
the system further includes digital links interconnecting the GSU's and said digital switching means in a star-like manner, said digital links also providing the physical media for the couplings between the CCP and the respective control means of said GSU's;

all connections through the system are set up under the control of the CCP and of the control means associated with the GSU or GSU's to which the terminals involved in the said connections are connected;

each said connection is set up via a said digital link from the GSU serving one of the terminals involved in that connection to the digital switching means and therefrom via one of said digital links to the GSU serving another one of the terminals involved in that connection, each one of said connections being set up via the digital switching means whether the said connection is an inter-GSU connection or an intra-GSU connection;

the digital links provide sufficient TDM slots to ensure that all of the subscribers served by the same GSU can be talking at once, so that the system is fully non-blocking; and

all signalling between different ones of the terminals of the system is controlled by the CCP and is conveyed over the same physical transmission path as is used for the conveyance of speech.



4,809,261

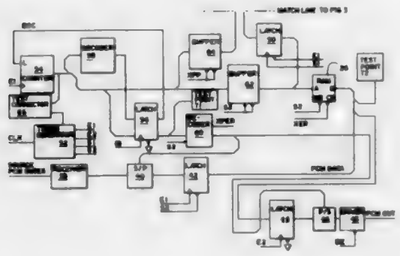
SPACE AND TIME SWITCH FOR 22 PCM HIGHWAYS

Reginald Ratcliff, Atlanta, Ga., assignor to Solid State Systems, Inc., Kennesaw, Ga.

Filed Jul. 10, 1987, Ser. No. 72,249

Int. Cl.[4] H04Q *11/04*

U.S. Cl. 370—59 **38 Claims**



23. A space and time switch, comprising:

input means for converting twenty-two incoming serial PCM data streams formed of frames of data into twenty-two 8-bit parallel streams and multiplexing said twenty-two parallel streams into one 8-bit parallel data stream;

control interface means for receiving commands in the form of twenty-four bits appearing as three bytes in three separate operations, storing said bytes until all three are ready and transferring said command bytes as a combination of address and data bits;

a speech RAM storing a complete frame of the data transferred within each time-slot;

a control RAM storing commands from said control interface means;

output means for receiving a multiplexed 8-bit parallel data stream from said speech RAM and converting said stream to a serial stream; and

state control means for influencing operation of said input means, control interface means, speech RAM, control RAM, and output means, said state control means controlling readout of the commands from said control RAM, said readout commands becoming addresses for said speech RAM.

4,809,262

METHOD OF MAKING CONFERENCE CALL CONNECTIONS IN COMPUTER-CONTROLLED DIGITAL TELEPHONE EXCHANGES

Reinhard Klose, and Jürgen Schröter, both of Berlin, Fed. Rep. of Germany, assignors to Deutsche Telephonwerke und Kabelindustrie AG, Berlin, Fed. Rep. of Germany

Filed Feb. 22, 1988, Ser. No. 158,574

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1987, 3706128

Int. Cl.[4] H04Q *11/04*

U.S. Cl. 370—62 **10 Claims**



1. In a method of making conference call connections in computer-controlled telephone exchanges, which includes combining voice signals of conference participants on a digital basis, forming a signal of a total of speaking levels of a given number of the most active participants, distributing the signal in an undamped manner, and suppressing voice signals of the inactive participants, the improvement which comprises:

distributing a bit stream of the conference participants reaching a conference assembly through an incoming line to m adding processors having n channels each, linearizing PCM words by means of a code table, storing the PCM words in level memories for each particular participant;

forming a total of the linear values, adding the total of the linear values to individual participant evaluation totals, and storing the total of the linear values in evaluation memories for each particular participant;

transmitting the participant evaluation totals to an evaluation processor which determines active channels by using a delayed average value of the participant levels and which transmits the active channels to the adding processors;

creating a conference total signal by adding linear values of all channels;

subtracting the individual linear value of the active participants, subsequently forming transmission signals for all channels in the adding processors by compressing the conference total signal;

storing the signals thus created in transmitting memories, and transmitting the signals through an outgoing line.

4,809,263

T-TYPE SWITCHING SYSTEM FOR BROADBAND SWITCHING SYSTEM AND TIME SWITCHING STAGE FOR USE IN A T-STAGE

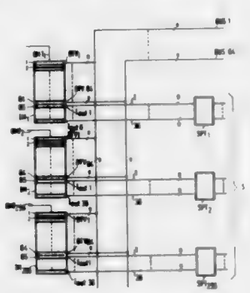
Johannes van Baardwijk, and Marinus A. Bos, both of Eindhoven, Netherlands, assignors to AT&T and Philips Telecommunications B.V., both of Hilversum, Netherlands

Filed Mar. 3, 1987, Ser. No. 21,320

Claims priority, application Netherlands, Mar. 10, 1986, 8600612

Int. Cl.[4] H04Q *11/04*

U.S. Cl. 370—66 **2 Claims**



1. A switching system of the T-type, comprising n parallelarranged time switching stages each comprising an information store having N addressable memory locations and an addressing arrangement connected thereto, the switching system being controlled by a time slot control, characterized in that the T-type switching system includes a p-fold bus line, that each bus line has one end connected during each time slot to an input of each of the information stores and its other end is connectable during each time slot to one of the p possible signal sources for distributing the p signals from all of the p signal sources to p inputs of all the n time switching stages, that the information store of each time switching stage has q further inputs for individually connecting a total of n×q further signal sources and that the time switching stages are each arranged for exchanging N_1 ($N_1 < N$) time slots.

4,809,264

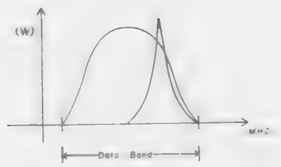
COLLISION SIGNAL DETECTION SYSTEM

Menachem Abraham, Lexington; Yoseph Linde, Needham, and Gordon C. Sanssy, Brighton, all of Mass., assignors to Chipcom Corporation, Mass.

Filed Aug. 7, 1987, Ser. No. 83,705

Int. Cl.[4] H04J *1/02*

U.S. Cl. 370—76 **13 Claims**



1. A collision signal detection system for shared-multi-user, frequency-division-multiplexed transmission media comprising:

a plurality of stations connected to the shared, multi-user, frequency-division-multiplexer transmission media, receiving and transmitting signals including data signals within a databand;

collision signal means associated with each of said plurality of stations for sending a collision enforcement signal from one of said plurality of stations to the other ones of the plurality of stations after a data collision has been detected at said one of said plurality of stations, said collision enforcement signals having a frequency within the data band;

signal detection means associated with at least one of said plurality of stations for receiving an input signal and for detecting said collision enforcement signal.

4,809,265

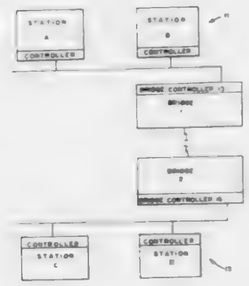
METHOD AND APPARATUS FOR INTERFACING TO A LOCAL AREA NETWORK

John H. Hart, San Jose, and Frederick J. Baker, Santa Clara, both of Calif., assignors to Vitalink Communications Corporation, Fremont, Calif.

Filed May 1, 1987, Ser. No. 44,964

Int. Cl.[4] H04J *3/02*

U.S. Cl. 370—85 **6 Claims**



1. A controller for a bridge of the kind which interconnects two or more local area networks and which operates in a promiscuous receive and transmit mode to receive station data frames with appended frame check sums from stations in one local area network and to transmit the station data frames and appended frame check sums to one or more stations in another local area network while essentially passing the existing, appended frame check sums through the bridge without change and which also operates in a bridge management mode to receive requests for information from stations in a local area network and to respond to the requests by generating management data frames from an associated memory and by computing and appending frame check sums to the generated management data frames and by then transmitting the generated management data frames and appended frame check sums to the stations which requested the information, said controller comprising,

bridge interface means for interfacing the controller with an associated bridge,

local area network interface means for associating the controller with an associated local area network,

first circuit means and second circuit means operatively associated with the bridge interface means and the local area network interface means,

said first circuit means comprising a circuit which can be reprogrammed and which is effective to transmit both the station data frames which have existing appended frame

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check sums and the management data frames which have the computed appended frame check sums,

said second circuit means comprising a circuit which is not reprogrammable and which is effective to receive all station data frames and existing appended frame check sums so that the controller for the bridge is always in a state in which the controller can receive information and all station data frames transmitted from stations to the bridge are received by the bridge without interruption or loss of any such station data frames and

programming means for programming the first circuit means in the promiscuous mode to retransmit station data frames with the existing prepended frame check sum and in the management mode to append the computed frame check sum before transmitting the frame.

4,809,266

TIME-DIVISION MULTIPLEX TRANSMISSION NETWORK SYSTEM FOR AN AUTOMOBILE VEHICLE

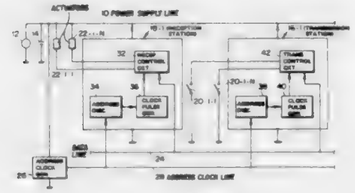
Kazuyoshi Okada, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Feb. 27, 1986, Ser. No. 833,606

Claims priority, application Japan, Mar. 14, 1985, 60-50856

Int. Cl.⁴ H04J *3/02*

U.S. Cl. 370—85 **9 Claims**



1. A network system, comprising:

(a) a plurality of data transmission and reception stations each interconnected via a common data transmission line and via an address clock line; and

(b) first means for generating and outputting via the address clock line to each of said data transmission and reception stations a series of information identifying a pair of data stations between which data is communicated in a time-division multiplex transmission mode;

each of said data transmission stations including; (c) second means, responsive to the information from said first means, for determining whether a stored information identifying the data transmission station itself coincides with the information outputted from said first means via the address clock line; (d) third means for generating and outputting an activation command responsive to a determination by said second means that the data transmission station identifying information accords with the information outputted from said first means; and (e) fourth means responsive to the activation command of said third means for starting the transmission of the data on the common data transmission line, thereby enabling transmission of said data on the data transmission line in response to said second means.

4,809,267

PACKET DATA COMMUNICATION SYSTEM WITH RING TYPE TRANSMISSION LINE

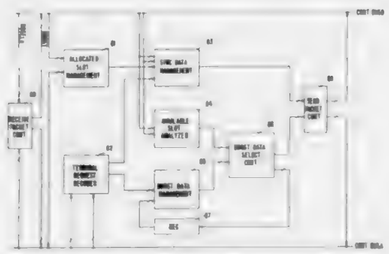
Masahiro Higuchi, Kawasaki; Haruki Fukuda, Tokyo; Kenshi Tazaki, Kashiwa; Masahiro Matsuda, and Tomohiko Awazu, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 29, 1987, Ser. No. 67,231

Claims priority, application Japan, Jun. 27, 1986, 61-150775; Sep. 12, 1986, 61-216468; Jan. 7, 1987, 62-001412

Int. Cl.⁴ H04J *3/02*

U.S. Cl. 370—86 **16 Claims**



1. A packet data communication system, comprising:

a ring-type transmission line for circulating frames, each frame including a frame header and a predetermined number of slots in which packets to be transmitted are loaded, the slots having a predetermined order of priority; and

a plurality of interface nodes, provided on said ring-type transmission line, for loading the packets in the slots and for receiving the packets from the slots, each of said interface nodes including

a predetermined number of sub-transmission lines for passing each of the slots in one of the frames in parallel through said interface node,

terminal interfaces, each having a plurality of sending buffers for sequentially storing the packets to be transmitted in a transmission sequence using different ones of the sending buffers for adjacent packets and a plurality of receiving buffers for storing the packets to be received,

packet processing means for detecting whether the slots on any of said sub-transmission lines are available and for detecting the addreases of the packets in unavailable slots,

synchronization means for synchronizing the frames using information in the frame header and for supplying a plurality of timing signals to said packet processing means,

switch means for connecting each of the sending buffers and the receiving buffers to any one of said sub-transmission lines, said packet processing means controlling said switch means to connect the sending buffer containing a next packet, as determined by the transmission order, to a transmissible one of said sub-transmission lines selected in the predetermined order of priority and containing an available slot, whereby a group of the packets forming a message may be transmitted simultaneously from a single interface node, while maintaining the transmission sequence of the group of the packets.

4,809,268

MULTIPOINT DATA COMMUNICATION WITH A SUPERVISORY SYSTEM FOR DETECTING A MALFUNCTIONING REMOTE STATION

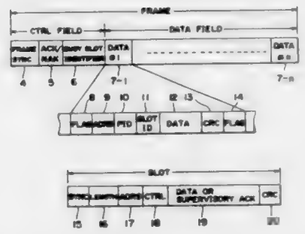
Shuuichiro Tejima, and Akira Fujii, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Sep. 28, 1987, Ser. No. 101,727

Claims priority, application Japan, Sep. 30, 1986, 61-233062

Int. Cl.⁴ H04J *3/24, 3/16*

U.S. Cl. 370—93 **3 Claims**



1. A random access multipoint data communication system having a central station, a plurality of remote stations, and means for establishing a multiple access channel from each of said remote stations to said central station and a broadcast channel from said central station to said remote stations,

said central station comprising:

means for transmitting a timing signal to said remote stations via said broadcast channel;

means for transmitting a status signal indicating time slot idle-busy status to said remote stations via said broadcast channel;

means for sequentially transmitting on said broadcast channel to each of said remote stations a polling signal which is repeated at periodic intervals to request a polled remote station to return an acknowledgment signal on said multiple access channel, said polling signal specifying a time slot in said multiple access channel; and

means responsive to said acknowledgment signal for determining the presence or absence of a trouble in said polled station;

each of said remote stations comprising:

means responsive to said timing signal for defining a plurality of commonly shared time slots in said multiple access channel;

means for detecting said status signal to randomly select an idle time slot from among the time slots indicated by the detected status signal and for transmitting a message signal on said selected idle time slot; and

means for transmitting said acknowledgment signal in response to a receipt of said polling signal on a time slot of said multiple access channel specified by said polling signal.

4,809,269

DUAL-PORT TIMING CONTROLLER

Dale E. Gulick, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 2, 1987, Ser. No. 35,687

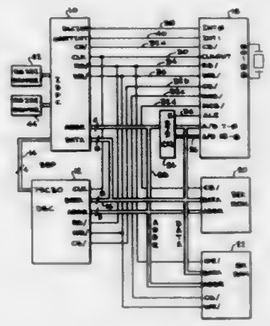
Int. Cl.⁴ H04J *3/24*

U.S. Cl. 370—94 **2 Claims**

1. A dual-port timing controller (DPTC) connected to a source of clock signals receiving control signals from a local processor including a local data transmit/receive (LDT-R) signal and a local processor access request (LREQ) signal and control signals from a host processor including a host data transmit/receive (HDT-R) signal and a host processor access request (HREQ) signal and generating signals to a shared random access memory (RAM) (**22***a*) and to arbitration means (**502, 504, 506, 508, 510, 512**) responsive to a plurality of arbitration control signals, for arbitrating and establishing read/-write access to said shared RAM by said local and said hot processor, said DPTC providing said read/write access to said shared RAM by said local and said host processor, said DPTC comprising:

means (**520**) connected to said source of clock signals for synchronizing said host request signal to said clock signals and generating a synchronous host request signal;

means (**522**) connected to said source of clock signals responsive to said local request signal and said synchronous host request signal for generating a host memory cycle timing (HCYCLE) signal and a local memory cycle tim-



ing (LCYCLE) signal, and a memory access enable (GO) signal, therefrom, implementing predetermined cycle arbitration procedures;

means (**524**) connected to said source of clock signals receiving said LDT-R and HDT-R signals for generating a plurality of control signals conducted to said shared RAM and generating a memory access disable (STOP) signal; and

means (**526, 528, 530, 532**) connected to said source of clock signals receiving said LCYCLE and HCYCLE signals, said STOP signal and said HDT-R signal for generating a plurality of control signals to said arbitration means.

4,809,270

VARIABLE TIME SLOT COMMUNICATION SYSTEM

Leslie A. Baxter, Eatontown, and Paul R. Berkowitz, Red Bank, both of N.J., assignors to AT&T Information Systems Inc. American Telephone and Telegraph Company, Murray Hill, N.J.

Continuation of Ser. No. 685,247, Dec. 21, 1984, abandoned.

This application Feb. 11, 1988, Ser. No. 150,489

Int. Cl.⁴ H04J *3/16*

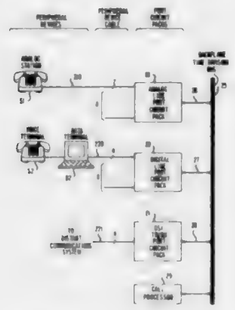
U.S. Cl. 370—95 **14 Claims**

1. A communication system having a plurality of port circuits, each such port circuit controlling communications to and from at least one communication device, said system comprising

a time division network common to all of said port circuits for moving bytes of data between any of said port circuits, and

means for dynamically assigning to any of said port circuits a plurality of time slots in at least one frame for the interchange of data bytes between any of said port circuits, the assigned plurality of time slots for one of said plurality of port circuits and for at least one other one of said plurality of port circuits being identical in that data bytes transmit-

ted in assigned time slots from said one of said plurality of port circuits are simultaneously received in the assigned



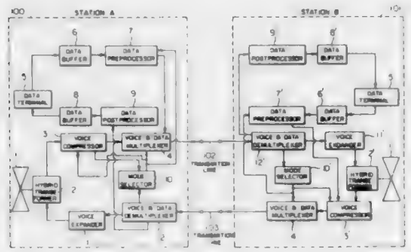
time slots in which they were transmitted by said at least one other one of said plurality of port circuits.

4,809,271

VOICE AND DATA MULTIPLEXER SYSTEM

Kazuhiro Kondo, Kokubunji; Toshiro Suzuki, Tama, and Takanori Miyamoto, Fuchu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 13, 1987, Ser. No. 119,924
Claims priority, application Japan, Nov. 14, 1986, 61-209660
Int. Cl.⁴ H04J *3/12*
U.S. Cl. 370—110.1 **6 Claims**



1. A system in which two stations are respectively provided with telephones and data terminal means such that a voice and data are multiplexed for communication between said two stations, each said station comprising:

means for converting voice signals inputted from said telephone into a plurality of kinds of predetermined voice parameters;

means connected to said converting means for outputting a signal representing a transmission mode determined on the basis of a predetermined parameter of said voice signals;

means for extracting from data to be transmitted from said data terminal data having a length according to said transmission mode signal;

means connected to said converting means for selecting at least one of said plurality of voice parameters according to said transmission mode signal; and

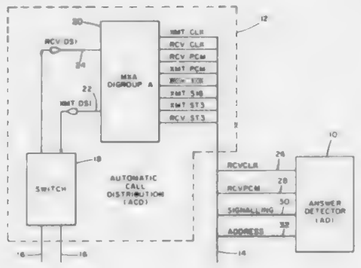
means connected to said extracting means and said selecting means for editing a mode indicator indicating said transmission mode, the selected voice parameter, and the extracted data into a transmission block format accordion to said transmission mode signal.

4,809,272

TELEPHONE SWITCHING SYSTEM WITH VOICE DETECTION AND ANSWER SUPERVISION

Willard J. Torgrim, Batavia, and Robert M. Zaranski, Woodridge, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 22, 1986, Ser. No. 909,549
Int. Cl.⁴ G06G *7/19;* **H04M** *3/00*
U.S. Cl. 370—110.3 **10 Claims**



1. An answer detector for use with an automatic call distribution system having a bus with at least first and second control signals, address signals, PCM data stream and clock signal comprising:

input signal means for receiving said first and second control signals, said input signal means connected to said bus;

address decode means for decoding said address signals, said address decode means connected to said bus;

data convert means for converting said PCM data stream from a serial format to a parallel format, said data convert means connected to said bus;

processor means for monitoring said PCM data stream, said processor means operatively connected to said input signal means, to said address decode means and to said data convert means, said processor means outputting a code signal indicative of tones and voice energy in said PCM data stream, said processor means responsive to said first and second control signals and utilizing said address signals to monitor said PCM data stream;

output signal means for transmitting at least first and second response signals to said automatic call distribution system, said output signal means connected to at least said processor means and to said bus.

4,809,273

DEVICE FOR VERIFYING OPERATION OF A CHECKING CODE GENERATOR

Stefan P. Jackowski, and Ronald B. Jenkins, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1987, Ser. No. 8,505
Int. Cl.⁴ G06F *11/12*
U.S. Cl. 371—3 **11 Claims**

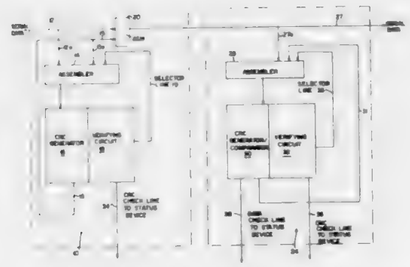
1. In a system for transmitting data from one functional unit to another functional unit, an apparatus for ensuring accurate transmission of said data comprising:

a checking code generator at said one functional unit for generating a checking code from said data for appending to said data for transmission with said data to said another functional unit;

a first assembler means at said one unit for appending said checking code to said data;

a second assembler means at said one unit for receiving said data and said checking code and applying either of said data or checking code to said checking code generator as an input signal; and,

a verifying circuit connected to sequentially enable said second assembler to apply said data and checking code to said checking code generator, and to generate a status



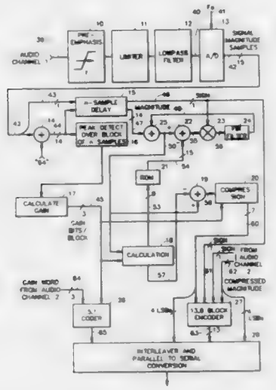
signal indicating whether said checking code generator, when receiving a checking code as an input, produces a predetermined checking code.

4,809,274

DIGITAL AUDIO COMPANDING AND ERROR CONDITIONING

Gordon K. Walker, Carlsbad; Ron D. Katznelson, San Diego; Paul Moroney, Cardiff-by-the-Sea, and Karl E. Moerder, Poway, all of Calif., assignors to M/A-COM Government Systems, Inc. and Cable/Home Communication Corporation, both of San Diego, Calif.

Continuation-in-part of Ser. No. 909,776, Sep. 19, 1986, abandoned. This application Sep. 4, 1987, Ser. No. 91,911
Int. Cl.⁴ G06F *11/10;* **H23M** *13/22*
U.S. Cl. 371—37 **15 Claims**



15. A system for processing audio signals, comprising

means for providing a gain word for a block of first digital audio signal samples by detecting the peak first digital audio signal sample magnitude within a block of a predetermined number of first digital audio signal samples, and computing the gain word for said block of samples in accordance with the position of the most significant "1" bit in the first digital audio signal sample(s) having the detected peak magnitude;

means for processing each said first digital audio signal sample of said block with said gain word in accordance with a first predetermined process to compress said first digital audio signal samples;

means for processing the gain word and the compressed first digital audio signal samples in accordance with a second predetermine process to provide reproduced digital audio signal samples;

means for calculating the effect of using a single gain word for said block of samples upon the accuracy of each reproduced digital audio signal sample; and

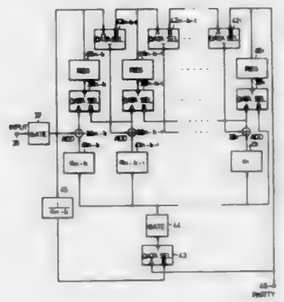
means for processing the first digital audio signal samples in accordance with said calculated effect to correct each digital audio signal sample for said compression in accordance with said first predetermined process.

4,809,275

PARITY SIGNAL GENERATING CIRCUIT

Yasuo Inoue, Kawasaki, and Yasuhiro Yamada, Fuusa, both of Japan, assignors to Victor Company of Japan Ltd., Yokohama, Japan

Filed Jan. 21, 1987, Ser. No. 5,744
Claims priority, application Japan, Feb. 4, 1986, 61-22616
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—37 **6 Claims**



1. A parity signal generating circuit for generating parity signals $P_{i+1}, \ldots, P_{j-1}$ of a Reed Solomon code described by a row matrix $W_0=(D_1, D_2, \ldots, D_k P_{i+1}, \ldots, P_{j-1}, D_j \ldots, D_n)$ where D_1 through D_i and D_j through D_n denotes k m-bit data and P_{i+1} through P_{j-1} denote $(n-k)$ m-bit parity signals, $n-k=j-i-1$, $2^m-1 \geqq n$ and $n>j>i$, where i, j, n, k and m are positive integers, said parity signals of said Reed Solomon code being used for detecting and correcting errors in said data of said Reed Solomon code, said parity signal generating circuit comprising:

gate means supplied with an input signal for successively producing n elements $D_1, D_2, \ldots, D_i, 0, \ldots, 0, D_j \ldots, D_n$ in this sequence;

a first adder supplied with the element $D_1, D_2, \ldots, D_i, 0, \ldots, 0, D_j \ldots, D_n$ successively from said gate means;

second through $(n-k)$th adders;

first through $(n-k)$th registers supplied with output signals of said first through $(n-k)$th adders;

switching means assuming one of first and second switching states for switching input and output signals of said first through $(n-k)$th registers;

first through $(n-k-1)$th multipliers coupled to input sides of said second through $(n-k)$th adders, respectively;

a $(n-k)$th multiplier coupled to an input side of said first adder; and

a $(n-k+1)$th multiplier coupled to an output side of said first register,

said switching means in said first switching state supplying the output signal of said $(n-K)$th register to each of said second through $(n-K)$th adders via corresponding ones of said first through $(n-k-1)$th multipliers so that said second through $(n-k)$th adders respectively add the output signals of said first through $(n-k-1)$th registers and output signals of said corresponding ones of said first through $(n-k-1)$th multipliers and supplying the output

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signal of said (n−k)th register to said first adder via said (n−k)th multiplier so that said first adder adds one of the elements $D_1, D_2, \ldots, D_i, 0, \ldots, 0, D_j, \ldots, D_n$ and an output signal of said (n−k)th multiplier, said first through (n−k)th adders supplying added signals to said first through (n−k)th registers, respectively, said first through (n−k)th adders, said first through (n−k)th registers, said switching means in said first switching state and said first through (n−k+1) th multipliers carrying out a dividing step by a parity generating polynomial G(x) each time one of the elements $D_1, D_2, \ldots, D_n, 0, \ldots, 0, D_j, \ldots, D_n$ is supplied to said first adder, said parity generating polynomial G(x) being described by

$$\begin{aligned} G(x) &= (x-1)\cdot(x-\alpha)\cdot\ldots\cdot(x-\alpha^{n-k-1}) \\ &= x^{n-k} + a_1\cdot x^{n-k-1} + a_2\cdot x^{n-k-2} + \ldots + \\ &\quad a_{n-k-1}\cdot x + a_{n-k}, \end{aligned}$$

where α is a primitive element of Galois Field $GF(2^m)$ and a_1 through a_{n-k} are constants, a divided result of the dividing step by said parity generating polynomial G(x) being obtained as values in said first through (n−k)th registers,

said switching means assuming said second switching state after the dividing step by said parity generating polynomial G(x) is carried out n times,

said switching means in said second state supplying the output signal of said first register to each of said first through (n−k−1)th multipliers and to said (n−k)th register via said (n−k+1)th multiplier so that said second through (n−k)th adders add the output signals of said first through (n−k−1)th multipliers and said second through (n−k)th register and added signals from said second through (n−k)th adders are respectively supplied to said first through (n−k−1)th registers, said first through (n−k)th adders, said first through (n−k)th registers, said switching means in said second switching state and said first through (n−k+1)th multipliers carrying out a dividing step by a reciprocal polynomial $G^*(x)$ of said parity generating polynomial G(x) with respect to the values in said first through (n−K)th registers, where said reciprocal polynomial $G^*(x)$ is

$$G^*(x) = a_{n-k}x^{n-k} + a_{n-k-1}x^{n-k-1} + \ldots + a_1x + 1,$$

a divided result of the dividing step by said reciprocal polynomial $G^*(x)$ being obtained as new values in said first through (n−K) registers,

the parity signals $P_{i+1}, \ldots, P_{j-1}$ being obtained in said first through (n−k)th registers after the dividing step by said reciprocal polynomial $G^*(x)$ is carried out (n−j+1) times.

4,809,276

MEMORY FAILURE DETECTION APPARATUS

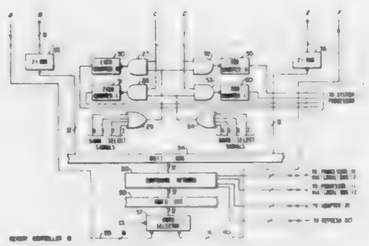
Richard A. Lemay, Carlisle, and David A. Wallace, Chelmsford, both of Mass., assignors to Hutton/FBC Technology Partners I and Honeywell Bull Inc., both of Minneapolis, Minn.

Filed Feb. 27, 1987, Ser. No. 19,908
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—38 **5 Claims**

1. Apparatus for identifying a defective portion of a memory comprising a plurality of separately replaceable memory boards organized so that first and second memory boards function with a first error correction circuit, wherein third and fourth memory boards function with a second error correction circuit, wherein both said error correction circuits correct and provide an indication of correctable memory errors from their associated memory boards, and wherein board selection apparatus generates signals to select a board of said memory during addressing, said apparatus comprising:

first logic means receiving a first signal from said first error correction circuit indicating a correctable memory error from reading said first and said second memory boards, said first logic means also receiving a second signal from said board selection apparatus indicating that said first or said second memory boards have been selected and upon the concurrence of said first signal and said second signal said first logic means provides separate indications of which of said first of said second memory boards has failed;

second logic means receiving a third signal from said second error correction circuit indicating a correctable memory error from reading said third and said fourth memory error from reading said third and said fourth memory boards, said second logic means also receiving a fourth signal from said board selection apparatus indicating that said third or said fourth memory boards have been selected and upon the concurrence of said third signal and



said fourth signal said second logic means provides separate indications of which of said third or said fourth memory boards has failed;

a first counter connected to the output of said first logic means and counting the number of times that said first logic means determines that there is a failure of said first memory board,

a second counter connected to the output of said first logic means and counting the number of times that said first logic means determines that there is a failure of said second memory board,

a third counter connected to the output of said second logic means and counting the number of times that said second logic means determines that there is a failure of said third memory board, and

a fourth counter connected to the output of said second logic means and counting the number of times that said second logic means determines that there is a failure of said fourth memory board,

said first, second, third and fourth counters being external to all of said memory boards.

4,809,277

CONVOLUTIONAL ENCODER

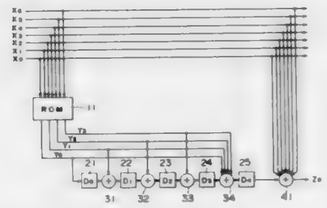
Mitsuharu Yano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 13, 1987, Ser. No. 106,681
Claims priority, application Japan, Oct. 14, 1986, 61-242036
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—43 **2 Claims**

1. An encoding apparatus comprising:

converter means for converting a k-bit input to an m-bit output, said k-bit input belonging to one of 2^m subsets of a set of 2^k elements, said m-bit output representing said one of 2^m subsets, each of said subsets having 2^{k-m} elements, the minimum Hamming distance between any of said 2

$^{k-m}$ elements being equal to or greater than a Hamming distance to be achieved, where m is smaller than k; and



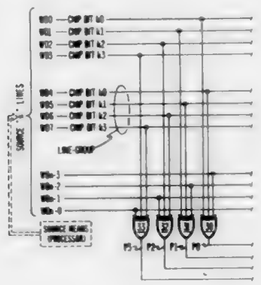
a convolutional encoder having the last-mentioned Hamming distance and responsive to said k-bit input and said m-bit output for generating an (n-k)-bit output, where n is greater than k.

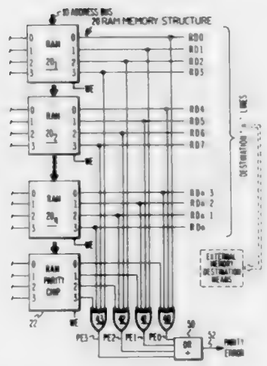
4,809,278

SPECIALIZED PARITY DETECTION SYSTEM FOR WIDE MEMORY STRUCTURE

Dongsung R. Kim, Laguna Hills, and Reinhard K. Kronies, Fountain Valley, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Apr. 21, 1986, Ser. No. 854,232
The portion of the term of this patent subsequent to Dec. 1, 2004, has been disclaimed.
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—51 **7 Claims**





1. A parity checking system for checking reliability of data transfers of data stored in and read out of a wide random access memory structure where a data transfer bus has "n" data bit lines organized in line-groups of "k" lines and each group of "k" lines is serviced by a single multiple width memory chip, the combination comprising:

(a) said data transfer bus having "n" data bit lines for transferring data from a source means to a destination means and including:

(a1) a series of "q" line-groups wherein each line-group is composed of "k" consecutive bit lines;

(b) a plurality of "q" multiple width RAM memory chips forming said wide memory structure, and connected to receive and store data bits from said source means, where "q" =n/k and wherein "k" represents the number of data bit lines in said line-group connected to each memory chip, where "k" is also a submultiple of "n", and each of said plurality of "q" memory chips being connected to receive a consecutive series of "k" data bit lines from each of said line-groups of said transfer bus for subsequent readout on corresponding data bit output lines for transfer to a destination means, and wherein each of said memory chips has "k" data bit input lines for receiving data bits for storage in each particularly addressed memory location, and each consecutive data bit input line to each memory chip is designated as k_0, k_1, k_2—k_x so that each of said memory chips has an input data bit line which corresponds to a co-related input data bit line on each other of said memory chips;

(c) first sense means, connected to said source means, for sensing each of said data bits on each said corresponding input line on each of said "q" memory chips to provide a first set of "k" resultant parity bits for temporary storage in an auxiliary RAM parity chip;

(d) second sense means, connected to said destination means, for sensing each of said data bits on each said corresponding output bit line of each of said "q" memory chips to constitute a second set of "k" resultant bits as input to said second sense means, said second sense means including:

(d1) checking means for comparing said first set of "k" resultant parity bits and said second set of "k" resultant bits for providing a third set of "k" output lines to a thrid sense means;

(e) an auxiliary RAM parity memory chip which duplicates the width and address location of each of said plurality of memory chips and is operated as a parity storage chip on each write-read cycle for temporary storage of said first set of "k" resultant parity bits which are representative of input data to each address location of said wide memory structure, said RAM parity memory chip having "k" input lines for receivng said first set of "k" resultant parity bits from said first sense means;

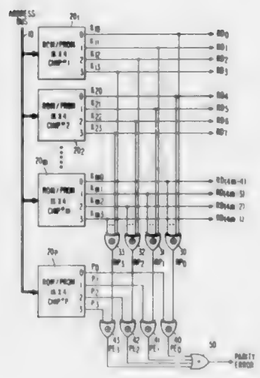
(f) third sense means for receiving said third set of "k" output lines to determine coincidence or non-coincidence of said first set of "k" resultant parity bits and said second set of "k" resultant bits;

(g) said source means for generating a multiple number "k" of data bits, each bit on one of "k" bit lines, for writing into said wide memory structure;

(h) said destination means for receiving "k" data bits read out of said wide memory structure on "k" output bit lines.

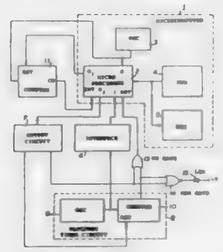
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4,809,279
ENHANCED PARITY DETECTION FOR WIDE ROM/PROM MEMORY STRUCTURE
Dongwung R. Kim, Laguna Hills, and Reinhard K. Kronies, Fountain Valley, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.
Filed Sep. 8, 1986, Ser. No. 904,443
The portion of the term of this patent subsequent to Dec. 1, 2004, has been disclaimed.
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—51 12 Claims



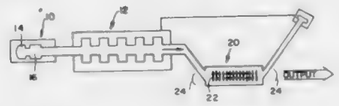
1. A parity checking system for checking the integrity of data transferred into and read out of a ROM/PROM memory structure, the combination comprising:
(a) a wide memory structure having a plurality of paralleled ROM/PROM memory chips wherein each of said memory chips is connected to an address bus for receiving addresses to a specific location in each memory chip and each memory chip includes:
(a1) "k" output lines for read-out of data from said addressed specific location where "k" represents the width in bits of each ROM/PROM memory chip;
(b) said address bus, connected to each one of said paralleled ROM/PROM memory chips, for addressing the same location in each of said memory chips;
(c) an auxiliary ROM/PROM parity memory chip connected to said address bus and holding parity information at each addressed location, said parity memory chip including
(c1) "k" parity output lines connected to a second gating means for transmitting "k" parity output signals;
(d) a first gating means for providing "k" summation output signals, each of which sum the bit values of each of the corresponding output lines from each of said memory chips;
(e) said second gating means for providing "k" parity error output signals by comparing each of said "k" summation output signals with each of said respective "k" parity output signals.

4,809,280
MICROCOMPUTER SYSTEM WITH WATCHDOG TIMER
Hisashi Shosaka, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan
Continuation of Ser. No. 743,658, Jun. 11, 1985, abandoned.
This application Dec. 17, 1987, Ser. No. 136,442
Claims priority, application Japan, Jun. 12, 1984, 59-120583
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—62 2 Claims



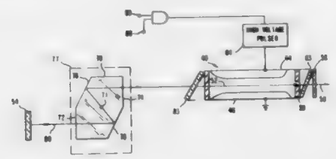
1. A microcomputer system, comprising:
(a) an abnormal state display means,
(b) a microcomputer comprising:
(i) a microprocessor means, and
(ii) a system clock means for producing system clock signals,
(c) a watchdog timer circuit external to the microcomputer comprising:
(i) a timer clock, different from said system clock means, for producing timer clock signals,
(ii) a counter means for receiving and counting said timer clock signals, and upon reaching a first predetermined count indicating passage of a first time interval since reset of said watchdog timer circuit, causing forcible reset of said microprocessor means,
(d) a timer circuit means including a counter receiving and counting said system clock signals, and upon reaching a second predetermined count indicating passage of a second time interval since reset of said timer circuit means, causing one of (i) forcible resetting of said microprocessor means and (ii) activation of said abnormal state display means,
(e) said microprocessor means comprising means for:
(i) detecting, in cooperation with said timer circuit means, whether an abnormal condition exists in said watchdog timer circuit and generating an abnormal condition signal in response to a detection of an abnormal condition,
(ii) causing a reset output signal to be supplied to said counter means of said watchdog timer circuit prior to said counter means reaching said first predetermined count, unless a said abnormal condition signal has been generated,
(iii) in response to occurrence of each of said timer clock signals of said watchdog timer circuit, supplying repeated reset output signals to said counter of said timer circuit means to reset said timer circuit means to prevent its counter from reaching said second predetermined count, and
(iv) stopping supplying of said repeated reset output signal to said counter of said timer circuit means in response to detection of said abnormal condition existing in said watchdog timer circuit, said counter of said timer circuit means reaching said second predetermined count in an absence of receipt of one of said repeated reset output signals during said second time interval.

4,809,281
FREE-ELECTRON LASER
George R. Neil, San Pedro, and John A. Edighoffer, Palo Alto, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.
Filed Jul. 5, 1985, Ser. No. 752,286
Int. Cl.[4] H01S *3/00*
U.S. Cl. 372—2 9 Claims



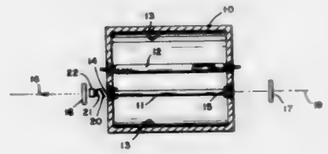
1. A free-electron laser modified for operation at a shorter wavelength than its fundamental, without a corresponding increase in electron energy, the laser comprising:
a free-electron laser cavity;
means for generating a high-energy beam of electrons, including means for accelerating the electrons in controlled bunches and introducing the electron beam into the laser cavity;
a wiggler magnetic field generator, providing a magnetic field transverse to the electron beam in the laser cavity and varying periodically in field strength along the direction of the beam, to interact with the beam and produce spontaneous emission of light; and
opposed optical mirror means, responsive to the fundamental wavelength and to a selected harmonic wavelength;
whereby lasing is initiated at the fundamental wavelength, but is also sustained at the selected harmonic wavelength.

4,809,282
CRITICAL ANGLE ROTATING PRISM Q-SWITCH
Donald R. Dewhirst, Torrance, Calif., assignor to Hughes Aircraft Co., Los Angeles, Calif.
Continuation of Ser. No. 646,884, Sep. 4, 1984, abandoned. This application Nov. 2, 1987, Ser. No. 125,801
Int. Cl.[4] H01S *3/11*
U.S. Cl. 372—16 4 Claims



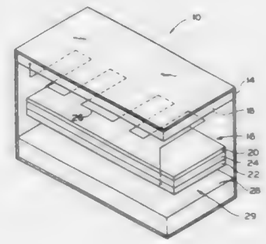
1. Apparatus for controlling the output of a pulse laser device comprising:
a laser device having an active medium and means for exciting said medium for producing a laser output, a prism Q-switch and means for rotating said prism, and first and second resonator mirrors,
said active medium and said prism being interposed between said first and second mirrors,
said first and second resonator mirrors having an arrangement which defines an optical path through said active medium and through said prism, said mirrors further being aligned optically parallel to one another with respect to said optical path, and
said prism having at least one internal reflecting surface upon which said optical path is reflected at the critical angle once for each revolution of the prism, for enabling the optical loss associated with said internal reflection to be changed when the internal reflection is swept through the critical angle.

4,809,283
METHOD OF MANUFACTURING CHROMIUM-DOPED BERYLLIUM ALUMINATE LASER ROD AND LASERS INCORPORATING THE RODS THEREIN
Donald J. Harter, Berkeley Hts., N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Feb. 26, 1988, Ser. No. 160,737
Int. Cl.[4] H01S *3/16*
U.S. Cl. 372—41 20 Claims



1. In a method of making solid state laser rods for use in a solid state laser, the method comprising the steps of preparing a single crystal of beryllium aluminate having a chromium doping concentration effective to permit lasing of said crystal, said crystal being prepared by the Czochralski technique from stoichiometric melt, and thereafter core drilling and grinding said crystal into a laser rod, the improvement wherein said rod is further treated by heating in a furnace at a temperature, within the range of about 800° C. to about 1500° C. to release stress induced on its crystal structure by grinding whereby the wavefront distortion of a light beam propagating throughout the rod is reduced.

4,809,284
RF TRANSFORMER AND DIAGNOSTIC TECHNIQUE THEREFOR
Peter P. Chezansky, 151 Deercliff Rd., Avon, Conn. 06001
Continuation-in-part of Ser. No. 728,744, Apr. 30, 1985, Pat. No. 4,751,717. This application Mar. 22, 1988, Ser. No. 171,679
Int. Cl.[4] H01P *5/00*
U.S. Cl. 333—24 R 21 Claims



1. A transformer for use at frequencies in the RF range comprising:
first conductor means, said first conductor means having a planar electrically conductive surface portion and being electrically grounded;
second conductor means, said second conductor means having a planar electrically conductive surface portion, said second conductor means planar portion being specially displaced from said first conductor means planar portion, said first and second conductor means planar

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surface portions cooperating to define therebetween an interior capacitance C_x, said second conductor means also at least in part defining an exterior capacitance C_L to ground;

third conductor means, said third conductor means having a planar electrically conductive surface portion;

means supporting said third conductor means such that the planar surface portion thereof is intermediate the planar surface portions of said first and second conductor means whereby said third conductor means divides said capacitance C_x into a pair of capacitances C_A and C_B;

at least a first inductive element connected between a pair of said conductor means;

means for applying a RF voltage between said first and third conductor means, the frequency of said RF voltage being chosen to provide a minimum voltage standing wave ratio; and

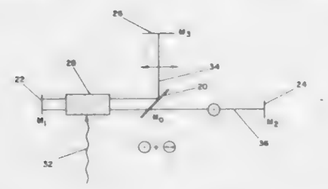
means for coupling a load to said transformer means, said coupling means being connected between said second conductor means and ground.

4,809,285

CORRELATED EMISSION LASER

Marlan O. Scully, Estancia, N. Mex., assignor to University of New Mexico, Albuquerque, N. Mex.

Filed Dec. 15, 1986, Ser. No. 942,498
Int. Cl.[4] H01S 3/00
U.S. Cl. 372—33 **10 Claims**



1. A method for correlating spontaneous emissions in active laser systems comprising the steps of:

exciting atoms in a single lasing medium in at least two laser fields from a low atomic state into a coherent superposition of upper atomic states, wherein random noise is created by spontaneous emissions by some of the excited atoms within each of the laser fields; and

correlating relative phase differences between the spontaneous emissions among the excited atoms within different laser fields to quench the noise created by the spontaneous emissions.

4,809,286

LASER DRIVER CIRCUIT

Miklos J. Kollanyi, and Frankie P. Buchanan, both of Albuquerque, N. Mex., assignors to GTE Communication Systems Corporation, Phoenix, Artz.

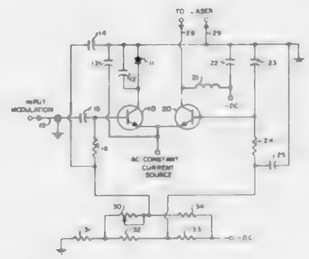
Continuation of Ser. No. 944,046, Dec. 22, 1986. This application May 31, 1988, Ser. No. 205,012
Int. Cl.[4] H01S 3/00
U.S. Cl. 372—38 **4 Claims**

1. A circuit for turning on and off an electrical current driven light emitting device from a modulated electrical signal, said circuit comprising:

light emitting device biasing means connected to said light emitting device arranged to provide an electrical current to said light emitting device sufficient to bias said light emitting device to an operating point just below a turn on threshold;

first and second current switching means each connected to an AC constant current source and to said light emitting device, said first and second switching means arranged to switch drive current between said AC constant current source to said light emitting device, whereby said second switching means provides sufficient current above said turn on threshold to render said light emitting device operated;

a voltage divider network further connected to said first and second current switching means and to a source of voltage potential is arranged to provide an electrical bias voltage to said first and second current switching means rendering said first and second switching means on and ready to switch drive current from said constant current source to said light emitting device; and,



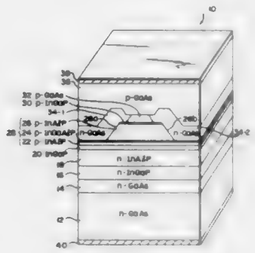
responsive to the positive transition of said modulated electrical signal applied to said first switching means, said first switching means allows the majority of said drive current to flow thru said first switching means, rendering said light emitting device not operated, and alternatively responsive to a negative transition of said modulated electrical signal applied to said first switching means, said first switching means prevents drive current from flowing thru said first switching means allowing the majority of said drive current to flow thru said second switching means, rendering said light emitting device operated.

4,809,287

DOUBLE-HETEROSTRUCTURE SEMICONDUCTOR WITH MESA STRIPE WAVEGUIDE

Yasuo Ohba, Yokohama, Japan; Miyoko Watanabe, Halifax, Canada; Hideto Sugawara; Masayuki Ishikawa, both of Tokyo, Japan; Yukio Watanabe, Yokohama, Japan, and Motoyuki Yamamoto, Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 10, 1987, Ser. No. 83,189
Claims priority, application Japan, Aug. 8, 1986, 61-186505; Sep. 26, 1986, 61-225842
Int. Cl.[4] H01S 3/19
U.S. Cl. 372—45 **23 Claims**



1. A semiconductor laser for emitting a laser beam in a visible light range, comprising:

(a) a semiconductive substrate of a first conductivity type comprising a III–V group compound semiconductor;

(b) a first semiconductive cladding layer of said first conductivity type disposed on said substrate;

(c) an active layer disposed on said first cladding layer and formed by a semiconductor film;

(d) a second semiconductive cladding layer of a second conductivity type disposed on said active layer to provide a double-heterostructure junction, said second cladding layer having a mesa stripe shape having side surfaces and defining a light waveguide channel of said semiconductor laser, and said second cladding layer comprising a compound semiconductor containing a first III-group element and a first V-group element and aluminum a composition ratio of which is not less than 0.35;

(e) a semiconductive current-blocking layer formed to cover said side surfaces of said second cladding layer, and comprising a compound semiconductor which is different from said compound semiconductor of said second cladding layer and contains a second III-group element and a second V-group element;

(f) a first electrode layer provided connected to said substrate; and

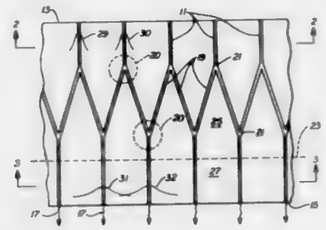
(g) a second electrode layer provided connected to said second cladding layer.

4,809,288

HYBRID Y-JUNCTION LASER ARRAY

David Welch; Donald R. Scifres, both of San Jose; Peter Cross, and William Streifer, both of Palo Alto, all of Calif., assignors to Spectra Diode Laboratories, Inc., San Jose, Calif.

Filed Mar. 4, 1987, Ser. No. 21,640
Int. Cl.[4] H01S 3/19
U.S. Cl. 372—46 **23 Claims**



1. A semiconductor laser array comprising,

a plurality of contiguous semiconductor layers, at least one of said layers forming an angle region for lightwave generation,

means for injecting current into said active region to produce said lightwaves,

means for establishing optical feedback within sad laser for said lightwaves sufficient to provide lasing,

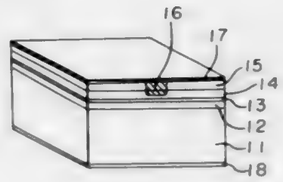
a plurality of spaced apparatus waveguides transmitting light generated from said active region, lightwaves propagating in at least some waveguides being directly phase coupled together in a branching coupling region, said waveguides having strong waveguide portions and weak waveguide portions, said strong waveguide portions including said branching coupling region.

4,809,289

SEMICONDUCTOR LASER DEVICE

Katsuhiko Goto, and Hirofumi Nanitzaki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1987, Ser. No. 55,506
Claims priority, application Japan, May 30, 1986, 61-126175
Int. Cl.[4] H01S 3/19
U.S. Cl. 372—46 **4 Claims**



1. A semiconductor laser device which comprises:

(a) a semi-insulating Cr-doped GaAs substrate; and

(b) on said substrate in order the following laminated layers:

(i) an $Al_xGa_{1-x}As$ layer,

(ii) an $Al_xGa_{1-x}As/GaAs$ multiquantum well layer,

(iii) an $Al_xGa_{1-x}As$ layer, and

(iv) a GaAs layer; and thereon

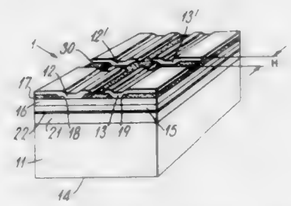
(c) a p-region and an n-region, respectively, formed at both sides of said laminated layers, whereby disordered regions are formed in said multiquantum well layer except for a stripe region as an intermediate portion by selectively diffusing two kinds of impurities having different conductive properties from both sides of said multiquantum well layer until said impurities reach said semi-insulating substrate.

4,809,290

OPTO-ELECTRONIC DIRECTIONAL SWITCH

Ian H. White; Richard S. Linton, and John E. Carroll, all of Cambridge, England, assignors to British Telecommunications public limited company, Great Britain

Filed Mar. 10, 1987, Ser. No. 24,129
Claims priority, application United Kingdom, Mar. 10, 1986, 8605862
Int. Cl.[4] H01S 3/19, 3/10
U.S. Cl. 372—44 **16 Claims**



1. An opto-electronic switch, comprising a semiconductor injection laser structure capable of providing the optical gain in at least two distinguishable and separate waveguiding paths, each waveguide path being at least partially defined by two or more electrodes between adjacent ones of which there is a discontinuities, the two waveguide paths being neighboring in a region of their respective electrode discontinuity, and switching control means for varying the characteristics of a first of the paths relative to a second of the paths such that the relationship between light outputs from the two paths can be changed.

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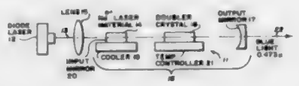
DIODE PUMPED LASER AND DOUBLING TO OBTAIN BLUE LIGHT

Robert L. Byer, and Tso Y. Fan, both of Stanford, Calif., assignors to Board of Trustees, of Leland Stanford Jr U., Stanford, Calif.

Continuation-in-part of Ser. No. 674,948, Nov. 26, 1984, abandoned. This application Sep. 15, 1986, Ser. No. 907,495

Int. Cl.[4] H01S *3/091*

U.S. Cl. 372—75 20 Claims



1. In a method for generating coherent blue light, the steps of:

generating a beam of optical pumping radiation of a first optical wavelength from a semiconductive diode;

directing the beam of optical pumping radiation derived from the diode into a Nd^{3+} doped member of lasant material disposed in an optical resonator for efficient, optical pumping of the lasant material to excite optical lasant radiation at a second wavelength corresponding to the $^4F_{3/2}$–$^4I_{9/2}$ laser transition having a wavelength in the range of 0.870–0.960 μm;

reflecting the lasant radiation at said second wavelength between reflectors of said optical resonator containing said member of lasant material and through said optically pumped member of lasant material for exciting said optical resonator with coherent, optical radiation at said second wavelength; and

interacting the coherent, optical radiation at said second wavelength with a non-linear, electro-optic material within an optical resonator to generate coherent, optical radiation at a third wavelength which is the second harmonic of said second wavelength, thereby producing coherent blue light.

4,809,292

METHOD AND DEVICE TO TRANSFORM ELECTROMAGNETIC WAVES

Eberhard Muller, Lilienconstrasse 9a, 2000 Hamburg 73, Fed. Rep. of Germany

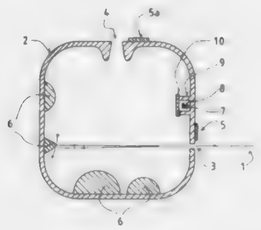
PCT No. PCT/EP86/00502, § 371 Date Apr. 17, 1987, § 102(e) Date Apr. 17, 1987, PCT Pub. No. WO87/01503, PCT Pub. Date Mar. 12, 1987

PCT Filed Aug. 27, 1986, Ser. No. 51,466

Claims priority, application Ireland, Aug. 30, 1985, 2154/85

Int. Cl.[4] H01S *3/08*

U.S. Cl. 372—92 7 Claims



1. Method to transform electromagnetic radiation, in particular light, into monochromatic, coherent electromagnetic radiation of a predeterminable frequency and heat radiation where the predeterminable frequency is the lowest frequency of the Planck-distributed frequency spectrum of the heat radiation, characterized by electromagnetic radiation being focussed into a d-dimensional enclosure with reflecting walls or reflecting boundary and diffusely scattered in the enclosure, wherein the power of the focussed radiation and the reflectivity of the enclosure walls or boundary are such that in the enclosure an electromagnetic energy density is built up which is greater than u_{crit}, and which remains greater than u_{crit}, so that the radiation in the enclosure exceeding u_{crit} is substantially spontaneously transformed into radiation of the frequency of the electromagnetic ground state of the enclosure, which frequency is determined by the geometric dimensions of the enclosure, where u_{crit} is defined by

$$u_{crit} = u_{crit}(T,d) = \pi^{1-d}(2+(-1)^{d-1})(hc)^{-d}(kT)^{d+1}\sum_{n=1}^{\infty} n^{-(d+1)},$$

where

k means the Boltzmann constant,

$2\pi\hbar$ the Planck constant,

c the velocity of light,

T (in Kelvin) that temperature which is computed for a thermodynamic equilibrium given by the mean photon number density in the enclosure and the mean electromagnetic energy density in the enclosure, and

d has the value 2 in the case of an enclosure of effective dimension 2, and the value 3 in the case of an enclosure of dimension 3,

and where all electromagnetic energy densities give the energy per polarization mode, and refer to the unit volume in the case d=3, and to the unit area in the case d=2.

4,809,293

OPTICAL COMPONENT OF A LASER

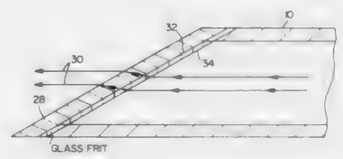
Gary W. DeBell, Los Altos; David L. Wright, Redwood City; Kenneth A. Ruddock, Oak Creek; Alan B. Petersen, Palo Alto; Lee R. Carlson, Pleasanton, and Marc K. Von Gunten, Los Altos, all of Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 770,717, Sep. 3, 1985, Pat. No. 4,685,110, which is a continuation-in-part of Ser. No. 654,305, Sep. 24, 1984, abandoned. This application Jun. 5, 1987, Ser. No. 58,498

The portion of the term of this patent subsequent to Aug. 4, 2004, has been disclaimed.

Int. Cl.[4] H01S *3/08*

U.S. Cl. 372—98 25 Claims



1. An optical component of a laser of the type with photon fluxes generated within the laser, comprising:

an optical element operatively associated with said laser having at least one surface exposed to and in communication with said photon fluxes; and

a coating means on said optical element surface exposed to said photon fluxes, said coating means being formed of a material including a member of the group selected from Al_2O_3, BeO, Y_2O_3, MgO, B_2O_3, Sc_2O_3 hafnium oxide, titanium oxide, LiF, NdF_3, ThF_4, Na_3AlF_6, and mixtures thereof.

4,809,294

ELECTRICAL MELTING TECHNIQUE FOR GLASS

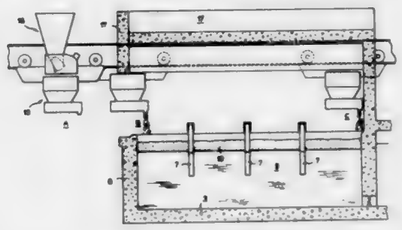
Philippe Dandin; Pierre-Emmanuel Levy, both of Paris; Jean-Yves Aube, Clermont; Bernard Duplessis, Lianconrt, and Marcel Boivent, Neuilly sur Seine, all of France, assignors to Saint-Gobain Recherche, France

Filed Jan. 8, 1987, Ser. No. 59,582

Claims priority, application France, Jan. 6, 1986, 86 08232

Int. Cl.[4] C03B *5/027*

U.S. Cl. 373—41 20 Claims



1. The method of electrically melting a vitrifiable composition in a melting tank, comprising the steps of:

(1) placing the vitrifiable composition in the melting tank; and

(2) melting the vitrifiable composition by means of a plurality of vertically adjustable plunging electrodes in which energy is dissipated by a Joule effect in the resulting molten mass; and

wherein the distance separating said electrodes from the closest lateral wall of said melting tank is at least half of the distance separating two adjacent electrodes and wherein the position of the level of the maximum temperature is regulated by the depth of immersion of the electrodes.

4,809,295

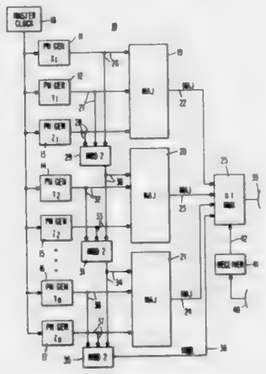
CODE LENGTHENING SYSTEM

John W. Zachelle, Jr., Farmington; Alan E. Lundquist, Salt Lake City, and Bellie M. Spencer, Bountiful, all of Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Apr. 20, 1987, Ser. No. 40,526

Int. Cl.[4] H04L *9/04*

U.S. Cl. 375—1 8 Claims



1. A method of transmitting and rapidly acquiring substantially non-repeating pseudonoise (PN) spread spectrum codes, comprising the steps of:

transmitting a first composite code comprising a first plurality of individual component codes X_1, Y_1, Z_1 having correlation properties with the component codes,

sequentially acquiring each of the component codes X_1, Y_1, Z_1 until the composite code having correlation properties with the first plurality of component codes is acquired,

transmitting a second composite code comprising a second plurality of individual component codes Y_2, Z_2 and the composite of said first plurality of individual component codes treated as a component code where said second composite code has correlation properties with said individual component codes Y_2 and Z_2,

sequentially acquiring each of said component codes Y_2 and Z_2 until the composite code being transmitted is acquired,

transmitting n^{th} composite code comprising a nth plurality individual component codes Y_n, Z_n and the composite of said first and said second plurality of individual component codes treated as a component code where said n^{th} composite code has correlation properties with said individual component codes Y_n and Z_n, and

sequentially acquiring each of said component codes Y_n and Z_n until the modulo two (MOD) composite code MOD $(X_1, Y_1, Z_1, Y_2, Z_2, Y_n, Z_n)$ which comprises the substantially non-repeating composite code is acquired.

4,809,296

METHOD FOR TRANSMITTING DATA VIA THE LINES OF A POWER SUPPLY SYSTEM

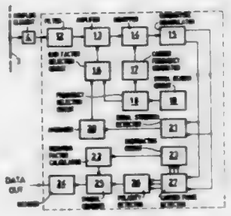
Walter Brunn, Wettingen, and Walter Hagmann, Dättwil, both of Switzerland, assignors to BBC Brown, Boveri Ltd., Baden, Switzerland

Filed Feb. 11, 1987, Ser. No. 13,554

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1986, 3606354

Int. Cl.[4] H04B *15/00*

U.S. Cl. 375—1 6 Claims



1. Method for transmitting data via the lines of a power supply system, particularly at low- and medium-voltage level, comprising the following steps:

encoding data to be transmitted into the form of symbols (A, . . . , F) by applying a forward error correction code;

duplicating each one of said symbols (A, . . . F) a given number of times;

rearranging said duplicated symbols (A, . . . F) so that symbols previously located directly adjacently to each other are then a far distance from each other;

combining said rearranged symbols into blocks so that each symbol is at least in two different blocks;

transmitting said blocks by means of different carrier frequencies in order to reduce the error rate during transmission;

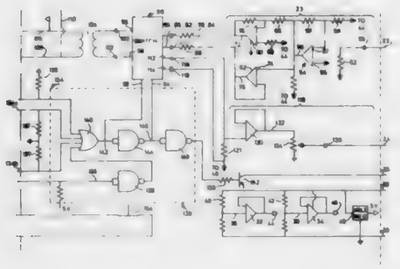
wherein the different carrier frequencies are modulated by means of phase shift keying.

4,809,297

INTERFACE DEVICE

Ken Polansky, Fort Saskatchewan; Gerry Polanski, Bon Accord, and Lee Bush, Edmonton, all of Canada, assignors to Williams Electronics Ltd., Edmonton and Polansky Electronics Ltd., Fort Saskatchewan, both of, Canada

Filed Oct. 4, 1984, Ser. No. 657,730
Int. Cl.[4] H04N 1/42
U.S. Cl. 375—7 **10 Claims**



1. An interface to connect a data transfer device with a radio transceiver comprising a receiving circuit to receive a data signal in a given form from said transceiver, a transmitting circuit to transmit a data signal in said given form to said transceiver, a data bus to transfer one of said data signals between said device and the respective circuit, switch means to connect one of said circuits with said data bus and control means to control said switch means, said control means being responsive to a signal from said data transfer device, which is indicative of a change in the operational mode thereof to disconnect said one circuit and connect the other of said circuits to said data bus.

4,809,298

RADIO DATA TRANSMISSION SYSTEM

Toshiaki Sakane, Nasu; Sadao Takenaka, Yokohama; Morihiko Minowa, Machida; Yoshihito Aono, Nasu, and Yoshimasa Daidoh, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP86/00437, § 371 Date Apr. 30, 1987, § 102(e) Date Apr. 30, 1987, PCT Pub. No. WO87/01535, PCT Pub. Date Mar. 12, 1987
PCT Filed Aug. 27, 1986, Ser. No. 53,396
Claims priority, application Japan, Aug. 30, 1985, 60-191318; Oct. 14, 1985, 60-226897
Int. Cl.[4] H04L 25/49; H04B 7/005
U.S. Cl. 375—17 **7 Claims**



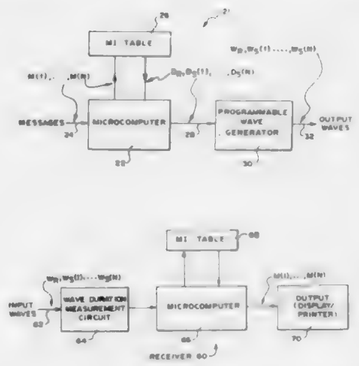
1. A radio data transmission system, comprising:
a transmitting apparatus, comprising:
converting means, operatively connected to receive n-bit data, for converting the n-bit data into a multi-level transmission signal, where n is a positive integer,
modulating means for modulating a carrier signal with the multi-level transmission signal to produce a modulated signal, and
transmitting means for transmitting the modulated signal as a radio signal; and
a receiving apparatus, comprising:
demodulating means for demodulating the received radio signal and for outputting a multi-level received signal,
a transversal filter, operatively connected to said demodulating means, having a main tap and other taps, receiving weighting signals for controlling weighting of the main and other taps and for outputting an equalized multi-level signal,
discriminating means for discriminating levels in the equalized multi-level signal output from said transversal filter and for outputting a converted digital signal of n+m bits, where m is a positive integer,
tap weighting control means for outputting the weighting signals using at least a part of the digital signal of n+m bits output from said discriminating means, and
control mode switching means for switching a control mode of said tap weighting control means in accordance with a frequency of a pseudo error pulse generator using at least a part of the lower m bits of the digital signal of n+m bits output from said discriminating means, having a first threshold value for switching from a first control mode to a second control mode among at least two control modes and a second threshold value, different from the first threshold value for switching from the second control mode to the first control mode.

4,809,299

FREQUENCY INDEPENDENT INFORMATION TRANSMISSION SYSTEM

Kit-Fun Ho, P.O. Box 54504, North Point, Hong Kong

Filed Apr. 18, 1986, Ser. No. 853,480
Int. Cl.[4] H03M 7/00
U.S. Cl. 375—48 **38 Claims**



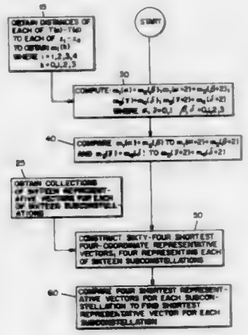
1. A process for transmitting information consisting of a series of message units selected from a set of defined message units, said transmission process comprising the steps of:
(a) defining the message units comprising the set of defined message units;
(b) assigning a message unit ratio to each defined message unit;
(c) providing a periodic reference signal having a reference periodic property;
(d) converting each message unit of the information to be transmitted into a set of signals including said reference signal, each message unit being a member of the set of defined message units and related to said reference signal by a specific message unit ratio;
(e) providing an information signal having an information periodic property, said information periodic property being varied for each message unit to conform to the message unit ratio for each message unit;
(f) transmitting said periodic reference signal and said information signal;
(g) receiving said periodic reference signal and said information signal;
(h) determining a received message unit ratio between said reference periodic property and said information periodic property of the received signals;
(i) deconverting said received message unit ratio to a message unit in accordance with the assigned message unit ratio, thereby to convey the information.

4,809,300

BRANCH METRIC ALGORITHM FOR EIGHT-DIMENSIONAL SIGNAL CONSTELLATION

Yuri Goldstein, Southbury; William E. Abdelsayed, Wolcott, and Paul D. Cole, Fairfield, all of Conn., assignors to General DataComm, Inc., Middlebury, Conn.

Filed Apr. 5, 1988, Ser. No. 177,638
Int. Cl.[4] H04L 23/02, 27/06
U.S. Cl. 375—94 **17 Claims**



1. A method for determining indications of the distances between a received eight-dimensional vector having four two-dimensional coordinates and each of sixteen non-overlapping subconstellations, comprising:
(a) obtaining indications of distances between each of said two-dimensional coordinates of said received vector and a first set of points in a two-dimensional plane, and between each of said two-dimensional coordinates of said received vector and non-overlapping second, third, and fourth sets of points generated by ninety, one hundred eighty and two hundred seventy degree rotations of said first set of points, wherein each of said sixteen non-overlapping subconstellations is represented by a collection of sixteen representational four-coordinate vectors, wherein an i'th coordinate of one of said four-coordinate representational vectors represents one of said four non-overlapping sets of points in an i'th plane, and wherein for any representational four-coordinate vector representing a particular subconstellation, said representational vectors which represent one hundred and eighty degree rotations in a first and second two-dimensional coordinate and zero rotation in a third and fourth two-dimensional coordinate, zero rotation in said first and second two-dimensional coordinate and one hundred eighty degree rotation in said third and fourth two-dimensional coordinates, and one hundred eighty degree rotation in all said four two-dimensional coordinates are also representative of said particular subconstellation;
(b) using said obtained indications of distance for said two-dimensional coordinates to find an indication of distance between a first four-dimensional vector consisting of the first two two-dimensional coordinates of said received eight-dimensional vector and each of sixteen four-dimensional sets of points represented by sixteen two-coordinate representational vectors wherein a first coordinate represents one of said nonoverlapping sets of points in a first two-dimensional plane and wherein a second coordinate represents one of said nonoverlapping sets of points in a second two dimensional plane, and obtaining by comparison the smaller of two distance indications in each of eight pairs of distance indications to obtain a first group of eight shorter distances, each pair comprising the distance indication between said first four-dimensional vector and a particular of said four-dimensional set of points and the distance indication between said first four-dimensional vector and a set of four-dimensional points which is a hundred-eighty degree rotation of said particular four-dimensional set of points;
(c) using said obtained indications of distance for said two-dimensional coordinates to find an indication of distance between a second four-dimensional vector consisting of the second two two-dimensional coordinates of said received eight-dimensional vector and each of a second collection of sixteen four-dimensional sets of points represented by a second collection of sixteen two-coordinate representational vectors wherein a first coordinate of said second four-dimensional vector represents one of said nonoverlapping sets of points in a third two-dimensional plane and wherein a second coordinate of said four-dimensional vector represents one of said nonoverlapping sets of points in a fourth two-dimensional plane, and obtaining by comparison the smaller of two distance indications in each of a second group of eight pairs of distance indications to obtain a second group of eight shorter distances, each pair comprising the distance indication between said second four-dimensional vector and a particular one of said second collection of four-dimensional sets of points and the distance indication between said second four-dimensional vector and a set of four-dimensional points which is a hundred-eighty degree rotation of said particular one of said second collection of four-dimensional sets of points;
(d) for each said collection of sixteen four-coordinate representational vectors, finding four representational four-coordinate vectors comprised of a combination of first and second two-dimensional coordinates from said first group of shorter distance indications, and third and fourth two-dimensional coordinates from said second group of shorter distance indications; and
(e) for each said collection of sixteen four coordinate representational vectors, comparing among four distance indications from said received vector to the eight-dimensional set of subconstellation points represented by each of said four found four-coordinate representational vectors, to determine a shortest distance indication between said received vector and each subconstellation.

4,809,301

DETECTION APPARATUS FOR BI-PHASE SIGNALS

Melvin H. Rhodes, Cedar Rapids, Iowa, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 25, 1987, Ser. No. 128,006
Int. Cl.[4] H03D 3/22
U.S. Cl. 375—87 **5 Claims**

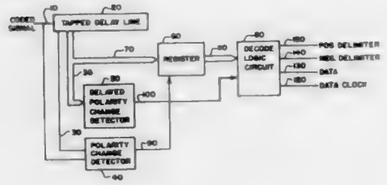
1. A bi-phase signal detection apparatus comprising in combination:
a delay line to provide a predetermined time delay, said delay line having a plurality of delay taps, said delay line

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receiving a bi-phase coded signal, said delay line providing a plurality of delayed signals,

means for detecting polarity change, said polarity change detecting means receiving said bi-phase coded signal and a first delayed signal from a first delay tap of said delay line, said polarity change detecting means providing a polarity change signal,

means for detecting delayed polarity change, said delayed polarity change detecting means receiving a second and third delayed signal from said delay line, said delayed polarity change detecting means providing a delayed polarity change signal,



a shift register to receive said plurality of delayed signals from the plurality of delay taps of said delay line, said shift register receiving said polarity change signals from said polarity change detecting means, and

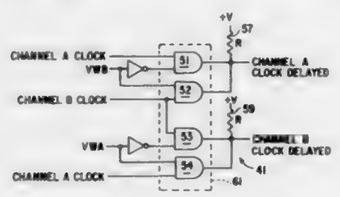
a means for decode logic, said decode logic means receiving each signal of said plurality of delayed signals from said shift register and said delayed polarity change signal from said delayed polarity change means, said decode logic means decodes said plurality of delayed signals and provides a data signal, a clock signal, a positive delimiter signals and a negative delimiter signal.

4,809,302

CLOCK INJECTOR CIRCUIT

Jay L. Richman, Montville, and Adrian Chan, Harrington Park, both of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed May 29, 1987, Ser. No. 55,572
Int. Cl.[4] H04C *7/00*
U.S. Cl. 375—107 **8 Claims**



1. Circuitry for receiving signals from at least two data busses representing distinct channels, in which each data bus provides a data stream which may be at any given time by a phase shift asynchronous with respect to that provided by the other data bus, and in which the circuitry includes a circuit for receiving the data and a circuit further responsive to the data, further characterized by:

(a) an interface circuit connected to the two busses for receiving the data from the two busses, and receiving clock signals from each of said channels, the clock signals representing timing of the data on their respective busses; and

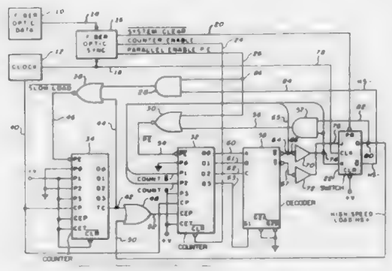
(b) the interface circuit including means to transmit the data from the two busses to said circuit further responsive to the data, the means to transmit delaying said transmission for a time period approximating that of a time period represented by said phase shift.

4,809,303

DYNAMIC SPEED SHIFTER FOR FIBER OPTIC WORK STATION

Robert A. Barndt, Sr., Coatesville, Pa., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 16, 1987, Ser. No. 121,389
Int. Cl.[4] H04L *7/02;* **H04B** *17/00*
U.S. Cl. 375—110 **16 Claims**



1. Apparatus for determining the bit rate of an incoming encoded data stream transmitted in at least one of a plurality of bit rates, comprising:

means for receiving said encoded data at a given one of said bit rates,

means coupled to said receiving means for synchronizing transitions of said encoded data with a source of clock pulses and providing s signal corresponding thereto,

counter means responsive to said clock pulses and also responsive to said synchronized transitions and having an output terminal for providing a first count corresponding to said given one of said bit rates when at least one transition occurs during a predetermined bit period corresponding to the bit period of said given bit rate, and a second count corresponding to a further given one of said bit rates when no transition occurs during a period subtantially greater than said predetermined bit period but less than twice said predetermined bit period,

decoder means responsive to said counter means for providing a logic output indicative of a predetermined state; and

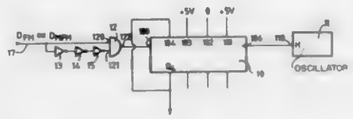
switch means responsive to said decoder means for providing an output indicative of said first or second counts.

4,809,304

METHOD OF EXTRACTING A SYNCHRONOUS CLOCK SIGNAL FROM A SINGLE- OR DOUBLE-DENSITY CODED SIGNAL, AND APPARATUS FOR PERFORMING THE METHOD

N. Vo Chau, Villejust, France, assignor to Bull, S. A., Paris, France

Filed Mar. 17, 1986, Ser. No. 840,004
Claims priority, application France, Mar. 18, 1985, 8503924
Int. Cl.[4] H04L *7/02*
U.S. Cl. 375—110 **3 Claims**



1. A method for extracting a synchronous clock signal from a signal coded in single or double density for a modulation

frequency corresponding to the time interval T separating the most closely-spaced pulses in the signal that is received, this synchronous clock signal comprising a window that enables the extraction of a binary data signal, the values of which have determinate durations T or 2T, from the modulated signal that is received, the method including the following steps:

detection of the leading edges of the coded signal;

charging a binary counter with at least one given value following the detection of the leading edge;

counting the pulses transmitted by an oscillator having a frequency the ratio of which to the modulation frequency of the coded signal is equal to the capacity N of the counter,

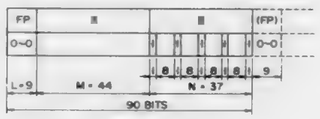
wherein the method is characterized in that the step of charging is effected to a given value (X) when the data pulses are spaced apart by an integral multiple of time intervals T, while the charging is effected with the given value (X) increased by a value corresponding to half the capacity of the counter when the data pulses are spaced apart by a fractional number of time intervals T, and in that the sampling of the clock signal is effected via the highest-weighted bit of the counter.

4,809,305

CYCLIC DIGITAL INFORMATION TRANSMISSION SYSTEM

Mitsuru Yamaura, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 18, 1986, Ser. No. 886,894
Claims priority, application Japan, Jul. 30, 1985, 60-166794
Int. Cl.[4] H04L *7/00*
U.S. Cl. 375—112 **8 Claims**



1. A frame synchronization method in a cyclic information transmission system employing a frame structure having a unique pattern with a minimum number of fixed bits, comprising the steps of:

constituting a one-frame data format by an L-bit sync signal, an M-bit first field, and an N-bit second field, so that a relation $L+N>M$ is satisfied; and

constituting the L-bit sync signal by continuous bits of a first logic level, inserting a fixed bit of a second logic level at both end positions of the second field, and inserting a fixed bit of a second logic level between said two end positions by a bit interval of not more than L-bits where said second field is adjacent to said first field.

4,809,306

RF MODEM WITH IMPROVED CLOCK RECOVERY CIRCUIT

Gerald L. Somer, Sebastopol, Calif., assignor to AMP Incorporated, Harrisburg, Pa.

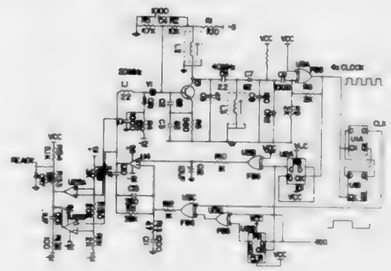
Filed Nov. 17, 1986, Ser. No. 931,573
Int. Cl.[4] H04B *7/04*
U.S. Cl. 375—120 **21 Claims**

1. Apparatus for recovering timing information from a data stream, comprising

digital circuit means for establishing a reference voltage signal at precisely the midpoint of the voltage levels representing a logic 0 and a logic 1;

phase detector means for detecting the phase difference between a clock signal and the data stream, said phase detector means having a first input port for receiving the clock signal, a second input port for receiving the data stream and an output port at which the detected phase difference is presented;

amplifier means for receiving the voltage reference signal and for receiving the detected phase difference and for amplifying the difference therebetween, said amplifier means having a first input port for receiving the voltage reference signal, a second input port for receiving the



detected phase difference, and an output port at which the amplified difference signal is presented; and

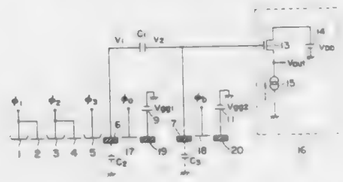
voltage controlled oscillator means for receiving the amplified difference signal, said voltage controlled oscillator producing an output signal having a frequency that varies with the amplified difference signal, said output signal providing the input to the first input port of said phase detector means.

4,809,307

CHARGE TRANSFER DEVICE CAPACITOR COUPLED OUTPUT

Tatsuo Sakane, and Tatsuya Yoshie, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1987, Ser. No. 31,459
Claims priority, application Japan, Mar. 31, 1986, 61-73457
Int. Cl.[4] G11C *19/28;* **H01L** *29/78*
U.S. Cl. 377—60 **18 Claims**



1. A charge transfer device comprising:

a charge transfer unit for transferring a signal charge by said charge transfer cells, said charge transfer unit having a plurality of charge transfer cells;

a first floating diffusion region adjacent to said charge transfer unit for storing said signal charge transferred by said charge transfer cells;

first control switch means driven by a first reset pulse;

a first reset power source connected to said first floating diffusion region through said first control switch means;

a second floating diffusion region;

second control switch means driven by a second reset pulse;

a reset power source connected to said second floating diffusion region through said second control switch means;

a capacitor coupling said first floating diffusion region to said second floating diffusion region; and

detector means for detecting a potential change of said

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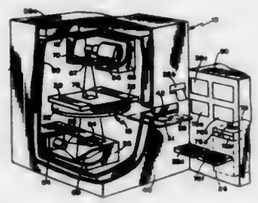
second floating diffusion region to output said potential change as an output signal corresponding to said signal charge.

4,809,308

METHOD AND APPARATUS FOR PERFORMING AUTOMATED CIRCUIT BOARD SOLDER QUALITY INSPECTIONS

John Adams, Escondido; Juan Amoroso, Jr., San Diego; Paul Axford, La Jolla; Phil Bowles, Encinitas; Mike Juba, Del Mar; Van Nguyen, San Diego; Charles Preskitt, La Jolla; Ed Ross, Escondido; Doug Thompson, and Paul Turner, both of San Diego, all of Calif., assignors to IRT Corporation, San Diego, Calif.

Filed Feb. 20, 1986, Ser. No. 831,997
Int. Cl.[4] G06F *15/46, 5/32*
U.S. Cl. 378—99 **21 Claims**



1. An apparatus for measuring structural characteristics of selected portions of a circuit board having components disposed upon and electrically connected thereto at solder joints, comprising:

X-ray means for providing a beam of X-rays;

multi-axis positioning means for receiving and for selectively positioning a circuit board, said circuit board having components coupled thereto at solder joints, within said beam of X-rays;

imaging means for detecting X-rays from said beam of X-rays transmitted through said circuit board and providing an electronic image thereof;

processing means for converting said electronic image into a gray scale coded image; and

computational means for storing a library of measurement algorithms and predetermined measurement parameters corresponding thereto, for receiving said gray scale coded image, for analyzing said gray scale coded image by selecting measurement algorithms from said library of measurement algorithms with the selected measurement algorithms corresponding to certain structural characteristics of said circuit board, performing predetermined computational analysis on said gray scale coded image based upon each selected measurement algorithm, and providing a resultant analysis value corresponding to each computational analysis,

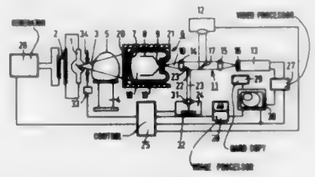
for comparing each resultant analysis value with each corresponding measurement parameter, and for providing an output corresponding to the variation of each resultant analysis value from each corresponding predetermined measurement parameter.

4,809,309

X-RAY EXAMINATION APPARATUS WITH A LOCALLY DIVIDED AUXILIARY DETECTOR

Antonius A. G. Beekmans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 908,131, Sep. 17, 1986. This application Mar. 24, 1988, Ser. No. 173,682
Claims priority, application Netherlands, Sep. 20, 1985, 8502569
Int. Cl.[4] H05G *1/64*
U.S. Cl. 378—99 **9 Claims**



1. An X-ray examination apparatus comprising:

an X-ray tube for producing an X-ray beam;

an X-ray image intensifier tube having an input screen disposed for receiving an X-ray image from the X-ray beam and an output screen for producing an optical image;

image read out means, which includes an image signal processor, for producing a visual representation of the optical image;

optical means for transmitting the optical image from the output screen to the image read out means;

auxiliary light detecting means comprising a two-dimensional matrix of photodetector elements disposed in the form of an orthogonal matrix, for selecting and detecting a portion of the optical image being transmitted from the output screen to the image read out means which portion of the image contains image information from substantially the entire output screen, and for producing an output signal corresponding to said portion, the output signal being connected to control one or more signal transfer characteristics of the image signal processor; and

means for individually controlling the photodetector elements by means of two mutually orthogonal line controls so that the output signal includes spatial image information from the output screen.

4,809,310

DEVICE FOR SUPPLYING CURRENT TO A FILAMENT OF AN X-RAY TUBE

Jacques Salesses, Paris, and Arthur Baghdiguian, Boulogne Billancourt, both of France, assignors to Thomson-CGR, Paris, France

Filed Apr. 8, 1987, Ser. No. 35,867
Claims priority, application France, Apr. 11, 1986, 86 05240
Int. Cl.[4] H05G *1/34, 1/50*
U.S. Cl. 378—109 **9 Claims**

1. A device for supplying current to a filament of at least one X-ray tube, said device comprising:

a generator means for providing control pulses;

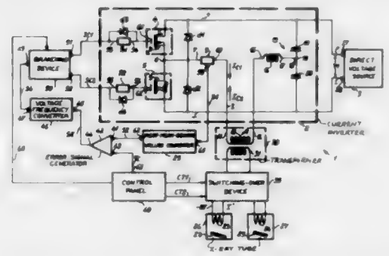
a current inverter for receiving said controlled pulses and outputting an alternating heating current from a direct voltage,

a regulator circuit for regulating said heating current according to a set value;

a load circuit for receiving said alternating heating current wherein said load circuit comprises an oscillating circuit and a primary winding of a transformer wherein said heating current is applied through said transformer to said filament of said at least one X-ray tube and wherein said heating current has the same frequency as the frequency of said control pulses;

wherein said oscillating circuit is connected in series with said primary winding;

wherein said regulator circuit includes a means for outputting an error signal which is applied to said generator in



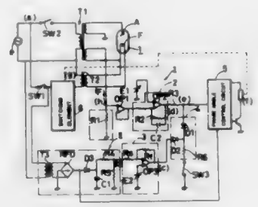
order to modify the frequency of said control pulses to thereby modify the impedance of said oscillating circuit until the value of said heating current corresponds to said set value.

4,809,311

X-RAY DIAGNOSTIC APPARATUS

Eiichi Arai; Keisuke Mori, both of Kyoto, and Takao Makino, Otsu, all of Japan, assignors to Kabushiki Kaisha Moritta Seisakusho, Kyoto, Japan

Filed Apr. 17, 1987, Ser. No. 40,355
Claims priority, application Japan, Apr. 18, 1986, 61-090293
Int. Cl.[4] H05G *1/34*
U.S. Cl. 378—110 **10 Claims**



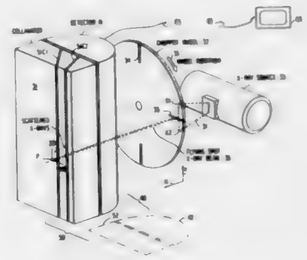
1. A pre-ignition type X-ray diagnostic apparatus comprising a mode changeover switch which enables switching between a pre-heat mode and an X-ray irradiation mode, a tube current control circuit for feedback control of an X-ray tube's filament heating current to a target value, and a pre-heat control circuit for controlling said filament heating current in said pre-heat mode to a target value lower than the target value in said X-ray irradiation mode, characterized in that said pre-heat control circuit comprises a differential amplifier which amplifies the difference between a detected voltage corresponding to a source voltage and a reference voltage corresponding to said lower target value, so that the control signal is outputted from said differential amplifier.

4,809,312

METHOD AND APPARATUS FOR PRODUCING TOMOGRAPHIC IMAGES

Martin Annis, Cambridge, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.

Filed Jul. 22, 1986, Ser. No. 888,019
Int. Cl.[4] G01N *23/20*
U.S. Cl. 378—146 **59 Claims**



1. A device useful in producing a tomographic image of a selected slice of an object to be examined comprising:

a source of penetrating radiation,

sweep means for forming energy from said source into a pencil beam and for repeatedly sweeping said pencil beam over a line in space to define a sweep plane,

first means for supporting an object to be examined so that said pencil beam intersects said object along a path passig through said object and said selected slice,

line collimating means for filtering radiation scattered by said object, said line collimating means having a field of view which intersects said sweep plane in a bounded line so that said line collimating means passes only radiation scattered by elementary volumes of said object lying along said bounded line, said line collimating means including a plurality of channels such substantially planar in form to collectively define said field of view, said channels oriented so that said pencil beam sweeps along said bounded line as a function of time, and

radiation detector means responsive to radiation passed by said line collimating means

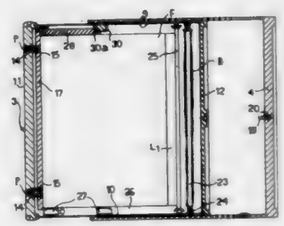
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4,809,313

X-RAY FILM FEEDING MAGAZINE USABLE IN FILM HANDLING AUTOMATIC APPARATUS

Rino Gandolfo, Savona, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 4, 1987, Ser. No. 21,507
Claims priority, application Italy, Mar. 12, 1986, 19729 A/86; Jun. 12, 1986, 20769 A/86
Int. Cl.[4] B65G *57/00*; G03D *13/06*
U.S. Cl. 378—182 **16 Claims**



3. An x-ray film feeding magazine, for use in an automatic

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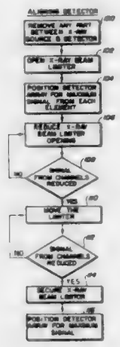
film handling apparatus, comprising a tray having a bottom wall, a front wall, a back wall and two side walls and a quadrangular housing means formed in the tray for receiving an x-ray film packet, comprising a front end gauge near the front wall of the tray, a back end gauge near said back wall and two side gauges near said two side walls, one of said end gauges and at least one of said side gauges being movable between a stand-by position for receiving the x-ray film packet with clearance and a work position for centering the films of the packet, and externally driven actuator means in the tray to move said movable gauges from the stand-by position to the work position, further comprising connection means between said end movable gauge and at least one side movable gauge, in order to move the gauges from the stand-by position to the work position simultaneously, the connection means comprising two slanting surface portions carried by said movable side gauge and wedge-shaped elements, having complementary slanting surfaces, cooperating with said slanting surface portions of the movable side gauge, one of said wedge-shaped elements being movable together with the movable end gauge and the other one being stationary with respect to the tray.

4,809,314

METHOD OF ALIGNING A LINEAR ARRAY X-RAY DETECTOR

Douglas S. Steele, Fairfield, Ohio; John P. Keaveney, and David W. Oliver, both of Schenectady, N.Y., assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 25, 1986, Ser. No. 832,973
Int. Cl.[4] G21K *1/00*
U.S. Cl. 378—205 **2 Claims**



1. In a computer based system for non-destructive measuring and testing of manufactured parts, the system including an X-ray source for providing a beam of X-ray radiation, a beam limiter positioned in the beam of radiation and having an adjustable gap in at least one plane and being positionable in the at least one plane for establishing a directed beam of radiation, a linear array X-ray detector having a plurality of radiation detecting elements for converting detected radiation into electrical signals, the detector being generally oriented in the directed beam of radiation, and a collimator coupled to the detector for restricting radiation received by the detector to a predetermined range of approach angles, a method for aligning the detector to the directed beam of X-ray radiation comprising the steps of:

opening the beam limiter gap until each element of the linear array receives X-ray radiation unattenuated by the beam limiter;

positioning the linear array detector such that each radiation detecting element produces signals of maximum amplitude;

reducing the beam limiter gap until the signals from the detector begin to reduce in amplitude;

repositioning the beam limiter in the at least one plane such that the signals from the detector achieve another maximum amplitude; and

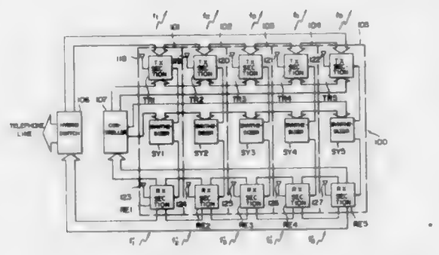
positioning the linear array detector in the at least one plane until the radiation detecting elements produce signals of still another maximum amplitude.

4,809,315

CORDLESS TELEPHONE SYSTEM

Toshiaki Oda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 42,907, Apr. 27, 1987. This application Jun. 6, 1988, Ser. No. 202,605
Claims priority, application Japan, Apr. 25, 1986, 61-94882
Int. Cl.[4] H04Q *7/04*; H04B *7/00*
U.S. Cl. 379—58 **9 Claims**



9. A battery saving method for a communication system comprising a base communication unit connected to a plurality of telephone lines, and portable communication units equal in number to said telephone lines, said base communication unit having the same number of radio transceivers as said telephone lines and having a controller provided with a storage for controlling said transceivers, each of said portable communication units being connected to a respective one of said transceivers of said base communication unit by a cordless communication link, said method comprising the steps of:

(a) sending a signal from one of said portable communication units to said base communication unit when one of said portable units is turned ON or OFF, when a call on one of said portable units is originated or received, or when a communication on one of said portable units is terminated;

(b) producing, in response to said signal, battery saving designate signals having particular timings and periods, said battery saving designate signals being produced based on the number of portable communication units turned ON, and on the number of portable communication units being used; and

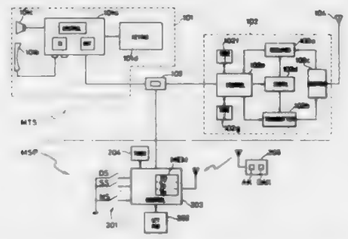
(c) transmitting the designate signals to said individual portable communication units according to a sequence registered in the storage of said base communication unit, and individual portable communication units being brought into battery saving operation by the transmitted designate signals according to the particular battery saving timings and periods designated by the designate signals.

4,809,316

METHOD FOR IDENTIFYING OPERATION MODES OF AN ANTITHEFT SYSTEM

Makoto Namekawa, Iwaki, Japan, assignor to Alpine Electronics, Japan

Continuation of Ser. No. 881,075, Jul. 2, 1986, abandoned. This application Sep. 11, 1987, Ser. No. 96,790
Claims priority, application Japan, Jul. 9, 1985, 60-150642
Int. Cl.[4] H01Q *7/04*
U.S. Cl. 379—58 **3 Claims**



1. A method for remotely identifying the status of an anti-theft system applicable to a motor vehicle having a telephone system and an anti-theft system, comprising:

providing the anti-theft system with a controller unit for monitoring a plurality of sensors detecting a plurality of anti-theft conditions of the vehicle;

connecting the controller unit of the anti-theft system to the telephone system and providing the controller unit with means for pre-setting a time for turning on the telephone system to a power-on state and a time period during which the power-on state continues;

initially placing the telephone system in a power-off state when a notifiee for the vehicle leaves the vehicle unattended to be protected by the anti-theft system;

turning on the telephone system with the controller unit to receive an incoming call from a notifiee at a remote location after the pre-set power-on time and during the pre-set time period; and

operating the controller unit when receiving the incoming call during the power-on state of the telephone system to respond to any one of a plurality of inquiry codes selectively transmitted on the incoming call by issuing a status signal to the telephone system identifying the status of any one of the plurality of anti-theft conditions of the vehicle corresponding to the inquiry code, wherein the status signal is transmitted by the telephone system to the notifiee at the remote location.

4,809,317

TELEPHONE LINE EXCLUSION DEVICE

Paul R. Howe, 3708 E. Dover Stravenue, Tucson, Ariz. 85706, and Michael D. Morris, 9272 E. Bidahochi Dr., Tucson, Ariz. 85749

Filed Apr. 22, 1987, Ser. No. 41,236
Int. Cl.[4] H04M *11/00, 1/68*
U.S. Cl. 379—98 **10 Claims**

1. A telephone line exclusion device interfacing between a single incoming telephone line, a first telephone line connected instrument, and a second telephone line connected instrument, said telephone line having a tip line and a ring line and each of said instruments having a tip line and ring line, the device permitting operation by the first of said two instruments to commence to use the incoming telephone line and excluding the second of the two instruments from use of the telephone line, the device comprising:

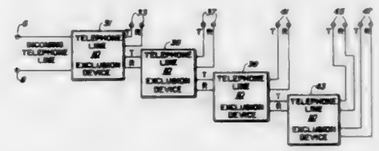
a first relay operably connected to said incoming telephone line and to first telephone connected instrument, said first relay having a set of contacts, and first coil and a second coil operating upon said first relay contacts;

a second relay operably connected to said incoming telephone line, to said first relay, and to said second telephone line connected instrument, said second relay having a set of contacts, and a first coil and a second coil operating upon said second relay contacts;

said first relay and said second relay contacts connected to said incoming telephone line tip line, said first relay and said second relay first coil connected to said incoming telephone line ring line, said first relay contacts also connected to said second relay second coil, and said second relay contacts also connected to said first relay second coil;

said first coil and said second coil of said first relay connected to said first telephone line connected instrument ring line and tip line respectively; and

said first coil and said second coil of said second relay connected to said second telephone line connected instrument ring line and tip line respectively;



said first relay operating when said first telephone line connected instrument uses said incoming telephone line by energizing said first coil and said second coil of said first relay to operate upon said first relay contacts to exclude said second telephone line instrument from said incoming telephone line; and

said second relay operating when said second telephone line connect instrument uses said incoming telephone line by energizing said first coil and said second coil of said second relay to operate upon said second relay contacts to exclude said first telephone line connected instrument from said incoming telephone line whereby the first of the two telephone line connected instruments to be used conducts current through both coils of the relay it is connected to and operates upon said relay's contacts, and the other telephone line connected instrument is thereby excluded from coming onto the incoming telephone line.

4,809,318

METHOD OF OVERLOAD CONTROL FOR THE CENTRAL CONTROL OF A TELECOMMUNICATION SYSTEM AND ARRANGEMENT FOR IMPLEMENTING THE METHOD

Frederik C. Schoute, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 28, 1987, Ser. No. 101,917
Claims priority, application Netherlands, Sep. 29, 1986, 8602452
Int. Cl.[4] H04M *3/36*; H04Q *3/545*
U.S. Cl. 379—279 **5 Claims**

1. A method of overload control for the central control of a telecommunication system, more specifically a telephone exchange of the SPC type, the method comprising the following steps:

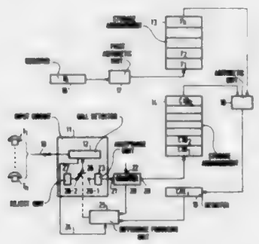
(1) determining the number of calls in build-up phase in a first period of a predetermined length;

(2) determining the demand on the capacity of the processor of the central control in the first period;

(3) estimating the maximum number of calls in the build-up phase which the processor is capable of processing simultaneously in a second period of a predetermined length;

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(4) determining with each new offered call in the second period whether as a result of the new call the instantaneous number of calls in build-up phase reaches the maximum number of calls determined in step (3);
(5) accepting the offered call if the number of calls estimated in step (3) was not reached;
(6) rejecting the offered all if the estimated number was reached;



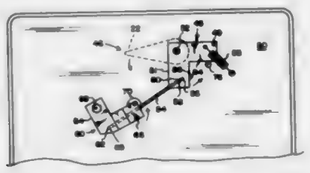
(7) repeating steps (1) to (6) in a subsequent first period for evaluating calls in a subsequent second period; wherein the improvement comprises:
(8) using the number of tasks waiting to be processed by the processor ("the queue length") as a criterion for the demand on the capacity to be determined in step (2); and
(9) making the estimation in step (3) based on the number of calls in build-up phase and the queue length in the first period.

4,809,319

COIN-OPERATED TELEPHONE APPARATUS

Gerald B. McGough, Huntsville, Ala., assignor to Palco Telecom, Inc., Nashville, Tenn.

Filed Jan. 11, 1988, Ser. No. 142,850
Int. Cl.[4] H04M *17/02*
U.S. Cl. 379—153 **6 Claims**



1. A coin-operated telephone comprising:
a housing having a pair of sections disposed for releasable engagement, a first of said sections having a face and upper, lower, and intermediate sections, and a display area disposed in said upper sections, said second of said sections having an upper portion for receiving said first of said pair of sections and a lower coin storage section;
a coin acceptor and associated coin release mechanism mounted in said second of said pair of housing sections, said coin acceptor having a coin release mechanism actuator assembly secured thereto for actuating said release mechanism of said coin acceptor, said release mechanism actuator assembly including a plate having a downwardly depending elongated lip; and
a coin release linkage assembly secured to the interior surface of said face above said display window, said coin release linkage assembly including a flat plate having a substantially inverted L-shaped configuration pivotally secured to the interior surface of said face of said first of said pair of housing sections, a rod having one end secured to said flat plate, said rod extending from said flat plate, a second L-shaped member mounted to said interior face of said first of said housing sections in spaced relation with said flat plate, said rod having its second end secured to said second L-shaped member, a roller mounted on said second L-shaped member for operative engagement with said elongated lip of said actuator assembly for actuating said coin release mechanism, a lever mounted on said face of said first of said housing sections in said upper section thereof, said lever secured to said inverted L-shaped flat plate for pivotal movement thereof, and biasing means secured to said flat inverted L-shaped member and said housing for biased relation of said linkage assembly and said housing.

4,809,320

DOOR SECURITY SYSTEM

Gary D. Hawkins, 1426 E. Mountain View Rd., #3, Phoenix, Ariz. 85020, and Louis Commisso, 3807 N. 30th St., #22, Phoenix, Ariz. 85016

Filed Aug. 6, 1987, Ser. No. 82,374
Int. Cl.[4] H04M *1/60*
U.S. Cl. 379—167 **2 Claims**



1. A security intercommunication system for providing visual and aural information to a person situated on a first side of a closed door with respect to a person situated on a second side of the door, said system comprising:
(A) a first housing;
(B) a second housing;
(C) a borehole through said door extending from said first side to said second side thereof;
(D) a peephole optical assembly;
1. said optical assembly including:
a. a cylindrical body having first and second ends and first and second threadedly engagable sections;
b. an inside lens coaxially disposed proximate said first body end; and
c. an outside lens coaxially disposed proximate said second body end; and
2. the optical properties of said optical assembly being selected to provide an observer on said first door side with a field of view through said optical assembly of at least 160° of the scene on said second door side;
(D) mounting means for:
1. removeably fixing said optical assembly in said borehole;
2. securing said first housing in a position against said first door side such that said first housing is supported by said optical assembly; and
3. securing said second housing in a position against said second door side such that said second housing is supported by said optical assembly;
4. said mounting means further comprising:

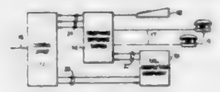
a. a first mounting aperture through said first housing, said first mounting aperture being of sufficient diameter as to pass said cylindrical body;
b. a second mounting aperture through said second housing, said second mounting aperture being of sufficient diameter as to pass said cylindrical body;
c. a first circumferential flange extending outwardly from said first cylindrical body end the diameter of said first circumferential flange being greater than the diameter of said first mounting aperture; and
d. a second circumferential flange extending outwardly from said second cylindrical body end, the diameter of said second circumferential flange being greater than the diameter of said second mounting aperture;
e. a first tab through which said first mounting aperture passes, said first tab being disposed at the top of said first housing; and
f. a second tab through which said second mounting aperture passes, said second tab being disposed at the bottom of said second housing;
whereby, said optical assembly and said first and second housings may be mounted to said door by passing said first cylindrical body section through said first mounting aperture and into said borehole from said first door side and by passing said second cylindrical body section through said second mounting aperture and into said borehole from said second door side and thereafter threading said first and second cylindrical body sections together such that said first housing is suspended downwardly from said first tab and said second housing is supported above said second tab to provide the full field of view below said second housing to a viewer on said first side of said door;
(E) an outside speaker/microphone unit contained within said second housing;
(F) electronic apparatus contained in said first housing said electronic apparatus including:
1. an inside speaker/microphone unit;
2. an amplifier having an input and an output;
3. a battery;
4. an on/off switch coupled to said battery and to said amplifier for selectively energizing said amplifier from said battery;
5. a talk/listen switch having first and second positions; and
6. a volume control connected to said amplifier input for establishing the degree of amplification of sensed sounds;
(G) conductor means connected to said outside speaker/microphone unit and to said talk/listen switch, said conductor means passing through said borehole external said optical assembly cylindrical body, said conductor means further including a plug and jack assembly such that said outside speaker/microphone unit may be detachably coupled to said electronic apparatus by inserting said plug into said jack;
and wherein:
(H) said talk/listen switch:
1. when in said first position, couples said outside speaker/microphone unit to said input of said amplifier and said inside speaker/microphone unit to said output of said amplifier; and
2. when in said second position, couples said inside speaker/microphone unit to said input of said amplifier and said outside speaker/microphone unit to said output of said amplifier.

4,809,321

BUSY/NO-ANSWER CALL COMPLETION EQUIPMENT

Sanford J. Morganstein, Elgin; Bakulesh A. Mehta, Downers Grove; Herbert B. Kraken, Elmhurst, all of Ill.; Neil F. N. Milsted, Houston, Tex., and Mark D. Klecka, DeKalb, Ill., assignors to Dytel Corporation, Schaumburg, Ill.

Filed Sep. 22, 1986, Ser. No. 909,755
Int. Cl.[4] H04M *3/58*
U.S. Cl. 379—211 **32 Claims**



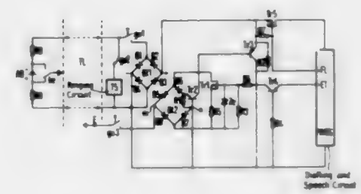
1. A call processing system for use in conjunction with a telephone switching system for assisting a calling party in completing a call to the telephone switching system, comprising:
means responsive to a first request for service from the calling party to place a call to a called party associated with the switching system, and for causing said telephone switching system to attempt to establish communications with the called party;
a detector responsive to a signal from the switching system indicating an unavailability of the called party;
a message generating unit responsive to an unavailability indication for instructing the calling party of alternate procedures for completing a call, said unit having means for instructing the calling party of a camp-on option and digit information to input to cause the call processor to carry out said option; and
means responsive to a second request for service from the calling party in response to an input of digit information for causing the switching system to carry out said camp-on option.

4,809,322

CIRCUIT ARRANGEMENT FOR A TELEPHONE STATION WITH GROUND CONNECTION

Juergen Riesmeyer, Olching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 29, 1988, Ser. No. 161,728
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1987, 3709538
Int. Cl.[4] H04M *1/00*
U.S. Cl. 379—380 **3 Claims**



1. A circuit arrangement for a telephone station with a ground connection to a central supply device for the purpose of post-dialling signalling, whereby the telephone station has a dialling and speech circuit with pulse circuit and a first polarity reversal protection device, comprising the telephone station having a second polarity reversal protection device whose first input is connected via a hybrid switch-over contact to a ground terminal point and whose second input is connected to

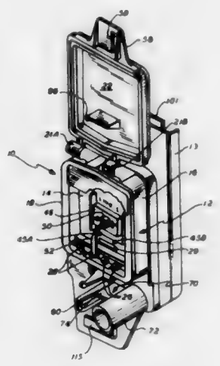
a negative output of the first polarity reversal protection device, two outputs of the second polarity reversal protection device being connected via a drain-source path of a field effect transistor, a gate of which is controlled by the function of a ground key, a bias resistor connected between the second input and a diode, poled from this point in the current flow direction, of the second polarity reversal protection device and connected in parallel with the base-emitter path of a NPN-transistor, whose collector is connected to a base of a PNP-transistor, and a collector-emitter path of the PNP-transistor being connected to the negative output of the first polarity reversal protection device and being bridged by an ignition resistor.

4,809,323

TELEPHONE NETWORK INTERFACE APPARATUS

Thomas J. Collins, Wall, and Anthony L. Nieves, Beach, both of N.J., assignors to Keptel, Inc., Tinton Falls, N.J.

Filed Mar. 4, 1988, Ser. No. 164,433
Int. Cl.[4] H04M 9/00
U.S. Cl. 379—399 **7 Claims**



1. Telephone network interface apparatus for interconnecting a plurality of incoming telephone lines to a plurality of subscriber premises lines and for providing demarcation points therebetween and for receiving the telephone plug of a standard operating telephone to facilitate determination of whether faults exist on the subscriber premises lines or incoming telephone lines, said telephone plug of said standard operating telephone for being connected to a single incoming telephone line, comprising:

base means;

a plurality of subscriber terminals mounted on said base means for interconnection with a plurality of subscriber premises lines;

a plurality of telephone company terminals mounted on said base means for interconnection with a plurality of incoming telephone lines;

a multi-line interface plug provided with a plurality of conductors interconnecting said multi-line interface plug with said plurality of subscriber terminals;

a multi-line interface jack mounted on said base means and provided with a movable member movable into a plurality of different positions, said multi-line interface jack interconnected with said plurality of incoming telephone lines;

upon said movable member being in one of said positions and said multi-line interface plug being inserted in said multi-line interface jack, all of said plurality of subscriber lines being interconnected with all of said plurality of incoming telephone lines;

upon said movable member being in said one position and said multi-line interface plug being removed from said multi-line interface jack, a demarcation point being provided between one of said subscriber premises lines and one of said incoming telephone lines and upon said telephone plug of said standard operating telephone being inserted in said multi-line interface jack a determination of whether a fault exists on said one subscriber premises line or said one incoming telephone line is facilitated;

upon said multi-line interface plug being removed from said multi-line interface jack, and said movable member being positioned in another of said positions, a second demarcation point being provided between another of said subscriber premises lines and another of said incoming telephone lines and upon said telephone plug of said standard operating telephone being inserted in said multi-line interface jack a determination of whether a fault exists on said another subscriber premises line or said another incoming telephone line is facilitated;

subscriber security means provided on said base means and operable by said subscriber to deny others except telephone company personnel access to at least said plurality of subscriber terminals, said multi-line interface plug and said multi-line interface jack;

control means provided on said subscriber security means for rendering said subscriber security means inoperable by said subscriber upon said movable member being in any of said positions other than said one position and for allowing said subscriber security means to be operable by said subscriber upon said movable member being in said one position; and

telephone company personnel override means mounted on said base means for permitting telephone company personnel to override said subscriber security means and provide said telephone company personnel with access to at least said multi-line interface plug and said multi-line interface jack.

4,809,324

SUBSCRIBER LINE INTERFACE CIRCUIT (SLIC) ISOLATION FROM LIGHTING-INDUCED GROUND OVERSHOOTS

Bruce D. Bender, Phoenix, Ariz., assignor to Siemens Transmission Systems, Inc., Phoenix, Ariz.

Filed Jul. 27, 1987, Ser. No. 78,447
Int. Cl.[4] H02H 9/04
U.S. Cl. 379—412 **12 Claims**

1. A telephone subscriber line interface circuit having improved isolation between a two-wire subscriber line having a ground cable impedance and the input stages of said subscriber line interface circuit, comprising:

a pair of subscriber line feed resistance means, each of said line feed resistance means being coupled to one of the wires of said two-wire subscriber line;

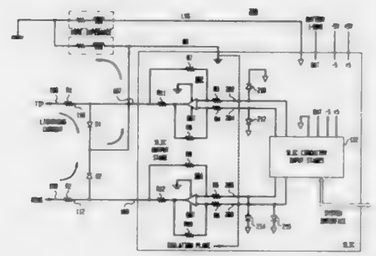
a high voltage dc battery having a battery ground coupled to said subscriber line via said line feed resistance means;

a low voltage dc voltage source having a low voltage ground;

a pair of drive amplifiers comprising the output stage of said subscriber line interface circuit, each of said drive amplifiers being powered by said high voltage dc battery and

battery ground, and having an output coupled in series respectively to one of said line feed resistance means;

input resistance means having a high ohmic value coupled to the inputs of each of said drive amplifiers and to the input stages of said subscriber line interface circuit, such that lightning induced voltages on said subscriber line are isolated from the input stages of said subscriber line interface circuit by said input resistance means, and where in



the voltage of said battery ground powering said drive amplifiers increases with voltage induced at the outputs of said drive amplifiers due to large current flow through ground cable impedance during a lightning strike, and

wherein said circuit is configured as an integrated circuit fabricated on a substrate material and having said input resistance means electrically isolated from the substrate material.

4,809,325

RECEIVER FOR PAY TELEVISION

Toshihide Hayashi, Tokyo; Ikuo Kanayama, Kanagawa, and Masayoshi Kanno, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 803,007, Nov. 29, 1985. This application Aug. 5, 1987, Ser. No. 82,999
Claims priority, application Japan, Nov. 29, 1984, 59-252185; Nov. 29, 1984, 59-252186
Int. Cl.[4] H04N 7/167, 7/10
U.S. Cl. 380—20 **7 Claims**

	DEPOSIT	BALANCE	DATE
CH 2	$ 20	— $ 27	SEPT 15
CH 6	$ 30	— $ 41	OCT 4
CH 4	$ 50	— $ 72	JUL 25
CH 3	$ 70	— $ 94	AUG 31

1. A payment control apparatus at a remote subscriber station in a pay per view pay television system, comprising:

means for descrambling a selected video program transmitted from a center to the remote subscriber station;

means for decoding control data transmitted from said center, said control data including an advance deposit amount for each pay per view channel, a deposit date for each advance deposit amount, and program fee data for each channel and program;

memory means for storing at least a last advance deposit amount for each of a plurality of channels, and the deposit date for each advance deposit amount;

advance memory means for maintaining a current running balance for each channel;

adding means connected to the advance memory means for increasing the running balance for each channel with each advance deposit amount for that channel;

subtracting means connected to the advance memory means for subtracting the program fee data on a given channel when a program is received from the running balance for each such given channel;

activating means connected to said memory means for activating said means for descrambling said selected video program after checking that the running balance is not below a predetermined amount on the channel corresponding to the selected program;

means for comparing a deposit date of a new deposit amount and the deposit date of a last deposit amount to check validity of the new deposit amount; and

means for simultaneously displaying upon viewer request each channel, the most recent deposit amount for each channel, the running balance for each channel, and the date of the most recent deposit amount for each channel.

4,809,326

IC CARD SYSTEM

Yoshimi Shigenaga, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 834,812, Feb. 28, 1986, abandoned. This application Nov. 16, 1987, Ser. No. 120,773
Claims priority, application Japan, Mar. 5, 1985, 60-43386
Int. Cl.[4] H04L 9/00
U.S. Cl. 380—23 **28 Claims**

9. An IC card system comprising:

IC card terminal means including first memory means for storing a main program used for performing a transaction with a customer, second memory means for storing decryption key code data, decrypting means for decrypting predetermined encrypted data in accordance with said decryption key code data, and first comparing means for comparing data decrypted by the decryption means with the predetermined encrypted data;

initializing means for initializing said IC card terminal means including third memory means for storing said decryption key code data for supply to said second memory means, fourth memory means for storing terminal administrator identification number (AIN) data, second comparing means for comparing the AIN data with AIN data entered at said terminal means, and means for transferring said decryption key code data stored in the third memory means of said initializing means to said second memory means of said IC card terminal means when a coincidence is detected by said second comparing means; and

customer IC card means for performing a transaction with a customer in combination with said IC card terminal means,

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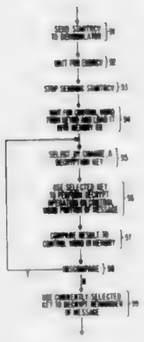
said IC card terminal means further including means for distinguishing the customer IC card means from the initializing means, and means for accessing said customer IC card means when said distinguishing means determines that a card inserted into the IC card terminal means is the customer IC card.

4,809,327

ENCRTPTION OF MESSAGES EMPLOYING UNIQUE CONTROL WORDS AND RANDOMLY CHOSEN ENCRYPTION KEYS

George T. Shima, Tokyo, Japan, assignor to Unisys Corporation, Detroit, Mich.

Continuation of Ser. No. 902,743, Sep. 2, 1986, abandoned. This application Sep. 14, 1987, Ser. No. 98,723
Int. Cl.[4] H04L *9/04*
U.S. Cl. 380—44 12 Claims



1. For use in a communication network of the type in which a transmitting station send an encrypted message to a plurality of receiving stations in a manner that enables only a selected receiving station in said plurality to decrypt the message, a method of operating said transmitting station including the steps of:

storing in said transmitting station, a single set of several encryption keys, each of which is for encrypting messages to all of said receiving stations; and

sending a message for decryption in said selected receiving station by (a) automatically choosing at random any encryption key from said set, (b) appending a control word to said message, with said control word being any series of bits that uniquely identifies said selected receiving station, (c) encrypting both said message and said control word with said randomly selected key, and (d) transmitting the result of step (c) to all of said receiving stations.

4,809,328

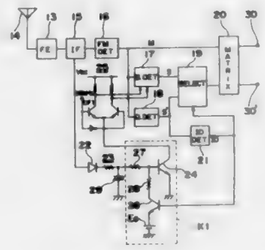
FM/FMX STEREOPHONIC RECEIVER

Nobora Usui; Kanji Tanaka, both of Oota; Ryuichi Ogawa, Gunma; Tsutomu Ishikawa, Oota; Kazuhisa Ishiguro, and Masashi Arai, both of Gunma, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Feb. 16, 1988, Ser. No. 157,048
Claims priority, application Japan, Feb. 20, 1987, 62-38277; Feb. 20, 1987, 62-38280; Feb. 20, 1987, 62-38281
Int. Cl.[4] H04H *5/00*
U.S. Cl. 381—13 14 Claims

1. An FM/FMX stereophonic receiver for receiving an FMX stereophonic broadcast signal which includes a stereo sum signal, a stereo difference signal, a compressed stereo difference signal and an FMX ID signal indicating the FMX stereophonic broadcast signal, and also for receiving an FM stereophonic broadcast signal which includes a stereo sum signal and stereo difference signal, said FM/FMX stereophonic receiver comprising:

a stereo demodulation circuit means for receiving a broadcast signal, which may be either of said FM or FMX stero broad st signals, and for producing left and right stereo signals;



means for detecting the field strength of the received broadcast signal;

means for reducing noise signals contained in said left and right stereo signals;

means for detecting said FMX ID signal;

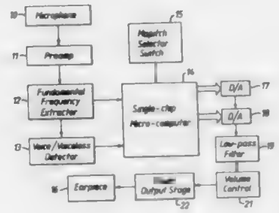
means for disabling said reducing means when said FMX ID signal is detected by said detecting means.

4,809,329

APPARATUS FOR USE IN CONJUNCTION WITH LIPREADING BY THE PROFOUNDLY DEAF

John R. Walliker, Epsom; Stuart M. Rosen, and Adrian J. Fourcin, both of London, all of England, assignors to National Research Development Corporation, London, England

Filed Aug. 29, 1986, Ser. No. 902,963
Int. Cl.[4] G10L *5/00*
U.S. Cl. 381—36 10 Claims



1. Apparatus for generating a sine wave audio signal from a sound having a complex waveform, comprising:

a sound to electrical signal transducer for deriving an output signal from incident sound,

pitch extractor means for deriving a pitch signal representative of the fundamental frequency of the transducer output signal,

processor means for storing a table of sine wave samples and programmed to derive an output signal by reading through the table cyclically, the number of table samples read in each cycle being dependent on the pitch signal, and

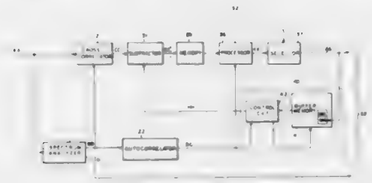
means for generating an audio signal from the samples read.

4,809,330

ENCODER CAPABLE OF REMOVING INTERACTION BETWEEN ADJACENT FRAMES

Shunji Tanaka, and Naoki Matsumura, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of Ser. No. 913,710, Sep. 30, 1986, Pat. No. 4,776,938. This application Apr. 23, 1985, Ser. No. 726,583
Claims priority, application Japan, Apr. 23, 1984, 59-80239
Int. Cl.[4] G10L *5/00*
U.S. Cl. 381—40 3 Claims



1. An encoder for encoding an input signal into an encoded signal by the use of an autocorrelaton signal and a cross-correlation signal which are internally produced to specify autocorrelation and cross-correlation related to said input signal, respectively, said input signal carrying a plurality of speech samples placed within both of a current frame and a part of a following frame, said encoder comprising:

impulse response deriving means responsive to said input signal for deriving an impulse response from said plurality of the speech samples of said input signal to produce an impulse response signal representative of said impulse response;

cross-correlation calculating means responsive to said input signal and said impulse response signal for calculating cross-correlation between said input signal and said impulse response signal in relation to said plurality of the speech samples for said current frame and said part of the following frame to produce a cross-correlation signal representative of the cross-correlation between said input signal and said impulse response signal;

autocorrelation calculating means coupled to said impulse response deriving means for calculating autocorrelation of said impulse response signal to produce an autocorrelaton signal representative of said autocorrelation;

control signal producing means responsive to said encoded signal and said autocorrelation signal for producing a control signal related to the autocorrelation of said part of the following frame;

subtracting means coupled to said cross-correlation calculating means and said control signal producing means for subtracting said control signal from said cross-correlation signal to produce a difference signal representative of a difference between said cross-correlation signal and said control signal, said difference signal being produced for said part of the following frame; and

processing means coupled to said subtracting means and said autocorrelation calculating means for processing said difference signal and said auto-correlation signal into said encoded signal produced only for said current frame.

4,809,331

APPARATUS AND METHODS FOR SPEECH ANALYSIS

John N. Holmes, Uxbridge, England, assignor to National Research Development Corporation, London, England

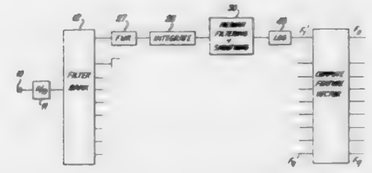
Filed Nov. 7, 1986, Ser. No. 927,721
Claims priority, application United Kingdom, Nov. 12, 1985, 8527899
Int. Cl.[4] G10L *5/00*
U.S. Cl. 381—41 8 Claims

1. Apparatus for speech analysis comprising:

an analogue to digital converter connected to receive a speech signal to be analyzed,

filter means coupled to an output of said analogue to digital converter, for filtering said output to provide a plurality of signals, representative of power intensities in a plurality of frequency ranges in the audio frequency band,

median-filtering means, coupled to said filter means, for repeatedly processing a group of successive samples in



each said frequency range by multiplying the samples in each said group by respective coefficients and summing the resultants, and

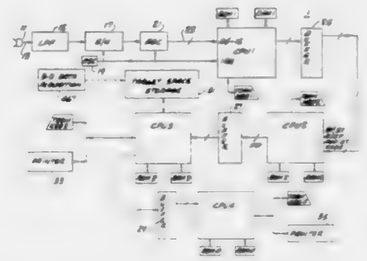
smoothing means for repeatedly processing a group of successive outputs of the median-filtering means in said each frequency range by selecting one output according to relative magnitudes thereof.

4,809,332

SPEECH PROCESSING APPARATUS AND METHODS FOR PROCESSING BURST-FRICTION SOUNDS

Allard Jongman, and James D. Miller, both of St. Louis, Mo., assignors to Central Institute for the Deaf, St. Louis, Mo.

Continuation-in-part of Ser. No. 60,397, Jun. 9, 1987, which is a continuation-in-part of Ser. No. 792,965, Oct. 30, 1985. This application Oct. 8, 1987, Ser. No. 107,488
Claims priority, application European Pat. Off., Oct. 29, 1986, 86906693.6
Int. Cl.[4] G10L *1/00*
U.S. Cl. 381—43 24 Claims



1. Speech processing apparatus comprising:

memory means;

first means for deriving from speech sets of digital values representative of frequency spectra, the spectra having peaks at particular and frequencies, the peaks including a

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highest magnitude peak for each spectrum, and for generating an auditory state signal representing the presence or absence of a burst-friction auditory state of the speech; and

second means for electronically identifying, when the auditory state signal indicates the presence of a burst-friction auditory state, the highest magnitude peak for each spectrum as well as each peak having a magnitude within a range of magnitudes less than the magnitude of the highest magnitude peak, and for selectively storing in distinct locations in the memory, respectively representative of normally occurring prominences of a burst-friction sound, the values of frequency of the lowest two particular frequencies of the identified peaks.

4,809,333

METHOD AND APPARATUS FOR RECOGNIZING SPOKEN STATEMENTS BY USE OF A SEPARATE GROUP OF WORD STORES FOR EACH STATEMENT

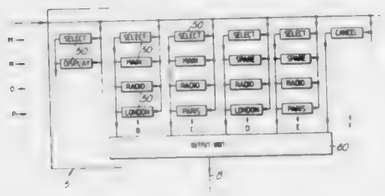
Michael R. Taylor, Swindon, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Apr. 22, 1987, Ser. No. 41,270

Claims priority, application United Kingdom, May 2, 1986, 8610809

Int. Cl.⁴ G10L *5/00*

U.S. Cl. 381—43 **7 Claims**



1. Speech recognition apparatus for recognizing a plurality of statements each comprising a plurality of spoken words, the apparatus including a store containing a reference vocabulary of all the words in the statements to be recognized, means for supplying speech signals to said apparatus in accordance with the spoken words of a current statement, and a unit that compares each spoken word in said current statement with the reference vocabulary and operates to produce a plurality of output signals representative of said spoken words in said current statement, the apparatus including a processing unit including a plurality of groups of storage locations, each said group being associated with an individual one of the statements, each of the storage locations within each group being associated with a respective individual one of the spoken words in said individual one of said statements, the apparatus including means for supplying said output signals representative of the spoken words into the storage location in the processing unit associated with each of the spoken words in said current statement in all the groups having such a storage location regardless of the order in which each word is spoken in said current statement thereby to mark the storage locations associated with each of the spoken words, and the processing unit including an output unit that ascertains which group of storage locations has the greatest proportion of marked locations and is thereby identified most closely with said current statement.

4,809,334

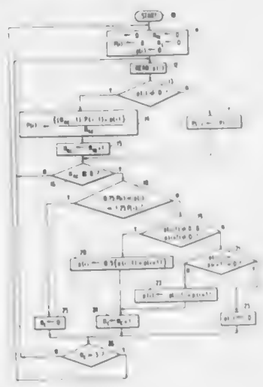
METHOD FOR DETECTION AND CORRECTION OF ERRORS IN SPEECH PITCH PERIOD ESTIMATES

Udaya Bhaskar, Gaithersburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Jul. 9, 1987, Ser. No. 71,243

Int. Cl.⁴ G10L *5/00*

U.S. Cl. 381—49 **9 Claims**



1. A method for detecting and correcting gross errors in pitch period estimates of a speech signal, comprising the steps of:

determining an average of nonzero values of received pitch period estimates;

accepting a current pitch period estimate if said current pitch period estimate is within a predetermined range of said average; and

correcting said current pitch period estimate if said current pitch period estimate is outside said predetermined range of said average.

4,809,335

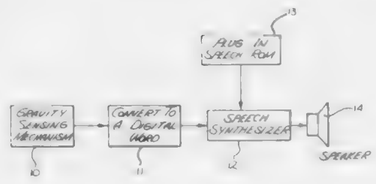
SPEECH UNIT FOR DOLLS AND OTHER TOYS

Daniel S. Rumsey, 5520 W. 118th Pl., Inglewood, Calif. 90304

Filed Oct. 24, 1985, Ser. No. 790,949

Int. Cl.⁴ G10L *9/10*

U.S. Cl. 381—53 **43 Claims**



1. A speech unit for use with a toy figure, said speech unit comprising:

a gravity sensing means for providing a plurality of first signals, said first signals corresponding to the orientation of said gravity sensing means with respect to gravity;

a converting means coupled to said gravity sensing means, said converting means for converting said first signals to a plurality of speech signals, each of said speech signals corresponding to one of said first signals;

speaker means coupled to said converting means, said speaker means for producing audible sounds in response to said speech signals.

4,809,336

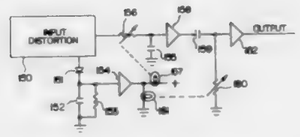
SEMICONDUCTOR AMPLIFIER WITH TUBE AMPLIFIER CHARACTERISTICS

Eric K. Pritchard, 1702 Plymouth Ct., Bowie, Md. 20716

Filed Mar. 23, 1987, Ser. No. 29,144

Int. Cl.⁴ H03G *3/00*

U.S. Cl. 381—61 **29 Claims**



1. A distortion synthesizer comprising:

transformerless filter means having a pass bandwidth between a high and low frequency cutoff; and

means for narrowing said bandwidth of said filter means as a function of amplitude of an input signal to said distortion synthesizer above a preselected value within an upper portion of an operating range.

4,809,337

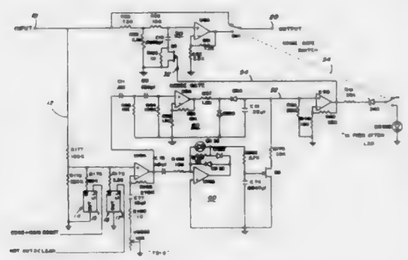
AUDIO NOISE GATE

Donald T. Scholz, Wayland, and William F. Clack, Waltham, both of Mass., assignors to Scholz Research & Development, Inc., Waltham, Mass.

Filed Jun. 20, 1986, Ser. No. 877,225

Int. Cl.⁴ H04B *15/00*

U.S. Cl. 381—94 **13 Claims**



1. An audio noise gate comprising;

an input terminal for receiving an input audio signal that may have high end content audio signals,

an output terminal,

circuit means coupled between said input and output terminals and including high audio frequency filter means having a control node for determining frequency response and having at least two different roll-off frequencies including one that rolls-off high end content audio signals and one that passes high end content audio signals,

a high pass filter circuit coupled from said input terminal for sensing high end audio signal content,

means coupling the high pass filter circuit to the control node of the high audio frequency filter means to roll-off high end content audio signals through said circuit means in the absence of sensing high end audio signals by said high pass filter circuit, and to pass high end content audio signals through said circuit means in the presence of sensing high end audio signals by said high pass filter circuit,

signal detection means coupled from said output terminal for determining the presence or absence of the audio signal,

said high pass filter circuit including a high frequency detector circuit having a predetermined attack and release time,

and means coupling the output of the signal detection means to said high frequency detector circuit to control the release time thereof.

4,809,338

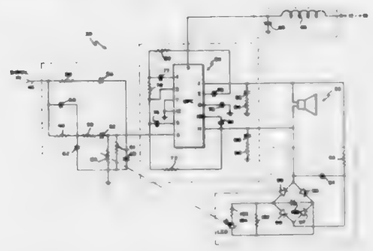
AUTOMOTIVE SOUND SYSTEM

William N. House, Bloomington, Ind., assignor to Harman International Industries, Incorporated, Northridge, Calif.

Continuation-in-part of Ser. No. 752,058, Jul. 5, 1985, abandoned. This application Oct. 8, 1986, Ser. No. 916,959

Int. Cl.⁴ H03G *5/00*

U.S. Cl. 381—103 **6 Claims**



1. In a sound system comprising a source of program material, a transducer, and means for coupling the transducer to the source to produce an audible signal related to the program material, the improvement comprising a controllable bass contour control network having a separate input and output, a power amplifier, a second transducer and a control circuit, means for coupling an input of the bass contour control network to the program material source, means for coupling an input of the power amplifier to an output of the bass contour control network, means for coupling the second transducer and the control circuit to the output of the power amplifier, an output of the control circuit being coupled to the bass contour control network, the control circuit controlling the contour of the signal supplied from the program material source through the bass contour control network to the power amplifier based upon the signal provided by the power amplifier to the control circuit, the bass contour control network comprising a light sensitive resistor, the control circuit comprising a light emitting device, and the control circuit being coupled to the bass contour control network by coupling light form the light emitting device to the light sensitive resistor, the control circuit further comprising an low pass filter, means for coupling the low pass filter across the output of the power amplifier, a rectifier, means for coupling the rectifier across the low pass filter, means for storing the rectified voltage variations appearing across the rectifier, means for coupling the storage means to the rectifier and current limiting means for coupling the light emitting device across the storage means to limit the light output from the light emitting device for a given stored energy in the storage means.

4,809,339

AUDIO TRANSDUCER

Kelvin Shih, 908 Devonshire, Brighton, Mich. 48116, and Peter A. Hochstein, 2966 River Valley Dr., Troy, Mich. 48098

Continuation of Ser. No. 775,174, Sep. 12, 1985, abandoned. This application Jan. 27, 1987, Ser. No. 8,073

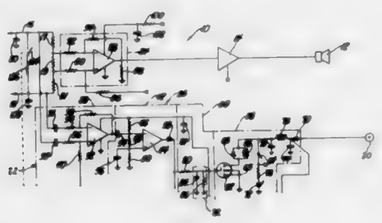
Int. Cl.⁴ H03G *3/20*

U.S. Cl. 381—110 **30 Claims**

1. A method of supplying power from a constantly available power source (**20**) to an audio power amplifier means (**14**) for

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an acoustic transducer (12) of the type utilizing first and second input leads (16, 18) having a difference in potential responsive to an audio signal, said method comprising the steps of; detecting (24) a predetermined audio signal having a difference in potential between the input leads (16, 18) to produce an amplified output response for driving the amplifier means (14), sensing the presence of an audio signal for selectively supplying power from the constantly available power source (20) to enable the detecting (24) and to supply power to the amplifier means (14), the sensing (26) of the audio signal being further



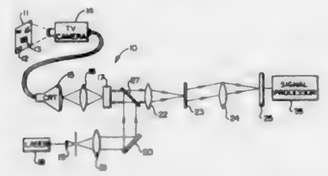
defined as amplifying (28) the audio signal to produce an amplified audio signal and comparing the amplified audio signal to a minimum magnitude reference voltage to produce a control signal, integrating (60) the control signal and a second control signal in response to an audio signal on a second pair of input leads (16, 18) to form a combined control signal and limiting the potential of the combined control signal to operate the supplying (58) of the power, and closing (58) a power circuit (64) in response to the combined control signal to power the audio power amplifier means (14) and to initiate the detecting (24).

4,809,340

OPTICAL CORRELATION SYSTEM

Keith O. Merserean, Columbus, Ohio, assignor to Battelle Memorial Institute, Columbus, Ohio

Filed Apr. 8, 1988, Ser. No. 179,057
Int. Cl.[4] G06K *9/76*
U.S. Cl. 382—1 **19 Claims**



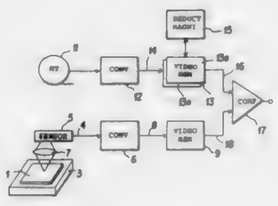
1. Apparatus for use in a mail sorting system, comprising:
a. optical of a mailpiece having address information comprised of characters spaced in a line and character lines spaced in a block;
b. holographic filter means receiving the optical means light image and producing a filtered light image correlated with an address information reference pattern, wherein said reference pattern contains correlating data on the spacing of characters in a line and on the spacing of character lines in a block;
c. detector means receiving the holographic filter means filtered light image and producing an output electronic signal which contains the degree of correlation of said mailpiece address information to said address information reference pattern; and
d. signal processor means receiving said detector means output electronic signal and producing an address location signal based at least in part on correlation of said mailpiece address information to said address information reference pattern.

4,809,341

TEST METHOD AND APPARATUS FOR A RETICLE OR MASK PATTERN USED IN SEMICONDUCTOR DEVICE FABRICATION

Shougo Matsui, Sagamihara, and Kenichi Kobayashi, Tokyo, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jul. 13, 1987, Ser. No. 72,372
Claims priority, application Japan, Jul. 18, 1986, 61-170369
Int. Cl.[4] G06K *9/00*
U.S. Cl. 382—8 **11 Claims**



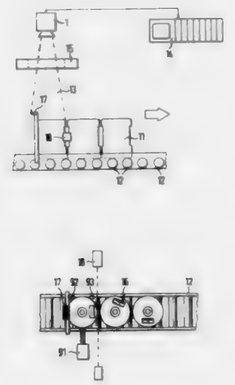
1. A test method for a reticle/mask pattern wherein data of an original design pattern is provided and utilized for generating the original design pattern, and a pattern formed on the reticle/mask has a dimension which is reduced/magnified from the original design pattern in a subsequent reticle/mask fabrication process at least in one of X and Y directions, said test method comprising the steps of:
scanning and detecting said formed pattern of said reticle/-mask, converting the detected signal to a first video signal, and storing said first video signal in a first video memory as a first binary data every time one field is scanned;
reading the data of said original design pattern stored in a recording medium and converting said original design data to a second video signal, and storing said second video signal in a second video memory as an original design binary data every time said field is read;
subjecting said original design binary data to a reduction/-magnification means and generating a group of second binary data, each of said group of second binary data having a stepwise charge in reduction/magnification ratio from said original binary data either in one of X and Y directions or in both directions and storing each of said second binary data in said second video memory;
selecting one of said second binary data form said second video memory, which best matches the formed pattern on the reticle/mask; and
making a comparison test between said first binary data outputted from first video memory and said selected second binary data from second video memory.

4,809,342

PROCESS AND ARRANGEMENTS FOR THE INDENTIFICATION MARKING AND RECOGNITION OF OBJECTS

Helmut A. Kappner, Akazienweg 13,, 6720 Speyer/Rhein, Fed. Rep. of Germany

PCT No. PCT/EP85/00648, § 371 Date Jul. 21, 1986, § 102(e) Date Jul. 21, 1986, PCT Pub. No. WO86/03314, PCT Pub. Date Jun. 5, 1986
PCT Filed Nov. 27, 1985, Ser. No. 890,853
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1984, 3443086; Feb. 22, 1985, 3506175
Int. Cl.[4] G06K *9/18*
U.S. Cl. 382—11 **8 Claims**



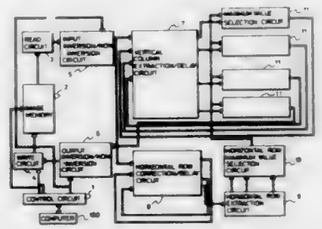
1. A method of identifying an object having permanently applied thereto an identifying coding comprising segmented character symbols readable both by humans and machines and orientation symbols having a predetermined position relative to said identifying coding, said method comprising the steps of:
(a) scanning said object with applied identifying coding and orientation symbols with an electronic camera to produce an electronic output signal;
(b) feeding said output signal to an image-processing computer which determines an expected position for said orientation symbols and produces an orientation symbol scanning pattern which includes the expected position of the orientation symbols and has an area which exceeds the area covered by the orientation symbols;
(c) scanning segments of said orientation symbol scanning pattern with said electronic camera to identify a precise coordinate position for said orientation symbols;
(d) determining a coordinate position for said identifying coding from the coordinate position of the orientation symbols and the predetermined position of the orientation symbols relative to said identifying coding, and producing an image segment scanning pattern covering the position of said identifying coding;
(e) scanning segments of said image segment scanning pattern with said electronic camera to determine the presence or absence of image segments; and
(f) deriving identifying information for said character symbols from the presence or absence of image segments in the scanned segments of said image segment scanning pattern.

4,809,343

MAXIMUM/MINIMUM VALUE CONVERSION CIRCUIT FOR IMAGE PROCESSING

Shuichi Wakabayashi; Tetsuaki Kawamoto; Toshiyuki Yamada, and Yuko Murayama, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan

Filed Sep. 21, 1987, Ser. No. 99,113
Claims priority, application Japan, Oct. 31, 1986, 61-259934
Int. Cl.[4] G06K *9/56*
U.S. Cl. 382—27 **7 Claims**



1. In a maximum/minimum value conversion circuit for image processing comprising:
image memory for storing image data representing an image made up of pixels in the form of a matrix composed of a plurality of horizontal rows and vertical columns of the pixels;
read means coupled to said image memory means for sequentially reading out the image data from said image memory means and converting the image data into a serial data stream composed of a plurality of multi-bit words each constituting the image data of one of the pixels of the image;
horizontal row extraction means connected to receive the serial data stream for extracting, from the serial data stream, image data associated with a portion of predetermined length of a horizontal row of the matrix;
horizontal row maximum value selection means coupled to said horizontal row extraction means for selecting the maximum value image data from among the data extracted by said horizontal row extraction means;
vertical column extraction/delay means connected to receive the serial data stream for sequentially extracting, from the serial data stream, image data associated with a portion of predetermined length of a vertical column of the matrix;
a plurality of additional maximum value selection means each connected for comparing the data extracted by said vertical column extraction/delay means with the data selected by said horizontal row maximum value selection means and selecting and outputting the maximum value from among the compared data; and
write means coupled to said image memory means for sequentially writing the data selected by one of said additional maximum value selection means into said image memory means.

4,809,344

APPARATUS FOR PREPROCESSING OF CHARACTER RECOGNITION

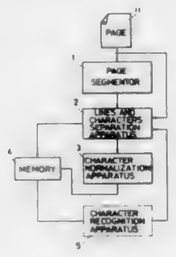
Norman A. Peppers, Belmont; James R. Young, Palo Alto; Gerald A. Pierce, Redwood City, all of Calif.; Hisami Nishi, and Kazuo Katsuki, both of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed May 11, 1987, Ser. No. 48,229
Int. Cl.[4] G06K *9/74*
U.S. Cl. 382—32 **8 Claims**

1. An apparatus for preprocessing of character recognition comprising:

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dividing means for dividing an area within a page into a plurality of areas,
multiplying means for multiplying one of the plurality of areas into a plurality of images,
feature extracting means for extracting features of said one of the plurality of means by optically detecting the presence or absence of a correlation between each of pairs of the plurality of images and a plurality of different masks,
a plurality of photosensor arrays each of which has a plurality of aligned light-receiving elements having different alignment directions and being respectively paired with the plurality of images,
first and second image sensors for reading lines and characters within the page in a predetermined scanning direction;
moving means for moving relatively the characters and said first and second image sensors in a direction different from the scanning direction;



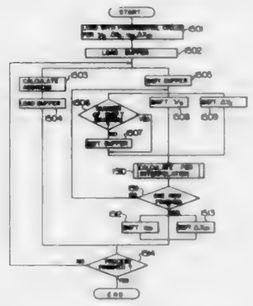
calculating means for calculating a size of the characters along a moving direction on the basis of an output from said first image sensor; and
control means for controlling a scanning frequency of said second image sensor on the basis of the size of the characters calculated,
wherein each said one of the areas within the page is divided until each said one of the plurality of areas as directed has a single feature, and a beam from each said one of the plurality of areas with a single feature is incident on said plurality of photosensor arrays,
the lines and the characters in each said one of the plurality of areas as divided are separated on the basis of a density distribution represented by detection outputs form said light-receiving elements, and
each of the characters as separated is normalized by said second image sensor along the predetermined scanning direction.

4,809,345
METHOD OF AND APPARATUS FOR ENLARGING/REDUCING TWO-DIMENSIONAL IMAGES

Kunioki Tabata, Tokyo; Tetuo Machida, Sagamihara; Haruo Takeda, Machida; Naoki Takada, Hadano, and Yasuyuki Okada, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 489,350, Apr. 28, 1983, Pat. No. 4,610,026. This application Aug. 29, 1986, Ser. No. 901,574
Claims priority, application Japan, Apr. 30, 1982, 57-71237; Sep. 6, 1982, 57-153904
The portion of the term of this patent subsequent to Sep. 2, 2003, has been disclaimed.
Int. Cl.[4] G06K *9/42*
U.S. Cl. 382—47 **28 Claims**

1. A method of converting a first two-dimensional image on first column direction and row direction scales to a second two-dimensional image on second column direction and rod direction scales, said first and second two-dimensional images being of image elements arranged in first and second matrices respectively, the ratios between said first and second scales being predetermined column direction and row direction scale factors, respectively, comprising:
first step of preparing at least one data sequence of fundamental cycle representing differences between those column order numbers in said first matrix which are particularly related to coordinates of image elements in said second matrix and those column order numbers in said first matrix which are particularly related to coordinates

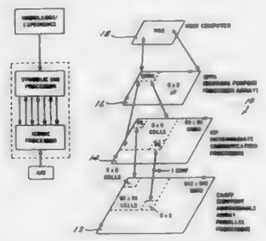


of image elements adjacent to the first-mentioned image elements in said second matrix;
second step of selecting at least one row of image elements in said first matrix;
third step of selecting sequentially at least one of the image elements in said first matrix within said selected row by the use of said prepared data sequence; and
fourth step of determining sequentially a data value for each of the image elements on one row in said second matrix on the basis of the value for said selected at least one image element.

4,809,346
COMPUTER VISION ARCHITECTURE FOR ICONIC TO SYMBOLIC TRANSFORMATION

David B. Shu, Canoga Park, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 887,847, Jul. 18, 1986. This application Feb. 11, 1987, Ser. No. 13,481
Int. Cl.[4] G06K *9/00*
U.S. Cl. 382—49 **10 Claims**

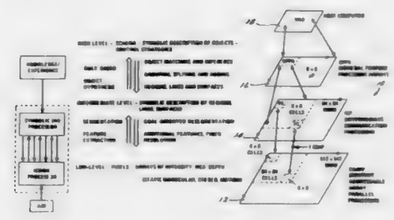


1. An image understanding machine comprising:
a network of substantially identical processing elements (PE) having a memory capable of at least storing a pixel value therein, at least one register for storing a data value therein, and input means for receiving a result value;
gating means between each processing element and its neighboring processing elements, adapted to selectively connect each processing element and its associated register to other processing elements;
control means for opening and closing said gating means, said control means operating to close said gating means to connect together those processing elements having predetermined characteristics stored in said memory; and
some/none logic means having a plurality of inputs coupled to said registers of the processing elements and having a plurality of outputs coupled to the input means of the processing elements, said logic means providing an output substantially simultaneously to the input means of all of the processing elements which have been connected together via said gating means, said output being a function of the data values in said register means of all of the connected processing elements.

4,809,347
COMPUTER VISION ARCHITECTURE

James G. Nash, Los Angeles, and David B. Shu, Canoga Park, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 18, 1986, Ser. No. 887,847
Int. Cl.[4] G06K *9/00*
U.S. Cl. 382—49 **34 Claims**

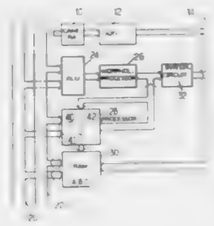


1. A computer architecture for an image understanding machine for performing operations on image data in the form of a matrix of pixels, said machine comprising:
a first level of image processing elements having a first construction that enables neighboring processing elements on the first level to operate on different instructions simultaneously;
a second level of processing elements having a different construction than the first level processing elements, said second level processing elements each including means therein enabling processing elements on the second level to operate on different instructions simultaneously, each second level processing element being associated with a group of first level processing elements and communicating therewith as well as with other second level processing elements;
a third level of processing elements having a construction different than the first and second level of processing elements, each third level processing element being associated with a given number of second level processing elements and communicating therewith as well as with other third level processing elements; and
a host computer communicating with at least the third level processing elements whereby different instructions can be transmitted to the processing elements of various levels to enable the computer to operate simultaneously on multiple instructions in each level.

4,809,348
PROCESS AND DEVICE FOR SEQUENTIAL IMAGE TRANSFORMATION

Fernand Meyer, Vaucux les Sablons, and Jean-Claude Klein, Fontainebleau Cedex, both of France, assignors to Association pour la Recherche et le Developpement des Methodes et Processus, Paris, France

Filed Aug. 7, 1986, Ser. No. 894,123
Claims priority, application France, Aug. 7, 1985, 85 12120
Int. Cl.[4] G06K *9/54*
U.S. Cl. 382—49 **17 Claims**



1. Process for skeletonization of an image made up of a matrix of pixels, wherein each of the pixels constitutes a central pixel in a neighborhood consisting of a predetermined plurality of pixels adjacent to the central pixel, each of the pixels in said matrix presenting a characteristic feature, such as a brightness, defined by a digital value, said method comprising the steps of:
(a) transforming said image by eliminating its plateaus to generate a relief without plateaus;
(b) coding said relief without plateau in the neighborhood of each of said pixels according to a predetermined coding algorithm to provide a coded relief represented by coded values;
(c) marking peak points on said coded relief, said peak points belonging to a skeleton of shapes in said image; and
(d) starting from said peak points, generating upstream parts of said skeleton by a re-write transformation including: (d1) a first scan of the image in a direct direction, during which a value is selected for each pixel in the image which is responsive to values of a set of pixels within a structuring element associated with the pixel whose value is to be selected and identical for all pixels; the selected value of each pixel is immediately substituted for the coded value in a image memory, whereby the pixel values in said structuring element include coded values and already selected values; and (d2), after symmetry or rotation of the structuring element, repeating step (d1) using a reversed direction scan, at least once.

4,809,349
METHOD OF AUTOMATICALLY EXTRACTING A CONTRASTING OBJECT IN A DIGITAL IMAGE

Gérard Herby, Le Kremlin Bicetre, and Serge Legall, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

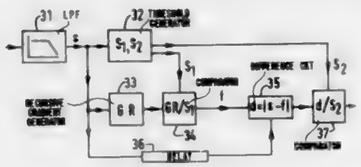
Filed Jul. 29, 1987, Ser. No. 79,549
Claims priority, application France, Jul. 30, 1986, 86 11031
Int. Cl.[4] G06K *9/38*
U.S. Cl. 382—50 **8 Claims**

1. A method for extracting a contrasting object in a digital image comprising:
estimating for each picture element (i,j) a threshold S_{ij} corresponding to a background estimation threshold representative of an image contrast;
determining a local contrast function (GR(i,j)) as a recursive gradient proportional to the absolute difference between an average (MV(j)) of the video signals on the line j of said picture element (i,j) and a function (MF(j), MF(j−1)) of

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the averages MF(j) and MF(j−1) of the estimated backgrounds in picture elements located on at least one identical line (j) or a line (j−1) preceding the line (j) on which the relevant picture element is located;

determining an estimated background value (f(i,j)) for each element by comparing to said threshold said local contrast function (GR(i,j)) calculated for each picture element (i,j);



determining the difference (d(i,j)) between the video signal (S(i,j)) and the estimated background (f(i,j)); and,

comparing said difference (d(i,j)) to a second decision threshold (S_2) to determine whether said picture element belongs to said contrasting object.

4,809,350

DATA COMPRESSION SYSTEM

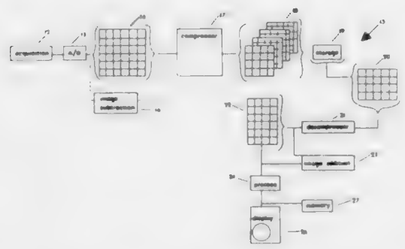
Yair Shimoni, Jerusalem, and Ron Niv, Ramana, both of Israel, assignors to Elscint Ltd., Haifa, Israel

Filed Jan. 30, 1987, Ser. No. 8,768

Claims priority, application Israel, Feb. 10, 1986, 77840

Int. Cl.⁴ G06K *9/36*

U.S. Cl. 382—56 **28 Claims**



1. A data compression method for compressing acquired image data to make more efficient use of memory space and to expedite the transfer of said data; said method comprising the steps of:

aquiring image data,

using a scan geometry for scanning the aquired image data region by region in an orderly fashion to obtain at least some of the data to be compressed, said scan geometry being determined by the image data aquisition system used for aquiring the image data,

predicting further data to be compressed based on the scanned aquired image data to obtain predicted data,

obtaining difference data from differences between said predicted further data and further aquired data,

compressing the difference data by encoding the difference data to be compressed using a string length code arrangment for the most prevalent difference data,

encoding the second most prevalent data to be compressed with a replacement code that is the shortest,

encoding the sequentially next most prevalent difference data with the shortest replacement code not previously used,

the step of predicting further data comprising the steps of:

using the scan geometry used for scanning the aquired image data to scan only data regions that have not previously been scanned and are contiguous to scanned data regions,

choosing a path from available paths from all of the contiguous scanned data regions that terminate in the region being scanned for predicting purposes,

selecting path points on said chosen path that come closer to the center point of the region being scanned that path points of any other available path,

determining the values of the selected path points, and

determining the predicted value of the region being scanned using the determined values of the selected path points.

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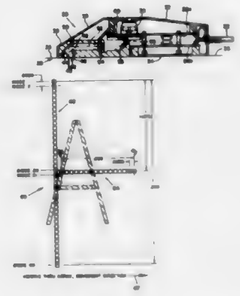
OPTICAL CHARACTER READER

Robert G. Abramovitz, Eugene; Robert L. Anderson, Jr., Tigard; Frederick L. Busse; Stuart A. Celarier, both of Portland; Jean-Yves H. Poublan, Beaverton, and Lawrence R. Shorthill, West Linn, all of Oreg., assignors to SABA Technologies, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 742,417, Jun. 7, 1985, abandoned. This application Dec. 11, 1986, Ser. No. 940,294

Int. Cl.⁴ G06K *9/22*

U.S. Cl. 382—59 **7 Claims**



1. A method for scanning a pattern of optical information on a surface, comprising:

projecting a plurality of first imaging elements along a line onto the surface;

projecting at least two second imaging elements onto the surface alongside the line of first imaging elements;

moving the first and second imaging elements laterally of the line in a scanning direction across the pattern;

sensing an optical state of the second imaging elements;

detecting a change in the optical state of the second imaging elements corresponding to relative movement between the second imaging elements and the pattern;

calculating an average rate of the relative movement;

generating a signal in accordance with the detected change in optical state of the second imaging elements;

in response to the signal, sensing at periodic intervals corresponding to the calculated average rate of movement an optical state of the first imaging elements corresponding to a portion of the pattern along the line;

detecting a uniform optical state of the second imaging elements; and

initiating the sensing of optical state of the first imaging elements at the periodic intervals so long as the uniform state continues to be detected.

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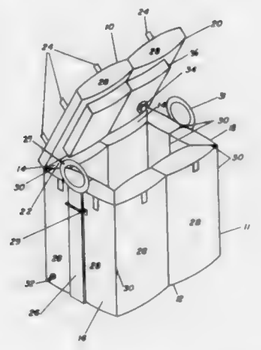
INFLATABLE COOLER

Kyle B. Walker, 4322 Martindale, Garland, Tex. 75043

Filed Nov. 27, 1987, Ser. No. 125,872

Int. Cl.⁴ B65D *30/00*

U.S. Cl. 383—3 **19 Claims**



1. An inflatable cooler comprising:

a container, having inflatable front and rear walls, side walls and a bottom wall, for containing and insulating articles from the surrounding environment;

an inflatable lid for covering the top of the container and for providing additional insulation from the surrounding environment;

valve means for introducing and removing air from the container and lid; and

a reinforcing support member secured to the bottom wall of the container for providing additional support to articles carried within the container, wherein the support member is a plate of semi-rigid material foldable along crease means extending across the support member.

4,809,353

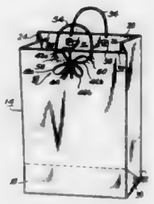
CARRIER WITH SIMULTANEOUS FORMATION OF CARRYING HANDLE AND DECORATIVE BOW

Peter S. C. Cheng, 5 Ross Street, Toronto, Ontario, Canada (M5T 1Z8)

Filed Sep. 24, 1987, Ser. No. 100,446

Int. Cl.⁴ B65D *33/00*

U.S. Cl. 383—6 **18 Claims**



1. A decorative carrier arrangement, comprising:

(a) an article to be carried;

(b) a bow having individual bow portions mounted on the article for movement relative to the article from a bow-unformed position to a bow-formed position; and

(c) means for forming a carrying handle on the article, and for simultaneously forming the bow, including an actuator, mounted on the article for movement relative to the article, and having one actuating portion operatively connected to the bow portions, for moving the bow portions from the bow-unformed position to the bow-formed position to form the bow on the article, and another actuating portion stationarily connected to the article, for simultaneously forming the carrying handle to carry the article from place to place with the bow thereon.

4,809,354

HYDROSTATIC BEARING UTILIZING A FERROMAGNETIC FLUID

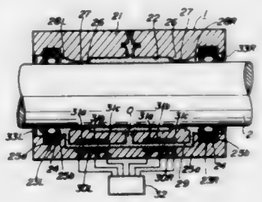
Sousuke Kawashima, Machashi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1987, Ser. No. 130,985

Claims priority, application Japan, Dec. 10, 1986, 61-294262; Dec. 10, 1986, 61-294263

Int. Cl.⁴ F16C *32/06, 33/74;* **F04B** *17/00;* **H02K** *44/00*

U.S. Cl. 384—114 **6 Claims**



1. A hydrostatic bearing system comprising:

a shaft;

a hydrostatic bearing provided with fluid chambers at positions confronting the shaft for hydrostatically holding ferromagnetic fluid;

sealing means at the axial sides of said chambers configured to allow movement between said hydrostatic bearing, and said shaft;

recovery grooves disposed at the axial sides of said chambers for collecting the ferromagnetic fluid squeezed out from the fluid chamber;

magnetic sealing means disposed at positions from which the ferromagnetic fluid is squeezed out of the bearing system;

circulating passages for circulating the ferromagnetic fluid collected between the recovery grooves and the fluid chambers; and

impelling means disposed within said passages for impelling the ferromagnetic fluid toward said fluid chamber.

4,809,355

METHOD FOR OPERATING A TRANSMITTING/RECEIVING CIRCUIT AND AN APPARATUS FOR IMPLEMENTING THE METHOD

Dieter Drefahl, Hanau, Fed. Rep. of Germany, assignor to Honeywell Regelsysteme GmbH, Fed. Rep. of Germany

Filed Dec. 8, 1986, Ser. No. 939,331

Claims priority, application European Pat. Off., Dec. 20, 1985, 85116347.7

Int. Cl.⁴ H04B *1/38, 1/54*

U.S. Cl. 455—75 **6 Claims**

1. A transmitting/receiving circuit comprising

a transmitting/receiving transducer,

a phase-locked-loop having a voltage-controlled oscillator,

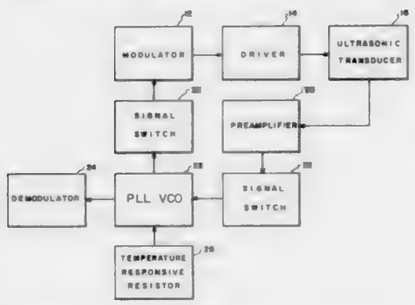
a modulator for applying a modulated carrier frequency to said transducer in a transmitting mode,

a transmitting circuit for selectively applying an output from said oscillator as a carrier frequency to said modulator to produce the modulated carrier frequency,

a receiving circuit for selectively applying an output from

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said transducer in a receiving mode for receiving reflected signals to an input of said phase-locked-loop and



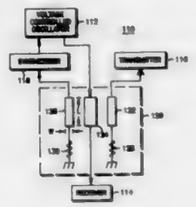
a temperature responsive element arranged to control the voltage-controlled oscillator at a frequency matched to an inherent frequency of said transducer.

4,809,356

THREE-WAY POWER SPLITTER USING DIRECTIONAL COUPLERS

David S. Peckham, and James J. Crakovic, both of Palatine, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 8, 1988, Ser. No. 153,121
Int. Cl.[4] H04B *1/40*
U.S. Cl. 455—86 **12 Claims**



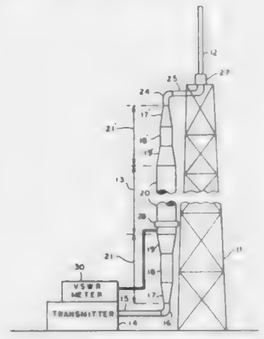
1. A circuit for splitting high frequency power provided at a power terminal, comprising:
a circuit board section having:
at least a first layer, a second layer and a third layer, situated respectively;
a first main conductor, on one of said first or second layers, for receiving the power at the power terminal;
a second conductor, on the other of said first or second layers and substantially parallel to and adjacent the first main conductor, for receiving a portion of the power on the first main conductor via at least partial broadside coupling;
a third conductor, situated on the same layer as the second conductor and substantially parallel thereto and substantially adjacent the first main conductor, for receiving a portion of the power on the first main conductor via at least partial broadside coupling; and
a ground conductor, situated on the third layer, for providing a ground reference for the first main conductor, and the second and third conductors;
whereby the first main conductor, the second conductor and the third conductor each provide a portion of the power from the power terminal to external circuitry.

4,809,357

TRANSITION BETWEEN RECTANGULAR AND RELATIVELY LARGE CIRCULAR WAVEGUIDE FOR A UHF BROADCAST ANTENNA

Thomas J. Vaughan, P.O. Box 440, Rye Beach, N.H. 03871

Continuation of Ser. No. 484,220, Apr. 12, 1983, Pat. No. 4,630,316. This application Dec. 16, 1986, Ser. No. 942,529
The portion of the term of this patent subsequent to Dec. 16, 2003, has been disclaimed.
Int. Cl.[4] H04B *1/02*
U.S. Cl. 455—129 **16 Claims**



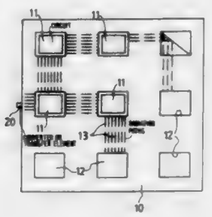
1. In a high power antenna system for UHF TV frequency (F) broadcast wherein a radiating antenna is located at the top of a tower structure many hundreds of feet high and a transmitter is located at the bottom of the tower, a relatively large diameter circular waveguide transmission line of diameter Dl is provided for conducting the UHF power from the transmitter up the tower to the antenna and the UHF power is fed to said circular waveguide transmission line from said transmitter by an input rectangular waveguide transmission line, and there is transmission line means between said input rectangular and said circular waveguide transmission lines for insuring that wave propagation in said circular waveguide transmission line is substantially totally in the dominant TE11 mode at the frequency F, although F is above the cut off frequency of the TM01 mode therein, the improvement comprising,
(a) wave propagation in said input rectangular waveguide transmission line is substantially totally in the dominant TE10 mode therein at the frequency F,
(b) a section of relatively small diameter circular waveguide of diameter Ds that has an input end and an output end, said diameter Ds being such that F is below the cutoff frequency of the TM01 mode in said small diameter circular waveguide section,
(c) a first transition section having a rectangular waveguide cross section at the input end thereof that connects to and matches said input rectangular waveguide transmission line from said transmitter and has a circular waveguide cross section at the output end thereof that connects to and matches said circular waveguide section of diameter Ds and
(d) a second transition section having an input end of diameter Ds connected to the output end of said circular waveguide section of diameter Ds and an output end of diameter Dl connected to the input end of said circular waveguide transmission line of diameter Dl,
(e) all of said connections being substantially matched,
(f) whereby the propagation mode of waves launched into said circular waveguide transmission line from said input rectangular waveguide through said sections is substantially totally in the dominant TE11 mode at the frequency F, although F is above the cut off frequency of the TM01 mode therein and resonance of said dominant TE11 mode therein is avoided.

4,809,358

DEVICE FOR INFORMATION TRANSFERRING IN A TRANSPARENT SUBSTRATE BETWEEN COMPONENTS HAVING I/O ELEMENTS ARRANGED FOR COMMUNICATION DIRECTLY THROUGH THE SUBSTRATE BY DIRECTIVE RADIATION PROPAGATING LINEARLY WITHOUT REFLECTION AT SURFACES OF THE SUBSTRATE

Mikael Fernström, Göteborg, Sweden, assignor to Svenska Robot/Swedish Robot HB, Goteborg, Sweden

PCT No. PCT/SE87/00051, § 371 Date Oct. 6, 1987, § 102(e) Date Oct. 6, 1987, PCT Pub. No. WO87/05120, PCT Pub. Date Aug. 27, 1987
PCT Filed Feb. 4, 1987, Ser. No. 108,825
Claims priority, application Sweden, Feb. 14, 1986, 8600065
Int. Cl.[4] H04B *9/00*
U.S. Cl. 455—600 **6 Claims**



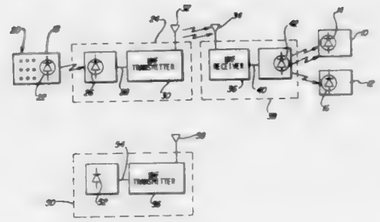
1. A device for information transferring communication between components or circuits on a substrate by using directive, narrow spectrum radiation as an information transferring medium, where the substrate (10) is formed of a material that is transparent to said radiation, the components (11) are placed in predetermined positions at least partially inside the transparent material, and components in regions thereof lying inside said material are provided with input and output elements (17 and 16, respectively) responsive to said radiation, characterized in that said input and output elements are arranged for communication directly through the material of the substrate by means of said radiation (13) which propagates linearly in the substrate material without reflection at surfaces of the substrate.

4,809,359

SYSTEM FOR EXTENDING THE EFFECTIVE OPERATIONAL RANGE OF AN INFRARED REMOTE CONTROL SYSTEM

Devan T. Dockery, Rt. 8 Box 14, Defuniak Springs, Fla. 32433

Filed Dec. 24, 1986, Ser. No. 945,822
Int. Cl.[4] H04B *9/00*
U.S. Cl. 455—603 **2 Claims**



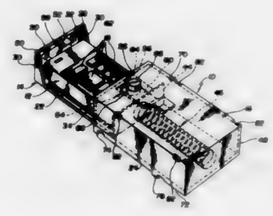
1. A system for extending the effective operational range of one or more infrared remote control systems each having a remote control unit with an infrared transmitter and a controlled device having an infrared receiver remote from the infrared transmitter, said system comprising
(a) a first repeater physically adjacent the remote control unit having
(1) means for receiving said infrared signal and for generating an electrical signal representative thereof,
(2) means responsive to said electrical signal for transmitting a radio signal representative of said electrical signal, and
(b) a second repeater physically adjacent the controlled device having
(1) means for receiving sadi radio signal and for generating an electrical signal representative thereof, and
(2) means responsive to said electrical signal for transmitting an infrared signal representative thereof toward the controlled device;
wherein said means for receiving said infrared signal comprises an infrared photodetector, and
wherein said infrared transmitter comprises an infrared emitter.

4,809,360

ELECTRONIC EQUIPMENT REMOTE CONTROL UNIT CHASSIS

James L. Kraft, Minneapolis, Minn., assignor to Collage Video Specialities, Inc., Minneapolis, Minn.

Filed Oct. 6, 1987, Ser. No. 106,613
Int. Cl.[4] H04B *9/00, 1/08*
U.S. Cl. 455—603 **6 Claims**



1. Apparatus for protecting a plurality of electronic equipment remote control units from damage and consolidating the units at a common location, comprising:
(a) a plurality of housings, one corresponding to each of the remote control units, each of said housing being defined by a wall having a window formed therein;
(b) means for immobilely mounting each remote control unit in its corresponding housing, and orienting each unit with an infrared emitter thereof disposed to project an infrared signal through the window of its corresponding housing to control an associated electronic equipment; and
(c) means for mating said housings together with each transmission path from a window of a housing mounting a remote control unit therein to the electronic equipment associated with the remote control unit able to be rendered unobstructed.

4,809,361

OPTICAL COMPOSITE TRANSCEIVER

Akihiro Okada, and Takashi Matsuda, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 13, 1986, Ser. No. 929,797
Claims priority, application Japan, Nov. 13, 1985, 60-254016
Int. Cl.[4] H04B *9/00*
U.S. Cl. 455—606 **3 Claims**

1. An optical composite transceiver for a bus type local area network (LAN) system using a U-shaped or S-shaped optical fiber cable as a one-way transmission line and using a carrier sense multiple access/collision detection (CSMA/CD) method

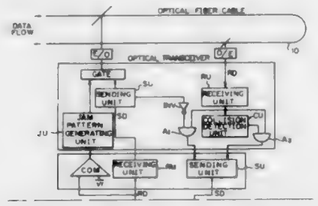
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and a half duplex communication method, said optical composite transceiver comprising:

first and second optical couplers, coupled to said optical fiber cable, sending and branching data to and from said optical fiber cable;

conversion means, coupled to said first and second optical couplers, for converting electric signals into optical signals and optical signals into electric signals;

an inner coaxial cable;



a plurality of coaxial transceivers, connected to said inner coaxial cable, and detecting collision of frame data on said inner coaxial cable; and

a control unit, coupled to said conversion means and one of said coaxial transceivers, having access functions for sending and receiving data and a collision detection function, collisions of frame data on said optical fiber cable being detected by said control unit, wherein when said control unit detects collisions of frame data on said optical fiber cable when data is transmitted, data received from the optical fiber cable is sent to the inner coaxial cable.

4,809,362

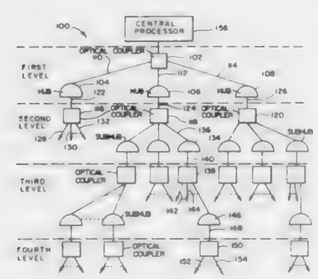
FIBER-OPTIC STAR TREE NETWORK

Richard O. Class, Christiansburg, and Ashok Sankar, Roanoke, both of Va., assignors to Center For Innovative Technology, Herndon, Va.

Filed Mar. 13, 1987, Ser. No. 25,692

Int. Cl.[4] H04B 9/00; G08B 5/00

U.S. Cl. 455—607 **6 Claims**



1. A method of transmitting messages between at least two of a plurality of stations connected together in a fiber optic star-tree communications network wherein, any station can be a source or a destination of the message being transmitted, said network comprising at least a first and a second family of stations, all stations within a family having different addresses, and wherein said first family of stations are connected together and said second family of stations are connected together, respectively, with optical connecting means in a star configuration at respective first and second central passive optical couplers, a first and second parent hub, each parent hub having a unique address and said first and second parent hubs respectively connected to said first and second optical coupler, said first and second hubs also being connected together with an optical connecting means in a star configuration at a common main passive optical coupler, said method comprising:

assigning a first and second part destination address to a message to be sent, said first destination address part containing the address of the destination hub and said second destination address part containing the address of the destination station connected to said destination hub;

assigning a first and second part source address to the message to be sent, said first source address part containing the address of the parent hub and said second source address part containing the address of the source station;

transmitting said message from a source station inside the family to said parent hub and to all stations connected to said parent hub;

copying said message at said parent hub only if the message destination is a station outside of the family of the transmitting station, and then retransmitting said message outside said source family to at least one other hub;

copying said parent hub retransmitted message at a receiving hub only if the message destination is a station inside the family of stations of that hub, and then retransmitting said retransmitted message to the family of stations of said receiving hub; and

copying a message by the destination station.

4,809,363

METHOD FOR AUTOMATIC LEVEL MATCHING IN A LOCAL NETWORK, IN PARTICULAR A MULTICOMPUTER ARRANGEMENT, COMPRISING A BUS SYSTEM HAVING LIGHT WAVEGUIDES, FOR THE PURPOSE OF COLLISION RECOGNITION

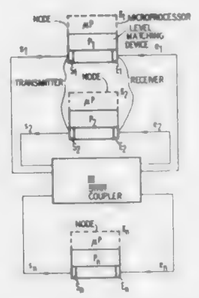
Hans Thinschmidt, Germering, and Franz Kurfess, Blaustein, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 906,497, Sep. 12, 1986, abandoned. This application Sep. 28, 1987, Ser. No. 102,242

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1985, 3534207

Int. Cl.[4] H04B 9/00

U.S. Cl. 455—612 **9 Claims**



1. A method for automatic level matching in a local network which comprises a plurality of nodes, a bus system having light waveguides connected to the nodes and an optical star coupler connected to the waveguides, for setting a standardized level at all input of the star coupler for collision recognition, whereby an information signal to be transmitted is converted into an optical signal by an electro-optical transmitter, the optical signal is coupled into a light waveguide, the optical signal is converted into an electrical useful signal by an opto-electric receiver and the information signal is recovered from the electrical useful signal, whereby a respective transmitter is provided for each node and has a light power which is dependent on the information signal and which is coupled into the

light waveguide by the transmitter which is variable in digital steps, and whereby a receiver comprising DC-coupled amplifiers without gain control is respectively provided for each node, the receiver comprising an input stage for generating the useful signal, a first comparator stage for generating the information signal from the useful signal and a second comparator stage which is supplied with a reference voltage variable in digital steps which senses the level of the useful signal and emits a collision signal when a useful signal exceeds the reference voltage, and in particular comprising the steps of:

given a required level matching for the local network, executing a process to produce a fundamental phase synchronizing all level matching devices in all nodes with one another;

in a first matching phase simultaneously setting the reference voltage of all level matching devices to the lowest received level, whereby the sum of all attenuation components of the signal path is taken into consideration at the receiving side of the appertaining node from the output of the star coupler up to the input of the first comparator stage; and

in a second matching phase successively setting the transmission level of each transmitter such that the transmitted light power at their own receiver leads to the receiving power registered as lowest, whereby the sum of attenuation components of the signal path is taken in consideration at the transmitting side of the nodes from the output of the respective transmission current source to the respective input of the star coupler, whereby the transmission level of each of the nodes in the local network has the same value at that input of the star coupler assigned thereto as all other transmission levels have at the respective other inputs of the star coupler so that when two or more nodes simultaneously feed an information signal into the optical bus during normal operation of the local network, at least twice the value of the standardized transmission level occurs and is acquired by collision comparators respectively individually assigned to the nodes so that the condition of a collision is recognized at all nodes for initiation of a known collision disentangling algorithm.

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DESIGN PATENTS

GRANTED FEB. 28, 1989

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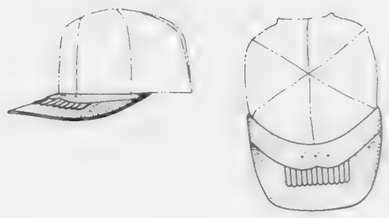
DESIGNS

FEBRUARY 28, 1989

299,980
GARMENT PROTECTOR
Björn Hamberg, PO Box 94, S-822 00 Alfta, Sweden
Filed Aug. 25, 1986, Ser. No. 899,727
Claims priority, application Sweden, Feb. 28, 1986, 860500
Term of patent 14 years
U.S. Cl. D2—225



299,981
VISOR FOR CAP OR THE LIKE
Michael K. Proctor, P.O. Box 345, Midway, Utah 84049
Filed Apr. 7, 1986, Ser. No. 850,406
Term of patent 14 years
U.S. Cl. D2—260

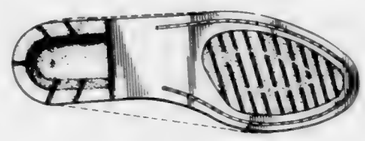


299,982
ELEMENT OF A SHOE UPPER
James K. Toeg, Beaverton, Oreg., assignor to AVIA Group International, Inc., Portland, Oreg.
Filed Feb. 17, 1988, Ser. No. 156,565
Term of patent 14 years
U.S. Cl. D2—314



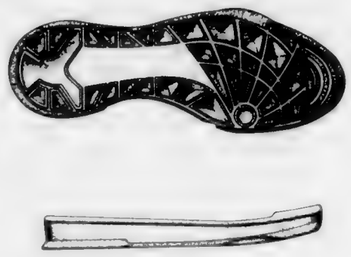


299,983
SHOE SOLE
Gary Zaidema, Rohnert Park; John Schelling, Orinda, and Steve Dodds, Novato, all of Calif., assignors to The Donner Mountain Corporation, Marlboro, Mass.
Filed Dec. 2, 1987, Ser. No. 127,693
Term of patent 14 years
U.S. Cl. D2—320

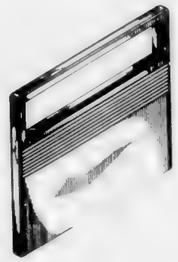


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299,984
SHOE SOLE
Steven P. Liggett, North Easton; Tuan N. Le, Cohasset, and Jeffrey P. Bua, Duxbury, all of Mass., assignors to Reebok International Ltd., Canton, Mass.
Filed Nov. 20, 1985, Ser. No. 805,946
Term of patent 14 years
U.S. Cl. D2—320



299,985
DIVIDER PANEL FOR AN OPERATOR WORKSTATION OR THE LIKE
Edmond J. Helstab, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed May 8, 1986, Ser. No. 862,427
Term of patent 14 years
U.S. Cl. D6—332



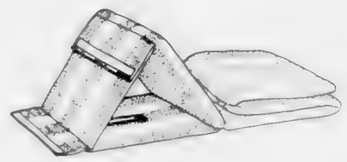
299,986
ROCKER
Frederic E. Doughty, Sierra Madre, Calif., assignor to Brown Jordan Company Limited Partnership, El Monte, Calif.
Filed Sep. 16, 1986, Ser. No. 908,099
Term of patent 14 years
U.S. Cl. D6—344



299,987
CHAIR
David C. Jenkins, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Mar. 31, 1986, Ser. No. 847,569
The portion of the term of this patent subsequent to Oct. 11, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



299,988
FOLDABLE BEACH MAT OR SIMILAR ARTICLE
Giovanni Parabita, Via C. Farini 93, I-20159 Milano, Italy
Filed Jun. 4, 1986, Ser. No. 870,855
Term of patent 14 years
U.S. Cl. D6—368



299,989
HAT STAND
Stuart C. Burr, Westlake Village, Calif., assignor to Equipment de' Sport U.S.A., Inc., Westlake, Calif.
Filed Jan. 23, 1986, Ser. No. 821,605
Term of patent 14 years
U.S. Cl. D6—415

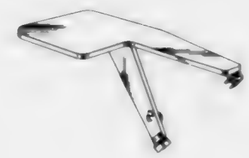




299,990
DISPLAY STAND
Lynn E. Everett, New Philadelphia, Ohio, assignor to Tusco Manufacturing Company, Gnadenhutten, Ohio
Filed Jul. 11, 1986, Ser. No. 884,557
Term of patent 14 years
U.S. Cl. D6—415



299,991
TABLE ATTACHMENT FOR FOLDING CHAIR
Vilas D. Hershberger, R.R. 1, Hesston, Kans. 67062
Filed Sep. 2, 1986, Ser. No. 903,085
Term of patent 14 years
U.S. Cl. D6—511



299,992
FOOD CONTAINER
Daniel P. Michel, 52, Avenue du Général Leclerc, 75014 Paris, France
Filed Sep. 3, 1985, Ser. No. 771,896
Term of patent 14 years
U.S. Cl. D7—5





299,993
STEMMED WINE GLASS OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute 62510, Arques, France
Filed Nov. 13, 1985, Ser. No. 804,990
The portion of the term of this patent subsequent to Jan. 3, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13

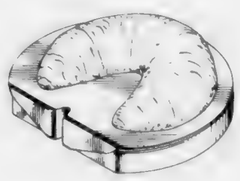


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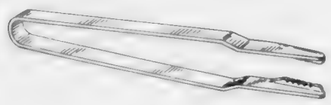
299,994
PLATE
Elsa Fischer-Treyden, Selb, Fed. Rep. of Germany, assignor to Rosenthal Aktiengesellschaft Rechtsabteilung, Fed. Rep. of Germany
Filed Jul. 29, 1986, Ser. No. 891,103
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1986, 7622
Term of patent 14 years
U.S. Cl. D7—23



299,995
CROISSANT SLICER
Gilles Rainville, and Francoise Rainville, both of Northridge, Calif., assignors to Howard A. Kenyon, Cerritos, Calif.
Filed Feb. 28, 1986, Ser. No. 838,005
Term of patent 14 years
U.S. Cl. D7—43



299,996
BARBECUE TONG
James E. Tucker, Batavia, and John Beecher, III, Carpentersville, both of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.
Division of Ser. No. 763,856, Aug. 8, 1985. This application Mar. 10, 1988, Ser. No. 166,161
Term of patent 14 years
U.S. Cl. D7—105



299,997
BARBECUE FORK
James E. Tucker, Batavia, and John Beecher, III, Carpentersville, both of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.
Division of Ser. No. 763,856, Aug. 8, 1985. This application Mar. 10, 1988, Ser. No. 166,164
Term of patent 14 years
U.S. Cl. D7—106

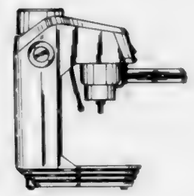


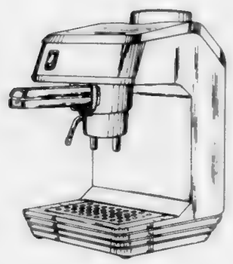
299,998
ESPRESSO COFFEE MAKING MACHINE
Florian Seiffert, Wiesbaden, Fed. Rep. of Germany, assignor to Robert Krups Stiftung & Co. KG, Solingen, Fed. Rep. of Germany
Filed Mar. 14, 1986, Ser. No. 844,745
Term of patent 14 years
U.S. Cl. D7—309





299,999
ESPRESSO MACHINE
Alberto Pandolfi, Milan, Italy, assignor to 501 Brevelle Gaggia S.p.A., Robecco Sul Naviglio, Italy
Filed Jan. 24, 1986, Ser. No. 822,253
Claims priority, application Italy, Jul. 26, 1985, 53643/85[U]
Term of patent 14 years
U.S. Cl. D7—309

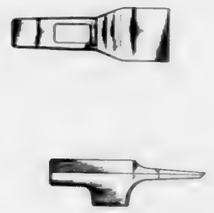




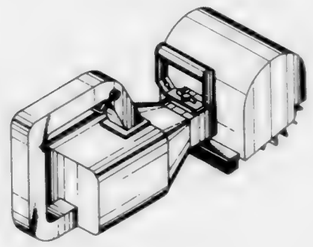
300,000
GAS METER SHUTOFF VALVE WRENCH OR SIMILAR ARTICLE
Willi W. Reinhardt, 2933 Castle Harbor, Ontario, Calif. 91761
Filed May 30, 1986, Ser. No. 869,071
Term of patent 14 years
U.S. Cl. D8—17



300,001
HAMMER HEAD
Thomas W. Oberg, Monroe, N.C., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Feb. 26, 1987, Ser. No. 19,384
Term of patent 14 years
U.S. Cl. D8—78

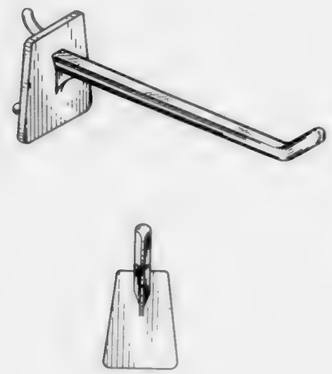


300,002
HAND HELD POWER SCRAPER
Thomas M. Sanguinet, and Dorothy D. Sanguinet, both of P.O. Box 686, Gladewater, Tex. 75647
Filed Apr. 28, 1986, Ser. No. 857,811
Term of patent 14 years
U.S. Cl. D8—69



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300,003
DISPLAY HOOK FOR PEGBOARD OR THE LIKE
V. James Hutchison, Denver, Colo., assignor to T-Plastech Corporation, Englewood, Colo.
Filed Apr. 3, 1986, Ser. No. 847,835
Term of patent 14 years
U.S. Cl. D8—367





300,004
BAG
Nowell N. Korey, 1201 W. 37th St., Chicago, Ill. 60609
Filed Nov. 1, 1985, Ser. No. 793,965
Term of patent 14 years
U.S. Cl. D9—305



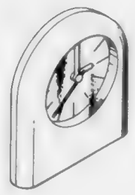
300,005
BOTTLE
André Jacobs, Meise; Richard May, Brussels; Marcel Vandebroek, Grimbergen, and Frieda Spores, Houthalen, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 750,823, Jul. 1, 1985. This application Jul. 31, 1987, Ser. No. 80,380
Claims priority, application Benelux, Jan. 4, 1985, 3490-08; Jan. 4, 1985, 3490-11; Jan. 4, 1985, 3490-12; Jan. 4, 1985, 3490-19
Term of patent 14 years
U.S. Cl. D9—370



300,006
CLOCK
Donald J. Booty, Frankfort, Ill., assignor to Zelco Industries, Mount Vernon, N.Y.
Filed Nov. 18, 1985, Ser. No. 805,756
Term of patent 14 years
U.S. Cl. D10—22



300,007
CLOCK
Donald J. Booty, Frankfort, Ill., assignor to Zelco Industries, Mount Vernon, N.Y.
Filed Nov. 18, 1985, Ser. No. 805,755
Term of patent 14 years
U.S. Cl. D10—28



300,008
WINDOWPANE THERMOMETER
Alexander Zalman, 5201 Banyan La., Tamarac, Fla. 33319
Filed Feb. 10, 1986, Ser. No. 827,375
Term of patent 14 years
U.S. Cl. D10—57



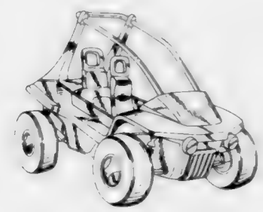
300,009
DIAL GAUGE
Seigo Takahashi; Toshiyuki Matsumoto, both of Kawasaki, and Kazuya Ishida, Tochigi, all of Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan
Filed May 7, 1986, Ser. No. 860,744
Claims priority, application Japan, Nov. 7, 1985, 60-46761
Term of patent 14 years
U.S. Cl. D10—73



300,010
LIVE FISH SCALE
Manny Homen, 5798 E. Paseo Cimarron, Tucson, Ariz. 85715
Filed Aug. 22, 1986, Ser. No. 899,395
Term of patent 14 years
U.S. Cl. D10—91



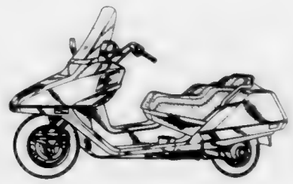
300,011
FOUR-WHEELED BUGGY
Yasuhiro Obe; Yukinori Kawaguchi, and Kazuhiko Yokoyama, all of Saitama, Japan, assignors to Honda Gikeu Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 8, 1986, Ser. No. 850,895
Claims priority, application Japan, Oct. 14, 1985, 60-42938
Term of patent 14 years
U.S. Cl. D12—87



300,012
EXPANDABLE TRAILER
David L. Boice, Jr., 8531 Lindante Dr., Whittier, Calif. 90603
Continuation-in-part of Ser. No. 896,467, Aug. 14, 1986, abandoned. This application Oct. 22, 1986, Ser. No. 922,827
Term of patent 14 years
U.S. Cl. D12—97

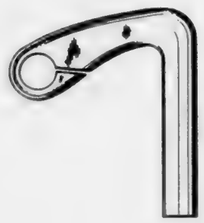


300,013
MOTORCYCLE
Hiroaki Shimoyama, Saitama, and Kiyoshi Ono, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 31, 1986, Ser. No. 847,060
Claims priority, application Japan, Sep. 30, 1985, 60-41015
Term of patent 14 years
U.S. Cl. D12—110

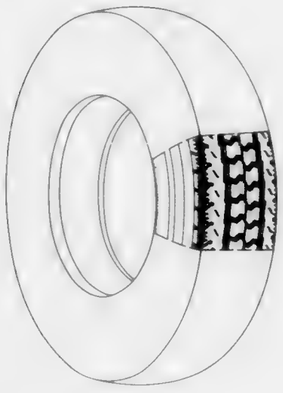


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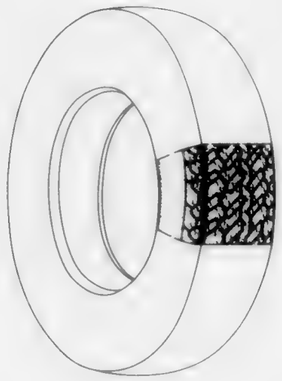
300,014
STEM FOR A BICYCLE HANDLEBAR
Lucio Borromeo, Turin, Italy, assignor to 3 T S.p.A., Turin, Italy
Filed Dec. 23, 1985, Ser. No. 812,598
Claims priority, application Italy, Jan. 26, 1985, 53539/85[U]
Term of patent 14 years
U.S. Cl. D12—118



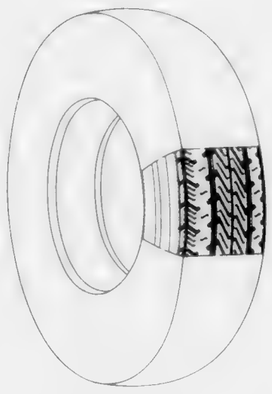
300,015
TIRE
Roger C. Cottrell, Greenville, S.C., assignor to Michelin Recherche et Technique, Switzerland
Filed Jul. 25, 1986, Ser. No. 889,395
Term of patent 14 years
U.S. Cl. D12—147



300,016
TIRE
Kevin F. Clemens, Simpsonville, and Robert D. McGinty, Greenville, both of S.C., assignors to Michelin Recherche et Technique, Switzerland
Filed Jun. 25, 1986, Ser. No. 878,567
Term of patent 14 years
U.S. Cl. D12—147



300,017
TIRE
Roger C. Cottrell, Greenville, S.C., assignor to Michelin Recherche et Technique, Switzerland
Filed Jul. 25, 1986, Ser. No. 889,390
Term of patent 14 years
U.S. Cl. D12—147



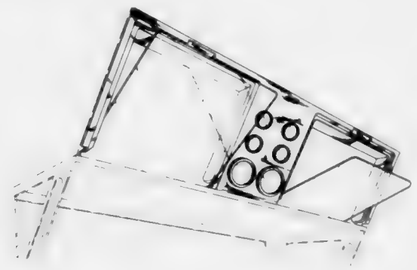
300,018
LUGGAGE CARRIER
John A. Bott, 931 Lakeshore Dr., Grosse Point Shores, Mich. 48236
Filed Aug. 8, 1986, Ser. No. 894,339
Term of patent 14 years
U.S. Cl. D12—157



300,019
COMBINED PICKUP TRUCK UTILITY BOX AND LEG SUPPORTS THEREFOR
Thomas Dickinson, St. Louis, Mo., assignor to Contico Automotive, Inc., St. Louis, Mo.
Filed Jun. 17, 1986, Ser. No. 875,749
Term of patent 14 years
U.S. Cl. D12—157



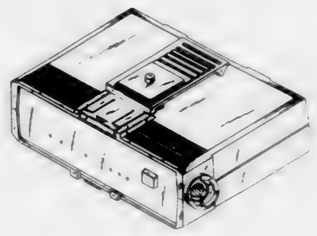
300,020
FRONT PANEL FOR A BOAT CONSOLE OR SIMILAR ARTICLE
Peter J. Petrilli, Miami, Fla., assignor to Mako Marine, Inc., Miami, Fla.
Filed Mar. 14, 1986, Ser. No. 844,736
Term of patent 14 years
U.S. Cl. D12—192



300,021
TRANSOM PORTION OF A BOAT
William D. Riley, Sarasota, Fla., assignor to Donzi Marine, Tallevast, Fla.
Filed Sep. 24, 1986, Ser. No. 911,211
Term of patent 14 years
U.S. Cl. D12—318



300,022
BATTERY PACK WITH REMOVABLE CLIP
Richard Shaper, 99 McCoun's La., Old Brookville, N.Y. 11545
Filed Feb. 16, 1988, Ser. No. 155,841
Term of patent 14 years
U.S. Cl. D13—8

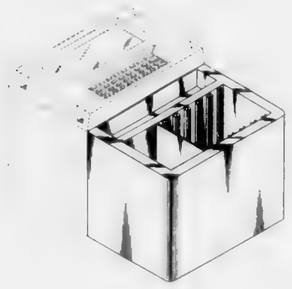


300,023
ELECTRONIC GEARSHIFT CONTROL FOR A VEHICLE
Lawrence D. DeRamus, Jr., 2611 18th St., Plano, Tex. 75074
Filed Nov. 19, 1985, Ser. No. 805,752
Term of patent 14 years
U.S. Cl. D13—32



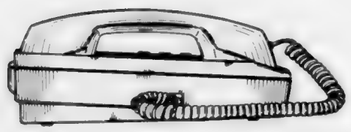
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300,024
HOUSING FOR ELECTRONIC MODULES
John M. Klebba, Golden, Colo., assignor to Geomation, Inc., Golden, Colo.
Filed Aug. 14, 1986, Ser. No. 896,627
Term of patent 14 years
U.S. Cl. D13—40

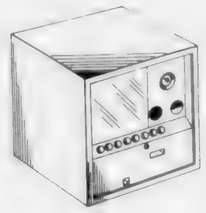


300,025
COMBINED TEI EPHONE AND ANSWERING MACHINE
Youji Honda, Ohizumi, Japan, assignor to Sanyo Electric Co., Ltd., Japan
Filed Nov. 5, 1985, Ser. No. 795,075
Claims priority, application Japan, May 8, 1985, 60-18774
Term of patent 14 years
U.S. Cl. D14—141

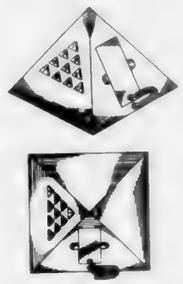




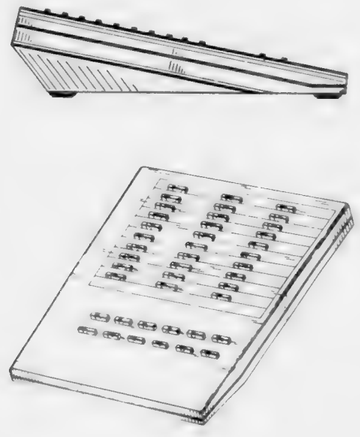
300,026
COMBINED VIDEO TAPE RECORDER/PLAYER AND VIDEO MONITOR
S. Glen Pace, Marina del Rey, Calif., and M. Don Larsen, Logan, Utah, assignors to Sports Replay, Inc., Santa Monica, Calif.
Filed Jul. 22, 1985, Ser. No. 757,487
Term of patent 14 years
U.S. Cl. D14—129



300,027
TELEPHONE SET
Corey Brunish, 2426 SE. Market St., Portland, Oreg. 97214
Filed Nov. 23, 1987, Ser. No. 124,453
Term of patent 14 years
U.S. Cl. D14—143

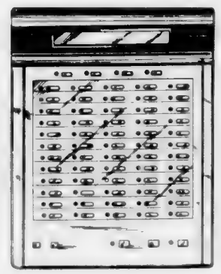


300,028
INTERCALL CONSOLE MODULE DEVICE FOR A TELEPHONE SET
Tadamine To, Kawasaki, Japan, assignor to Nitsuko Corporation, Kawasaki, Japan
Filed Jan. 17, 1987, Ser. No. 63,288
Claims priority, application Japan, Dec. 17, 1986, 61-49690
Term of patent 14 years
U.S. Cl. D14—151



300,029
DIRECT STATION TELEPHONE SELECTOR STAND
Shigeaki Kido; Sadao Isozaki, and Yasuko Yajima, all of Tokyo, Japan, assignors to Meisei Electric Co., Ltd., Tokyo, Japan
Filed Jan. 22, 1987, Ser. No. 6,693
Claims priority, application Japan, Jul. 25, 1986, 61-29173; Oct. 4, 1986, 61-39346
Term of patent 14 years
U.S. Cl. D14—241

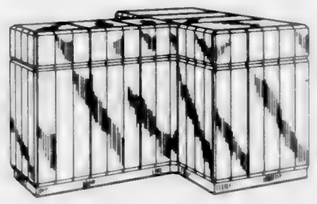




300,030
REMOTE CONTROL UNIT
William H. Barrett, Woodstock; Joseph A. Gregory, Kingston; Lisa M. Mohr, Woodstock; Louis J. Rennsburger, Pine Plains, and David L. Schamm, Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 3, 1986, Ser. No. 926,472
Term of patent 14 years
U.S. Cl. D14—218

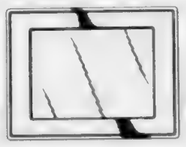


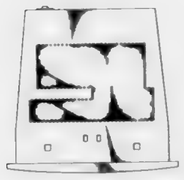
300,031
MAIN FRAME COMPUTER
Dwaine S. Katai; Brian G. Reeve, both of San Jose; Charles E. Ferguson, Fremont; Carl W. Thomas, and Gary L. McDougall, both of San Jose, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.
Filed Oct. 22, 1985, Ser. No. 789,993
Term of patent 14 years
U.S. Cl. D14—102



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300,032
ROCK-MOUNTED TOUCH CONTROL SCREEN DISPLAY TERMINAL
Jeffrey C. Brown, 522 NE. 91st St., Seattle, Wash. 98115, and Peter F. Barbee, 5219 Kensington Pl. N., Seattle, Wash. 98103
Filed May 20, 1986, Ser. No. 867,257
Term of patent 14 years
U.S. Cl. D14—113

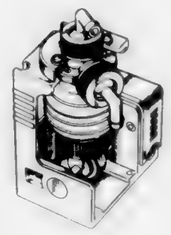




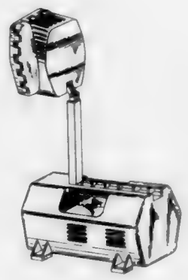
300,033
POWER UNIT FOR POWERED PAINT APPLICATOR OR THE LIKE
David C. Miller, Ridgefield, Conn., assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Aug. 8, 1986, Ser. No. 894,890
Term of patent 14 years
U.S. Cl. D15—7



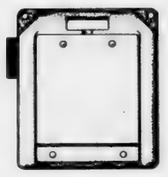
300,034
BELLOWS PUMP
Norishige Hirakawa, Moroyama; Kazuhiko Sato, Kawagoe, and Satoru Hagiwara, Saitama, all of Japan, assignors to Iwaki Co., Ltd., Japan
Filed Nov. 24, 1986, Ser. No. 934,134
Claims priority, application Japan, May 26, 1986, 61-19951
The portion of the term of this patent subsequent to Jul. 5, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—7

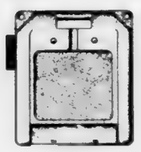


300,035
COMBINED AIR COMPRESSOR AND MULTI-PURPOSE SPOTLIGHT
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Apr. 16, 1985, Ser. No. 723,640
Claims priority, application United Kingdom, Oct. 23, 1984, 1022808
Term of patent 14 years
U.S. Cl. D15—9



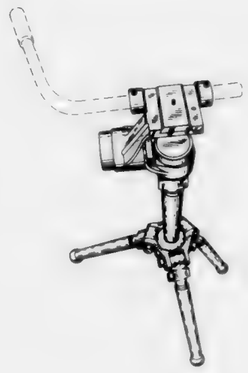
300,036
HOPPER FOR A SANDBLASTER
James F. Mariol, Cincinnati, Ohio, assignor to Campbell Hausfeld/Scott Fetzer Company, Harrison, Ohio
Filed May 7, 1986, Ser. No. 860,679
Term of patent 14 years
U.S. Cl. D15—126







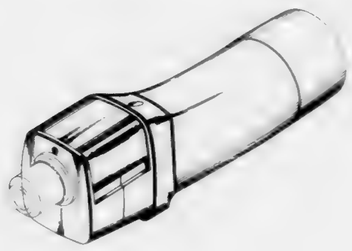
300,037
TRIPOD WITH INSTRUMENT SUPPORTING HEAD
John A. Jones, Gresham; L. Mark Marchus, and Loren S. Hardy, both of Portland, all of Oreg., assignors to Cineonix, Inc., Portland, Oreg.
Filed Nov. 3, 1986, Ser. No. 926,901
Term of patent 14 years
U.S. Cl. D16—244



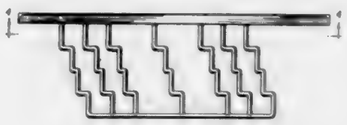
300,038
SPOTTING TELESCOPE
Claus O. Huckenbeck, Tehachapi, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Apr. 18, 1986, Ser. No. 855,776
Term of patent 14 years
U.S. Cl. D16—132



300,039
SPOTTING TELESCOPE
Claus O. Huckenbeck, Tehachapi, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Feb. 21, 1986, Ser. No. 834,489
Term of patent 14 years
U.S. Cl. D16—132



300,040
KEYBOARD GUIDE
Thomas E. Dermody, P.O. Box 3184, Napa, Calif. 94558
Filed Feb. 18, 1986, Ser. No. 833,758
Term of patent 14 years
U.S. Cl. D18—12



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300,041
ELECTRONIC WHITEBOARD AND PHOTOCOPIER
Shigeru Kurosumi, and Haruni Sakamoto, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jul. 22, 1985, Ser. No. 757,538
Claims priority, application Japan, Jan. 22, 1985, 60-1926
Term of patent 14 years
U.S. Cl. D19—52

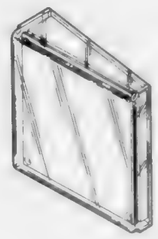


300,042
POINT AND BARREL TIP ASSEMBLY FOR WRITING INSTRUMENT
Norman D. Poisson, Andover, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation of Ser. No. 765,283, Aug. 13, 1985. This application Dec. 21, 1987, Ser. No. 136,154
Term of patent 14 years
U.S. Cl. D19—54





300,043
SIGN
Leslie M. Silverman, 55 Division St., San Francisco, Calif. 94103
Filed Mar. 27, 1986, Ser. No. 847,002
Term of patent 14 years
U.S. Cl. D20—10



300,044
DOLL HEAD
Eva K. Ku, Kowloon, Hong Kong, assignor to UCP International Company Limited, Hong Kong
Filed Dec. 13, 1985, Ser. No. 808,577
Term of patent 14 years
U.S. Cl. D21—190



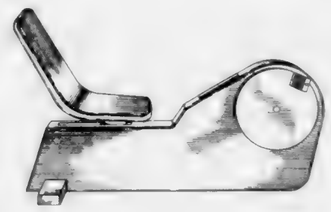
300,045
ADJUSTABLE EXERCISE BENCH
Sherman P. Grider, Walnut, Calif., assignor to Bollinger Industries, Irving, Tex.
Filed Oct. 6, 1986, Ser. No. 916,060
Term of patent 14 years
U.S. Cl. D21—191



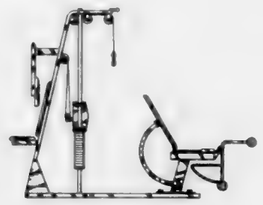
300,046
EXERCISE BICYCLE
Timothy O. Armstrong; David B. Smith, both of Bellevue, and Randolph F. Miller, Mt. Vernon, all of Wash., assignors to Precor Incorporated, Bothell, Wash.
Filed Feb. 6, 1987, Ser. No. 12,118
Term of patent 14 years
U.S. Cl. D21—194



300,047
EXERCISE BICYCLE
Ron Sheltra, 2801 W. Mission Rd., Alhambra, Calif. 91803
Filed Feb. 24, 1986, Ser. No. 836,463
Term of patent 14 years
U.S. Cl. D21—194



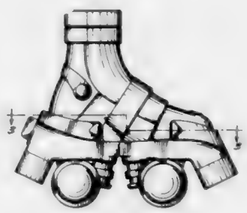
300,048
PHYSICAL EXERCISER
Sherman P. Grider, Walnut, Calif., assignor to Bollinger Industries, Irving, Tex.
Filed Oct. 6, 1986, Ser. No. 916,210
Term of patent 14 years
U.S. Cl. D21—195



300,049
ROLLER SKATE
Reuben B. Klamer, Suite 1001, 969 Hilgard Ave., Los Angeles, Calif. 90029, and Beatrice Pardo, 7414 Herschel Ave. #309, La Jolla, Calif. 92037
Filed Sep. 23, 1986, Ser. No. 910,763
Term of patent 14 years
U.S. Cl. D21—226



300,050
ADJUSTABLE ROLLER SKATE
Reuben B. Klamer, Suite 1001, 969 Hilgard Ave., Los Angeles, Calif. 90029, and Beatrice Pardo, 7414 Herschel Ave. #309, La Jolla, Calif. 92037
Filed Sep. 23, 1986, Ser. No. 910,764
Term of patent 14 years
U.S. Cl. D21—226



300,051
THREE-MAN WATER SLED
Donato Minurri, North Charleston, S.C., assignor to Sun Star Inflatable Corporation, N. Charleston, S.C.
Filed Mar. 13, 1987, Ser. No. 25,779
Term of patent 14 years
U.S. Cl. D21—228



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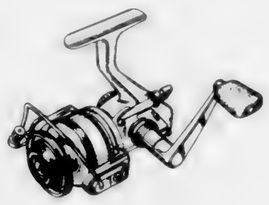
300,052
TENT
William J. Maloney, II, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 17, 1986, Ser. No. 920,866
Term of patent 14 years
U.S. Cl. D21—253



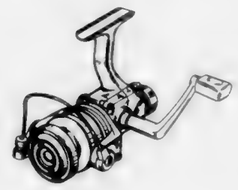
300,053
FISHING LURE
W. Thomas Mann, Rte. 2, Box 84-C, Eufaula, Ala. 36027
Filed Sep. 8, 1986, Ser. No. 905,056
Term of patent 14 years
U.S. Cl. D22—127



300,054
FISHING REEL
Etsuo Hiraishi, and Terukisa Numata, both of Tokyo, Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Oct. 16, 1986, Ser. No. 919,926
Claims priority, application Japan, Apr. 25, 1986, 61-15852
Term of patent 14 years
U.S. Cl. D22—141



300,055
FISHING REEL
Tetsuyuki Doi, Hiroshima, and Etsuo Hiraishi, Tokyo, both of Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Sep. 11, 1986, Ser. No. 906,128
Claims priority, application Japan, Mar. 21, 1986, 61-10427
Term of patent 14 years
U.S. Cl. D22—141



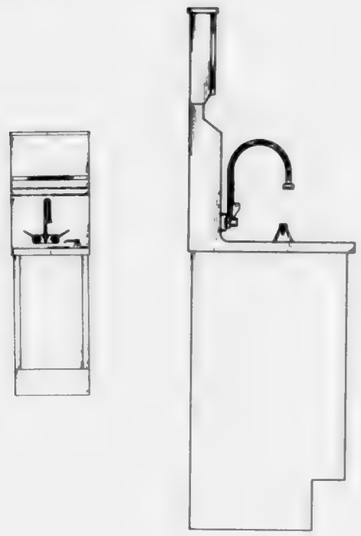
300,056
HANDLE FOR A FISHING ROD
James E. Andreasen, Magnolia Springs, Ala., assignor to Lew Childre & Sons, Inc., Foley, Ala.
Filed Feb. 20, 1986, Ser. No. 834,477
Term of patent 14 years
U.S. Cl. D22—142



300,057
GRIP PANEL FOR HANDGUN
William B. Ruger, Croydon, N.H., and Lawrence L. Larson, Branford, Conn., assignors to Sturm, Ruger & Company, Inc., Southport, Conn.
Filed Mar. 28, 1985, Ser. No. 716,919
Term of patent 14 years
U.S. Cl. D22—108



300,058
COMBINED SINK AND TOWEL DISPENSER
Roy Emanuele, Massapequa, and Myron H. David, North Massapequa, both of N.Y., assignors to IMC/Teddy Food Service Corp., Copaigue, N.Y.
Filed Oct. 23, 1986, Ser. No. 922,556
Term of patent 14 years
U.S. Cl. D23—271



300,059
MOUTHPIECE FOR USE AS A GERIATRIC PACIFIER OR FOR THE TREATMENT OF BRUXISM
Florine L. Pier, 3210 W. Belmont Ave., Phoenix, Ariz. 85021
Filed Feb. 18, 1986, Ser. No. 833,760
Term of patent 14 years
U.S. Cl. D24—10



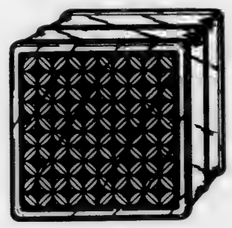
300,060
BIOPSY CANNULA
Arne Molgaard-Nielsen, Copenhagen, Denmark, assignor to William Cook Europe A/S, Denmark
Filed Aug. 8, 1985, Ser. No. 763,609
Claims priority, application Denmark, Feb. 25, 1985, 153/85
Term of patent 14 years
U.S. Cl. D24—28



300,061
GLASS BRICK
Franzjosef Hackelsberger, Wehrstalstrasse 6, 7867 Wehr, Fed. Rep. of Germany
Filed Apr. 4, 1985, Ser. No. 720,144
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1984, 1244
Term of patent 14 years
U.S. Cl. D25—107



300,062
GLASS BRICK
Franzjosef Hackelsberger, Wehr, Fed. Rep. of Germany, assignor to J. Weck GmbH & Co., Wehr-Öflingen, Fed. Rep. of Germany
Filed Apr. 4, 1985, Ser. No. 720,142
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1984, 1243
Term of patent 14 years
U.S. Cl. D25—108

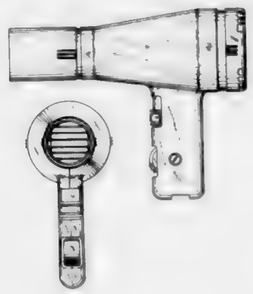


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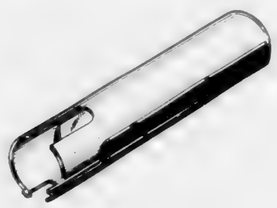
300,063
STRUCTURAL GUIDE COLUMN
Ronald Sheltra, Alhambra, Calif., assignor to Marcy Fitness Products, Ontario, Calif.
Filed Feb. 3, 1986, Ser. No. 825,553
Term of patent 14 years
U.S. Cl. D25—120



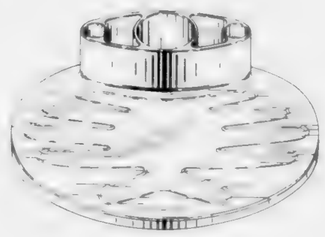
300,064
HAIR DRYER
Stephen A. Francis, Milford, and Ronald L. Muller, Old Saybrook, both of Conn., assignors to North American Philips Corp., New York, N.Y.
Filed Dec. 24, 1986, Ser. No. 946,246
Term of patent 14 years
U.S. Cl. D28—13



300,065
CURLING IRON COVER
Thaddeus Zaborowski, Cambridge, Mass., and Ronald Emmerling, New York, N.Y., assignors to The Schwabel Corporation, Cambridge, Mass.
Filed Jan. 12, 1987, Ser. No. 2,634
Term of patent 14 years
U.S. Cl. D28—35



300,066
MANICURE BOARD
Annie L. Spradley, 8303 Odessa Oaks, San Antonio, Tex. 78251
Filed Jun. 19, 1986, Ser. No. 876,362
Term of patent 14 years
U.S. Cl. D28—61



300,067
AQUARIUM
Debra A. Smith, and Armand Smalls, both of 2426 Hardesty; Apartment #1, Kansas City, Mo. 64127
Filed Apr. 20, 1987, Ser. No. 39,914
Term of patent 14 years
U.S. Cl. D30—101



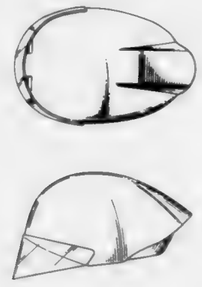
300,068
PET TRAY
Carol Pritikin, and Gail Pritikin, both of 15002 Del Gado Dr., Sherman Oaks, Calif. 91403
Filed Feb. 24, 1987, Ser. No. 18,582
Term of patent 14 years
U.S. Cl. D30—129



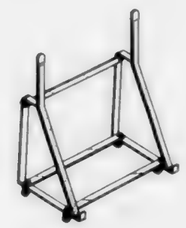
300,069
REFUSE CONTAINER
Roy A. Abel, 2212 Potrillo Rd., Rolling Hills, Calif. 90274
Filed Jun. 5, 1986, Ser. No. 871,623
Term of patent 14 years
U.S. Cl. D34—3



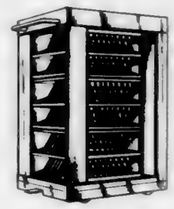
300,070
BICYCLIST'S HELMET
Lester V. Broersma, Bellflower, Calif., assignor to Bell Helmets, Inc., Norwalk, Calif.
Filed Mar. 7, 1986, Ser. No. 842,014
Term of patent 14 years
U.S. Cl. D29—14

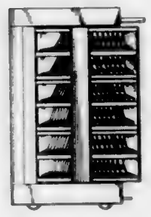


300,071
STORAGE CART
Richard S. Dunchock, South Laguna, Calif., assignor to SL Corporation, Troy, Mich.
Filed Mar. 19, 1987, Ser. No. 28,196
The portion of the term of this patent subsequent to Dec. 6, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D34—17



300,072
TAPE CARTRIDGE STORAGE CART
Macy J. Price, Golden, Colo., and Mario B. Accumanno, Cedar Grove, N.J., assignors to Engineered Data Products, Inc., Broomfield, Colo.
Filed Dec. 30, 1985, Ser. No. 814,238
Term of patent 14 years
U.S. Cl. D34—21



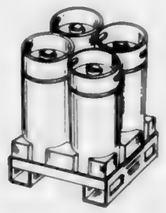


300,073
PORTABLE EXTENSION RAMP
Robert F. Cramp, 1503 Thackeray Dr., Louisville, Ky. 40205
Filed Feb. 10, 1986, Ser. No. 827,727
Term of patent 14 years
U.S. Cl. D34—32



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300,074
COMBINED PALLET AND CONTAINERS THEREFOR
Larry D. Thomas, Beatrice, Nebr., assignor to Hoover Group, Inc., Roswell, Ga.
Filed May 5, 1986, Ser. No. 859,725
Term of patent 14 years
U.S. Cl. D34—38



300,075
PALLET
Victor A. Sahm, Jr., 14910 Lake Forest Dr., Dallas, Tex. 75240
Filed Jun. 28, 1985, Ser. No. 749,739
Term of patent 14 years
U.S. Cl. D34—38



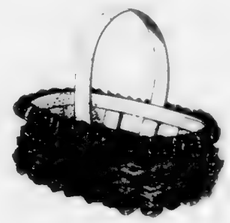
300,076
SINGLE SHEAVE LIFTING BLOCK
Uwe Lichtenvort, Essen, and Manfred Stoeber, Witten, both of Fed. Rep. of Germany, assignors to Mannesmann Demag AG, Duisburg, Fed. Rep. of Germany
Filed Sep. 16, 1985, Ser. No. 776,569
Term of patent 14 years
U.S. Cl. D34—35



300,077
DOUBLE SHEAVE LIFTING BLOCK
Uwe Lichtenvort, Essen, and Manfred Stoeber, Witten, both of Fed. Rep. of Germany, assignors to Mannesmann Demag AG, Duisburg, Fed. Rep. of Germany
Filed Sep. 16, 1985, Ser. No. 776,570
Term of patent 14 years
U.S. Cl. D34—35



300,078
BASKET
Doris McDuffie, 210 Perry Town, New Bern, N.C. 28560
Filed Nov. 12, 1985, Ser. No. 805,127
Term of patent 14 years
U.S. Cl. D34—43



300,079
JEWELRY PENDANT
Ben N. Smith, 705 Providence Rd., Charlotte, N.C. 28207
Filed Aug. 12, 1986, Ser. No. 896,114
Term of patent 14 years
U.S. Cl. D99—27



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF FEBRUARY, 1989

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See*—
Bhogal, Balbir S., 4,808,404, Cl. 424-88.000.
A.O. Smith Corporation: *See*—
King, James L., 4,808,865, Cl. 310-71.000.
Aamodt, James A.: *See*—
Edwards, Tim L.; and Aamodt, James A., 4,808,303, Cl. 210-138.000.
Aarts, Petrus; Verslujis, Cornelis; and Schuitmaker, Pieter D., to U.S. Philips Corporation. Guide arrangement for guiding an object along a kinked path. 4,808,011, Cl. 384-9.000.
AB Akerlund & Rausing: *See*—
Lindstam, Goran, 4,808,179, Cl. 604-408.000.
Abbott Laboratories: *See*—
Lu, Mou-Ying F.; and Borodkin, Saul, 4,808,411, Cl. 424-441.000.
Abdelsayed, William E.: *See*—
Goldstein, Yuri; Abdelsayed, William E.; and Cole, Paul D., 4,809,300, Cl. 375-94.000.
Abdou-Sabet, Sabet: *See*—
Patel, Raman; Wang, Yun L.; and Abdou-Sabet, Sabet, 4,808,665, Cl. 525-133.000.
Abe, Sadahiro: *See*—
Tazuke, Hisashi; Araki, Kazunori; Yamaguchi, Shogo; Nakamura, Sueshige; and Abe, Sadahiro, 4,807,673, Cl. 141-57.000.
Abe, Tomohiro: *See*—
Itoh, Masayoshi; Miyagawa, Hiroharu; Murakami, Masami; Abe, Tomohiro; Inoue, Kaoru; and Ikeda, Keiichi, 4,808,392, Cl. 423-347.000.
Abe, Toshiro; and Nishihara, Toshikazu, to Victor Company of Japan, Ltd. Method of producing magnetic disc. 4,808,489, Cl. 428-336.000.
Abend, Serge: *See*—
Edstrom, Andrew, 4,807,841, Cl. 248-580.000.
Aberdeen Biotech Limited: *See*—
Melvin, James S., 4,808,427, Cl. 426-521.000.
Abolins, Visvaldis; Betts, Joseph E.; Holub, Fred F.; and Lee, Gim F., Jr., to General Electric Company. Crosslinkable flame retardant composition of polyolefin and polyphenylene ether. 4,808,647, Cl. 524-141.000.
Abra, Inc.: *See*—
Gomes, Daniel, 4,807,330, Cl. 16-261.000.
Abraham, Menachem; Linde, Yoseph; and Saussy, Gordon C., to Chipcom Corporation. Collision signal detection system. 4,809,264, Cl. 370-76.000.
Abramovitz, Robert G.; Anderson, Robert L., Jr.; Busse, Frederick L.; Celarier, Stuart A.; Poublan, Jean-Yves H.; and Shorthill, Lawrence R., to SABA Technologies, Inc. Optical character reader. 4,809,351, Cl. 382-59.000.
Abrams, Robert S. Method and device for opening and closing vials. 4,807,425, Cl. 53-468.000.
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Bayer Aktiengesellschaft: *See*—
Boberg, Michael; Metzger, Karl G.; and Zeiler, Hans-Joachim, 4,808,724, Cl. 548-194.000.
Gehring, Reinhold; Schallner, Otto; Stetter, Jorg; Santel, Hans-Joachim; Schmidt, Robert F.; and Lurssen, Klaus, 4,808,209, Cl. 71-92.000.
Grohe, Klaus; and Lammens, Robert, 4,808,583, Cl. 514-254.000.
Grohe, Klaus; and Lammens, Robert, 4,808,585, Cl. 514-230.200.
Hamprecht, Rainer, 4,808,723, Cl. 548-164.000.
Kinast, Gunther; Schwenner, Eckhard; Kazda, Stanislav; Knorr, Andreas; and Kayser, Michael, 4,808,622, Cl. 514-356.000.
Konig, Klaus; and Barnes, James M., 4,808,691, Cl. 528-76.000.
Krastz, Udo, 4,808,725, Cl. 548-262.000.
Onnenberg, Volker; Busch, Ralf; and Lindsey, John, 4,808,100, Cl. 425-127.000.
Ooms, Pieter; and Becker, Benedikt, 4,808,623, Cl. 514-404.000.
Psaar, Hubertus; and Raue, Roderich, 4,808,719, Cl. 546-165.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Nehls, Wolfgang, 4,809,121, Cl. 361-1.000.

Bayern-Chemie Gesellschaft fur flugchemische Antriebe GmbH: *See*—
Vockensperger, Hubert; Hieble, Franz; and Gebhardt, Robert, 4,807,534, Cl. 102-489.000.

Bazydola, Stanley J., Jr.: *See*—
Moore, Thomas A.; Bazydola, Stanley J., Jr.; and Depietro, Richard A., 4,808,072, Cl. 416-5.000.

BBC Brown Boveri AG: *See*—
Kirchhofer, Hubert; and Mayer, Andreas, 4,808,082, Cl. 417-64.000.

BBC Brown, Boveri & Company Limited: *See*—
Albrecht, Joachim; and Duerig, Thomas, 4,808,246, Cl. 148-11.50Q.

BBC Brown, Boveri Ltd.: *See*—
Braun, Walter; and Hagmann, Walter, 4,809,296, Cl. 375-1.000.

Beall, Richard W., Jr. Water purifier valve. 4,808,302, Cl. 210-117.000.

Beasom, James D., to Harris Corporation. Method of fabrication of high voltage IC bopolar transistors operable to BV_{CBO}. 4,808,547, Cl. 437-54.000.

Beaupre, Richard F.; Guptill, Richard P.; and Hilmar, Martin D., to Texaco Inc. Variable length membrane module. 4,808,309, Cl. 210-321.890.

Bec, Daniel: *See*—
Collomby, Michel; Bec, Daniel; and Gerard, Jean-Louis, 4,809,251, Cl. 369-32.000.

Bechet, Louis, to Battelle Memorial Institute. Storing and reconstituting analog signals using data compression. 4,809,195, Cl. 364-518.000.

Beck, Andreas; Breitenstein, Werner; von Sprecher, Andreas; Lang, Robert W.; and Oertle, Konrad, to Ciba-Geigy Corporation. α-Hydroxy thioethers. 4,808,572, Cl. 514-18.000.

Beck, Andreas; Sallmann, Alfred; and Wenk, Paul, to Ciba-Geigy Corporation. N-(substituted phenyl) tetrazol-5-yl carboxamides and anti-allergic use thereof. 4,808,604, Cl. 514-381.000.

Becker, Benedikt: *See*—
Ooms, Pieter; and Becker, Benedikt, 4,808,623, Cl. 514-404.000.

Becker, Rolf: *See*—
Kamp, Heinz; Becker, Rolf; and Wionsek, Horst, 4,807,822, Cl. 242-43.00R.

Beckman Industrial Corporation: *See*—
Kaiser, Donald F., 4,808,930, Cl. 324-442.000.

Beckman Instruments, Inc.: *See*—
Ulfelder, Kathi Jo; and Gurske, William A., 4,808,288, Cl. 204-182.800.
Wright, Herschel E.; and Stahl, Lawrence E., 4,807,483, Cl. 73-865.300.

Beckwith, John O.: *See*—
Gegere, Michael A., 4,807,585, Cl. 124-21.000.

Becton, Dickinson and Company: *See*—
Titus, George R.; and Williams, Joel L., 4,808,650, Cl. 524-108.000.

Bedell, Stephen A.; and Kuan Tsai, Susan S., to Dow Chemical Company, The. Process for the recovery of alkanolamines from their heat-stable salts formed during absorbent thermal regenerative step of gas conditioning processes. 4,808,284, Cl. 204-72.000.

Beecham Group p.l.c.: *See*—
Evans, John M.; Stemp, Geoffrey; Nicholson, Charles D.; and Angersbach, Dieter, 4,808,619, Cl. 514-278.000.
King, Francis D., 4,808,588, Cl. 514-212.000.
Smith, Richard A. G.; and Winchester, John G., 4,808,405, Cl. 424-94.300.

Beekmans, Antonius A. G., to U.S. Philips Corporation. X-ray examination apparatus with a locally divided auxiliary detector. 4,809,309, Cl. 378-99.000.

Beesley, Thomas E., to American Maize-Products Company. Separation and purification of cyclodextrins. 4,808,232, Cl. 127-46.300.

Beetle, Robert H. Submerged casting. 4,807,688, Cl. 164-72.000.

Behrendt, Douglas. Lounge chair rib cushion. 4,807,936, Cl. 297-445.000.

BEI Electronics, Inc.: *See*—
Godkin, Mikhail; and Kimble, Jack, 4,808,955, Cl. 335-222.000.

Belart, Juan, to ITT Industries, Inc. Hydraulic brake system with slip control. 4,807,942, Cl. 303-114.000.

Belcher, Nicky G. Hitch assembly. 4,807,899, Cl. 280-477.000.

Bell, Harry T. Illuminated location sign. 4,807,378, Cl. 40-576.000.

Bell Helmets Inc.: *See*—
Sundahl, James G., 4,807,305, Cl. 2-424.000.

Bell & Howell Company: *See*—
Adams, Jerryl, 4,809,187, Cl. 364-464.030.

Bell, Kenneth L.: *See*—
Lazarus, Richard M.; Bell, Kenneth L.; and Bauer, Carla M., 4,808,513, Cl. 430-331.000.

Bell, Peter D. Wire holding nail plate. 4,807,417, Cl. 52-699.000.

Bell, Thomas J.: *See*—
Dee, James S.; and Bell, Thomas J., 4,808,123, Cl. 439-470.000.

Bellin, Tamara. System for mounting articles under a downwardly facing surface. 4,807,764, Cl. 211-94.000.

Belmonte, Bruce D. J. Flexible pressure compensating divers weight belt. 4,808,033, Cl. 405-186.000.

Beloit Corporation: *See*—
Fujiwara, Haruyoshi; and Toyofuku, Toshihiro, 4,808,445, Cl. 427-428.000.
Wedel, Gregory L., 4,807,371, Cl. 34-117.000.

Bend Research, Inc.: *See*—
Baker, Richard W.; and Ninomiya, Yasuo, 4,808,408, Cl. 424-408.000.

Bendele, Hanns J.: *See*—
Dietrich, Peter; and Bendele, Hanns J., 4,807,980, Cl. 350-526.000.

Bender, Bruce D., to Siemens Transmission Systems, Inc. Subscriber line interface circuit (SLIC) isolation from lighting-induced ground overshoots. 4,809,324, Cl. 379-412.000.

Beneitone, Raymond D., to Magma Copper Co. Rotary take-off system and method of operating same. 4,807,689, Cl. 164-76.100.

Benge, Terence A.; and Prince, Cyril M., to Metal Box Public Limited Company. Multi-layer plastics structures and apparatus and methods for their manufacture. 4,808,482, Cl. 428-411.100.

Benjamin, John D.; Mears, Adrian L.; and White, John C., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Majesty's Government of the. Flat-panel display and a process for its manufacture. 4,808,983, Cl. 340-719.000.

Bennett, Martin B. Free-standing (self-supporting) lamp shade. 4,809,145, Cl. 362-358.000.

Bennett, Reginald B. P.; Drake, Allan R.; and Finn, Roger C., to Northern Telecom Limited. Process for application of overlay conductors to surface of printed circuit board assemblies. 4,808,434, Cl. 427-54.100.

Bennett, William E., to Kirkos Development, Ltd. Motor driven caging system for free gyros. 4,807,485, Cl. 74-5.100.

Bentley, Richard M.; Ripka, Chester D.; and Keller, Henry F., to Carrier Corporation. Water permeable heat exchanger for condensing furnace. 4,807,588, Cl. 126-110.00R.

Berchtold, Merrill E.; and Witzel, John R., to Cincinnati Milacron Inc. Counterbalance mechanism for vertically movable means. 4,807,518, Cl. 91-421.000.

Berdahl, Donald R.; and Matach, Pamela A., to General Electric Company. Method for making oxydiphthalic anhydride. 4,808,731, Cl. 549-241.000.

Beretta, Mario, to R D B Plastotecnica S.p.A. Process to obtain molecular orientations in perforated plates made of extruded plastic material. 4,808,358, Cl. 264-156.000.

Berg, Harvey J.: *See*—
Dyrud, James F.; Berg, Harvey J.; and Murray, Alice C., 4,807,619, Cl. 128-206.160.

Berg, Kenneth R.; Sundquist, Roger L.; and Truong, Liem V., to ASEA Composites, Inc. Method for attaching an end-fitting to a drive shaft tube. 4,807,351, Cl. 29-432.000.

Bergamin, Renzo; and Quittmann, Wilhelm, to Lonza Ltd. Process for the reduction of the ketene trimer content in raw diketene. 4,808,735, Cl. 549-329.000.

Berger, Eric S. V-shaped ear ventilation tube. 4,808,171, Cl. 604-264.000.

Berkey, George E., to Corning Glass Works. Method of splicing fibers. 4,807,959, Cl. 350-96.210.

Berkowitz, Paul R.: *See*—
Baxter, Leslie A.; and Berkowitz, Paul R., 4,809,270, Cl. 370-95.000.

Berliner, William, to Coleco Industries, Inc. Doll with controlled mouth actuation in simulated speech. 4,808,142, Cl. 446-301.000.

Bernard, Claude: *See*—
Douche, Jean-Pierre; Coulon, Jean-Claude; and Bernard, Claude, 4,807,814, Cl. 239-428.000.

Berner, Jorg; Anliker, Markus; Feller, Willy; and Breer, Werner, to Sprecher & Schuh AG. Magnetic trigger for a selectively operative switch. 4,808,952, Cl. 335-41.000.

Bernier, Denis; and Simard, Jean-Francois, to Cyclopark Inc. Bicycle anti-theft device. 4,807,453, Cl. 70-233.000.

Berninger, Mark S.: *See*—
Hartley, James L.; and Berninger, Mark S., 4,808,519, Cl. 435-6.000.

Berry Products Corporation: *See*—
Berry, Ronald L.; and Scholes-Witty, Linda J., 4,807,563, Cl. 119-1.000.

Berry, Ronald L.; and Scholes-Witty, Linda J., to Berry Products Corporation. Self-contained, disposable, sanitary toilet facility for pets. 4,807,563, Cl. 119-1.000.

Berry, W. Wes; Schmeda, Rae A.; and Kibler, Holly S., to Advanced Separation Technologies Incorporated. Process for continuous contacting of fluids and solids. 4,808,317, Cl. 210-660.000.

Bertone, Antonino; and Ippolito, Luigi P., to Fiat Auto S.p.A. Anti-skid brake control system. 4,807,946, Cl. 303-115.000.

Bertram, Leo; Schemmann, Hugo; Bukoschek, Romuald L.; and Huszar, Reinhard, to U.S. Philips Corp. Method for making the shaving head of a dry-shaving apparatus. 4,807,365, Cl. 30-346.510.

Berwald, Ernst; and Lewe, Winfried, to Schering AG. Safety transport system for hazardous or valuable chemicals. 4,807,777, Cl. 220-23.830.

Besic, Dragan, to Dresser Industries, Inc. Vertical plunger pump with active plunger heat exchange. 4,808,093, Cl. 417-539.000.

Bessing, Klaus-Peter: *See*—
Hain, Klaus; Bessing, Klaus-Peter; and Bruestle, Claus, 4,807,439, Cl. 60-602.000.

Best, William D.: *See*—
Fisher, Eugenia T.; and Best, William D., 4,808,323, Cl. 252-15.000.

Betterton, Joseph T.; Glover, Alfred H.; and McKee, Thomas S., to Chrysler Motors Corporation. Pressure transducer. 4,807,478, Cl. 73-725.000.

Betts, Joseph E.: *See*—
Abolins, Vinvaldis; Betts, Joseph E.; Holub, Fred F.; and Lee, Gim F., Jr., 4,808,647, Cl. 524-141.000.

Beuret, Jacques: *See*—
Beuret, Pierre; and Beuret, Jacques, 4,808,294, Cl. 204-427.000.

Beuret, Pierre; and Beuret, Jacques. Probe for measuring the partial pressure of oxygen in a gaseous atmosphere in relation to a reference atmosphere. 4,808,294, Cl. 204-427.000.

Beutler, Rolf D.; Wimmer, Thomas; and Angst, Gunhild, to Merz + Co. GmbH & Co. Foamable creams. 4,808,388, Cl. 424-47.000.

Beyers, Billy W., Jr.; and Hailey, James E., to RCA Licensing Corporation. Component audio/video system with automatic turn-off of peripheral devices. 4,808,992, Cl. 340-825.240.

Beyl, Jean. Jig for facilitating the adjustment of a block under the sole of a cyclist's shoe, a sole and a cyclist's shoe adapted to such a jig. 4,807,368, Cl. 33-3.00B.

Bezdetko, Gennady N.: *See*—
Brekhman, Izrail I.; Bulanov, Alexandr E.; Polozhentseva, Mira I.; Mudzhiri, Levan A.; Alkhazashvili, Gia G.; Kalatozishvili, Elena I.; Dardymov, Igor V.; Bezdetko, Gennady N.; and Khasina, Eleonora L., 4,808,574, Cl. 514-23.000.

Bhalaik, Arun; Braddick, Peter W.; Brittin, Darryl S.; and Johnson, Gerald L., to Santa Fe International Corporation. Mobile marine operations structure. 4,808,036, Cl. 405-217.000.

Bhaskar, Udaya, to Communications Satellite Corporation. Method for detection and correction of errors in speech pitch period estimates. 4,809,334, Cl. 381-49.000.

Bhateja, Sudershan K., to Minnesota Mining and Manufacturing Company. Crystalline vinylidene fluoride. 4,808,352, Cl. 264-22.000.

Bhattacharyya, Dhirendra N.: *See*—
Ghosh, Pushpito K.; Bhattacharyya, Dhirendra N.; Iyer, Rama S.; Chikale, Sudhakar V.; Chattopadhyay, Arun K.; Paul, Sasanka S.; and Rao, Vattipalli M., 4,808,251, Cl. 149-2.000.

BHL - Sportartikel - Vertriebs GmbH: *See*—
Lothar, Eggerstorfer, 4,807,876, Cl. 272-123.000.

Bhogal, Balbir S., to A. H. Robins Company, Inc. Live vaccine for coccidiosis utilizing coccidial sporozoites. 4,808,404, Cl. 424-88.000.

Bianchi, Franco: *See*—
Egloff, Anton; Kohler, Lothar; and Bianchi, Franco, 4,807,670, Cl. 139-448.000.

Biehl, Karl-Ernst: *See*—
Boecher, Jorg; and Biehl, Karl-Ernst, 4,807,466, Cl. 73-38.000.

Big Jon, Inc.: *See*—
Emory, John E., Jr., 4,807,386, Cl. 43-27.400.

Binder, Horst: *See*—
Schwalm, Reinhold; and Binder, Horst, 4,808,682, Cl. 526-279.000.

Bingham, David; and Allen, Charles M., to Maxim Integrated Products. Integrated dual charge pump power supply and RS-232-transmitter/-receiver. 4,809,152, Cl. 363-61.000.

Biocan, Inc.: *See*—
Whiddon, Orren P., 4,808,831, Cl. 250-506.100.

Birch, Andrew D., to Shell Oil Company. System and method for securing a marine riser to a floating structure. 4,808,034, Cl. 405-195.000.

Bishop, Glen W.; and Hornbostel, Scott C., to Exxon Production Research Company. Method for restoring the background appearance of two-dimensional filtered seismic data. 4,809,238, Cl. 367-46.000.

Bitha, Panayota; Hlavka, Joseph J.; and Lin, Yang-I, to American Cyanamid Company. Synthesis of cisplatin analogs. 4,808,730, Cl. 549-211.000.

Bjork, Jon A.: *See*—
Whitcomb, David R.; and Bjork, Jon A., 4,808,565, Cl. 503-211.000.

Bjorkholm, Paul J., to American Science and Engineering, Inc. Diaphanography method and apparatus. 4,807,637, Cl. 128-664.000.

Blaas, Karl: *See*—
Baetschmann, Daniel; Nipp, Hansjorg; and Blaas, Karl, 4,807,587, Cl. 125-1.000.

Blackmore, B. Brian, to Boeing Company, The. Fastener removing method. 4,807,349, Cl. 29-426.500.

Blanc, Philippe, to Societe Montalbanaise de Constructions Mecaniques. Apparatus for filling boxes with objects notably fruits, floating in water. 4,807,422, Cl. 53-248.000.

Blanchard, Russell O., to Batts, Inc. Article hanger clip. 4,807,334, Cl. 24-487.000.

Blaney, Ted L.: *See*—
Aziz, Mohammed I.; and Blaney, Ted L., 4,808,178, Cl. 604-385.200.

Blau, Andrew P.; and Masso, Joseph A., to Caterpillar Industrial Inc. Hitch assembly and method. 4,807,714, Cl. 180-168.000.

Blau, David A., to Hewlett-Packard Company. Electron-emission filament cutoff for gas chromatography + mass spectrometry systems. 4,808,820, Cl. 250-281.000.

Blaupunkt-Werke GmbH: *See*—
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Blazek, John M.; and Tipton, John R., Jr., to Bloom, Leonard, a part interest. Video recording camera. 4,809,079, Cl. 358-335.000.

Blazey, Steven D.: *See*—
Hoyt, John M.; and Blazey, Steven D., 4,808,669, Cl. 525-330.400.

Bledsoe, Steven W.; and McMurry, Alan D., to Western Atlas International, Inc. Streamer cable. 4,809,243, Cl. 367-154.000.

Blickle, Peter; Hintzer, Klaus; Lohr, Gernot; and Schwertfeger, Werner, to Hoechst Aktiengesellschaft. Solutions of fluoropolymers, and their use. 4,808,651, Cl. 524-366.000.

Bliss, Marilynn J. Make-up coverture. 4,807,650, Cl. 132-319.000.

Block, Peter, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method and apparatus for echo transit time determination. 4,809,241, Cl. 367-88.000.

Blomgren, George E.; and Leger, Violeta Z., to Eveready Battery Company. Organic electrolyte for nonaqueous cells. 4,808,497, Cl. 429-194.000.

Blondin, George A.; and Harkin, John M., to Wisconsin Alumni Research Foundation. Bioassay for toxic substances. 4,808,517, Cl. 435-4.000.

Bloom, Leonard: *See*—
Blazek, John M.; and Tipton, John R., Jr., 4,809,079, Cl. 358-335.000.

Blumhof, Roy, to Joy Insignia, Inc. Identification tag and method for making same. 4,807,379, Cl. 40-653.000.

Blunt, Harry W.; and Nguyen, Tuyen T., to Hercules Incorporated. Rotational polymerization molding. 4,808,364, Cl. 264-310.000.

Board of Regents The University of Texas System: *See*—
Linner, John G.; and Livesey, Stephen A., 4,807,442, Cl. 62-55.500.
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Boberg, Michael; Metzger, Karl G.; and Zeiler, Hans-Joachim, to Bayer Aktiengesellschaft. 2-aminothiazolyl-containing β-lactam antibiotics. 4,808,724, Cl. 548-194.000.

Bobsinger, Karl J.; and Gutkowski, Ronald R., to S.C. Johnson & Son, Inc. Container and dispensing-closure assembly. 4,807,781, Cl. 222-546.000.

Bobsein, Rex L.; and Clark, Earl, Jr., to Phillips Petroleum Company. Production of aromatic sulfide/sulfone polymers. 4,808,698, Cl. 528-388.000.

Bobsein, Rex L.: *See*—
Edmonds, James T., Jr.; Geibel, Jon; Bobsein, Rex L.; and Straw, Jim J., 4,808,694, Cl. 528-125.000.

Boden, Ogden W. Cord lock with cord removal slot. 4,807,333, Cl. 24-117.000.

Boehringer, John R.; Nelson, Jay B.; and Karpowicz, John, to Boehringer Laboratories. Pneumotach and components therefore and combined pulmonary function measuring kit containing the same. 4,807,641, Cl. 128-725.000.

Boehringer Laboratories: *See*—
Boehringer, John R.; Nelson, Jay B.; and Karpowicz, John, 4,807,641, Cl. 128-725.000.

Boehringer Mannheim Corporation: *See*—
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Cook, James E.; Kennedy, James C.; and Young, Fred D., 4,807,476, Cl. 73-620.000.
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Boening, Robert E.: *See*—
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Boero, Paolo: *See*—
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Bogardus, Joseph B.: *See*—
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Bohara, Robert C.: *See*—
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Bohlen, James W.: *See*—
Ozelton, Malcolm W.; Bohlen, James W.; Scarich, Gregory V.; Scuttl, James J.; and Averill, Stephan W., 4,808,248, Cl. 148-12.70A.

Boisseau, Jean-Louis, to Vega Automation. Packing machine for American boxes. 4,807,428, Cl. 53-563.000.

Boivent, Marcel: *See*—
Daudin, Philippe; Levy, Pierre-Emmanuel; Aube, Jean-Yves; Duplessis, Bernard; and Boivent, Marcel, 4,809,294, Cl. 373-41.000.

Bokiau, Philippe. Apparatus for dispensing insecticide. 4,807,391, Cl. 43-131.000.

Bolnick, Bradley J.: *See*—
Rappaport, Lisa N.; and Bolnick, Bradley J., 4,807,757, Cl. 206-535.000.

Bolthouse, Robert. Die spring retainer. 4,807,859, Cl. 267-170.000.

Bomed Medical Manufacturing, Ltd.: *See*—
Sramek, Bohumir, 4,807,638, Cl. 128-672.000.

Bonner, George; Rodriguez, Milo R.; and Kisling, Douglas L., to United States of America, Air Force. Anti-rotation guide vane bushing. 4,808,069, Cl. 415-160.000.

Borgquist, Ronald B. Geodesic inflatable structure, and methods of constructing and utilizing same. 4,807,405, Cl. 52-2.000.

Borkar, Shekhar Y.: *See*—
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Bornzin, Gene A.: *See*—
Baudino, Michael D.; De Franco, Michael D.; Lessar, Joseph F.; Brumwell, Dennis A.; Bornzin, Gene A.; and Schweitzer, Jeffrey A., 4,807,629, Cl. 128-419.0PG.

Borodkin, Saul: *See*—
Lu, Mou-Ying F.; and Borodkin, Saul, 4,808,411, Cl. 424-441.000.

Bortmas, Howard J.: *See*—
Cipriano, Anthony P.; and Bortmas, Howard J., 4,807,653, Cl. 134-64.00R.

Bortolin, Roberto, to Dow Corning, Ltd. Process for the preparation of polysilanes. 4,808,685, Cl. 528-14.000.

Bos, Marinus A.: *See*—
van Baardwijk, Johannes; and Bos, Marinus A., 4,809,263, Cl. 370-66.000.

Boscher, Jorg; and Biehl, Karl-Ernst, to Honeywell-Elac-Nautik GmbH. Method and apparatus for determining the charging of charcoal filters. 4,807,466, Cl. 73-38.000.

Boston Metal Products Corporation: *See*—
McCue, David S.; and Gebhardt, Roland, 4,808,451, Cl. 428-31.000.

Botzolakis, John E.; Harris, Michael R.; and Nesbitt, Russell U., to Warner-Lambert Company. Apparatus for measuring capsule plug, granule and pellet hardness. 4,807,465, Cl. 73-78.000.

Bourcier, David P.; and Esposito, Robert A., to Monsanto Company. Process for forming shaped interlayer blanks. 4,808,357, Cl. 264-151.000.

Bourgery, Guy R.: *See*—
Platel, Alain Y.; Bourgery, Guy R.; and Guerret, Patrick G., 4,808,582, Cl. 514-212.000.

Bourns Instruments, Inc.: *See*—
Hewitt, Richard P.; Shoemaker, Timothy A.; and Kitlas, Paul F., 4,808,958, Cl. 336-136.000.

Bowles, Phil: *See*—
Adams, John; Amoroso, Juan, Jr.; Axford, Paul; Bowles, Phil; Juha, Mike; Nguyen, Van; Preskitt, Charles; Ross, Ed; Thompson, Doug; and Turner, Paul, 4,809,308, Cl. 378-99.000.

Bowlin, Robert L., Sr.: *See*—
Casteel, Larry L.; and Bowlin, Robert L., Sr., 4,807,427, Cl. 53-556.000.

Bowling, Bruce A.; Buma, Douglas J.; Gamble, Bruce W.; and Donaldson, Robert D., to Eastman Kodak Company. Continuous ink jet printer having modular print head assembly. 4,809,015, Cl. 346-75.000.

Bowman, Mark; Olofson, Roy; Malfroot, Thierry; and Senet, Jean-Pierre, to Societe Nationale des Poudres et Explosifs. Vinyl chloroformates and preparation. 4,808,743, Cl. 558-141.000.

Boyarsky, David: *See*—
Denton, Peter R.; and Boyarsky, David, 4,808,291, Cl. 204-298.000.

Boyce, Joseph S.; Wallis, Roland R., Jr.; and Bullock, Daniel E., to Foster-Miller, Inc. Composite structure reinforcement. 4,808,461, Cl. 428-119.000.

Boyer, Alan H.; Walter, Graham D.; and Moore, Robert A., to Markem Corporation. Electrostatic printing utilizing a heated air flow. 4,809,026, Cl. 346-155.000.

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Freeman, Jerre M. Phacoemulsification/irrigation and aspiration sleeve apparatus. 4,808,154, Cl. 604-22.000.
Freeman, Richard A., to Rockwell International Corporation. Digital sine conversion circuit for use in direct digital synthesizers. 4,809,205, Cl. 364-721.000.
Freeman, Richard B., to Budd Company, The. Hollow reinforced fiber structure formed by resin transfer molding. 4,808,362, Cl. 264-257.000.
Freimanis, Richard: *See*—
Myong, Iaho; and Freimanis, Richard, 4,807,799, Cl. 228-212.000.
Fremuth, Dietmar R. A.; Rogers, Alan E.; and Zahner, John C., to Mobil Oil Corporation. Methanol-gas saturator for catalytic conversion system. 4,808,764, Cl. 585-640.000.
French, Park; Gotti, Mary B.; Karikas, John J.; and Reiling, Gilbert H., to General Electric Company. Metal halide lamp. 4,808,876, Cl. 313-25.000.
Freni, Joseph L., Jr.; and Ardito, John D., to Wang Laboratories, Inc. Tilt apparatus for a display monitor field. 4,807,842, Cl. 248-649.000.
Frey, Jeffrey A.: *See*—
Eilert, John H.; Frey, Jeffrey A.; Tan, Yih-shin; and Warnes, James H., 4,809,157, Cl. 364-200.000.
Freyberger, Laurin C.: *See*—
Flamm, Peter M.; and Freyberger, Laurin C., 4,809,059, Cl. 358-27.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Block, Peter, 4,809,241, Cl. 367-88.C00.
Buch, Elmar; Greff, Jurgen; Marzinkewitsch, Rene ; and Vogelgesang, Herbert, 4,807,458, Cl. 72-235.000.
Friedman, Ira L.: *See*—
Wertz, Timothy A.; Saltzman, Gilbert A.; and Friedman, Ira L., 4,808,055, Cl. 416-224.000.
Friedman, Mark I.; Tordoff, Michael G.; DiNovi, Michael J.; and Rafka, Robert J., to Monell Chemical Senses Center. Use of 2,5-anhydro-D-mannitol as a food intake modifier. 4,808,626, Cl. 514-738.000.
Friedman, Robert S., to Dallas Cowboys Football Club Limited. Combination remote hand control/foot pedal control system for VCR. 4,809,117, Cl. 360-137.000.
Friedrich, Hans-Helmut: *See*—
Wirth, Hermann O.; and Friedrich, Hans-Helmut, 4,808,755, Cl. 564-501.000.
Friel, Daniel D., to Edgecraft Corp. Method and apparatus for sharpening a knife. 4,807,399, Cl. 51-109.0BS.
Friling, Larry J.: *See*—
Allington, Robert W.; and Friling, Larry J., 4,809,123, Cl. 361-42.000.
Frito-Lay, Inc.: *See*—
Ward, Wendell; Kumar, Surinder; Mack, Melba; Keller, Lewis; and Fitzwater, Margaret, 4,808,422, Cl. 426-143.000.
Froes, Francis H.; and Eylon, Daniel, to United States of America, Air Force. Method for refining microstructures of blended elemental titanium powder compacts. 4,808,250, Cl. 148-20.300.
Froes, Francis H.: *See*—
Eylon, Daniel; and Froes, Francis H., 4,807,798, Cl. 228-190.000.
Eylon, Daniel; and Froes, Francis H., 4,808,249, Cl. 148-133.000.
Frosien, Juergen: *See*—
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Fruda, Thomas R.: *See*—
Adams, Lawrence J.; Fruda, Thomas R.; and Hughett, Paul D., 4,807,578, Cl. 123-198.00A.
Fry, Francis J., to Indianapolis Center for Advanced Research. Noninvasive tissue thermometry system and method. 4,807,633, Cl. 128-660.020.
Fry, Steven A.; and Stafford, Rodney L. Tensioned bed. 4,807,314, Cl. 5-118.000.
Fuchs, Andreas: *See*—
Bremer, Jurgen; Fuchs, Andreas; and Marquardt, Rainer, 4,809,153, Cl. 363-141.000.
Fuji Blade Co., Ltd.: *See*—
Masato, Honsho; and Toru, Hanahusa, 4,807,366, Cl. 30-383.000.
Fuji Car Mfg. Co., Ltd.: *See*—
Kamata, Shigeru, 4,807,376, Cl. 38-42.000.
Fuji Electric Co., Ltd.: *See*—
Ozaki, Ryoji; Shinohara, Hisaji; Yamamoto, Hironobu; Nara, Takashi; and Yoshida, Hajime, 4,808,223, Cl. 75-235.000.
Ozawa, Hiromi, 4,809,120, Cl. 360-78.140.
Fuji Oil Company, Ltd.: *See*—
Ezaki, Mitsuo; Kobayashi, Makoto; and Izumi, Tsuguo, 4,808,334, Cl. 252-314.000.
Fuji Photo Film Co., Ltd.: *See*—
Morigaki, Masakazu; and Seto, Nobuo, 4,808,515, Cl. 430-551.000.
Noguchi, Masaru; Miyagawa, Ichirou; and Horikawa, Kazuo, 4,807,992, Cl. 356-121.000.
Okuzawa, Tugio; and Kawada, Ken, 4,809,049, Cl. 355-28.000.
Seto, Kunihira, 4,809,114, Cl. 360-133.000.
Suzuki, Kenji, 4,809,061, Cl. 358-75.000.
Takashima, Masanobu; Iwakura, Ken; Satomura, Masato; and Matsuoka, Katsumi, 4,808,566, Cl. 503-217.000.
Terashita, Takaaki, 4,809,198, Cl. 364-525.000.
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Moriguchi, Haruhiko; and Toshiharu, Inui, 4,809,063, Cl. 358-75.000.
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Fujii, Akio: *See*—
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, 4,808,703, Cl. 530-322.000.
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Shimizu, Atsuko; Fujii, Hiroshi; and Ohki, Shinichi, 4,807,639, Cl. 128-690.000.
Fujii, Teru: *See*—
Otsubo, Toru; Aiuchi, Susumu; Kamimura, Takashi; Noguchi, Minoru; and Fujii, Teru, 4,808,258, Cl. 156-643.000.
Fujii, Toshifumi; and Kikuchi, Jun, to Mitsubishi Denki Kabushiki Kaisha. Magnetic recording and reproducing apparatus. 4,809,097, Cl. 360-9.100.
Fujiki, Hiroyuki; and Fukumoto, Masumi, to Nissan Motor Co.; and Nifco Inc. Vehicular umbrella container. 4,807,920, Cl. 296-37.800.
Fujimori, Haruo: *See*—
Kitamori, Takehiko; Fujimori, Haruo; and Suzuki, Kazumichi, 4,808,828, Cl. 250-458.100.
Fujino, Yoshiharu: *See*—
Kawai, Hajime; Fujino, Yoshiharu; Shimizu, Youji; Nieda, Seiichi; Gendai, Kazuhiko; and Tsunemitsu, Katsuhiko, 4,808,567, Cl. 503-220.000.
Fujisash Company: *See*—
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Fujisawa Pharmaceutical Co., Ltd.: *See*—
Yagi, Hideo; and Takeuchi, Toru, 4,808,641, Cl. 524-5.000.
Fujishima, Kazuyasu: *See*—
Konishi, Yasuhiro; Fujishima, Kazuyasu; Kumanoya, Masaki; Miyatake, Hidesbi; Hidaka, Hideto; and Dosaka, Katsumi, 4,809,230, Cl. 365-189.000.
Ozaki, Hideyuki; Hirayama, Kazutoshi; Fujishima, Kazuyasu; and Hidaka, Hideto, 4,808,844, Cl. 307-243.000.
Fujita, Jun; Nakanishi, Yoshinori; Oda, Etsuri; and Yamashita, Kazutaka, to Toshiba Machine Co., Ltd. Acceleration control apparatus. 4,808,895, Cl. 318-384.000.
Fujitsu Limited: *See*—
Aoyama, Keizo; Yamauchi, Takahiko; and Seki, Teruo, 4,809,046, Cl. 357-41.000.
Fukushima, Toshitaka, 4,808,550, Cl. 437-67.000.
Higuchi, Masahiro; Fukuda, Haruki; Tazaki, Kenshi; Matsuda, Masahiro; and Awazu, Tomohiko, 4,809,267, Cl. 370-86.000.
Kousaka, Kunimitsu; and Gotoh, Kunihiko, 4,808,852, Cl. 307-451.000.
Matsui, Shougo; and Kobayashi, Kenichi, 4,809,341, Cl. 382-8.000.
Matsumura, Nobutake; and Sato, Shinji, 4,809,029, Cl. 364-900.000.
Okada, Akihiro; and Matsuda, Takashi, 4,809,361, Cl. 455-606.000.
Sakane, Toshiaki; Takenaka, Sadao; Minowa, Morihiko; Aono, Yoshihito; and Daidoh, Yoshimasa, 4,809,298, Cl. 375-17.000.
Shirato, Takehide; and Aneha, Nobuhiko, 4,809,056, Cl. 357-71.000.
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Takemae, Yoshihiro, 4,809,233, Cl. 365-222.000.
Fujiwara, Haruyoshi; and Toyofuku, Toshihiro, to Beloit Corporation. Coating apparatus and method. 4,808,445, Cl. 427-428.000.
Fujiwara, Masahiko: *See*—
Miyatake, Kimio; Imaki, Takao; and Fujiwara, Masahiko, 4,808,825, Cl. 250-343.000.
Fujiwara, Masaki, to Shoketsu Kinzoku Kabushiki Kaisha. Air line lubricator. 4,807,721, Cl. 184-55.200.

Fujiwara, Yoshito: *See*—
Taniuchi, Toshihiko; Nemoto, Rikio; and Fujiwara, Yoshito, 4,808,371, Cl. 420-54.000.
Fujiyoshi, Shiori, to Jimbo Electric Co., Ltd. Switching apparatus having a rocking element. 4,808,778, Cl. 200-33.900.
Fukami, Masanobu; and Sakakibara, Naoji, to Aisin Seiki Kabushikikaisha. Electrically driven power steering apparatus. 4,809,173, Cl. 364-424.050.
Fukatani, Yasunobu: *See*—
Kitano, Seiichi; Fukatani, Yasunobu; and Asada, Masaaki, 4,807,730, Cl. 192-13.00R.
Fukaya, Takashi: *See*—
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Fukuda, Haruki: *See*—
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Fukuda, Hiroshi; Nagai, Takeshi; and Ohji, Kenzo, to Matsushita Electric Industrial Co., Ltd. Oxygen sensor and method of making such sensor. 4,808,293, Cl. 204-410.000.
Fukuhara, Toru: *See*—
Takagi, Tadao; and Fukuhara, Toru, 4,809,030, Cl. 354-414.000.
Fukumoto, Hiroshi: *See*—
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Fukumoto, Masumi: *See*—
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Fukumura, Kagenori: *See*—
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Fukuo, Koichi: *See*—
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Fukuoka, Takeyo: *See*—
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Fukushima, Toshitaka, to Fujitsu Limited. Method of producing isolation groove structure. 4,808,550, Cl. 437-67.000.
Fuller, Harold A.; and Shepard, Michael L., to Westvaco Corporation. Concentric injection flow pipe junction fabrication method. 4,807,340, Cl. 29-157.00R.
Fuller, William T., to Tandem Computers Incorporated. Processor controlled modifying of tabled input/output priority. 4,809,164, Cl. 364-200.000.
Funada, Masahiro, to Canon Kabushiki Kaisha. Image forming apparatus with storage of processing modes. 4,809,041, Cl. 355-14.00C.
Funahashi, Toshihiro, to Matsushita Electric Industrial Co., Ltd. Recording and reproducing apparatus for reducing cross-talk in color television signal. 4,809,085, Cl. 358-329.000.
Funaki, Yasuzo: *See*—
Tsujimura, Osamu; Saito, Takayoshi; Arai, Tatsuo; and Funaki, Yasuzo, 4,808,045, Cl. 408-204.000.
Funamoto, Takao; Kajiwara, Ryoichi; Katou, Mituo; Matsuzaka, Takeshi; Shida, Tomohiko; Wachi, Hiroshi; Takahashi, Kazuya; Watanabe, Masatoshi; Yamada, Minoru; Nakanishi, Keiichirou; and Sugawara, Katuo, to Hitachi, Ltd. Integrated circuit device. 4,809,058, Cl. 357-82.000.
Funke, Herbert, to Saphirwerk Industrieprodukte. Precision reciprocating metering pump. 4,808,092, Cl. 417-454.000.
Furgal, James J.: *See*—
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Furukawa, Hiroshi, to Kabushiki Kaisha Toshiba. Magnetic shield apparatus. 4,808,957, Cl. 335-301.000.
Futamura, Shoji, to Institute of Technology Precision Electrical Discharge Works. Wire-cut electrical discharge machining equipment. 4,808,787, Cl. 219-69.00W.
G. D. Searle & Co.: *See*—
Deason, James R.; Stealey, Michael A.; and Weier, Richard M., 4,808,729, Cl. 549-30.000.
Gach, Peter P., to Sunbeam Plastics Corporation. Child resistant dispensing closure. 4,807,768, Cl. 215-216.000.
Gach, Peter P., to Sunbeam Plastics Corporation. Tamper indicating closure. 4,807,769, Cl. 215-235.000.
Gadkaree, Kishor P.: *See*—
Chyung, Kenneth; Dawes, Steven B.; Gadkaree, Kishor P.; Morena, Robert M.; and Taylor, Mark P., 4,808,460, Cl. 428-116.000.
GAF Corporation: *See*—
Chaudhuri, Ratan K.; Helioff, Michael W.; and Login, Robert B., 4,808,569, Cl. 512-2.000.
Gaffar, Abdul; and Polefka, Thomas G., to Colgate-Palmolive Company. Anticalculus oral composition. 4,808,400, Cl. 424-52.000.
Gaffar, Abdul; and Polefka, Thomas G., to Colgate-Palmolive Company. Anticalculus oral composition. 4,808,401, Cl. 424-52.000.
Gagnon, Theodore G., to Standard Oil Company, The. Photoplotting apparatus. 4,809,028, Cl. 346-108.000.
Gaidano, Roberto; Gandini, Marco; and Sartori, Mario, to CSELT - Centro Studi E Laboratori Telecomunicazioni SPA. Integrated active filter without external components. 4,808,947, Cl. 330-307.000.
Gains, Oliver B.; Perrin, Jack L.; and Tucker, Council A., to James River II, Inc. Paper roll towel dispenser. 4,807,824, Cl. 242-55.300.
Gainutdinova, Raisa V.; Jurov, Boris A.; Mazo, Bentsian M.; and Petrova, Vera M., to Nauchno-Proizvodstvennoe Objedinenie "Medinstrument". Intrauterine contraceptive device. 4,807,610, Cl. 128-830.000.
Gajer, Nandor: *See*—
Fleming, Paul D.; and Gajer, Nandor, 4,807,914, Cl. 292-48.000.
Gala, Mahen S.: *See*—
Kleiser, Charles M.; and Gala, Mahen S., 4,807,498, Cl. 81-56.000.
Galan, Louis, to Telemagnetics, Inc. On-board tire pressure indicating system. 4,807,468, Cl. 73-146.500.
Gale, Edwin J.; and Olsen, Albert B., to Stanley Aviation Corporation. Coupler with combination locking and bonding ring. 4,808,117, Cl. 439-192.000.
Gallagher, Patrick E.: *See*—
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Gamble, Bruce W.: *See*—
Bowling, Bruce A.; Buma, Douglas J.; Gamble, Bruce W.; and Donaldson, Robert D., 4,809,015, Cl. 346-75.000.
Gana, John W. Tape dispenser. 4,807,789, Cl. 225-16.000.
Gandhi, Harendra S.: *See*—
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Gandini, Marco: *See*—
Gaidano, Roberto; Gandini, Marco; and Sartori, Mario, 4,808,947, Cl. 330-307.000.
Gandolfo, Rino, to Minnesota Mining and Manufacturing Company. X-ray film feeding magazine usable in film handling automatic apparatus. 4,809,313, Cl. 378-182.000.
Gantenbein, Dieter; Gfeller, Fritz R.; and Mumprecht, Eduard P., to International Business Machines Corporation. Hierarchical distributed infrared communication system. 4,809,257, Cl. 370-4.000.
Garakani, Reza G. Apparatus for three-dimensional viewing. 4,807,965, Cl. 350-131.000.
Gardner, Kenneth J., to Monsanto Company. Crosslinker compositions comprising amino resins, epoxies and styrene allyl alcohol copolymers. 4,808,652, Cl. 524-376.000.
Garoche, Didier: *See*—
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Garrido Marquez, Josu : *See*—
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Gartzmuller, Claude A. Differential hydraulic jack with damping system for the control of electric circuit-breakers. 4,807,514, Cl. 91-25.000.
Gas Research Institute: *See*—
Darilek, Glenn T., 4,808,889, Cl. 315-291.000.
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Gatward, Robert: *See*—
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Gawlik, Gerald M.; Hoyt, Robert D.; and Anderson, Eugene A., to Anderson, Eugene A. Portable intravenous stand. 4,807,837, Cl. 248-125.000.
Gay, Michel; and Canivenc, Edith, to Rhone-Poulenc Chimie. Beta-ketoester substituted diorganopolysiloxanes and PVC stabilizers comprised thereof. 4,808,649, Cl. 524-264.000.
Gay, Paolo: *See*—
Puozzo, Luciano; Contrafatto, Guido; and Gay, Paolo, 4,808,791, Cl. 219-121.780.
Gazzani, Giovanni, to Crinos Industria Farmacobiologica Spa. Composition for the extemporary preparation of formulations for topical applications for pharmaceutical and cosmetic use. 4,808,415, Cl. 424-488.000.
Geary, Frederick J., to Robertshaw Controls Company. Heating element operating unit and method. 4,809,128, Cl. 361-264.000.
Gebauer, Carl R.: *See*—
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Gegere, Michael A., to Beckwith, John O.; and Gegere, Michael A. Rubber band powered gun. 4,807,585, Cl. 124-21.000.
Gehlke, Donald A.: *See*—
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Gehring, Reinhold; Schallner, Otto; Stetter, Jorg; Santel, Hans-Joachim; Schmidt, Robert F.; and Larssen, Klaus, to Bayer Aktiengesellschaft. 5-Fluoroacylamino-4-nitro-1-aryl-pyrazoles. 4,808,209, Cl. 71-92.000.
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Edmonds, James T., Jr.; Geibel, Jon; Bobsein, Rex L.; and Straw, Jim J., 4,808,694, Cl. 528-125.000.
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Gencorp Inc.: *See*—
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Genentech, Inc.: *See—*
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General DataComm, Inc.: *See—*
Goldstein, Yuri; Abdelsayed, William E.; and Cole, Paul D., 4,809,300, Cl. 375-94.000.

General Dynamics Corporation/Convair Div.: *See—*
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General Dynamics Pomona Division: *See—*
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General Electric Company: *See—*
Abolins, Visvaldis; Betts, Joseph E.; Holub, Fred F.; and Lee, Gim F., Jr., 4,808,647, Cl. 524-141.000.
Aneja, Viney P.; and Skilbeck, John P., 4,808,262, Cl. 159-47.100.
Berdahl, Donald R.; and Matsch, Pamela A., 4,808,731, Cl. 549-241.000.
Capuano, Angelo D.; and Hallenbeck, Gordon R., 4,807,354, Cl. 29-596.000.
Cella, James A.; Gallagher, Patrick E.; and Shank, Gary K., 4,808,686, Cl. 528-27.000.
Dar, Tariq B., 4,809,006, Cl. 342-352.000.
French, Park; Gotti, Mary B.; Karikas, John J.; and Reiling, Gilbert H., 4,808,876, Cl. 313-25.000.
Guggenheim, Thomas L.; Guiles, Joseph W.; and McCormick, Sharon J., 4,808,754, Cl. 564-428.000.
Hang, Kenneth W.; Prabhu, Ashok N.; and Anderson, Wayne M., 4,808,673, Cl. 524-413.000.
Hathaway, Susan J.; and Han, Choong Y., 4,808,672, Cl. 525-397.000.
Johnson, Bruce C.; Hovatter, Thomas W.; Rice, Steven T.; and Chao, Herbert S., 4,808,674, Cl. 525-397.000.
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Milkovic, Miran, 4,808,942, Cl. 330-9.000.
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Palmieri, Joseph M.; Castonguay, Roger N.; Arnold, David; and Morris, Robert A., 4,809,132, Cl. 361-353.000.
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Sivavec, Timothy M., 4,808,671, Cl. 525-397.000.
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Temple, Victor A. K., 4,809,047, Cl. 352-23.400.
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General Mills, Inc.: *See—*
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General Motors Corporation: *See—*
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General Signal Corp.: *See—*
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General Technology, Inc.: *See—*
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GenRad, Inc.: *See—*
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Hsu, Edward J. Automated method for a semi-solid fermentation used in the production of ancient quality rice vinegar and/or rice wine. 4,808,419, Cl. 426-13.000.

Hsu, Frank H.; and Dech, James A., to Atlantic Richfield Company. System and method for providing multiple wells from a single wellbore. 4,807,704, Cl. 166-313.000.

Hsu, Kai; and Wiggins, Ralphe, to Schlumberger Technology Corporation. Method and apparatus for determining the magnitude of components of measurements made from inside a borehole. 4,809,236, Cl. 367-28.000.

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Kim, Dongsung R.; and Kronies, Reinhard K., to Unisys Corporation. Enhanced parity detection for wide ROM/PROM memory structure. 4,809,279, Cl. 371-51.000.
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Kraemer, Hartmuth; and Zolda, Ernst, to Robert Bosch GmbH. Device for conveying fuel from a supply tank to internal combustion engine. 4,808,066, Cl. 415-53.00T.

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Krause, Gary L. Roof panel locking system. 4,807,414, Cl. 52-478.000.

Krauss, Rudolf: *See*—
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Kreher, Alfons; Nagel, Werner; Brandt, Bernd; and Peters, Albert, to Degussa Aktiengesellschaft. Process and apparatus for granulating powdery materials. 4,807,819, Cl. 241-222.000.

Kresge, James S., to General Electric Company. High-energy low-voltage surge arrester. 4,809,124, Cl. 361-58.000.

Kreuzer, Rudolf; Noda, Wayne A.; Stockert, Friedemann; and Zupkas, Paul F., to Stockert Instrumente GmbH. Vascular catheter. 4,808,158, Cl. 604-49.000.

Krichever, Mark J.; Metlitsky, Boris; and Swartz, Jerome, to Symbol Technologies, Inc. Bar code symbol readers with variable spot size and/or working distance. 4,808,804, Cl. 235-462.000.

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Kronlage, John W., to Texas Instruments Incorporated. High speed parallel binary multiplier. 4,809,211, Cl. 364-754.000.

Kruck, Richard W.; and Cur, Omer N., to Whirlpool Corporation. Heavy gas-filled multilayer insulation panels. 4,808,457, Cl. 428-69.000.

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Lawford, Hugh G., to George Weston Limited. Continuous process for ethanol production by bacterial fermentation. 4,808,527, Cl. 435-161.000.

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Karasaki, Toshihiko; Ishida, Tokuji; Hamada, Masataka; Norita, Toshio; and Taniguchi, Nobuyuki, 4,808,808, Cl. 250-201.000
Norqvist, Anders: *See*—
Roffey, Roger; Olofsson, Goran; Norqvist, Anders; and Hulten, Goran, 4,808,538, Cl. 436-6.000.
North American Instruments Corp.: *See*—
Morse, Phillip H., 4,807,666, Cl. 137-625.470.
North American Philips Corporation: *See*—
Barnes, Casper W., 4,809,249, Cl. 367-100.000.
Meyer, Edwin R.; and Naimpally, Saiprasad V., 4,809,069, Cl. 358-166.000.
North American Philips Corporation, Signetics Division: *See*—
Huijsing, Johan H., 4,808,846, Cl. 307-271.000.
North Carolina State University: *See*—
Swartzel, Kenneth R.; Ball, Hershell R., Jr.; and Hamid-Samimi, Mohammad-Hossein, 4,808,425, Cl. 426-399.000.
Northern Telecom Limited: *See*—
Bennett, Reginald B. P.; Drake, Allan R.; and Finn, Roger C., 4,808,434, Cl. 427-54.100.
Northrop Corporation: *See*—
Ozelton, Malcolm W.; Bohlen, James W.; Scarich, Gregory V.; Scuttl, James J.; and Averill, Stephan W., 4,808,248, Cl. 148-12.70A.
Northwestern University: *See*—
Leibovich, Samuel J.; Polverini, Peter J.; and Shepard, H. Michael, 4,808,402, Cl. 424-423.000.
Norton, Jeffrey M.; Paukovits, Edward J., Jr.; Rudy, William J., Jr.; and Shaffer, Howard R., to AMP Incorporated. Line replaceable connector assembly for use with printed circuit boards. 4,808,115, Cl. 439-79.000.
Nowicki, Casimir W.: *See*—
Kaminski, Ronald S.; Sido, William F.; and Nowicki, Casimir W., 4,808,366, Cl. 264-509.000.
Nowshiravani, Shahriar. *See*—
Homer, John C.; Nowshiravani, Shahriar; Ross, Steven L.; and Lutz, Gilbert F., 4,809,190, Cl. 364-510.000

Nukiyama, Tomoji, to NEC Corporation. Data processing integrated circuit with improved decoder arrangement. 4,809,229, Cl. 365-189.000.
Nurano, Hideo. Optical decorative apparatus. 4,807,971, Cl. 350-13.600.
Nury, Jacques; and Nawrot, Serge, to Atochem. Process for cross-linking of copolymers comprising ethylene and a hydroxyalkyl ester. 4,808,670, Cl. 525-370.000.
Nuzzo, Robert A., to Morgan Container Corp. Display case mounting system for shelving. 4,807,947, Cl. 312-140.400.
Oak, Reginald O. Vapor barrier hole plug. 4,807,415, Cl. 52-514.000.
Oaks, Richard W., to Hughes Aircraft Company. Loop resistance test apparatus. 4,808,911, Cl. 324-57.00Q.
Obara, Hideo: *See*—
Nagashima, Hideyuki; Obara, Hideo; and Kimituka, Akira, 4,807,715, Cl. 180-268.000.
Obata, Fumio: *See*—
Suenaga, Makoto; and Obata, Fumio, 4,807,728, Cl. 188-260.000.
Obayashi, Akira; Hiraoka, Nobutsugu; Kita, Keiko; and Nakajima, Hiroshi, to Takara Shuzo Co., Ltd. New restriction enzyme and process for producing the same. 4,808,531, Cl. 435-195.000.
Obermann, Peter: *See*—
Buchholtz, Gerhard; Fickweiler, Werner; and Obermann, Peter, 4,808,089, Cl. 417-417.000.
Obersteiner, Georg: *See*—
Budecker, Ludwig; David, Anton; Obersteiner, Georg; Zutt, Ulrich; and Guse, Hans-Albrecht, 4,807,945, Cl. 303-114.000.
O'Brien, Jay P.: *See*—
Mohacsi, Erno; and O'Brien, Jay P., 4,808,580, Cl. 514-211.000.
O'Brien, Kennedy M.; Dunton, Keith E.; Newley, Peter E.; Purser, Michael H.; Isherwood, Jonathan M.; and Tansley, Robert W., to Driver Southall Limited. Weighing hoppers. 4,807,711, Cl. 177-25.180.
Occidental Chemical Corporation: *See*—
Dannels, Bobby F.; Fifolt, Michael J.; and Tang, David Y., 4,808,760, Cl. 570-139.000.
Ochiai, Chiaki: *See*—
Tsubouchi, Kaoru; and Ochiai, Chiaki, 4,807,438, Cl. 60-585.000.
Ochoa, Agustin, Jr., to United States of America, Energy. Random access memory immune to single event upset using a T-resistor. 4,809,226, Cl. 365-156.000.
Ocken, Alfred G., to Motorola, Inc. Electrical component assembly and method of manufacture thereof. 4,809,057, Cl. 357-76.000.
O'Connor, Patrick W.: *See*—
Wilson, Dennis L.; and O'Connor, Patrick W., 4,809,203, Cl. 364-602.000.
Oda, Etsuzi: *See*—
Fujita, Jun; Nakanishi, Yoshinori; Oda, Etsuzi; and Yamashita, Kazutaka, 4,808,895, Cl. 318-384.000.
Oda, Goro: *See*—
Nakatomi, Yoshitsugu; and Oda, Goro, 4,809,032, Cl. 355-3.0TR.
Oda, Toshiaki, to NEC Corporation. Cordless telephone system. 4,809,315, Cl. 379-58.000.
Odahara, Kazuhiro: *See*—
Isozumi, Shuzo; Odahara, Kazuhiro; and Tanaka, Toshinori, 4,808,836, Cl. 290-48.000.
Odani, Noboru: *See*—
Nagai, Ryo; Yoshimitu, Kazumi; Kajita, Kozo; and Odani, Noboru, 4,808,499, Cl. 429-218.000.
Odetics, Inc.: *See*—
Bartholet, Stephen J., 4,808,064, Cl. 414-730.000.
O'Donnell, Matthew; and Magrane, Mark G., to General Electric Company. Method and apparatus for fully digital beam formation in a phased array coherent imaging system. 4,809,184, Cl. 364-413.250.
Oe, Takanori; Kawasaki, Kazuyuki; Terasawa, Michio; and Imayoshi, Tomonori, to Yoshitomi Pharmaceutical Industries, Ltd. Benzopyranopyridineacetic acid ester compounds and their pharmaceutical uses. 4,808,593, Cl. 514-291.000.
Oe, Takanori; Kawasaki, Kazuyuji; Terasawa, Michio; Imayoshi, Tomonori; and Yasunaga, Yukihiro, to Yoshitomi Pharmaceutical Industries, Ltd. Pyrazolopyridine compounds, their preparation and use as platelet aggregation inhibitors. 4,808,620, Cl. 514-303.000.
OEM Messtechnik GmbH: *See*—
Dassler, Hans-Ulrich; Haas, Ruediger; Loeffler, Gerhard; and Liebers, Lutz, 4,807,995, Cl. 356-240.000.
Oertle, Konrad: *See*—
Beck, Andreas; Breitenstein, Werner; von Sprecher, Andreas; Lang, Robert W.; and Oertle, Konrad, 4,808,572, Cl. 514-18.000.
Oettgen, Herbert F.: *See*—
Old, Lloyd J.; Oettgen, Herbert F.; Ikeda, Hisami; Li, Lucy T. C.; Lloyd, Kenneth O.; and Dippold, Wolfgang G., 4,808,704, Cl. 530-387.000.
Ogawa, Kyosuke: *See*—
Honda, Mitsuru; Koike, Atsushi; Ogawa, Kyosuke; and Murai, Keiichi, 4,808,504, Cl. 430-31.000.
Ogawa, Ryota: *See*—
Shindo, Osamu; and Ogawa, Ryota, 4,808,806, Cl. 250-201.000.
Ogawa, Ryuichi: *See*—
Usui, Noboru; Tanaka, Kanji; Ogawa, Ryuichi; Ishikawa, Tsutomu; Ishiguro, Kazuhisa; and Arai, Masashi, 4,809,328, Cl. 381-13.000.
Ogawara, Hisashi: *See*—
Michizuki, Akira; Sato, Yoshio; Ogawara, Hisashi; and Yamashita, Syuzo, 4,808,313, Cl. 210-500.280.
Ogino, Kinji, to Akebono Brake Industry Co., Ltd.; and Akebono Research & Development Centre Ltd. Brake control system for a motor vehicle. 4,807,943, Cl. 303-113.000.
Ogiue, Katsumi: *See*—
Nishioka, Yasushiro; Shiba, Takeo; Shinriki, Hiroshi; Mukai, Kiichiro; Uchida, Akihisa; Mitamura, Ichiro; Higeta, Keiichi; Ogiue, Katsumi; Yamaguchi, Kunihiko; and Sakuma, Noriyuki, 4,809,052, Cl. 357-45.000.
Ogletree, Martin L., to E. R. Squibb & Sons, Inc. Method of preventing or treating toxemia in pregnancy using a thromboxane A_2 receptor antagonist. 4,808,627, Cl. 514-469.000.
Ogura, Yoshikazu: *See*—
Otomura, Keiichiro; Ogura, Yoshikazu; Echigo, Yoshiaki; Yamao, Mutsunori; and Ishikura, Tadashi, 4,808,316, Cl. 210-664.000.
Ohba, Shinya: *See*—
Akimoto, Hajime; Ozaki, Toshifumi; and Ohba, Shinya, 4,809,075, Cl. 358-213.180.
Ohba, Yasuo; Watanabe, Miyoko; Sugawara, Hideto; Ishikawa, Masayuki; Watanabe, Yukio; and Yamamoto, Motoyuki, to Kabushiki Kaisha Toshiba. Double-heterostructure semiconductor with mesa stripe waveguide. 4,809,287, Cl. 372-45.000.
Ohdawa, Hisao: *See*—
Imaide, Takuya; Ohdawa, Hisao; and Noda, Masaru, 4,809,074, Cl. 358-213.150.
Ohio State University, The: *See*—
Means, Gary E.; and Ampon, Kamaruzaman, 4,808,530, Cl. 435-180.000.
Ohji, Kenzo: *See*—
Fukuda, Hiroshi; Nagai, Takeshi; and Ohji, Kenzo, 4,808,293, Cl. 204-410.000.
Ohkaka, Ichizo; and Nakajima, Hiroaki, to Kato Hatsujo Kaisha, Ltd. Tube cutting and separating implement for conduit of blood or the like. 4,807,622, Cl. 128-305.000.
Ohki, Masaru: *See*—
Hirosawa, Toshio; Ohki, Masaru; and Kuwahara, Yutaka, 4,809,163, Cl. 364-200.000.
Ohki, Shinichi: *See*—
Shimizu, Atsuko; Fujii, Hiroshi; and Ohki, Shinichi, 4,807,639, Cl. 128-690.000.
Ohlinger, Wilhelm; and Warner, Nicholas M., to Unisys Corp. Bi-directional difference counter. 4,808,900, Cl. 318-603.000.
Ohmega Electronics: *See*—
Rice, James M.; and Mahler, Bruce P., 4,808,967, Cl. 338-309.000.
Ohmori, Kouichi: *See*—
Kumakura, Tosiyuki; Kataoka, Hiroyuki; and Ohmori, Kouichi, 4,808,811, Cl. 250-214.00L.
Ohnari, Yoshihide: *See*—
Nojiri, Hitoshi; Kitai, Katuhiro; Ohnari, Yoshihide; Kidoh, Masaro; and Yamamoto, Tsuneo, 4,808,468, Cl. 428-220.000.
Ohnhaus, Buford U. Convertible shape hood structure for air flow measurement. 4,807,667, Cl. 138-45.000.
Ohno, Makoto: *See*—
Suzuki, Mitsuru; Ohno, Makoto; and Yamamoto, Isamu, 4,808,312, Cl. 210-500.230.
Ohta, Hatsuo: *See*—
Katsuragi, Yoshio; and Ohta, Hatsuo, 4,808,896, Cl. 318-436.000.
Ohta, Ryuji: *See*—
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Ohtsu, Masamitsu: *See*—
Shimeki, Yasuharu; Matsushima, Hiroshi; Ohtsu, Masamitsu; and Kihara, Nobuyoshi, 4,809,087, Cl. 360-19.100.
Ohyu, Kiyonori: *See*—
Moniwa, Masahiro; Miyao, Masanobu; Shukuri, Shoji; Murakami, Eiichi; Warabisako, Terunori; Tamura, Masao; Natsuaki, Nobuyoshi; Ohyu, Kiyonori; Suzuki, Tadashi; Madokoro, Yuuichi; and Wada, Yasuo, 4,808,546, Cl. 437-41.000.
Ohzeki, Tamami: *See*—
Nakagawa, Yoshihiro; Tomatsuri, Takeo; Ozaki, Ikuo; Hirose, Kiichiro; Sato, Yukie; and Ohzeki, Tamami, 4,808,782, Cl. 219-10.55M.
Ohzora, Takashi; Otsuka, Yoshio; and Hoshino, Kazuo, to Nissan Motor Co., Ltd. Method for forming corrosion resistant coating on a disc brake. 4,808,275, Cl. 204-16.000.
Oishi, Takeshi; Nakanishi, Fumio; and Yamamoto, Toshihiko, to Hoyu Co., Ltd. Powdered hair dye containing cyclodextrin inclusion complex. 4,808,189, Cl. 8-408.000.
Oka, Hiroyuki: *See*—
Shannon, Paul D.; Oka, Hiroyuki; Grimme, Paul E.; and Sparks, Robert W., 4,809,231, Cl. 365-201.000.
Oka, Yasuhiko; and Satoh, Hideya, to Katoh Electrical Machinery Co., Ltd. Apparatus for processing fish detection signals. 4,809,242, Cl. 367-113.000.
Okada, Akihiro; and Matsuda, Takashi, to Fujitsu Limited. Optical composite transceiver. 4,809,361, Cl. 455-606.000.
Okada, Kazuyoshi, to Nissan Motor Company, Limited. Time-division multiplex transmission network system for an automobile vehicle. 4,809,266, Cl. 370-85.000.
Okada, Tetsuji: *See*—
Aoki, Katsuyuki; Umemura, Hiroyuki; Okada, Tetsuji; Matsuda, Kenji; Ishioka, Hidenori; Arai, Isao; Togashi, Kenji; Hara, Masanori; and Sugawara, Sakuo, 4,807,444, Cl. 62-179.000.
Okada, Yasuhiro: *See*—
Tomizu, Motoyuki; and Okada, Yasuhiro, 4,808,122, Cl. 439-417.000.
Okada, Yasuyuki: *See*—
Tabata, Kuniaki; Machida, Tetsuo; Takeda, Haruo; Takada, Naoki; and Okada, Yasuyuki, 4,809,345, Cl. 382-47.000.

Okajima, Takahiro: *See*—
Ikedo, Yuji; Miyakawa, Tsutomu; Okajima, Takahiro; and Miyake, Masahiko, 4,809,252, Cl. 369-34.000.
Okawa, Tadashi: *See*—
Kobayashi, Sumio; Tokashiki, Mutsuo; Tomita, Hiroyuki; Okawa, Tadashi; and Sugai, Hiroshi, 4,808,933, Cl. 324-163.000.
Okazaki, Hisayoshi: *See*—
Terao, Shinji; Okazaki, Hisayoshi; and Imada, Isuke, 4,808,339, Cl. 260-396.00R.
Okazaki, Kouji: *See*—
Yamamoto, Hitoshi; Tottori, Takumi; Ikeda, Tsugio; and Okazaki, Kouji, 4,807,571, Cl. 123-65.0PE.
Oki Electric Industry Co., Ltd.: *See*—
Matsui, Hiroshi, 4,808,544, Cl. 437-44.000.
Tanuma, Jiro; and Kasai, Tadashi, 4,808,985, Cl. 340-727.000.
Yamato, Osamu; Horii, Hiroyuki; Takino, Tetuji; Yamasaki, Takanori; Sakurai, Yoshimitu; Matsukura, Hisao; and Iwase, Ichiro, 4,808,951, Cl. 333-202.000.
Okumura, Masahide; Matsuzaka, Takashi; Matsuoka, Genya; Iwadate, Kazumi; Matsuda, Tadahito; and Yamaguchi, Ryoichi, to Hitachi Ltd.; and Nippon Telegraph and Telephone Corp. Mark position detection system for use in charged particle beam apparatus. 4,808,829, Cl. 250-491.100.
Okuyama, Toshiaki: *See*—
Matsui, Takayuki; Okuyama, Toshiaki; Sukegawa, Takashi; and Takahashi, Junichi, 4,808,903, Cl. 318-800.000.
Okuzawa, Tugio; and Kawada, Ken, to Fuji Photo Film Co., Ltd. Image recording apparatus. 4,809,049, Cl. 355-28.000.
Old, Lloyd J.; Oettgen, Herbert F.; Ikeda, Hisami; Li, Lucy T. C.; Lloyd, Kenneth O.; and Dippold, Wolfgang G., to Sloan-Kettering Institute for Cancer Research. Monoclonal antibodies to cell surface antigens of human malignant melanoma. 4,808,704, Cl. 530-387.000.
Oldigs, Richard W., to Schlumberger Technology Corporation. Shielded induction sensor for well logging. 4,808,929, Cl. 324-339.000.
Oleck, Stephen M., to Mobil Oil Corporation. Catalyst for simultaneous desulfurization and dewaxing of residua. 4,808,560, Cl. 502-66.000.
Olin Corporation: *See*—
Katz, Lawrence E., 4,808,689, Cl. 528-48.000.
Oliver, David W.: *See*—
Steele, Douglas S.; Keaveney, John P.; and Oliver, David W., 4,809,314, Cl. 378-205.000.
Oliver Rubber Company: *See*—
Hill, Gilbert L., 4,808,256, Cl. 156-394.100.
Oliver, Ruth. Gastrotomy tube stabilizer. 4,808,162, Cl. 604-180.000.
Olofson, Roy: *See*—
Bowman, Mark; Olofson, Roy; Malfroot, Thierry; and Senet, Jean-Pierre, 4,808,743, Cl. 558-141.000.
Olofsson, Goran: *See*—
Roffey, Roger; Olofsson, Goran; Norqvist, Anders; and Hulten, Goran, 4,808,538, Cl. 436-6.000.
Olsen, Albert B.: *See*—
Gale, Edwin J.; and Olsen, Albert B., 4,808,117, Cl. 439-192.000.
Olson, Allan G.; and Heiles, Tod S., to Hewlett-Packard Company. Unified paper path printer. 4,808,019, Cl. 400-605.000.
Olympus Optical Co., Ltd.: *See*—
Hasegawa, Hiroshi, 4,807,598, Cl. 128-6.000.
Ito, Hideo, 4,807,593, Cl. 128-4.000.
Nagano, Takashi; Tsunoda, Toshiyuki; and Fukaya, Takashi, 4,807,989, Cl. 351-212.000.
Omata, Tetsuo: *See*—
Senda, Shuji; and Omata, Tetsuo, 4,808,340, Cl. 260-410.900.
Omega Engineering, Inc.: *See*—
Hollander, Milton B.; and McKinley, William E., 4,808,241, Cl. 136-230.000.
Omoda, Koichiro: *See*—
Torii, Shunichi; Nagashima, Shigeo; and Omoda, Koichiro, 4,809,161, Cl. 364-200.000.
Omron Tateisi Electronics Co.: *See*—
Nakagawa, Masakatu, 4,808,801, Cl. 235-379.000.
Shonaka, Hisashi, 4,809,280, Cl. 371-62.000.
Sowa, Masahiro, 4,809,159, Cl. 364-200.000.
Tomizu, Motoyuki; and Okada, Yasuhiro, 4,808,122, Cl. 439-417.000.
O'Neill, Brian C.; and Willis, Christopher A., to National Research Development Corporation. Flow measurement/metering. 4,807,480, Cl. 73-861.040.
O'Neill, James K.: *See*—
Palmer, David N.; Cartwright, John S.; and O'Neill, James K., 4,808,494, Cl. 429-101.000.
Onishi, Yasuhiko. Matrix polymer and its preparation. 4,808,709, Cl. 536-112.000.
Onizuka, Masaaki: *See*—
Shinkai, Masaru; Tanaka, Makoto; Aramaki, Jun; and Onizuka, Masaaki, 4,808,786, Cl. 219-69.00W.
Onnenberg, Volker; Busch, Ralf; and Lindsey, John, to Bayer Aktiengesellschaft. Process and a form tool for the production of cushions made of foam which are provided with textile covers. 4,808,100, Cl. 425-127.000.
Ono, Toshio: *See*—
Shimodaira, Hisayo; and Ono, Toshio, 4,807,969, Cl. 350-320.000.
Onoda Cement Co., Ltd.: *See*—
Ishii, Shiro; Kubota, Hachiro; Hida, Toshiharu; and Migita, Junichiro, 4,807,530, Cl. 102-333.000.
Onoda, Shigeyoshi: *See*—
Ikemoto, Isao; Kanemitsu, Shinji; Mizutani, Morikazu; Kitajima, Hajime; and Onoda, Shigeyoshi, 4,809,033, Cl. 355-3.0SH.
Onogi, Nobuyoshi; Shimamoto, Mamoru; Hoashi, Yosiaki; and Tago, Masakazu, to Nippondenso Co., Ltd. Anti-skid control system. 4,807,941, Cl. 303-108.000.
Ooms, Pieter; and Becker, Benedikt, to Bayer Aktiengesellschaft. 5-amino-3-halogenoalkyl-1-aryl-pyrazoles, composition containing them, and method of using them to combat insects. 4,808,623, Cl. 514-404.000.
Oosta, Gary: *See*—
Doppelfeld, Peter; Oosta, Gary; Riebel, Alexander; and Schranz, Karl-Wilhelm, 4,808,529, Cl. 435-179.000.
Oosterhout, Gretchen R.: *See*—
Burkman, Jack L.; and Oosterhout, Gretchen R., 4,809,126, Cl. 361-212.000.
Ootsuka, Shigeharu: *See*—
Sako, Yuji; Tsutsumi, Kiyohide; and Ootsuka, Shigeharu, 4,808,961, Cl. 337-49.000.
Oowa, Nobutaka; Arai, Yasuji; Yasuike, Osamu; Ikemoto, Hiroyuki; and Doi, Shunichi, to Toyota Jidosha Kabushiki Kaisha; and Toyota Central Research and Development Laboratories, Inc. System for vehicle body roll control with overshoot prevention. 4,809,176, Cl. 364-424.000.
Oowatari, Yoshitaka: *See*—
Yamada, Kunio; Miyazaki, Kohzoh; Oowatari, Yoshitaka; Egami, Yoshio; and Honma, Toshio, 4,808,484, Cl. 428-522.000.
Ophir, Jonathan, to Board of Regents, The University of Texas System. Pulse centroid echo method and apparatus for enhanced sound velocity estimation in vivo. 4,807,635, Cl. 128-660.010.
Oppenlander, Theodor, to U.S. Philips Corp. Device for pair-wise coupling the ends of two groups of optical fibers. 4,807,960, Cl. 350-96.220.
Optical Disc Corporation: *See*—
Wilkinson, Richard L.; and Winslow, John S., 4,809,022, Cl. 346-135.100.
Orain, Michel A., to Glaenzer Spicer. Homokinetic transmission joint for motor vehicles. 4,808,144, Cl. 464-111.000.
Orbital Engine Company Proprietary Limited: *See*—
Schlunke, Christopher K., 4,807,572, Cl. 123-73.00C.
Orito, Yoshiaki: *See*—
Toyoshima, Masayasu; Watanabe, Yoshiaki; and Orito, Yoshiaki, 4,808,283, Cl. 204-71.000.
O'Rourke, Ronald L.: *See*—
Sung, Rodney L.; Zoleski, Benjamin H.; and O'Rourke, Ronald L., 4,808,335, Cl. 252-47.500.
Orr, Avigdor: *See*—
Springler, John O.; Orr, Avigdor; and Gilbert, Seymour G., 4,808,420, Cl. 426-106.000.
Orr, Lawrence W., Jr. Hinge-line multilayer cable and method. 4,808,771, Cl. 174-72.00R.
Osada, Shiro: *See*—
Tsuchida, Yutaka; Takahashi, Shuzo; Osada, Shiro; and Hasebe, Nobuhisa, 4,807,692, Cl. 164-430.000.
Osamu, Matsuda: *See*—
Yoshikatsu, Okabayashi; and Osamu, Matsuda, 4,808,463, Cl. 428-215.000.
Osborne, John C.: *See*—
Auchinleck, Geoffrey F.; McEwen, James A.; Osborne, John C.; and Bussani, Carlo R., 4,807,618, Cl. 128-878.000.
Oshima, Shinnosuke. Elevator device transportable in a motor vehicle. 4,808,056, Cl. 414-462.000.
Oshio, Minoru: *See*—
Chazono, Hirokazu; Oshio, Minoru; Murai, Shunji; and Kishi, Hiroshi, 4,809,130, Cl. 361-321.000.
Chazono, Hirokazu; Oshio, Minoru; Murai, Shunji; and Kishi, Hiroshi, 4,809,131, Cl. 361-321.000.
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Hennessy, James P.; Osisek, Damian L.; and Seigh, Joseph W., II, 4,809,168, Cl. 364-200.000.
Oskam, Herman: *See*—
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Oslin, Brian: *See*—
Anderson, Raymond L.; Groza, Joanna R.; and Oslin, Brian, 4,808,224, Cl. 75-246.000.
Osman, Maged A.: *See*—
Huynh-ba, Tuong; and Osman, Maged A., 4,808,333, Cl. 252-299.660.
Ossberger, Karl-Friedrich: *See*—
Linss, Gerhard; and Ossberger, Karl-Friedrich, 4,808,105, Cl. 425-529.000.
Ossberger Turbinenfabrik GmbH & Co.: *See*—
Linss, Gerhard; and Ossberger, Karl-Friedrich, 4,808,105, Cl. 425-529.000.
Ostermeier, Wilhelm, to M & C Products Analysentechnik GmbH. Oxygen measuring cell. 4,807,463, Cl. 73-27.00A.
Ota, Naoto, to Fanuc Ltd. Switching regulator having parallel diode isolated primary windings and plural secondary windings. 4,809,151, Cl. 363-21.000.
Otis Elevator Company: *See*—
Salmon, John K.; and Edge, William S., 4,807,723, Cl. 187-20.000.
Otomura, Keiichiro; Ogura, Yoshikazu; Echigo, Yoshiaki; Yamao, Mutsunori; and Ishikura, Tadashi, to Unitika Ltd.; and Doryokuro Kakunenryo Kaihatsu Jigyodan. Process for treating waste water containing uranium and fluorine. 4,808,316, Cl. 210-664.000.

Otowa, Takashi: *See—*
Sonoda, Toshinari; Matsubara, Toshihiko; Otowa, Takashi; and Yoshida, Kazuo, 4,807,576, Cl. 123-90.570.

Otsubo, Toru; Aiuchi, Susumu; Kamimura, Takashi; Noguchi, Minoru; and Fujii, Teru, to Hitachi, Ltd. Plasma processing method and apparatus for carrying out the same. 4,808,258, Cl. 156-643.000.

Otsuka Kagaku Kabushiki Kaisha: *See—*
Torii, Shigeru, 4,808,712, Cl. 540-229.000.

Otsuka, Yoshio: *See—*
Ohzora, Takashi; Otsuka, Yoshio; and Hoshino, Kazuo, 4,808,275, Cl. 204-16.000.

Ott, Bruce S.; Haus, Joseph; and Kohlhepp, Frederick F., to Carter-Wallace, Inc. Flea and tick infestation control composition containing chlorpyrifos and vinyl acetate/crotonic acid/vinyl neodecanoate copolymer. 4,808,615, Cl. 514-89.000.

Ott, George L.: *See—*
Peck, Lawrence B.; Buttke, Robert D.; Ott, George L.; and Cox, Jeffry A., 4,808,298, Cl. 208-212.000.

Ottawa Truck Corporation: *See—*
Smith, Russell M.; and Peck, William J., 4,807,713, Cl. 180-89.140.

Ottemann, William C.; and Plagenhoef, James E., to Barient, Inc. Multi-pedestal winch system. 4,807,852, Cl. 254-290.000.

Otto, Dennis L., to Timken Company, The. Flap seal for anti-friction bearings. 4,808,012, Cl. 384-482.000.

Otto Zollinger, Inc.: *See—*
Zollinger, Otto, 4,807,829, Cl. 242-152.100.

Oudenes, Jan, to Torcan Chemical Ltd. Process for preparing carboxyalkyl dipeptides. 4,808,741, Cl. 556-418.000.

Ouhadi, Trazollah: *See—*
Datta, Sudhin; and Ouhadi, Trazollah, 4,808,387, Cl. 423-265.000.

Ovshinsky, Stanford R.: *See—*
Pryor, Roger W.; Formigoni, Napoleon P.; and Ovshinsky, Stanford R., 4,809,044, Cl. 357-2.000.

Owechko, Yuri: *See—*
Little, Michael J.; Efron, Uzi; Braatz, Paul O.; Schwartz, Robert N.; Owechko, Yuri; and Welkowsky, Murray S., 4,807,976, Cl. 350-355.000.

Owens, Edward C. Two color depth tinting apparatus. 4,807,324, Cl. 15-166.000.

Owens-Illinois Closure Inc.: *See—*
Barriac, Jacques J., 4,807,770, Cl. 215-252.000.
Schloss, Francis M., 4,807,772, Cl. 215-349.000.

Owens-Illinois Plastic Products Inc.: *See—*
Kaminski, Ronald S.; Sido, William F.; and Nowicki, Casimir W., 4,808,366, Cl. 264-509.000.

Oxford, Alexander W.; and Cavalla, David J., to Glaxo Group Limited. Imidazolyl- indolylpropanones as 5-HT_3 receptor antagonists. 4,808,581, Cl. 514-212.000.

Oy Uponor AB: *See—*
Johansson, Goran; and Arts, Dirk, 4,807,910, Cl. 285-21.000.

Oyamada, Kimiyuki; and Utsumi, Yozo, to Nippon Hoso Kyokai. Optical coupling device. 4,807,954, Cl. 350-96.150.

Ozaki, Hideyuki; Hirayama, Kazutoshi; Fujishima, Kazuyasu; and Hidaka, Hideto, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device. 4,808,844, Cl. 307-243.000.

Ozaki, Ikuo: *See—*
Nakagawa, Yoshihiro; Tomatsuri, Takeo; Ozaki, Ikuo; Hirose, Kiichiro; Sato, Yukie; and Ohzeki, Tamami, 4,808,782, Cl. 219-10.55M.

Ozaki, Ryoji; Shinohara, Hisaji; Yamamoto, Hironobu; Nara, Takashi; and Yoshida, Hajime, to Fuji Electric Co., Ltd.; and Tokuriki Honten Co., Ltd. Silver/metal oxide material for electrical contacts and method of producing the same. 4,808,223, Cl. 75-235.000.

Ozaki, Toshifumi: *See—*
Akimoto, Hajime; Ozaki, Toshifumi; and Ohba, Shinya, 4,809,075, Cl. 358-213.180.

Ozawa, Hiromi, to Fuji Electric Company Ltd. Head position control system. 4,809,120, Cl. 360-78.140.

Ozelton, Malcolm W.; Bohlen, James W.; Scarich, Gregory V.; Scuttl, James J.; and Averill, Stephan W., to Northrop Corporation. Process for thermal aging of aluminum alloy plate. 4,808,248, Cl. 148-12.70A.

Paar, Willibald, to Vianova Kunstharz, A.G. Self-crosslinking cationic paint binders containing biuret groups. 4,808,688, Cl. 538-45.000.

Pace, Laurel J.: *See—*
Snow, Robert A.; McGuckin, Hugh G.; Ponticello, Ignazio S.; Daly, Robert C.; Pace, Laurel J.; Fischer, Sandra K.; and Hanrahan, Michael J., 4,808,510, Cl. 430-287.000.

Pacesetter Infusion, Ltd.: *See—*
Mann, Alfred E.; and Schulman, Joseph H., 4,808,167, Cl. 604-151.000.

Packaging Concepts, Inc.: *See—*
Mendenhall, Abraham H.; and Irace, Joseph E., 4,808,421, Cl. 426-107.000.

Padalino, Marco, to Ricoh Company, Ltd.; and Ricoh Systems, Inc. Inkjet interlace printing with inclined printhead. 4,809,016, Cl. 346-75.000.

Padgett, John G.: *See—*
Ramm, Eric J.; Bukyx, Wilhelmus J.; Padgett, John G.; and Ringwood, Alfred E., 4,808,337, Cl. 252-628.000.

Paget, Fredrick W.: *See—*
Wyner, Elliot F.; and Paget, Fredrick W., 4,808,888, Cl. 315-289.000.

Pak, Chu: *See—*
Watson, Herman L.; Sackner, Deborah R.; Pak, Chu; and Sackner, Marvin A., 4,807,640, Cl. 128-721.000.

Pakhomov, Gennady A.: *See—*
Ivchenkov, Vadim P.; Kaluzhsky, Nikolai A.; Isidorov, Eduard A.; Sirotenko, Viktor G.; Shusterov, Viktor S.; Pakhomov, Gennady A.; Teplyakov, Fedor K.; and Khromovskikh, Oleg S., 4,808,375, Cl. 420-548.000.

Palco Telecom, Inc.: *See—*
McGough, Gerald B., 4,809,319, Cl. 379-153.000.

Palepu, Nageswara R.: *See—*
Kaplan, Murray A.; Palepu, Nageswara R.; and Bogardus, Joseph B., 4,808,617, Cl. 514-202.000.

Palmer, David N.; Cartwright, John S.; and O'Neill, James K., to Combustion Engineering, Inc. Thermally actuated hydrogen secondary battery. 4,808,494, Cl. 429-101.000.

Palmer, David W., to Walker Magnetics Group, Inc. Thread wrapping apparatus. 4,807,430, Cl. 57-18.000.

Palmieri, Joseph M.; Castonguay, Roger N.; Arnold, David; and Morris, Robert A., to General Electric Co. Field installable line and load lug connectors for molded case circuit breakers. 4,809,132, Cl. 361-353.000.

Paloma Kogyo Kabushik Kaisha: *See—*
Yokoyama, Nobuyoshi; and Matsumura, Yoshihiro, 4,808,107, Cl. 431-1.000.

Panje, William R., to University of Iowa Research Foundation. Voice button prosthesis and method for installing same. 4,808,183, Cl. 623-9.000.

Paparatto, Giuseppe, to Montedipe S.p.A. Process for the catalytic trans-halogenation of a poly-iodo-benzene. 4,808,759, Cl. 570-202.000.

Papenfuhs, Theodor, to Hoechst Aktiengesellschaft. Process for the preparation of 2-aminophenyl thioethers. 4,808,752, Cl. 564-414.000.

Paquet, Christian: *See—*
Labrousse, Jean-Michel J.; and Paquet, Christian, 4,808,860, Cl. 307-572.000.

Parasin, Alexander V., to Council of Forest Industries of British Columbia Plywood Technical Centre. Tongue and groove profile. 4,807,416, Cl. 52-595.000.

Pariani, Emilio; Caramaschi, Vittorio; and Castelli, Pierluigi, to Costruzioni Aeronautiche Giovanni Agusta S.p.A. Helicopter rotor. 4,808,075, Cl. 416-140.000.

Parisi, Tulio T., to Ultramed Corporation. Device for removing plaque from arteries. 4,808,153, Cl. 604-22.000.

Park, Eugene S.; and Poste, Steven D., to Lanxide Technology Company, LP. Ceramic foams. 4,808,558, Cl. 501-80.000.

Park, Kyung T.; and Klafter, Richard D., to Temple University of the Commonwealth System of Higher Education. Method and apparatus for measuring stimuli applied to a piezoelectric transducer. 4,807,482, Cl. 73-862.680.

Park, Robert E.: *See—*
Havens, Terry L.; and Park, Robert E., 4,808,078, Cl. 417-38.000.

Parker, Keith E.; and Scott, Martin G., to Thorn Emi plc. High pressure discharge lamp with overhung end arc tube and cermet ends. 4,808,882, Cl. 313-625.000.

Parrillo, Louis C.; Mauntel, Richard W.; and Barden, John M., to Motorola, Inc. Well Extensions for trench devices. 4,808,543, Cl. 437-38.000.

Parrillo, Louis C.: *See—*
Mauntel, Richard W.; Cosentino, Stephen J.; Parrillo, Louis C.; and Holly, Patrick J., 4,808,555, Cl. 437-191.000.

Parsons, Alfred; and Sefton, Thomas, to Eurocup (Crosby) Limited. Vending machine for beverage. 4,807,780, Cl. 221-113.000.

Paschke, Klaus: *See—*
Weiler, Rolf; Bach, Uwe; Kirst, Thomas H.; and Paschke, Klaus, 4,807,725, Cl. 188-71.800.

Pasciak, Robert L., to Union Oil Company of California. Positioning device and method. 4,808,000, Cl. 356-375.000.

Pass, Milo C.: *See—*
Lund, Richard B.; and Pass, Milo C., 4,808,342, Cl. 260-508.000

Pastor, Stephen D.: *See—*
Spivack, John D.; Ravichandran, Ramanathan; and Pastor, Stephen D., 4,808,644, Cl. 524-94.000.

Patel, Dipakkumar I.; and Giampa, Randall S., to Kulicke and Soffa Industries, Inc. Automatic tuning system for ultrasonic generators. 4,808,948, Cl. 331-4.000.

Patel, Raman; Wang, Yun L.; and Abdou-Sabet, Sabet, to Monsanto Company. Crosslinked blends. 4,808,665, Cl. 525-133.000

Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen m.b.H.: *See—*
Fahnrich, Hans-Jurgen; and Zuchtriegel, Anton, 4,808,887, Cl. 315-247.000.
Schuster, Werner, 4,808,136, Cl. 445-9.000.

Patterson, Patrick E.; and Katz, Judd A., to Iowa State University Research Foundation, Inc. Tactile stimulus receptor for a hand prosthesis. 4,808,187, Cl. 623-25.000.

Patterson, Wayne D.: *See—*
Carney, Wayne D.; and Patterson, Wayne D., 4,808,058, Cl. 414-343.000.

Patti, Anthony J. Flexible adjustable-core air hose. 4,807,658, Cl. 137-223.000.

Paukovits, Edward J., Jr.: *See—*
Norton, Jeffrey M.; Paukovits, Edward J., Jr.; Rudy, William J., Jr.; and Shaffer, Howard R., 4,808,115, Cl. 439-79.000.

Paul, Lowell A. Seedling planter. 4,807,543, Cl. 111-2.000.

Paul, Sasanka S.: *See—*
Ghosh, Pushpito K.; Bhattacharyya, Dhirendra N.; Iyer, Rama S.; Chikale, Sudhakar V.; Chattopadhyay, Arun K.; Paul, Sasanka S.; and Rao, Vattipalli M., 4,808,251, Cl. 149-2.000.

Pavlik, Dennis J., to Toro Company, The. Method and apparatus for securing a torque applying device. 4,807,727, Cl. 188-84.000.

Pavlik, Norman M.; and Sefko, John, to Westinghouse Electric Corp. Insulating ferromagnetic amorphous metal strips. 4,808,464, Cl. 428-216.000.

Pavlisko, Joseph A.: *See—*
Nielsen, Paul L.; and Pavlisko, Joseph A., 4,807,341, Cl. 29-132.000.

Pawloski, Martin B.; and Borkar, Shekhar Y., to Metalink Corporation. Circuitry for emulating single chip microcomputer without access to internal buses. 4,809,167, Cl. 364-200.000.

PBS Building Systems: *See—*
Horn, John J., 4,807,407, Cl. 52-79.100.

Peak Systems, Inc.: *See—*
Eddy, William A., 4,808,059, Cl. 414-416.000.

Pearce, David M.: *See—*
Hayman, Dennis J.; and Pearce, David M., 4,807,306, Cl. 4-203.000.

Pearce, Roscoe L.; and Wolcott, Richard A., to Dow Chemical Company, The. Sulfur removal from hydrocarbons. 4,808,765, Cl. 585-860.000.

Pearson, David J.: *See—*
Burgess, James P.; and Pearson, David J., 4,809,199, Cl. 364-550.000.

Pearson, Keith. Gripper assembly for robot arm. 4,808,898, Cl. 318-568.000.

Peck, James V.; and Minaskanian, Gevork, to Nelson Research & Development Co. Amide penetration enhancers for transdermal delivery of systemic agents. 4,808,414, Cl. 424-449.000.

Peck, Lawrence B.; Buttke, Robert D.; Ott, George L.; and Cox, Jeffry A., to Amoco Corporation. Process for reducing resid hydrotreating solids in a fractionator. 4,808,298, Cl. 208-212.000.

Peck, William J.: *See—*
Smith, Russell M.; and Peck, William J., 4,807,713, Cl. 180-89.140.

Peckham, David S.; and Crnkovic, James J., to Motorola, Inc. Three-way power splitter using directional couplers. 4,809,356, Cl. 455-86.000.

Pecoraro, George A.: *See—*
Hughes, Gary N.; and Pecoraro, George A., 4,808,205, Cl. 65-135.000.

Pedrazzini, Giuseppe, to ITALBONDER Spa. Compositions for protecting steel surfaces against atmospheric oxidation. 4,808,244, Cl. 148-6.15Z.

Peffer, John R.: *See—*
Chang, Wen H.; Prucnal, Paul J.; Peffer, John R.; Dufford, Edward L.; and Ambrose, Ronald R., 4,808,663, Cl. 525-100.000.

Pelin, Charles. Closed system, standpipe operated hydroelectric power plant. 4,807,437, Cl. 60-325.000.

Penenberg, Brad L.; Jasty, Murali; and Chandler, Hugh P. Tibial prosthesis, template and reamer. 4,808,185, Cl. 623-20.000.

Penick & Ford, Limited: *See—*
Fox, Charles J., 4,808,479, Cl. 428-394.000.

Penkoske, Donald G.: *See—*
Kamlukin, Igor; Penkoske, Donald G.; and Schanz, John W., 4,807,904, Cl. 280-781.000.

Penneck, Richard J.; Fox, David R.; and Atkinson, Edward B., to Focas Limited. Support member for pressure sensor. 4,809,244, Cl. 367-162.000.

Peppers, Norman A.; Young, James R.; Pierce, Gerald A.; Nishi, Hisami; and Katsuki, Kazuo, to Nippon Sheet Glass Co., Ltd. Apparatus for preprocessing of character recognition. 4,809,344, Cl. 382-32.000.

Periard, Jacques; Staub, Hans R.; and Lanini, Marco, to Lonza Ltd. Lubricant system for sheet and section rolling mills. 4,808,324, Cl. 252-23.000.

Perma Power Electronics, Inc.: *See—*
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Perma Pure Products, Inc.: *See—*
Kertzman, Jack, 4,808,201, Cl. 55-158.000.

Perrin, Jack L.: *See—*
Gains, Oliver B.; Perrin, Jack L.; and Tucker, Council A., 4,807,824, Cl. 242-55.300.

Perry, David M.: *See—*
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Perry, Richard P.: *See—*
Urkowitz, Harry; and Perry, Richard P., 4,809,001, Cl. 342-94.000.

Perry, Richard R.: *See—*
Strop, Hans R.; and Perry, Richard R., 4,808,426, Cl. 426-417.000.

Perry, Ronald E.; and Baumgardner, Timmy D. Shoulder draped bird perch. 4,807,568, Cl. 119-26.000.

Person, LuAnn H.; and Roddy, Kenneth A. Portable stacking and nesting toilet. 4,807,308, Cl. 4-483.000.

Peters, Albert: *See—*
Kreher, Alfons; Nagel, Werner; Brandt, Bernd; and Peters, Albert, 4,807,819, Cl. 241-222.000.

Peters, Ronald L.: *See—*
Peters, Rudolph; Peters, Ronald L.; and Taylor, William, 4,807,628, Cl. 128-334.00R.

Peters, Rudolph; Peters, Ronald L.; and Taylor, William, to Edward Weck & Company, Inc. Method and apparatus for storing, dispensing, and applying surgical staples. 4,807,628, Cl. 128-334.00R.

Peters, Timothy J.: *See—*
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Petersen, Alan B.: *See—*
DeBell, Gary W.; Wright, David L.; Ruddock, Kenneth A.; Petersen, Alan B.; Carlson, Lee R.; and Von Gunten, Marc K., 4,809,293, Cl. 372-98.000.

Petersen, Godber: *See—*
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Petersen, Poul: *See—*
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Petro Chemical Corporation: *See—*
Adams, Lawrence J.; Fruda, Thomas R.; and Hughett, Paul D., 4,807,578, Cl. 123-198.00A.

Petrova, Vera M.: *See—*
Gainutdinova, Raisa V.; Jurov, Boris A.; Mazo, Bentsian M.; and Petrova, Vera M., 4,807,610, Cl. 128-830.000.

Pettigrew, Susan: *See—*
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Pezzuto, John M.: *See—*
Kinghorn, Alan D.; Compadre, Cesar M.; and Pezzuto, John M., 4,808,409, Cl. 424-439.000.

Pfaff, Wayne K. Zero insertion force mounting housings for electronic device packages. 4,808,119, Cl. 439-268.000.

Pfannkoch, Edward A., to W. R. Grace & Co.-Conn. Method for high pH washing of silica-based chromatographic sorbents. 4,808,233, Cl. 134-2.000.

Pfeifer, Josef, to Ciba-Geigy Corporation. Amino-tetraalkylbenzoylphthalic acids. 4,808,732, Cl. 549-244.000.

Pfizer Inc.: *See—*
Hoffman, William W.; and Kraska, Allen R., 4,808,597, Cl 514-311.000.
Kadin, Saul B., 4,808,601, Cl. 514-374.000.
Santini, Conrad, 4,808,591, Cl. 514-274.000.

Pham, Ha Q.; and Ho, Loan A., to Dow Chemical Company, The. Preparation of advanced epoxy resins from epoxy resins and dihydric phenols in the presence of phosphonium compounds. 4,808,692, Cl. 528-89.000.

Phelps Engineering Company, Inc.: *See—*
Manning, Douglas E., 4,807,748, Cl. 206-386.000.

Philip Morris Incorporated: *See—*
Wheless, Jack C., 4,807,738, Cl. 198-377.000.

Philippi, Randy J. Operator powered skateboard. 4,807,896, Cl 280-243.000.

Philips Telecommunications B.V.: *See—*
van Baardwijk, Johannes; and Bos, Marinus A., 4,809,263, Cl. 370-66.000.

Phillips, Brian T.: *See—*
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Phillips, James L.: *See—*
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Phillips Petroleum Company: *See—*
Bobsein, Rex L.; and Clark, Earl, Jr., 4,808,698, Cl. 528-388.000.
Edmonds, James T., Jr.; Geibel, Jon; Bobsein, Rex L.; and Straw, Jim J., 4,808,694, Cl. 528-125.000.
Kolts, John H.; and Kukes, Simon G., 4,808,394, Cl. 423-437.000.
Latimer, Edward G.; and Jones, Richard W., 4,808,299, Cl. 208-251.00R.
Sberk, Fred T.; and Gilbreth, Jimmy M., 4,807,672, Cl. 141-1.000.
Stroman, David W.; Brust, Paul F.; Ellis, Steven B.; Gingeras, Thomas R.; Harpold, Michael M.; and Tschopp, Juerg F., 4,808,537, Cl. 435-6.000.

Phillips, Ronald W., II: *See—*
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Phoenix Newspapers, Inc.: *See—*
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Phoenix Park Systems: *See—*
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Pichler, Klaus; Kunze, Dieter; Rost, Jan; and Haeder, Wolfgang, to Siemens Aktiengesellschaft. Cable joint with end bodies and a longitudinally slotted sleeve. 4,808,772, Cl. 174-92.000.

Pickart, Loren R., to ProCyte Corporation. Chemical derivatives of GHL-Cu. 4,808,571, Cl. 514-18.000.

Pidde, Victor S.; and Langdon, John D. Device for the automatic operation of international metallic silhouette target platforms. 4,807,888, Cl. 273-392.000.

Pierce, Gerald A.: *See—*
Peppers, Norman A.; Young, James R.; Pierce, Gerald A.; Nishi, Hisami; and Katsuki, Kazuo, 4,809,344, Cl. 382-32.000.

Pike, Edward R.; and Pusey, Peter N., to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Multichannel digital signal correlator or structurator. 4,809,210, Cl. 364-728.000.

Pilkington, Donald J.; and Marlow, Christopher I., to Design Technologies Limited. Cutting method. 4,808,046, Cl. 409-132.000.

Pioneer Electronic Corporation: *See—*
Ikedo, Yuji; Miyakawa, Tsutomu; Okajima, Takahiro; and Miyake, Masahiko, 4,809,252, Cl. 369-34.000.

Pioneer Fishing and Rental Tools, Inc.: *See—*
Falgout, Thomas E., Sr.; and Schoeffler, William N., 4,807,709, Cl. 175-296.000.

Pirotton, Patrice: *See—*
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Pistorius, Rudolf, to Hoechst Aktiengesellschaft. Process for isolating paraffinsulfonates with a low alkal: metal sulfate content and sulfuric

acid from paraffin-sulfoxidation reaction mixtures without obligatory production of sodium sulfate. 4,808,343, Cl. 260-513.00R.
Piteau, Marc: *See—*
Malfroot, Thierry; Piteau, Marc; and Senet, Jean-Pierre, 4,808,745, Cl. 558-277.000.
Pitney Bowes Inc.: *See—*
Check, Frank T.; and Sansone, Ronald P., 4,809,021, Cl. 346-108.000.
Freeman, Gerald C.; Feinland, Seymour; and Crowley, Raymond R., 4,809,186, Cl. 364-464.000.
Talmadge, Paul C., 4,809,185, Cl. 364-464.020.
Pitschi, Franz-Xaver: *See—*
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Pitsenbarger, Lyle R.: *See—*
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Placontrol Corporation: *See—*
Chodorow, Ingram S., 4,807,752, Cl. 206-63.500.
Plagenhoef, James E.: *See—*
Ottemann, William C.; and Plagenhoef, James E., 4,807,852, Cl. 254-290.000.
Plant-Tech, Inc: *See—*
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Plasmainvent AG, Ita Oberleh 2: *See—*
Gruenr, Heiko, 4,808,487, Cl. 428-610.000.
Plastiflex Company International: *See—*
Finley, Richard O., 4,808,081, Cl. 417-57.000.
Platel, Alain Y.; Bourgery, Guy R.; and Guerret, Patrick G., to Delalande S.A. New cinnamoic compounds, the process for preparing same and the use thereof in therapeutics. 4,808,582, Cl. 514-212.000.
Plath, Peter; Eicken, Karl; Zeeh, Bernd; Eichenauer, Ulrich; Hagen, Helmut; Kohler, Rolf-Dieter; Meyer, Norbert; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Oxime esters of substituted quinoline-8-carboxylic acids and use thereof as herbicides. 4,808,212, Cl. 71-94.000.
Plath, Peter: *See—*
Eicken, Karl; Plath, Peter; Wuerzer, Bruno; and Meyer, Norbert, 4,808,211, Cl. 71-92.000.
Platzer, Stephan J. W., to Hoechst Celanese Corporation. Negative working color proofing process comprising diazo compound and polyvinyl acetal/polyvinyl alcohol/polyvinyl acetate resin. 4,808,508, Cl. 430-143.000.
Pletsch, Hubert: *See—*
Wolf, Franz J.; Pletsch, Hubert; Weber, Otto; and Keck, Volkamr, 4,807,857, Cl. 267-140.300.
Pohl, Winfried, to Robert Bosch GmbH. Method and apparatus for generating a video wipe border signal. 4,809,072, Cl. 358-183.000
Poitevin, Anton. Self contained high pressure hot water cleaning system for grocery carts. 4,807,319, Cl. 15-21.00D.
Polanski, Gerry: *See—*
Polansky, Ken; Polanski, Gerry; and Bush, Lee, 4,809,297, Cl 375-7.000.
Polansky Electronics Ltd.: *See—*
Polansky, Ken; Polanski, Gerry; and Bush, Lee. 4,809,297, Cl 375-7.000.
Polansky, Ken; Polanski, Gerry; and Bush, Lee, to Williams Electronics Ltd.; and Polansky Electronics Ltd. Interface device. 4,809,297, Cl. 375-7.000.
Polaroid Corporation: *See—*
Agulnek, Martin A., 4,809,020, Cl. 346-107.00R.
Polaroid Corporation, Patent Dept.: *See—*
Chiulli, Carl A., 4,808,501, Cl. 430-7.000.
Polefka, Thomas G.: *See—*
Gaffar, Abdul; and Polefka, Thomas G., 4,808,400, Cl. 424-52.000
Gaffar, Abdul; and Polefka, Thomas G., 4,808,401, Cl. 424-52.000
Polifarma S.p.A.: *See—*
De Luca, Giovanna; Di Stazio, Giovanni; Margonelli, Andrea; Materazzi, Mario; and Politi, Vincenzo, 4,808,728, Cl. 548-502.000.
Polino, Alfredo; Nonini, Geremia; and Tomat, Ferruccio, to Danieli & C. Officine Mecchaniche SpA. Line to cool wound bundles of rolled wire and rod. 4,807,457, Cl. 72-128.000.
Politi, Vincenzo: *See—*
De Luca, Giovanna; Di Stazio, Giovanni; Margonelli, Andrea; Materazzi, Mario; and Politi, Vincenzo, 4,808,728, Cl 548-502.000.
Polozhentseva, Mira I.: *See—*
Brekhman, Izrail I.; Bulanov, Alexandr E.; Polozhentseva, Mira I.; Mudzhiri, Levan A.; Alkhazashvili, Gia G.; Kalatozishvili, Elena I.; Dardymov, Igor V.; Bezdetko, Gennady N.; and Khasina, Eleonora I., 4,808,574, Cl. 514-23.000.
Polverini, Peter J.: *See—*
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Sunaga, Mamoru, to Sanden Corporation. Air outlet nozzles for an air circulation device in a refrigerated display cabinet. 4,807,446, Cl. 62-256.000.
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Short, Keith E., 4,808,817, Cl. 250-231.0SE.
Sung, Rodney L.; Zoleski, Benjamin H.; and O'Rourke, Ronald L., to Texaco Inc. Oxidation and corrosion resistant diesel engine lubricant. 4,808,335, Cl. 252-47.500.
Suskind, Stuart P.; Martucci, Susan L. K.; and Israel, Joseph, to James River Corporation of Virginia. High strength hydroentangled nonwoven fabric. 4,808,467, Cl. 428-284.000.
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Suzuki, Masayoshi; and Izaki, Naoyuki, to Hitachi, Ltd. High voltage pulse generating semiconductor circuit with improved driving arrangement. 4,808,845, Cl. 307-270.000.
Suzuki, Mitsuru; Ohno, Makoto; and Yamamoto, Isamu, to Toyo Boseki Kabushiki Kaisha. Cellulose ester hollow fiber membrane for plasma separation. 4,808,312, Cl. 210-500.230.
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Toyo Denso Kabushiki Kaisha: *See*—
Satoh, Hiroshi; and Mohri, Minoru, 4,808,775, Cl. 200-1.00V.
Toyo Soda Manufacturing Co., Ltd.: *See*—
Miyanaga, Akiyoshi; and Umino, Masuo, 4,808,540, Cl. 436-150.000.
Toyoda Gosei Co., Ltd.: *See*—
Niwa, Minoru; and Hashiba, Takahiro, 4,808,776, Cl. 200-61.550.
Toyofuku, Toshihiro: *See*—
Fujiwara, Haruyoshi; and Toyofuku, Toshihiro, 4,808,445, Cl. 427-428.000.
Toyoshima, Masayasu; Watanabe, Yoshiaki; and Orito, Yoshiaki, to Sumitomo Light Metal Industries, Ltd. Method of producing a high purity aluminum-lithium mother alloy. 4,808,283, Cl. 204-71.000.
Toyota Central Research and Development Laboratories, Inc.: *See*—
Oowa, Nobutaka; Arai, Yasuji; Yasuike, Osamu; Ikemoto, Hiroyuki; and Doi, Shunichi, 4,809,176, Cl. 364-424.000.
Toyota, Eijiro, to Sumitomo Heavy Industries, Ltd. Electric beam accelerator. 4,808,940, Cl. 328-233.000.
Toyota Jidosha K.K.: *See*—
Moroto, Syuzo; Sumiya, Koji; Kobayashi, Yukihiro; Kano, Takenori; Hoshino, Akira; Ando, Yasushi; Watanabe, Kazuaki; and Taga, Yutaka, 4,807,492, Cl. 74-606.00R.
Toyota Jidosha Kabushiki Kaisha: *See*—
Ito, Shoji, 4,807,656, Cl. 137-43.000.
Matsumoto, Shinichi; Miyoshi, Naoto; and Sato, Masayasu, 4,808,564, Cl. 502-303.000.
Oowa, Nobutaka; Arai, Yasuji; Yasuike, Osamu; Ikemoto, Hiroyuki; and Doi, Shunichi, 4,809,176, Cl. 364-424.000.
Yasue, Hideki; and Fukumura, Kagenori, 4,807,497, Cl. 74-867.000.
Toyota Jidoshokki Seisakusho Kabushiki Kaisha: *See*—
Watanabe, Yasushi; Nakai, Tatsuya; Suzuki, Shinichi; and Kawaguchi, Masahiro, 4,808,083, Cl. 417-295.000.
Transalta Resources Corporation: *See*—
Dykema, Owen W., 4,807,542, Cl. 110-343.000.
Triangle Research and Development Corp.: *See*—
Colvin, David P.; and Mulligan, James C., 4,807,696, Cl. 165-10.000.
Trihey, John M., to Vulcan Australia Limited. Solar tracking system. 4,807,592, Cl. 126-438.000.
Trimble, Paul M., to Anterior, Inc. Adjustable tube bending pattern device. 4,807,370, Cl. 33-529.000.
Tripar Incorporated: *See*—
Breckwoldt, Robert G., 4,807,648, Cl. 131-359.000.
Tripp, Gregory A. Spinner trivia game. 4,807,878, Cl. 278-1.00E.
TriQuint Semiconductor, Inc.: *See*—
Taylor, Stewart S., 4,808,853, Cl. 307-473.000.
Taylor, Stewart S., 4,808,944, Cl. 330-253.000.
Triscari, Joseph: *See*—
Danho, Waleed; Triscari, Joseph; and Madison, Vincent S., 4,808,701, Cl. 530-317.000.
Trotta, Robert A.: *See*—
Cerier, Jeffrey C.; Trotta, Robert A.; and Shurtleff, Jill M., 4,807,360, Cl. 30-49.000.
Troyer, James, to Phoenix Newspapers, Inc. Roll-feeder loader and method therefor. 4,807,526, Cl. 101-216.000.
Trubert, Valdo: *See*—
Georgel, Jean; Monvoisin, Jacques; and Trubert, Valdo, 4,808,254, Cl. 156-245.000.
Trueblood, John W.; and Mizuno, Masami, to Sony Corporation. Gamma corrected anti-aliased graphic display apparatus. 4,808,984, Cl. 340-723.000.
Truitt, Robert E.: *See*—
Courtois, Peter D.; and Truitt, Robert E., 4,807,843, Cl. 249-61.000.
Truong, Liem V.: *See*—
Berg, Kenneth R.; Sundquist, Roger L.; and Truong, Liem V., 4,807,351, Cl. 29-432.000.
TRW Inc.: *See*—
Neil, George R.; and Edighoffer, John A., 4,809,281, Cl. 372-2.000.
Taber, John E., 4,809,156, Cl. 364-200.000.
Tryggvason, Karl; and Liotta, Lance A. Antibody composition for the detection of malignant cells with metastatic cell activity. 4,808,528, Cl. 435-172.200.
Tsai, Aaron. Vertically assembled compact. 4,807,773, Cl. 220-4.00D.
Tsang, Ching H.: *See*—
Howard, James K.; Toney, Michael F.; and Tsang, Ching H., 4,809,109, Cl. 360-113.000.
Tschopp, Juerg F.: *See*—
Stroman, David W.; Brust, Paul F.; Ellis, Steven B.; Gingeras, Thomas R.; Harpold, Michael M.; and Tschopp, Juerg F., 4,808,537, Cl. 435-6.000.
Tsubata, Takeshi: *See*—
Ishibashi, Masaru; Tsubata, Takeshi; and Sasaki, Kazumi, 4,809,055, Cl. 357-71.000.
Tsuboi, Noboru: *See*—
Nishitani, Kunihiko; and Tsuboi, Noboru, 4,808,095, Cl. 418-15.000.
Tsubouchi, Kaoru; and Ochiai, Chiaki, to Aisin Seiki Kabushiki Kaisha. Reservoir inlet assembly for a master cylinder. 4,807,438, Cl. 60-585.000.
Tsubouchi, Kuniyoshi; Yoshida, Shohei; Namura, Kiyoshi; and Arai, Akira, to Hitachi, Ltd. Apparatus for transferring small amount of fluid 4,808,084, Cl. 417-322.000.
Tsubouchi, Natsuro: *See*—
Kimata, Masafumi; and Tsubouchi, Natsuro 4,809,048, Cl. 357-24.000.
Tsuchida, Yutaka; Takahashi, Shuzo; Osada, Shiro; and Hasebe, Nobuhisa, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and

Nippon Kokan Kabushiki Kaisha. Mold apparatus for endless track type continuous casting machine. 4,807,692, Cl. 164-430.000.
Tsuchiya, Kiyoshi: *See*—
Kawazoe, Takashi; Tsuchiya, Kiyoshi; and Ioka, Hideyuki, 4,808,866, Cl. 310-68.00D.
Tsuji, Masanari; Tani, Yuji; Zaitsu, Akira; Shimamoto, Kojiro; Hashii, Masaaki; Donoue, Ikuo; Suzuki, Hiromi; and Sakakibara, Yoshihito, to Mitsubishi Jukogyo Kabushiki Kaisha. Power generation cassette type power plant for marine electric propulsion and a controller thereof. 4,808,835, Cl. 290-4.00A.
Tsuji, Sadahiko, to Canon Kabushiki Kaisha. Lens system of variable magnification range and having a supplementary lens unit. 4,807,982, Cl. 350-422.000.
Tsujimura, Osamu; and Arai, Tatsuo, to Mitsubishi Kinzoku Kabushiki Kaisha. Insert cutter. 4,808,044, Cl. 407-42.000.
Tsujimura, Osamu; Saito, Takayoshi; Arai, Tatsuo; and Funaki, Yasuzo, to Mitsubishi Kinzoku Kabushiki Kaisha. End mill with throw-away tip. 4,808,045, Cl. 408-204.000.
Tsukamoto, Goro: *See*—
Taguchi, Masahiro; Kondo, Hirosato; Inoue, Yoshimasa; Kawahata, Yoshihiro; and Tsukamoto, Goro, 4,808,584, Cl. 514-229.500.
Tsukamoto, Jun: *See*—
Matsumura, Kiichiro; Takahashi, Akio; and Tsukamoto, Jun, 4,808,475, Cl. 428-367.000.
Tsukuda, Yasuo; and Hara, Hisao, to Hitachi Metals, Ltd. Plasma sprayed film resistor heater. 4,808,490, Cl. 428-699.000.
Tsunemitsu, Katsuhiko: *See*—
Kawai, Hajime; Fujino, Yoshiharu; Shimizu, Youji; Nieda, Seiichi; Gendai, Kazuhiko; and Tsunemitsu, Katsuhiko, 4,808,567, Cl. 503-220.000.
Tsuneoka, Masayuki: *See*—
Yokouchi, Hisatake; Maruyama, Masanori; Takahashi, Fumitaka; and Tsuneoka, Masayuki, 4,809,071, Cl. 358-111.000.
Tsuno, Koichi; Nishikawa, Mitsuru; and Awazu, Kunio, to Sumitomo Electric Industries, Ltd. Fiberscope. 4,807,597, Cl. 128-6.000.
Tsunoda, Toshiyuki: *See*—
Nagano, Takashi; Tsunoda, Toshiyuki; and Fukaya, Takashi, 4,807,989, Cl. 351-212.000.
Tsutsui, Toshiaki; and Akiba, Takashi, to Nikkiso Co., Ltd. Canned motor pump. 4,808,087, Cl. 417-369.000.
Tsutsumi, Kiyohide: *See*—
Sako, Yuji; Tsutsumi, Kiyohide; and Ootsuka, Shigeharu, 4,808,961, Cl. 337-49.000.
Tsutsumi, Yasuyuki: *See*—
Uozumi, Norihira; Amakawa, Koji; Kubota, Yoshiyuki; Miki, Atsushi; and Tsutsumi, Yasuyuki, 4,808,492, Cl. 429-34.000.
Tsuya, Yuko: *See*—
Watanabe, Tadahiko; Shobu, Kazuhisa; Tsuya, Yuko; Enomoto, Yuji; Hayakawa, Junshiro; Yagishita, Osamu; Yamamoto, Hideki; and Sudoh, Eiichi, 4,808,557, Cl. 501-87.000.
Tsuyuguchi, Hiroshi; and Enami, Katsuya, to Teac Corporation. Circuit arrangement for the determination of the constant speed rotation of a disklike record medium. 4,809,119, Cl. 360-73.000.
Tsuzuki, Nobuyori: *See*—
Mori, Hidefumi; Tsuzuki, Nobuyori; and Yamamoto, Mitsuo, 4,808,551, Cl. 437-81.000.
Tu, Chen-Hua. Unitary mold for making ice sculpture. 4,807,844, Cl. 249-78.000.
Tucker, Council A.: *See*—
Gains, Oliver B.; Perrin, Jack L.; and Tucker, Council A., 4,807,824, Cl. 242-55.300.
Tuckey, Charles H., to Walbro Corporation. Reserve fuel shut-off valve. 4,807,582, Cl. 123-514.000.
Tukahara, Tadayuki: *See*—
Ito, Yukihiro; Imaizumi, Takeshi; Tukahara, Tadayuki; and Miyamoto, Yoshimi, 4,808,841, Cl. 307-11.000.
Tuley, Eugene N.: *See*—
Maclin, Harvey M.; Lenahan, Dean T.; and Tuley, Eugene N., 4,807,433, Cl. 60-39.290.
Turner, Paul: *See*—
Adams, John; Amoroso, Juan, Jr.; Axford, Paul; Bowles, Phil; Juha, Mike; Nguyen, Van; Preskitt, Charles; Ross, Ed; Thompson, Doug; and Turner, Paul, 4,809,308, Cl. 378-99.000.
Tustaniwskyj, Jerry I.; and Rogneby, James H., to Unisys Corporation. Low stress liquid cooling assembly. 4,809,134, Cl. 361-385.000.
Twilley, Ian C.; and Lofquist, Robert A., to Allied-Signal Inc. Moisture permeable film for lamination to a textile material. 4,808,675, Cl. 525-408.000.
Tzong, Liou C. Riveter with adjustable headpiece. 4,807,460, Cl. 72-391.000.
UBE Industries, Ltd.: *See*—
Nishihara, Yoshio; Isobe, Noriyuki; and Kotera, Satoshi, 4,808,659, Cl. 524-701.000.
Uchida, Akihisa: *See*—
Nishioka, Yasushiro; Shiba, Takeo; Shinriki, Hiroshi; Mukai, Kiichiro; Uchida, Akihisa; Mitamura, Ichiro; Higeta, Keiichi; Ogiue, Katsumi; Yamaguchi, Kunihiko; and Sakuma, Noriyuki, 4,809,052, Cl. 357-45.000.
Udagawa, Tsunekazu, to Ishikawa Gasket Co., Ltd. Steel laminate gasket with high sealing ability. 4,807,892, Cl. 277-235.00B.
Ueda, Hideaki, to Minolta Camera Kabushiki Kaisha. Photosensitive member with enamine charge transport material. 4,808,505, Cl. 430-83.000.
Ueda, Hirotada: *See*—
Kiuchi, Atsushi; Kaneko, Kenji; Ishida, Jun; Nakagawa, Tetsuya; Hagiwara, Yoshimune; and Ueda, Hirotada, 4,809,206, Cl. 364-724.000.
Ueda, Kouichi; Yamauchi, Kouichi; Takebayashi, Hiroaki; and Rokkaku, Kazuo, to Koyo Seiko Co., Ltd. Attaching structure for ceramics bearing. 4,808,014, Cl. 384-492.000.
Ueda, Satoshi: *See*—
Hata, Takehisa; Yamaguchi, Hisami; Ueda, Satoshi; and Kodaru, Masateru, 4,808,416, Cl. 424-497.000.
Uehara, Yumito: *See*—
Goko, Nobuaki; Uehara, Yumito; and Nishihara, Yasuhiro, 4,808,667, Cl. 525-247.000.
Ueno, Akira: *See*—
Sakaguchi, Touru; Takahashi, Akira; and Ueno, Akira, 4,809,031, Cl. 354-429.000.
Uher, Jan: *See*—
Rypacek, Frantisek; Uher, Jan; and Drobnik, Jaroslav, 4,808,399, Cl. 424-2.000.
Ulevitch, Richard J.: *See*—
Karplus, Thomas E.; Ulevitch, Richard J.; and Wilson, Curtis B., 4,808,314, Cl. 210-638.000.
Ulfelder, Kathi Jo; and Gurske, William A., to Beckman Instruments, Inc. Electrophoretic gel for separating hemoglobin variants. 4,808,288, Cl. 204-182.800.
Ulike Corporation: *See*—
Yang, Onie, 4,807,803, Cl. 229-40.000.
Ultramed Corporation: *See*—
Parisi, Tulio T., 4,808,153, Cl. 604-22.000.
Umemura, Akio: *See*—
Tanaka, Hiroshi; and Umemura, Akio, 4,808,390, Cl. 423-261.000.
Umemura, Hiroyuki: *See*—
Aoki, Katsuyuki; Umemura, Hiroyuki; Okada, Tetsuji; Matsuda, Kenji; Ishioka, Hidenori; Arai, Isao; Togashi, Kenji; Hara, Masanori; and Sugawara, Sakuo, 4,807,444, Cl. 62-179.000.
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, to Zaidan Hojin Biseibutsu Kagaku Kenku Kai. Novel 3-(4'-aminobutylammo) propylaminobleomycin derivatives. 4,808,703, Cl. 530-322.000.
Umino, Masuo: *See*—
Miyanaga, Akiyoshi; and Umino, Masuo, 4,808,540, Cl. 436-150.000.
Unger, John J.; and Suffi, Louis, to Reliance Comm/Tec Corporation. Telephone distribution frame connector assembly. 4,808,116, Cl. 439-94.000.
Ungermann, Heinz; Sauerschell, Wolfgang; and Heumann, Wilfried, to VDO Adolf Schindling AG. Electric set-point transmitter. 4,808,935, Cl. 328-146.000.
Union Oil Company of California: *See*—
Hsieh, Wen-Ching, 4,808,648, Cl. 524-156.000.
Pasciak, Robert L., 4,808,000, Cl. 356-375.000.
Uniroyal Chemical Company, Inc.: *See*—
Stieber, Joseph F., 4,808,714, Cl. 544-58.400.
Unisys Corporation: *See*—
Barndt, Robert A., Sr., 4,809,303, Cl. 375-110.000.
Kim, Dongtung R.; and Kronies, Reinhard K., 4,809,278, Cl. 371-51.000.
Kim, Dongtung R.; and Kronies, Reinhard K., 4,809,279, Cl. 371-51.000.
Kingston, Samuel C., 4,808,939, Cl. 328-167.000.
Ohlinger, Wilhelm; and Warner, Nicholas M., 4,808,900, Cl. 318-603.000.
Shima, George T., 4,809,327, Cl. 380-44.000.
Tustaniwskyj, Jerry I.; and Rogneby, James H., 4,809,134, Cl. 361-385.000.
Zacheile, John W., Jr.; Lundquist, Alan E.; and Spencer, Bellie M., 4,809,295, Cl. 375-1.000.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Pike, Edward R.; and Pusey, Peter N., 4,809,210, Cl. 364-728.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Manning, Paul A.; and Watton, Rex, 4,808,822, Cl. 250-332.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Majesty's Government of the: *See*—
Benjamin, John D.; Mears, Adrian L.; and White, John C., 4,808,983, Cl. 340-719.000.
United States Brass Corporation: *See*—
Hayman, Dennis J.; and Pearce, David M., 4,807,306, Cl. 4-203.000.
United States of America
Administrator, National Aeronautics and Space Administration: *See*—
Cohen, Marc M., 4,807,834, Cl. 244-159.000.
Air Force: *See*—
Adam, Colin M., 4,808,226, Cl. 75-246.000.
Arnold, Alison M.; and Reed, Ronald G., 4,808,023, Cl. 403-157.000.
Bonner, George; Rodriguez, Milo R.; and Kisling, Douglas L., 4,808,069, Cl. 415-160.000.
Brewer, George D.; and Marshall, David P., 4,807,831, Cl. 244-117.00A.
Eylon, Daniel; and Froes, Francis H., 4,807,798, Cl. 228-190.000.
Eylon, Daniel; and Froes, Francis H., 4,808,249, Cl. 148-133.000.
Froes, Francis H.; and Eylon, Daniel, 4,808,250, Cl. 148-20.300.

Neher, Clarence W., 4,807,891, Cl. 277-80.000.
Reynolds, Hugh M.; and Kawabata, Curt M., 4,807,531, Cl. 102-347.000.
Rhodes, Melvin H., 4,809,301, Cl. 375-87.000.
America: *See*—
Straw, Gregory M., 4,808,630, Cl. 514-317.000.
Army: *See*—
Branovich, Louis E.; Freeman, Gerard L.; and Smith, Bernard, 4,808,137, Cl. 445-50.000.
Canfield, Craig J.; Heiffer, Melvin H.; and Korte, Don W., Jr., 4,808,398, Cl. 514-312.000.
Nettleton, John E.; and Barr, Dallas N., 4,807,839, Cl. 248-476.000.
Energy: *See*—
Baumbaugh, Alan E.; and Knickerbocker, Kelly L., 4,809,232, Cl. 365-221.000.
Humphreys, D. Russell, 4,808,368, Cl. 376-118.000.
Komarneni, Sridhar; and Roy, Rustum, 4,808,318, Cl. 210-682.000.
Ochoa, Agustin, Jr., 4,809,226, Cl. 365-156.000.
Ruddy, Francis H., 4,808,271, Cl. 204-1.500.
Sievers, Robert K., 4,808,240, Cl. 136-202.000.
Stampfer, Martha R., 4,808,532, Cl. 435-240.200.
National Aeronautics and Space Administration: *See*—
Dominek, Allen K.; Gilreath, Melvin C.; and Wood, Richard M., 4,809,003, Cl. 342-165.000.
Navy: *See*—
Urkowitz, Harry; and Perry, Richard P., 4,809,001, Cl. 342-94.000.
U.S. Philips Corporation: *See*—
Aarts, Petrus; Versluijs, Cornelis; and Schuitmaker, Pieter D., 4,808,011, Cl. 384-9.000.
Bauch, Wolf-Dieter; Gervelmeyer, Rolf; and Merker, Heinrich B., 4,808,885, Cl. 315-122.000.
Beekmans, Antonius A. G., 4,809,309, Cl. 378-99.000.
Bertram, Leo; Schemmann, Hugo; Bukoschek, Romuald L.; and Huszar, Reinhard, 4,807,365, Cl. 30-346.510.
Burghard, Krahl, 4,809,149, Cl. 363-20.000.
Chantepie, Bernard, 4,808,851, Cl. 307-450.000.
Gravesteijn, Dirk J.; and van der Poel, Carolus J., 4,808,514, Cl. 430-495.000.
Herby, Gerard; and Legail, Serge, 4,809,349, Cl. 382-50.000.
Kessels, Henricus M. M., 4,808,003, Cl. 356-376.000.
Labrousse, Jean-Michel J.; and Paquet, Christian, 4,808,860, Cl. 307-572.000.
Liehr, Manfred R., 4,807,796, Cl. 228-121.000.
Netten, Adriaan; and Vervecken, Karel R., 4,808,877, Cl. 313-25.000.
Nillesen, Antonius H. H. J., 4,809,207, Cl. 364-724.030.
Oppenlander, Theodor, 4,807,960, Cl. 350-96.220.
Schoute, Frederik C., 4,809,318, Cl. 379-279.000.
Van Kessel, Henricus J., 4,808,847, Cl. 307-297.000.
Veenvliet, Hendrik; Verhulst, Antonius G. H.; and Raaymakers, Antonius H. M., 4,807,967, Cl. 350-269.000.
Wijma, Willem S., 4,807,359, Cl. 30-43.600.
Zieren, Victor, 4,809,111, Cl. 360-125.000.
United Tank Lifting Technologies, Inc.: *See*—
De Castro, Bruno, 4,807,851, Cl. 254-1.000.
United Technologies Corporation: *See*—
Ginnis, Andrew F.; and Larkin, Wesley F., 4,807,996, Cl. 356-347.000.
Glenn, William H.; Meltz, Gerald; and Snitzer, Elias, 4,807,950, Cl. 350-3.610.
Jarmon, David C.; and Prewo, Karl M., 4,808,076, Cl. 416-230.00A.
Levinson, Samuel, 4,808,938, Cl. 328-156.000.
Moore, Thomas A.; Bazydola, Stanley J., Jr.; and Depietro, Richard A., 4,808,072, Cl. 416-5.000.
Prewo, Karl M.; Nardone, Vincent C.; and Strife, James R., 4,808,485, Cl. 428-582.000.
Wagner, Thomas R.; Wentzell, Joseph; and Hosey, Wayne, 4,808,218, Cl. 75-0.50C.
Unitika Ltd.: *See*—
Otomura, Keiichiro; Ogura, Yoshikazu; Echigo, Yoshiaki; Yamao, Mutsunori; and Ishikura, Tadashi, 4,808,316, Cl. 210-664.000.
Unitka, Ltd.: *See*—
Nishikawa, Yasuo; and Nakazima, Yasumasa, 4,808,202, Cl. 55-390.000.
Universite Paul Sabatier (Toulouse III): *See*—
Rousset, Abel; Salvaing, Christiane B.; Mollard, Paul; Gougeon, Michel; and Tailhades, Philippe, 4,808,327, Cl. 252-62.560.
University of British Columbia, The: *See*—
Jaeger, Nicolas A. F.; and Young, Lawrence, 4,807,952, Cl. 350-96.140.
University of California: *See*—
Michaeli, Dov, 4,808,570, Cl. 514-2.000.
University of Delaware: *See*—
Daly, Mary M.; and Keown, Robert W., 4,808,707, Cl. 536-3.000.
University of Florida, The: *See*—
Wilson, Richard A.; Butler, Jerry F.; Withycombe, Donald; Mookherjee, Braja D.; Katz, Ira; and Schrankel, Kenneth R., 4,808,403, Cl. 424-84.000.
University of Georgia Research Center: *See*—
McClelland, Michael; and Kessler, Louis G., 4,808,525, Cl. 435-91.000.
University of Iowa Research Foundation: *See*—
Panje, William R., 4,808,183, Cl. 623-9.000.
Rosier, Randy N., 4,807,643, Cl. 128-741.000.
University of New Mexico: *See*—
Scully, Marian O., 4,809,285, Cl. 372-33.000.
University of Tennessee Research Corporation: *See*—
Dorsett, Preston H.; Naegele, Robert F.; and Ratcliffe, Terry S., 4,808,518, Cl. 435-5.000.
Keefer, Dennis R., 4,807,990, Cl. 356-28.500.
University of Toronto Innovations Foundation, The: *See*—
Moskovits, Martin; and Schmidhalter, Beat, 4,808,279, Cl. 204-28.000.
University of Vermont and State Agricultural College, The: *See*—
Gotlieb, Alan R.; and Watson, Alan K., 4,808,207, Cl. 71-73.000.
Unland, Georg: *See*—
Tiggesbaumker, Peter; Durr, Manfred; Wurr, Jurgen; Krutzner, Karl; Rother, Wolfgang; Menzel, Karl; Schaberg, Frank; Klockenbusch, Heinrich; Unland, Georg; and Driemeier, Gunter, 4,808,108, Cl. 432-14.000.
Uozumi, Norihira; Amakawa, Koji; Kubota, Yoshiyuki; Miki, Atsushi; and Tsutsumi, Yasuyuki, to Hitachi. Ltd. Fuel cell using liquid electrolyte. 4,808,492, Cl. 429-34.000.
Uriarte, Richar J.; and Gross, David C., to General Electric Company. Low density silicon foam. 4,808,634, Cl. 521-87.000.
Urkowitz, Harry; and Perry, Richard P., to United States of America, Navy. Land mass blanking apparatus (U). 4,809,001, Cl. 342-94.000.
Ushioda, Kentaro; and Yamaguchi, Shigeaki. Paper feeding method and apparatus. 4,807,790, Cl. 226-2.000.
Ushiro, Tatsuzo, to Canon Kabushiki Kaisha. Recording and reproducing apparatus selectively using a plurality of kinds of recording mediums. 4,809,095, Cl. 360-75.000.
Usui, Noboru; Tanaka, Kanji; Ogawa, Ryuichi; Ishikawa, Tsutomu; Ishiguro, Kazuhisa; and Arai, Masashi, to Sanyo Electric Co., Ltd. FM/FMX stereophonic receiver. 4,809,328, Cl. 381-13.000.
Utsumi, Yozo: *See*—
Oyamada, Kimiyuki; and Utsumi, Yozo, 4,807,954, Cl. 350-96.150.
Utzig, Jacob J.: *See*—
Kaneko, Takushi; Wong, Henry S.; and Utzig, Jacob J., 4,808,613, Cl. 514-42.000.
Uyama, Shintaro; and Ohta, Ryuji, to Jidosha Kiki Co., Ltd. Actuator casing. 4,807,521, Cl. 92-169.00R.
Vallier, Thierry: *See*—
Geuskens, Georges; Deltour, Robert; and Vallier, Thierry, 4,808,470, Cl. 428-323.000.
Vallo, Ferenc: *See*—
Csillag, Zsolt; Szentgyorgyi, Geza; Solymar, Karoly; Kalman, Tibor; Toth, Pal; Rosemann, Ferenc; Steiner, Janos; Morzal, Janos; Zsemberi, Laszlo ; Lajtai, Bela; Legat, Tibor; Sitkei, Ferenc; Vallo, Ferenc; Szabo, Balint; Molnar, Gabor; and Czafit, Sandor, 4,807,815, Cl. 241-39.000.
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van Baardwijk, Johannes; and Bos, Marinus A., to AT&T; and Philips Telecommunications B.V. T-type switching system for broadband switching system and time switching stage for use in a t-stage. 4,809,263, Cl. 370-66.000.
Van Broekhoven, Johannes A. M.; and Doyle, Michael J., to Shell Oil Company. Process for preparing polymers of carbon monoxide and ethylene under specified pressures. 4,808,699, Cl. 528-392.000.
Van Den Bergh, Hugo H., to General Dynamics Corporation/Convair Div. Automatic fluid flow regulator. 4,807,657, Cl. 137-101.000.
Van den Broeck, Jean B. A.: *See*—
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van den Heuvel, Martinus J.: *See*—
de Jongh, Hendrik P.; and van den Heuvel, Martinus J., 4,808,710, Cl. 540-30.000.
Van Den Heuvel, Raymond C. Associative and organic memory circuits and methods. 4,809,222, Cl. 365-45.000.
Vandermarliere, Marc, to Institut Textile de France. Method and device for preparing a stack of fabric panels for subsequent cutting. 4,807,504, Cl. 83-22.000.
van der Molen, Theodorus J., to Stamicarbon B.V. Process for the preparation of cast film. 4,808,359, Cl. 264-171.000.
van der Poel, Carolus J.: *See*—
Gravesteijn, Dirk J.; and van der Poel, Carolus J., 4,808,514, Cl. 430-495.000.
Vanderpool, Clarence D.; Ladd, Judith A.; MacInnis, Martin B.; and Fedorchak, Mary A., to GTE Products Corporation. Recovery of tungsten, scandium, iron, and manganese from tungsten bearing material. 4,808,384, Cl. 423-21.100.
van der Smissen, Carl E.; and Rohling, Holmer, to Dragerwerk Aktiengesellschaft. Protective hood. 4,807,614, Cl. 128-201.230.
Van Doorn, Willem, to AT&T and Philips Telecommunications B.V. Preamplifier for an optical receiver. 4,808,810, Cl. 250-214.00A.
Vane, Jeffrey A. Composite material. 4,808,465, Cl. 428-233.000.
Van Elderen, Daniel N.; and Lichac, Gerald J., to Atari Games. Amusement game with dispensed targets. 4,807,886, Cl. 273-356.000.
Van Erden, Donald L., to Minigrip, Inc. Apparatus for making tubular film with transverse closure strips. 4,808,099, Cl. 425-72.100.
Van Kessel, Henricus J., to U.S. Philips Corporation. Temperature-compensated voltage driver circuit for a current source arrangement. 4,808,847, Cl. 307-297.000.

van Loon, Miriam H. J. M.: *See*—
Langmeier, James R.; Chehab, Mohamed N. H.; De Caluwe, Robert C. J. M.; Hertogs, Willy A. M.; Van den Broeck, Jean B. A.; and van Loon, Miriam H. J. M., 4,807,787, Cl. 222-529.000.
Van Naarden, Robert W.: *See*—
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van Zijverden, Willem, to Dagma Deutsche Automaten - Und Getrankemaschinen GmbH & Co. KG. Water jet injection device for use with dispensers for producing and dispensing beverages mixed of fruit syrup or concentrate and water. 4,807,783, Cl. 222-129.200.
Varian Associates, Inc.: *See*—
Felch, Susan B.; and Powell, Ronald A., 4,807,994, Cl. 356-326.000.
Varsanik, Richard G.: *See*—
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Vastech Medical Products Inc.: *See*—
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Vaughan, Thomas J. Transition between rectangular and relatively large circular waveguide for a UHF broadcast antenna. 4,809,357, Cl. 455-129.000.
VDO Adolf Schindling AG: *See*—
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Veenvliet, Hendrik; Verhulst, Antonius G. H.; and Raaymakers, Antonius H. M., to U.S. Philips Corporation. Passive display device. 4,807,967, Cl. 350-269.000.
Vega Automation: *See*—
Boisseau, Jean-Louis, 4,807,428, Cl. 53-563.000.
Velenyi, Louis J., to Standard Oil Company, The. Molybdenum-tungsten-containing catalyst for methane conversion process. 4,808,563, Cl. 502-241.000.
Vepa AG: *See*—
Fleissner, Gerold, 4,807,337, Cl. 28-248.000.
Verhulst, Antonius G. H.: *See*—
Veenvliet, Hendrik; Verhulst, Antonius G. H.; and Raaymakers, Antonius H. M., 4,807,967, Cl. 350-269.000.
Veriflo Corp.: *See*—
Morgan, Daniel P., 4,807,849, Cl. 251-362.000.
Verlaan, Johannes P. J.; and Nijhoe, Leonardus B. G. M., to Akzo NV. Composition suitable for use in polymer cross-linking processes. 4,808,442, Cl. 427-393.500.
Vermeulen, Leon L.: *See*—
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Vernay, Michel, to Sintra. Display system comprising a transparent emissive screen. 4,808,978, Cl. 340-705.000.
Verne, Jean A., to Sullivan Strong Scott Ltd. Valve for distributing particulate materials. 4,807,662, Cl. 137-554.000.
Versluijs, Cornelis: *See*—
Aarts, Petrus; Versluijs, Cornelis; and Schuitmaker, Pieter D., 4,808,011, Cl. 384-9.000.
Vertz, Richard J.; and Mosavi, Reza K., to Chromalloy Gas Turbine Corporation. Method and apparatus for diffused cooling holes in an airfoil. 4,808,785, Cl. 219-69.00M.
Vervecken, Karel R.: *See*—
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Vervloet, Ludovicus H.; De Smedt, Willy P.; and Vermeulen, Leon L., to Agfa-Gevaert, N.V. Diffusion transfer imaging method and receptor sheet for making personal identification documents. 4,808,509, Cl. 430-237.000.
Vexcel Corporation: *See*—
Leberl, Franz W.; Curry, Sean; and Karspeck, Milan, 4,809,066, Cl. 358-107.000.
Vianova Kunstharz, A.G.: *See*—
Paar, Willibald, 4,808,688, Cl. 538-45.000.
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Abe, Toshiro; and Nishihara, Toshikazu, 4,808,489, Cl. 428-336.000.
Hamabe, Makoto; and Yamada, Yasuhiro, 4,809,093, Cl. 360-67.000.
Inoue, Yasuo; and Yamada, Yasuhiro, 4,809,275, Cl. 371-37.000.
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Faustini, Franco; di Salle, Enrico; Villa, Vittoria; and Lombardi, Paolo, 4,808,578, Cl. 514-177.000.
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Vitalink Communications Corporation: *See*—
Hart, John H.; and Baker, Frederick J., 4,809,265, Cl. 370-85.000.
Vives, Charles; Forest, Bernard; and Riquet, Jean-Pierre, to Cegedur Societe de Transformation de l'Aluminium Pechiney. Process for regulating the level of the line of contact of the free surface of the metal with the mould in vertical casting. 4,807,694, Cl. 164-466.000.
Vockensperger, Hubert; Hieble, Franz; and Gebhardt, Robert, to Bayern-Chemie Gesellschaft fur flugchemische Antriebe GmbH. Device for ejecting containers, in particular, ammunition. 4,807,534, Cl. 102-489.000.
Vogan, Dennis J., to W. R. Grace & Co. Easy-open flexible pouch and apparatus and method for making same. 4,808,010, Cl. 383-107.000.
Vogel, Charles B.; Davis, Mike; Guy, James O.; and Smith, John R. E., to Western Atlas International, Inc. Method for monitoring the goodness of the cement bond to a borehole casing. 4,809,237, Cl. 367-35.000.
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von Braunhut, Harold. Bubble making device. 4,808,138, Cl. 446-16.000.
von Entress-Furstenecck, Wolfgang, to Diehl GmbH & Co. Artillery projectile containing submunitions. 4,807,533, Cl. 102-489.000.
Von Gunten, Marc K.: *See*—
DeBell, Gary W.; Wright, David L.; Ruddock, Kenneth A.; Petersen, Alan B.; Carlson, Lee R.; and Von Gunten, Marc K., 4,809,293, Cl. 372-98.000.
Von Holdt, John W. Flex gate. 4,808,106, Cl. 425-547.000.
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Vulcan Australia Limited: *See*—
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Vulich, Yordan: *See*—
Ramos, Rolando P.; Loreto, Wilfredo P.; and Vulich, Yordan, 4,807,398, Cl. 51-101.0LG.
W & F Manufacturing, Inc.: *See*—
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W. R. Grace & Co.: *See*—
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Pfannkoch, Edward A., 4,808,233, Cl. 134-2.000.
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Kamp, Heinz; Becker, Rolf; and Wiomsek, Horst, 4,807,822, Cl 242-43.00R.
Wachenheim, John E. Waterbed pedestal with safe. 4,807,315, Cl. 5-400.000.
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Wada, Toshiaki; Katsuyama, Yoshiaki; and Nakaoka, Junichi, to Sumitomo Special Metals Co., Ltd. Magnetic recording disc and process for producing the same. 4,808,455, Cl. 428-64.000.
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Moniwa, Masahiro; Miyao, Masanobu; Shukuri, Shoji; Murakami, Eiichi; Warabeako, Terunori; Tamura, Masao; Natsuaki, Nobuyoshi; Ohyu, Kiyonori; Suzuki, Tadashi; Madokoro, Yuuichi; and Wada, Yasuo, 4,808,546, Cl. 437-41.000.
Waddington, Clive, to Avco Corporation. Bearing assembly. 4,808,013, Cl. 384-495.000.
Wade, Franklin C.; Anderson, Richard A.; and Barron, Richard H., to Wade, Franklin C.; and Barron, Richard H. Method and apparatus for removal of submerged offshore objects. 4,808,037, Cl. 405-226.000.
Wadell, Lars G. A., to Nestec S.A. Process for coating foodstuffs with particulate material. 4,808,424, Cl. 426-289.000.
Wadsworth, Thomas P., to Chemi-Trol Chemical Company. Tubeless tire valve stem inserter. 4,807,343, Cl. 29-221.500.
Wagner, Thomas R.; Wentzell, Joseph; and Hosey, Wayne, to United Technologies Corporation. Method and apparatus for making metal powder. 4,808,218, Cl. 75-0.50C.
Waite, J. Herbert. Decapeptides produced from bioadhesive polyphenolic proteins. 4,808,702, Cl. 530-328.000.
Wakabayashi, Shuichi; Kawamoto, Tetsumi; Yamada, Toshiyuki; and Murayama, Yuko, to Seiko Instruments Inc. Maximum/minimum value conversion circuit for image processing. 4,809,343, Cl. 382-27.000.
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Waldhauer, Fred D.; and Baez, Carlos A., to Resound Corporation. Variolosser. 4,808,945, Cl. 330-254.000.
Waldner, Kurt. Semiconductor lead frame. 4,809,054, Cl. 357-70.000.
Walker, Christopher M.: *See*—
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Walker, Douglas W. Trailerable structure and components for use therewith. 4,807,894, Cl. 280-63.000.
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Walker, Gordon K.; Katznelson, Ron D.; Moroney, Paul; and Moerder, Karl E., to M/A-COM Government Systems, Inc.; and Cable/Home Communication Corporation. Digital audio companding and error conditioning. 4,809,274, Cl. 371-37.000.
Walker, Kyle B. Inflatable cooler. 4,809,352, Cl. 383-3.000.
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Wallace, David A., to General Electronic Company. Temperature-dependent infinitely variable ratio transmission control system and method. 4,807,495, Cl. 74-844.000.
Wallace, David A.: *See*—
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Walley, Darlene R., to Procter & Gamble Company, The. Mono-esters as fiber and fabric treatment compositions. 4,808,321, Cl. 252-8.800.
Walliker, John R.; Rosen, Stuart M.; and Fourcin, Adrian J., to National Research Development Corporation. Apparatus for use in conjunction with lipreading by the profoundly deaf. 4,809,329, Cl. 381-36.000.
Wallis, Roland R., Jr.: *See*—
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Walsh, Dennis E.: *See*—
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Drumm, Donald E., 4,808,980, Cl. 340-707.000.
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Ward, Trevor, to British Gas plc; and Hotwork Developments Ltd. Regenerator for a regenerative heating system. 4,807,695, Cl. 165-4.000.
Ward, Wendell; Kumar, Surinder; Mack, Melba; Keller, Lewis; and Fitzwater, Margaret, to Frito-Lay, Inc. Center-filled food products. 4,808,422, Cl. 426-143.000.
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Eoga, Anthony B. J., 4,807,649, Cl. 134-2.000.
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Washizuka, Isamu; Nishimura, Kosuke; and Saiji, Mitsuhiro, to Sharp Kabushiki Kaisha. Audio output device with speech synthesis technique. 4,809,192, Cl. 364-513.500.
Wasserman, Jacob S. Vision testing and/or training apparatus and method. 4,807,986, Cl. 351-200.000.
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Watanabe, Yasushi; Nakai, Tatsuya; Suzuki, Shinichi; and Kawaguchi, Masahiro, to Toyota Jidoshokki Seisakusho Kabushiki Kaisha. Variable capacity type vane compressor. 4,808,083, Cl. 417-295.000.
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Watanabe, Yukio: *See*—
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Waters, Mark H.; Reynolds, Charles; Root, John A.; and Whiteman, Robert N., Jr., to AMP Incorporated. Connector assembly with diecast housing and drawn shell. 4,808,125, Cl. 439-607.000.
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Watson, Alan K.: *See*—
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Watson, Herman L.; Sackner, Deborah R.; Pak, Chu; and Sackner, Marvin A., to Respitrace Corporation. Stretchable band-type transducer particularly suited for respiration monitoring apparatus. 4,807,640, Cl. 128-721.000.
Watson, William J. W.: *See*—
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Weaver, Max A.; Coates, Clarence A., Jr.; Pruett, Wayne P.; and Hilbert, Samuel D., to Eastman Kodak Company. Condensation polymer containing copolymerized colorants derived from indigo and articles produced therefrom. 4,808,677, Cl. 525-437.000.
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Weber, Mark W., to Honeywell Inc. Ring laser having amplitude and phase controlled externally injected back scatter. 4,807,998, Cl. 356-350.000.

Weber, Otto: *See*—
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Yamamoto, Hajime; and Takashima, Yuji, to Matsushita Electric Industrial Co., Ltd. Color electrophotographic apparatus and method. 4,809,038, Cl. 355-4.000.

Yamamoto, Harutoshi; Mochizuki, Zenichi; and Sakomoto, Sadasue, to Toshiba Kikai Kabushiki Kaisha. Production method of machine parts and the machine parts thus produced. 4,808,486, Cl. 428-609.000.

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Yamamoto, Hitoshi; Tottori, Takumi; Ikeda, Tsugio; and Okazaki, Kouji, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust timing control apparatus. 4,807,571, Cl. 123-65.0PE.

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Leonard, George H., to Airpot Corp. Counterbalance device and torsion member usable therein. Re. 32,878, Cl. 16-298.000.

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Grider, Sherman P., 300,048, Cl. D21-195.000.

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Brown, Jeffrey C.; and Barbee, Peter F. Rock-mounted touch control screen display terminal. 300,032, 2-28-89, Cl. D14-113.000.

Brown Jordan Company Limited Partnership: *See*—
Doughty, Frederic E., 299,986, Cl. D6-344.000.

Brunish, Corey. Telephone set. 300,027, 2-28-89, Cl. D14-143.000.

Bua, Jeffrey P.: *See*—
Liggett, Steven P.; Le, Tuan N.; and Bua, Jeffrey P., 299,984, Cl. D2-320.000.

Burr, Stuart C., to Equipment de' Sport U.S.A., Inc. Hat stand. 299,989, 2-28-89, Cl. D6-415.000.

Campbell Hausfeld/Scott Fetzer Company: *See*—
Mariol, James F., 300,036, Cl. D15-126.000.

Cineonix, Inc.: *See*—
Jones, John A.; Marchus, L. Mark; and Hardy, Loren S., 300,037, Cl. D16-244.000.

Clemens, Kevin F.; and McGinty, Robert D., to Michelin Recherche et Technique. Tire. 300,016, 2-28-89, Cl. D12-147.000.

Contico Automotive, Inc.: *See*—
Dickinson, Thomas, 300,019, Cl. D12-157.000.

Cooper Industries, Inc.: *See*—
Oberg, Thomas W., 300,001, Cl. D8-78.000.

Cottrell, Roger C., to Michelin Recherche et Technique. Tire. 300,015, 2-28-89, Cl. D12-147.000.

Cottrell, Roger C., to Michelin Recherche et Technique. Tire. 300,017, 2-28-89, Cl. D12-147.000.

Crump, Robert F. Portable extension ramp. 300,073, 2-28-89, Cl. D34-32.000.

David, Myron H.: *See*—
Emanuele, Roy; and David, Myron H., 300,058, Cl. D23-271.000.

DeRamus, Lawrence D., Jr. Electronic gearshift control for a vehicle. 300,023, 2-28-89, Cl. D13-32.000.

Dermody, Thomas E. Keyboard guide. 300,040, 2-28-89, Cl. D18-12.000.

Dickinson, Thomas, to Contico Automotive, Inc. Combined pickup truck utility box and supports therefor. 300,019, 2-28-89, Cl. D12-157.000.

Dodds, Steve: *See*—
Zuidema, Gary; Schelling, John; and Dodds, Steve, 299,983, Cl. D2-320.000.

Doi, Tetsuyuki; and Hiraishi, Etsuo, to Ryobi Ltd. Fishing reel. 300,055, 2-28-89, Cl. D22-141.000.

Donner Mountain Corporation, The: *See*—
Zuidema, Gary; Schelling, John; and Dodds, Steve, 299,983, Cl. D2-320.000.

Donzi Marine: *See*—
Riley, William D., 300,021, Cl. D12-318.000.

Doughty, Frederic E., to Brown Jordan Company Limited Partnership. Rocker. 299,986, 2-28-89, Cl. D6-344.000.

Dunchock, Richard S., to SL Corporation. Storage cart. 300,071, 2-28-89, Cl. D34-17.000.

Durand, Jean-Jacques. Stemmed wine glass or similar article. 299,993, 2-28-89, Cl. D7-13.000.

Emanuele, Roy; and David, Myron H., to IMC/Teddy Food Service Corp. Combined sink and towel dispenser. 300,058, 2-28-89, Cl. D23-271.000.

Emmerling, Ronald: *See*—
Zaborowski, Thaddeus; and Emmerling, Ronald, 300,065, Cl. D28-35.000.

Engineered Data Products, Inc.: *See*—
Price, Macy J.; and Accumanno, Mario B., 300,072, Cl. D34-21.000.

Equipment de' Sport U.S.A., Inc.: *See*—
Burr, Stuart C., 299,989, Cl. D6-415.000.

Everett, Lynn E., to Tusco Manufacturing Company. Display stand. 299,990, 2-28-89, Cl. D6-415.000.

Ferguson, Charles E.: *See*—
Katai, Dwaine S.; Reeve, Brian G.; Ferguson, Charles E.; Thomas, Carl W.; and McDougall, Gary L., 300,031, Cl. D14-102.000.

Fischer-Treyden, Elsa, to Rosenthal Aktiengesellschaft Rechtsabteilung. Plate. 299,994, 2-28-89, Cl. D7-23.000.

Francis, Stephen A.; and Muller, Ronald L., to North American Philips Corp. Hair dryer. 300,064, 2-28-89, Cl. D28-13.000.

Geomation, Inc.: *See*—
Klebba, John M., 300,024, Cl. D13-40.000.

Gillette Company, The: *See*—
Poisson, Norman D., 300,042, Cl. D19-54.000.

Gregory, Joseph A.: *See*—
Barrett, William H.; Gregory, Joseph A.; Mohr, Lisa M.; Remsburger, Louis J.; and Schaum, David L., 300,030, Cl. D14-218.000.

Grider, Sherman P., to Bollinger Industries. Adjustable exercise bench. 300,045, 2-28-89, Cl. D21-191.000.

Grider, Sherman P., to Bollinger Industries. Physical exerciser. 300,048, 2-28-89, Cl. D21-195.000.

Hackelsberger, Franzjosef. Glass brick. 300,061, 2-28-89, Cl. D25-107.000.

Hackelsberger, Franzjosef, to J. Weck GmbH & Co. Glass brick. 300,062, 2-28-89, Cl. D25-108.000.

Hagiwara, Satoru: *See*—
Hirakawa, Norishige; Sato, Kazuhiko; and Hagiwara, Satoru, 300,034, Cl. D15-7.000.

Hamberg, Bjorn. Garment protector. 299,980, 2-28-89, Cl. D2-225.000.

Hardy, Loren S.: *See*—
Jones, John A.; Marchus, L. Mark; and Hardy, Loren S., 300,037, Cl. D16-244.000.

Helstab, Edmond J., to Northern Telecom Limited. Divider panel for an operator workstation or the like. 299,985, 2-28-89, Cl. D6-332.000.

Hershberger, Vilas D. Table attachment for folding chair. 299,991, 2-28-89, Cl. D6-511.000.

Hiraishi, Etsuo; and Numata, Teruhisa, to Ryobi Ltd. Fishing reel. 300,054, 2-28-89, Cl. D22-141.000.

Hiraishi, Etsuo: *See*—
Doi, Tetsuyuki; and Hiraishi, Etsuo, 300,055, Cl. D22-141.000.

Hirakawa, Norishige; Sato, Kazuhiko; and Hagiwara, Satoru, to Iwaki Co., Ltd. Bellows pump. 300,034, 2-28-89, Cl. D15-7.000.

Homen, Manny. Live fish scale. 300,010, 2-28-89, Cl. D10-91.000.

Honda Giken Kabushiki Kaisha: *See*—
Shimoyama, Hiroshi; and Oono, Kiyoshi, 300,013, Cl. D12-110.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Oba, Yasuhiro; Kawaguchi, Yukinori; and Yokoyama, Kazuhiko, 300,011, Cl. D12-87.000.

Honda, Youji, to Sanyo Electric Co., Ltd. Combined telephone and answering machine. 300,025, 2-28-89, Cl. D14-141.000.

Hoover Group, Inc.: *See*—
Thomas, Larry D., 300,074, Cl. D34-38.000.

Huckenbeck, Claus O., to Bausch & Lomb Incorporated. Spotting telescope. 300,038, 2-28-89, Cl. D16-132.000.

Huckenbeck, Claus O., to Bausch & Lomb Incorporated. Spotting telescope. 300,039, 2-28-89, Cl. D16-132.000.

Hutchison, V. James, to T-Plastech Corporation. Display hook for pegboard or the like. 300,003, 2-28-89, Cl. D8-367.000.

IMC/Teddy Food Service Corp.: *See*—
Emanuele, Roy; and David, Myron H., 300,058, Cl. D23-271.000.

International Business Machines Corporation: *See*—
Barrett, William H.; Gregory, Joseph A.; Mohr, Lisa M.; Remsburger, Louis J.; and Schaum, David L., 300,030, Cl. D14-218.000.

Ishida, Kazuya: *See*—
Takahashi, Seigo; Matsumoto, Toshiyuki; and Ishida, Kazuya, 300,009, Cl. D10-73.000.

Isozaki, Sadao: *See*—
Kido, Shigeaki; Isozaki, Sadao; and Yajima, Yasuko, 300,029, Cl. D14-241.000.

Iwaki Co., Ltd.: *See*—
Hirakawa, Norishige; Sato, Kazuhiko; and Hagiwara, Satoru, 300,034, Cl. D15-7.000.

J. Weck GmbH & Co.: *See*—
Hackelsberger, Franzjosef, 300,062, Cl. D25-108.000.

Jacobs, Andre ; May, Richard; Vandebroek, Marcel; and Sporen, Frieda, to Procter & Gamble Company, The. Bottle. 300,005, 2-28-89, Cl. D9-370.000.

Jenkins, David C., to Steelcase Inc. Chair. 299,987, 2-28-89, Cl. D6-366.000.

John Manufacturing Limited: *See*—
Yuen, John S., 300,035, Cl. D15-9.000.

Jones, John A.; Marchus, L. Mark; and Hardy, Loren S., to Cineonix, Inc. Tripod with instrument supporting head. 300,037, 2-28-89, Cl. D16-244.000.

Katai, Dwaine S.; Reeve, Brian G.; Ferguson, Charles E.; Thomas, Carl W.; and McDougall, Gary L., to Amdahl Corporation. Main frame computer. 300,031, 2-28-89, Cl. D14-102.000.

Kawaguchi, Yukinori: *See*—
Oba, Yasuhiro; Kawaguchi, Yukinori; and Yokoyama, Kazuhiko, 300,011, Cl. D12-87.000.

Kenyon, Howard A.: *See*—
Rainville, Gilles; and Rainville, Francoise, 299,995, Cl. D7-43.000.

Kido, Shigeaki; Isozaki, Sadao; and Yajima, Yasuko, to Meisei Electric Co., Ltd. Direct station telephone selector stand. 300,029, 2-28-89, Cl. D14-241.000.

Klamer, Reuben B.; and Pardo, Beatrice. Roller skate. 300,049, 2-28-89, Cl. D21-226.000.

Klamer, Reuben B.; and Pardo, Beatrice. Adjustable roller skate. 300,050, 2-28-89, Cl. D21-226.000.

Klebba, John M., to Geomation, Inc. Housing for electronic modules. 300,024, 2-28-89, Cl. D13-40.000.

Korey, Nowell N. Bag. 300,004, 2-28-89, Cl. D9-305.000.

Ku, Eva K., to UCP International Company Limited. Doll head. 300,044, 2-28-89, Cl. D21-190.000.

Kurozumi, Shigeru; and Sakamoto, Harumi, to Sharp Corporation. Electronic whiteboard and photocopier. 300,041, 2-28-89, Cl. D19-52.000.

Larsen, M. Don: *See*—
Pace, S. Glen; and Larsen, M. Don, 300,026, Cl. D14-129.000.

Larson, Lawrence L.: *See*—
Ruger, William B.; and Larson, Lawrence L., 300,057, Cl. D22-108.000.

Le, Tuan N.: *See*—
Liggett, Steven P.; Le, Tuan N.; and Bua, Jeffrey P., 299,984, Cl. D2-320.000.

Lew Childre & Sons, Inc.: *See*—
Andreasen, James E., 300,056, Cl. D22-142.000.

Lichtenvort, Uwe; and Stoeber, Manfred, to Mannesmann Demag AG. Single sheave lifting block. 300,076, 2-28-89, Cl. D34-35.000.

Lichtenvort, Uwe; and Stoeber, Manfred, to Mannesmann Demag AG. Double sheave lifting block. 300,077, 2-28-89, Cl. D34-35.000

Liggett, Steven P.; Le, Tuan N.; and Bua, Jeffrey P., to Reebok International Ltd. Shoe sole. 299,984, 2-28-89, Cl. D2-320.000.

Mako Marine, Inc.: *See*—
Petrilli, Peter J., 300,020, Cl. D12-192.000.

Maloney, William J., II, to Quaker Oats Company, The. Tent. 300,052, 2-28-89, Cl. D21-253.000.

Mann, W. Thomas. Fishing lure. 300,053, 2-28-89, Cl. D22-127.000.

Mannesmann Demag AG: *See*—
Lichtenvort, Uwe; and Stoeber, Manfred, 300,076, Cl. D34-35.000.
Lichtenvort, Uwe; and Stoeber, Manfred, 300,077, Cl. D34-35.000.

Marchus, L. Mark: *See*—
Jones, John A.; Marchus, L. Mark; and Hardy, Loren S., 300,037, Cl. D16-244.000.

Marcy Fitness Products: *See*—
Sheltra, Ronald, 300,063, Cl. D25-120.000.

Mariol, James F., to Campbell Hausfeld/Scott Fetzer Company. Hopper for a sandblaster. 300,036, 2-28-89, Cl. D15-126.000.

Matsumoto, Toshiyuki: *See*—
Takahashi, Seigo; Matsumoto, Toshiyuki; and Ishida, Kazuya, 300,009, Cl. D10-73.000.

May, Richard: *See*—
Jacobs, Andre ; May, Richard; Vandebroek, Marcel; and Sporen, Frieda, 300,005, Cl. D9-370.000.

McDougall, Gary L.: *See*—
Katai, Dwaine S.; Reeve, Brian G.; Ferguson, Charles E.; Thomas, Carl W.; and McDougall, Gary L., 300,031, Cl. D14-102.000.

McDuffie, Doris. Basket. 300,078, 2-28-89, Cl. D34-43.000.

McGinty, Robert D.: *See*—
Clemens, Kevin F.; and McGinty, Robert D., 300,016, Cl. D12-147.000.

Meisei Electric Co., Ltd.: *See*—
Kido, Shigeaki; Isozaki, Sadao; and Yajima, Yasuko, 300,029, Cl. D14-241.000.

Michel, Daniel P. Food container. 299,992, 2-28-89, Cl. D7-5.000.

Michelin Recherche et Technique: *See*—
Clemens, Kevin F.; and McGinty, Robert D., 300,016, Cl. D12-147.000.
Cottrell, Roger C., 300,015, Cl. D12-147.000.
Cottrell, Roger C., 300,017, Cl. D12-147.000.

Miller, David C., to Wagner Spray Tech Corporation. Power unit for powered paint applicator or the like. 300,033, 2-28-89, Cl. D15-7.000.

Miller, Randolph F.: *See*—
Armstrong, Timothy O.; Smith, David B.; and Miller, Randolph F., 300,046, Cl. D21-194.000.

Minurri, Donato, to Sun Star Inflatable Corporation. Three-man water sled. 300,051, 2-28-89, Cl. D21-228.000.

Mitutoyo Mgf. Co., Ltd.: *See*—
Takahashi, Seigo; Matsumoto, Toshiyuki; and Ishida, Kazuya, 300,009, Cl. D10-73.000.

Mohr, Lisa M.: *See*—
Barrett, William H.; Gregory, Joseph A.; Mohr, Lisa M.; Remsburger, Louis J.; and Schaum, David L., 300,030, Cl. D14-218.000.

Molgaard-Nielsen, Arne, to William Cook Europe A/S. Biopsy cannula. 300,060, 2-28-89, Cl. D24-28.000.

Muller, Ronald L.: *See*—
Francis, Stephen A.; and Muller, Ronald L., 300,064, Cl. D28-13.000.
Nitsuko Corporation: *See*—
To, Tadamine, 300,028, Cl. D14-151.000.
North American Philips Corp.: *See*—
Francis, Stephen A.; and Muller, Ronald L., 300,064, Cl. D28-13.000.
Northern Telecom Limited: *See*—
Helstab, Edmond J., 299,985, Cl. D6-332.000.
Numata, Teruhisa: *See*—
Hiraishi, Etsuo; and Numata, Teruhisa, 300,054, Cl. D22-141.000.
Oba, Yasuhiro; Kawaguchi, Yukinori; and Yokoyama, Kazuhiko, to Honda Giken Kogyo Kabushiki Kaisha. Four-wheeled buggy. 300,011, 2-28-89, Cl. D12-87.000.
Oberg, Thomas W., to Cooper Industries, Inc. Hammer head. 300,001, 2-28-89, Cl. D8-78.000.
Oono, Kiyoshi: *See*—
Shimoyama, Hiroshi; and Oono, Kiyoshi, 300,013, Cl. D12-110.000.
Pace, S. Glen; and Larsen, M. Don, to Sports Replay, Inc. Combined video tape recorder/player and video monitor. 300,026, 2-28-89, Cl. D14-129.000.
Pandolfi, Alberto, to 501 Brevelle Gaggia S.p.A. Espresso machine. 299,999, 2-28-89, Cl. D7-309.000.
Parabita, Giovanni. Foldable beach mat or similar article. 299,988, 2-28-89, Cl. D6-368.000.
Pardo, Beatrice: *See*—
Klamer, Reuben B.; and Pardo, Beatrice, 300,049, Cl. D21-226.000.
Klamer, Reuben B.; and Pardo, Beatrice, 300,050, Cl. D21-226.000.
Petrilli, Peter J., to Mako Marine, Inc. Front panel for a boat console or similar article. 300,020, 2-28-89, Cl. D12-192.000.
Pier, Florise L. Mouthpiece for use as a geriatric pacifier or for the treatment of bruxism. 300,059, 2-28-89, Cl. D24-10.000.
Poisson, Norman D., to Gillette Company, The. Point and barrel tip assembly for writing instrument. 300,042, 2-28-89, Cl. D19-54.000.
Precor Incorporated: *See*—
Armstrong, Timothy O.; Smith, David B.; and Miller, Randolph F., 300,046, Cl. D21-194.000.
Price, Macy J.; and Accumanno, Mario B., to Engineered Data Products, Inc. Tape cartridge storage cart. 300,072, 2-28-89, Cl. D34-21.000.
Pritikin, Carol; and Pritikin, Gail. Pet tray. 300,068, 2-28-89, Cl. D30-129.000.
Pritikin, Gail: *See*—
Pritikin, Carol; and Pritikin, Gail, 300,068, Cl. D30-129.000.
Procter & Gamble Company, The: *See*—
Jacobs, Andre ; May, Richard; Vandebroek, Marcel; and Sporen, Frieda, 300,005, Cl. D9-370.000.
Proctor, Michael K. Visor for cap or the like. 299,981, 2-28-89, Cl. D2-260.000.
Quaker Oats Company, The: *See*—
Maloney, William J., II, 300,052, Cl. D21-253.000.
Rainville, Francoise: *See*—
Rainville, Gilles; and Rainville, Francoise, 299,995, Cl. D7-43.000.
Rainville, Gilles; and Rainville, Francoise, to Kenyon, Howard A. Croissant slicer. 299,995, 2-28-89, Cl. D7-43.000.
Reebok International Ltd.: *See*—
Liggett, Steven P.; Le, Tuan N.; and Bua, Jeffrey P., 299,984, Cl. D2-320.000.
Reeve, Brian G.: *See*—
Katai, Dwaine S.; Reeve, Brian G.; Ferguson, Charles E.; Thomas, Carl W.; and McDougall, Gary L., 300,031, Cl. D14-102.000.
Reinhardt, Willi W. Gas meter shutoff valve wrench or similar article. 300,000, 2-28-89, Cl. D8-17.000.
Remsburger, Louis J.: *See*—
Barrett, William H.; Gregory, Joseph A.; Mohr, Lisa M.; Remsburger, Louis J.; and Schaum, David L., 300,030, Cl. D14-218.000.
Riley, William D., to Donzi Marine. Transom portion of a boat. 300,021, 2-28-89, Cl. D12-318.000.
Robert Krups Stiftung & Co. KG: *See*—
Seiffert, Florian, 299,998, Cl. D7-309.000.
Rosenthal Aktiengesellschaft Rechtsabteilung: *See*—
Fischer-Treyden, Elsa, 299,994, Cl. D7-23.000.
Ruger, William B.; and Larson, Lawrence L., to Sturm, Ruger & Company, Inc. Grip panel for handgun. 300,057, 2-28-89, Cl. D22-108.000.
Ryobi Ltd.: *See*—
Doi, Tetsuyuki; and Hiraishi, Etsuo, 300,055, Cl. D22-141.000.
Hiraishi, Etsuo; and Numata, Teruhisa, 300,054, Cl. D22-141.000.
Sahm, Victor A., Jr. Pallet. 300,075, 2-28-89, Cl. D34-38.000.
Sakamoto, Harumi: *See*—
Kurozumi, Shigeru; and Sakamoto, Harumi, 300,041, Cl. D19-52.000.
Sanguinet, Dorothy D.: *See*—
Sanguinet, Thomas M.; and Sanguinet, Dorothy D., 300,002, Cl. D8-69.000.
Sanguinet, Thomas M.; and Sanguinet, Dorothy D. Hand held power scraper. 300,002, 2-28-89, Cl. D8-69.000.
Sanyo Electric Co., Ltd.: *See*—
Honda, Youji, 300,025, Cl. D14-141.000.
Sato, Kazuhiko: *See*—
Hirakawa, Norihige; Sato, Kazuhiko; and Hagiwara, Satoru, 300,034, Cl. D15-7.000.
Schaum, David L.: *See*—
Barrett, William H.; Gregory, Joseph A.; Mohr, Lisa M.; Remsburger, Louis J.; and Schaum, David L., 300,030, Cl. D14-218.000.
Schelling, John: *See*—
Zuidema, Gary; Schelling, John; and Dodds, Steve, 299,983, Cl. D2-320.000.
Schwabel Corporation, The: *See*—
Zaborowski, Thaddeus; and Emmerling, Ronald, 300,065, Cl. D28-35.000.
Seiffert, Florian, to Robert Krups Stiftung & Co. KG. Espresso coffee making machine. 299,998, 2-28-89, Cl. D7-309.000.
Shaper, Richard. Battery pack with removable clip. 300,022, 2-28-89, Cl. D13-8.000.
Sharp Corporation: *See*—
Kurozumi, Shigeru; and Sakamoto, Harumi, 300,041, Cl. D19-52.000.
Sheltra, Ron. Exercise bicycle. 300,047, 2-28-89, Cl. D21-194.000.
Sheltra, Ronald, to Marcy Fitness Products. Structural guide column. 300,063, 2-28-89, Cl. D25-120.000.
Shimoyama, Hiroshi; and Oono, Kiyoshi, to Honda Giken Kabushiki Kaisha. Motorcycle. 300,013, 2-28-89, Cl. D12-110.000.
Silverman, Leslie M. Sign. 300,043, 2-28-89, Cl. D20-10.000.
SL Corporation: *See*—
Dunchock, Richard S., 300,071, Cl. D34-17.000.
Smalls, Armand: *See*—
Smith, Debra A.; and Smalls, Armand, 300,067, Cl. D30-101.000.
Smith, Ben N. Jewelry pendant. 300,079, 2-28-89, Cl. D99-27.000.
Smith, David B.: *See*—
Armstrong, Timothy O.; Smith, David B.; and Miller, Randolph F., 300,046, Cl. D21-194.000.
Smith, Debra A.; and Smalls, Armand. Aquarium. 300,067, 2-28-89, Cl. D30-101.000.
Sporen, Frieda: *See*—
Jacobs, Andre ; May, Richard; Vandebroek, Marcel; and Sporen, Frieda, 300,005, Cl. D9-370.000.
Sports Replay, Inc.: *See*—
Pace, S. Glen; and Larsen, M. Don, 300,026, Cl. D14-129.000.
Spradley, Annie L. Manicure board. 300,066, 2-28-89, Cl. D28-61.000.
Steelcase Inc.: *See*—
Jenkins, David C., 299,987, Cl. D6-366.000.
Stoeber, Manfred: *See*—
Lichtenvort, Uwe; and Stoeber, Manfred, 300,076, Cl. D34-35.000.
Lichtenvort, Uwe; and Stoeber, Manfred, 300,077, Cl. D34-35.000.
Sturm, Ruger & Company, Inc.: *See*—
Ruger, William B.; and Larson, Lawrence L., 300,057, Cl. D22-108.000.
Sun Star Inflatable Corporation: *See*—
Minurri, Donato, 300,051, Cl. D21-228.000.
T-Plastech Corporation: *See*—
Hutchison, V. James, 300,003, Cl. D8-367.000.
Takahashi, Seigo; Matsumoto, Toshiyuki; and Ishida, Kazuya, to Mitutoyo Mgf. Co., Ltd. Dial gauge. 300,009, 2-28-89, Cl. D10-73.000.
Thomas, Carl W.: *See*—
Katai, Dwaine S.; Reeve, Brian G.; Ferguson, Charles E.; Thomas, Carl W.; and McDougall, Gary L., 300,031, Cl. D14-102.000.
Thomas, Larry D., to Hoover Group, Inc. Combined pallet and containers therefor. 300,074, 2-28-89, Cl. D34-38.000.
3 T S.p.A.: *See*—
Borromeo, Lucio, 300,014, Cl. D12-118.000.
To, Tadamine, to Nitsuko Corporation. Intercall console module device for a telephone set. 300,028, 2-28-89, Cl. D14-151.000.
Tong, James K., to AVIA Group International, Inc. Element of a shoe upper. 299,982, 2-28-89, Cl. D2-314.000.
Tucker, James E.; and Beecher, John, III, to Weber-Stephen Products Co. Barbecue tong. 299,996, 2-28-89, Cl. D7-105.000.
Tucker, James E.; and Beecher, John, III, to Weber-Stephen Products Co. Barbecue fork. 299,997, 2-28-89, Cl. D7-106.000.
Tusco Manufacturing Company: *See*—
Everett, Lynn E., 299,990, Cl. D6-415.000.
UCP International Company Limited: *See*—
Ku, Eva K., 300,044, Cl. D21-190.000.
Vandebroek, Marcel: *See*—
Jacobs, Andre ; May, Richard; Vandebroek, Marcel; and Sporen, Frieda, 300,005, Cl. D9-370.000.
Wagner Spray Tech Corporation: *See*—
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Weber-Stephen Products Co.: *See*—
Tucker, James E.; and Beecher, John, III, 299,996, Cl. D7-105.000.
Tucker, James E.; and Beecher, John, III, 299,997, Cl. D7-106.000.
William Cook Europe A/S: *See*—
Molgaard-Nielsen, Arne, 300,060, Cl. D24-28.000.
Yajima, Yasuko: *See*—
Kido, Shigeaki; Isozaki, Sadao; and Yajima, Yasuko, 300,029, Cl. D14-241.000.
Yokoyama, Kazuhiko: *See*—
Oba, Yasuhiro; Kawaguchi, Yukinori; and Yokoyama, Kazuhiko, 300,011, Cl. D12-87.000.
Yuen, John S., to John Manufacturing Limited. Combined air compressor and multi-purpose spotlight. 300,035, 2-28-89, Cl. D15-9.000.
Zaborowski, Thaddeus; and Emmerling, Ronald, to Schwabel Corporation, The. Curling iron cover. 300,065, 2-28-89, Cl. D28-35.000.
Zaiman, Alexander. Windowpane thermometer. 300,008, 2-28-89, Cl. D10-57.000.
Zelco Industries: *See*—
Booty, Donald J., 300,006, Cl. D10-22.000.
Booty, Donald J., 300,007, Cl. D10-28.000.
Zuidema, Gary; Schelling, John; and Dodds, Steve, to Donner Mountain Corporation, The. Shoe sole. 299,983, 2-28-89, Cl. D2-320.000.
501 Brevelle Gaggia S.p.A.: *See*—
Pandolfi, Alberto, 299,999, Cl. D7-309.000.

LIST OF PLANT PATENTEES

Apgar, Lindi: *See*—
Apgar, Paul; and Apgar, Lindi, 6,630, Cl. 67.000.
Apgar, Paul; and Apgar, Lindi. Ivy plant. 6,630, 2-28-89, Cl. 67.000.
Colorado State University Research Foundation: *See*—
Goldsberry, Kenneth L., 6,641, Cl. 70.000.
Goldsberry, Kenneth L., 6,642, Cl. 70.000.
Goldsberry, Kenneth L., 6,643, Cl. 71.000.
Denholm Seeds: *See*—
Winner, Blair L., 6,636, Cl. 68.000.
Drewlow, Lyndon W., to Mikkelsens, Inc. Kalanchoe plant named Garnet. 6,631, 2-28-89, Cl. 68.000.
Drewlow, Lyndon W., to Mikkelsens, Inc. Kalanchoe plant named Goldstrike. 6,632, 2-28-89, Cl. 68.000.
Drewlow, Lyndon W., to Mikkelsens, Inc. Streptocarpus plant named Achilles. 6,635, 2-28-89, Cl. 68.000.
Fischer, Arnold. African violet plant named Irish Ruffles. 6,638, 2-28-89, Cl. 69.000.
Fischer, Arnold. African violet plant named Picotee Ruffles. 6,639, 2-28-89, Cl. 69.000.
Fischer, Arnold. African violet plant named Blue Waters. 6,640, 2-28-89, Cl. 69.000.
Geo. W. Park Seed Co., Inc.: *See*—
Wiles, Linda S., 6,633, Cl. 68.000.
Wiles, Linda S., 6,634, Cl. 68.000.
Wiles, Linda S., 6,637, Cl. 68.000.
Goldsberry, Kenneth L., to Colorado State University Research Foundation. Dwarf carnation plant 'Quandary'. 6,641, 2-28-89, Cl. 70.000.
Goldsberry, Kenneth L., to Colorado State University Research Foundation. Dwarf carnation plant 'Snowmass'. 6,642, 2-28-89, Cl. 70.000.
Goldsberry, Kenneth L., to Colorado State University Research Foundation. Dwarf carnation plant 'Shavano'. 6,643, 2-28-89, Cl. 71.000.
Halligan, James P. Rhododendron plant 'Scented Springtime' . 6,629, 2-28-89, Cl. 55.000.
Mack, Grace H.; and VandenBerg, Cornelis P., to Mack, Grace H. Chrysanthemum plant named Illusion. 6,644, 2-28-89, Cl. 74.000.
Mikkelsens, Inc.: *See*—
Drewlow, Lyndon W., 6,631, Cl. 68.000.
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Drewlow, Lyndon W., 6,635, Cl. 68.000.
VandenBerg, Cornelis P.: *See*—
Mack, Grace H.; and VandenBerg, Cornelis P., 6,644, Cl. 74.000.
Wiles, Linda S., to Geo. W. Park Seed Co., Inc. Achimenes plant named Pink Rose. 6,633, 2-28-89, Cl. 68.000.
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Wiles, Linda S., to Geo. W. Park Seed Co., Inc. Achimenes plant named Picotee Rose. 6,637, 2-28-89, Cl. 68.000.
Winner, Blair L., to Denholm Seeds. Variety of geranium named Carnival. 6,636, 2-28-89, Cl. 68.000.

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363 S 4,808,826
370.02 4,808,827
458.1 4,808,828
491.1 4,808,829
505.1 4,808,830
506.1 4,808,831
548 4,808,832
578 4,808,833
4,808,834

CLASS 251

7 4,807,845
46 Re.32,880
129.15 4,807,846
144 4,807,847
149.4 4,807,848
206 4,807,850
362 4,807,849

CLASS 252

8.8 4,808,320
4,808,321
15 4,808,323
23 4,808,324
47.5 4,808,335
51.5 A 4,808,325
62.54 4,808,326
62.56 4,808,327
106 4,808,328
121 4,808,322
162 4,808,329
170 4,808,330
172 4,808,331
299.66 4,808,333
314 4,808,334
500 4,808,336
[illegible] 4,808,337

CLASS 254

1 4,807,851
290 4,807,852

CLASS 260

396 R 4,808,339
410.9 4,808,340
504 R 4,808,341
508 4,808,342
513 N 4,808,344
513 R 4,808,343
544 D 4,808,345

CLASS 261

18.1 4,808,346
30 4,808,347
[illegible] 4,808,348
4,808,349
96 4,808,350

CLASS 264

22 4,808,351
4,808,352
28 4,808,353
29.5 4,808,354
39 4,808,355
46.5 4,808,356
151 4,808,357
156 4,808,358
171 4,808,359
221 4,808,360
255 4,808,361
257 4,808,362
288.4 4,808,363
310 4,808,364
343 4,808,365
509 4,808,366
555 4,808,367

CLASS 265

397.7 R 4,808,338

CLASS 266

81 4,807,853
[illegible] 4,807,854

CLASS 267

64.12 4,807,855
64.27 4,807,858
132 4,807,856
140.3 4,807,857
170 4,807,859
217 4,807,860

CLASS 269

75 4,807,861
87.2 4,807,862
153 4,807,863
328 4,807,864

CLASS 270

54 4,807,865

CLASS 271

209 4,807,866
256 4,807,868
277 4,807,867

CLASS 272

28 R 4,807,869
70.3 4,807,870
76 4,807,871
[illegible] 4,807,872
93 4,807,873
[illegible] 4,807,874
123 4,807,875
4,807,876
130 4,807,877

CLASS 273

29 A 4,807,879
55 B 4,807,880
144 B 4,807,881
4,807,882
145 C 4,807,883
149 R 4,807,884
292 4,807,885
356 4,807,886
372 4,807,887
392 4,807,888
422 4,807,889

CLASS 277

12 4,807,890
[illegible] 4,807,891
235 B 4,807,892

CLASS 278

1 E 4,807,878

CLASS 280

11.2 4,807,893
63 4,807,894
243 4,807,896
[illegible] 4,807,897
276 4,807,898
477 4,807,899
491.3 4,807,900
[illegible] 4,807,901
4,807,902
772 4,807,903
[illegible] 4,807,904
853 4,507,895

CLASS 281

15 R 4,807,905
45 4,807,906

CLASS 282

9 R 4,807,907

CLASS 283

5 4,807,908
67 4,807,909

CLASS 285

21 4,807,910
323 4,807,911
348 4,807,912
369 4,807,913

CLASS 290

4 A 4,808,835
48 4,808,836
54 4,808,837

CLASS 292

48 4,807,914

CLASS 293

132 4,807,915

CLASS 294

15 4,807,916
87.24 4,807,917
110.1 4,807,918

CLASS 296

37.1 4,807,919
37.8 4,807,920
98 4,807,921
136 4,807,922
146 4,807,923
164 4,807,924
194 4,807,925

CLASS 297

33 4,807,926
153 4,807,928

184 4,807,927
191 4,807,929
219 4,807,930
284 4,807,931
346 4,807,932
391 4,807,933
403 4,807,934
417 4,807,935
445 4,807,936
465 4,807,937

CLASS 300

21 4,807,938

CLASS 301

124 H 4,807,939

CLASS 303

100 4,807,940
108 4,807,941
113 4,807,943
114 4,807,942
4,807,944
4,807,945
115 4,807,946

CLASS 307

11 4,808,841
43 4,808,842
105 4,808,843
243 [illegible] 4,808,844
270 4,808,845
271 4,808,846
290 4,808,840
296.4 4,808,839
297 4,808,847
355 [illegible] 4,808,848
400 4,808,849
446 4,808,850
450 4,808,851
451 4,808,852
473 4,808,853
4,808,854
[illegible] 4,808,855
511 4,808,856
530 4,808,857
544 4,808,858
571 4,808,859
572 4,808,860
579 4,808,861

CLASS 310

[illegible] 4,808,862
51 4,808,863
52 4,808,864
68 C 4,808,867
68 D 4,808,866
68 R 4,808,868
71 4,808,865
78 4,808,869
4,808,870
89 4,808,871
215 4,808,872
260 4,808,873
328 4,808,874

CLASS 312

140.4 4,807,947
245 4,808,875
258 4,807,948

CLASS 313

25 4,808,876
4,808,877
141 4,808,878
421 4,808,879
[illegible] 4,808,880
624 4,808,881
625 4,808,882
632 4,808,883

CLASS 315

122 4,808,885
227 R 4,808,886
247 4,808,887
289 4,808,888
291 4,808,889
366 4,808,890
411 4,808,891

CLASS 318

135 4,808,892
254 4,808,893
266 4,808,894
384 4,808,895
436 4,808,896
568 4,808,897
4,808,898
603 4,808,900
619 4,808,899
687 4,808,901
798 4,808,902
800 4,808,903

CLASS 320

2 4,808,904

CLASS 323

222 4,808,905
223 4,808,906
313 4,808,908
4,808,909
316 4,808,907
358 4,808,910

CLASS 324

57 Q 4,808,911
58 B 4,808,912
4,808,913
62 4,808,914
73 R 4,808,915
110 4,808,916
127 4,808,917
142 4,808,918
158 F 4,808,919
161 4,808,920
163 4,808,933
204 4,808,921
4,808,922
207 4,808,923
208 4,808,934
220 4,808,924
4,808,927
221 4,808,925
226 4,808,926
309 4,808,928
339 4,808,929
442 4,808,930
444 4,808,931
545 4,808,932

CLASS 328

146 4,808,935
155 4,808,936
4,808,937
156 4,808,938
167 4,808,939
233 4,808,940
235 4,808,941

CLASS 330

9 4,808,942
51 4,808,943
253 4,808,944
254 4,808,945
297 4,808,946
307 4,808,947

CLASS 331

8 4,808,948

CLASS 333

1.1 4,808,949
24 R 4,808,284
157 4,808,950
202 4,808,951

CLASS 335

41 4,808,952
42 4,808,953
216 4,808,954
222 4,808,955
299 4,808,956
301 4,808,957

CLASS 336

136 4,808,958
189 4,808,959

CLASS 337

[illegible] 4,808,960
49 4,808,961
203 4,808,962
246 4,808,963
252 4,808,964
[illegible] 4,808,965

CLASS 338

214 4,808,966
309 4,808,967

CLASS 340

71 4,808,968
95 4,808,969
347 DD 4,808,970
521 4,808,971
541 4,808,972
545 4,808,973
546 4,808,974
568 4,808,981
641 4,808,975
4,808,982
665 4,808,976
691 4,808,977
705 4,808,978
707 4,808,980
709 4,808,979
719 4,808,983
721 4,808,987
723 4,808,984
727 4,808,985
744 4,808,988
747 4,808,986
750 4,808,989
784 4,808,990
793 4,808,991
825.24 4,808,992
825.31 4,808,993
825.57 4,808,994
825.69 4,808,995
[illegible] 4,808,996
942 4,808,997

CLASS 341

118 4,808,998

CLASS 342

15 4,808,999
61 4,809,000
94 4,809,001
160 4,809,002
165 4,809,003
199 4,809,004
352 4,809,005
4,809,006
417 4,809,007

CLASS 343

700 MS 4,809,008
719 4,809,010
726 4,809,009
754 4,809,011
853 4,809,012

CLASS 346

19 4,809,013
75 4,809,015
4,809,016
4,809,017
76 L 4,809,014
76 PH 4,809,018
4,809,019
107 R 4,809,020
108 4,809,021
4,809,028
135.1 4,809,022
139 R 4,809,023
140 R 4,809,024
154 4,809,025
155 4,809,026
159 4,809,027

CLASS 350

3.61 4,807,950
3.64 4,807,970
3.73 4,807,978
3.85 4,807,951
13.6 4,807,971
96.14 4,807,952
96.15 4,807,953
4,807,954
96.2 4,807,949
96.20 4,807,955
4,807,956
96.21 4,807,957
4,807,958
96.22 4,807,960
96.23 4,807,961
4,807,962
96.24 4,807,963
96.34 4,807,964
131 4,807,965
255 4,807,966
269 4,807,967
311 4,807,968
320 4,807,969
331 T 4,807,972
332 4,807,973
4,807,974
345 4,807,975
355 4,807,976
357 4,807,977
404 4,807,981
422 4,807,982
463 4,807,983
520 4,807,979
526 4,807,980
529 4,807,984

CLASS 351

158 4,807,985
200 4,807,986
205 4,807,987
210 4,807,988
212 4,807,989

CLASS 352

23.4 4,809,047

CLASS 354

414 4,809,030
429 4,809,031

CLASS 355

3 DD 4,809,034
4,809,035
4,809,036
3 SH 4,809,033
3 TR 4,809,032
4 4,809,037
4,809,038
5 4,809,040
8 4,809,042
14 C 4,809,041
14 R 4,809,039
14 SH 4,809,050
28 4,809,049
67 4,809,043

CLASS 356

28.5 4,807,990
72 4,807,991
121 4,807,992
240 4,807,995
323 4,807,993
326 4,807,994
347 4,807,996
349 4,807,997
350 4,807,998
4,807,999
375 4,808,000
376 4,808,003
394 4,808,001
401 4,808,002

CLASS 357

[illegible] 4,809,044
23.4 4,809,045
24 4,809,048
4,809,051
41 4,809,046
45 4,809,052
70 4,809,053
4,809,054
71 4,809,055
4,809,056
76 4,809,057
82 4,809,058

CLASS 358

27 4,809,059
31 4,809,060
75 4,809,061
4,809,062
4,809,063
76 4,809,064
88 4,809,065
107 4,809,066
111 4,809,071
135 4,809,067
148 4,809,068
166 4,809,069
4,809,070
4,809,072
183 4,809,073
213.13 4,809,074
213.15 4,809,075
213.18 4,809,076
213.19 4,809,077
213.26 4,809,078
236 4,809,080
256 4,809,081
260 4,809,082
283 4,809,083
287 4,809,086
293 4,809,084
324 4,809,085
329 4,809,079
335

CLASS 360

9.1 4,809,097
19.1 4,809,087
31 4,809,088
33.1 4,809,089
4,809,118
46 4,809,090
[illegible] 4,809,091
66 4,809,092
67 4,809,093
72.1 4,809,094
73 4,809,119
75 4,809,095
77.15 4,809,096
78.14 4,809,120
92 4,809,098
95 4,809,099
96.1 4,809,100
96.4 4,809,101
[illegible] 4,809,102
103 4,809,103
104 4,809,104
4,809,105
106 4,809,106
4,809,107
109 4,809,108
113 4,809,109
122 4,809,110
125 4,809,111
4,809,112
132 4,809,113
133 4,809,114
137 4,809,115
4,809,116
4,809,117

CLASS 361

1 4,809,121
18 4,809,122
42 4,809,123
58 4,809,124
93 4,809,125
212 4,809,126
213 4,809,127
264 4,809,128
284 4,809,129
321 4,809,130
4,809,131
353 4,809,132
385 4,809,133
4,809,134
404 4,809,135
519 4,809,136

CLASS 362

61 4,809,137
4,809,138
66 4,809,139
74 4,809,140
99 4,809,141
147 4,809,142
249 4,809,143
294 4,809,144
347 4,809,147
358 4,809,145
367 4,809,146

CLASS 363

20 4,809,148
4,809,149
21 4,809,150
4,809,151
61 4,809,152
141 4,809,153

CLASS 364

148 4,809,154
200 4,809,155
4,809,156
4,809,157
4,809,158
4,809,159
4,809,160
4,809,161
4,809,162
4,809,163
4,809,164
4,809,165
4,809,166
4,809,167
4,809,168
4,809,169
4,809,170
4,809,171
413.16 4,809,172
413.25 4,809,184
424 4,809,175
4,809,176
424.01 4,809,174
4,809,177
424.05 4,809,173
4,809,179
4,809,180
426.01 4,809,181
426.02 4,809,182
426.04 4,809,183
443 4,809,178
464 4,809,186
464.02 4,809,185
464.03 4,809,187
469 4,809,188
487 4,809,189
510 4,809,190
513 4,809,191
4,809,193
513.5 4,809,192
518 4,809,194
4,809,195
525 4,809,201
550 4,809,198
4,809,197
550.01 4,809,196
551 4,809,200
578 4,809,202
602 4,809,203
713 4,809,204
721 4,809,205
724 4,809,206
724.03 4,809,207
724.12 4,809,208
724.16 4,809,209
728 4,809,210
754 4,809,211
757 4,809,212
821 4,809,213
900 4,809,029
4,809,214
4,809,215
4,809,216
4,809,217
4,809,218
4,809,219
4,809,220
4,809,221

CLASS 365

45 4,809,222
4,809,223
94 4,809,224
145 4,809,225
156 4,809,226
168 4,809,227
189 4,809,228
4,809,229
4,809,230
201 4,809,231
221 4,809,232
222 4,809,233
230 4,809,234

CLASS 366

155 4,808,004
312 4,808,005
332 4,808,006
337 4,808,007

CLASS 367

21 4,809,235
28 4,809,236
35 4,809,237
46 4,809,238
57 4,809,239
72 4,809,240
88 4,809,241
100 4,809,249
113 4,809,242
154 4,809,243
162 4,809,244
188 4,809,245

CLASS 368

[illegible] 4,809,250

CLASS 369

32 4,809,251
34 4,809,252
44 4,809,247
45 4,809,253
47 4,809,248
75.2 4,809,254
270 4,809,255

CLASS 370

4 4,809,256
4,809,257
58 4,809,258
4,809,259
4,809,260
59 4,809,261
62 4,809,262
66 4,809,263
76 4,809,264
[illegible] 4,808,008
85 4,809,265
4,809,266
86 4,809,267
93 4,809,268
94 4,809,269
95 4,809,270
110.1 4,809,271
110.3 4,809,272

CLASS 371

[illegible] 4,809,273
37 4,809,274
4,809,275
38 4,809,276
43 4,809,277
51 4,809,278
4,809,279
62 4,809,280

CLASS 372

2 4,809,281
16 4,809,282
33 4,809,285
38 4,809,286
41 4,809,283
[illegible] 4,809,290
45 4,809,287
46 4,809,288
4,809,289
75 4,809,291
92 4,809,292
98 4,809,293

CLASS 373

41 4,809,294

CLASS 374

178 4,808,009

CLASS 375

1 4,809,295
4,809,296
7 4,809,297
17 4,809,298
48 4,809,299
87 4,809,301
94 4,809,300
107 4,809,302

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110 4,809,303
4,809,304
112 4,809,305
120 4,809,[illegible]
4,809,306

CLASS 376

118 4,808,368
282 4,808,369
291 4,808,370

CLASS 377

60 4,809,307

CLASS 378

99 4,809,308
4,809,309
109 4,809,310
110 4,809,311
146 4,809,312
182 4,809,313
205 4,809,314

CLASS 379

58 4,809,315
4,809,316
98 4,809,317
153 4,809,319
167 4,809,320
211 4,809,321
279 4,809,318
380 4,809,322
399 4,809,323
412 4,809,324

CLASS 380

[illegible] 4,809,325
23 4,809,326
44 4,809,327

CLASS 381

13 4,809,328
36 4,809,329
[illegible] 4,809,330
41 4,809,331
43 4,809,332
4,809,333
[illegible] 4,809,334
53 4,809,335
61 4,809,336
94 4,809,337
[illegible] 4,809,338
110 4,809,339

CLASS 382

1 4,809,340
[illegible] 4,809,341
11 4,809,342
27 4,809,343
32 4,809,344
47 4,809,345
49 4,809,346
4,809,347
4,809,348
50 4,809,349
56 4,809,350
59 4,809,351

CLASS 383

3 4,809,352
6 4,809,353
107 4,808,010

CLASS 384

9 4,808,011
114 4,809,354
482 4,808,012
492 4,808,014
495 4,808,013
609 4,808,015

CLASS 400

17 4,808,016
83 4,808,017
121 4,808,018
605 4,808,019
663 4,808,020
717 4,808,021

CLASS 401

176 4,808,022

CLASS 403

16 Re.32,881
157 4,808,023

CLASS 404

2 4,808,024
26 4,808,025
90 4,808,026
127 4,808,027

CLASS 405

3 4,808,028
59 4,808,029
146 4,808,030
168 4,808,031
184 4,808,032
188 4,808,033
195 4,808,034
4,808,035
217 4,808,036
226 4,808,037
237 4,808,038
281 4,808,039
303 4,808,040
4,808,041

CLASS 406

86 4,808,042
181 4,808,043

CLASS 407

42 4,808,044

CLASS 408

14 4,808,047
204 4,808,045

CLASS 409

132 4,808,046
234 4,808,049
239 [illegible]

CLASS 411

188 4,808,050
378 4,808,051

CLASS 413

8 4,808,052
30 4,808,053

CLASS 414

267 4,808,057
343 4,808,058
416 4,808,059
462 4,808,056
608 4,808,060
695.7 4,808,061
703 4,808,062
730 4,808,063
4,808,064
774 4,808,065
795 4,808,054

CLASS 415

53 T 4,808,066
90 4,808,067
110 4,808,070
157 4,808,068
160 4,808,069

CLASS 416

5 4,808,071
4,808,072
95 4,808,073
140 4,808,074
4,808,075
224 4,808,055
230 A 4,808,076

CLASS 417

2 4,808,077
38 4,808,078
50 4,808,079
[illegible]
57 4,808,081
64 4,808,082
295 4,808,083
322 [illegible]
363 4,808,085
369 4,808,087
395 4,808,088
407 4,808,091
417 4,808,089
423.2 4,808,090
454 4,808,092
539 4,808,093

CLASS 418

1 4,808,094
15 4,808,095
113 4,808,096

CLASS 420

54 4,808,371
457 4,808,372
507 4,808,373
537 4,808,374
548 4,808,375
564 4,808,376

CLASS 422

16 4,808,377
48 4,808,378
56 4,808,379
64 4,808,380
100 4,808,381
140 4,808,382
4,808,383

CLASS 423

21.1 4,808,384
226 4,808,385
4,808,386
261 4,808,390
265 4,808,387
321 R 4,808,391
347 4,808,392
395 4,808,393
437 4,808,394
447.3 4,808,395
579 4,808,396
608 4,808,397
622 4,808,398

CLASS 424

2 4,808,399
47 4,808,388
52 4,808,400
4,808,401
53 4,808,389
84 4,808,403
88 4,808,404
96.3 4,808,405
140 4,808,406
141 4,808,407
408 4,808,408
423 4,808,402
435 4,808,410
439 4,808,409
441 4,808,411
442 4,808,412
449 4,808,414
458 4,808,413
488 4,808,415
497 4,808,416

CLASS 425

8 4,808,097
72.1 4,808,098
4,808,099
127 4,808,100
130 4,808,101
150 4,808,102
190 4,808,103
298 4,808,104
529 4,808,105
547 4,808,106

CLASS 426

2 4,808,417
5 4,808,418
13 4,808,419
106 4,808,420
107 4,808,421
143 4,808,422
273 4,808,423
289 4,808,424
399 4,808,425
417 4,808,426
521 4,808,427
569 4,808,428
647 4,808,429

CLASS 427

4 4,808,430
8 4,808,431
32 4,808,432
36 4,808,433
54.1 4,808,434
97 4,808,435
120 4,808,436
130 4,808,437
242 4,808,086
260 4,808,438
356 4,808,439
372.2 4,808,440
386 4,808,441
393.5 4,808,442
407.1 4,808,443
420 4,808,444
428 4,808,445

CLASS 428

17 4,808,446
4,808,447
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610 4,808,487
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[illegible] 4,808,494
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4,808,499

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56 4,808,524
68 4,808,523
91 4,808,525
[illegible] 4,808,526
4,808,527
172.2 4,808,528
179 4,808,529
[illegible] 4,808,530
195 4,808,531
240.2 4,808,532
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252.1 4,808,535

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886 4,808,130

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66 4,808,132

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7 4,808,135
[illegible] 4,808,136
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[illegible] 4,808,617
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[illegible] 4,808,599
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[illegible] 4,808,600
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[illegible] 4,808,606
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[illegible] 4,808,646
[illegible] 4,808,650
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156 4,808,648
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[illegible] 4,808,651
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[illegible] 4,808,660

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[illegible] 4,808,181
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CLASSIFICATION OF DESIGNS

D2—	225	299,980		106	299,997		118	300,014		218	300,030		195	300,048	D28—	13	300,064
	260	299,981		309	299,998		147	300,015		241	300,029		226	300,049		35	300,065
	314	299,982			299,999			300,016	D15—	7	300,033			300,050		61	300,066
	320	299,983	D8—	17	300,000			300,017			300,034		228	300,051	D29—	14	300,070
		299,984		[illegible]	300,002		157	300,018		[illegible]	300,035		253	300,052	D30—	101	300,067
D6—	332	299,985		78	300,001			300,019		126	300,036	D22—	[illegible]	300,057		129	300,068
	344	299,986		367	300,003		192	300,020	D16—	132	300,038		127	300,053	D34—	3	300,069
	366	299,987	D9—	305	300,004		318	300,021			300,039		141	300,054		17	300,071
	368	299,988		370	300,005	D13—	8	300,022		244	300,037			300,055		21	300,072
	415	299,989	D10—	22	300,006		32	300,023	D18—	12	300,040		142	300,056		32	300,073
		299,990		28	300,007		[illegible]	300,024	D19—	52	300,041	D23—	271	300,058		35	300,076
	511	299,991		57	300,008	D14—	102	300,031		54	300,042	D24—	[illegible]	300,059			300,077
D7—	5	299,992		73	300,009		113	300,032	D20—	[illegible]	300,043		28	300,060		38	300,074
	13	299,993		91	300,010		129	300,026	D21—	190	300,044	D25—	107	300,061			300,075
	23	299,994	D12—	87	300,011		141	300,025		191	300,045		[illegible]	300,062		43	300,078
	43	299,995		97	300,012		143	300,027		194	300,046		[illegible]	300,063	D99—	27	300,079
	105	299,996		110	300,013		151	300,028			300,047						

CLASSIFICATION OF PLANTS

P.—	55	6,629		6,632		6,635		[illegible]	6,638		70	6,641	71	6,643
	67	6,630		6,633		6,636			6,639					
	68	6,631		6,634		6,637			6,640			6,642	74	6,644

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

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26 : 4,807,316 4,807,317 4,807,331 4,807,334 4,807,335 4,807,338 4,807,353 4,807,386 4,807,396 4,807,405 4,807,414 4,807,449 4,807,452 4,807,462 4,807,468 4,807,486 4,807,502 4,807,538 4,807,575 4,807,582 4,807,584 4,807,600 4,807,650 4,807,729 4,807,813 4,807,838 4,807,847 4,807,848 4,807,855 4,807,859 4,807,895
4,807,913 4,807,936 4,807,972 4,807,991 4,808,015 4,808,061 4,808,148 4,808,260 4,808,272 4,808,281 4,808,282 4,808,301 4,808,319 4,808,323 4,808,350 4,808,356 4,808,441 4,808,457 4,808,549 4,808,621 4,808,653 4,808,664 4,808,680 4,808,687 4,808,750 4,808,995 4,809,044 4,809,089 4,809,128 4,809,179 4,809,339
27 : 4,807,324 4,807,413 4,807,601 4,807,608 4,807,629 4,807,719 4,807,727 4,807,884 4,807,889 4,807,998 4,808,009 4,808,068 4,808,180 4,808,228 4,808,255 4,808,307 4,808,352 4,808,471 4,808,474 4,808,565 4,808,638 4,808,780 4,809,104 4,809,360 4,808,994 4,809,200 4,807,507 4,807,555 4,807,565 4,807,589 4,807,678 4,808,028 4,808,149 4,808,376 4,808,419 4,808,794 4,809,332
MI : 4,807,319
31 : 4,808,025
32 : 4,808,127
33 : 4,807,320 4,807,987 4,808,079 4,808,157 4,808,161 4,808,265 4,808,773 4,808,950 4,809,026 4,809,027 4,809,357
34 : 4,807,375 4,807,465 4,807,546 4,807,569 4,807,599 4,807,623 4,807,649 4,807,688 4,807,710 4,807,741 4,807,747 4,807,752 4,807,874 4,807,903 4,807,968 4,808,055 4,808,093 4,808,110 4,808,137 4,808,151 4,808,196 4,808,201 4,808,232
4,808,274 4,808,291 4,808,295 4,808,296 4,808,332 4,808,387 4,808,400 4,808,401 4,808,403 4,808,413 4,808,418 4,808,420 4,808,421 4,808,508 4,808,512 4,808,560 4,808,569 4,808,573 4,808,575 4,808,580 4,808,607 4,808,610 4,808,615 4,808,637 4,808,673 4,808,701 4,808,722 4,808,734 4,808,762 4,808,764 4,808,770 4,808,930 4,808,959 4,809,202 4,809,270 4,809,283 4,809,302 4,809,323
35 : 4,807,667 4,808,368 4,809,011 4,809,285 4,809,286
36 : 4,807,301 4,807,302 4,807,308 4,807,341 4,807,345 4,807,348 4,807,354 4,807,357 4,807,394 4,807,425 4,807,488 4,807,558 4,807,562 4,807,588 4,807,644 4,807,648 4,807,652 4,807,666 4,807,686 4,807,757 4,807,758 4,807,767 4,807,805 4,807,807 4,807,835 4,807,854 4,807,866 4,807,867 4,807,878 4,807,911 4,807,959 4,807,970 4,807,985 4,807,986 4,807,988 4,808,017 4,808,090 4,808,104 4,808,128 4,808,150 4,808,152 4,808,181 4,808,194 4,808,195 4,808,204 4,808,218 4,808,225 4,808,262 4,808,306 4,808,335 4,808,365 4,808,386 4,808,428 4,808,431 4,808,435 4,808,438 4,808,460 4,808,502 4,808,510 4,808,516 4,808,524 4,808,525 4,808,539
4,808,545 4,808,579 4,808,586 4,808,617 4,808,624 4,808,629 4,808,634 4,808,639 4,808,644 4,808,645 4,808,647 4,808,668 4,808,671 4,808,672 4,808,674 4,808,686 4,808,696 4,808,700 4,808,704 4,808,730 4,808,731 4,808,754 4,808,760 4,808,785 4,808,792 4,808,808 4,808,854 4,808,914 4,808,917 4,808,932 4,808,942 4,808,968 4,808,973 4,808,999 4,809,024 4,809,045 4,809,047 4,809,064 4,809,133 4,809,135 4,809,145 4,809,157 4,809,158 4,809,168 4,809,184 4,809,196 4,809,273
37 : 4,807,303 4,807,418 4,807,430 4,807,528 4,807,602 4,807,696 4,807,742 4,807,745 4,807,809 4,807,885 4,807,957 4,808,026 4,808,188 4,808,256 4,808,393 4,808,425 4,808,459 4,808,625 4,808,632 4,808,650 4,808,753
38 : 4,807,564
39 : 4,807,343 4,807,397 4,807,402 4,807,426 4,807,427 4,807,433 4,807,447 4,807,493 4,807,501 4,807,515 4,807,518 4,807,559 4,807,560 4,807,675 4,807,693 4,807,714 4,807,731 4,807,772 4,807,782 4,807,787 4,807,798 4,807,843 4,807,928 4,807,964 4,808,012 4,808,018 4,808,047 4,808,052 4,808,086 4,808,121 4,808,177 4,808,178 4,808,221 4,808,249 4,808,250 4,808,252 4,808,257
40 : 4,807,387
41 : 4,807,929
42 : 4,807,362 4,807,419 4,807,482 4,807,498 4,807,511 4,807,641 4,807,653 4,807,697 4,807,706 4,807,724 4,807,770 4,807,771 4,807,789 4,807,825 4,807,879 4,807,882 4,807,955 4,808,050 4,808,063 4,808,080 4,808,088 4,808,115 4,808,125 4,808,163 4,808,205 4,808,215 4,808,217 4,808,231 4,808,240 4,808,271 4,808,318 4,808,331 4,808,372 4,808,377 4,808,383 4,808,384 4,808,453 4,808,464 4,808,476 4,808,478
4,808,278 4,808,321 4,808,344 4,808,361 4,808,366 4,808,407 4,808,426 4,808,450 4,808,458 4,808,469 4,808,497 4,808,530 4,808,563 4,808,657 4,808,660 4,808,665 4,808,666 4,808,669 4,808,779 4,808,799 4,808,826 4,808,865 4,808,876 4,808,899 4,808,960 4,808,965 4,808,974 4,809,003 4,809,015 4,809,028 4,809,035 4,809,177 4,809,190 4,809,217 4,809,314 4,809,340

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	4,808,480		4,807,580		4,807,703		4,808,561		4,808,868		4,808,021
	4,808,491		4,807,734		4,807,704		4,808,662		4,808,939		4,808,023
	4,808,496		4,807,754		4,807,808		4,808,692		4,809,010		4,808,036
	4,808,498		4,807,806		4,807,845		4,808,738		4,809,295		4,808,171
	4,808,595		4,807,829		4,807,861		4,808,765	50 :	4,808,511		4,808,571
	4,808,612		4,808,191		4,807,873		4,808,838	51 :	4,807,340		4,808,611
	4,808,626		4,808,467		4,807,890		4,808,861		4,807,346		4,808,863
	4,808,627		4,808,771		4,807,900		4,808,889		4,807,625		4,808,886
	4,808,656	47 :	4,807,372		4,807,922		4,808,925		4,807,674		4,808,946
	4,808,663		4,807,748		4,807,924		4,808,929		4,807,720		4,808,976
	4,808,679		4,807,765		4,808,000		4,808,977		4,807,738		4,809,126
	4,808,707		4,807,990		4,808,005		4,808,986		4,807,839		4,809,150
	4,808,718		4,808,154		4,808,031		4,808,996		4,807,933		4,809,174
	4,808,742		4,808,170		4,808,035		4,809,016		4,808,129	54 :	4,809,223
	4,808,743		4,808,412		4,808,119		4,809,117		4,808,328	55 :	4,807,371
	4,808,816		4,808,518		4,808,197		4,809,171		4,808,404		4,807,383
	4,808,859		4,808,677		4,808,199		4,809,211		4,808,630		4,807,429
	4,808,892		4,808,926		4,808,235		4,809,219		4,808,675		4,807,472
	4,808,948		4,808,971		4,808,284		4,809,231		4,809,362		4,807,619
	4,809,001		4,809,069		4,808,287		4,809,235	53 :	4,807,434		4,807,645
	4,809,006	48 :	4,807,306		4,808,289		4,809,237		4,807,437		4,807,779
	4,809,009		4,807,392		4,808,298		4,809,238		4,807,476		4,807,781
	4,809,090		4,807,442		4,808,305		4,809,240		4,807,495		4,807,797
	4,809,125		4,807,473		4,808,406		4,809,243		4,807,510		4,807,904
	4,809,154		4,807,509		4,808,422		4,809,245		4,807,516		4,808,024
	4,809,187		4,807,635		4,808,440		4,809,269		4,807,552		4,808,176
	4,809,303		4,807,661		4,808,536		4,809,352		4,807,916		4,808,263
43 :	4,807,379		4,807,663		4,808,543	49 :	4,807,344		4,807,965		4,808,517
44 :	4,808,322		4,807,700		4,808,552		4,808,175		4,808,001		4,808,684
45 :	4,807,388		4,807,701		4,808,555		4,808,237		4,808,019		4,809,122
	4,807,393		4,807,702								

DESIGN PATENTS

01 :	300,053		300,039		300,071		300,006	33 :	300,057		300,037
	300,056		300,040	08 :	300,003		300,007	36 :	300,022	45 :	300,015
04 :	300,010		300,043		300,024	20 :	299,991		300,030		300,016
	300,059		300,045		300,072	21 :	300,073		300,052		300,017
06 :	299,983		300,047	09 :	300,033	25 :	299,984		300,058		300,051
	299,986		300,048		300,064		300,042	37 :	300,001	48 :	300,002
	299,989		300,049	12 :	300,008		300,065		300,078		300,023
	299,995		300,050		300,020	26 :	299,987		300,079		300,066
	300,000		300,063		300,021		300,018	39 :	299,990		300,075
	300,012		300,068	17 :	299,996	29 :	300,019		300,036	49 :	299,981
	300,026		300,069		299,997		300,067	41 :	299,982	53 :	300,032
	300,031		300,070		300,004	31 :	300,074		300,027		300,046
	300,038										

PLANT PATENTS

06 :	6,630		09 :	6,644		45 :	6,633		6,637
	6,636	6,642			6,632				
08 :	6,641	6,643	39 :	6,631	6,635		6,634	53 :	6,629

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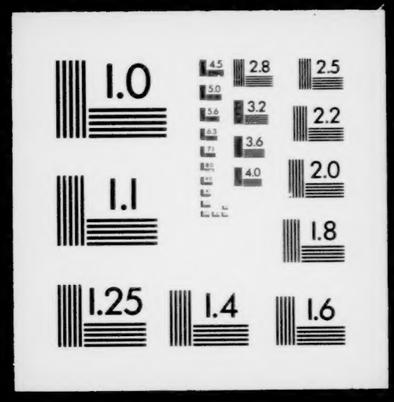
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